



## **TECHNICAL MANUAL**

# STANDARD INVERTER PACKAGED AIR-CONDITIONERS

(Split system, air to air heat pump type)

**CEILING CASSETTE-4WAY TYPE** 

FDT100VNP1VF2

**CEILING SUSPENDED TYPE** 

FDE100VNP1VG

DUCT CONNECTED-HIGH STATIC PRESSURE TYPE

FDU100VNP1VF2

DUCT CONNECTED-LOW / MIDDLE STATIC PRESSURE TYPE

FDUM100VNP1VF2

**FLOOR STANDING TYPE** 

FDF100VNP1VD2

**WALL MOUNTED TYPE** 

SRK100VNP1ZR

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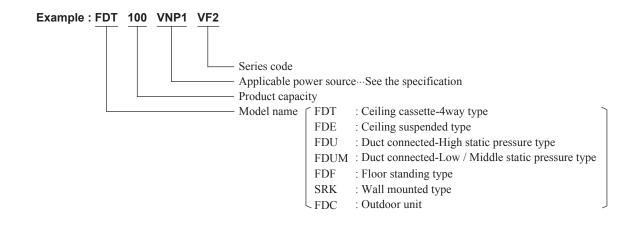
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|   |     |

#### ■ How to read the model name



### 1. SPECIFICATIONS

#### (1) Ceiling cassette-4way type (FDT)

| (1) 0   |                                     |               | Model    | FDT100\  | /NP1VF2                                      |
|---|-------------------------------------|---------------|----------|--|--|
| Item  |                                     |               |          | Indoor unit FDT100VF2  | Outdoor unit FDC100VNP                       |
| Power sour                                    |                                     |               |          | 1 Phase 220-240V   |  |
|   | Nominal cooling capacity            |               | kW       | 10.0 [ 2.8(Min.  | )— 11.2(Max.)]                               |
|   | Nominal heating capacity            | y (range)     | kW       | 11.2 [ 2.5(Min.  | )— 12.5(Max.)]                               |
|   | Power consumption                   | Cooling       |          |  | 76   |
|   | Heating                             |               | kW       |  | 84   |
|   | Max power consumption               |               |          |  | 60   |
|   | Running current                     | Cooling       |          |  | / 12.7                                       |
|   |                                     | Heating       | Α        |  | / 13.0                                       |
| Operation                                     | Inrush current, max curre           |               |          | 5,   |  |
| data  | Power factor                        | Cooling       | %        |  | 9  |
| data  |                                     | Heating       | ,,,      | 9  |  |
|   | EER                                 | Cooling       |          |  | 62   |
|   | COP                                 | Heating       |          | 4.:  | 52   |
|   | Sound power level                   | Cooling       | ļ        | 65   | 70   |
|   |                                     | Heating       |          |  |  |
|   | Sound pressure level                | Cooling       | dB(A)    | P-Hi:51 Hi:40 Me:37 Lo:35  | 57   |
|   | ·                                   | Heating       |          |  | 61   |
|   | Silent mode sound press             | sure level    |          |  | Cooling:50 / Heating:49                      |
| Exterior dim                                  | ensions (Height × Width :           | × Depth)      | mm       | Unit 298 × 840 × 840   | 845×970×370                                  |
|   |                                     |               |          | Panel 35 × 950 × 950   |  |
| Exterior app                                  |                                     |               |          | Plaster white  | Stucco white                                 |
| ( Munsell co                                  | olor)                               |               |          | ( 6.8Y8.9/0.2 )near equivalent   | ( 4.2Y7.5/1.1)near equivalent                |
| Net weight                                    |                                     |               | kg       | UNIT 27 PANEL 5.5  | 70   |
| Compressor type & Q'ty                        |                                     |               |          | _  | RMT5126MCE1 (Twin rotary type)×1             |
| Compressor motor (Starting method)            |                                     |               | kW       | _  | Direct line start                            |
| Refrigerant oil (Amount, type)                |                                     |               | l l      | — 0.90 MA68  R410A 2.55kg in outdoor unit (incl. the amount for the piping of : 15m) |  |
| Refrigerant (Type, amount, pre-charge length) |                                     |               | kg       |  |  |
| Heat exchanger                                |                                     |               |          | Louver fin & inner grooved tubing  | M shape fin & inner grooved tubing           |
| Refrigerant                                   |                                     |               |          | Capillary tubes + Elec   |  |
| Fan type &                                    |                                     |               | 147      | Turbo fan ×1   | Propeller fan ×1                             |
| Fan motor (                                   | Starting method)                    | 0 "           | W        | 140 < Direct line start >  | 86 < Direct line start >                     |
| Air flow                                      |                                     | Cooling       | m³/min   | P-Hi: 37 Hi: 27 Me: 24 Lo: 20  | 75   |
| Available av                                  | townal atatic pressure              | Heating       | Do       | 0  | 79<br>0                                      |
|   | ternal static pressure              |               | Pa       | <u> </u>   |  |
| Outside air                                   |                                     | -             |          | Possible   | <del>-</del>                                 |
|   | ality / Quantity<br>ration absorber |               |          | Pocket plastic net ×1(Washable) Rubber sleeve(for fan motor)                         | - Dubbor alogue (for fan mater 8 gempresser) |
| Electric hea                                  |                                     |               | w        | hubber sleeve(for fail filotor)  | Rubber sleeve (for fan motor & compressor)   |
| Electric flea                                 | Remote control                      |               | VV       | (option) wired: PC EV1A PC E5  | , RCH-E3 wireless : RCN-T-36W-E              |
| Operation                                     | Room temperature contr              | ·ol           |          |  | by electronics                               |
| control                                       | Operation display                   | OI            |          | memostat t   |  |
|   | Operation display                   |               |          | Compressor overheat protection, Overcurrent  |  |
| 0 ( )   |                                     |               |          |  | · · · · · · · · · · · · · · · · · · ·        |
| Safety equip                                  | oments                              |               |          | Frost protection, Serial signal error protection,                                    |  |
|   |                                     |               |          | Heating overload protection( High pressure co  |  |
|   | Refrigerant piping size (           | O.D. )        | mm       | Liquid line: I/U $\phi$ 9.52 (3/8") Pipe   |  |
|   | 3 11 3 (                            |               |          | Gas line: I/U φ 15.88 (5/8") Pipe φ  |  |
|   | Connecting method                   |               |          | Flare piping   | Flare piping                                 |
| Installation                                  | Attached length of piping           | 3             | m        | <del>-</del>   |  |
| data  | Insulation for piping               | \ 1 · · ·     |          | Necessary (both L  | <u> </u>                                     |
|   | Refrigerant line (one way           |               | m        |  | .30m   |
|   | Vertical height diff. between 0     | J.U. and I.U. | m        | Max.20m (Outdoor unit is higher)   | Max.20m (Outdoor unit is lower)              |
| D '   | Drain hose                          |               |          | Hose connectable VP25 (O.D.32)   | Holes size $\phi$ 20 × 3pcs                  |
|   | , max lift height                   |               | mm       | Built-in drain pump , 700  | _  |
|   | ded breaker size                    |               | A        |  |  |
|   | (ed rotor ampere)                   |               | Α        |  | .0   |
|   | ting wires   Size × Core no         | umber         |          | ,  | e) / Termainal block (Screw fixing type)     |
| IP number                                     |                                     |               |          | IPX0   | IPX4   |
| Standard ac                                   |                                     |               |          | Mounting kit   | t, Drain hose                                |
| Option parts                                  |                                     |               |          | <u> </u>   | _  |
| Note (1)                                      | The data are measured at            | t the followi | na condi | itions. The pipe length is 7.5   | om.  |

Note (1) The data are measured at the following conditions.

| The | pipe | length | is | 7.5m |
|-----|------|--------|----|------|

| Item      | Indoor air t | emperature | Outdoor air | temperature | Standards  |
|-----------|--------------|------------|-------------|-------------|------------|
| Operation | DB           | WB         | DB          | WB          | Staridards |
| Cooling   | 27°C         | 19℃        | 35°C        | 24°C        | ISO5151-T1 |
| Heating   | 20°C         | _          | 7°C         | 6°C         | 1505151-11 |

- (2) This air-conditioner is manufactured and tested in conformity with the ISO.
- (3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat (a) Solid fevel indicates the value in an affection chamber. During operation these values are so higher due to ambient conditions.
  (4) Select the breaker size according to the own national standard.
  (5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
  (6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

#### (2) Ceiling suspended type (FDE)

|                                    |                                       |                | Model    | FDE100  | VNP1VG                                     |  |
|------------------------------------|---------------------------------------|----------------|----------|---|--|--|
| Item                               |                                       |                |          | Indoor unit FDE100VG                              | Outdoor unit FDC100VNP                     |  |
| Power sour                         |                                       |                |          |   | 50Hz / 220V 60Hz                           |  |
|                                    | Nominal cooling capacit               |                | kW       | 10.0 [ 2.8(Min.                                   | )— 11.2(Max.)]                             |  |
|                                    | Nominal heating capacity (range)      |                | kW       | 11.2 [ 2.5(Min.                                   |  |  |
|                                    | Power consumption Cooling             |                |          |   | 66   |  |
|                                    | 1 ower consumption                    | Heating        | kW       |   | 94   |  |
|                                    | Max power consumption                 | 1              |          | 4.  | 28   |  |
|                                    | Running current                       | Cooling        |          | 11.7  | / 12.2                                     |  |
|                                    | Hulling Current                       | Heating        | Α        | 12.9  | / 13.5                                     |  |
| Operation                          | Inrush current, max curre             | ent            |          | 5,  | 21.0                                       |  |
| data                               | Power factor                          | Cooling        | %        | 9   | 9  |  |
| uala                               | Fower factor                          | Heating        | 70       | 99  |  |  |
|                                    | EER                                   | Cooling        |          | 3.  | 76   |  |
|                                    | COP                                   | Heating        |          | 3.  | 81   |  |
|                                    | 0                                     | Cooling        |          | 64  | 70   |  |
|                                    | Sound power level                     | Heating        |          | 64  | 70   |  |
|                                    |                                       | Cooling        | dB(A)    | D.I. 40 II. 40 M. 00 I. 04                        | 57   |  |
|                                    | Sound pressure level                  | Heating        | . ,      | P-Hi: 48 Hi: 43 Me: 38 Lo: 34                     | 61   |  |
|                                    | Silent mode sound press               |                |          | _   | Cooling:50 / Heating:49                    |  |
|                                    | · · · · · · · · · · · · · · · · · · · |                |          |   |  |  |
| Exterior din                       | nensions (Height × Width              | × Depth)       | mm       | 250 × 1,620 × 690                                 | 845×970×370                                |  |
| Exterior app                       | pearance                              |                |          | Plaster white                                     | Stucco white                               |  |
| ( Munsell co                       | olor )                                |                |          | ( 6.8Y8.9/0.2 )near equivalent                    | (4.2Y7.5/1.1)near equivalent               |  |
| Net weight                         |                                       |                | kg       | 43  | 70   |  |
|                                    | or type & Q'ty                        |                |          | _   | RMT5126MCE1 (Twin rotary type)×1           |  |
| Compressor motor (Starting method) |                                       | kW             | _        | Direct line start                                 |  |  |
|                                    | oil (Amount, type)                    |                | l        | _   | 0.90 MA68                                  |  |
|                                    | (Type, amount, pre-charge             | ge length)     | kg       | B410A 2.55kg in outdoor unit (incl.               | the amount for the piping of : 15m)        |  |
| Heat excha                         |                                       | go longin,     | ng_      | Louver fin & inner grooved tubing                 | M shape fin & inner grooved tubing         |  |
| Refrigerant                        |                                       |                |          |   | tronic expansion valve                     |  |
| Fan type &                         |                                       |                |          | Centrifugal fan ×4                                | Propeller fan ×1                           |  |
|                                    | (Starting method)                     |                | W        | 80 < Direct line start >                          | 86 < Direct line start >                   |  |
| 1 all motor (                      | (Starting metriod)                    | Cooling        |          | 00 \ Direct line start >                          | 75   |  |
| Air flow                           |                                       | Heating        | m³/min   | P-Hi:32 Hi:26 Me:21 Lo:16.5                       | 79   |  |
| Available o                        | xternal static pressure               | Trieating      | Pa       | 0   | 0  |  |
| Outside air                        | -                                     |                | Га       | Not possible                                      | _  |  |
|                                    | uality / Quantity                     |                |          | Pocket plastic net ×2(Washable)                   | _  |  |
|                                    | bration absorber                      |                |          | Rubber sleeve(for fan motor)                      | Dubbar alague (for for mater 9 compressor) |  |
| Electric hea                       |                                       |                | W        | nubber sleeve(for larr friotor)                   | Rubber sleeve (for fan motor & compressor) |  |
| Electric flea                      | 1                                     |                | VV       | (antian) wired - DC EV1A DC E                     | <br>E5 , RCH-E3 wireless : RCN-E-E         |  |
| Operation                          | Remote control                        |                |          |   |  |  |
| control                            | Room temperature contr                | OI             |          | I nermostat t                                     | by electronics                             |  |
|                                    | Operation display                     |                |          | -   | <del>_</del>                               |  |
|                                    |                                       |                |          | Compressor overheat protection, Overcurrent       | · · · · · · · · · · · · · · · · · · ·      |  |
| Safety equi                        | ipments                               |                |          | Frost protection, Serial signal error protection, |  |  |
|                                    |                                       |                |          | Heating overload protection( High pressure co     | introl), Cooling overload protection       |  |
|                                    | Definement 1.1 1 1                    | 0.0.           |          | Liquid line: I/U φ 9.52 (3/8") Pipe               | φ 9.52(3/8")×0.8 O/U φ 9.52 (3/8")         |  |
|                                    | Refrigerant piping size (             | U.D.)          | mm       | Gas line: I/U φ 15.88 (5/8") Pipe φ               |  |  |
|                                    | Connecting method                     |                |          | Flare piping                                      | Flare piping                               |  |
| Installation                       |                                       |                | m        |   |  |  |
| data                               | Insulation for piping                 |                | <u> </u> | Necessary (both I                                 | Liquid & Gas lines)                        |  |
|                                    | Refrigerant line (one wa              | v) lenath      | m        | 7 (   | .30m                                       |  |
|                                    | Vertical height diff. between         |                | m        | Max.20m (Outdoor unit is higher)                  | Max.20m (Outdoor unit is lower)            |  |
|                                    | Drain hose                            |                | ···      | Hose connectable VP20 (O.D.26)                    | Holes size $\phi$ 20 × 3pcs                |  |
| Drain numr                         | o, max lift height                    |                | mm       | — (O.B.E.O)                                       | —  |  |
|                                    | nded breaker size                     |                | A        | _   |  |  |
|                                    | ked rotor ampere)                     |                | A        |   | .0   |  |
| ,                                  | cting wires   Size × Core n           | umher          |          |   | e) / Termainal block (Screw fixing type)   |  |
| IP number                          | Uning Wiles   DIZE x COTE II          | ui i i i i i i |          | IPX0  | IPX4                                       |  |
| Standard a                         | coossorios                            |                |          |   | Drain elbow, Drain hole grommet            |  |
|                                    |                                       |                |          | Mounting kit, Drain hose                          | Drain elbow, Drain note grommet            |  |
| Option part                        | IS<br>The data are magazired a        |                | L        | itions The pine length is 7.1                     |  |  |

Note (1) The data are measured at the following conditions.

| ( )       |              | 5          |             |             | 3          |  |
|-----------|--------------|------------|-------------|-------------|------------|--|
| Item      | Indoor air t | emperature | Outdoor air | temperature | Standards  |  |
| Operation | DB           | WB         | DB          | WB          | Standards  |  |
| Cooling   | 27°C         | 19°C       | 35°C        | 24°C        | ISO5151-T1 |  |
| Heating   | 20°C         | _          | 7°C         | 6°C         | 1505151-11 |  |

- (2) This air-conditioner is manufactured and tested in conformity with the ISO.(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat (a) Solid level indicates the value in an alterfold chamber. During operation these values are so higher due to ambient conditions.
  (4) Select the breaker size according to the own national standard.
  (5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
  (6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

#### (3) Duct connected-High static pressure type (FDU)

|   |  |                    | Model   | FDU100\  | /NP1VF2                                    |  |  |  |
|---|--|--------------------|---------|--|--|--|--|--|
| Item  |  |                    | _       | Indoor unit FDU100VF2                              | Outdoor unit FDC100VNP                     |  |  |  |
| Power sour                                    | rce                                      |                    |         |  | 50Hz / 220V 60Hz                           |  |  |  |
|   | Nominal cooling capacity                 | (range)            | kW      |  | )— 11.2(Max.)]                             |  |  |  |
|   | Nominal heating capacity (range)         |                    | kW      | 11.2 [ 2.5(Min.                                    |  |  |  |  |
|   |  | Cooling            |         |  | 00   |  |  |  |
|   | Power consumption                        | Heating            | kW      | 2.93   |  |  |  |  |
|   | Max power consumption                    |                    |         | 4.60   |  |  |  |  |
|   |  | Cooling            |         | 13.2 / 13.8  |  |  |  |  |
|   | Running current Heating                  |                    | Α       | 12.9 / 13.5  |  |  |  |  |
|   | Inrush current, max currer               |                    | · ` `   |  | 22.0                                       |  |  |  |
| Operation                                     |  | Cooling            |         | ·  | 9  |  |  |  |
| data  | Power factor                             | Heating            | %       |  | 9  |  |  |  |
|   | EER                                      | Cooling            |         |  | 33   |  |  |  |
|   | COP                                      | Heating            | -       |  | 82   |  |  |  |
|   | COP                                      | Cooling            |         | 5.   | 02   |  |  |  |
|   | Sound power level                        |                    | {       | 65   | 70   |  |  |  |
|   |  | Heating            | 4D(V)   |  | 57   |  |  |  |
|   | Sound pressure level                     | Cooling            | dB(A)   | P-Hi: 44 Hi: 38 Me: 36 Lo: 30                      | 61   |  |  |  |
|   | Cilent made a consideration              | Heating            |         |  | -  |  |  |  |
|   | Silent mode sound pressu                 | re ievei           |         | <del>_</del>                                       | Cooling:50 / Heating:49                    |  |  |  |
| Exterior din                                  | nensions (Height $\times$ Width $\times$ | Depth)             | mm      | 280 × 1,370 × 740                                  | 845×970×370                                |  |  |  |
| Exterior app                                  | pearance                                 |                    |         |  | Stucco white                               |  |  |  |
| (Munsell co                                   |  |                    |         | _  | ( 4.2Y7.5/1.1)near equivalent              |  |  |  |
| Net weight                                    |  |                    | kg      | 54   | 70   |  |  |  |
|   | or type & Q'ty                           |                    | 1.19    | _  | RMT5126MCE1 (Twin rotary type )×1          |  |  |  |
| Compressor motor (Starting method)            |  |                    | kW      |  | Direct line start                          |  |  |  |
|   | oil (Amount, type)                       |                    | l       |  | 0.90 MA68                                  |  |  |  |
|   |  | longth)            | kg      | P410A 2 55kg in outdoor unit (incl                 | the amount for the piping of : 15m)        |  |  |  |
| Refrigerant (Type, amount, pre-charge length) |  | iengin)            | l kg    | Louver fin & inner grooved tubing                  | M shape fin & inner grooved tubing         |  |  |  |
| Heat exchanger Refrigerant control            |  |                    |         | tronic expansion valve                             |  |  |  |  |
|   |  |                    |         | Capillary tubes + Liec<br>Centrifugal fan ×3       |  |  |  |  |
| Fan type &                                    |  |                    | W       | 100 + 130 < Direct line start >                    | Propeller fan ×1                           |  |  |  |
| ran motor (                                   | (Starting method)                        | Caalina            | VV      | 100 + 130 < Direct line start >                    | 86 < Direct line start >                   |  |  |  |
| Air flow                                      |  | Cooling<br>Heating | m³/min  | P-Hi:36 Hi:28 Me:25 Lo:19                          | 75<br>79                                   |  |  |  |
| Available ex                                  | xternal static pressure                  |                    | Pa      | Standard: 60 Max: 200                              | 0  |  |  |  |
| Outside air                                   | intake                                   |                    |         | Possible   | _  |  |  |  |
| Air filter, Qu                                | uality / Quantity                        |                    |         | Procure locally                                    | _  |  |  |  |
| Shock & vik                                   | oration absorber                         |                    |         | Rubber sleeve(for fan motor)                       | Rubber sleeve (for fan motor & compressor) |  |  |  |
| Electric hea                                  | ater                                     |                    | W       | _  | _  |  |  |  |
| O   | Remote control                           |                    | İ       | (option) wired: RC-EX1A, RC-E5                     | , RCH-E3 wireless : RCN-KIT3-E             |  |  |  |
| Operation                                     | Room temperature contro                  |                    |         | Thermostat b                                       | by electronics                             |  |  |  |
| control                                       | Operation display                        |                    |         | -  | _  |  |  |  |
|   |  |                    |         | Compressor overheat protection, Overcurrent        | protection                                 |  |  |  |
| Safety equi                                   | inments                                  |                    |         | Frost protection, Serial signal error protection,  | •  |  |  |  |
| Oalety equi                                   | prilents                                 |                    |         | Heating overload protection( High pressure co      |  |  |  |  |
|   | 1  |                    |         |  |  |  |  |  |
|   | Refrigerant piping size ( O              | .D. )              | mm      | Liquid line: I/U $\phi$ 9.52 (3/8") Pipe           |  |  |  |  |
|   |  | ,                  |         | Gas line: I/U φ 15.88 (5/8") Pipe φ                |  |  |  |  |
|   | Connecting method                        |                    |         | Flare piping                                       | Flare piping                               |  |  |  |
| Installation                                  | Attached length of piping                |                    | m       | _  |  |  |  |  |
| data  | Insulation for piping                    |                    |         | Necessary (both L                                  | · · · · · · · · · · · · · · · · · · ·      |  |  |  |
|   | Refrigerant line (one way)               |                    | m       |  | .30m                                       |  |  |  |
|   | Vertical height diff. between O.         | U. and I.U.        | m       | Max.20m (Outdoor unit is higher)                   | Max.20m (Outdoor unit is lower)            |  |  |  |
|   | Drain hose                               |                    |         | Hose connectable VP25 (I.D.25,O.D.32)              | Holes size $\phi$ 20 × 3pcs                |  |  |  |
| Drain pump, max lift height                   |  |                    | mm      | Built-in drain pump , 600                          | _  |  |  |  |
| Recommended breaker size                      |  |                    | Α       |  | _  |  |  |  |
|   | ked rotor ampere)                        |                    | Α       | 5  | .0   |  |  |  |
| Interconnec                                   | cting wires   Size × Core nur            | mber               |         | 1.5mm <sup>2</sup> ×4 cores (Including earth cable | e) / Termainal block (Screw fixing type)   |  |  |  |
| IP number                                     |  |                    |         | IPX0   | IPX4                                       |  |  |  |
| Standard a                                    | ccessories                               |                    |         | Mounting kit, Drain hose                           | _  |  |  |  |
| Option part                                   | ts                                       |                    |         | -  |  |  |  |  |
| Note (1)                                      | The data are measured at t               | he followi         | na cond | itions   | The pipe length is 7.5m.                   |  |  |  |

Note (1) The data are measured at the following conditions.

| Item      | Indoor air temperature |      | Outdoor air temperature |      | External static pressure | Standards  |
|-----------|------------------------|------|-------------------------|------|--------------------------|------------|
| Operation | DB                     | WB   | DB                      | WB   | of indoor unit           | Staridards |
| Cooling   | 27°C                   | 19°C | 35°C                    | 24°C | 60Pa                     | ISO5151-T1 |
| Heating   | 20°C                   | _    | 7°C                     | 6°C  | 60Pa                     | 1505151-11 |

- (2) This air-conditioner is manufactured and tested in conformity with the ISO.
- (3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.

- (3) Sound level indicates the value in an anechoic chamber. During operation these values are sorted.
  (4) Select the breaker size according to the own national standard.
  (5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
  (6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
  (7) The factory E.S.P. setting is set within the range of 80 150 Pa.If SW8-4 is turned to "ON", E.S.P. setting range can be changed to 10 200 Pa.(For RC-EX1A and RC-E5 only)

#### (4) Duct connected-Low / Middle static pressure type (FDUM)

|               |   |  | Model   | FDUM100  | DVNP1VF2                                   |  |
|---------------|---|--|---------|--|--|--|
| Item          |   |  |         | Indoor unit FDUM100VF2   | Outdoor unit FDC100VNP                     |  |
| Power sour    | ce  |  |         | 1 Phase 220-240V   | 50Hz / 220V 60Hz                           |  |
|               | Nominal cooling capacity                      |  | kW      | 10.0 [ 2.8(Min.  | )— 11.2(Max.)]                             |  |
|               | Nominal heating capacit                       | y (range)                                    | kW      | 11.2 [ 2.5(Min.  | )— 12.5(Max.)]                             |  |
|               | Power consumption                             | Cooling                                      |         |  | 00   |  |
|               |   | Heating                                      | kW      |  | 93   |  |
|               | Max power consumption                         | 1  |         |  | 60   |  |
|               | Running current                               | Cooling                                      |         |  | / 13.8                                     |  |
|               |   | Heating                                      | A       |  | / 13.5                                     |  |
| Operation     | Inrush current, max curre                     |  |         | ·  | 22.0                                       |  |
| data          | Power factor                                  | Cooling                                      | %       |  | 9  |  |
|               | FFD   | Heating                                      |         |  | 9  |  |
|               | EER<br>COP                                    | Cooling<br>Heating                           | -       |  | 33<br>82                                   |  |
|               | COP   | Cooling                                      |         |  | 0 <u>/</u>                                 |  |
|               | Sound power level                             | Heating                                      | 1       | 65   | 70   |  |
|               |   | Cooling                                      | dB(A)   |  | 57   |  |
|               | Sound pressure level                          | Heating                                      | ab(//)  | P-Hi: 44 Hi: 38 Me: 36 Lo: 30  | 61   |  |
|               | Silent mode sound press                       |  | 1       | _  | Cooling:50 / Heating:49                    |  |
|               | ·   |  |         |  |  |  |
| Exterior din  | nensions (Height × Width                      | × Depth)                                     | mm      | 280 × 1,370 × 740  | 845×970×370                                |  |
| Exterior app  | pearance                                      |  |         |  | Stucco white                               |  |
| ( Munsell co  |   |  |         | _  | (4.2Y7.5/1.1)near equivalent               |  |
| Net weight    | ,   |  | kg      | 54   | 70   |  |
|               | or type & Q'ty                                |  |         | _  | RMT5126MCE1 (Twin rotary type)×1           |  |
| Compresso     | or motor (Starting method)                    |  | kW      | _  | Direct line start                          |  |
| Refrigerant   | Refrigerant oil (Amount, type)                |  | l       | _  | 0.90 MA68                                  |  |
| Refrigerant   | Refrigerant (Type, amount, pre-charge length) |  | kg      | R410A 2.55kg in outdoor unit (incl.  | the amount for the piping of : 15m)        |  |
| Heat excha    | inger   |  |         | Louver fin & inner grooved tubing  | M shape fin & inner grooved tubing         |  |
| Refrigerant   | control                                       |  |         | Capillary tubes + Elec   | tronic expansion valve                     |  |
| Fan type &    | Q'ty  |  |         | Centrifugal fan ×3   | Propeller fan ×1                           |  |
| Fan motor     | (Starting method)                             |  | W       | 100 + 130 < Direct line start >  | 86 < Direct line start >                   |  |
| Air flow      |   | Cooling                                      | m³/min  | P-Hi:36 Hi:28 Me:25 Lo:19  | 75   |  |
|               |   | Heating                                      |         | 01 1 1 00 14 1 100   | 79   |  |
|               | xternal static pressure                       |  | Pa      | Standard: 60 Max: 100  | 0  |  |
| Outside air   |   | -  |         | Possible Procure locally   | _  |  |
|               | uality / Quantity<br>oration absorber         |  |         | Rubber sleeve(for fan motor)   | Rubber sleeve (for fan motor & compressor) |  |
| Electric hea  |   |  | W       |  |  |  |
|               | Remote control                                |  | - **    | (option) wired : BC-EX1A BC-E5   | 5 , RCH-E3 wireless : RCN-KIT3-E           |  |
| Operation     | Room temperature contr                        | rol  |         | Thermostat by electronics  |  |  |
| control       | Operation display                             | <u>.                                    </u> |         | -  | -  |  |
|               | 1-1   |  |         | Compressor overheat protection, Overcurrent  | protection                                 |  |
| Safety equi   | pments  |  |         | Frost protection, Serial signal error protection, Indoor fan motor error protection, |  |  |
| Journey again | pillolito                                     |  |         | Heating overload protection (High pressure control), Cooling overload protection     |  |  |
|               |   |  |         | Liquid line: I/U \( \phi \) 9.52 (3/8") Pipe   |  |  |
|               | Refrigerant piping size (                     | O.D. )                                       | mm      | Gas line: I/U φ 15.88 (5/8") Pipe φ  | φ 3.32(3/6 )×0.6                           |  |
|               | Connecting method                             |  |         |  | Flare piping                               |  |
| Installation  | Attached length of piping                     | r  | m       | — — — — — — — — — — — — — — — — — — —  | —  |  |
| data          | Insulation for piping                         | 9  |         | Necessary (both L  | iquid & Gas lines)                         |  |
|               | Refrigerant line (one war                     | y) lenath                                    | m       |  | .30m                                       |  |
|               | Vertical height diff. between (               |  | m       | Max.20m (Outdoor unit is higher)   | Max.20m (Outdoor unit is lower)            |  |
|               | Drain hose                                    |  | İ       | Hose connectable VP25 (I.D.25,O.D.32)  | Holes size $\phi$ 20 × 3pcs                |  |
| Drain pump    | o, max lift height                            |  | mm      | Built-in drain pump , 600  |  |  |
|               | ided breaker size                             |  | Α       | -  |  |  |
| L.R.A. (Loc   | ked rotor ampere)                             |  | Α       | 5  | .0   |  |
| Interconnec   | cting wires   Size × Core n                   | umber  |         | 1.5mm <sup>2</sup> ×4 cores (Including earth cable                                   | e) / Termainal block (Screw fixing type)   |  |
| IP number     |   |  |         | IPX0   | IPX4                                       |  |
| Standard a    | ccessories                                    |  |         | Mounting kit, Drain hose   | _  |  |
| Option part   |   |  |         | UM-F   | FL3EF                                      |  |
| Note (1)      | The data are measured a                       | t the followi                                | ng cond | itions.  | The pipe length is 7.5m.                   |  |

Note (1) The data are measured at the following conditions.

| Item      | Indoor air t | emperature | Outdoor air temperature |      | External static pressure | Standards  |
|-----------|--------------|------------|-------------------------|------|--------------------------|------------|
| Operation | DB           | WB         | DB                      | WB   | of indoor unit           | Staridards |
| Cooling   | 27°C         | 19°C       | 35°C                    | 24°C | 60Pa                     | ISO5151-T1 |
| Heating   | 20°C         | _          | 7°C                     | 6°C  | ouPa                     | 1303131-11 |

- (2) This air-conditioner is manufactured and tested in conformity with the ISO.
- (3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.

- (3) Sound level indicates the value in an anechoic chamber. During operation these values are someted.
  (4) Select the breaker size according to the own national standard.
  (5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
  (6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
  (7) Static pressure of optional air filter "UM-FL3EF" is 5Pa initially.
  (8) The external static pressure setting can be changed to 10-100Pa. (For RC-EX1A and RC-E5 only)

#### (5) Floor standing type (FDF)

|              |  |                    | Model  | FDF100\   | /NP1VD2  |  |
|--------------|--|--------------------|--------|---|--|--|
| Item         |  |                    |        | Indoor unit FDF100VD2   | Outdoor unit FDC100VNP   |  |
| Power sour   | rce  |                    |        |   | 50Hz / 220V 60Hz   |  |
|              | Nominal cooling capacity   | (range)            | kW     |   | )— 11.2(Max.)]   |  |
|              | Nominal heating capacity   |                    | kW     | 11.2 [ 2.5(Min.   |  |  |
|              |  | Cooling            |        |   | 19   |  |
|              | Power consumption  | Heating            | kW     |   | 09   |  |
|              | Max power consumption  | 11100011119        | 1      |   | 60   |  |
|              | max perrer concampus.  | Cooling            |        |   | / 14.6   |  |
|              | Running current  | Heating            | Α      |   | / 14.2   |  |
|              | Inrush current, max curre  | <u> </u>           | · ``   |   | 21.0   |  |
| Operation    | midsir current, max curre  | Cooling            |        |   | 9  |  |
| data         | Power factor   | Heating            | %      |   | 9  |  |
|              | EER  | Cooling            |        |   | 13   |  |
|              | COP  | Heating            | -      |   | 62   |  |
|              | COP  |                    |        | ٥.  | 02<br>   |  |
|              | Sound power level  | Cooling            | ļ      | 65  | 70   |  |
|              |  | Heating            | -10(4) |   | F.7  |  |
|              | Sound pressure level   | Cooling            | dB(A)  | P-Hi: 54 Hi: 50 Me: 48 Lo: 44   | 57   |  |
|              |  | Heating            |        |   | 61   |  |
|              | Silent mode sound press  | ure level          |        | _   | Cooling:50 / Heating:49  |  |
| Exterior din | mensions (Height × Width ×   | Depth)             | mm     | 1,850 × 600 × 320   | 845×970×370  |  |
| Exterior ap  | pearance   |                    |        | Ceramic white   | Stucco white   |  |
| ( Munsell co |  |                    |        | ( N8.0 )near equivalent   | ( 4.2Y7.5/1.1)near equivalent  |  |
| Net weight   |  |                    | kg     | 52  | 70   |  |
|              |  |                    | l kg   | 32  | RMT5126MCE1 (Twin rotary type )×1  |  |
|              | Compressor type & Q'ty   |                    | kW     |   | Direct line start  |  |
|              | Compressor motor (Starting method)  Refrigerant oil (Amount, type) |                    |        |   | 0.90 MA68  |  |
|              |  | - 1                | l      | R410A 2.55kg in outdoor unit (incl. the amount for the piping of : 15m) |  |  |
|              | (Type, amount, pre-charg   | e iength)          | kg     | ů ,   | ,                                  |  |
| Heat excha   |  |                    |        | Louver fin & inner grooved tubing                                       | M shape fin & inner grooved tubing                                       |  |
| Refrigerant  |  |                    |        | ' '   | tronic expansion valve   |  |
| Fan type &   |  |                    |        | Centrifugal fan ×1  | Propeller fan ×1   |  |
| Fan motor    | (Starting method)  |                    | W      | 157 < Direct line start >   | 86 < Direct line start >   |  |
| Air flow     |  | Cooling<br>Heating | m³/min | P-Hi:29 Hi:26 Me:23 Lo:19   | 75<br>79   |  |
| Available ex | xternal static pressure  | J J                | Pa     | 0   | 0  |  |
| Outside air  | · · · · · · · · · · · · · · · · · · ·                              |                    |        | Not possible  | _  |  |
|              | uality / Quantity  |                    |        | Plastic net ×1(Washable)  | _  |  |
|              | bration absorber   |                    |        | Rubber sleeve(for fan motor)  | Rubber sleeve (for fan motor & compressor)                               |  |
| Electric hea |  |                    | w      |   |  |  |
|              | Remote control   |                    |        | RC-F5 (Installed) / wirele  | ess: RCN-KIT3-E (option)   |  |
| Operation    | Room temperature control   | nl                 |        |   | , , ,  |  |
| control      | Operation display  | <u> </u>           |        | Thermostat by electronics  —  |  |  |
|              | Operation display  | -                  |        | C   |  |  |
|              |  |                    |        | Compressor overheat protection, Overcurrent                             | •  |  |
| Safety equi  | ipments  |                    |        | Frost protection, Serial signal error protection,                       | 1 /  |  |
|              |  |                    |        | Heating overload protection( High pressure co                           | ontrol), Cooling overload protection                                     |  |
|              | Refrigerant piping size ( 0  | D.D. )             | mm     | Liquid line: I/U φ 9.52 (3/8") Pipe                                     | φ 9.52(3/8")×0.8 O/U φ 9.52 (3/8")<br>15.88(5/8")×1.0 O/U φ 15.88 (5/8") |  |
|              | Connecting method  |                    |        | Flare piping  | Flare piping   |  |
| Installation |  |                    | m      | i iai e pipiliy   | i iai e pipiliy  |  |
|              |  | 1                  | m      | Nagagaar : /ltl-  | iguid <sup>9</sup> Can linea)  |  |
| data         | Insulation for piping Refrigerant line (one way                    | () longth          | p=     | , ,   | Liquid & Gas lines)  |  |
|              | Vertical height diff. between C                                    |                    | m      |   | .30m Max 20m (Outdoor unit is lower)                                     |  |
|              | Vertical neight diff. between C                                    | and i.U.           | m      | Max.20m (Outdoor unit is higher)  Hose connectable with VP20            | Max.20m (Outdoor unit is lower)  Holes size φ20 x 3pcs                   |  |
| Drain pump   | o, max lift height   | -                  | mm     | _   | <u> </u>   |  |
|              | nded breaker size  |                    | Α      | <del>-</del>  |  |  |
|              | ked rotor ampere)  | -                  | A      |   | .0   |  |
| ,            | cting wires   Size × Core nu                                       | ımber              | · · ·  |   | e) / Termainal block (Screw fixing type)                                 |  |
| IP number    | g  |                    |        | IPX0  | IPX4   |  |
|              | ccessories   |                    |        | Mounting kit  | Drain elbow, Drain hole grommet  |  |
| Option part  |  |                    |        | <u> </u>  | – Drain elbow, Brain Hole grommer  |  |
| Sphon pan    |  |                    |        |   |  |  |

Note (1) The data are measured at the following conditions.

| . ,       |              |            |             |             |            |
|-----------|--------------|------------|-------------|-------------|------------|
| Item      | Indoor air t | emperature | Outdoor air | temperature | Standards  |
| Operation | DB           | WB         | DB          | WB          | Standards  |
| Cooling   | 27°C         | 19℃        | 35°C        | 24°C        | ISO5151-T1 |
| Heating   | 20°C         | _          | 7°C         | 6°C         | 1909191-11 |

- (2) This air-conditioner is manufactured and tested in conformity with the ISO.
- (3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat (a) Solid fevel indicates the value in an affection chamber. During operation these values are so higher due to ambient conditions.
  (4) Select the breaker size according to the own national standard.
  (5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
  (6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

#### (6) Wall mounted type (SRK)

| Itom               |                               |  | Model  |  | Outdoor unit FDC100VNP                      |  |
|--------------------|-------------------------------|--|--------|--|---|--|
| Item<br>Power sour |                               |  |        | Indoor unit SRK100ZR-S   | / 50Hz / 220V 60Hz                          |  |
| Power sour         | <del></del>                   | (**********                                      | 14/4/  |  |   |  |
|                    | Nominal cooling capacit       |  | kW     | 10.0 [ 2.4(Min.)— 10.5(Max.)]<br>11.2 [ 3.2(Min.)— 11.5(Max.)] |   |  |
|                    | Nominal heating capacit       | y (range)  | kW     | 11.2 [ 3.2(IVIIII.) — 11.3(IVIAX.)]                            |   |  |
|                    | Heating capacity (H2)         |  | kW     | 2.00 / 0   |   |  |
|                    | Cooling                       |  |        |  | .6 - 3.2 )<br>.6 - 3.6 )                    |  |
|                    | Power consumption             | Heating  | kW     | 3.28 ( 0   | .6 - 3.6 )                                  |  |
|                    | 14                            | Heating (H2)                                     |        |  |   |  |
|                    | Max power consumption         |  |        |  | 4.6   |  |
|                    | Running current               | Cooling  |        |  | (220/ 230/ 240 V)                           |  |
| O                  |                               | Heating  | Α      |  | (220/ 230/ 240 V)                           |  |
| Operation          | Inrush current, max curr      |  |        | i  | 0/ 230/ 240 V) Max. 21                      |  |
| data               | Power factor                  | Cooling  | %      |  | 99  |  |
|                    | FFD                           | Heating  |        |  | 99  |  |
|                    | EER                           | Cooling  |        |  | 24  |  |
|                    | COP                           | Heating  |        |  | 41  |  |
|                    |                               | Heating (H2)                                     |        |  |   |  |
|                    | Sound power level             | Cooling  |        | 63   | 70  |  |
|                    |                               | Heating  | 4D(A)  | 63   | 74  |  |
|                    | Sound pressure level          | Cooling  | dB(A)  | Hi: 48 Me: 45 Lo: 40 ULo: 27                                   | 57  |  |
|                    | ·                             | Heating  |        | Hi: 48 Me: 43 Lo: 38 ULo: 30                                   | 61  |  |
|                    | Silent mode sound pres        |  |        | -  | Cooling:50 / Heating:49                     |  |
|                    | nensions (Height × Width      | × Deptn)   | mm     | 339 x 1197 x 262   | 845×970×370                                 |  |
| Exterior app       |                               |  |        | Fine snow  | Stucco white                                |  |
| ( Munsell co       |                               |  |        | (8.0Y 9.3/0.1) near equivalent                                 | (4.2Y7.5/1.1)near equivalent                |  |
| Net weight         |                               |  | kg     | 16.5   | 70  |  |
|                    | or type & Q'ty                |  | 1347   | _  | RMT5126MCE1 (Twin rotary type)×1            |  |
|                    | or motor (Starting method)    | 1  | kW     | _  | 4.0 (Inverter driven)                       |  |
|                    | oil (Amount, type)            |  | Q.     |  | 0.90 ( DIAMOND FREEZE MA68 )                |  |
|                    | (Type, amount, pre-char       | ge length)                                       | kg     |  | the amount for the piping of 15m)           |  |
| Heat excha         |                               |  |        | Louver fin & inner grooved tubing                              | M fin & inner grooved tubing                |  |
| Refrigerant        |                               |  |        | · · ·  | etronic expansion valve                     |  |
| Fan type &         |                               |  | 14/    | Tangential fan x 1   | Propeller fan ×1                            |  |
| ran motor (        | (Starting method)             | 10 11  | W      | 56 x1 (Direct drive)   | 86 x1 (Direct drive)                        |  |
| Air flow           |                               | Cooling  | m³/min | Hi: 24.5 Me: 21.3 Lo: 17.6 ULo: 10.4                           | 75  |  |
| A '1 I I           | 1 1 1 2                       | Heating  |        | Hi: 27.5 Me: 23.2 Lo: 19.1 ULo: 13.6                           | 80  |  |
|                    | xternal static pressure       |  | Pa     | 0  | 0   |  |
| Outside air        |                               |  |        | Not possible   | _   |  |
|                    | uality / Quantity             |  |        | Polypropylene net ( washable ) x 2                             |   |  |
|                    | oration absorber              |  |        | Rubber sleeve(for fan motor)                                   | Rubber sleeve (for fan motor & compressor)  |  |
| Electric hea       | 1                             |  |        |  |   |  |
| Operation          | Remote control                |  |        |  | emote control                               |  |
| control            | Room temperature cont         | roi  |        |  | ter thermostat                              |  |
|                    | Operation display             |  |        | ,                        | POWER: Green, 3D AUTO: Green                |  |
|                    |                               |  |        | Compressor overheat protection, Overcurrent                    | · · · · · · · · · · · · · · · · · · ·       |  |
| Safety equi        | pments                        |  |        | Frost protection, Serial signal error protection,              | , Indoor fan motor error protection,        |  |
|                    |                               |  |        | Heating overload protection( High pressure co                  | ontrol), Cooling overload protection        |  |
|                    | Refrigerant piping size (     | O.D.)  | mm     | Liquid line: φ 9.52 (3/8")                                     | Gas line: φ15.88 (5/8")                     |  |
|                    | Connecting method             | ,  |        | Flare connection   | Flare connection                            |  |
|                    | Attached length of pipin      | g  | m      | Liquid line: 0.78 / Gas line: 0.72                             | _   |  |
| nstallation        | Insulation for piping         |  |        | Necessary ( Both sides ), independent                          |   |  |
| data               | Refrigerant line (one wa      | y) length  | m      |  | 30m   |  |
|                    | Vertical height diff. between | <del>,,                                   </del> | m      |  | / Max.20 ( Outdoor unit is lower )          |  |
|                    | Drain hose                    |  |        | Hose connectable (VP 16)                                       | Holes $\phi$ 20 × 3pcs                      |  |
| Drain pump         | o, max lift height            |  | mm     | _  | _   |  |
|                    | nded breaker size             |  | Α      | 3  | 30  |  |
|                    | ked rotor ampere)             |  | A      |  | 0/ 230/ 240 V)                              |  |
|                    | cting wires   Size × Core n   | umber  | · · ·  | -  | le ) / Terminal block ( Screw fixing type ) |  |
| P number           | 5 12   23.21                  |  |        | IPX0   | IPX4  |  |
| Standard a         | ccessories                    |  |        | Mounting kit, Clean filter ( Allergen clear filter x 1         |   |  |
| Option part        |                               |  |        | <u> </u>   | BIKN-E), Drain Hose                         |  |
|                    | The data are measured a       | t the fellowi                                    |        |  | , , , ,                                     |  |

Note (1) The data are measured at the following conditions.

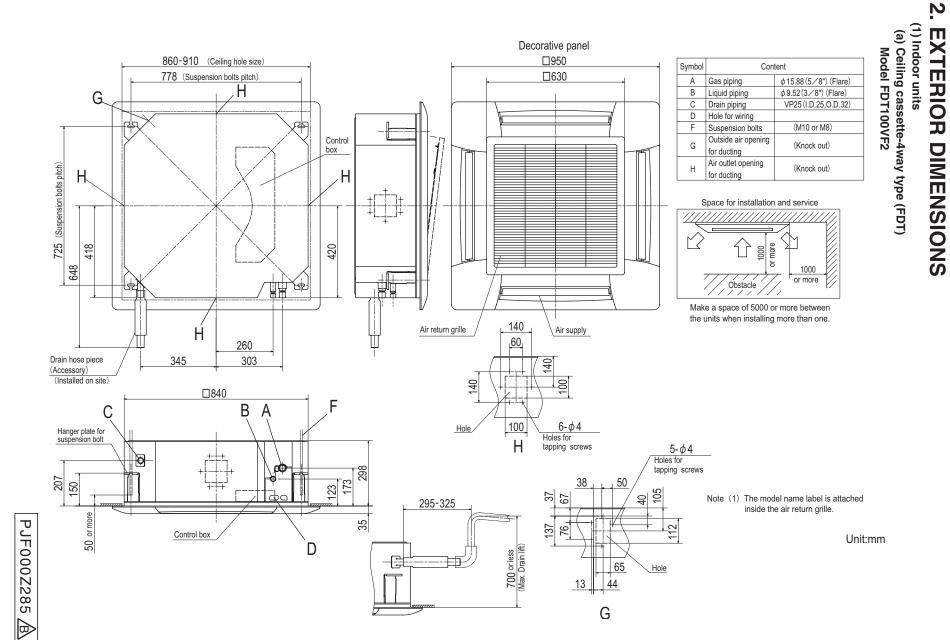
| Item         | Indoor air temperature |      | Outdoor air | temperature | Standards  |
|--------------|------------------------|------|-------------|-------------|------------|
| Operation    | DB                     | WB   | DB          | WB          | Standards  |
| Cooling      | 27°C                   | 19°C | 35°C        | 24°C        | ISO5151-T1 |
| Heating      | 20°C                   | _    | 7°C         | 6°C         | ISO5151-H1 |
| Heating (H2) | 20°C                   | _    | 2°C         | 1°C         | ISO5151-H2 |

<sup>(2)</sup> This air-conditioner is manufactured and tested in conformity with the ISO.

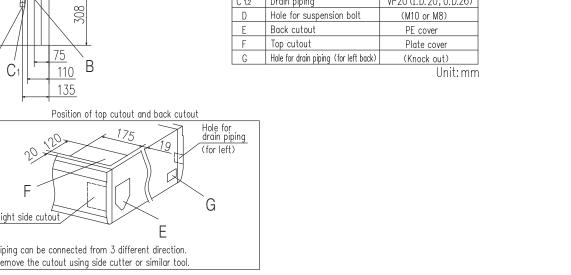
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.

(4) Select the breaker size according to the own national standard.

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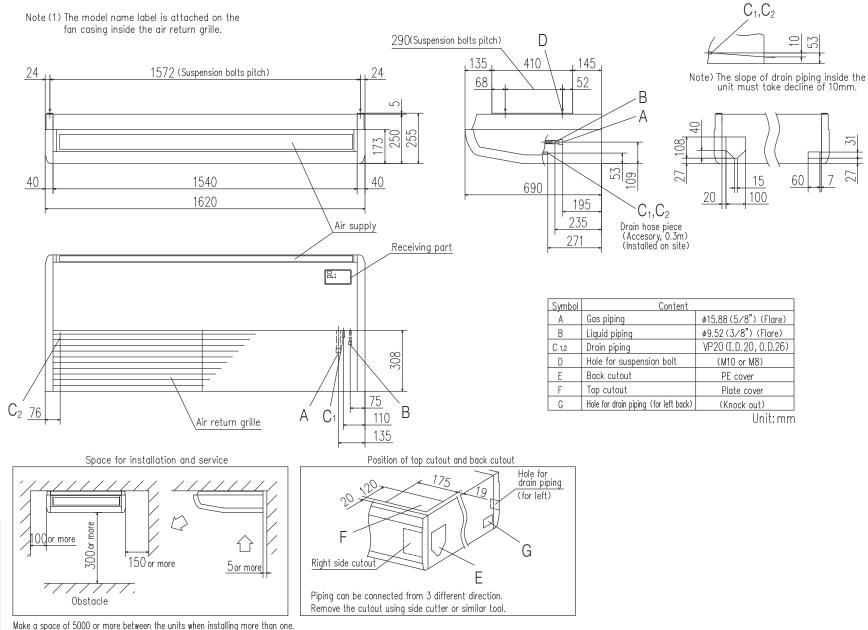


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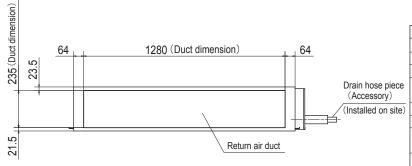


(b) Ceiling suspended type (FDE)
Model FDE100VG

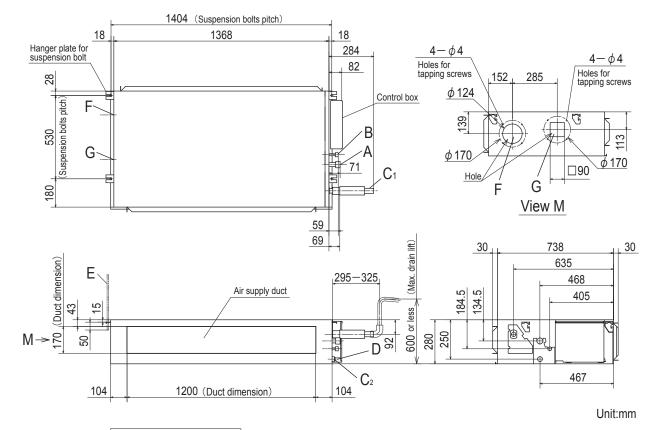
'16 • PAC-T-240



# (c) Duct connected-High static pressure type (FDU) Model FDU100VF2

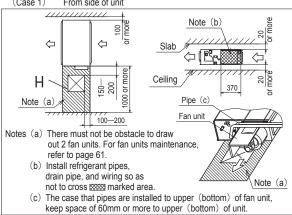


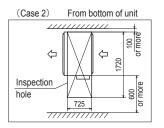
| Symbol |                                    | Content                     |
|--------|------------------------------------|-----------------------------|
| Α      | Gas piping                         | $\phi$ 15.88 (5/8") (Flare) |
| В      | Liquid piping                      | $\phi$ 9.52 (3/8") (Flare)  |
| C1     | Drain piping                       | VP25 (I.D.25,O.D.32)        |
| C2     | Drain piping<br>(Gravity drainage) | VP20 (I.D.20,O.D.26)        |
| D      | Hole for wiring                    |                             |
| Е      | Suspension bolts                   | (M10)                       |
| F      | Outside air opening for ducting    | (Knock out)                 |
| G      | Air outlet opening for ducting     | (Knock out)                 |
| Н      | Inspection hole                    | (450X450)                   |



Space for installation and service

Select either of two cases to keep space for installation and services. (Case 1) From side of unit

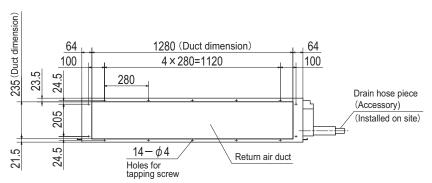




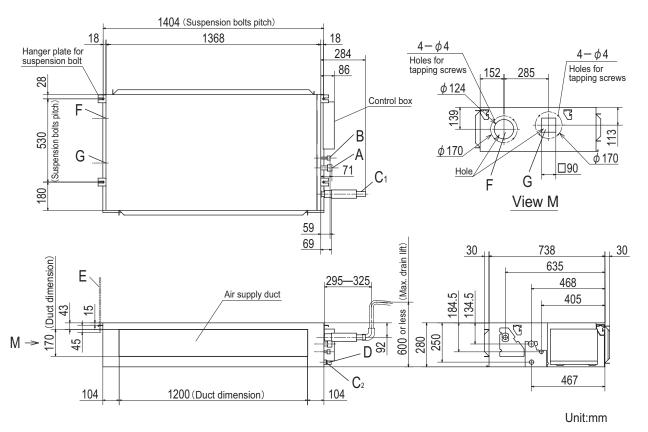
Notes (1) The model name label is attached on the lid of the control box.

PJG000Z048

# (d) Duct connected-Low / Middle static pressure type (FDUM) Model FDUM100VF2

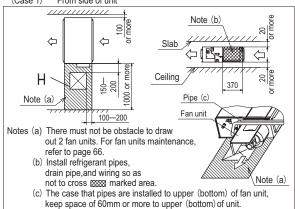


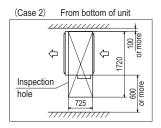
| Symbol | Cor                             | ntent                    |
|--------|---------------------------------|--------------------------|
| Α      | Gas piping                      | φ 15.88 (5 / 8") (Flare) |
| В      | Liquid piping                   | φ 9.52 (3/8") (Flare)    |
| C1     | Drain piping                    | VP25 (I.D.25,O.D.32)     |
| C2     | Drain piping (Gravity drainage) | VP20 (I.D.20,O.D.26)     |
| D      | Hole for wiring                 |                          |
| E      | Suspension bolts                | (M10)                    |
| F      | Outside air opening for ducting | (φ150) (Knock out)       |
| G      | Air outlet opening for ducting  | (φ125) ( Knock out)      |
| Н      | Inspection hole                 | (450X450)                |



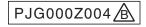
#### Space for installation and service

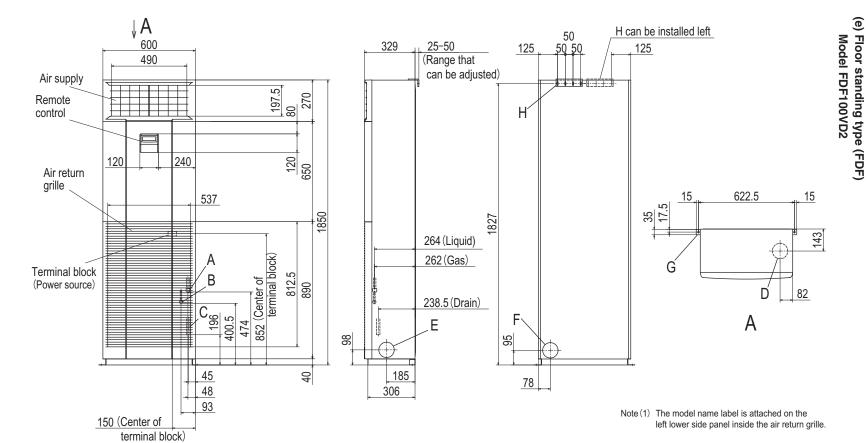
Select either of two cases to keep space for installation and services. (Case 1) From side of unit





Note (1) The model name label is attached on the lid of the control box.





#### Space for installation and service

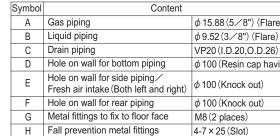
1000

or more

Air supply

Air return

100 or more

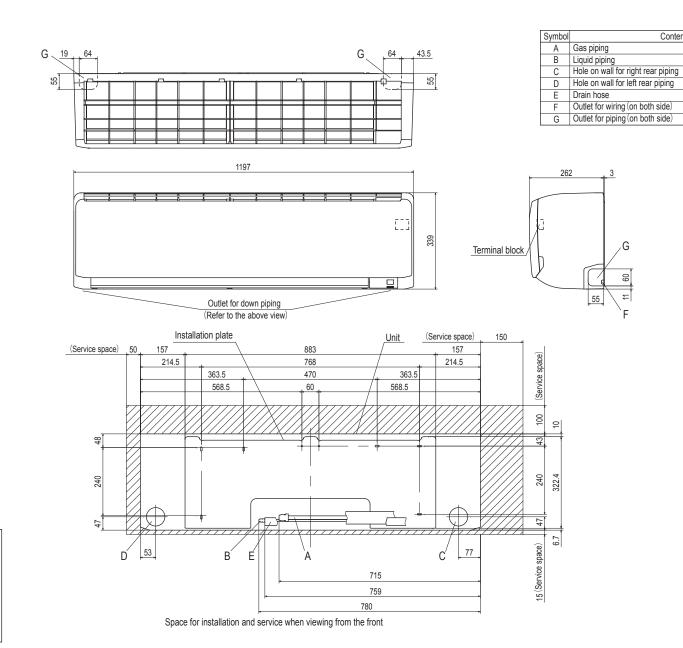


Unit:mm

'16 • PAC-T-240

| Symbol | Content   |                          |
|--------|---|--------------------------|
| Α      | Gas piping  | φ 15.88 (5/8") (Flare)   |
| В      | Liquid piping   | φ 9.52 (3/8") (Flare)    |
| С      | Drain piping  | VP20 (I.D.20,O.D.26)     |
| D      | Hole on wall for bottom piping  | φ 100 (Resin cap having) |
| Е      | Hole on wall for side piping / Fresh air intake (Both left and right) | φ 100 (Knock out)        |
| F      | Hole on wall for rear piping  | φ 100 (Knock out)        |
| G      | Metal fittings to fix to floor face                                   | M8 (2 places)            |
| Н      | Fall prevention metal fittings  | 4-7 × 25 (Slot)          |

| $\Box$ |
|--------|
| =      |
|        |
| D      |
| 0      |
| 0      |
| 0      |
| N      |
| 0      |
| 0      |
| 10     |
|        |



Note (1) The model name label is attached on the underside of the indoor unit.

Content

φ 15.88 (5/8") (Flare)

φ 9.52 (3 / 8") (Flare)

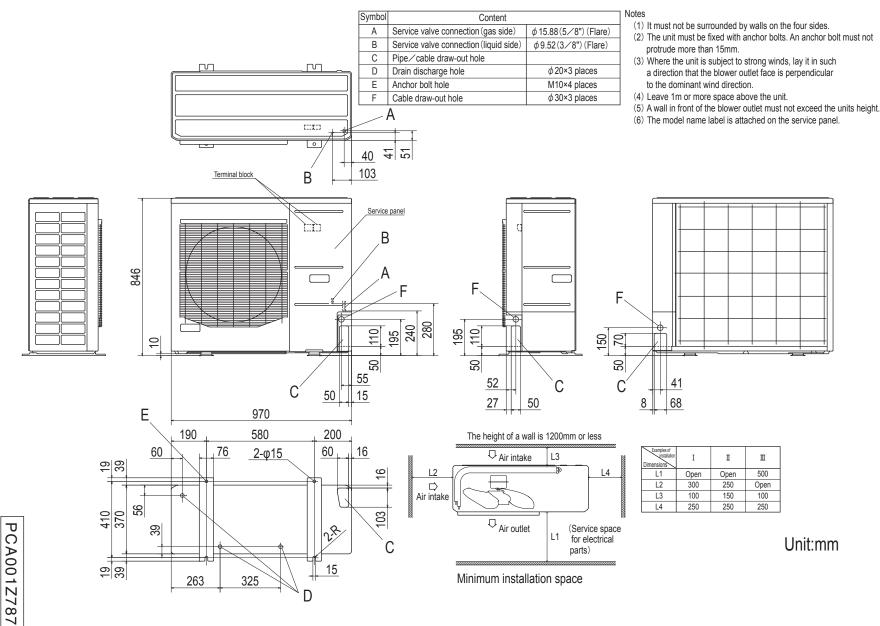
 $(\phi 65)$ 

(  $\phi$  65)

VP16

Unit:mm

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18

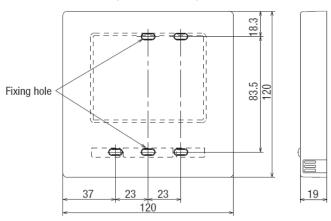
#### (3) Remote control

#### (a) Wired remote control (Option parts)

#### Model:RC-EX1A

Interface kit (SC-BIKN-E) is required to use the wired remote control. (SRK series only)

#### Dimensions (Viewed from front)



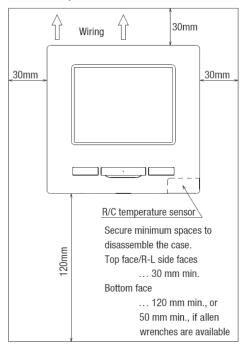
| Exterior appearance | Pearl white            | l |
|---------------------|------------------------|---|
| (Munsell color)     | (N8.5) near equivalent |   |

#### Cautions for selecting installation place

- Installation surface must be flat and sufficiently strong.
   R/C case must not be deformed.
- (2) Where the R/C can detect room temperatures accurately This is a must when detecting room temperatures with the temperature sensor of R/C.
  - $\cdot$  Install the R/C where it can detect the average temperature in the room.
  - Install the R/C sufficiently separated from a heat source.
  - $\cdot$  Install the R/C where it will not be influenced by the turbulence of air when the door is opened or closed.

Select a place where the R/C is not exposed to direct sunlight or blown by winds from the air-conditioner or temperatures on the wall surface will not deviate largely from indoor air temperatures.

#### Installation space



#### R/C cable: 0.3mm $^2 \times 2$ -core

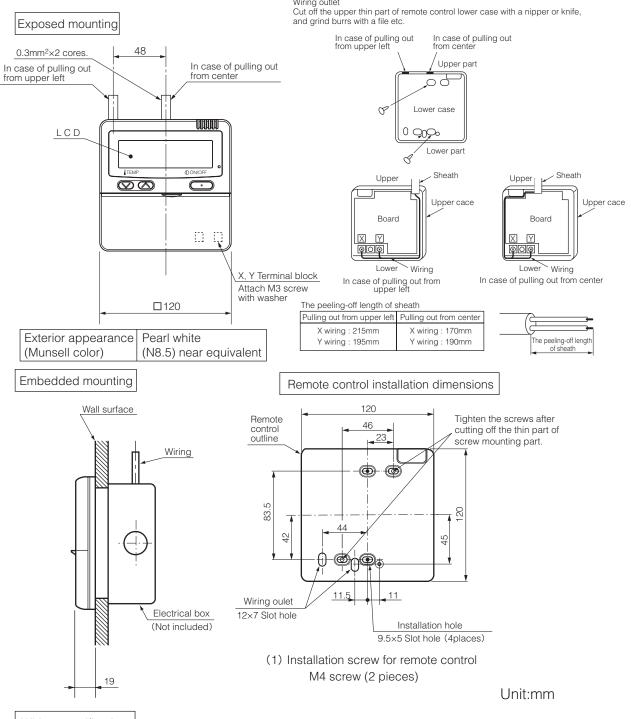
When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm². Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

| < 200 m | 0.5 mm <sup>2</sup> x 2-core  |
|---------|-------------------------------|
| < 300 m | 0.75 mm <sup>2</sup> x 2-core |
| < 400 m | 1.25 mm <sup>2</sup> x 2-core |
| < 600 m | 2.0 mm <sup>2</sup> x 2-core  |

Adapted to **RoHS** directive

PJZ000Z297

Model RC-E5 Interface kit (SC-BIKN-E) is required to use the wired remote control. (SRK series only)



#### Wiring specifications

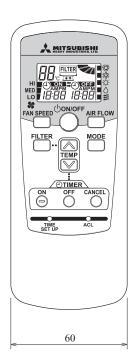
(1) If the prolongation is over 100m, change to the size below. But, wiring in the remote control case should be under 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

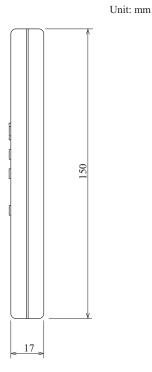
| Length      | Wiring thickness             |
|-------------|------------------------------|
| 100 to 200m | 0.5mm <sup>2</sup> ×2 cores  |
| Under 300m  | 0.75mm <sup>2</sup> ×2 cores |
| Under 400m  | 1.25mm <sup>2</sup> ×2 cores |
| Under 600m  | 2.0mm <sup>2</sup> ×2 cores  |

PJZ000Z274

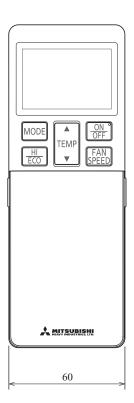
#### (b) Wireless remote control

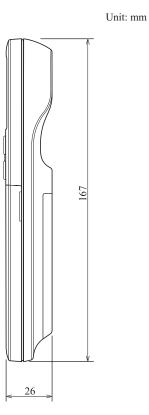
#### RCN-E1R (Option parts) (Except SRK series)





#### SRK series only (Standard accessory)





# ယ (1) Indoor units Ш Ш **CTRICAL** WIRING

'16 • PAC-T-240

(a) Ceiling cassette-4way type (FDT)
Model FDT100VF2

F1-3 Fuse FMI Fan motor FS Float switch Reactor LED · 2 Indication lamp (Green-Normal operation) LED · 3 Indication lamp (Red-Inspection) LM1-4 Louver motor PS Panel switch SW2 Remote control communication address SW5 Plural units Master/Slave setting SW6 Model capacity setting SW7-1 Operation check, Drain motor test run SW7-3 Powerful mode

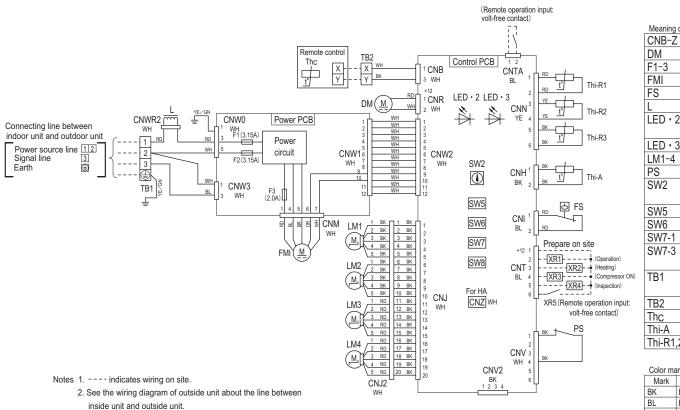
Valid/Invalid TB1 Terminal block (Power source) (□mark) TB2 Terminal block (Signal line) (□ mark) Thc Thermistor (Remote control) Thi-A Thermistor (Return air) Thi-R1,2,3 Thermistor (Heat exchanger)

Meaning of marks

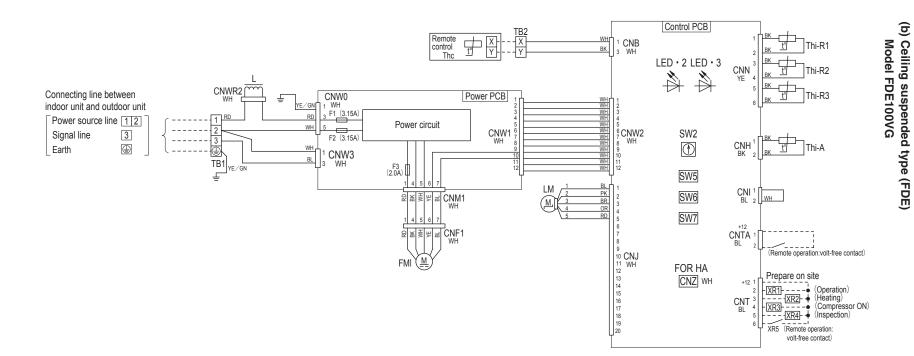
Connector

Drain motor

| Color marks |        |       |              |
|-------------|--------|-------|--------------|
| Mark        | Color  | Mark  | Color        |
| BK          | Black  | RD    | Red          |
| BL          | Blue   | WH    | White        |
| BR          | Brown  | YE    | Yellow       |
| OR          | Orange | YE/GN | Yellow/Green |



3. Use twin core cord (0.3mm<sup>2</sup> × 2) at remote control line. 4. Do not put remote control line alongside power source line.



Notes 1. --- indicates wiring on site.

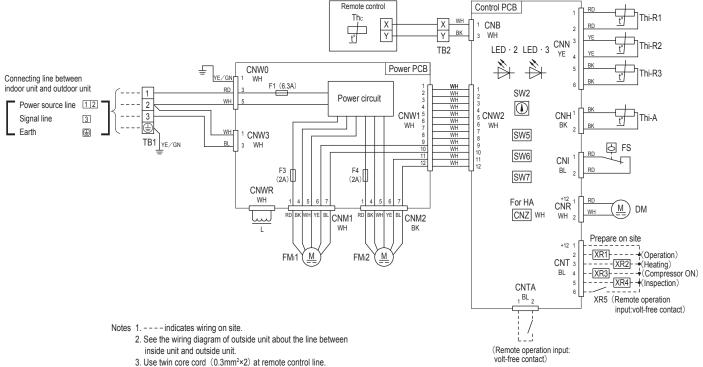
- See the wiring diagram of outside unit about the line between indoor unit and outdoor unit.
- Use twin core cable (0.3mm²×2) at remote control line. See spec sheet of remote control in case that the total length is more than 100m.
- 4. Do not put remote control line alongside power source line.

Meaning of marks

| Meaning of marks |  |  |
|------------------|--|--|
| Mark             | Parts name                               |  |
| CNB-Z            | Connector                                |  |
| F1-3             | Fuse (Power PCB)                         |  |
| FMI              | Fan motor                                |  |
| LED • 2          | Indication lamp (Green-Normal operation) |  |
| LED · 3          | Indication lamp (Red-Inspection)         |  |
| LM               | Louver motor                             |  |
| SW2              | Remote control communication address     |  |
| SW5              | Plural units Master / Slave setting      |  |
| SW6              | Model capacity setting                   |  |
| SW7-1            | Operation check,drain motor test run     |  |
| SW7-3            | Powerful mode Valid / Invalid            |  |
| TB1              | Terminal block (Power source)            |  |
| TB2              | Terminal block (Signal line)             |  |
| Thc              | Thermistor (Remote control)              |  |
| Thi-A            | Thermistor (Return air)                  |  |
| Thi-R1,2,3       | Thermistor (Heat exchanger)              |  |

| Color marks |              |  |
|-------------|--------------|--|
| Mark        | Color        |  |
| BK          | Black        |  |
| BL          | Blue         |  |
| BR          | Brown        |  |
| OR          | Orange       |  |
| PK          | Pink         |  |
| RD          | Red          |  |
| WH          | White        |  |
| YE          | Yellow       |  |
| YE/GN       | Yellow/Green |  |

'16 • PAC-T-240



4. Do not put remote control line alongside power source line.

#### Meaning of marks

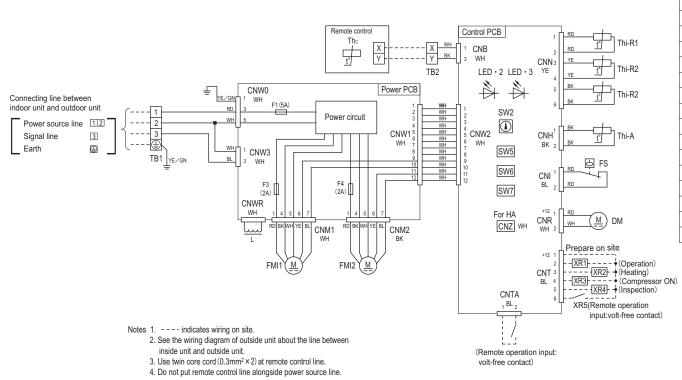
| CNB-Z               | Connector                                |
|---------------------|--|
| DM                  | Drain motor                              |
| F1,3,4              | Fuse                                     |
| FM <sub>1</sub> 1,2 | Fan motor (with thermostat)              |
| FS                  | Float switch                             |
| L                   | Reactor                                  |
| LED · 2             | Indication lamp (Green-Normal operation) |
| LED · 3             | Indication lamp (Red-Inspection)         |
| SW2                 | Remote control communication address     |
| SW5                 | Plural units Master / Slave setting      |
| SW6                 | Model capacity setting                   |
| SW7-1               | Operation check, Drain motor test run    |
| SW7-3               | Powerful mode Valid / Invalid            |
| TB1                 | Terminal block (Power source) (□mark)    |
| TB2                 | Terminal block (Signal line) (□mark)     |
| Thc                 | Thermistor (Remote control)              |
| Thi-A               | Thermistor (Return air)                  |
| Thi-R1,2,3          | Thermistor (Heat exchanger)              |
|                     |  |

(c) Duct connected-High static pressure type (FDU) Model FDU100VF2

#### Color marks

| Color  | Mark          | Color            |  |
|--------|---------------|------------------|--|
| Black  | RD            | Red              |  |
| Blue   | WH            | White            |  |
| Yellow | YE/GN         | Yellow/Green     |  |
|        | Black<br>Blue | Black RD Blue WH |  |

| Mark | Color  | Mark  | Color        |
|------|--------|-------|--------------|
| BK   | Black  | RD    | Red          |
| BL   | Blue   | WH    | White        |
| YE   | Yellow | YE/GN | Yellow/Green |



#### Meaning of marks

| CNB-Z      | Connector                                |
|------------|--|
| DM         | Drain motor                              |
| F1,3,4     | Fuse                                     |
| FMI1,2     | Fan motor (with thermostat)              |
| FS         | Float switch                             |
| L          | Reactor                                  |
| LED · 2    | Indication lamp (Green-Normal operation) |
| LED · 3    | Indication lamp (Red-Inspection)         |
| SW2        | Remote control communication address     |
| SW5        | Plural units Master / Slave setting      |
| SW6        | Model capacity setting                   |
| SW7-1      | Operation check, Drain motor test run    |
| SW7-3      | Powerful mode Valid / Invalid            |
| TB1        | Terminal block (Power source) (□mark)    |
| TB2        | Terminal block (Signal line) (□mark)     |
| Thc        | Thermistor (Remote control)              |
| Thi-A      | Thermistor (Return air)                  |
| Thi-R1,2,3 | Thermistor (Heat exchanger)              |
| ■mark      | Closed-end connector                     |
|            |  |

(d) Duct connected-Low / Middle static pressure type (FDUM) Model FDUM100VF2

'16 • PAC-T-240

#### Color marks

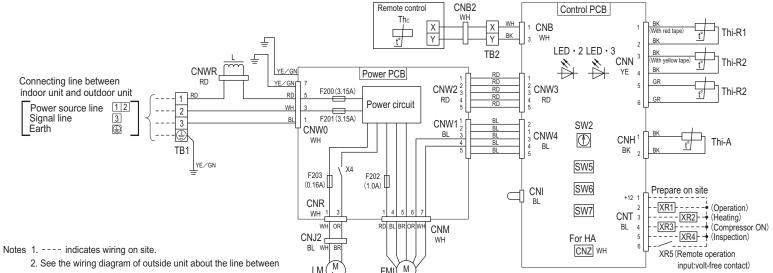
|   | Mark | Color  | Mark  | Color        |
|---|------|--------|-------|--------------|
| ĺ | BK   | Black  | RD    | Red          |
| ĺ | BL   | Blue   | WH    | White        |
| ĺ | BR   | Brown  | YE    | Yellow       |
| l | OR   | Orange | YE/GN | Yellow/Green |
|   |      | •      |       |              |

#### Mark Color Color Mark Mark Color BK Black GR Gray WH White BL Blue OR Orange YΕ Yellow BR Brown RD Red YE/GN Yellow/Green

#### Meaning of marks

| CNB-Z    | Connector                        |
|----------|----------------------------------|
| F200-203 | Fuse                             |
| FMI      | Fan motor                        |
| L        | Reactor                          |
| LED · 2  | Indication lamp                  |
|          | (Green-Normal operation)         |
| LED · 3  | Indication lamp (Red-Inspection) |
| LM       | Louver motor                     |
| SW2      | Remote control communication     |
|          | address                          |
|          |                                  |

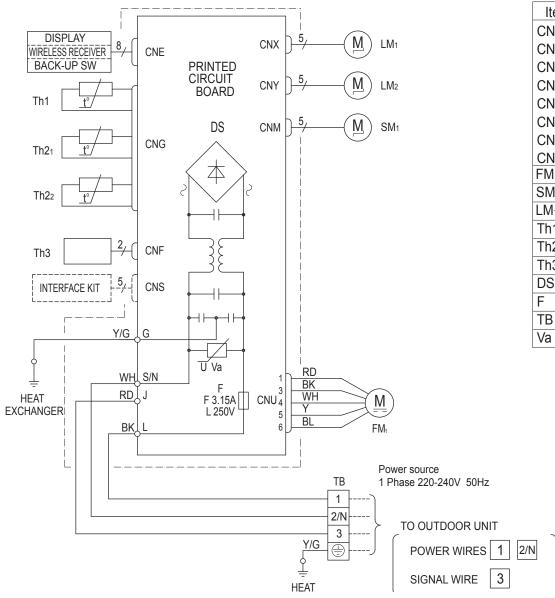
| SW5        | Plural units Master / Slave setting    |
|------------|--|
| SW6        | Model capacity setting                 |
| SW7- 1     | Operation check, Drain motor test run  |
| TB1        | Terminal block (Power source) (□ mark) |
| TB2        | Terminal block (Signal line) (□mark)   |
| Thc        | Thermistor (Remote control)            |
| Thi-A      | Thermistor (Return air)                |
| Thi-R1,2,3 | Thermistor (Heat exchanger)            |
| X4         | Relay for DM                           |



- inside unit and outside unit.
- 3. Use twin core cord (0.3mm<sup>2</sup> × 2) at remote control line.
- 4. Do not put remote control line alongside power source line.

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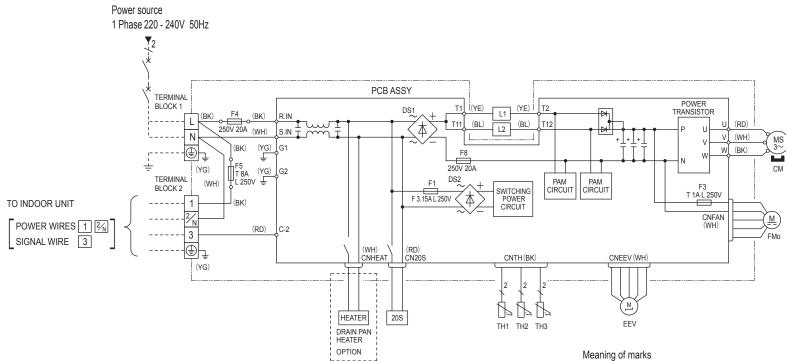
Meaning of marks

| Item               | Description           |
|--------------------|-----------------------|
| CNE                | Connector             |
| CNF                |                       |
| CNG                |                       |
| CNM                |                       |
| CNS                |                       |
| CNU                |                       |
| CNX                |                       |
| CNY                |                       |
| FΜı                | Fan motor             |
| SM <sub>1</sub>    | Flap motor            |
| LM <sub>1,2</sub>  | Louver motor          |
| Th1                | Room temp. sensor     |
| Th2 <sub>1,2</sub> | Heat exchanger sensor |
| Th3                | Humidity sensor       |
| DS                 | Diode stack           |
| F                  | Fuse                  |
| TB                 | Terminal block        |
| Va                 | Varistor              |

Color marks

| Mark | Color          |  |
|------|----------------|--|
| BK   | Black          |  |
| BL   | Blue           |  |
| RD   | Red            |  |
| WH   | White          |  |
| Υ    | Yellow         |  |
| Y/G  | Yellow / Green |  |

'16 • PAC-T-240



#### Power cable, indoor-outdoor connecting wires

| MODEL NAME | MAX running current (A) | Power cable size (mm²) | Power cable length (m) | indoor-outdoor<br>wire size x number<br>(mm) | Earth wire size (mm) |
|------------|-------------------------|------------------------|------------------------|--|----------------------|
| FDC100VNP  | 21                      | 5.5                    | 25                     | φ 1.6 × 3                                    | φ1.6                 |

#### XAt the connection with the duct type indoor unit

| MODEL NAME | MAX running current (A) | Power cable size (mm²) | Power cable length (m) | indoor-outdoor<br>wire size x number<br>(mm) | Earth wire size (mm) |
|------------|-------------------------|------------------------|------------------------|--|----------------------|
| FDC100VNP  | 22                      | 5.5                    | 24                     | φ 1.6 × 3                                    | φ1.6                 |

- •The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- •Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
- The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, please follow the internal cabling regulations. Adapt it to the regulation in effect in each country.

| Color marks |                 |  |
|-------------|-----------------|--|
| Mark        | Color           |  |
| BK          | Black           |  |
| BL          | Blue            |  |
| RD          | Red             |  |
| WH          | White           |  |
| YE          | Yellow          |  |
| YG          | Yellow<br>Green |  |
|             |                 |  |

| wicariing or marks |                                 |  |
|--------------------|---------------------------------|--|
| Item               | Description                     |  |
| 20S                | Solenoid coil for 4 way valve   |  |
| CN20S              | Connector                       |  |
| CNEEV              |                                 |  |
| CNFAN              |                                 |  |
| CNHEAT             |                                 |  |
| CNTH               |                                 |  |
| CM                 | Compressor motor                |  |
| DS1,2              | Diode stack                     |  |
| EEV                | Electric expansion valve (coil) |  |
| FMo                | Fan motor                       |  |
| L1,2               | Reactor                         |  |
| TH1                | Heat exchanger sensor           |  |
| TH2                | Outdoor air temp. sensor        |  |
| TH3                | Discharge pipe temp. sensor     |  |
| J2                 | Jumper(**)                      |  |

Note(1) % By cutting J2, the operation of cooling start in heating mode is disablement.

#### 4. NOISE LEVEL

Notes (1) The data are based on the following conditions.

Ambient air temperature: Indoor unit 27°CWB. Outdoor unit 35°CDB.

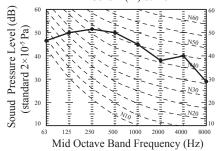
- (2) The data in the chart are measured in an anechoic room.
- (3) The noise levels measured in the field are usually higher than the data because of reflection.

#### (1) Indoor units

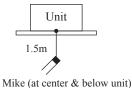
#### (a) Ceiling cassette-4way type (FDT)

#### Model FDT100VF2

Noise level 51 dB (A) at P-Hi 40 dB (A) at Hi 37 dB (A) at Me 35 dB (A) at Lo



Measured based on JIS B 8616 ■ Mike position



white (at center & below unit)

#### (b) Ceiling suspended type (FDE)

#### Model FDE100VG

Sound Pressure Level (dB)

Standard 2 × 10<sup>-5</sup> Pa

38 dB (A) at Hi

38 dB (A) at Me

34 dB (A) at Lo

(a) A dB (A) at Lo

(b) A dB (A) at Lo

(c) A dB (A) at Lo

(d) A dB (A) at Lo

(e) A dB (A) at Lo

(e) A dB (A) at Lo

(f) A dB (A) at Hi

(f) A dB (A) at Hi

(f) A dB (A) at Lo

(f) A dB (A) at Hi

(f) A dB (A) at Lo

(f) A dB (A) at Hi

(f) A dB (A) at Hi

(f) A dB (A) at Lo

(f) A dB (A) at Lo

(f) A dB (A) at Hi

(f) A dB (A) at Lo

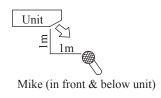
(f) A dB (A) at Hi

(f) A dB (A) at Lo

(f)

Noise level 48 dB (A) at P-Hi

Measured based on JIS B 8616 Mike position



#### (c) Duct connected-High static pressure-type (FDU)

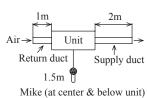
Mid Octave Band Frequency (Hz)

#### Model FDU100VF2

Noise level 44 dB (A) at P-Hi
38 dB (A) at Hi
36 dB (A) at Me
30 dB (A) at Lo

(BD)

Measured based on JIS B 8616 ●Mike position



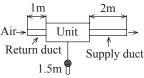
#### (c) Duct connected-Low / Middle static pressure type (FDUM)

#### Model FDUM100VF2

Mid Octave Band Frequency (Hz)

2000

Measured based on JIS B 8616 ■Mike position

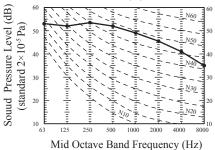


Mike (at center & below unit)

#### (d) Floor standing type (FDF)

#### Model FDF100VD2

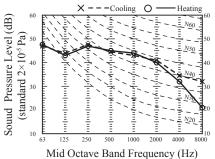
Noise level 54 dB (A) at P-Hi 50 dB (A) at Hi 48 dB (A) at Me 44 dB (A) at Lo



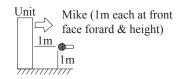
(e) Wall mounted type (SRK)

#### Model SRK100ZR-S

Cooling noise level  $48~\mathrm{dB}$  (A) at Hi Heating noise level  $48~\mathrm{dB}$  (A) at Hi



Measured based on JIS B 8616 ●Mike position



Unit

Measured based on JIS C 9612

Mike position
Unit
0.8m

Mike

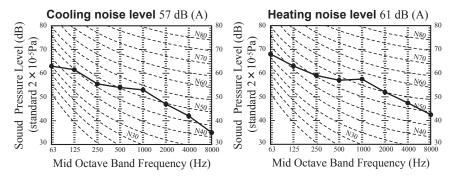
(at center & low points)

#### (2) Outdoor unit

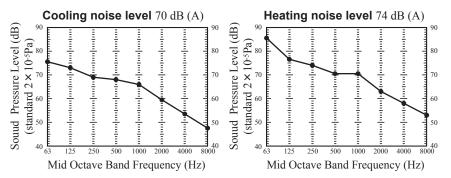
Measured based on ISO-T1, JIS B 8616
Mike position: at highest noise level in position as mentined below
Distance from front side 1m
Height 1m

#### Model FDC100VNP

#### ■ Sound pressure level



#### ■ Sound power level



#### 5. CHARACTERISTICS OF FAN

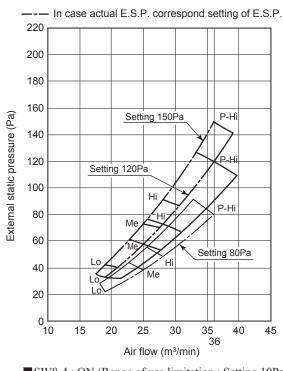
- (1) Duct connected-High static static pressure type (FDU)
  - Characteristic FAN (1) shows air flow vs. External Static Pressure (E.S.P.) range where settings of E.S.P. are maximum E.S.P. (SW8-4 OFF : 150Pa, SW8-4 ON : 200Pa), rated E.S.P., and minimum E.S.P. (SW8-4 OFF : 80Pa, SW8-4 ON : 10Pa)
  - · Characteristic FAN (2) shows air flow vs E.S.P. curve when set fan tap is set P-Hi with each setting of E.S.P. by remote control.
  - External Static Pressure (E.S.P.) can be set by wired remote control.
  - · You can set required E.S.P. by wired remote control which calculate it with the set air flow rate and pressure loss of the duct connected.

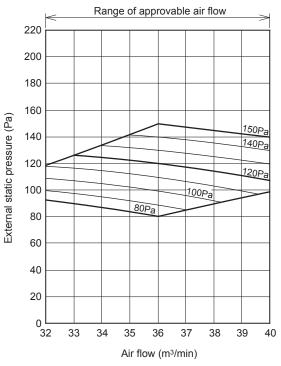
#### Model FDU100VF2

■SW8-4 : OFF (Range of use limitation : Setting 80Pa-150Pa)

Characteristic FAN (1)

Characteristic FAN (2)

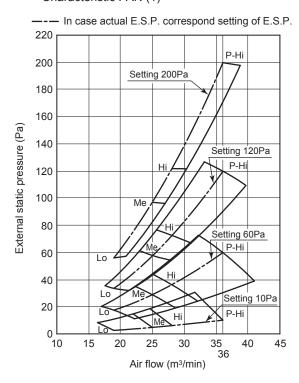


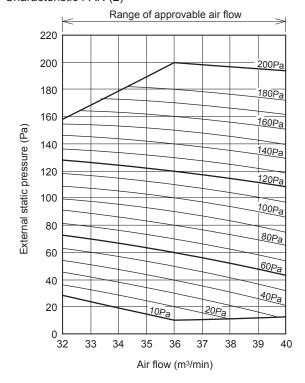


■SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa)

Characteristic FAN (1)

Characteristic FAN (2)





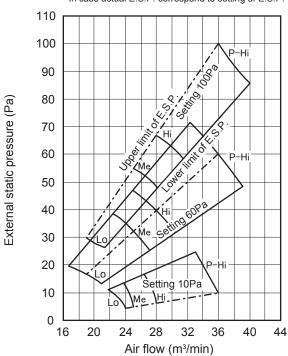
#### (2) Duct connected-Low / Middle static pressure type (FDUM)

- Characteristic FAN (1) shows air flow vs. External Static Pressure (E.S.P.) range where settings of E.S.P. are maximum E.S.P. (100Pa), rated E.S.P., and minimum E.S.P. (10Pa)
- · Characteristic FAN (2) shows air flow vs. E.S.P curve when set fan tap is set P-Hi with each setting of E.S.P by remote control.
- External Static Pressure (E.S.P.) can be set by wired remote control.
- · You can set required E.S.P. by wired remote control which calculate it with the set air flow rate and pressure loss of the duct connected.

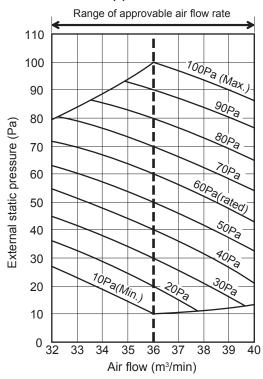
#### Model FDUM100VF2

#### Characteristic FAN(1)

--- In case actual E.S.P. correspond to setting of E.S.P.



#### Characteristic FAN(2)



#### 6. TEMPERATURE AND VELOCITY DISTRIBUTION

Indoor temperature

Cooling 27°CDB / 19°CWB

Heating 20°CDB

Note: These figures represent the typical main range of temperature and velocity distribution at the center of air outlet within the published conditions.

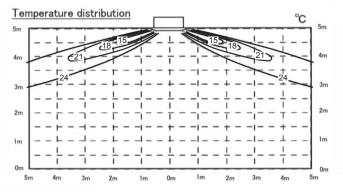
In the actual installation, they may differ from the typical figures under the influence of air temperature conditions, ceiling height, operation conditions and obstacles.

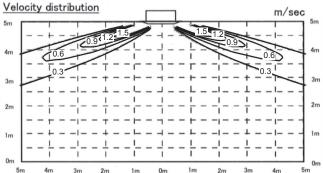
#### (1) Ceiling cassett-4way type (FDT) Model FDT100VF2

#### Cooling Air flow: P-Hi

Louver position

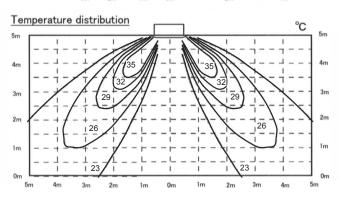


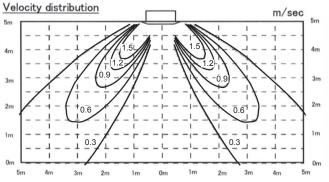




Heating Air flow: P-Hi
Louver position







#### (2) Ceiling suspended type (FDE)

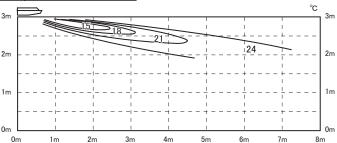
#### Model FDE100VG

#### Cooling Air flow: P-Hi

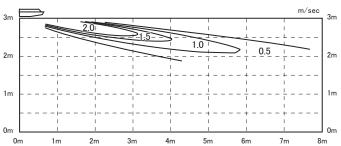
Louver position



#### Temperature distribution

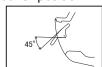


#### Velocity distribution

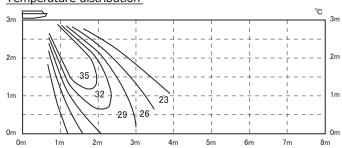


#### Heating Air flow: P-Hi

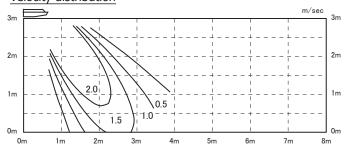
Louver position



#### Temperature distribution



#### Velocity distribution

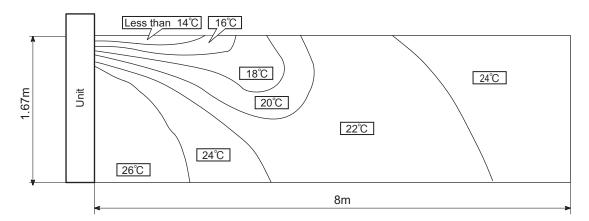


# (3) Floor standing type (FDF)

# Model FDF100VD2

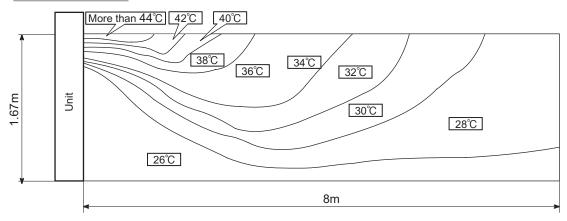
# **Cooling Air flow:Hi (Louver position:Horizontal)**

Temperature distribution



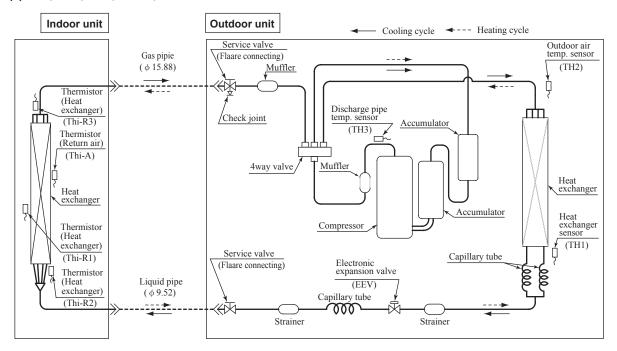
# Heating Air flow:Hi (Louver position:Horizontal)

Temperature distribution

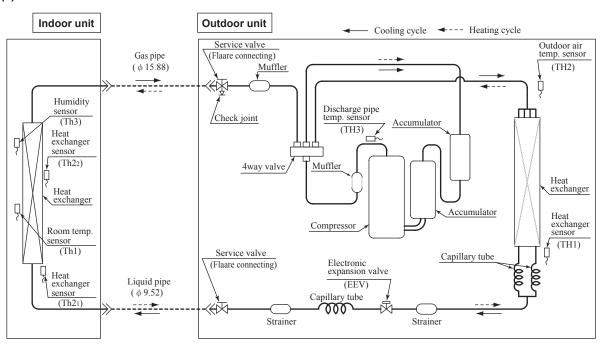


# 7. PIPING SYSTEM

# (1) FDT, FDE, FDU, FDUM, FDF series



# (2) SRK series



# Preset point of the protective devices

| Parts name  | Mark  | Equipped unit | All models                |
|---|-------|---------------|---------------------------|
| Thermistor (for protection overloading in heating)    | Thi-R | Indoor unit   | OFF 63(17)℃ , ON 56(16)℃  |
| Thermistor (for frost prevention)                     | (Th2) | indoor unit   | OFF 1.0(2.5)℃ , ON 10(8)℃ |
| Thermistor (for protection high pressure in cooling)  | TH1   | Outdoor unit  | OFF 63℃ , ON 53℃          |
| Thermistor (for detecting discharge pipe temperature) | TH3   | Outdoor unit  | OFF 115℃, ON 95℃          |

Note(1) Values in ( ) are for the SRK series.

# 8. RANGE OF USAGE & LIMITATIONS

| 0   |                            | See next page.   |
|---|----------------------------|--|
| Operating temperature range                   | ge                         | When used below -5°C, install a snow hood (prepared on site).  |
| Recommendable area to in                      | stall                      | Considering to get sufficient heating capacity, the area where the averaged lowest ambient air temperature in day time during winter is above 0°C, and it has no accumulation of snow. |
| Installation site                             |                            | The limitations of installation space are shown in the page for exterior dimensions.  Install the indoor unit at least 2.5m higher than the floor surface.                             |
| Temperature and humidity indoor unit (Note 2) | conditions surrounding the | Model FDE, FDF, SRK: Dew point temperature: 23°C or less, relative hummdity: 80% or less Other models: Dew point temperature: 28°C or less, relative hummdity: 80% or less             |
| Limitations on unit and pipi                  | ng installation            | See page 40  |
| Compressor                                    | Cycle time                 | 10 minutes or more (from OFF to OFF) or (from ON to ON)  |
| ON-OFF cycling                                | Stop time                  | 3 minutes or more  |
|   | Voltage range              | Rating ±10%  |
| Power source                                  | Voltage drop at start-up   | Min.85% of rating  |
|   | Phase-to-phase imbalance   | 3% or less   |

Note 1. Do not install the unit in places which:

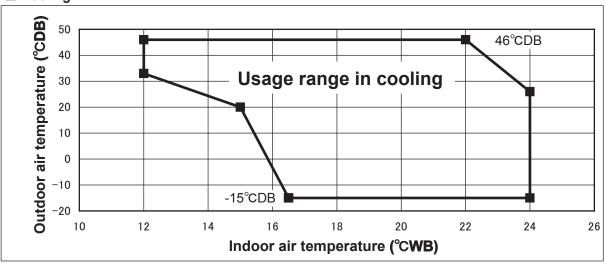
- 1) Flammable gas may leak.
- 2) Carbon fiber, metal particles, powder, etc. are floating.
- 3) Cosmetic or special sprays are used frequently.
- 4) Exposed to oil splashes or steam (e.g. kitchen and machine plant).
- 5) Exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent).
- 6) Exposed to ammonia substance (e.g. organic fertilizer).
- 7) Matters affecting devices, such as sulfuric gas, chlorine gas, acid, alkali, etc. may generate or accumulate.
- 8) Chimney smoke is hanging.
- 9) Sucking the exhaust gas from heat exchanger.
- 10) Adjacent to equipment generating electromagnetic waves or high frequency waves.
- 11) There is light beams that affect the receiving device of indoor unit in case of the wireless specification.
- 12) Snow falls heavily.
- 13) At an elevation of 1000 meters or higher.
- 14) On mobile machine (e.g. vehicle, ship, etc.)
- 15) Splashed with water to indoor unit (e.g. laundry room).
- Note 2. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation on the outer plate (10mm or thicker) of indoor unit

Note 3. Both gas and liquid pipes need to be coverd with 20mm or thicker heat insulation materials at the place where relative humidity exceeds 70%.

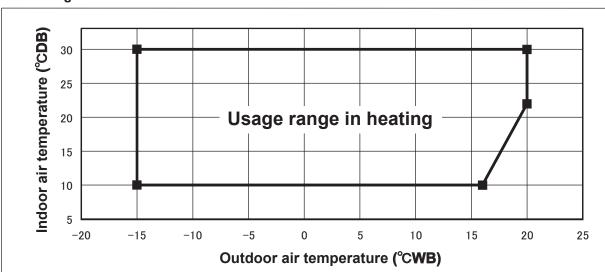
PJF000Z317

# Operating temperature range

# ■ Cooling



# ■ Heating



Decline in cooling and heating capacity or operation stop may occur when the outdoor unit is installed in places where natural wind can increase or decrease its design airflow rate.

PJF000Z317

# "CAUTION" Cooling operation under low outdoor air temperature conditions

PAC models can be operated in cooling mode at low outdoor air temperature condition within above temperature range. However in case of severely low temperature conditions if the following precaution is not observed, it may not be operated in spite of operable temperature range mentioned above and cooling capacity may not be established under certain conditions.

# [Precaution]

In case of severely low temperature condition

- 1) Install the outdoor unit at the place where strong wind cannot blow directly into the outdoor unit.
- 2) If there is no installation place where can prevent strong wind from directly blowing into the outdoor unit, mount the flex flow adapter (prepared as option part) or like such devices onto the outdoor unit in order to divert the strong wind.

# [Reason]

Under the low outdoor air temperature conditions of  $-5^{\circ}$ C or lower, the outdoor fan is controlled at lower or lowest speed by outdoor fan control, but if strong wind directly blow into the outdoor unit, the outdoor heat exchanger temperature will drop more.

This makes high and low pressures to drop as well. This low pressure drop makes the indoor heat exchanger temperature to drop and will activate anti-frost control at indoor heat exchanger at frequent intervals, that cooling operation may not be established for any given time.

| Limitation on unit and p     | oiping installation                        |                        |                         |                                |
|------------------------------|--|------------------------|-------------------------|--------------------------------|
| Descriptions                 |  | Model for outdoor unit | Dimensional limitations | Marks appearing in the drawing |
| One-way pipe length          |  |                        | ≦ 30m                   | L                              |
| Elevation difference between | When the outdoor unit is positioned higher | FDC100VNP              | ≦ 20m                   | н                              |
| indoor and outdoor unit      | When the outdoor unit is positioned lower  |                        | ≦ 20m                   | П                              |
|                              | Н  | Outdoor unit           | Indoor unit             |                                |

PJF000Z317

# 9.SELECTION CHART

Correct the cooling and heating capacity in accordance with the operating conditions. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown in the capacity tables (9.1) × Correction factors shown in the table (9.2) (9.3) (9.4).

Caution: In case that the cooling operation during low outdoor air temperature below -5°C is expected, install the outdoor unit where it is not influenced by natural wind. Otherwise protection control by low pressure will be activated much more frequently and it will cause insufficient capacity or breakdown of the compressor in worst case.

# 9.1 Capacity tables

# (1) Ceiling cassette-4way type (FDT)

Model FDT100VNP1VF2 Indoor unit FD100VF2 Outdoor unit FDC100VNP

| Cooling                    | moue |      |      |      |      |      |       |          |       |       |       |      |       |      |       | (KVV) |
|----------------------------|------|------|------|------|------|------|-------|----------|-------|-------|-------|------|-------|------|-------|-------|
| 0.44                       |      |      |      |      |      |      | Indo  | or air t | emper | ature |       |      |       |      |       |       |
| Outdoor air<br>temperature | 18°0 | DB   | 21°0 | DB   | 23°0 | DB   | 26°0  | DB       | 27°C  | DB    | 28°C  | DB   | 31℃   | DB   | 33°C  | DB    |
| temperature                | 12°C | WB   | 14°C | WB   | 16°C | WB   | 18°C  | WB       | 19℃   | WB    | 20°C  | WB   | 22°C  | WB   | 24°C  | WB    |
| °CDB                       | TC   | SHC  | TC   | SHC  | TC   | SHC  | TC    | SHC      | TC    | SHC   | TC    | SHC  | TC    | SHC  | TC    | SHC   |
| 11                         |      |      |      |      | 9.71 | 8.44 | 10.21 | 8.98     | 10.46 | 8.88  | 10.66 | 8.76 | 11.06 | 9.23 | 11.46 | 8.97  |
| 13                         |      |      |      |      | 9.71 | 8.44 | 10.21 | 8.98     | 10.46 | 8.88  | 10.66 | 8.76 | 11.06 | 9.23 | 11.46 | 8.97  |
| 15                         |      |      |      |      | 9.71 | 8.44 | 10.21 | 8.98     | 10.46 | 8.88  | 10.66 | 8.76 | 11.06 | 9.23 | 11.46 | 8.97  |
| 17                         |      |      |      |      | 9.71 | 8.44 | 10.21 | 8.98     | 10.46 | 8.88  | 10.66 | 8.76 | 11.06 | 9.23 | 11.46 | 8.97  |
| 19                         |      |      |      |      | 9.65 | 8.42 | 10.18 | 8.97     | 10.45 | 8.88  | 10.66 | 8.76 | 11.08 | 9.23 | 11.51 | 8.98  |
| 21                         |      |      |      |      | 9.59 | 8.39 | 10.16 | 8.96     | 10.44 | 8.88  | 10.67 | 8.76 | 11.11 | 9.24 | 11.56 | 8.99  |
| 23                         |      |      |      |      | 9.60 | 8.40 | 10.17 | 8.97     | 10.46 | 8.88  | 10.69 | 8.77 | 11.14 | 9.25 | 11.60 | 9.00  |
| 25                         |      |      | 9.03 | 8.53 | 9.60 | 8.40 | 10.19 | 8.97     | 10.48 | 8.89  | 10.71 | 8.78 | 11.17 | 9.26 | 11.63 | 9.01  |
| 27                         |      |      | 9.02 | 8.53 | 9.61 | 8.40 | 10.20 | 8.98     | 10.51 | 8.90  | 10.81 | 8.80 | 11.41 | 9.32 |       |       |
| 29                         |      |      | 8.92 | 8.48 | 9.49 | 8.36 | 10.08 | 8.94     | 10.38 | 8.85  | 10.68 | 8.77 | 11.28 | 9.29 |       |       |
| 31                         |      |      | 8.81 | 8.44 | 9.38 | 8.32 | 9.96  | 8.90     | 10.25 | 8.81  | 10.55 | 8.73 | 11.14 | 9.25 |       |       |
| 33                         | 8.24 | 7.79 | 8.61 | 8.36 | 9.26 | 8.27 | 9.83  | 8.86     | 10.13 | 8.77  | 10.42 | 8.69 | 11.01 | 9.21 |       |       |
| 35                         | 8.08 | 7.72 | 8.47 | 8.30 | 9.14 | 8.23 | 9.71  | 8.81     | 10.00 | 8.73  | 10.29 | 8.65 | 10.87 | 9.17 |       |       |
| 37                         | 7.85 | 7.62 | 8.23 | 8.06 | 8.84 | 8.12 | 9.37  | 8.70     | 9.67  | 8.63  | 9.96  | 8.55 | 10.54 | 9.09 |       |       |
| 39                         | 7.62 | 7.47 | 7.98 | 7.82 | 8.54 | 8.01 | 9.03  | 8.59     | 9.33  | 8.52  | 9.62  | 8.45 | 10.21 | 9.00 |       |       |
| 41                         | 7.39 | 7.25 | 7.74 | 7.58 | 8.24 | 7.90 | 8.70  | 8.48     | 8.99  | 8.42  | 9.29  | 8.35 | 9.89  | 8.91 |       |       |
| 43                         | 7.16 | 7.02 | 7.10 | 6.96 | 7.54 | 7.39 | 7.93  | 7.77     | 8.66  | 8.31  | 8.47  | 8.11 | 9.00  | 8.68 |       |       |

| (kW) | Heatin                 | Heating mode : HC (kW Outdoor air Indoor air temperature |       |           |         |        |       |  |  |  |  |  |  |
|------|------------------------|--|-------|-----------|---------|--------|-------|--|--|--|--|--|--|
|      | Outdo                  | oor air  | In    | door a    | ir temp | peratu | re    |  |  |  |  |  |  |
| )B   | tempe                  | rature   |       |           | °CDB    |        |       |  |  |  |  |  |  |
| ٧B   | °CDB                   | °CWB   | 16    | 18        | 20      | 22     | 24    |  |  |  |  |  |  |
| SHC  | -14.5                  | -15  | 6.20  | 6.18      | 6.16    | 6.14   | 6.11  |  |  |  |  |  |  |
| 8.97 | -13.5 -14<br>-11.5 -12 |  | 6.26  | 6.23      | 6.21    | 6.19   | 6.16  |  |  |  |  |  |  |
| 8.97 | -11.5 -12<br>-9.5 -10  |  | 6.36  | 6.34 6.31 |         | 6.29   | 6.26  |  |  |  |  |  |  |
| 8.97 | -9.5                   | -10  | 6.47  | 6.44      | 6.42    | 6.39   | 6.36  |  |  |  |  |  |  |
| 8.97 | -7.5                   | -8   | 6.58  | 6.55      | 6.52    | 6.49   | 6.46  |  |  |  |  |  |  |
| 8.98 | -5.5                   | -6   | 7.16  | 7.13      | 7.10    | 7.06   | 7.02  |  |  |  |  |  |  |
| 8.99 | -3.0 -4                |  | 7.75  | 7.71      | 7.67    | 7.63   | 7.59  |  |  |  |  |  |  |
| 9.00 | -3.0 -4<br>-1.0 -2     |  | 8.33  | 8.29      | 8.24    | 8.20   | 8.15  |  |  |  |  |  |  |
| 9.01 | 1.0                    | 0  | 8.92  | 8.87      | 8.81    | 8.77   | 8.72  |  |  |  |  |  |  |
|      | 2.0                    | 1  | 9.21  | 9.15      | 9.10    | 9.05   | 9.00  |  |  |  |  |  |  |
|      | 3.0                    | 2  | 9.63  | 9.58      | 9.52    | 9.47   | 9.41  |  |  |  |  |  |  |
|      | 5.0                    | 4  | 10.48 | 10.42     | 10.36   | 10.30  | 10.24 |  |  |  |  |  |  |
|      | 7.0                    | 6  | 11.33 | 11.26     | 11.20   | 11.14  | 11.07 |  |  |  |  |  |  |
|      | 9.0                    | 8  | 11.49 | 11.42     | 11.36   | 11.29  | 11.22 |  |  |  |  |  |  |
|      | 11.5                   | 10   | 11.64 | 11.58     | 11.51   | 11.44  | 11.36 |  |  |  |  |  |  |
|      | 13.5                   | 12   | 10.42 | 10.35     | 10.29   | 10.22  | 10.14 |  |  |  |  |  |  |
|      | 15.5                   | 14   | 9.20  | 9.13      | 9.06    | 8.99   | 8.92  |  |  |  |  |  |  |
|      | 16.5                   | 16   | 8.58  | 8.52      | 8.45    | 8.38   | 8.31  |  |  |  |  |  |  |

PJF000Z318A

# (2) Ceiling suspended type (FDE)

Model FDE100VNP1VG Indoor unit FDE100VG Outdoor unit FDC100VNP Cooling mode

|                            |      |      |      |        |      |      |       |          |       |       |       |      |       |      |       | (    |
|----------------------------|------|------|------|--------|------|------|-------|----------|-------|-------|-------|------|-------|------|-------|------|
| 0.44                       |      |      |      |        |      |      | Indo  | or air t | emper | ature |       |      |       |      |       |      |
| Outdoor air<br>temperature | 18°0 | DB   | 21°0 | DB     | 23°0 | DB   | 26°0  | DB       | 27°C  | DB    | 28°C  | DB   | 31℃   | DB   | 33°C  | DB   |
| temperature                | 12°C | WB   | 14°C | WB     | 16°C | WB   | 18°C  | WB       | 19°C  | WB    | 20°C  | WB   | 22°C  | WB   | 24°C  | WB   |
| °CDB                       | TC   | SHC  | TC   | TC SHC |      | SHC  | TC    | SHC      | TC    | SHC   | TC    | SHC  | TC    | SHC  | TC    | SHC  |
| 11                         |      |      |      |        | 9.71 | 8.14 | 10.21 | 8.62     | 10.46 | 8.54  | 10.66 | 8.44 | 11.06 | 8.85 | 11.46 | 8.63 |
| 13                         |      |      |      |        | 9.71 | 8.14 | 10.21 | 8.62     | 10.46 | 8.54  | 10.66 | 8.44 | 11.06 | 8.85 | 11.46 | 8.63 |
| 15                         |      |      |      |        | 9.71 | 8.14 | 10.21 | 8.62     | 10.46 | 8.54  | 10.66 | 8.44 | 11.06 | 8.85 | 11.46 | 8.63 |
| 17                         |      |      |      |        | 9.71 | 8.14 | 10.21 | 8.62     | 10.46 | 8.54  | 10.66 | 8.44 | 11.06 | 8.85 | 11.46 | 8.63 |
| 19                         |      |      |      |        | 9.65 | 8.11 | 10.18 | 8.61     | 10.45 | 8.54  | 10.66 | 8.44 | 11.08 | 8.86 | 11.51 | 8.64 |
| 21                         |      |      |      |        | 9.59 | 8.09 | 10.16 | 8.60     | 10.44 | 8.54  | 10.67 | 8.44 | 11.11 | 8.87 | 11.56 | 8.66 |
| 23                         |      |      |      |        | 9.60 | 8.09 | 10.17 | 8.61     | 10.46 | 8.55  | 10.69 | 8.45 | 11.14 | 8.88 | 11.60 | 8.67 |
| 25                         |      |      | 9.03 | 8.18   | 9.60 | 8.09 | 10.19 | 8.62     | 10.48 | 8.55  | 10.71 | 8.46 | 11.17 | 8.89 | 11.63 | 8.68 |
| 27                         |      |      | 9.02 | 8.18   | 9.61 | 8.10 | 10.20 | 8.62     | 10.51 | 8.56  | 10.81 | 8.49 | 11.41 | 8.96 |       |      |
| 29                         |      |      | 8.92 | 8.13   | 9.49 | 8.05 | 10.08 | 8.57     | 10.38 | 8.51  | 10.68 | 8.45 | 11.28 | 8.92 |       |      |
| 31                         |      |      | 8.81 | 8.08   | 9.38 | 8.00 | 9.96  | 8.53     | 10.25 | 8.47  | 10.55 | 8.40 | 11.14 | 8.88 |       |      |
| 33                         | 8.24 | 7.49 | 8.61 | 7.99   | 9.26 | 7.95 | 9.83  | 8.48     | 10.13 | 8.42  | 10.42 | 8.36 | 11.01 | 8.83 |       |      |
| 35                         | 8.08 | 7.41 | 8.47 | 7.93   | 9.14 | 7.90 | 9.71  | 8.43     | 10.00 | 8.38  | 10.29 | 8.31 | 10.87 | 8.79 |       |      |
| 37                         | 7.85 | 7.31 | 8.23 | 7.83   | 8.84 | 7.78 | 9.37  | 8.31     | 9.67  | 8.25  | 9.96  | 8.20 | 10.54 | 8.68 |       |      |
| 39                         | 7.62 | 7.20 | 7.98 | 7.72   | 8.54 | 7.66 | 9.03  | 8.18     | 9.33  | 8.13  | 9.62  | 8.08 | 10.21 | 8.58 |       |      |
| 41                         | 7.39 | 7.09 | 7.74 | 7.58   | 8.24 | 7.54 | 8.70  | 8.05     | 8.99  | 8.01  | 9.29  | 7.97 | 9.89  | 8.48 |       |      |
| 43                         | 7 16 | 6.98 | 7 10 | 6.96   | 7 54 | 7 26 | 7 93  | 7 77     | 8 66  | 7 89  | 8 47  | 7 69 | 9.00  | 8 20 |       |      |

| (kW) |   | Heatin    | ig mod  | e : HC | ;      |         |         | (kW)  |
|------|---|-----------|---------|--------|--------|---------|---------|-------|
|      | П | Outdo     | oor air | In     | door a | ir temp | peratur | e     |
| В    | П | tempe     | rature  |        |        | °CDB    |         |       |
| ٧B   |   | °CDB      | °CWB    | 16     | 18     | 20      | 22      | 24    |
| SHC  | П | -14.5 -15 |         | 6.20   | 6.18   | 6.16    | 6.14    | 6.11  |
| 8.63 | П | -13.5     | -14     | 6.26   | 6.23   | 6.21    | 6.19    | 6.16  |
| 8.63 |   | -11.5     | -12     | 6.36   | 6.34   | 6.31    | 6.29    | 6.26  |
| 8.63 | П | -9.5      | -10     | 6.47   | 6.44   | 6.42    | 6.39    | 6.36  |
| 8.63 | П | -7.5      | -8      | 6.58   | 6.55   | 6.52    | 6.49    | 6.46  |
| 8.64 | П | -5.5      | -6      | 7.16   | 7.13   | 7.10    | 7.06    | 7.02  |
| 8.66 |   | -3.0      | -4      | 7.75   | 7.71   | 7.67    | 7.63    | 7.59  |
| 8.67 |   | -1.0      | -2      | 8.33   | 8.29   | 8.24    | 8.20    | 8.15  |
| 8.68 |   | 1.0       | 0       | 8.92   | 8.87   | 8.81    | 8.77    | 8.72  |
|      |   | 2.0       | 1       | 9.21   | 9.15   | 9.10    | 9.05    | 9.00  |
|      | П | 3.0       | 2       | 9.63   | 9.58   | 9.52    | 9.47    | 9.41  |
|      |   | 5.0       | 4       | 10.48  | 10.42  | 10.36   | 10.30   | 10.24 |
|      |   | 7.0       | 6       | 11.33  | 11.26  | 11.20   | 11.14   | 11.07 |
|      |   | 9.0       | 8       | 11.49  | 11.42  | 11.36   | 11.29   | 11.22 |
|      |   | 11.5      | 10      | 11.64  | 11.58  | 11.51   | 11.44   | 11.36 |
|      |   | 13.5      | 12      | 10.42  | 10.35  | 10.29   | 10.22   | 10.14 |
|      |   | 15.5      | 14      | 9.20   | 9.13   | 9.06    | 8.99    | 8.92  |
|      |   | 16.5      | 16      | 8.58   | 8.52   | 8.45    | 8.38    | 8.31  |
|      | • |           |         |        |        |         |         | ^     |

Note(1) These data show average statuses.

Depending on the system control, there may be ranges where the operation is not conducted continuously

These data show the case where the operation frequency of a compressor is fixed. (2) Capacities are based on the following conditions.

Corresponding refrigerant piping length :7.5m Level difference of Zero.

(3) Symbols are as follows.

TC: Total cooling capacity (kW)

SHC: Sensible heat capacity (kW)

PFA004Z049A

# (3) Duct connected-High static pressure type (FDU)

Model FDU100VNP1VF2 Indoor unit FDU100VF2 Outdoor unit FDC100VNP

| Cooling     | 111000 |      |      |              |      |               |       |          |       |       |        |      |        |      |       | (KVV) |
|-------------|--------|------|------|--------------|------|---------------|-------|----------|-------|-------|--------|------|--------|------|-------|-------|
| Outdoor air |        |      |      |              |      |               | Indo  | or air t | emper | ature |        |      |        |      |       |       |
| temperature | 18°C   | DB   | 21°C | DB           | 23°0 | DB            | 26℃   | DB       | 27°C  | DB    | 28°C   | DB   | 31℃    | DB   | 33°C  | DB    |
| tomperature | 12℃    | WB   | 14℃  | 14°CWB 16°CW |      | 16°CWB 18°CWB |       | WB       | 19℃   | WB    | 20°CWB |      | 22°CWB |      | 24°C  | WB    |
| °CDB        | TC     | SHC  | TC   | SHC          | TC   | SHC           | TC    | SHC      | TC    | SHC   | TC     | SHC  | TC     | SHC  | TC    | SHC   |
| 11          |        |      |      |              | 9.71 | 7.49          | 10.21 | 7.92     | 10.46 | 7.77  | 10.66  | 7.61 | 11.06  | 7.97 | 11.46 | 7.62  |
| 13          |        |      |      |              | 9.71 | 7.49          | 10.21 | 7.92     | 10.46 | 7.77  | 10.66  | 7.61 | 11.06  | 7.97 | 11.46 | 7.62  |
| 15          |        |      |      |              | 9.71 | 7.49          | 10.21 | 7.92     | 10.46 | 7.77  | 10.66  | 7.61 | 11.06  | 7.97 | 11.46 | 7.62  |
| 17          |        |      |      |              | 9.71 | 7.49          | 10.21 | 7.92     | 10.46 | 7.77  | 10.66  | 7.61 | 11.06  | 7.97 | 11.46 | 7.62  |
| 19          |        |      |      |              | 9.65 | 7.47          | 10.18 | 7.91     | 10.45 | 7.77  | 10.66  | 7.61 | 11.08  | 7.97 | 11.51 | 7.63  |
| 21          |        |      |      |              | 9.59 | 7.45          | 10.16 | 7.90     | 10.44 | 7.77  | 10.67  | 7.61 | 11.11  | 7.98 | 11.56 | 7.63  |
| 23          |        |      |      |              | 9.60 | 7.45          | 10.17 | 7.91     | 10.46 | 7.77  | 10.69  | 7.61 | 11.14  | 7.98 | 11.60 | 7.64  |
| 25          |        |      | 9.03 | 7.67         | 9.60 | 7.45          | 10.19 | 7.91     | 10.48 | 7.78  | 10.71  | 7.62 | 11.17  | 7.99 | 11.63 | 7.65  |
| 27          |        |      | 9.02 | 7.67         | 9.61 | 7.45          | 10.20 | 7.92     | 10.51 | 7.78  | 10.81  | 7.64 | 11.41  | 8.03 |       |       |
| 29          |        |      | 8.92 | 7.63         | 9.49 | 7.42          | 10.08 | 7.88     | 10.38 | 7.75  | 10.68  | 7.61 | 11.28  | 8.01 |       |       |
| 31          |        |      | 8.81 | 7.60         | 9.38 | 7.38          | 9.96  | 7.85     | 10.25 | 7.72  | 10.55  | 7.58 | 11.14  | 7.98 |       |       |
| 33          | 8.24   | 7.05 | 8.61 | 7.53         | 9.26 | 7.35          | 9.83  | 7.82     | 10.13 | 7.69  | 10.42  | 7.55 | 11.01  | 7.96 |       |       |
| 35          | 8.08   | 6.99 | 8.47 | 7.48         | 9.14 | 7.31          | 9.71  | 7.79     | 10.00 | 7.66  | 10.29  | 7.52 | 10.87  | 7.93 |       |       |
| 37          | 7.85   | 6.90 | 8.23 | 7.40         | 8.84 | 7.23          | 9.37  | 7.70     | 9.67  | 7.58  | 9.96   | 7.45 | 10.54  | 7.87 |       |       |
| 39          | 7.62   | 6.82 | 7.98 | 7.32         | 8.54 | 7.14          | 9.03  | 7.61     | 9.33  | 7.50  | 9.62   | 7.38 | 10.21  | 7.81 |       |       |
| 41          | 7.39   | 6.73 | 7.74 | 7.24         | 8.24 | 7.05          | 8.70  | 7.53     | 8.99  | 7.42  | 9.29   | 7.31 | 9.89   | 7.75 |       |       |
| 43          | 7.16   | 6.65 | 7.10 | 6.96         | 7.54 | 6.85          | 7.93  | 6.34     | 8.66  | 7.34  | 8.47   | 7.13 | 9.00   | 7.60 |       |       |

| (kW) | Heatin | Heating mode : HC (kW)  Outdoor air Indoor air temperature |       |        |         |        |       |  |  |  |  |  |  |  |
|------|--------|--|-------|--------|---------|--------|-------|--|--|--|--|--|--|--|
|      |        |  | In    | door a | ir temp | peratu | re    |  |  |  |  |  |  |  |
| OB   | tempe  | erature  |       |        | °CDB    |        |       |  |  |  |  |  |  |  |
| VB   | °CDB   | °CWB   | 16    | 18     | 20      | 22     | 24    |  |  |  |  |  |  |  |
| SHC  | -14.5  | -15  | 6.20  | 6.18   | 6.16    | 6.14   | 6.11  |  |  |  |  |  |  |  |
| 7.62 | -13.5  | -14  | 6.26  | 6.23   | 6.21    | 6.19   | 6.16  |  |  |  |  |  |  |  |
| 7.62 | -11.5  | -12  | 6.36  | 6.34   | 6.31    | 6.29   | 6.26  |  |  |  |  |  |  |  |
| 7.62 | -9.5   | -10  | 6.47  | 6.44   | 6.42    | 6.39   | 6.36  |  |  |  |  |  |  |  |
| 7.62 | -7.5   | -8   | 6.58  | 6.55   | 6.52    | 6.49   | 6.46  |  |  |  |  |  |  |  |
| 7.63 | -5.5   | -6   | 7.16  | 7.13   | 7.10    | 7.06   | 7.02  |  |  |  |  |  |  |  |
| 7.63 | -3.0   | -4   | 7.75  | 7.71   | 7.67    | 7.63   | 7.59  |  |  |  |  |  |  |  |
| 7.64 | -1.0   | -2   | 8.33  | 8.29   | 8.24    | 8.20   | 8.15  |  |  |  |  |  |  |  |
| 7.65 | 1.0    | 0  | 8.92  | 8.87   | 8.81    | 8.77   | 8.72  |  |  |  |  |  |  |  |
|      | 2.0    | 1  | 9.21  | 9.15   | 9.10    | 9.05   | 9.00  |  |  |  |  |  |  |  |
|      | 3.0    | 2  | 9.63  | 9.58   | 9.52    | 9.47   | 9.41  |  |  |  |  |  |  |  |
|      | 5.0    | 4  | 10.48 | 10.42  | 10.36   | 10.30  | 10.24 |  |  |  |  |  |  |  |
|      | 7.0    | 6  | 11.33 | 11.26  | 11.20   | 11.14  | 11.07 |  |  |  |  |  |  |  |
|      | 9.0    | 8  | 11.49 | 11.42  | 11.36   | 11.29  | 11.22 |  |  |  |  |  |  |  |
|      | 11.5   | 10   | 11.64 | 11.58  | 11.51   | 11.44  | 11.36 |  |  |  |  |  |  |  |
|      | 13.5   | 12   | 10.42 | 10.35  | 10.29   | 10.22  | 10.14 |  |  |  |  |  |  |  |
|      | 15.5   | 14 9.20 9.13 9.06  |       |        |         | 8.99   | 8.92  |  |  |  |  |  |  |  |
|      | 16.5   | 16   | 8.58  | 8.52   | 8.45    | 8.38   | 8.31  |  |  |  |  |  |  |  |

PJG000Z190A

# (4) Duct connected-Low / Middle static pressure type (FDUM)

Model FDUM100VNP1VF2 Indoor unit FDUM100VF2 Outdoor unit FDC100VNP Cooling mode

| 0.11                       |      |      |      |      |      |      | Indo  | or air t | emper | ature |       |      |       |      |       |      |
|----------------------------|------|------|------|------|------|------|-------|----------|-------|-------|-------|------|-------|------|-------|------|
| Outdoor air<br>temperature | 18°0 | DB   | 21°0 | DB   | 23°0 | DB   | 26°0  |          | 27°C  |       | 28°C  | DB   | 31℃   | DB   | 33°C  | DB   |
| temperature                | 12°C | WB   | 14°C | WB   | 16°C | WB   | 18°C  | WB       | 19°C  | WB    | 20°C  | WB   | 22°C  | WB   | 24°C  | WB   |
| °CDB                       | TC   | SHC  | TC   | SHC  | TC   | SHC  | TC    | SHC      | TC    | SHC   | TC    | SHC  | TC    | SHC  | TC    | SHC  |
| 11                         |      |      |      |      | 9.71 | 7.49 | 10.21 | 7.92     | 10.46 | 7.77  | 10.66 | 7.61 | 11.06 | 7.97 | 11.46 | 7.62 |
| 13                         |      |      |      |      | 9.71 | 7.49 | 10.21 | 7.92     | 10.46 | 7.77  | 10.66 | 7.61 | 11.06 | 7.97 | 11.46 | 7.62 |
| 15                         |      |      |      |      | 9.71 | 7.49 | 10.21 | 7.92     | 10.46 | 7.77  | 10.66 | 7.61 | 11.06 | 7.97 | 11.46 | 7.62 |
| 17                         |      |      |      |      | 9.71 | 7.49 | 10.21 | 7.92     | 10.46 | 7.77  | 10.66 | 7.61 | 11.06 | 7.97 | 11.46 | 7.62 |
| 19                         |      |      |      |      | 9.65 | 7.47 | 10.18 | 7.91     | 10.45 | 7.77  | 10.66 | 7.61 | 11.08 | 7.97 | 11.51 | 7.63 |
| 21                         |      |      |      |      | 9.59 | 7.45 | 10.16 | 7.90     | 10.44 | 7.77  | 10.67 | 7.61 | 11.11 | 7.98 | 11.56 | 7.63 |
| 23                         |      |      |      |      | 9.60 | 7.45 | 10.17 | 7.91     | 10.46 | 7.77  | 10.69 | 7.61 | 11.14 | 7.98 | 11.60 | 7.64 |
| 25                         |      |      | 9.03 | 7.67 | 9.60 | 7.45 | 10.19 | 7.91     | 10.48 | 7.78  | 10.71 | 7.62 | 11.17 | 7.99 | 11.63 | 7.65 |
| 27                         |      |      | 9.02 | 7.67 | 9.61 | 7.45 | 10.20 | 7.92     | 10.51 | 7.78  | 10.81 | 7.64 | 11.41 | 8.03 |       |      |
| 29                         |      |      | 8.92 | 7.63 | 9.49 | 7.42 | 10.08 | 7.88     | 10.38 | 7.75  | 10.68 | 7.61 | 11.28 | 8.01 |       |      |
| 31                         |      |      | 8.81 | 7.60 | 9.38 | 7.38 | 9.96  | 7.85     | 10.25 | 7.72  | 10.55 | 7.58 | 11.14 | 7.98 |       |      |
| 33                         | 8.24 | 7.05 | 8.61 | 7.53 | 9.26 | 7.35 | 9.83  | 7.82     | 10.13 | 7.69  | 10.42 | 7.55 | 11.01 | 7.96 |       |      |
| 35                         | 8.08 | 6.99 | 8.47 | 7.48 | 9.14 | 7.31 | 9.71  | 7.79     | 10.00 | 7.66  | 10.29 | 7.52 | 10.87 | 7.93 |       |      |
| 37                         | 7.85 | 6.90 | 8.23 | 7.40 | 8.84 | 7.23 | 9.37  | 7.70     | 9.67  | 7.58  | 9.96  | 7.45 | 10.54 | 7.87 |       |      |
| 39                         | 7.62 | 6.82 | 7.98 | 7.32 | 8.54 | 7.14 | 9.03  | 7.61     | 9.33  | 7.50  | 9.62  | 7.38 | 10.21 | 7.81 |       |      |
| 41                         | 7.39 | 6.73 | 7.74 | 7.24 | 8.24 | 7.05 | 8.70  | 7.53     | 8.99  | 7.42  | 9.29  | 7.31 | 9.89  | 7.75 |       |      |
| 43                         | 7.16 | 6.65 | 7.10 | 6.96 | 7.54 | 6.85 | 7.93  | 6.34     | 8.66  | 7.34  | 8.47  | 7.13 | 9.00  | 7.60 |       |      |

| (kW)   | Heat  | ing mod  | le : HC | ;      |         |        | (kW)  |
|--------|-------|----------|---------|--------|---------|--------|-------|
| $\neg$ | Out   | door air | ln      | door a | ir temp | peratu | re    |
| DΒ     | temp  | erature  |         |        | °CDB    |        |       |
| VB     | °CDE  | 3 °CWB   | 16      | 18     | 20      | 22     | 24    |
| SHC    | -14.5 | -15      | 6.20    | 6.18   | 6.16    | 6.14   | 6.11  |
| 7.62   | -13.5 | -14      | 6.26    | 6.23   | 6.21    | 6.19   | 6.16  |
| 7.62   | -11.5 | -12      | 6.36    | 6.34   | 6.31    | 6.29   | 6.26  |
| 7.62   | -9.5  | -10      | 6.47    | 6.44   | 6.42    | 6.39   | 6.36  |
| 7.62   | -7.5  | -8       | 6.58    | 6.55   | 6.52    | 6.49   | 6.46  |
| 7.63   | -5.5  | -6       | 7.16    | 7.13   | 7.10    | 7.06   | 7.02  |
| 7.63   | -3.0  | -4       | 7.75    | 7.71   | 7.67    | 7.63   | 7.59  |
| 7.64   | -1.0  | -2       | 8.33    | 8.29   | 8.24    | 8.20   | 8.15  |
| 7.65   | 1.0   | 0        | 8.92    | 8.87   | 8.81    | 8.77   | 8.72  |
|        | 2.0   | 1        | 9.21    | 9.15   | 9.10    | 9.05   | 9.00  |
|        | 3.0   | 2        | 9.63    | 9.58   | 9.52    | 9.47   | 9.41  |
|        | 5.0   | 4        | 10.48   | 10.42  | 10.36   | 10.30  | 10.24 |
|        | 7.0   | 6        | 11.33   | 11.26  | 11.20   | 11.14  | 11.07 |
|        | 9.0   | 8        | 11.49   | 11.42  | 11.36   | 11.29  | 11.22 |
|        | 11.5  | 10       | 11.64   | 11.58  | 11.51   | 11.44  | 11.36 |
|        | 13.5  | 12       | 10.42   | 10.35  | 10.29   | 10.22  | 10.14 |
|        | 15.5  | 14       | 9.20    | 9.13   | 9.06    | 8.99   | 8.92  |
|        | 16.5  | 16       | 8.58    | 8.52   | 8.45    | 8.38   | 8.31  |

Note(1) These data show average statuses.

Depending on the system control, there may be ranges where the operation is not conducted continuously.

These data show the case where the operation frequency of a compressor is fixed.(Cooling only)

(2) Capacities are based on the following conditions.

Corresponding refrigerant piping length: 7.5m

Level difference of Zero.

(3) Symbols are as follows.

TC: Total cooling capacity (kW)

SHC: Sensible heat capacity (kW)

HC: Heating capacity (kW)

# (5) Floor standing type (FDF)

Model FDF100VNP1VD2 Indoor unit FDF100VD2 Outdoor unit FDC100VNP

| Cooming                    | mode |      |      |      |      |      |       |          |       |       |       |      |       |      | (KVV  |      |
|----------------------------|------|------|------|------|------|------|-------|----------|-------|-------|-------|------|-------|------|-------|------|
| Outdoor oir                |      |      |      |      |      |      | Indo  | or air t | emper | ature |       |      |       |      |       |      |
| Outdoor air<br>temperature | 18°0 | DB   | 21°0 | DB   | 23°0 | DB   | 26°C  | DB       | 27°C  | DB    | 28°C  | DB   | 31℃   | DB   | 33°C  | DB   |
| temperature                | 12°C | WB   | 14°C | WB   | 16°C | WB   | 18°C  | WB       | 19°C  | WB    | 20°C  | WB   | 22°C  | WB   | 24°C  | WB   |
| °CDB                       | TC   | SHC  | TC   | SHC  | TC   | SHC  | TC    | SHC      | TC    | SHC   | TC    | SHC  | TC    | SHC  | TC    | SHC  |
| 11                         |      |      |      |      | 9.71 | 7.81 | 10.21 | 8.24     | 10.46 | 8.16  | 10.66 | 8.06 | 11.06 | 8.42 | 11.46 | 8.20 |
| 13                         |      |      |      |      | 9.71 | 7.81 | 10.21 | 8.24     | 10.46 | 8.16  | 10.66 | 8.06 | 11.06 | 8.42 | 11.46 | 8.20 |
| 15                         |      |      |      |      | 9.71 | 7.81 | 10.21 | 8.24     | 10.46 | 8.16  | 10.66 | 8.06 | 11.06 | 8.42 | 11.46 | 8.20 |
| 17                         |      |      |      |      | 9.71 | 7.81 | 10.21 | 8.24     | 10.46 | 8.16  | 10.66 | 8.06 | 11.06 | 8.42 | 11.46 | 8.20 |
| 19                         |      |      |      |      | 9.65 | 7.78 | 10.18 | 8.23     | 10.45 | 8.16  | 10.66 | 8.06 | 11.08 | 8.43 | 11.51 | 8.22 |
| 21                         |      |      |      |      | 9.59 | 7.75 | 10.16 | 8.22     | 10.44 | 8.16  | 10.67 | 8.07 | 11.11 | 8.44 | 11.56 | 8.23 |
| 23                         |      |      |      |      | 9.60 | 7.76 | 10.17 | 8.22     | 10.46 | 8.16  | 10.69 | 8.07 | 11.14 | 8.45 | 11.60 | 8.25 |
| 25                         |      |      | 9.03 | 7.84 | 9.60 | 7.76 | 10.19 | 8.23     | 10.48 | 8.17  | 10.71 | 8.08 | 11.17 | 8.46 | 11.63 | 8.26 |
| 27                         |      |      | 9.02 | 7.84 | 9.61 | 7.76 | 10.20 | 8.24     | 10.51 | 8.18  | 10.81 | 8.12 | 11.41 | 8.54 |       |      |
| 29                         |      |      | 8.92 | 7.79 | 9.49 | 7.71 | 10.08 | 8.19     | 10.38 | 8.13  | 10.68 | 8.07 | 11.28 | 8.49 |       |      |
| 31                         |      |      | 8.81 | 7.74 | 9.38 | 7.66 | 9.96  | 8.14     | 10.25 | 8.08  | 10.55 | 8.02 | 11.14 | 8.45 |       |      |
| 33                         | 8.24 | 7.19 | 8.61 | 7.64 | 9.26 | 7.61 | 9.83  | 8.09     | 10.13 | 8.04  | 10.42 | 7.98 | 11.01 | 8.40 |       |      |
| 35                         | 8.08 | 7.12 | 8.47 | 7.58 | 9.14 | 7.56 | 9.71  | 8.04     | 10.00 | 7.99  | 10.29 | 7.93 | 10.87 | 8.35 |       |      |
| 37                         | 7.85 | 7.01 | 8.23 | 7.47 | 8.84 | 7.44 | 9.37  | 7.91     | 9.67  | 7.86  | 9.96  | 7.81 | 10.54 | 8.25 |       |      |
| 39                         | 7.62 | 6.89 | 7.98 | 7.36 | 8.54 | 7.31 | 9.03  | 7.78     | 9.33  | 7.74  | 9.62  | 7.69 | 10.21 | 8.14 |       |      |
| 41                         | 7.39 | 6.78 | 7.74 | 7.25 | 8.24 | 7.18 | 8.70  | 7.65     | 8.99  | 7.61  | 9.29  | 6.57 | 9.89  | 8.03 |       |      |
| 43                         | 7.16 | 6.68 | 7.10 | 6.96 | 7.54 | 6.90 | 7.93  | 6.36     | 8.66  | 7.49  | 8.47  | 6.28 | 9.00  | 7.75 |       |      |

| (kW) | Heatin | ıg mod  | e : HC | ;      |         |         | (kW)  |
|------|--------|---------|--------|--------|---------|---------|-------|
|      | Outdo  | oor air | In     | door a | ir temp | peratur | е     |
| DВ   | tempe  | erature |        |        | °CDB    |         |       |
| VB   | °CDB   | °CWB    | 16     | 18     | 20      | 22      | 24    |
| SHC  | -14.5  | -15     | 6.20   | 6.18   | 6.16    | 6.14    | 6.11  |
| 8.20 | -13.5  | -14     | 6.26   | 6.23   | 6.21    | 6.19    | 6.16  |
| 8.20 | -11.5  | -12     | 6.36   | 6.34   | 6.31    | 6.29    | 6.26  |
| 8.20 | -9.5   | -10     | 6.47   | 6.44   | 6.42    | 6.39    | 6.36  |
| 8.20 | -7.5   | -8      | 6.58   | 6.55   | 6.52    | 6.49    | 6.46  |
| 8.22 | -5.5   | -6      | 7.16   | 7.13   | 7.10    | 7.06    | 7.02  |
| 8.23 | -3.0   | -4      | 7.75   | 7.71   | 7.67    | 7.63    | 7.59  |
| 8.25 | -1.0   | -2      | 8.33   | 8.29   | 8.24    | 8.20    | 8.15  |
| 8.26 | 1.0    | 0       | 8.92   | 8.87   | 8.81    | 8.77    | 8.72  |
|      | 2.0    | 1       | 9.21   | 9.15   | 9.10    | 9.05    | 9.00  |
|      | 3.0    | 2       | 9.63   | 9.58   | 9.52    | 9.47    | 9.41  |
|      | 5.0    | 4       | 10.48  | 10.42  | 10.36   | 10.30   | 10.24 |
|      | 7.0    | 6       | 11.33  | 11.26  | 11.20   | 11.14   | 11.07 |
|      | 9.0    | 8       | 11.49  | 11.42  | 11.36   | 11.29   | 11.22 |
|      | 11.5   | 10      | 11.64  | 11.58  | 11.51   | 11.44   | 11.36 |
|      | 13.5   | 12      | 10.42  | 10.35  | 10.29   | 10.22   | 10.14 |
|      | 15.5   | 14      | 9.20   | 9.13   | 9.06    | 8.99    | 8.92  |
|      | 16.5   | 16      | 8.58   | 8.52   | 8.45    | 8.38    | 8.31  |

PGA000Z814A

# (6) Wall mounted type (SRK)

Model SRK100VNP1ZR Indoor unit SRK100ZR-S Outdoor unit FDC100VNP Cooling mode

| Outdoor oir                |      |      |      |      |      |      | Indo  | or air t | emper | ature |       |      |       |      |       |      |
|----------------------------|------|------|------|------|------|------|-------|----------|-------|-------|-------|------|-------|------|-------|------|
| Outdoor air<br>temperature | 18°C | DB   | 21°C | DB   | 23°C | DB   | 26°C  | DB       | 27°C  | DB    | 28°C  | DB   | 31°C  | DB   | 33°C  | DB   |
| temperature                | 12°C | WB   | 14°C | WB   | 16°C | WB   | 18°C  | WB       | 19°C  | WB    | 20°C  | WB   | 22°C  | WB   | 24°C  | WB   |
| °CDB                       | TC   | SHC  | TC   | SHC  | TC   | SHC  | TC    | SHC      | TC    | SHC   | TC    | SHC  | TC    | SHC  | TC    | SHC  |
| 11                         |      |      |      |      | 9.71 | 7.31 | 10.21 | 7.67     | 10.46 | 7.59  | 10.66 | 7.50 | 11.06 | 7.77 | 11.46 | 7.56 |
| 13                         |      |      |      |      | 9.71 | 7.31 | 10.21 | 7.67     | 10.46 | 7.59  | 10.66 | 7.50 | 11.06 | 7.77 | 11.46 | 7.56 |
| 15                         |      |      |      |      | 9.71 | 7.31 | 10.21 | 7.67     | 10.46 | 7.59  | 10.66 | 7.50 | 11.06 | 7.77 | 11.46 | 7.56 |
| 17                         |      |      |      |      | 9.71 | 7.31 | 10.21 | 7.67     | 10.46 | 7.59  | 10.66 | 7.50 | 11.06 | 7.77 | 11.46 | 7.56 |
| 19                         |      |      |      |      | 9.65 | 7.28 | 10.18 | 7.65     | 10.45 | 7.59  | 10.66 | 7.50 | 11.08 | 7.78 | 11.51 | 7.58 |
| 21                         |      |      |      |      | 9.59 | 7.26 | 10.16 | 7.64     | 10.44 | 7.59  | 10.67 | 7.50 | 11.11 | 7.79 | 11.56 | 7.59 |
| 23                         |      |      |      |      | 9.60 | 7.26 | 10.17 | 7.65     | 10.46 | 7.59  | 10.69 | 7.51 | 11.14 | 7.80 | 11.60 | 7.60 |
| 25                         |      |      | 9.03 | 7.33 | 9.60 | 7.26 | 10.19 | 7.66     | 10.48 | 7.60  | 10.71 | 7.52 | 11.17 | 7.81 | 11.63 | 7.62 |
| 27                         |      |      | 9.02 | 7.33 | 9.61 | 7.26 | 10.20 | 7.66     | 10.51 | 7.61  | 10.81 | 7.55 | 11.41 | 7.90 |       |      |
| 29                         |      |      | 8.92 | 7.27 | 9.49 | 7.21 | 10.08 | 7.61     | 10.38 | 7.56  | 10.68 | 7.50 | 11.28 | 7.85 |       |      |
| 31                         |      |      | 8.81 | 7.22 | 9.38 | 7.16 | 9.96  | 7.56     | 10.25 | 7.51  | 10.55 | 7.45 | 11.14 | 7.80 |       |      |
| 33                         | 8.24 | 6.76 | 8.61 | 7.12 | 9.26 | 7.11 | 9.83  | 7.51     | 10.13 | 7.46  | 10.42 | 7.40 | 11.01 | 7.75 |       |      |
| 35                         | 8.08 | 6.68 | 8.47 | 7.06 | 9.14 | 7.05 | 9.71  | 7.46     | 10.00 | 7.41  | 10.29 | 7.35 | 10.87 | 7.70 |       |      |
| 37                         | 7.85 | 6.56 | 8.23 | 6.94 | 8.84 | 6.92 | 9.37  | 7.31     | 9.67  | 7.27  | 9.96  | 7.22 | 10.54 | 7.59 |       |      |
| 39                         | 7.62 | 6.44 | 7.98 | 6.83 | 8.54 | 6.79 | 9.03  | 7.18     | 9.33  | 7.14  | 9.62  | 7.10 | 10.21 | 7.47 |       |      |
| 41                         | 7.39 | 6.33 | 7.74 | 6.71 | 8.24 | 6.65 | 8.70  | 7.04     | 8.99  | 7.01  | 9.29  | 6.97 | 9.89  | 7.36 |       |      |
| 43                         | 7.16 | 6.21 | 7.10 | 6.41 | 7.54 | 6.35 | 7.93  | 6.73     | 8.66  | 6.88  | 8.47  | 6.67 | 9.00  | 7.05 |       |      |

| Heatin | ig mod  | le : HC                | ;     |       |       | (kW)  |  |  |
|--------|---------|------------------------|-------|-------|-------|-------|--|--|
| Outdo  | oor air | Indoor air temperature |       |       |       |       |  |  |
| tempe  | erature |                        |       | °CDB  |       |       |  |  |
| °CDB   | °CWB    | 16                     | 18    | 20    | 22    | 24    |  |  |
| -14.5  | -15     | 6.20                   | 6.18  | 6.16  | 6.14  | 6.11  |  |  |
| -13.5  | -14     | 6.26                   | 6.23  | 6.21  | 6.19  | 6.16  |  |  |
| -11.5  | -12     | 6.36                   | 6.34  | 6.31  | 6.29  | 6.26  |  |  |
| -9.5   | -10     | 6.47                   | 6.44  | 6.42  | 6.39  | 6.36  |  |  |
| -7.5   | -8      | 6.58                   | 6.55  | 6.52  | 6.49  | 6.46  |  |  |
| -5.5   | -6      | 7.16                   | 7.13  | 7.10  | 7.06  | 7.02  |  |  |
| -3.0   | -4      | 7.75                   | 7.71  | 7.67  | 7.63  | 7.59  |  |  |
| -1.0   | -2      | 8.33                   | 8.29  | 8.24  | 8.20  | 8.15  |  |  |
| 1.0    | 0       | 8.92                   | 8.87  | 8.81  | 8.77  | 8.72  |  |  |
| 2.0    | 1       | 9.21                   | 9.15  | 9.10  | 9.05  | 9.00  |  |  |
| 3.0    | 2       | 9.63                   | 9.58  | 9.52  | 9.47  | 9.41  |  |  |
| 5.0    | 4       | 10.48                  | 10.42 | 10.36 | 10.30 | 10.24 |  |  |
| 7.0    | 6       | 11.33                  | 11.26 | 11.20 | 11.14 | 11.07 |  |  |
| 9.0    | 8       | 11.49                  | 11.42 | 11.36 | 11.29 | 11.22 |  |  |
| 11.5   | 10      | 11.64                  | 11.58 | 11.51 | 11.44 | 11.36 |  |  |
| 13.5   | 12      | 10.42                  | 10.35 | 10.29 | 10.22 | 10.14 |  |  |
| 15.5   | 14      | 9.20                   | 9.13  | 9.06  | 8.99  | 8.92  |  |  |
| 16.5   | 16      | 8.58                   | 8.52  | 8.45  | 8.38  | 8.31  |  |  |

(kW)

Note(1) These data show average statuses.

Depending on the system control, there may be ranges where the operation is not conducted continuously.

These data show the case where the operation frequency of a compressor is fixed (Cooling only)

(2) Capacities are based on the following conditions.

Corresponding refrigerant piping length: 7.5m

Level difference of Zero.

(3) Symbols are as follows.

TC: Total cooling capacity (kW)

SHC: Sensible heat capacity (kW)

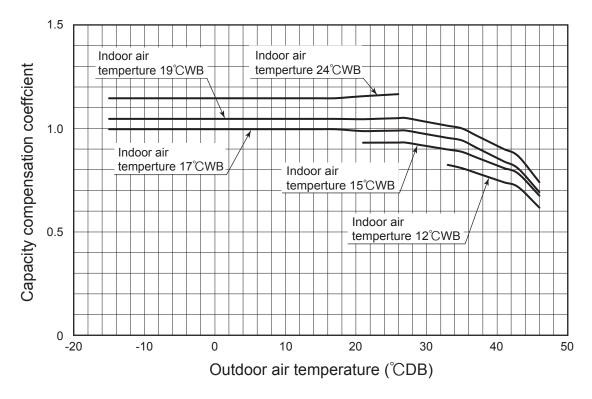
HC: Heating capacity (kW)

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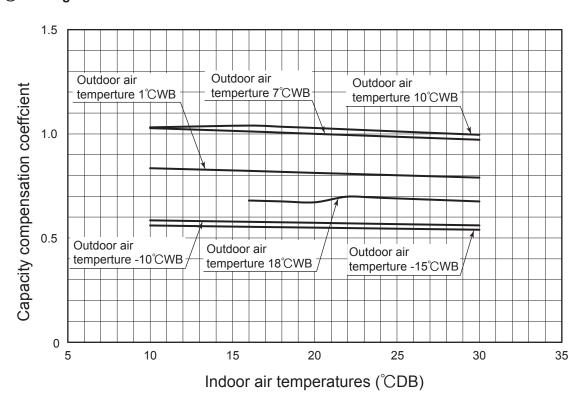
# [References data]

Capacity variation against outdoor and indoor temperature at the maximum compressor speed capacity compensation coefficient shows the ratio to nominal capacity.

# ① Cooling



# 2 Heating



# 9.2 Correction of cooling and heating capacity in relation to air flow rate control Fan speed (Except SRK series)

| Fan speed   |         | P-Hi | Hi   | Me   | Lo   |
|-------------|---------|------|------|------|------|
| Coefficient | Cooling | 1.00 | 0.95 | 0.93 | 0.90 |
| Coefficient | Heating | 1.00 | 0.97 | 0.96 | 0.94 |

# 9.3 Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

| Equivalent piping length (m) | 7.5 | 10   | 15   | 20   | 25   | 30   |
|------------------------------|-----|------|------|------|------|------|
| Cooling                      | 1   | 0.99 | 0.97 | 0.96 | 0.94 | 0.92 |
| Heating                      | 1   | 1    | 1    | 1    | 1    | 1    |

# 9.4 Height difference between the indoor unit and outdoor unit

When the outdoor unit is located below indoor units in cooling mode, or when the outdoor unit is located above indoor units in heating mode, the correction coefficient mentioned in the below table should be subtracted from the value in the above table.

| Height difference between the indoor unit and outdoor unit in the vertical height difference | 5m   | 10m | 15m  | 20m  |
|--|------|-----|------|------|
| Adjustment coefficient   | 0.99 | 098 | 0.97 | 0.96 |

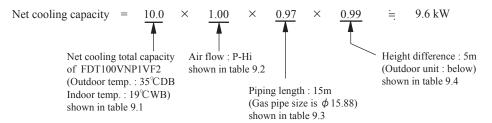
# **Piping length limitations**

| Model                           | All models  |
|---------------------------------|---|
| Max. one way piping length      | 30m   |
| Max. vertical height difference | Outdoor unit is higher 20m<br>Outdoor unit is lower 20m |

Note (1) Values in the table indicate the one way piping length between the indoor and outdoor units.

# How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDT100VNP1VF2 with the air flow "P-Hi", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at  $19.0^{\circ}$ C and outdoor dry-bulb temperature  $35^{\circ}$ C is



# 10. APPLICATION DATA

# 10.1 Installation of indoor unit

(1) Ceiling cassette-4 way type (FDT)

This manual is for the installation of an indoor unit.

For electrical wiring work (Indoor), refer to the page 76. For remote control installation, refer to the page 84. For wireless kit installation, refer to the page 217. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to the page 98.

This unit must always be used with the panel.

# **SAFETY PRECAUTIONS**

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, [AWARNING] and [ACAUTION] <u>AWARNING</u>: Wrong installation would cause serious consequences such as injuries or death. (ACAUTION): Wrong installation might cause serious consequences depending on circumstances
- Both mentions the important items to protect your health and safety so strictly follow them by any means. The meanings of "Marks" used here are as shown on the right:

Never do it under any circumstances.

• After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

### *∧* **WARNING**

Installation should be performed by the specialist.

If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn

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● Install the system correctly according to these installation manuals.

Improper installation may cause explosion, injury, water leakage, electric shock, and fire

● Check the density refered by the foumula (accordance with ISO5149).

If the density exceeds the limit density, please consult the dealer and installate the ventilation system

• Use the genuine accessories and the specified parts for installation.

If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit

Ventilate the working area well in case the refrigerant leaks during installation.

If the refrigerant contacts the fire, toxic gas is produced

Install the unit in a location that can hold heavy weight.

tallation may cause the unit to fall leading to accident

■ Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.

Improper installation may cause the unit to fall leading to accidents

Do not mix air in to the cooling cycle on installation or removal of the air-conditioner.

If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injurie

Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit. Power source with insufficient capacity and improper work can cause electric shock and fin

Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in

order not to apply unexpected stress on the terminal.

Loose connections or hold could result in abnormal heat generation or fire.

• Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.

Improper fitting may cause abnormal heat and fire

Check for refrigerant gas leakage after installation is completed.

If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.

Ouse the specified pipe, flare nut, and tools for R410A.

Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle Tighten the flare nut according to the specified method by with torque wrench.

If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period

● Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can

Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also

ause the corrosion of the indoor unit and a resultant unit failure or refriger • Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.

If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.

• Stop the compressor before removing the pipe after shutting the service valve on pump down work.

If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.

Only use prescribed option parts. The installation must be carried out by the qualified installer.

If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire Do not repair by yourself. And consult with the dealer about repair.

Improper repair may cause water leakage, electric shock or fire

Consult the dealer or a specialist about removal of the air-conditioner.

Improper installation may cause water leakage, electric shock or fire

● Turn off the power source during servicing or inspection work

If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the ope

Do not run the unit when the panel or protection guard are taken off.

Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get

Shut off the power before electrical wiring work.

It could cause electric shock, unit failure and improper runnin

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# **⚠ CAUTION**

### Perform earth wiring surely Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit Earth leakage breaker must be installed. ø If the earth leakage breaker is not installed, it can cause electric shocks Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current sing the incorrect one could cause the system failure and fire Do not use any materials other than a fuse of correct capacity where a fuse should be used. Connecting the circuit by wire or copper wire could cause unit failure and fire. Do not install the indoor unit near the location where there is possibility of flammable gas leakages If the gas leaks and gathers around the unit, it could cause fire. • Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled. t could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire. Secure a space for installation, inspection and maintenance specified in the ma Ø Insufficient space can result in accident such as personal injury due to falling from the installation place. Do not use the indoor unit at the place where water splashes such as laundry. Indoor unit is not waterproof. It could cause electric shock and fire. Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art. It could cause the damage of the items. Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics. Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air-conditioner and cause a malfunction and breakdown. Or the air-conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jammin Do not install the remote control at the direct sunlight. It could cause breakdown or deformation of the remote control. Do not install the indoor unit at the place listed below. Places where flammable gas could leak Places where cosmetics or special sprays ar frequently used. Highly salted area such as bea Places where carbon fiber, metal powder or any powder is floated. Place where the substances which affect the air-conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres. Heavy snow area Places exposed to oil mist or steam directly. Places where the system is affected by On vehicles and ships Places where machinery which generates high harmonics is used. smoke from a chimney Altitude over 1000m Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation) Locations with any obstacles which can prevent inlet and outlet air of the unit Locations where vibration can be amplified due to insufficient strength of structure Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit) Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m) Locations where drainage cannot run off safely It can affect performance or function and etc.. Do not put any valuables which will break down by getting wet under the air-conditioner. ld drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use It could cause the unit falling down and injury. Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit. a If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit. Install the drain pipe to drain the water surely according to the installation manual. Ø Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit. Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficient Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping wor If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of or occur, which can cause serious accidents. For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding. 0 Check if the drainage is correctly done during commissioning and ensure the space for inspection and maint Ensure the insulation on the pipes for refrigeration circuit so as not to condense water. Ø ncomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables Do not install the outdoor unit where is likely to be a nest for insects and small animals Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean. Pay extra attention, carrying the unit by hand. The start the unit with 2 people if it is hearier than 20%, Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin. Make sure to dispose of the packaging material. 0 Leaving the materials may cause injury as metals like nail and woods are used in the package Do not operate the system without the air filter. It may cause the breakdown of the system due to clogging of the heat exchanger. Do not touch any button with wet hands. could cause electric shock Do not touch the refrigerant piping with bare hands when in operation. The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or fi Do not clean up the air-conditioner with water. It could cause electric shock. Do not turn off the power source immediately after stopping the operation. Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdow Do not control the operation with the circuit breaker It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury

# **1**Before installation

- Install correctly according to the installation manual.
- Confirm the following points:

OUnit type/Power source specification OPipes/Wires/Small parts OAccessory items

### Accessory item

| For un            | it hanging                         |                                 | For refrigerant pi                    | pe                    |  | For dra                                | in pipe                      |                            |
|-------------------|------------------------------------|---------------------------------|---------------------------------------|-----------------------|--|--|------------------------------|----------------------------|
| Flat washer (M10) | Level gauge                        | Pipe cover(big)                 | Pipe cover (small)                    | Strap                 | Pipe cover(big)                        | Pipe cover(small)                      | Drain hose                   | Hose damp                  |
| 0                 |                                    | 6                               | 6                                     | F                     | 0                                      | 0                                      | <b>•</b>                     | ()                         |
| 8                 | 1                                  | 1                               | 1                                     | 4                     | 1                                      | 1                                      | 1                            | 1                          |
| For unit hanging  | For unit hanging<br>and adjustment | For heat insulation of gas pipe | For heat insulation<br>of liquid tube | For pipe cover fixing | For heat insulation<br>of drain socket | For heat insulation<br>of drain socket | For drain pipe<br>connecting | For drain hose<br>mounting |

# 2) Selection of installation location for the indoor unit

- ① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- ${\mbox{\footnote{i}}}$  Areas where it can be drained properly. Areas where drain pipe descending slope can be taken
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air-conditioner.
- Areas where the supply air does not short-circuit.
- · Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80% This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air-conditioner is operated under the severer condition than mentioned above.

If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.

Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)

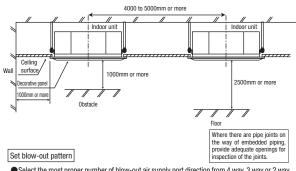
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
   Areas where lighting device such as fluorescent light or incandescent light doesn't affect the

(A beam from lighting device sometimes affects the infrared receiver for the wireless remote control and the air-conditioner might not work properly.)

- 2Check if the place where the air-conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.
- ③If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.
- (4) When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

# Space for installation and service

- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow
- Install the indoor unit at a height of more than 2.5m above the floor.



- Select the most proper number of blow-out air supply port direction from 4 way, 3 way or 2 way according to the shape of the room and installation position. (1 way is not available.)
- If it is necessary to change the number of air supply port, prepare the covering materials.
- ●Instruct the user not to use low fan speed when 2way or 3way air supply is used.
- Do not use 2way air supply port under high temperature and humidity environment. (Otherwise it could cause condensation and leakage of water.)
- It is possible to set the airflow direction port by port independently. Refer to the user's manual for details.

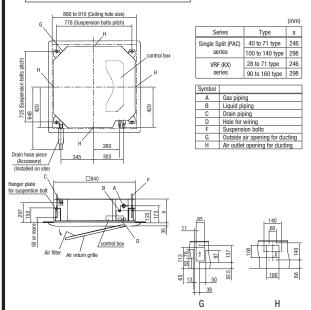
# 3 Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  - OFor arid ceiling

When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

- Oln case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength
- When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10 or M8) on site.

### Ceiling opening, Suspension bolts pitch, Pipe position

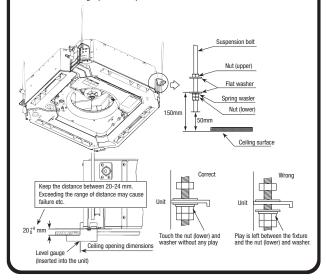


# (4)Installation of indoor unit

# Work procedure

- 1. Prepare a ceiling hole with the size of from 860mm  $\times$  860mm to 910mm  $\times$  910mm referring to the template attached in the package.

  2. Arrange the suspension bolt at the right position (725mm×778mm).
- Make sure to use four suspension bolts and fix them so as to be able to hold 500N load. Ensure that the lower end of the suspension bolt should be 50mm above the ceiling plane. Temporarily put the four lower nuts 150mm above the ceiling plane and the upper
- nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit
- Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer



# 4 Installation of indoor unit (continued)

- Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
- 7. Tighten four upper nuts and fix the unit after height and levelness adjustment.



### Caution

- Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan.
- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- ullet In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, but the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor

### **5** Refrigerant pipe

### Caution

- Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product or a nut compatible with JIS B 8607, Class 2.
- Regarding whether existing pines can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data.
- 1) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2. 2) In case of reuse: Flare the end of pipe replaced partially for R410A.





| Pipe dia. | Min. pipe      | Protruding dimer | nsion for flare, mm | Flare O.D.  | Flare nut         |
|-----------|----------------|------------------|---------------------|-------------|-------------------|
| d d       | wall thickness | Rigid (CI        | utch type)          |             | tightening torque |
| mm        | mm             | For R410A        | Conventional tool   | mm          | N-m               |
| 6.35      | 0.8            |                  |                     | 8.9 - 9.1   | 14 - 18           |
| 9.52      | 0.8            |                  |                     | 12.8 - 13.2 | 34 - 42           |
| 12.7      | 0.8            | 0 - 0.5          | 0.7 - 1.3           | 16.2 - 16.6 | 49 — 61           |
| 15.88     | 1              |                  |                     | 19.3 — 19.7 | 68 - 82           |
| 19.05     | 1.2            |                  |                     | 23.6 - 24.0 | 100 - 120         |

- ●Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H 3300) for refrigeration pipe installation.
- In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting,
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- ●Use special tools for R410A refrigerant

# Work procedure

- Remove the flare nut and blind flanges on the pipe of the indoor unit.
  - \*\* Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out, (as the indoor unit is sometimes pressured.) 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. \*\*Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending. Do not twist a pipe or collapse to 2/3D or smaller.
- \*Do a flare connection as follows:
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.

  When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw
- the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
- Make sure to insulate both gas pipes and liquid pipes completely

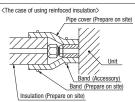
- In case of using at high humidity condition, reinforce insulation of refrigerant pipes.
   Surface of insulation may cause dew condition or water dropping, if insulations are not reinfoced.
- Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

# 5 Refrigerant pipe (continued)

Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare

Refrigerating machine oil may be applied to the internal surface of flare only

<The case of using thicness of insulation is 10mm> Pipe cover (Accessory) Band (Accessory) The thckness of insulation is 10mm



# **6**Drain pipe

### Caution

- Install the drain pipe according to the installation manual in order to drain properly.
- Imperfection in draining may cause flood indoors and wetting the household goods, etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint
- Insulate the pipe properly to avoid condensation drop.

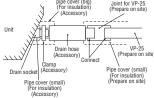
  Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

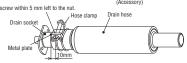
### Work procedure

1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket

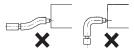
Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw



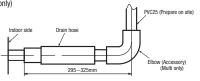




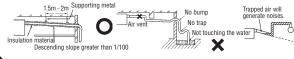
- - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



 As for drain pipe, apply VP25 (0D32).
 If apply PVC25 (0D25), connect the expanded connector to the drain hose, with adhesive. (Multi unit only)

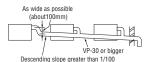


- $3.\,\,$  Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
  - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
  - Do nt set up air vent.



# **6 Drain pipe (continued)**

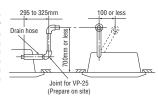
 When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe



- 4 Insulate the drain nine
- Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.

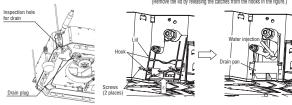
\*After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless

 The position for drain pipe outlet can be raised up to 700mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



### Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not. Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.
- 1. Fill water of approx. 1,000 cc in the drain pan of the main unit. Take care not to wet electrical equipment such as the drain pump, etc. Inject water through the blow outlet using a feed water pump, or the like, or through
  - the refrigerant pipe joint. hen injecting water through the blow outlet
    - ●When removing the lid to inject water through the refrigerant joint (1) Remove screws at 2 places. (2) While pressing the lid in the direction ①, pull and remove the lid in the direction ②. (Remove the lid by releasing the catches from the hooks in the figure.)



- 2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test.
- On the utahi pipe at the test.

  Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.

  Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.

# Drain pump operation

- OIn case electrical wiring work finished

On case electrical wining work minshed

Drain pump can be operated by remote control (wired).

For the operation method, refer to [Operation for drain pump] in the installation manual for wiring work.

Oln case electrical wiring work not finished

Drain pump will run continuously when the dip switch "SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power source (230VAC on the terminal block ① and ②) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
- Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in
- order not to apply unexpected stress on the terminal.

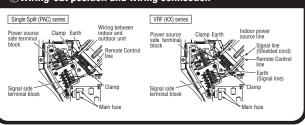
  Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
   For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- Remove a lid of the control box (3 screws) and the wiring cover (2 screws).
- Hold each wiring inside the unit and fasten them to terminal block securely.
- 3. Fix the wiring with clamps.4. Install the removed parts back to original place.

# Main fuse specification

| mam race open | 110441011    |
|---------------|--------------|
| Specification | Part No.     |
| T3.15A L250V  | SSA564A149AF |



# 7Wiring-out position and wiring connection



# **®Panel installation**

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to attached manual for panel installation for details.

### 9Check list after installation

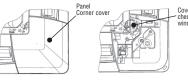
Check the following items after all installation work completed.

| Check if;  | Expected trouble                  | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely?                   | Falling, vibration, noise         |       |
| Inspection for leakage is done?                                    | Insufficient capacity             |       |
| Insulation work is properly done?                                  | Water leakage                     |       |
| Water is drained properly?   | Water leakage                     |       |
| Power source voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all |       |
| There is mis-wiring or mis-connection of piping?                   | PCB burnt out, not working at all |       |
| Earth wiring is connected properly?                                | Electric shock                    |       |
| Cable size comply with specified size?                             | PCB burnt out, not working at all |       |
| Any obstacle blocks airflow on air inlet and outlet?               | Insufficient capacity             |       |

# (Maintenance)

### The method of checking the dirt of drain pan

- It is possible to check the dirt for inlet of drain pan without detaching the panel. (Inspection is not possible when the high efficient filter and option spacer is installed.)
- 1. Open the air return grille and remove the panel corner cover on drain pan side.
- Remove the cover of inspection window. (1screw) Check the drain pan from the inspection window.
- If the drain pan is very dirty, remove the drain pan and clean it.
- After checking of the dirty of drain pan, restore the cover of the inspection window securely. Improper restoration of the cover may cause dew condensation and water



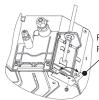


# Attention for removing drain pan

The fixing components have been attached the with drain pan. Pay attention to these components during installation and removing. Take off the hanging hook after removing four screws. During the installation of drain pan, fix the drain pan firmly by using four screws after hanging it up with the fixing hook



Drain pan Fixing piece



Remove the screws Rotate the hook

# PJF012D003C ∕€

# PANEL INSTALLATION MANUAL

Read this manual together with the indoor unit's installation manual.



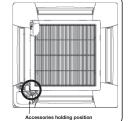
Make sure the power source is turned off when electric wiring work.
 Otherwise, electric shock, malfunction and improper running may occur.



# Before installation

- Follow installation manual carefully, and install the panel properly.
   Check the following items.

| Bolt  | 6)- | 4 pieces | For panel installation                     |
|-------|-----|----------|--|
| Strap |     | 4 pieces | For avoiding the corner panel from falling |
| Screw | \$  | 4 pieces | For fixing the corner panel                |

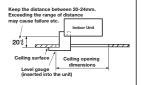


# ② Checking the indoor unit installation position

- · Read this manual together with the air-conditioner installation manual carefully
- · Check if the opening size for the indoor unit is correct with the level gauge supplied in the indoor unit.
- Check if the gap between the ceiling plane and the indoor unit is correct by inserting the level gauge into the air outlet port of the indoor unit. (See below drawing)
   Adjust the installation elevation if necessary.

If there is a height difference beyond the design limit between the installation level of the indoor unit and the ceiling plane, the panel may be subject to excessive stress during installation, it may cause distortion and damage.

The installation level of the indoor unit can be adjusted finely from the opening provided on the corner, even after panel is attached. from the opening provided on the corner, even after (Refer to 6 Attaching the panel for details.)

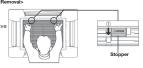


# ③ Removing the air return grille

1. Hold the stoppers on the air return grille (2 places) toward

OPEN direction, open the air return grille.

2. Remove the hooks of the air return grille from the decorativ panel while it is in the open position.

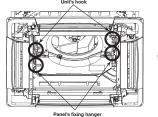


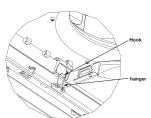
# 6 Attaching the panel

- Temporary attaching

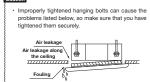
  Lift up the hanger (2 places) on the panel for temporary support.

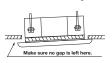
  Hang the panel on the hook on the indoor unit.



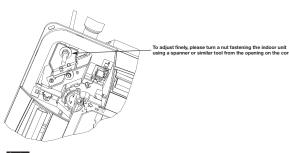


- 2. Fix the panel on the indoor unit
  - Fasten the panel on the indoor unit with the four bolts supplied with the panel





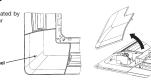
It is possible to adjust the installation height of the indoor unit with the panel attached as long as there is no influence on the drain pipe inclination and/or the indoor unit levelness.



Make sure there is no stress given on the panel when adjusting the height of the indoor unit to avoid unexpected distortion. It may cause the distortion of panel or failing to close the air return grille.

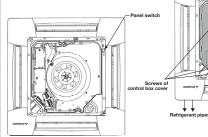
# Removing a corner panel

Pull the corner panel toward the direction indicated by the arrow and remove it. (Same way for all four corner panels)

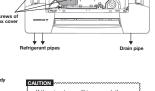


# 7 Electrical wiring

- 1. After removing three screws of control box, detach the cover of control box (the hatched part)
- 2. Connect the connector for louver motor (white 20P) · Hold the wiring by using the clamps of the indoor unit.
- · Hold the connector inside the control box
- 3. Connect the connector for panel switch. · Hold the wiring by using the clamps of the indoor unit.







# If the air return grill is opened, the panel switch is turned off so that the air-conditioner cannot be operated any more. To start the air-conditioner, close the air return grill.

# ⑤ Orientation of the panel installation

- Take note that there is an orientation to install the panel.

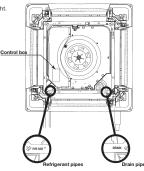
  Attach the panel with the orientation shown on the right.

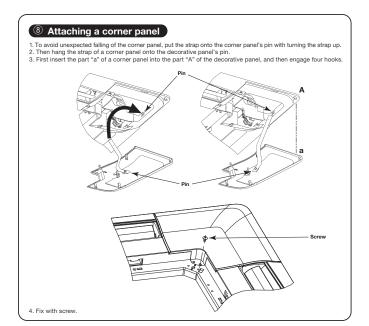
  Align the "PIPE SIDE" mark (on the panel) with the refrigerant pipes on the indoor unit.

  Align the "DRAIN" mark (on the panel) with the drain pipe on the indoor unit.

# CAUTION

In case the orientation of the panel is not correct, it will lead to air leakage and also it is not possible to connect the louver motor wiring.





# 9 How to set the airflow direction

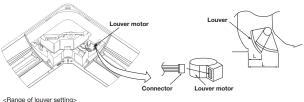
It is possible to change the movable range of the louver on the air outlet from the wired remote control. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.

For the setting method of the louver's operating range, refer to the instruction manual of the wired remote

- If it is necessary to fix the louver position manually, follow the procedure mentioned below.

  1. Shut off the main power switch.

  2. Unplug the connector of the louver motor which you want to fix the position. Make sure to insulate unplugged connectors electrically with a viny! tape.
- 3. Adjust the louver position slowly by hand so as to be within the applicable range mentioned below table.



<Range of louver setting>

Vertical airflow direction
Dimension L (mm) Horizontal 0° Downwards 45° 43 26

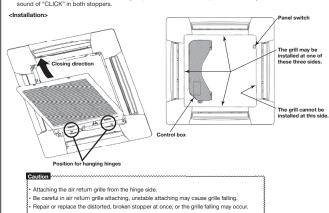
- Any automatic control or operation from the remote control will be disabled on the louver whose po-sition is fixed in the above way.
- Do not set a louver beyond the specified range. Failure to observe this instruction may result in dripping, dew condensation, the fouling of the ceiling and the malfunctioning of the unit.

# Mattaching the air return grille

To attach the air return grille, follow the procedure described in <a>Beamoving the air return grille</a> in the reverse order. 1. Hang the hooks of the air return grille in the hole of the panel. (The hooks of the grille can be hanged in three side

of the panel as following.)

2. After the grille is hanged, close the grille while the stoppers on the grille (2 places) are kept pressed to "OPEN" direction. When the grille comes to the original position, release the stoppers to hold the grille. Make sure to hear the sound of "CLICK" in both stoppers.



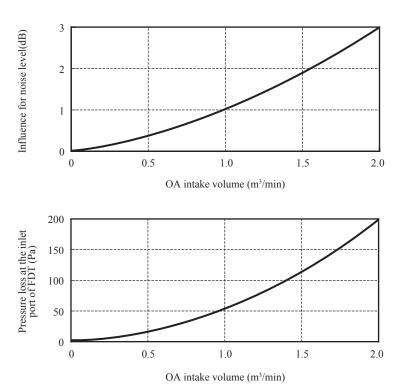
# **OUTDOOR AIR (OA) INTAKE FOR FDT**

If it is required to intake OA through FDT unit, make sure to check following points carefully in order to conform to the requirement of customer.

If the OA intake volume through FDT unit is not satisfied with the required ventilation air volume, consider to install an independent ventilation system.

- 1) Be sure to calculate cooling/heating load considering the ventilation heat load and to decide the air-conditioning system.
- 2) Be sure the OA intake volume to FDT unit should not exceed 20% of the Supply Air (SA) volume of FDT unit and it should be less than 2m³/min.
- Be sure to decide the OA intake volume considering the mixed air temperature will be within the usage temperature range of FDT unit.
  - Especially in following case, please consider to intake OA after processing OA or reducing the OA intake volume.
- 4) Be sure to equip a suitable filter for OA intaken in order to protect the dust. (Because OA does not pass through the filter equipped on FDT unit)
- 5) Be sure to insulate OA duct.
  (If not, it may have dew condensation.)
- 6) Be sure to interlock the booster fan for OA with the fan of FDT unit by using CNT connector.

  (If not, the dust trapped on the filter of FDT unit may be blown out to the room by the OA being intaken during the fan of FDT unit stopping)
- 7) Be sure to select a suitable booster fan for OA considering the pressure loss in the OA duct and the pressure loss at the inlet port of FDT with following diagram.
  - (Please take into consideration the noise level as well)



<Selection of booster fan>

Booster fan should have a static pressure calculated with following formula

Static pressure of booster fan

= the pressure loss at the inlet port of FDT (from above diagram)

+ Pressure loss in the OA duct (In case of  $\phi$  100 duct, 5Pa/m is required)

Select the booster fan from the fan characteristic diagram

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# (2) Ceiling suspended type (FDE)

This manual is for the installation of an indoor unit. For electrical wiring work (Indoor), refer to page 76. For remote control installation, refer to page 84. For wireless kit installation, refer to page 219. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to page 98.

### **SAFETY PRECAUTIONS**

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, <a href="Marking">(▲WARNING)</a> and <a href="Marking">(▲CAUTION)</a>. AWARNING: Wrong installation would cause serious consequences such as injuries or death ACAUTION: Wrong installation might cause serious consequences depending on circumstances Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown as follows: Never do it under any circumstances. • Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

# **MARNING**

•Installation should be performed by the specialist.

If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit

Install the system correctly according to these installation manuals.

allation may cause explosion, injury, water leakage, electric shock, and fir

• When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).

If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accidents.

Use the genuine accessories and the specified parts for installation.

If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit

Ventilate the working area well in case the refrigerant leaks during installation.

If the refrigerant contacts the fire, toxic gas is produced.

• Install the unit in a location that can hold heavy weight.

Improper installation may cause the unit to fall leading to accident

• Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes

Improper installation may cause the unit to fall leading to accidents

 $\ensuremath{\bullet}$  Do not mix air in to the cooling cycle on installation or removal of the air-conditioner. If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries

• Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.

Power source with insufficient capacity and improper work can cause electric shock and fire •Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in

order not to apply unexpected stress on the terminal.

Loose connections or hold could result in abnormal heat generation or fire

● Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.

mproper fitting may cause abnormal heat and fire

Check for refrigerant gas leakage after installation is completed.

If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced

Use the specified pipe, flare nut, and tools for R410A.

Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle

 $\ensuremath{\bullet}$  Tighten the flare nut according to the specified method by with torque wrench.

If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period

● Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur. Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can a cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.

• Connect the pipes for refrigeration circuit securely in installation work before compressor is operated. If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due

to abnormal high pressure in the system • Stop the compressor before removing the pipe after shutting the service valve on pump down work.

If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.

Only use prescribed option parts. The installation must be carried out by the qualified installer. If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire

●Do not repair by yourself. And consult with the dealer about repair.

Improper repair may cause water leakage, electric shock or fin Consult the dealer or a specialist about removal of the air-conditioner.

Improper installation may cause water leakage, electric shock or fire

 $\ensuremath{\bullet}$  Turn off the power source during servicing or inspection work. If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan

● Do not run the unit when the panel or protection guard are taken off.

Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get

Shut off the power before electrical wiring work.

It could cause electric shock, unit failure and improper running.

### 

Perform earth wiring surely.

nect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could unit failure, electric shock and fire due to a sh

Earth leakage breaker must be installed.

If the earth leakage breaker is not installed, it can cause fire and electric shocks

Using the incorrect one could cause the system failure and fire

 Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.

 Do not use any materials other than a fuse of correct capacity where a fuse should be used. Connecting the circuit by wire or copper wire could cause unit failure and fire

 Do not install the indoor unit near the location where there is possibility of flammable gas leakage If the gas leaks and gathers around the unit, it could cause fire.

 Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are ham It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire

Secure a space for installation, inspection and maintenance specified in the manual

Insufficient space can result in accident such as personal injury due to falling from the installation place. Do not use the indoor unit at the place where water splashes such as laundry. Indoor unit is not waterproof. It could cause electric shock and fire.

 Do not use the indoor unit for a special purpose such as food storage, cooling for precisior ment, preservation of animals, plants, and a work of art.

It could cause the damage of the items. Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics

Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air-conditioner and cause a malfunction and breakdown. Or the air-conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.

 Do not install the remote control at the direct sunlight. It could cause breakdown or deformation of the remote control.

Do not install the indoor unit at the place listed below.

Places where flammable gas could leak Places where carbon fiber, metal powder or any powder is floated.

Places where the substances which after the air-confidure are generated such as suffide gas, chloride gas, acid, alkali or ammonic atmospheres. Places exposed to oil mist or steam directly. On vehicles and ships Places where machinery which generates high harmonics is used.

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Places where cosmetics or special sprays are

frequently used. Highly salted area such as beach. Heavy snow area

Places where the system is affected by smoke from a chimney.

 Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)

Locations with any obstacles which can prevent inlet and outlet air of the unit Locations where vibration can be amplified due to insufficient strength of structure

Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)

Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)

Locations where drainage cannot run off safely It can affect performance or function and etc

Do not put any valuables which will break down by getting wet under the air-conditioner. on could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings

Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.

It could cause the unit falling down and injury. Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit. 0

If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit. Install the drain pipe to drain the water surely according to the installation manual.

Improper connection of the drain pipe may cause dropping water into room and damaging user's belonging Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit. Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to

user's health and safety. Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping wor

If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of ox occur, which can cause serious accidents. For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.

Check if the drainage is correctly done during commissioning and ensure the space for inspection and mainti

 Ensure the insulation on the pipes for refrigeration circuit so as not to condense water. Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valual

 Do not install the outdoor unit where is likely to be a nest for insects and small animals. Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to

 Pay extra attention, carrying the unit by hand. Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit

by hand. Use protective gloves in order to avoid injury by the aluminum fin Make sure to dispose of the packaging material.

Leaving the materials may cause injury as metals like nail and woods are used in the package Do not operate the system without the air filter.

It may cause the breakdown of the system due to clogging of the heat exchange

Do not touch any button with wet hands. It could cause electric shock.

• Do not touch the refrigerant piping with bare hands when in operation.

The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or fr

 Do not clean up the air-conditioner with water. It could cause electric shock.

 Do not turn off the power source immediately after stopping the operation Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or break

Do not control the operation with the circuit breaker

It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury

-53-

# **①Before installation**

- Install correctly according to the installation manual.
- •Confirm the following points:

OUnit type/Power source specification OPipes/Wires/Small parts OAccessory items

### Accessory item

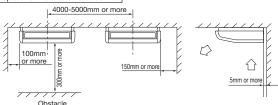
| For un            | For unit hanging F                 |                                    |                                       | pipe  | For drain pipe               |                            |                |                                     |                 | For air return grille           |
|-------------------|------------------------------------|------------------------------------|---------------------------------------|-------|------------------------------|----------------------------|----------------|-------------------------------------|-----------------|---------------------------------|
| Flat washer (M10) | Paper pattern                      | Pipe cover (large)                 | Pipe cover (small)                    | Strap | Drain hose<br>(with clamp)   | Hose clamp                 | Fixing bracket | Screw                               | Heay insulation | Screw                           |
| 0                 |                                    | 6                                  | 6                                     | ш     | @DDDDD                       |                            |                |                                     |                 |                                 |
| 8                 | 1                                  | 1                                  | 1                                     | 4     | 1                            | 1                          | 1              | 2                                   | 1               | 4                               |
| For unit hanging  | For unit hanging<br>and adjustment | For heat insulation<br>of gas pipe | For heat insulation<br>of liquid pipe |       | For drain pipe<br>connection | For drain hose<br>mounting |                | For installing of<br>fixing bracket |                 | For fixing air<br>return grille |



# ②Selection of installation location for the indoor unit

- ① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- · Areas where there is enough space to install and service.
- · Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- · Areas where fire alarm will not be accidentally activated by the air-conditioner.
- $\boldsymbol{\cdot}$  Areas where the supply air does not short-circuit.
- · Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 23°C and relative humidity is lower than 80% This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air-conditioner is operated under the severer condition than mentioned above.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit,
- Areas where there is no influence by the heat which cookware generates.
- · Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- ② Check if the place where the air-conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.
- ③ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

# Space for installation and service



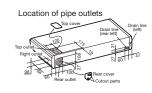
# ③Preparation before installation

- •If suspension bolt becomes longer, do reinforcement of earthquake resistant. O For grid ceiling
  - When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  - $\circ \ln$  case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
- When suspension bolt length is over 1000 mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

# Pitch of suspension bolts and pipe position

Pitch of suspension bolts



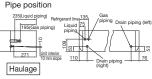


# ③Preparation before installation (continued)

Series type 40 to 50type 1070 1022 Single Split (PAC) 60 to 71type 1320 1272 1572 1022 36 to 56type 1070 VRF (KX) series 1320 1272 112 to 140type 1620 1572 %Pipes can be taken out in 3 directions (rear, right or top).

- Cut out holes using nippers, etc. Cut out holes to take out pipes along the cutoff line
- on the rear cover.
  Cut out the top face cover aligning to the piping
- position. When taking pipe out to right-hand side, cut out a hole along the groove at the inside of side panel. After installing pipes and wires, seal clearances around pipes and wires with putty, etc. to shut off dust.

Make sure to install the covers at rear and top in order to protect the inside of unit from intrusion of dust or protect wires from damages by sharp edges. When taking them out to the right-hand side, remove burrs or sharp edges



•Move the box as close to the installation area as possible packed. olf it must be unpacked, wrap the unit with a nylon sling,

and be careful not to damage the unit. \*Do not hold fragile plastic parts, such as the side panel, blow louver, etc

olf you need to lay the unit on a floor after unpacking, always put it with the intake grille facing upward.

### Preparation before instalation

1. Remove the air return grille. Slide stoppers (4 places) of the catches, then pull out the pins (4 or 6 places).

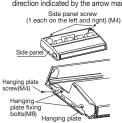


3. Remove the hanging plate Remove the screw, and then loosen the fixing bolts.



### 2. Remove the side panel.

Remove the screw and detach the side panel by sliding it toward the direction indicated by the arrow mark

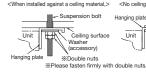


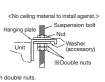
# 4 Installation of indoor unit

# Work procedure

- Select the suspension bolt locations and the pipe hole location. (1) Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe. \*Decide the locations based on direct measurements.
  - (2) Once the locations are properly placed, the paper pattern can be removed.
- 2. Install the suspension bolts in place.
- 3. Fix with 4 suspension bolts, which can endure load of 500N.
- 4. Check the measurements given at the right figure for the length of the suspension bolts
- 5. Fasten the hanging plate onto the suspension bolts.







Paper pattern

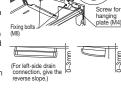
Ceiling

Hanging plate

suspension bolt

6. Install the unit to the hanging plate. (See the figure at right.)

- (1) Slide the unit in from front side to get it hanged on the hanging plate with the bolts.
  (2) Fasten the four fixing bolts (M8: 2
- each on the left and right sides) firmly. (3) Fasten the two screws (M4: 1 each on the left and right sides).
- **⚠WARNINIG**: Hang a side panel on from the panel side to the rear side and then fasten it securely onto the indoor unit with screws
- \*To ensure smooth drain flow, install the unit with a descending slope toward the drain outlet.



⚠ CAUTION: Do not give the reversed slope, which may cause water leaks.

# ⑤ Refrigerant pipe

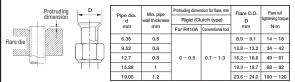
### Caution

Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product

or a nut compatible with JIS B 8607, Class 2.

Regarding whether existing pipes can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data.

1) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2 2) In case of reuse: Flare the end of pine replaced partially for R410A



 Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H 3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.

Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.

Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or

vater getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc

Use special tools for R410A refrigerant.

### Work procedure

 Remove the flare nut and blind flanges on the pipe of the indoor unit.
 Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)

Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)

Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.When pulling out pipes backward or upward, install them passing through the attached cover together with the electrical cabling.

 Seal the gap with putty, or other, to protect from dust, etc.
 Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending. Do not twist a pipe or collapse to 2/3D or smaller

※Do a flare connection as follows:

 Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the coppe

pipe, and then remove them.

• When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.

Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.

Make sure to insulate both gas pipes and liquid pipes completely

| X Incomplete insulation may cause dew condensation or water dropping.
| Use heat-resistant (120 °C or more) insulations on the gas side pipes.
| In case of using at high humidity condition, reinforce insulation of refrigerant pipes.

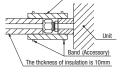
Surface of insulation may cause dew condition or water dropping, if insulations are not reinfoced Refrigerant is charged in the outdoor unit.

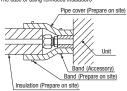
As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare by the stress corrosion.

Refrigerating machine oil may be applied to the internal surface of flare only

<The case of using thicness of insulation is 10mm> <The case of using reinfoced insulation> Pipe cover (Accessory)

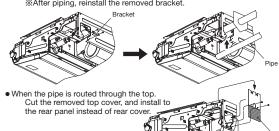




The pipe can be connected from three different directions. (back, reight, top)

When the pipe is routed through the back.
 If the bracket is removed, piping work will become easy.

\*After piping, reinstall the removed bracket



# **6** Drain pipe

The drain pipes may pull out either from back, right or left side.

### Caution

Install the drain pipe according to the installation manual in order to drain properly.

- Imperfection in draining may cause flood indoors and wetting the household goods, etc. Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful andinflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell,

- of oxygen). In addition, it may cause corrosion of neat exchanger and dad smell.

  Connect the pipe securely to avoid water leakage from the joint.

  Insulate the pipe properly to avoid condensation drop.

  Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

# Work procedure

1. Insert drain hose completely to the base, and tighten the drain hose clamp securely. adhesive must not be used.)

When plumbing on the left side, move the rubber plug and the cylindrical insulating materials by the pipe connecting hole on the

left side of the unit to the right side.

A Beware of a possible outflow of water that may

occur upon removal of a drain plug.

2. Fix the drain hose at the lowest point with a hose clamp supplied as an accessory. \*\* Give a drain hose a gradient of 10mm as

illustrated in the right drawing by laying it without leaving a slack.

 Take head of electrical cables so that they may not run beneath the drain hose  $\triangle$  A drain hose must be clamped down with a hose clamp.

There is a possibility that drain water overflows.

Connect VP-20(prepare on site) to drain hose. (adhesive must not be used.) \*\* Use commercially available rigid PVC general pipe VP-20 for drain pipe.

Do not to make the up-down bending and trap in the mid-way while assuming that the drain pipes is downhill. (more than 1/100)

Never set up air vent.
 Insulate the drain pipe.

 Insulate the drain hose clamp with the heat insulation supplied as accessories. When the unit is installed in a humid place, consider precautions against dew condensation such as heat insulation for the drain pipe.

### Drain test

 After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan.

Do drain test even if installation of heating season.

# (7) Wiring-out position and wiring connection

Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country. Be sure to use an exclusive circuit.
Use specified cord, fasten the wiring to the terminal securely, and hold the

cord securely in order not to apply unexpected stress on the terminal.

Be sure to do D type earth work.

For the details of electrical wiring work, see attached instruction manual for electrical wiring work

Remove wiring from clips.
Remove the control box (Screw ①, ②pcs).

Pull out the control box by sliding along the groove on the bracket (Direction (A)→(B)).

Remove the lid of control box (Screw 2), 2pcs)

Hold each wiring inside the unit and connect to the terminal block surely.

Fix the wiring by clamp.

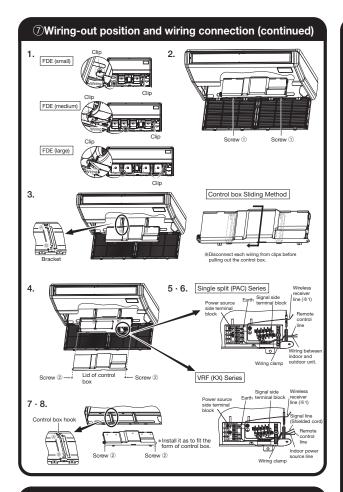
Install the lid of control box (Screw ②, ②pcs).

Return the control box to the original place by sliding along the groove on the bracket (Direction ®→♠).

9. Install the removed parts at their original places.

%1 Wiring for the signal receiving section of wireless kit (Option) are connected to the X and Y terminals on the terminal block (the site connection side), when the indoor unit is shipped from the factory.

It is not necessary to disconnect these wiring when wired remote control is connected. When the wired/wireless kits are used together, it becomes necessary to set the slaves and remote control.



# **®Control mode switching**

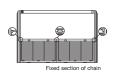
 The control content of indoor units can be switched in following way. ( is the default setting)

| Switch No. | Contr | Control Content         |  |  |  |
|------------|-------|-------------------------|--|--|--|
| SW8-4      | ON    | Indoor unit silent mode |  |  |  |
|            | OFF   | Normal operation        |  |  |  |

# Attaching the air return grille

- The air return grille must be attached when electrical cabling work is completed.
- 1. Fix the chains tied to the air return grille onto the indoor unit with screws supplied as accessories (4 pieces).
- 2. Close the air return grille This completes the unit installtion work





# **(1)** Check list after installation

Check the following items after all installation work completed.

| Check if   | Expected trouble                  | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely?                   | Falling, vibration, noise         |       |
| Inspection for leakage is done?                                    | Insufficient capacity             |       |
| Insulation work is properly done?                                  | Water leakage                     |       |
| Water is drained properly?   | Water leakage                     |       |
| Power source voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all |       |
| There is mis-wiring or mis-connection of piping?                   | PCB burnt out, not working at all |       |
| Earth wiring is connected properly?                                | Electric shock                    |       |
| Cable size comply with specified size?                             | PCB burnt out, not working at all |       |
| Any obstacle blocks airflow on air inlet and outlet?               | Insufficient capacity             |       |

# 11)How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote control. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.

1. Stop the air-conditioner and press SET button and

- LOUVER button simultaneously for three seconds or
  - The following is displayed if the number of the indoor units connected to the remote control is one. Go to step 4.
  - The following is displayed if the number of the indoor units connected to the remote control are more than one.

- Ab SELECT IZII-"I/U000



2. Press ▲or ▼ button.(selection of indoor unit) ● Select the indoor unit of which the louver is set.

3. Press SET button.(determination of indoor unit) •Selected indoor unit is fixed.

[EXAMPLE]
" [/U00 | " (displayed for two seconds) - DATA LOADING --≈=No.1 A-

4. Press▲or▼ button.(selection of louver No.) •Select the louver No. to be set according to the right figure.

[EXAMPLE] "5근No.1 ▲"○"5근No.2 ♦"○"5근No.3 ♦"○ "5근No.4 ▼"

- 5. Press SET button.(Determination of louver No.)The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

  [EXAMPLE] If No.1 louver is selected,

  "No.1 UPFR2 \* " —current upper limit position

- 6. Press ▲ or ▼ button.(selection of upper limit position)
  - Select the upper limit of louver movable range.
     "position 1" is the most horizontal, and "position 6" is the most downward.
     "position --" is to return to the factory setting.

If you need to change the setting to the default Setting, use "position --".

No. IUPPR: ""(the most horizotal)

No. IUPPR: 4"

No



7. Press SET button.(Fixing of the upper limit position)

The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.

- 8. Press ▲or ▼button.(Selection of lower limit position)

Select the lower limit position of louver.
 "position 1" is the most horizontal, and "position 6" is the most downwards.
 "position -" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No. LOMER ▼ (the most horizontal)
No. LOMER 2 ⊕
No. LOMER 3 ⊕
No. LOMER 4 ⊕
No. LOMER 5 ⊕
No. LOMER 5 ⊕
No. LOMER 6 ⊕ (the most downwards)
No. LOMER 6 ⊕ (the most downwards)

9. Press SET button.(Fixing of the lower limit position)

•Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.

After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)

No.1 U2 L6 SET COMPLETE হ**ে** No.1 ▲



10.Press OoWoFF button.

Louver adjusting mode ends and returns to the original display.

# Caution

If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

If you press RESET button during settings, the display will return to previous display. If you press ONNOFF button during settings, the mode will be ended and return to original display, and the settings that have not completed will become invalid.

When plural remote controls are connected, louver setting operation cannot be set by slave remote control.

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# (3) Duct connected-High static pressure type (FDU)

- •This munual is for instaration of an indoor unit and an outdoor air processing unit (FDU-F).
  •This manual is for the installation of an indoor unit.
  For electrical wiring work (Indoor), refer to page 84. For remote control installation, refer to page 76. For wireless kit installation, refer to page 223. For electrical wiring work (Outdoor) and refrigerapipe work installation for outdoor unit, refer to page 98.

- •The total connection capacity of the other air-conditioning units and the outdoor air processing units must be from 50% to 100% (the total includes the outdoor air processing unit).
  The connection capacity of the outdoor air processing unit must not exceed 30% of the capacity of
- the outdoor unit. Single outdoor air processing unit can be used alone. The connection capacity of the outdoor air processing unit must be from 50% to 100% of the total capacity of the outdoor unit.

  Maximum number of outdoor air processing units that can be connected to the outdoor unit is
- Capacities of the suction air processing units can be calculated with the forllowing formulas.
   FDU850FKXEZ1 = 90, FDU1100FKXEZ1 = 140

# **SAFETY PRECAUTIONS** Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself. The precautionary items mentioned below are distinguished into two levels, [AWARNING] and [ACAUTION]. [AWARNING]: Wrong installation would cause serious consequences such as injuries or death. [ACAUTION]: Wrong installation might cause serious consequences depending on circumstances. Both mentions the important items to protect your health and safety so strictly follow them by any means. ● The meanings of "Marks" used here are as shown on the right: ○ Never do it under any circumstances. ● ● Always do it according to the instruction. After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed. **<b>⚠WARNING** 0 urv due to overturn

|   | <ul> <li>Installation should be performed by the specialist.</li> <li>If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injur of the unit.</li> </ul> |
|---|--|
|   | Install the system correctly according to these installation manuals. Improper installation may cause explosion, injury, water leakage, electric shock, and fire.  |
| ı | Check the density refered by the formula (accordance with ISO5149)   |

- If the density exceeds the limit density please consult the dealer and installate the ventilation system. Use the genuine accessories and the specified parts for installation. If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the
- Ventilate the working area well in case the refrigerant leaks during installation. If the refrigerant contacts the fire, toxic gas is produced
- Install the unit in a location that can hold heavy weight. on may cause the unit to fall leading to Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes
- may cause the unit to fall leading to accident: Do not mix air in to the cooling cycle on installation or removal of the air-conditioner.
- If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit. Power source with insufficient capacity and improper work can cause electric shock and fire
- Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely
  in order not to apply unexpected stress on the terminal.
- oose connections or hold could result in abnormal heat generation or fire. Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.
- roper fitting may cause abnormal heat and fire Check for refrigerant gas leakage after installation is completed.
- f the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced Use the specified pipe, flare nut, and tools for R410A.
- ing existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycl Tighten the flare nut according to the specified method by with torque wrench. If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas
- Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak. Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.
- is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due Stop the compressor before removing the pipe after shutting the service valve on pump down work.
- If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circ and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle. Only use prescribed option parts. The installation must be carried out by the qualified installer.
- 0 tall the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire Do not repair by yourself. And consult with the dealer about repair.
- roper repair may cause water leakage, electric shock or fire Consult the dealer or a specialist about removal of the air-conditioner. 0
- Turn off the power source during servicing or inspection work 0 If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan
- Do not run the unit when the panel or protection guard are taken off. ning the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get ourned, or electric shock.
- Shut off the power before electrical wiring work. It could cause electric shock, unit failure and in

### **A** CAUTION

Perform earth wiring surely.

Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock or fire due to a short circuit.

Earth leakage breaker must be installed.

If the earth leakage breaker is not installed, it could cause electric shocks or fire

 Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.

Using the incorrect one could cause the system failure and fire

Do not use any materials other than a fuse of correct capacity where a fuse should be used. nnecting the circuit by wire or copper wire could cause unit failure and fire.

Do not install the indoor unit near the location where there is possibility of flammable gas If the gas leaks and gathers around the unit, it could cause fire.

Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled

It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire Secure a space for installation, inspection and maintenance specified in the manual.

Insufficient space can result in accident such as personal injury due to falling from the installation place Do not use the indoor unit at the place where water splashes such as laundry.

Indoor unit is not waterproof. It could cause electric shock and fire. Do not use the indoor unit for a special purpose such as food storage, cooling for precision

instrument, preservation of animals, plants, and a work of art. It could cause the damage of the items. Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics

Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air-conditioner and cause a malfunction and breakdown. Or the air-conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming

Do not install the remote control at the direct sunlight. It could cause breakdown or deformation of the remote control.

Do not install the indoor unit at the place listed below

- Places where flammable gas could leak. Places where carbon fiber, metal powder or any powder is floated. Place where the substances which affect the air-conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
- Places exposed to oil mist or steam directly.
- On vehicles and ships

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- Places where machinery which generates high harmonics is used.
- Places where cosmetics or special sprays are frequently used.
- Highly salted area such as beach.
  Heavy snow area
  Places where the system is affected by
- Altitude over 1000m
- Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit) coording to the installation manual for each model because each indoor unit has each limitation)
  Locations with any obstacles which can prevent inlet and outlet air of the unit
  Locations where thereinton can be amplified unde insufficient strength of structure.
  Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the

  - infrared specification unit)
  - Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
- Locations where drainage cannot run off safely It can affect performance or function and etc..
- $\ensuremath{\bullet}$  Do not put any valuables which will break down by getting wet under the air-conditioner. ion could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's b
- Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use. It could cause the unit falling down and injury.
- Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit. If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water.
- To avoid damaging, keep the indoor unit packed or cover the indoor unit Install the drain pipe to drain the water surely according to the installation manual.
- Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to
- Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work
- If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxyg occur, which can cause serious accidents For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps
- and not to make air-bleeding. Check if the drainage is correctly done during commissioning and ensure the space for inspection and mai
- Ensure the insulation on the pipes for refrigeration circuit so as not to condense water Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables
- Do not install the outdoor unit where is likely to be a nest for insects and small animals Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to
- keep the surroundings clean. Pay extra attention, carrying the unit by hand.
- Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- Make sure to dispose of the packaging material. Leaving the materials may cause injury as metals like nail and woods are used in the package Do not operate the system without the air filter.
- It may cause the breakdown of the system due to clogging of the heat exchanger.
- Do not touch any button with wet hands.
- could cause electric shock
- $\ensuremath{ullet}$  Do not touch the refrigerant piping with bare hands when in operation. The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or fros Do not clean up the air-conditioner with water.
- It could cause electric shock. Do not turn off the power source immediately after stopping the operation.
- Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown Do not control the operation with the circuit breaker. It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

This model is high static ducted type air-conditioning unit. Therefore, do not use this model for direct blow type air-conditioning unit.

# 1 Before installation

- Install correctly according to the installation manual.
- Confirm the following points:

Ounit type/Power source specification OPipes/Wires/Small parts

OAccessory items

Accessory item

| For hanging          | Fo                  | or refrigerant pipe                   |                       | For drain pipe                         |  |                           |                            | frigerant pipe For drain pipe |         | For drain pipe |  |  |  |  |  |
|----------------------|---------------------|---------------------------------------|-----------------------|--|--|---------------------------|----------------------------|-------------------------------|---------|----------------|--|--|--|--|--|
| Flat washer<br>(M10) | Pipe cover<br>(big) | Pipe cover (small)                    | Strap                 | Pipe cover<br>(big)                    | Pipe cover (small)                     | Drain hose                | Hose clamp                 | Elbow<br>(Multi only)         |         |                |  |  |  |  |  |
| 0                    | 6                   | 6                                     |                       | 6                                      | 5                                      | •                         | ()                         |                               | (       |                |  |  |  |  |  |
| 8                    | 1                   | 1                                     | 4                     | 1                                      | 1                                      | 1                         | 1                          | 1                             |         |                |  |  |  |  |  |
|                      |                     | For heat insulation<br>of liquid tube | For pipe cover fixing | For heat insulation<br>of drain socket | For heat insulation<br>of drain socket | For drain pipe connecting | For drain hose<br>mounting | For drain pipe connecting     | Accinsi |                |  |  |  |  |  |

# **2** Selection of installation location for the indoor unit

- 1) Select the suitable areas to install the unit under approval of the user
- •Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.

  Areas where there is enough space to install and service.
- ·Areas where it can be drained properly. Areas where drain pipe descending slope can be
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air-conditioner.
- Areas where the supply air does not short-circuit.
- ·Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%
- This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air-conditioner is operated under the severer condition than mentioned above.
- If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)

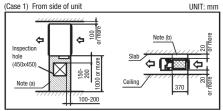
  Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above frver.
- ·Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
- (A beam from lighting device sometimes affects the infrared receiver for the wireless remote control and the air-conditioner might not work properly.)
- ·When operating the suction air processing unit independently, it operates in the outdoor air processing mode. Blowout temperatures are not same at the standard unit operation and the outdoor air
- processing mode operations. Since the temperatures become higher during cooling or lower during heating, take care of
- the direction of blowout outlet.
- Avoid directing the blowout outlet to the space where people are present
- ② Check if the place where the air-conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

# Space for installation and service

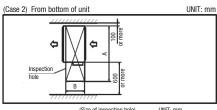
Make installation altitude over 2.5m.

(Indoor Unit)

Select either of two cases to keep space for installation and services.



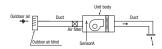
Notes (a) There must not be obstacle to draw out fan motor. ( marked area) (b) Install refrigerant pipe, drain pipe, and wiring so as not to cross



| (Size of inspe | UNIT: mm |        |         |
|----------------|----------|--------|---------|
| Single type    | -        | 71     | 100-140 |
| Multi type     | 45, 56   | 71, 90 | 112-160 |
| FDU-F          | -        | 650    | 1100    |
| A              | 1100     | 1300   | 1720    |
| D              | C1       | 705    |         |

# 3 Cautions for the handling and installation place of outdoor air processing unit

stop with the thermostat based on the value of sensor A and the setting temperature by the remote control



Remote control's setting temperature indicates the outdoor air temperature that controls the start and stop of operation

When the thermostat is turned off, the operation is changed to the fan mode so that the outdoor air is blown out directly into the room. For example if the remote control is set to 22°C in cooling operation, and if the outdoor temperature is 22°C or lower at that time, the unit will go into fan operation.

- 2) When there is a difference between the air-conditioning temperature in the room during cooling operation and the temperature of air blown out from the outdoor air processing unit, dewing water may drip from the unit. To prevent the dewing, provide a sufficient heat insulation means at the air blow outlet.
- 3 Since the air blow outlet on the outdoor air processing unit may blow out the outdoor air directly, orient the outlet in such a way that it will not blow air directly to persons in the room.
- (4) Since the unit controls the thermostat start and stop by monitoring the outdoor air temperature, it is prohibited to monitor the room temperature by means of the room temperature monitoring by changing the thermostat setting at the remote control side and the optional remote thermistor. Otherwise, dewing water may drip from the unit at lower outdoor air temperatures during cooling operation.
- (5) Install the remote control of the outdoor air processing unit at a place closer to the administrator to avoid the end user from

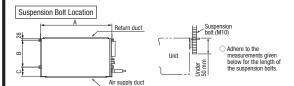
When handing over the unit to the end user, make sure to explain sufficiently about the foregoing cautions, the installation place of the remote control for the outdoor air processing unit and the position of air bl

# 4 Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
- OFor grid ceiling

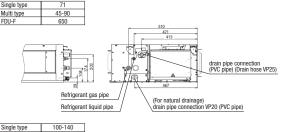
When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

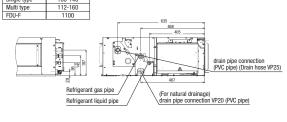
- Oln case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength
- When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt. Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site

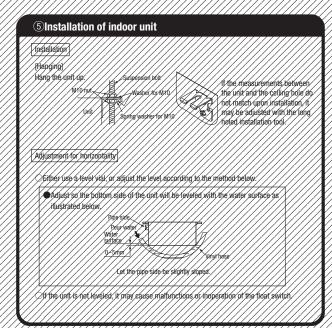


|             |        |        | UNIT: mm |
|-------------|--------|--------|----------|
| Single type | _      | 71     | 100-140  |
| Multi type  | 45, 56 | 71, 90 | 112-160  |
| FDU-F       | ı      | 650    | 1100     |
| A           | 786    | 986    | 1720     |
| В           | 472    | 472    | 725      |
| C           | 135    | 135    | 180      |

Pipe locations UNIT: mm







### **6** Duct Work

- rrugated board (for preventing sputtering) is attached to the main body of th
- on the outlet porty, to not remove it until connecting the duct.

  Arrain titler can be provided on the main body of the air-condition it when connecting the eyet on the inlet port.

### Blowout duct

- Use rectangular duct to connect with unit,
- Drigt size for each unit is as shown below.

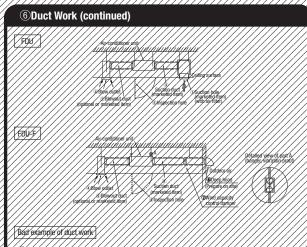
| <i>/////////////////////////////////////</i> | 7777777          | //////         | ///xin/t:/m/n. |
|--|------------------|----------------|----------------|
| Single type                                  | //////           | 1/1///         | 190,148        |
| Multi type /                                 | /45/58//         | /1/21/20//     | 112/160/       |
| //F0K-F//                                    |                  | 650//          | 1/1/1/18//     |
| X//X///                                      | //882//          | //882///       | 1/12/12/       |
| X///\\$///                                   | ///1///          | // 1/12//      | ///p///        |
|  |                  |                |                |
| /////  | <del>'''''</del> | <i>,,,,,</i> , |                |
|  |                  |                |                |
|  |                  |                |                |
| ////   |                  |                |                |

- ●Duct should be at their minimum length
- We recommend to use sound and heat insulated duct to prevent it from

# Connect duct to vipit before ceiling attackripent

| / | <b>М</b> БИКОМ | Mhh   | V / /-/ | '/Y/ | /IX/           | /  / / 190 | - <i>y</i> 4 <i>y</i> / | //// |
|---|----------------|-------|---------|------|----------------|------------|-------------------------|------|
| / | /Multi/        | fype⁄ | /45/54  | 5/X/ | 71,80/         | // //12    | -160/                   | //// |
| 1 | <b>/</b> FD0   | 7     | V / /-/ | /X/  | <b>/650/</b>   | V/y        | (00//                   | //// |
| / | //A            | 77)   | / 882   | 777  | TV2//          | 1/13       | 282//                   | //// |
| / | //B            | ///   | 1/202   | 777  | /202//         |            | ~ / /                   | //// |
| / | 777            | ///   | 777     | //// | ////           | 777        | ////                    | ///  |
| / | ///            | //    | ////    | //// | ////           |            | ///                     |      |
| / | ///            | //    | ////    | ///  | ////           | ////       | ///                     | //// |
| / | ///            | //.   | // 1/7  | ///  | ///            | ////       | 7//                     | //// |
| / | ///            | 4     | ////    | ///  | ///            | <u> </u>   | <del>4</del> %          | //// |
| / | 1//            | KX/   | //X/    | ///  | ////           | ///        | /XX/                    | //// |
| ø | 1//I           | (X)   | /X/     | //// | ////           | ////       | /XX/                    | ///  |
| / | V/I            | 2/2   |         | ///  | ////           |            | (4,4)                   | ///  |
| / | ///            | 99    | ////    | 4/4  | <del>///</del> | ///;       | <del>//</del> */        | //// |
| / | ///            | //    | ////    | //// | '///           | ////       | ///                     | ///  |

- Make sure to insulate the duct to prevent dewing on it. Install the specific blowout duct in a location where the air will circulate to the entire foom.
- Conduct the installation of the specific blowout hole and the eomection of the eluct before attaching them to the ceiling. Insulate the area where the duct is secured by a band for de
- condensation prevention. Make sure provide an inspection hole on the ceiling It is indispensable to egujøment, motor, functional components and cleaning of heat exchanger



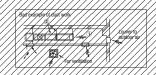
It a duct is not provided at the suction side lout it is substituted with the space hurhibity in the space will increase by the influence of capacity of ventilation ran, strength o wind blowing, against the out door air louver, weather (rainy day) and others.

a)Mildisture in air is likely to condense over the external plates of the unit and to drip on the ceiting. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a dupt. In such occasion, it is necessary to insulate the entire unit with glass wood (25 mm). (Use a virte net or equivalent to hold the glass wood in place, i

bill may run out the allowable limit of unit operation (Example, the case of FDU: Winen outdoor air temperature is 35°CDB, suction air temperature is 27°CWB) and it could result in such troubles as compressor overload, etc.

e)There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louve so that drainage from be heat exchanger may tall to reach the drain pan but leak outside (Esample: drip on to the ceiling) with consequential water leakage in the room) It vibration damping is het conducted between the unit and the duct, and between the unit and

the slab, vibration will be transpritted to the duct and vibration noise may eccur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed,



Connecting the air intake/vent ducts the case of FDU

X)Fresh Air Intake

ľtor air intake duet onkil

Mae the side tresh air intake hote, or supply through a part of the suction duct.

[for şimultangous air intake/vent] Intake air through the suction duct Athe side cannot be used?

Air Vent Use the side air vent hole. (always use together with the air intake

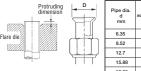
# **7**Refrigerant pipe

### Caution

- Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product or a nut compatible with JIS B 8607, Class 2.
- Regarding whether existing pipes can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data.

  1) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2.

  2) In case of reuse: Flare the end of pipe replaced partially for R410A.



|               | . Min. pipe    | Protruding dimer | nsion for flare, mm | Flare O.D.  | Flare nut<br>tightening torque |  |
|---------------|----------------|------------------|---------------------|-------------|--------------------------------|--|
| Pipe dia<br>d | wall thickness | Rigid (CI        | utch type)          |             |                                |  |
| mm            | mm             | For R410A        | Conventional tool   | mm          | N-m                            |  |
| 6.35          | 0.8            |                  |                     | 8.9 - 9.1   | 14 - 18                        |  |
| 9.52          | 0.8            | ]                |                     | 12.8 - 13.2 | 34 - 42                        |  |
| 12.7          | 0.8            | 0 - 0.5          | 0.7 - 1.3           | 16.2 - 16.6 | 49 - 61                        |  |
| 15.88         | 1              | ]                |                     | 19.3 - 19.7 | 68 - 82                        |  |
| 19.05         | 1.2            | 1                |                     | 23.6 - 24.0 | 100 - 120                      |  |

- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H 3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- ●Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410A refrigerant.



When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function)

# Work procedure

- Remove the flare nut and blind flanges on the pipe of the indoor unit.
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.

  (Gas may come out at this time, but it is not abnormal.)

  Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
- 2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
  - \*\*Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending. Do not twist a pipe or collapse to 2/3D or smaller.
    \*\*Do a flare connection as follows:

  - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving. torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
  - When fastening the flare nut, align the refrigeration nine with the center of flare nut, screw. the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a
- spanner when tightening the nut in order to avoid unexpected stress on the copper pipe. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.

  - Make sure to insulate both gas pipes and liquid pipes completely.
     \*\*Minomplete insulation may cause dew condensation or water dropping.
     Use heat-resistant (120 °C or more) insulations on the gas side pipes.

  - In case of using at high humidity condition, reinforce insulation of refrigerant pipes.
     Surface of insulation may cause dew condition or water dropping, if insulations are not reinfoced.

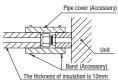
Refrigerant is charged in the outdoor unit.

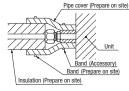
As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It nemygraung macmine on snoun not be applied to the threads of union or external surface of mare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare

Refrigerating machine oil may be applied to the internal surface of flare only.

(The case of using thicness of insulation is 10mm)





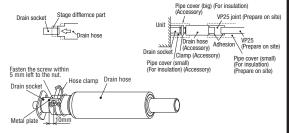
# **®Drain pipe**

### Caution

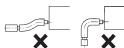
- Install the drain pipe according to the installation manual in order to drain properly. Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen) In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance

### Work procedure

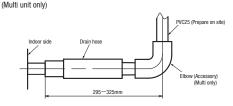
- 1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
  - Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
- Do not apply adhesives on this end.
- Do not use acetone-based adhesives to connect to the drain socket.



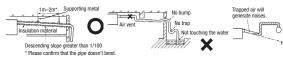
- Prepare a joint for connecting VP-25 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-25 pipe (prepare on site). \*As for drain pipe, apply VP-25 made of rigid PVC which is on the market.
  - Make sure that the adhesive will not get into the supplied drain hose.
  - It may cause the flexible part broken after the adhesive is dried up and gets rigid.
  - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



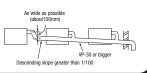
As for drain pipe, apply VP25 (0D32). If apply PVC25 (OD25), connect the expanded connector to the drain hose, with adhesive



- 3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
  - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe
  - Do not set up air vent.



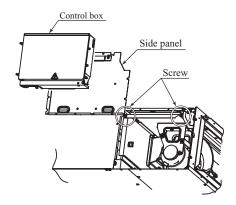
When sharing a drain pine for more. than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



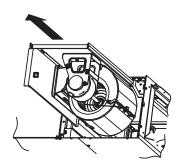
PJG012D004B

# (b) Replacement procedure of the fan unit

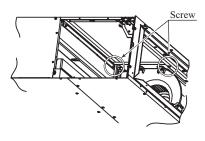
- Notes(1) The unit is a heavy item. It must be supported securely and handled with care not to drop when it is necessary to replace.
  - (2) For the maintenance space, refer to page 58.
- (i) Remove the control box and the side panel, and remove the screws marked in the circles (2 places) from the unit located at the near side.



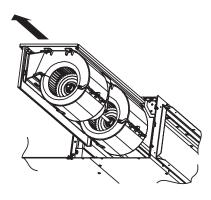
(ii) Take out the fan unit located at the near side in the arrow direction.



(iii) Remove the screws marked in the circles (2 places) from the fan unit located at the far side.



(iv) Take out the fan unit in the arrow direction.



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Places where cosmetics or special sprays are

requently used.
Highly salted area such as beach.
Heavy snow area
Places where the system is affected by

smoke from a chimney.

# (4) Duct connected-Low / Middle static pressure type (FDUM)

PJG012D008C ∕A

This manual is for the installation of an indoor unit

For electrical wiring work (Indoor), refer to the page 76. For remote control installation, refer to the page 84. For wireless kit installation, refer to the page 223. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to the page 98.

# **SAFETY PRECAUTIONS**

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, [AWARNING] and [ACAUTION] AWARNING: Wrong installation would cause serious consequences such as injuries or death ACAUTION: Wrong installation might cause serious consequences depending on circumstances
- Both mentions the important items to protect your health and safety so strictly follow them by any means. ●The meanings of "Marks" used here are as shown on the right:
- Never do it under any circumstances. ●After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

### **⚠ WARNING**

### Installation should be performed by the specialist.

If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.

### Install the system correctly according to these installation manuals.

Improper installation may cause explosion, injury, water leakage, electric shock, and fire

# ●Check the density refered by the foumula (accordance with ISO5149).

If the density exceeds the limit density, please consult the dealer and installate the ventilation system

### • Use the genuine accessories and the specified parts for installation.

If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the

### Ventilate the working area well in case the refrigerant leaks during installation.

If the refrigerant contacts the fire, toxic gas is produced

• Install the unit in a location that can hold heavy weight.

Improper installation may cause the unit to fall leading to accidents

• Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes. Improper installation may cause the unit to fall leading to accidents

# Do not mix air in to the cooling cycle on installation or removal of the air-conditioner.

If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries

Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.

Power source with insufficient capacity and improper work can cause electric shock and fire. • Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in

order not to apply unexpected stress on the terminal. Loose connections or hold could result in abnormal heat generation or fire

Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services

Improper fitting may cause abnormal heat and fire Check for refrigerant gas leakage after installation is completed.

If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced

Use the specified pipe, flare nut, and tools for R410A.

Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle

● Tighten the flare nut according to the specified method by with torque wrench.

If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period

● Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can

Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak

Connect the pipes for refrigeration circuit securely in installation work before compressor is operated

If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.

Stop the compressor before removing the pipe after shutting the service valve on pump down work.

If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.

• Only use prescribed option parts. The installation must be carried out by the qualified installer. If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire

Do not repair by yourself. And consult with the dealer about repair.

Improper repair may cause water leakage, electric shock or fire

Consult the dealer or a specialist about removal of the air-conditioner.

Improper installation may cause water leakage, electric shock or fire. Turn off the power source during servicing or inspection work.

If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan

● Do not run the unit when the panel or protection guard are taken off.

ouching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.

Shut off the power before electrical wiring work.

It could cause electric shock, unit failure and improper running

# **↑** CAUTION

Perform earth wiring surely.

Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock or fire due to a short circuit.

Earth leakage breaker must be installed.

If the earth leakage breaker is not installed, it could cause electric shocks or fire

 Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current

Using the incorrect one could cause the system failure and fire.

 Do not use any materials other than a fuse of correct capacity where a fuse should be used Connecting the circuit by wire or copper wire could cause unit failure and fire.

 Do not install the indoor unit near the location where there is possibility of flammable gas leakages If the gas leaks and gathers around the unit, it could cause fire.

Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.

It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire. Secure a space for installation, inspection and maintenance specified in the manual

sufficient space can result in accident such as personal injury due to falling from the installation place

 Do not use the indoor unit at the place where water splashes such as laundry. Indoor unit is not waterproof. It could cause electric shock and fire.

 Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.

It could cause the damage of the items.

 Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics. Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunicatio equipment might influence the air-conditioner and cause a malfunction and breakdown. Or the air-conditioner might nfluence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.

Do not install the remote control at the direct sunlight.

It could cause breakdown or deformation of the remote control.

Do not install the indoor unit at the place listed below

Places where flammable gas could leak. Places where carbon fiber, metal powder or any powder is floated. Place where the substances which affect the air-conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.

Places exposed to oil mist or steam directly.

On vehicles and ships

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Places where machinery which generates high harmonics is used.

Altitude over 1000m Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit
according to the installation manual for each model because each indoor unit has each limitation)
 Locations with any obstacles which can prevent inlet and outlet air of the unit
 Locations where vibration can be amplified due to insufficient strength of structure.

Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)

minated specification unity.

Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m).

Locations where drainage cannot run off safely.

It can affect performance or function and etc..

Do not put any valuables which will break down by getting wet under the air-conditioner.

on could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damag

 Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use. It could cause the unit falling down and injury.

 Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit. If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.

Install the drain pipe to drain the water surely according to the installation manual.

nproper connection of the drain pipe may cause dropping water into room and damaging user's belor

 Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit. Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to er's health and safety.

 Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping w 0 If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

• For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps and not to make air-bleeding. Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintena

Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.

ncomplete insulation could cause condensation and it would wet ceiling, floor, and any other val

 Do not install the outdoor unit where is likely to be a nest for insects and small animals isects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to

 Pay extra attention, carrying the unit by hand. Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.

Make sure to dispose of the packaging material.

Leaving the materials may cause injury as metals like nail and woods are used in the package

Do not operate the system without the air filter.

It may cause the breakdown of the system due to clogging of the heat exchanger

 Do not touch any button with wet hands It could cause electric shock

Do not touch the refrigerant piping with bare hands when in operation.

The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frost

Do not clean up the air-conditioner with water. It could cause electric shock

Do not turn off the power source immediately after stopping the operation

Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown Do not control the operation with the circuit breaker.

It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury

OThis model is middle static ducted type air-conditioning unit. Therefore, do not use this model for direct blow type air-conditioning unit.

# Before installation Install correctly according to the install correctly according to the installation.

Install correctly according to the installation manual.

Confirm the following points:

OUnit type/Power source specification OPipes/Wires/Small parts OAccessory

### Accessory item

|   | For hanging       | F                                  | or refrigerant pip                    | e       |  | 1                                      |                           |                            |                              |
|---|-------------------|------------------------------------|---------------------------------------|---------|--|--|---------------------------|----------------------------|------------------------------|
|   | Flat washer (M10) | Pipe cover (big)                   | Pipe cover (small)                    | Strap   | Pipe cover (big)                       | Pipe cover (small)                     | Drain hose                | Hose clamp                 |                              |
|   | 0                 | 6                                  | 5                                     | <u></u> | 6                                      | 5                                      |                           | ()                         |                              |
|   | 8                 | 1                                  | 1                                     | 4       | 1                                      | 1                                      | 1                         | 1                          | 1                            |
|   |                   | For heat insulation<br>of gas pipe | For heat insulation<br>of liquid tube |         | For heat insulation<br>of drain socket | For heat insulation<br>of drain socket | For drain pipe connecting | For drain hose<br>mounting | Accessory p<br>inside this s |
| L |                   |                                    |                                       |         |  |  |                           |                            |                              |

# **2**Selection of installation location for the indoor unit

- ① Select the suitable areas to install the unit under approval of the user.
  - Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use
    a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
  - · Areas where there is enough space to install and service.
  - Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
  - · Areas where there is no obstruction of airflow on both air return grille and air supply port.
  - Areas where fire alarm will not be accidentally activated by the air-conditioner.
  - · Areas where the supply air does not short-circuit.
  - · Areas where it is not influenced by draft air.
  - · Areas not exposed to direct sunlight.
  - Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.
     This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air-conditioner is operated under the severer condition than mentioned above. If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
  - $\boldsymbol{\cdot}$  Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
  - Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
  - Areas where there is no influence by the heat which cookware generates.
  - Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
  - Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.

(A beam from lighting device sometimes affects the infrared receiver for the wireless remote control and the air-conditioner might not work properly.)

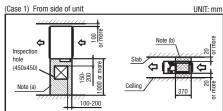
② Check if the place where the air-conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

# Space for installation and service

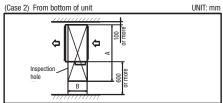
• Make installation altitude over 2.5m.

(Indoor Unit)

Select either of two cases to keep space for installation and services.



Notes (a) There must not be obstacle to draw out fan motor. ( ) marked area)
(b) Install refrigerant pipe, drain pipe, and wiring so as not to cross marked area.



| (Size of inspe | ction hole | )     | UNIT: mm |
|----------------|------------|-------|----------|
| Single type    | 40-50      | 60-71 | 100-140  |
| Multi type     | 22-56      | 71-90 | 112-160  |
| A              | 1100       | 1300  | 1720     |
| D              | 61         | 20    | 705      |

# 3 Preparation before installation

lacktriangle If suspension bolt becomes longer, do reinforcement of earthquake resistant.

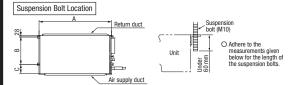
OFor grid ceiling

When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

Oln case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.

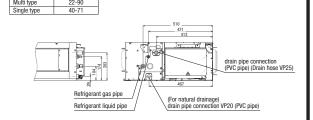
When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.

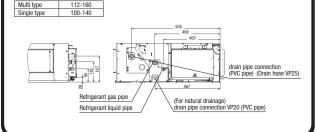
Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

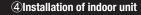


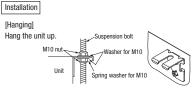
|             |       |        | UNIT: mm |
|-------------|-------|--------|----------|
| Multi type  | 22-56 | 71, 90 | 112-160  |
| Single type | 40-50 | 60, 71 | 100-140  |
| Α           | 786   | 986    | 1404     |
| В           | 472   | 472    | 530      |
| C           | 135   | 135    | 180      |

Pipe locations UNIT: mm





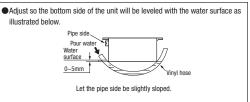




If the measurements between the unit and the ceiling hole do not match upon installation, it may be adjusted with the long holed installation tool.

Adjustment for horizontality

OEither use a level vial, or adjust the level according to the method below.



Olf the unit is not leveled, it may cause malfunctions or inoperation of the float switch.

# **5Duct Work**

- 1) A corrugated board (for preventing sputtering) is attached to the main body of the air-conditione (on the outlet port). Do not remove it until connecting the duct.
  - An air filter can be provided on the main body of the air-conditioner (on the inlet port). Remov it when connecting the duct on the inlet port.

### 2 Blowout duct

 Use rectangular duct to connect with unit. Duct size for each unit is as shown below.

|             |       |       | UNIT: mm |
|-------------|-------|-------|----------|
| Single type | 40-50 | 60-71 | 100-140  |
| Multi type  | 22-56 | 71-90 | 112-140  |
| A           | 682   | 882   | 1202     |
| В           | 172   | 172   | 172      |
| B           |       | A     |          |

- Duct should be at their minimum length.
- We recommend to use sound and heat insulated duct to prevent it from condensation.
- Connect duct to unit before ceiling attachment.

### 3 Inlet port

- When shipped the inlet port lies on the back.
- When connecting the duct to the inlet port, remove the air filter if it is fitted to the inlet port.
- When placing the inlet port to carry out suction from the bottom side, use the following procedure to replace the suction duct joint and the bottom plate.



 Remove the screws which fasten the bottom plate and the duct joint on the



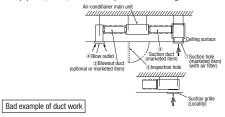
 Replace the removed bottom plate and duct joint

Secure with a band, etc.

Blov



- Fit the duct join with a screw; fit the bottom plate
- Make sure to insulate the duct to prevent dewing on it. (4)Install the specific blowout duct in a location where the air will
- circulate to the entire room Conduct the installation of the specific blowout hole and the
- connection of the duct before attaching them to the ceiling. Insulate the area where the duct is secured by a band for dew
- condensation prevention. (5) Make sure provide an inspection hole on the ceiling. It is indispensable to service electric equipment, motor, functional components and cleaning of heat exchanger



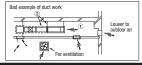
(1) If a duct is not provided at the suction side but it is substituted with the space over the ceiling. humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the out door air louver, weather (rainy day) and others.

a)Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct. In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold the glass wool in place.)

b)It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35°C DB, suction air temperature is 27°C WB) and it could result in such troubles as compressor overload, etc.,

c) There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fall to reach the drain pan but leak outside (Example: drip on to the ceiling) with consequential water leakage in the room.

2)If vibration damping is not conducted between the unit and the duct, and between the unit and the slab, vibration will be transmitted to the duct and vibration noise may occur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed.



# **5 Duct Work (continued)**

### Connecting the air intake/vent ducts

1)Fresh Air Intake

[for air intake duct only]

OUse the side fresh air intake hole, or supply through a part of the suction duct.

[for simultaneous air intake/vent] Olntake air through the suction duct. (the side cannot be used)

de fresh air intake hole .4 Fresh air intake through the 分 \ Air vent hole =: 6 Fresh air intake through the suction duct  $\Diamond$ Air vent hole =6 Fresh air intake through the suction duct

OUse the side air vent hole (always use together with the air intake)

Oinsulate the duct to protect it from dew condensation.

# 6 Refrigerant pipe

2)Air Vent

Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product or a nut compatible with JIS B 8607, Class 2.

Regarding whether existing pipes can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data.

I) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2.

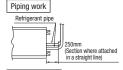
2) In case of reuse: Flare the end of pipe replaced partially for R410A.



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|-----|---|
|     | l |
|     | L |
|     | L |
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|     | Г |
|     | Г |
|     |   |

|   | Pipe dia.   | Min. pipe      | Protruding dimer | sion for flare, mm | Flare O.D.  | Flare nut         |
|---|-------------|----------------|------------------|--------------------|-------------|-------------------|
|   | d Pipe dia. | wall thickness | Rigid (CI        | utch type)         | D           | tightening torque |
|   | mm          | mm             | For R410A        | Conventional tool  | mm          | N-m               |
|   | 6.35        | 0.8            |                  |                    | 8.9 — 9.1   | 14 18             |
|   | 9.52        | 0.8            |                  |                    | 12.8 - 13.2 | 34 - 42           |
| ┦ | 12.7        | 0.8            | 0 - 0.5          | 0.7 - 1.3          | 16.2 - 16.6 | 49 — 61           |
|   | 15.88       | 1              |                  |                    | 19.3 — 19.7 | 68 - 82           |
|   | 19.05       | 1.2            |                  |                    | 23.6 - 24.0 | 100 - 120         |

- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410A refrigerant.



When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function)

# Work procedure

- Remove the flare nut and blind flanges on the pipe of the indoor unit.
- \*\* Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.) Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. \*Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending.
  - Do not twist a pipe or collapse to 2/3D or smaller \*\*Do a flare connection as follows:
- Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the coppe pipe, and then remove them.
- When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe. Cover the flare connection part of the indoor unit with attached insulation material after a gas
- leakage inspection, and tighten both ends with attached straps.
  - Make sure to insulate both gas pipes and liquid pipes completely.
     Incomplete insulation may cause dew condensation or water dropping.
- Use heat-resistant (120 °C or more) insulations on the gas side pipes.
   In case of using at high humidity condition, reinforce insulation of refrigerant pipes.
- Surface of insulation may cause dew condition or water dropping, if insulations are not

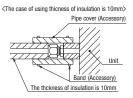
# **6** Refrigerant pipe (continued)

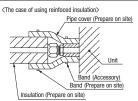
Refrigerant is charged in the outdoor unit.
 As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

### Caution:

Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare by the stress corrosion.

Refrigerating machine oil may be applied to the internal surface of flare only.





# 7 Drain pipe

### Caution

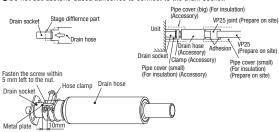
- Install the drain pipe according to the installation manual in order to drain properly.
   Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end
  of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

### Work procedure

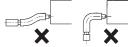
Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part
of drain socket.

Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.

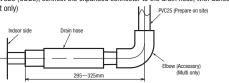
- Do not apply adhesives on this end.
- Do not use acetone-based adhesives to connect to the drain socket.



- Prepare a joint for connecting VP-25 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-25 pipe (prepare on site).
   XAs for drain pipe, apply VP-25 made of rigid PVC which is on the market.
  - Make sure that the adhesive will not get into the supplied drain hose.
    - It may cause the flexible part broken after the adhesive is dried up and gets rigid.
  - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.

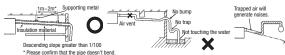


●As for drain pipe, apply VP25 (0D32).
If apply PVC25 (0D25), connect the expanded connector to the drain hose, with adhesive.
(Multi unit only)

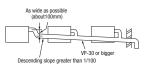


# 7 Drain pipe (continued)

- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
  - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
  - Do not set up air vent.



• When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.

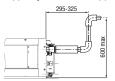


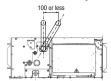
- 4. Insulate the drain pipe.
- Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.

\*\*After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

### Drain up

• The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.





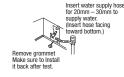
Otherwise, the construction point makes it same as drain pipe construction

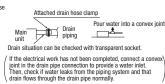
# Drain test

- Conduct a drain test after completion of the electrical work.
- 2. During the trail, make sure that drain flows properly through the piping and that no water leaks from connections.
- ${\it 3. \ \ In \ case \ of \ a \ new \ building, \ conduct \ the \ test \ before \ it \ is \ furnished \ with \ the \ ceiling.}$
- 4. Be sure to conduct this test even when the unit is installed in the heating season.

# Procedures

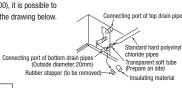
- Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.
- 2. Check the drain while cooling operation.





# Outline of bottom drain piping work

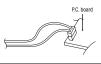
 If the bottom drain piping can be done with a descending gradient (1/50-1/100), it is possible to connect the pipes as shown in the drawing below.



# Uncoupling the drain motor connector

 Uncouple the connector CNR for the drain motor as illustrated in the drawing on the right.

Note: If the unit is run with the connector coupled, drain water will be discharged from the upper drain pipe joint, causing a water leak.

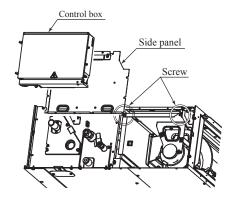


# (b) Replacement procedure of the fan unit

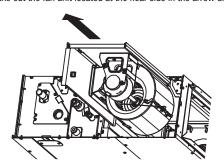
Notes(1) The unit is a heavy item. It must be supported securely and handled with care not to drop when it is necessary to replace.

(2) For the maintenance space, refer to page 63.

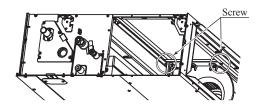
(i) Remove the control box and the side panel, and remove the screws marked in the circles (2 places) from the unit located at the near side.



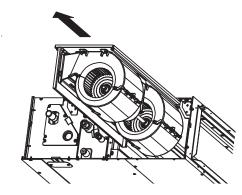
(ii) Take out the fan unit located at the near side in the arrow direction.



(iii) Remove the screws marked in the circles (2 places) from the fan unit located at the far side.



(iv) Take out the fan unit in the arrow direction.



# (5) Floor standing type (FDF)

PGA012D404A

This manual is for the installation of an indoor unit.

For electrical wiring work (Indoor), refer to the page 80. For remote control installation, refer to the page 84. For wireless kit installation, refer to the page 223. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to the page 98.

# **SAFETY PRECAUTIONS**

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels. AWARNING and ACAUTION <u>AWARNING</u>: Wrong installation would cause serious consequences such as injuries or death. <u>ACAUTION</u>: Wrong installation might cause serious consequences depending on circumstances.
- Both mentions the important items to protect your health and safety so strictly follow them by any means. The meanings of "Marks" used here are as shown on the right:
- Never do it under any circumstances.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit. Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed

# **⚠ WARNING**

### Installation should be performed by the specialist

If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit

### Install the system correctly according to these installation manuals.

Improper installation may cause explosion, injury, water leakage, electric shock, and fire

Check the density refered by the foundia (accordance with ISO5149).

If the density exceeds the limit density, please consult the dealer and installate the ventilation system

# Use the genuine accessories and the specified parts for installation.

If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit

# Ventilate the working area well in case the refrigerant leaks during installation.

If the refrigerant contacts the fire, toxic gas is produced

Install the unit in a location that can hold heavy weight.

Improper installation may cause the unit to fall leading to accidents

• Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes. Improper installation may cause the unit to fall leading to accidents

Do not mix air in to the cooling cycle on installation or removal of the air-conditioner.

If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and inju

• Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.

Power source with insufficient capacity and improper work can cause electric shock and fire. • Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in

order not to apply unexpected stress on the terminal

Loose connections or hold could result in abnormal heat generation or fire ● Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services

Improper fitting may cause abnormal heat and fire. • Check for refrigerant gas leakage after installation is completed.

If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced

●Use the specified pipe, flare nut, and tools for R410A.

ing existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle

● Tighten the flare nut according to the specified method by with torque wrench.

If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period

Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can

Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.

Connect the pipes for refrigeration circuit securely in installation work before compressor is operated. If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due

to abnormal high pressure in the system

• Stop the compressor before removing the pipe after shutting the service valve on pump down work. If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.

• Only use prescribed option parts. The installation must be carried out by the qualified installer.

If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.

Do not repair by yourself. And consult with the dealer about repair Improper repair may cause water leakage, electric shock or fire

Consult the dealer or a specialist about removal of the air-conditioner.

Improper installation may cause water leakage, electric shock or fire.

 $\ensuremath{\bullet}$  Turn off the power source during servicing or inspection work. If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan

• Do not run the unit when the panel or protection guard are taken off.

Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get

Shut off the power before electrical wiring work.

It could cause electric shock, unit failure and improper running.

### Perform earth wiring surely.

Earth leakage breaker must be installed.

nless the earth leakage circuit breaker is provided, if could cause a fire or electric shock

 Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all oles under over current

 Do not use any materials other than a fuse of correct capacity where a fuse should be used. Connecting the circuit by wire or copper wire could cause unit failure and fire

Do not install the indoor unit near the location where there is possibility of flammable gas leakage If the gas leaks and gathers around the unit, it could cause fire.

Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.

Secure a space for installation, inspection and maintenance specified in the manual.

Insufficient space can result in accident such as personal injury due to falling from the installation place

Do not use the indoor unit at the place where water splashes such as laundry.

Indoor unit is not waterproof. It could cause electric shock and fire. Do not use the indoor unit for a special purpose such as food storage, cooling for precision

instrument, preservation of animals, plants, and a work of art. It could cause the damage of the items.

Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics

Do not install the remote control at the direct sunlight.

t could cause breakdown or deformation of the remote control.

Do not install the indoor unit at the place listed below.

Places where flammable gas could leak. Places where carbon fiber, metal powder or any powder is floated.

Place where the substances which affect the air-conditioner are general such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres. Places exposed to oil mist or steam directly.

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On vehicles and ships Places where machinery which generates high harmonics is used.

Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit

infrared specification unit)

Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)

Locations where drainage cannot run off safely t can affect performance or function and etc..

Do not put any valuables which will break down by getting wet under the air-conditioner

tion could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings. Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.

It could cause the unit falling down and injury. Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.

Install the drain pipe to drain the water surely according to the installation manual.

Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.

user's health and safety. Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work

occur, which can cause serious accidents For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps.

and not to make air-bleeding. Check if the drainage is correctly done during commissioning and ensure the space for inspection and mainte

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 Ensure the insulation on the pipes for refrigeration circuit so as not to condense water. Incomplete insulation could cause ondensation and it would wet ceiling, floor, and any other valuable

 Do not install the outdoor unit where is likely to be a nest for insects and small animals. Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.

 Pay extra attention, carrying the unit by hand. Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.

Make sure to dispose of the packaging material.

Leaving the materials may cause injury as metals like nail and woods are used in the package Do not operate the system without the air filter.

It may cause the breakdown of the system due to clogging of the heat exchanger

 Do not touch any button with wet hands. It could cause electric shock

Do not touch the refrigerant piping with bare hands when in operation.

The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or fi

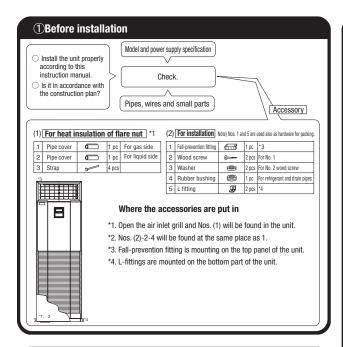
 Do not clean up the air-conditioner with water It could cause electric shock

Do not turn off the power source immediately after stopping the operation.

Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown Do not control the operation with the circuit breaker.

It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

# **⚠ CAUTION** Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Imperfect earth work (grounding) could cause an electric shock or fire if some trouble or earth leakage occurs. 0 a Using the incorrect one could cause the system failure and fire It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire. 0 Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air-conditioner and cause a malfunction and breakdown. Or the air-conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming. Places where cosmetics or special sprays are frequently used. Highly salted area such as beach Heavy snow area Places where the system is affected by smoke from a chimney. Altitude over 1000m according to the installation manual for each model because each indoor unit has each limitation) Locations with any obstacles which can prevent inlet and outlet air of the unit. Locations with evitantion can be amplified us to insufficient strength of structure. Locations where wherein can be empilified used to insufficient strength of structure. Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the Osputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. to avoid damaging, keep the indoor unit packed or cover the indoor unit. Improper connection of the drain pipe may cause dropping water into room and damaging user's belon Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can O



# 2) Selection of installation place for the indoor unit

- Select the suitable areas to install the unit under approval of the user.

  -Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.

  -Areas where there is enough space to install and service.

  -Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.

  -Areas where there is no obstruction of airflow on both air return grille and air supply port.

  -Areas where fire alarm will not be accidentally activated by the air-conditioner.

- Areas where the supply air does not short-circuit.

  Areas where it is not influenced by draft air.

  Areas not exposed to direct sunlight.

- -Areas not exposed to direct sunlight.

  -Areas where dev point is lower than around 23°C and relative humidity is lower than 80%.

  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air-conditioner is operated under the severer condition than mentioned above.

  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.

  -Areas where IY and radio stays away more than 1m. (It could cause jamming and noise.)

  -Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.

- server, or medical equipment under the unit.

  Areas where there is no influence by the heat which cookware generates.

  Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.

  Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.

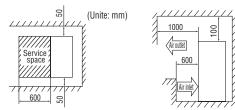
  Abeam from lighting device sometimes affects the infrared receiver for the wireless remote control and the air-conditioner might not work properly.)

  When operating the suction air processing unit independently, it operates in the outdoor air processing mode.
- owout temperatures are not same at the standard unit operation and the outdoor air processing mode
- operations. Since the temperatures become higher during cooling or lower during heating, take care of the direction
- of blowout outlet.

  Avoid directing the blowout outlet to the space where people are present.

  Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

# Space for installation and service



· Secure sufficient spaces for inspection and maintenance

# **<u>∧</u>WARNING**

Install the unit securely on a floor that can endure its weight sufficiently Insufficient strength or incorrect installation could result in injuries if the unit falls.

### ATTENTION: Select a place for installation where the following conditions are fulfilled with customer's consent.

- . Where cool or hot air can be blown sufficiently and widely. Where the piping and wiring work to outdoor unit can be done easily.
- Where drainage water can run off completely.
- . Where the installation floor is strong enough.
- Where the unit its protected from direct exposure to sunlight.
- . Where there is no obstacle at he air inlet and air outlet.
- Where the fire alarm apparatus will not be activated by malfunction. Where There is no risk for short-circuit of air.

# **3**Carrying-in and installation of the unit

### Carrying-in

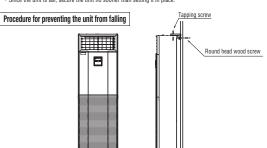
### ATTENTION: · Carry in the unit kept in a package as near as possible to the installa-

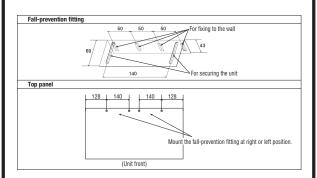


- tion place. When it is necessary to unpack the unit before carrying in, sufficient
- care must be taken not to damage it by using nylon slings or the like. Note) Do not hold on the air inlet grill, air outlet louver or other sections made of plastics.
- When placing the unit on the floor after unpacking, be sure to have its front face at the top.

### ATTENTION:

Be sure to fix the unit with L-fittings and the fall-prevention fitting.

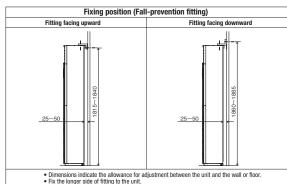




(1) Fixing the unit with the fall-prevention fitting



- ①Loosen screws (2 pcs) and remove the fall-prevention fitting.
- 2 Select a position to fix the fall-prevention fitting as illustrated and fix it to the top of unit and the
  - · The fixing positon of the fall-prevention fitting is as illastrated below



Fix the longer side of fitting to the unit.
 When the fitting is faced downward, fix it to the wall first.

# (3) Carrying-in and installation of the unit (Continued) (2) Fixing the unit with the L-fittings ①Remove the L-fittings mounted on the unit with screws. ②Turn over the L-fitting and fix it to the unit and either the floor or the wall as illustrated. Fixing position of the L-fittings are as illustrated below. Fixing position (L fitting) ₹2<u>× ø</u>8 ATTENTION: Install the unit on the level. Inclination must be less than 1°in fore-aft and right-left directions.

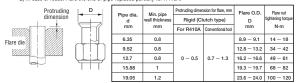
# 4 Refrigerant piping

Caution

•Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product or a nut compatible with JIS B 8607, Class 2.

Regarding whether existing pipes can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data

1) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2 In case of reuse: Flare the end of pipe replaced partially for R410A



- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H 3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A. Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- ■Use special tools for R410A refrigerant.

# Work procedure

- 1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
  - 38 Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
- Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)

  Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit. \*Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending Do not twist a pipe or collapse to 2/3D or smaller.

  - ※ Do a flare connection as follows:■ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
  - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
- Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.

  - Make sure to insulate both gas pipes and liquid pipes completely.

    incomplete insulation may cause dew condensation or water dropping.

    Use heat-resistant (120 °C or more) insulations on the gas side pipes.

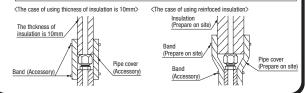
  - In case of using at high humidity condition, reinforce insulation of refrigerant pipes.
     Surface of insulation may cause dew condition or water dropping, if insulations are not reinfoced.
- 4. Refrigerant is charged in the outdoor unit.

As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

# Caution:

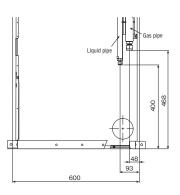
Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare

Refrigerating machine oil may be applied to the internal surface of flare only.



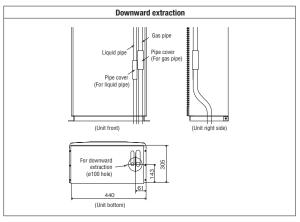
# (Continued)

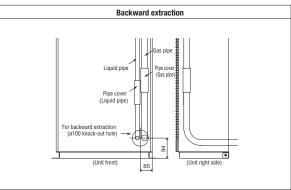
Pine and wire extracting position

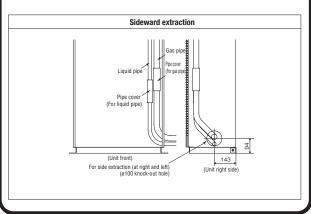


 Do not cut off the flange at the hole on the base plate for the downward extraction









# **⑤Drain pipe**

# **∴**WARNING

. Do not insert the drain pipe directly in the drain ditch where toxic gases such as sulffuric gas are produced.
Toxic gas may flow into the room.

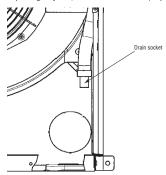
# **<u>∧</u>CAUTION**

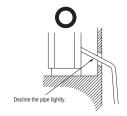
• Install the drain pipe properly according to the installation manu And insulate it to prevent from dew condensation.

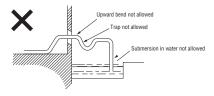
Improper installation of drain pipe may cause damage of furniture drainage water leaked or dew condensation.

### Procedure

- 1. Connect the drain socket to the drain pipe (VP-20) provided at site and fix the joint with adhesive tape, or the like.
- 2. When the pipe provided at site runs through a room, insulate the pipe with a commercial insulator (Polyethylene foam: Specific gravity 0.03, thickness 15 mm or more) to prevent dewing.







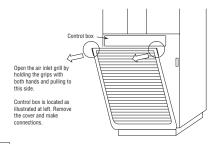
- Insulate the drain pipe to prevent dewing. (Especially in room and unit)
- ullet Incline the drain pipe downward to the outlet (1/50 1/100). Upward bend or trap is not allowed on the way.
- Use a commercial hard polyvinyl chloride pipe, PV-20, for the drain pipe. <Use of adhesive agent is prohibited.>

# **6**Wire extracting position and wire connecton

# Control box position and power cable connection

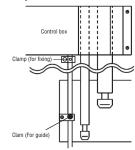
- Electric work must be made by qualified electricians according to the "Engineering standards concerning electric equipment", "Extension wiring regulations" and the electric wiring work manual. Be sure to use dedicated electric circuits.
- Make sure to use specified wires for wiring, and connect them securely. Clamp the wires to protect the terminal connection from external force.
- Make sure to protect the unit with the D-type grounding work.
- For details of wiring work, refer to the attached electric wiring work manual.

# **6Wire extracting position and wire connecton (Continued)**

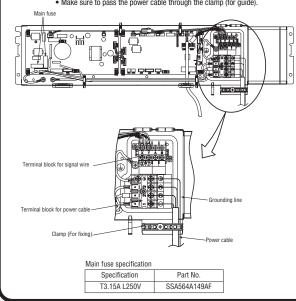


# Procedure

- ①Remove the control box cover (fixed with a screw).
- 2Introduce wires in the unit and connect securely on the terminals.
- (3) Fix each wire with a clamp (for fixing).
- 4Install removed parts as they were.



· Make sure to pass the power cable through the clamp (for guide).



# **7**Check list after installation

Check the following items after all installation work completed.

| Check if;  | Expected trouble                  | Check |
|--|-----------------------------------|-------|
| The indoor and outdoor units are fixed securely?                   | Falling, vibration, noise         |       |
| Inspection for gas leakage is done?                                | Insufficient capacity             |       |
| Insulation work is properly done?                                  | Water leakage                     |       |
| Water is drained properly?   | Water leakage                     |       |
| Power source voltage is same as mentioned in the model name plate? | PCB burnt out, not working at all |       |
| There is mis-wiring or mis-connection of piping?                   | PCB burnt out, not working at all |       |
| Earth wiring is connected properly?                                | Electric shock                    |       |
| Cable size comply with specified size?                             | PCB burnt out, not working at all |       |
| Any obstacle blocks airflow on air inlet and outlet?               | Insufficient capacity             |       |

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- . This installation manual illustrates the method of installing an indoor unit.
- For electrical wiring work, see instructions set out on the backside.
- For outdoor unit installation and refrigerant piping, refer to page 98.
- · A wired remote control unit is supplied separately as an option part.
- While installing the unit, be sure to check the selection of installation place. power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage etc.) and installation snaces

### SAFETY PRECAUTIONS

- follow it during the installation work in order to protect yourself The precautionary items mentioned below are distinguished into two levels.
- **MARNING** and **MCAUTION**. MARNING : Wrong installation would cause serious consequences such

as injuries or death.

A CAUTION : Wrong installation might cause serious consequences depending on circumstances.

Both mention the important items to protect your health and safety so strictly follow them by any means.

· Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.

• Before installation, read the "SAFETY PRECAUTIONS" carefully and strictly • Keep the installation manual together with owner's manual at a place where

- · Pay attention not to fall down the tools, etc. when installing the unit at the
- If unusual noise can be heard during operation, consult the dealer.
- . The meanings of "Marks" used here are shown as follows:





- · Installation must be carried out by the qualified installer. water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- Install the system in full accordance with the installation manual. Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- Be sure to use only for household and residence.
- and etc. it can cause malfunction.

leaks, electric shocks, fire and personal injury.

- Ventilate the working area well in the event of refrigerant leakage during installation.

If the refrigerant comes into contact with naked flames, poisonous gas is

When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage referred by the formula (accordance with ISO5149).

install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident

the system.

other hot surface, poisonous gas is produced.

- any user can read at any time. Moreover if necessary, ask to hand them to a new user



Always do it according to the

### ★ WARNING

- If this appliance is installed in inferior environment such as machine shop Be sure to shut off the power before starting electrical work.
- Use the original accessories and the specified components for

If parts other than those prescribed by us are used, It may cause water

- Install the unit in a location with good support. Unsuitable installation locations can cause the unit to fall resulting in material damage and personal injury.

produced

If the density of refrigerant exceeds the limit, consult the dealer and

After completing installation, check that no refrigerant leaks from

If refrigerant leaks into the room and comes into contact with an oven or

Use the prescribed pipes, flare nuts and tools for R410A Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.

- · Before starting the installation work, proper precautions (using suitable protective clothing, groves etc.) should be taken by qualified installer.
- high position



# Take care when carrying the unit by hand.

- · Locations where carbon fiber, metal powder or any powder is floating.
- · Locations where any substances that can affect the unit such as sulphide nas chloride nas acid and alkaline can occur

· Carry out the electrical work for ground lead with care.

faults such as electric shocks due to short-circuiting.

Using the incorrect one could cause the system failure and fire.

accordance with the local codes and regulations.

Install isolator or disconnect switch on the power source wiring in

The isolator should be locked in OFF state in accordance with EN60204-1.

Install the drainage pipe to run off drainage securely according to the

Be sure to install indoor unit properly according to instruction manual so

Improper installation of indoor unit can cause dropping water into the room and

Incorrect installation of the drainage pipe can cause dropping water into the room

Be sure to install the drainage pipe with descending slope of 1/100 or more.

After maintenance, all wiring, wiring ties and the like, should be returned to

their original state and wiring route, and the necessary clearance from all

Secure a space for installation, inspection and maintenance specified in the

Insufficient space can result in accident such as personal injury due to falling

Check if the drainage runs off securely during commissioning and ensure the

disconnect all poles under over current.

that drainage can run off smoothly.

damaging personal property.

and damaging personal property.

metal parts should be secured

from the installation place.

and not to make trans and air-bleedings

space for inspection and maintenance.

installation manual

- Vehicles and ships.
- · Locations where cosmetic or special sprays are often used.
- . Locations with direct exposure of oil mist and steam such as kitchen and machine nlant
- · Locations where any machines which generate high frequency harmonics are used.
- · Locations with salty atmospheres such as coastlines.
- · Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
- · Locations where the unit is exposed to chimney smoke
- · Locations at high altitude (more than 1000m high).
- Locations with ammonic atmospheres (e.g. organic fertilizer).
- · Locations with calcium chloride (e.g. snow melting agent).
- . Locations where heat radiation from other heat source can affect the unit. Locations without good air circulation . Locations with any obstacles which can prevent inlet and outlet air of the unit.
- · Locations where short circuit of air can occur (in case of multiple units
- · Locations where strong air blows against the air outlet of outdoor unit. · Locations where something located above the unit could fall.
- It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)
- · Locations with any obstacles which can prevent inlet and outlet air of the unit. · Locations where vibration can be amplified due to insufficient strength of structure.
- . Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
- Locations where an equipment affected by high harmonics is placed (TV) set or radio receiver is placed within 1m).
- · Locations where drainage cannot run off safely.
- It can affect performance or function and etc.
- Do not install the unit near the location where leakage of combustible gases can occur.

Use the circuit breaker of correct capacity. Circuit breaker should be able to If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.

Dispose of any packing materials correctly.

of the wind for the high rise anartment etc.

**↑** CAUTION

Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit

Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.

- For installation work, be careful not to get injured with the heat exchanger piping flare portion or screws etc.
- · Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.

Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.

- When perform the air-conditioner operation (cooling or dehumidifying operation) in which ventilator is installed in the room. In this case, using the air-conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lanse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room large into pegative pressure status due to register
- · Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.

If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

 Do not install the unit in the locations listed below. If leaked gases accumulate around the unit, it can cause fire

· Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.

Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.

- Do not use the indoor unit at the place where water splashes may occur such as in laundries
- Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics. Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause iamming.
- · Do not place any variables which will be damaged by getting wet under the indoor unit.

When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of

- . Do not install the remote control at the direct sunlight. It can cause malfunction or deformation of the remote control.
- · Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants

It can cause the damage of the items.

· Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used. Connecting the circuit with copper wire or other metal thread can cause unit

failure and fire Do not touch any buttons with wet hands.

It can cause electric shocks. Do not touch any refrigerant pipes with your hands when the system is in operation

During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

. Do not wash the inside of the air-conditioner Water leakage and permanent damage may result. Electrical hazard exists

- Tighten the flare nut by torque wrench with specified method. If you install the system by yourself, it may cause serious trouble such as If the flare nuts were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
  - The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to

the dedicated circuit. Power source with insufficient capacity and incorrect function done by

- improper work can cause electric shocks and fire. Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.
- Unconformable cables can cause electric leak, anomalous heat production or fire.
- This appliance must be connected to main power source by means of a circuit breaker or switch [fuse Model 63(21):16A, Model 71(24), 80(28), 92, 100:20A1 with a contact separation of at least 3mm.
- When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.
- · Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks
- Loose connections or cable mountings can cause anomalous heat production or fire
- Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly Incorrect installation may result in overheating and fire
- Re sure to switch off the power source in the event of installation. inspection or servicing. If the power source is not shut off, there is a risk of electric shocks, unit
- failure or personal injury due to the unexpected start of fan . Be sure to wear protective goggles and gloves while at work.
- · Earth leakage breaker must be installed

the nower cord by treading it

- If the earth leakage breaker is not installed, it can cause electric shocks. • Do not bundle or wind or process the power cord. Do not deform
- This may cause fire or heating Do not vent R410∆ into the atmosphere : R410∆ is a fluorinated. greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.
- . Do not run the unit with removed panels or protections. Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks. · Do not perform any change of protective device itself or its setup

The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst



Poisonous gases will flow into the room through drainage pipe and

seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak. Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.

If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.

- Do not process or splice the power cord, or share the socket with
- This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.

### **BEFORE INSTALLATION**

Before installation check that the power source matches the air-conditioner

| S   | tandard accessories (Installation kit)<br>Accessories for indoor unit | Q'ty |
|-----|---|------|
| 1   | Installation board (Attached to the rear of the indoor unit)          | 1    |
| 2   | Wireless remote control   | 1    |
| 3   | Remote control holder   | 1    |
| 4   | Tapping screws<br>(for installation board ø4 X 25mm)                  | 10   |
| (5) | Wood screws<br>(for remote control holder ø3.5 X 16mm)                | 2    |
| 6   | Battery [R03 (AAA, Micro) 1.5V]                                       | 2    |
| 7   | Air-cleaning filters  | 2    |
| 8   | Filter holders  | 2    |
| 9   | Insulation (#486 50 x 100 t3)   | 1    |

|     | Locally procured parts                             | Q'ty |
|-----|--|------|
| а   | Sealing plate                                      | 1    |
| (b) | Sleeve   | 1    |
| ©   | Inclination plate                                  | 1    |
| (d) | Putty  | 1    |
| e   | Drain hose (extension hose)                        | 1    |
| Ð   | Piping cover (for insulation of connection piping) | 1    |

|    | Necessary tools for the installation work   |
|----|---|
| 1  | Plus headed driver  |
| 2  | Knife   |
| 3  | Saw   |
| 4  | Tape measure  |
| 5  | Hammer  |
| 6  | Spanner wrench  |
| 7  | Torque wrench (14.0 ~ 82.0N·m<br>(1.4 ~ 8.2kgf·m)   |
| 8  | Hole core drill (65mm in diameter)  |
| 9  | Wrench key (Hexagon) [4m/m]   |
| 10 | Flaring tool set Designed specifically for R410A  |
| 11 | Gas leak detector (Designed specifically for R410A)                                       |
| 12 | Gauge for projection adjustment (Used when flare is made by using conventional flare tool |
| 13 | Pipe bender   |

# SELECTION OF INSTALLATION LOCATION (Install at location that meets the following conditions, after getting approval from the customer)

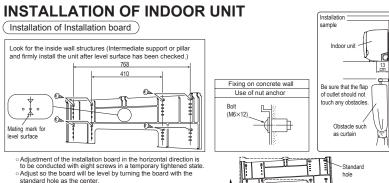
#### Indoor unit

- Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
- A solid place where the unit or the wall will not vibrate.
- o A place where there will be enough space for servicing. (Where space mentioned below can be secured)
- Where wiring and the piping work will be easy to conduct.
   The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
- A place where it can be easily drained.
- A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
  Places where this unit is not affected by the high frequency equipment or electric equipment.

  Avoid installing this unit in place where there is much oil mist.
- Places where there is no electric equipment or household under the installing unit.
   Install the indoor unit on the wall where the height from the floor to the bottom of the unit is more than 1.8m.

#### Wireless remote control

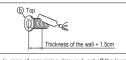
- A place where the air-conditioner can be received the signal surely during operating the wireless remote control.
- Places where there is no affected by the TV and radio etc.
- o Do not place where exposed to direct sunlight or near heat devices such as a stove



#### Drilling of hole and fixture of sleeve (Locally procured parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.









- o Drill a hole with whole core drill.
- o In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar

#### Installing the support of piping

#### In case of piping in the right rear direction

Drain hose

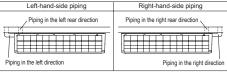


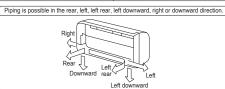
- o Hold the bottom of the piping and fix direction before stretching it and shaping it.
- o Tape only the portion that goes through the wall.
  Always tape the wiring with the piping.

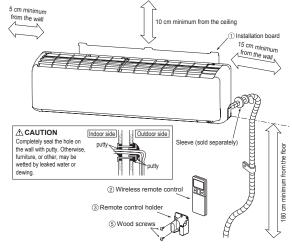
Taping of the exterior

Sufficient care must be taken not to damage the panel when connecting pipes.

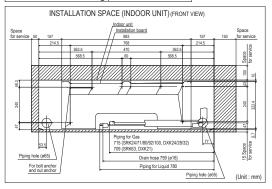
#### · Matters of special notice when piping from left or central/rear of the unit. [Top view]







#### Relation between setting plate and indoor unit



#### [Drain hose changing procedures]

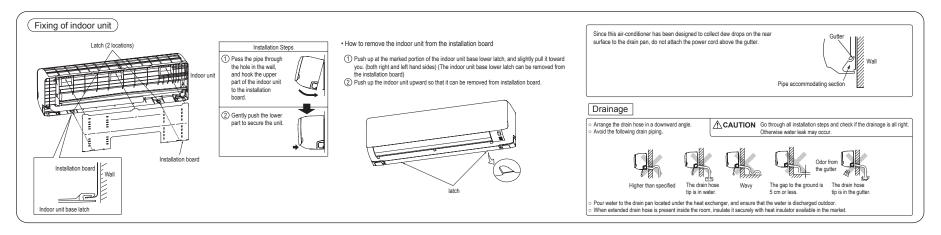


Remove the screw and drain hose, making it rotate.

o Remove it with hand or pliers 4. Connect the drain hose.



- Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench etc. Note: Be careful that If it is not inserted securely, water leakage may occur
- o Insert the drain hose securely, making rotate. And install the screw. Note: Re careful that If it is not inserted securely, water leakage may occur



**⚠ CAUTION** 

oil to the flared surface

Do not apply refrigerating machine



Indoor Liquid side ø6.35 : 9.1 (mm) ø9.52 : 13.2 (mm) Gas side ø9.52 : 13.2 (mm) (Do not turn ø12.7 : 16.6 (mm) ø15.88: 19.7 (mm) o Remove the flared nuts. (on both liquid and gas sides) Install the removed flared nuts to the pipes to be connected

then flared the pipes.

· Flaring work Measurement B Flaring

|                      | Measurement B (mm)         |                               |               |  |
|----------------------|----------------------------|-------------------------------|---------------|--|
| Copper pipe diameter | Clutch type flare tool for | Conventional (R22) flare tool |               |  |
|                      | R410A                      | Clutch type                   | Wing nut type |  |
| ø6.35                | 0.0 - 0.5                  | 1.0 - 1.5                     | 1.5 - 2.0     |  |
| ø9.52                | 0.0 - 0.5                  | 1.0 - 1.5                     | 1.5 - 2.0     |  |
| ø12.7                | 0.0 - 0.5                  | 1.0 - 1.5                     | 2.0 - 2.5     |  |
| ø15.88               | 0.0 - 0.5                  | 1.0 - 1.5                     | 2.0 - 2.5     |  |

Use a flare tool designed for R410A or a conventional flare tool. Note that measurement B (protrusion from the flaring block) will vary depending on the type of

a flare tool in use

If a conventional flare tool is used, use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

### Connection



Connect the pines on both liquid and gas sides

 Tighten the nuts to the following torque. Liquid side (ø6.35): 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m) (ø9.52): 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m) Gas side (ø9.52): 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m) (ø12.7): 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m) (ø15.88): 68.0 - 82.0 N·m (6.8 - 8.2 kgf·m)

#### **⚠ CAUTION**

Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may crack.

If FDC71VNP is connected, use reducer at gas side of indoor unit to change the pipe size from ø15.88 to ø12.7. (Reducer is attached in the outdoor unit accessory)

#### Insulation of the connection portion

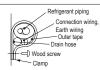




Use an attached insulation pad for heat insulation.

· Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached insulation pad placed over the heat insulating material's slit area.

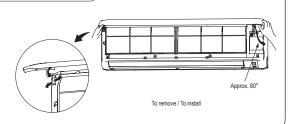
### Finishing work and fixing

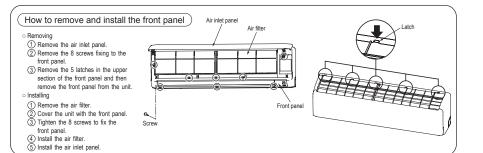


Cover the exterior portion with outer tane and shape the piping to match with the contours of the route that piping will take. Also fix the wiring and pipings to the wall with

#### Open/close and detachment/attachment of the air inlet panel

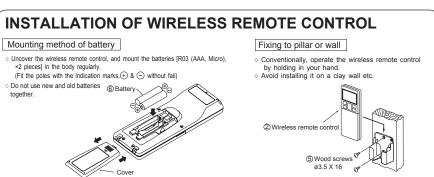
- o To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
- (The panel stops at approx. 60° open position)
- To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works
- o To remove, pull up the panel to the position shown in right illustration and pull it toward you.
- o To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works.

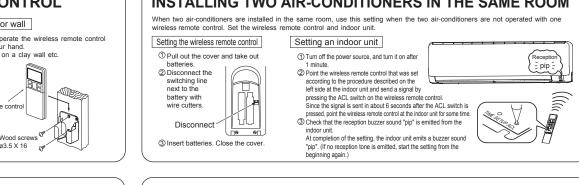




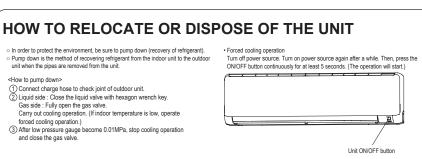
#### **ELECTRICAL WIRING WORK** Installing the air-cleaning filters The screw of the lid is Terminal block tightened securely (1) Open the air inlet panel and remove the air filters. o In case of faulty wiring connection. Preparation of indoor unit 2 Install the air-cleaning filter in the filter holders, and then install the filter indoor unit does not operate. Then, holders in the air-conditioner. run lamp turns on and timer lamp Each air-cleaning filter can be installed in the left or right filter holder. Mounting of connecting wires (3) Install the air filters and close the inlet panel. 1 Open the air inlet panel. Use cables for interconnection wiring to avoid loosening of the wire (2) Remove the lid. CENELEC code for cables Required field cables. (3) Remove the wiring clamp. 4 Connect the connecting wire securely to the terminal block. H05RNR4G1.5 (example) or 245IEC57 1) Connect the connection wire securely to the terminal H Harmonized cable type 05 300/500 volts block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat Natural-and/or synth, rubber wire insulation Polychloroprene rubber conductors insulation n up and catch fire. Stranded core 2) Take care not to confuse the terminal numbers for indoor 4or5 Number of conductors and outdoor connections. One conductor of the cable is the earth condu 5 Fix the connecting wire by wiring clamp. (yellow/green) Connecting wire 6 Attach the lid. 1.5 Section of copper wire (mm²) · Earth wire shall be Yellow/Green (Y/G) in color and longer than other AC wires for safety reason. · Pass the connecting wire through the path from (7) Close the air inlet panel.

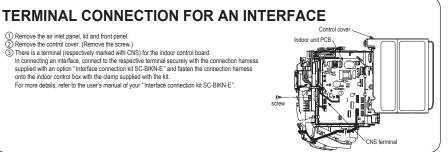






shown in the illustration.





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| INSTALLATION TEST CHECK POINTS  Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly. At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual. |  |   |  |  |
|--|--|---|--|--|
| After installation   |  | Test run  |  |  |
| The power source voltage is correct as the rating.   | The screw of the lid is tightened securely.  | Air-conditioning operation is normal. The wireless remote control is normal.  |  |  |
| No gas leaks from the joints of the service valve.   | Service valve is fully open.                 | No abnormal noise. Operation of the unit has been explained to the customer. (Three-minutes restart preventive timer)   |  |  |
| Power cables and crossover wires are securely fixed to   | The pipe joints for indoor and outdoor pipes | When the air-conditioner is restarted or when changing the operation, the unit will not start operating for             |  |  |
| the terminal board.  | have been insulated.                         | Protective functions are not working. approximately 3 minutes. This is to protect the unit and it is not a malfunction. |  |  |

### (7) Effective range of cool/hot wind (Reference)

### (a) FDT series

Guideline for ceiling height

| For ground gotting | Model     |
|--------------------|-----------|
| Fan speed setting  | FDT100VF2 |
| Hi                 | 3.2m      |
| P-Hi               | 4.3m      |

Notes (1) If the ceiling height is over 3m, please consider to add circulators.

This table shows reference values in case of four outlet.

If you shut some outlets, they are different.

Fan speed setting can be changed by using a wired remote control.

### (b) FDE series

| Model    | Effective range |
|----------|-----------------|
| FDE100VG | 9.0m            |

[Conditions] 1. Height of unit: 2.4 – 3.0 (m) above floor level

2. Fan speed: Hi

3. Location: Free space without obstacles

4. The effective range means the horizontal distance for wind to reach the floor.

5. Wind speed at the effective range: 0.5 m/s

### (c) FDF series

| Model     | Effective range |
|-----------|-----------------|
| FDF100VD2 | 8m              |

[Conditions] 1. Fan speed: Hi

2. Location: Free space without obstacles

3. The effective range means the horizontal distance for the wind to reach the floor.

4. Wind speed at the effective range: 0.5 m/s

### 10.2 Electric wiring work installation

(1) FDT, FDE, FDU, FDUM series

Electrical wiring work must be performed by an electrician qualified by a local power provider according to the electrical installation technical standards and interior wiring regulations applicable to the installation site.

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.

[AWARNING]: Wrong installation would cause serious consequences such as injuries or death. ACAUTION: Wrong installation might cause serious consequences depending on circumstances. Both mentions the important items to protect your health and safety so strictly follow them by any means.

- The meanings of "Marks" used here are as shown on the right: Never do it under any circumstances. • Always do it according to the instruction.
- Accord with following items. Otherwise, there will be the risks of electric shock and fire caused by overheating or short circuit.

#### **↑**WARNING

●Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.

Power source with insufficient capacity and improper work can cause electric shock and fin

- Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal. Loose connections or hold could result in abnormal heat generation or fire
- Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property. Improper fitting may cause abnormal heat and fire.
- •Use the genuine option parts. And installation should be performed by a

specialist.

If you install the unit by yourself, it could cause water leakage, electric shock and fire

- Do not repair by yourself. And consult with the dealer about repair. Improper repair may cause water leakage, electric shock or fire.
- ●Consult the dealer or a specialist about removal of the air-conditioner. Improper installation may cause water leakage, electric shock or fire
- Turn off the power source during servicing or inspection work. If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- Shut off the power before electrical wiring work. It could cause electric shock, unit failure and improper running.

### **△CAUTION**

Perform earth wiring surely. Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.

Earth leakage breaker must be installed.

Use power source line of correct capacity.

- If the earth leakage breaker is not installed, it can cause electric shocks
- Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.) Absence of breaker could cause electric shock
- Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.
  Using the incorrect one could cause the system failure and fire
- Do not use any materials other than a fuse of correct capacity where a fuse
- Connecting the circuit by wire or copper wire could cause unit failure and fire.
- Using incorrect capacity one could cause electric leak, abnormal heat generation and fire. Do not mingle solid cord and stranded cord on power source and signal side
- In addition, do not mingle difference capacity solid or stranded cord.
- Inappropriate cord setting could cause loosing screw on terminal block, bad electrical contact, smoke and fire. Do not turn off the power source immediately after stopping the operation.
- Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or
- Do not control the operation with the circuit breaker.

  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

# Control mode switching

The control content of indoor units can be switched in following way. ( is the default setting)

| Switch No. | Contro  | l Content                                      |
|------------|---------|--|
| SW2        | Indoor  | unit address (0-Fh)                            |
| SW5-1      | Macto   | r/Slave Switching (plural /Slave unit Setting) |
| SW5-2      | IVIASIC | 73lave Switching (plurar/slave unit Setting)   |
| SW6-1-4    | Model   | capacity setting                               |
| SW7-1      | ON      | Operation check, Drain motor test run          |
| 5W7-1      | 0FF     | Normal operation                               |

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#### **①Electrical Wiring Connection**

- Electrical wiring work must be performed by an electlician an qualified by a local power provider. These wiring specifications are determined on the assumption that the following instructions are observed:

  - ① Do not use cords other than copper ones.
    Do not use any supply line lighter than one specified in parentheses for each type below
    -braided cord code designation flock5 EIC 51), if allowed in the relevant part 2;
    -ordinary tough rubber sheathed cord (code designation 60245 EIC 53);
    -flat twin times cord (code designation 60227 EIC 41);
    -ordinary polyvinyl chloride sheathed cord (code designation 60227 EIC 53);
    -conditionary polyvinyl chloride sheathed cord (code designation 60227 EIC 53);
- чипка у рыукнук илилие знешней сого (code designation 60/22 / RC 53); (2)

  3) Pay extra attention so as not to confuse signal line and power source line connection, because an error in their connection can be burn all the boards at once.
- Screw the line to terminal block without any looseness, certainly.
- Do not turn on the switch of power source, before all of line work is done.
- Provide a dedicated branching circuit and never share a branching circuit with other equipment. If shared, disconnection at the circuit breaker may occur, which can cause secondary damage.
- Use three-core cable as wiring between indoor and outdoor unit. As for detail, refer to "INSTALLATION MANUAL" of outdoor Unit
- Set earth of D-type.

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 $\bigcirc$ 

 Do not add cord in the middle of line (of indoor power source, remote control and signal) route on outside of unit. If connecting point is flooded, it could cause problem as for electric or communication.

(In the case that it is necessary to set connecting point on the signal line way, perform thorough waterproof measurement.)

- Run the lines (power source, remote control and "between indoor and outdoor unit") upper ceiling through iron pipe or other tube protection to avoid the damage by mouse and so on.
- Keep "remote control line" and "power source line" away from each other on constructing
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- Connection of the line ("Between indoor and outdoor unit", Earth and Remote control)
- Connection of the line ("Between indoor and outdoor unit", Earth and Hemote control)

  Of Renowe lid of control box before connect the above lines, and connect the lines to terminal block according to number pointed on label of terminal block.
  In addition, pay enough attention to confirm the number to lines, because there is electrical polarity except earth line.
  Furthermore, connect earth line to earth position of terminal block of power source.

  Of Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as earth leakage breaker.

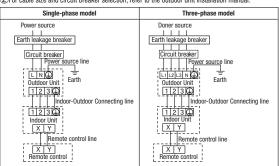
  Of It the function of selected earth leakage breaker is only for earth-fault protection, hand switch (switch listed and type "B" fuse) or circuit breaker is required in series with the earth leakage breaker.

  Of Install isolator of scionnect switch on the power source winking in accordance with the local codes and regulations.

  The isolator should be set in the box with key to prevent touching by another person when servicing.

### Cable connection for single unit installation

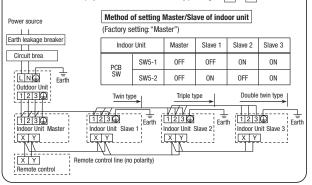
- ①As for connecting method of power source, select from following connecting patterns. In principle, do not directly connect power souce line to inside unit.
- country with referring to technical documents, and follow its instruction.
- 2) For cable size and circuit breaker selection, refer to the outdoor unit installation manual



### Cable connection for a V multi configuration installation

- ①Connect the same pairs number of terminal block "①, ②, and ③"and " X and Y" between master and slave indoor units.
- 2Do the same address setting of all inside units belong to same refrigerant system by rotary switch SW2 on indoor unit's PCB (Printed circuit board).

  ③Set slave indoor unit as "slave 1" through "slave 3" by address switch SW5-1, 5-2 on PCB.
- When the AIR CON NO. button on the remote control unit is pressed after turning on the power, an indoor unit's address number will be displayed. Do not fail to confirm that the connected indoor unit's numbers are displayed on the remote control unit by pressing the 🔳 or 🔻 button.



### **②Remote Control, Wiring and functions**

- DO NOT install it on the following places
- 1)Places exposed to direct sunlight
- ②Places near heat devices
- (3)High humidity places
- 4 Hot surface or cold surface enough to generate condensation
- ⑤Places exposed to oil mist or steam directly.
- 6 Uneven surface

### Installation and wiring of remote control

1) Install remote control referring to the attached installation manual.

②Wiring of remote control should use  $0.3 \text{mm}^2 \times 2$  core wires or cables. The insulation thickness is 1mm or more. (on-site configuration)

3 Maximum prolongation of remote control wiring is 600 m.

If the prolongation is over 100m, change to the size below.

But, wiring in the remote control case should be under 0.5mm <sup>2</sup> . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

 100 - 200m
  $0.5 \text{mm}^2 \times 2 \text{ cores}$  

 Under 300m
  $0.75 \text{mm}^2 \times 2 \text{ cores}$  

 Under 400m
  $1.25 \text{mm}^2 \times 2 \text{ cores}$  

 Under 600m
  $2.0 \text{mm}^2 \times 2 \text{ cores}$ 

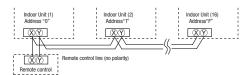
- Avoid using multi-core cables to prevent malfunction.
- ⑤Keep remote control line away from earth (frame or any metal of building).
- ⑥Make sure to connect remote control line to the remote control and terminal block of indoor unit. (No polarity)

### Control plural indoor units by a single remote control.

 $\textcircled{1}\!\!\!\!$  A remote control can control plural indoor units (Up to 16).

In above setting, all plural indoor units will operate under same mode and temperature setting. ②Connect all indoor units with 2 core remote control line.

③Set unique remote control communication address from "0" to "F" to each inside unit by the rotary switch SW2 on the indoor unit's PCB.



### Master/ slave setting when more than one remote control unit are used

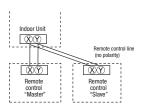
A maximum of two remote control units can be connected to one indoor unit (or one group of indoor units.)

The air-conditioner operation follows the last operation of the remote control regardless of the master/slave setting of it.

Acceptable combination is "two (2) wired remote controls", "one (1) wired remote control and one (1) wireless kit" or "two (2) wireless kits".

Set one to "Master" and the other to "Slave".

Note:The setting "Remote control unit sensor enabled" is only selectable with the master remote control unit in the position where you want to check room temperature.



### ③ Operation and confirmation from remote control

Operation from RC-EX1A

Operation from RC-E5

Check the number of units connected in the remote control system.
 It checks sub units of twin, triple or W-twin connection.

"Menu"⇒"Next"⇒"Service & Maintenance"⇒
"Input password"⇒"IU address"

Press AIR CON NO button to display the IU address. Press the ▼ or A button and check addresses of connected indoor units one by one.

2 Check if each unit is connected properly in the remote control system. It cannot check main and sub units of twin, triple or W-twin connection.

When the operation is stopped, "Menu"⇒
"Next"⇒"Service & Maintenance"⇒
"Input password"⇒"IU address"⇒"check run mode"

If AIR CON NO. button is pressed when the operation is stopped, the indoor unit address is displayed. If you select one of addresses for connected indoor units by pressing the 🕶 or 🛦 button and press the 🕒 (MODE) button, the unit starts to blow air

3 Setting main/slave remote controls

"Menu"⇒"Next"⇒"R/C function settings"⇒
"Input password"⇒"Main/Sub of R/C"

Set SW1 to "Slave" for the slave remote control

4 Checking operation data

"Menu"⇒"Next"⇒"Service & Maintenance"⇒
"Input password"⇒"Operation data"

Press the CHECK|button. ⇒ "PPRINIA v" is displayed. ⇒ Press the (⊕) (ET) button. ⇒ "Intal NUMNE" is displayed. ⇒ Press the "⇔' SAIR I/I" button. ⇒ "Select one of addresses for connected indoor units by pressing the ▲ or ▼ button. ⇒ Press the (⊕) (ET) button. ⇒ "NIA NUMNE" is displayed. ⇒ Select data by pressing the ▲ or ▼ button.

5 Checking inspection display

"Menu"⇒"Next"⇒"Service & Maintenance"⇒
"Input password"⇒"Inspection display"

Press the  $\overline{\text{CHECK}}$  button.  $\Rightarrow$   $\overline{\blacksquare}$  button.  $\Rightarrow$  ERR DATA. $\Rightarrow$  Press the  $\overline{\blacksquare}$  (SET) button.  $\Rightarrow$  "DATA LOADING" is displayed.  $\Rightarrow$  Data.

6 Cooling test run from remote control

"Menu"⇒"Next"⇒"Installation settings"⇒
"Input password"⇒"Test run"⇒
"Cooling test run"⇒"Start"

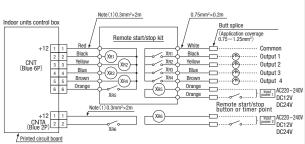
(T) Start the system by pressing the [©\_ONOSE] button.
②Select \* n. (200)\* with the (□) (MODE) button.
③Shess the [TEST] button for 3 seconds or longer.
The screen display will switch £TST \$M \ \bar{\pi}\$
@ (When the (□) \$SET) button is pressed while \* \bar{\pi}\$ ISTS \$M \ \bar{\pi}\$
is indicated, a cooling lest run will start.
The screen display will switch \bar{\pi}\TST \$M \\bar{\pi}\$

7 Trial operation of drain pump from remote control

"Menu" ⇒ "Next" ⇒ "Installation settings" ⇒
"Input password" ⇒ "Test run" ⇒
"Drain pump test run" ⇒ "Run"

(") Press the TEST button for three seconds or longer.
The display will change " \$ TEST RIN ▼"
(2 Press the Test to the displayed.
(3 When the (18 SET) button is pressed, a drain pump operation will start. Display: " 6 (20 TIO STIP ")

# ④ Function of CNT connector of indoor printed circuit board. Note (1) 0. 3mm<sup>2</sup> ⋅ 2m 0. 75mm<sup>2</sup> ⋅ 20 m



Note (1): Do not use the length over 2 meter

● CNT connector (local) vendor model Connector : Made by molex 5264-06 Terminals : Made by molex 5263 T

### Function

| Output 1              | Air-condi  | tioner operation output (When the air-conditioner ON: X <sub>R1</sub> = ON) |
|-----------------------|--|---|
| Output 2              | Heating of   | output  |
| Output 3              | Output 3 Thermostat ON output (When the thermostat ON: XR3 = ON) |   |
| Output 4              | Air-condi  | tioner check ON (When checking air-conditioner: XR4 = ON)                   |
|                       | At shipping  | XR5 OFF ⇒ ON: Air-conditioner operates.                                     |
| Input                 |  | XR5 ON ⇒ OFF: Air-conditioner stops.  |
|                       | *Function  | ns and controls may vary depending on the switching at site.                |
|                       | At shipping  | $X_{R6}$ OFF $\Rightarrow$ ON: Air-conditioner operates.                    |
| Input 2<br>(FDT etc.) | At Shipping  | XR6 ON ⇒ OFF: Air-conditioner stops.  |
| (1 0 1 616.)          | *Function  | ns and controls may vary depending on the switching at site.                |

\* Refer to I/U settings.

CNTA connector is installed on FDT, etc. Refer to the spec. drawings

CNTA connector (local) vendor model Connector : Made by JST XAP02V-1-E Terminals : Made by JST SXA-01T-P0.6

### ⑥ Operation and setting from remote control

- A: Refer to the instruction manual for RC-EX series.
  B: Refer to the installation manual for RC-EX series.
  C: Loading a utility software vie Internet

  O: Nearly same function setting and operations are possible.

|     | Setting & display item                                 | Description  | RC-EX<br>series |         |
|-----|--|--|-----------------|---------|
| Re  | emote Control network                                  |  |                 | T       |
| 1   | Control plural indoor units by a single remote control | A remote control can control plural indoor units up to 16 (in one group of remote control network). An address is set to each indoor unit.   | 0               |         |
| 2   | Master/slave setting of remote controls                | A maximum of two remote controls (include option wireless) can be connected to one indoor unit. Set one to "Master" and the other to "Slave".  | В               |         |
| 0   | P screen, Switch manipulation                          |  | Α               | T       |
|     | Menu   | "Control", "Settings", or "Details" can be selected. (319.)  | Α               | T       |
| 2   | Operation mode   | "Cooling", "Heating", "Fan", "Dry" or "Auto" can be set.   | Α               | T       |
| 3   | Set temp.  | "Set temperature" can be set by 0.5°C interval.  | Α               | t       |
|     | Air flow direction                                     | "Air flow direction". Individual flap control settingl can be set.   | A               | +       |
|     |  | "Fan speed" can be set.  | A               | +       |
|     | Fan speed  | and the second s |                 | +       |
|     | Timer setting  | "Timer operation" can be set.  | Α               | +       |
|     | ON/OFF   | "On/Off operation of the system" can be done.  | Α               | ╀       |
|     | High power SW  | "High power operation" or "Normal operation" can be selected.  | Α               | ┸       |
| ١   | Energy-saving SW                                       | "Energy-saving operation" or "Normal operation" can be selected.   | Α               |         |
| Er  | nergy-saving setting                                   |  | Α               | Т       |
|     | Auto OFF timer<br>[Administrator password]             | For preventing the timer from keeping ON, set hours to stop operation automatically with this timer.  -The selectable range of setting time is from 30 to 240 minutes (10minutes interval)  -When setting is "Valid", this timer will activate whenever the ON timer is set.   | А               |         |
|     | Peak-cut timer<br>[Administrator password]             | Power consumption can be reduced by restricting the maximum capacity.  Set the [Start time], the [End time] and the capacity limit % (Peak-cut %).  -4-operation patterns per day can be set at maximum.  -The setting time can be changed by 5-minutes interval.  -The selectable range of capacity limit % (Peak-cut %) is from 0% to 40-80% (20% interval).  -Holiday setting is available.  After the elapse of the set time period, the current set temp. will be set back to the [Set back temp.]  | A               |         |
|     | Automatic temp. set back<br>[Administrator password]   | The setting can be done in cooling and heating mode respectively.  The setting can be done in cooling and heating mode respectively.  The selectable range of the set time is from 20 min. to 120 min. (10 min. interval).  Set the [Set back temp.] by 1°C interval.  | Α               |         |
| n   | dividual flap control setting                          |  | Α               | +       |
|     | Individual flap control setting                        | The moving range (the positions of upper limit and lower limit) of the flap for individual air outlet port can be set.   | Α               |         |
| /e  | ntilation  |  |                 | Т       |
|     | External ventilation (In combination with ventilator)  | On/Off operation of the external ventilator can be done.  -The settings of [Interlock] with AC (air-conditioner), [Single operation] of ventilator or operation [invalid] of ventilation can be done through [Ventilation settings] in the [Remote control] menu.  | А               |         |
| ilt | er sign reset  |  | Α               |         |
|     | Filter sign reset                                      | The filter sign can be reset.  | В               | Г       |
|     | Setting next cleaning date                             | The next cleaning date can be set.   | Α               | T       |
| _   | tial settings  |  |                 | +       |
|     |  | The august date and time are the east or united  |                 | +       |
|     | Clock setting  | The current date and time can be set or revised.   | A               | $\perp$ |
|     | Date and time display                                  | [Display] or [Hide] the date and/or time can be set, and the [12H] or [24H] display can be set.  | Α               | +       |
|     | Summer time  | When select [Valid], the +1hour adjustment of current time can be set. When select [Invalid], the [Summer time] adjustment can be reset.   | Α               | ┸       |
| ŀ   | Contrast   | The contrast of LCD can be adjusted higher or lower.   | Α               |         |
| ,   | Backlight  | Switching on/off a light can be set and the period of the lighting time can be set within the range of 5sec-90sec (5sec interval).   | Α               |         |
| i   | Controller sound                                       | It can set with or without [Controller sound (beep sound)] at touching panel.  | Α               | Γ       |
| n   | ner settings   |  | Α               | Т       |
|     | Set On timer by hour                                   | The period of time to start operation after stopping can be set.  -The period of set time can be set within the range of 1hour-12hours (1hr interval).  -The operation mode, set temp and fan speed at starting operation can be set.  | Α               |         |
|     | Set Off timer by hour                                  | The period of time to stop operation after starting can be set.  -The period of set time can be set within the range of 1hour-12hours (1hr interval).  | Α               |         |
| •   | Set On timer by clock                                  | The clock time to start operation can be set.  -The set clock time can be set by 5 minutes interval.  -[Once (one time only)] or [Everyday] operation can be switched.  -The operation mode, set temp and fan speed at starting operation can be set.  | Α               |         |
|     | Set Off timer by clock                                 | The clock time to stop operation can be setThe set clock time can be set by 5 minutes interval[Once (one time only)] or [Everyday] operation can be switched.  | Α               |         |
|     | Confirmation of timer settings                         | Status of timer settings can be seen.  | Α               | $\perp$ |
|     | ekly timer   |  |                 | L       |
|     | Weekly timer<br>[Administrator password]               | On timer and Off timer on weekly basis can be set.  -8-operation patterns per day can be set at a maximum.  -The setting clock time can be set by 5 minutes interval.  -Holiday setting is available.  | Α               |         |
|     |  | •The operation mode, set temp and fan speed at starting operation can be set.  |                 |         |
| Н   | ome leave mode   | When leaving home for a long period like a vacation leave, the unit can be operated to maintain the room temperature not to be hotter in summer or not to be colder in winter.   |                 |         |

|      | Setting & display item                | Description  | RC-EX  | R      |
|------|---------------------------------------|--|--------|--------|
|      |                                       | ·  | series | 4"     |
| -    | dministrator settings                 | [Administrator password]   | Α      | +      |
| ľ    | Enable/Disable setting                | Enable/Disable setting of operation can be set. [On/Off] [Change set temp.] [Change operation mode] [Change air flow direction] [Individual flap control setting][Fan speed] [High power operation] [Energy-saving operation] [Timer settings] [Weekly timer setting]  |        |        |
|      |                                       | *Request for administrator password can be set. [Individual flap control setting][Weekly timer][Energy-saving setting][Home leave mode][Administrator settings]  | A      |        |
| ŀ    | Silent mode timer                     | The period of time to operate the outdoor unit by prioritizing the quietness can be set.   |        | $^{+}$ |
| ľ    | onone mode times                      | •The [Start time] and the [End time] for operating outdoor unit in silent mode can be set. •The period of the operation time can be set once a day by 5 minutes interval.  | Α      |        |
| İ    | Setting temp. range                   | The upper/lower limit of indoor temp. setting range can be set.  |        | t      |
|      |                                       | •The limitation of indoor temp. setting range can be set for each operation mode in cooling and heating.   | Α      |        |
| [    | Temp. increment setting               | The temp increment setting can be changed by 0.5°C or 1.0°C.   | Α      | Ι      |
|      | RC display setting                    | Register [Room name] [Name of I/U]   |        | L      |
|      |                                       | Display [indoor temp.] or not.   | A      | L      |
|      |                                       | Display [inspection code] or not. Display [Heating stand-by] [Defrost operation] [Auto cooling/heating] or not   |        | ŀ      |
| ŀ    |                                       |  |        | +      |
| 1    | Change administrator password         | The administrator password can be changed. (Default setting is "0000") The administrator password can be reset.  | A<br>B | 4      |
| Ind  | staller settings                      |  | _      | +      |
| - 1  |                                       | • • •  | B      | +      |
| ľ    | Installation date                     | The [Installation date] can be registered.  •When registering the [Installation date], the [Next service date] is displayed automatically. (For changing the [Next service date], please refer the item of [Service & Maintenance].)   | В      |        |
| ŀ    | Service contact                       | The [Service contact] can be registered and can be displayed on the RC.  |        | $^{+}$ |
| ľ    | SELVICE COLLECT                       | •The [Contact company] can be registered within 10 characters. •The [Contact phone] can be registered within 13 digits.  | В      |        |
| 1    | Test run                              | On/Off operation of the test run can be done.  |        | $^{+}$ |
|      | Cooling test run                      | The [Cooling test run] can be done at 5°C of set temp. for 30 minutes.   |        | H      |
|      |                                       | Only the drain pump can be operated.   | В      | r      |
|      |                                       | The [Test run] operation can be done with fixed compressor Hz set by installer.  | 1      | r      |
| į    |                                       | In case of combination with only the ducted indoor unit which has a function of static pressure adjustment, the static pressure is adjustable.   | В      | Ť      |
| - h  | Change auto-address                   | The set address of each indoor unit decided by auto-address setting method can be changed to any other address. (For multiple KX units only)   | В      | Ţ      |
| - 1- | Address setting of Main IU            | Main indoor unit address can be set.   |        | Ť      |
| ſ    | •                                     | Only the Main indoor unit can change operation mode and the Sub indoor units dominated by the Main indoor unit shall follow.   | В      |        |
| _    |                                       | •The Main indoor unit can domain 10 indoor units at a maximum.   |        | 1      |
|      | function settings                     | [Service password]   | В      | 1      |
| - 1- | Main/Sub RC setting                   | The setting of [Main/Sub RC] can be changed.   | В      | 1      |
| 1    |                                       | The offset value of [RC sensor] sensing temp. can be set respectively in heating and cooling.  | В      | 1      |
|      | 9 RC sensor adjustment                | The offset value of [RC sensor] sensing temp. can be set respectively in heating and cooling.  | В      |        |
|      |                                       | •The setting range of offset value is ±3°C both in cooling and heating.  |        | +      |
| - h  | 12 Operation mode                     | The [Valid/Invalid] setting of [Auto][Cooling][Heating] and [Dry] can be done respectively.  | В      | +      |
| H    | 13 Fan speed                          | The setting of [Fan speed] can be done from following patterns.·1-speed, 2-speeds (Hi-Me), 2-speeds (Hi-Lo), 3-speeds, 4-speeds.   | В      | +      |
| - 1  | 14 External input                     | The applicable range ([Individual] or [All units]) of CnT input to the multiple indoor units connected in one control system.  | В      |        |
|      | 1 C Vantilation autting               | •[Individual] : Only the unit received CnT input signal. •[All units] : All the units connected to one control system received CnT input signal.   |        | +      |
|      | 15 Ventilation setting                | The setting of [Invalid] operation of ventilator, [Interlock] with AC or [Independent] of ventilator can be selected.  When setting [Interlock], the operation of external ventilator is interlocked with the operation of AC •When setting [Independent], only the operation of external ventilator is available. | В      |        |
| ;    | 16 Flap control                       | The [Flap control] method can be switched to[Stop at fixed position] or [Stop at any position] · [Stop at fixed position] : Stop the flap at a certain position  |        | +      |
| 1    | το παρ σοπασι                         | among the designated 4 positions. (Stop at any position): Stop the flap at any arbitrary position just after the stopping command from RC was sent.  | В      |        |
| ŀ    | 17 Auto-restart                       | The operation control method after recovery of power blackout happened during operation can be set.  | В      | $^{+}$ |
|      | 18 Auto temp. setting                 | [Valid] or [Invalid] of Auto temp. setting] can be selected.   | В      | t      |
|      | 19 Auto fan speed setting             | [Valid] or [Invalid] of [Auto fan speed setting] can be selected.  | В      | Ť      |
| 1/   | U settings                            | [Service password]   | В      | T      |
| ſ    | High ceiling                          | The fan tap of indoor fan can be changed. •[Standard] [High ceiling 1] [High ceiling 2] can be selected.   | В      | Ť      |
| 2    | Filter sign                           | The setting of filter sign display timer can be done from following patterns.  | В      | T      |
| ŀ    | External input 1                      | The content of control by external input can be changed. The selectable contents of control are [On/Off] [Permission/Prohibition] [Cooling/heating] [Emergency stop]   | В      | Ť      |
|      | External input 1 signal               | The type of external input signal ([Level input]/[Pulse input]) can be changed.  | В      | Ť      |
| · F  | External input 2                      | *The selectable contents of control are [On/Off] [Permission/Prohibition] [Cooling/heating] [Emergency stop]   | В      | Ť      |
| - 1- | External input 2 signal               | The type of external input signal ([Level input]/[Pulse input]) can be changed.  | В      | Ť      |
| ŀ    |                                       | The judgment temp. of heating thermo-off can be adjusted within the range from 0 to +3°C (1°C interval)  | В      | t      |
| - 1  | Return air sensor adjust.             | The sensing temp. of return air temp. sensor built in the indoor unit can be adjusted within the range of $\pm 2^{\circ}$ C.   | В      | Ť      |
| - 1- |                                       | The fan control method at heating thermo-off can be changed. The selectable fan control methods are [Low] [Set fan speed] [Intermittent] [Stop].   | В      | Ť      |
| -    | Anti-frost temp.                      | The judgment temp. of anti-frost control for the indoor unit in cooling can be changed to [Temp. High] or [Temp. Low].   | В      | Ť      |
|      | Anti-frost control                    | When the anti-frost control of indoor unit in cooling is activated, the fan speed can be changed.  | В      | Ť      |
| H    | Drain pump operation                  | In any operation mode in addition to cooling and dry mode, the setting of drain pump operation can be done.  | В      | t      |
| ŀ    |                                       | The time period of residual fan operation after stopping or thermo-off in cooling mode can be set.   | В      | t      |
| Ŀ    |                                       | The time period of residual fan operation after stopping or thermo-off in heating mode can be set.   | В      | Ť      |
| - 1- |                                       | The fan operation rule following the residual fan operation after stopping or thermo-off in heating mode can be set.   | В      | t      |
| ŀ    | Fan circulator operation              | In case that the fan is operated as the circulator, the fan control rule can be set.   | В      | t      |
| H    | · · · · · · · · · · · · · · · · · · · | When only the OA processing units are operated, control pressure value can be changed.   | В      | Ť      |
| H    | Auto operation mode                   | The [Auto rule selection] for switching the operation mode automatically can be selected from 3 patterns.  | В      | Ť      |
| - 1- | Thermo. rule setting                  | When selecting [Outdoor air temp. control], the judgment temp can be offset by outdoor temp  | В      | Ť      |
| H    | Auto fan speed control                | Under the [Auto fan speed control] mode, the switching range of fan speed can be selected from following 2 patterns [Auto 1] [Auto 2]. •[Auto 1] : Hi ⇔Me⇔Lo•[Auto 2] : P-hi⇔Hi⇔Me⇔Lo  | В      | Ť      |
| _    | rvice & Maintenance                   | [Service password]   | В      | Ť      |
|      | IU address No.                        | Max. 16 indoor units can be connected to one remote control, and all address No. of the connected indoor units can be displayed.   |        | Ť      |
|      |                                       | •The indoor unit conforming to the address No. can be identified by selecting the address No. and tapping [Check] to operate the indoor fan.   | В      |        |
| 1    | Next service date                     | The [Next service date] can be registered. The [Next service date] and [Service contact] is displayed on the [Periodical check] message screen.  | AB     | Γ      |
|      | Operation data                        | Total 39 items of [Operation data] for indoor unit and outdoor unit can be displayed.  | В      | Г      |
| ŀ    | Error history                         | [Date and time of error occurred] [I/U address] [Error code] for Max. 16 latest cases of error history can be displayed.   | В      | T      |
|      | Display anomaly data                  | The operation data just before the latest error stop can be displayed.   | В      | T      |
| H    | Reset periodical check                | The timer for the periodical check can be reset.   | В      | Ť      |
| - H  | Saving I/U settings                   | The I/U settings memorized in the indoor PCB connected to the remote control can be saved in the memory of the remote control.   | В      | Ť      |
| - 1- | Special settings                      | [Erase I/U address] [CPU reset] [Initializing] [Touch panel calibration]   | В      | †      |
| _    | spection                              |  |        | Ť      |
| Ins  |                                       |  |        |        |
| -    | ·                                     | The address No, of anomalous indoor/outdoor unit and error code are displayed.   | Α      | Г      |

### (2) FDF series

Electrical wiring work must be performed by an electrician qualified by a local power provider according to the electrical installation technical standards and interior wiring regulations applicable to the installation site.

#### Security instructio

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, [AWARNING] and ACAUTION.

[AWARNING]: Wrong installation would cause serious consequences such as injuries or death. ACAUTION: Wrong installation might cause serious consequences depending on circumstances. Both mentions the important items to protect your health and safety so strictly follow them by any means.

- The meanings of "Marks" used here are as shown on the right: Never do it under any circumstances.
- Accord with following items. Otherwise, there will be the risks of electric shock and fire caused by overheating or short circuit.

#### **↑**WARNING

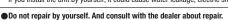
Be sure to have the electrical wiring work done by qualified electrical installer. and use exclusive circuit.

Power source with insufficient capacity and improper work can cause electric shock and fire.

- Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.

  Loose connections or hold could result in abnormal heat generation or fire.
- Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property
- Ouse the genuine option parts. And installation should be performed by a

If you install the unit by yourself, it could cause water leakage, electric shock and fire





Consult the dealer or a specialist about removal of the air-conditioner. Improper installation may cause water leakage, electric shock or fire.

Turn off the power source during servicing or inspection work. If the power is supplied during servicing or inspection work, it could cause electric

Shut off the power before electrical wiring work.

Improper fitting may cause abnormal heat and fire

It could cause electric shock, unit failure and improper running

### **↑**CAUTION

### Perform earth wiring surely.

shock and injury by the operating fan.

Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.

Earth leakage breaker must be installed.

If the earth leakage breaker is not installed, it can cause electric shocks.

Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.)

Absence of breaker could cause electric shock

Use the circuit breaker of correct canacity. Circuit breaker should be the one that disconnect all poles under over current.

Using the incorrect one could cause the system failure and fire.

Do not use any materials other than a fuse of correct capacity where a fuse should be used.

Connecting the circuit by wire or copper wire could cause unit failure and fire.

Use power source line of correct capacity.

Using incorrect capacity one could cause electric leak, abnormal heat generation and fire.

Do not mingle solid cord and stranded cord on power source and signal side terminal block.

In addition, do not mingle difference capacity solid or stranded cord. Inappropriate cord setting could cause loosing screw on terminal block, bad electrical contact, smoke and fire.

Do not turn off the power source immediately after stopping the operation. Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or

Do not control the operation with the circuit breaker. It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.



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PGA012D405

#### (1) Electrical Wiring Connection

- ■Use three-core cable as wiring between indoor and outdoor unit As for detail, refer to "INSTALLATION MANUAL" of

- Use three-core cable as wiring between indoor and outdoor unit. As tor detail, reter to "INSTALLATION MANUAL. or outdoor Unit.
  Set earth of 10-type.
  Set earth of 10-type.
  Keep "remote control line" and "power source line" away from each other on constructing of unit outside.
  Run the lines (power source, remote control and "between indoor and outdoor unit") upper ceiling through iron pipe or other tube protection to avoid the damage by mouse and so on.

  Do not add cord in the middle of line route (of power source, remote control and "between indoor and outdoor unit") on outside of unit. If connecting point is flooded, it could cause problem as for electric or communication. In the case that it is necessary to set connecting point on the way, perform thorough waterproof measurement, (In the case that it is necessary to set connecting point on the way, perform thorough waterproof measurement.)
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could
- Screw the line to terminal block without any looseness, certainly.

- ●Screw the line to terminal block without any loseness, certainly.

   Do not turn on the switch of power source, before all of line work is done.

  ●Connection of the line ("Between indoor and outdoor unit", Earth and Remote control)

  Remove lid of control box before connect the above lines, and connect the lines to terminal block according to number pointed on label of terminal block.

  In addition, pay enough attention to confirm the number to lines, because there is electrical polarity except earth line. Furthermore, connect earth line to earth position of terminal block of power source.

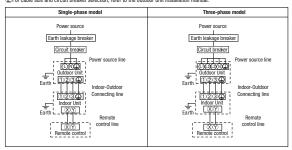
  ②Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as
- earth leakage breaker.
- 3. If the function of selected earth leakage breaker is only for earth-fault protection, hand switch (switch itself and type "B" fuse) or circuit breaker is required in series with the earth leakage breake (4)Install the local switch near the unit.

### Cable connection for single unit installation

- This for connecting method of power source, select from following connecting patterns. In principle, do not directly connect power souce line to inside unit.

  A for exceptional connecting method of power souce, discuss with the power provider of the country with referring to technical documents, and follow its instruction.

  For cable size and circuit breaker selection, refer to the outdoor unit installation manual.



#### Cable connection for a V multi configuration installation

- ①Connect the same pairs number of terminal block "①, ②, and ③"and " ② and ⑦" between master and slave indoor units.
- ②Do the same address setting of all inside units belong to same refrigerant system by rotary switch SW2 on indoor unit's PCB (Printed circuit board).
- (3)Set slave indoor unit as "slave 1" through "slave 3" by address switch SW5-1, 5-2 on PCB.

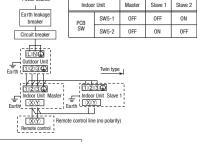
  (4)When the AIR CON NO. button on the remote control unit is pressed after turning on the power, an indoor unit's address
- number will be displayed. Do not fail to confirm that the connected indoor unit's numbers are displayed on the remote control unit by pressing the 
  or 
  button.

Slave 3

ON

### Method of setting Master/Slave of indoor unit

(Factory setting: "Master")

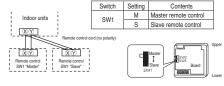


### Switch and wiring specification

Refer to the installation manual attached to the outdoor unit

### 2 Wiring for the remote control

For each indoor unit, one more remote control can be connected in addition to the one which is built in the main unit.



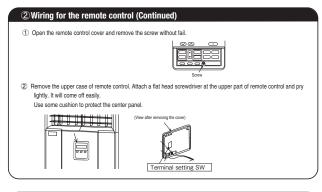
Set SW1 to "Slave" for the slave remote control. It was factory set to "Master" for shipment.

Note: The setting "Remote control thermistor enabled" is only select to check room temperature.

The air-conditioner operation follows the last operation of the remote control regardless of the master/ slave setting of it.

When setting the remote control built in the main unit to the "Slave"

Remove the cover and change the setting of switch as follows



### **③Function Setting by Remote Control**

#### Installation and wiring of remote control

(1)Wiring of remote control should use 0.3mm<sup>2</sup> × 2 core wires or cables, (on-site configuration)

②Maximum prolongation of remote control wiring is 600 m.

If the prolongation is over 100m, change to the size below

But, wiring in the remote control case should be under 0.5mm<sup>2</sup> . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact

......0.5mm² × 2 cores ......0.75mm² × 2 cores .....1.25mm² × 2 cores .....20mm² × 2 cores 100 - 200m Under 300m Under 400m Under 600m

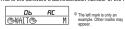
### The indication when power source is supplied

When power source is turned on, the following is displayed on the remote control until the

communication between the remote control and indoor unit settled.

At the same time, a mark or a number will be displayed for two seconds first.

This is the software's administration number of the remote control, not an error cord



When remote control cannot communicate with the indoor unit for half an hour, the below indication willappear. Check wiring of the indoor unit and the outdoor unit etc.

Function No. ®

/000000

AUTO RUN SET

0000

INSPECT I/U

### How to set function

1. Stop air-conditioner and press ○ (SET) (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼ " will be displayed.



2. Press (SET) button.

Make sure which do you want to set, "
 ☐ FUNCTION ▼" (remote control function) or "I/U FUNCTION ▲" (indoor unit function).

control function) or "I/U FUNCTION &



6. [On the occasion of remote control function selection ]

"DATA LOADING" (Indication with blinking) → Display is changed to "01 GRILLE ↑↓ SET"

Press or button.

No. and function are indicated by turns on the remote control function table, then you can select from them.

(For example) BZ ← Function No.

AUTO RUN SET ← Function

Press ○ (SET) button.

The current setting of selected function is indicated.

(for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected



Press (C)(SET) button.

"SET COMPLETE" will be indicated, and the setting will be completed.

Then after 'No. and function' indication returns, Set as the same procedure if you want to set continuously, and if to finish, go to 7.



### [On the occasion of indoor unit function selection]

D "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)

↓ ndication is changed to "02 FAN SPEED SET". Go to ②

(1) If plural indoor units are connected to a rem

the indication is "I/U 000" (blinking) — The lowest number of the indoor unit connected is indicated.

I/U000

(2) Press ▲ or ▼ button.

Select the number of the indoor unit you are to set

If you select \*ALL UNIT ▼\*, you can set the same setting with all unites.

(3) Press (O)(SET) button.

② Press ▲ or ▼ button.
\*No. and function\* are indicated by turns on the indoor unit function table, then you can select from them. "No. and function (For example)

FAN SPEED SET ← Function No.

### **③Function Setting by Remote Control (Continued)**

The current setting of selecte (For example) "STANDARD" inction is indicated. If "02 FAN SPEED SET" is selected. ☐2 STANDARD ← Setting

Press 
or 
button

Press ((SET) button.

"SET COMPLETE' will be indicated, and the setting will be completed.

Then after "No. and function' indication returns, set as the same procedure if you want to set continuously, and if to finish, go to 7.

SET COMPLETE

When plural indoor units are connected to a remote control, press the [AIRCON NO.] button, which allows you to go back to the indoor unit selection screen. [example "I/U 000"]

#### 7. Press ON/OFF button

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable
- During setting, if you press (RESET) button, you return to the previous so Setting is memorized in the control and it is saved independently of power failure.

[How to check the current setting ]
When you select from "No. and funcion" and press set button by the previous operation, the "Setting" displayed first is the current

setting. (But, if you select "ALL UNIT ▼ ", the setting of the lowest number indoor unit is displayed.)

### The functional setting

●The initial function setting for typical using is performed automatically by the indoor unit connected, when remote control and indoor unit are connected.

Control and induor directed.

As long as they are used in a typical manner, there will be no need to change the initial settings. If you would like to change the initial setting marked "O", set your desired setting as for the selected item. The procedure of functional setting is shown as the following diagram.

Sequence of the function setting is as follows.

### The range of temperature setting

When shipped, the range of set temperature differs depending on the operation mode as below. Heating: 16-30°C (55-86°F)

Except heating (cooling, fan, dry, automatic) : 18~30°C (62~86°F)

#### ●Upper limit and lower limit of set temperature can be changed with remote control. Upper limit setting: valid during heating operation. Possible to set in the range of 20 to 30°C (68 to 86°F).

Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26°C (62 to

When you set upper and lower limit by this function, control as below

1. When @TEMP RANGE SET, remote control function of function setting mode is "INDN CHANGE" (factory setting), [ If upper limit value is set ]
During heating, you cannot set the value exceeding the upper limit

[ If lower limit value is set ]

During operation mode except heating, you cannot set the value below the lower limit.

2. When @TEMP RANGE SET, remote control function of function setting mode is "NO INDN CHANGE" ( If upper limit value is set )

During heating, even if the value exceeding the upper limit is set, upper limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

[ If lower limit value is set ]

During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

●How to set upper and lower limit value

Stop the air-conditioner, and press (SET) and (MODE) button at the same time for over three

seconds. The indication changes to "FUNCTION SET ▼

Press ♥ button once, and change to the "TEMP RANGE ▲ " indication.

Press ♥ O (SET) button, and enter the temperature range setting mode.

Select "UPPER LIMIT ▼ " o "LOWER LIMIT ▲ " by using ▲ ♥ button.

Press ○ (SET) button to fix.

When "UPPER LIMIT ▼ " is selected (valid during heating)

① Indication: " ⊕ ∨ ∧ SET UP" → "UPPER 30°C ∨"

② Select the upper limit value with temperature setting button ☑ △. Indication example: "UPPER 26°C ∨ △"

(Select the upper limit value with reinperature seating union (V) (V), indicator example: OFFER 26 CV (blinking)

(3) Press (□) (SET) button to fix. Indication example: "UPPER 26"C" (Displayed for two seconds)

After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼".

② Select the lower limit value with temperature setting button ☑ △. Indication example: "LOWER 24°C ∨ ∧" 

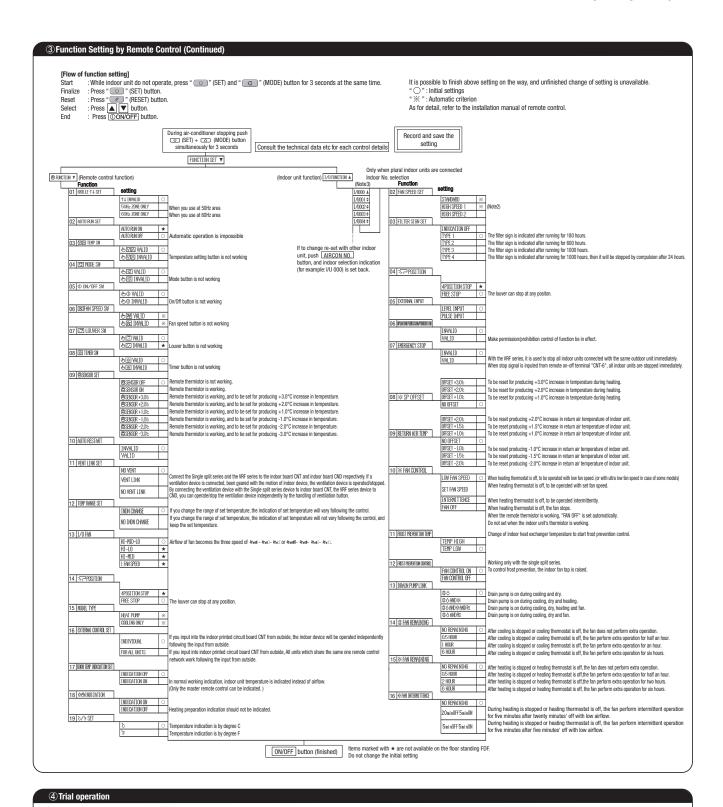
After the fixed lower limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼".

8. Press ON/OFF button to finish.

It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable. TEMP RANGE 4 During setting, if you press (RESET) button, you return to the previous screen. Note 1: Fan setting of "HIGH SPEED" | Indoor unit air flow setting | 20±8f = 70±8f an tap

FAN SPEED SET STANDARD HIGH SPEED1, 2 Initial function setting of some indoor unit is "HIGH SPEED"

Note 2: As for plural indoor unit, set indoor functions to each master and slave indoor unit But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".



# The method of trial cooling operation

Operate the remote control unit as follows.

1. Starting a cooling test run.

①Start the system by pressing the  $\boxed{\bigcirc \text{ON/OFF}}$  button.

 $\ensuremath{\ensuremath{\Im}}$  Press the  $\ensuremath{\ensuremath{\,\overline{TEST}}}$  button for 3 seconds or longer.

The screen display will switch to

TEST RUN

▼

♠When the 
 (SET) button is pressed while " 
 \* TEST RUN ▼ " is indicated, a cooling test run will start.

The screen display will switch to TEST RUN ".

2. Ending a cooling test run.

Pressing the OONOFF button, the (TEMP) button or (MODE) button will end a cooling test run. (Cooling test run will end after 30 minutes pass.)

"  $\$  TEST RUN " shown on the screen will go off.

### 4 Trial operation (Continued)

### Checking operation data

Operation data can be checked with remote control unit operation.

1. Press the CHECK button.

The display change " OPER DATA ▼ "

2. Press the (SET) button while OPER DATA To is displayed.

 When only one indoor unit is connected to remote control, "DATA LDADING" is displayed (blinking indication during data loading).

Next, operation data of the indoor unit will be displayed. Skip to step 7.

 When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed. [Example]:

U\$\$ SELECT I/U " (blinking 1 seconds)
I/U000 ▲ " blinking.

5. Select the indoor unit number you would like to have data displayed with the 

button.

6. Determine the indoor unit number with the (SET) button.

| 01 | \$              | (Ope ration Mode)                                   |
|----|-----------------|---|
| 02 | SET TEMP        | (Set Temperature)                                   |
| 03 | RETURN AIR_6    | (Return Air Temperature)                            |
| 04 | ■SENSORc        | (Remote Control ThermistorTemperature)              |
| 05 | THI-R1c         | (Indoor Unit Heat Exchanger Thermistor / U Bend)    |
| 06 | THI-R2c         | (Indoor Unit Heat Exchanger Thermistor /Capillary)  |
| 07 | THI-R3c         | (Indoor Unit Heat Exchanger Thermistor /Gas Header) |
| 08 | I/U FANSPEED    | (Indoor Unit Fan Speed)                             |
| 09 | DEMANDHz        | (Frequency Requirements)                            |
| 10 | ANSWERHz        | (Response Frequency)                                |
| 11 | I/U EEVP        | (Pulse of Indoor Unit Expansion Value)              |
| 12 | TOTAL I/U RUN   | H (Total Running Hours of The Indoor Unit)          |
| 21 | OUTDOORc        | (Outdoor Air Temperature)                           |
| 22 | THO-R1tc        | (Outdoor Unit Heat Exchanger Thermistor)            |
| 23 | THO-R2c         | (Outdoor Unit Heat Exchanger Thermistor)            |
| 24 | COMPHz          | (Compressor Frequency)                              |
| 25 | HPMPa           | (High Pressure)                                     |
| 26 | LPMPa           | (Low Pressure)                                      |
| 27 | Tdb             | (Discharge Pipe Temperature)                        |
| 28 | COMP BOTTOMc    | (Comp Bottom Temperature)                           |
| 29 | CTAMP           | (Current)   |
| 30 | TARGET SH       | (Target Super Heat)                                 |
| 31 | SHb             | (Super Heat)  |
| 32 | TDSHt           | (Discharge Pipe Super Heat)                         |
| 33 | PROTECTION No   | (Protection State No. of The Compressor)            |
| 34 | O/U FANSPEED    | (Outdoor Unit Fan Speed)                            |
| 35 | 63H1            | (63H1 On/Off)                                       |
| 36 | DEFROST         | (Defrost Control On/Off)                            |
| 37 | TOTAL COMP RUN_ | H (Total Running Hours of The Compressor)           |
| 38 | 0/U EEV 1P      | (Pulse of The Outdoor Unit Expansion Valve EEVC)    |
| 39 | N/ILFEV2 P      | (Pulse of The Outdoor Unit Expansion Valve EEVH)    |

\*Depending on outdoor unit model, there are data not show

(The indoor unit number changes from blinking indication to continuous indication)

 $1/\!\!\!\!/1000$  " (The address of selected indoor unit is blinking for 2 seconds.)

"DATA LOADING" (A blinking indication appears while data loaded.)

Next, the operation data of the indoor unit is indicated.

7. Upon operation of the button, the current operation data is displayed in order from data

The items displayed are in the above table.

\*Depending on models, the items that do not have corresponding data are not displayed.

8. To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.

9. Pressing the OONOFF button will stop displaying data.

Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

To two (2) remote control are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

### ⑤Control mode switching

• The control content of indoor units can be switched in following way.

### 

#### (7)Troubleshooting

The operation data is saved when the situation of abnormal operation happen, and the data can be confirmed by remote control

#### Error Code of indoor unit

| Display on remote | LED on indoor circuit board   |                     | Content   |  |
|-------------------|-------------------------------|---------------------|---|--|
| control           | red (checking) green (normal) |                     |   |  |
|                   | Off                           | Continuous blinking | Normal  |  |
| Off               | Off                           | Off                 | Fault on power, indoor power off or lack phase                            |  |
| E1                | Off                           | Continuous blinking | Fault on the transmission between indoor circuit board and remote control |  |
|                   | Not sure                      | Not sure            | Indoor computer abnormal  |  |
| E5                | Blinking twice                | Continuous blinking | Fault on outdoor-indoor transmission                                      |  |
| E6                | Blinking once                 | Continuous blinking | Indoor heat exchange sensor interrupted or short-circuit                  |  |
| E7                | Blinking once                 | Continuous blinking | Indoor air inhaling sensor broken or short-circuit                        |  |
| E8                | Blinking once                 | Continuous blinking | The temperature of heat exchange abnormal                                 |  |
| E9                | Blinking once                 | Continuous blinking | Float SW actions (only with FS)   |  |
| E10               | Off                           | Continuous blinking | Excess number of remote control connections                               |  |
| E14               | Blinking for three times      | Continuous blinking | The communication fault for master/slave indoor units                     |  |
| E16               | Blinking once                 | Continuous blinking | Fan motor abnormal  |  |
| E19               | Blinking once                 | Continuous blinking | Configuration fault on running checking model                             |  |
| E28               | Off                           | Continuous blinking | Remote control sensor interrupted   |  |
| Over E30          | Off                           | Continuous blinking | Outdoor unit checking (outdoor circuit board LED checking)                |  |

#### [Operating procedure]

1. Press the CHECK button.

The display change " OPER DATA ▼ "

2. Once, press the volume button, and the display change

ERROR DATA ▲ ".

- 3. Press the (SET) button and abnormal operation data mode is started.
- 4. When only one indoor unit is connected to remote control, following is displayed.
  - 1) The case that there is history of abnormal operation.

→ Error code and " DATA LOADING" is displayed.

[Example]: [E8] (ERROR CODE)

" <code>DATA LOADING</code>" is displayed (blinking indication during data loading).

Next, the abnormal operation data of the indoor unit will be displayed. Skip to step 8.

2 The case that there is not history of abnormal operation.

ightarrow " NO ERROR " is displayed for 3 seconds and this mode is closed.

5. When plural indoor units is connected, following is displayed.

①The case that there is history of abnormal operation.

Error code and the smallest address number of indoor unit among all connected indoor unit is displayed.

[Example]: [E8] (ERROR CODE)

②The case that there is not history of abnormal operation.

ightarrow Only address number is displayed.

6. Select the indoor unit number you would like to have data displayed with the

7. Determine the indoor unit number with the (SET) button.

[Example]: [E8] (ERROR CODE)

[E8] "  $\mbox{DATA LOADING}$  " (A blinking indication appears while data loaded.)

Next, the abnormal operation data is indicated.

If the indoor unit doing normal operation is selected, " NO ERROR " is displayed for 3 seconds and address of indoor unit is displayed.

8. By the 🛕 🔻 button, the abnormal operation data is displayed.

Displayed data item is based on <a> Trial operation</a> .

\*Depending on models, the items that do not have corresponding data are not displayed.

9. To display the data of a different indoor unit, press the AIR CON No. button, which allows you to go back to the indoor unit slection screen.

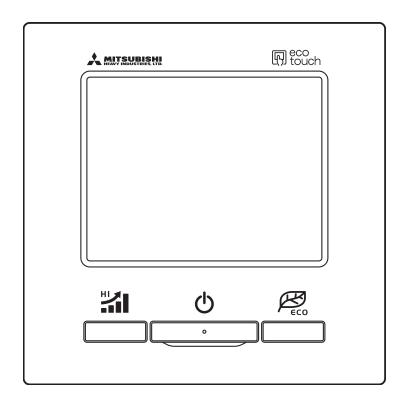
10.Pressing the ON/OFF button will stop displaying data.

Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

⑤If two (2) remote control are connected to one (1) indoor unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote control is not available.) 10.3 Installation of wired remote control (Option)
(1) Model RC-EX1A



# eco touch REMOTE CONTROL RC-EX1A INSTALLATION MANUAL



# 1. Safety precautions

This installation manual describes the installation methods and precautions related to the remote control. Use this manual together with the user's manuals for the indoor unit, outdoor unit and other option equipment. Please read this manual carefully before starting the installation work to install the unit properly.

### Safety precautions

Please read this manual carefully before starting installation work to install the unit properly. Every one of the followings is important information to be observed strictly.

| <b>∴WARNING</b> | Failure to follow these instructions properly may result in serious consequences such as death, severe injury, etc |
|-----------------|--|
| <b>⚠CAUTION</b> | Failure to follow these instructions properly may cause injury or property damage.                                 |

It could have serious consequences depending on the circumstances.

The following pictograms are used in the text.



• Keep this manual at a safe place where you can consult with whenever necessary. Show this manual to installers when moving or repairing the unit. When the ownership of the unit is transferred, the "Installation Manual" should be given to a new owner.

### **MARNING**

Ask a professional contractor to carry out installation work according to the installation manual. Improper installation work may result in electric shocks, fire or break-down.



Shut OFF the main power source before starting electrical work.

Otherwise, it could result in electric shocks, break-down or malfunction.



Do not install the unit in appropriate environment or where inflammable gas could generate, flow in, accumulate or leak.

If the unit is used at places where air contains dense oil mist, steam, organic solvent vapor, corrosive gas (ammonium, sulfuric compound, acid, etc) or where acidic or alkaline solution, special spray, etc. are used, it could cause electric shocks, break-down, smoke or fire as a result of significant deterioration of its performance or corrosion.



Do not install the unit where water vapor is generated excessively or condensation occurs.

It could cause electric shocks, fire or break-down.



Use the specified cables for wiring, and connect them securely with care to protect electronic parts from external forces.



Improper connections or fixing could cause heat generation, fire, etc.



If dew, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.



# When installing the unit at a hospital, telecommunication facility, etc., take measures to suppress electric noises.

It could cause malfunction or break-down due to hazardous effects on the inverter, private power generator, high frequency medical equipment, radio communication equipment, etc.



The influences transmitted from the remote control to medical or communication equipment could disrupt medical activities, video broadcasting or cause noise interference.

### **A CAUTION**

### Do not install the remote control at following places.

It could cause break-down or deformation of remote control.

- (1) Where it is exposed to direct sunlight
- (2) Near the equipment to generate heat
- (3) Where the surface is not flat



### Do not leave the remote control with its upper case removed.

When the upper case is removed, put it in a packing box or packing bag to protect internal PCBs or other parts from dust, moisture, etc.



# 2. Accessories & prepare on site

Accessories

R/C main unit, wood screw (ø3.5 x 16) 2 pcs User's Manual. Installation Manual

### Parts procured at site

| Item name  | Q'ty        | Remark                                  |  |
|--|-------------|---|--|
| Switch box For 1 piece or 2 pieces (JIS C 8340 or equivalent)          | 1           | These are not required when installing  |  |
| Thin wall steel pipe for electric appliance (JIS C 8305 or equivalent) | As required | directly on a wall.                     |  |
| Lock nut, bushing (JIS C 8330 or equivalent)                           | As required |   |  |
| Lacing (JIS C 8425 or equivalent)                                      | As required | Necessary to run R/C cable on the wall. |  |
| Putty  | Suitably    | For sealing gaps                        |  |
| Molly anchor   | As required |   |  |
| R/C cable (0.3 mm <sup>2</sup> x 2 pcs)                                | As required | See right table when longer than 100 m  |  |

When the cable length is longer than 100 m, the max size for wires used in the R/C case is  $0.5~\text{mm}^2$ . Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

| < 200 m | 0.5 mm² x 2-core              |
|---------|-------------------------------|
| < 300 m | 0.75 mm <sup>2</sup> x 2-core |
| < 400 m | 1.25 mm <sup>2</sup> x 2-core |
| < 600 m | 2.0 mm <sup>2</sup> x 2-core  |

# 3. Remote control installation procedure

### Determine where to install the remote control

Installation "Using a switch box"

"Installed directly on a wall"

Wiring direction "Backward"

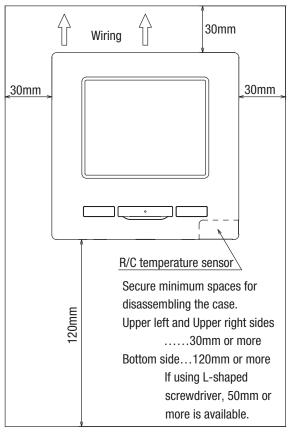
"Upper center", "Upper left"

### **Cautions for selecting installation place**

- (1) Installation surface must be flat and sufficiently strong. R/C case must not be deformed.
- (2) Where the R/C can detect room temperatures accurately. This is a must when detecting room temperatures with the temperature sensor of R/C.
  - · Install the R/C where it can detect the average temperature in the room.
  - · Install the R/C separated from a heat source sufficiently.
  - · Install the R/C where it will not be influenced by the turbulence of air when the door is opened or closed.

Select a place where the R/C is not exposed to direct sunlight or blown by winds from the air-conditioner or temperatures on the wall surface will not deviate largely from actual room temperature.

### Installation space



### Request

Be sure not to install R/C at a place where temperatures around the installation surface of R/C may differ largely from actual room temperature.



Difference between detected temperature and actual room temperature could cause troubles.

The correction for detected temperature by the R/C cannot offset such temperature difference because it corrects the detected temperatures itself.

### Request

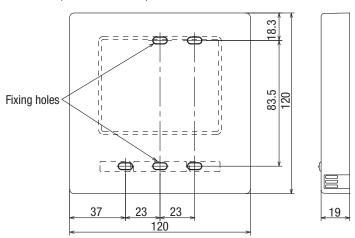
Do not install the R/C at a place where it is exposed to direct sunlight or where surrounding air temperature exceeds 40°C or drops below 0°C.



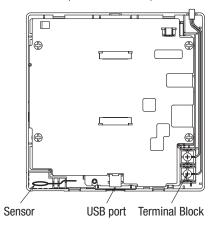
It could cause discoloration, deformation, malfunction or breakdown.

### Installation procedure

Dimensions (Viewed from front)



PCB side (Viewed from rear)



① To remove the upper case from the bottom cases of R/C

 Insert the tip of flat head screwdriver or the like in the recess at the lower part of R/C and twist it lightly to remove.

Take care to protect the removed upper case from moisture or dust.



② Connect wires from X and Y terminals of R/C to X and Y terminals of indoor unit.

R/C wires (X, Y) have no polarity.

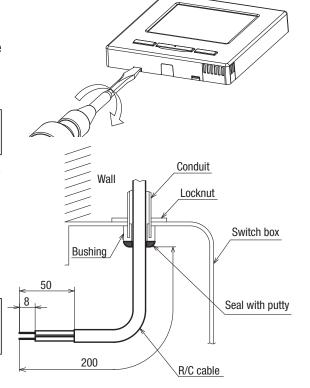
In case of embedding wiring (When the wiring is retrieved "Backward")

3 Embed the switch box and the R/C wires beforehand.

### Seal the inlet hole for the R/C wiring with putty.

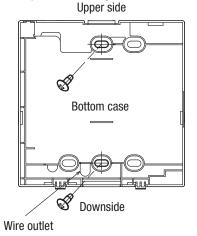
 If dust or insect enters, it could cause electric shocks, fire or breakdown.



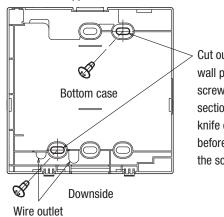


When wires are passed through the bottom case, fix the bottom case at 2 places on the switch box.
Upper side

Switch box for 1 pc



Switch box for 2 pcs



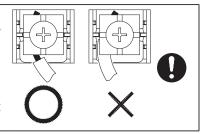
Cut out the thin wall part at the screw mounting section with a knife or the like before tightening the screw.

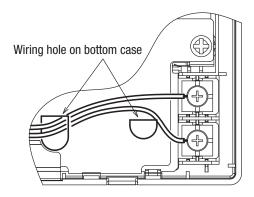
- (5) When fixing the bottom case diagonally at 2 places, cut out the thin wall section on the case.
- ⑥ Fix wires such that the wires will run around the terminal screws on the top case of R/C.

### **Cautions for wire connection**

Use wires of no larger than 0.5 mm² for wiring running through the remote control case, Take care not to pinch the sheath.

Tighten by hand (0.7 N·m or less) the wire connection. If the wire is connected using an electric driver, it may cause failure or deformation.

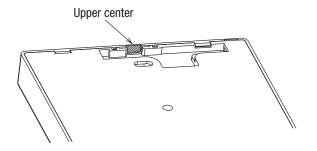




① Install the upper case with care not to pinch wires of R/C.

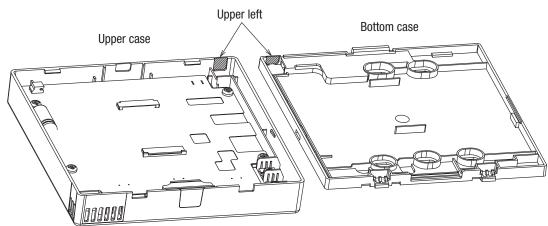
In case of exposing wiring (When the wiring is taken out from the "upper center" or "upper left" of R/C)

3 Cut out the thin wall sections on the cases for the size of wire.



When taking the wiring out from the upper center, open a hole before separating the upper and bottom cases. This will reduce risk of damaging the PCB and facilitate subsequent work.

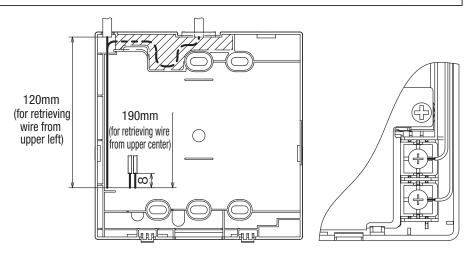
When taking the wiring out from the upper left, take care not to damage the PCB and not to leave any chips of cut thin wall inside.



If the hole is cut too large, moisture, dust or insects may enter. Seal gaps with putty or the like.



- ④ Fix the bottom R/C case on a flat surface with wood screws.
- ⑤ In case of the upper center, pass the wiring behind the bottom case. (Hatched section)
- ⑥ Fix wires such that the wires will run around the terminal screw of the top case of R/C.
- Install the top case with care not to pinch wires of R/C.

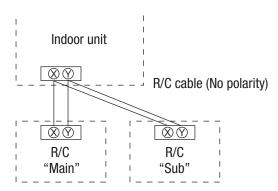


### Main/Sub setting when more than one remote control are used

### Main-Sub setting for use of two or more R/C

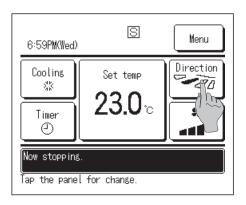
Up to two units of R/C can be used at the maximum for 1 indoor unit or 1 group. One is main R/C and the other is sub R/C.

Operating range is different depending on the main or sub R/C.



Set the "Main" and "Sub" as described at Section 7 of installtion manual attached to the remote control.

| R/C function   | Main | Sub |
|--|------|-----|
| Run/Stop, setting temperature, fan speed and flap direction operations | 0    | 0   |
| High power and energy-saving operations                                | 0    | 0   |
| Energy-saving setting  | 0    | _   |
| R/C sensor   | 0    | _   |
| Test run menu operation  | 0    | _   |
| Room temperature range setting   | 0    | _   |
| Indoor unit settings   | 0    | _   |
| Individual flap control  | 0    | _   |
| Operation data display   |      | _   |
| Error history display  | 0    | 0   |



### **Note: Connection to personal computer**

It can be set from a personal computer via the USB port (mini-B). Connect after removing the cover for USB port of upper case.

### Replace the cover after use.

If dust, insect, etc. enters, it could cause electric shocks or breakdown.



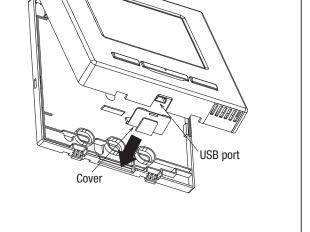
Special software is necessary for the connection. For details, view the web site or refer to the engineering data.

# Do not connect to a personal computer without using the special software.

Do not connect the personal computer to the USB simultaneously with other USB devices.



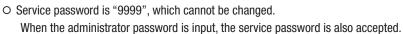
It could cause malfunction or breakdown of R/C or personal computer.

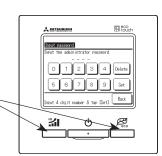


### Note: Initializing of password

Administrator password (for daily setting items) and service password (for installation, test run and maintenance) are used.

 The administrator password at factory default is "0000". This setting can be changed (Refer to User's Manual). When the administrator password is forgotten, it can be initialized, if the [High power] and the [Energy-saving] buttons are pushed simultaneously for 5 seconds on the administrator password input screen.





(2) Model RC-E5

Read together with indoor unit's installation manual.

### **<b>∆WARNING**

Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.

Loose connection or hold will cause abnormal heat generation or fire.

Make sure the power source is turned off when electric wiring work. Otherwise, electric shock, malfunction and improper running may occur.



### **ACAUTION**

- ■DO NOT install the remote control at the following places in order to avoid malfunction.
  - (1) Places exposed to direct sunlight
- (4) Hot surface or cold surface enough to generate condensation (5) Places exposed to oil mist or steam directly
- (2) Places near heat devices(3) High humidity places
- o) Flaces exposed to oil filist of steal





■DO NOT leave the remote control without the upper case.

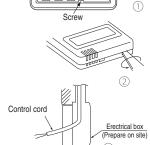
In case the upper cace needs to be detached, protect the remote control with a packaging box or bag in order to keep it away from water and dust.



| Accessories     | Remote control, wood screw (ø3.5×16) 2 pieces                          |
|-----------------|--|
| Prepare on site | Remote control cord (2 cores) the insulation thickness in 1mm or more. |
|                 | [In case of embedding cord] Erectrical box, M4 screw (2 pieces)        |
|                 | [In case of exposing cord] Cord clamp (if needed)                      |

### Installation procedure

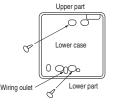
- Open the cover of remote control, and remove the screw under the buttons without fail.
- ② Remove the upper case of remote control. Insert a flat-blade screwdriver into the dented part of the upper part of the remote control, and wrench slightly.

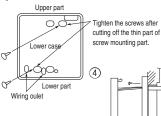


### [In case of embedding cord]

3 Embed the erectrical box and remote control cord beforehand.

Prepare two M4 screws (recommended length is 12-16mm) on site, and install the lower case to erectrical box. Choose either of the following two positions in fixing it with screws.

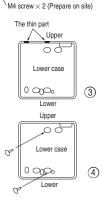




- S Connect the remote control cord to the terminal block. Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)
- Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.

### [In case of exposing cord]

- You can pull out the remote control cord from left upper part or center upper part. Cut off the upper thin part of remote control lower case with a nipper or knife, and grind burrs with a file etc.
- ④ Install the lower case to the flat wall with attached two wooden screws.

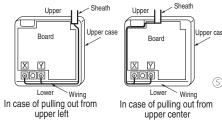


(4)

S Connect the remote control cord to the terminal block.

Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)

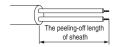
Wiring route is as shown in the right diagram depending on the pulling out direction.



The wiring inside the remote control case should be within 0.3mm² (recommended) to 0.5mm². The sheath should be peeled off inside the remote control case.

The peeling-off length of each wire is as below.

| Pulling out from upper left | Pulling out from upper center |
|-----------------------------|-------------------------------|
| X wiring : 215mm            | X wiring: 170mm               |
| Y wiring : 195mm            | Y wiring : 190mm              |



- Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.
- In case of exposing cord, fix the cord on the wall with cord clamp so as not to slack.

### Installation and wiring of remote control

- ① Wiring of remote control should use 0.3mm<sup>2</sup> × 2 core wires or cables. (on-site configuration)
- ② Maximum prolongation of remote control wiring is 600 m.

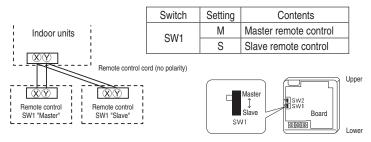
If the prolongation is over 100m, change to the size below.

But, wiring in the remote control case should be under 0.5mm<sup>2</sup>. Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

| 100 - 200m | ······0.5mm <sup>2</sup> × 2 cores |
|------------|------------------------------------|
| Under 300m | 0.75mm <sup>2</sup> × 2 cores      |
| Under 400m | 1.25mm <sup>2</sup> × 2 cores      |
| Under 600m | ······2.0mm <sup>2</sup> × 2 cores |

### Master/ slave setting when more than one remote controls are used

A maximum of two remote controls can be connected to one indoor unit (or one group of indoor units.)



Set SW1 to "Slave" for the slave remote control. It was factory set to "Master" for shipment.

Note: The setting "Remote control thermistor enabled" is only selectable with the master remote control in the position where you want to check room temperature.

The air-conditioner operation follows the last operation of the remote control regardless of the master/ slave setting of it.

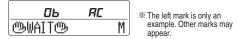
### The indication when power source is supplied

When power source is turned on, the following is displayed on the remote control until the communication between the remote control and indoor unit settled.

Master remote control : "@WAIT@ M"
Slave remote control : "@WAIT@ S"

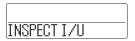
At the same time, a mark or a number will be displayed for two seconds first.

This is the software's administration number of the remote control, not an error cord.



When remote control cannot communicate with the indoor unit for half an hour, the below indication will appear.

Check wiring of the indoor unit and the outdoor unit etc.



### The range of temperature setting

When shipped, the range of set temperature differs depending on the operation mode as below.

Heating: 16-30°C (55-86°F)

Except heating (cooling, fan, dry, automatic): 18-30°C (62-86°F)

### ●Upper limit and lower limit of set temperature can be changed with remote control.

Upper limit setting: valid during heating operation. Possible to set in the range of 20 to 30°C (68 to 86°F). Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26°C (62 to 79°F)

When you set upper and lower limit by this function, control as below.

 When ②TEMP RANGE SET, remote control function of function setting mode is "INDN CHANGE" (factory setting), [If upper limit value is set]

During heating, you cannot set the value exceeding the upper limit.

[ If lower limit value is set ]

During operation mode except heating, you cannot set the value below the lower limit.

2. When ② TEMP RANGE SET, remote control function of function setting mode is "NO INDN CHANGE" [If upper limit value is set ]

During heating, even if the value exceeding the upper limit is set, upper limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

[ If lower limit value is set ]

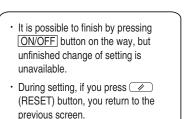
During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

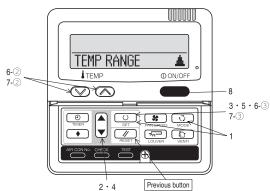
### How to set upper and lower limit value

1. Stop the air-conditioner, and press (SET) and (MODE) button at the same time for over three seconds.

The indication changes to "FUNCTION SET ▼".

- 2. Press ▼ button once, and change to the "TEMP RANGE ▲ " indication.
- 3. Press (SET) button, and enter the temperature range setting mode.
- 4. Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using ▲ ▼ button.
- 5. Press (SET) button to fix.
- 6. When "UPPER LIMIT ▼" is selected (valid during heating)
  - ① Indication: "  $\bigcirc$   $\lor$   $\land$  SET UP"  $\rightarrow$  "UPPER 30°C  $\lor$ "
  - ② Select the upper limit value with temperature setting button ☑ △. Indication example: "UPPER 26°C ∨ △" (blinking)
  - ③ Press (SET) button to fix. Indication example: "UPPER 26°C" (Displayed for two seconds) After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼".
- 7. When "LOWER LIMIT **\( \Lambda \)**" is selected (valid during cooling, dry, fan, automatic)
  - ① Indication: " $\textcircled{b} \lor \land \mathsf{SET} \mathsf{UP}" \to "\mathsf{LOWER} \mathsf{18}^\circ\mathsf{C} \land "$
  - ② Select the lower limit value with temperature setting button ☑ △. Indication example: "LOWER 24°C ∨ △" (blinking)
  - ③ Press (SET) button to fix. Indication for example: "LOWER 24°C" (Displayed for two seconds) After the fixed lower limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼".
- 8. Press ON/OFF button to finish.





### The functional setting

The initial function setting for typical using is performed automatically by the indoor unit connected, when remote control and indoor unit are connected.

As long as they are used in a typical manner, there will be no need to change the initial settings.

If you would like to change the initial setting marked " O ", set your desired setting as for the selected item. The procedure of functional setting is shown as the following diagram.

| i | Flow | οf | funct  | ion   | settin  | n٦ |
|---|------|----|--------|-------|---------|----|
|   | LIOW | O. | IUIICI | 11011 | Selliii | ч  |

Start : Stop air-conditioner and press "\( \)" (SET) and
"\( \)" (MODE) buttons at the same time for over three seconds.

Finalize : Press "\( \)" (SET) button.

Reset : Press "\( \)" (RESET) button.

Select : Press \( \) \( \)" (MODE) button.

End : Press \( \) (NOPF) button. Record and keep the setting

Consult the technical data etc. for each control details

It is possible to finish above setting on the way, and unfinished change of setting is unavailable.

": Initial settings

Stop air-conditioner and press (MODE) buttons It the same time for over three seconds

> FUNCTION SET ▼ To next page

☐ FUNCTION ▼ (Remote control function) **Function** setting 01 6MAEF 3E SP VALID SP INVALID ○ Validate setting of ESP:External Static Pressure Invalidate setting of ESP 02 AUTO RUN SE Automatical operation is impossible 03 | MA TEMP SW ⊹D⊠ VALID S⊠⊠ INVALII Temperature setting button is not working 04 🖾 MODE SW (SEE INVALI Mode button is not working 05 O ON/OFF SW On/Off button is not working 06 [⊠] FAN SPEED SW 용절 INVALID Fan speed button is not working 07 🖾 LOUVER SW ⊕⊠ VALID ⊕⊠ INVALID Louver button is not working OR O TIMER SW ७७ VALID ७७ INVALID Timer button is not working 09 ■ SENSOR SE ESENSOR OF Remote thermistor is not working. Remote thermistor is working.

Remote thermistor is working, and to be set for producing +3.0°C increase in temperature.

Remote thermistor is working, and to be set for producing +2.0°C increase in temperature.

Remote thermistor is working, and to be set for producing +1.0°C increase in temperature. Remote thermistor is working, and to be set for producing -1.0°C increase in temperature. Remote thermistor is working, and to be set for producing -2.0 °C increase in temperature. Remote thermistor is working, and to be set for producing -3.0 °C increase in temperature. 10 AUTO RESTART 11 | VENT LINK SET NO VENT In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit. VENT LTNK operation of indoor failt.

In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), you can operate /stop the ventilation device independently by 

(VENT) button. NO VENT LINK 12 TEMP RANGE SET If you change the range of set temperature, the indication of set temperature INDN CHANGE will vary following the control.

If you change the range of set temperature, the indication of set temperature will not vary following the control, and keep the set temperature. NO INDN CHANG 13 I/U FAN . Airflow of fan becomes of منافع الله عناه - Airflow of fan becomes of منافع الله عناه - الله عناه - الله عناه -Airflow of fan becomes of & all - & all l If you change the remote control function "14 %¬POSITION", you must change the indoor function "04 %¬POSITION" accordingly. 14 ⇒¬POSITION You can select the louver stop position in the four. The louver can stop at any position. 4POSITION STOR 15 MODEL TYPE COOLENG ONLY 16 EXTERNAL CONTROL SET If you input signal into CNT of the indoor printed circuit board from external, the indoor unit will be operated independently according to the input from external. If you input into CNT of the indoor printed circuit board from external, all units which connect to the same remote control are operated according to the input from external. INDIVIDUAL FOR ALL UNITS 17 ROOM TEMP INDICATION SET INDICATION OFF In normal working indication, indoor unit temperature is indicated instead of airflow (Only the master remote control can be indicated.) 18 \* INDICATION Heating preparation indication should not be indicated. 19 I°C/°ESET Temperature indication is by degree C °C / °E Temperature indication is by degree F To next page

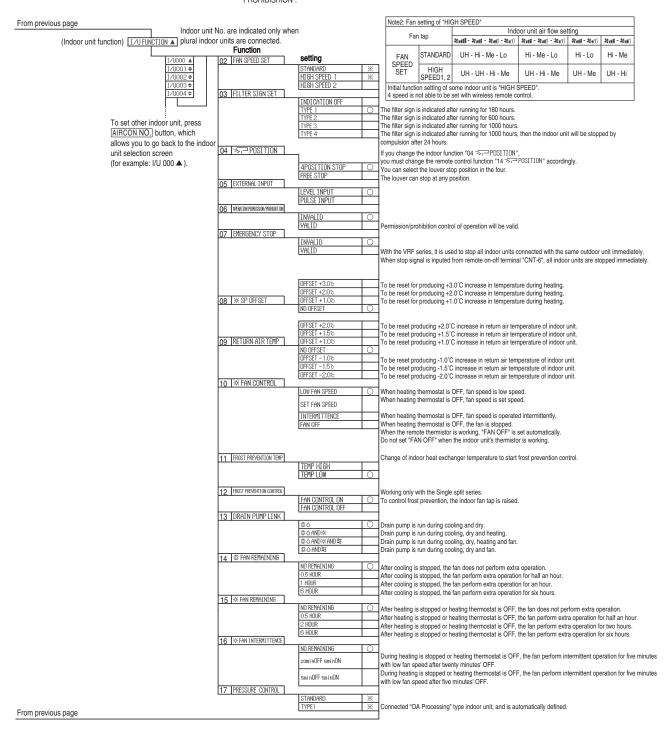
> ON/OFF button (finished)

Note 1: The initial setting marked "%" is decided by connected indoor and outdoor unit, and is automatically defined as following table.

| Function No.   | Item            | Default      | Model  |
|----------------|-----------------|--------------|--|
| Remote control | AUTO RUN SET    | AUTO RUN ON  | "Auto-RUN" mode selectable indoor unit.                |
| function02     |                 | AUTO RUN OFF | Indoor unit without "Auto-RUN" mode                    |
| Remote control | ☑SIFAN SPEED SW | 용조 VALID     | Indoor unit with two or three step of air flow setting |
| function06     |                 | 6國 INVALID   | Indoor unit with only one of air flow setting          |
| Remote control | EZ LOUVER SW    | &⊡ VALID     | Indoor unit with automatically swing louver            |
| function07     |                 | & ☑ INVALID  | Indoor unit without automatically swing louver         |
| Remote control | I/U FAN         | HI-MID-LO    | Indoor unit with three step of air flow setting        |
| function13     |                 | HI-LO        | Indoor unit with two step of air flow setting          |
|                |                 | HI-MID       |  |
|                |                 | 1 FAN SPEED  | Indoor unit with only one of air flow setting          |
| Remote control | MODEL TYPE      | HEAT PUMP    | Heat pump unit   |
| function15     |                 | COOLING ONLY | Exclusive cooling unit                                 |

Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.

But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".



### How to set function

Stop air-conditioner and press ○ (SET) ★ (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼ " will be displayed.



- 2. Press (SET) button.
- 3. Make sure which do you want to set, "■ FUNCTION ▼" (remote control function) or "I/U FUNCTION▲ " (indoor unit function).
- 4. Press ▲ or ▼ button.

Selecct "☐ FUNCTION ▼" (remote control function) or "I/U FUNCTION ▲" (indoor unit function).



5. Press (SET) button.

#### 6. [On the occasion of remote control function selection]

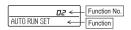
① "DATA LOADING" (Indication with blinking)

Display is changed to "01 & ESF SET".

② Press ▲ or ▼ button.

"No. and function are indicated by turns on the remote control function table, then you can select from them.

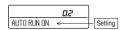
(For example)



③ Press O (SET) button.

The current setting of selected function is indicated.

(for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected.



Press or button. Select the setting.



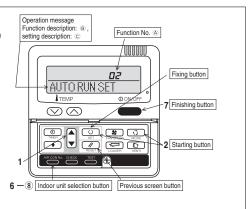
⑤ Press ○ (SET)

"SET COMPLETE" will be indicated, and the setting will be completed.

Then after "No. and function" indication returns, Set as the same procedure if you want to set continuously ,and if to finish, go to 7.



7. Press ON/OFF button. Setting is finished.



#### [On the occasion of indoor unit function selection]

① "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)

Indication is changed to "02 FAN SPEED SET".

#### [Note]

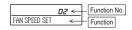
 If plural indoor units are connected to a remote control, the indication is "I/U 000" (blinking) ← The lowest number of the indoor unit connected is indicated.



- (2) Press ▲ or ▼ button. Select the number of the indoor unit you are to set If you select "ALL UNIT ▼", you can set the same setting with all unites.
- (3) Press (SET) button.
- ② Press ▲ or ▼ button.

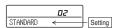
"No. and function" are indicated by turns on the indoor unit function table, then you can select from them.

(For example)



③ Press O (SET) button.

The current setting of selected function is indicated. (For example) "STANDARD" ← If "02 FAN SPEED SET" is selected.



- ④ Press ▲ or ▼ button. Select the setting.
- S Press (SET) button.
  "SET COMPLETE" will be indicated, and the setting will be completed.

Then after "No. and function" indication returns, set as the same procedure if you want to set continuously , and if to finish, go to 7.



When plural indoor units are connected to a remote control, press the AIRCON No. button, which allows you to go back to the indoor unit selection screen. (example "I/U 000 A")

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.
- $\boldsymbol{\cdot}$  Setting is memorized in the control and it is saved independently of power failure.

### [ How to check the current setting ]

When you select from "No. and funcion" and press set button by the previous operation, the "Setting" displayed first is the current setting.

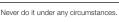
(But, if you select "ALL UNIT ▼ ", the setting of the lowest number indoor unit is displayed.)

### 10.4 Installation of outdoor unit

- This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 46.
- . While install the unit, be sure to check the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage etc.) and installation spaces.

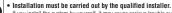
### SAFETY PRECAUTIONS

- Before installation, read the "SAFETY PRECAUTIONS" carefully and strictly follow it during the installation work
- The precautionary items mentioned below are distinguished into two levels, MARNING and ACAUTION. A WARNING: Wrong installation would cause serious consequences such as injuries or death CAUTION: Wrong installation might cause serious consequences depending on circumstances.
- Both mention the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completing installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- Before starting the installation work, proper precautions (using suitable protective clothing, groves etc.) should be taken by qualified installer.
- Pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:



Always do it according to the instruction.

### **↑** WARNING



If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer

- Install the system in full accordance with the installation manual Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire
- When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149)

If the density of refrigerant exceeds the limit, consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.

- Use the original accessories and the specified components for installation. If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- Install the unit in a location with good support.

Unsuitable installation locations can cause the unit to fall resulting in material damage and

- Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.
- Unsuitable installation locations can cause the unit to fall and cause material damage and
- Ventilate the working area well in the event of refrigerant leakage during installation. If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- Use the prescribed pipes, flare nuts and tools for R410A. Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.
- If the compressor is operated in state of opening service valves before completing

high, which can cause burst and personal injury. Do not process or splice the power cord, or share the socket with other power plugs. This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc

connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrinerant

- The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation". and the system must be connected to the dedicated circuit. Power source with insufficient capacity and incorrect function done by improper work can
- Be sure to shut off the nower before starting electrical work Failure to shut off the power can cause electric shocks, unit failure or incorrect function of
- Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.
- Unconformable cables can cause electric leak, anomalous heat production or fire.
- This appliance must be connected to main power source by means of a circuit breaker or switch (fuse:30A) with a contact separation of at least 3mm.
- . Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly. Incorrect installation may result in overheating and fire.
- · Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.
- Loose connections or cable mountings can cause anomalous heat production or fire.
- Be sure to fix up the service panels.

cause electric shocks and fire

Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water. · Be sure to switch off the power source in the event of installation, inspection

If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.

 Stop the compressor before removing the pipe after shutting the service valve on pump down work.

If the nine is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle

 Only use prescribed option parts. The installation must be carried out by the qualified installer

If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks fire

- · Be sure to wear protective goggles and gloves while at work.
- · Earth leakage breaker must be installed.
- If the earth leakage breaker is not installed, it can cause electric shocks.
- Do not perform any change of protective device itself or its setup condition. The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
- · After completed installation, check that no refrigerant leaks from the system. If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- · Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.

An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit.

- . Do not perform brazing work in the airtight room It can cause lack of oxygen.
- Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much. Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
- · Consult the dealer or an expert regarding removal of the unit. Incorrect installation can cause water leaks, electric shocks or fire

• Ensure that no air enters in the refrigerant circuit when the unit is installed and • Do not bundle or wind or process the power cord. Do not deform the power cord by treading it. This may cause fire or heating. If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too

 Do not run the unit with removed panels or protections. Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.

. Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.

If you renair or modify the unit, it can cause water leaks, electric shocks or fire

### **↑** CAUTION



Carry out the electrical work for ground lead with care.

Do not connect the around lead to the connect the connect

Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks, it could cause explosion or ignition. If the unit weights more than 20kg, it must be carried by two or more persons. Do not

carry by the plastic straps, always use the carry handle when carrying the unit by hand.

Any remaining packing materials can cause personal injury as it contains nails and

wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away.



- · Use the circuit breaker for all pole correct capacity. Circuit breaker should be able to disconnect all poles under over current. Using the incorrect circuit breaker, it can cause the unit malfunction and fire
- Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.
- The isolator should be locked in OFF state in accordance with EN60204-1. After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all
- metal parts should be secured Secure a space for installation, inspection and maintenance specified in

Insufficient space can result in accident such as personal injury due to falling from the installation place

The outlet air can affect adversely to the plant etc.

• Take care when carrying the unit by hand.

Dispose of any packing materials correctly.

from children and to dienose after tear it up

ambient air moisture on them.

Use gloves to minimize the risk of cuts by the aluminum fins.

- Be sure to insulate the refrigerant pipes so as not to condense the Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- strength of structure . Locations where vibration and operation sound generated by the outdoor unit can affect seriously (on the wall or at the place near bed room).
- . Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 5m).
- Locations where drainage cannot run off safely.
- It can affect surrounding environment and cause a claim.
- Do not install the unit near the location where leakage of combustible. gases can occur.

If leaked gases accumulate around the unit, it can cause fire.

. Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.

Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.

• Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics. Equipment such as inverters, standby generators, medical high frequency equipments

and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.

 Do not install the outdoor unit in a location where insects and small animals can inhahit Insects and small animals can enter the electric parts and cause damage or fire.

Instruct the user to keep the surroundings clean.

Do not use the base flame for outdoor unit which is corroded or damaged

· Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.

If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.

- Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.
- If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- . Perform installation work properly according to this installation manual. Improper installation can cause abnormal vibrations or increased noise generation.

#### . Do not install the unit in the locations listed below. Locations where vibration can be amplified and transmitted due to insufficient

- . Locations where carbon fiber, metal powder or any powder is floating.
- . Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
- Vehicles and ships.
- . Locations where cosmetic or special sprays are often used.
- . Locations with direct exposure of oil mist and steam such as kitchen and machine
- Locations where any machines which generate high frequency harmonics are used. Locations with salty atmospheres such as coastlines
- . Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
- · Locations where the unit is exposed to chimney smoke.
- . Locations at high altitude (more than 1000m high).
- · Locations with ammonic atmospheres (e.g. organic fertilizer).
- . Locations with calcium chloride (e.g. snow melting agent).
- . Locations where heat radiation from other heat source can affect the unit.
- · Locations without good air circulation.
- Locations with any obstacles which can prevent inlet and outlet air of the unit.
- Locations where short circuit of air can occur (in case of multiple units installation).
- Locations where strong air blows against the air outlet of outdoor unit. Locations where something located above the unit could fall.
- It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire
- Do not install the outdoor unit in the locations listed below.
- . Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
- Locations where outlet air of the outdoor unit blows directly to an animal or plants.

#### due to long periods of operation.

Using an old and damage base flame can cause the unit falling down and cause nersonal injury

- Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used. Connecting the circuit with copper wire or other metal thread can cause unit failure
- . Do not touch any buttons with wet hands. It can cause electric shocks
- Do not touch any refrigerant pipes with your hands when the system is in operation.

During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

- Do not touch the suction or aluminum fin on the outdoor unit. This may cause injury.
- . Do not put anything on the outdoor unit and operating unit. This may cause damage the objects or injury due to falling to the object.
- Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.
- . Do not clean up the unit with water.
- When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.
- If safety facilities are not provided, it can cause personal injury due to falling from the installation place
- . Do not step onto the outdoor unit.
- You may incur injury from a drop or fall

### Check before installation work

- Model name and power source
- Refrigerant piping length
- . Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

| Accessories for outdoor unit | Q'ty |
|------------------------------|------|
| ① Edging                     | 1    |
|                              |      |

|          | Locally procured parts                            | Q't |
|----------|---|-----|
| <u>a</u> | Sealing plate                                     | 1   |
| 6        | Sleeve  | -1  |
| 0        | Inclination plate                                 | 1   |
| 0        | Putty   | 1   |
| <u></u>  | Drain hose (extension hose)                       | 1   |
| 1        | Piping cover(for insulation of connection piping) | 1   |
| 9        | Drain elbow                                       | 1   |
| h        | Grommet   | 2   |

|   |   | Wrench key (Hexagon) [4m/m]                                |
|---|---|--|
|   |   | Vacuum pump  |
| Plus headed driver                          | 11  | Vacuum pump adapter (Anti-reverse flow type)               |
| Knife                                       |   | (Designed specifically for R410A)                          |
| Saw   | 12  | Gauge manifold (Designed specifically for R410A)           |
| Tape measure                                | 13  | Charge hose (Designed specifically for R410A)              |
| Hammer                                      | 14  | Flaring tool set (Designed specifically for R410A)         |
| Spanner wrench                              | 15  | Gas leak detector (Designed specifically for R410A)        |
| Torque wrench [14.0-82.0N·m (1.4-8.2kgf·m)] | 16  | Gauge for projection adjustment                            |
| Hole core drill (65mm in diameter)          | 10  | (Used when flare is made by using conventional flare tool) |
|   | Plus headed driver Knife Saw Tape measure Hammer Spanner wrench Torque wrench [14.0-82.0N·m (1.4-8.2kgf·m)] | Plus headed driver   |

#### Note as a unit designed for R410A

- . Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.
- A cylinder containing R410A has a pink indication mark on the top.
- . A unit designed for R410A has adopted a different size indoor unit service valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake. The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure.
- Accordingly, you are required to arrange dedicated R410A tools listed in the table on the left before installing or servicing this unit.
- . Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.
- In charging refrigerant, always take it out from a cylinder in the liquid phase.
- All indoor units must be models designed exclusively for R410A. Check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

#### Head the following the heating operation

• In the case when this unit has stopped for a long time, heating operation may start and operate in cooling mode by 7 minutes, after that, heating operation is started. This operation keep oil quality in compressor by preventing liquid refrigerant come into compressor. If that is the case, do not suspect a unit failure. (In this case, remote control displays "DEFROST" or "In operation for defrosting".)

### 1. HAULAGE AND INSTALLATION (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

When a unit is hoisted with slings for haulage, take into consideration the offset of its gravity center position. **△** CAUTION If not properly balanced, the unit can be thrown off-balance and fall.

#### 1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from
- When you have to unpack the unit for a compelling reason before you haul it to the installation point, hoist the unit with nylon slings or ropes and protection pads so that you may not damage the unit.



#### 2) Portage

• The right hand side of the unit as viewed from the front (Fan side) is heavier. A person carrying the right hand side must take heed of this fact. A person carrying the left hand side must hold with his right hand the handle provided on the front panel of the unit and with his left hand the corner column section.



#### 3) Selecting the installation location

Be sure to select a suitable installation place in consideration of following conditions.

- · A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- . A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit. A place where the unit is not exposed to oil splashes.
- . A place where it can be free from danger of flammable gas leakage.
- · A place where drain water can be disposed without any trouble.
- . A place where the unit will not be affected by heat radiation from other heat source.
- . A place where snow will not accumulate.
- . A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any TV set or radio receiver interference.
- · A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely
- A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment
- · A place where chemical substances like sulfuric gas, chloric gas, acid and alkali (including ammonia), which can harm the unit, will not be generated and not remain.
- If a operation is conducted when the outdoor air temperature is -5 or lower, the outdoor unit should be installed at a place where it is not influenced by natural wind.
- . A place where strong wind will not blow against the outlet air blow of the unit.
- · A place where stringent regulation of electric noises is not applicable.

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

#### 4) Caution about selection of installation location

- (1) If the unit is installed in the area where the snow will accumulate, following measures are required. The bottom plate of unit and intake, outlet may be blocked by snow.
- 1 Install the unit on the base so that the hottom is higher than



2 Provide a snow bond to the outdoor unit on site Regarding outline of a snow manual.



3 Install the unit under eaves or providen the roof on site



Since drain water generated by defrost control may freeze, following measures are required.

. Don't execute drain piping work by using a drain elbow and drain grommets (optional parts). [Refer to Drain piping work.1

- Attach heater on a base plate on site, if there is possibility to freeze drain water. In case that the product has a corrective drainage system, the drainage paths should have suitable measure against freezing but be sure not to melt the material of drainage paths with heat.
- (2) If the unit can be affected by strong wind, following measures are required Strong wind can cause damage of fan (fan motor), or can cause performance degradation, or can trigger anomalous stop of the unit due to rising of high pressure.
  - unit to face a wall of building, or the unit in a position provide a fence or a windbreak perpendicular to the direction of wind.



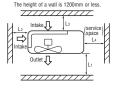
1.Install the outlet air blow side of the 2.Install the outlet air blow side of 3.The unit should be installed on the stable and level foundation If the foundation is not level. tie down the unit with wires.



#### 5) Installation space

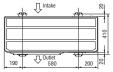
- . Walls surrounding the unit in the four sides are not acceptable.
- . There must be a 1-meter or larger space in the above.
- . When more than one unit are installed side by side, provide a 250mm or wider interval between them as a service space. In order to facilitate servicing of controllers, provide a sufficient space between units so that their top plates can be removed easily.
- . Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not
- . Where piling snow can bury the outdoor unit, provide proper snow guards.

|                           |      |      | (mm) |
|---------------------------|------|------|------|
| Size Example installation | I    | П    | Ш    |
| L1                        | Open | Open | 500  |
| L2                        | 300  | 250  | Open |
| L3                        | 100  | 150  | 100  |
| L4                        | 250  | 250  | 250  |

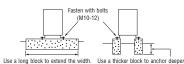


#### 6) Installation

Anchor bolt fixed position



### (2) Notes for installation



- . In installing the unit, fix the unit's legs with bolts specified on the above.
- . The protrusion of an anchor bolt on the front side must be kept within 15mm.
- . Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- · Refer to the above illustrations for information regarding concrete foundations.
- . Install the unit in a level area. (With a gradient of 5mm or less.) Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

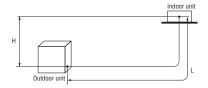
#### 7) To run the unit for a cooling operation, when the outdoor temperature is -5°C or lower.

• When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site. So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual

2. REFRIGERANT PIPING WORK

. Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

| Restrictions                 |   | Dimensional restrictions | Marks appearing in the drawing on the right |
|------------------------------|---|--------------------------|---|
| Main pipe length             |   | 30m or less              | L   |
| Elevation difference between | When the outdoor unit is positioned higher, | 20m or less              | Н   |
| indoor and outdoor units     | When the outdoor unit is positioned lower,  | 20m or less              | Н   |



. The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, see "5. UTILIZATION OF EXISTING PIPING."

### 2) Determination of pipe size

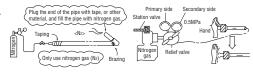
Determine refrigerant pipe size according to the following guidelines based on the indoor unit specifications.

|                                    | Gas pipe       | Liquid pipe    |
|------------------------------------|----------------|----------------|
| Outdoor unit connected             | ø15.8<br>Flare | ø9.52<br>Flare |
| Refrigerant piping (branch pipe L) | ø15.8          | ø9.52          |
| Indoor unit connected              | ø15.8          | ø9.52          |

#### Pipe brazing

#### Brazing must be performed under a nitrogen gas flow.

Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.



#### 3) Refrigerant pipe wall thickness and material

 Select refrigerant pipes of the table shown on the right wall thickness and material as specified. for each pipe size.

NOTE Select pipes having a wall thickness larger than the specified minimum pipe thickness.

| Pipe diameter [mm]               | ø9.52       | ø15.88      |
|----------------------------------|-------------|-------------|
| Minimum pipe wall thickness [mm] | 0.8         | 1.0         |
| Pipe material*                   | O-type pipe | O-type pipe |

<sup>\*</sup>Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

#### 4) On-site piping work

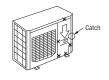
**⚠** IMPORTANT

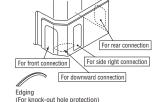
Take care so that installed pipes may not touch components within a unit. If pipes touch internal components, abnormal sounds and/or vibrations,

How to remove the side cover

First remove the five screws (x mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.

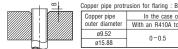
- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- · Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- . Carry out the on site piping work with the service valve fully closed.
- · Give sufficient protection to a pipe end (compressed and blazed, or with an adhesive tape) so that water or foreign matters may not enter the piping.
- . Bend a pipe to a radius as large as practical (R100-R150). Do not bend a pipe repeatedly to correct its form
- Flare connection is used between the unit and refrigerant pipe. Flare a pipe after engaging a flare nut onto it. Flare dimensions for R410A are different from those for conventional R407C. Although we recommend the use of flaring tools designed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- . The pipe should be anchored every 1.5m or less to isolate the vibration.
- . Tighten the flare joint securely with a double spanner.





| ŀ | Α.     | - | F |
|---|--------|---|---|
|   | $\Box$ | ĺ | Γ |
|   |        |   | ŀ |
|   | H      |   | t |

| Flared pipe end :             | A (mm)     |
|-------------------------------|------------|
| Copper pipe<br>outer diameter | A 0<br>-04 |
| ø9.52                         | 013.2      |
| ø15.88                        | 19.7       |



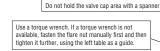
| opper pipe processor for naring . b (iiiii) |                    |                          |  |  |  |  |
|---|--------------------|--------------------------|--|--|--|--|
| Copper pipe                                 | In the case of a   | rigid (clutch) type      |  |  |  |  |
| outer diameter                              | With an R410A tool | With a conventional tool |  |  |  |  |
| ø9.52                                       | 0-0.5              | 1.0 -1.5                 |  |  |  |  |
| ø15.88                                      | 0 0.5              | 1.0 - 1.5                |  |  |  |  |
|   |                    |                          |  |  |  |  |

### **↑** CAUTION

#### Do not apply force beyond proper fastening torque in tightening the flare nut.

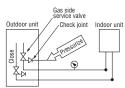
Fix both liquid and gas service valves at the valve main bodies as illustrated on the right, and then fasten them. applying appropriate fastening torque.

| Service valve size (mm) | Tightening torque (N·m) | Tightening angle (°) | Recommended length of a tool handle (mm) |
|-------------------------|-------------------------|----------------------|--|
| ø9.52 (3/8")            | 34-42                   | 30-45                | 200                                      |
| ø15.88 (5/8")           | 68-82                   | 15-20                | 300                                      |



### 5) Air tightness test

- (1) Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
- a) Raise the pressure to 0.5MPa, and then stop. Leave it for five minutes to see if the pressure drops.
- b) Then raise the pressure to 1.5MPa, and stop. Leave it for five more minutes to see if the pressure drops.
- c) Then raise the pressure to the specified level (4.15MPa), and record the ambient temperature and the pressure.
- d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient temperature fall 1C, the pressure also fall approximately 0.01MPa. The pressure, if changed, should be compensated for.
- e) If a pressure drop is observed in checking e) and a) d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air tightness test again.
- 2 In conducting an air tightness test, use nitrogen gas and pressurize the system with nitrogen gas from the gas side. Do not use a medium other than nitrogen gas under any circumstances.



#### 6) Evacuation <Work flow> Air tightness test completed Vacuuming begins When the system has remaining moisture Run the vacuum pump for at least one hour after the vacuum inside or a leaky point, the vacuum gauge gauge shows -0.1MPa or lower. (-76cmHg or lower) indicator will rise. Vacuuming completed Check the system for a leaky point and Confirm that the vacuum gauge indicator does not rise even if then draw air to create a vacuum again. the system is left for one hour or more. Vacuum gauge check

#### Pay attention to the following points in addition to the above for the R410A and compatible machines.

. To prevent a different oil from entering, use dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).

Fill refrigerant

· Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.

#### 7) Additional refrigerant charge

(1) Calculate a required refrigerant charge volume from the following table.

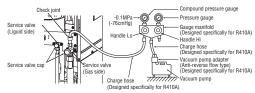
| Additional charge volume (g)    | Refrigerant volume charged  | Installation's pipe length (m) |
|---------------------------------|-----------------------------|--------------------------------|
| per meter of refrigerant piping | for shipment at the factory | covered without additional     |
| (liquid pipe ø9.52)             | (kg)                        | refrigerant charge             |
| 60                              | 2.55                        |                                |

- This unit contains factory charged refrigerant covering 15m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 15m refrigerant piping. When refrigerant piping exceeds 15m, additionally charge an amount calculated from the pipe length and the above
- table for the portion in excess of 15m. • If an existing pipe system is used, required refrigerant charge volume will vary depending on the liquid pipe size. For

further information, see "5. UTILIZATION OF EXISTING PIPING." Formula to calculate the volume of additional refrigerant required

Additional charge volume (g) = { Main length (m) - Factory charged volume 15 (m) } x 60 (g/m)

- \* When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally,
- . For an installation measuring 15m or shorter in pipe length, charge the refrigerant volume charged for shipment at the factory, when you recharge refrigerant after servicing etc.



Securely tighten the service valve can and the check joint blind but after adjustment

| , 5                |                         |                         |  |  |  |  |
|--------------------|-------------------------|-------------------------|--|--|--|--|
| Service valve size | Service valve cap       | Check joint blind nut   |  |  |  |  |
| (mm)               | tightening torque (N·m) | tightening torque (N·m) |  |  |  |  |
| ø9.52 (3/8")       | 20-30                   | 10 – 12                 |  |  |  |  |
| ø15.88 (5/8")      | 30-40                   | 10-12                   |  |  |  |  |

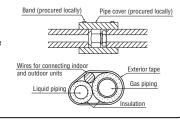
#### (2) Charging refrigerant

- . Since R410A refrigerant must be charged in the liquid phase, you should charge it keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult to charge a required amount, fully open the outdoor unit valves on both liquid and gas sides and charge refrigerant from the gas (suction) side service port, while running the unit in the cooling mode. In doing so, care must be taken so that refrigerant may be discharged from the cylinder in the liquid phase all the time. When the cylinder valve is throttled down or a dedicated conversion tool to change liquid phase refrigerant into mist is used to protect the compressor, however, adjust charge conditions so that refrigerant will gasify upon entering the unit.
- . In charging refrigerant, always charge a calculated volume by using a scale to measure the charge
- . When refrigerant is charged with the unit being run, complete a charge operation within 30minutes. Running the unit with an insufficient quantity of refrigerant for a long time can cause a compressor failure.

NOTE Put down the refrigerant volume calculated from the pipe length onto the caution label attached on the service nanel

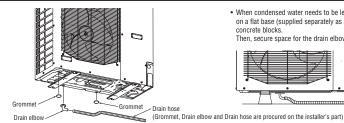
#### 8) Heating and condensation prevention

- (1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
- · Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.
- (2) Use a heat insulating material that can withstand 120°C or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable
- . All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- . Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
- Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and
- wrap them together with a connecting cable by a dressing tape.
- · Both gas and liquid pipes need to be dressed with 20mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.



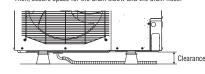
### 3. DRAIN PIPING WORK

- · Execute drain piping by using a drain elbow and drain grommets supplied separately as accessories, where water drained from the outdoor unit is a problem
- Water may drip where there is a larger amount of drain water. Seal around the drain. elbow and drain grommets with putty or adequate caulking material.
- . Condensed water may flow out from vicinity of service valve or connected pipes.
- . Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)
- Do not use drain elbow and grommet made of plastic for drain piping when base heater for outdoor unit is used. Plastic grommet and elbow will be damaged and hurnt in worst case
- . Prepare another drain tray made of metallic material for collecting drain when base heater is used.



. When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as a locally procured part) or concrete blocks

Then, secure space for the drain elbow and the drain hose



### 4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

Electrical installation work must be performed by an electrical installation service provider, qualified by a power provider of the country. Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.

• Do not use any power cable lighter than one specified in parentheses for each type below.

- braided cord (code designation 60245 IEC 51)
- . ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
- flat twin tinsel cord (code designation 60227 IEC 41) Use polychloroprene sheathed flexible cord (code designation 60245 IEC57) for power cables of parts of appliances for outdoor use.
- . Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone arounding wire. If improperly grounded, an electric shock or malfunction may result.
- . A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire.
- . Do not turn on the power until the electrical work is completed.
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- . For power cables, use conduits.

- . Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laving them together can result in the malfunctioning or a failure of the unit due to electric noises.
- . Fasten the cables so that those may not touch the piping, etc.
- . When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- . Never use a shield cable
- . Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.
- Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- . In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.

In case of faulty wiring connection, indoor unit dose not operate. Then, run lamp turns on and timer lamp blinks.

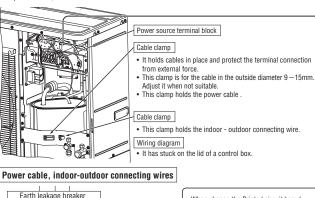
Use cables for interconnection wiring to avoid loosening of the wires. CENELEC code for cables Required field cables.

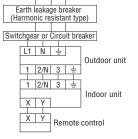
H05RNR4G1.5 (Example) or 245IEC57

- Harmonized cable type
- 300/500 volts
- Natural-and/or synth. rubber wire insulation
- Polychloroprene rubber conductors insulation
- Stranded core
- 4or5 Number of conductors
- One conductor of the cable is the earth conductor (yellow/green)
- Section of copper wire (mm2)

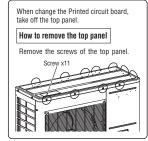
#### Main fuse specification

| ı | Specification | Part No.    |
|---|---------------|-------------|
| ı | 250V 20A      | SSA564A136A |



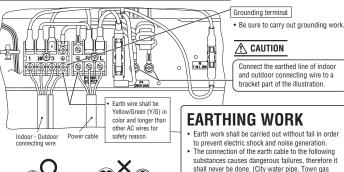


- · Always perform grounding system installation work with the power cable unplugged.
- . Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire
- . In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- Grounding terminals are provided in the terminal block.



. Use Polychloroprene sheathed flexible cord (code designation 60245 IEC57, IEC60335-2-40) with cross-sectional area of 5.5 mm<sup>2</sup> for power cable of outdoor unit.

(POWER CABLE) CENELEC code for cables requiring fields cables. H05RNR3G5.5



VCT cabtyre cable VVF flat cable 4-core cable

**↑** CAUTION

Power cable, indoor - outdoor connecting wire circuit diagram

telephoneline, etc.) Always use an earth leakage circuit breaker designed for inverter circuits to prevent

pipe, TV antenna, lightning conductor,

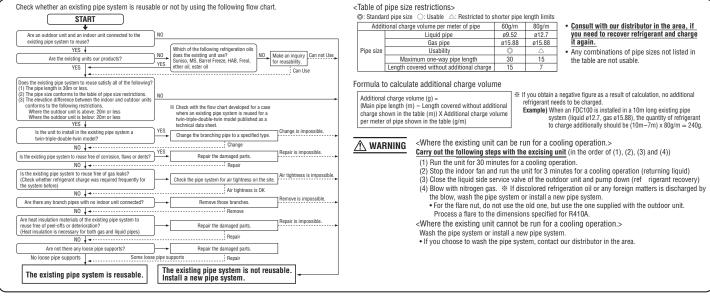
| Power source                                      | Power cable thickness (mm²) | MAX. over current (A) | Cable length (m) | Grounding wire thickness | Indoor -outdoor wire thickness × number |
|---|-----------------------------|-----------------------|------------------|--------------------------|---|
| Single phase 3 wire<br>220-240V 50Hz<br>220V 60Hz | 5.5                         | 21                    | 25               | ф1.6                     | ф 1.6х3                                 |

\*At the connection with the duct type indoor uni

| Power source                                      | Power cable thickness (mm²) | MAX. over current (A) | Cable length (m) | Grounding wire thickness | Indoor -outdoor wire thickness × number |  |
|---|-----------------------------|-----------------------|------------------|--------------------------|---|--|
| Single phase 3 wire<br>220-240V 50Hz<br>220V 60Hz | 5.5                         | 22                    | 24               | ф1.6                     | ф 1.6х3                                 |  |

- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear or Circuit breaker capacity which is calculated from maximum over current should be chosen. along the regulations in each country.
- The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, follow the internal cabling regulations. Adapt it to the regulation in effect in each country.

### 5. UTILIZATION OF EXISTING PIPING



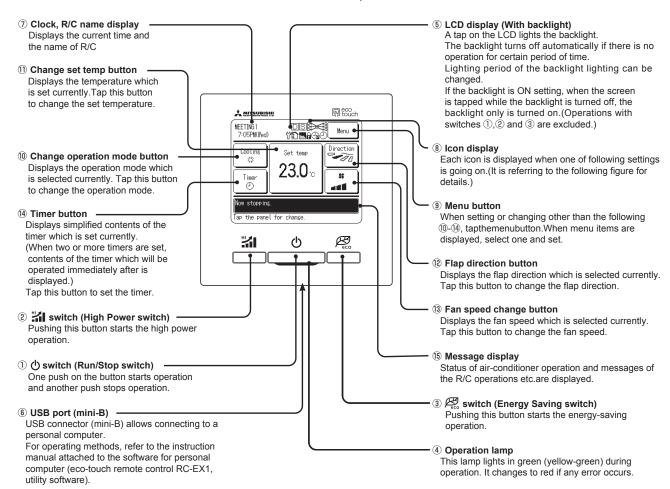
| INSTALLATION TEST CHECK POINTS  | After installation  Power cables and connecting wires are securely fixed to the terminal block. No gas leaks from the joints of the service valve.   |           |  |  |  |
|---|--|-----------|--|--|--|
| Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly. Explain to the customer how to use the unit and how to take care of the unit following the instruction manual. | The power source voltage is correct as the rating.  The pipe joints for indoor and outdoor pipes have been in the pipe data in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor and outdoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipes have been in the pipe joints for indoor pipe joints for indoo | nsulated. |  |  |  |

### 11. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

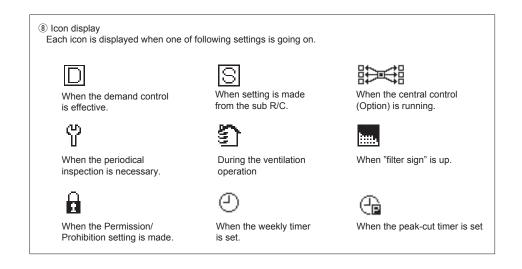
### 11.1 Remote control

# (1) Wired remote control Model RC-EX1A

All icons are shown for the sake of explanation.



Touch panel system, which is operated by tapping the LCD screen with a finger, is employed for any operations other than the  $\bigcirc$  Run/Stop,  $\bigcirc$  High power and  $\bigcirc$  Energy-saving switches.



### **Model RC-E5**

TEST button -

This button is used during test operation.

The figure below shows the remote control with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation Characters displayed with dots in the liquid crystal display area are abbreviated.

The figure below shows the remote control with the cover opened. Ventilaion display Weekly timer display Displayed during ventilation operation Displays the settings of the weekly timer. Central control display Operation setting display area Displayed when the air-conditioning system is Displays setting temperature, airflow controlled by centralized remote control. volume, operation mode and oparation message. Timer operation display Displays the timer operation setting. Operation/check indicator light During operation: Lit in green In case of error: Flashing in red Temperature setting buttons Operation/stop button These buttons are used to set the 7.5°C 🏶🛍 This button is used to operate and stop temperature of the room. the air-conditioning system. **↓**TEMP ① ON/OFF Press the button once to operate the system and press it once again to stop Timer button -This button is used to set the system. the timer mode. MODE button This button is used to change the operation mode. Timer setting buttons -**FAN SPEED button** These buttons are used to set // 5 4 This button is used to set the airflow the timer mode and the time. LOL volume. **VENT** button ESP button This button is used to operate external This button is used to select the auto static ventilator. pressure adjustment mode. LOUVER button This button is used to operate/stop the Cover swing louver. AIR CON No. button Display the indoor unit number connected to this **SET** button remote control. •This button is used to fix the setting. •This button is used to set the silent mode. CHECK button This button is used at servicing. **RESET button** •If you press this button while making settings, you can go back to the

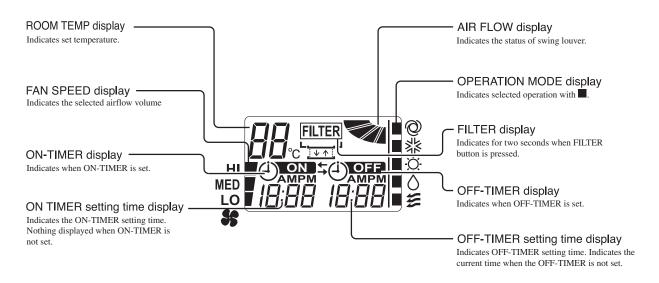
previous operation.
•This button is also used to reset the "FILTER CLEANING" display.

(Press it after cleaning the air filter)

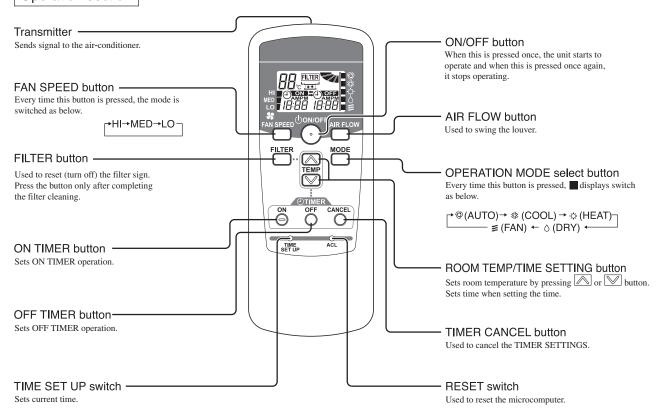
<sup>\*</sup> All displays are described in the liquid crystal display for explanation.

# (2) Wireless remote control (FDT, FDE, FDU, FDUM, FDF series) (SRK series : Refer to the page 128)

### Indication section



### Operation section

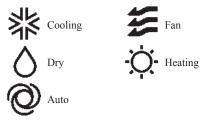


<sup>\*</sup> All displays are described in the liquid crystal display for explanation

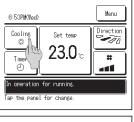
# 11.2 Operation control function by the wired remote control Model RC-EX1A

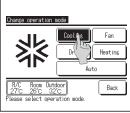
### (1) Switching sequence of the operation mode switches of remote control

- (a) Tap the change operation mode button on the TOP screen.
- (b) When the change operation mode screen is displayed, tap the button of desired mode.
- (c) When the operation mode is selected, the display returns to the TOP screen. Icons displayed have the following meanings.



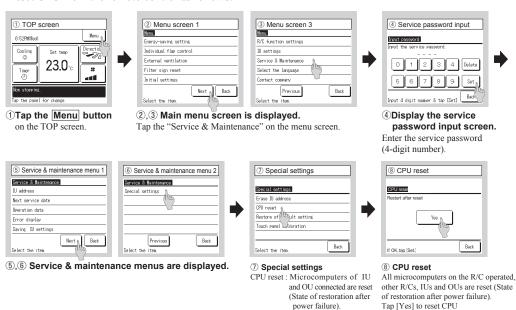
- Notes(1) Operation modes which cannot be selected depending on combinations of IU and OU are not displayed.
  - (2) When the Auto is selected, the cooling and heating switching operation is performed automatically according to indoor and outdoor temperatures.





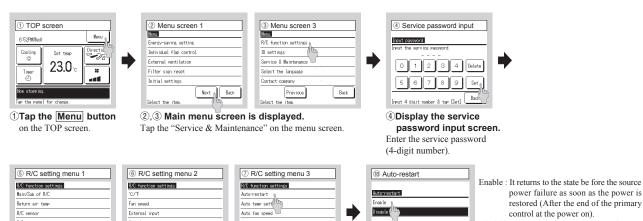
#### (2) CPU reset

Reset CPU from the remote control as follows.



### (3) Power failure compensation function (Electric power source failure)

Enable the Auto-restart function from the remote control as follows.



(5),(6),(7) Display the R/C setting menu screens.

Flap control

Operation mode

Select the iten.

Back

Back

Back

Set the state of operation to be started when the power source is restored after a power failure.

Disable: It stops after the restoration of power

before the power failure.

source, regardless the state of operation

Back

- Since it memorizes always the condition of remote control, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.
  - After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.
- Content memorized with the power failure compensation are as follows.
  - Note (1) Items (f), (g) and (h) are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.
    - (a) At power failure Operating/stopped

      If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)
    - (b) Operation mode
    - (c) Airflow volume mode
    - (d) Room temperature setting
    - (e) Louver auto swing/stop
      - However, the stop position (4-position) is cancelled so that it returns to Position (1).
    - (f) "Remote control function items" which have been set with the remote control function setting ("Indoor function items" are saved in the memory of indoor unit.)
    - (g) Upper limit value and lower limit value which have been set with the temperature setting control
    - (h) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

### **Model RC-E5**

### (1) Switching sequence of the operation mode switches of remote control



### (2) CPU reset

This functions when "CHECK" and "ESP" buttons on the remote control are pressed simultaneously. Operation is same as that of the power source reset.

### (3) Power failure compensation function (Electric power source failure)

- This becomes effective if "Power failure compensation effective" is selected with the setting of remote control function.
- Since it memorizes always the condition of remote control, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.

After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.

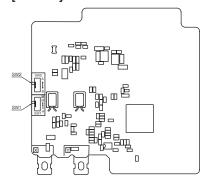
• Content memorized with the power failure compensation are as follows.

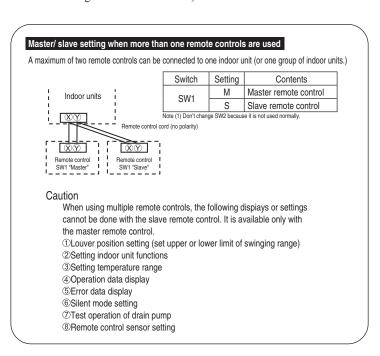
Note (1) Items (f), (g) and (h) are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.

- (a) At power failure Operating/stopped

  If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)
- (b) Operation mode
- (c) Airflow volume mode
- (d) Room temperature setting
- (e) Louver auto swing/stop
  - However, the stop position (4-position) is cancelled so that it returns to Position (1).
- (f) "Remote control function items" which have been set with the remote control function setting ("Indoor function items" are saved in the memory of indoor unit.)
- (g) Upper limit value and lower limit value which have been set with the temperature setting control
- (h) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

### [Parts layout on remote control PCB]



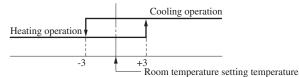


# 11.3 Operation control function by the indoor control

# 11.3.1 FDT,FDE,FDU,FDUM,FDF series

### (1) Auto operation

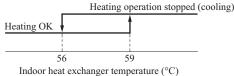
(a) If "Auto" mode is selected by the remote control, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ heating mode takes place within 3 minutes, the compressor does not operate for 3 minutes by the control of 3-minute timer.) This will facilitate the cooling/heating switching operation in intermediate seasons and the adaptation to unmanned operation at stores, etc (ATM corner of bank).



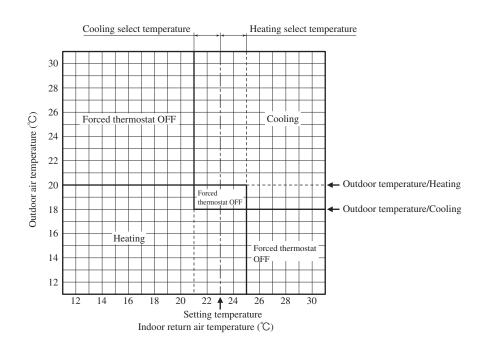
Room temperature (detected with Thi-A) [deg]

Notes (1) Temperature range of switching cooling/heating mode can be changed by RC-EX1A from  $\pm 1.0 - \pm 4.0$ .

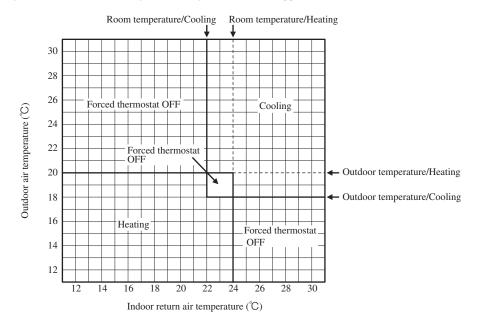
- (2) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF:  $\pm 1$  deg)
- (3) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not performed, regardless of the temperature shown at right.



- (b) The following automatic controls are performed other than (a) above.
  - (i) Cooling or heating operation mode is judged according to the conditions of the "Judgment based on Setting temperature + Cooling select temperature and Indoor return air temperature" and the "Judgment based on Outdoor temperature".
    - 1) In "Setting temperature Cooling select temperature < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor return air temperature" \Rightarrow Operation mode: Cooling
    - 2) "Setting temperature + Heating select temperature > Indoor return air temperature" and "Outdoor temperature/Heating > Outdoor air temperature" \Rightarrow Operation mode: Heating
    - 3) The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
    - 4) In the range where the above cooling and heating zones are overlapped ⇒ Forced thermostat OFF



- (ii) Regardless of the setting temperature, the cooling or heating operation mode is judged according to the "Judgment based on Room temperature/Cooling or Heating and Outdoor temperature/Cooling or Heating".
  - 1) In case of "Room temperature/Cooling < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor air temperature"  $\Rightarrow$  Operation mode: Cooling
  - 2) In case of "Room temperature/Heating > Indoor return air temperature" and "Outdoor temperature /Heating > Outdoor air temperature" \Rightarrow Operation mode: Heating
  - 3) The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
  - 4) In the range where the above cooling and heating zones are overlapped ⇒ Forced thermostat OFF



#### (2) Operations of functional items during cooling/heating

| Operation                 | Cod              | ling              |                  | Heating          |                    |                        |  |
|---------------------------|------------------|-------------------|------------------|------------------|--------------------|------------------------|--|
| Functional item           | Thermostat<br>ON | Thermostat<br>OFF | Fan              | Thermostat<br>ON | Thermostat<br>OFF  | Hot start<br>(Defrost) | Dehumidifying  |
| Compressor                | 0                | ×                 | ×                | 0                | ×                  | 0                      | O/×  |
| 4-way valve               | ×                | ×                 | ×                | 0                | 0                  | ○(×)                   | ×  |
| Outdoor unit fan          | 0                | ×                 | ×                | 0                | ×                  | ○(×)                   | O/×  |
| Indoor unit fan           | 0                | 0                 | 0                | O/×              | O/×                | O/×                    | O/×  |
| Drain pump <sup>(3)</sup> | 0                | × <sup>(2)</sup>  | × <sup>(2)</sup> |                  | O/× <sup>(2)</sup> |                        | Thermostat ON: O<br>Thermostat OFF: X <sup>(2)</sup> |

Note (1) ○: Operation ×: Stop ○/×: Turned ON/OFF by the control other than the room temperature control.

- (2) ON during the drain motor delay control.
- (3) Drain pump ON setting may be selected with the indoor unit function setting of the wired remote control.

# (3) Dehumidifying operation

Return air temperature thermistor [Thi-A (by the remote control when the remote control thermistor is enabled)] controls the indoor temperature environment simultaneously.

- (a) Operation is started in the cooling mode. When the difference between the return air temperature and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor unit fan tap.
- (b) If the return air temperature exceeds the setting temperature by 3°C during dehumidifying operation, the indoor unit fan tap is raised. That tap is retained for 3 minutes after changing the indoor unit fan tap.
- (c) If the thermostat OFF is established during the above control, the indoor unit fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.

### (4) Timer operation

#### (a) RC-EX1A

(i) Sleep timer

Set the time from the start to stop of operation. The time can be selected in the range from 30 to 240 minutes (in the unit of 10-minute).

Note (1) Enable the "Sleep timer" setting from the remote control. If the setting is enabled, the timer operates at every time.

### (ii) Set OFF timer by hour

Set the time to stop the unit after operation, in the range from 1 to 12 hours (in the unit of hour).

#### (iii) Set ON timer by hour

Set the time to start the unit after the stop of operation, in the range from 1 to 12 hours (in the unit of hour). It is allowed also to set simultaneously the indoor temperature, operation mode, air flow rate and warm-up enabled/disabled.

#### (iv) Set ON timer by clock

Set the time to start operation. The time can be set in the unit of 5-minute. This setting can be activated only once or at every time. It is allowed also to set simultaneously the indoor temperature, operation mode, air flow rate and warm-up enabled/disabled.

Note (1) It is necessary to set the clock to use this timer.

### (v) Set OFF timer by clock

Set the time to stop operation. The time can be set in the unit of 5-minute. This setting can be activated only once or at every time.

Note (1) It is necessary to set the clock to use this timer.

#### (vi) Weekly timer

Set the ON or OFF timer for a week. Up to 8 patterns can be set for a day. The day-off setting is provided for holidays and non-business days.

Note (1) It is necessary to set the clock to use the weekly timer.

### (vii) Combination of patterns which can be set for the timer operations

|                        | Sleep time | Set OFF timer by hour | Set ON timer by hour | Set OFF timer by clock | Set ON timer by clock | Weekly timer |
|------------------------|------------|-----------------------|----------------------|------------------------|-----------------------|--------------|
| Sleep time             |            | ×                     | ×                    | 0                      | 0                     | 0            |
| Set OFF timer by hour  | ×          |                       | ×                    | ×                      | ×                     | ×            |
| Set ON timer by hour   | ×          | ×                     |                      | ×                      | ×                     | ×            |
| Set OFF timer by clock | 0          | ×                     | ×                    |                        | 0                     | ×            |
| Set ON timer by clock  | 0          | ×                     | ×                    | 0                      |                       | ×            |
| Weekly timer           | 0          | ×                     | ×                    | ×                      | ×                     |              |

Note (1) O: Allowed X: Not

### (b) RC-E5

#### (i) Sleep timer

Set the duration of time from the present to the time to turn off the air-conditioner.

It can be selected from 10 steps in the range from "OFF 1 hour later" to "OFF 10 hours later". After the sleep timer setting, the remaining time is displayed with progress of time in the unit of hour.

# (ii) OFF timer

Time to turn OFF the air-conditioner can be set in the unit of 10 minutes.

### (iii) ON timer

Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.

#### (iv) Weekly timer

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

### (v) Timer operations which can be set in combination

| Item Item    | Timer | OFF timer | ON timer | Weekly timer |
|--------------|-------|-----------|----------|--------------|
| Timer        |       | ×         | 0        | ×            |
| OFF timer    | ×     |           | 0        | ×            |
| ON timer     | 0     | 0         |          | ×            |
| Weekly timer | ×     | ×         | ×        |              |

Note (1) ○: Allowed ×: Not

<sup>(2)</sup> Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the air-conditioner are duplicated, the setting of the OFF timer has priority.

### (5) Remote control display during the operation stop

When the operation is stopped (the power source is turned ON), it displays preferentially the "Room temperature", "Center/Remote", "Filter sign", "Inspection" and "Timer operation".

#### (6) Hot start (Cold draft prevention at heating)

#### (a) Operating conditions

When either one of following conditions is met, the hot start control is performed.

- (i) From stop to heating operation
- (ii) From cooling to heating operation
- (iii) From heating thermostat OFF to ON
- (iv) After completing the defrost control (only on units with thermostat ON)

### (b) Contents of operation

- (i) Indoor fan motor control at hot start
  - Within 7 minutes after starting heating operation, the fan mode is determined depending on the condition of thermostat (fan control with heating thermostat OFF).
    - a) Thermostat OFF
      - i) Operates according to the fan control setting at heating thermostat OFF.
      - ii) Even if it changes from thermostat OFF to ON, the fan continues to operate with the fan control at thermostat OFF till the heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 35°C or higher.
    - iii) When the heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.
    - b) Thermostat ON
      - i) When the heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 25°C or lower, the fan is turned OFF and does not operate.
      - ii) When the heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 25°C or higher, the fan operates with the fan control at heating thermostat OFF.
    - iii) When the heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.
  - c) If the fan control at heating thermostat OFF is set at the "Set airflow volume" (from the remote control), the fan operates with the set airflow volume regardless of the thermostat ON/OFF.
  - 2) Once the fan motor is changed from OFF to ON during the thermostat ON, the indoor fan motor is not turned OFF even if the heat exchanger thermistor detects lower than 25°C.
    - Note (1) When the defrost control signal is received, it complies with the fan control during defrosting.
  - 3) Once the hot start is completed, it will not restart even if the temperature on the heat exchanger thermistor drops.
- (ii) During the hot start, the louver is kept at the horizontal position.
- (iii) When the fan motor is turned OFF for 7 minutes continuously after defrosting, the fan motor is turned ON regardless of the temperatures detected with the indoor heat exchanger thermistors (Thi-R1, R2).

### (c) Ending condition

- (i) If one of following conditions is met during the hot start control, this control is terminated, and the fan is operated with the set airflow volume.
  - 1) Heat exchanger thermistor (Thi-R1 or R2, whichever higher) detects 35°C or higher.
  - 2) It has elapsed 7 minutes after starting the hot start control.

#### (7) Hot keep

Hot keep control is performed at the start of the defrost control.

- (a) Control
  - (i) When the indoor heat exchanger temperature (detected with Thi-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.
  - (ii) During the hot keep, the louver is kept at the horizontal position.
- (b) Ending condition

When the indoor fan is at the lower tap at each setting, it returns to the set airflow volume as the indoor heat exchanger temperature rises to 45°C or higher.

### (8) Auto swing control (Only with auto swing)

#### (a) RC-EX1A

- (i) Louver control
  - 1) To operate the swing louver when the air-conditioner is operating, press the "Direction" button on the TOP screen of remote control. The wind direction select screen will be displayed.
  - 2) To swing the louver, touch the "Auto swing" button. The lover will move up and down. To fix the swing louver at a position, touch one of [1] [4] buttons. The swing lover will stop at the selected position.
  - Louver operation at the power on with a unit having the louver 4-position control function
     The louver swings one time automatically (without operating the remote control) at the power on.
    - This allows the microcomputer recognizing and inputting the louver motor (LM) position.

### (ii) Automatic louver level setting during heating

At the hot start and the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (in order to prevent blowing of cool wind). The louver position display LCD continues to show the display which has been shown before entering this control.

(iii) Louver free stop control

If you touch the "Menu"  $\rightarrow$  "Next"  $\rightarrow$  "R/C settings" buttons one after another on the TOP screen of remote control, the "Flap control" screen is displayed. If the free stop is selected on this screen, the louver motor stops upon receipt of the stop signal from the remote control. If the auto swing signal is received from the remote control, the auto swing will start from the position before the stop.

### (b) RC-E5

- (i) Louver control
  - 1) Press the "LOUVER" button to operate the swing louver when the air-conditioner is operating.

    "SWING ="" is displayed for 3 seconds and then the swing louver moves up and down continuously.
  - 2) To fix the swing louver at a position, press one time the "LOUVER" button while the swing louver is moving so that four stop positions are displayed one after another per second.
    - When a desired stop position is displayed, press the "LOUVER" button again. The display stops, changes to show the "STOP 1—" for 5 seconds and then the swing louver stops.
  - 3) Louver operation at the power on with a unit having the louver 4-position control function
    - The louver swings one time automatically (without operating the remote control) at the power on.
    - This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.
    - Note (1) If you press the "LOUVER" button, the swing motion is displayed on the louver position LCD for 10 second. The display changes to the "SWING =>=="" display 3 seconds later.
- (ii) Automatic louver level setting during heating

At the hot start with the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (In order to prevent the cold start). The louver position display LCD continues to show the display which has been shown before entering this control.

(iii) Louver-free stop control

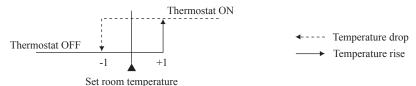
When the louver-free stop has been selected with the indoor function of wired remote control " $\Rightarrow_{n}$  POSITION", the louver motor stops when it receives the stop signal from the remote control. If the auto swing signal is received from the remote control, the auto swing will start from the position where it was before the stop.

Note (1) When the indoor function of wired remote control ">¬¬ POSITION" has been switched, switch also the remote control function ">¬¬ POSITION" in the same way.

#### (9) Thermostat operation

#### (a) Cooling

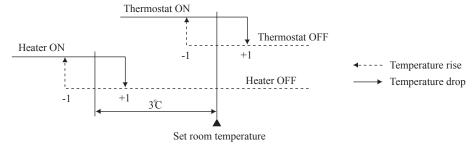
- (i) Thermostat is operated with the room temperature control.
- (ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



(iii) Thermostat is turned ON when the room temperature is in the range of -1 < Set temperature < +1 at the start of cooling operation (including from heating to cooling).

### (b) Heating

- (i) Thermostat is operated with the room temperature control.
- (ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



(iii) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from cooling to heating).

### (c) Fan control during heating thermostat OFF

- (i) Following fan controls during the heating thermostat OFF can be selected with the indoor function setting of the wired remote control.
  - ① Low fan speed (Factory default), ② Set fan speed, ③ Intermittence, ④ Fan OFF
- (ii) When the "Low fan speed (Factory default)" is selected, the following taps are used for the indoor fans.
  - · For DC motor: ULo tap
- (iii) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.
- (iv) If the "Intermittence" is selected, following controls are performed:
  - 1) If the thermostat is turned OFF during the heating operation, the indoor unit fan motor stops.
  - 2) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at ULo for 2 minutes. In the meantime the louver is controlled at level.
  - 3) After operating at ULo for 2 minutes, the indoor fan moves to the state of 1) above.
  - 4) If the thermostat is turned ON, it moves to the hot start control.
  - 5) When the heating thermostat is turned OFF, the remote control displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from ULo to stop.
    - The remote control uses the operation data display function to display temperatures and updates values of temperature even when the indoor fan is turned OFF.
  - 6) When the defrosting starts while the heating thermostat is turned OFF or the thermostat is turned OFF during defrosting, the indoor fan is turned OFF. (Hot keep or hot start control takes priority.) However, the suction temperature is updated at every 7-minute.
  - 7) When the heating thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.
- (v) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

#### (d) Fan control during cooling thermostat OFF

- (i) Following fan controls during the cooling thermostat OFF can be selected with the indoor function setting of the wired remote control.
  - 1 Low fan speed, 2 Set fan speed (Factory default), 3 Intermittence, 4 Fan OFF
- (ii) When the "Low fan speed" is selected, the following taps are used for the indoor fans.
  - · For DC motor: ULo tap
- (iii) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.
- (iv) If the "Intermittence" is selected, following controls are performed:
  - 1) If the thermostat is turned OFF during the cooling operation, the indoor unit fan motor stops.
  - 2) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at ULo for 2 minutes.
  - 3) After operating at ULo for 2 minutes, the indoor fan moves to the state of 1) above.
  - 4) If the thermostat is turned ON, the fan starts operation at set fan speed.
  - 5) When the cooling thermostat is turned OFF, the remote control displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from ULo to stop.
    - By using operation data display function at wireless remote control, the temperature as displayad and the value is updated including the fan stops.
  - 6) When the cooling thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.
- (v) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

### (10) Filter sign

As the operation time (Total ON time of ON/OFF switch) accumulates to 180 hours (1), "FILTER CLEANING" is displayed on the remote control. (This is displayed when the unit is in trouble and under the central control, regardless of ON/OFF)

Note (1) Time setting for the filter sign can be made as shown below using the indoor function of wired remote control "FILTER SIGN SET". (It is set at TYPE 1 at the shipping from factory.)

| Filter sign setting | Function                               |
|---------------------|--|
| TYPE 1              | Setting time: 180 hr (Factory default) |
| TYPE 2              | Setting time: 600 hr                   |
| TYPE 3              | Setting time: 1,000 hr                 |
| TYPE 4              | Setting time: 1,000 hr (Unit stop) (2) |

<sup>(2)</sup> After the setting time has elapsed, the "FILTER CLEANING" is displayed and, after operating for 24 hours further (counted also during the stop), the unit stops.

#### (11) Compressor inching prevention control

(a) 3-minute timer

When the compressor has been stopped by the thermostat, remote control operation switch or anomalous condition, its restart will be inhibited for 3 minutes. However, the 3-minute timer is invalidated at the power on the electric power source for the unit.

- (b) 3-minute forced operation timer
  - (i) Compressor will not stop for 3 minutes after the compressor ON. However, it stops immediately when the unit is stopped by means of the ON/OFF switch or by when the thermister turned OFF the change of operation mode.
  - (ii) If the thermostat is turned OFF during the forced operation control of heating compressor, the louver position (with the auto swing) is returned to the level position.
    - Note (1) The compressor stops when it has entered the protective control.

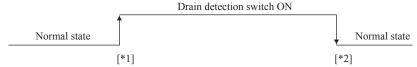
#### (12) Drain pump control

- (a) This control is operated when the inverter frequency is other than 0 Hz during the cooling operation and automatic cooling and dehumidifying operations.
- (b) Drain pump ON condition continues for 5 minutes even when it enters the OFF range according to (i) above after turning the drain pump ON, and then stops. The 5-minute delay continues also in the event of anomalous stop.
- (c) The drain pump is operated with the 5-minute delay operation when the compressor is changed from ON to OFF.
- (d) Even in conditions other than the above (such as heating, fan, stop, cooling thermostat OFF), the drain pump control is performed by the drain detection.
- (e) Following settings can be made using the indoor function setting of the wired remote control.
  - (i) 🕸 [Standard (in cooling & dehumidifying)]: Drain pump is run during cooling and dehumidifying.
  - (ii) \$\$\delta \text{NN}\text{\text{MN}}\$ [Operate in standard & heating]: Drain pump is run during cooling, dehumidifying and heating.
  - (iii) 黎春納原系列第 [Operate in heating & fan]: Drain pump is run during cooling, dehumidifying, heating and fan.
  - (iv) 禁冷部() 注 [Operate in standard & fan]: Drain pump is run during cooling, dehumidifying and fan.

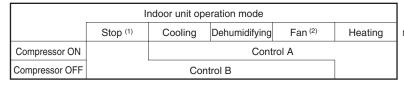
    Note (1) Values in [ ] are for the RC-EX1A model.

### (13) Drain pump abnormalities detection

(a) Drain detection switch is turned ON or OFF with the float switch (FS) and the timer.



- [\*1] Drain detection switch is turned "ON" when the float switch "Open" is detected for 3 seconds continuously in the drain detectable space.
- [\*2] Drain detection switch is turned "OFF" when the float switch "Close" is detected for 10 seconds continuously.
- (i) It detects always from 30 seconds after turning the power ON.
  - 1) There is no detection of anomalous draining for 10 seconds after turning the drain pump OFF.
  - 2) Turning the drain detection switch "ON" causes to turn ON the drain pump forcibly.
  - 3) Turning the drain detection switch "OFF" releases the forced drain pump ON condition.
- (b) Indoor unit performs the control A or B depending on each operating condition.



Note (1) Including the stop from the cooling, dehumidifying, fan and heating, and the anomalous stop (2) Including the "Fan" operation according to the mismatch of operation modes

### (i) Control A

- 1) If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop (displays E9) and the drain pump starts. After detecting the anomalous condition, the drain motor continues to be ON.
- 2) It keeps operating while the float switch is detecting the anomalous condition.

#### (ii) Control B

If the float switch detects any anomalous drain condition, the drain motor is turned ON for 5 minutes, and at 10 seconds after the drain motor OFF it checks the float switch. If it is normal, the unit is stopped under the normal mode or, if there is any anomalous condition, E9 is displayed and the drain motor is turned ON. (The ON condition is maintained during the drain detection.)

#### (14) Operation check/drain pump test run operation mode

- (a) If the power is turned on by the dip switch (SW7-1) on the indoor PCB when electric power source is supplied, it enters the mode of operation check/drain pump test run. It is ineffective (prohibited) to change the switch after turning power on.
- (b) When the communication with the remote control has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode. Unless the remote control communication is established, it enters the drain pump test run mode.
  - Note (1) To select the drain pump test run mode, disconnect the remote control connector (CNB) on the indoor PCB to shut down the remote control communication.

(c) Operation check mode

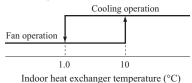
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote control

(d) Drain pump test run mode

As the drain pump test run is established, the drain pump only operates and during the operation protective functions by the microcomputer of indoor unit become ineffective.

### (15) Cooling, dehumidifying frost protection

(a) To prevent frosting during cooling mode or dehumidifying mode operation, the of compressor speed is reduced if the indoor heat exchanger temperature (detected with Thi-R) drops to 1.0 °C or lower at 4 minutes after the start of compressor operation. If the indoor unit heat exchanger temperature is 1.0 °C or lower after 1 minutes, the compressor speed is reduced further. If it becomes 2.5 °C or higher, the control terminates. When the indoor heat exchanger temperature has become as show below after reducing the compressor speed, it is switched to the fan operation. For the selection of indoor fan speed, refer to item 2).



(b) Selection of indoor fan speed

If it enters the frost prevention control during cooling operation (excluding dehumidifying), the indoor unit fan speed is switched.

- (i) When the indoor return air detection temperature (detected with Thi-A) is 23°C or higher and the indoor heat exchanger temperature (detected with Thi-R) detects the compressor frequency drop start temperature A°C+1°C, of indoor unit fan speed is increased by 20min<sup>-1</sup>.
- (ii) If the phenomenon of 1) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20min<sup>-1</sup>.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

Compressor frequency drop start temperature

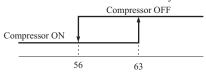
| Symbol Item Symbol                     | A   |
|--|-----|
| Temperature - Low (Factory default)(2) | 1.0 |
| Temperature - High                     | 2.5 |

Notes (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote control.

(2) Limited to FDE series only, it is set at the high temperture  $(2.5^{\circ}C)$  at the time of shipping from the factory.

### (16) Heating overload protection

(a) If the indoor heat exchanger temperature (detected with Thi-R) at 63°C or higher is detected for 2 seconds continuously, the compressor stops. When the compressor is restarted after a 3-minute delay, if a temperature at 63°C or higher is detected for 2 seconds continuously within 60 minutes after initial detection and if this is detected 5 times consecutively, the compressor stops with the anomalous stop (E8). Anomalous stop occurs also when the indoor heat exchanger temperature at 63°C or higher is detected for 6 minutes continuously.



Indoor heat exchanger temperature (°C)

# (b) Indoor unit fan speed selection

If, after second detection of heating overload protection up to fourth, the indoor fan is set at Me and Lo taps when the compressor is turned ON, the indoor fan speed is increased by 1 tap.

#### (17) Anomalous fan motor

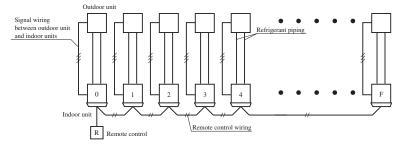
- (a) After starting the fan motor, if the fan motor speed is 200min<sup>-1</sup> or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).
- (b) If the fan motor fails to reach at -50(FDU: -500) min<sup>-1</sup> less than the required speed, it stops with the anomalous stop (E20).

### (18) Plural unit control - Control of 16 units group by one remote control

#### (a) Function

One remote control switch can control a group of multiple number of unit (Max. 16 indoor units). "Operation mode" which is set by the remote control switch can operate or stop all units in the group one after another in the order of unit No.<sup>(1)</sup>. Thermostat and protective function of each unit function independently.

Notes (1) Unit No. is set by SW2 on the indoor unit control PCB. Unit No. setting by SW2 is necessary for the indoor unit only. SW2: For setting of 0-9, A-F



(2) Unit No. may be set at random unless duplicated, it should be better to set orderly like 0, 1, 2..., F to avoid mistake.

#### (b) Display to the remote control

- (i) Central or each remote control basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the central mode unless the remote mode is available) is displayed.
- (ii) Inspection display, filter sign: Any of unit that starts initially is displayed.
- (iii) Confirmation of connected units
  - In case of RC-EX1A remote control

    If you touch the buttons in the order of "Menu" → "Next" → "Service & Maintenance" → "IU address" on the

    TOP screen of remote control, the indoor units which are connected are displayed.
  - 2) In case of RC-E5 remote control

Pressing "AIR CON No." button on the remote control displays the indoor unit address. If "▲" "▼" button is pressed at the next, it is displayed orderly starting from the unit of youngest No.

### (iv) In case of anomaly

- 1) If any anomaly occurs on a unit in a group (a protective function operates), that unit stops with the anomalous stop but any other normal units continue to run as they are.
- Signal wiring procedure Signal wiring between indoor and outdoor units should be made on each unit same as the normal wiring. For the group control, lay connect with sires wiring between rooms using terminal blocks (X, Y) of remote control. Connect the remote control communication wire separately from the power source wire or wires of other electric devices (AC220V or higher).

### (19) High ceiling control

When sufficient air flow rate cannot be obtained from the indoor unit which is installed at a room with high ceiling, the air flow rate can be increased by changing the fan tap. To change the fan tap, use the indoor unit function "FAN SPEED SET" on the wired remote control.

| Fan tap       |             | Indoor unit airflow setting |                     |                       |                  | Series        |                 |
|---------------|-------------|-----------------------------|---------------------|-----------------------|------------------|---------------|-----------------|
|               |             | श्वती - श्वत                | - \$tat() - \$ta(() | Statt - Statü - Staüü | \$2001 - \$20(1) | Statt - Stati | Scries          |
|               | STANDARD    | PHi1 - Hi                   | - Me- Lo            | Hi - Me - Lo          | Hi - Lo          | Hi - Me       | Except FDT, FDE |
|               | STANDARD    | PHi2 - Hi                   | - Me- Lo            | Hi - Me - Lo          | Hi - Lo          | Hi - Me       | Only FDT, FDE   |
| FAN SPEED SET |             | PHi1 - PHi                  | 1 - Hi - Me         | PHi1 - Hi - Me        | PHi1 - Me        | PHi1 - Hi     | Except FDT, FDE |
|               |             | PHi2 - PHi                  | 1 - Hi - Me         | PHi1 - Hi - Me        | PHi1 - Me        | PHi1 - Hi     | Only FDT        |
|               |             | PHi1 - Hi                   | - Me- Lo            | Hi - Me - Lo          | Hi - Lo          | Hi - Me       | Only FDE        |
|               | HIGH SPEED2 | PHi2 - Hi                   | -Me- Lo             | Hi - Me - Lo          | Hi - Lo          | Hi - Me       | Only FDT, FDE   |

Notes (1) Factory default is STANDARD.

- (2) At the hot-start and heating thermostat OFF, or other, the indoor unit fan is operated at the low speed tap of each setting.
- (3) This function is not able to be set with wireless remote controls or simple remote control (RCH-E3)

#### (20) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

Broken wire detection

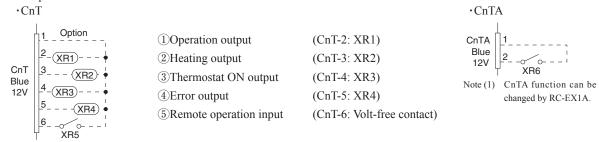
When the return air temperature thermistor detects -50°C or lower or the heat exchanger temperature thermistor detect -50°C or lower for 5 seconds continuously, the compressor stops. After a 3-minute delay, the compressor restarts but, if it is detected again within 60 minutes after the initial detection for 6 minutes continuously, stops again (the return air temperature thermistor: E7, the heat exchanger temperature thermistor: E6).

Short-circuit detection

If the heat exchanger temperature thermistor detects 70°C or higher for 5 seconds continuously at 2 minutes and 20 seconds after the compressor ON during cooling operation, the compressor stops (E6).

#### (21) External input/output control (CnT or CnTA)

Be sure to connect the wired remote control to the indoor unit. Without wired remote control remote operation by CnT is not possible to perform.



### ■ Priority order for combinations of CnT and CnTA input.

|     |  | CnTA                      |                           |                                    |  |                                   |                                   |  |
|-----|--|---------------------------|---------------------------|------------------------------------|--|-----------------------------------|-----------------------------------|--|
|     |  | ① Operation stop<br>level | ② Operation stop<br>pulse | ③ Operation permission/prohibition | 4 Operation permission/prohibition pulse | ⑤ Cooling/heating selection level | 6 Cooling/heating selection pulse |  |
|     | ① Operation stop level                   | CnT ①                     | CnT ①                     | CnT ① +CnTA ②                      | CnT ①                                    | CnT ① /CnTA ⑤                     | CnT ① /CnTA ⑥                     |  |
|     | ② Operation stop pulse                   | CnT ②                     | CnT ②                     | CnT ② +CnTA ③                      | CnT ②                                    | CnT ② /CnTA ⑤                     | CnT ② /CnTA ⑥                     |  |
| CnT | ③ Operation permission/prohibition level | CnT ③ >CnTA ①             | CnT ③ >CnTA ②             | CnT ③ +CnTA ③                      | CnT ③                                    | CnT ③ /CnTA ⑤                     | CnT ③ /CnTA ⑥                     |  |
| Cni | Operation permission/prohibition pulse   | CnT 4                     | CnT 4                     | CnT 4 +CnTA 3 **                   | CnT 4                                    | CnT 4 /CnTA 5                     | CnT 4 /CnTA 6                     |  |
|     | (5) Cooling/heating selection level      | CnT ⑤ /CnTA ①             | CnT 5 /CnTA 2             | CnT 5 /CnTA 3 **                   | CnT 5 /CnTA 4                            | CnT (5)                           | CnT ⑤                             |  |
|     | (6) Cooling/heating selection pulse      | CnT 6 /CnTA 1             | CnT 6 /CnTA 2             | CnT 6 /CnTA 3                      | CnT 6 /CnTA 4                            | CnT 6                             | CnT 6                             |  |

Note (1) Following operation commands are accepted when the operation prohibition is set with CnTA as indicated with \*.

Individual operation command from remote control, test run command from outdoor unit and operation command from optional device, CNT input.

Reference: Explanation on the codes and the combinations of codes in the table above

- In case of CnT "Number", the CnT "Number" is adopted and CnTA is invalidated.
- In case of CnTA "Number", the CnTA "Number" is adopted and CnT is invalidated.

  In case of CnT "Number"/CnTA "Number", the CnT "Number" and the CnTA "Number" become independent functions each other.
- In case of CnT "Number" + CnTA "Number", the CnT "Number" and the CnTA "Number" become competing functions each other.
- In case of CnT "Number" > CnTA "Number", the function of CnT "Number" supersedes that of CnTA "Number".
- In case of CnT "Number" < CnTA "Number", the function of CnTA "Number" supersedes that of CnT "Number". (The "Number" above means (1) - (6) in the table.)

# (a) Output for external control (remote display)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

- ① **Operation output:** Outputs DC12V signal for driving relay during operation
- **2 Heating output:** Outputs DC12V signal for driving relay during heating operation
- 3 Thermostat ON output: Outputs DC12V signal for driving relay when compressor is operating.
- **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

#### (b) Remote operation input

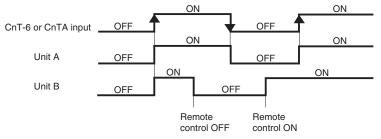
Remote operation input connector (CnT-6 or CnTA) is provided on the indoor control PCB.

However remote operation by CnT-6 or CnTA is not effective, when "Center mode" is selected by central control.

Only the "LEVEL INPUT" is acceptable for external input, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote control, operation status will be changed as follows.

### (i) In case of "Level input" setting (Factory default)

Input signal to CnT-6 or CnTA is OFF→ON ..... unit ON Input signal to CnT-6 or CnTA is ON→OFF ..... unit OFF Operation is not inverted.

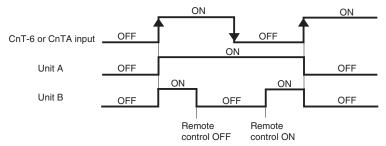


Note: The latest operation has priority

It is available to operate/stop by remote control or center control

### (ii) In case of "Pulse input" setting (Local setting)

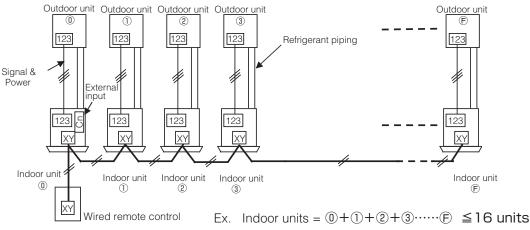
It is effective only when the input signal to CnT-6 or CnTA is changed OFF→ON, and at that time unit operation [ON/OFF] is inverted.



# (c) Remote operation

### (i) In case of multiple units (Max. 16 indoor units group) are connected to one wired remote control

When the indoor function setting of wired remote control for "External control set" is changed from "Individual (Factory default)" to "For all units", all units connected in one wired remote control system can be controlled by external operation input.



|                  | Individual operation  | on (Factory default)   | All units operation (Local setting)                     |  |  |
|------------------|---|--|---|--|--|
|                  | ON  | OFF  | ON  | OFF  |  |
| CnT-6 or<br>CnTA | Only the unit directly connected to the remote control can be operated. | Only the unit directly connected to the remote control can be stopped opeartion. | All units in one remote control system can be operated. | All units in one remote control system can be stopped operation. |  |
|                  | Unit ① only   | Unit ① only  | Units ① – ⑤   | Units ① – ⑤  |  |

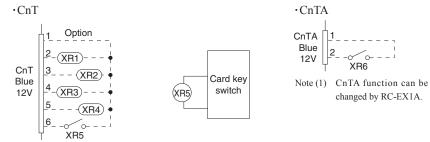
When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote control system:

- (1) With the factory default, external input to CnT-6 or CnTA is effective for only the unit ①.
- (2) When setting "For all unit" (Local setting), all units in one remote control system can be controlled by external input to CnT-6 or CnTA on the indoor unit ①.
- (3) External input to CnT-6 or CnTA on the other indoor unit than the unit ① is not effective.

### (22) Operation permission/prohibition

#### (In case of adopting card key switches or commercially available timers)

When the indoor function setting of wired remote control for "Operation permission/prohibition" is changed from "Invalid (Factory default)" to "Valid", following control becomes effective.



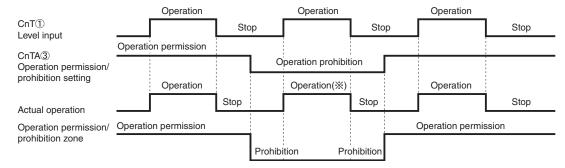
|                  |           | operation<br>default) | Operation permission/prohibition mode "Valid" (Local setting) |                                       |  |
|------------------|-----------|-----------------------|---|---------------------------------------|--|
| CnT-6 or<br>CnTA | ON        | OFF                   | ON  | OFF                                   |  |
|                  | Operation | Stop                  | Operation permission*1  | Operation prohibition<br>(Unit stops) |  |

\*1 Only the "LEVEL INPUT" is acceptable for external input, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote control, operation status will be changed as follows.

| In case of "Level input" setting                                   | In case of "Pulse input" setting |
|--|----------------------------------|
| Unit operation from the wired remote control becomes available*(1) | Unit starts operation *(2)       |

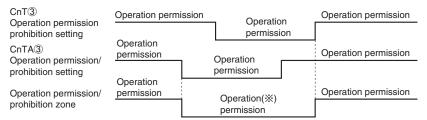
- \*(1) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Level input (Factory default)";
  - ① When card key switch is ON (CnT-6 or CnTA ON: Operation permission), start/stop operation of the unit from the wired remote control becomes available.
  - ② When card key switch is OFF (CnT-6 or CnTA OFF: Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote control becomes not available.
- \*(2) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Pulse input (Local setting)";
  - ① When card key switch is ON (Operation permission), the unit starts operation in conjunction with ON signal. and also start/stop operation of the unit from the wired remote control becomes available.
  - 2 When card key switch is OFF (Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote control becomes not available.
- (3) This function is invalid only at "Center mode" setting done by central control.

### (a) In case of CnT ① Operation stop level > CnTA ③ Operation permission/prohibition level



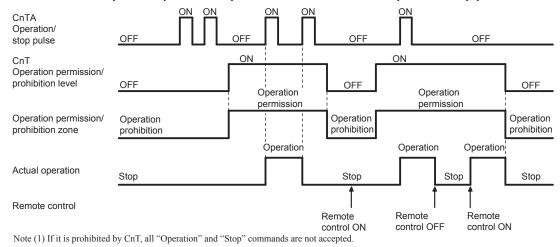
(\*X) CnT level input supersedes CnTA operation prohibition.

# (b) In case of CnT ③ Operation permission/prohibition level + CnTA ③ Operation permission/prohibition level

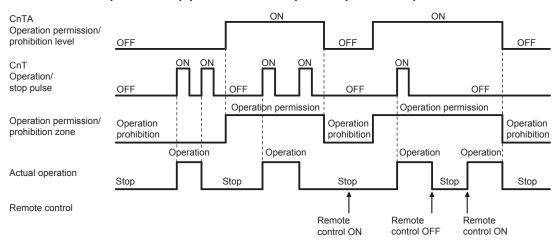


(\*) Operation prohibition zone is determined by the OR judgment between CnT Operation prohibition zone and CnTA Operation prohibition zone.

### (c) In case of CnT 3 Operation permission/prohibition level > CnTA 2 Operation/stop pulse



### (d) In case of CnT ② Operation/stop pulse + CnTA ③ Operation permission/prohibition level



### (23) Selection of cooling/heating external input function

- (a) When "External input 1 setting: Cooling/heating" is set for the indoor unit function from remote control, the cooling or heating is selected with CnT-6 or CnTA.
- (b) When the External input 1 method selection: Level input is set for the indoor unit function:
  - CnT-6 or CnTA: OPEN → Cooling operation mode
  - · CnT-6 or CnTA: CLOSE → Heating operation mode
- (c) When the External input 1 method selection: Pulse input is set for the indoor unit function:

  If the external input is changed OPEN → CLOSE, operation modes are inverted (Cooling → Heating or Heating → Cooling).

- (d) If the cooling/heating selection signal is given by the external input, the operation mode is transmitted to the remote control.
  - Selection of cooling/heating external input function

| External input selection                           | External input method |                                       | Operation  |
|--|-----------------------|---------------------------------------|--|
|  |                       | External terminal input (CnT or CnTA) | OFF ON OFF ON Cooling zone , Heating zone , Cooling zone , Heating zone , Cooling zone , Heating zone  |
|  | (5) Level             | Cooling/heating                       | Cooling Heating Heating Cooling  |
| External input selection Cooling/heating selection |                       | Cooling/heating (Competitive)         | Cooling Heating Heating  Auto, cooling, dry mode command 1 1 Heating, auto, heating mode command from remote control from remote control   |
|  | ⑥ Pulse               | External terminal input (CnT or CnTA) | OFF ON OFF Cooling/Deading zone  1 After setting "Cooling/Deading selection", the cooling/Deading is selected by the current operation mode. During heating: Set at the heating zone (cooling prohibition zone). During cooling, dry, anto and fan mode: Set at cooling zone (theating problibition zone). |
|  |                       | Cooling/heating                       | Auto   Heating   Cooling   |
|  |                       | Cooling/heating (Competitive)         | Auto Cooling Cooling Cooling 1 Auto, cooling, dry mode command 1 Auto, heating mode command by remote control command by remote control  |

Notes (1) Regarding the priority order for combinations of CnT and CnTA, refer to Page 121.

#### (24) Fan control at heating startup

(a) Starting conditions

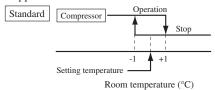
At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

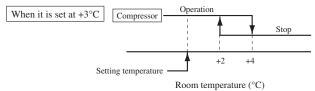
- (b) Contents of control
  - (i) Sampling is made at each minute and, when the indoor unit heat exchanger temperature (detected with Thi-R) is 37°C or higher, present number of revolutions of indoor unit fan speed is increased by 10min<sup>-1</sup>.
  - (ii) If the indoor unit heat exchanger temperature drops below 37°C at next sampling, present number of revolutions of indoor unit fan speed is reduced by 10min<sup>-1</sup>.
- (c) Ending conditions

Indoor fan speed is reduced to the setting airflow volume when the compressor OFF is established and at 30 minutes after the start of heating operation.

# (25) Room temperature detection temperature compensation during heating

With the standard specification, the compressor is turned ON/OFF with the thermostat setting temperature. When the thermostat is likely to turn OFF earlier because the unit is installed at the ceiling where warm air tends to accumulate, the setting can be changed with the wired remote control indoor unit function "\* \$P OFFSET". The compressor and the heater are turned ON/OFF at one of the setting temperature +3, +2 or +1°C in order to improve the feeling of heating. The setting temperature, however, has the upper limit of 30°C.





#### (26) Return air temperature compensation

This is the function to compensate the deviation between the detection temperature by the return air temperature thermistor and the measured temperature after installing the unit.

- (a) It is adjustable in the unit of 0.5°C with the wired remote control indoor unit function "RETURN AIR TEMP".
  - +1.0°C, +1.5°C, +2.0°C
- -1.0°C, -1.5°C, -2.0°C
- (b) Compensated temperature is transmitted to the remote control and the compressor to control them.

Note (1) The detection temperature compensation is effective on the indoor unit thermistor only.

# (27) High power operation (RC-EX1A only)

It operates at with the set temp. fixed at 16°C for cooling, 30°C for heating and maximum indoor fan speed for 15 minutes maximum.

### (28) Energy-saving operation (RC-EX1A only)

It operates with the setting temperature fixed at 28°C for cooling, 22°C for heating or 25°C for auto. (Maximum capacity is restricted at 80%.)

### (29) Warm-up control (RC-EX1A only)

Operation will be started 5 to 60 minutes before use according to the forecast made by the microcomputer which calculates when the operation should be started in order to warm up the indoor temperature near the setting temperature at the setting time of operation start.

#### (30) Home leave mode (RC-EX1A only)

When the unit is not used for a long period of time, the room temperature is maintained at a moderate leval, avoiding extremely hot or cool temperature.

- (a) Cooling or heating is operated according to the outdoor temperature (factory setting 35°C for cooling, 0°C for heating) and the set temperature. (factory setting 33°C for cooling, 10°C for heating)
- (b) Set temp and indoor fan speed can be set by RC-EX1A.

### (31) Auto temperature setting (RC-EX1A only)

Setting temperature is adjusted automatically at the adequate temperature the center set temp. is 24°C by correcting the outdoor air temperature.

#### (32) Fan circulator operation (RC-EX1A only)

When the fan is used for circulation, the unit is operated as follows depending on the setting with the remote control.

- (a) If the invalid is selected with the remote control, the fan is operated continuously during the fan operation. (mormal fan mode)
- (b) If the valid is selected with the remote control, the fan is operated or stopped when on the difference of the remote control temperature sensor and the indoor unit return air temperature sensor becomes bigger than 3°C.

### (33) The operation judgment is executed every 5 minutes (RC-EX1A only)

Setting temperature Ts is changed according to outdoor temperature

This control is valid with cooling and heating mode. (NOT auto mode)

- (a) Operate 5 minutes forcedly.
- (b) Setting temperature is adjusted every 10 minutes.
  - (i) Cooling mode.

Ts = outdoor temperature - offset value

- (ii) Heating mode.
  - Ts = outdoor temperature offset value
- (c) If the return air temperature lower than 18°C or return air temperature becomes lower than 25°C, unit goes thermo OFF.

#### (34) Auto fan speed control (RC-EX1A only)

In order to reach the room temperature to the set temperature as quickly as possible, the airflow rate is increased when the set temperature of thermostat differs largely from the return air temperature. According to temperature difference be tureen set temperature and return air temperature, indoor fan tap are controlled automalically.

- Auto 1: Changes the indoor unit fan tap within the range of  $Hi \leftrightarrow Me \leftrightarrow Lo$ .
- Auto 2: Changes the indoor unit fan tap within the range of PHi  $\leftrightarrow$  Hi  $\leftrightarrow$  Me  $\leftrightarrow$  Lo.

### (35) Indoor unit overload alarm (RC-EX1A only)

If the following condition is satisfied at 30 minutes after starting operation, RC-EX1A shows maintenance code "M07" and the signal is transmitted to the external output (CnT-5).

- (a) Receipt of the signal by the external output is indicated by lighting an LED or other prepared on site.
  - Cooling, Dehumidifying, Auto(Cooling): Indoor air temperature = Set room temperature by remote control + Alarm temperature difference
  - Heating, Auto(Heating) : Indoor air temperature = Set room temperature by remote control Alarm temperature difference

Alarm temperature difference is selectable between 5 to 10°C.

- (b) If the following condition is satisfied or unit is stopped, the signal is disappeared.
  - Cooling, Dehumidifying, Auto(Cooling): Indoor air temperature = Set room temperature + Alarm temperature difference 2°C
  - Heating, Auto(Heating) : Indoor air temperature = Set room temperature Alarm temperature difference +2°C

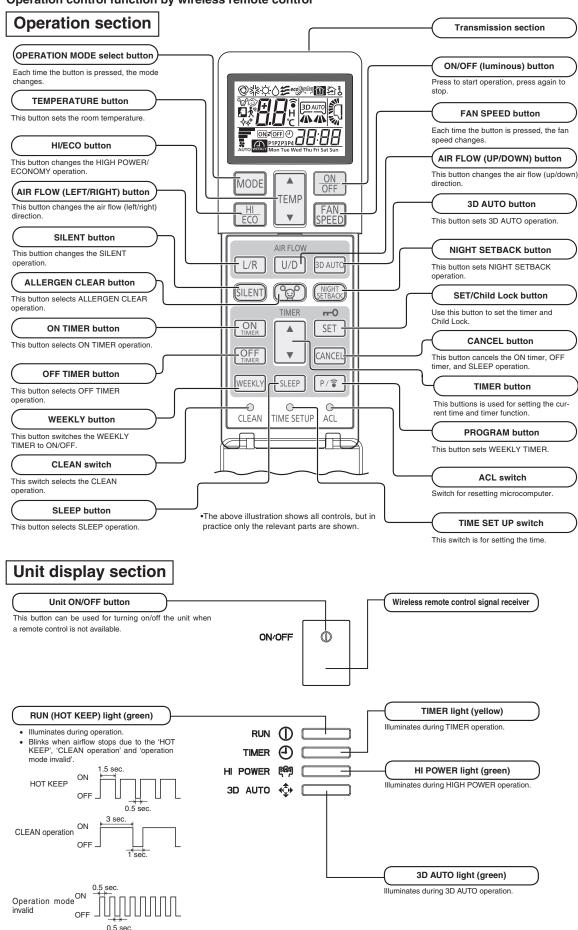
# (36) Peak-cut time (RC-EX1A only)

Power consumption can be reduced by restricting the maximum capacity. Set the [Start time], the [End time] and the capacity limit % (Peak-cut %).

- 4-operation patterns per day can be set at maximum.
- The setting time can be changed by 5-minutes interval.
- The selectable range of capacity limit % (Peak-cut %) is from 0% to 40-80% (20% interval).
- Holiday setting is available.

### 11.3.2 SRK series

(1) Operation control function by wireless remote control



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### (2) Unit ON/OFF button

When the wireless remote control batteries become weak, or if the wireless remote control is lost or malfunctioning, this button may be used to turn the unit on and off.

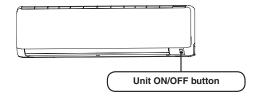
#### (a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

#### (b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from indoor temperature (as detected by sensor), whether to go into COOL, DRY or HEAT modes.

| Function Operation mode | Indoor temperature setting | Fan speed | Flap/Louver | Timer switch |
|-------------------------|----------------------------|-----------|-------------|--------------|
| COOL                    |                            |           |             |              |
| DRY                     | About 24°C                 | Auto      | Auto        | Continuous   |
| HEAT                    |                            |           |             |              |



#### (3) Auto restart function

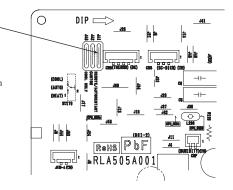
(a) Auto restart function records the operational status of the air-conditioner immediately prior to be switched off by a power cut, and then automatically resumes operations after the power has been restored.

Jumper wire (JA1)

- (b) The following settings will be cancelled:
  - (i) Timer settings
  - (ii) HIGH POWER operations

Notes (1) Auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.

- (2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.
- (3) If the jumper wire (JA1) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)



### (4) Installing two air-conditioners in the same room

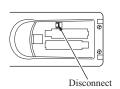
When tow air-conditioners are installed in the room, use setting when the two air-conditioners are not operated with one wireless remote control. Set the wireless remote control and indoor unit.

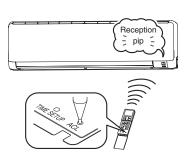
### (a) Setting the wireless remote control

- (i) Pull out the cover and take out batteries.
- (ii) Disconnect the switching line next to the battery with wire cutters.
- (iii) Insert batteries, Close the cover.

#### (b) Setting an indoor unit

- (i) Turn off the power source, and turn it on after 1 minute.
- (ii) Point the wireless remote control that was set according to the procedure described on the left side at the indoor unit and send a signal by pressing the ACL switch on the wireless remote control.
  - Since the signal is sent in about 6 seconds after the ACL switch is pressed, point the wireless remote control at the indoor unit for some time.
- (iii) Check that the reception buzzer sound "pip" is emitted from the indoor unit.At completion of the setting, the indoor unit emits a buzzer sound "pip".(If no reception tone is emitted, start the setting from the beginning again.)





#### (5) Selection of the annual cooling function

(a) The annual cooling function can be enabled or disabled by means of the jumper wire (JA3) on the indoor unit PCB and the dip switch (SW2-4) on the interface kit (option) PCB.

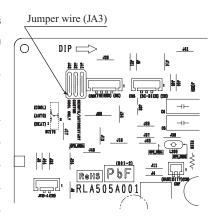
| Jumper wire (JA3) | Interface kit<br>(SC-BIKN-E)<br>SW2-4 | Function |
|-------------------|---------------------------------------|----------|
| Shorted           | ON                                    | Enabled  |
| Shorted           | OFF                                   | Disabled |
| Open              | ON                                    | Disabled |
| Open              | OFF                                   | Disabled |

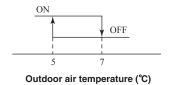
Note: (1) Default states of the jumper wire (JA3) and the interface kit at the shipping from factory -On the PCB, the dip switch (SW2-4) is set to enable the annual cooling function.

(2) To cancel the annual cooling setting, consult your dealer.

### (b) Content of control

- (i) If the outdoor air temperature sensor (TH2) detects below 5°C, the indoor fan speed is switched to 8th step. (It is not possible to change.)
- (ii) If the outdoor air temperature sensor (TH2) detects higher than 7°C, the indoor fan speed is changed to the normal control speed.





# (6) High power operation

Pressing the HI POWER/ECONO button intensifies the operating power and initiates powerful cooling and heating operation for 15 minutes continuously. The wireless remote control displays and the FAN SPEED display disappears.

- (a) During the HIGH POWER operation, the room temperature is not controlled. When it causes an excessive cooling and heating, press the HI POWER/ECONO button again to cancel the HIGH POWER operation.
- (b) HIGH POWER operation is not available during dehumidifying and the program timer operations.
- (c) When HIGH POWER operation is set after ON TIMER operation, HIGH POWER operation will start from the set time.
- (d) When the following operation are set, HIGH POWER operation will be cancelled.
  - ① When the HI POWER/ECONO button is pressed again.
  - ② When the operation mode is changed.
  - ③ When it has been 15 minutes since HIGH POWER operation has started.
  - 4 When the 3D AUTO botton is pressed.
  - (5) When the SILENT botton is pressed.
  - (6) When the NIGHT SETBACK botton is pressed.
- (e) Not operable while the air-conditioner is OFF.
- (f) After HIGH POWER operation, the sound of refrigerant flowing may be heard.

### (7) Economy operation

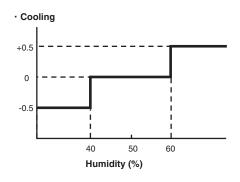
Pressing the HI POWER/ECONO button initiate a soft operation with the power suppressed in order to avoid an excessive cooling or heating. The unit operate  $1.0^{\circ}$ C higher than the setting temperature during cooling or  $2.0^{\circ}$ C lower than that during heating. The wireless remote control displays ECONO mark and the FAN SPEED display disappears.

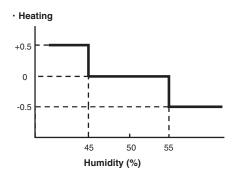
- (a) It will go into ECONOMY operation at the next time the air-conditioner runs in the following cases.
  - ① When the air-conditioner is stopped by ON/OFF button during ECONOMY operation.
  - 2 When the air-conditioner is stopped in SLEEP or OFF TIMER operation during ECONOMY operation.
  - ③ When the operation is retrieved from CLEAN or ALLERGEN CLEAR operation.
- (b) When the following operation are set, ECONOMY operation will be cancelled.
  - ① When the HI POWER/ECONO button is pressed again.
  - ② When the operation mode is changed DRY to FAN.
  - ③ When the NIGHT SETBACK botton is pressed.
- (c) Not operable while the air-conditioner is OFF.

(d) The setting temperature is adjusted according to the following table.

| Mode<br>Item           | Cooling | Heating |
|------------------------|---------|---------|
| T                      |         | ①-1.0   |
| Temperature adjustment | ②+1.0   | ②-2.0   |
| <i>3</i>               | 3       | 3       |

- ① at the start of operation.
- ② one hour after the start of operation.
- 3 two hours after the start of operation.



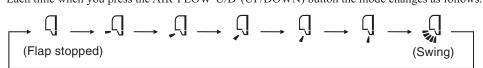


### (8) Flap and louver control

Control the flap and louver by AIR FLOW U/D (UP/DOWN) and L/R (LEFT/RIGHT) button on the wireless remote control.

### (a) Flap

Each time when you press the AIR FLOW U/D (UP/DOWN) button the mode changes as follows.

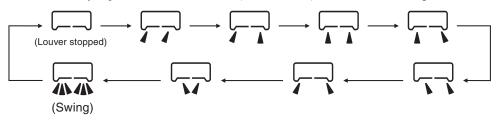


• Angle of Flap from Horizontal

| Remote control display | <u>-</u> Q  | Ţ           | Ù           | Ģ           | Ç           |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| COOL , DRY, FAN        | Approx. 5°  | Approx. 20° | Approx. 35° | Approx. 50° | Approx. 70° |
| HEAT                   | Approx. 20° | Approx. 35° | Approx. 45° | Approx. 60° | Approx. 70° |

# (b) Louver

Each time when you press the AIR FLOW L/R (LEFT/RIGHT) button the mode changes as follows.



· Angle of louver

| Remote control display | 11               |                  |        |                   |                   |
|------------------------|------------------|------------------|--------|-------------------|-------------------|
| Center installation    | Left approx. 50° | Left approx. 20° | Center | Right approx. 20° | Right approx. 50° |

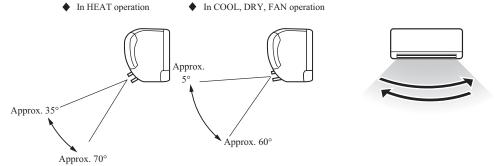
#### (c) Swing

### (i) Swing flap

Flap moves in upward and downward directions continuously.

### (ii) Swing louver

Louver moves in left and right directions continuously.



### (d) Memory flap (Flap or Louver stopped)

When you press the AIR FLOW (UP/DOWN or LEFT/RIGHT) button once while the flap or louver is operating, it stops swinging at the position. Since this angle is memorized in the microcomputer, the flap or louver will automatically be set at this angle when the next operation is started.

### (e) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

### (9) 3D auto operation

Control the flap and louver by 3D AUTO button on the wireless remote control.

Air flow selection and air flow direction are automatically controlled, allowing the entire indoor to efficiently conditioned.

- (a) During cooling and heating (Including auto cooling and heating)
  - (i) Air flow selection is determined according to indoor temperature and setting temperature.

| Operation mode | Air flow selection                |                                    |          |     |    |     |
|----------------|-----------------------------------|------------------------------------|----------|-----|----|-----|
| Operation mode | AUTO                              |                                    | HI       | MED | LO | ULO |
| Cooling        | Indoor temp. – Setting temp. >5°C | Indoor temp. – Setting temp. ≦ 5°C |          |     |    | ULO |
| Cooling        | HIGH POWER                        | AUTO                               | НІ       | MED | 10 |     |
| Heating        | Setting temp. – Indoor temp. >5°C | Setting temp. – Indoor temp. ≦ 5°C | HI   MEL | MED | LO |     |
| пеанну         | HIGH POWER                        | AUTO                               |          |     |    |     |

- (ii) Air flow direction is controlled according to the indoor temperature and setting temperature.
  - 1) When 3D auto operation starts

|        | Cooling Heating |                |  |
|--------|-----------------|----------------|--|
| Flap   | Up/down swing   |                |  |
| Louver | Wide (Fixed)    | Center (Fixed) |  |

When Indoor temp. – Setting temp. is  $\leq 5^{\circ}$ C during cooling and when Setting temp. – Indoor temp. is  $\leq 5^{\circ}$ C during heating, the system switches to the following air flow direction control. After the louver swings left and right symmetrically for 3 cycles, control is switched to the control in 3).

|        | Cooling                    | Heating                        |  |
|--------|----------------------------|--------------------------------|--|
| Flap   | Horizontal blowing (Fixed) | Slant forwardl blowing (Fixed) |  |
| Louver | Left/right swing           |                                |  |

3) After the flap swings for 5 cycles, control is switched to the control in 4).

|        | Cooling        | Heating |
|--------|----------------|---------|
| Flap   | Up/down swing  |         |
| Louver | Center (Fixed) |         |

4) For 5 minutes, the following air flow direction control is carried out.

|        | Cooling                    | Heating                        |  |
|--------|----------------------------|--------------------------------|--|
| Flap   | Horizontal blowing (Fixed) | Slant forwardl blowing (Fixed) |  |
| Louver | Wide (Fixed)               |                                |  |

5) After 5 minutes have passed, the air flow direction is determined according to the indoor temperature and setting temperature.

| Operation mode | Air flow direction contorol       |   |                                       |
|----------------|-----------------------------------|---|---------------------------------------|
| Cooling        | Indoor temp. – Setting temp. ≦2°C | $2^{\circ}$ C < Indoor temp. – Setting temp. $\leq 5^{\circ}$ C | Indoor temp. – Setting temp. > 5°C    |
| Cooling        | The control in 4) continues.      | Control returns to the control in 2).                           | Control returns to the control in 1). |
| Heating        | Setting temp. – Indoor temp. ≦2°C | $2^{\circ}$ C < Setting temp. – Indoor temp. $\leq 5^{\circ}$ C | Setting temp. – Indoor temp. > 5°C    |
| Heating        | The control in 4) continues.      | Control returns to the control in 2).                           | Control returns to the control in 1). |

(b) During dehumidifying operation (including auto dehumidifying operation)

| Flap   | Horizontal blowing (Fixed) |  |
|--------|----------------------------|--|
| Louver | Wide (Fixed)               |  |

### (10) Timer operation

### (a) Comfortable timer setting (ON timer)

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the indoor temperature at the setting time (temperature of room temperature sensor) and the setting temperature.

### (b) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled with respect to the set temperature.

### (c) OFF timer operation

The Off timer can be set at a specific time (in 10-minute units) within a 24-hour period.

### (d) Weekly timer operation

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

# (11) Silent mode

As "Silent mode start" signal is received from the wireless remote control, it operates by dropping the outdoor fan tap. (Upper limit is 3rd speed)

#### (12) Night setback

As "Night setback" signal is received from the wireless remote control, the heating operation starts with the setting temperature at  $10^{\circ}$ C.

· ( i ),(iv)

(ii)

(iii)

### (13) Installation location setting

When the indoor unit is installed at the end of a room, control the air flow direction so that it is not toward the side walls. If you set the wireless remote control installation position, keep it so that the air flow is within the range shown in the following figure.

### (a) Setting

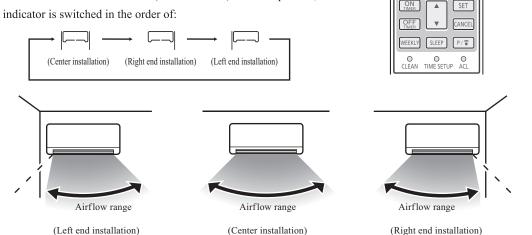
- (i) If the air-conditioning unit is running, press the ON/OFF button to stop. The installation location setting cannot be made while the unit is running.
- Press the AIR FLOW U/D (UP/DOWN) button and the AIR FLOW L/R (LEFT/RIGHT) button together for 5 seconds or more.

The installation location display illuminates.

(iii) Setting the air-conditioning installation location.

> Press the AIR FLOW L/R (LEFT/RIGHT) button and adjust to the desired location.

Each time the AIR FLOW L/R (LEFT/RIGHT) button is pressed, the



# Press the ON/OFF button.

The air-conditioner's installation location is set.

Press within 60 seconds of setting the installation location (while the installation location setting display illuminates).

### (14) Outline of heating operation

### (a) Operation of major functional components in heating mode

|                   | Heating       |                         |                       |  |
|-------------------|---------------|-------------------------|-----------------------|--|
|                   | Thermostat ON | Thermostat OFF          | Failure               |  |
| Compressor        | ON            | OFF                     | OFF                   |  |
| Indoor fan motor  | ON            | ON(HOT KEEP)            | OFF                   |  |
| Outdoor fan motor | ON            | OFF<br>(few minutes ON) | OFF                   |  |
| 4-way valve       | ON            | ON                      | OFF<br>(3 minutes ON) |  |

### (b) Details of control at each operation mode (pattern)

### (i) Fuzzy operation

Deviation between the indoor temperature setting correction temperature and the return air temperature is calculated in accordance with the fuzzy rule, and used for control of the air capacity and the compressor speed.

| Model Fan speed | SRK100ZR-S |
|-----------------|------------|
| AUTO            | 20-82rps   |
| HI              | 20-82rps   |
| MED             | 20-82rps   |
| LO              | 20-74rps   |
| ULO             | 20-50rps   |

When the defrosting, protection device, etc. is actuated, operation is performed in the corresponding mode.

### (ii) Hot keep operation

If the hot keep operation is selected during the heating operation, the indoor fan speed is controlled based on the temperature of the indoor heat exchanger (Th2) to prevent blowing of cool wind.

However, if the fan speed setting is HI and room temperature is 19°C or higher, this control is not executed.

#### (15) Outline of cooling operation

### (a) Operation of major functional components in cooling mode

|                   | Cooling       |                         |                         |  |  |  |  |  |
|-------------------|---------------|-------------------------|-------------------------|--|--|--|--|--|
|                   | Thermostat ON | Thermostat OFF          | Failure                 |  |  |  |  |  |
| Compressor        | ON            | OFF                     | OFF                     |  |  |  |  |  |
| Indoor fan motor  | ON            | ON                      | OFF                     |  |  |  |  |  |
| Outdoor fan motor | ON            | OFF<br>(few minutes ON) | OFF<br>(few minutes ON) |  |  |  |  |  |
| 4-way valve       | OFF           | OFF                     | OFF                     |  |  |  |  |  |

### (b) Detail of control in each mode (Pattern)

### 1) Fuzzy operation

During the fuzzy operation, the air flow and the compressor speed are controlled by calculating the difference between the indoor temperature setting correction temperature and the return air temperature.

| Model Fan speed | SRK100ZR-S |
|-----------------|------------|
| AUTO            | 15-77rps   |
| HI              | 15-77rps   |
| MED             | 15-62rps   |
| LO              | 15-50rps   |
| ULO             | 15-30rps   |

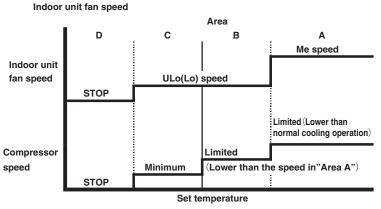
### (16) Outline of dry(dehumidifying) operation

### (a) Purpose of DRY mode

The purpose is "Dehumidification", and not to control the humidity to the target condition. Indoor/outdoor unit control the operation condition to reduce the humidity, and also prevent over cooling.

### (b) Outline of control

(i) Indoor unit fan speed and compressor are controlled by the area which is selected by the temperature difference.



Difference between set temperature and return temperature

(ii) The indoor unit check the current area by every 5 minutes, and operate by the next checking.

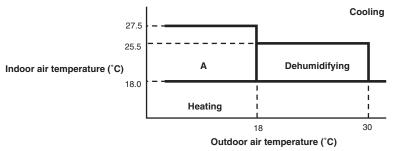
### (c) Other

When the outside temperature and room temperature is low for cooling operation, indoor unit can not operate in cooling, and dehumidifying. In this case, the units operate in heating to rise the room temperature and after that start dehumidifying operation.

### (17) Outline of automatic operation

### (a) Determination of operation mode

The unit checks the indoor air temperature and setting temperature and the outdoor air temperature, determines the operation mode, and then begins in the automatic operation.



- (b) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.
  - (i) If the setting temperature is changed with the remote control, the operation mode is judged immediately.
  - (ii) When both the indoor and the outdoor air temperatures are in the range "A", cooling or heating is switched depending on the difference between the setting temperature and the indoor air temperature.
  - (iii) When the operation mode has been judged following the change of setting temperature with the remote control, the hourly judgment of operation mode is cancelled.
- (c) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.
- (d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote control and the setting temperature.

|                        |               |    |    | Sig | nals of v | vireless | remote | control | (Display | /) |    |    |    |    |
|------------------------|---------------|----|----|-----|-----------|----------|--------|---------|----------|----|----|----|----|----|
|                        |               | -6 | -5 | -4  | -3        | -2       | -1     | ±0      | +1       | +2 | +3 | +4 | +5 | +6 |
| Catting                | Cooling       |    |    |     |           |          |        |         |          |    |    |    |    |    |
| Setting<br>temperature | Dehumidifying | 18 | 19 | 20  | 21        | 22       | 23     | 24      | 25       | 26 | 27 | 28 | 29 | 30 |
| temperature            | Heating       |    |    |     |           |          |        |         |          |    |    |    |    |    |

### (18) Protection control function

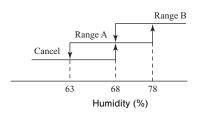
- (a) Dew prevention control [Cooling]: Prevents dewing on the indoor unit.
  - (i) Operating conditions: When the following conditions have been satisfied for more than 30 minutes after starting operation.
    - 1) Compressor's command speed is 30 rps or higher.
    - 2) Detected value of humidity is 68% or higher.

### (ii) Contents of operation

### Air capacity control

| Model<br>Item                                 | SRK100ZR-S                                       |
|---|--|
| Upper limit of compressor's command speed (1) | Range A: As per following table, Range B: 40 rps |

Note (1) Ranges A and B are as shown below



### Condition for range A

Compressor's command speed is controlled according to the indoor unit heat exchanger temperature (Th2) and the indoor unit room temperature (Th1).

| 1 ,                          |   |
|------------------------------|---|
| Condition                    | Compressor's command speed  |
| Th2 ≤ Th1 - 10               | Decreases the compressor's target max speed by 4 rps.     If the condition is met still 20 seconds later, the speed is decreased further by 4 rps. This process is repeated further so far as the condition is met. [Lower limit is 20 rps] |
| $Th1 - 10 < Th2 \le Th1 - 6$ | Compressor's target max. speed or changed value of the same is maintained.  |
| Th2 - 6 < Th1                | Changed compressor's target max. speed is increased at a rate of 1 rps/20 seconds.  |

- When this control has continued for more than 30 minutes continuously, the following wind direction control is performed.
  - a) When the vertical wind direction is set at other than the vertical swing, the flaps change to the horizontal position.
  - b) When the horizontal wind direction is set at other than the horizontal swing, the louver changes to the vertical po-
- (iii) Reset conditions: When either of the following conditions is satisfied.
  - Compressor's command speed is less than 20 rps. 1)
  - Detected value of humidity is less than 63%.

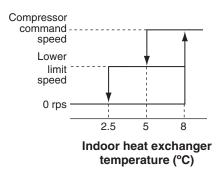
### **(b)** Frost prevention control (During cooling or dehumidifying)

# **Operating conditions**

- Indoor heat exchanger temperature (Th2) is lower than 5°C.
- 8 minutes after reaching the compressor command speed except 0 rps.

#### **Detail of anti-frost operation** (ii)

| Indoor heat exchanger temperature       |                           | 2.5°C or lower  |  |  |
|---|---------------------------|---|--|--|
| Lower limit of compressor command speed | 16rps                     | 0 rps   |  |  |
| Indoor fan                              | Depends on operation mode | Protects the fan tap just before frost prevention control |  |  |
| Outdoor fan                             | Depends on command speed  | Dananda an atan mada                                      |  |  |
| 4-way valve                             | OFF                       | Depends on stop mode                                      |  |  |



- Notes (1) When the indoor heat exchanger temperature is in the range of 2.5-5°C, the speed is reduced by 4 rps at each 20 seconds.

  (2) When the temperature is lower than 2.5°C, the compressor is stopped.

  (3) When the indoor heat exchanger temperature is in the range of 5-8°C, the compressor command speed is been maintained.

#### **Reset conditions:** When either of the following conditions is satisfied.

- The indoor heat exchanger temperature (Th2) is 8°C or higher.
- 2) The compressor command speed is 0 rps.

### (c) Indoor fan motor protection

When the air-conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 min<sup>-1</sup> or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

# 11.4 Operation control function by the outdoor control

### (1) Compressor command speed

Unit: rps

|             | Cooling | Heating |
|-------------|---------|---------|
| Upper limit | 90      | 90      |
| Lower limit | 15      | 15      |

### (2) Compressor protection start

- (a) Operating conditions: When the compressor is turned ON from the state of OFF.
- **(b) Detail of operation:** During the protection start control, the upper limit of compressor speed is restricted to the speeds as shown in the following table.

Unit: rps

|         | _         |              | Time after establishment of operating conditions (Including acceleration time) |                 |                 |                 |                |  |  |
|---------|-----------|--------------|--|-----------------|-----------------|-----------------|----------------|--|--|
|         |           |              | Less than 1 min and 45 sec   | Less than 3 min | Less than 5 min | Less than 9 min | 9 min or more  |  |  |
| Cooling |           |              | 90   | 90              | 90              | 90              |                |  |  |
| Hooting | TU0 < 0°C | Thi-A≧25°C   | 30   | 30              | 55              | 90              | End of control |  |  |
| пеанну  | TH2<0°C   | Thi-A < 25°C | 55   | 55              | 55              | 90              | End of control |  |  |
|         | TH2≧0°C   |              | 90   | 90              | 90              | 90              |                |  |  |

### (3) Outdoor unit fan control

### (a) Outdoor unit fan speed and fan motor speed

Unit: min<sup>-1</sup>

| Fan tap   | 1st speed | 2nd speed | 3rd speed | 4th speed | 5th speed | 6th speed | 7th speed | 8th speed |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Fan speed | 150       | 300       | 550       | 650       | 740       | 820       | 870       | 950       |

### (b) Outdoor unit fan control at start (Cooling operation only)

When the outdoor air temperature (TH2) is lower than 22°C at the start of compressor, the outdoor unit fan is operated at a fixed speed.

- (i) When the outdoor air temperature is higher than 11°C, the compressor runs at 2nd speed for 30 seconds after the compressor ON.
- (ii) When the outdoor air temperature is lower than 11°C, the compressor runs at 1st speed for 30 seconds after the compressor ON.

# (c) Relationship between compressor speed and outdoor unit fan speed

Outdoor unit fan speed is controlled according to the operation mode (Heating/cooling) and the compressor speed.

Unit: rps

|         | 1st speed | 2nd speed | 3rd speed | 4th speed | 5th speed | 6th speed | 7th speed | 8th speed |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Cooling | _         | _         | 0-21      | 21-32     | 32-44     | 44-49     | 49-70     | 70-       |
| Heating | _         | _         | 0-21      | 21-30     | 30-48     | 48-60     | 60-67     | 67-       |

#### (d) Outdoor fan control at low outdoor temperature

#### (i) Cooling

- 1) Operating conditions: When the outdoor air temperature (TH2) is 22°C or lower continues for 30 seconds while the compressor command speed is other than 0 rps.
- **2) Detail of operation:** After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

#### • Value of A

|                                | Outdoor fan |
|--------------------------------|-------------|
| Outdoor air temperature > 10°C | 2nd speed   |
| Outdoor air temperature ≤ 10°C | 1st speed   |

a) Outdoor heat exchanger temperature ≤ 22°C

After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 22°C, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)

b)  $22^{\circ}\text{C} < \text{Outdoor heat exchanger temperature} \leq 40^{\circ}\text{C}$ 

After the outdoor fan speed maintains for 20 seconds; if the outdoor heat exchanger temperature is 22°C-40°C, maintain outdoor fan speed again.

c) Outdoor heat exchanger tempeature > 40°C

After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 40°C, gradually increase outdoor fan speed by 1 speed. (Upper limit 3rd speed)

- 3) Reset conditions: When either of the following conditions is satisfied
  - a) The outdoor air temperature (TH2) is 24°C or higher and fan speed is 3rd speed.
  - b) The compressor command speed is 0 rps.
- 4) Outdoor unit fan speed and fan motor speed

#### (ii) Heating

- 1) Operating conditions: When the outdoor air temperature (TH2) is 3°C or lower continues for 30 seconds while the compressor command speed is other than 0 rps.
- 2) Detail of operation: The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)
- 3) Reset conditions: When either of the following conditions is satisfied
  - a) The outdoor air temperature (TH2) is 5°C or higher.
  - b) The compressor command speed is 0 rps.

# (e) Outdoor fan control at overload

- (i) Cooling
  - 1) Operating conditions: When the outdoor air temperature (TH2) is 41°C or higher continues for 30 seconds while the compressor command speed is other than 0 rps.
  - **2) Detail of operation:** The outdoor fan is stepped up by 3 speed. (Upper limit 8th speed)
  - 3) Reset conditions: When either of the following conditions is satisfied
    - a) The outdoor air temperature (TH2) is 40°C or lower.
    - b) The compressor command speed is 0 rps.

### (ii) Heating

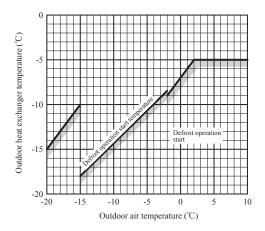
- 1) Operating conditions: When the outdoor air temperature (TH2) is 13°C or higher continues for 30 seconds while the compressor command speed is other than 0 rps.
- 2) Detail of operation: The outdoor fan stepped down to 3 speed. (Lower limit 2nd speed)
- 3) Reset conditions: When either of the following conditions is satisfied
  - a) The outdoor air temperature (TH2) is 11°C or lower.
  - b) The compressor command speed is 0 rps.

### (f) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 rpm or lower for more than 30 seconds, the compressor and fan motor are stopped.

#### (4) Defrost operation

- (a) Starting conditions (Defrost operation can be started only when all of the following conditions are satisfied.)
  - (i) After start of heating operation
     When it elapsed 35 minutes. (Accumulated compressor operation time)
  - (ii) After end of defrost operation
    - When it elapsed 35 minutes. (Accumulated compressor operation time)
  - (iii) Outdoor heat exchanger sensor (TH1) temperature
    - When the temperature has been below -5°C for 3 minutes continuously.
  - (iv) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature (TH2-TH1)
    - The outdoor air temperature  $\geq -2^{\circ}\text{C}$ : 7°C or higher
    - $-15^{\circ}$ C < The outdoor air temperature <  $-2^{\circ}$ C :  $4/15 \times$  The outdoor air temperature + 7°C or higher
    - The outdoor air temperature  $\leq -15^{\circ}\text{C}$ :  $-5^{\circ}\text{C}$  or higher



### (v) During continuous compressor operation

In addition, when the speed command from the indoor control of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of (i), (ii) above and the outdoor air temperature is 3°C or less and the temperature for outdoor heat exchanger sensor (TH1) is -5°C or less: 62 rps or more, -4°C or less: less than 62 rps are satisfied, defrost operation is started.

- (b) Ending condition (Operation returns to the heating cycle when either one of the following is satisfied.)
  - (i) Outdoor heat exchanger sensor (TH1) temperature: 13°C or higher
  - (ii) Continued operation time of defrost operation → For more than 18 minutes.

#### Defrost operation



\*Depends on an operation condition, the time can be longer than 7 minutes.

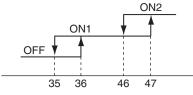
### (5) Cooling overload protective control

(a) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 36°C or more, or 47°C or more with the compressor running, the lower limit speed of compressor is

 Model Item
 FDC100VNP

 Outdoor air temperature
 36°C or more
 47°C or more

 Lower limit speed
 20 rps
 25 rps



#### (b) Detail of operation

Outdoor air temperature (°C)

The lower limit of compressor command speed is set to 20 or 25 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 20 or 25 rps. However, when the thermo OFF, the speed is reduced to 0 rps.

(c) Reset condition: When either of the following condition is satisfied.

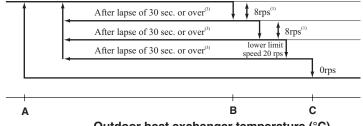
brought up.

- 1) The outdoor air temperature is lower than 35°C.
- 2) The compressor command speed is 0 rps.

#### (6) Cooling high pressure control

- (a) Purpose: Prevents anomalous high pressure operation during cooling.
- **(b) Detector:** Outdoor heat exchanger sensor (TH1)
- (c) Detail of operation:

### (Example) Fuzzy



| Outdoor air temperature(TH2) | Α  | В  | С  |
|------------------------------|----|----|----|
| TH2 ≧ 32°C                   | 53 | 58 | 60 |
| TH2 < 31°C                   | 51 | 53 | 56 |

Outdoor heat exchanger temperature (°C)

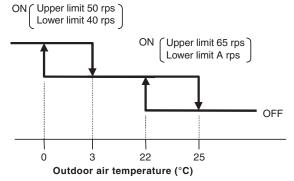
Notes (1) When the outdoor heat exchanger temperature is in the range of B - C °C, the compressor command speed is reduced by 8 rps at each 20 seconds.

- (2) When the temperature is C °C or higher, the compressor is stopped.
- (3) When the outdoor heat exchanger temperature is in the range of A B °C, if the compressor command speed is been maintained and the operation has continued for more than 30 seconds at the same speed, it returns to the normal cooling operation.

### (7) Cooling low outdoor temperature protective control

- (a) Operating condition: When the outdoor air temperature (TH2) is C°C or lower continues for 20 seconds while the compressor command speed is other than 0 rps.
- (b) Detail of operation:
  - (i) The lower limit of the compressor command speed is set to 40 (A) rps and even if the speed becomes lower than 40 (A) rps, the speed is kept to 40 (A) rps. However, when the thermo OFF, the speed is reduced to 0 rps.
  - (ii) The upper limit of the compressor command speed is set to 50 (65) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 50 (65) rps.

Note (1) Values in ( ) are for outdoor air temperature is C or D



| • Value of A                   |         |
|--------------------------------|---------|
|                                | Α       |
| Outdoor air temperature≧26°C   | Release |
| Outdoor air temperature < 24°C | 25      |
|                                |         |

(iii) Reset condition: When either of the following condition is satisfied

- 1) The outdoor air temperature (TH2) is 25 °C or higher.
- 2) The compressor command speed is 0 rps.

### (8) Heating high pressure control

- (a) **Starting condition:** When the indoor heat exchanger temperature (Thi-R1, R2) has risen to a specified temperature while the compressor is turned on.
- (b) Compressor command speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.

|                               | Thi-R < P1 | P1 ≦ Thj-R < P2 | P2 ≦ Thi-R < P3 | P3 ≦ Thi-R |
|-------------------------------|------------|-----------------|-----------------|------------|
| Protection control speed (NP) | Normal     | Retention       | NP-4rps         | NP-8rps    |
| Sampling time (s)             | Normal     | 20              | 20              | 20         |

Unit: °C Thi-R Р1 P2 РЗ NP 10 ≦ NP < 90 45 52 57 90 ≦ NP < 120 45 - 43 52 - 45 57 - 48 120 ≦ NP 43 45 48

### (9) Heating overload protective control I

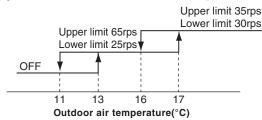
(a) **Operating conditions**: When the outdoor air temperature (TH2) is 13 °C or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

### (b) Detail of operation

- (i) Taking the upper limit of compressor command speed range at 65(35)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.
- (ii) The lower limit of compressor command speed is set to 25(30)rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 25(30)rps. However, when the thermo OFF, the speed is reduced to 0 prs

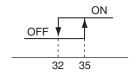
Note (1) Values in ( ) are for outdoor air temperature at 17°C.

(c) Reset condition: The outdoor air temperature (TH2) is lower than 11°C



### (10) Heating overload protective control II

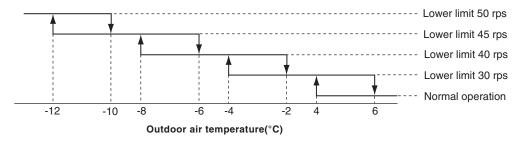
- (a) Starting condition: When the indoor heat exchanger temperature (Thi-R) has risen to a specified temperature while the compressor is turned on.
- **(b) Detail of operation :** The lower limit of compressor command speed is set to 20rps.



Indoor heat exchanger temperature (°C)

### (11) Heating low outdoor temperature protective control

- (a) Operating conditions: When the outdoor air temperature (TH2) is 4°C or lower continues for 30 seconds while the compressor command speed is other than 0 rps.
- (b) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



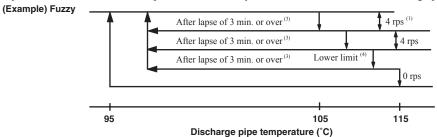
- **(c) Reset condition:** When either of the following condition is satisfied.
  - (i) The outdoor air temperature (TH2) is higher than 6°C
  - (ii) The compressor command speed is 0 rps.

#### (12) Compressor overheat protection

(a) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

### (b) Detail of operation

(i) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.



- Notes (1) When the discharge pipe temperature is in the range of 105-115°C, the speed is reduced by 4 rps.
  - (2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.
  - (3) If the discharge pipe temperature is in the range of 95-105°C even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95-105°C, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.
  - (4) Lower limit speed

|                   | Cooling | Heating |
|-------------------|---------|---------|
| Lower limit speed | 20 rps  | 25 rps  |

(ii) If the temperature of 115°C is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

#### (13) Current safe

- (a) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.
- **(b) Detail of operation:** Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 20 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

# (14) Current cut

- (a) **Purpose:** Inverter is protected from overcurrent.
- **(b) Detail of operation:** Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

## (15) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item (a), (b) is satisfied. Once the unit is stopped by this function, it is not restarted

- (a) When the input current is measured at 1 A or less for 3 continuous minutes or more.
- (b) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

# (16) Serial signal transmission error protection

- (a) **Purpose:** Prevents malfunction resulting from error on the indoor  $\leftrightarrow$  outdoor signals.
- **(b) Detail of operation:** If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

# (17) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

# (18) Refrigeration cycle system protection

# (a) Starting conditions

- (i) When S minutes have elapsed after the compressor ON or the completion of the defrost control
- (ii) Other than the defrost control
- (iii) When, after meeting the conditions of (i) and (ii) above, the compressor speed, indoor air temperature (Thi-A) and indoor heat exchanger temperature (Thi-R) have met the conditions in the following table for 5 minutes:

| Operation mode | S (min) | Compressor speed (N) | Indoor air temperature (Thi-A) | Indoor air temperature (Thi-A)/<br>Indoor heat exchanger temperature (Thi-R) |
|----------------|---------|----------------------|--------------------------------|--|
| Cooling        | 5       | 30≦N                 | 10 ≦Thi-A ≦ 40                 | Thi-A-4 <thi-r< td=""></thi-r<>  |
| Heating        | 5       | 30≦N                 | 0 ≦Thi-A ≦ 40                  | Thi-A+6>Thi-R  |

# (b) Contents of control

- (i) When the conditions of (a) above are met, the compressor stops.
- (ii) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

# (c) Resetting condition

When the compressor has been turned OFF

# (19) Silent mode

As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor fan tap.

|         | Outdoor fan tap (Upper limit) |
|---------|-------------------------------|
| Cooling | 3rd speed                     |
| Heating | 3rd speed                     |

# (20) Broken wire detection on temperature sensor

# (a) Outdoor unit heat exchanger sersor, outdoor air sensor

If the following is detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop. Or with in 20 seconds after power ON.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Outdoor unit heat exchanger sensor: -55°C or lower
- Outdoor air temperature sensor: -55 or lower

# (b) Discharge pipe temperature sensor

If the following is detected for 5 second continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected

• Discharge pipe temperature sensor: -25°C or lower

# (21) Base heater ON/OFF output control (Option)

# (a) Base heater ON conditions

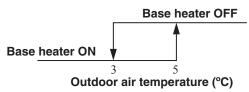
When all of following conditions are met, the base heater is turned ON.

- (i) Outdoor air temperature (detected with Tho-A) is 3°C or lower.
- (ii) In the heating mode
- (iii) When the compressor is turned ON

# (b) Base heater OFF conditions

When either one of following conditions is met, the base heater is turned OFF.

- (i) Outdoor air temperature (detected with Tho-A) is 5°C or higher.
- (ii) When the compressor stop has been detected for 30 minutes continuously
- (iii) In the cooling or dehumidifying mode



# (22) Reverse operation start for compressor protection

(a) Purpose: It is designed to prevent compressor failure at heating mode.

# (b) Detail of operation

When the outdoor air temperature (TH2) is 10°C or lower and compressor is not operated for long time, the unit start cooling mode up to 7 minutes at heating mode.

# (c) Method for disabling this operation.

When outdoor unit is installed higher than indoor unit, you can disable this control by cutting jumper (J2) of PCB of outdoor unit.

Notes(1) Unit may failure if you disable this control without above installation condition.

# 12. MAINTENANCE DATA

# 12.1 FDT, FDE, FDU, FDUM, FDF series

# 12.1.1 Diagnosing of microcomputer circuit

# (1) Selfdiagnosis function

# (a) Check indicator table

Whether a failure exists or not on the indoor unit can be know by the contents of remote control error code, indoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

### (i) Indoor unit

In case of these indoor unit errors, the outdoor control PCB Red LED stays OFF.

| Remote control |        |                   |  |                    |   |   | Reference   |  |  |   |   |  |
|----------------|--------|-------------------|--|--------------------|---|---|---|--|--|---|---|--|
| Error          | code F | Red LED           | Red LED  | Green<br>LED (1)   | Location of trouble                               | Description of trouble  | Repair method   | page                                     |  |   |   |  |
|                |        |                   | Stays OFF  | Keeps<br>flashing  | -   | Normal operation  | _   | _  |  |   |   |  |
| No-indication  |        | Stays OFF         | Stays OFF  | Stays OFF          | Indoor unit power source                          | Power OFF, broken wire/blown fuse, broken transformer wire  | Repair  | 167                                      |  |   |   |  |
|                |        |                   | *  | Keeps              | Remote control wires                              | Poor connection, breakage of remote control wire * For wire breaking at power ON, the LED is OFF.   | Repair  | 1.00                                     |  |   |   |  |
|                |        |                   | 3-time<br>flash  | flashing           | Remote control                                    | Defective remote control PCB  | Replacement of<br>remote control  | 168                                      |  |   |   |  |
|                | WAIT   |                   | Stays OFF  | Keeps<br>flashing  | Indoor-outdoor units connection wire              | Poor connection, breakage of indoor-outdoor units connection wire   | Repair  | 169-173                                  |  |   |   |  |
| - 111          | SILCI  | 1/0               |  | nasning            | Remote control                                    | Improper setting of master and slave by remote control  |   |  |  |   |   |  |
| F              | !      |                   | G. OFF   | *<br>Keeps         | Remote control wires (Noise)                      | Poor connection of remote control signal wire (White)     *For wire breaking at power ON, the LED is OFF  Intrusion of noise in remote control wire                             | Repair  | 174                                      |  |   |   |  |
|                |        |                   | Stays OFF  | flashing           | Remote control indoor control<br>PCB              | *• Defective remote control or indoor control PCB (defective communication circuit)?  | Replacement of remote control or PCB  | 174                                      |  |   |   |  |
|                |        |                   | 2-time<br>flash  | Keeps<br>flashing  | Indoor-outdoor units connection wire              | Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection)     Anomalous communication between indoor-outdoor units by noise, etc. | Repair  |  |  |   |   |  |
| E              |        |                   | 2-time   | Keeps              | (Noise)   | CPU-runaway on outdoor control PCB  | Power reset or<br>Repair  |  |  |   |   |  |
| <b>_</b>       | ןכ     |                   | *• Occurrence of defective outdoor control PCB on the way of power source (defective communication circuit)? | Replacement of PCB | 175   |   |   |  |  |   |   |  |
|                |        |                   | 2-time   | Keeps<br>flashing  |   |   | Replacement   |  |  |   |   |  |
|                |        |                   | flash  |                    | Fuse  | Blown fuse  | першести  |  |  |   |   |  |
| E              | 5      |                   | 1-time   | Keeps              | Indoor heat exchanger tempera-<br>ture thermistor | Defective indoor heat exchanger temperature thermistor (defective element, broken wire, short-circuit)     Poor contact of temperature thermistor connector                     | Replacement, repair<br>of temperature<br>thermistor                               | 176                                      |  |   |   |  |
| _ `            | _      |                   | flash  | flashing           | Indoor control PCB                                | *• Defective indoor control PCB (Defective temperature thermistor input circuit)?   | Replacement of<br>PCB   |  |  |   |   |  |
| E              | 7      |                   | 1-time   | flash flashing     | flash   |   |   | Keeps                                    | Indoor return air temperature<br>thermistor                            | Defective indoor return air temperature thermistor (defective element, broken wire, short-circuit)     Poor contact of temperature thermistor connector | Replacement, repair<br>of temperature<br>thermistor | 177  |
|                |        | Keeps<br>flashing | nasning  |                    |   | Indoor control PCB  | *- Defective indoor control PCB (Defective temperature thermistor input circuit)? | Replacement of<br>PCB                    |  |   |   |  |
|                |        |                   |  |                    |   |   |   | Installation or operating condi-<br>tion | Heating over-load (Anomalously high indoor heat exchanger temperature) | Repair  |   |  |
| E              | 8      |                   |  |                    |   |   |   |  |  | Keeps<br>flashing   | Indoor heat exchanger tempera-<br>ture thermistor   | Defective indoor heat exchanger temperature thermistor (short-circuit) |
|                |        |                   |  |                    | Indoor control PCB                                | *- Defective Indoor control PCB (Defective temperature thermistor input circuit)?   | Replacement of PCB  |  |  |   |   |  |
| _              |        |                   |  |                    | Drain trouble                                     | Defective drain pump (DM), broken drain pump wire, disconnected connector   | Replacement, repair<br>of DM  |  |  |   |   |  |
| E              | 4      |                   | 1-time   | Keeps              | Float switch                                      | Anomalous float switch operation (malfunction)  | Repair  | 179                                      |  |   |   |  |
|                |        |                   | flash  | flashing           | Indoor control PCB                                | *- Defective indoor control PCB (Defective float switch input circuit) *- Defective indoor control PCB (Defective DM drive output circuit)?                                     | Replacement of PCB  | 1//                                      |  |   |   |  |
|                | _      |                   |  |                    | Option  | Defective optional parts (At optional anomalous input setting)  | Repair  |  |  |   |   |  |
| E              | 10     |                   | Stays OFF  | Keeps<br>flashing  | Number of connected indoor<br>units               | When multi-unit control by remote control is performed, the number of units is over   | Repair  | 180                                      |  |   |   |  |
| E              | E 11   |                   | Keeps<br>flashing  | Keeps<br>flashing  | Address setting error                             | Address setting error of indoor units   | Repaie  | 181                                      |  |   |   |  |
| Ę              | ļΕ     |                   | 1(2)-time  | Keeps              | Fan motor   | Defective fan motor   | Replacement, repair   | 182                                      |  |   |   |  |
|                |        |                   | flash  | flashing           | Indoor power PCB                                  | Defective indoor power PCB  | Replacement   | 102                                      |  |   |   |  |
| Ε              | 19     |                   | 1-time<br>flash  | Keeps<br>flashing  | Indoor control PCB                                | Improper operation mode setting   | Repair  | 183                                      |  |   |   |  |

| Remote     | control           | Indoor co       | ntrol PCB         |  |  |               | Reference |
|------------|-------------------|-----------------|-------------------|--|--|---------------|-----------|
| Error code | Red LED           | Red LED         | Green<br>LED (1)  | Location of trouble                      | Description of trouble                               | Repair method | page      |
| con        | 1(2)-time Keeps   |                 | Fan motor         | Defective by rotation speed of fan motor | Replacement, repair                                  | 184           |           |
| CCU        |                   | flash           | flashing          | Indoor power PCB                         | Defective indoor power PCB                           | Replacement   | 104       |
| E2 1       | Keeps<br>flashing | 1-time<br>flash | Keeps<br>flashing | Panel switch detection                   | Defective panel switch operation (FDT only)          | Repair        | 185       |
| E28        |                   | Stays OFF       | Keeps<br>flashing | Remote control temperature thermistor    | Broken wire of remote control temperature thermistor | Repair        | 186       |

Notes (1) Normal indicator lamp (Indoor unit: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing

# (ii) Outdoor unit

| Remote control |                   | Indoor control PCB |                     |  |   |   | Reference                                       |        |  |
|----------------|-------------------|--------------------|---------------------|--|---|---|---|--------|--|
| Error code     | Red LED           | Red LED            | Green<br>LED        | Location of trouble                                      | Description of trouble  | Repair method                                       | page  |        |  |
|                |                   |                    |                     | Installation, operation status                           | Higher outdoor heat exchanger temperature   | Repair  |   |        |  |
| E 35           |                   | Stays OFF          | Stays OFF           | Keeps<br>flashing  | Outdoor heat exchanger temperature sensor   | Defective outdoor heat exchanger temperature sensor | Replacement, repair<br>of temperature<br>sensor | 187    |  |
|                |                   |                    |                     | Outdoor control PCB                                      | *• Defective outdoor control PCB (Defective temperature sensor input circuit)?                | Replacement of<br>PCB                               |   |        |  |
|                |                   |                    |                     | Installation, operation status                           | Higher discharge temperature  | Repair  |   |        |  |
| E 36           |                   | Stays OFF          | Keeps<br>flashing   | Discharge pipe temperature sensor                        | Defective discharge pipe temperature sensor   | Replacement, repair<br>of temperature<br>sensor     | 188   |        |  |
|                |                   |                    |                     | Outdoor control PCB                                      | *• Defective outdoor control PCB (Defective temperature sensor input circuit)?                | Replacement of<br>PCB                               |   |        |  |
| E37            |                   | Stays OFF          | Keeps               | Outdoor heat exchanger temperature sensor                | Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection | Replacement, repair<br>of temperature<br>sensor     | 189   |        |  |
|                |                   |                    | flashing            | Outdoor control PCB                                      | *• Defective outdoor control PCB (Defective temperature sensor input circuit)?                | Replacement of<br>PCB                               |   |        |  |
| E 38           | Stavs OFF Keeps   |                    | *                   |  | Defective outdoor air temperature sensor, broken wire or poor connector connection            | Replacement, repair<br>of temperature<br>sensor     | 190   |        |  |
|                |                   |                    | Outdoor control PCB | Replacement of<br>PCB                                    |   |   |   |        |  |
| E 39           | Keeps<br>flashing | Stays OFF          | Keeps               | Discharge pipe temperature sensor                        | Defective discharge pipe temperature sensor, broken wire or poor connector connection         | Replacement, repair<br>of temperature<br>sensor     | 191   |        |  |
|                |                   |                    | flashing            | Outdoor control PCB                                      | *• Defective outdoor control PCB (Defective temperature sensor input circuit)?                | Replacement of PCB                                  |   |        |  |
| E42            | Stave OFF         |                    | S OFF Keeps         | Outdoor control PCB,<br>compressor                       | Current cut (Anomalous compressor over-current)   | Replacement of<br>PCB                               | 192 • 193                                       |        |  |
| l              |                   | Hashing            |                     | flashing   |   | Installation, operation status                      | Service valve closing operation                 | Repair |  |
| ЕЧП            |                   | Stays OFF          | Keeps<br>flashing   | Outdoor control PCB                                      | Over voltage     Defective active filter  | Repair<br>PCB replacement                           | 194   |        |  |
| E48            |                   | Stays OFF          | Keeps<br>flashing   | Fan motor Outdoor control PCB                            | Defective fan motor     Defective outdoor control PCB   | Replacement   | 195   |        |  |
| E5 1           |                   | Stays OFF          | Keeps<br>flashing   | Power transistor error<br>(outdoor control PCB)          | Power transistor error  | Replacement of PCB                                  | 196   |        |  |
|                |                   |                    |                     | Operation status   | Shortage in refrigerant quantity  | Repair  |   |        |  |
| E57            |                   | Stays OFF          | Keeps<br>flashing   | Installation status                                      | Service valve closing operation   | Service valve<br>opening check                      | 197   |        |  |
| E 58           |                   | Stays OFF          | Keeps<br>flashing   | Overload operation     Overcharge     Compressor locking | Current safe stop   | Replacement   | 198   |        |  |
| E 59           |                   | Stays OFF          | Keeps<br>flashing   | Compressor, outdoor control PCB                          | Anomalous compressor startup     Voltage drop   | Replacement   | 199   |        |  |
| E 50           |                   | Stays OFF          | Keeps<br>flashing   | Compressor   | Anomalous compressor rotor lock   | Replacement   | 200   |        |  |

Note (1) \* mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

in any trouble other than anomalous CPU.

(2) \* mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

# (iv) Display sequence of error codes or inspection indicator lamps

# ■ Occurrence of one kind of error

Displays are shown respectively according to errors.

# ■ Occurrence of plural kinds of error

| Section              | Category of display  |
|----------------------|--|
| Error code on remote | • Displays the error of higher priority (When plural errors are persisting)                      |
| Red LED on indoor    | E   E5 ·····E   10>€35>·····Eb0  |
| control PCB          | • Displays the present errors. (When a new error has occurred after the former error was reset.) |

# **■** Error detecting timing

| Section | Error description   | Error code | Error detecting timing   |
|---------|---|------------|--|
|         | Drain trouble (Float switch activated)  | E9         | Whenever float switch is activated after 30 second had past since power ON.  |
|         | Communication error at initial operation  | "®WAIT®"   | No communication between indoor and outdoor units is established at initial operation.   |
|         | Remote control communication circuit error  | ΕI         | Communication between indoor unit and remote control is interrupted for mote than 2 minutes continuously after initial communication was established.  |
| Indoor  | Communication error during operation  | E5         | Communication between indoor and outdoor units is interrupted for mote than 2 minutes continuously after initial communication was established.  |
|         | Excessive number of connected indoor units by controlling with one remote control | E 10       | Whenever excessively connected indoor units is detected after power ON.  |
|         | Return air temperature thermistor anomaly   | EΠ         | -50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature.   |
|         | Indoor heat exchanger temperature thermistor anomaly                              | E6         | -50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature. Or 70°C or higher is detected for 5 seconds continuously.                                     |
|         | Outdoor air temperature sensor anomaly  | E 38       | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or lower is detected for 5 seconds continuously within 20 seconds after power ON. |
| Outdoor | Outdoor heat exchanger temperature sensor anomaly                                 |            | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or lower is detected for 5 seconds continuously within 20 seconds after power ON. |
|         | Discharge pipe temperature sensor anomaly   | E39        | -25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.  |

# **■** Error log and reset

| Error indicator               | Memorized error log                 | Reset  |
|-------------------------------|-------------------------------------|--|
| Remote control display        | Higher priority error is memorized. | • Stop the unit by pressing the ON/OFF switch of remote control. |
| Red LED on indoor control PCB | Not memorized.                      | • If the unit has recovered from anomaly, it can be operated.    |

# ■ Resetting the error log

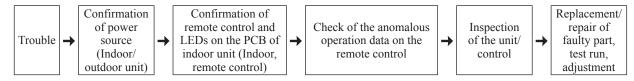
- Resetting the memorized error log in the remote control
  Holding down "CHECK" button, press "TIMER" button to reset the error log memorized in the remote control.
- Resetting the memorized error log in the indoor unit

  The remote control transmits error log erase command to the indoor unit when "VENTI" button is pressed while holding down "CHECK" button.

Receiving the command, the indoor unit erase the log and answer the status of no error.

# (2) Troubleshooting procedure

When any trouble has occurred, inspect as follows. Details of respective inspection method will be described on later pages.



# (3) Troubleshooting at the indoor unit

With the troubleshooting, find out any defective part by checking the voltage (AC, DC), resistance, etc. at respective connectors at around the indoor PCB, according to the inspection display or operation status of unit (the compressor does not run, fan does not run, the 4-way valve does not switch, etc.), and replace or repair in the unit of following part.

# (a) Replacement part related to indoor PCB's

Control PCB, power source PCB, temperature thermistor (return air, indoor heat exchanger), remote control switch and fuse

Note (1) With regard to parts of high voltage circuits and refrigeration cycle, judge it according to ordinary inspection methods.

# (b) Instruction of how to replace indoor control PCB

# SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the replacement in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, WARNING and CAUTION.

Both mentions the important items to protect your health and safety so strictly follow them by any means.

MARNING Wrong installation would cause serious consequences such as injuries or death.

⚠ CAUTION Wrong installation might cause serious consequences depending on circumstances.

After completing the replacement, do commissioning to confirm there are no anomaly

# 

- Replacement should be performed by the specialist.
- If you replace the PCB by yourself, it may lead to serious trouble such as electric shock or fire.
- Replace the PCB correctly according to these instructions.
  - Improper replacement may cause electric shock or fire.
- · Shut off the power before electrical wiring work.
  - Replacement during the applying the current would cause the electric shock, unit failure or improper running.
  - It would cause the damage of connected equipment such as fan motor, etc.
- Fasten the wiring to the terminal securely, and hold the cable securely so as not to apply unexpected stress on the terminal.
- Loose connections or hold could result in abnormal heat generation or fire.

  Check the connection of wiring to PCB correctly before turning on the power, after replacement.

Defectiveness of replacement may cause electric shock or fire.

# **↑ CAUTION**

- In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction.
- Insert connecter securely, and hook stopper. It may cause fire or improper running.
- Bundle the cables together so as not to be pinched or be tensioned. It may cause malfunction or electric shock for disconnection or deformation.

# (i) Models FDT, FDE, FDU, FDUM series

# 1) Control PCB

Replace and set up the PCB according to this instruction.

a) Set to an appropriate address and function using switch on PCB.

Select the same setting with the removed PCB.

| item     | switch | Content of control                              |                                      |  |  |
|----------|--------|---|--------------------------------------|--|--|
| Address  | SW2    | Plural indoor units control by 1 remote control |                                      |  |  |
| Test run | SW7-1  | OFF   | Normal                               |  |  |
|          | 3007-1 | ON  | Operation check/drain motor test run |  |  |

b) Set to an appropriate capacity using the model selector switch(SW6).

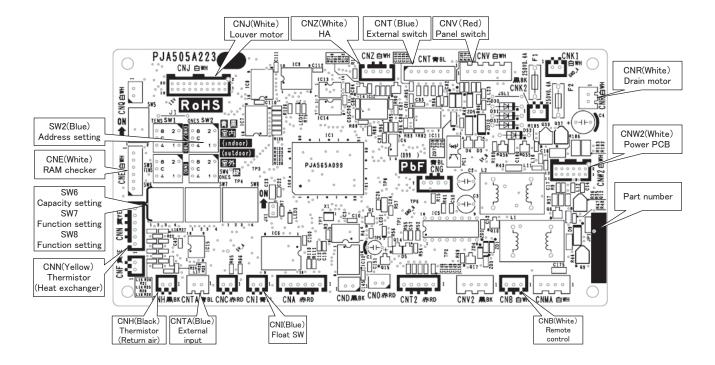
Select the same capacity with the PCB removed from the unit.

| Γ | SW6  | -1 | -2 | -3  | -4 | ا ا | SW6             |               |
|---|------|----|----|-----|----|-----|-----------------|---------------|
| r | 100V | ON | ON | OFF | ON |     | ON              |               |
| _ |      |    |    |     |    | `   |                 |               |
|   |      |    |    |     |    |     | $\sqcup \sqcup$ | ╛             |
|   |      |    |    |     |    |     | 7 7             | $\overline{}$ |

# c) Replace the PCB

- i) Exchange PCB after detaching all connectors connected with the PCB.
- ii) Fix the PCB so as not to pitch the wiring.
- iii) Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

# d) Control PCB



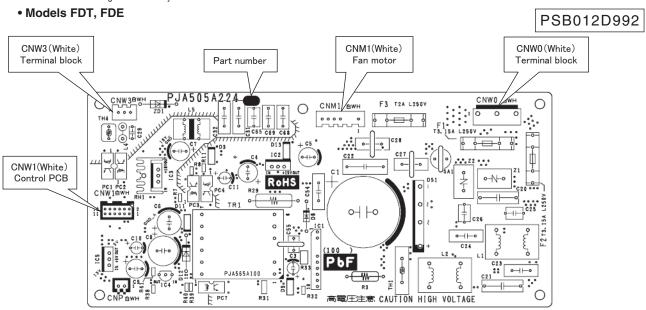
# 2) Power PCB

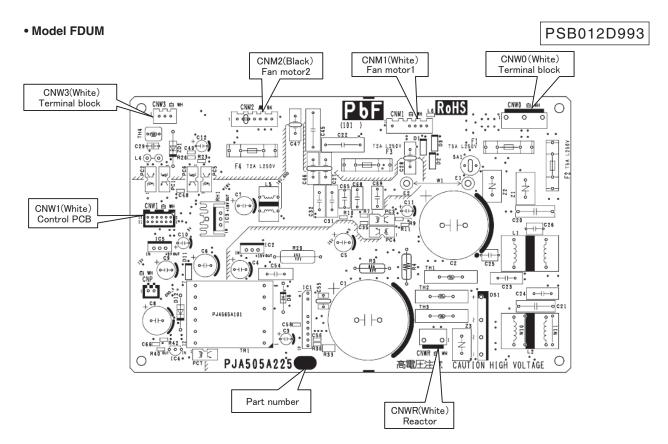
# a) Models FDT, FDE, FDUM series

This PCB is a general PCB. Replace the PCB according to this instruction.

- i) Replace the PCB
  - ① Unscrew terminal of the wiring(yellow/green) connected to Terminal block (CNWO) from the box.
  - 2 Replace the PCB only after all the wirings connected to the connector are removed.
  - 3 Fix the board such that it will not pinch any of the wires.
  - 4 Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
  - ⑤ Screw back the terminal of wiring, that was removed in 1.

# ii) Power PCB





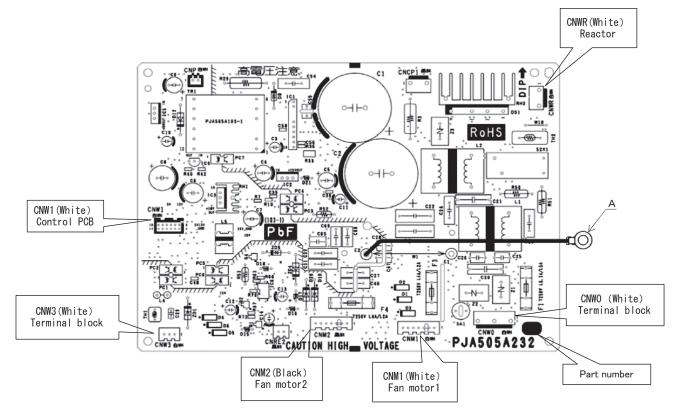
b) Model FDU series PSC012D021

This PCB is a general PCB. Replace the PCB according to this instruction.

# i) Replace the PCB

- ① Unscrew terminal(Arrow A) of the "E2" wiring(yellow/green) that is connected to PCB.
- ② Replace the PCB only after all the wirings connected to the connector are removed.
- ③ Fix the board such that it will not inch any of the wires.
  ④ Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
  ⑤ Screw back the terminal(Arrow A) of the "E2" wiring, that was removed in 1.

# ii) Power PCB



(ii) Model FDF series PSB012D976D

# 1) Control PCB

Replace and set up the PCB according to this instruction.

a) Set to an appropriate address and function using switch on PCB.

Select the same setting with the removed PCB.

| item     | switch | Content of control  Plural indoor units control by 1 remote control |                                      |  |
|----------|--------|---|--------------------------------------|--|
| Address  | SW2    |   |                                      |  |
| Test run | SW7-1  | OFF   | Normal                               |  |
| restrun  | 3007-1 | ON  | Operation check/drain motor test run |  |

b) Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

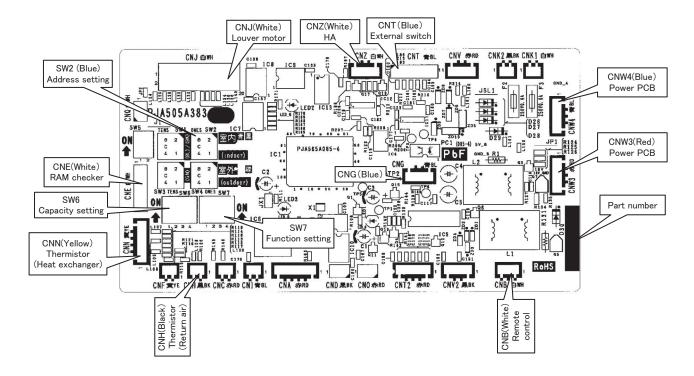
| SW6  | -1 | -2 | -3  | -4 |
|------|----|----|-----|----|
| 100V | ON | ON | OFF | ON |



# c) Replace the PCB

- i) Fix the PCB so as not to pitch the cords.
- ii) Connect connectors to the PCB. Connect a cable connector with the PCB connector of the same color.
- iii) Do not pass CPU surrounding about wirings.

# d) Control PCB



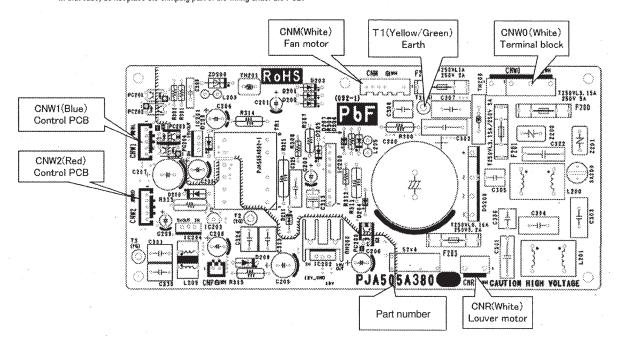
# 2) Power PCB

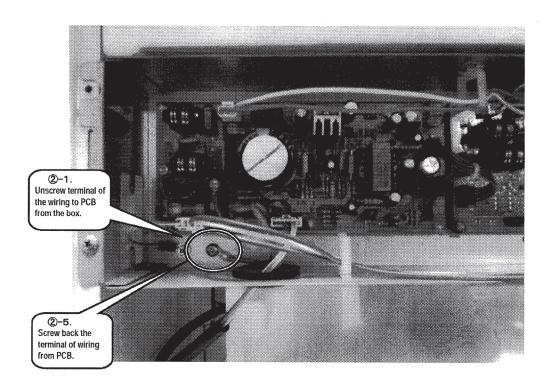
PSB012D953G

This PCB is a general PCB. Replace the PCB according to this instruction.

Replace the PCE

- a) Unscrew terminal of the wiring(yellow/green) soldered to PCB from the box.
- b) Replace the PCB only after all the wirings connected to the connector are removed.
- c) Fix the board such that it will not pinch any of the wires.
- d) Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
- e) Screw back the terminal of wiring (yellow/green) from PCB(T1), that was removed in 1. In that case, do not place the crimping part of the wiring under the PCB.





# **●DIP** switch setting list

| Switches | Descript                             | D                       | efault setting | Remarks |             |
|----------|--------------------------------------|-------------------------|----------------|---------|-------------|
| SW2      | Address No. setting at plural indoor | units control by 1 R/C  | 0              |         | 0-F         |
| SW5-1    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW5-2    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW6-1    |                                      |                         |                |         |             |
| SW6-2    | Model selection                      |                         | A c por r      | modal   | See table 1 |
| SW6-3    | Widder selection                     |                         | As per model   |         | See table 1 |
| SW6-4    |                                      |                         |                |         |             |
| SW7-1    | Test run, Drain motor                | Normal*/Test run        | OFF            | Normal  |             |
| SW7-2    | Reserved                             | -                       | OFF            |         | Keep OFF    |
| SW7-3    | Powerful mode                        | Valid*/Invalid          | ON             | Valid   |             |
| SW7-4    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW8-1    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW8-2    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW8-3    | Reserved                             |                         | OFF            |         | Keep OFF    |
| SW8-4    | Reserved                             |                         | OFF            |         | Keep OFF    |
| JSL1     | Superlink terminal spare             | Normal*/switch to spare | With           |         |             |

Note (1): SW8: FDT, FDE, FDU, FDUM on hyDefault setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

| Switches | 100V |
|----------|------|
| SW6-1    | ON   |
| SW6-2    | ON   |
| SW6-3    | OFF  |
| SW6-4    | ON   |

# (4) Check of anomalous operation data with the remote control

# (a) In case of RC-EX1A remote control

[Operating procedure]

- ① On the TOP screen, touch the buttons in the order of "Menu" → "Next" → "Service & Maintenance" → "Service password" → "Set" → "Error display" → "Error history".
- ② When only one indoor unit is connected to the remote control, followings will be displayed.
  - 1. When there is any anomaly: "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly. Contents of display
    - · Error code
    - · Number and data item
  - 2. When there is no anomaly: "No anomaly" is displayed, and this mode is terminated.
- 3 When two or more indoor units are connected to the remote control, followings will be displayed.
  - 1. When there is any anomaly: If the unit having anomaly is selected on the "Select IU" screen, "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly.

Contents of display

- · Indoor unit No.
- · Error code
- · Number and data item
- 2. When there is no anomaly: "No anomaly" is displayed, ant this mode is terminated.

Note (1) When the number of connected units cannot be shown in a page, select "Next".

- ④ If you press [RUN/STOP] button, the display returns to the TOP screen.
  - O If you touch "Back" button on the way of setting, the display returns to the last precious screen.

Note (1) When two remote controls are used to control indoor units, the check of anomaly operation data can be made on the master remote control only. (It cannot be operated from the slave remote control.)

■ Anomaly operation data (Corresponding data may not be provided depending on models. Such items will not be displayed.)

| Number |                       | Data Item  |
|--------|-----------------------|--|
| 01     | 4k                    | (Operation Mode)                                   |
| 02     | SET TEMPb             | (Set Temperature)                                  |
| 03     | RETURN AIRで           | (Return Air Temperature)                           |
| 04     | ■SENSORた              | (Remote Control Thermistor Tempeature)             |
| 05     | THI-R1c               | (Indoor Heat Exchanger Thermistor / U Bend)        |
| 06     | THI-R2c               | (Indoor Heat Exchanger Thermistor /Capillary)      |
| 07     | THI-R3t               | (Indoor Heat Exchanger Thermistor /Gas Header)     |
| 08     | I/U FANSPEED          | (Indoor Unit Fan Speed)                            |
| 09     | DEMANDHz              | (Frequency Requirements)                           |
| 10     | ANSWERHz              | (Response Frequency)                               |
| 11     | I/U EEVP              | (Pulse of Indoor Unit Expansion Value)             |
| 12     | TOTAL I/U RUN         | $_{ m H}$ (Total Running Hours of The Indoor Unit) |
| 21     | OUTDOORზ              | (Outdoor Air Temperature)                          |
| 22     | THO-R1t               | $(Outdoor\ Heat\ Exchanger\ Thermistor)$           |
| 23     | THO-R2c               | (Outdoor Heat Exchanger Thermistor)                |
| 24     | COMPHz                | (Compressor Frequency)                             |
| 25     | HPMPa                 | (High Pressure)                                    |
| 26     | LPMPa                 | (Low Pressure)                                     |
| 27     | ďbT                   | (Discharge Pipe Temperature)                       |
| 28     | COMP BOTTOM_t         | (Comp Bottom Temperature)                          |
| 29     | CTAMP                 | (Current)  |
| 30     | TARGET SH್ರಿ          | (Target Super Heat)                                |
| 31     | SHt                   | (Super Heat)                                       |
| 32     | TDSHt                 | (Discharge Pipe Super Heat)                        |
| 33     | PROTECTION No         | (Protection State No. of The Compressor)           |
| 34     | O/U FANSPEED          | (Outdoor Unit Fan Speed)                           |
| 35     | 63H1                  | (63H1 On/Off)                                      |
| 36     | DEFROST               | (Defrost Control On/Off)                           |
| 37     | TOTAL COMP RUN_       |  |
| 38     | 0/U <del>E</del> EV1P | (Pulse of The Outdoor Unit Expansion Valve EEVC)   |
| 39     | 0/U EEV2P             | (Pulse of The Outdoor Unit Expansion Valve EEVH)   |

# Details of Compressor protection status No. 33

| No.  | Contents of display                                |  |  |  |  |  |  |
|------|--|--|--|--|--|--|--|
| "0"  | Normal   |  |  |  |  |  |  |
| "1"  | Discharge pipe temperature protection control      |  |  |  |  |  |  |
| "2"  | Discharge pipe temperature anomaly                 |  |  |  |  |  |  |
| "3"  | Current safe control of inverter primary current   |  |  |  |  |  |  |
| "4"  | High pressure protection control                   |  |  |  |  |  |  |
| "5"  | High pressure anomaly                              |  |  |  |  |  |  |
| "6"  | Low pressure protection control                    |  |  |  |  |  |  |
| "8"  | Anti-frost prevention control                      |  |  |  |  |  |  |
| "9"  | Current cut  |  |  |  |  |  |  |
| "13" | Spare  |  |  |  |  |  |  |
| "15" | Current safe control of inverter secondary current |  |  |  |  |  |  |
| "16" | Stop by compressor rotor lock                      |  |  |  |  |  |  |
| "17" | Stop by compressor startup failure                 |  |  |  |  |  |  |

Note(1) Operation data display on the remote control.

Data is dispalyed until canceling the protection control.

In case of multiple protections controlled, only the younger No. is displayed.

Note(2) Common item.

① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.

② In cooling and dehumidifying mode.

During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

# (b) In case of RC-E5 remote control

Operation data can be checked with remote control unit operation.

- ① Press the CHECK button. The display change "OPER DATA
- ② Press the O (SET) button while "OPER DATA T" is displayed.
- 3 When only one indoor unit is connected to remote control, "DATA LOADING" is displayed (blinking indication during data loading).
  - Next, operation data of the indoor unit will be displayed. Skip to step ⑦.
- 4 When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed. [Example]:
  - " (blinking 1 seconds) → " [/[]000 inking.
- ⑤ Select the indoor unit number you would like to have data displayed with the | \ | \ | button.
- 6 Determine the indoor unit number with the (SET) button.

(The indoor unit number changes from blinking indication to continuous indication)

"[/[]000" (The address of selected indoor unit is blinking for 2 seconds.)

"DATA LOADING" (A blinking indication appears while data loaded.)

Next, the operation data of the indoor unit is indicated.

 Upon operation of the  **button, the current operation data is** displayed in order from data number 01.

The items displayed are in the above table.

- \*Depending on models, the items that do not have corresponding data are
- ® To display the data of a different indoor unit, press the AIR CON No. button, which allows you to go back to the indoor unit selection screen.
- Pressing the OON/OFF button will stop displaying data.

Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

⊙If two (2) remote controls are connected to one (1) inside unit, only the master control is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

# Details of Compressor protection status No. 33

| No.  | Contents of display                                |  |  |  |  |  |  |
|------|--|--|--|--|--|--|--|
| "0"  | Normal   |  |  |  |  |  |  |
| "1"  | Discharge pipe temperature protection control      |  |  |  |  |  |  |
| "2"  | 2" Discharge pipe temperature anomaly              |  |  |  |  |  |  |
| "3"  | Current safe control of inverter primary current   |  |  |  |  |  |  |
| "4"  | High pressure protection control                   |  |  |  |  |  |  |
| "5"  | High pressure anomaly                              |  |  |  |  |  |  |
| "6"  | Low pressure protection control                    |  |  |  |  |  |  |
| "8"  | Anti-frost prevention control                      |  |  |  |  |  |  |
| "9"  | Current cut  |  |  |  |  |  |  |
| "13" | Spare  |  |  |  |  |  |  |
| "15" | Current safe control of inverter secondary current |  |  |  |  |  |  |
| "16" | Stop by compressor rotor lock                      |  |  |  |  |  |  |
| "17" | Stop by compressor startup failure                 |  |  |  |  |  |  |

| Number |                          | Data Item  |
|--------|--------------------------|--|
| 01     | *                        | (Operation Mode)                                 |
| 02     | SET TEMP                 | (Set Temperature)                                |
| 03     |                          | (Return Air Temperature)                         |
| 03     | RETURN AIR&<br>■SENSOR & | (Remote Control Thermistor Tempeature)           |
|        |                          | , , ,  |
| 05     |                          | (Indoor Heat Exchanger Thermistor / U Bend)      |
| 06     | 1114 1144                | (Indoor Heat Exchanger Thermistor /Capillary)    |
| 07     | THI-R36                  | (Indoor Heat Exchanger Thermistor /Gas Header)   |
| 80     | I/U FANSPEED             | (Indoor Unit Fan Speed)                          |
| 09     | DEMANDHz                 | (Frequency Requirements)                         |
| 10     | ANSWERHz                 | (Response Frequency)                             |
| 11     | I/U EEVP                 | (Pulse of Indoor Unit Expansion Value)           |
| 12     | TOTAL I/U RUN            | H (Total Running Hours of The Indoor Unit)       |
| 21     | OUTDOORb                 | (Outdoor Air Temperature)                        |
| 22     |                          | (Outdoor Heat Exchanger Thermistor)              |
| 23     | THO-R26                  | (Outdoor Heat Exchanger Thermistor)              |
| 24     | COMPHz                   | (Compressor Frequency)                           |
| 25     | HPMPa                    | (High Pressure)                                  |
| 26     | LPMPa                    | (Low Pressure)                                   |
| 27     | ďbT                      | (Discharge Pipe Temperature)                     |
| 28     | COMP BOTTOM_6            | (Comp Bottom Temperature)                        |
| 29     | CTAMP                    | (Current)  |
| 30     | TARGET SHზ               | (Target Super Heat)                              |
| 31     | SH6                      | (Super Heat)                                     |
| 32     | TDSHt                    | (Discharge Pipe Super Heat)                      |
| 33     | PROTECTION No            | (Protection State No. of The Compressor)         |
| 34     | O/U FANSPEED             | (Outdoor Unit Fan Speed)                         |
| 35     | 63H1                     | (63H1 On/Off)                                    |
| 36     | DEFROST                  | (Defrost Control On/Off)                         |
| 37     | TOTAL COMP RUN           | H (Total Running Hours of The Compressor)        |
| 38     | 0/U EEV1P                | (Pulse of The Outdoor Unit Expansion Valve EEVC) |
| 39     | D/ILFFV2P                | (Pulse of The Outdoor Unit Expansion Valve EEVH) |

- Note(1) Operation data display on the remote control.
  - Data is dispalyed until canceling the protection control.

    In case of multiple protections controlled, only the younger No. is displayed.
- Note(2) Common item.

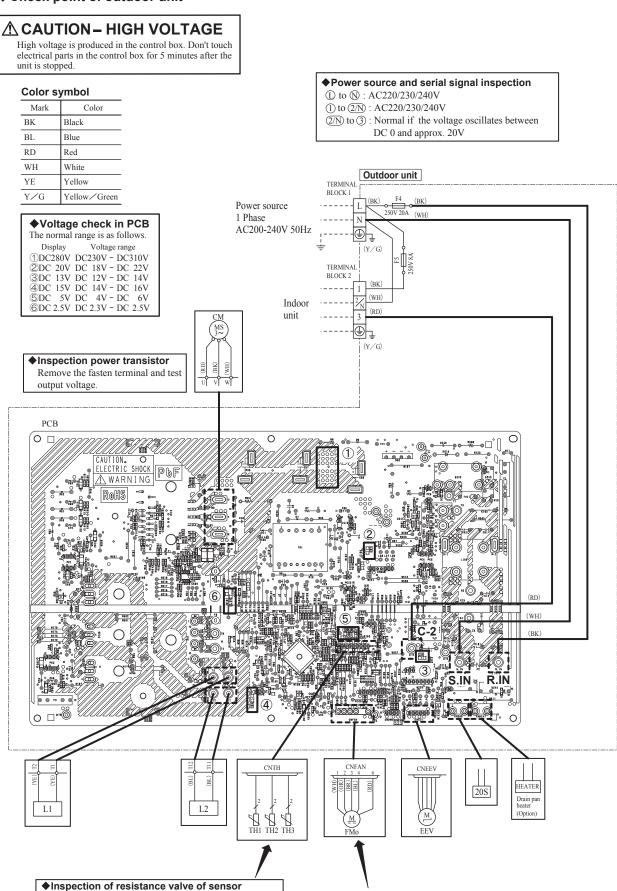
  ① In heating mode.

  - During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.

    ② In cooling and dehumidifying mode.

  - During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

# (5) Outdoor unit control failure diagnosis circuit diagram ◆ Check point of outdoor unit



Remove the connector and check the resistance valve. See the section of sensor characteristics on page 189,190. ♦Inspection of outdoor fan motor

See page195.

# 12.1.2 Troubleshooting flow (1) List of troubles

| Remote control display | Description of trouble   | Reference page |
|------------------------|--|----------------|
| None                   | Operates but does not cool   | 160            |
| None                   | Operates but does not heat   | 161            |
| None                   | Earth leakage breaker activated  | 162            |
| None                   | Excessive noise/vibration (1/3)  | 163            |
| None                   | Excessive noise/vibration (2/3)  | 164            |
| None                   | Excessive noise/vibration (3/3)  | 165            |
| None                   | Louver motor failure (FDT, FDE, FDF series)  | 166            |
| None                   | Power source system error (Power source to indoor control PCB)   | 167            |
| None                   | Power source system error (Power source to remote control)   | 168            |
| INSPECT I/U            | INSPECT I/U (When 1 or 2 remote controls are connected)  | 169            |
| INSPECT I/U            | INSPECT I/U (Connection of 3 units or more remote controls)  | 170            |
| ⊕WAIT⊕                 | Communication error at initial operation   | 171-173        |
| E1                     | Remote control communication circuit error   | 174            |
| E5                     | Communication error during operation   | 175            |
| E6                     | Indoor heat exchanger temperature thermistor anomaly   | 176            |
| E7                     | Return air temperature thermistor anomaly  | 177            |
| E8                     | Heating overload operation   | 178            |
| E9                     | Drain trouble (FDT, FDU, FDUM series)  | 179            |
| E10                    | Excessive number of connected indoor units (more than 17 units) by controlling with one remote control | 180            |
| E11                    | Address setting error of indoor units  | 181            |
| E16                    | Indoor fan motor anomaly   | 182            |
| E19                    | Indoor unit operation check  | 183            |
| E20                    | Indoor fan motor rotation speed anomaly  | 184            |
| E21                    | Defective panel switch operation (FDT only)  | 185            |
| E28                    | Remote control temperature thermistor anomaly  | 186            |
| E35                    | Cooling overload operation   | 187            |
| E36                    | Discharge pipe temperature error   | 188            |
| E37                    | Outdoor heat exchanger temperature sensor anomaly  | 189            |
| E38                    | Outdoor air temperature sensor anomaly   | 190            |
| E39                    | Discharge pipe temperature sensor anomaly  | 191            |
| E42                    | Current cut  | 192,193        |
| E47                    | Active filter voltage error  | 194            |
| E48                    | Outdoor fan motor anomaly  | 195            |
| E51                    | Power transistor anomaly   | 196            |
| E57                    | Insufficient refrigerant amount or detection of service valve closure                                  | 197            |
| E58                    | Current safe stop  | 198            |
| E59                    | Compressor startup failure   | 199            |
| E60                    | Compressor rotor lock error  | 200            |

# (2) Troubleshooting

|                      |        |                |           | $\sim$                     |
|----------------------|--------|----------------|-----------|----------------------------|
| Error code           | LED    | Green          | Red       | Content                    |
| Remote control: None | Indoor | Keeps flashing | Stays OFF | Operates but does not cool |

# 1. Applicable model

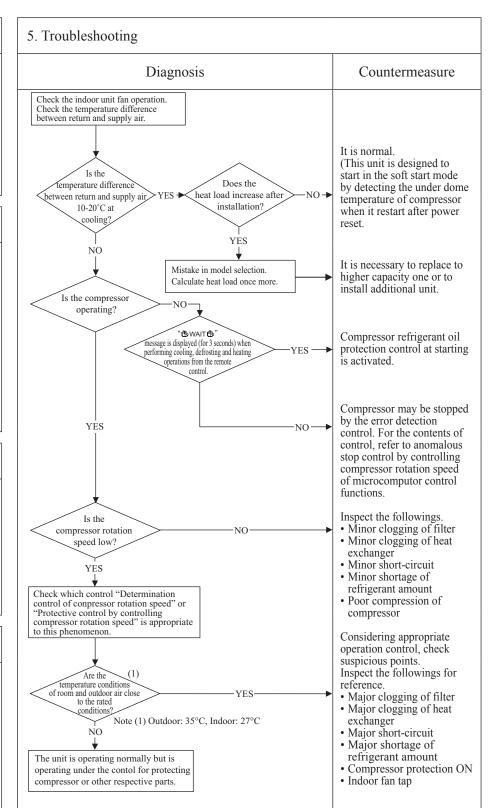
All models

# 2. Error detection method

3. Condition of error displayed

# 4. Presumable cause

- Poor compression of compressor
- Faulty expansion valve operation



| Error code           | LED    | Green          | Red       | Content                    |
|----------------------|--------|----------------|-----------|----------------------------|
| Remote control: None | Indoor | Keeps flashing | Stays OFF | Operates but does not heat |
|                      |        | ļ              |           |                            |

### 1. Applicable model 5. Troubleshooting All models Diagnosis Countermeasure Check the indoor unit fan operation. Check the temperature difference between return and supply air. It is normal. (This unit is designed to start in the soft start mode by detecting the under Does the temperature difference dome temperature of between return and supply air heat load increase after 10-30°C at installation? compressor when it restart heating's 2. Error detection method after power reset. YES NO It is necessary to replace to Mistake in model selection. higher capacity one or to Calculate heat load once again. install additional unit. Is the compressor operating? Compressor refrigerant oil "®WAIT®' protection control at starting message is displayed (for 3 seconds) when performing cooling, defrosting and heating operations from the remote is activated. control. Compressor may be stopped by the error YES detection control. NO For the contents of control, refer to anomalous stop 3. Condition of error displayed control by controlling compressor rotation speed of microcomputor control functions. Inspect the followings. compressor rotation Minor clogging of filter speed low? Minor clogging of heat exchanger YES • Minor short-circuit Minor shortage of refrigerant amount Check which control "Determination control of • Poor compression of conpressor rotation speed" or "Protective control by controlling compressor rotation speed" is compressor appropriate to this phenomenon. 4. Presumable cause Considering appropriate operation control, check suspicious points. • Faulty 4-way valve operation Are the Inspect the followings for temperature conditions of room and outdoor air close · Poor compression of reference. compressor to the rated • Major clogging of filter • Faulty expansion valve conditions Major clogging of heat operation Note (1) Outdoor: 7°C, Indoor: 20°C exchanger • Major short-circuit Major shortage of The unit is operating normally but is refrigerant amount operating under the contol for protecting Compressor protection ON compressor or other respective parts. Indoor fan tap

Note: When the outdoor air temperature (TH2) is 10 °C or lower and compressor is not operated for long time, the unit start cooling mode up to 7 minutes at heating mode.

|                      |        |           |           | <u> </u>                        |
|----------------------|--------|-----------|-----------|---------------------------------|
| Error code           | LED    | Green     | Red       | Content                         |
| Remote control: None | Indoor | Stays OFF | Stays OFF | Earth leakage breaker activated |

# 1.Applicable model All models Diagnosis Are OK the insulation resistance and coil resistance of compressor? YES 2. Error detection method Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc?

Are OK the insulation resistance and coil resistance of compressor?

| Secure insulation resistance | NO | Secure insulation resistance | NO | Secure insulation resistance.

| Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulation resistance. | Secure insulat

# 3. Condition of error displayed

# 4. Presumable cause

- · Defective compressor
- Noise

| the compressor.  |
|--|
| When the earth breaker is activated at lower insulation          |
| resistance, check the following points.                          |
| ① Check if the earth leakage breaker is conformed to higher      |
| harmonic regulation or not.                                      |
| Since the unit is equipped with inverter, it is necessary to use |
| components conformed to higher harmonic regulation in order      |
| to prevent malfunction of earth leakage breaker.                 |
|  |

• Immediately after installation or when the unit has been left for long time without power source, the insulation resistance may drop to a few  $M\Omega$  because of refrigerant migrated in

panel. (Do not connect to another grounding wire.)

② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic

\* Insulation resistance of compressor

regulation.

|                      |        |       |     | (4)                             |
|----------------------|--------|-------|-----|---------------------------------|
| Error code           | LED    | Green | Red | Content                         |
| Remote control: None | Indoor | -     | -   | Excessive noise/vibration (1/3) |

5. Troubleshooting

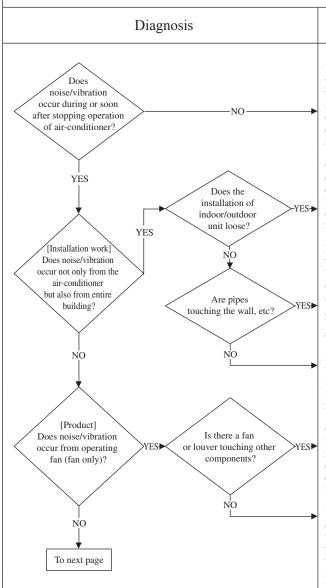
# 1.Applicable model All models

# 2. Error detection method

3. Condition of error displayed

# 4. Presumable cause

- ① Improper installation work
- Improper anti-vibration work at installation
- Insufficient strength of mounting face
- 2 Defective product
  - Before/after shipping from factory
- ③ Improper adjustment during commissioning
  - Excess/shortage of refrigerant, etc.



Countermeasure

If excessive noise/vibration persists when sufficient time has elapsed after stopping the unit, it is considered that the air-conditioner is not the source.

Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.

Prevent the vibration from transmitting to wall and etc by fixing pipes on the wall or wrapping rubber cushion around the pipe which goes through the hole in the wall or applying other appropriate means.

Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.

Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it

When the heat exchanger or filter is clogged, clean them. In case that the unit is installed at the site where background noise is very low, small noise from indoor unit can be heard, but it is normal. Before installation, check for background noise if backgound nois is very low, convince client prior to installation.

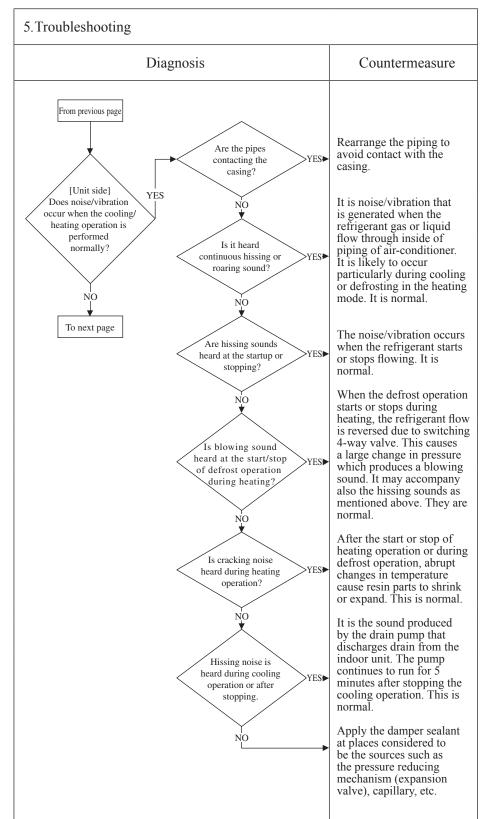
|   |                      |        |       |     | <u> </u>                        |
|---|----------------------|--------|-------|-----|---------------------------------|
| P | Error code           | LED    | Green | Red | Content                         |
|   | Remote control: None | Indoor | I     | I   | Excessive noise/vibration (2/3) |

# 1.Applicable model All models

2. Error detection method

3. Condition of error displayed

4. Presumable cause



|                      |        |       |     | <u> </u>                        |
|----------------------|--------|-------|-----|---------------------------------|
| Error code           | LED    | Green | Red | Content                         |
| Remote control: None | Indoor | _     | Ι   | Excessive noise/vibration (3/3) |

# $\bigcup$ 5. Troubleshooting 1. Applicable model All models Diagnosis Countermeasure From previous page If insufficient cooling/ heating problem happens due to anomalous operating conditions at cooling/ heating, followings are Adjustment during commissioning Does noise/vibration occur when the cooling/heating operation is in 2. Error detection method anomalous condition? suspicious. Overcharge of refrigerantInsufficient charge of YES refrigerant • Intrusion of air, nitrogen, etc. In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant. \* Since there could be many causes of noise/ vibration, the above do not cover all. In such case, check the conditions when, where, 3. Condition of error displayed how the noise/vibration occurs according to following check point. • Indoor/outdoor unit • Cooling/heating/fan mode • Startup/stop/during operation • Operating condition (Indoor/outdoor temperatures, pressure) • Time it occurred • Operation data retained by the remote control 4. Presumable cause such as compressor rotation speed, heat exchanger temperature, EEV opening degree, etc. • Tone (If available, record the noise) • Any other anomalies

|                      |        |                |           | <u>(4)</u>             |
|----------------------|--------|----------------|-----------|------------------------|
| Error code           | LED    | Green          | Red       | Content                |
| Remote control: None |        |                |           | Louver motor failure   |
|                      | Indoor | Keeps flashing | Stays OFF | (FDT, FDE, FDF series) |
|                      |        |                |           |                        |

FDT, FDE, FDF series only

# 2. Error detection method

3. Condition of error displayed

# 4. Presumable cause

- Defective LMLM wire breakageFaulty indoor control PCB

| 5.Troubleshooting  |   |
|--|---|
| Diagnosis  | Countermeasure  |
| Does the louver operate at the power on?  NO  Is LM wiring broken? |   |
| YES Is LM locked? NO   | Repair wiring.  Defective indoor control PCB → Replace. |
| YES  | Replace LM.   |
| Is the louver operable with the remote control?                    | Normal  |
| NO   | Adjust LM lever and then check again.                   |
| LM: louver motor   |   |
|  |   |
|  |   |
|  |   |
|  |   |

| _  |                      |        |           |           | 9                                    |
|----|----------------------|--------|-----------|-----------|--------------------------------------|
| (1 | Error code           | LED    | Green     | Red       | Power source system error            |
|    | Remote control: None | Indoor | Stays OFF | Stays OFF | (Power source to indoor control PCB) |
|    |                      |        |           |           |                                      |

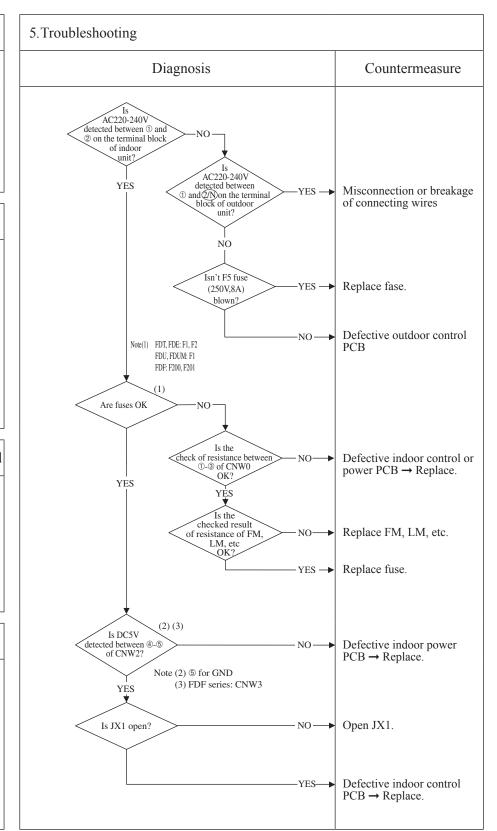
All models

# 2. Error detection method

3. Condition of error displayed

# 4. Presumable cause

- Misconnection or breakage of connecting wires
- Blown fuse
- Faulty transformer
- Faulty indoor control or power PCB
- Broken harness
- Faulty outdoor control PCB



|                      |        |                |           | <u> </u>   |
|----------------------|--------|----------------|-----------|--|
| Error code           | LED    | Green          | Red       | Content Dayyor gayraa gyatam arrar                         |
| Remote control: None | Indoor | Keeps flashing | Stays OFF | Power source system error (Power source to remote control) |
|                      |        |                |           |  |

# 1. Applicable model 5. Troubleshooting All models Diagnosis Countermeasure Isn't there any loose connection of remote Correct. YES control wires? NO 2. Error detection method Isn't remote control wire broken or Replace wires. YES short-circuited? NO Disconnect remote control wires. Is DC15V or higher detected between X-Y Replace remote control. of indoor unit terminal block? 3. Condition of error displayed NO Is DC180V between ①-② of CNW2? Defective indoor power PCB→Replace. Note (1) FDF series: CNW3 YES Defective indoor control PCB→Replace. 4. Presumable cause • Remote control wire breakage/short-circuit • Defective remote control Malfunction by noise Faulty indoor power PCB Broken harness • Faulty indoor control PCB

|                             |        |                |           | <u> </u>  |
|-----------------------------|--------|----------------|-----------|---|
| Error code                  | LED    | Green          | Red       | Content   |
| Remote control: INSPECT I/U | Indoor | Keeps flashing | Stays OFF | INSPECT I/U (When 1 or 2 remote controls are connected) |

All models

# 2. Error detection method

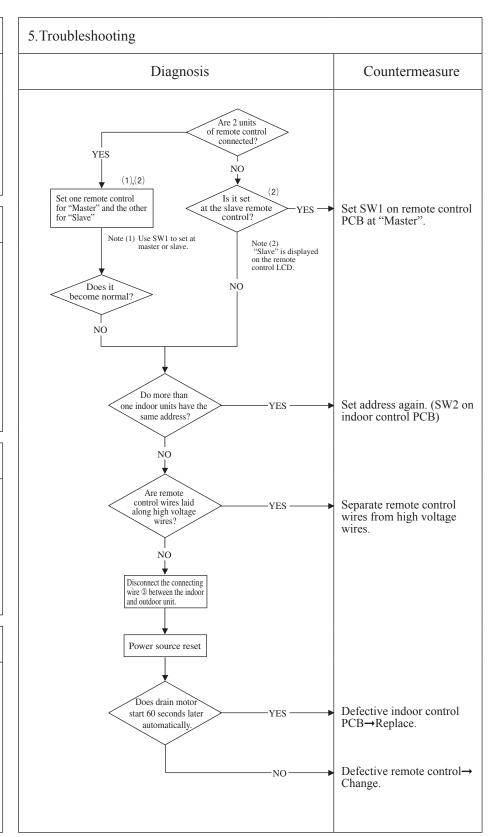
Communication between indoor unit and remote control is disabled for more than 30 minutes after the power on.

# 3. Condition of error displayed

Same as above

# 4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor control PCB



Note: If any error is detected 30 minutes after displaying "WAIT "on the remote control, the display changes to "INSPECT I/U".

|                             |        |                |           | <u> </u>   |
|-----------------------------|--------|----------------|-----------|--|
| Error code                  | LED    | Green          | Red       | Content  |
| Remote control: INSPECT I/U | Indoor | Keeps flashing | Stays OFF | INSPECT I/U (Connection of 3 units or more remote control) |

All models

# 2. Error detection method

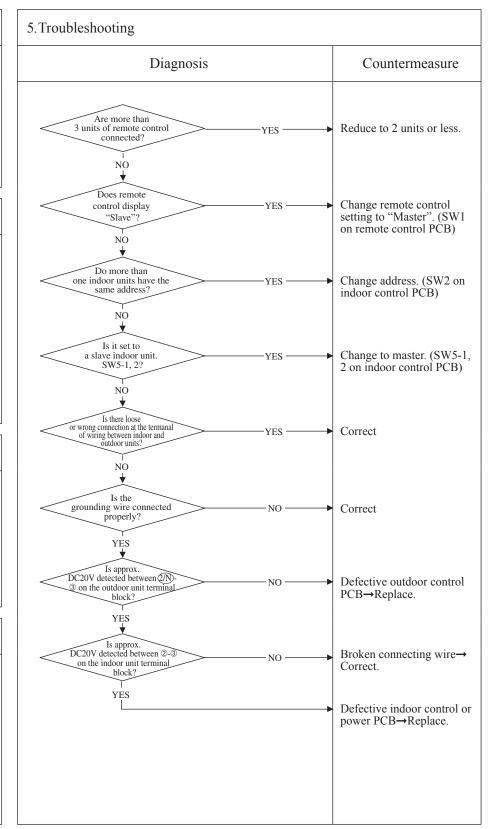
Indoor unit cannot communicate for more than 30 minutes after the power on with remote control.

# 3. Condition of error displayed

Same as above

# 4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor control or power PCB
- Faulty outdoor control PCB



Note: If any error is detected 30 minutes after displaying "WAIT "on the remote control, the display changes to "INSPECT I/U".

| Error code                             | LED       | Green          | Red  | Communicati   | 0.10 0.11 0.1 0.1                        |
|--|-----------|----------------|--|---|--|
| Remote control:   WAIT                 | Indoor    | Keeps flashing | Stays OFF                                    | initial operat  |  |
|  |           |                |  |   |  |
| 1.Applicable model                     | 5.Tro     | ublesho        | oting  |   |  |
| All models When the remote control LCD |           |                |  | Diagnosis   | Countermeasure                           |
| displays "                             | di        | splays "🕲      | ontrol LCD<br>WAIT ""<br>er the power        | on.  Turn the breaker off once and then back on again 3 minutes later.  Is normal condition restored? |  |
| 2. Error detection method              | <\text{t} | e power source | Isn't blown e fuse (20A) on unit control?    | the outdoor NO Replace the power source fuse.  See next page.   |  |
|  |           | detected at    | AC220-240V<br>the secondary<br>or control PC |   | Defective outdoor contro<br>PCB→Replace. |
| 3. Condition of error displayed        |           |                | YES  Is the ED of indoo flashing?            | r unit NO   | Defective indoor control PCB→Replace.    |

# 4. Presumable cause

- Blown fuse
- Faulty outdoor control PCB
- Connection between PCB's
- Faulty indoor control PCB
- Defective remote control
- Broken remote control wire

YES Replace indoor control PCB. Are wires connected properly between the indoor and the outdoor Correct connection wires NO between indoor and units? outdoor units. YES Is approx.
DC20V detected between 2/N Defective outdoor control 3 on the outdoor unit terminal PCB→Replace. YES Is approx.

DC20V detected between ②-③
on the indoor unit terminal Defective connection wire (broken wire) Noise Defective indoor control YES -PCB→Replace.

Note: If any anomaly is detected during communication, the error code E5 is displayed. Inspection procedure is same as above. (Excluding matters related to connection) When the power source is reset after the occurrence of E5, the LED will display " WAIT " if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), " WAIT " may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

| _  |                             |        |                |           | <u> </u>                                       |
|----|-----------------------------|--------|----------------|-----------|--|
| (1 | Error code                  | LED    | Green          | Red       | Content  |
|    | Remote control: <b>WAIT</b> | Indoor | Keeps flashing | Stays OFF | Communication error at initial operation (2/3) |
|    |                             |        |                |           |  |

# All models

When the fuse is blown, the method to inspect outdoor PCB before replacing the power source fuse

# 2. Error detection method

3. Condition of error displayed

# 4. Presumable cause

- Blown fuse
- Faulty outdoor control PCB Faulty reactor

| 5. Troubleshooting  |                |  |
|---|----------------|--|
| Diagnosis   | Countermeasure |  |
| From previous page  Aren't there  cracks or burning on the power ransistor module or diode stack?  YES  Isn't reactor the anomalous?  NO  Replace the outdoor control PCB  Replace the reactor. | Replace fuse.  |  |

| Note: |  |  |  |
|-------|--|--|--|
|       |  |  |  |
|       |  |  |  |

|    |                        |        |                |           | (4)  |
|----|------------------------|--------|----------------|-----------|--|
| (1 | Error code             | LED    | Green          | Red       | Content  |
|    | Remote control: @WAIT@ | Indoor | Keeps flashing | Stays OFF | Communication error at initial operation (3/3) |
|    |                        |        |                |           |  |

# All models

When the remote control display is extinguished after the power on.

# 2. Error detection method

# 3. Condition of error displayed

# 4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor control PCB
  Defective remote control
  Wire breakage on remote

- Faulty outdoor control PCB

| D:  | Comme                    |
|---|--------------------------|
| Diagnosis   | Countermeasure           |
| Domoto control disolar is   |                          |
| Remote control display is extinguished after the power on.            |                          |
|   |                          |
| <b>★</b>  |                          |
| Is the  |                          |
| green LED on the indoor unit flashing? NO                             |                          |
| NO V  |                          |
| Is the  |                          |
| fuse on the indoor control PCB OK?  NO-                               | Replace fuse.            |
|   |                          |
| YĖS   |                          |
| YES   |                          |
| approx. DC 10-11V detected between wires at the remote control        | Short-circuit on remote  |
| side after disconnecting the remote control?                          | control wire             |
|   |                          |
| YES —   | Defective remote control |
|   |                          |
| Are wires  connected properly between the indoor and                  | Comment into             |
| connected properly between the indoor and                             | Correct wires.           |
|   |                          |
|   |                          |
| YES   |                          |
| $\downarrow$  |                          |
| Is annrox   |                          |
| Is approx.  DC20V detected between QN- ③ on the outdoor unit terminal | Defective outdoor contro |
| on the outdoor unit terminal block?                                   | PCB→Replace.             |
| T   |                          |
| YES   |                          |
|   |                          |
| •   |                          |
| Is approx DC20V detected between 2-3                                  | Defective commenties     |
| on the indoor unit terminal NO  | Defective connection win |
| Block?  | (Broken wire)<br>Noise   |
|   |                          |
| YES   | Defective indoor control |
|   | PCB→Replace.             |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |
|   |                          |

|     |                    |        |                |           | <u> </u>                    |
|-----|--------------------|--------|----------------|-----------|-----------------------------|
|     | Error code         | LED    | Green          | Red       | Content                     |
|     | Remote control: E1 | Indoor | Vaana flashina | Stavs OFF | Remote control              |
|     |                    | maoor  | Keeps nasning  | Stays Off | communication circuit error |
| - [ |                    |        |                |           |                             |

All models

# 2. Error detection method

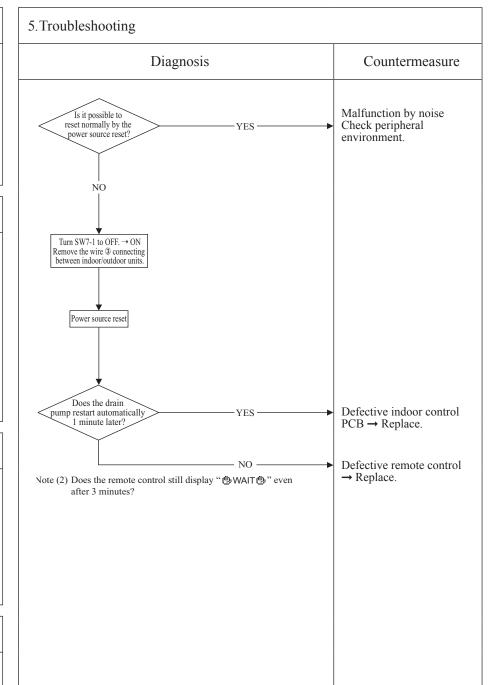
When normal communication between the remote control and the indoor unit is interrupted for more than 2 minutes. (Detectable only with the remote control)

# 3. Condition of error displayed

Same as above

# 4. Presumable cause

- Defective communication circuit between remote control-indoor unit
- Noise
- Defective remote controlFaulty indoor control PCB



Note: If the indoor unit cannot communicate normally with the remote control for 180 seconds, the indoor unit PCB starts to reset automatically.

| _ |                    |        |                |              |                                      |
|---|--------------------|--------|----------------|--------------|--------------------------------------|
| ( | Error code         | LED    | Green          | Red          | Content                              |
|   | Remote control: E5 | Indoor | Keeps flashing | 2-time flash | Communication error during operation |
|   |                    |        |                |              |                                      |

All models

# 2. Error detection method

When normal communication between indoor and outdoor unit is interrupted for more than 2 minutes.

# 3. Condition of error displayed

Same as above is detected during operation.

# 4. Presumable cause

- Broken remote control wire
- Faulty remote control wire connection
  Faulty outdoor control PCB

| 5. Troubleshooting   |  |
|--|--|
| Diagnosis  | Countermeasure   |
| Note (1) Inspect faulty connections (disconnection, looseness) on the outdoor unit terminal block.  connection of signal wires at the outdoor unit side OK?  YES  Note (2) Check for faulty connection or breakage of signal wires between indoor-outdoor units.  NO  NO  Power source reset | Repair signal wires.  Repair signal wires.   |
| Has the remote control LCD returned to normal state?   | Defective outdoor control PCB (Defective network communication circuit) → Replace.  Unit is normal. (Malfunction by temporary noise, etc.) |

| ۰ | Omi   | NO. | sen     | шд | enoi |
|---|-------|-----|---------|----|------|
| _ | Deale |     | ~ *** ~ | 4  |      |

| Note: |  |  |
|-------|--|--|
|       |  |  |

|                    |        |                |              | 9                              |
|--------------------|--------|----------------|--------------|--------------------------------|
| Error code         | LED    | Green          | Red          | Content                        |
| Remote control: E6 | T 1    | 77 0 1:        | 1.: 0.1      | Indoor heat exchanger          |
|                    | Indoor | Keeps flashing | 1-time flash | temperature thermistor anomaly |
|                    |        |                |              |                                |

All models

# 2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected on the indoor heat exchanger thermistor (Thi-R1, R2 or R3).

# 3. Condition of error displayed

- When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection
- detection.
   Or if 70°C or higher is detected for 5 seconds continuously.

# 4. Presumable cause

- Defective indoor heat exchanger thermistor connector
- Indoor heat exchanger temperature thermistor anomaly
- Faulty indoor control PCB

# 5. Troubleshooting Diagnosis Countermeasure Is the connection of indoor heat exchanger temperature thermistor Correct. → Insert connector securely. connector OK? YES Are characteristics of indoor Defective indoor heat heat exchanger temperature thermistor OK? exchanger temperature thermistor $\rightarrow$ Replace. YES Defective indoor control PCB → Replace. (Defective indoor unit heat exchanger temperature thermistor input circuit) Temperature-resistance characteristic (Broken wire) Temperature thermistor resistance (kΩ) 5kΩ at 25°C (Short circuit) Temperature (°C)

|   |                    |         |                |              |                        | M) |
|---|--------------------|---------|----------------|--------------|------------------------|----|
| P | Error code         | LED     | Green          | Red          | Content                |    |
|   | Remote control: E7 | Indoor  | Keeps flashing | 1 time flech | Return air temperature |    |
|   |                    | IIIdooi | Keeps masning  | 1-unic nasn  | thermistor anomaly     |    |
|   |                    |         |                |              | *                      |    |

All models

# 2. Error detection method

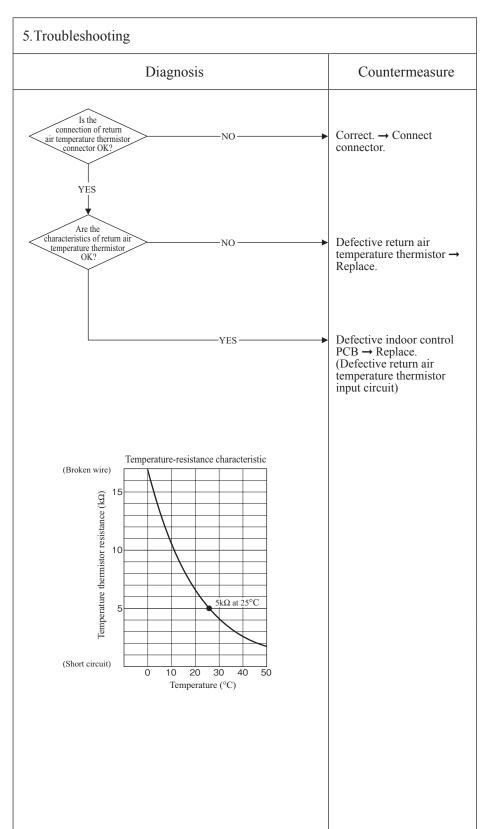
Anomalously low temperature or high temperature (resistance) is detected by indoor return air temperature thermistor (Thi-A)

# 3. Condition of error displayed

• When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

# 4. Presumable cause

- Defective return air temperature thermistor connector
- Defective return air temperature thermistor
- Faulty indoor control PCB



|                    |        |                |              | <u></u>                    |
|--------------------|--------|----------------|--------------|----------------------------|
| Error code         | LED    | Green          | Red          | Content                    |
| Remote control: E8 | Indoor | Keeps flashing | 1-time flash | Heating overload operation |

All models

# 2. Error detection method

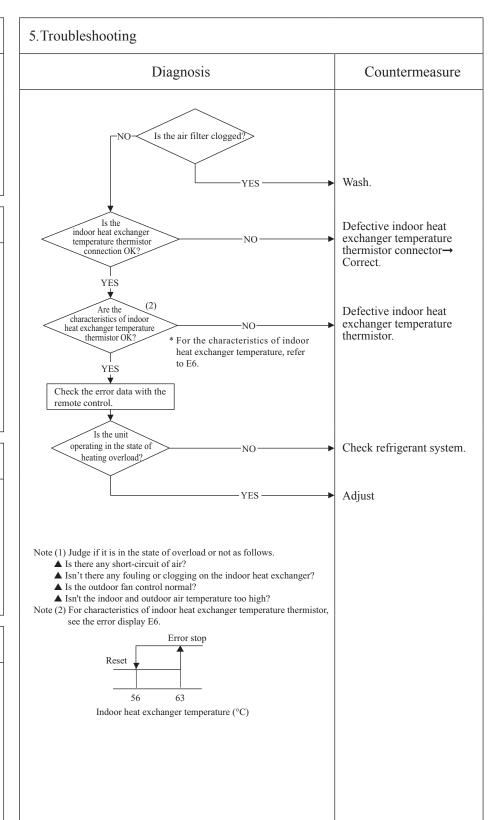
Indoor heat exchanger temperature thermistor (Thi-R1, R2, R3)

# 3. Condition of error displayed

When it is detected 5 times within 60 minutes from initial detection or when the overload condition is detected for 6 minutes continuously.

# 4. Presumable cause

- · Clogged air filter
- Defective indoor heat exchanger temperature thermistor connector
- Defective indoor heat exchanger temperature thermistor
- · Anomalous refrigerant system



Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (Thi-R) in order to control high pressure.

|   |                    |        |                |              | <u> </u>                          |
|---|--------------------|--------|----------------|--------------|-----------------------------------|
| 9 | Error code         | LED    | Green          | Red          | Content                           |
| - | Remote control: E9 |        |                |              | Drain trouble                     |
|   | Kemote control. E9 | Indoor | Keeps flashing | 1-time flash | (FDT, FDU, FDUM series)           |
|   |                    |        |                |              | (1 D 1, 1 D 0, 1 D 0 W 5 c 1 c 5) |

FDT, FDU, FDUM series only

# 2. Error detection method

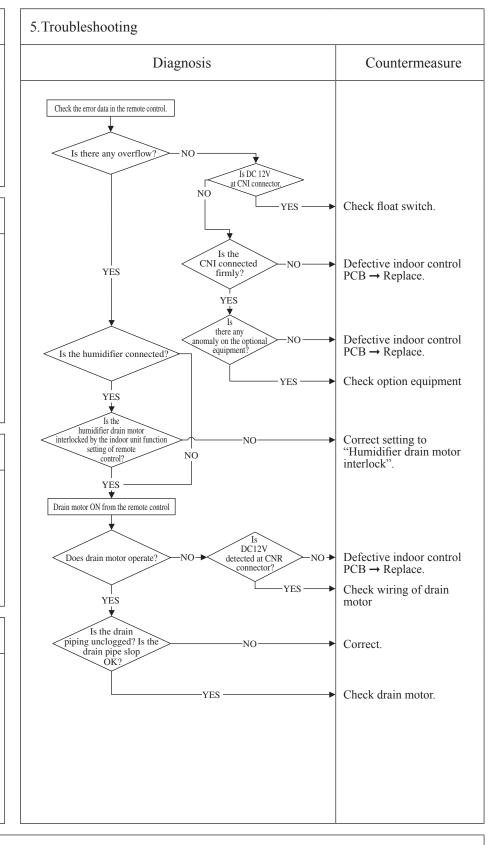
Float switch is activated

# 3. Condition of error displayed

If the float switch OPEN is detected for 3 seconds continuously or if float switch connector or wire is disconnected.

# 4. Presumable cause

- Defective indoor control or power PCB
- Float switch setting error
- Humidifier drain motor interlock setting error
- Optional equipment setting error
- · Drain piping error
- Defective drain motor
- Disconnection of drain motor wiring



Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

| Error code  | LED    | Green          | Red  | Content Excessive number                  |  |
|---|--------|----------------|--|---|--|
| Remote control: E10   | Indoor | Keeps flashing | Stays OFF                                    | indoor units (more by controlling with or | than 17 units) ne remote control                                 |
|   |        | 1              |  |   |  |
| 1.Applicable model  | 5.Tro  | ublesho        | oting  |   |  |
| All models  |        |                | -  | Diagnosis                                 | Countermeasure   |
|   | <      | indoor units c | ore than 17<br>onnected to ore<br>e control? | ne NO                                     | <ul> <li>Defective remote control</li> <li>→ Replace.</li> </ul> |
| 2. Error detection method   |        |                |  | YES                                       | Reduce to 16 or less units                                       |
| When it detects more than 17 of indoor units connected to one remote control  3. Condition of error displayed Same as above |        |                |  |   |  |
| • Excessive number of indoor  |        |                |  |   |  |
| 4. Presumable cause     Excessive number of indoor units connected     Defective remote control                             |        |                |  |   |  |

| Note: |  |  |  |
|-------|--|--|--|
|       |  |  |  |

| C | Error code          | LED    | Green          | Red            | Content                               | _H) |
|---|---------------------|--------|----------------|----------------|---------------------------------------|-----|
|   | Remote control: E11 | Indoor | Keeps flashing | Keeps flashing | Address setting error of indoor units |     |
|   |                     |        |                |                |                                       |     |

All models

## 2. Error detection method

Indoor unit address has been set using the "Indoor unit address set" function of remote control.

## 3. Condition of error displayed

Same as above

## 4. Presumable cause

Wrong address setting method. (It cannot set addresses from the remote control.)

| 5.Troubleshooting  |   |  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|
| Diagnosis  | Countermeasure  |  |  |  |  |  |  |  |
| In case the wiring is below and "Indoor unit address set" is used, E11 is appeared.  IU① IU② IU③ — R/C | Change of address settin method. Addresses are set using the dip switch (SW2) on the indoor control PCB. (Refer to the page 120.) |  |  |  |  |  |  |  |

|   |   |                     |        |                |                 |                          | 1) |
|---|---|---------------------|--------|----------------|-----------------|--------------------------|----|
| P | 9 | Error code          | LED    | Green          | Red             | Content                  |    |
|   |   | Remote control: E16 | Indoor | Keeps flashing | 1(2)-time flash | Indoor fan motor anomaly |    |

Note(1) Value in ( ) is for the FDU, FDUM series FMI2 only.

## 1. Applicable model

All models

## 2. Error detection method

Detected by rotation speed of indoor fan motor

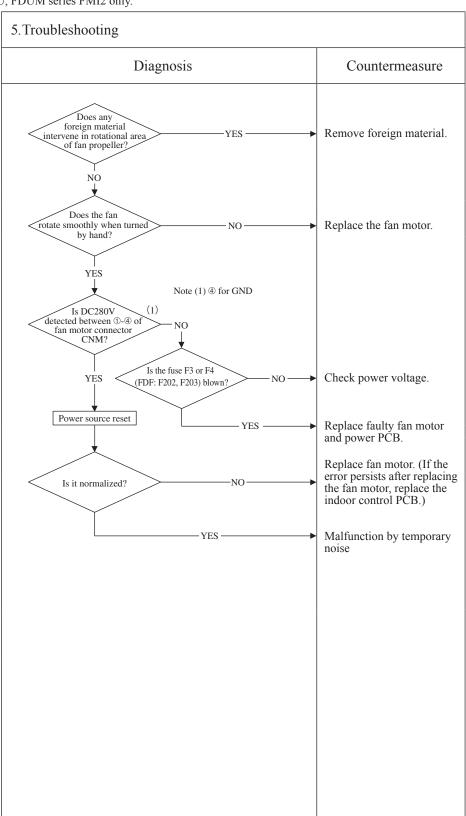
## 3. Condition of error displayed

When actual rotation speed of indoor fan motor drops to lower than 200min<sup>-1</sup> for 30 seconds continuously, the compressor and the indoor fan motor stop. After 2-seconds, it starts again automatically, but if this error occurs 4 times within 60 minutes after the initial detection.

## 4. Presumable cause

- Defective indoor power PCB
- · Foreign material at rotational area of fan propeller

  • Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge



|   |                     |        |                |              |         |                             | u |
|---|---------------------|--------|----------------|--------------|---------|-----------------------------|---|
| Q | Error code          | LED    | Green          | Red          | Content |                             |   |
|   | Remote control: E19 | Indoor | Keeps flashing | 1-time flash |         | Indoor unit operation check |   |
|   |                     |        |                |              |         |                             |   |

All models

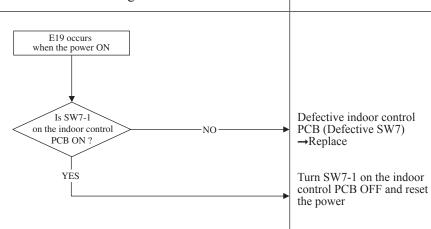
## 2. Error detection method

After indoor operation check, when the communication between indoor and outdoor unit is established and SW7-1 is still kept ON.

## 4. Presumable cause

Mistake in SW7-1 setting (Due to forgetting to turn OFF SW7-1 after indoor operation check)

| 5. Troubleshooting |                |
|--------------------|----------------|
| Diagnosis          | Countermeasure |



## 3. Condition of error displayed

Same as above

| Note: |  |  |
|-------|--|--|
|       |  |  |

|   |                     |        |                |                 | <u> </u>                                |
|---|---------------------|--------|----------------|-----------------|---|
| 9 | Error code          | LED    | Green          | Red             | Content                                 |
|   | Remote control: E20 | Indoor | Keeps flashing | 1(2)-time flash | Indoor fan motor rotation speed anomaly |

Note(1) Value in ( ) is for the FDU, FDUM series FMI2 only.

## 1. Applicable model

All models

### 2. Error detection method

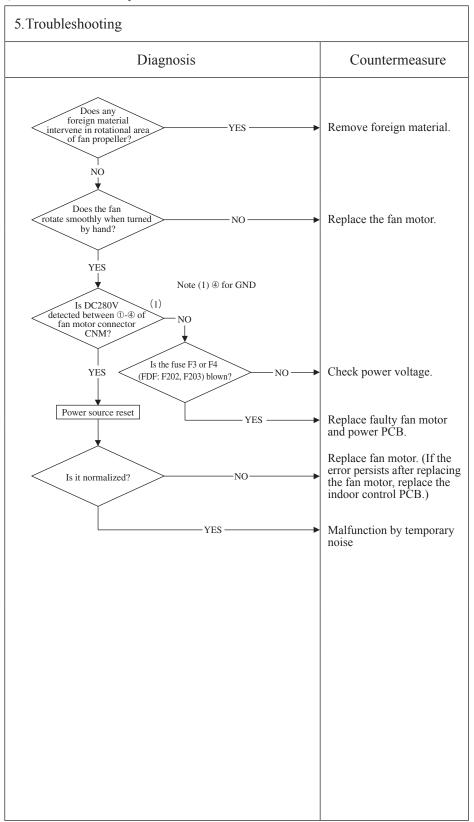
Detected by rotation speed of indoor fan motor

## 3. Condition of error displayed

When the actual fan rotation speed does not reach to the speed of [required speed -50 (FDU:-500) min<sup>-1</sup>] after 2 minutes have been elapsed since the fan motor rotation speed command was output, the unit stops by detecting indoor fan motor anomaly.

## 4. Presumable cause

- Defective indoor power PCB
- Foreign material at rotational area of fan propeller
  • Defective fan motor
- Dust on control PCB
- · Blown fuse
- External noise, surge



|   |                     |        |                |              | M.                             |
|---|---------------------|--------|----------------|--------------|--------------------------------|
| P | Error code          | LED    | Green          | Red          | Content Defective nenel switch |
|   | Remote control: F21 |        |                |              | Defective panel switch         |
|   | Remote condoi. E21  | Indoor | Keeps flashing | 1-time flash | operation (FDT series)         |
|   |                     |        |                |              |                                |
|   | )                   |        |                |              |                                |

FDT series only

## 2. Error detection method

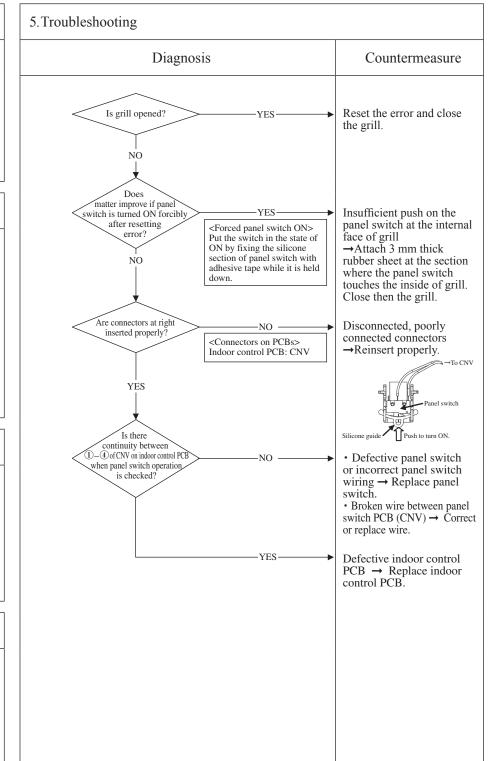
Panel switch (PS) has detected Open for more than 1 second.

## 3. Condition of error displayed

Same as above

## 4. Presumable cause

- Defective panel switch
- Disconnection of wiring
- Defective indoor control PCB



| (1 | Error code          | LED    | Green          | Red       | Content                                       |
|----|---------------------|--------|----------------|-----------|---|
|    | Remote control: E28 | Indoor | Keeps flashing | Stays OFF | Remote control temperature thermistor anomaly |
|    | )                   |        |                |           |   |

All models

### 2. Error detection method

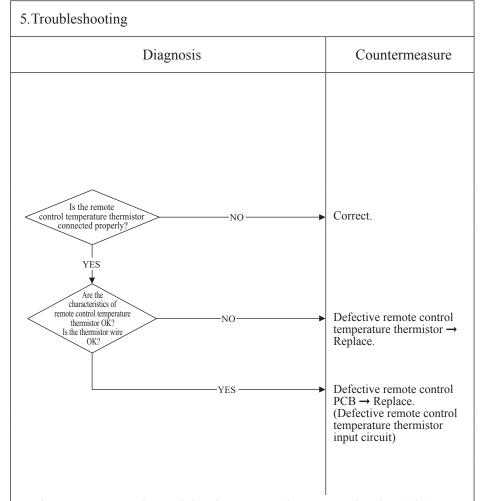
Detection of anomalously low temperature (resistance) of remote control temperature thermistor (Thc)

## 3. Condition of error displayed

When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

## 4. Presumable cause

- Faulty connection of remote control temperature thermistor
- Defective remote control temperature thermistor
- Defective remote control PCB



Resistance-temperature characteristics of remote control temperature thermistor (Thc)

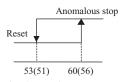
| Temperature (°C) | Resistance value (kΩ) | Temperature (°C) | Resistance value (kΩ) |
|------------------|-----------------------|------------------|-----------------------|
| 0                | 65                    | 30               | 16                    |
| 1                | 62                    | 32               | 15                    |
| 2                | 59                    | 34               | 14                    |
| 4                | 53                    | 36               | 13                    |
| 6                | 48                    | 38               | 12                    |
| 8                | 44                    | 40               | 11                    |
| 10               | 40                    | 42               | 9.9                   |
| 12               | 36                    | 44               | 9.2                   |
| 14               | 33                    | 46               | 8.5                   |
| 16               | 30                    | 48               | 7.8                   |
| 18               | 27                    | 50               | 7.3                   |
| 20               | 25                    | 52               | 6.7                   |
| 22               | 23                    | 54               | 6.3                   |
| 24               | 21                    | 56               | 5.8                   |
| 26               | 19                    | 58               | 5.4                   |
| 28               | 18                    | 60               | 5.0                   |

Note: After 10 seconds has passed since remote control thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote control thermistor to indoor return air temperature thermistor. Even though the remote control thermistor is set to be Effective, the return air temperature displayed on remote control for checking still shows the value detected by indoor return air temperature thermistor, not by remote control temperature thermistor.

|   |                     |        |                |           | <u> </u>                   |
|---|---------------------|--------|----------------|-----------|----------------------------|
| 9 | Error code          | LED    | Green          | Red       | Content                    |
|   | Remote control: E35 | Indoor | Keeps flashing | Stays OFF | Cooling overload operation |
|   |                     |        |                |           |                            |

All models

### 2. Error detection method



Outdoor heat exchanger temperature (°C)

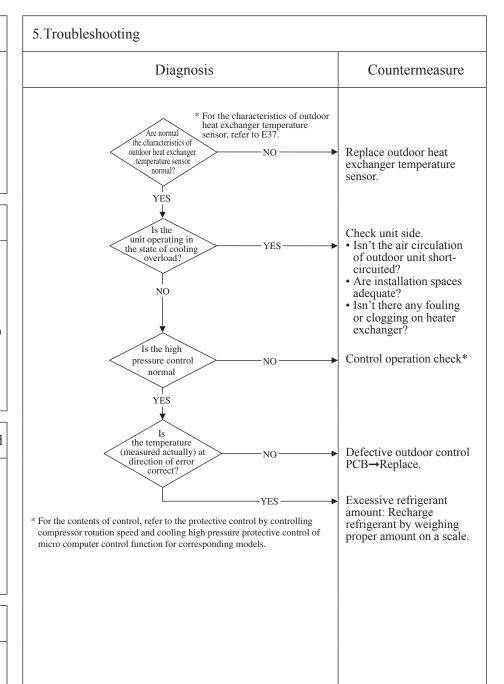
Note (1) Values in ( ) are applicable when outdoor temperature (TH2) is lower than 31 °C

## 3. Condition of error displayed

When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 60(56)°C or higher continues for 10 minutes, including the compressor stop.

### 4. Presumable cause

- Defective outdoor heat exchanger temperature sensor
- Defective outdoor control PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity



|                     |        |                |           | <u> </u>                         |
|---------------------|--------|----------------|-----------|----------------------------------|
| Error code          | LED    | Green          | Red       | Content                          |
| Remote control: E36 | Indoor | Keeps flashing | Stays OFF | Discharge pipe temperature error |

All models

### 2. Error detection method

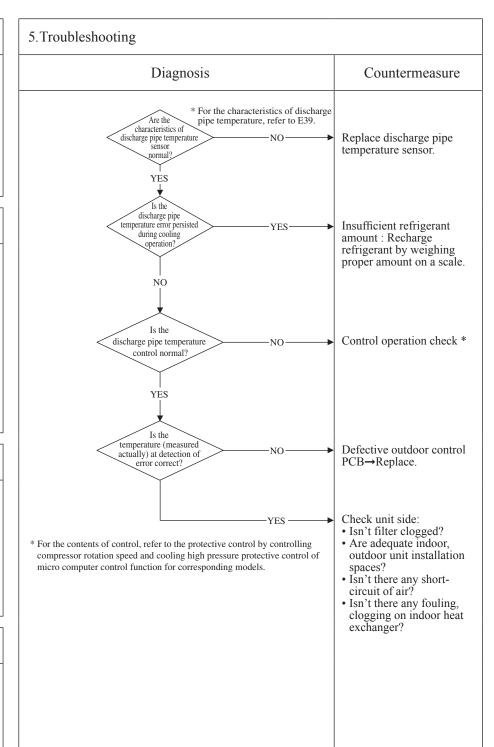
For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

## 3. Condition of error displayed

When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.

## 4. Presumable cause

- Defective outdoor control PCB
- Defective discharge pipe temperature sensor
- Clogged filter
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger



|     |                     |              |                            |     | <u> </u>               |
|-----|---------------------|--------------|----------------------------|-----|------------------------|
| 9   | Error code          | LED          | Green                      | Red | Content                |
|     | Remote control: F37 |              |                            |     | Outdoor heat exchanger |
|     | Kemote control. E3/ | control: E37 | temperature sensor anomaly |     |                        |
| 1 [ |                     |              |                            |     |                        |

All models

## 2. Error detection method

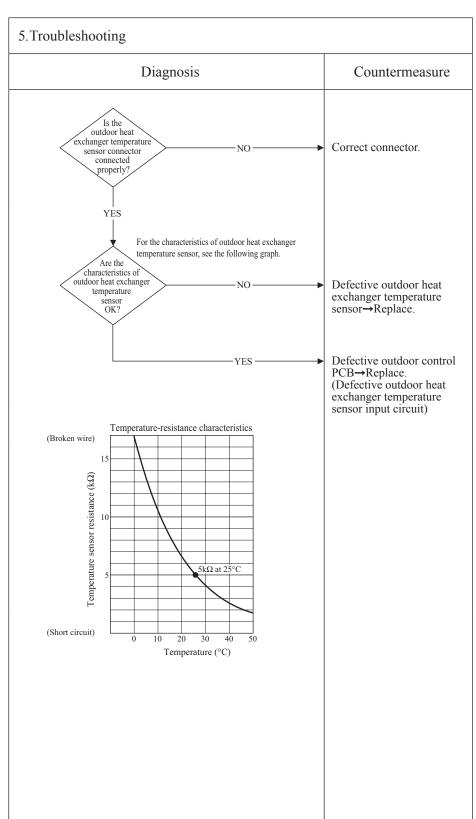
Detection of anomalously low temperature (resistance) on the outdoor heat exchanger temperature sensor

## 3. Condition of error displayed

- When the temperature sensor detects -55 °C or lower for 20 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- minutes.
   When -55 °C or lower is detected for within 20 second after power ON.

## 4. Presumable cause

- Defective outdoor control PCB
- Broken sensor harness or temperature sensing section
- Disconnected wire connection (connector)



|   |                     |        |                |           | <u> </u>                |
|---|---------------------|--------|----------------|-----------|-------------------------|
| ( | Error code          | LED    | Green          | Red       | Content                 |
|   | Remote control: E38 |        |                |           | Outdoor air temperature |
|   | Remote control. E38 | Indoor | Keeps flashing | Stays OFF | sensor anomaly          |
|   |                     |        |                |           |                         |

All models

### 2. Error detection method

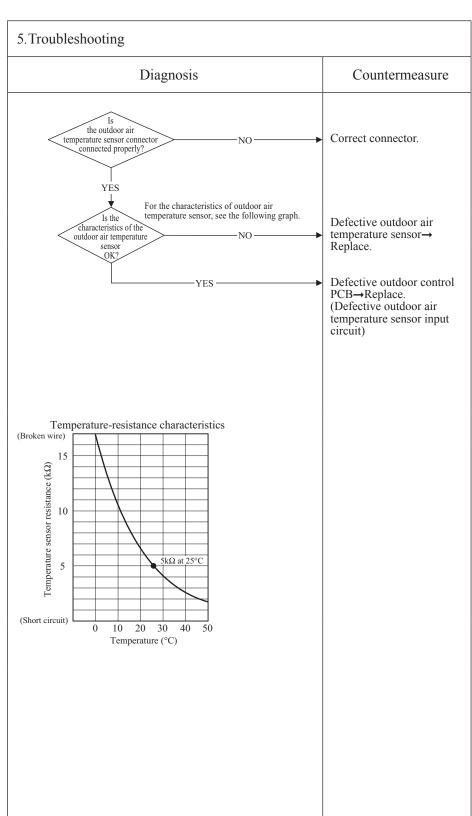
Detection of anomalously low temperature (resistance) on outdoor air temperature sensor

## 3. Condition of error displayed

- When the temperature sensor detects -55 °C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

## 4. Presumable cause

- Defective outdoor control PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)



(Defective temperature sensor input circuit)

|   |                     |              |                |                | Ω                          |  |
|---|---------------------|--------------|----------------|----------------|----------------------------|--|
| 4 | Error code          | LED          | Green          | Red            | Content                    |  |
|   | Remote control: F39 |              |                | hing Stays OFF | Discharge pipe             |  |
|   | 20,                 | Indoor Keeps | Keeps flashing |                | temperature sensor anomaly |  |
|   |                     |              |                |                | ·                          |  |

## 1. Applicable model

All models

## 2. Error detection method

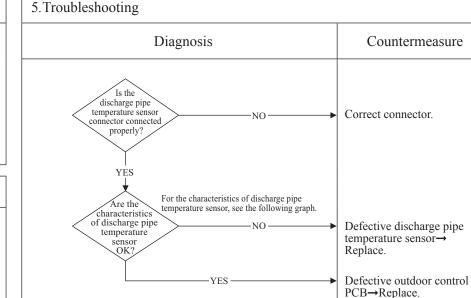
Detection of anomalously low temperature (resistance) on the discharge pipe temperature sensor

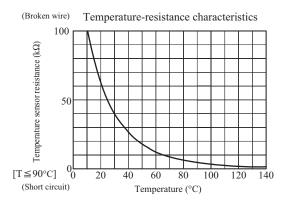
## 3. Condition of error displayed

When the temperature sensor detects -25 °C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.

## 4. Presumable cause

- Defective outdoor control PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)





|    |                     |        |                |           | <u>(4)</u>        |
|----|---------------------|--------|----------------|-----------|-------------------|
| (1 | Error code          | LED    | Green          | Red       | Content           |
|    | Remote control: E42 | Indoor | Keeps flashing | Stays OFF | Current cut (1/2) |

All models

## 2. Error detection method

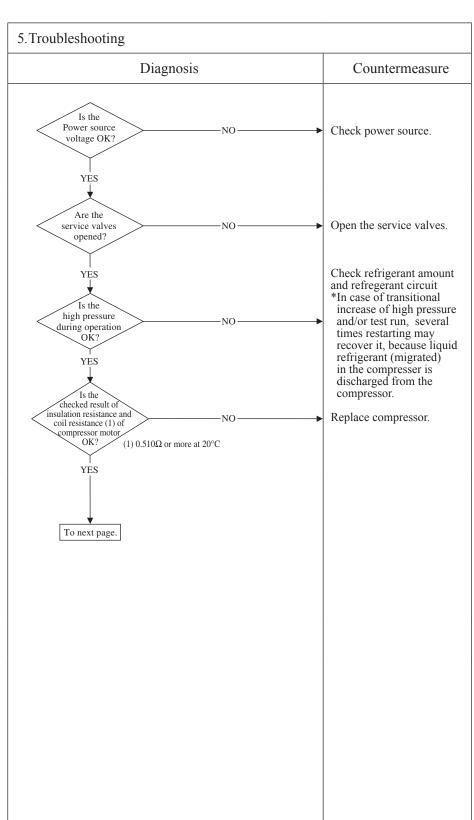
In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

## 3. Condition of error displayed

• If the output current of inveter exceeds the specifications, it makes the compressor stopping.

## 4. Presumable cause

- · The valves closed
- Faulty power source
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module



|                     |        |                |           | <u> </u>          |
|---------------------|--------|----------------|-----------|-------------------|
| Error code          | LED    | Green          | Red       | Content           |
| Remote control: E42 | Indoor | Keeps flashing | Stays OFF | Current cut (2/2) |
|                     |        |                |           |                   |

All models

## 2. Error detection method

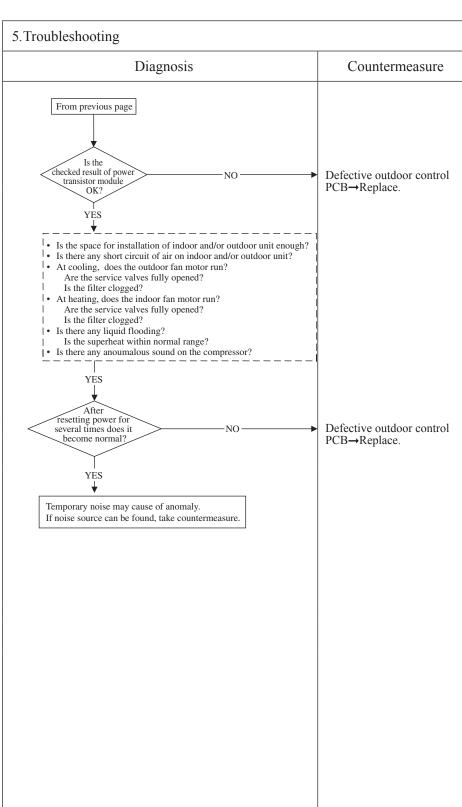
In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

## 3. Condition of error displayed

• If the output current of inveter exceeds the specifications, it makes the compressor stopping.

## 4. Presumable cause

- Defective outdoor control PCB
- Faulty power source
- · Insufficient refrigerant amount
- Faulty compressorFaulty power transistor module



|                     |        |                |           | <u> </u>                    |
|---------------------|--------|----------------|-----------|-----------------------------|
| Error code          | LED    | Green          | Red       | Content                     |
| Remote control: E47 | Indoor | Keeps flashing | Stays OFF | Active filter voltage error |

All models

## 2. Error detection method

Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes). Remote control may be set after 3 minutes delay. Error is displayed if the converter voltage is lower than DC 210V (1-time within 5 seconds after power ON)

## 3. Condition of error displayed

Same as above

## 4. Presumable cause

- Defective outdoor control PCB
- Dust on outdoor control PCB
- Anomalous power source

| Diagnosis   |                | Countermeasure                                 |
|---|----------------|--|
|   |                |  |
| Is the power source normal?                                     | NO <b>&gt;</b> | Restore normal condition.                      |
|   |                |  |
| YES<br>   |                |  |
|   |                |  |
| Is voltage within the specified range?                          | NO             | Restore normal condition.                      |
|   |                |  |
| YES   |                |  |
| Check   |                |  |
| soldered surfaces on the outdoor control PCB for foreign matter | —NO →          | Remove foreign matter like dust, fouling, etc. |
| like dust, fouling,   |                | dust, fouling, etc.                            |
| VES   |                | Defective outdoor control                      |
| YES —   |                | PCB→Replace.                                   |
|   |                |  |
|   |                |  |
|   |                |  |
|   |                |  |
|   |                |  |
|   |                |  |

| Note: |  |  |  |
|-------|--|--|--|
|       |  |  |  |
|       |  |  |  |

|                     |        |                |           | <u> </u>                  |
|---------------------|--------|----------------|-----------|---------------------------|
| Error code          | LED    | Green          | Red       | Content                   |
| Remote control: E48 | Indoor | Keeps flashing | Stays OFF | Outdoor fan motor anomaly |

All models

### 2. Error detection method

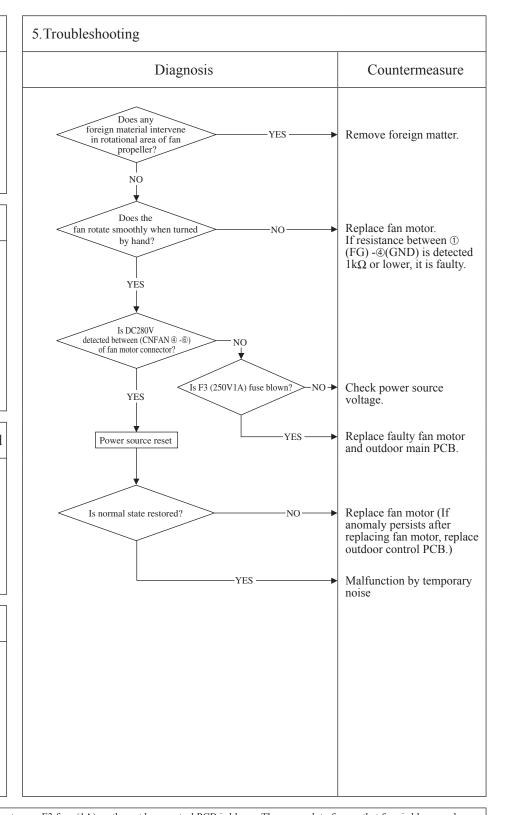
Detected by rotation speed of outdoor fan motor

## 3. Condition of error displayed

When actual rotation speed of outdoor fan motor drops to 75min<sup>-1</sup> or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection.

### 4. Presumable cause

- Defective outdoor control PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor control PCB
- Blown F3 fuse



Note: When E48 error occurs, in almost cases F3 fuse (1A) on the outdoor control PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor control PCB ( or fuse) is replaced,, another trouble could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.

After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)

| Error code          | LED    | Green          | Red       | Content |                          |
|---------------------|--------|----------------|-----------|---------|--------------------------|
| Remote control: E51 | Indoor | Keeps flashing | Stays OFF |         | Power transistor anomaly |

# 1. Applicable model All models

## 2. Error detection method

Power transistor primary current

# 3. Condition of error displayed

If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.

## 4. Presumable cause

- Faulty outdoor control PCB
   Dust on outdoor control PCB
   Blown fuse

| Diag   | gnosis                      |       |          | Countermeasure                                 |
|--|-----------------------------|-------|----------|--|
| Check solde surfaces on the outdoor foreign matter li fouling et | control PCB for<br>ke dust, | NO    | -        | Remove foreign matter like dust, fouling, etc. |
| Isn't F8 f<br>(250V, 20A)  |                             | YES — | <b>→</b> | Replace fuse.                                  |
|  |                             | NO—   | <b>→</b> | Defective outdoor control PCB→Replace.         |
|  |                             |       |          |  |
|  |                             |       |          |  |
|  |                             |       |          |  |
|  |                             |       |          |  |
|  |                             |       |          |  |

| N | 0 | te |
|---|---|----|
|   |   |    |

| Error code   LED           | Green          | Red       | Content   |
|----------------------------|----------------|-----------|---|
| Remote control: E57 Indoor | Keeps flashing | Stays OFF | Insufficient refrigerant amount or detection of service valve closure |

All models

### 2. Error detection method

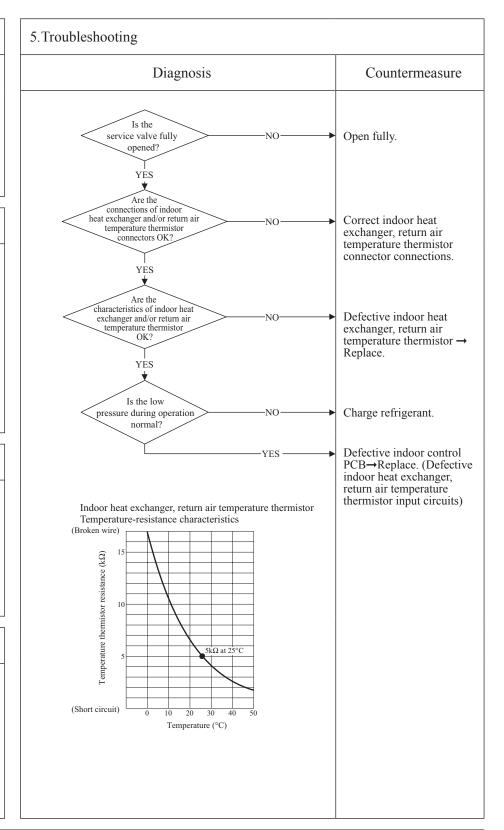
• Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (Thi-R) and indoor return air (Thi-A).

## 3. Condition of error displayed

When the insufficient refrigerant amount is detected 3 times within 60 minutes.

## 4. Presumable cause

- · Defective indoor heat exchanger temperature thermistor
- Defective indoor return air temperature thermistor
- Defective indoor control PCB
- · Insufficient refregerant amount



Note: When the compressor speed is 30 rps or under at 5 minutes after the start of compressor or the completion of defrosting, the low refrigerant protection control judges, by detecting the difference between the indoor heat exchanger temperature (Thi-R) and the indoor return air temperature (Thi-A), that it is in the state of gas low, and stops the compressor.

Cooling: Indoor return air temperature (Thi-A) – Indoor heat exchanger temperature (Thi-R) ≥ 4 deg

Heating: Indoor heat exchanger temperature (Thi-R) – Indoor return air temperature (Thi-A)  $\leq 4 \deg$ 

|                     |        |                |           | <u> </u>          |
|---------------------|--------|----------------|-----------|-------------------|
| Error code          | LED    | Green          | Red       | Content           |
| Remote control: E58 | Indoor | Keeps flashing | Stays OFF | Current safe stop |

All models

# 5. Troubleshooting

## Diagnosis Countermeasure

## 2. Error detection method

When the current safe control has operated at the compressor speed of 20 rps or under.

## 3. Condition of error displayed

Same as above

## 4. Presumable cause

- Excessive refrigerant amount
   Indoor,outdoor unit installation spaces
   Faulty compressor
   Defective outdor air temperature

- Defective outdoor control PCB

| Is the refrigerant amount nomal?         | Adjust the refrigerant amount properly.                                    |
|--|--|
| YES                                      |  |
| Is outdoor ventilation condition good?   | Secure space for inlet and outlet.   |
| YES                                      |  |
| Inspect compressor NO NO                 | Replace compressor.  |
| YES                                      |  |
| Inspect outdor air temperature sensor NO | Replace sensor.  |
|  |  |
| YES                                      |  |
|  | PCB→Replace.<br>(Defective outdor air temperature<br>sensor input circuit) |
|  |  |
|  |  |
|  |  |

| Error code          | LED    | Green          | Red       | Content                    |
|---------------------|--------|----------------|-----------|----------------------------|
| Remote control: E59 | Indoor | Keeps flashing | Stays OFF | Compressor startup failure |

All models

## 2. Error detection method

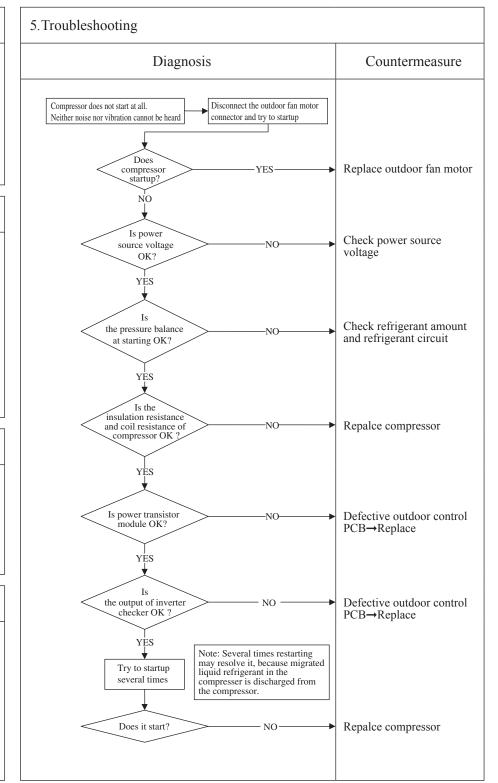
• If it fails to change over to the rotor detection operation of compressor motor

## 3. Condition of error displayed

If compressor fails to startup for 42 times

## 4. Presumable cause

- Faulty outdoor fan motor
- Faulty outdoor control PCB
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Faulty compressor (Motor bearing)



Note: Insulation resistance

check followings.
Check whether the electric leakage breake conforms to high-hermonic specifications

(As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor.
 In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings

|                     |        |                |           |                             | (ك |
|---------------------|--------|----------------|-----------|-----------------------------|----|
| Error code          | LED    | Green          | Red       | Content                     |    |
| Remote control: E60 | Indoor | Keeps flashing | Stays OFF | Compressor rotor lock error |    |

All models

## 2. Error detection method

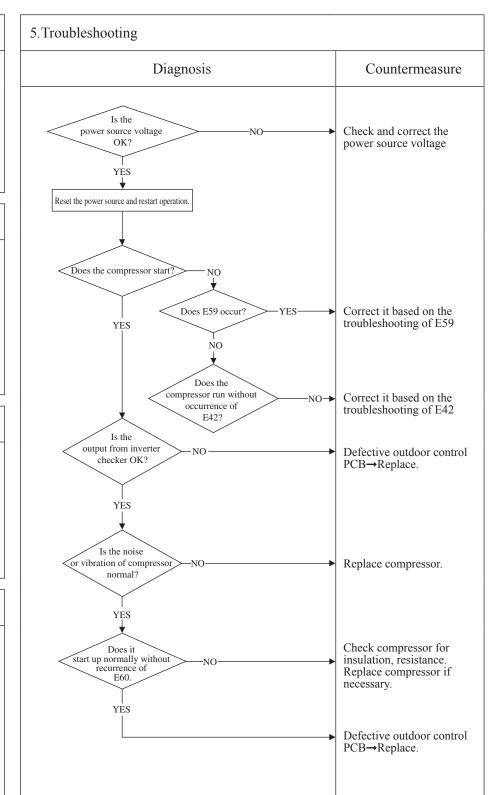
Compressor rotor position

## 3. Condition of error displayed

If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.

## 4. Presumable cause

- Defective outdoor fan motor
- Defective outdoor control PCB
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Defective compressor (motor, bearing)



Note: Insulation resistance

• The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor.

• The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several  $M\Omega$  or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings. Check whether the electric leakage breake conforms to high-hermonic specifications (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

## 12.2 SRK series

This chapter has described about an indoor unit. Look at 12.1 chapters about the outdoor unit.

### (1) Cautions

- (a) If you are disassembling and checking an air-conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work.
- (b) When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.
- (c) When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

### (2) Items to check before troubleshooting

- (a) Have you thoroughly investigated the details of the trouble which the customer is complaining about?
- (b) Is the air-conditioner running? Is it displaying any self-diagnosis information?
- (c) Is a power source with the correct voltage connected?
- (d) Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?
- (e) Is the outdoor unit's service valve open?

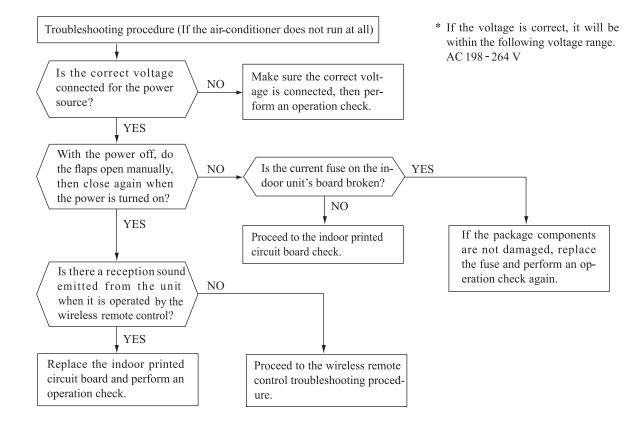
## (3) Troubleshooting procedure (If the air-conditioner does not run at all)

If the air-conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air-conditioner is running but breaks down, proceed to troubleshooting step (4).

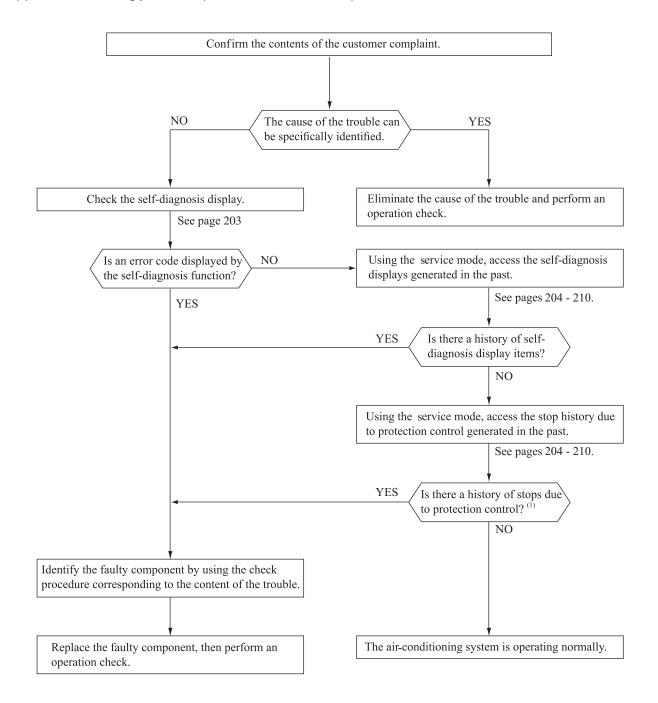
Important

When all the following conditions are met, we say that the air-conditioner will not run at all.

- (a) The RUN light does not light up.
- (b) The flaps do not open.
- (c) The indoor unit fan motors do not run.
- (d) The self-diagnosis display does not function.



### (4) Troubleshooting procedure (If the air-conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air-conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

## (5) Self-diagnosis table

When this air-conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air-conditioner is operated using the remote control 3 minutes or more after the emergency stop, the trouble display stops and the air-conditioner resumes operation. (1)

| Indoor unit d     | door unit display panel Wired(2) remote Description |      | Carre  | Display (flashing) condition   |   |  |
|-------------------|---|------|--|--|---|--|
| RUN<br>light      | TIMER   |      | of trouble   | Cause  | Display (flashing) condition  |  |
| 1-time<br>flash   | ON  | _    | Heat exchanger<br>sensor 1 error   | Broken heat exchanger sensor 1 wire, poor connector connection     Indoor control PCB is faulty                | When a heat exchanger sensor 1 wire disconnection is detected while operation is stopped. (If a temperature of -28°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)  |  |
| 2-time<br>flash   | ON  | _    | Room<br>temperature<br>sensor error  | Broken room temperature sensor wire, poor connector connection     Indoor control PCB is faulty                | When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –45°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)  |  |
| 3-time<br>flash   | ON  | _    | Heat exchanger<br>sensor 2 error   | Broken heat exchanger sensor 2 wire, poor connector connection     Indoor control PCB is faulty                | When a heat exchanger sensor 2 wire disconnection is detected while operation is stopped. (If a temperature of –28°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)  |  |
| 6-time<br>flash   | ON  | E 16 | Indoor fan<br>motor error  | Defective fan motor, poor<br>connector connection  | When conditions for turning the indoor unit's fan motor on exist during air-<br>conditione roperation, an indoor unit fan motor speed of 300 min <sup>-1</sup> or lower<br>is measured for 30 seconds or longer. (The air-conditioner stops.)   |  |
| Keeps<br>flashing | 1-time<br>flash                                     | E 38 | Outdoor air<br>temperature<br>sensor anomaly                                       | Outdoor aie temperature sensor     Outdoor control PCB is faulty   | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.  Or -55°C or lower is detected for within 20 seconds after power ON.   |  |
| Keeps<br>flashing | 2-time<br>flash                                     | E 37 | Outdoor heat<br>exchanger<br>temperature<br>sensor anomaly                         | Outdoor heat exchanger<br>temperature sensor     Outdoor control PCB is faulty                                 | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.  Or -55°C or lower is detected for within 20 seconds after power ON.  |  |
| Keeps<br>flashing | 4-time flash  | E 39 | Discharge pipe<br>temperature<br>sensor anomaly                                    | Discharge pipe temperature<br>sensor     Outdoor control PCB   | -25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.   |  |
| ON                | 1-time<br>flash                                     | E 42 | Current cut  | • Outdoor control PCB is faulty<br>• Defective compressor<br>• Installation, operation status                  | If the output current of inveter exceeds the specifications, it makes the compressor stopping.  |  |
| ON                | 2-time flash  | E 59 | Compressor<br>startup failure  | • Defective compressor<br>• Outdoor control PCB is faulty  | If compressor fails to startup for 42 times.  |  |
| ON                | 3-time flash  | E 58 | Current safe<br>stop   | Overload operation     Overcharge     Compressor locking   | When the current safe control has operated at the compressor speed of 20 rps or under.  |  |
| ON                | 4-time flash  | E 51 | Power<br>transistor<br>anomaly   | • Power transistor error<br>(Outdoor control PCB is faulty)  | If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.  |  |
| ON                | 5-time<br>flash                                     | E 36 | Discharge pipe<br>temperature<br>error   | • Installation, operation status<br>• Discharge pipe temperature sensor<br>• Outdoor control PCB is faulty     | When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.   |  |
| ON                | 6-time<br>flash                                     | E 5  | Error of signal transmission   | Defective power source,<br>Broken signal wire, defective<br>indoor/outdoor control PCB                         | When there is no signal between the indoor control PCB and outdoor control PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 7 minute 35 seconds or longer (during operation) (the compressor is stopped).   |  |
| ON                | 7-time<br>flash                                     | E 48 | Outdoor fan<br>motor anomaly   | • Defective fan motor<br>• Outdoor control PCB is faulty   | When actual rotation speed of outdoor fan motor drops to 75min <sup>-1</sup> or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection. |  |
| ON                | Keeps<br>flashing                                   | E 35 | Cooling<br>overload<br>operation   | Installation, operation status     Outdoor heat exchanger temperature sensor     Outdoor control PCB is faulty | When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 60℃ or higher continues for 10 minutes, including the compressor stop.  |  |
| 2-time flash      | 2-time flash  | E 60 | Compressor<br>rotor lock<br>error  | Defective compressor   | If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.   |  |
| 5-time<br>flash   | ON  | E 47 | Active filter voltage error  | Outdoor control PCB is faulty  | Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes). Remote control may be set after 3 minutes delay. Error is displayed if the converter voltage is lower than 210V (1-time within 5 seconds after power ON)  |  |
| 7-time<br>flash   | ON  | E 57 | Insufficient refri<br>-gerant amount or<br>detection of servi<br>-ce valve closure | Operation status     Installation status   | When the insufficient refrigerant amount is detected 3 times within 60 minutes.   |  |
| _                 | _   | E 1  | Error of wired<br>remote control<br>wiring   | Broken wired remote control<br>wire, defective indoor control<br>PCB   | The wired remote control wire Y is open. The wired remote control wires X and Y are reversely connected. Noise is penetrating the wired remote control lines. The wired remote control or indoor control PCB is faulty. (The communications circuit is faulty.)   |  |

Notes (1) The air-conditioner cannot be restarted using the remote control for 3 minutes after operation stops. (2) The wired remote control is option parts.

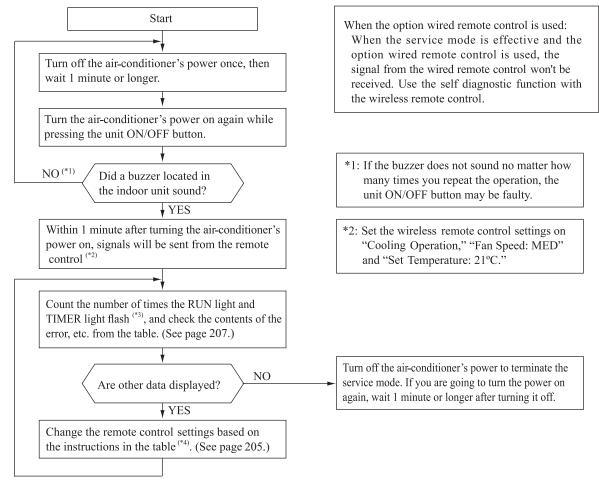
### (6) Service mode (Trouble mode access function)

This air-conditioner is capable of recording error displays and protective stops (service data) which have occurred in the past. If self-diagnosis displays cannot be confirmed, it is possible to get a grasp of the conditions at the time trouble occurred by checking these service data.

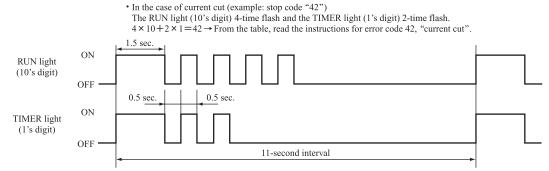
### (a) Explanation of terms

| Term                | Explanation   |
|---------------------|---|
| Service mode        | The service mode is the mode where service data are displayed by flashing of the display lights when the operations in item (b) below are performed with the indoor controller.   |
| Service data        | These are the contents of error displays and protective stops which occurred in the past in the air-conditioner system. Error display contents and protective stop data from past anomalous operations of the air-conditioner system are saved in the indoor unit controller's non-volatile memory (memory which is not erased when the power goes off). There are two types of data, self-diagnosis data and stop data, described below.   |
| Self-diagnosis data | These are the data which display the reason why a stop occurred when an error display(self-diagnosis display) occurred in an indoor unit. Data are recorded for up to 5 previous occurrences. Data which are older than the 5th previous occurrence are erased.  In addition, data on the temperature of each sensor (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor air temperature, discharge pipe), remote control information (operation switching, fan speed switching) are recorded when trouble occurs, so more detailed information can be checked.   |
| Stop data           | These are the data which display the reason by a stop occurred when the air-conditioning system performed protective stops, etc. in the past. Even if stop data alone are generated, the system restarts automatically. (After executing the stop mode while the display is normal, the system restarts automatically.) Data for up to 10 previous occasions are stored. Data older than the 10th previous occasion are erased.  (Important) In cases where transient stop data only are generated, the air-conditioner system may still be normal. However, if the same protective stop occurs frequently (3 or more times), it could lead to customer complaints. |

### (b) Service mode display procedure



\*3: To count the number of flashes in the service mode, count the number of flashes after the light lights up for 1.5 second initially (start signal). (The time that the light lights up for 1.5 second (start signal) is not counted in the number of flashes.)



\*4: When in the service mode, when the wireless remote control settings (operation mode, fan speed mode, temperature setting) are set as shown in the following table and sent to the air-conditioner unit, the unit switches to display of service data.

### (i) Self-diagnosis data

What are Self-......These are control data (reasons for stops, temperature at each sensor, wireless remote control information) diagnosis Data? from the time when there were error displays (abnormal stops) in the indoor unit in the past.

Data from up to 5 previous occasions are stored in memory. Data older than the 5th previous occasion are erased.

The temperature setting indicates how many occasions previous to the present setting the error display data are and the operation mode and fan speed mode data show the type of data.

| Wireless remote | e control setting | Ocustoute of cutout data  |  |  |
|-----------------|-------------------|---|--|--|
| Operation mode  | Fan speed mode    | Contents of output data   |  |  |
|                 | MED               | Displays the reason for stopping display in the past (error code).  |  |  |
| Cooling         | HI                | Displays the room temperature sensor temperature at the time the error code was displayed in the past.        |  |  |
| AUTO            |                   | Displays the indoor heat exchanger sensor temperature at the time the error code was displayed in the past.   |  |  |
|                 | LO                | Displays the wireless remote control information at the time the error code was displayed in the past.        |  |  |
| Haatima         | MED               | Displays the outdoor air temperature sensor temperature at the time the error code was displayed in the past. |  |  |
| Heating HI      |                   | Displays the outdoor heat exchanger sensor temperature at the time the error code was displayed in the past.  |  |  |
|                 | AUTO              | Displays the discharge pipe sensor temperature at the time the error code was displayed in the past.          |  |  |

| Wireless remote control setting | Indicates the number of occasions previous to the present |
|---------------------------------|---|
| Temperature setting             | the error display data are from.                          |
| 21°C                            | 1 time previous (previous time)                           |
| 22°C                            | 2 times previous  |
| 23°C                            | 3 times previous  |
| 24°C                            | 4 times previous  |
| 25°C                            | 5 times previous  |

### Only for indoor heat exchanger sensor 2

| Wireless remote control setting | Indicates the number of occasions previous to the present |
|---------------------------------|---|
| Temperature setting             | the error display data are from.                          |
| 26°C                            | 1 time previous (previous time)                           |
| 27°C                            | 2 times previous  |
| 28°C                            | 3 times previous  |
| 29°C                            | 4 times previous  |
| 30°C                            | 5 times previous  |

## (Example)

| Wireless       | remote contr      | ol setting          |   |  |  |  |  |
|----------------|-------------------|---------------------|---|--|--|--|--|
| Operation mode | Fan speed<br>mode | Temperature setting | Displayed data  |  |  |  |  |
|                |                   | 21°C                | Displays the reason for the stop (error code) the previous time an error was displayed.     |  |  |  |  |
|                |                   | 22°C                | Displays the reason for the stop (error code) 2 times previous when an error was displayed. |  |  |  |  |
| Cooling        | g MED             | 23°C                | Displays the reason for the stop (error code) 3 times previous when an error was displayed. |  |  |  |  |
|                |                   | 24°C                | Displays the reason for the stop (error code) 4 times previous when an error was displayed. |  |  |  |  |
|                |                   | 25°C                | Displays the reason for the stop (error code) 5 times previous when an error was displayed. |  |  |  |  |

## (ii) Stop data

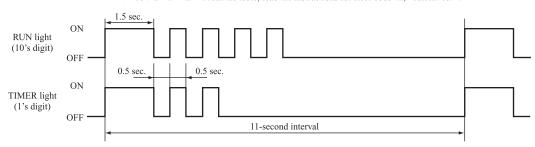
| Wireless       | remote contr | ol setting |   |
|----------------|--------------|------------|---|
| Operation mode |              |            | Displayed data  |
|                |              | 21°C       | Displays the reason for the stop (stop code) the previous time when the air-conditioner was stopped by protective stop control. |
|                |              | 22°C       | Displays the reason for the stop (stop code) 2 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 23°C       | Displays the reason for the stop (stop code) 3 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 24°C       | Displays the reason for the stop (stop code) 4 times previous when the air-conditioner was stopped by protective stop control.  |
| Cooling        | LO           | 25°C       | Displays the reason for the stop (stop code) 5 times previous when the air-conditioner was stopped by protective stop control.  |
| Coomig         | LO           | 26°C       | Displays the reason for the stop (stop code) 6 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 27°C       | Displays the reason for the stop (stop code) 7 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 28°C       | Displays the reason for the stop (stop code) 8 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 29°C       | Displays the reason for the stop (stop code) 9 times previous when the air-conditioner was stopped by protective stop control.  |
|                |              | 30°C       | Displays the reason for the stop (stop code) 10 times previous when the air-conditioner was stopped by protective stop control. |

## (c) Error code, stop code table (Assignment of error codes and stop codes is done in common for all models.)

| Number of fla<br>service     | shes when in   | 04   |   |  |  |                  |                 |
|------------------------------|--|--|---|--|--|------------------|-----------------|
| RUN<br>light<br>(10's digit) | TIMER<br>light   | Stop coad<br>or<br>Error coad  | Error content   | Cause  | Occurrence conditions  | Error<br>display | Auto<br>recover |
|                              | OFF  | 0  | Normal  | _  | _  | _                | _               |
| OFF                          | 1-time<br>flash  | 01   | Error of wired remote control wiring  | Broken wired remote control wire, defective indoor control PCB   | The wired remote control wire Y is open. The wired remote control wires X and Y are reversely connected. Noise is penetrating the wired remote control lines. The wired remote control or indoor control PCB is faulty.                                    | _                | 0               |
|                              | 5-time<br>flash  | 05   | Can not receive signals for 35 seconds (if communications have recovered)   | Power source is faulty. Power source cables and signal lines are improperly wired. Indoor or outdoor control PCB are faulty.                                 | When 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.  | 0                | _               |
|                              | 5-time<br>flash  | 35   | Cooling high pressure control   | Cooling overload operation. Outdoor unit fan speed drops. Outdoor heat exchanger sensor is short circuit.  | When the outdoor heat exchanger sensor's value exceeds the set value.  | (5 times)        | 0               |
|                              | 6-time<br>flash  | 36   | Compressor overheat 115°C   | Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.   | When the discharge pipe sensor's value exceeds the set value.  | (2 times)        | 0               |
| 3-time<br>flash              | 7-time<br>flash  | 37   | Outdoor heat exchanger sensor is abnormal   | Outdoor heat exchanger sensor wire is disconnected.  Connector connections are poor.  Outdoor control PCB is faulty.   | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature.  Or-55°C lower is detected for 5 seconds continuously within 20 seconds after power ON.                              | (3 times)        | 0               |
|                              | 8-time<br>flash  | 38   | Outdoor air temperature sensor is abnormal  | Outdoor air temperature sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.  | -55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature.  Or-55°C lower is detected for 5 seconds continuously within 20 seconds after power ON.                              | (3 times)        | 0               |
|                              | 9-time flash  Discharge pipe sensor is abnormal (anomalous stop)  Discharge pipe sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.  Discharge pipe sensor wire is disconnected for 5 seconds contitutes within 40 minutes after intial detection of anomalous temperature.   |  | -25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. | (3 times)  | 0  |                  |                 |
| 4-time                       | 2-time<br>flash  | -time lash  42 Current cut  Compressor lock. Compressor wiring short circuit. Compressor output is open phase. Outdoor control PCB is faulty. Service valve is closed. Electronic expansion valve is faulty. |   | In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.                               | (2 times)  | 0                |                 |
| flash                        | 7-time<br>flash  | 47   | Active filter voltage error   | Defective active filter.   | Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes).  Remote control may be set after 3 minutes delay.  Error is displayed if the converter voltage is lower than 210V (1-time within 5 seconds after power ON) | 0                | _               |
|                              | 8-time<br>flash  | 48   | Outdoor unit's fan motor is abnormal  | Outdoor fan motor is faulty. Connector connections are poor. Outdoor control PCB is faulty.  | When a fan speed of 75 min <sup>-1</sup> or lower continues for 30 seconds or longer.  |                  | 0               |
|                              | 1-time<br>flash  | 51   | Short circuit in the power transistor (high side) Current cut circuit breakdown   | Outdoor control PCB is faulty.<br>Power transistor is damaged.   | When it is judged that the power transistor was damaged at the time the compressor started.  | 0                | _               |
|                              | 7-time<br>flash  | 57   | Refrigeration cycle system  | Service valve is closed. Refrigerant is insufficient.  | When refrigeration cycle system protective control operates  | (3 times)        | 0               |
| 5-time<br>flash              | 8-time<br>flash  | 58   | Current safe  | Refrigerant is overcharge.<br>Compressor lock.   | When there is a current safe stop during operation.  | — (5 times)      | 0               |
|                              | 9-time<br>flash  | 59   | Compressor wiring is unconnection<br>Voltage drop<br>Low speed protective control   | Compressor wiring is disconnected. Power transistor is damaged. Power source construction is defective. Outdoor control PCB is faulty. Compressor is faulty. | When the current is 1A or less at the time the compressor started. When the power source voltage drops during operation. When the compressor command speed is 1ower than 32 rps for 60 minutes.  | 0                | 0               |
|                              | OFF  | 60   | Rotor lock  | Compressor is faulty. Compressor output is open phase. Electronic expansion valve is faulty. Overload operation. Outdoor control PCB is faulty.              | After the compressor starts, when the compressor stops due to rotor lock.  | (2 times)        | 0               |
| 6-time<br>flash              | lach 1-time Connection lines between   |  | Connection lines between the indoor and outdoor units are faulty  | Connection lines are faulty.<br>Indoor or outdoor control PCB are faulty.  | When 10 seconds passes after the power is turned on without communications signals from the indoor or outdoor unit being detected correctly.   | 0                | _               |
|                              | 2-time<br>flash  | 62   | Serial transmission error   | Indoor or outdoor control PCB are faulty. Noise is causing faulty operation.   | outdoor unit being detected correctly.   |                  |                 |
|                              | OFF  | 80   | Indoor unit's fan motor is abnormal   | Indoor fan motor is faulty. Connector connections are poor. Indoor control PCB is faulty.  | When the indoor unit's fan motor is detected to be running at 300 min <sup>-1</sup> or lower speed with the fan motor in the ON condition while the air-conditioner is running.  | 0                | _               |
|                              | 2-time<br>flash  | 82   | Indoor heat exchanger sensor is abnormal (anomalous stop)   | Indoor heat exchanger sensor wire is disconnected. Connector connections are poor.   | When a temperature of -28°C or lower is sensed continuously for 40 minutes during heating operation. (the compressor stops).   | 0                | _               |
| 8-time<br>flash              | 4-time<br>flash  | 84   | Anti-condensation control   | High humidity condition.<br>Humidity sensor is faulty.   | Anti-condensation prevention control is operating.   |                  | 0               |
|                              | S-time   15   Cooling high pressure control   Indoor or outdoor counted PCB are faulty.   When the outdoor heat exchanger sense facility counted   Society   When the outdoor heat exchanger sense   Society   When the discharge pipe sense/s value   Society   When the anti-frost control operates and the compressor stops during cooling operation.  | _   | 0  |  |                  |                 |
|                              |  | 86   | Heating high pressure control   | Indoor unit fan speed drops.   | When high pressure control operates during heating operation and the compressor stops.   | _                | 0               |

Notes (1) The number of flashes when in the service mode do not include the 1.5 second period when the lights light up at first (start signal). (See the example shown below.)

• In the case of current cut (example: stop code "42") The RUN light (10's digit) 4-time flash and the TIMER light (1's digit) 2-time flash.  $4 \times 10 + 2 \times 1 = 42 \rightarrow$  From the table, read the instructions for error code 42, "current cut".



- Is not displayed. (automatic recovery only) (2) Error display:
  - $\bigcirc$  Displayed.

) displayed, the error display shows the number of times that an auto recovery occurred for the same reason has If there is a ( reached the number of times in ( ).

If no ( ) is displayed, the error display shows that the trouble has occurred once.

(3) Auto Recovery: - Does not occur

O Auto recovery occurs.

## (d) Operation mode, Fan speed mode information tables

### (i) Operation mode

| Display pattern when in service mode | Operation mode                    |
|--------------------------------------|-----------------------------------|
| RUN light<br>(10's digit)            | when there is an<br>abnormal stop |
| _                                    | AUTO                              |
| 1-time flash                         | DRY                               |
| 2-time flash                         | COOL                              |
| 3-time flash                         | FAN                               |
| 4-time flash                         | HEAT                              |

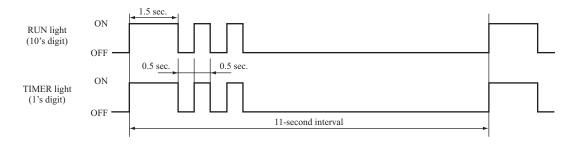
### (ii) Fan speed mode

| Display pattern when in service mode | Fan speed<br>mode when    |
|--------------------------------------|---------------------------|
| TIMER light<br>(1's digit)           | there is an abnormal stop |
| _                                    | AUTO                      |
| 2-time flash                         | HI                        |
| 3-time flash                         | MED                       |
| 4-time flash                         | LO                        |
| 5-time flash                         | ULO                       |
| 6-time flash                         | HI POWER                  |
| 7-time flash                         | ECONO                     |

\* If no data are recorded (error code is normal), the information display in the operation mode and fan speed mode becomes as follows.

| Mode           | Display when error code is normal. |  |  |  |  |  |
|----------------|------------------------------------|--|--|--|--|--|
| Operation mode | AUTO                               |  |  |  |  |  |
| Fan speed mode | AUTO                               |  |  |  |  |  |

(Example): Operation mode: COOL, Fan speed mode: HI



## (e) Temperatare information

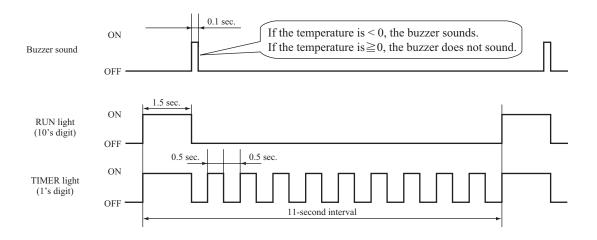
(i) Room temperature sensor, indoor heat exchanger sensor, outdoor air temperature sensor, outdoor heat exchanger sensor temperature

|   |   |     |     |     |     |     |     |     |     | U   | nit: °C |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|
| RUN lic<br>(10's di                     | TIMER light<br>(1's digit)<br>pht<br>git) | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9       |
|   | 6   | -60 | -61 | -62 | -63 | -64 |     |     |     |     |         |
|   | 5   | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59     |
| .,                                      | 4   | -40 | -41 | -42 | -43 | -44 | -45 | -46 | -47 | -48 | -49     |
| Yes (sounds for 0.1 second)             | 3   | -30 | -31 | -32 | -33 | -34 | -35 | -36 | -37 | -38 | -39     |
| (************************************** | 2   | -20 | -21 | -22 | -23 | -24 | -25 | -26 | -27 | -28 | -29     |
|   | 1   | -10 | -11 | -12 | -13 | -14 | -15 | -16 | -17 | -18 | -19     |
|   | 0   |     | -1  | -2  | -3  | -4  | -5  | -6  | -7  | -8  | -9      |
|   | 0   | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9       |
|   | 1   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19      |
|   | 2   | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29      |
|   | 3   | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39      |
| No                                      | 4   | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | 49      |
| (does not sound)                        | 5   | 50  | 51  | 52  | 53  | 54  | 55  | 56  | 57  | 58  | 59      |
|   | 6   | 60  | 61  | 62  | 63  | 64  | 65  | 66  | 67  | 68  | 69      |
|   | 7   | 70  | 71  | 72  | 73  | 74  | 75  | 76  | 77  | 78  | 79      |
|   | 8   | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89      |
|   | 9   | 90  | 91  | 92  | 93  | 94  | 95  | 96  | 97  | 98  | 99      |

<sup>\*</sup> If no data are recorded (error code is normal), the display for each temperature information becomes as shown below.

| Sensor name                    | Sensor value displayed when the error code is normal |
|--------------------------------|--|
| Room temperature sensor        | -64°C  |
| Indoor heat exchanger sensor   | -64°C  |
| Outdoor air temperature sensor | -64°C  |
| Outdoor heat exchanger sensor  | -64°C  |

(Example) Outdoor heat exchanger temperature data: "-9°C"



## (ii) Discharge pipe sensor temperature

| т   | Tanit. | 00 |
|-----|--------|----|
| - 1 | nit.   | ~( |

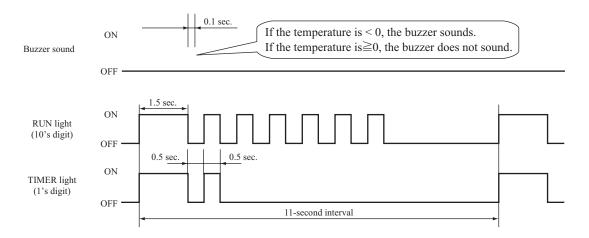
|                         |   |     |     |     |     |     |     |     |     | U1. | nt: °C |
|-------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| RUN lig<br>(10's di     | TIMER light<br>(1's digit)<br>ght<br>git) | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9      |
|                         | 3   | -60 | -62 | -64 |     |     |     |     |     |     |        |
| Yes                     | 2   | -40 | -42 | -44 | -46 | -48 | -50 | -52 | -54 | -56 | -58    |
| (sounds for 0.1 second) | 1   | -20 | -22 | -24 | -26 | -28 | -30 | -32 | -34 | -36 | -38    |
|                         | 0   |     | -2  | -4  | -6  | -8  | -10 | -12 | -14 | -16 | -18    |
|                         | 0   | 0   | 2   | 4   | 6   | 8   | 10  | 12  | 14  | 16  | 18     |
|                         | 1   | 20  | 22  | 24  | 26  | 28  | 30  | 32  | 34  | 36  | 38     |
|                         | 2   | 40  | 42  | 44  | 46  | 48  | 50  | 52  | 54  | 56  | 58     |
| No (doos not sound)     | 3   | 60  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78     |
| (does not sound)        | 4   | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98     |
|                         | 5   | 100 | 102 | 104 | 106 | 108 | 110 | 112 | 114 | 116 | 118    |
|                         | 6   | 120 | 122 | 124 | 126 | 128 | 130 | 132 | 134 | 136 | 138    |
|                         | 7   | 140 | 142 | 144 | 146 | 148 | 150 |     |     |     |        |

<sup>\*</sup> If no data are recorded (error code is normal), the display for each temperature information becomes as shown below.

| Sensor name           | Sensor value displayed when the error code is normal |
|-----------------------|--|
| Discharge pipe sensor | -64°C  |

(Example) Discharge pipe temperature data: "122°C"

<sup>\*</sup> In the case of discharge pipe data, multiply the reading value by 2. (Below,  $61 \times 2 = 122$ °C")



## Service data record form

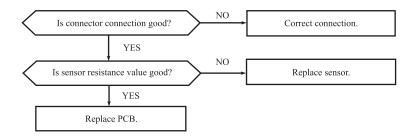
| Customer            |              |  |   | Model                            |                  |                   |                     |                 |
|---------------------|--------------|--|---|----------------------------------|------------------|-------------------|---------------------|-----------------|
| Date of inve        | estigation   |  |   |                                  |                  |                   |                     |                 |
| Machine na          | -            |  |   |                                  |                  |                   |                     |                 |
| Content of c        | complaint    |  |   |                                  |                  |                   |                     |                 |
| Wireless r          | emote contro | l settings   |   |                                  | :                | Display resul     | ts                  | D: 1            |
| Temperature setting |              | Fan speed mode   | Content of displayed da   | nta                              | Buzzer (Yes/No.) | RUN light (Times) | TIMER light (Times) | Display content |
| - V                 |              | MED  | Error code on previous occasion.  |                                  |                  |                   | /                   |                 |
| Cooling             |              | HI   | Room temperature sensor on previous occasi                                    | on.                              |                  |                   |                     |                 |
|                     |              | AUTO   | Indoor heat exchanger sensor 1 on previous o                                  | ccasion.                         |                  |                   |                     |                 |
| 21                  |              | LO   | Wireless remote control information on previ                                  | ous occasion.                    |                  |                   |                     |                 |
| Heating             |              | MED  | Outdoor air temperature sensor on previous of                                 | ecasion.                         |                  |                   |                     |                 |
|                     |              | HI   | Outdoor heat exchanger sensor on previous or                                  | ecasion.                         |                  |                   |                     |                 |
|                     |              | AUTO   | Discharge pipe sensor on previous occasion.                                   |                                  |                  |                   |                     |                 |
| 26                  | Cooling      | AUTO   | Indoor heat exchanger sensor 2 on previous of                                 | ccasion.                         |                  |                   |                     |                 |
|                     |              | MED  | Error code on second previous occasion.                                       | ode on second previous occasion. |                  |                   |                     |                 |
|                     | Cooling      | HI   | Room temperature sensor on second previous                                    | occasion.                        |                  |                   |                     |                 |
|                     |              | AUTO   | Indoor heat exchanger sensor 1 on second previ                                | ous occasion.                    |                  |                   |                     |                 |
| 22                  |              | LO   | Wireless remote control information on secon                                  | nd previous occasion.            |                  |                   |                     |                 |
|                     |              | MED  | Outdoor air temperature sensor on second pre                                  | vious occasion.                  |                  |                   |                     |                 |
|                     | Heating      | HI   | Outdoor heat exchanger sensor on second pre                                   | vious occasion.                  |                  |                   |                     |                 |
|                     |              | AUTO   | Discharge pipe sensor on second previous occ                                  | asion.                           |                  |                   |                     |                 |
| 27                  | Cooling      | AUTO   | Indoor heat exchanger sensor 2 on second occ                                  | asion.                           |                  |                   |                     |                 |
|                     |              | MED  | Error code on third previous occasion.  |                                  |                  |                   |                     |                 |
|                     | Cooling      | HI   | Room temperature sensor on third previous of                                  | ccasion.                         |                  |                   |                     |                 |
|                     |              | AUTO   | Indoor heat exchanger sensor 1 on third previ-                                |                                  |                  |                   |                     |                 |
| 23                  |              | LO   | Wireless remote control information on third                                  |                                  |                  |                   |                     |                 |
|                     |              | MED  | Outdoor air temperature sensor on third previous                              | -                                |                  |                   |                     |                 |
|                     | Heating      | HI   | Outdoor heat exchanger sensor on third previo                                 |                                  |                  |                   |                     |                 |
|                     |              | AUTO   | Discharge pipe sensor on third previous occas                                 |                                  |                  |                   |                     |                 |
| 28                  | Cooling      | AUTO   | Indoor heat exchanger sensor 2 on third occas                                 |                                  |                  |                   |                     |                 |
|                     |              | MED  | Error code on fourth previous occasion.                                       |                                  |                  |                   |                     |                 |
|                     | Cooling      | HI   | Room temperature sensor on fourth previous                                    | occasion.                        |                  |                   |                     |                 |
|                     |              | AUTO   | Indoor heat exchanger sensor 1 on fourth prev                                 |                                  |                  |                   |                     |                 |
| 24                  |              | LO   | Wireless remote control information on four                                   |                                  |                  |                   |                     |                 |
|                     |              | MED  | Outdoor air temperature sensor on fourth prev                                 | *                                |                  |                   |                     |                 |
|                     | Heating      | HI   | Outdoor heat exchanger sensor on fourth prev                                  |                                  |                  |                   |                     |                 |
|                     |              | AUTO   | Discharge pipe sensor on fourth previous occa                                 |                                  |                  |                   |                     |                 |
| 29                  | Cooling      | AUTO   | Indoor heat exchanger sensor 2 on fouth occa                                  |                                  |                  |                   |                     |                 |
|                     |              | MED  | Error code on fifth previous occasion.  |                                  |                  |                   |                     |                 |
|                     | Cooling      | HI   | Room temperature sensor on fifth previous oc                                  | casion.                          |                  |                   |                     |                 |
|                     |              | AUTO   | Indoor heat exchanger sensor 1 on fifth previo                                |                                  |                  |                   |                     |                 |
| 25                  |              | LO   | Wireless remote control information on fifth                                  |                                  |                  |                   |                     |                 |
|                     |              | MED  | Outdoor air temperature sensor on fifth previo                                |                                  |                  |                   |                     |                 |
|                     | Heating      | HI   | Outdoor heat exchanger sensor on fifth previo                                 |                                  |                  |                   |                     |                 |
|                     |              | AUTO   | Discharge pipe sensor on fifth previous occas                                 |                                  |                  |                   |                     |                 |
| 30                  | Cooling      | AUTO   | Indoor heat exchanger sensor 2 on fifth occas                                 |                                  |                  |                   |                     |                 |
| 21                  | 8            | -1010  | Stop code on previous occasion.   | •                                |                  |                   |                     |                 |
| 22                  |              |  | Stop code on second previous occasion.  |                                  |                  |                   |                     |                 |
| 23                  |              |  | Stop code on third previous occasion.   |                                  |                  |                   |                     |                 |
| 24                  |              |  | top code on fourth previous occasion.   |                                  |                  |                   |                     |                 |
| 25                  |              |  | top code on fifth previous occasion.  |                                  |                  |                   |                     |                 |
| 26                  | Cooling      | LO   | LO Stop code on sixth previous occasion.                                      |                                  |                  |                   |                     |                 |
| 27                  |              | Stop code on sixth previous occasion.  Stop code on seventh previous occasion.  Stop code on eighth previous occasion. |   |                                  |                  |                   |                     |                 |
| 28                  |              |  |   |                                  |                  |                   |                     |                 |
| 29                  |              |  | Stop code on eighth previous occasion.  Stop code on ninth previous occasion. |                                  |                  |                   |                     |                 |
| 30                  |              |  | Stop code on finth previous occasion.  Stop code on tenth previous occasion.  |                                  |                  |                   |                     |                 |
| Judgment            |              |  | Stop code on tenth previous occasion.   |                                  |                  |                   |                     | Examiner        |
| Remarks             |              |  |   |                                  |                  |                   |                     | LAMITHE         |
| ACIIIai KS          |              |  |   |                                  |                  |                   |                     |                 |

Note (1) In the case of indoor heat exchanger sensor 2, match from 26 to 30 the temperature setting of wireless remote control. (Refor to page 205)

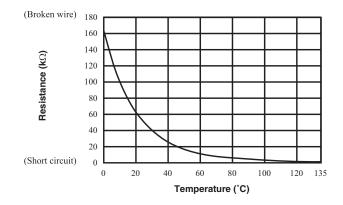
### (7) Inspection procedures corresponding to detail of trouble

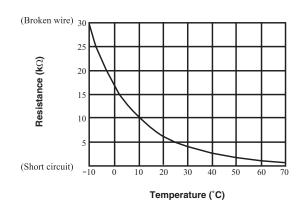
## Sensor error

Broken sensor wire, connector poor connection



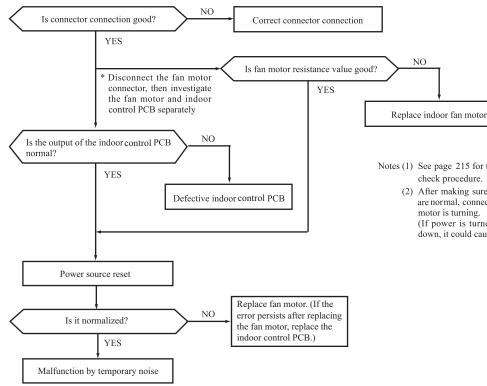
- **♦** Discharge pipe sensor temperature characteristics
- Sensor temperature characteristics (Room temp., indoor heat exchanger temp., outdoor heat exchanger temp., outdoor air temp.)





## Indoor fan motor error

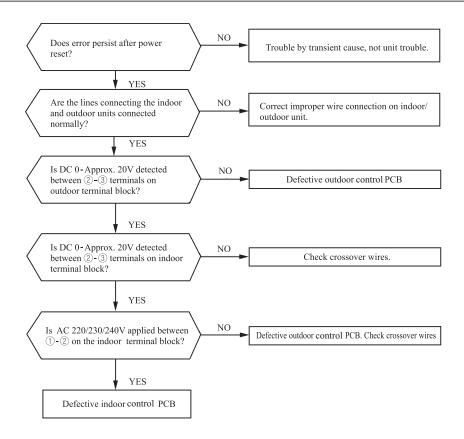
Defective fan motor, connector poor connection, defective indoor control PCB



- Notes (1) See page 215 for the fan motor and indoor control PCB check procedure.
  - (2) After making sure the fan motor and indoor control PCB are normal, connect the connectors and confirm that the fan motor is turning.
    - (If power is turned on while one or the other is broken down, it could cause the other to break down also.)

# **Error of signal transmission**

Wiring error including power cable, defective indoor/ outdoor control PCB

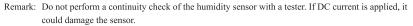


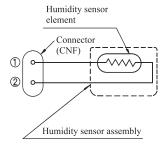
## (8) Phenomenon observed after shortcircuit, wire breakage on sensor

| Sensor                | Operation mode | Phenomenon   |   |
|-----------------------|----------------|--|---|
|                       |                | Shortcircuit   | Disconnected wire   |
| Room temperature      | Cooling        | Release of continuous compressor operation command.              | Continuous compressor operation command is not released.                  |
| sensor                | Heating        | Continuous compressor operation command is not released.         | Release of continuous compressor operation command.                       |
| Heat exchanger sensor | Cooling        | Freezing cycle system protection trips and stops the compressor. | Continiuous compressor operation command is not released. (Anti-frosting) |
|                       | Heating        | High pressure control mode (Compressor stop command)             | Hot keep (Indoor fan stop)  |
| Humidity sensor       | Cooling        | Refer to the table below.  | Refer to the table below.   |
|                       | Heating        | Normal system operation is possible.                             |   |

## Humidity sensor operation

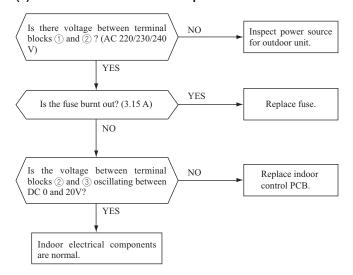
| Failure mode      |                            | Control input circuit resding | Air conditioning system operation      |  |
|-------------------|----------------------------|-------------------------------|--|--|
| cted              | ① Disconnected wire        |                               |  |  |
| Disconnected wire | ② Disconnected wire        | Humidity reading is 0%        | Anti-condensation control is not done. |  |
|                   | ①② Disconnected wire       |                               |  |  |
| Short             | ① and ② are shot circuited | Humidity reading is 100%      | Anti-condensation control keep doing.  |  |





## (9) Checking the indoor electrical equipment

## (a) Indoor control PCB check procedure



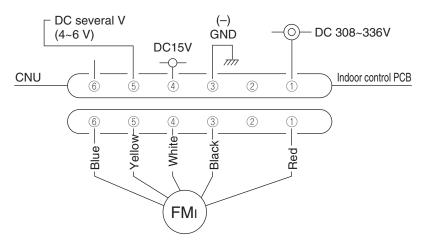
## (b) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the indoor control PCB is broken down.

## 1) Indoor control PCB output check

- a) Turn off the power.
- b) Remove the front panel, then disconnect the fan motor lead wire connector.
- c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the indoor control PCB is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor control PCB has failed and the fan motor is normal.



| Measuring point | Voltage range when normal |
|-----------------|---------------------------|
| 1 - 3           | DC 308-336V               |
| 4 - 3           | DC 15V                    |
| 5-3             | DC several V (4-6V)       |

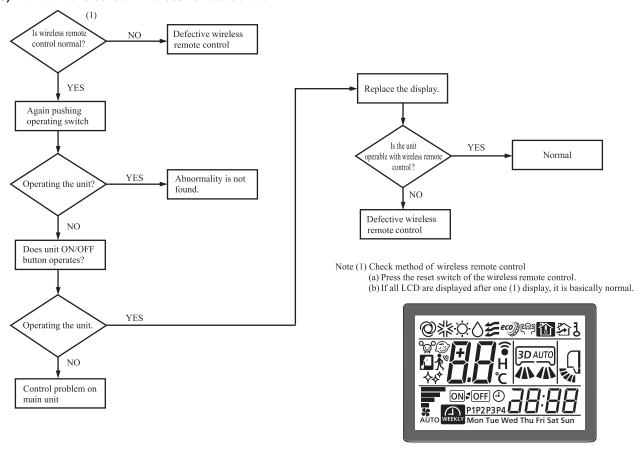
### 2) Fan motor resistance check

| Measuring point       | Resistance when normal           |
|-----------------------|----------------------------------|
| ① - ③ (Red - Black)   | $20  \mathrm{M}\Omega$ or higher |
| 4 - 3 (White - Black) | 20 k Ω or higher                 |

Notes (1) Remove the fan motor and measure it without power connected to it.

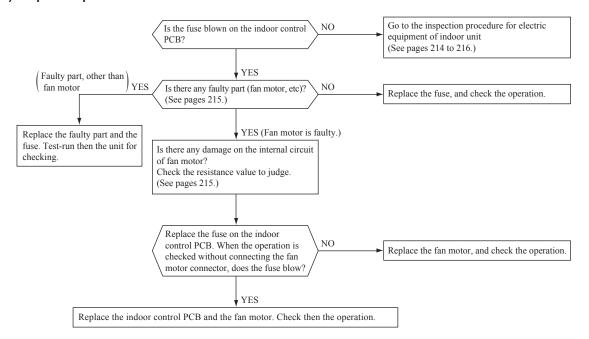
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

### (10) How to make sure of wireless remote control



 Simplified check methd of wireless remote control It is normal if the signal transmission section of the wireless remote control emits a whitish light at each transmission on the monitor of digital camera.

### (11) Inspection procedure for blown fuse on the indoor control PCB



## 13. OPTION PARTS

### 13.1 Wireless kit

(1) FDT series (RCN-T-36W-E)

### Notes:

Following functions of indoor unit series are not able to be set with this wireless remote control (RCN-TC-36W-E).

- 1. Individual flap control system
- 2. 4-fan speed setting (P-Hi/Hi/Me/Lo) ightarrow 3-fan speed setting (Hi/Me/Lo)

### PJF012D010

### **⚠ WARNING**

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.

  Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power source is turned off when electric wiring work.
   Otherwise, electric shock, malfunction and improper running may occur

## 0 0

### **⚠** CAUTION

- DO NOT install the wireless kit at the following places in order to avoid malfunction. places in order to avoid malfunction.

  (8) Places where the receiver is influenced by the fluorescent lamp (especially inverter type) or sunlight.

  (9) Places where the receiver is affected by infrared rays of any other communication devices

  (10) Places where some object may obstruct the communication with the remote control
- DO NOT install the wireless kit at the following r
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to
  generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
  (7) Places affected by the direct airflow of the
  AC unit.

in order to keep it away from water and dust.

- DO NOT leave the wireless kit without the cover. In case the cover needs to be detached, protect the receiver with a packaging box or bag

## 0

### Attention

- Instruct the customer how to operate it correctly referring to the instruction manual.
- For the installation method of the air-conditioner itself, refer to the installation manual enclosed in the

### ① Accessories

Please make sure that you have all of the following accessories.

| Receiver                      |       | 1 |   |
|-------------------------------|-------|---|---|
| Wireless<br>remote<br>control | (A-D) | 1 |   |
| Parts set                     |       | 1 | - |

| Remote control holder      | 1 |
|----------------------------|---|
| Wood screw for holder      | 2 |
| AAA dry cell battery (RO3) | 2 |

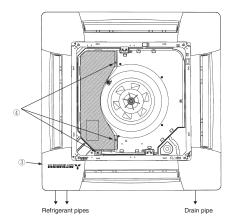
### 2 How to install the receiver

The receiver can be installed by replacing with a corner panel on the applicable decorative panel.

### Preparation before installation

- $\ensuremath{\textcircled{1}}$  Attach the decorative panel onto the air-conditioner according to the installation manual for

- Attach the decorative panel onto the air-conditioner according to the installation manual for the panel.
   Remove the air return grille.
   Remove a corner panel located on the refrigerant pipes side.
   Remove three screws and detach the cover (indicated as shadowed area) from the control box of the air-conditioner.

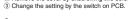


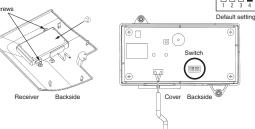
### Setting on site

① PCB on the receiver has the following switches to set the functions. Default setting is shown

| • |       |  |                             |  |  |  |  |
|---|-------|--|-----------------------------|--|--|--|--|
|   | S W 1 | Customized signal setting to avoid mixed communication | ON: Normal<br>OFF: Remote   |  |  |  |  |
|   | SW2   | Receiver master/slave setting                          | ON: Master<br>OFF: Slave    |  |  |  |  |
|   | SW3   | Buzzer valid/Invalid                                   | ON: Valid<br>OFF: Invalid   |  |  |  |  |
|   | S W 4 | Auto restart   | ON : Valid<br>OFF : Invalid |  |  |  |  |

### <To change the settings>





 $\ensuremath{\mathfrak{F}}$  When SW1 is turned to OFF position, change the corresponding remote control setting as

Pressing ACL and AIR FLOW button at the same time or inserting the batteries with pressing AIR FLOW button will customize the signal.

### Note

\* When the batteries are removed, the setting will return to the default setting.
Please make sure to reset it when the batteries are

## Caution ^

Instruct the customer to set the mentioned above when replacing the batteries. (How to set is also mentioned in the user's manual attached on the air-conditioner.)

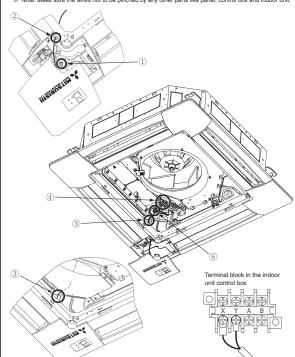


Radio interference prevention mode

### Installation of the receiver

- O Loosen the bolts which fix the panel and make a gap between the panel and the indoor unit
  Put the wiring of the receiver through the opening.
  Put the wiring on the notch on the control box so as not to be pinched by the control box and lid as shown below.
  Connect the wiring to the terminal block provided in the control box. (No polarity)
  Attach the receiver to the panel according to the panel installation manual.
  Fix the wiring with the clamp so that the wiring do not contact the edge of control box's metal sheet.
  Reattach the control box lid with 3 screws removed.

- Note: Make sure the wires not to be pinched by any other parts like panel, control box and indoor unit.

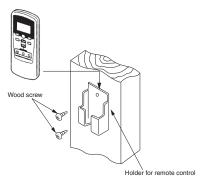


### 3 Remote control

### Installation of the control holder

### Caution

- Places exposed to direct sunlight
   Places near heat devices
   High humidity places
- DO NOT install it on the following places 4. Hot surface or cold surface enough to generate Hot surface or cold surface enough to generate condensation
   Places exposed to oil mist or steam directly.
   Uneven surface

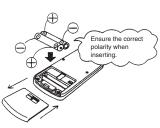


### Installation tips for the remote control holder

- Adjust and keep the holder upright
   Tighten the screw to the end to avoid scratching the remote control.
- DO NOT attach the holder on plaster wall.

### How to insert batteries

- 1 Detach the back lid.
- Insert the batteries. (two AAA batteries)
   Reattach the back lid.



### Control plural indoor units with one remote control

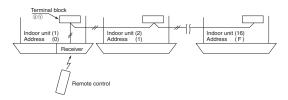
Up to 16 indoor units can be connected.

Onnect the XY terminal with 2-core wire. As for the size, refer to the following note.
 For Packaged air-conditioner series, set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

Restrictions on the thickness and length of wire (Maximum total extension 600m.)

Standard Within 100m x 0.3 mm

Within 200m x 0.5 mm<sup>2</sup>
Within 300m x 0.75mm<sup>2</sup>
Within 400m x 1.25mm<sup>2</sup> Within 600m x 2.0 mm



⑤ For VRF series, set the indoor unit address with SW1, SW2 and SW5-2 on the indoor unit PCB from [000] to [127] so as not to duplicate.

### Master/Slave setting when using plural remote controls

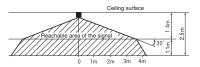
Up to two receivers can be installed in one indoor unit group.

When two receivers are used, it is necessary for a receiver to turn OFF SW2 on the receiver PCB to set it as slave.

(For the method of switching, please see Setting on site in the section of 3 How to install the receiver in this manual.)

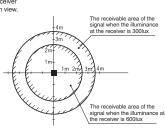
### Wireless remote control's operable area

① Standard reachable area of the signal [condition] Illuminance at the receiver: 300lux (when no lighting is installed within 1m of the receiver in an ordinary office.)



② Correlation between illuminance at the receiver and reachable area of the signal in a plain view. The drawing in the right shows the correlation between the reachable area of the signal and illuminance at the receiver when the remote control is operated at 1.1m high under the condition of ceiling height of 2.5m.

When the illuminance becomes double the area is narrowed down to two thirds



3 Installation tips when several receivers are installed close Minimum distance between the indoor units which can avoid cross communication is 5m under the condition of 300lux of illuminance at the receive (When no lighting is installed within 1m of the receiver in an ordinary office )

### (4) How to disable the Auto mode operation

VRF system (except heat recovery 3-pipe systems) cannot be operated Make sure to set the remote control for the models so as not to be able

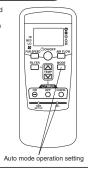
to choose Auto mode

Pushing ACL and MODE button at the same time or inserting the batteries with pressing MODE button will make auto mode operation.

### Attention

When the batteries are removed, the setting will return to the default setting (Auto mode is valid).

Instruct the customer to set the mentioned above when eplacing the batteries. (How to set is also mentioned in the user's manual attached on the air-conditioner.)



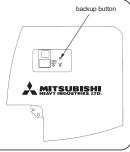
### **5** Backup button

A Backup button is provided on the receiver. Even when the operation from the wireless remote control is not possible (due to flat batteries, controller lost, or control failure), still it possible to operate as temporary means. Press the button directly when operating it.

The air-conditioner starts the operation with the condition of Auto mode, 23°C of set point, High fan

speed and horizontal louver position.

(2) The air-conditioner stops the operation when the button is pressed when in operation.



### 6 Cooling test run operation

- After safety confirmation, turn on the power
- Transmit a cooling operation command with wireless remote control, while the backup button on the receiver is pressed.
- If the backup button on the receiver is pressed during a test run, it will end the test run.

  If you cannot operate the unit properly during a test run, please check by consulting with inspection guides on the wiring diagram of outdoor units.

### The to read the two-digit display

- On the receiver of a wireless kit, a two-digit (7-segment) display is provided.
- On the receiver of a wireless kit, a two-digit (7-segment) display is provided.

  (1) An indication will be displayed for one hour after power on.

  (2) An indication will be displayed for 3.5 seconds after transmitting a "STOP" command from the wireless remote control or the operation of the backup button to stop the unit.

  (3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.

  (4) When there are no error records to indicate, addresses of all the connected units are displayed.

- (5) When there are some error records remaining, the error records are displayed.(6) Error records can be cleared by transmitting a "STOP" command from the wireless remote
- control, while the backup button is pressed.

### (2) FDE series (RCN-E-E)

Notes:

Following functions of indoor unit series are not able to be set with this wireless remote control (RCN-E-E).

1. Flap control system

2. 4-fan speed setting (P-Hi/Hi/Me/Lo) → 3-fan speed setting (Hi/Me/Lo)

PFA012D619A

### **⚠ WARNING**

 Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.

Loose connections or hold could result in abnormal heat generation or fire.

Ų

• Turn off the power source during servicing or inspection work.

If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.



• Shut off the power before electrical wiring work.

It could cause electric shock, unit failure and improper running.



## **A** CAUTION

- DO NOT install it on the following places
  - 1. Places exposed to direct sunlight
- 4. Places where the receiver is influenced by the fluorescent lamp or sunlight.
- 2. Places near heat devices3. High humidity places
- 5. Places where the receiver is affected by infrared rays of any other communication devices.6. Places where some object may obstruct the communication with the remote control.



## **1** Accessories

Please make sure that you have all of the following accessories.

| Receiver | Remoto control holder | AAA dry cell battery (RO3) | Wood screw for holder                         | Wireless remote control |
|----------|-----------------------|----------------------------|---|-------------------------|
| \[ \]    |                       | <u> </u>                   | « <u>————————————————————————————————————</u> |                         |
| 1        | 1                     | 2                          | 2   | 1                       |

## ② Preparation before installation

### Setting on site

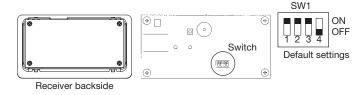
PCB on the receiver has the following switches to set the function.

Default setting is shown with \_\_\_ mark.

| SW1 | Prevents interference during plural setting | ON: Normal (1ch) OFF: Customized (2ch) |
|-----|---|--|
| SW2 | Receiver master/slave setting               | ON : Master<br>OFF : Slave             |
| SW3 | Buzzer valid/Invalid                        | ON : Valid<br>OFF : Invalid            |
| SW4 | Auto restart                                | ON : Valid<br>OFF : Invalid            |

### To change setting

- 1. Remove four screws located on the back of the receiver and detach the board.
- 2. Change the setting by the switch on PCB.



3. When switch 1 is turned to off position, change the wireless remote control setting.

(For the method of changing the setting, refer to Setting to avoid mixed communication on page 2)

Refer to Wireless remote control unit operation distance of Facceiver in case of plural setting.

### Master/Slave setting when using plural remote controls

Up to two receiver or wired remote control can be installed in one indoor unit group.

When two receiver or wired remote control are used, it is necessary to change SW on the PCB to set it as slave.

## 3 How to install the receiver

The receiver can be installed by replacing with a cover of the panel.

**CAUTION**: When installing the receiver after unit has been fixed,

injury due to falling may result because of working at high place.

1 Remove the cover

Insert a flat-blade screwdriver into the dented part (2 places), and wrench slightly.

2 Connect the wiring

Connect wiring of the receiver to the wiring in the back. **ATTENTION** 

DO NOT remove the clamp fixed the wiring.

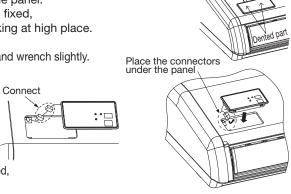
③ Installation of the receiver

Check direction of the receiver, and fix to the panel.

**CAUTION**: Connect the connectors before installing the receiver.

In case of connecting after the receiver had been installed,

it will be necessary to remove the panel.



## (4) Wireless remote control

### **⚠ CAUTION DO NOT install it on the following places.**

- 1. Places exposed to direct sunlight
- 3. Places near heat devices
- 5. High humidity places

- 2. Hot surface or cold surface enough to generate condensation
- 4. Places exposed to oil mist or steam directly.
- 6. Uneven surface

### Installation tips for the remote control holder

- · Adjust and keep the holder up right.
- Tighten the screw to the end to avoid scratching the remote control.
- DO NOT attach the holder on plaster wall.

### How to insert batteries

- ① Detach the back lid.
- 2 Insert the batteries. (two AAA batteries)
- ③ Reattach the back lid.

# Wood screw Holder for remote control Ensure the correct polarity when

### Setting to avoid mixed communication

Pressing | ACL | and | AIR FLOW | button at the same time or inserting the batteries with pressing AIR FLOW button will customize the signal.

### Setting to disable the Auto mode operation

VRF system (except heat recovery 3-pipe system) cannot be operated in Auto mode. Make sure to set the remote control for the models so as not to be able to choose Auto mode.

Pressing ACL and MODE button at the same time or inserting the batteries with pressing MODE button will make auto mode operation.

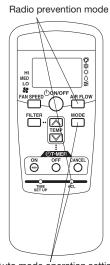
### **ATTENTION**

When the batteries are removed, the setting will return to the default setting.

Please make sure to reset it when the batteries are replaced.

### **∆**Caution

Instruct the customer to set the mentioned above when replacing the batteries. (How to set is also mentioned in the user's manual attached on the air-conditioner.)



Auto mode operation setting

## **5** Receiver

### Control plural indoor units with one remote control

Up to 16 indoor units can be connected.

- ① Connect indoor units with each other with 2-core wires. As for size, refer to the following note.
- 2 The receiver wires must be connected only with the indoor unit that will be operated by the remote control directly.
- ③ Use the rotary SW1 and SW2 provided on the indoor unit PCB (Printed circuit board) to set unique remote control communication address avoiding duplication.

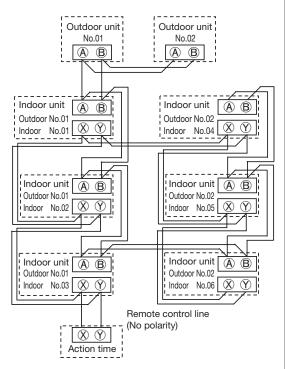
Restrictions on the thickness and length of wire (Maximun total extension 600m.)

Standard

Within  $100m \times 0.3$   $mm^2$  Within  $200m \times 0.5$   $mm^2$  Within  $300m \times 0.75$   $mm^2$  Within  $400m \times 1.25$   $mm^2$  Within  $600m \times 2.0$   $mm^2$ 

After a unit is energized, it is possible to display an indoor unit address by pressing AIR CON No. button on the remote control unit.

Press the ▲ or ▼ button to make sure that all indoor units connected are displayed in order.



### Wireless remote control unit operation distance

① Standard signal receiving range

### [Condition]

Illuminance at the receiver area: 360 lux. (When no lighting fixture is located within 1m of indoor unit in an ordinary office)

Wireless remote control unit

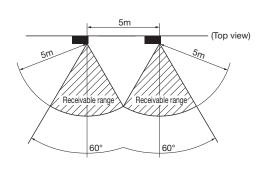
Within 5m

(Top view)

② Points for attention in connecting a plural number of indoor units

### [Condition]

Illuminance at the receiver area: 360 lux.



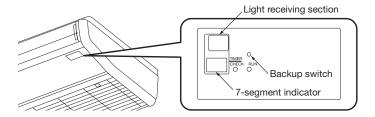
## ⑤ Receiver (continued)

### Backup button

A backup switch is provided on the receiver section of the panel surface.

When operation from the wireless remote control unit is not possible (due to flat batteries, a mislaid unit, a unit failure), you can use it as an emergency means. You should operate this switch manually.

- (1) If pressed while the air-conditioner is in a halt, it will cause the air-conditioner to start operation in the automatic mode (in the case of cooling only, in the cooling mode).
  - Wind speed: Hi fan, Temperature setting: 23°C, Louver: horizontal
- (2) If pressed while the air-conditioner is in operation, it will stop the air-conditioner.



### Cooling test run operation

- After safety confirmation, turn on the power.
- Transmit a cooling operation command with the wireless remote control unit, while the backup switch on the receiver is depressed.
- If the backup switch on the receiver is pressed during a test run, it will end the test run.
- If you cannot operate the unit properly during a test run, please check wiring by consulting with inspection guides.

### How to read the two-digit display

A two-digit indicator (7-segment indicator) is provided on the receiver section.

- (1) An indication will be displayed for one hour after power on.
- (2) An indication appears for 3.5 seconds when a Stop command is sent from the wireless remote control unit while the air-conditioner is not running.
- (3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.
- (4) When there are no error records to indicate, addresses are displayed for all of the connected units.
- (5) When there are some error records remaining, the error records are displayed.
- (6) Error records can be cleared by transmitting a "Stop" command from the wireless remote control unit, while the backup switch is depressed.

### (3) FDU, FDUM, FDF series (RCN-KIT3-E)

Following functions of indoor unit series are not able to be set with this wireless remote control (RCN-KIT3-E).

1. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

Read this manual together with the installation manual attached to the air conditioner

PJZ012D060

### **⚠ WARNING**

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.

  Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power source is turned off when electric wiring work
- Otherwise, electric shock, malfunction and improper running may occur.



### **⚠** CAUTION

- DO NOT install the wireless kit at the following places in order to avoid malfunction.
- (1)Places exposed to direct sunlight (2)Places near heat devices
- (3)-High humidity places (4)-Hot surface or cold surface enough to generate condensation (5)-Places exposed to oil mist or steam directly
- (6)Uneven surface
- (7) Places affected by the direct airflow of the AC unit.
- DO NOT leave the wireless kit without the cover.
- In case the cover needs to be detached, protect the receiver with a packaging box or bag in order to keep it away from water and dust.



## Attention

- Instruct the customer how to operate it correctly referring to the instruction manual.
   User's manual of a wireless remote control is attached to a indoor unit or a outside unit.
   Read this together with a manual attached to this kit.

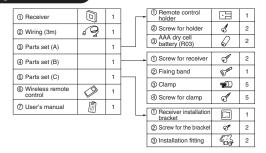
## 1 Accessories

Please make sure that you have all of the following accessories

(8)Places where the receiver is influenced by the fluorescent lamp (especially in verter

(10)Places where some object may obstruct the

communication with the remote control

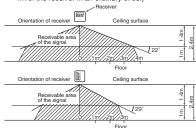


### 2 Wireless remote control's operable area

### (1) When installed on ceiling

1 Standard reachable area of the signal

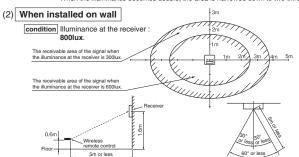
condition Illuminance at the receiver: 300lux (when no lighting is installed within 1m of the receiver in an ordinary of ce.)



(2) Correlation between illuminance at the receiver and reachable area of the signal in a plain

condition Correlation between the reachable area of the signal and illuminance at the receiver when the remote control is operated at 1.1m high under the condition of ceiling height of 2.5m.

When the illuminance becomes double, the area is narrowed down to two third



### 3 How to install the receiver

The following two methods can be used to install the receiver onto a ceiling or a wall. Select a method according to the installation position.

### <Installation position>

- (A) Direct installation onto the ceiling with wood screws.
- (B) Installation with accessory's bracket

### (1) Drilling of the ceiling (ceiling opening)

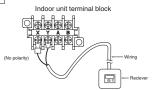
Drill the receiver installation holes with the following dimensions at the ceiling position where wires can be connected.

| (A) Direct installation onto the ceiling with wood screws. | 88mm(H)×101mm(W)  |          |
|--|-------------------|----------|
| (B) Installation with enclosed bracket.                    | 108mm(H)×108mm(W) | <u> </u> |
|  |                   | l w      |

### (2) Wiring connection of receiver

### Caution

Do not connect the wiring to the power source of the terminal block If it is connected, printed board will be damaged.

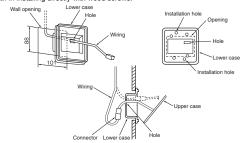


### (3) Installation of the receiver

Remove the screw on the side of the receiver and sprit it into the upper case and lower case.Install the receiver with one of the two installation methods (A) or (B) shown below

### (A) Direct installation onto the ceiling with screws

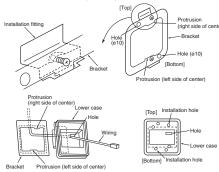
Use this installation method when the ceiling is wooden, and there is no problem for strength in installing directly with wood screws



- 1) Put through the wiring from the back side to the hole of the lower case.
- ②Fit the lower case into the ceiling opening. Make sure that the clearance between the convex part of the back of the lower case and the ceiling opening must be as equal as possible on both sides.
- 3Using the two installation holes shown above, fix the lower case onto the ceiling with the enclosed wood screws. (The other four holes are not used.)
- (4) Connect the wiring with the wiring from the upper case by the connector
- 5)Take out the connector to the backside from the hole of the lower case putting through the wiring at 1.
- 6Fit the upper case and the lower case, and tighten the screws.

### (B) Installation with enclosed bracket

Use this method when installaing onto a gypsum board (7 to 18mm), etc.



- ①Catch the two protrusion of the enclosed bracket onto the tting as shown above, and temporarily fix with the screws. (The bracket has an up/down and front/back orientation. Con rm the top/bottom protrusion positions and the positional relation of the ø 10 holes on the bracket and the installation hole on the lower case with the above drawing.)
- ②Insert the end of the installation tting into the back of the ceiling from the opening, and tighten the screws to fix the bracket onto the ceiling.
- ③Pass the wiring from the rear side through the hole on the lower case.④Fit the lower case onto the bracket, and fix the lower case to the bracket using the two installation holes shown above. (The other four holes are not used.)
- ⑤Follow step ① to ⑥ for (A) to complete the installation.

### 4 Remote control

### Installation of the control holder

DO NOT install it on the follow

- 1) Places exposed to direct sunlight 2) Places near heat devices

- 3) High humidity places
  4) Hot surface or cold surface enough to generate condensation
  5) Places exposed to oil mist or steam directly
- 6) Uneven surface

### Installation tips for the remote control holder

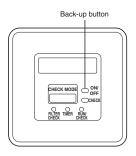
- · Adjust and keep the holder upright.
- . Tighten the screw to the end to avoid scratching the remote control.
- DO NOT attach the holder to plaster wall.

### How to insert batteries

- 1 Detach the back lid
- 2 Insert the batteries. (two AAA batteries)
- 3 Reattach the back lid.

### **5** Cooling test run operation

- •After safety con rmation, turn on the power.
- •Transmit a cooling operation command with wireless remote control, while the backup button on the receiver is pressed.
- •If the backup button on the receiver is pressed during a test run, it will end the test run.
- •If you cannot operate the unit properly during a test run, please check by consulting with inspection guides on the wiring diagram of outdoor units.



### 6 Setting of wireless remote control and receiver

### (A) Methods of avoiding the malfunction due to the mixed communication

Do both procedures ① and ②

This setting is to avoid the mixed communication with other household electric appliances or the mixed communication when two receivers are located closely

①Setting change of the wireless remote control

Pressing ACL and AIRFLOW button at the same time or inserting the batteries with pressing AIRFLOW button will customize the signal.

Note \*When the batteries are removed, the setting will return to the default setting. Make sure to reset it when the batteries are replaced.

2 Setting the PCB of the receiver

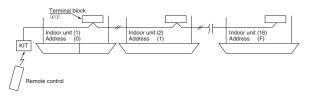
### † ●PCB of the receiver HI NED SEED ON/OFF AIR FLOW 833 64 1 C12 C13 FILTER MODE TEMP -SW1-1 (Customized signal SW1-4 setting to avoid (Auto restart) mixed communication) SW1-2 (Receiver master/slave setting) Customized signal setting to : Normal : Remote avoid mixed communication : Master : Slave SW1-2 ON : Valid OFF : Invalid Auto restart : Default setting

### (B) Control plural indoor units with one remote control

Up to 16 indoor units can be connected

①Connect the XY terminal with 2-core wire As for the size, refer to the following note.

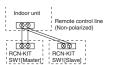
2) For Packaged air-conditioner series, set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate Restrictions on the thickness and length of wire (Maximum total extension 600m.) within 100m x 0.3 mm<sup>2</sup>
Within 200m x 0.5 mm<sup>2</sup>
Within 200m x 0.5 mm<sup>2</sup>
Within 300m x 0.75mm<sup>2</sup>
Within 400m x 1.25mm<sup>2</sup>
Within 600m x 2.0 mm<sup>2</sup> Standard



③For VRF series, set the indoor unit address with SW1, SW2 and SW5-2 on the indoor unit PCB from [000] to [127] so as not to duplicate

### (C) Master/Slave setting when using plural remote control

Up to two receivers can be installed in one indoor unit group.



| Switch  | Setting | Function |
|---------|---------|----------|
| SW1-2   | ON      | Master   |
| 3VV 1-2 | OFF     | Slave    |

### (D) Change setting of auto mode operation

Auto mode operation is prohibited to be selected for KX models (except for KXR

Therefore be sure to change setting of remote control to disable the auto mode operation for these models according to the following procedure.

while pressing the MODE button, press the IACL switch, or while pressing the MODE button, insert the batteries to the remote control. Then the auto mode can be invalid. Attention

When the batteries are removed, it is returned to initial setting (Auto mode

Accordingly when replacing the batteries, be sure to perform the above operation

### (E) Change setting of fan speed

While pressing the FAN SPEED button, press the ACL switch, or while pressing the FAN SPEED button, insert the batteries to the remote control. Then the fan speed can be changed from 2-speed setting to 3-speed setting.

When changing fan speed setting of remote control, be sure to perform the same fan speed setting as that of the indoor unit model to be used.

When the batteries are removed, it is returned to initial setting (Fan speed setting

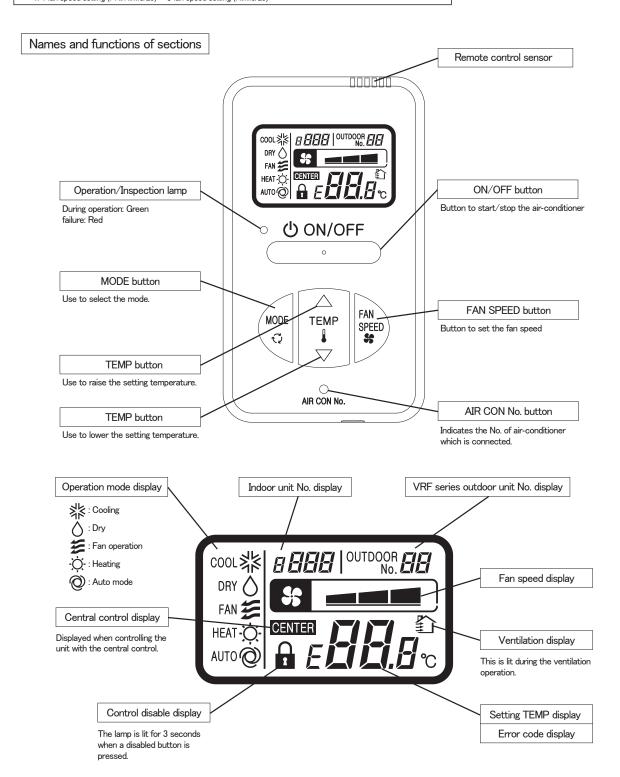
Accordingly when replacing the batteries, be sure to perform the above operation

## 13.2 Simple wired remote control (RCH-E3)

Notes

Following functions of indoor unit series are not able to be set with this simple wired remote control (RCH-E3).

1. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

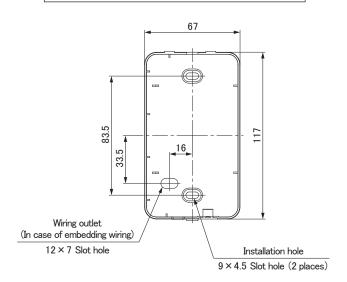


### Installation of remote control

- DO NOT install the remote control at the following places in order to avoid malfunction.
- (1) Places exposed to direct sunlight(2) Places near heat devices
- (4) Hot surface or cold surface enough to generate condensation (5) Places exposed to oil mist or steam directly
- (3) High humidity places
- (6) Uneven surface

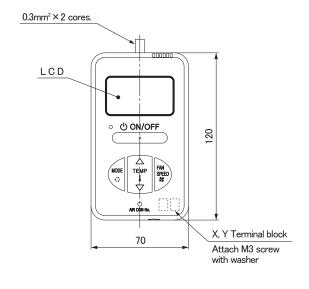
PJZ000Z272 🛕

### Remote control installation dimensions

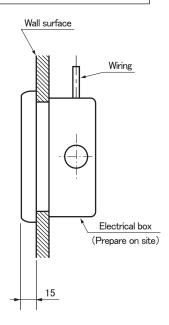


Note: Installation screw for remote control M4 Screw (2 pieces)

## In case of exposing wiring

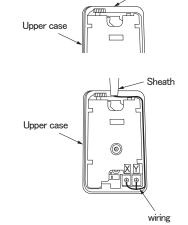


### In case of embedding wiring



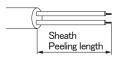
The remote control wiring can be extracted from the upper center. After the thin part in the upper side of the remote control upper case is scraped with a nipper or knife, remove burr with a file.

Thin part



The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



Unit:mm

## Wiring specifications

- (1) Wiring of remote control should use  $0.3 \text{mm}^2 \times 2$  core wires or cables. (on–site configuration)
- (2) Maximum prolongation of remote control wiring is 600m.

If the prolongation is over 100m, change to the size below.

But, the wiring in the remote control case should be  $0.3 \text{mm}^2$  (recommended) to  $0.5 \text{mm}^2.$ 

Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire

connecting section. Be careful about contact failure.

| Length      | Wiring thickness              |
|-------------|-------------------------------|
| 100 to 200m | 0.5mm² × 2 cores              |
| Under 300m  | 0.75mm <sup>2</sup> × 2 cores |
| Under 400m  | 1.25mm <sup>2</sup> × 2 cores |
| Under 600m  | 2.0mm <sup>2</sup> × 2 cores  |

Adapted to RoHS directive

## **Simple Remote Control Installation Manual**

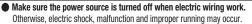
PJZ012D069

Read together with indoor unit's installation manual.

### **⚠WARNING**

Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.

Loose connection or hold will cause abnormal heat generation or fire.





### **⚠** CAUTION

- DO NOT install the remote control at the following places in order to avoid malfunction.
  - (1) Places exposed to direct sunlight
- (4) Hot surface or cold surface enough to generate condensation
- (2) Places near heat devices
- (5) Places exposed to oil mist or steam directly
- (3) High humidity places
- (6) Uneven surface



In case the upper cace needs to be detached, protect the remote control with a packaging box or bag in order to keep it away from water and dust.



| Accessories Remote control, wood screw ( $\phi$ 3.5 $\times$ 16) 2 pieces |   |
|---|---|
| Prepare on site   | Remote control cord (2 cores) (Refer to [2. Installation and wiring of remote control]) [In case of embedding cord] Electrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed) |

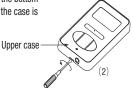
### 1. Installation procedure

### In case of embedding cord

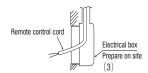
 Make certain to remove the screw on the bottom surface of the remote control.



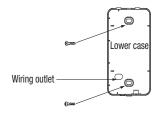
(2) Remove the upper case of the remote control. Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.

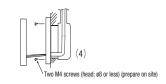


(3) Pre-bury the electrical box and remote control cord.



(4) Prepare two M4 screws (recommended length: 12 – 16mm), and install the lower case to the electrical box. Do not use a screw whose screw head is larger than the height of the wall around the screw hole.





- (5) Connect the remote control cord to the terminal block. Connect the terminals (X and Y) of the remote control and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)
- 6) Mount the upper case for restoring to its former state so as not to crimp the remote control cord, and secure with the removed screw.

### In case of exposing cord

 Make certain to remove a screw on the bottom surface of the remote control.



(2) Remove the upper case of the remote control. Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.

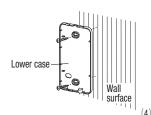


(3) The remote control cord can be extracted from the upper center.

After the thin part in the upper side of the remote control upper case is scraped with a nipper or knife, remove burr with a file.



(4) The lower case of the remote control is mounted to a flat wall with two accessory wood screws.



(5) Connect the remote control cord to the terminal block. Connect the terminals (X and Y) of the remote control and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)

The wiring route is as shown in the right.



The wiring in the remote control case should be  $0.3~\mathrm{mm}^2$  (recommended) to  $0.5~\mathrm{mm}^2$  at maximum.

Further, peel off the sheath.

The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



- 6) Mount the upper case for restoring to its former state so as not to crimp the remote control cord, and secure with the removed screw.
- (7) In the case of exposing installation, secure the remote control cord to the wall surface with a cord clamp so as not to loosen the remote control cord.

### 2. Installation and wiring of remote control

- (1) Wiring of remote control should use 0.3mm<sup>2</sup> × 2 core wires or cables. (on-site configuration)
- (2) Maximum prolongation of remote control wiring is 600 m.

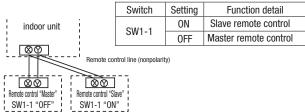
If the prolongation is over 100m, change to the size below.

But, the wiring in the remote control case should be 0.3mm² (recommended) to 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire

connecting section. Be careful about contact failure.

### 3. Master/ slave setting when more than one remote control are used

Up to two remote controls can be connected to one unit (or one group) of indoor unit.

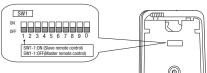


(2) Set the switch SW1-1 of the slave remote control is "Slave" (ON). The factory default is set as "Master" (OFF).

(Note) • The remote control thermistor enabled setting can be set only to the master remote control.

• Install the master remote control at the position to detect room temperature.

• The air-conditioner operation follows the last operation of the remote control in case of the master / slave setting.



### 4. The indication when power source is supplied

At the time of turning the power source on, after the light is on for the first 2 seconds, the display becomes as shown below

The number displayed on the upper side of LCD in the remote control is the software number,

and this is not an error code.



### Software number

(The number in the left is one example. Another number may be shown.)

- (2) Then, "88.0 °C" blinks on the remote control until the communication between the remote control and the indoor unit is established.
- In the case of connecting one remote control with one unit (or one group) of indoor unit, make certain to set the master remote control (factory default). If the slave remote control is set, a communication cannot be established.
- If a state where the communication between the remote control and the indoor unit cannot be established continues about for 30 minutes, "E" is displayed. Confirm the wiring of the indoor unit and the outdoor unit and master/slave setting of the remote control

# E

### 5. Confirmation method for return air temperature

Return air temperature can be confirmed by the remote control operation.

Press AIR CON No. button for over 5 seconds.

"88" blinks on the temperature setting indicator.

("88" blinks for approximately 2 seconds while data are read.)



Then, the return air temperature is displayed.

(Example) return air temperature: "27 °C" (blinking)

(Note) For the return air temperature, in the normal case, the return air temperature of the indoor unit is displayed; however, in the case that the remote control thermistor is effective, detected temperature by the remote control thermistor is displayed.

(2) Press **(b) ON/OFF** button. End.

[In the case that the remote thermistor is ineffective and plural indoor units are connected to one remote control 1

Press AIR CON No. button for over 5 seconds.

indoor unit No. indicator: "U 000" (blinking) (Among the connected indoor units, the lowest number is displayed.)

Press  $\boxed{\text{TEMP}}$  or  $\boxed{\text{TEMP}}$  button. Select the indoor unit No.



Press  $\bigcirc$  MODE button.

Dectder the indoor unit No.

(Example) indoor unit No. indicator: "U 000"

"88" blinks on the temperature setting indicator. (blinking for approximately 2 to 10 seconds while data is read) Then, the return air temperature is displayed. When AIR CON No. is pressed, return to the indoor unit selection display (example, "U 000").

Press 0 0N/0FF button. End.

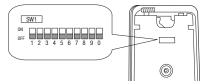
## 6. Function setting

Each function of the remote control and the indoor unit is automatically set to the initial setting, which is the standard use, on the occasion of connecting the remote control with the indoor unit. In the case of the standard use, the setting change is unnecessary. However, if you whould like to change the initial setting " , change the setting for only the item of the function number. Record the setting contents and stored them.

### (1) Function setting item by switch on PCB

| Switch No. | Setting | Setting detail Initial setting     |   |
|------------|---------|------------------------------------|---|
| SW1-1      | ON      | Slave remote control               |   |
| SW1-1      | 0FF     | Master remote control              | 0 |
| SW1-2      | ON      | Remote control thermistor enabled  |   |
| SW1-2      | 0FF     | Remote control thermistor disabled | 0 |
| SW1-3      | ON      | "MODE" button prohibited           |   |
| SW1-3      | 0FF     | "MODE" button enabled              | 0 |
| SW1-4      | ON      | "ON/OFF" button prohibited         |   |
| SW1-4      | 0FF     | "ON/OFF" button enabled            | 0 |

| Switch No.  | Setting | Setting detail                 | Initial setting |
|-------------|---------|--------------------------------|-----------------|
| CW1 F       | ON      | "TEMP" button prohibited       |                 |
| SW1-5 OFF   |         | "TEMP" button enabled          | 0               |
| SW1-6       | ON      | "FAN SPEED" button prohibited  | * Note 1        |
| 3W1-0       | 0FF     | "FAN SPEED" button enabled     | * Note 1        |
| SW1-7       | ON      | Auto restart function enabled  |                 |
| SW1-7       | 0FF     | Auto restart function disabled | 0               |
| SW1-8, 9, 0 | ON      | Not used                       |                 |
| 3W1-0, 9, U | 0FF     | Not used                       |                 |



- As for the slave remote control, function setting is impossible other than SW1-1.
- In the indoor unit with only one fan speed, "FAN SPEED" button cannot be enabled.

### (2) Function setting item by button operation

| Classification | Function No. | Function  | Setting No. | Setting                                  | Initial setting |  |
|----------------|--------------|---|-------------|--|-----------------|--|
|                |              |   | 01          | Fan speed: three steps                   | ፠ Note 1        | The fan speed is three steps, * a = = - * a = - * a .  |
|                | 01           | Indoor unit fan speed   | 02          | Fan speed: two steps (Hi-Lo)             | ※ Note 1        | The fan speed is two steps, 💸 ■■■ - 💸 ■ .  |
|                | 01           | mador um ran specu  | 03          | Fan speed: two steps (Hi-Me)             |                 | The fan speed is two steps, ♦ ■■■ - ♦ ■■.  |
|                |              |   | 04          | Fan: one step                            | ※ Note 1        | The fan speed is fixed to one step.  |
|                |              |   | 01          | Remote control thermistor: no offset     | 0               |  |
|                |              |   | 02          | Remote control thermistor: +3.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +3.0°C.  |
|                |              | Remote control  | 03          | Remote control thermistor: +2.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +2.0°C.  |
|                | 03           | thermistor at the time  | 04          | Remote control thermistor: +1.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +1.0°C.  |
|                |              | of cooling  | 05          | Remote control thermistor: -1.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offset temperature at -1.0°C.  |
|                |              |   | 06          | Remote control thermistor: -2.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offset temperature at -2.0°C.  |
| Remote         |              |   | 07          | Remote control thermistor: -3.0 °C       |                 | At the time of cooling, in the case of remote control thermistor enabled, offsett temperature at -3.0°C.   |
| control        |              |   | 01          | Remote control thermistor: no offset     | 0               |  |
| function       |              |   | 02          | Remote control thermistor: +3.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at +3.0°C.  |
|                |              | Remote control  | 03          | Remote control thermistor: +2.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at +2.0°C.  |
|                | 04           | thermistor at the time  | 04          | Remote control thermistor: +1.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at +1.0°C.  |
|                |              | of heating  | 05          | Remote control thermistor: -1.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at -1.0°C.  |
|                |              |   | 06          | Remote control thermistor: -2.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at -2.0°C.  |
|                |              |   | 07          | Remote control thermistor: -3.0 °C       |                 | At the time of heating, in the case of remote control thermistor enabled, offset temperature at -3.0°C.  |
|                |              |   | 01          | No ventilator connection                 | 0               |  |
|                | 05           | Ventilation setting   | 02          | Ventilator links air-conditioner         |                 | In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit. |
|                | 06           | "Auto" operation  | 01          | "Auto" operation enabled                 | ※ Note 1        |  |
|                | 00           | setting   | 02          | "Auto" operation disabled                | ፠ Note 1        | "Auto" operation disabled  |
|                | 07           | Operation permission/<br>prohibition         01<br>02         Disabled<br>Enabled | 0           |  |                 |  |
|                | 07           |   | 02          | Enabled                                  |                 | Operation permission/prohibition control is enabled.   |
|                | 08           | External input  | 01          | Level input                              | 0               |  |
|                | 08           | External input  | 02          | Pulse input                              |                 |  |
|                |              |   | 01          | Standard                                 | Note2           |  |
|                | 09           | Fan speed setting   | 02          | High speed 1                             | Note2           |  |
|                |              |   | 03          | High speed 2                             | Note2           |  |
|                |              |   | 01          | No remaining operation                   | 0               | After cooling stopped, no fan remaining operation  |
|                | 10           | Fan remaining operation at the time   | 02          | 0.5 hours                                |                 | After cooling stopped, fan remaining operation for 0.5 hours   |
|                | 10           | of cooling  | 03          | 1 hour                                   |                 | After cooling stopped, fan remaining operation for 1 hour  |
|                |              | of cooling  | 04          | 6 hours                                  |                 | After cooling stopped, fan remaining operation for 6 hours   |
|                |              |   | 01          | No remaining operation                   | 0               | After heating stopped or after heating thermostat OFF, no fan remaining operation  |
|                |              | Fan remaining   | 02          | 0.5 hours                                |                 | After heating stopped or after heating thermostat OFF, fan remaining operation for 0.5 hours   |
|                | 11           | operation at the time of heating  | 03          | 2 hours                                  |                 | After heating stopped or after heating thermostat OFF, fan remaining operation for 2 hours   |
| Indoor unit    |              | of ficating   | 04          | 6 hours                                  |                 | After heating stopped or after heating thermostat OFF, fan remaining operation for 6 hours   |
| function       |              |   | 01          | No offset                                | 0               |  |
| IUIICUOII      |              | Setting temperature   | 02          | Setting temperature offset + 3.0 °C      |                 | The setting temperature at the time of heating is offset by +3.0 °C.   |
|                | 12           | offset at the time of heating   | 03          | Setting temperature offset + 2.0 °C      |                 | The setting temperature at the time of heating is offset by +2.0 °C.   |
|                |              | licauliy  | 04          | Setting temperature offset + 1.0 °C      |                 | The setting temperature at the time of heating is offset by +1.0 °C.   |
|                |              |   | 01          | Low fan speed                            | * Note 1        | At the time of heating thermostat OFF, operate with low fan speed.   |
|                |              |   | 02          | Setting fan speed                        |                 | At the time of heating thermostat OFF, operate with the setting fan speed.   |
|                | 13           | Heating fan controller  | 03          | Intermittent operation                   | * Note 1        | At the time of heatingr thermostat OFF, intermittently operate.  |
|                |              |   | 04          | Fan off                                  |                 | At the time of heating thermostat OFF, a fan will be stopped.  When the remote control thermistor is enabled, automatically set to "Fan off". Do not set at the time of the indoor unit thermistor.  |
|                |              |   | 01          | No offset                                | 0               |  |
|                |              |   | 02          | Return air temperature offset +2.0 °C    | <u> </u>        | Offset the return air temperature of the indoor unit by +2.0 °C.   |
|                |              |   | 03          | Return air temperature offset +1.5 °C    |                 | Offset the return air temperature of the indoor unit by +1.5 °C.   |
|                | 14           | Return air temperature  | 04          | Return air temperature offset +1.0 °C    |                 | Offset the return air temperature of the indoor unit by +1.0 °C.   |
|                |              | offset -  | 05          | Return air temperature offset -1.0 °C    |                 | Offset the return air temperature of the indoor unit by -1.0 °C.   |
|                |              |   | 06          | Return air temperature offset -1.5 °C    | <u> </u>        | Offset the return air temperature of the indoor unit by -1.5 °C.   |
|                |              |   | Un          | r Return air temperature offset - 1.5 °C | 1               | TUISELINE FEIUM AIT TEMPERATURE OF THE INDOOR WHILDY - 1.5 °C.   |

Note 1: The symbol " \* " in the initial setting varies depending upon the indoor unit and the outdoor unit to be connected, and this is automatically determined as follows:

| automatically determined as follows: |                          |                               |  |  |  |  |
|--------------------------------------|--------------------------|-------------------------------|--|--|--|--|
| Swith No.<br>Function No.            | Function                 |                               | Product model  |  |  |  |
|                                      | "FAN SPEED"              | "FAN SPEED" button prohibited | Product model whose indoor fan speed is only one step            |  |  |  |
|                                      |                          | "FAN SPEED" button enabled    | Product model whose indoor fan speed is two steps or three steps |  |  |  |
|                                      |                          | Fan speed: three steps        | Product model whose indoor unit fan speed is three steps         |  |  |  |
| Remote control function 01           | Indoor unit fan<br>speed | Fan speed: two steps (Hi-Lo)  | Product model whose indoor unit fan speed is two steps           |  |  |  |
|                                      |                          | Fan speed: two steps (Hi-Me)  |  |  |  |  |
|                                      |                          | Fan: one step                 | Product model whose indoor unit fan speed is only one step       |  |  |  |
| Remote control function 06           | "Auto" operation         | "Auto" operation enabled      | Product model where "Auto" mode is selectable                    |  |  |  |
| nemote control function of           | setting                  | "Auto" operation disabled     | Product model without "Auto" mode                                |  |  |  |
| Indoor unit function 13              | Heating fan              | Low fan speed                 | Product model except FDUS  |  |  |  |
| muoor umit idilcuon 13               | control                  | Intermittent operation        | FDUS   |  |  |  |

Note 2: Fan speed of "High speed" setting

| Fan speed setting | Indoor unit fan speed setting |                  |                     |  |  |
|-------------------|-------------------------------|------------------|---------------------|--|--|
| ran speed setting | St a al al - St a al - St a   | \$0 mm m - \$0 m | \$6 m m M - \$6 m m |  |  |
| Standard          | Hi — Mid — Lo                 | Hi — Lo          | Hi — Mid            |  |  |
| High speed 1 · 2  | UHi — Hi — Mid                | UHi — Mid        | UHi — Hi            |  |  |

Initial setting of some indoor unit is "High speed".

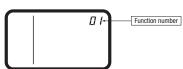
Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.

But only master indoor unit is received the setting change of indoor unit function "07 Operation permission/prohibition" and "08 External input".

### 7. How to set functions by button operation

(1) Stop air-conditioning, and simultaneously press AIR CON NO. and T MODE buttons at the same time for over three seconds.

The function number "01" blinks in the upper right.

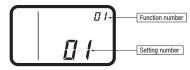


- (2) **Press TEMP** or **TEMP button.** Select the function number.
- (3) Press NODE button.
  Decide the function number.

### (4) [In the case of selecting the remote control function (01-06)]

 $\ensuremath{\bigcirc}$  The current setting number of the selected function number blinks (Example)

Function number: "01" (lighting) Setting number: "01" (blinking)



- ② Press TEMP△ or TEMP▽ button. Select the setting number.
- 3 Press MODE button.

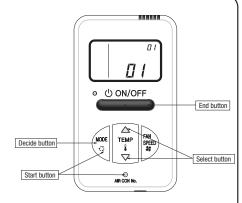
The setting is completed.

Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted. (Example)

Function number: "01" (lighting for 3 to 20 seconds) Setting number: "01" (lighting for 3 to 20 seconds)



Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).



### [In the case of selecting the indoor unit function (07-14)]

① "88" blinks on the temperature setting indicators.

(blinking for approximately 2 to 10 seconds while data are read)

After that, the current setting number of the selected function number blinks. (Example)

Function number: "07" (lighting) Setting number: "01" (blinking)

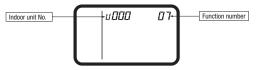


Proceed to ② . [Note]

a. In the case of connecting one remote control to plural indoor units, the display will be as follows:

Indoor unit No. display: "U 000" (blinking)

(Display the lowest number among the connected indoor units.)



b. Press TEMP△ or TEMP▽ button.

Select the indoor unit No. to be set.

If "U ALL" is selected, the same setting can be set to all units.

c. Press MODE button.

Decide the indoor unit No.

"88" blinks on the temperature setting indicators. (blinking for 2 to 10 seconds while data are read)

When  $\overline{\mbox{AIR CON NO.}}$  button is pressed, go back to the indoor unit selection display (for example, "U 000" blinking).

② Press TEMP△ or TEMP▽ button.

Select the setting number

### ③ Press **₹ MODE** button.

The setting is completed.

Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. are transmitted.

(Example)

Indoor unit No.: "U 000" (lighting for 3 to 20 seconds) Function number: "07" (lighting for 3 to 20 seconds) Setting number: "01" (lighting for 3 to 20 seconds)



Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).

(5) **Press ON/OFF button.** The setting is completed.

• Even if ON/OFF button is pressed during setting, the setting is ended. However, any details where the setting has not been completed will be ineffective.

• The setting contents are stored in the controller, and even if the power failure occur, this will not be lost.

[Confirmation method for current setting]

According to the operation, the "setting number" displayed first after selecting "function number" and pressing \(\bar{\mathcal{C}}\) MODE button is the currently set content. (However, in the case of selecting "U ALL" (all units), the setting number of the lowest number among the indoor units is displayed.)

### 13.3 Filter kit (FDUM series)

PJZ012D076A

This manual contains installation points and operating instructions for the filter kit manufactured by MHI. Carry out the work following the instructions below.

This manual also contains information on the usage after installation, so keep this manual properly with USER'S MANUAL provided with the indoor unit.

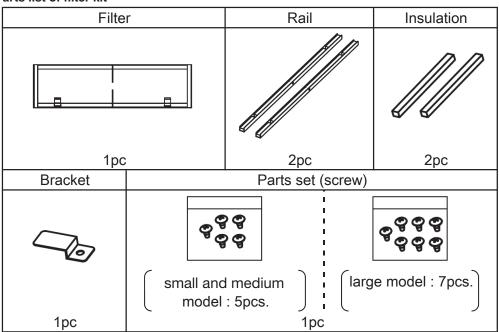
# ⚠ CAUTION

- · After unpacking, carry out this work on the ground.
- Do not carry out the work during operation, or there is a danger of being entangled in the rotating parts and getting injured.
- · Clean the air filter regularly.
- Be sure to entrust qualified serviceman to performance on the air filter.
- Be sure to cut off the power and stop the unit before performing maintenance.

### (1) Table of filer kit parts No. and corresponding object models

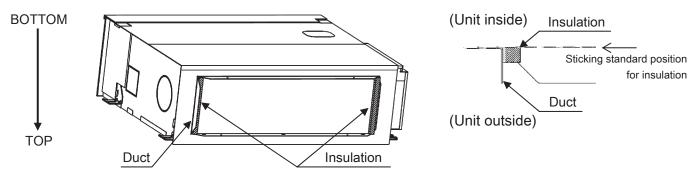
|             | Small model | Medium model | Large model |
|-------------|-------------|--------------|-------------|
| Single type | 40, 50      | 60, 71       | 100 - 140   |
| Multi type  | 22 - 56     | 71, 90       | 112 - 160   |
| Filter Kit  | UM-FL1EF    | UM-FL2EF     | UM-FL3EF    |

### (2) Parts list of filter kit

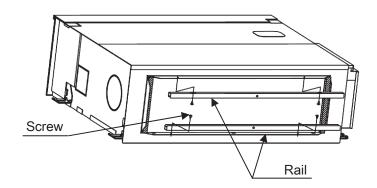


### (3) Installation Points

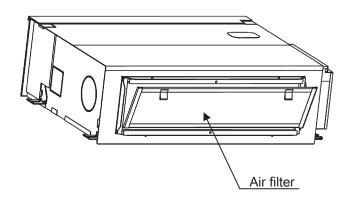
(a) Stick the insulation on both inner sides of the duct, leaving no space up and down.



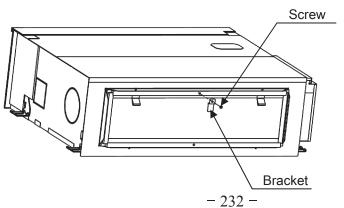
- (\*) After unpacking, bottom side of the unit is located at the upper side.
- (b) Install the rail on both inner sides of the duct with the screw.

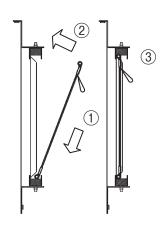


(c) Install the air filter on the rails.



(d) Install the bracket on the rail with the screw.





Installation procesure

(\*\*) When the unit is installed, bottom side of the unit is located at the lower side.

### 13.4 Interface kit (SC-BIKN-E)

### RKZ012A088B

### Accessories included in package

Be sure to check all the accessories included in package.

| No. | Part name   |   |  |  |
|-----|---|---|--|--|
| 1   | Indoor unit's connection cable (cable length: 1.8m)                     |   |  |  |
| 2   | Wood screws (for mounting the interface: ø4x 25)                        |   |  |  |
| 3   | Tapping screws (for the cable clump and the interface mounting bracket) |   |  |  |
| 4   | Interface mounting bracket  | 1 |  |  |
| (5) | Cable clamp (for the indoor unit's connection cable)                    | 1 |  |  |
| 6*  | CNT terminal connection cable (total cable length: 0.5m)                | 1 |  |  |

\* SC-BIKN-EA only

### Safety precautions

Before use, please read these Safety Precautions thoroughly before installation.

• All the cautionary items mentioned below are important safety related items to be taken into consideration, so be sure to observe them at all times.

Warning Incorrect installation could lead to serious consequences such as death, major injury or environmental destruction.

Symbols used in these precautions



Always go along these instruction.

After completed installation, carry out trial operation to confirm no anomaly, and ask the
user to keep this installation manual in a good place for future reference.

## 



●Installation must be carried out by a qualified installer.

If you install it by yourself, it may cause an electric shock, fire and personal injury, as a result of a system malfunction.

● Install it in full accordance with the instruction manual.

Incorrect installation may cause an electric shock, fire and personal injury.

 Electrical work must be carried out by a qualified electrician in accordance with the technical standard for electrical equipment, the indoor wiring standard and this instruction manual.

Incorrect installation may cause an electric shock, fire and personal injury.

• Use the specific cables for wiring. And connect all the cables to terminals or connectors securely and clamp them with cable clamps in order for external forces not to be transmitted to the terminals directly.

Incomplete connection may cause malfunction, and lead to heat generation and fire.

Use the original accessories and specified components for installation.
If the parts other than those prescribed by us are used, it may cause an electric shock, fire and sersonal injury.

## Connecting the indoor unit's connection cable to the interface

①Remove the upper case of the interface.

Remove 2 screws from the interface casing before removal of upper casing.

②Connect the indoor unit's connection cable to the interface.

 Connect the connector of the indoor unit connection cable to the connector on the interface's circuit board.

③Fix the indoor unit's connection cable with the cable clamp.

• Cable can be brought in from the top or from the back.

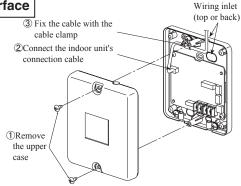
• Cut out the punch-outs for the connection cables running into the casing with cutter.

(4) Connect the indoor unit's connection cable to the indoor control PCB.

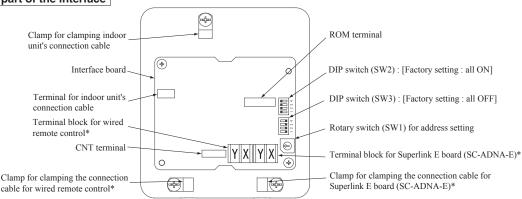
• Connect the indoor unit's connection cable to the indoor control PCB securely

 Clamp the connection cable to the indoor control box securely with the cable clamp provided as an accessory.

 Regarding the cable connection to the indoor unit, refer to the instruction manual for indoor unit.



### Name of each part of the interface



\*Either the connection cables of Superlink E board (SC-ADNA-E) or of wired remote control is connectable

|         |        |                                    | *                             | ,       |  |                             |
|---------|--------|------------------------------------|-------------------------------|---------|--|-----------------------------|
|         | Switch | Setting                            | Function                      | Switch  | Setting                                      | Function                    |
|         | SW2-1  | ON**                               | CNT level input               | SW2-3   | ON**   | External input (CNT input)  |
| SW2-1   | OFF    | CNT Pulse input                    | 3 W 2-3                       | OFF     | Operation permission/prohibition (CNT input) |                             |
|         | SW2-2  | ON**                               | Wired remote control : Enable | SW2-4   | ON**   | Annual cooling : Enable***  |
| 3 W 2-2 |        | OFF Wired remote control : Disable |                               | 5 W Z-4 | OFF  | Annual cooling : Disable*** |

\*\* Factory setting

\*\*\* Indoor fan control at low outdoor air temperature in cooling

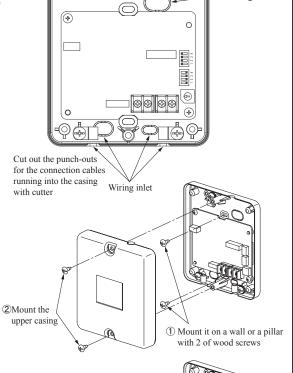
Wiring inlet

### Installation of the interface

- Install the interface within the range of the connection cable length (approximately 1.3m) from the indoor unit.
- Be sure not to extend the connection cable on site. If the connection cable is extended, malfunction may occur.
- Fix the interface on the wall, pillar or the like.
- DO NOT install the interface and wired remote control at the following places.
  - OPlaces exposed to direct sunlight
  - OPlaces near heating devices
  - OHigh humidity places
  - OSurfaces where are enough hot or cold to generate condensation
  - OPlaces exposed to oil mist or steam directly
  - OUneven surface

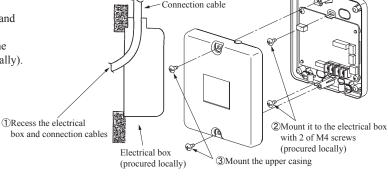
### Mounting the interface directly on a wall

- ①Mount the lower casing of the interface on a flat surface with wood screws provided as standard accessory.
- 2 Mount the upper casing.



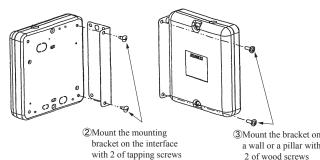
### Recessing the interface in the wall

- ①Recess the electrical box (procured locally) and connection cables in the wall.
- ②Mount the lower casing of the interface to the electrical box with M4 screws (procured locally).
- 3 Mount the upper casing.



### Mounting the interface with the mounting bracket

- ①Mount the mounting bracket to the interface with tapping screws provided as standard accessory.
- ②Mount the mounting bracket on wall or the like with wood screws provided as standard accessory.
- 3Mount the mounting bracket to a wall surface, etc. using the wood screws provided.



### Installation check items

- ☐ Are the connection cables connected securely to the terminal blocks and connectors?
- ☐ Are the thickness and length of the connection cables conformed with the standard?

### **Functions of CNT connector**

Function

Output 1 Operation output

Output 2 Heating output

Output 4 | Malfunction output

Output 3 Compressor operation output

Output

It is available to operate the air-conditioning unit and to monitor the operation status with the external control unit (remote display) by sending the input/output signal through CNT connector on the indoor control PCB.

Content

During air-conditioner operation

During heating operation

During anomalous stop

During compressor running

- ①Connect a external remote control unit (procured locally) to CNT terminal.
- ②In case of the pulse input, switch OFF the DIP switch SW2-1 on the interface PCB.
- ③When setting operation permission/prohibition mode, switch OFF the DIP switch SW2-3 on the interface PCB.

Output signal

ON/OFF

ON

ON

ON

ON

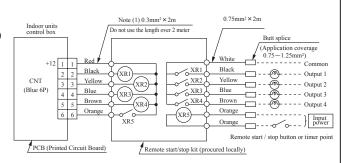
Relay

XRı

XR<sub>2</sub>

XR<sub>3</sub>

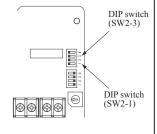
XR4



- ■XR<sub>1-4</sub> are for the DC 12V relay
- ●XR5 is a DC 12/24V or AC 220-240V relay
- ●CNT connector (local) maker, model

| Connector | Molex | 5264-06 |
|-----------|-------|---------|
| Terminals | Molex | 5263T   |

| Immust/                   |                    | SW2-1                               |             |         | SW2-3                                |                       |                       |                     | Operation by                   |
|---------------------------|--------------------|-------------------------------------|-------------|---------|--------------------------------------|-----------------------|-----------------------|---------------------|--------------------------------|
| Input/<br>Output Function | Function           | Setting                             |             | Setting | Input signal                         |                       | Content               | Air-<br>Conditioner | Operation by<br>Remote Control |
| Output                    |                    |                                     | Setting     | Setting | Level/Pulse                          | XR5                   | Content               | Conditioner         | remote control                 |
|                           |                    |                                     |             | ON*     |                                      | $OFF{\rightarrow}ON$  | External input        | ON                  |                                |
|                           | t External control | ON* Level input — OFF Pulse input — | UN*         | Level   | $\text{ON} {\rightarrow} \text{OFF}$ | External input        | OFF                   | Allowed             |                                |
|                           |                    |                                     | OFF         |         | $OFF{\rightarrow}ON$                 | Operation permission  | OFF                   |                     |                                |
| Input                     |                    |                                     |             |         | $\text{ON} {\rightarrow} \text{OFF}$ | Operation prohibition | OFF                   | Not allowed         |                                |
|                           | input              |                                     |             | ON*     | Pulse                                | OFF→ON                | OFF→ON External input | OFF→ON              |                                |
|                           |                    |                                     | Pulce innut |         |                                      |                       |                       | ON→OFF              | Allowed                        |
|                           |                    |                                     | OFF         | Level   | OFF→ON                               | Operation permission  | ON                    |                     |                                |
|                           |                    |                                     |             | Orr     | Level                                | ON→OFF                | Operation prohibition | OFF                 | Not allowed                    |

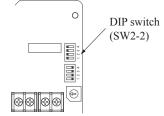


### Connection of Superlink E board

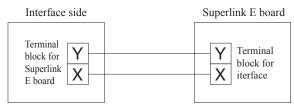
Regarding the connection of Superlink E board, refer to the instruction manual of Superlink E board. For electrical work, power source for all of units in the Superlink system must be turned OFF.

①Switch ON the DIP switch SW2-2 (Factory setting: ON) on the interface PCB.

Caution: Wireless remote control attached to the indoor unit can be used in parallel, after connecting the wired remote control. However, some of functions other than the basic functions such as RUN/STOP, Temperature Setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.



②Wiring connection between the interface and the Superlink E board.



| No. | Names of recommended signal wires                    |
|-----|--|
| 1   | Shielded wire  |
| 2   | Vinyl cabtyre round cord                             |
| 3   | Vinyl cabtyre round cable                            |
| 4   | Vinyl insulated wirevinyl sheathed cable for control |

Within 200 m  $0.5 \text{ mm}^2 \times 2 \text{ cores}$ Within 300 m  $0.75 \text{ mm}^2 \times 2 \text{ cores}$ Within 400 m  $1.25 \text{ mm}^2 \times 2 \text{ cores}$ Within 600 m  $2.0 \text{ mm}^2 \times 2 \text{ cores}$ 

3Clamp the connection cables with cable clamps.

<sup>\*</sup> Factory setting

DIP suitch

0

### Connection of wired remote control

Regarding the connection of wired remote control, refer to the instruction manual of wired remote control.

①Switch ON the DIP switch SW2-2 (Factory setting : ON) on the interface PCB.

Caution: Wireless remote control attached to the indoor unit can be used in parallel, after connecting the wired remote control. However, some of functions other than the basic functions such as RUN/STOP, Temperature Setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.

②Wiring connection between the interface and the wired remote control.

### Installation and wiring of wired remote control

- (A) Install the wired remote control with reference to the attached instruction manual of wired remote control.
- ⊕ 0.3mm² x 2-core cable should be used for the wiring of wired remote control.
- © Maximum length of wiring is 600m.

If the length of wiring exceeds 100m, change the size of cable as mentioned below.

100m-200m:  $0.5\text{mm}^2\times2$ -core, 300m or less:  $0.75\text{mm}^2\times2$ -core, 400m or less:  $1.25\text{mm}^2\times2$ -core, 600m or less:  $2.0\text{mm}^2\times2$ -core However, cable size connecting to the terminal of wired remote control should not exceed  $0.5\text{mm}^2$ . Accordingly if the size of connection cable exceeds  $0.5\text{mm}^2$ , be sure to downsize it to  $0.5\text{mm}^2$  at the nearest section of the wired remote control and waterproof treatment should be done at the connecting section in order to avoid contact failure.

- Don't use the multi-core cable to avoid malfunction.
- Except he wiring of wired remote control away from grounding (Don't touch it to any metal frame of building, etc.).
- © Connect the connection cables to the terminal blocks of the wired remote control and the interface securely (no polarity).
- 3Clamp the connection cables with cable clamps.

### Control of multiple units by a single wired remote control

Multiple units (up to 16) can be controlled by a single wired remote control. In this case, all units connected with a single wired remote control will operate under the same mode and same setting temperature.

- ①Connect all the interface with 2-core cables of wired remote control line.
- ②Set the address of indoor unit for remote control communication from "0" to "F" with the rotary switch SW1 on the interface PCB.
- 3After turning the power ON, the address of indoor unit can be displayed by pressing AIR CON button on the wired remote control.
  - Make sure all indoor units connected are displayed in order by pressing 

     or 

    button.

### Master/Slave setting wired when 2 of wired remote control are used

Maximum two wired remote control can be connected to one indoor unit (or one group of indoor units)

①Set the DIP switch SW1 on the wired remote control to "Slave" for the slave remote control. (Factory setting: Master)

O Caution: Remote control sensor is invalid.

• When using the wireless remote control in parallel with the wired remote control;

Since temperature setting range of wired remote control is different from that of wireless remote control, please adjust the setting range of wired remote control to be the same setting range of wireless remote control by following procedure. (The set temperature may not be displayed correctly on the wireless remote control, unless change of temperature setting range is done.)

Changing procedure of temperature setting range is as follows.

### How to set upper and lower limit of temperature sting range

- Stop the air-conditioner, and press (SET) and (MODE) button at the same time for 3 seconds or more.
  - The indication changes to "FUNCTION SET▼"
- 2. Press ▶ button once, and change to the "TEMP RANGE ▲" indication.
- 3. Press (SET) button, and enter the temperature range setting mode.
- Confirm that the "Upper limit ▼" is shown on the display.
- 5. Press (SET)button to fix.
- 6. ①Indication: "ⓑ∨∧ SET UP"→"UPPER 28°C ∨∧"
  - ②Select the upper limit value 30°C with temperature setting button △."UPPER30°C  $\lor$ " (blinking)
  - ③Press (SET) button to fix. "UPPER 30°C" (Displayed for two seconds)

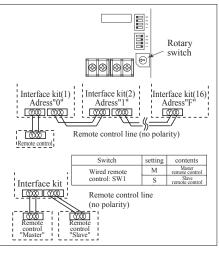
    After the fixed upper limit value displayed for two seconds, the indication will returm to "UPPER LIMIT ▼".
- 7. Press button once, "LOWER LIMIT ▲" is selected, press (SET) button to fix.

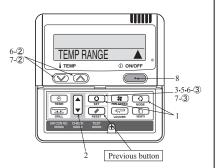
  ①Indication: "♠∨ ∧ SET UP" → "LOWER 20°C ∨ ∧"
  - ②Select the lower limit value 18°C with temperature setting button ☑."LOWER18°C ∧" (blinking)
  - ③Press (SET) button to fix. "LOWER 18°C" (Displayed for two seconds)

    After the fixed lower limit value displayed for two seconds, the indication will returm to "LOWER LIMIT▼"
- 8. Press ON/OFF button to finish.

Temperature setting range

| Mode                        | Temperature setting range |
|-----------------------------|---------------------------|
| Cooling, Heating, Dry, Auto | 18-30°C                   |





- It is possible to quit in the middle by pressing ON/OFF button, but the change of setting is incompleted.
- During setting, if pressing (RESET) button, it returns to the previous screen.

### 13.5 Superlink E board (SC-ADNA-E)

PJZ012D029F

- Read and understand the instructions completely before starting installation.
- Refer to the instructions for both indoor and outdoor units.

### Safety precautions

- Carefully read "Safety precautions" first, Follow the instructions for installation.
- Precautions are grouped into "Warning⚠" and "Caution⚠". The "Warningڝ" group includes items that may lead to serious injury or death if not observed. The items included
- in the "Caution not group also may lead to serious results under certain conditions. Both groups are crucial for safety installation. Read and understand them carefully.

  After installation, conduct the test operation of the device to check for any abnormalities. Describe how to operate the device to the customer following the installation instruction manual. Instruct the customer to keep this installation instruction for future reference.

### **∕**:\Warning

- This device should be installed by the dealer where you purchase the device or a licensed professional shop. If the device is incorrectly installed by the
- customer, it may result in electric shock or fire.

  Install the device carefully following the installation instruction. If the device is incorrectly installed, it may result in electric shock or fire.
- Use the accessory parts and specified parts for installation. If any parts that do not match the specifications are used, it may result in electric shock or fire.
- A person with the electrical service certification should conduct the service based on the "Technical standards for electrical facilities", "Electrical Wiring Code", and the installation instruction. If the work is done incorrectly, it may result in electric shock or fire.
- Wiring should be securely connected using the specified types of wire. No external force on the wire should be applied to any terminals. If a secure connection is not achieved, it may result in electric shock or fire.

### 1 Application

Indoor-to-outdoor three core communication specification type 3 (since

### Accessories

| SL E board      | Metal box  | Metal cover  | Screw for Ground |
|-----------------|--|--------------|------------------|
|                 | (0)  |              | M4×8L 2 pieces   |
| Pan head screws | Locking supports   | Binding band | Grommet          |
| ø4x8L 2 pieces  | To secure the print board and the metal box Made of nylon 4 pieces | 68           |                  |

### 3 Function

Allowing the center console SL1N-E, SL2N-E, and SL3N-AE/BE to control and monitor the commercial air conditioning unit.

### 4 Control switching

Settings can be changed by the switch SW3 on the SL E board as in the fol-

| Switch | Symbol | Switch        | Remarks   |
|--------|--------|---------------|---|
|        | 4      | ON            | Master  |
|        | '      | OFF (default) | Slave   |
|        |        | ON            | Fixed previous protocol   |
|        | 2      | OFF (default) | Automatic adjustment of Superlink protocol                                    |
| SW3    | 3      | ON            | Indicates the forced operation stop when abnormality has occurred.            |
|        | 3      | OFF (default) | Indicates the status of running/stop as it is, when abnormality has occurred. |
|        | 4      | ON            | The hundredth address activated "1"   |
|        | 4      | OFF (default) | The hundredth address activated "0"   |

### **⚠** Caution

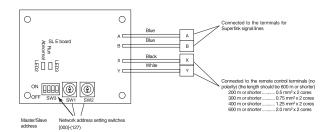
- Provide ground connection.
- The ground line should never be connected to the gas supply piping, the water supply piping, the lightning conductor rod, nor the telephone ground. If the grounding is improper, it may result in electric shock.
- Do not install the device in the following locations.
  - 1.Where there is mist/spray of oil or steam such as kitchens. 2.Where there is corrosive gases such as sulfurous acid gas.

  - 3. Where there is a device generating electromagnetic waves. These may interfere with the control system resulting in the device becoming uncontrollable.
  - 4. Where flammable volatile materials such as paint thinner and gasoline may exist or where they are handled. This may cause a fire.

### 5 Connection outline

Note for setting the address

- Set the address between 00 and 47 for the previous Superlink connection and between 000 and 127 for the new Superlink connection. (\*1)
- Do not set the address overlapping with those of the other devices in the network. (The default is 000)



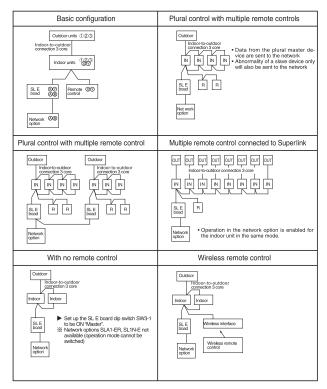
(\*1) Whether the actual link is either the new Superlink or the previous Superlink depends on the models of the connected outdoor and indoor units. Consult the agent or the dealer.

### Signal line specification

| Communication method         | Previous Superlink | New Superlink            |
|------------------------------|--------------------|--------------------------|
| Line type                    | MVVS               | MVVS                     |
| Line diameter                | 0.75 - 1.25mm²     | 0.75/1.25mm <sup>2</sup> |
| Signal line (total length)   | up to 1000m        | up to 1500/1000m (*2)    |
| Signal line (maximum length) | up to 1000m        | up to 1000m              |

- (\*2) Up to 1500 m for  $0.75 \text{ mm}^2$ , and up to 1000 m for  $1.25 \text{ mm}^2$ . Do not use 2.0 mm<sup>2</sup>. It may cause an error.
- (\*3) Connect grounding on both ends of the shielding wire. For the grounding method, refer to the section "6 Installation".

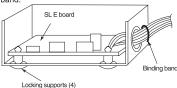
- Set the Superlink network address with SW1 (tens place), SW2 (ones place), and SW3 (hundreds place).
- (2) Set the SL E board SW3-1 to be ON (Master) when using this without any remote control (no wired remote control nor wireless remote control).
- (3) Set up the plural master/slave device using the dip switches on the indoor unit board.
- (4) Set up the remote control master/slave device using the slide switch on the remote control board.
- (5) Set up "0" to "F" using the address rotary switch on the indoor unit board when controlling the indoor unit with the multiple remote control.



## 6 Installation

- When using the metal box (mounted on the indoor unit / mounted on the back of the remote control):
  - (1) Mount the SL E board in the metal box using the locking supports.
  - (2) Wiring should go through the provided grommet since then through the wiring to the hole on the Metal box.

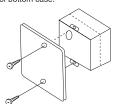
Secure the grommet after inserting the grommet into the Metal box as shown in below figure, then tie the wiring at the outlet of the unit using a binding band.



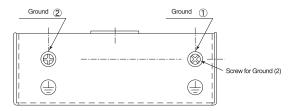
▲ When installed outside the indoor unit, put the metal cover on.



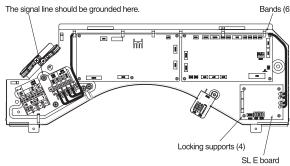
When installed on the back of the remote control, mount it directly on the remote control bottom case.



Connect grounding. Connect grounding for the power line to Ground 1, and grounding for the signal line to Ground 2 or to the Ground on the indoor unit control box.



- When connecting to the indoor unit control box (ceiling-concealed type and FDT type only):
- (1) Mount the SL E board in the control box using the locking supports
- (2) Remove 6 bands from the box and put the wiring through the bands to be secured



Electrical shock hazard! Make sure to turn the power off for servicing. Be cautious so that no abnormal force should be applied to the wiring. Do not let the SL E board hung by the wiring. Do not damage the board with a screw driver.

The board is sensitive to static electricity. Release the static electricity of your body before servicing.

(you can do this by touching the control board which is grounded).

### Location of installation

Install the device at the location where there are no electromagnetic waves nor where there is water and dust. The specified temperature range of the device is 0 to  $40^{\circ}$ C. Install the device at the location where the ambient temperature stays within the range. If it exceeds the specification, make sure to provide solution such as installing a cooling fan. When used outside of the range, it may cause abnormal operation.

### 7 Indicator display

Check the LED 3 (green) and LED 2 (red) on the SL E board for flashing.

| SL E board LEDs |                   |   | Display on the                     |
|-----------------|-------------------|---|------------------------------------|
| Red             | Green             | Inspection mode   | integrated network control device  |
| Off             | Keeps flashing    | Normal communication  |                                    |
| Off             | Off               | Disconnection in the remote control communication line (X or Y) Short-circuit in the remote control communication line (between X and Y) Faulty indoor unit remote control power Faulty remote control communication circuit Faulty CPU on SL E board |                                    |
| 1-time<br>flash | Keeps<br>flashing | Disconnection in the Superlink signal line (A or B)     Short-circuit in the Superlink signal line (between A and B)     Faulty Superlink signal circuit  | No<br>corresponding<br>unit number |
| 2-time<br>flash | Keeps<br>flashing | Faulty address setting for the SL E board (Set up the address for previous SL E board : more than 48 new SL E board : more than 128)  |                                    |
| 3-time<br>flash | Keeps<br>flashing | SL E board parent not set up when used without a remote control     Faulty remote control communication circuit   | E1                                 |
| 4-time<br>flash | Keeps<br>flashing | Address overlapping for the SL E board<br>and the Superlink network connected<br>indoor unit  | E2                                 |
| Off             | Keeps<br>flashing | Number of connected devices exceeds the<br>specification for the multiple indoor unit control   | E10                                |

### 13.6 Base heater kit (CW-H-E1)

PCZ012D007B

### **⚠ WARNING**

- Follow the instruction and installation manual for outdoor unit when installing the heater.
- This heater must be installed by authorized personnel.
- Turn off the power source when the kit is installed.
- Failure to follow the above will result in serious accident like electrical

### **⚠** CAUTION

- Follow the law or regulation of the country where it is installed.
- Do not alter the heater.
- Lay down the heater so that the edge of the sheet metal does not damage the heater.
- Bending radius must be bigger than 25mm.
- Do not use the heater near flammable substances.
- Be sure to check the electrical insulation before use.
- Be sure to check the drain is not trapped by the heater.
- Do not leave refrigerant oil on the base.

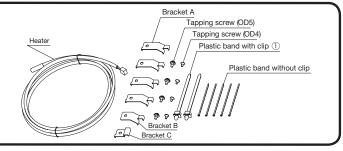
### **AREAS TO BE APPLIED**

This kit is to be used in an area where the lowest temperature drops below

⚠Caution: In case the heater is not applied on the unit which is installed in an area mentioned above, it may be regarded as installation failure and warranty may not be given.

### Components

- Heater : 1pc : 4pcs
- Bracket A Bracket B
- : 1pcs Bracket C : 1pcs
- Tapping screw (OD5) : 4pcs : 4pcs
- Tapping screw (OD4) ● Plastic band with clip ① : 2pcs
- Plastic band



## Applicable model

This heater kit is applicable for 3 different models.

<Model A>

Single fan with plastic fan guard model



: 5pcs

Single fan model (Without FDC 100VNP) (Refer to page 7-8 for FDC 100VNP < Model D>)

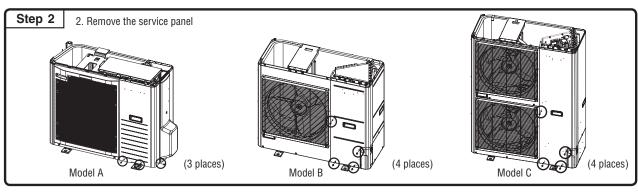


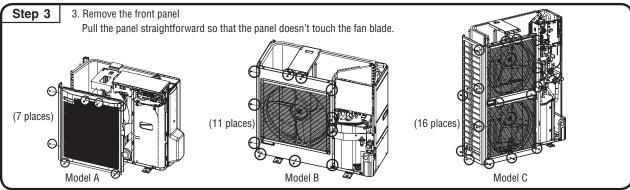
<Model C> Double fan model

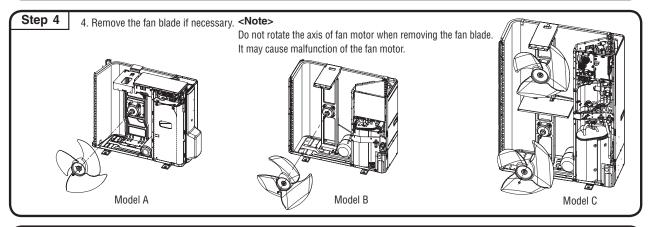


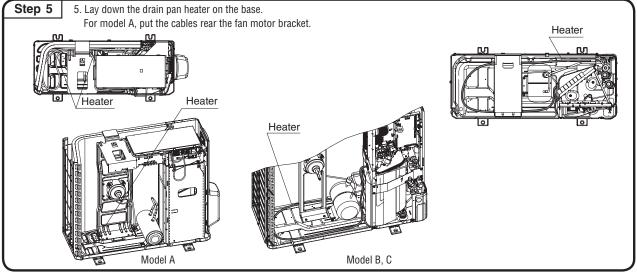
## Installation procedure

# Step 1 (11 places) 1. Remove the top panel of the outdoor unit (11 places) (6 places) Model A Model B Model C



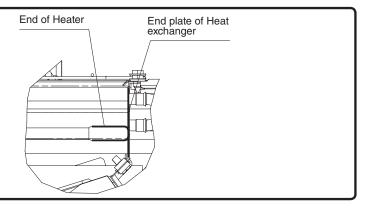






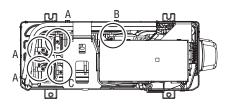
### Step 6

6. Put the heater underneath the heat exchanger and align the end of heater with the end plate of heat exchanger.

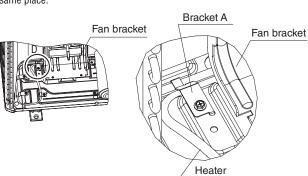


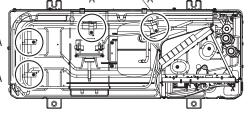
### Step 7

7. Fix the heater with brackets.



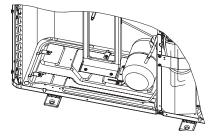
For model A, use 3 pcs of bracket A, 1pc of bracket B and C. Fix bracket A and C with the attached screw (OD4), and fix bracket B with the removed screw which is fastened at the same place.





For model B and C, fix bracket A with the attached screw (OD5).

This bracket is for model B only



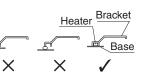
Model A Detail view D Model B, C

### <Note for model A>

- 1) Put the end of heating part just after the bracket C
- 2) Fix the incoming and out going cable with one bracket A on the left of fan bracket as figure shows.

### <Note>

1) Fix the heater so that the bracket 2) Place the heater so as to touch the 3) In bending position, twist the doesn't pinch the heater as figure shows.



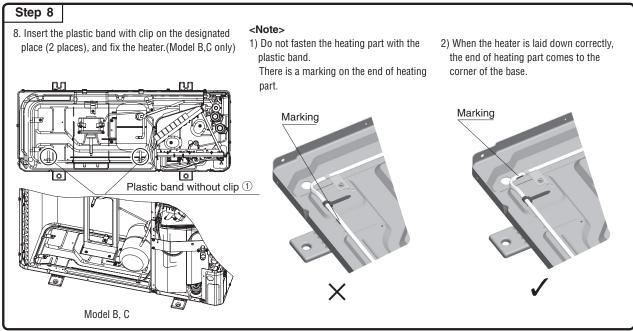
base completely.

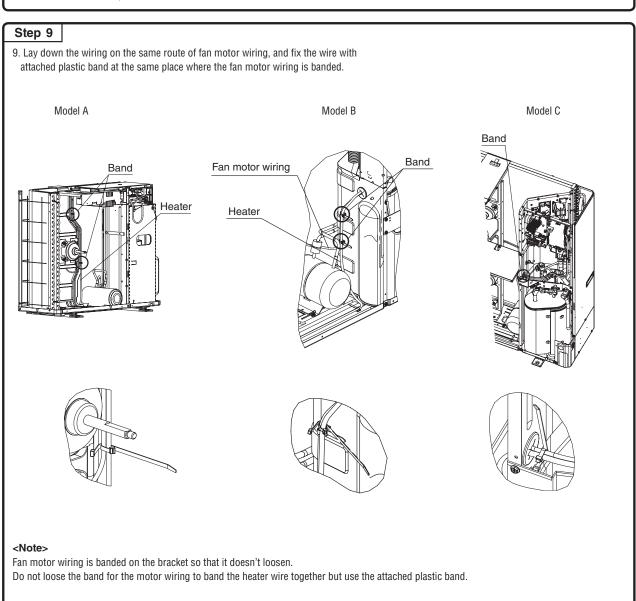


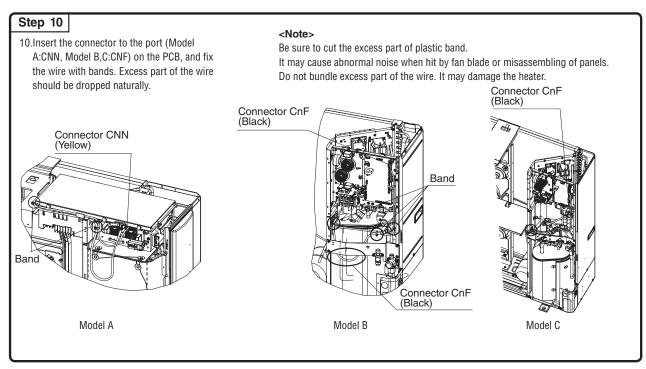
heater to make it easier to bend, and get back to be able to fix it

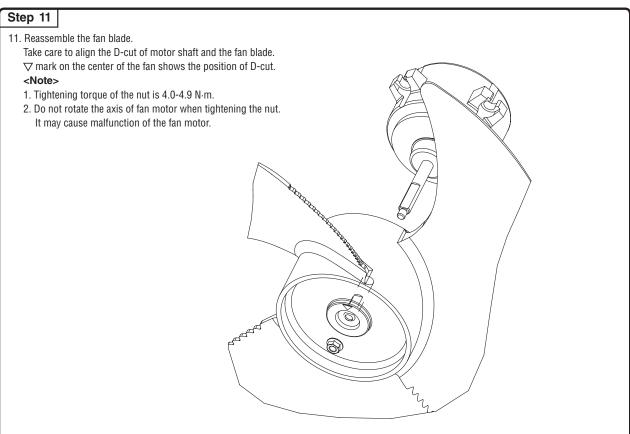


4) Be careful not to be injured by aluminum fin when fixing the heater with screw.



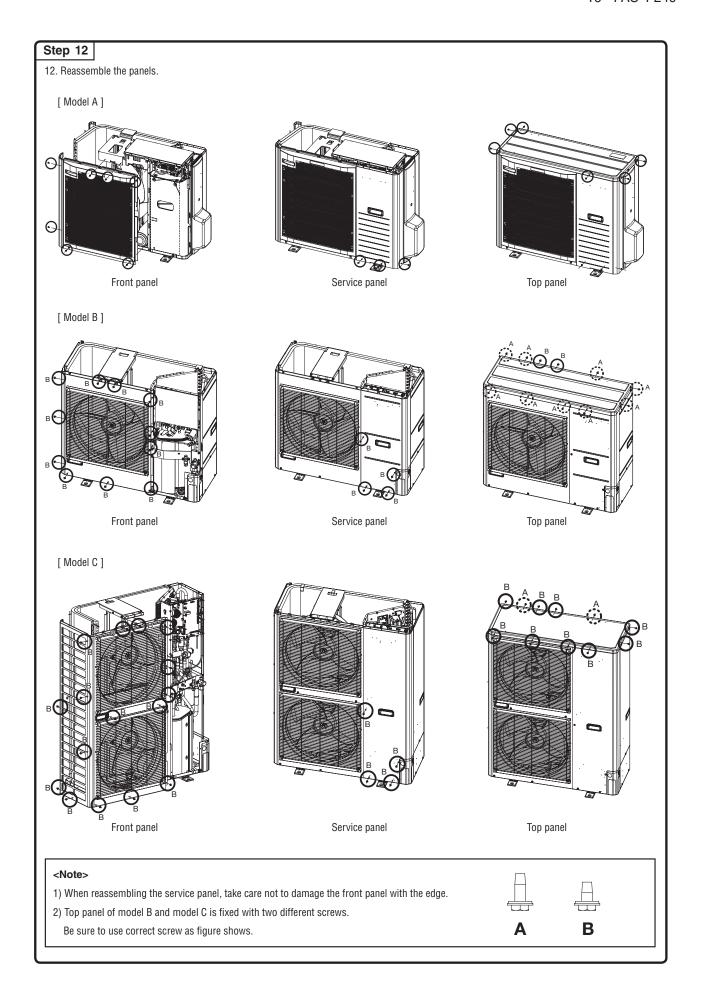


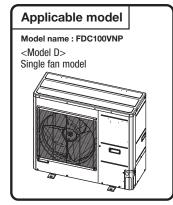


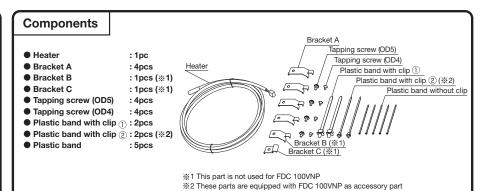


### <Note>

- This heater should have bending radius of at least 25mm including non-heating part. Do not bundle the excess part of the wire. It may cause disconnection of the heater or insufficient capacity.
- Be sure to prevent the heater from touching any refrigerant piping.
   Especially, pay close attention not to make it touch with pipes which are close to the wiring route such as suction pipe, check valve and check joint.





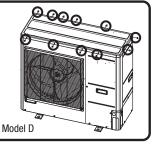


## Installation procedure



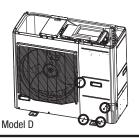
Remove the top panel of the outdoor unit

(11 pcs of tapping screws).



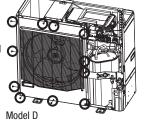
### Step 2

2. Remove the service panel (4 pcs of tapping screws).



### Step 3

3. Remove the front panel (11 pcs of tapping screws).
Pull the panel straightforward so that the panel doesn't touch the fan blade.



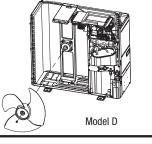
### Step 4

Remove the fan blade if necessary.

### <Note>

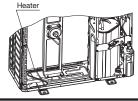
Do not rotate the axis of fan motor when removing the fan blade.

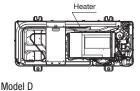
It may cause malfunction of the fan motor.





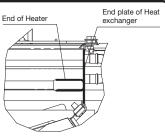
5. Lay down the drain pan heater on the base.





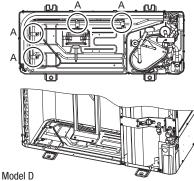
### Step 6

 Put the heater underneath the heat exchanger and align the end of heater with the end plate of heat exchanger.



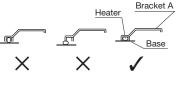
### Step 7

7. Fix the heater with 4 brackets.



### <Note>

1) Fix the heater so that the bracket doesn't pinch the heater as figure shows.



2) Place the heater so as to touch the base completely.



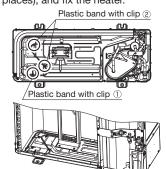
 In bending position, twist the heater to make it easier to bend, and get back to be able to fix it with bracket.



4) Be careful not to be injured by aluminum fin when fixing the heater with screw.

### Step 8

8. Insert the plastic band with clip on the designated place (3 places), and fix the heater.



<Note> 1) Do not fasten the heating part with the plastic band.

There is a marking on the end of heating part.



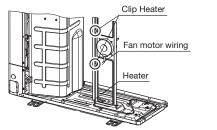
2) When the heater is laid down correctly, the end of heating part comes to the corner of the base.



### Step 9

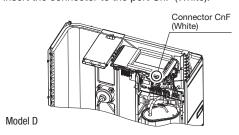
Model D

9. Lay down the wiring on the same route of fan motor wiring.



### Step 10

10. Insert the connector to the port CnF (White).



### Step 11

Model D

11. Reassemble the fan blade.

Take care to align the D-cut of motor shaft and the fan blade.  $\nabla$  mark on the center of the fan shows the position of D-cut.

- 1. Tightening torque of the nut is 4.0-4.9 N·m.
- 2. Do not rotate the axis of fan motor when tightening the nut. It may cause malfunction of the fan motor.

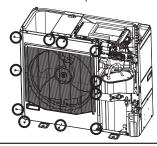


### Step 12

12. Reassemble the panels.

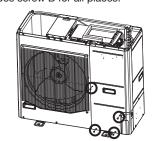
### 1) Front panel

Use screw B for all places.

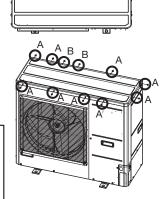


### Model D

2) Service panel Use screw B for all places.



### 3) Top panel



- 1) When reassembling the service panel, take care not to damage the front panel with the edge.
- 2) There are two different length of screws.

Be sure to use correct screw.

Long screw A: used for Top panel other than fixing fan bracket. Short screw B: other place than A.



- This heater should have bending radius of at least 25mm including non-heating part. Do not bundle the excess part of the wire. It may cause disconnection of the heater or insufficient capacity.
- Be sure to prevent the heater from touching any refrigerant piping.

Especially, pay close attention not to make it touch with pipes which are close to the wiring route such as suction pipe, check valve and check joint.

## 14. TECHNICAL INFORMATION

(1) Ceiling cassette-4way type (FDT)

| Information to identify the model(s) t                      | o which the information r                       | elates to:  | If function includes heating: Indicate t                      | he heating so | eason the      |                  |
|---|---|-------------|---|---------------|----------------|------------------|
| Indoor unit model name                                      | FDT100VF2                                       | olutoo to.  | information relates to. Indicated values should relate to one |               |                |                  |
| Outdoor unit model name                                     | FDC100VNP                                       |             | heating season at a time. Include at l                        | east the heat | ing seasor     | 'Average'        |
|   |   |             |   |               | _              |                  |
| Function(indicate if present)                               |   |             | Average(mandatory)  | Yes           |                |                  |
| cooling   | Yes   |             | Warmer(if designated)   | No            |                |                  |
| heating   | Yes   |             | Colder(if designated)   | No            |                |                  |
| lta aa  | accepted control                                |             | lka-sa-   |               |                | -1               |
| Item Design load  | symbol value                                    | unit        | Item Seasonal efficiency and energy efficiency                | symbol        | value          | class            |
| cooling   | Pdesignc 10.0                                   | kW          | cooling   | SEER          | 6.78           | A++              |
| heating / Average   |   | kW          | heating / Average   | SCOP/A        | 4.52           | A+               |
| heating / Warmer  |   | kW          | heating / Warmer  | SCOP/W        |                | -                |
| heating / Colder  | Pdesignh -                                      | kW          | heating / Colder  | SCOP/C        |                | -                |
|   |   |             | g. com  |               |                | unit             |
| Declared capacity at outdoor temper                         | ature Tdesignh                                  |             | Back up heating capacity at outdoor t                         | emperature -  | Tdesignh       |                  |
| heating / Average (-10°C)                                   |   | kW          | heating / Average (-10°C)                                     | elbu          | Ö              | kW               |
| heating / Warmer (2°C)                                      | Pdh -   | kW          | heating / Warmer (2°C)  | elbu          | -              | kW               |
| heating / Colder (-22°C)                                    | Pdh -   | kW          | heating / Colder (-22°C)                                      | elbu          | -              | kW               |
|   | •   |             |   |               |                |                  |
| Declared capacity for cooling, at inde                      | oor temperature 27(19)°C                        | and         | Declared energy efficiency ratio, at in                       | door tempera  | ature 27(19    | 9)°C and         |
| outdoor temperature Tj                                      | D   |             | outdoor temperature Tj  |               |                | 1                |
| Tj=35°C   | Pdc 10.00                                       | kW          | Tj=35°C   | EERd          | 3.62           | -                |
| Tj=30°C   |   | kW          | Tj=30°C   | EERd          | 5.30           | -                |
| Tj=25°C   |   | kW          | Tj=25°C<br>Ti=20°C  | EERd          | 8.28           | -                |
| Tj=20°C   | Pdc 3.50  | kW          | IJ=20 C   | EERd          | 12.07          | -                |
| Declared capacity for heating / Avera                       | ane season at indoor                            |             | Declared coefficient of performance /                         | Average con   | enn at ind     | loor             |
| temperature 20°C and outdoor temp                           |   |             | temperature 20°C and outdoor temperature                      |               | , at 1110      |                  |
| Ti=-7°C   | Pdh <b>7.10</b>                                 | lkW         | Ti=-7°C   | COPd          | 2.96           | ]-               |
| Tj=2°C  |   | kW          | Tj=2°C  | COPd          | 4.46           | <br> -           |
| Tj=7°C  |   | kW          | Tj=7°C  | COPd          | 5.83           | <br> -           |
| Ti=12℃  |   | kW          | Ti=12°C   | COPd          | 6.95           | -                |
| Tj=bivalent temperature                                     |   | kW          | Tj=bivalent temperature                                       | COPd          | 2.66           | -                |
| Tj=operating limit  |   | kW          | Tj=operating limit  | COPd          | 2.50           | -                |
|   |   |             | 3 - 1   |               |                |                  |
| Declared capacity for heating / Warn                        | ner season, at indoor                           |             | Declared coefficient of performance /                         | Warmer sea    | son, at ind    | oor              |
| temperature 20°C and outdoor temp                           | erature Tj                                      | .           | temperature 20°C and outdoor temperature                      | rature Tj     |                | _                |
| Tj=2°C  | Pdh -   | kW          | Tj=2°C  | COPd          | -              | ]-               |
| Tj=7°C  | Pdh -   | kW          | Tj=7°C  | COPd          | -              | -                |
| Tj=12°C   | Pdh -   | kW          | Tj=12°C   | COPd          | -              | -                |
| Tj=bivalent temperature                                     | Pdh -   | kW          | Tj=bivalent temperature                                       | COPd          | -              | ]-               |
| Tj=operating limit  | Pdh -   | kW          | Tj=operating limit  | COPd          | -              | -                |
|   |   |             |   | 0.11          |                |                  |
| Declared capacity for heating / Colde                       |   |             | Declared coefficient of performance /                         |               | on, at indo    | or               |
| temperature 20°C and outdoor temp                           | Pdh -   | kW          | temperature 20°C and outdoor temperature Tj=-7°C              | COPd          |                | 1_               |
| Tj=2°C  |   | kW          | Tj=2°C  | COPd          | <del>-</del> - | -                |
| Ti=7°C  | Pdh -   | kW          | Ti=7°C  | COPd          | <del></del>    | -                |
| Tj=12°C   | Pdh -   | kW          | Tj=12°C   | COPd          | <del>-</del>   | _                |
| Tj=bivalent temperature                                     | Pdh -   | kW          | Tj=bivalent temperature                                       | COPd          | -              | _                |
| Tj=operating limit  | Pdh -   | kW          | Tj=operating limit  | COPd          |                | _                |
| Ti=-15°C  | Pdh -   | kW          | Tj=-15°C  | COPd          |                | -                |
| .,  |   |             | .,  | 00. 0         |                |                  |
| Bivalent temperature  |   |             | Operating limit temperature                                   |               |                |                  |
| heating / Average   | Tbiv -10  | °C          | heating / Average   | Tol           | -15            | ]℃               |
| heating / Warmer  | Tbiv -  | ℃           | heating / Warmer  | Tol           | -              | °C               |
| heating / Colder  | Tbiv -  | ℃           | heating / Colder  | Tol           | -              | °C               |
|   |   |             |   |               |                |                  |
| Cycling interval capacity                                   | Dayes   | 16147       | Cycling interval efficiency                                   | EED           |                | 1                |
| for cooling   | Pcycc -   | kW<br>kW    | for cooling   | EERcyc        | -              | ļ <sup>-</sup>   |
| for heating   | Pcych -   | KVV         | for heating   | COPcyc        | -              | -                |
| Degradation coefficient                                     |   |             | Degradation coefficient                                       |               |                |                  |
| cooling   | Cdc <b>0.25</b>                                 | 1-          | heating   | Cdh           | 0.25           | 1-               |
|   |   |             |   |               |                | -                |
| Electric power input in power modes                         |   |             | Annual electricity consumption                                |               |                |                  |
| off mode  | Poff 10   | W           | cooling   | Qce           | 516            | kWh/a            |
| standby mode  | Psb <b>10</b>                                   | W           | heating / Average   | Qhe           | 2507           | kWh/a            |
| thermostat-off mode   | Pto <b>35</b>                                   | W           | heating / Warmer  | Qhe           | -              | kWh/a            |
| crankcase heater mode                                       | Pck 0   | W           | heating / colder  | Qhe           | -              | kWh/a            |
|   |   |             |   |               |                |                  |
| Capacity control(indicate one of thre                       | e options)                                      |             | Other items   | Luca          | C.E.           | JAD(A)           |
| I   |   |             | Sound power level(indoor) Sound power level(outdoor)          | Lwa           | 65             | dB(A)            |
| fixed   | No  |             |   | Lwa<br>GWP    | 70             | dB(A)            |
| fixed   | No<br>No  |             | Global warming potential Rated air flow(indoor)               | GWP<br>-      | 1975<br>2220   | kgCO2eq.<br>m3/h |
| staged<br>variable  |   |             |   |               |                | m3/h             |
| IVALIABLE   |   |             |   |               |                |                  |
| 14.145.0  | Yes   |             | Rated air flow(outdoor)                                       | -             | 4500           | 1113/11          |
|   | Yes   | of the man  |   |               | 4500           | [1110/11         |
| Contact details for obtaining                               | Yes   |             | ufacturer or of its authorised represent                      |               | 4500           | JIIIO/II         |
| Contact details for obtaining more information Mitsul       | Yes  Name and address pishi Heavy Industries Ai | r-Condition | ufacturer or of its authorised represent                      |               | 4500           | ПІЗЛІ            |
| Contact details for obtaining more information Mitsul 7 Rou | Yes  Name and address pishi Heavy Industries Ai | r-Condition | ufacturer or of its authorised representing Europe, Ltd.      |               | 4500           | ПІЗЛІ            |

PJF000Z314

## (2) Ceiling suspended type (FDE)

| Indoor unit model name                                     | mation to identify the model(s) to which the information relates to: or unit model name  FDE100VG  FDC100VNP |              |            | If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'. |                     |              |            |
|--|--|--------------|------------|--|---------------------|--------------|------------|
| Outdoor unit model name                                    | FDC100V  | /NP          |            | I heating season at a time. Include at leas  | st the neati        | ng season    | Average.   |
| Function(indicate if present)                              |  |              |            | Average(mandatory)   | Yes                 |              |            |
| cooling  | Yes  |              |            | Warmer(if designated)  | No                  |              |            |
| heating  | Yes  |              |            | Colder(if designated)  | No                  |              |            |
| Item Design load   | symbol   | value        | unit       | Item Seasonal efficiency and energy efficiency   | symbol              | value        | class      |
| cooling  | Pdesigno   | 10.0         | lkW        | Seasonal efficiency and energy efficience   Icooling   | SEER                | 6.73         | A++        |
| heating / Average  | Pdesignh   |              | kW         | heating / Average  | SCOP/A              | 4.44         | A+         |
| heating / Warmer   | Pdesignh   |              | kW         | heating / Warmer   | SCOP/W              | -            | -          |
| heating / Colder   | Pdesignh   | -            | kW         | heating / Colder   | SCOP/C              | -            | -          |
|  |  |              |            | 16   |                     |              | unit       |
| Declared capacity at outdoor temperation / Average (-10°C) | ature i designi<br>Pdh   | 8.1          | lkW        | Back up heating capacity at outdoor tem heating / Average (-10°C)  | iperature i<br>elbu | aesignn<br>0 | kW         |
| heating / Warmer (2°C)                                     | Pdh  | - 0.1        | kW         | heating / Warmer (2°C)   | elbu                | -            | kW         |
| heating / Colder (-22°C)                                   | Pdh  | -            | kW         | heating / Colder (-22°C)   | elbu                | -            | kW         |
|  |  | '            |            |  |                     |              | •          |
| Declared capacity for cooling, at indo                     | or temperatur  | re 27(19)°C  | and        | Declared energy efficiency ratio, at indo  | or tempera          | ture 27(19   | )℃ and     |
| outdoor temperature Tj<br>Tj=35°C                          | Pdc  | 10.00        | lkW        | outdoor temperature Tj   | EERd                | 3.76         | i          |
| Tj=30°C  | Pdc  | 7.37         | kW         |  | EERd                | 5.30         | -          |
| Tj=25°C  | Pdc  | 4.80         | kW         | Tj=25°C  | EERd                | 8.14         | -          |
| Tj=20°C  | Pdc  | 3.50         | kW         | Tj=20°C  | EERd                | 11.67        | -          |
|  |  |              |            |  |                     |              |            |
| Declared capacity for heating / Avera                      |  | tindoor      |            | Declared coefficient of performance / Av   |                     | son, at ind  | oor        |
| temperature 20°C and outdoor tempe Ti=-7°C                 | rature 1j<br>Pdh   | 7.20         | lkW        | temperature 20°C and outdoor temperat  | coPd                | 2.58         | l <u>-</u> |
| Tj=2°C   | Pdh  | 4.40         | kW         | Tj=2°C   | COPd                | 4.44         | -          |
| Tj=7°C   | Pdh  | 2.80         | kW         | Tj=7°C   | COPd                | 5.96         | -          |
| Tj=12°C  | Pdh  | 2.90         | kW         | Tj=12°C  | COPd                | 7.07         | -          |
| Tj=bivalent temperature                                    | Pdh  | 8.10         | kW         | Tj=bivalent temperature  | COPd                | 2.71         | -          |
| Tj=operating limit   | Pdh  | 7.17         | kW         | Tj=operating limit   | COPd                | 2.56         | -          |
| Declared capacity for heating / Warm                       | er season at   | indoor       |            | Declared coefficient of performance / W  | armer sea           | son at inde  | oor        |
| temperature 20°C and outdoor temperature                   |  | illadoi      |            | temperature 20°C and outdoor temperat  |                     | Joii, at ma  | 501        |
| Tj=2°C   | Pdh  | -            | kW         | Tj=2°C   | COPd                | -            | -          |
| Tj=7°C   | Pdh  | -            | kW         | Tj=7°C   | COPd                | -            | -          |
| Tj=12°C  | Pdh  | -            | kW         | Tj=12°C  | COPd                | -            | -          |
| Tj=bivalent temperature Tj=operating limit                 | Pdh<br>Pdh   | -            | kW<br>kW   | Tj=bivalent temperature Tj=operating limit   | COPd<br>COPd        | -            | -          |
| 1j-operating limit   | Full   |              | IVAA       | TJ-operating limit   | COFU                |              | -          |
| Declared capacity for heating / Colde                      | r season, at ir  | ndoor        |            | Declared coefficient of performance / Co   | older seaso         | on, at indoo | or         |
| temperature 20°C and outdoor temperature                   |  |              | 1          | temperature 20°C and outdoor temperat  |                     |              | 1          |
| Tj=-7°C  | Pdh  |              | kW         | Tj=-7°C  | COPd                | -            | -          |
| Tj=2°C<br>Tj=7°C   | Pdh<br>Pdh   | -            | kW<br>kW   | │  Tj=2°C<br>│ Ti=7°C  | COPd<br>COPd        | -            | -          |
| Tj=12°C  | Pdh  | <del>-</del> | kW         |  | COPd                | H            | -          |
| Tj=bivalent temperature                                    | Pdh  | -            | kW         | Tj=bivalent temperature  | COPd                | -            | -          |
| Tj=operating limit   | Pdh  | -            | kW         | Tj=operating limit   | COPd                | -            | -          |
| Tj=-15℃  | Pdh  | -            | kW         | Tj=-15°C   | COPd                | -            | -          |
| Divelopt to your party ye                                  |  |              |            | On a realize at line it to many a realize  |                     |              |            |
| Bivalent temperature heating / Average                     | Tbiv   | -10          | l°c        | Operating limit temperature heating / Average  | Tol                 | -15          | l°c        |
| heating / Warmer   | Tbiv   | -10          | °C         | heating / Warmer   | Tol                 | -10          | °C         |
| heating / Colder   | Tbiv   | -            | °C         | heating / Colder   | Tol                 | -            | °C         |
|  |  | '            | <b>'</b>   |  |                     |              | •          |
| Cycling interval capacity                                  | Davisa   |              | 1.34       | Cycling interval efficiency  | CCD                 |              | ı          |
| for cooling for heating                                    | Pcycc<br>Pcych   | <del>-</del> | kW<br>kW   | for cooling for heating  | EERcyc<br>COPcyc    | <u> </u>     | -          |
| To reading   | i cycii  | _            | KVV        | lor rieating   | COI Cyc             |              |            |
| Degradation coefficient                                    |  |              |            | Degradation coefficient  |                     |              |            |
| cooling  | Cdc  | 0.25         | ]-         | heating  | Cdh                 | 0.25         | -          |
|  |  |              |            | 1.   |                     |              |            |
| Electric power input in power modes off mode               | other than 'ac<br>Poff   | tive mode'   | lw         | Annual electricity consumption cooling   | Qce                 | 521          | kWh/a      |
| standby mode   | Psb  | 10           | w          | heating / Average  | Qhe                 | 2556         | kWh/a      |
| thermostat-off mode  | Pto  | 36           | W          | heating / Warmer   | Qhe                 | -            | kWh/a      |
| crankcase heater mode                                      | Pck  | 0            | W          | heating / colder   | Qhe                 | -            | kWh/a      |
|  |  |              |            | l four "   |                     |              |            |
| Capacity control(indicate one of three                     | e options)   |              |            | Other items Sound power level(indoor)  | Lwa                 | 64           | dB(A)      |
|  |  |              |            | Sound power level(indoor)  | Lwa                 | 70           | dB(A)      |
| fixed  | No   |              |            | Global warming potential   | GWP                 | 1975         | kgCO2eq.   |
| staged   | No   |              |            | Rated air flow(indoor)   | -                   | 1920         | m3/h       |
| variable   | Yes  |              |            | Rated air flow(outdoor)  | -                   | 4500         | m3/h       |
| Contact details for obtaining                              | Nama c=  | d addras-    | of the me- | unfacturer or of its authorised representation   | 10                  |              |            |
| Contact details for obtaining more information Mitsub      |  |              |            | ufacturer or of its authorised representative ining Europe, Ltd.   | /C.                 |              |            |
| 7 Rou  | ndwood Aven  |              |            | xbridge, Middlesex, UB11 1AX,  |                     |              |            |
| United   | l Kingdom  |              |            |  |                     |              |            |
|  |  |              |            |  |                     |              |            |

### (3) Duct connected-High static pressure type (FDU)

| Information to identify the model(s) to v | vhich the in | formation                             | relates to:  | If function includes heating: Indicate the  | heating se | eason the   |                |
|---|--------------|---------------------------------------|--|---|------------|-------------|----------------|
| Indoor unit model name                    | , , ,        |                                       |  | If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one |            |             |                |
| Outdoor unit model name FDC100VNP         |              |                                       | heating season at a time. Include at least the heating season 'Average'. |   |            |             |                |
|   | 1            |                                       |  |   |            |             |                |
| Function(indicate if present)             |              |                                       |  | Average(mandatory)  | Yes        |             |                |
| cooling                                   | Yes          |                                       |  | Warmer(if designated)   | No         |             |                |
| heating                                   | Yes          |                                       |  | Colder(if designated)   | No         |             |                |
|   |              |                                       |  |   |            |             |                |
| Item                                      | symbol       | value                                 | unit   | Item  | symbol     | value       | class          |
| Design load                               |              |                                       |  | Seasonal efficiency and energy efficiency   |            |             |                |
| cooling                                   | Pdesigno     | 10.0                                  | kW   | cooling   | SEER       | 6.36        | A++            |
| heating / Average                         | Pdesignh     | 8.1                                   | kW   | heating / Average   | SCOP/A     | 4.13        | A+             |
| heating / Warmer                          | Pdesignh     | -                                     | kW   | heating / Warmer  | SCOP/W     | -           | -              |
| heating / Colder                          | Pdesignh     | -                                     | kW   | heating / Colder  | SCOP/C     | -           | -              |
|   |              |                                       |  |   |            |             | unit           |
| Declared capacity at outdoor temperate    | ure Tdesigr  | ıh                                    |  | Back up heating capacity at outdoor ten   | nperature  | Γdesignh    |                |
| heating / Average (-10°C)                 | Pdh          | 8.10                                  | kW   | heating / Average (-10°C)   | elbu       | Ö           | kW             |
| heating / Warmer (2°C)                    | Pdh          | -                                     | kW   | heating / Warmer (2°C)  | elbu       | -           | kW             |
| heating / Colder (-22°C)                  | Pdh          | -                                     | kW   | heating / Colder (-22°C)  | elbu       | -           | kW             |
| ,   |              |                                       |  | ,   |            |             | !              |
| Declared capacity for cooling, at indoor  | temperatu    | re 27(19)°                            | C and  | Declared energy efficiency ratio, at indo   | or tempera | ture 27(19  | and            |
| outdoor temperature Tj                    |              | ( ,                                   |  | outdoor temperature Tj  |            | (           | ,              |
| Tj=35°C                                   | Pdc          | 10.00                                 | 1kW  | Ti=35℃  | EERd       | 3.33        | ]-             |
| Tj=30°C                                   | Pdc          | 7.37                                  | kW   | Tj=30°C   | EERd       | 4.75        | †_             |
| Tj=25°C                                   | Pdc          | 4.74                                  | kW   | Tj=25°C   | EERd       | 8.03        | †_             |
| Tj=20°C                                   | Pdc          | 3.50                                  | kW   | Tj=20°C   | EERd       | 11.67       | <del> </del> _ |
| -, <u>-</u> -, -                          | 1 40         | 0.00                                  | 1.11   | ., 200  | LLINU      | . 1.07      |                |
| Declared capacity for heating / Average   | season a     | t indoor                              |  | Declared coefficient of performance / Av  | /erane sea | son at inc  | loor           |
| temperature 20°C and outdoor temperature  |              | i i i i i i i i i i i i i i i i i i i |  | temperature 20°C and outdoor tempera  |            | oon, at iil | 1001           |
| Ti=-7°C                                   | Pdh          | 7.17                                  | 1kW  | Ti=-7°C   | COPd       | 2.79        | 1_             |
| Tj=2°C                                    | Pdh          | 4.36                                  | kW   | Ti=2°C  | COPd       | 4.04        | <u> </u>       |
|   |              |                                       |  |   |            |             | <del> </del> - |
| Tj=7°C                                    | Pdh          | 2.83                                  | kW<br>kW   | Tj=7°C  | COPd       | 5.34        | 1              |
| Tj=12°C                                   | Pdh          | 2.90                                  |  | Tj=12°C   | COPd       | 6.17        | ļ <sup>-</sup> |
| Tj=bivalent temperature                   | Pdh          | 8.10                                  | kW   | Tj=bivalent temperature   | COPd       | 2.52        | ļ-             |
| Tj=operating limit                        | Pdh          | 7.15                                  | kW   | Tj=operating limit  | COPd       | 2.38        | -              |
|   |              |                                       |  |   | ,          |             |                |
| Declared capacity for heating / Warme     |              | tindoor                               |  | Declared coefficient of performance / W   |            | son, at ind | oor            |
| temperature 20°C and outdoor tempera      |              |                                       | 1  | temperature 20°C and outdoor tempera  |            |             | 1              |
| Tj=2°C                                    | Pdh          | -                                     | kW   | Tj=2°C  | COPd       |             | ļ-             |
| Tj=7°C                                    | Pdh          | -                                     | kW   | Tj=7°C  | COPd       | -           | ļ-             |
| Tj=12°C                                   | Pdh          | -                                     | kW   | Tj=12°C   | COPd       | -           | ]-             |
| Tj=bivalent temperature                   | Pdh          | -                                     | kW   | Tj=bivalent temperature   | COPd       | -           | ]-             |
| Tj=operating limit                        | Pdh          | -                                     | kW   | Tj=operating limit  | COPd       | -           | -              |
|   |              |                                       |  |   |            |             |                |
| Declared capacity for heating / Colder:   |              | ndoor                                 |  | Declared coefficient of performance / Co  |            | on, at indo | or             |
| temperature 20°C and outdoor tempera      |              |                                       | .  | temperature 20°C and outdoor tempera  |            |             |                |
| Tj=-7°C                                   | Pdh          | -                                     | kW   | Tj=-7°C   | COPd       |             | ]-             |
| Tj=2°C                                    | Pdh          | -                                     | kW   | Tj=2°C  | COPd       | -           | ]-             |
| Tj=7°C                                    | Pdh          | -                                     | kW   | Tj=7°C  | COPd       | -           | ]-             |
| Tj=12℃                                    | Pdh          | -                                     | kW   | Tj=12°C   | COPd       | -           | ]-             |
| Tj=bivalent temperature                   | Pdh          | -                                     | kW   | Tj=bivalent temperature   | COPd       | -           | 1-             |
| Tj=operating limit                        | Pdh          | -                                     | kW   | Tj=operating limit  | COPd       | -           | 1-             |
| Tj=-15°C                                  | Pdh          | -                                     | kW   | Tj=-15°C  | COPd       | -           | 1-             |
|   |              |                                       |  |   |            | •           |                |
| Bivalent temperature                      |              |                                       | _  | Operating limit temperature   |            |             |                |
| heating / Average                         | Tbiv         | -10                                   | ]℃   | heating / Average   | Tol        | -15         | ]°C            |
| heating / Warmer                          | Tbiv         | -                                     | ]℃   | heating / Warmer  | Tol        | -           | ]℃             |
| heating / Colder                          | Tbiv         | -                                     | ℃  | heating / Colder  | Tol        | -           | ℃              |
|   |              |                                       |  |   |            |             |                |
| Cycling interval capacity                 |              |                                       |  | Cycling interval efficiency   |            |             |                |
| for cooling                               | Pcycc        | -                                     | kW   | for cooling   | EERcyc     | -           | ]-             |
| for heating                               | Pcych        | -                                     | kW   | for heating   | COPcyc     | -           | -              |
|   |              |                                       |  |   |            |             |                |
| Degradation coefficient                   |              |                                       | ,  | Degradation coefficient   |            |             |                |
| cooling                                   | Cdc          | 0.25                                  | -  | heating   | Cdh        | 0.25        | -              |
|   |              |                                       |  |   |            |             |                |
| Electric power input in power modes of    |              |                                       |  | Annual electricity consumption  | 0 -        |             | 1              |
| off mode                                  | Poff         | 10                                    | W  | cooling   | Qce        | 551         | kWh/a          |
| standby mode                              | Psb          | 10                                    | W  | heating / Average   | Qhe        | 2746        | kWh/a          |
| thermostat-off mode                       | Pto          | 50                                    | W  | heating / Warmer  | Qhe        |             | kWh/a          |
| crankcase heater mode                     | Pck          | 0                                     | W  | heating / colder  | Qhe        | -           | kWh/a          |
|   |              |                                       |  | Tour 'i   |            |             |                |
| Capacity control(indicate one of three of | options)     |                                       |  | Other items   |            |             | 1 15/4:        |
|   |              |                                       |  | Sound power level(indoor)   | Lwa        | 65          | dB(A)          |
| <u>.</u> .                                |              |                                       |  | Sound power level(outdoor)  | Lwa        | 70          | dB(A)          |
| fixed                                     | No           |                                       |  | Global warming potential  | GWP        | 1975        | kgCO2eq.       |
| staged                                    | No           |                                       |  | Rated air flow(indoor)  | -          | 2160        | m3/h           |
| variable                                  | Yes          |                                       |  | Rated air flow(outdoor)   | -          | 4500        | m3/h           |
|   |              |                                       |  |   |            |             |                |
| Contact details for obtaining             |              |                                       |  | ufacturer or of its authorised representati   | ve.        |             |                |
|   |              |                                       |  | ning Europe, Ltd.   |            |             |                |
|   |              | nue, Stockl                           | ey Park, U   | xbridge, Middlesex, UB11 1AX,   |            |             |                |
| United F                                  | (ingdom      |                                       |  |   |            |             |                |
|   |              |                                       |  |   |            |             |                |
|   |              |                                       |  |   | D ICO      |             |                |

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## (4) Duct connected-Low / Middle static pressure type (FDUM)

| Information to identify the model(s) to                                |                      |  | If function includes heating: Indicate   |                  |               |                |
|--|----------------------|--|--|------------------|---------------|----------------|
| Indoor unit model name   | FDUM100              | information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'. |  |                  |               |                |
| Outdoor unit model name  | FDC100V              | NP   | heating season at a time. Include at I   | least the heat   | ing seaso     | n 'Average'.   |
| Function(indicate if present)  |                      |  | Average(mandatory)   | Yes              |               |                |
| cooling  | Yes                  |  | Warmer(if designated)  | No               |               |                |
| heating  | Yes                  |  | Colder(if designated)  | No               |               |                |
| 3  |                      |  |  |                  |               |                |
| Item   | symbol               | value unit   | Item   | symbol           | value         | class          |
| Design load  |                      |  | Seasonal efficiency and energy effici  |                  |               |                |
| cooling  | Pdesignc             | 10.0 kW  | cooling  | SEER             | 6.36          | A++            |
| heating / Average  | Pdesignh             | 8.1 kW<br>- kW   | heating / Average  | SCOP/A           | 4.13          | A+             |
| heating / Warmer<br>heating / Colder                                   | Pdesignh<br>Pdesignh | - kW   | heating / Warmer<br>heating / Colder   | SCOP/W<br>SCOP/C | <del>-</del>  | -              |
| rieating / Colder  | Fuesignin            | -   \  | rieating / Colder  | 300F/0           |               | unit           |
| Declared capacity at outdoor tempe                                     | rature Tdesign       | า  | Back up heating capacity at outdoor  | temperature 7    | Edesianh      | unit           |
| heating / Average (-10°C)  | Pdh                  | 8.10 kW  | heating / Average (-10°C)  | elbu             | 0             | kW             |
| heating / Warmer (2°C)   | Pdh                  | - kW   | heating / Warmer (2°C)   | elbu             | -             | kW             |
| heating / Colder (-22°C)   | Pdh                  | - kW   | heating / Colder (-22°C)   | elbu             | -             | kW             |
|  |                      |  |  |                  |               |                |
| Declared capacity for cooling, at ind                                  | oor temperatur       | e 27(19)°C and   | Declared energy efficiency ratio, at in  | idoor tempera    | ature 27(1    | 9)°C and       |
| outdoor temperature Tj   | D44 [                | 10.00 kW   | outdoor temperature Tj<br>Ti=35°C  | EED4             | 3.33          | 7              |
| Tj=35°C<br>Tj=30°C   | Pdc<br>Pdc           | 7.37 kW  | Tj=35°C  | EERd<br>EERd     | 4.75          |                |
| Tj=30°C  | Pdc                  | 4.74 kW  | Tj=25°C  | EERd             | 8.03          | +-             |
| Tj=20°C  | Pdc                  | 3.50 kW  | Tj=20°C  | EERd             | 11.67         | -              |
| ., 200   | . 40                 | 0.00   | ., 20 0  |                  |               |                |
| Declared capacity for heating / Aver                                   | age season, at       | indoor   | Declared coefficient of performance /  | Average sea      | son, at in    | door           |
| temperature 20°C and outdoor temp                                      | erature Tj           |  | temperature 20°C and outdoor temperature   | erature Tj       |               | _              |
| Tj=-7°C  | Pdh                  | 7.17 kW  | Tj=-7°C  | COPd             | 2.79          | <u></u>  -     |
| Tj=2°C   | Pdh                  | <b>4.36</b> kW   | Tj=2°C   | COPd             | 4.04          |                |
| Tj=7°C   | Pdh                  | 2.83 kW  | Tj=7°C   | COPd             | 5.34          |                |
| Tj=12°C  | Pdh                  | 2.90 kW  | Tj=12°C  | COPd             | 6.17          | <u></u>  -     |
| Tj=bivalent temperature  | Pdh                  | 8.10 kW  | Tj=bivalent temperature  | COPd             | 2.52          | <b>-</b>  -    |
| Tj=operating limit   | Pdh                  | 7.15 kW  | Tj=operating limit   | COPd             | 2.38          | -              |
| Declared capacity for heating / Warr                                   | mer season at        | indoor   | Declared coefficient of performance /  | Warmer sea       | son at inc    | door           |
| temperature 20°C and outdoor temp                                      |                      | iiidooi  | temperature 20°C and outdoor temperature   |                  | 0011, at 1110 | 2001           |
| Tj=2°C   | Pdh                  | - kW   | Tj=2°C   | COPd             |               | 7-             |
| Tj=7°C   | Pdh                  | - kW   | Tj=7°C   | COPd             | -             | 7-             |
| Tj=12°C  | Pdh                  | - kW   | Tj=12°C  | COPd             | -             | 7-             |
| Tj=bivalent temperature  | Pdh                  | - kW   | Tj=bivalent temperature  | COPd             | -             | ]-             |
| Tj=operating limit   | Pdh                  | - kW   | Tj=operating limit   | COPd             | -             | -              |
| Delegation (Cold   |                      | de e   | Destructive (Colored to Constitution of Consti |                  |               |                |
| Declared capacity for heating / Cold temperature 20°C and outdoor temp |                      | idoor  | Declared coefficient of performance  |                  | on, at indo   | oor            |
| Tj=-7°C  | Pdh [                | - kW   | temperature 20°C and outdoor temperature Tj=-7°C   | COPd             |               | ٦.             |
| Tj=2°C   | Pdh                  | - kW   | Tj=2°C   | COPd             | <del>-</del>  | +_             |
| Ti=7°C   | Pdh                  | - kW   | Tj=7°C   | COPd             |               | ┪_             |
| Tj=12°C  | Pdh                  | - kW   | Tj=12°C  | COPd             | -             | ┪_             |
| Tj=bivalent temperature  | Pdh                  | - kW   | Tj=bivalent temperature  | COPd             | -             | <b>1</b> -     |
| Tj=operating limit   | Pdh                  | - kW   | Tj=operating limit   | COPd             | -             | 7-             |
| Tj=-15°C   | Pdh                  | - kW   | Tj=-15°C   | COPd             | -             | <u> </u>       |
|  |                      |  |  |                  |               |                |
| Bivalent temperature   | This [               | 40 00  | Operating limit temperature  | Tal              | 4.5           | <b>7∘</b> c    |
| heating / Average<br>heating / Warmer                                  | Tbiv<br>Tbiv         | -10 °C<br>- °C   | heating / Average<br>heating / Warmer  | Tol<br>Tol       | -15<br>-      | ]℃<br> ℃       |
| heating / Warrier  | Tbiv                 | - 0°   | heating / Colder   | Tol              | <u> </u>      | <del>1</del> € |
| rieating / Colder  | TDIV                 | -   0  | rieating / Coldei  | 101              |               | 10             |
| Cycling interval capacity  |                      |  | Cycling interval efficiency  |                  |               |                |
| for cooling  | Pcycc                | - kW   | for cooling  | EERcyc           |               | ]-             |
| for heating  | Pcych                | - kW   | for heating  | COPcyc           | -             | ]-             |
|  |                      |  | [ F=   |                  |               |                |
| Degradation coefficient  | 0.4.                 | 0.05   | Degradation coefficient  | 0.41             | 0.05          | 7              |
| cooling  | Cdc                  | 0.25  -  | heating  | Cdh              | 0.25          | -              |
| Electric power input in power modes                                    | s other than 'so     | tive mode'   | Annual electricity consumption   |                  |               |                |
| off mode   | Poff                 | 10 W   | cooling  | Qce              | 551           | kWh/a          |
| standby mode   | Psb                  | 10 W   | heating / Average  | Qhe              | 2746          | kWh/a          |
| thermostat-off mode  | Pto                  | 50 W   | heating / Warmer   | Qhe              | -             | kWh/a          |
| crankcase heater mode  | Pck                  | <b>0</b> W   | heating / colder   | Qhe              | -             | kWh/a          |
|  |                      |  |  |                  | •             | •              |
| Capacity control(indicate one of three                                 | ee options)          |  | Other items  |                  |               | 7              |
|  |                      |  | Sound power level(indoor)  | Lwa              | 65            | dB(A)          |
| fived  | NI-                  |  | Sound power level(outdoor)   | Lwa              | 70            | dB(A)          |
| fixed  | No                   |  | Global warming potential   | GWP              | 1975          | kgCO2eq.       |
| staged<br>variable   | No<br>Yes            |  | Rated air flow(indoor) Rated air flow(outdoor)   | -                | 2160<br>4500  | m3/h<br>m3/h   |
| variable   | 162                  |  | Itatou ali liow(outdoor)   |                  | 1 4300        | [1110/11       |
| Contact details for obtaining  | Name and             | address of the mar   | nufacturer or of its authorised represent  | ative.           |               |                |
| more information Mitsu   | ıbishi Heavy Ind     | dustries Air-Condition   | ning Europe, Ltd.  |                  |               |                |
|  |                      | ue, Stockley Park, U   | xbridge, Middlesex, UB11 1AX,  |                  |               |                |
| Unite  | d Kingdom            |  |  |                  |               |                |
|  |                      |  |  |                  |               |                |

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## (5) Floor standing type (FDF)

|  | 1110116                 |                 | The man to the man to |                   |                    |
|--|-------------------------|-----------------|---|-------------------|--------------------|
| Information to identify the model(s) to valid Indoor unit model name | FDF100VD2               | elates to:      | If function includes heating: Indicate the information relates to. Indicated values   |                   |                    |
| Outdoor unit model name  | FDC100VNP               |                 | heating season at a time. Include at le   |                   |                    |
|  | 1.20.000                |                 |   | act are meaning t | oucon / trolugo .  |
| Function(indicate if present)  |                         |                 | Average(mandatory)  | Yes               |                    |
| cooling  | Yes                     |                 | Warmer(if designated)   | No                |                    |
| heating  | Yes                     |                 | Colder(if designated)   | No                |                    |
|  |                         |                 |   |                   |                    |
| Item   | symbol value            | unit            | Item  | symbol            | value class        |
| Design load cooling  | Pdesignc 10             | 0.0 kW          | Seasonal efficiency and energy efficiency and energy efficiency   | ncy class<br>SEER | <b>5.41</b> A      |
| heating / Average  |                         | .1 kW           | heating / Average   | SCOP/A            | 3.94 A             |
| neating / Warmer   |                         | - kW            | heating / Warmer  | SCOP/W            |                    |
| neating / Colder   | · -                     | - kW            | heating / Colder  | SCOP/C            |                    |
|  |                         | 1               |   |                   | unit               |
| Declared capacity at outdoor temperate                               | ure Tdesignh            |                 | Back up heating capacity at outdoor to  | emperature Tdes   | ignh               |
| neating / Average (-10°C)  |                         | <b>10</b> kW    | heating / Average (-10°C)   | elbu              | <b>0</b> kW        |
| neating / Warmer (2°C)   |                         | - kW            | heating / Warmer (2°C)  | elbu              | - kW               |
| neating / Colder (-22°C)   | Pdh                     | - kW            | heating / Colder (-22°C)  | elbu              | - kW               |
|  |                         |                 | 15  |                   |                    |
| Declared capacity for cooling, at indoor                             | r temperature 27(19)°C  | and             | Declared energy efficiency ratio, at ind  | oor temperature   | 2/(19)°C and       |
| outdoor temperature Tj<br>Fj=35°C                                    | Pdc 10                  | . <b>00</b> kW  | outdoor temperature Tj  | EERd              | 3.13 -             |
| [j=30°C  |                         | 37 kW           | Tj=30°C   | EERd              | 4.47               |
| Γj=30 C<br>Γj=25°C   |                         | 74 kW           | Tj=30 C<br>  Tj=25°C  | EERd              | 6.58               |
| [j=25℃<br>[j=20℃   |                         | 38 kW           | Tj=25 C<br>  Tj=20°C  | EERd              | 8.45               |
| , 200  | 100 3.                  | OC IVAA         |   | LLING             | 0.40               |
| Declared capacity for heating / Average                              | e season, at indoor     |                 | Declared coefficient of performance / /   | Average season.   | at indoor          |
| emperature 20°C and outdoor tempera                                  | ature Tj                |                 | temperature 20°C and outdoor temper   | ature Tj          |                    |
| Γj=-7°C  |                         | <b>17</b> kW    | Tj=-7°C   | COPd              | 2.70 -             |
| Γj=2°C   |                         | <b>36</b> kW    | Tj=2°C  | COPd              | 3.93 -             |
| Γj=7°C   |                         | 83 kW           | Tj=7°C  | COPd              | 4.96 -             |
| _j=12°C  |                         | <b>90</b> kW    | Tj=12°C   | COPd              | 5.58 -             |
| j=bivalent temperature   |                         | <b>10</b> kW    | Tj=bivalent temperature   | COPd              | 2.45 -             |
| j=operating limit  | Pdh 7.                  | 15 kW           | Tj=operating limit  | COPd              | 2.32 -             |
|  |                         |                 | 1 =   |                   |                    |
| Declared capacity for heating / Warme                                |                         |                 | Declared coefficient of performance /   |                   | at indoor          |
| emperature 20°C and outdoor tempera                                  |                         | 1,147           | temperature 20°C and outdoor temper   |                   |                    |
| ¯j=2°C   |                         | - kW            | Tj=2°C  | COPd              | <u> </u>           |
|  |                         | - kW            | Tj=7°C  | COPd              |                    |
|  |                         | - kW            | Tj=12°C   | COPd              |                    |
| j=bivalent temperature   |                         | - kW            | Tj=bivalent temperature   | COPd              | -                  |
| j=operating limit  | Pdh                     | - kW            | Tj=operating limit  | COPd              |                    |
| Declared capacity for heating / Colder                               | season at indoor        |                 | Declared coefficient of performance / 0   | Colder season a   | at indoor          |
| emperature 20°C and outdoor temperature                              |                         |                 | temperature 20°C and outdoor temper   |                   | it illuool         |
| Fi=-7°C  |                         | - kW            | Ti=-7°C   | COPd              |                    |
| rj=2°C   |                         | - kW            | Ti=2°C  | COPd              |                    |
| rj=7°C   |                         | - kW            | Ti=7°C  | COPd              |                    |
| rj 12°C  |                         | - kW            | Ti=12°C   | COPd              |                    |
| j=bivalent temperature   |                         | - kW            | Tj=bivalent temperature   | COPd              |                    |
| ij bredicht temperature  |                         | - kW            | Tj=operating limit  | COPd              |                    |
| -j-15°C  |                         | - kW            | Tj=-15°C  | COPd              |                    |
|  | •                       |                 |   |                   | •                  |
| Bivalent temperature   |                         | 0.5             | Operating limit temperature   |                   | 15-10-             |
| neating / Average  |                         |                 | heating / Average   | Tol               | -15 °C             |
| eating / Warmer  |                         | °℃              | heating / Warmer  | Tol               | - °C               |
| eating / Colder  | Tbiv                    | -               | heating / Colder  | Tol               | - °C               |
| Cycling interval capacity  |                         |                 | Cycling interval efficiency   |                   |                    |
| or cooling   | Pcycc                   | - kW            | for cooling   | EERcyc            |                    |
| or heating   |                         | - kW            | for heating   | COPcyc            |                    |
|  | ·J-··                   | 1               |   |                   |                    |
| Degradation coefficient  |                         |                 | Degradation coefficient   |                   |                    |
| ooling   | Cdc 0.:                 | 25 -            | heating   | Cdh               | 0.25 -             |
| Tantala annualis a d'annualis a                                      | llaar thaar tooti       |                 | Annual alasticitus and  |                   |                    |
| Electric power input in power modes of                               |                         | 0 10/           | Annual electricity consumption  | 0                 | CA7                |
| ff mode  |                         | 0 W             | cooling   | Qce               | 647 kWh/a          |
| tandby mode  |                         | 0 W             | heating / Average   | Qhe               | 2875 kWh/a         |
| nermostat-off mode<br>rankcase heater mode                           |                         | 6 W<br>W        | heating / Warmer<br>heating / colder  | Qhe<br>Qhe        | - kWh/a<br>- kWh/a |
| Talinudse Healer HIUUE   | FUN   (                 | ۷۷              | Theathly / colder   | પાણ               | -  KVVII/a         |
| Capacity control(indicate one of three of                            | ontions)                |                 | Other items   |                   |                    |
| sapaon, control(molecule one of tillee t                             | -p.::0110)              |                 | Sound power level(indoor)   | Lwa               | <b>65</b> dB(A)    |
|  |                         |                 | Sound power level(indoor)   | Lwa               | 70 dB(A)           |
| ixed   | No                      |                 | Global warming potential  | GWP               | 1975 kgCO2e        |
| taged  | No                      |                 | Rated air flow(indoor)  | -                 | 1740 m3/h          |
| variable   | Yes                     |                 | Rated air flow(indoor)  | _                 | <b>4500</b> m3/h   |
|  |                         |                 |   |                   | 1                  |
| Contact details for obtaining  | Name and addre          | ess of the manu | facturer or of its authorised representative  | <del>)</del> .    |                    |
|  | ibishi Heavy Industries |                 |   |                   |                    |
| 7 Ro   | undwood Avenue, Stoo    |                 | ridge, Middlesex, UB11 1AX,   |                   |                    |
|  | d Kingdom               |                 | •   |                   |                    |
|  |                         |                 |   |                   |                    |
|  |                         |                 |   |                   |                    |

PGA000Z812 🙆

## (6) Wall mounted type (SRK)

| Information to identify the mode        | I(s) to which the info   | ormation re | elates to:      | If function includes heating: Indicate                        | the heating s      | eason the    |                |
|---|--------------------------|-------------|-----------------|---|--------------------|--------------|----------------|
| Indoor unit model name SRK100ZR-S       |                          |             |                 | information relates to. Indicated values should relate to one |                    |              |                |
| Outdoor unit model name                 | FDC100VN                 | NP          |                 | heating season at a time. Include at                          | least the heat     | ing seasor   | n 'Average'.   |
|   |                          |             |                 |   |                    |              |                |
| Function(indicate if present)           |                          |             |                 | Average(mandatory)  | Yes                |              |                |
| cooling                                 | Yes                      |             |                 | Warmer(if designated)   | Yes                |              |                |
| heating                                 | Yes                      |             |                 | Colder(if designated)   | No                 |              |                |
| Item                                    | symbol v                 | value i     | unit            | Item  | symbol             | value        | class          |
| Design load                             | Syllibol                 | value (     | uriit           | Seasonal efficiency and energy effici                         |                    | value        | Class          |
| cooling                                 | Pdesignc                 | 10.00       | kW              | cooling   | SEER               | 6.60         | A++            |
| heating / Average                       | Pdesignh                 |             | kW              | heating / Average   | SCOP/A             | 4.40         | A+             |
| heating / Warmer                        | Pdesignh                 |             | kW              | heating / Warmer  | SCOP/W             |              | A+++           |
| heating / Colder                        | Pdesignh                 |             | kW              | heating / Colder  | SCOP/C             | -            | -              |
| J S S S S S S S S S S S S S S S S S S S |                          |             |                 | 3   |                    |              | unit           |
| Declared capacity at outdoor ter        | nperature Tdesignh       | 1           |                 | Back up heating capacity at outdoor                           | temperature 7      | Tdesignh     |                |
| heating / Average (-10°C)               | · Pdh [                  |             | kW              | heating / Average (-10°C)                                     | elbu               | Ö            | kW             |
| heating / Warmer (2°C)                  | Pdh                      | 9.00        | kW              | heating / Warmer (2°C)  | elbu               | 0            | kW             |
| heating / Colder (-22°C)                | Pdh                      | - 1         | kW              | heating / Colder (-22°C)                                      | elbu               | -            | kW             |
|   | •                        |             |                 |   |                    |              |                |
| Declared capacity for cooling, at       | t indoor temperature     | e 27(19)℃   | and             | Declared energy efficiency ratio, at ir                       | ndoor tempera      | ature 27(19  | 9)℃ and        |
| outdoor temperature Tj                  | _                        |             |                 | outdoor temperature Tj  |                    |              | _              |
| Tj=35°C                                 | Pdc                      |             | kW              | Tj=35°C   | EERd               | 3.24         |                |
| Tj=30°C                                 | Pdc                      |             | kW              | Tj=30°C   | EERd               | 5.00         | ]-             |
| Tj=25°C                                 | Pdc                      |             | kW              | Tj=25°C   | EERd               | 7.75         | -              |
| Tj=20°C                                 | Pdc                      | 3.52        | kW              | Tj=20°C   | EERd               | 12.00        | -              |
| Declared acceptable 1 12 11             | \                        | lade        |                 | Declared on first of  | / A                |              | 4              |
| Declared capacity for heating / A       | average season, at i     | ınaoor      |                 | Declared coefficient of performance                           |                    | ison, at inc | 1001           |
| temperature 20°C and outdoor to         | emperature 1j<br>Pdh = F | 627         | <sub>κ\Λ/</sub> | temperature 20°C and outdoor temperature 7°C                  | erature IJ<br>COPd | 2.70         | 1_             |
| Tj=-7°C<br>Tj=2°C                       | Pan<br>Pdh               |             | kW<br>kW        | Tj=-7 C   | COPa               | 4.40         |                |
|   |                          |             | kW              |   |                    |              | ļ <sup>-</sup> |
| Tj=7°C<br>Ti=12°C                       | Pdh                      |             | kW              | Tj=7°C  | COPd               | 6.10         | ļ-             |
| 1,                                      | Pdh                      |             | - 1             | Tj=12°C   | COPd               | 7.40         | ļ <sup>-</sup> |
| Tj=bivalent temperature                 | Pdh                      |             | kW              | Tj=bivalent temperature                                       | COPd               | 2.50         | ļ <sup>-</sup> |
| Tj=operating limit                      | Pdh                      | 6.36        | kW              | Tj=operating limit  | COPd               | 2.30         | -              |
| Declared capacity for heating / \       | Narmar saasan at i       | indoor      |                 | Declared coefficient of performance                           | / Marmor coa       | con at inc   | loor           |
| temperature 20°C and outdoor to         |                          | iiiuuui     |                 | temperature 20°C and outdoor temperature                      |                    | ison, at inc | 1001           |
| Tj=2°C                                  | Pdh [                    | 9.00        | kW              | Tj=2°C  | COPd               | 2.80         | 1_             |
| Ti=7°C                                  | Pdh                      |             | kW              | Tj=7°C  | COPd               | 5.15         | -              |
| Tj=12℃                                  | Pdh                      |             | kW              | Tj=12°C   | COPd               | 7.40         | -              |
| Tj=12 0                                 | Pdh                      |             | kW              | Tj=bivalent temperature                                       | COPd               | 2.80         | -              |
| Tj=operating limit                      | Pdh                      |             | kW              | Tj=operating limit  | COPd               | 2.30         | -              |
| rj operating innit                      | 1 011                    | 0.00        |                 | 1) operating innit  | 001 0              | 2.00         |                |
| Declared capacity for heating / 0       | Colder season, at in     | door        |                 | Declared coefficient of performance                           | / Colder seas      | on, at indo  | or             |
| temperature 20°C and outdoor to         |                          |             |                 | temperature 20°C and outdoor temperature                      |                    | ,            |                |
| Tj=-7°C                                 | . Pdh ⊂                  | - 1         | kW              | Tj=-7℃  | COPd               | -            | 7-             |
| Tj=2°C                                  | Pdh                      | - 1         | kW              | Tj=2°C  | COPd               | -            | 1-             |
| Tj=7°C                                  | Pdh                      | - 1         | kW              | Tj=7°C  | COPd               | -            | 1-             |
| Tj=12°C                                 | Pdh                      | - 1         | kW              | Tj=12°C   | COPd               | -            | 1-             |
| Tj=bivalent temperature                 | Pdh                      | - 1         | kW              | Tj=bivalent temperature                                       | COPd               | -            | 1-             |
| Tj=operating limit                      | Pdh                      | - 1         | kW              | Tj=operating limit  | COPd               | -            | ]-             |
| Tj=-15℃                                 | Pdh                      | - 1         | kW              | Tj=-15°C  | COPd               | -            | ]-             |
|   |                          |             |                 |   |                    |              |                |
| Bivalent temperature                    |                          |             | .               | Operating limit temperature                                   |                    |              | ٦.             |
| heating / Average                       | Tbiv                     |             | °C              | heating / Average   | Tol                | -15          | J°C            |
| heating / Warmer                        | Tbiv                     |             | °C              | heating / Warmer  | Tol                | -15          | <u></u> ℃      |
| heating / Colder                        | Tbiv                     | -           | °C              | heating / Colder  | Tol                | -            | °C             |
| Cycling interval capacity               |                          |             |                 | Cycling interval efficiency                                   |                    |              |                |
| for cooling                             | Pcycc [                  |             | kW              | for cooling   | EERcyc             | _            | 1_             |
| for heating                             | Pcych                    |             | kW              | for heating   | COPcyc             | <u> </u>     | -              |
| To Treating                             | 1 Cycli                  | - 1         | NVV             | ioi rieating  | COI Cyc            |              | <u> </u> -     |
| Degradation coefficient                 |                          |             |                 | Degradation coefficient                                       |                    |              |                |
| cooling                                 | Cdc                      | 0.25        | -               | heating   | Cdh                | 0.25         | ]-             |
|   |                          |             |                 |   |                    |              |                |
| Electric power input in power mo        |                          |             |                 | Annual electricity consumption                                |                    |              |                |
| off mode                                | Poff                     |             | W               | cooling   | Qce                | 531          | kWh/a          |
| standby mode                            | Psb                      |             | W               | heating / Average   | Qhe                | 2289         | kWh/a          |
| thermostat-off mode                     | Pto                      |             | W               | heating / Warmer  | Qhe                | 2251         | kWh/a          |
| crankcase heater mode                   | Pck                      | 0           | W               | heating / colder  | Qhe                | -            | kWh/a          |
| 0                                       | 41                       |             |                 | Ott 't  |                    |              |                |
| Capacity control(indicate one of        | three options)           |             |                 | Other items Sound power level(indoor)                         | Lwa                | 63           | dB(A)          |
|   |                          |             |                 | Sound power level(indoor)                                     | Lwa                | 70           | dB(A)          |
| fixed                                   | No                       |             |                 | Global warming potential                                      | GWP                | 1975         | kgCO2eq.       |
| 1                                       | No                       |             |                 |   |                    | 1470         | m3/h           |
| staged<br>variable                      | Yes                      |             |                 | Rated air flow(indoor) Rated air flow(outdoor)                | -                  | 4500         | m3/h           |
| variable                                | res                      |             |                 | Trated all How(OutdOUL)                                       | -                  | 4300         | J1110/11       |
| Contact details for obtaining           | Name and                 | address o   | of the man      | ufacturer or of its authorised represent                      | tative.            |              |                |
|   | litsubishi Heavy Ind     |             |                 |   |                    |              |                |
|   |                          |             |                 | kbridge, Middlesex, UB11 1AX,                                 |                    |              |                |
|   | Inited Kingdom           |             | - ,             | · · · · · · · · · · · · · · · · · · ·                         |                    |              |                |
|   | ·                        |             |                 |   |                    |              |                |
|   |                          |             |                 |   |                    |              |                |

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