Manual No.'12•PAC-T-178

Revision : Lot10 data(P351~355) December 26, 2012

TECHNICAL MANUAL

INVERTER DUCT CONNECTED-HIGH STATIC PRESSURE TYPE AIR-CONDITIONERS (Split system, air to air heat pump type)

HYPER INVERTER

FDU71VNXVF1 FDU100VNXVF1 FDU100VSXVF1 FDU125VNXVF FDU125VSXVF FDU140VNXVF FDU140VSXVF

MICRO INVERTER

FDU100VNVF1 FDU100VSVF1 FDU125VNVF FDU125VSVF FDU140VNVF FDU140VSVF

Service code

Indoor unit	Histo	ory of s	ervice	code	Changes					
All FDU	1				_					
outdoor unit	Histo	ory of s	ervice	code	Changes					
FDC71VNX	1	Α			1→A Comply with Lot 10					
FDC100VNX	1	А			blank \rightarrow A Expand usage temp range to -20°C in heating					
FDC125VNX	1	А			$A \rightarrow B$ Expand diameter of half punched hole for the pipes to be					
FDC140VNX	1	А			drawn in from behind					
FDC100VN,FDC100VS	blank	Α	В	С	$B \rightarrow C$ Replace to new compressor and new PCB,					
FDC125VN,FDC125VS	blank	Α	В	С	Comply with Lot 10					
FDC140VN,FDC140VS	blank	А	В	С	Please refer to technical information : MQC-TSI-12010					

MITSUBISHI HEAVY INDUSTRIES, LTD.

This technical manual can be applyed for all service code.

TABLE OF CONTENTS

1. HYPER INVERTER	
2. MICRO INVERTER	
3. OPTION PARTS	

<For EU/EEA area only>

Based on the European regulation listed below, please refer to the following specification table.

1. The European regulation

Regulation (EU) No 626/2011 of 4 May 2011 : energy labeling of air-conditioners.

Regulation (EU) No 206/2012 of 6 March 2012 : requirements for air-conditioners and comfort fans.

2. Specification table (Lot10 data)

Indoor unit model name / outdoor unit model name

(1) FDU71VF1 / FDC71VNX	
(2) FDU100VF1 / FDC100VNX	
(3) FDU100VF1 / FDC100VSX	
(4) FDU100VF1 / FDC100VN	
(5) FDU100VF1 / FDC100VS	

1 HYPER INVERTER

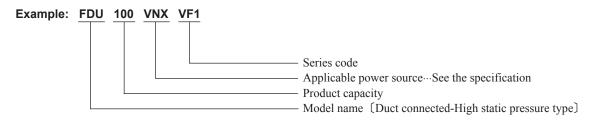
CONTENTS

1.1 SF	PECIFICATIONS	5
1.2 E)	(TERIOR DIMENSIONS	12
(1)) Indoor units	12
(2)) Outdoor units	14
(3)	Remote control (Option parts)	16
1.3 EL	ECTRICAL WIRING	19
(1)) Indoor units	19
(2)) Outdoor units	21
1.4 NC	DISE LEVEL	24
1.5 Cł	ARACTERISTICS OF FAN	26
1.6 PI	PING SYSTEM	30
1.7 R/	ANGE OF USAGE & LIMITATIONS	31
1.8 SE	ELECTION CHART	34
1.8.1	Capacity tables	34
1.8.2	Correction of cooling and heating capacity in relation to air flow rate control (fan speed)	40
1.8.3	Correction of cooling and heating capacity in relation to one way length of refrigerant piping	40
1.8.4	Height difference between the indoor unit and outdoor unit	40
1.9 AF	PLICATION DATA	42
	Installation of indoor unit	
1.9.2	Electric wiring work installation	48
	Installation of wired remote control (option)	
	Installation of outdoor unit	
1.10 Ol	JTLINE OF OPERATION CONTROL BY MICROCOMPUTER	82
1.10.1	Remote control	82
1.10.2	Operation control function by the wired remote control	85
1.10.3	Operation control function by the indoor control	88
(1)) Auto operation	88
(2)) Operations of functional items during cooling/heating	89
(3)) Dehumidifying operation	89
(4)) Timer operation	90
(5)) Remote control display during the operation stop	91
(6)) Hot start (Cold draft prevention at heating)	91
(7)) Hot keep	91
(8)		00
	Thermostat operation	92
(9)	•	
()	•	93
()	Filter sign	93 93

(13)	Operation check/drain pump test run operation mode	94
(14)	Cooling, dehumidifying frost protection	95
(15)	Heating overload protection	95
(16)	Anomalous fan motor	95
(17)	Plural unit control - Control of 16 units group by one remote control	96
(18)	High ceiling control	96
(19)	Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection .	96
(20)	External input/output control (CnT or CnTA)	97
(21)	Operation permission/prohibition	98
(22)	Selection of cooling/heating external input function	100
(23)	Fan control at heating startup	101
(24)	Room temperature detection temperature compensation during heating	101
(25)	Return air temperature compensation	101
(26)	High power operation (RC-EX1A only)	101
(27)	Energy-saving operation (RC-EX1A only)	101
(28)	Warm-up control (RC-EX1A only)	101
(29)	Home leave mode (RC-EX1A only)	101
(30)	Auto temp. setting (RC-EX1A only)	101
(31)	Fan circulator operation (RC-EX1A only)	102
(32)	The operation judgment is executed every 5 minutes (RC-EX1A only)	102
(33)	Auto fan speed control (RC-EX1A only)	102
(34)	IU overload alarm (RC-EX1A only)	102
1.10.4	Operation control function by the outdoor control	103
(1)	Determination of compressor speed (frequency)	103
(2)	Compressor start control	103
(3)	Compressor soft start control	104
(4)	Outdoor unit fan control	105
(5)	Defrosting	107
(6)	Protective control/anomalous stop control by compressor's number of revolutions	108
(7)	Silent mode	112
(8)	Test run	112
(9)	Pump-down control	112
(10)	Base heater ON/OFF output control (option)	113
1.11 MAI	NTENANCE DATA	
1.11.1	Diagnosing of microcomputer circuit	114
(1)	Selfdiagnosis function	
(2)	Troubleshooting procedure	117
(3)	Troubleshooting at the indoor unit	
(4)	Troubleshooting at the outdoor unit	121

(5)	Check of anomalous operation data with the remote control	128
(6)	Power transistor module (including the driver PCB) inspection procedure	130
(7)	Inverter checker for diagnosis of inverter output	131
(8)	Outdoor unit control failure diagnosis circuit diagram	132
1.11.2	Troubleshooting flow	135
(1)	List of troubles	135
(2)	Troubleshooting	136

How to read the model name



1.1 SPECIFICATIONS

Adapted	to	RoHS	directive
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tem	Model	ln			FDU71			
		l In	door unit FDU 7			Outdoor unit FDC71VNX		
Power source Operation data			Cooling			220-240V ~ 50Hz / 220V ~ 60Hz Heating		
Nominal capacity	kW	7 1	[3.2 (Min.)~8.0			8.0 [3.6 (Min.)~9.0 (Max.)]		
Power consumption	kW	/.1	2.05	J (Max.)]		2.01		
Running current	A		9.1 / 9.5			9.1 / 9.5		
Power factor	%		98			96		
Inrush current	A		50	5 < Ma	x runnir	ng current 17>		
Sound Pressure Level	dB(A)	P-Hi : 3	8 Hi:33 Me:			Cooling : 51, Heating : 48		
Exterior dimensions Height × Width × Depth	mm		280 × 950 × 6			750 × 880 (+88) × 340		
Exterior appearance (Munsell color)			_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight	kg		34			60		
Refrigerant equipment								
Compressor type & Q'ty			_			RMT5118MDE2 × 1		
Starting method	1		_			Direct line start		
Refrigerant oil	l		_			0.675 (M-MA68)		
Heat exchanger	Ť	Louver	fin & inner groo	oved tubing		M shape fin & inner grooved tubing		
Refrigerant control	1		_			Electronic expansion valve		
Air handling equipment Fan type & Q'ty			Centrifugal fan	× 2		Propeller fan × 1		
Motor <starting method=""></starting>	1:	30 <direct line<="" td=""><td>start></td><td></td><td>86 <direct line="" start=""></direct></td><td></td></direct>	start>		86 <direct line="" start=""></direct>			
Air flow (Standard)		4 Hi: 19 Me:			Cooling : 60, Heating : 50			
External static pressure	-					0		
Outside air intake			Possible					
Air filter, Q'ty		Procure loca	llv	-				
Shock & vibration absorber			er sleeve (for fa	,	Rubber sleeve (for Compressor)			
Insulation (noise & heat)			Polyurethane f	form				
Electric heater W		_			20 (Crank case heater)			
Remote control			wired : R0	C-EX1A, RC-E5	(option)) wireless : RCN-KIT3-E (option)		
Room temperature control		The	rmostat by elec					
Satety equipment		Internal thermostat for fan motor Abnormal discharge temperature protectio	on.					
Installation data			Liquid line :	I/U \$\$\phi\$ 9.52 (3/8"	Pipe d	b 9.52 (3/8") × 0.8 O/U φ 9.52 (3/8")		
Refrigerant piping size	mm		Gas line :	φ 15.88 (5/8	φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")			
Connecting method		Flare piping			,	Flare piping		
Refrigerant line (one way) length		Max.50m			· · · ·			
Vertical height difference between	1	Max.30m (Outdoor unit is higher)			See page 33			
outdoor unit and indoor unit			Max.15m	Outdoor unit is				
Refrigerant Quantity			R410A 2.95	kg in outdoor u	the amount for the piping of : 30m)			
Drain pump			Built-in Drain p	ump		-		
Drain	in Hose Connectable with VP25 (I.D.25mm, O.D.32mm		2mm)	Holes size $\phi 20 \times 3pcs$				
IP code			IPXO			IPX4		
Insulation for piping				Necessary	(both L	liquid & Gas lines)		
Standard Accessories			Drain hose	1				
Notes (1) The data are	measured	d at the following co	onditions.					
Item Indoor a		air temperature	Outdoor air	temperature	Ext	ternal static pressure of indoor unit		
Operation	DB	WB	DB	WB		Pa		
Cooling	27°C	19°C	35°C	24°C				
Heating		20°C	7°C	6°C		35		
(3) Sound pressu ambient temp (4) The operation	ure level i perature. data ind .S.P. sett	licates when the air ing is set within the	n an anechoic	chamber. Durin	g opera IV50Hz	tion these value are somewhat higher due to		

	Model			F	DU100	VNXVF1		
Item		In	door unit FDU1	00VF1		Outdoor unit FDC100VNX		
Power source						220-240V~50Hz / 220V~60Hz		
Operation data			Cooling			Heating		
Nominal capacity	kW	10.0	[4.0 (Min.)~11	.2 (Max.)]		11.2 [4.0 (Min.)~12.5 (Max.)]		
Power consumption	kW		2.68			3.02		
Running current	A		12.0 / 12.5			13.5 / 14.1		
Power factor	%		97			97		
Inrush current	A			5 <ma< td=""><td>x.runnir</td><td>ng current 25></td></ma<>	x.runnir	ng current 25>		
Sound Pressure Level	dB(A)	P-Hi :	44 Hi:38 Me:	:36 Lo:30		Cooling : 48 Heating : 50		
Exterior dimensions Height × Width × Depth	mm		280 × 1,370 ×	740		1,300 × 970 × 370		
Exterior appearance (Munsell color)			_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight	kg		54			105		
Refrigerant equipment Compressor type & Q'ty			_			RMT5134MDE2 × 1		
Starting method			_			Direct line start		
Refrigerant oil	l		_			0.9 M-MA68		
Heat exchanger		Louve	fin & inner gro	oved tubing		M shape fin & inner grooved tubing		
Refrigerant control						Electronic expansion valve		
Air handling equipment Fan type & Q'ty		Centrifugal fan × 3				Propeller fan × 2		
Motor <starting method=""></starting>	W	100	100 + 130 <direct line="" start=""></direct>			86 × 2 <direct line="" start=""></direct>		
Air flow (Standard)	CMM	P-Hi :	36 Hi:28 Me:	25 Lo:19		100		
External static pressure	Pa	St	Standard : 60 Max : 200			0		
Outside air intake			Possible			_		
Air filter, Q'ty			Procure loca	lly		_		
Shock & vibration absorber	-	Rub	ber sleeve (for f	,		Rubber sleeve (for Compressor)		
nsulation (noise & heat)	-		Polyurethane f	,				
Electric heater	w		_	-		20 (Crank case heater)		
Remote control			wired : R	C-EX1A, RC-E5	(option)	on) wireless : RCN-KIT3-E (option)		
Room temperature contro	1	Th	ermostat by ele		1-1	_		
· · ·			ad protection for		Internal thermostat for fan motor			
Safety equipment			st protection the		Abnormal discharge temperature protection.			
nstallation data			Liquid line :	I/U φ 9.52 (3/8"	φ 9.52 (3/8") × 0.8 O/U φ 9.52 (3/8")			
Refrigerant piping size	mm		Gas line :		φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")			
Connecting method	-		Flare piping	, ,	, ,	Flare piping		
Refrigerant line (one way) lengt	1		Max.100m					
Vertical height difference betwee	-		Max.30m	(Outdoor unit is	See page 33			
outdoor unit and indoor unit			Max.15m					
Refrigerant Quantity		R410A 4.5kg in outdoor unit (incl.				the amount for the piping of : 30m)		
Drain pump		Built-in Drain pump			_			
Drain		Hose Connectable with VP25 (I.D.25mm, O.D.32mm)			Holes size $\phi 20 \times 3pcs$			
IP code	1	IPXO		IPX4				
Insulation for piping	1			Liquid & Gas lines)				
Standard Accessories	1	Drain hose		Edging				
Notes (1) The data are	measure	d at the following o						
			1		_			
Item		air temperature	1	temperature	Ex	ternal static pressure of indoor unit		
Operation	DB	WB	DB	WB		Pa		
Cooling	27°C	19°C	35°C	24°C		60		
Heating		20°C	7°C	6°C				
(3) Sound press ambient tem	ure level i perature.	ditioner is manufac ndicates the value licates when the ai	in an anechoic	chamber. Durin	g opera	tion these value are somewhat higher due to		

(4) The operation data indicates when the an-conditioner is operated at 25030H2 of 22030H2 of 22030H2.
(5) 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.
(6) If wireless remote control is used, only 3-speed fan setting (Hi-Me-Lo) is available.

	Adapted	to	RoHS	directive
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	Model				DU100	VSXVF1		
Item		Inc	loor unit FDU1	00VF1	Outdoor unit FDC100VSX			
Power source						380-415V 3N~50Hz / 380V 3N~6	0Hz	
Operation data		Cooling				Heating		
Nominal capacity	kW	10.0 [4.0 (Min.)~11.2 (Max.)]				11.2 [4.0 (Min.)~16.0 (Max.)]		
Power consumption	kW		2.68			3.02		
Running current	A		4.0 / 4.2			4.5 / 4.7		
Power factor	%		97	5 . Ma		97 / 98		
Inrush current	A dB(A)		4 Hi · 29 Ma ·		x.runnir	ng current 16>		
Sound Pressure Level Exterior dimensions	dB(A)	Р-пі:4	P-Hi: 44 Hi: 38 Me: 36 Lo: 30			Cooling : 48 Heating : 50		
Height × Width × Depth	n mm		280 × 1,370 × 7	740		1,300 × 970 × 370		
Exterior appearance (Munsell color)			_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight	kg		54			105		
Refrigerant equipment								
Compressor type & Q't	y		_			RMT5134MDE3 × 1		
Starting method			_			Direct line start		
Refrigerant oil	l		_			0.9 M-MA68		
Heat exchanger		Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tubir	ng	
Refrigerant control			_			Electronic expansion valve		
Air handling equipment Fan type & Q'ty			Centrifugal fan	× 3		Propeller fan × 2		
Motor <starting metho<="" td=""><td>d> W</td><td>100 -</td><td colspan="3">100 + 130 <direct line="" start=""></direct></td><td>86 × 2 <direct line="" start=""></direct></td><td></td></starting>	d> W	100 -	100 + 130 <direct line="" start=""></direct>			86 × 2 <direct line="" start=""></direct>		
Air flow (Standard)	CMM	P-Hi: 36 Hi: 28 Me: 25 Lo: 19				100		
External static pressure	e Pa	Standard : 60 Max : 200			0			
Outside air intake			Possible			_		
Air filter, Q'ty			Procure locally			_		
Shock & vibration absor	ber	Rubb	Rubber sleeve (for fan motor)			Rubber sleeve (for Compressor)		
Insulation (noise & heat)		Polyurethane form			_			
Electric heater	W		_			20 (Crank case heater)		
Remote control			wired : RC-EX1A, RC-E5 (option)			n) wireless : RCN-KIT3-E (option)		
Room temperature con	itrol		rmostat by elec					
Safety equipment			Overload protection for fan motor Frost protection thermostat		Internal thermostat for fan motor Abnormal discharge temperature protection.			
Installation data			Liquid line :	I/U φ 9.52 (3/8")	9.52 (3/8") × 0.8 Ο/U φ 9.52 (3/8")			
Refrigerant piping size	mm		Gas line :	<i>φ</i> 15.88 (5/8	")	φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")		
Connecting method		Flare piping				Flare piping		
Refrigerant line (one way) length		Max.100m						
Vertical height difference bet	ween		Max.30m (Outdoor unit is	higher)	See page 33		
outdoor unit and indoor unit				Outdoor unit is				
Refrigerant Quantity				-	it (incl. t	the amount for the piping of : 30m)		
Drain pump			Built-in Drain pump		-			
Drain		Hose Connectab	Hose Connectable with VP25 (I.D.25mm, O.D.32mm)			Holes size $\phi 20 \times 3pcs$		
IP code		IPXO				IPX4		
Insulation for piping			(both L	Liquid & Gas lines)				
Standard Accessories			Drain hose			Edging		
Notes (1) The data	1		1					
Item	_	air temperature		temperature	Ext	ternal static pressure of indoor unit		
Operation DB		WB	DB	WB		Ра		
Cooling	27°C	19°C	35°C	24°C		60		
Heating		20°C	7°C	6°C				
(3) Sound pro higher du	essure level i e to ambient.		n an anechoic d	chamber. tempe	erature.	During operation these value are somewhat		
(5) The facto changed	ry E.S.P. sett to 10-200 Pa	•	range of 80-15	0 Pa. If SW8-4	is turne	ed to "ON", E.S.P. setting range can be		

	Model	Iodel FDU125VNXVF							
Item		In	door unit FDU1	25VF	Outdoor unit FDC125VNX				
Power source						220-240V~50Hz / 220V~60Hz			
Operation data			Cooling			Heating			
Nominal capacity	kW	12.5	[5.0 (Min.) ~ 14.	0 (Max.)]		14.0 [4.0 (Min.)~17.0 (Max.)]			
Power consumption	kW		3.49			3.77			
Running current	A		15.5 / 16.2			16.8 / 17.6			
Power factor	%		98			98 / 97			
Inrush current	A			5 <ma< td=""><td>x.runnir</td><td>ng current 29></td></ma<>	x.runnir	ng current 29>			
Sound Pressure Level	dB(A)	P-Hi : 4	5 Hi:40 Me:	34 Lo:29		Cooling : 48 Heating : 50			
Exterior dimensions Height × Width × Depth	mm		280 × 1,370 × 740			1,300 × 970 × 370			
Exterior appearance (Munsell color)			_			Stucco White (4.2Y7.5/1.1) near equivalent			
Net weight	kg		54			105			
Refrigerant equipment Compressor type & Q'ty			_			RMT5134MDE2 × 1			
Starting method			_			Direct line start			
Refrigerant oil	l					0.9 M-MA68			
Heat exchanger	L L	Louver	fin & inner groo	wed tubing		M shape fin & inner grooved tubing			
Refrigerant control		Louver	nin a inner groc	wed tubing	Electronic expansion valve				
Air handling equipment									
Fan type & Q'ty		Centrifugal fan × 3			Propeller fan × 2				
Motor <starting method=""></starting>	W	100 -	+ 200 <direct lin<="" td=""><td>ne start></td><td colspan="3">86 × 2 <direct line="" start=""></direct></td></direct>	ne start>	86 × 2 <direct line="" start=""></direct>				
Air flow (Standard)	CMM	P-Hi : 3	89 Hi:32 Me:	26 Lo:20	100				
External static pressure	Pa	Sta	Standard : 60 Max : 200			0			
Outside air intake			Possible			_			
Air filter, Q'ty			Procure locally			-			
Shock & vibration absorber		Rubb	er sleeve (for fa	an motor)		Rubber sleeve (for Compressor)			
Insulation (noise & heat)			Polyurethane form			_			
Electric heater	W		_			20 (Crank case heater)			
Remote control			wired : RC	C-EX1A, RC-E5	(option	on) wireless : RCN-KIT3-E (option)			
Room temperature control		The	rmostat by elec	tronics		-			
Safety equipment			Overload protection for fan motor Frost protection thermostat			Internal thermostat for fan motor Abnormal discharge temperature protection.			
Installation data) Pipe	ϕ 9.52 (3/8") × 0.8 O/U ϕ 9.52 (3/8")			
Refrigerant piping size	mm		Gas line :		<u>, , ,</u>	$(5,6)^{(1)} \times (5,6)^{(1)} \times $			
Connecting method			Flare piping	, ,	9 9	Flare piping			
Refrigerant line (one way) length				Max.100m					
Vertical height difference between			Max.100m Max.30m (Outdoor unit is higher			See page 33			
outdoor unit and indoor unit		Max.15m (Outdoor unit is lower)							
Refrigerant Quantity		R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)				the amount for the piping of : 30m)			
Drain pump		Built-in Drain pump			_				
Drain			Hose Connectable with VP25 (I.D.25mm, O.D.32mm)			Holes size $\phi 20 \times 3pcs$			
IP code		IPXO		IPX4					
Insulation for piping			-		(hoth l	Liquid & Gas lines)			
Standard Accessories			Drain hose			Edging			
		d at the following o				Luging			
		ed at the following conditions.							
Item		air temperature		temperature	Ex	ternal static pressure of indoor unit			
Operation	DB	WB	DB	WB		Pa			
Cooling	27°C	19°C	35°C	24°C		60			
Heating		20°C	7°C	6°C		00			
(2) This package	d air-con	ditioner is manufac	tured and teste	d in conformity	with th	e ISO			

(5) 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 (b) The factory E.co. rooting is occurrent to tange a set for the factory E.co. rooting is occurrent to tange a set for the factory E.co. rooting is even to tange a set for tange a set f

Adapted to	RoHS	directive
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		Model			I	FDU12	5VSXVF	
Item			Inc	door unit FDU1	25VF		Outdoor unit FDC125VSX	
Power source							380-415V 3N~50Hz / 380V 3N~60Hz	
Operation data				Cooling			Heating	
Nominal capacity	,	kW	12.5 [5.0 (Min.) ~ 14.	0 (Max.)]		14.0 [4.0 (Min.)~18.0 (Max.)]	
Power consumption	on	kW		3.49			3.77	
Running current		А		5.2 / 5.5			5.6 / 5.9	
Power factor		%		97 / 96			97	
Inrush current		А			5 <ma< td=""><td>x.runnir</td><td>ng current 18></td></ma<>	x.runnir	ng current 18>	
Sound Pressure L	evel	dB(A)	P-Hi : 4	5 Hi:40 Me:	34 Lo:29		Cooling : 48 Heating : 50	
Exterior dimensions Height × Width × I		mm		280 × 1,370 × 7	740		1,300 × 970 × 370	
Exterior appearance (Munsell color)	e			_			Stucco White (4.2Y7.5/1.1) near equivalent	
Net weight		kg		54			105	
Refrigerant equipm Compressor type				_			RMT5134MDE3 × 1	
Starting method				-			Direct line start	
Refrigerant oil		l					0.9 M-MA68	
Heat exchanger			Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tubing	
Refrigerant contro	bl			_			Electronic expansion valve	
Air handling equipm Fan type & Q'ty	nent			Centrifugal fan	× 3		Propeller fan × 2	
Motor <starting m<="" td=""><td>nethod></td><td>W</td><td>100 +</td><td>- 200 <direct lir<="" td=""><td>ne start></td><td></td><td>86 × 2 <direct line="" start=""></direct></td></direct></td></starting>	nethod>	W	100 +	- 200 <direct lir<="" td=""><td>ne start></td><td></td><td>86 × 2 <direct line="" start=""></direct></td></direct>	ne start>		86 × 2 <direct line="" start=""></direct>	
Air flow (Standard)		CMM	P-Hi : 3	9 Hi:32 Me:	26 Lo:20		100	
External static pre	ssure	ure Pa Standard : 60 Max : 200		0				
Outside air intake Possible				-				
Air filter, Q'ty		Procure locally		-				
Shock & vibration a	absorber		Rubb	er sleeve (for fa	n motor)		Rubber sleeve (for Compressor)	
Insulation (noise & I				Polyurethane form		_		
Electric heater		w	_		20 (Crank case heater)			
Remote control			wired : BC-EX1A_BC-E5 (option)) wireless : RCN-KIT3-E (option)			
Room temperature	e control		The	rmostat by elec	-	(-)		
				d protection for			Internal thermostat for fan motor	
Safety equipment			Frost protection thermostat			Abnormal discharge temperature protection.		
Installation data						Pipe d	b 9.52 (3/8") × 0.8 Ο/U φ 9.52 (3/8")	
Refrigerant piping	size	mm		Gas line :			b 15.88 (5/8") × 1.0 φ 15.88 (5/8")	
Connecting metho				Flare piping	1	, +	Flare piping	
Refrigerant line (one w			Max.100m					
Vertical height differend			Max.30m (Outdoor unit is higher)		See page 33			
outdoor unit and indoo			Max.15m (Outdoor unit is lower)					
Refrigerant Quanti			R410A 4.5kg in outdoor unit (incl. th		the amount for the piping of : 30m)			
Drain pump	-		E		imp	·	_	
Drain			Hose Connectabl				Holes size $\phi 20 \times 3pcs$	
IP code				IPXO			IPX4	
Insulation for piping	,				Necessary	(both L	Liquid & Gas lines)	
Standard Accessor	-			Drain hose			Edging	
Notes (1) The	data are m	neasured	at the following co	onditions.				
Item Indo					temperature	Ev4	ternal static pressure of indeer unit	
			air temperature		· · ·	EXI	ternal static pressure of indoor unit	
	ration	DB	WB	DB	WB		Pa	
Cooling		27°C	19°C	35°C	24°C		60	
Hea	ating		20°C	7°C	6°C			
(3) Sour highe	nd pressur er due to a	e level in ambient.		n an anechoic d	chamber. tempe	erature.	During operation these value are somewhat	
(5) The t		S.P. sett	ing is set within the				ed to "ON", E.S.P. setting range can be	

	Model				FDU140	OVNXVF
Item		In	Indoor unit FDU140VF			Outdoor unit FDC140VNX
Power source				220-240V~50Hz / 220V~60Hz		
Operation data		L	Cooling			Heating
Nominal capacity	kW	14.0	[5.0 (Min.) ~ 14	.5 (Max.)]		16.0 [4.0 (Min.)~18.0 (Max.)]
Power consumption	kW		4.28			4.42
Running current	А		19.2 / 20.1			19.8 / 20.7
Power factor	%		97			97
Inrush current	А			5 <ma< td=""><td>x.runnir</td><td>ng current 30></td></ma<>	x.runnir	ng current 30>
Sound Pressure Level	dB(A)	P-Hi : 4	7 Hi:40 Me:	35 Lo:30		Cooling : 49 Heating : 52
Exterior dimensions Height × Width × Depth	mm		280 × 1,370 ×	740		1,300 × 970 × 370
Exterior appearance		1	_			Stucco White
(Munsell color)						(4.2Y7.5/1.1) near equivalent
Net weight	kg		54			105
Refrigerant equipment Compressor type & Q'ty		L	_			RMT5134MDE2 × 1
Starting method			_			Direct line start
Refrigerant oil	l					0.9 M-MA68
Heat exchanger		Louver	fin & inner groo	oved tubing		M shape fin & inner grooved tubing
Refrigerant control		·				Electronic expansion valve
Air handling equipment Fan type & Q'ty			Centrifugal fan	× 3		Propeller fan × 2
Motor <starting method=""></starting>	arting method> W 100 + 200 <direct line="" start=""></direct>			86 × 2 <direct line="" start=""></direct>		
Air flow (Standard)	d) CMM P-Hi: 48 Hi: 35 Me: 28 Lo: 22			100		
External static pressure	Pa	Sta	Standard : 60 Max : 200		0	
Outside air intake			Possible		-	
Air filter, Q'ty			Procure locally		_	
Shock & vibration absorber		Rubb	Rubber sleeve (for fan motor)		Rubber sleeve (for Compressor)	
nsulation (noise & heat)			Polyurethane f	orm		_
Electric heater	W					20 (Crank case heater)
Remote control			wired : R0	C-EX1A, RC-E5	(option)	wireless : RCN-KIT3-E (option)
Room temperature control		The	rmostat by elec	ctronics		_
		Overloa	ad protection fo	or fan motor		Internal thermostat for fan motor
Safety equipment		Frost protection thermostat				Abnormal discharge temperature protection.
Installation data		Liquid line : I/U ϕ 9.52 (3/8") Pipe (- 9.52 (3/8") × 0.8 Ο/U φ 9.52 (3/8")	
Refrigerant piping size	mm	Gas line : ϕ 15.88 (5/8") ϕ			φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")	
Connecting method		Flare piping			Flare piping	
Refrigerant line (one way) length		Max.100m				
Vertical height difference between			Max.30m (Outdoor unit is higher) See page 33			
outdoor unit and indoor unit		Max.15m (Outdoor unit is lower)				
Refrigerant Quantity			R410A 4.5k	g in outdoor un	it (incl.	the amount for the piping of : 30m)
Drain pump			Built-in Drain p	ump		
Drain		Hose Connectabl	e with VP25 (I.I	D.25mm, O.D.3	2mm)	Holes size $\phi 20 \times 3pcs$
IP code			IPXO			IPX4
Insulation for piping				Necessary	(both L	iquid & Gas lines)
Standard Accessories			Drain hose			Edging
Notes (1) The data are m	easured	at the following co	onditions.			
Item	Indoor	air temperature	Outdoor air	temperature	Ext	ternal static pressure of indoor unit
Operation	DB	WB	DB	WB		Pa
oporation	27°C	19°C	35°C	24°C		. ~
Cooling	210	190				60
Cooling Heating		20°C	7°C	6°C		

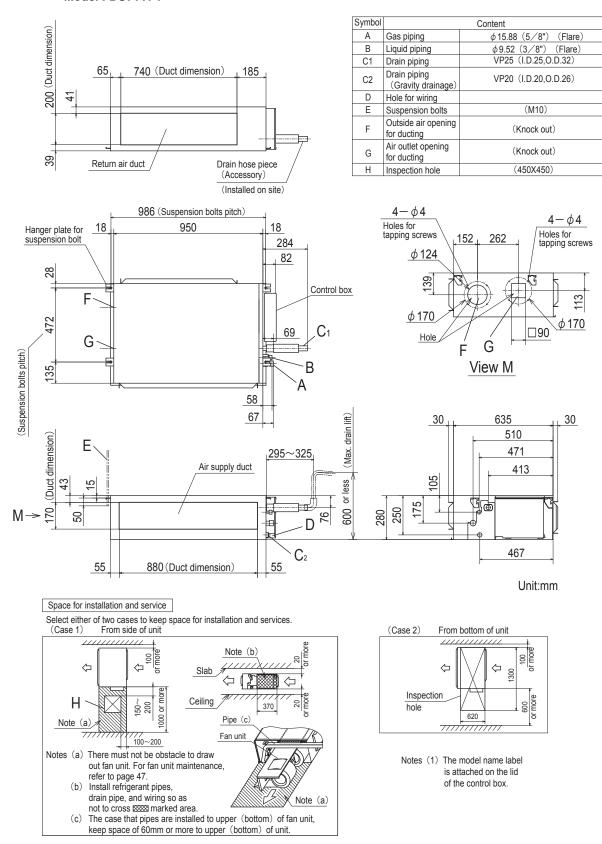
(5) The factory E.S.P. setting is set within the range of 80-150 Pa. If SW8-4 is turned to "ON", E.S.P. setting range can be changed to 10-200 Pa.
(6) If wireless remote control is used, only 3-speed fan setting (Hi-Me-Lo) is available.

Adapted to	RoHS	directive
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14						DU140		
Item			Inc	door unit FDU1	40VF		Outdoor unit FDC140VSX	
Power source							380-415V 3N~50Hz / 380V 3N~60Hz	
Operation data				Cooling			Heating	
Nominal capacity	k٧	W	14.0 [5.0 (Min.) ~ 14.	5 (Max.)]		16.0 [4.0 (Min.)~20.0 (Max.)]	
Power consumption	k٧	W		4.28			4.42	
Running current	A	4		6.4 / 6.7			6.6 / 6.9	
Power factor	%	6		97			97	
Inrush current	A	۹.			5 <ma< td=""><td>k.runnin</td><td>ng current 19></td></ma<>	k.runnin	ng current 19>	
Sound Pressure Leve	el dB(8(A)	P-Hi : 4	7 Hi:40 Me:	35 Lo:30		Cooling : 49 Heating : 52	
Exterior dimensions Height × Width × De	pth mr	im	:	280 × 1,370 × 7	'40		1,300 × 970 × 370	
Exterior appearance (Munsell color)				_			Stucco White (4.2Y7.5/1.1) near equivalent	
Net weight	kį	g		54			105	
Refrigerant equipment Compressor type & 0				_			RMT5134MDE3 × 1	
Starting method				_			Direct line start	
Refrigerant oil	l	e		_			0.9 M-MA68	
Heat exchanger	1		Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tubing	
Refrigerant control				_	-		Electronic expansion valve	
Air handling equipmer Fan type & Q'ty	nt		(Centrifugal fan	× 3		Propeller fan × 2	
Motor <starting meth<="" td=""><td>hod> W</td><td>v</td><td>100 +</td><td>200 <direct lir<="" td=""><td>e start></td><td></td><td>86 × 2 <direct line="" start=""></direct></td></direct></td></starting>	hod> W	v	100 +	200 <direct lir<="" td=""><td>e start></td><td></td><td>86 × 2 <direct line="" start=""></direct></td></direct>	e start>		86 × 2 <direct line="" start=""></direct>	
Air flow (Standard)	CM			8 Hi:35 Me:			100	
External static press			Standard : 60 Max : 200		0			
Outside air intake				-				
Air filter, Q'ty		Procure locally		_				
Shock & vibration abs	orber		Rubb	er sleeve (for fa	,		Rubber sleeve (for Compressor)	
Insulation (noise & hea			Polyurethane form					
Electric heater	W	N	_		20 (Crank case heater)			
Remote control		·		wired : BC	-EX1A_BC-E5	(option)	wireless : RCN-KIT3-E (option)	
Room temperature c	ontrol		The	mostat by elec		(0011011)		
				d protection for			Internal thermostat for fan motor	
Safety equipment			Frost protection thermostat			Abnormal discharge temperature protection.		
Installation data						Pipe d	$9.52 (3/8") \times 0.8 \text{ O/U} \phi 9.52 (3/8")$	
Refrigerant piping siz	ze mr	m –		Gas line :			(5.02) (5.02)	
Connecting method				Flare piping	φφ	<u>γ</u> φ	Flare piping	
Refrigerant line (one way)) length		Max.100m					
Vertical height difference b	· •		Max.30m (Outdoor unit is higher)		See page 33			
outdoor unit and indoor u			Max.15m (Outdoor unit is lower)					
Refrigerant Quantity					the amount for the piping of : 30m)			
Drain pump			E	Built-in Drain pu	5	<u>`</u>	_	
Drain			Hose Connectable			1	Holes size $\phi 20 \times 3pcs$	
IP code				IPXO	, -	,	IPX4	
Insulation for piping					Necessarv	(both L	iquid & Gas lines)	
Standard Accessories	;			Drain hose		.	Edging	
Notes (1) The da	ta are meas	sured a	at the following co			I		
Item Indo				Outdoor air t	emperaturo	Ev+	ternal static pressure of indeer unit	
			ir temperature			EXI	ternal static pressure of indoor unit	
Operati		DB	WB	DB	WB		Pa	
Cooling		?7℃	19°C	35°C	24°C		60	
Heatin	g		20°C	7°C	6°C			
(3) Sound higher o	pressure lev due to ambi	vel ind ient.	tioner is manufact licates the value ir ates when the air-	n an anechoic c	hamber. tempe	erature.	During operation these value are somewhat	
(5) The fac change	tory E.S.P. ed to 10-200	setting 0 Pa.		range of 80-15	0 Pa. If SW8-4	is turne	d to "ON", E.S.P. setting range can be	

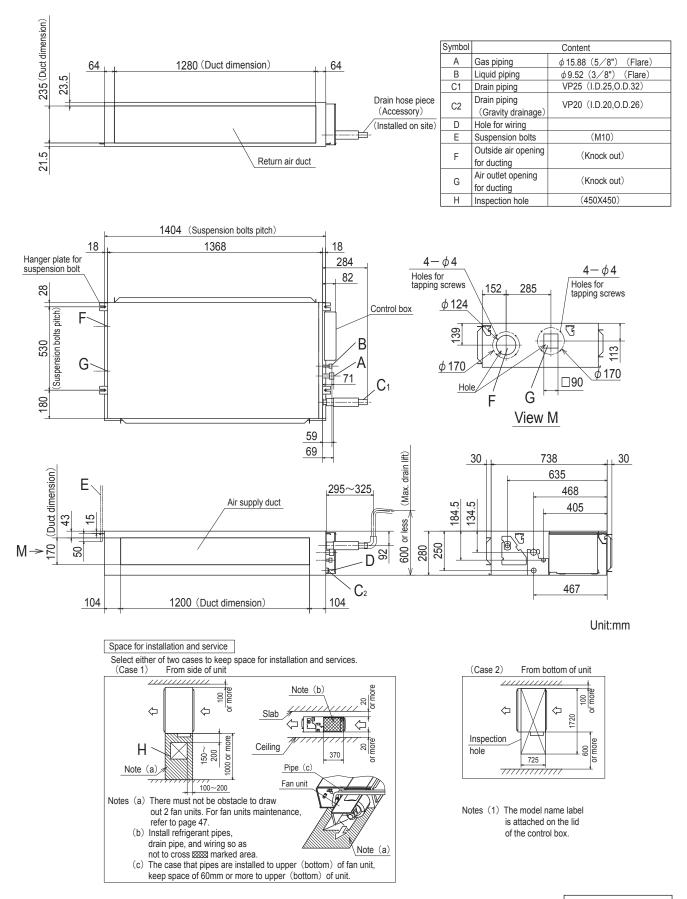
1.2 EXTERIOR DIMENSIONS

(1) Indoor units Model FDU71VF1



PJG000Z047

Models FDU100VF1, 125VF, 140VF

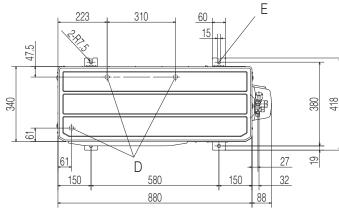


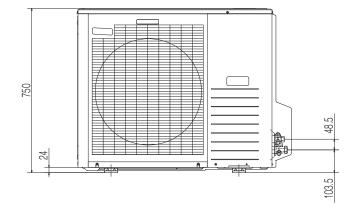
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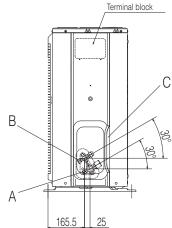
Symbol	Content			
А	Service valve connection (gas side)	¢ 15.88 (5∕8") (Flare)		
В	Service valve connection (liquid side)	¢9.52 (3∕8") (Flare)		
С	Pipe/cable draw-out hole			
D	Drain discharge hole ϕ 20 × 3places			
Е	Anchor bolt hole	M10 × 4places		

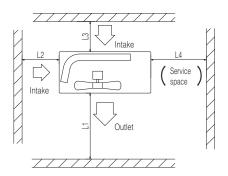
Notes

- (1) It must not be surrounded by walls on the four sides.
- (2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more the 15mm.
- (3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
- (4) Leave 1m or more space above the unit.
- (5) A wall in front of the blower outlet must not exceed the units height.(6) The model name label is attached on the lower right corner of the front panel.







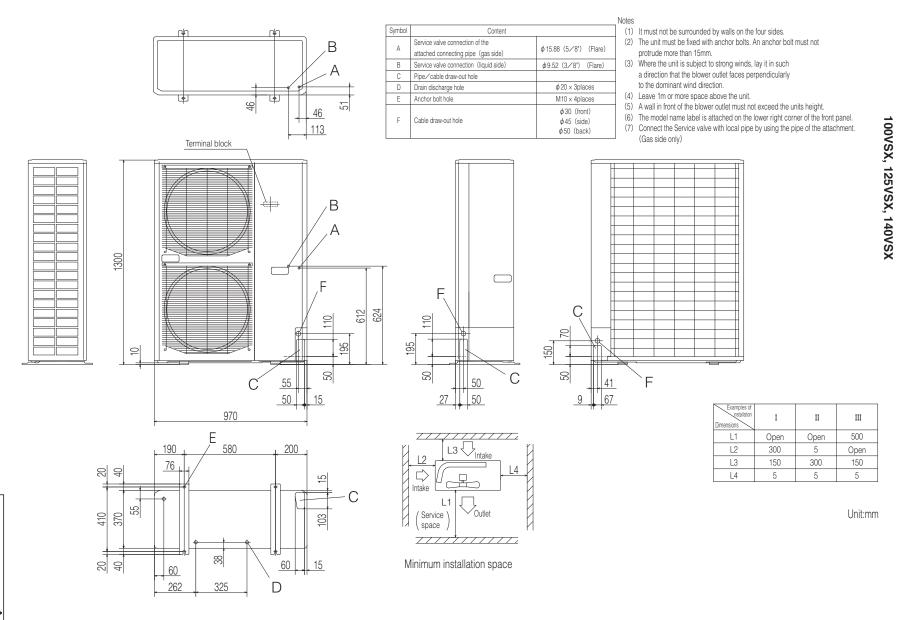


Minimum installation space

Examples of installation Dimensions	Ι	II	Ш
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

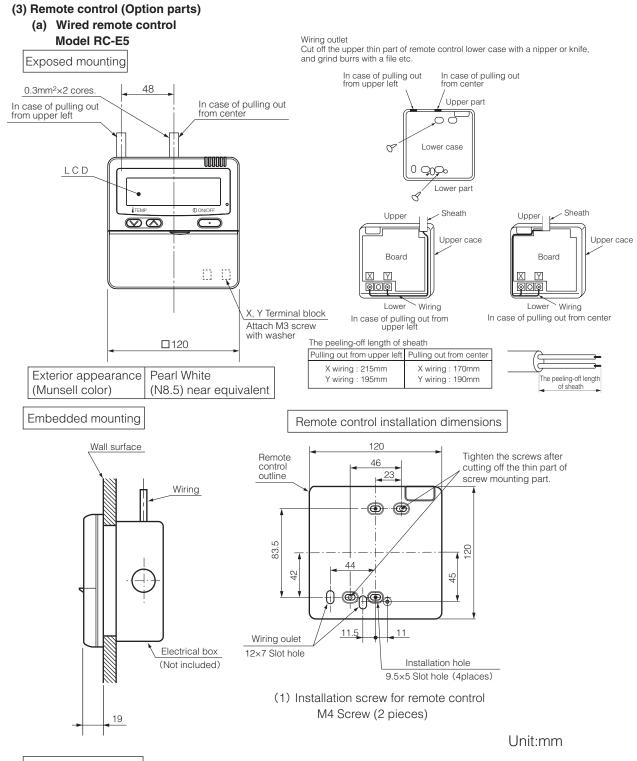


PCA001Z603



'12 • PAC-T-178

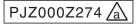
Models FDC100VNX, 125VNX, 140VNX



Wiring specifications

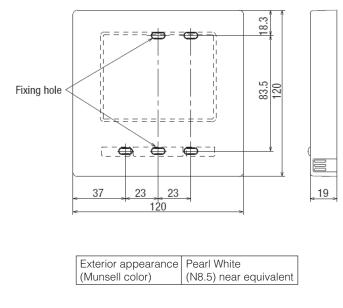
(1) If the prolongation is over 100m, change to the size below. But, wiring in the remote control case should be under 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

Length	Wiring thickness
100 to 200m	0.5mm ² ×2 cores
Under 300m	0.75mm ² ×2 cores
Under 400m	1.25mm ² ×2 cores
Under 600m	2.0mm ² ×2 cores



Model : RC-EX1A

Dimensions (Viewed from front)

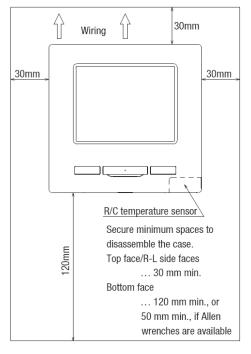


Cautions for selecting installation place

- (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 sufficiently separated from a heat source.
 - · 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

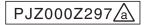


R/C cable: 0.3 mm² × 2-core

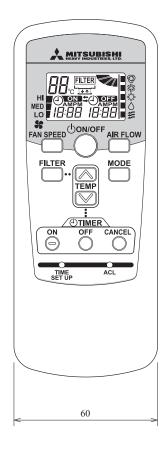
When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm^2 . Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

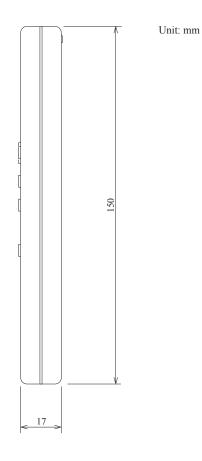
< 200 m	0.5 mm ² x 2-core
< 300 m	0.75 mm ² x 2-core
< 400 m	1.25 mm ² x 2-core
< 600 m	2.0 mm ² x 2-core

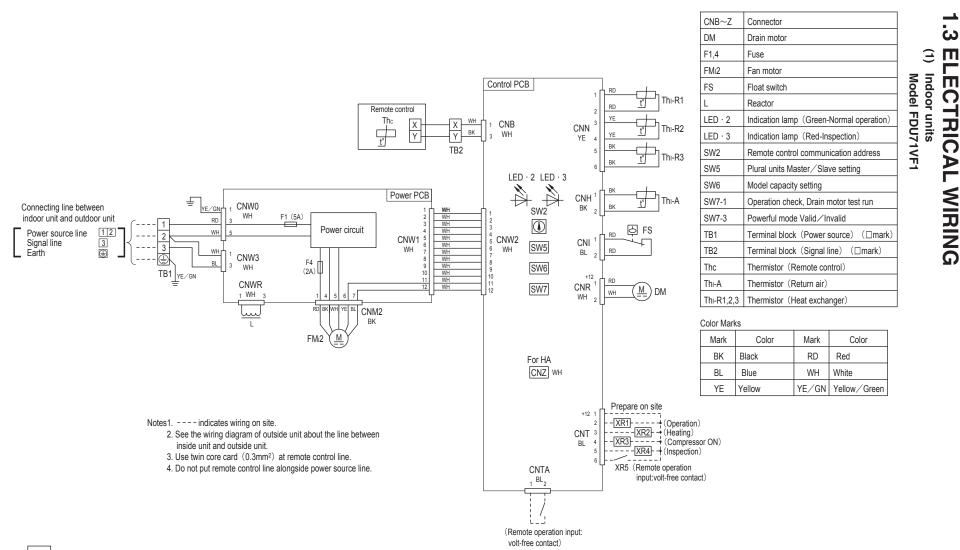
Adapted to **RoHS** directive



(b) Wireless remote control (RCN-E1R)







'12 • PAC-T-178

CNB~Z

DM

Connector

Drain motor

Mark

RD

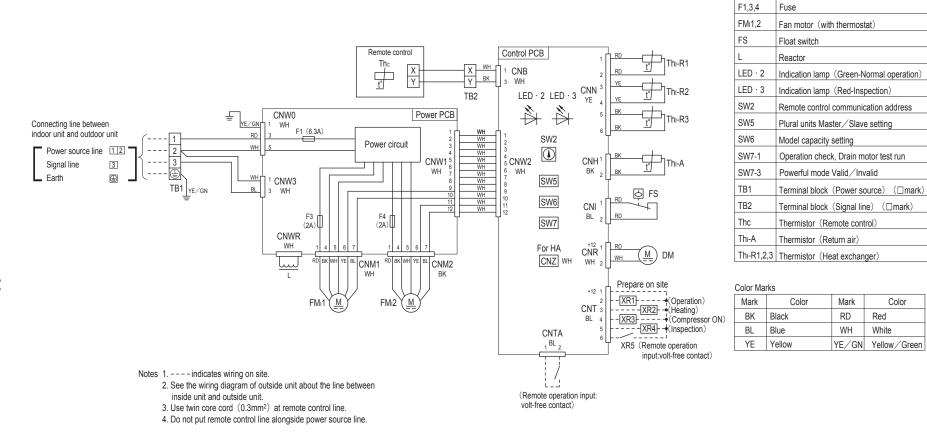
WH

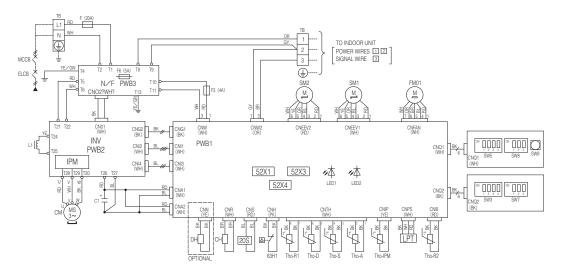
Color

Red

YE/GN Yellow/Green

White





	Item	Description
	CM	Compressor motor
	FM01	Fan motor
	CH	Crankcase heater
	DH	Drain pan heater
	52X1	Auxilliary relay (for CH)
	52X3	Auxilliary relay (for 20S)
	52X4	Auxilliary relay (for DH)
	20S	Solenoid valve for 4 way valve
	SM1	Expansion valve for cooling
	SM2	Expansion valve for heating
	63H1	High pressure switch
	Tho-A	Thermistor (Outdoor air temp.)
	Tho-D	Thermistor (Discharge pipe temp.)
Color Black	Tho-R1,R2	Thermistor (Heat exchanger temp.)
Blue	Tho-S	Thermistor
Brown	1110-3	(Suction pipe temp.)
Orange	Tho-IPM	Thermistor (IPM)
Red	LPT	Low pressure sensor
White	IPM	Intelligent power module
Yellow	TB	Terminal block
Yellow/Green	F.F3	Fuse
Gray	CnA~Z	Connector
Pink	SW9	Pump down switch
	SW3,5	Local setting switch
	LED1	Indication lamp (GREEN)
	LED2	Indication lamp (RED)
	L1	Reactor

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm ²)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size
71	17	3.5	21	φ1.6mm x 3	φ1.6mm

• 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.
- Refer to installation manual or technical manual about usage of local setting switch. Don't operate SW3-3,SW5-1,SW5-2,SW7,SW8

Local setting switch SW3, SW5 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 10 seconds in every 10 minutes, when outdoor temperature fails to 3°C or lower and the compressor is not running when the unit is used in a very snowy country, set this switch to ON.
SW5-3,4	Trial operation	Method of trial operation 1. Trial operation can be performed by using SW5-3. 2. Cooling trial operation will be performed when SW5-4 is OFF and heating trial operation when SW5-4 is ON. 3. Be sure to turn OFF SW5-3 after the trial operation is finished.

Mark

ΒK

BL

BR

OR

RD

WH

YE

GΥ

ΡK

YE/GN

Outdoor units Model FDC71VNX

2

POWER SOURCE 1~220-240V 50Hz/1~220V 60Hz	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
	SM1 SM2 FM01 FM02 M M M M M Q d/d b/d d/d d/d d/d d/d d/d d/d d/d d/d
	cc_st_st_con 0_1 1_1 <t< td=""></t<>
	52/2 LED1 LED2 SW3 SW5 SW1
	CNF CNR CNR CNH CNH CNH CNPS CNB 3 3 5 6 6 6 6 6 6 6 0H CH CH CH CH CH CH CH CH 0H CH CH CH CH CH CH CH CH 0H CH CH CH CH CH CH CH CH 0H CH CH CH CH CH CH CH CH 0H CH CH CH CH CH CH CH CH

Mark	Color	Item
BK	Black	CnA~Z
BI	Blue	СН
		DH
BR	Brown	СМ
GN	Green	СТ
GR	Gray	DM
Р	Pink	F
OR	Orange	FM01,02
RD	Red	IPM
WH	White	
YE	Yellow	
YE∕GN	Yellow/Green	LED1
		LED2

CnA~Z	Connector		
СН	Crankcase heater		
DH	Drain pan heater		
CM	Compressor motor		
CT	Current sensor		
DM	Diode module		
F	Fuse		
FM01,02	Fan motor		
IPM	Intelligent power module		
L	Reactor		
LED1	Indication lamp (GREEN)		
LED2	Indication lamp (RED)		
LPT	Low pressure sensor		
SM1	Expansion valve for cooling		
SM2	Expansion valve for heating		
SW1	Pump down switch		
SW3,5	Local setting switch		
TB	Terminal block		
THo-A	Thermistor (Outdoor air temp.)		
THo-D	Thermistor (Discharge pipe temp.)		
THo-P	Thermistor (IPM)		
THo-R1,2	Thermistor (Heat exchanger pipe temp.)		
THo-S	Thermistor (Suction pipe temp.)		
20S	Solenoid valve for 4 way valve		
52X1	Auxilliary relay (for CH)		
52X2	Auxilliary relay (for DH)		
52X3	Auxilliary relay (for 20S)		
	High pressure switch		

Description

- 22

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm ²)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size (mm)
100	25	5.5	24		
125	29	0	31	φ1.6mm x 3	φ1.6
140	30	d d	30		

• 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.

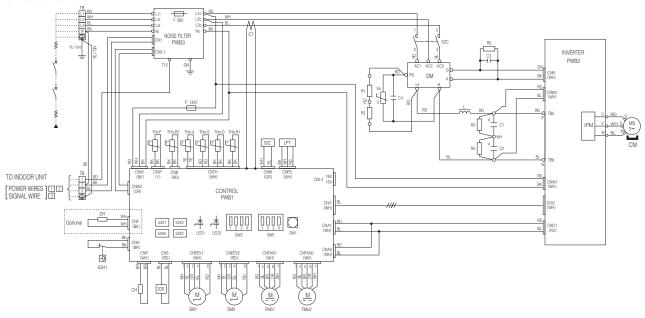
 Switchgear of Circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.

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.

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.		
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3°C or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.		
SW3-3,4	Trial operation	Method of trial operation () Trial operation can be performed by using SW3-3,4. () Compressor will be in the operation when SW3-3 is ON. () Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. () Be sure to turn OFF SW3-3 after the trial operation is finished.		

Models FDC100VNX, 125VNX, 140VNX



Item	Description
СН	Crankcase heater
CM	Compressor motor
CnA~Z	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FMo1,2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
LPT	Low pressure sensor
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
SW1	Pump down switch
SW3,5	Local setting switch
TB	Terminal block
THo-A	Thermistor (Outdoor air temp.)
THo-D	Thermistor (Discharger pipe temp.)
THo-R1,2	Thermistor (Heat exchanger pipe temp.)
THo-S	Thermistor (Suction pipe temp.)
THo-P	Thermistor (IPM)
20S	Solenoid valve for 4 way valve
52C	Relay
52X1	Auxilliary relay (for CH)
52X2	Auxilliary relay (for DH)
52X3	Auxilliary relay (for 20S)
52X6	Auxilliary relay (for 52C)
63H1	High pressure switch

1

23

1

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm ²)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size (mm)
100	16		26		
125	18	3.5	23	φ1.6mm x 3	φ1.6
140	19		21		

• 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.

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature fails to 3°C or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation (1) Trial operation can be performed by using SW3-3,4. (2) Compressor will be in the operation when SW3-3 is ON. (3) Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. (4) Be sure to turn OFF SW3-3 after the trial operation is finished.

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

1.4 NOISE LEVEL

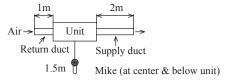
Notes(1) The data are based on the following conditions.

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

(2) The data in the chart are measured in an anechoic room

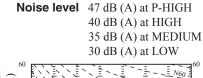
- (3) The noise levels measured in the field are usually higher than the data because of reflection.
- (1) Indoor units

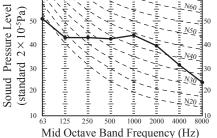
Measured based on JIS B 8616 Mike position as right



Model FDU71VF1 Model FDU100VF1 Model FDU125VF Noise level 38 dB (A) at P-HIGH Noise level 45 dB (A) at P-HIGH Noise level 44 dB (A) at P-HIGH 33 dB (A) at HIGH 38 dB (A) at HIGH 40 dB (A) at HIGH 29 dB (A) at MEDIUM 36 dB (A) at MEDIUM 34 dB (A) at MEDIUM 25 dB (A) at LOW 30 dB (A) at LOW 29 dB (A) at LOW 60 Souud Pressure Level V60 Souud Pressure Level N6(Pressure Level (standard 2×10^{-5} Pa) 2×10^{-5} Pa) $2 \times 10^{-5} Pa$) 50 50 <u>N50</u> <u>N5(</u> 4(40 V4(standard (standard 30 30 <u>N3(</u> Souud 20 20 20 10 -10 8000 8000 10 250 500 1000 2000 4000 125 1000 2000 4000 250 500 250 500 1000 2000 4000 Mid Octave Band Frequency (Hz) Mid Octave Band Frequency (Hz) Mid Octave Band Frequency (Hz)

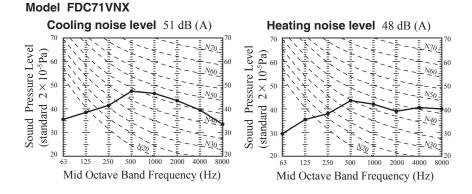
Model FDU140VF

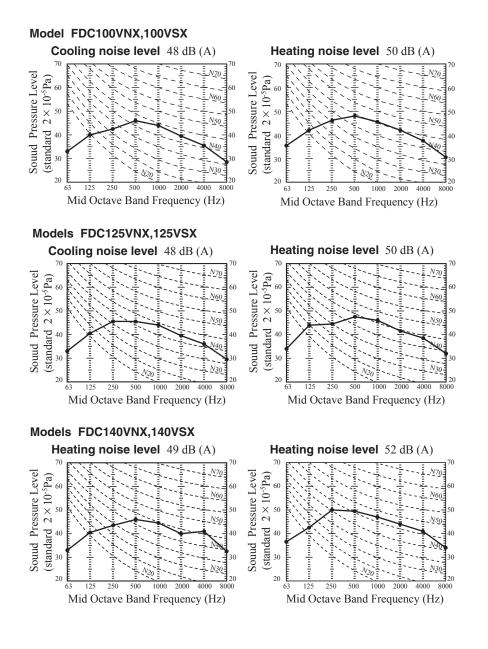




(2) Outdoor units

Measured based on JIS B 8616 Mike position: at highest noise level in position as mentioned below Distance from front side 1m Height 1m



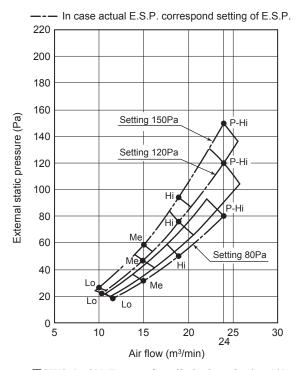


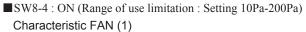
1.5 CHARACTERISTICS OF FAN

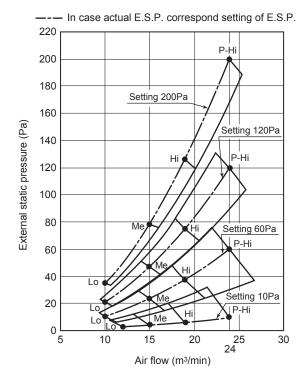
- Characteristic FAN (1) shows air flow vs. External Static Pressure (E.S.P.) range where settings of E.S.P. are maximum E.S.P. (SW8-4 OFF : 150Pa, SW8-4 ON : 200Pa), rated E.S.P., and minimum E.S.P. (SW8-4 OFF : 80Pa, SW8-4 ON : 10Pa)
- · Characteristic FAN (2) shows air flow vs. E.S.P curve when set 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.

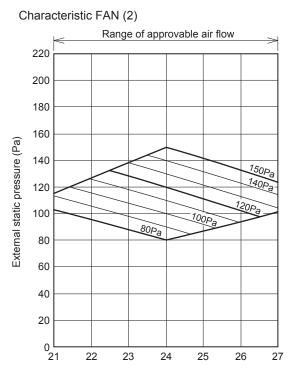
Model FDU71VF1

SW8-4 : OFF (Range of use limitation : Setting 80Pa-150Pa) Characteristic FAN (1)

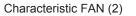


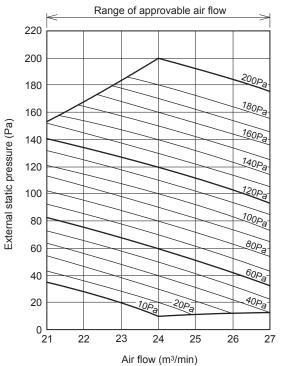






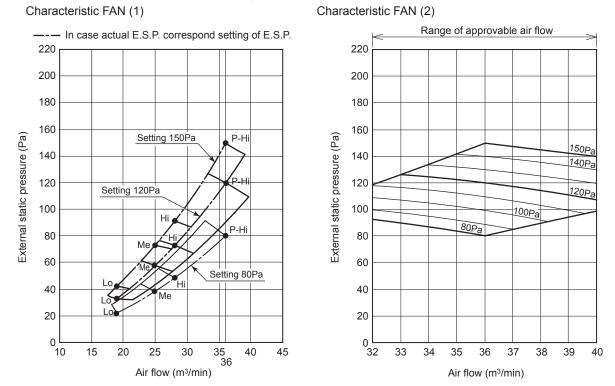
Air flow (m³/min)



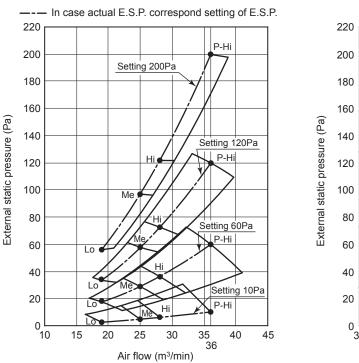


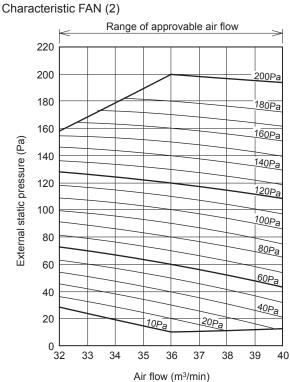
Model FDU100VF1

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



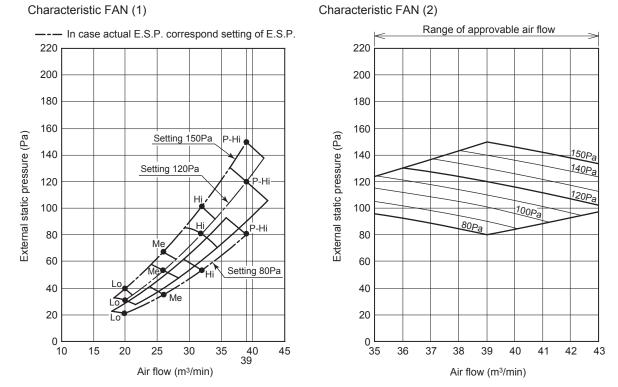
SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa) Characteristic FAN (1) Cha



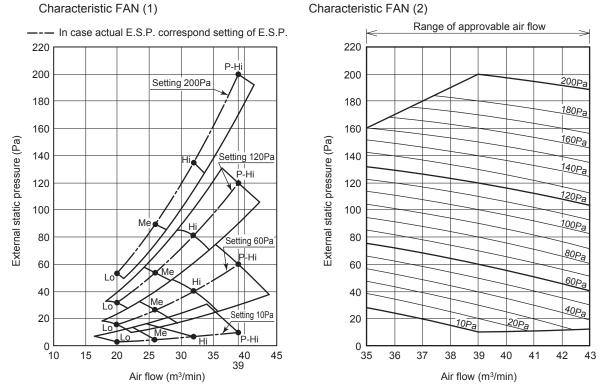


Model FDU125VF

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



SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa) Characteristic FAN (1) Cha



200Pa

<u>180Pa</u>

160Pa

140Pa

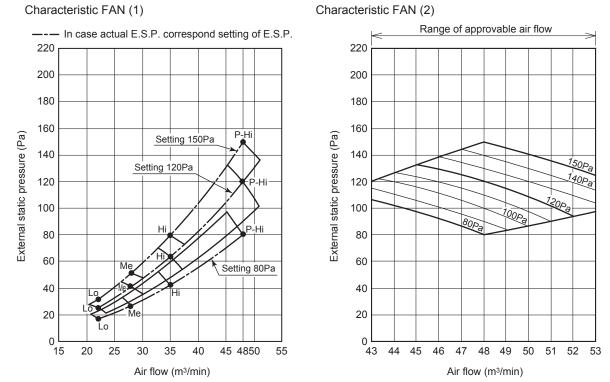
80Pa

60P

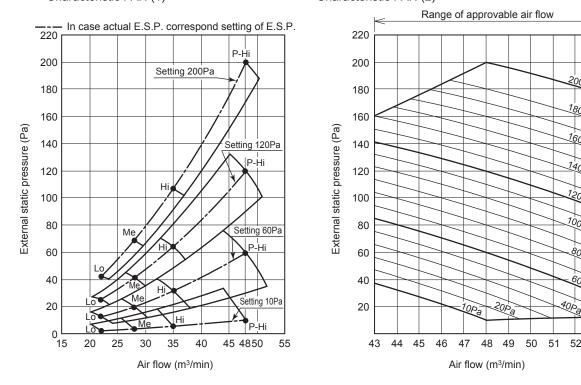
52 53

Model FDU140VF

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

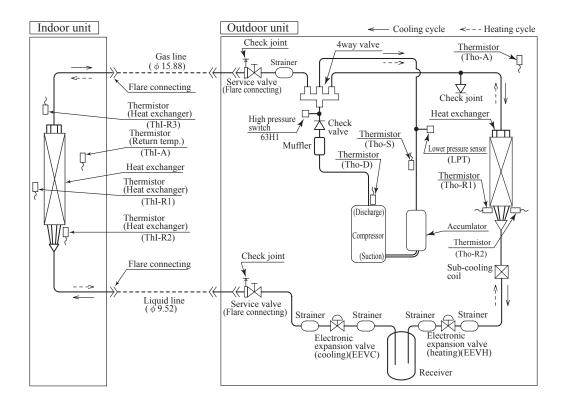


SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa) Characteristic FAN (1) Characteristic FAN (2)



1.6 PIPING SYSTEM

Models 71, 100, 125, 140



Preset point of the protective devices

Parts name	Mark	Equipped unit	71, 100, 125, 140 model
Thermistor (for protection overloading in heating)	Thl-R.1.2	Indoor unit	ON 63℃ OFF 56℃
Thermistor (for frost prevention)	Thl-R.1.2		ON 1.0℃ OFF 10℃
Thermistor (for protection high pressure in cooling.)	Tho-R.1.2	Outdoor unit	ON 65℃ OFF 51℃
Thermistor (for detecting discharge pipe temp.)	Tho-D	Outdoor unit	ON 115℃ OFF 85℃
High pressure switch (for protection)	63H1	Outdoor unit	ON 4.15MPa OFF 3.15MPa
Low pressure sensor (for protection)	LPT	Outdoor unit	ON 0.079MPa OFF 0.227MPa

1.7 RANGE OF USAGE & LIMITATIONS

Operating temperature range		See the next page.		
		When used below -5°C, install a snow hood.		
Recommendable area to ir	nstall	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 outline drawing. Install the indoor unit at least 2.5m higher than the floor surface.		
Temperature and humidity conditions surrounding the indoor unit in the ceiling (Note 3)		Dew point temperature : 28 $^\circ\!\mathrm{C}$ or less, relative hummdity : 80% or less		
Limitations on unit and pipi	ng installation	See page 33		
Compressor	Cycle Time	7 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).

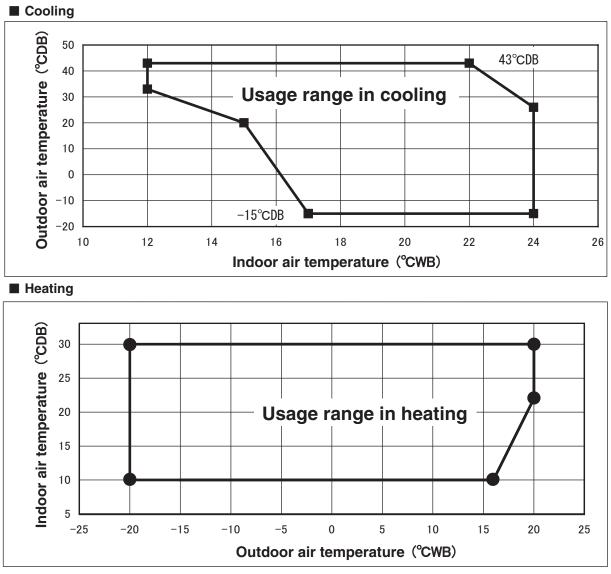
16) Indoor units of twin and triple specifications separately in a room with partition.

Note 2. If the surrounding temperature and humidity exceed above values, paste polyurethane.

Note 3. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation on the outer plate (10mm or thicker) of indoor unit.

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

Operating temperature range



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.

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"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

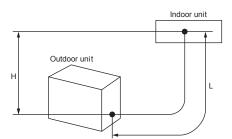
- 1) Install the outdoor unit at the place where strong wind cannot blow directly into the outdoor unit.
- 2) If there is no installation place where can prevent strong wind from directly blowing into the outdoor unit, mount the flex flow adapter (prepared as optional part) or like such devices onto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

[Reason]

Under the low outdoor air temperature conditions of -5° 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 piping installation - single.						
Descriptions	Model for outdoor units Dimensional limitations Marks appearin in the drawing					
One-way pipe length	71		≦ 50m			
	100 • 125 •	140	≦ 100m			
	When outdoor unit is	71	≤ 30m			
Elevation difference between indoor and outdoor units	positioned higher	100 • 125 • 140		H		
Elevation difference between indoor and outdoor units	When outdoor unit is	71	— ≦ 15m	н		
	positioned lower	100 • 125 • 140				



(1) Reduce refrigerant amount by according to table below from factory charge when refrigerant piping is shorter than 3m.

Model for outdoor units	refrigerant to be reduced
71 · 100 · 125 · 140	-1.0kg

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1.8 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 (1.8.1) × Correction factors shown in the table (1.8.2) (1.8.3) (1.8.4).

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.

(kW)

1.8.1 Capacity tables

Indoor unit FDU71VF1 Model FDU71VNXVF1 Outdoor unit FDC71VNX Cool Mode

																(1.00)	<u> nout</u>
Outdoor							Indo	or air t	emper	ature	-		-		_		Ou
Outdoor air temp.	18°CDB 21°CDB		CDB	23°C	DB	26°CDB		27°C	DB	28°C	DB	31°CDB		33°CDB		airt	
an temp.	12°C	12°CWB		14°CWB		16°CWB		18°CWB		WB	20°CWB		22°CWB		24°CWB		°CDB
°CDB	TC	SHC	тс	SHC	TC	SHC	TC	SHC	TC	SHC	тс	SHC	тс	SHC	TC	SHC	-19.8
11					4.87	4.77	6.02	5.60	6.59	5.67	6.79	5.62	7.19	5.96	7.59	5.82	-17.7
13					5.33	5.01	6.32	5.70	6.82	5.74	7.03	5.69	7.45	6.03	7.88	5.89	-15.7
15					5.79	5.17	6.63	5.80	7.05	5.82	7.27	5.76	7.71	6.10	8.16	5.96	-13.5
17					6.26	5.35	6.94	5.91	7.27	5.89	7.51	5.84	7.97	6.17	8.44	6.03	-11.5
19					6.59	5.47	7.16	5.98	7.44	5.95	7.68	5.89	8.15	6.22	8.63	6.08	-9.5
21					6.93	5.60	7.38	6.06	7.60	6.00	7.84	5.94	8.33	6.27	8.82	6.13	-7.5
23					6.91	5.59	7.35	6.05	7.57	5.99	7.81	5.93	8.30	6.26	8.78	6.11	-5.5
25			6.46	5.76	6.89	5.58	7.32	6.04	7.54	5.98	7.78	5.92	8.26	6.25	8.74	6.10	-3.0
27			6.45	5.75	6.87	5.57	7.30	6.03	7.52	5.97	7.74	5.91	8.18	6.23			-1.0
29			6.34	5.71	6.75	5.53	7.19	5.99	7.41	5.94	7.64	5.88	8.09	6.21			1.0
31			6.23	5.66	6.64	5.49	7.08	5.96	7.31	5.90	7.54	5.85	7.99	6.18			2.0
33	5.77	5.22	6.05	5.59	6.53	5.45	6.97	5.92	7.20	5.87	7.44	5.81	7.90	6.15			3.0
35	5.67	5.18	5.95	5.55	6.42	5.40	6.86	5.88	7.10	5.83	7.34	5.78	7.81	6.13			5.0
37	5.58	5.14	5.85	5.51	6.31	5.36	6.72	5.83	6.95	5.79	7.18	5.73	7.64	6.08			7.0
39	5.49	5.10	5.76	5.47	6.20	5.32	6.59	5.79	6.81	5.74	7.03	5.69	7.46	6.03			9.0
41	5.39	5.05	5.67	5.44	6.09	5.28	6.45	5.74	6.66	5.69	6.87	5.64	7.29	5.99			11.5
43	5.30	5.02	5.57	5.40	5.97	5.24	6.31	5.70	6.51	5.65	6.71	5.59	7.12	5.94			13.5
-																	15.5

Heat I	Heat Mode:HC (kW													
Out	door	In	door a	ir temp	peratu	re								
air te	emp.			°CDB										
°CDB	°CWB	16	18	20	22	24								
-19.8	-20	3.95	3.93	3.91	3.88	3.86								
-17.7	-18	4.18	4.16	4.14	4.11	4.09								
-15.7	-16	4.42	4.39	4.37	4.34	4.32								
-13.5	-14	4.68	4.65	4.63	4.60	4.57								
-11.5	-12	4.94	4.91	4.88	4.85	4.82								
-9.5	-10	5.20	5.17	5.14	5.11	5.08								
-7.5	-8	5.46	5.46 5.43 5.40		5.36	5.33								
-5.5	-6	5.59 5.55 5.52		5.48	5.44									
-3.0	-4	5.71	5.68	5.64	5.60	5.56								
-1.0	-2	5.84	5.80	5.76	5.72	5.67								
1.0	0	5.97	5.92	5.88	5.83	5.79								
2.0	1	6.03	5.98	5.94	5.89	5.85								
3.0	2	6.45	6.40	6.35	6.30	6.25								
5.0	4	7.29	7.23	7.18	7.12	7.06								
7.0	6	8.13	8.06	8.00	7.93	7.87								
9.0	8	8.42	8.36	8.29	8.23	8.16								
11.5	10	8.72	8.65	8.59	8.52	8.46								
13.5	12	9.20	9.13	9.06	9.00	8.92								
15.5	14	9.69	9.61	9.53	9.47	9.39								
16.5	16	9.93	9.85	9.77	9.71	9.62								

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(kW

Model FDU100VNXVF1 FDU100VF1 Outdoor unit FDC100VNX Indoor unit Cool Mode

Indoor air temperature Outdoo 18°CDB 21℃DB 23℃DB 26°CDB 27°CDB 28°CDB 31°CDB 33℃DB air temp 12°CWB 14°CWB 16°CWB 19°CWB 20°CWB 22°CWB 24°CWB 18°CWB °CDB SHC SHC SHC тс SHC тс тс тс тс SHC тс SHC тс SHC тс SHC 6.94 7.57 7.45 7.76 7.48 11 8.33 8.84 9.10 9.38 7.33 9.94 10.50 13 8.63 7.03 7.65 7.52 7.40 7.83 10.92 7.54 9.17 9.43 9.73 10.32 15 8.93 7.11 9.49 7.73 9.77 7.60 10.09 7.48 10.71 7.90 11.34 7.60 17 9.23 7.20 7.82 10.11 7.69 10.44 7.97 11.75 7.67 9.82 7.56 11.10 19 9.44 7.27 10.04 7.87 10.34 7.74 10.68 7.61 11.35 8.02 12.01 7.71 21 9 64 7.33 10.26 7.93 10.57 7.80 10.91 7.66 11.59 8.07 12.28 7.75 7.33 10.59 7.76 23 9.64 10.28 7.94 7.80 10.94 7.67 11.63 8.08 12.32 25 8.95 7.65 9.64 7.33 10.30 7.94 10.62 7.81 10.97 7.68 11.66 8.08 12.36 7.76 27 8.91 7.63 9.64 7.33 10.33 7.95 10.64 7.82 10.96 7.68 11.59 8.07 29 8.84 7.61 9.51 7.29 10.16 7.91 10.48 7.78 10.80 7.64 11.45 8.04 31 8.76 7.58 9.37 7.25 10.00 7.86 10.32 7.74 10.65 7.60 11.30 8.01 7.70 33 8.21 7.04 8.58 7.52 9.23 7.20 9.83 7.82 10.16 10.49 7.57 11.15 7.98 7.53 35 7.77 6.87 8.31 7.43 9.09 7.16 7.77 10.34 7.96 9.66 10.00 7.66 11.01 7.91 37 6.84 7.39 7.49 10.77 7.68 8.18 8.92 7.11 9.49 7.73 9.81 7.61 10.13 39 7.58 6.80 8.04 7.34 8.76 7.06 9.31 7.68 9.62 7.57 9.93 7.44 10.54 7.87 41 7.49 6.77 7.91 7.30 8.59 7.02 9.14 7.64 9.43 7.52 9.73 7.40 10.31 7.83 7.40 6.74 7.78 7.26 8.42 6.97 8.96 7.60 9.24 7.48 9.52 7.36 10.08 7.79 43

Outdoor Indoor air temperature air temp °CDB CDB °CWB 16 18 20 22 24 7.30 7.18 7.06 19.8 -20 7.24 7.12 7.55 7.49 17.7 -18 7.74 7.68 7.62 7.92 15.7 -16 8.18 8.12 8.05 7.99 8.47 8.27 13.5 -14 8.54 8.40 8.33 -12 8.89 8.82 8.75 8.68 8.61 11.5 -9.5 -10 9.25 9.17 9.10 9.03 8.95 -7.5 -8 9.60 9.53 9.45 9.38 9.30 9.84 -5.5 -6 10.00 9.92 9.76 9.68 -3.0 10.39 10.31 10.23 10.14 10.06 -4 -1.0 -2 10.79 10.70 10.62 10.53 10.44 1.0 11.18 11.09 11.01 10.91 10.82 0 2.0 11.38 11.29 11.20 11.10 11.01 1 3.0 2 11.38 11.29 11.20 11.10 11.01 11.38 11.20 11.01 5.0 4 11.29 11.11 11.37 11.20 11.01 7.0 6 11.29 11.11 9.0 8 11.85 11.76 11.67 11.58 11.48 11.5 10 12.32 12.23 12.15 12.05 11.95 12.72 12 12.97 12.88 12.78 13.5 12.68 15.5 14 13.62 13.52 13.41 13.32 13.49 16.5 16 13.95 13.84 13.72 13.63 13.87

Heat Mode HC

(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 (2) Capacities are based on the following conditions.

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

(3) Symbols are as follows.

: Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

HC : Heating capacity (kW)

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Model FDU100VSXVF1 Indoor unit FDU100VF1 Outdoor unit FDC100VSX Cool Mode

							Indo	or air t	emper	ature						<u>``</u>
Outdoor air temp.	18°C	DB	21°C	DB	23°C	DB	26°C		27°C		28°C	DB	31°C	DB	33°CDB	
air temp.	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					8.33	6.94	8.84	7.57	9.10	7.45	9.38	7.33	9.94	7.76	10.50	7.48
13					8.63	7.03	9.17	7.65	9.43	7.52	9.73	7.40	10.32	7.83	10.92	7.54
15					8.93	7.11	9.49	7.73	9.77	7.60	10.09	7.48	10.71	7.90	11.34	7.60
17					9.23	7.20	9.82	7.82	10.11	7.69	10.44	7.56	11.10	7.97	11.75	7.67
19					9.44	7.27	10.04	7.87	10.34	7.74	10.68	7.61	11.35	8.02	12.01	7.71
21					9.64	7.33	10.26	7.93	10.57	7.80	10.91	7.66	11.59	8.07	12.28	7.75
23					9.64	7.33	10.28	7.94	10.59	7.80	10.94	7.67	11.63	8.08	12.32	7.76
25			8.95	7.65	9.64	7.33	10.30	7.94	10.62	7.81	10.97	7.68	11.66	8.08	12.36	7.76
27			8.91	7.63	9.64	7.33	10.33	7.95	10.64	7.82	10.96	7.68	11.59	8.07		
29			8.84	7.61	9.51	7.29	10.16	7.91	10.48	7.78	10.80	7.64	11.45	8.04		
31			8.76	7.58	9.37	7.25	10.00	7.86	10.32	7.74	10.65	7.60	11.30	8.01		
33	8.21	7.04	8.58	7.52	9.23	7.20	9.83	7.82	10.16	7.70	10.49	7.57	11.15	7.98		
35	7.77	6.87	8.31	7.43	9.09	7.16	9.66	7.77	10.00	7.66	10.34	7.53	11.01	7.96		
37	7.68	6.84	8.18	7.39	8.92	7.11	9.49	7.73	9.81	7.61	10.13	7.49	10.77	7.91		
39	7.58	6.80	8.04	7.34	8.76	7.06	9.31	7.68	9.62	7.57	9.93	7.44	10.54	7.87		
41	7.49	6.77	7.91	7.30	8.59	7.02	9.14	7.64	9.43	7.52	9.73	7.40	10.31	7.83		
43	7.40	6.74	7.78	7.26	8.42	6.97	8.96	7.60	9.24	7.48	9.52	7.36	10.08	7.79		

Heat I	Heat Mode:HC (kW)													
Out	door	In	door a	ir temp	peratu	e								
air te	emp.			°CDB										
°CDB	°CWB	16	18	20	22	24								
-19.8	-20	11.29	11.20	11.11	11.02	10.93								
-17.7	-18	11.34	11.25	11.16	11.06	10.97								
-15.7	-16	11.38	11.29	11.20	11.11	11.02								
-13.5	-14	11.38	11.29	11.20	11.11	11.02								
-11.5	-12	11.38	11.29	11.20	11.11	11.02								
-9.5	-10	11.38	11.29	11.20	11.11	11.02								
-7.5	-8	11.37	11.29	11.20	11.11	11.02								
-5.5	-6	11.38	11.29	11.20	11.11	11.02								
-3.0	-4	11.38	11.29	11.20	11.11	11.01								
-1.0	-2	11.38	11.29	11.20	11.11	11.01								
1.0	0	11.38	11.29	11.20	11.10	11.01								
2.0	1	11.38	11.29	11.20	11.10	11.01								
3.0	2	11.38	11.29	11.20	11.10	11.01								
5.0	4	11.38	11.29	11.20	11.11	11.01								
7.0	6	11.37	11.29	11.20	11.11	11.01								
9.0	8	11.85	11.76	11.67	11.58	11.48								
11.5	10	12.32	12.23	12.15	12.05	11.95								
13.5	12	12.97	12.88	12.78	12.68	12.72								
15.5	14	13.62	13.52	13.41	13.32	13.49								
16.5	16	13.95	13.84	13.72	13.63	13.87								

PJG000Z045

Cool Mo	ode															(kW)	Heat	Mode:	HC				(k
Dutdoor	Indoor air temperature														Out	door	In	door a	ir temp	peratu	re		
ir temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°CDB		28°CDB		31°CDB		33°C	DB	air t	emp.			°CDB		
ur tompi	12°CWB		14°C	WB	16°C	WB	18°CWB		19°CWB		20°CWB		22°CWB		24°CWB		°CDB	°CWB	16	18	20	22	2
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	-19.8	-20	9.12	9.05	8.97	8.90	8.
11					10.41	9.34	11.05	10.16	11.37	10.10	11.72	10.04	12.42	10.66	13.12	10.51	-17.7	-18	9.67	9.60	9.52	9.44	9.
13					10.79	9.50	11.46	10.32	11.79	10.25	12.16	10.20	12.91	10.83	13.65	10.67	-15.7	-16	10.23	10.15	10.07	9.98	9.
15					11.16	9.66	11.87	10.48	12.22	10.42	12.61	10.36	13.39	10.99	14.17	10.83	-13.5	-14	10.67	10.59	10.50	10.42	10
17					11.54	9.82	12.27	10.64	12.64	10.58	13.05	10.52	13.87	11.15	14.69	10.99	-11.5	-12	11.11	11.03	10.94	10.85	10
19					11.80	9.93	12.55	10.75	12.93	10.69	13.34	10.63	14.18	11.25	15.02	11.10	-9.5	-10	11.56	11.47	11.38	11.29	11
21					12.05	10.04	12.83	10.86	13.21	10.79	13.64	10.74	14.49	11.36	15.34	11.20	-7.5	-8	12.00	11.91	11.82	11.72	11
23					12.05	10.04	12.85	10.87	13.24	10.81	13.67	10.75	14.54	11.38	15.40	11.22	-5.5	-6	12.49	12.40	12.30	12.20	12
25			11.19	10.21	12.05	10.04	12.88	10.88	13.27	10.82	13.71	10.77	14.58	11.39	15.45	11.23	-3.0	-4	12.99	12.89	12.79	12.68	12
27			11.14	10.19	12.05	10.04	12.91	10.89	13.30	10.83	13.70	10.76	14.49	11.36			-1.0	-2	13.48	13.38	13.27	13.16	13
29			11.05	10.15	11.88	9.97	12.70	10.81	13.10	10.75	13.51	10.69	14.31	11.30			1.0	0	13.98	13.87	13.76	13.64	13
31			10.95	10.10	11.71	9.89	12.49	10.72	12.90	10.67	13.31	10.62	14.13	11.24			2.0	1	14.22	14.11	14.00	13.88	13
33	10.26	9.37	10.73	10.00	11.53	9.82	12.29	10.64	12.70	10.60	13.11	10.54	13.94	11.17			3.0	2	14.22	14.11	14.00	13.88	13
35	9.71	9.10	10.39	9.84	11.36	9.74	12.08	10.56	12.50	10.52	12.92	10.47	13.76	11.11			5.0	4	14.22	14.11	14.00	13.88	13
37	9.60	9.05	10.22	9.77	11.15	9.65	11.86	10.47	12.26	10.43	12.67	10.38	13.47	11.01			7.0	6	14.22	14.11	14.00	13.88	13
39	9.48	8.99	10.05	9.69	10.94	9.57	11.64	10.39	12.03	10.34	12.41	10.29	13.18	10.92			9.0	8	14.81	14.70	14.59	14.47	14
41	9.36	8.93	9.89	9.62	10.74	9.48	11.42	10.30	11.79	10.25	12.16	10.20	12.89	10.82			11.5	10	15.41	15.29	15.18	15.06	14
43	9.25	8.88	9.72	9.53	10.53	9.39	11.21	10.22	11.55	10.16	11.90	10.10	12.60	10.72			13.5	12	16.22	16.09	15.97	15.85	1
ote(1) Th	1.	.1															15.5	14	17.03	16.90	16.76	16.65	1

43 0.25 0.30 0.12 0.35 0.35 0.35 0.35 0.35 0.25 0.21 10.22 0.35 0.15 0.15 0.16 0.20 0.16 12.
 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)

PJG000Z045

16 17.44 17.30 17.16 17.04 17.34

16.5

Model FDU125VSXVF Cool Mode Indoor unit FDU125VF Outdoor unit FDC125VSX

0001100	000															(KVV
Outdoor							Indo	or air t	emper	ature						
Outdoor air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB
un temp.	12℃	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					10.41	9.34	11.05	10.16	11.37	10.10	11.72	10.04	12.42	10.66	13.12	10.51
13					10.79	9.50	11.46	10.32	11.79	10.25	12.16	10.20	12.91	10.83	13.65	10.67
15					11.16	9.66	11.87	10.48	12.22	10.42	12.61	10.36	13.39	10.99	14.17	10.83
17					11.54	9.82	12.27	10.64	12.64	10.58	13.05	10.52	13.87	11.15	14.69	10.99
19					11.80	9.93	12.55	10.75	12.93	10.69	13.34	10.63	14.18	11.25	15.02	11.10
21					12.05	10.04	12.83	10.86	13.21	10.79	13.64	10.74	14.49	11.36	15.34	11.20
23					12.05	10.04	12.85	10.87	13.24	10.81	13.67	10.75	14.54	11.38	15.40	11.22
25			11.19	10.21	12.05	10.04	12.88	10.88	13.27	10.82	13.71	10.77	14.58	11.39	15.45	11.23
27			11.14	10.19	12.05	10.04	12.91	10.89	13.30	10.83	13.70	10.76	14.49	11.36		
29			11.05	10.15	11.88	9.97	12.70	10.81	13.10	10.75	13.51	10.69	14.31	11.30		
31			10.95	10.10	11.71	9.89	12.49	10.72	12.90	10.67	13.31	10.62	14.13	11.24		
33	10.26	9.37	10.73	10.00	11.53	9.82	12.29	10.64	12.70	10.60	13.11	10.54	13.94	11.17		
35	9.71	9.10	10.39	9.84	11.36	9.74	12.08	10.56	12.50	10.52	12.92	10.47	13.76	11.11		
37	9.60	9.05	10.22	9.77	11.15	9.65	11.86	10.47	12.26	10.43	12.67	10.38	13.47	11.01		
39	9.48	8.99	10.05	9.69	10.94	9.57	11.64	10.39	12.03	10.34	12.41	10.29	13.18	10.92		
41	9.36	8.93	9.89	9.62	10.74	9.48	11.42	10.30	11.79	10.25	12.16	10.20	12.89	10.82		
43	9.25	8.88	9.72	9.53	10.53	9.39	11.21	10.22	11.55	10.16	11.90	10.10	12.60	10.72		

Heat	Mode:	HC				(kW)
	door	In	door a	ir tem	peratu	re
air te	emp.			°CDB		
°CDB	°CWB	16	18	20	22	24
-19.8	-20	14.11	14.00	13.89	13.78	13.66
-17.7	-18	14.17	14.06	13.94	13.83	13.72
-15.7	-16	14.23	14.11	14.00	13.89	13.77
-13.5	-14	14.23	14.11	14.00	13.89	13.77
-11.5	-12	14.22	14.11	14.00	13.89	13.77
-9.5	-10	14.22	14.11	14.00	13.89	13.77
-7.5	-8	14.22	14.11	14.00	13.89	13.77
-5.5	-6	14.22	14.11	14.00	13.88	13.77
-3.0	-4	14.22	14.11	14.00	13.88	13.77
-1.0	-2	14.22	14.11	14.00	13.88	13.76
1.0	0	14.22	14.11	14.00	13.88	13.76
2.0	1	14.22	14.11	14.00	13.88	13.76
3.0	2	14.22	14.11	14.00	13.88	13.76
5.0	4	14.22	14.11	14.00	13.88	13.76
7.0	6	14.22	14.11	14.00	13.88	13.77
9.0	8	14.81	14.70	14.59	14.47	14.35
11.5	10	15.41	15.29	15.18	15.06	14.94
13.5	12	16.22	16.09	15.97	15.85	15.90
15.5	14	17.03	16.90	16.76	16.65	16.86
16.5	16	17.44	17.30	17.16	17.04	17.34

(kW)

PJG000Z045

Dutdoor							Indo	or air te	emper	ature							Outdoor Indo			door a	oor air temperature		
ir temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB	air temp.				°CDB		
	12°C	=	14°C		16°C	=	18°C	=	19°C		20°C	=	22°C		24°C		°CDB	°CWB	16	18	20	22	24
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	-19.8	-20	10.42	10.34	10.26	10.17	10.09
11					11.66	10.07	12.38	10.97	12.73	10.84	13.13	10.71	13.91	11.36	14.70	11.06	-17.7	-18	11.06	10.97	10.88	10.79	10.70
13					12.08	10.21	12.83	11.10	13.21	10.97	13.62	10.85	14.45	11.49		11.18	-15.7	-16	11.69	11.60	11.50	11.41	11.3
15					12.50	10.35		11.25	13.68	11.11		10.98	14.99	11.63		11.31	-13.5	-14	12.20	12.10	12.00	11.91	11.8
17					12.92	10.50		11.39	14.16	11.26	14.62	11.12	15.54	11.76		11.43	-11.5	-12	12.70	12.60	12.50	12.40	12.3
19					13.21	10.60	14.06	11.49	14.48	11.35	14.95	11.22	15.88	11.85	16.82	11.52	-9.5	-10	13.21	13.11	13.00	12.90	12.7
21					13.50	10.71	14.36	11.59	14.80	11.45	15.28	11.31	16.23	11.94		11.60	-7.5	-8	13.71	13.61	13.50	13.39	13.2
23					13.50	10.71	14.40	11.60	14.83	11.46	15.31	11.32	16.28	11.95	-	11.61	-5.5	-6	14.28	14.17	14.06	13.94	13.8
25			12.53	11.05	13.50	10.71	14.43	11.61	14.87	11.47	15.35	11.33	16.33	11.96	17.30	11.62	-3.0	-4	14.84	14.73	14.61	14.49	14.3
27			12.48	11.03	13.50	10.71	14.46	11.62	14.90	11.48	15.34	11.33	16.23	11.94			-1.0	-2	15.41	15.29	15.17	15.04	14.9
29			12.37	10.98	13.31	10.64	14.23	11.54	14.68	11.41	15.13	11.27	16.03	11.89			1.0	0	15.97	15.85	15.72	15.59	15.4
31			12.26	10.94	13.11	10.57	13.99	11.47	14.45	11.34	14.91	11.21	15.82	11.83			2.0	1	16.26	16.13	16.00	15.86	15.7
33	11.49	10.15	12.02	10.85	12.92	10.50	13.76	11.39	14.23	11.28	14.69	11.14	15.61	11.78			3.0	2	16.25	16.13	16.00	15.86	15.7
35	10.88	9.90	11.63	10.70	12.72	10.43	13.53	11.32	14.00	11.21	14.47	11.08	15.41	11.73			5.0	4	16.25	16.13	16.00	15.86	15.7
37	10.75	9.84	11.45	10.63	12.49	10.35	13.29	11.25	13.74	11.13	14.18	11.00	15.08	11.65			7.0	6	16.25	16.12	16.00	15.87	15.7
39	10.62	9.79	11.26	10.56	12.26	10.27	13.04	11.17	13.47	11.05	13.90	10.92	14.76	11.57			9.0	8	16.93	16.80	16.68	16.54	16.4
41	10.49	9.73	11.07	10.49	12.02	10.19		11.10	13.21	10.97	13.62	10.85	14.44	11.49			11.5	10	17.61	17.48	17.35	17.21	17.0
43	10.35	9.68	10.89	10.42	11.79	10.11	12.55	11.02	12.94	10.90	13.33	10.77	14.11	11.41			13.5	12	18.53	18.39	18.25	18.12	18.1
ote(1) Th																	15.5	14	19.46	19.31	19.16	19.02	19.2
					ere may operatio								sly.				16.5	16	19.93	19.77	19.61	19.48	19.8
(2) Ca Ca Le	pacities prrespon vel diffe	are base ding refr erence of	d on the igerant p Zero.	followin	ng condit	ions.	ney or u	compre.	501 15 11		oning on										PJG	60002	204
Co Le (3) Sy T S	orrespon evel diffe mbols a C : Tota	ding refr erence of re as foll al cooling nsible he	igerant p Zero. ows. g capacit at capac	oiping le ty (kW)	ngth :7.5																PJG	0002	<u>104</u>

PJG000Z045

- 36 -

Model FDU140VSXVF Cool Mode Indoor unit FDU140VF Outdoor unit FDC140VSX

	ouc															(KVV)
Outdoor							Indo	or air t	emper	ature						
Outdoor air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB
un tomp.	12℃	12°CWB 14°CWB 16°C		16°C	WB	/B 18℃WB		19°CWB		20°CWB		22°CWB		24°CWB		
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	10.07	12.38	10.97	12.73	10.84	13.13	10.71	13.91	11.36	14.70	11.06
13					12.08	10.21	12.83	11.10	13.21	10.97	13.62	10.85	14.45	11.49	15.28	11.18
15					12.50	10.35	13.29	11.25	13.68	11.11	14.12	10.98	14.99	11.63	15.87	11.31
17					12.92	10.50	13.75	11.39	14.16	11.26	14.62	11.12	15.54	11.76	16.45	11.43
19					13.21	10.60	14.06	11.49	14.48	11.35	14.95	11.22	15.88	11.85	16.82	11.52
21					13.50	10.71	14.36	11.59	14.80	11.45	15.28	11.31	16.23	11.94	17.19	11.60
23					13.50	10.71	14.40	11.60	14.83	11.46	15.31	11.32	16.28	11.95	17.25	11.61
25			12.53	11.05	13.50	10.71	14.43	11.61	14.87	11.47	15.35	11.33	16.33	11.96	17.30	11.62
27			12.48	11.03	13.50	10.71	14.46	11.62	14.90	11.48	15.34	11.33	16.23	11.94		
29			12.37	10.98	13.31	10.64	14.23	11.54	14.68	11.41	15.13	11.27	16.03	11.89		
31			12.26	10.94	13.11	10.57	13.99	11.47	14.45	11.34	14.91	11.21	15.82	11.83		
33	11.49	10.15	12.02	10.85	12.92	10.50	13.76	11.39	14.23	11.28	14.69	11.14	15.61	11.78		
35	10.88	9.90	11.63	10.70	12.72	10.43	13.53	11.32	14.00	11.21	14.47	11.08	15.41	11.73		
37	10.75	9.84	11.45	10.63	12.49	10.35	13.29	11.25	13.74	11.13	14.18	11.00	15.08	11.65		
39	10.62	9.79	11.26	10.56	12.26	10.27	13.04	11.17	13.47	11.05	13.90	10.92	14.76	11.57		
41	10.49	9.73	11.07	10.49	12.02	10.19	12.80	11.10	13.21	10.97	13.62	10.85	14.44	11.49		
43	10.35	9.68	10.89	10.42	11.79	10.11	12.55	11.02	12.94	10.90	13.33	10.77	14.11	11.41		

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)

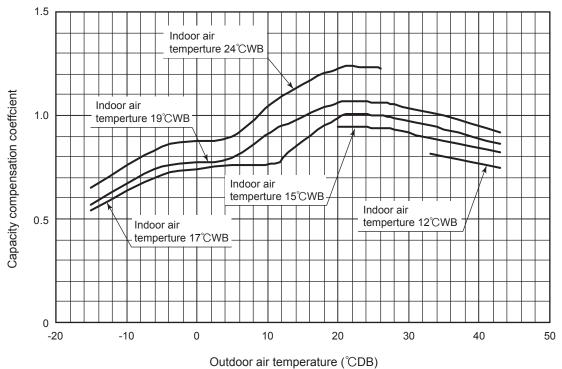
(kW)	Heat I	Mode:	HC				(kW)
	Out	door	In	door a	ir temp	peratu	e
ОВ	air te	emp.			°CDB		
VB	°CDB	°CWB	16	18	20	22	24
SHC	-19.8	-20	16.13	16.00	15.87	15.74	15.61
11.06	-17.7	-18	16.19	16.07	15.94	15.81	15.68
11.18	-15.7	-16	16.26	16.13	16.00	15.87	15.74
11.31	-13.5	-14	16.26	16.13	16.00	15.87	15.74
11.43	-11.5	-12	16.25	16.13	16.00	15.87	15.74
11.52	-9.5	-10	16.25	16.13	16.00	15.87	15.74
11.60	-7.5	-8	16.25	16.12	16.00	15.87	15.74
11.61	-5.5	-6	16.25	16.13	16.00	15.87	15.74
11.62	-3.0	-4	16.25	16.13	16.00	15.87	15.73
	-1.0	-2	16.25	16.13	16.00	15.86	15.73
	1.0	0	16.25	16.13	16.00	15.86	15.73
	2.0	1	16.26	16.13	16.00	15.86	15.73
	3.0	2	16.25	16.13	16.00	15.86	15.73
	5.0	4	16.25	16.13	16.00	15.86	15.73
	7.0	6	16.25	16.12	16.00	15.87	15.73
	9.0	8	16.93	16.80	16.68	16.54	16.40
	11.5	10	17.61	17.48	17.35	17.21	17.07
	13.5	12	18.53	18.39	18.25	18.12	18.17
	15.5	14	19.46	19.31	19.16	19.02	19.27
	16.5	16	19.93	19.77	19.61	19.48	19.82
					PJC	6000Z	Z045

[References data]

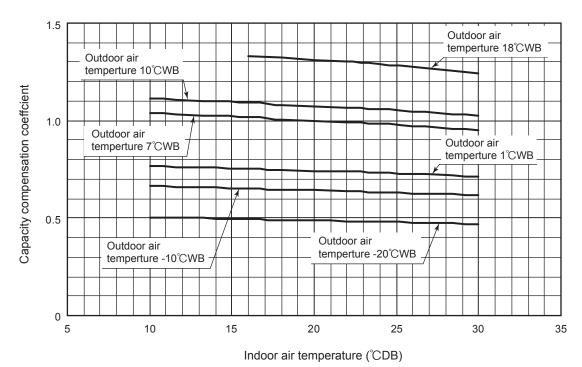
Capacity variation against outdoor and indoor temperature at rated capacity condition.

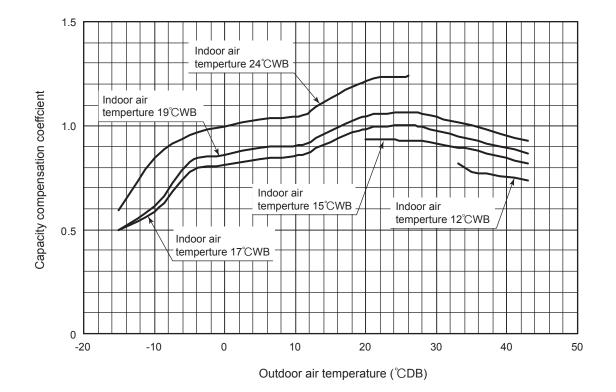
$({\tt I}) \underset{\frown}{\text{Model FDC71VNX}}$

1 Cooling



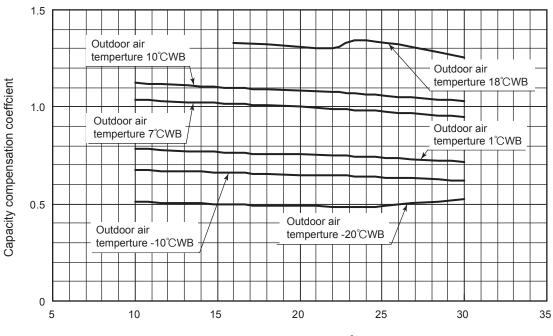






(II) Models FDC100, 125, 140VNX, 100, 125, 140VSX ① Cooling

2 Heating



Indoor air temperature (°CDB)

1.8.2 Correction of cooling and heating capacity in relation to air flow rate control (fan speed)

Fan speed	P-Hi or Hi	Me	Lo
Coefficient	1.00	0.97	0.95

1.8.3 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.

Equivale	nt piping length ⁽¹⁾ (n	n)	7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
	71 model		1	0.996	0.989	0.982	0.975	0.968	0.961	0.954	0.947	0.940	0.933
	100 model	φ15.88	1	0.991	0.978	0.964	0.951	0.937	0.924	0.910	0.897	0.883	0.870
	125 model	ψ 15.00	1	0.986	0.968	0.950	0.932	0.914	0.896	0.878	0.860	0.842	0.824
Cooling	140 model		1	0.985	0.966	0.946	0.927	0.907	0.888	0.868	0.849	0.829	0.810
cooning	71 model		1.008	1.006	1.003	1	0.997	0.994	0.991	0.988	0.985	0.982	0.979
	100 model	φ 19.05	1.016	1.013	1.007	1.002	0.996	0.991	0.985	0.980	0.974	0.969	0.963
	125 model	ψ 19.05	1.022	1.018	1.009	1.001	0.992	0.984	0.975	0.967	0.958	0.950	0.941
	140 model		1.026	1.021	1.011	1.002	0.992	0.983	0.973	0.964	0.954	0.945	0.935
Equivale	nt piping length ⁽¹⁾ (n	n)	60	65	70	75	80	85	90	95	100	105	_
Heating			0.983	0.983	0.978	0.978	0.973	0.973	0.968	0.968	0.963	0.963	_
	71 model		_	—	—	—	—	-	—	—	—	-	_
	100 model	φ15.88	0.856	0.843	0.829	0.816	0.803	0.789	0.776	0.762	0.749	0.736	_
	125 model	ψ 15.00	0.806	0.788	0.770	0.752	0.734	0.716	0.698	0.680	0.662	0.644	_
Cooling	140 model		0.790	0.771	0.751	0.732	0.712	0.693	0.673	0.654	0.634	0.615	-
cooling	71 model		—	—	_	—	_	—	—	—	—	—	
	100 model	φ 19.05	0.959	0.955	0.951	0.948	0.944	0.940	0.936	0.932	0.929	0.926	-
	125 model	ψ 19.05	0.935	0.929	0.924	0.919	0.912	0.908	0.902	0.897	0.892	0.887	
										0.882			

Note (1) Calculate the equivalent length using the following formula.

However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.

• Equivalent Length =Actual Length + (Equivalent bend length x number of bends in the piping.) Equivalent length per bend.

Gas Pipe Diameter (mm)	φ12.7	φ15.88	φ 19.05
Equivalent Bend Length	0.20	0.25	0.30

1.8.4 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	25m	30m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94

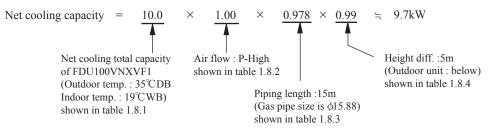
Piping length limitations

Item	71	100, 125, 140
Max. one way piping length	50m	100m
Max. vertical height difference		is higher 30m is lower 15m

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

 $\label{eq:example: The net cooling capacity of the model FDU100VNXVF1 with the air flow "P-High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0 °C and outdoor dry-bulb temperature 35 °C is$



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1.9 APPLICATION DATA

1.9.1 Installation of indoor unit

(1) Indoor unit

This manual is for the installation of an indoor unit.

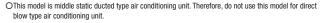
For electrical wining work (Indoor), refer to page 38. For remote control installation, refer to page 52. For wireless kit installation, refer to page 337. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to page 66.

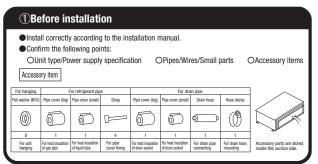
SAFETY PRECAUTIONS

- 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, <u>AWARNING</u> and <u>ACAUTION</u>. [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: Shewer 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 elonging exercting matched and temperature earling ended with used to write the instruction. 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.

Dinstallation 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.	Q
Install the system correctly according to these installation manuals.	
Improper installation may cause explosion, injury, water leakage, electric shock, and fire.	U
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.	C
Ventilate the working area well in case the refrigerant leaks during installation.	-
If the refrigerant contacts the fire, toxic gas is produced.	l
Install the unit in a location that can hold heavy weight.	-
Improper installation may cause the unit to fall leading to accidents.	Q
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.	Q
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.	\mathcal{O}
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.	e
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.	a
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.	a
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.	A
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.	0
Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.	2
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 to abnormal high pressure in the system.	Q
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.	Q
Only use prescribed optional 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.	U
Do not repair by yourself. And consult with the dealer about repair.	$\overline{\kappa}$
Improper repair may cause water leakage, electric shock or fire.	\mathcal{O}
Consult the dealer or a specialist about removal of the air conditioner.	
Improper installation may cause water leakage, electric shock or fire.	U
Turn off the power source during servicing or inspection work.	a
If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.	C
	\sim
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 burned, or electric shock.	\overline{O}
Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get	

<i>,</i>	▲ 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 ause unit failure and electric shock or fire due to a short circuit.	Ð
	Earth leakage breaker must be installed.	
	f the earth leakage breaker is not installed, it could cause electric shocks or fire.	U
F	Jse the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all soles under over current. Sing the incorrect one could cause the system failure and fire.	0
	Do not use any materials other than a fuse of correct capacity where a fuse should be used.	\bigcirc
	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.	$\frac{3}{8}$
	f 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	\odot
a	to no misma and use the time there concorregae goot as summaries and gas etc.) or minimular gas goot as is fininene, period lower 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.	\bigcirc
	Secure a space for installation, inspection and maintenance specified in the manual.	0
	nsufficient 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.	$\overline{\frown}$
l	ndoor unit is not waterproof. It could cause electric shock and fire.	\odot
i	Do not use the indoor unit for a special purpose such as food storage, cooling for precision nstrument, preservation of animals, plants, and a work of art. could cause the damage of the items.	\bigcirc
	Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.	\sim
e	quipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication quipment might influence the air conditioner and cause a mafunction and breakdown. Or the air conditioner might filtence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.	\bigcirc
	Do not install the remote control at the direct sunlight. t could cause breakdown or deformation of the remote control.	\bigcirc
• [Do not install the indoor unit at the place listed below.	
	Places where rannomable gas could leak. - Places where cosmetics or special sprays are places where cosmotics on special sprays are places where cosmotics on special sprays are places where the substances which affect the air conditioner are generated such as beach. - Highly salled area such as beach. Place where the substances which affect the air conditioner are generated such as beach. - Highly salled area such as beach. Place swhere the onlimits or statement of incredy. - Heavy snow area Places where the system is affected by	\odot
	On vehicles and ships smoke from a chimney. Places where machinery which generates high harmonics is used. 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 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. Locations where drainage cannot run off safely.	\bigcirc
• [Do not put any valuables which will break down by getting wet under the air conditioner.	$\overline{\bigcirc}$
• [Condensation 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. could cause the unit falling down and injury.	$\overline{\Diamond}$
• F	ay attention not to damage the drain pan by weld sputter when brazing work is done near the unit. 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.	0
	nstall the drain pipe to drain the water surely according to the installation manual.	A
• [mproper connection of the drain pipe may cause dropping water into room and damaging user's belongings. Jo not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit. Oxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to	-
• E	user's health and safety. 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 cour, which can cause serious accidents.	
• F	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
	Theck if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance. 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 valuables.	0
h	Do not install the outdoor unit where is likely to be a nest for insects and small animals. nescts and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to ege the surroundings clean.	\bigcirc
• F (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	0
b	y hand. Use protective gloves in order to avoid injury by the aluminum fin. Make sure to dispose of the packaging material.	
	eaving 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.	
ľ	t may cause the breakdown of the system due to clogging of the heat exchanger.	\bigcirc
	Do not touch any button with wet hands.	$\overline{\bigcirc}$
	t could cause electric shock. Do not touch the refrigerant piping with bare hands when in operation.	2
	The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbilte.	\bigcirc
• [Do not clean up the air conditioner with water.	$\overline{\bigcirc}$
	t could cause electric shock. Do not turn off the power source immediately after stopping the operation.	2
		(\mathcal{V})
	3e 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.	<u> </u>





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.
- · 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.)

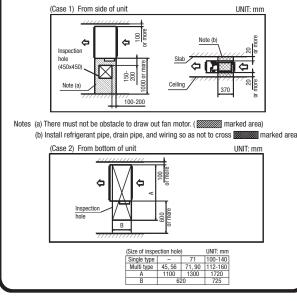
② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

Space for installation and service

Make installation altitude over 2.5m.

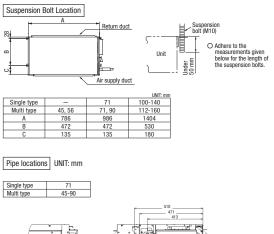
(Indoor Unit)

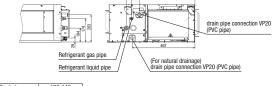
Select either of two cases to keep space for installation and services

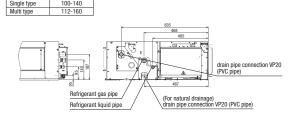


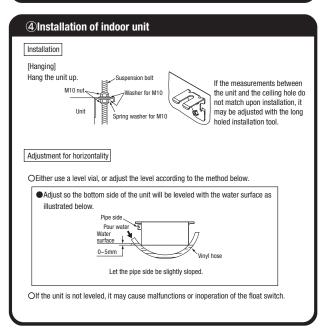
③Preparation before installation

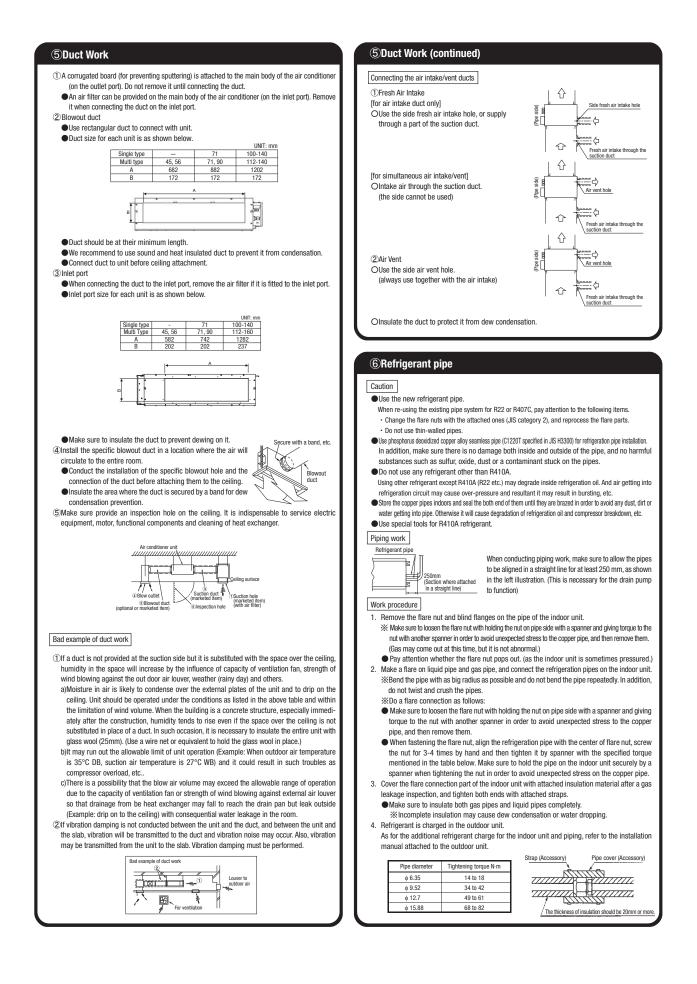
- If suspension bolt becomes longer, do reinforcement of earthquake resistant. OFor grid ceiling
 - When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
- OIn case the unit is hanged directly from the slab 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.

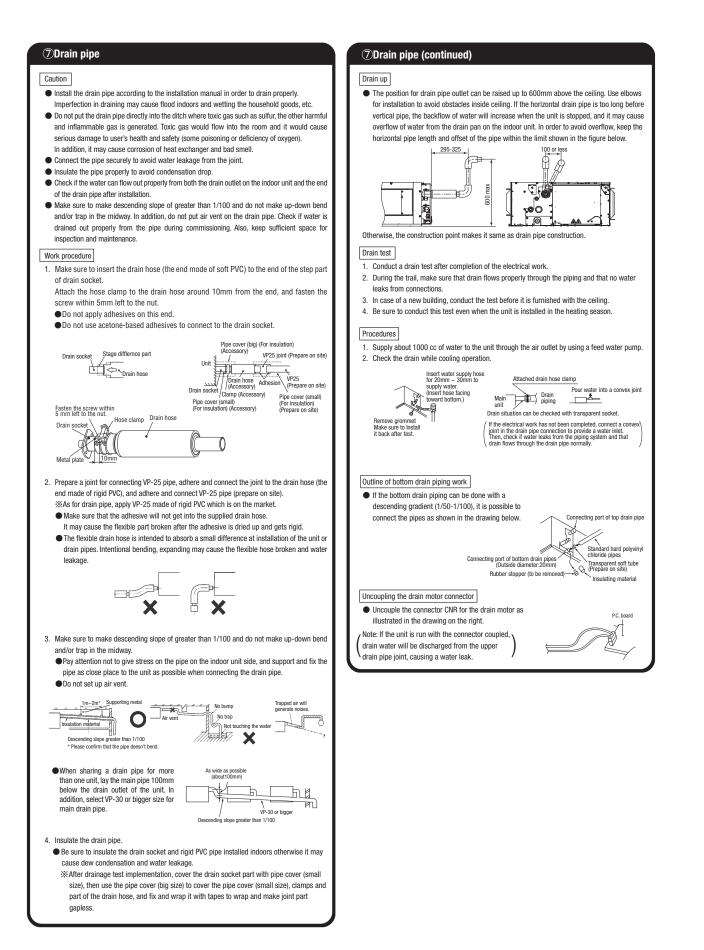






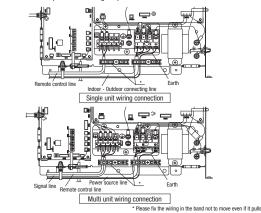






8Wiring-out position and wiring connection

- 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.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (2 screws).
- 2. 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.



9 External static pressure setting

You can set External Static Pressure (E.S.P) by method of MANUAL SETTING on remote control. Indoor unit will control fan-speed to keep rated air flow volume at each fan speed setting (Lo-Uhi) You can set required E.S.P. by wired remote control that calculated with the set air flow rate and pressure loss of the duct connected.

- How to set E.S.P. by wired remote control
 1 Push "
 " marked button(E.S.P. button).

 2 Select indoor unit No. by using
 button.
- 2 Select indoor unit No. by using \$ button
 3 Select setting No. by using \$ button and
- set E.S.P. by O button. See detailed procedure in technical manual.

Notice

You can NOT set E.S.P. by wireless remote control.

With E.S.P. setting, confirm that actual E.S.P. agrees with E.S.P. setting.

When E.S.P. setting is higher than actual E.S.P., the airflow rate becomes excessively higher. This will cause water leakage if water splashes.

When E.S.P.setting is lower than actual E.S.P, the airflow rate becomes excessively lower and the cooling or heating may become ineffective.

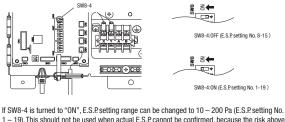
E.S.P. butt

to order to reduce the risk above the factory E.S.P.setting is set within the range of 80 - 150 Pa (E.S.P.setting No. 8 - 15). Be sure to use within the range of 80 - 150 Pa in actual operations. If actual E.S.P. is lower than 80 Pa, it may cause water leakage.

Setting No. 8 9 10 11 12 13 14 15

E.S.P (Pa) 80 90 100 110 120 130 140 150

% If 1 – 7 is selected for the setting No. on the remote control, the setting No. shows No. 8. If 16 – 20 is selected for the setting No. on the remote control, the setting No. shows No. 15. Factory default is No. 8.



1 – 19). This should not be used when actual E.S.P. cannot be confirmed, because the risk above becomes higher.

 Setting No.
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(1) Check list after installation

Check the following items after all installation work completed.

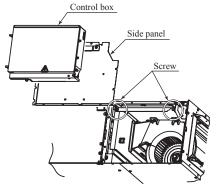
Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
No 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	
Is setting of E.S.P finished?	Excessive air flow, water drop blow out	

(2) Replacement procedure of the fan unit

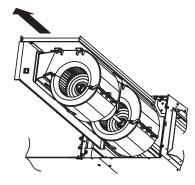
Notes(1) The unit is a heavy item. It must be supported securely and handled with care not to drop when it is necessary to replace. (2) For the maintenance space, refer to page 43.

(a) Model FDU71VF1

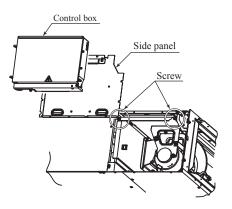
(i) Remove the control box and the side panel, and remove the screws marked in the circles (2 places) in the figure.



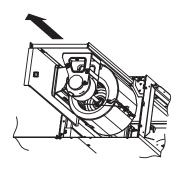
(ii) Take out the fan unit in the arrow direction.



- (b) Models FDU100VF1, 125VF, 140VF
- (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.



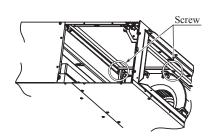
(iii) Remove the screws marked in the circles (2 places) from the fan unit located at the far side.

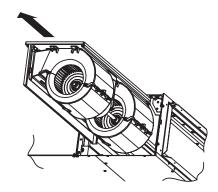


(ii) Take out the fan unit located at the near side in the arrow

direction.

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





PSB012D994

1.9.2 Electric wiring work installation

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 instructions

- 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,
 <u>AWARNING</u> and ACAUTION .

[AWARNING] : Wrong installation would cause serious consequences such as injuries or death. CAUTION : 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 mean

- The meanings of "Marks" used here are as shown on the right:
- Never do it under any circumstances. O 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, O and use exclusive circuit Power source with insufficient capacity and improper work can cause electric shock and fire. Ouse 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 O rising. Fit the lid of the services panel property. Improper fitting may cause abnormal heat and fire. Ouse the genuine optional 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. \bigcirc Improper repair may cause water leakage, electric shock or fire. Consult the dealer or a specialist about removal of the air conditioner. 0 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 0 shock and injury by the operating fan. Shut off the power before electrical wiring work. 0 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. 0 If the earth leakage breaker is not installed, it could cause electric shocks or fire Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.) Q 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. O 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 \cap 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. $oldsymbol{0}$ 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. \bigcirc 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 \bigcirc

unexpectedly and it may cause injury.

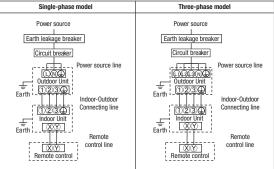
DElectrical Wiring Connection

- Use three-core cable as wiring between indoor and outdoor unit. As for detail, refer to "INSTAL-LATION MANUAL" of outdoor Unit.
- Set earth of D-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.)
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- 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.
- Connection of the line ("Between indoor and outdoor unit", Earth and Remote control) (T)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 nower source
- 2 Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as earth leakage breaker.
- ③If 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 breaker
- ④Install isolator or disconnect switch on the power supply wiring 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

- (1)As for connecting method of power source, select from following connecting patterns. In principle, do not directly connect power souce line to inside unit.
- % As for exceptional connecting method of power souce, discuss with the power provider of the 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.

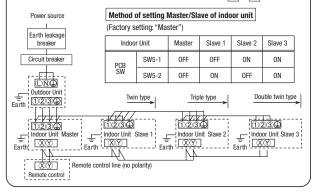


Cable connection for a V multi configuration installation

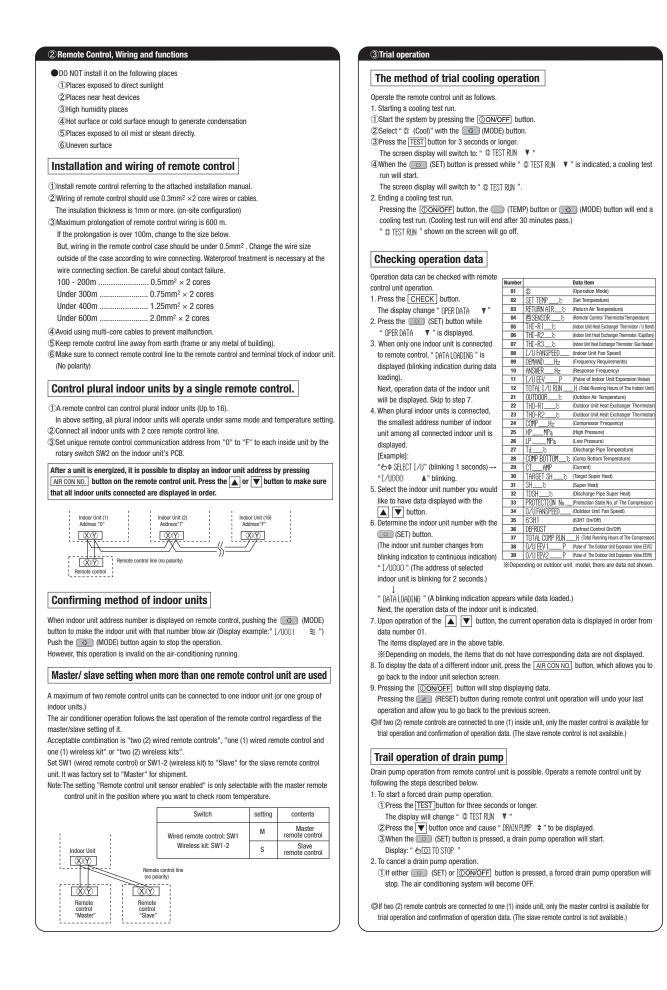
(1) Connect the same pairs number of terminal block "(1), (2), and (3)" and " (3) and (7)" between master and slave indoor units.

(2)Do 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. (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.



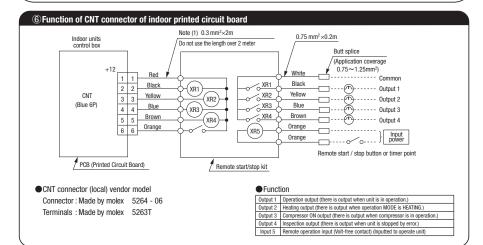
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Bits RR - 20.6 Bits RR - 20.	
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Image: space	eset producing +2.0°C increase in return air temperature of indoor unit.
10 (#TURESTINFT INHWLID 11 (WHILD Vertice W1 (WT <	eset producing +1.5°C increase in return air temperature of indoor unit.
INWID INWID <td< td=""><td>eset producing +1.0°C increase in return air temperature of indoor unit.</td></td<>	eset producing +1.0°C increase in return air temperature of indoor unit.
Image: NPRI D Image: N	eset producing -1.0°C increase in return air temperature of indoor unit.
IN VARI O VENT LINK Connect the Single split series and the VFF series to the indoor board CNT and indoor board CND respectively. If a verification device is constantiation device is constantiation device is constantiation device is constantiation device. In eventiation device with the single split series device to indevice is constantiation turbure. Intervention of a series device is indevice is constantiation turbure. 12 [DPF WWE 31] If you change the range of set temperature, the indication of set temperature will vary following the control. INTERVENTINGE When h 13 [L/UFMN If you change the range of set temperature, the indication of set temperature will vary following the control. Intervention device is operative. Intervention device is constantiation device. 13 [L/UFMN Min HMU or fan becomes the three speed of Xet - Xet or Xet - Xet or Xet - Xet C. To Xet Min	eset producing -1.5°C increase in return air temperature of indoor unit.
VBIT LINK Connect the Single spit series and the VPF series to the indoor band CATI and indoor	eset producing -2.0°C increase in return air temperature of indoor unit.
Verifiaition device is connected, been geared with the motion of indoor device, the verifiation device is operated/stopped. ST FM SPED When h 12 10P KWKE 31 COLV you can operate the verifiation device in dependently by the handling of verifiation buttom. ST FM SPED When h 12 10P KWKE 31 If you change the range of set temperature, the indication of set temperature will vary following the control, and how the range of set temperature. INTERMITTING When h INTERMINE TO THE WORK AND THE VALUE AND THE	eating thermostat is off, to be operated with low air flow.
Image:	eating thermostat is off, to be operated with set air flow.
II2 (UP WHX X) If you change the range of set temperature, the indication of set temperature will vary following the control, and when the set temperature. If you change the range of set temperature, the indication of set temperature will not vary following the control, and there are the set temperature. If you change the range of set temperature, the indication of set temperature will not vary following the control, and there are the set temperature. If you change the range of set temperature. If you change themperature.	
Interview Or provide the range of set interpeature in inducation of set interpeature with ray or control. When the range of set interpeature with ray or control. NN NNCKINNE If you change the range of set interpeature. The inducation of set interpeature with ray or control. Do not set interpeature with ray or control. Do not set interpeature with ray or control. 13	eating thermostat is off, to be operated intermittently. eating thermostat is off, the fan stops.
13 ////////////////////////////////////	he remote thermistor is working, "FAN OFF" is set automatically.
HI-HUP-10 X Airflow of fan becomes the three speed of \$v_nt - \$v_nt	set when the indoor unit's thermistor is working.
HI-LO 🗱 Airflow of fan becomes the two speed of the effective and	of indoor heat exchanger temperature to start frost prevention control.
	g only with the single split series. rol frost prevention, the indoor fan tap is raised.
FN CONTROL ON To control 14 (52-POSITION If you want to change the remote control function "14 52-POSITION".	an name processing with inducer that hap to function.
You must change the indoor function "04 ∞¬Press 1100" accordingly. 13 [DRNIN PUPP LINK	
	ump is on during cooling and dry.
15 NUCE IYFE	ump is on during cooling, dry and heating. ump is on during cooling, dry, heating and fan.
NFAT PUPP * 80AMDS Drain pr	ump is on during cooling, dry and fan.
International (2000) Internati	oling is stopped or cooling thermostat is off, the fan does not perform extra operation.
http://www.log. If you input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently	ioling is stopped or cooling thermostat is off, the fan perform extra operation for half an hour.
following the input from outside.	oling is stopped or cooling thermostat is off, the fan perform extra operation for an hour.
FIR ALL MITS If you input into indoor printed circuit board CNT from outside, All units which share the same one remote control 6HMR After co	oling is stopped or cooling thermostat is off, the fan perform extra operation for six hours.
17 (KOR H3P HACKATION ST A After he	ating is stopped or heating thermostat is off, the fan does not perform extra operation.
LINDICATION OFF 🔾	ating is stopped or heating thermostat is off, the fan perform extra operation for half an hour.
	eating is stopped or heating thermostat is off, the fan perform extra operation for two hours. eating is stopped or heating thermostat is off, the fan perform extra operation for six hours.
18 ************************************	anny a suppor a reasing areanoast to on, are ran periori total updialion for SK Hours.
INDEXTURION C	
	heating is stonged or heating thermostat is off, the fan perform intermittent operation for five minutes firs to set
C Temperature indication is by degree C SminOR SminOFF SminON	heating is stopped or heating thermostat is off, the fan perform intermittent operation for five minutes after twenty minut v airflow.
Fe Temperature indication is by degree F United Tomoto low airfl	v airflow. heating is stopped or heating thermostat is off, the fan perform intermittent operation for five minutes after five minutes'
	heating is stopped or heating thermostat is off, the fan perform intermittent operation for five minutes after five minutes'
ON/OFF button (finished)	v airflow. heating is stopped or heating thermostat is off, the fan perform intermittent operation for five minutes after five minutes'

5 Control mode switching

Switch No.	Control	Content
SW2	Indoor ι	unit address (0-Fh)
SW5-1	Master	Slave Switching (plural /Slave unit Setting)
SW5-2	maston	Sidvo Switching (plana / Sidvo and Sodang)
SW6-1~4	Model of	capacity setting
SW7-1 ON		Operation check, Drain motor test run
5w/ 1	0FF	Normal operation



Error Code of indoor unit

LED on indoor

red (checking)

Off

Off

Off

Not sure Blinking twice

Blinking once

Blinking once

Blinking once

Blinking once Blinking twice

Off

nking for three tim

Blinking once

Blinking twice

Blinking once

Blinking once Blinking twice

Off

Off

circuit board

green (normal)

Continuous blinking

Off

Continuous blinking

Not sure Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Content

Normal ult on power, indoor power off or lack

phase Fault on the transmission between indoor circuit board and remote control

Indoor computer abnormal Fault on outdoor-indoor transmission

Indoor air inhaling sensor broken or short-circuit The temperature of heat exchange abnormal

Float SW actions (only with FS)

Drain pump over current excess number of remote control

connections The communication fault for master

Fan motor (1) abnormal Fan motor (2) abnormal Configuration fault on running checking model

an motor (1) abnormal rotation

Fan motor (2) abnormal rotation Remote control sensor interrupte Outdoor unit checking (outdoor cir

short-circuit

ndoor units

Config nodel

ing

Display or remote controller

Off

F1

E6

E7

E8

E9

E10

E14

F16

F19

E20

E28

Over E30

(7)Troubleshooting

The operation data is saved when the situation of abnormal operation happen, and the data can be confirmed by remote control. [Operating procedure]

- 1. Press the CHECK button.
- ₹" The display change " OPFR DATA
- 2. Once, press the v button, and the display change
- " ERROR DATA 🐪 3. Press the O (SET) button and abnormal operation data mode is
- started. 4. When only one indoor unit is connected to remote control, following is displayed.
- $\textcircled{\sc l}$ The case that there is history of abnormal operation. \rightarrow Error code and " DATA LOADING " is displayed.
- [Example]: [E8] (ERROR CODE) "DATA LOADING" 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. \rightarrow " 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)
- ▲ " blinking 1711000 (2) The case that there is not history of abnormal operation.
- → Only address number is displayed.
- 6. Select the indoor unit number you would like to have data displayed with the 🔺 🔻 button.
- 7. Determine the indoor unit number with the O (SET) button.
- [Example]: [E8] (ERROR CODE)
- (The address of selected indoor unit is blinking for 2 seconds.) " I/U000
- [E8] "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 (3) Trial operation .
- *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.

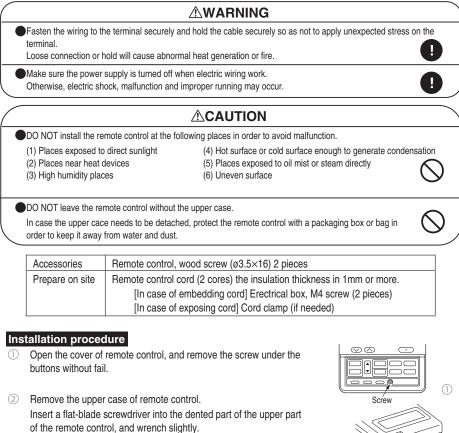
Sif two (2) remote controls are connected to one (1) indoor unit, only the master control is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

PJA012D730

1.9.3 Installation of wired remote control (option)

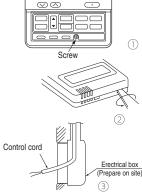
(1) Model RC-E5

Read together with indoor unit's installation manual.

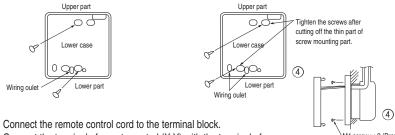


[In case of embedding cord]

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.

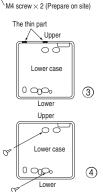


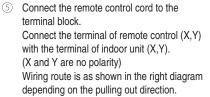
Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)

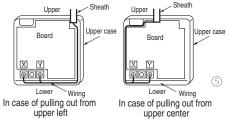
Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.

[In case of exposing cord]

- ③ 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.







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	The peeling-off length
Y wiring : 195mm	Y wiring : 190mm	of sheath

- 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

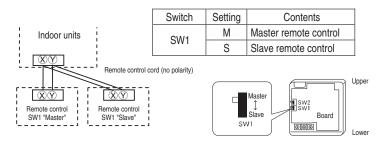
- ① Wiring of remote control should use 0.3mm² × 2 core wires or cables. (on-site configuration)
- 2 Maximum prolongation of remote control wiring is 600 m.

If the prolongation is over 100m, change to the size below. But, wiring in the remote control case should be under 0.5mm². 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.

100 - 200m ······	\cdots 0.5mm ² \times 2 cores
Under 300m	\cdots 0.75mm ² × 2 cores
Under 400m	···1.25mm ² × 2 cores
Under 500m	$\cdot\cdot\cdot2.0$ mm ² \times 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 : " @WAI T@	Μ"
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)

Oupper 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.

1. When (2) 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 (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]

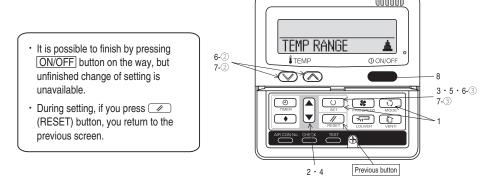
During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

How to set upper and lower limit value

1. Stop the air-conditioner, and press O (SET) and C (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 O (SET) button, and enter the temperature range setting mode.
- 4. Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using ▲ ▼ button.
- 5. Press <u>(SET)</u> button to fix.
- 6. When "UPPER LIMIT ▼ " is selected (valid during heating)
 - ① Indication: " $⊕ \lor \land$ SET UP" → "UPPER 30°C ∨"
 - \odot Select the upper limit value with temperature setting button \bigtriangledown . Indication example: "UPPER 26°C \lor \land " (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 ▲" is selected (valid during cooling, dry, fan, automatic)
 - (1) Indication: " $\textcircled{b} \lor \land$ SET UP" \rightarrow "LOWER 18°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 fu	unctional setting							
-		cal using is performe	d autom	atically by the indoor unit connected, when remote				
	ol and indoor unit are conne							
				need to change the initial settings. your desired setting as for the selected item.				
	rocedure of functional settin							
[Flow	of function setting	ı						
-	: Stop air-conditioner and pre-		ıd	Record and keep the				
"(T)" (MODE) buttons at the same time for over three seconds. setting								
	Finalize : Press "(" (SET) button.							
Select	: Press 🔺 💌 button.	utton.						
	: Press ON/OFF button.			Consult the technical data etc. for each control details				
	sible to finish above setting or nished change of setting is un							
	nitial settings		(U	lop air-conditioner and press L(SET) + ⓒ (MODE) buttons				
☆ : A	utomatic criterion		at the	same time for over three seconds.				
				FUNCTION SET V				
_					To next page			
🖻 FUNCT	ION T (Remote control fur	nction)						
	Function							
L	01 527 A ESP SET	setting	10					
		GENER ESP VALID Generation ESP Invalid		Validate setting of ESP:External Static Pressure Invalidate setting of ESP				
	02 AUTO RUN SET	AUTO RUN ON						
		AUTO RUN OFF	×	Automatical operation is impossible				
	03 VICA TEMP SW	(유지전 VALID	10					
	04 😨 MODE SW	SIM INVALID		Temperature setting button is not working				
	04 1001 0*	6년 VALID	0					
	05 (ON/OFF SW	8ট INVALID		Mode button is not working				
		ക് VALID ക് OINVALID	0	On/Off button in not working				
	06 🖾 FAN SPEED SW			On/Off button is not working				
		8년 VALID 8년 INVALID	× ×	Fan speed button is not working				
	07 🖾 LOUVER SW	S C VALID						
		8년 VALID 8년 INVALID	× ×	Louver button is not working				
	08 O TIMER SW	கூ VALID						
		50 INVALID		Timer button is not working				
	09 SENSOR SET	SENSOR OFF	0	Remote thermistor is not working.				
		ESENSOR ON SENSOR +3.0°C	_	Remote thermistor is working. Remote thermistor is working, and to be set for producing +3.0°C increase in temperature.				
		SENSOR +2.0°C		Remote thermistor is working, and to be set for producing +2.0 °C increase in temperature.				
		ESENSOR + 1.0%		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.				
		ESENSOR -2.0%		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							
		INVALID VALID	10					
	11 VENT LINK SET	NO VENT	10					
		NO VENT	+	In case of Single split series, by connecting ventilation device to CNT of the				
		VENT LINK		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.				
		NO VENT LINK		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				
	12 TEMP RANGE SET			board), you can operate /stop the ventilation device independently by 🗈 (VENT) button.				
		INDN CHANGE	0	If you change the range of set temperature, the indication of set temperature				
		NO INDN CHANGE		will vary following the control. If you change the range of set temperature, the indication of set temperature				
	13 I/U FAN			will not vary following the control, and keep the set temperature.				
	13 17 01114	HI-MID-LO	*	Airflow of fan becomes of 🗱 🖬 - 🏶 🛍 or the four speed of 📽 🖬 - 🗞 🛍 - 🏶 🛍 - 🏶 🛍 -				
		HI-LO HI-MID	*	Airflow of fan becomes of الاستاد المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعا Airflow of fan becomes of الاستاد المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعالي المعال				
		1 FAN SPEED	*	Airflow of fan is fixed at one speed.				
	14 🖘 POSITION	-		If you change the remote control function "14 ≠ 7 POSITION",				
		4POSITION STOP		you must change the indoor function "04 ≔⊽⊓P0SITI0N" accordingly. You can select the louver stop position in the four.				
	15 MODEL TYPE	FREE STOP		The louver can stop at any position.				
		HEAT PUMP	*					
	16 EXTERNAL CONTROL SET	COOLING ONLY	*					
		INDIVIDUAL	0	If you input signal into CNT of the indoor printed circuit board from external, the				
		FOR ALL UNITS		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.				

 17
 ROW THP INDICATION SET

 INDICATION OF
 In normal working indication, indoor unit temperature is indicated instead of airflow.

 18
 INDICATION ON

 INDICATION ON
 O

 INDICATION ON
 O

 INDICATION OFF
 Heating preparation indication should not be indicated.

 19
 b/*p SET

 Image: Set of the set of th

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		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	ISSIFAN SPEED S₩	ල 📧 VALID	Indoor unit with two or three step of air flow setting			
function06		டு 🗷 INVALID	Indoor unit with only one of air flow setting			
Remote control	🖾 LOUVER SW	കളു VALID	Indoor unit with automatically swing louver			
function07		கன 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			

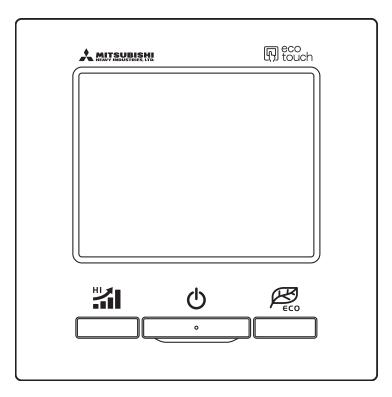
Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit. But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".

evious page					Note2: Fan se	etting of "HI	GH SPEED"			
, •		t No. are indicated only whe	en					or unit air flow se	etting	
(Indoor unit function) I/UF	INCTION A plural inde	oor units are connected.			Fan t	ιaμ	(m#+(m#+1m#+11m#	8ad - 8ad - 8ad	8 mil - 8 mil	8afi - 8afi
		Function	setting		FAN	STANDARD	UH - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	I/U000 ▲ I/U001 ≑	02 FAN SPEED SET	STANDARD	*	SPEED	HIGH				
	I/U002 ¢		HIGH SPEED 1	*	SET	SPEED1, 2	UH - UH - Hi - Me	UH - Hi - Me	UH - Me	UH - Hi
	I/U003≑		HIGH SPEED 2				ome indoor unit is "HIGH S			
	I/U004 ¢	03 FILTER SIGN SET	INDICATION OFF		4 speed is not	t able to be	set with wireless remote co	ontrol.		
			TYPE 1		The filter sign is	indicated at	iter running for 180 hours.			
To set other	indoor unit, press		TYPE 2				ter running for 600 hours.			
	D. button, which		TYPE 3 TYPE 4				iter running for 1000 hours. Iter running for 1000 hours,	then the indoor un	it will be stonn	hed hv
	o go back to the indo	or	11124		compulsion after		tor running for rooo nours,	and the indoor un	in will be stopp	ica by
unit selectio		04 ⇒,-POSITION	_	I	f you change the	e indoor fur	ction "04 🖘 🗆 POSITION"			
(for example	e: I/U 000 🔺).		4POSITION STOP				e control function "14 🖘 🗆	POSITION" accordi	ngly.	
			FREE STOP		You can select ti The louver can s		op position in the four.			
		05 EXTERNAL INPUT				stop at any p	00310011.			
			LEVEL INPUT	0						
		06 OPERATION PERMISSION/PROHIBITION	PULSE INPUT							
			INVALID							
			VALID	F	Permission/proh	ibition contr	ol of operation will be valid			
		07 EMERGENCY STOP	THUALTD							
			INVALID VALID	+	Nith the VRF se	nios itis us	ed to stop all indoor units c	onnected with the	same outdoor	unit immedia
							from remote on-off termina			
			OFFSET +3.0%		Ta ha sasat fas n		0°C increase in temperate	ue durine heating		
			OFFSET +2.0%				3.0°C increase in temperature 2.0°C increase in temperature 3.0°C increase 3.0°C increase 3.0			
		08 ※ SP OFFSET	OFFSET +1.0%				1.0°C increase in temperatu			
			NO OFFSET							
			OFFSET +2.0%		To he reset prod	lucina ⊥2 0°	C increase in return air terr	nerature of indoor	unit	
			OFFSET +1.5%				C increase in return air terr			
		09 RETURN AIR TEMP	OFFSET +1.0%		To be reset prod	lucing +1.0°	C increase in return air terr	perature of indoor	unit.	
			ND OFFSET OFFSET - 1.0%	-						
			OFFSET -1.5°C				C increase in return air tem C increase in return air tem			
			OFFSET -2.0%				C increase in return air tem			
		10 🔅 FAN CONTROL			Alle le Ale Ale		055 (
			LOW FAN SPEED				OFF, fan speed is low spe OFF, fan speed is set spee			
			SET FAN SPEED		-					
			INTERMITTENCE				OFF, fan speed is operate	d intermittently.		
			FAN OFF				OFF, the fan is stopped. is working, "FAN OFF" is s	set automatically.		
							the indoor unit's thermisto			
		11 FROST PREVENTION TEMP	TEMP HIGH		Change of Indoo	or heat exch	anger temperature to start	trost prevention co	ntrol.	
			TEMP LOW							
		12 FROST PREVENTION CONTROL	Is the course of ou		Norking only wit					
			FAN CONTROL ON FAN CONTROL OFF	+ +	o control frost p	prevention,	the indoor fan tap is raised.			
		13 DRAIN PUMP LINK	prin controls off							
			恭 心		Drain pump is ru					
			恭心 AND xx AND xx				oling, dry and heating.			
			恭心 AND淡 AND 禁心 AND 職				oling, dry, heating and fan. oling, dry and fan.			
		14 🕸 FAN REMAINING		<u> </u>						
			NO REMAINING				fan does not perform extra			
			0.5 HOUR 1 HOUR				fan perform extra operatio			
			6 HOUR				fan perform extra operatio fan perform extra operatio			
		15 🔅 FAN REMAINING		′	and couling is s	noppeu, me	ian periorin extra operatio	IT OF SIA TIUUIS.		
			NO REMAINING				neating thermostat is OFF,			
			0.5 HOUR 2 HOUR				neating thermostat is OFF,			
			6 HOUR	+ - 1/	Atter heating is s	stopped or h	neating thermostat is OFF, neating thermostat is OFF,	the fan perform ext	tra operation fo	or two hours.
		16 * FAN INTERMITTENCE			nior ricating is a	stopped of I	iousing incriniosial is UFF,	and rain perioriti exi		or ora riouls.
			NO REMAINING	- [],	During bestine !	o otopsad -	r booting thormastat is OFF	the fee and and a	ntormittent	protion for f
			20minOFF 5minON				r heating thermostat is OFF nty minutes' OFF.	, uie tan pertorm ir	mermittent ope	eration for fiv
							r heating thermostat is OFF	, the fan perform ir	ntermittent ope	eration for five
			sminOFF sminON		with low fan spe					
		17 PRESSURE CONTROL	CTANDADD							
		17 PRESSURE CONTROL	STANDARD TYPE1	<u>*</u>	Connected "OA	Processing	' type indoor unit, and is au	tomatically defined		

1. 2. 3. 4.	V 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. FUNCTION SET ▼ " Press ○ (SET) button. Make sure which do you want to set, " FUNCTION ▼ " (remote control function) or "/U FUNCTION ▼ " (indoor unit function). Press ▲ or ▼ button. Selecct FUNCTION ▼ " (remote control function) or "/U FUNCTION ▼ " (remote control function) or "/U FUNCTION ▼ (set) button. Press ○ (SET) button.	Operation message Function description: (B), setting description: (C) Function No. (A) Image: setting description: (C) Image: setting description: (C) Image: setting description: (C) Image: setting descripti
6.	(On the occasion of remote control function selection) (Indication with blinking) Jospiay is changed to "01 ⊕@@ ESP £T". Press ▲ or ♥ button. "No. and function"are indicated by turns on the remote control function table, then you can select from them.	[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". Go to ②. [Note] (1) If plural indoor units are connected to a remote control,
	 (For example) <u>B2'</u> ← Function No. Function Press ○ (SET) button. The current setting of selected function is indicated. (for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected 	 (1) In platal induct of all connected to a remote control, the indication is "1/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
	AUTO RUN ON Setting Setting Press Tor Tor button. Select the setting. AUTO RUN ON	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) □2 ← Function No.
	AUTO RUN OFF 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	FAN SPEED SET Function ③ Press ○)(SET) button. The current setting of selected function is indicated. (For example) "STANDARD" ← If "02 FAN SPEED SET" is selected. Image: StanDard Control of the setting of selected function is indicated.
7.	finish, go to 7.	 ④ Press ▲ or ▼ button. Select the setting. ⑤ 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.
	 It is possible to finish by pressing ON/OFF butt unavailable. During setting, if you press () (RESET) but 	
	Setting is memorized in the control and it is save [How to check the current setting]	ed independently of power failure.

PJZ012D077

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 optional 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.

Failure to follow these instructions properly may result in serious consequences such as death, severe injury, etc
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.



Never do.



Always follow the instructions given.

•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.

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 supply 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.

Seal the inlet hole for remote control cable with putty.

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.

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 C8340 or equivalent)	1	These are not required when installing
Thin wall steel pipe for electric appliance (JIS C8305 or equivalent)	As required	directly on a wall.
Lock nut, bushing (JIS C8330 or equivalent)	As required	
Lacing (JIS C8425 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 ² 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 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 mm ² x 2-core
< 300 m	0.75 mm ² x 2-core
< 400 m	1.25 mm ² x 2-core
< 600 m	2.0 mm ² x 2-core

3. Remote control installation procedure

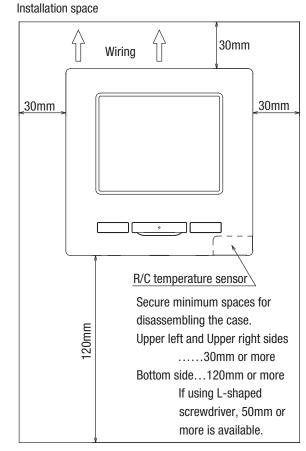
Determine where to install the remote control

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.
 - \cdot 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.



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.

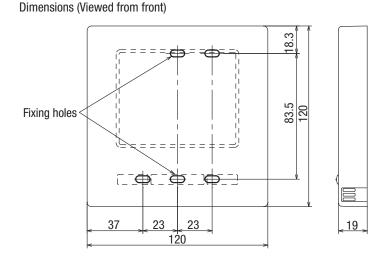
Difference between detected temperature and actual room temperature could cause troubles. The correction for detected temperature by the R/C cannot offset such temperature difference because it corrects the detected temperatures itself.

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



① To remove the upper case from the bottom cases of R/C

 \cdot 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.
P(C wires (Y, Y) have as polarity.

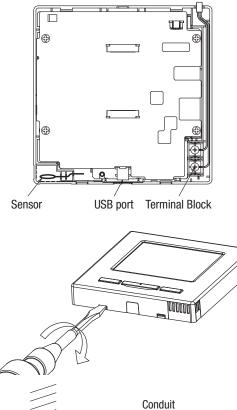
R/C wires (X, Y) have no polarity.

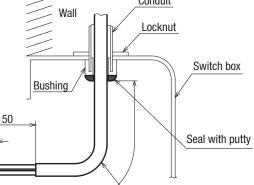
In case of embedding wiring (When the wiring is retrieved "Backward")

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.

PCB side (Viewed from rear)

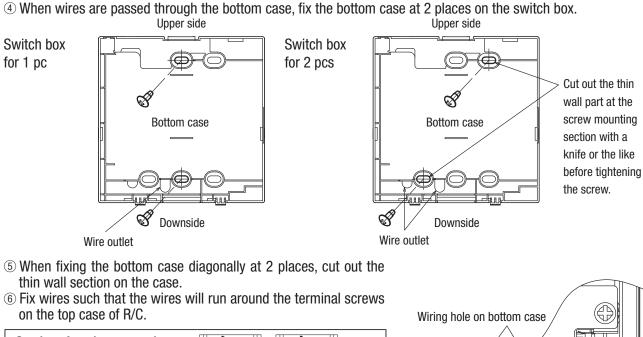




R/C cable

8

200

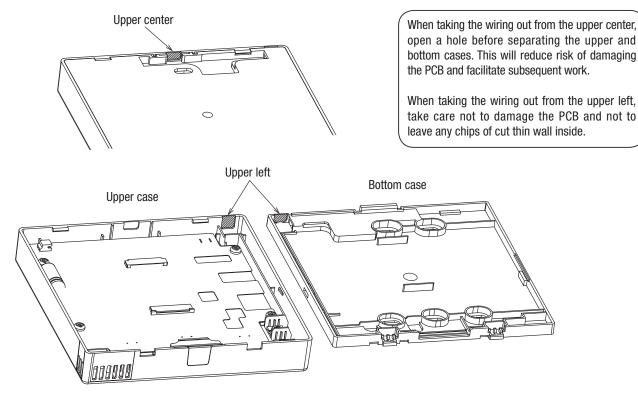


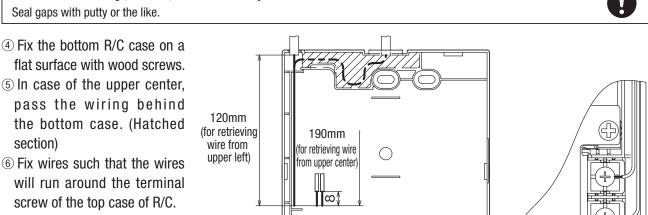
Cautions for wire connection Use wires of no larger than 0.5 mm² for wiring running through the remote control case, Take care not to pinch the sheath. Tighten by hand (0.7 N·m or less) the wire connection. If the wire is connected using an electric driver, it may cause failure or deformation.

⑦ Install the upper case with care not to pinch wires of R/C.

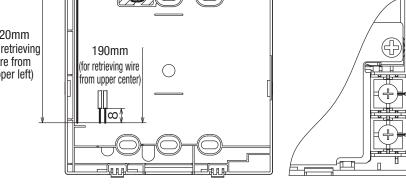
In case of exposing wiring (When the wiring is taken out from the "upper center" or "upper left" of R/C)

③ Cut out the thin wall sections on the cases for the size of wire.





⑦ Install the top case with care not to pinch wires of R/C.



Main/Sub setting when more than one remote control are used

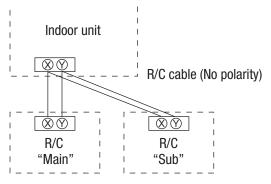
Main-Sub setting for use of two or more R/Cs

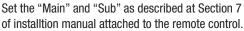
If the hole is cut too large, moisture, dust or insects may enter.

Up to two units of R/C can be used at the maximum for 1 indoor unit or 1 group.

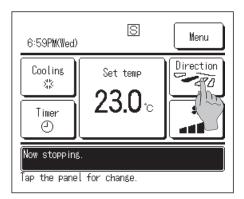
One is main R/C and the other is sub R/C.

Operating range is different depending on the main or sub R/C.





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	\bigcirc	_
Room temperature range setting	\bigcirc	_
Indoor unit settings	\bigcirc	—
Individual flap control	0	—
Operation data display	0	_
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.

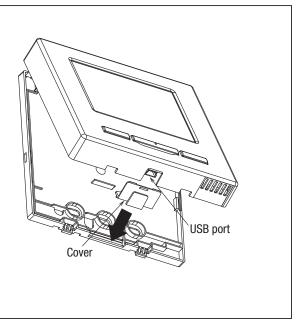
For details, view the web site or refer to the engineering data.

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

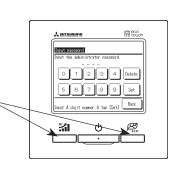
It could cause malfunction or breakdown of R/C or personal computer.



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 [Highpower] and the [Energy-saving] buttons are pushed simultaneously for 5 seconds on the administrator password input screen.
- Service password is "9999", which cannot be changed.
 When the administrator password is input, the service password is also accepted.



Note: Combination of R/C and indoor unit

(1) It can be used as the combination of Main and Sub with RC-E3 to -E5 type of wireless R/C (option part).

(2) It can be combined with FD-V or FD-KX E6 type and later types of indoor units

(3) In cases of combination with FD-V or FD-KX E6 type unit, there are some controlling items which cannot be used. If operating such items, the message "Invalid request" is displayed.

For details, refer to the installation manual attached to the remote control.

1.9.4 Installation of outdoor

(1) Model FDC71VNX

PSB012D909G 🖟

Inverter driven single split PAC	
71V	
Designed for R410A refrigerant	

OThis installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 42.

When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

•We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.

•The precautions described below are divided into AWARNING and ACAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the AWARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ACAUTION. These are very important precautions for safety. Be sure to observe all of them without fail. •The meaning of "Marks" used here are as shown below.

Never do it under any circumstance.

•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.

•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

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

	\wedge	WAF	RNING
	rried out by the qualified installer. by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system	0	Do not perform brazing work in the airtight room It can cause lack of oxygen.
	II accordance with the instruction manual. v cause bursts, personal injury, water leaks, electric shocks and fire.	1	• 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.
Use the original access	ories and the specified components for installation. prescribed by us are used, it may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard		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.
with IS05149.	Il rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which onts.		• Do not open the service 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 completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause
	rea well in the event of refrigerant leakage during installation. Into contact with naked flames, poisonous gas is produced.		burst or personal injury due to anomalously high pressure in the refrigerant • Only use prescribed optional parts. The installation must be carried out by the qualified installer.
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 joiting out of alignment, be sure to hang up the unit at 4-point support.			If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire. 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 specified component can cause fire or burst.
An improper manner of p	nortage such as 3-point support can cause death or serious personal injury due to falling of the unit	-	• Be sure to switch off the power supply in the event of installation, inspection or servicing. If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
Unsuitable installation lo	cations can cause the unit to fall and cause material damage and personal injury.	4	Consult the dealer or an expert regarding removal of the unit. Incorrect installation can cause water leaks, electric shocks or fire.
	le when installed, so that it can withstand earthquakes and strong winds. cations can cause the unit to fall and cause material damage and personal injury.		Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.
wiring regulation", and	on must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national ithe system must be connected to the dedicated circuit. cisient canacity and incorrect function done by imporer work can cause electric shocks and fire.		If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit
Be sure to shut off the	nome departing who memore character of mission of mission where are date cheare should memory and me, power before starting electrical work. wer can cause electric shocks, unit failure or incorrect function of equipment.	\bigcirc	• 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.
	es conformed to safety standard and cable ampacity for power distribution work. an cause electric leak, anomalous heat production or fire.		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
	les for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent	1	shocks.
overloading the termin Loose connections or cal	al DiocKS. ble mountings can cause anomalous heat production or fire.		Be sure to fix up the service panels. Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
	he control box so that it cannot be pushed up further into the box. Install the service panel correctly. y result in overheating and fire.		Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair. If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

\square	\land	CAL	JTION
•	Carry out the electrical work for ground lead with care 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-circuition. Never connect the grounding wire to a gas pice because if gas leaks.it could cause exclosion or ignition.	\bigcirc	Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation. Using an old and damage base flame can cause the unit falling down and cause personal injury.
0	Use the circuit breaker for all pole with correct capacity. Use the circuit breaker for all pole with correct capacity. Using the incorrect circuit breaker, it can cause the unit maliturction and fire.		 Do not install the unit in the locations listed below Locations where carbon fiber, metal powder or any powder is floating. Locations where any substances that can affect the unit such as suiphide gas, chloride gas, acid and alkaline can occur.
	Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations. The isolator should be locked in accordanced with EN60204-1.	1	Vehicles and ships Locations where cosmetic or special sprays are often used.
	Take care when carrying the unit by hand. 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 glowes to minimize the risk of cuts by the aluminum fins.	-	Locations with direct exposure of oil mist and steam such as kitchen and machine plant. Locations wither any machines which generate high frequency harmonics are used. Locations with saily atmospheres such as coastlines Locations with heavy snow (if installed, be sure to provide base flame and snow hood mentioned in the manual)
	Dispose of any packing materials correctly. 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.		Locations with rearry sink (in instance, be sure to private base name and show nood inendoned in the manuary Locations at high altitude (more than 1000m high) Locations with annonic atmospheres
	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.		Locations where heat radiation from other heat source can affect the unit Locations without good air circulation.
	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.		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)
	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.	1	Locations where strong air blows against the air outlet of outdoor unit It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
-	Perform installation work properly according to this installation manual. Improper installation can cause abnormal vibrations or increased noise generation.	1	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. The outlet air can affect adversely to the plant etc.
\sim	Earth leakage breaker must be installed If the earth leakage breaker is not installed, it can cause fire or electric shocks.		Locations where vibration can be amplified and transmitted due to insufficient 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)
	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.]	 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.
	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.		It can affect surrounding environment and cause a claim Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.
	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 het act-change, threakage of plastic parts and etc. And combustible gas can cause fire.		It can cause the damage of the items. Do not touch any buttons with wet hands It can cause electric shocks
	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.	1	Contraction of the original states and the origin
	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.]	During operation rule reinigious report accenter cardening for or experising one operating or operating conclusion, and it cardeade carringly or most injury. Do not clean up the unit with water it can cause electric shocks
	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 maifunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and destruct its function or cause jamming.		Can cause electric shocks Do not operate the outdoor unit with any article placed on it. You may incur properly damage or personal injure from a fall of the article.
	Do not install the outdoor unit in a location where insects and small animals can inhabit. Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.	1	Do not step onto the outdoor unit. You may incur injury from a drop or fall.

Notabilia as a unit designed for R410A

Notabilia as a unit designed for R410A		Dedicated R410A tools
• 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)	Gauge manifold
A cylinder containing R410A has a pink indication mark on the top.	b)	Charge hose
• A unit designed for R410A has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake.	c)	Electronic scale for refrigerant charging
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	d)	Torque wrench
arrange dedicated R410A tools listed in the table on the right before installing or servicing this unit.	e)	Flare tool
• Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.	f)	Protrusion control copper pipe gauge
 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 	g)	Vacuum pump adapter
• All model with models designed exclusively or P410X. Creck connectable model with models in a catalog, etc. (A wrong model with a connected into the system, with impair proper system operation)	h)	Gas leak detector

Pad

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.)

Wooden pallet ~

CAUTION When a unit is hoisted with slings for haulage, take into consideration the offset of its gravity center position. 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 the packaging.

• When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.

2) Portage

• The right hand side of the unit as viewed from the front (diffuser 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.

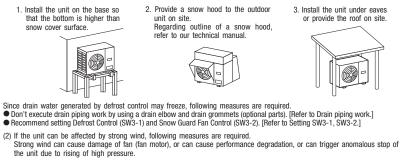


3) Selection of installation location for the outdoor unit

- Be sure to select a suitable installation place in consideration of following conditions.
- O A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- O A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
- O A place where the unit is not exposed to oil splashes.
- O A place where it can be free from danger of flammable gas leakage.
- O A place where drain water can be disposed without any trouble.
- O A place where the unit will not be affected by heat radiation from other heat source.
- O A place where snow will not accumulate.
- O A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any radio or TV interference.
- O A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely.
- O A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment. O 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.
- O A place where strong wind will not blow against the outlet air blow of the unit.

4) Caution about selection of installation location

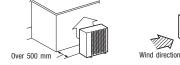
(1) If the unit is installed in the area where the snow will accumulate, following measures are required. The bottom plate of unit and intake, outlet may be blocked by snow.



1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen

2.Install the outlet air blow side of 3. The unit should be installed on the unit in a position perpendicular to the direction of wind.

the stable and level foundation If the foundation is not level tie down the unit with wires



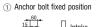
Wind direction

5) Installation space

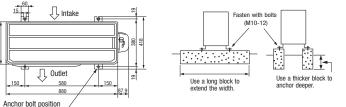
- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- When more than one unit are installed side by side, provide a 250mm or wider interval between them as a service snace. In order to facilitate servicing of controllers, please provide 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 occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.



6) 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 15 mm.

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 5 mm 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

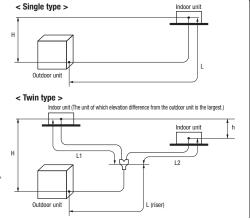
1) Restrictions on unit installation and use

• Check the following points in light of the indoor unit specifications and the installation site.

• Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Pa	strictions	Dimensional	Marks appearing in the drawing on the right	
	suictions	restrictions	Single type	Twin type
One-way pipe length of refrigerant piping	Model 71V	50m or less	L	L1+L1+L2
Main pipe length			L	L
One-way pipe length after	er the first branching point	20m or less	—	L1, L2
Difference of pipe length a	fter the first branching point	10m or less	_	L1-L2
Elevation difference between	When the outdoor unit is positioned higher,	30m or less	Н	Н
indoor and outdoor units When the outdoor unit is positioned lower,		15m or less	н	н
Elevation difference bet	0.5m or less	_	h	

• 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, please see " 6. UTILIZATION OF EXISTING PIPING."



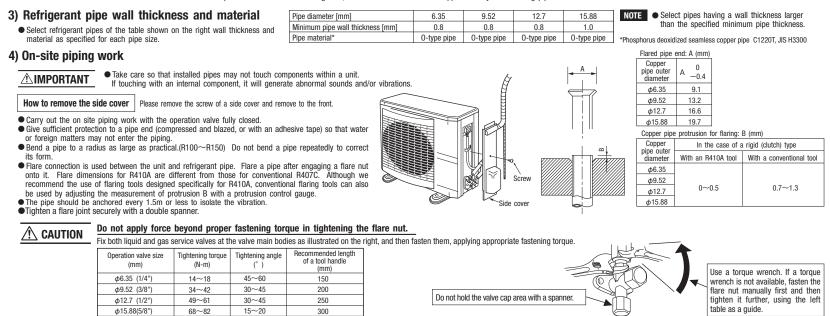
2) Determination of pipe size

• Determine refrigerant pipe size pursuant to the following guidelines based on the indoor unit specifications.

		Mod	el 71V	About brazing
		Gas pipe	Liquid pipe	Brazing must be performed under a nitrogen gas flow.
Outdoor u	nit connected	φ15.88 Flare	φ9.52 Flare	Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.
Refrigerant pip	ing (branch pipeL)	φ15.88	φ9.52	
	Indoor unit connected	φ15.88	φ9.52	Plug the end of the pipe with tape, or other material and fill the pipe with intronen pase Station value
In the case of a single type	Capacity of indoor unit	Mod	el 71V	/man dis por interesting at / 0.5MPa
	Branching pipe set	DIS	-WA1	
In the second of a high hard	Refrigerant piping (branch pipe L1,L2)	φ12.7	φ9.52	
In the case of a twin type	Indoor unit connected	φ12.7	φ6.35	(Only use nitrogen (gas (Na)) Brazing gas netlet value
	Capacity of indoor unit	Model	40V×2	
EXAMPLE On the liquid p If a ϕ 6.35 pi	pipe side).	pipe, a refrigerant o	distribution disorder r	ranching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor u ay occur, causing one of the indoor units to fall short of the rated capacity.

A branching part must be dressed with a heat-insulation material supplied as an accessory.

•For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.



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 operation valve's check joint equipped on the outdoor unit side. While conducting a test, keep the operation valve shut all the time.

- a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
- b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
- c) Then raise the pressure to the specified level (4.15 MPa), 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 1°C, the pressure also fall approximately 0.01 MPa. 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

		· · · · · · · · · · · · · · · · · · ·	,
			abo
<Work flow $>$		 Vacuuming begins 	\bigcirc
When the system has remaining moisture	Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)		0
inside or a leaky point, the vacuum gauge		Vacuuming completed	t
indicator will rise.	Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.		n
Check the system for a leaky point and		Vacuum gauge check	S
then draw air to create a vacuum again.			OL
		Fill refrigerant	F

Pay attention to the following points in addition to the bove for the R410A and compatible machines.

Outdoor unit

)To prevent a different oil from entering, assign 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.). 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.

	• •	•			
	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe φ6.35)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
Model 71V	2.35	20	0.06	2.95	30

• This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.

• When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 1.95kg.

• If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, please see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Additional charge volume (kg) = { Main pipe length (m) - Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

• For an installation measuring 3m or longer, but not more than 20m, in pipe length, please charge the standard refrigerant charge volume, when you recharge refrigerant after servicing etc.
• When refrigerant piping is shorter than 3m, recharge 1.95kg of refrigerant.

Ex.) For a 10m installation, charge 2.35 kg of refrigerant.

For a 25m installation, charge " $2.35 + (25-20) \times 0.06 = 2.65 \text{ kg.}$ "

(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 operation 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 volume.

• When refrigerant is charged with the unit being run, complete a charge operation within 30 minutes. 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 back side of the service panel.

8) Heating and condensation prevention

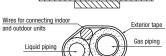
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation

- 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 deterioration.

- 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.
- Although it is verified in a test that this air conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 20 mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.





insulation

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Gas side

operation valve

Check joint

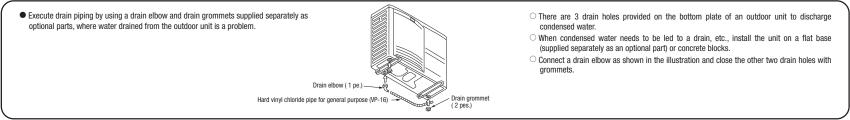
Indoor unit

Airtighteness test completed

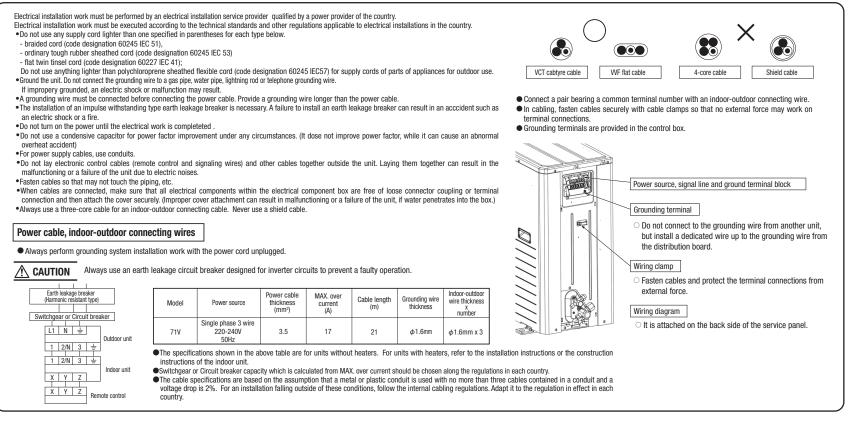
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3. DRAIN PIPING WORK

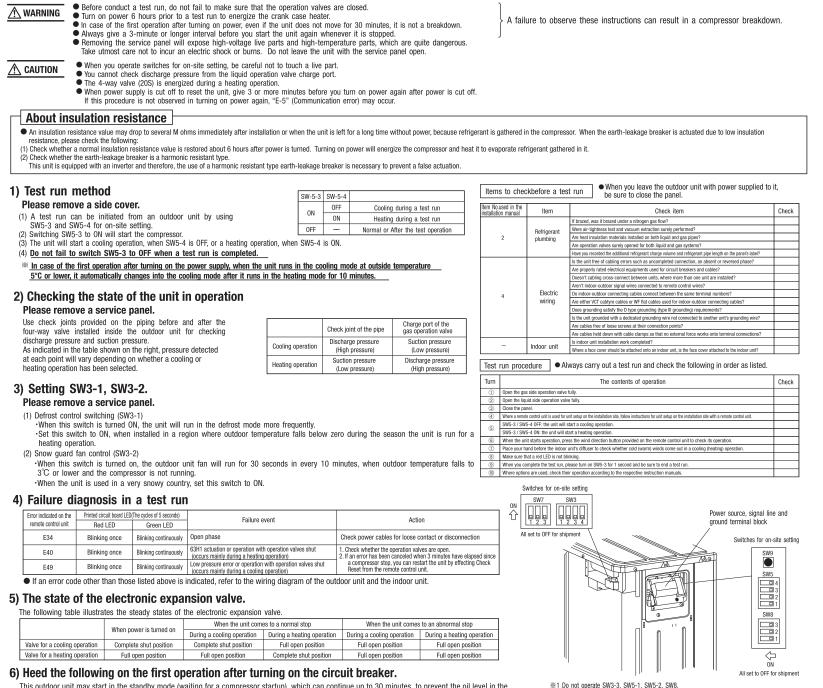
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4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.



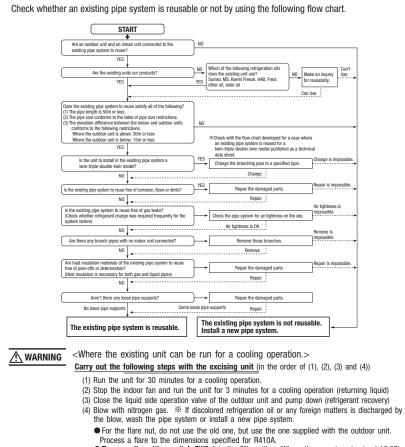
5. TEST RUN



*2 Refer to TECHNICAL MANUAL about SW9. (Pump down SW)

This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.

6. UTILIZATION OF EXISTING PIPING.



• Turn on-site setting switch SW8-1 to the ON position. (Where the gas pipe size is ϕ 19.05)

<Table of pipe size restrictions>

©:Standard pipe size ○:Usable △:Restricted to shorter pipe length limits Cool ↓ : Cooling capacity drop

Additio	nal charge volume per meter of pipe	0.06	0.08kg/m	
Dina sina	Liquid pipe	φ9.52	φ9.52	φ12.7
Pipe size	Gas pipe	φ12.7	\$ 15.88	\$ 15.88
	Usability	Cool ↓	0	\bigtriangleup
71V	Maximum one-way pipe length	35	50	25
	Length covered without additional charge	30	30	15

• The pipe length should be at least 3m. If the pipe length is shorter than 3m, the quantity of refrigerant needs to be reduced. Please consult with our distributor in the area, if you need to recover refrigerant and charge it again.

• Any combinations of pipe sizes not listed in the table are not usable.

<Pipe system after the branching pipe>

©:Standard pipe size O:Usable

Additional	charging amount of ref	0.06kg/m		
Dine size	Liquid	φ9.52		
Pipe size	Gas	φ12.7	φ15.88	
Model	Combination type	Combination of capacity		
FDC71	Twin	40+40	0	0

• Any combinations of pipe sizes not listed in the tableare not usable.

<The model types of existing units of which branching pipes are reusable.>

The branching pipes used with models other than those listed above are not reusable. Use our genuine branching pipes for R410A.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) - Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

* If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.

Example) When an 71V (single installation) is installed in a 30m long existing pipe system (liquid ϕ 12.7, gas ϕ 15.88), the quantity of refrigerant to charge additionally should be (30m-15m) x 0.08kg/m = 1.2 kg.

Example) When an 71V (twin installation) is installed in a 30m long existing pipe system (main pipe length 20m, liquid φ 12.7, gas φ 15.88; pipe length after branching pipe 5m x 2, liquid φ 9.52, gas φ 12.7), the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m + 5m x 2 x 0.06kg/m = 1.0 kg.

 $<\!\!$ Where the existing unit cannot be run for a cooling operation. $\!>$

Wash the pipe system or install a new pipe system.

• If you choose to wash the pipe system, contact our distributor in the area.

PSB012D955F

	0.40.14
(2) Models FDC100-140VNX, 100-14	UVSX

◎This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 42

When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

• We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.

• The precautions described below are divided into AWARNING and ACAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the AWARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ACAUTION. These are very important precautions for safety. Be sure to observe all of them without fail.

• The meaning of "Marks" used here are as shown below.

 \bigcirc

Never do it under any circumstance. Always do it according to the instruction

For 3 phase power source outdoor unit,EN61000-3-2 is not applicable if consent by the utility company or nortification to the utility company is given before usage.
 3 phase power source unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic interference.

• 5 and 6 HP units of single phase power source are equipment complying with IEC 61000-3-12.

• 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.

• 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

Inverter driven single split PAC
100VN~140VN,100VS~140VS
100VNX~140VNX,100VSX~140VSX
Designed for R410A refrigerant

Check before installation work

[Accessory]



• Model name and power source

Refrigerant piping length

• Piping, wiring and miscellaneous small parts

Indoor unit installation manual

	\wedge	WAF	RNING
0	Installation must be carried out by the qualified installer. 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 mafunction.	0	Do not perform brazing work in the airtight room It can cause lack of oxygen.
	Install the system in full accordance with the instruction manual. Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.		• 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.
	Use the original accessories and the specified components for installation. If parts other than those prescribed by us are used, it may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard performance, control failure and personal injury.	-	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.
	When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISOS149. Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.		• Do not open the service 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 completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause
	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.		burst or personal injury due to anomalously high pressure in the refrigerant Only use prescribed optional parts. The installation must be carried out by the qualified installer.
	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.		If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire. Do not perform any change of protective device itself or its setup condition
	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.		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.
	An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit		Be sure to switch off the power supply in the event of installation, inspection or servicing. If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
	Install the unit in a location with good support. Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.		• Consult the dealer or an expert regarding removal of the unit.
	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 personal injury.		Incorrect installation can cause water leaks, electric shocks or fire. Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.
	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 supply with insufficient capacity and incorrect function done by improver work can cause electric shocks and fire.		If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant orcuit
	Be sure to shut off the power before starting electrical work. Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.	\bigcirc	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.
	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.		Do not run the unit with removed panels or protections
	• Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent		Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
	overloading the terminal blocks. Lose connections or cable mountings can cause anomalous heat production or fire. O 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.		Be sure to fix up the service panels. Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
			Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair. If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

	\land	CAL	JTION
Ð	• Carry out the electrical work for ground lead with care Do not connect the ground lead to the gas line, water line, lighting conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to shot-circuitine. Never comect the arounding wire to a gas pice because if gas leaks.it could cause explosion or ionition.	\bigcirc	Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation. Using an old and damage base flame can cause the unit falling down and cause personal injury.
n	Use the circuit breaker for all pole with correct capacity. Using the incorrect circuit breaker (it can cus the unit malinction and fire.		Do not install the unit in the locations listed below - Locations where carbon fiber, metal powder or any powder is floating. - Locations where any substances that can affect the unit such as subhide gas, chloride gas, acid and alkaline can occur.
	Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations. The isolator should be locked in accordanced with EN60204-1.		Vehicles and ships Locations where cosmetic or special sprays are often used.
	Take care when carrying the unit by hand. 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 glowes to minimize the risk of cuts by the aluminum fins.	_	Locations with direct exposure of oil mist and steam such as kitchen and machine plant. Locations where any machines which generate high frequency harmonics are used. Locations with sally atmospheres such as coastilines Locations with heavy snow (if installed, be gave to provide base flame and snow hood mentioned in the manual)
	O ispose of any packing materials correctly. 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.		Locations where the unit is exposed to chimney smoke Locations at high allitude (more than 100m high) Locations with annonic atmospheres
	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.		Locations where heat radiation from other heat source can affect the unit Locations without good air circulation.
	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.		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 short circuit the material the short of th
	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.		Locations where strong air blows against the air outlet of outdoor unit It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
	Perform installation work properly according to this installation manual. Improper installation can cause abnormal vibrations or increased noise generation.		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. The outlet air can affect adversely to the plant etc.
\mathcal{O}	Earth leakage breaker must be installed If the earth leakage breaker is not installed, it can cause fire or electric shocks.	1	 Locations where vibration can be amplified and transmitted due to insufficient strength of structure. Locations where vibration can be amplified and transmitted due to insufficient 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)
إلا	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.		 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.
	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.	1	It can affect surrounding environment and cause a claim Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.
F	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.	1	It can cause the damage of the items.
	accumulate or collect, or where volatile controls that stances are nanoled. Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.		Do not touch any buttons with wet hands It can cause electric shocks
	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 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 inju
	• 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 clean up the unit with water It can cause electric shocks
	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 mailfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.		Bo not operate the outdoor unit with any article placed on it. You may incur property damage or personal injure from a fall of the article.
Ī	Do not install the outdoor unit in a location where insects and small animals can inhabit. Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.	1	Do not step onto the outdoor unit. You may incur injury from a drop or fall.

Notahilia as a unit designed for R410A

Notabilia as a unit designed for R410A		Dedicated R410A tools
	a)	Gauge manifold
• Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.	b)	Charge hose
A cylinder containing R410A has a pink indication mark on the top.	c)	Electronic scale for refrigerant charging
• A unit designed for R410A has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake.	d)	Torque wrench
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 right before installing or servicing this unit.	e)	Flare tool
equicated instructions instead in the table on the tight before instanting or servicing into mile. • Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.	f)	Protrusion control copper pipe gauge
 In charging refrigerant, always take it out from a cylinder in the liquid phase. 	g)	Vacuum pump adapter
• 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)	h)	Gas leak detector

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.)

Pad CAUTION When a unit is hoisted with slings for haulage, take into consideration the offset of its gravity center position. 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 the packaging. • When some compelling reason necessitates the unpacking of the unit before it is carried in, use

nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.



2) Portage

• The right hand side of the unit as viewed from the front (diffuser 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) Selection of installation location for the outdoor unit

. Be sure to select a suitable installation place in consideration of following conditions.

- O A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- O A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit O A place where the unit is not exposed to oil splashes.
- O A place where it can be free from danger of flammable gas leakage.
- O A place where drain water can be disposed without any trouble.
- O A place where the unit will not be affected by heat radiation from other heat source.
- O A place where snow will not accumulate.
- O A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any radio or TV interference.
- O A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely.
- O A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment. O A place where chemical substances like sulfuric gas, chloric gas, acid and alkali (including ammonia), which can harm the

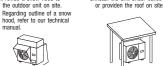
2.Provide a snow hood to

- unit, will not be generated and not remain.
- O A place where strong wind will not blow against the outlet air blow of the unit.

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.





3.Install the unit under eaves

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.] Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2), [Refer to Setting SW3-1, SW3-2.]

manual.

(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.

1.Install the outlet air blow side of the 2.Install the outlet air blow side of 3.The unit should be installed on unit to face a wall of building, or provide a fence or a windbreak screen.

the unit in a position perpendicular the stable and level foundation. to the direction of wind. If the foundation is not level, tie down the unit with wires.



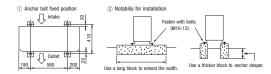
5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
 There must be a 1-meter or larger space in the above.
- 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 occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.

A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.







In installing the unit, fix the unit's legs with bolts specified on the left.

The protrusion of an anchor bolt on the front side must be kept within 15 mm.

Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.

• Refer to the left illustrations for information regarding concrete foundations.

Install the unit in a level area. (With a gradient of 5 mm 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.

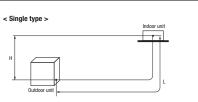
• When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site. So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual.

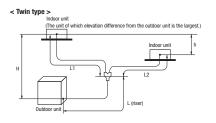
2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

Check the following points in light of the indoor unit specifications and the installation site.
 Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

						Marks appearting in the drawing		
		One-way pipe length difference	from the first branching po	int to the indoor u	nit	< 3m	≥ 3m	
Descriptions	Mode	Model for outdoor units		Single type	Twin type	Triple type A	Triple type B	
	100VN,125VN,	100VS,125VS				-	-	
One-way pipe length of	140VN,140VS		≦ 50m			L+L1+L2+L3	L+La+L1+L2+L3	
refrigerant piping	100VNX,125VN	IX,100VSX,125VSX	≤ 100m	1 -	L+L1+L2	-	-	
	140VNX,140VS	x				L+L1+L2+L3	L+La+L1+L2+L3	
	100VN,125VN,	100VS,125VS	<i></i>			-	-	
	140VN,140VS		≦ 50m			L	L	
Main pipe length	100VNX,125VN	IX,100VSX,125VSX	≤ 100m	_	L	-	-	
	140VNX,140VSX		= 100m			L	L	
One-way pipe length between the first branching point from to the second branching point	140VN,140VS, 140VNX,140VSX		≦ 5m	-	-	-	La	
One-way pipe length after the first	100VN,125VN,100VS,125VS,		< 00			-	-	
branching point	100VNX,125VN	C,100VSX,125VSX	≦ 30m	-	L1, L2	L1, L2, L3	L1 (1)	
One-way pipe length after the first branching point and second branching point	140VN,140VS,	140VNX,140VSX	≦ 27m	-	-	-	La+L2, La+L3(1)	
One-way pipe length difference	Twin type		≤ 10m			-	_	
from the first branching point to	Triple type	140VN,140VS,	≦ 3m	_	L1-L2	L1-L2 , L2-L3 , L3-L1		
the indoor unit	Inpie type	140VNX,140VSX	≦ 10m			-	L-(La+L2), L1-(La+L3) (1)	
One-way pipe length difference from the second branching point to the indoor unit	140VN, 140VS, 140VNX, 140VSX		≦ 10m	-	-	-	L2—L3	
Elevation difference between	When the outd	When the outdoor unit is positioned higher,		н	н	н	Н	
indoor and outdoor units	When the outdoor unit is positioned lower,		≦ 15m	н н		п	H	
Elevation difference between indoor units	≤ 0.5m	-	h	h1, h2, h3	h1, h2, h3			







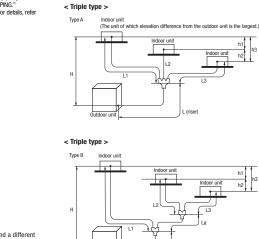
• The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, see " 6. UTILIZATION OF EXISTING PIPING." • With the triple pipe connection, the way of use is different when the difference of one-way pipe length after the first branching point is 3m to 10m. For details, refer to the above table and right figure.

Note (1) Install the indoor units so that L + L1 becomes the longest one-way pipe. Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.

2) Determination of pipe size

• Determine refrigerant pipe size pursuant to the following guidelines based on the indoor unit specifications.

		Model	100V	Model	125V	Mod	el 140V	
		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	
		\$\$15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
0	utdoor unit connected	Flare	Flare	Flare	Flare	Flare	Flare	
Refrig	arant piping (branch pipeL)	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
	Indoor unit connected	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
In the case of a single type	Capacity of indoor unit	Model 100V		Mode	al 125V	Mod	el 140V	
	Branching pipe set	DIS-1	WA1	DIS	-WA1	DIS	-WA1	
In the case of a twin type	Refrigerant piping (branch pipe L1,L2)	φ12.7	φ9.52	φ12.7	φ9.52	φ15.88	φ9.52	
	Indoor unit connected	φ12.7	φ6.35	φ12.7	φ6.35	φ15.88	φ9.52	
	Capacity of indoor unit	Model 50V×2		Model 60V×2		Model 71V×2		
	Branching pipe set					DIS-TA1		
	Refrigerant piping (branch pipe L1,L2,L3)]				φ12.7	φ9.52	
In the case of a triple type A	Indoor unit connected	1 -	-	_		φ12.7	φ6.35	
	Capacity of indoor unit	1				Model 50Vx3		
	Branching pipe set					DIS	-WA1	
	Refrigerant piping (branch pipe La)	1				φ15.88	φ9.52	
	Refrigerant piping (branch pipe L1)	1				φ12.7	φ9.52	
In the case of a triple type B	Indoor unit connected	1	-			DIS-WA1		
	Refrigerant piping (branch pipe L2,L3)	1				¢12.7	φ9.52	
	Indoor unit connected	1				φ12.7	φ6.35	
	Capacity of indoor unit	1				Model 50V×3		



Outdoor unit

Plug the end of the pipe with tape, or other

material, and fill the pipe with nitrogen gas.

15.88

1.0

22.22

1.0

For front of

25.4

1.0

tion

Primary side

Station valve

Vitroge

gas

28.58

For downward connection

CAUTION • When the 50V or 60V model is connected as an indoor unit, always use a ϕ 9.52 liquid pipe for the branch (branching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor unit (\$\phi 6.35\$ on the liquid pipe side). If a \$\phi 6.35 pipe is used for connection with a branching pipe, a refrigerant distribution disorder may occur, causing one of the indoor units to fall short of

- the rated capacity. • A riser pipe must be a part of the main. A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.
- A branching part must be dressed with a heat-insulation material supplied as an accessory.
- For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.

About 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.



Minimum pipe wall thickness [mm]

 $\langle N_2 \rangle$

0.8

0.8

0.8

Flared pipe end: A (mm)

-0.4

9.1

16.6

19.7

Copper

pipe outer

diameter

φ6.35

φ9.52 13.2

φ12.7

φ15.88

Taping

- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each nine size • This unit uses R410A. Always use 1/2H pipes having a 1.0mm or thicker wall for \$\$\phi19.05\$
- or larger pipes, because 0-type pipes do not meet the pressure resistance requirement.
- Pipe material* *Phosphorus deoxidized seamless copper pipe C1220T, JIS H3300

4) On-site piping work

 Take care so that installed pipes may not touch components within a unit. If touching with an internal component, it will generate abnormal sounds and/or vibrations. **MIMPORTANT**

First remove the five screws (xmark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you. How to remove the service panel

- 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 operation 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 daude.
- The pipe should be anchored every 1.5m or less to isolate the vibration.

Tighten a flare joint securely with a double spanner.

//\ CAULIUN —	o not apply force beyond proper fastening torque in tightening e flare nut.	Operation valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)		Do not hold the valve cap area with a span	nner.
<u></u>		φ6.35 (1/4")	14~18	45~60	150			
	to both liquid and gas service valves at the valve main bodies as illustrated the right, and then fasten them, applying appropriate fastening torque.	φ9.52 (3/8")	34~42	30~45	200		nch. If a torque wrench is not available,	
UII	the right, and then rasten them, applying appropriate rastening torque.	φ12.7 (1/2")	49~61	30~45	250		ut manually first and then tighten it	<u> </u>
			68~82	15~20	300	further, using the left table as a guide.		



-Ø-

In the case of a rigid (clutch) type

With an R410A tool With a conventional tool

07~13

Secondary side

0.5MPa

Relief valve

NOTE

For rear connection

Copper pipe protrusion for flaring: B (mm)

0~05

For side right connection

Copper

diameter

*φ*6.35

φ9.52

φ12.7

*φ*15.88

pipe oute

12 • PAC-T-178

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 operation valve's check joint equipped on the outdoor unit side. While conducting a test, keep the operation valve shut all the time.

a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.

- b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
 c) Then raise the pressure to the specified level (4.15 MPa), 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 1°C, the pressure also fall approximately 0.01 MPa. The pressure if changed should be compensated for

proceeding of many of the second processing of

(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

 \leq

			Pay attention to the following points in addition to the above for
Work flow> When the system has remaining moisture inside or a leaky point, the vacuum gauge	Run the vacuum pump for at least one hour after the vacuum gauge shows	Vacuuming begins	the R410A and compatible machines.
indicator will rise.	-101kPa or lower. (-755mmHg or lower)	Vacuuming completed	○To prevent a different oil from entering, assign dedicated tools, etc. to each
Check the system for a leaky point and	Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.		refrigerant type. Under no circumstances must a gauge manifold and a charge
then draw air to create a vacuum again.		Vacuum gauge check	hose in particular be shared with other refrigerant types (R22, R407C, etc.). Ouse a counterflow prevention adapter to prevent vacuum pump oil from entering

7) Additional refrigerant charge

(1) Calculate a required refrigerant charge volume from the following table.

<single th="" type<=""><th>></th><th></th><th></th><th></th><th></th><th>ſ</th><th>ltem</th><th></th><th>Provide set of the</th><th>Additional char</th><th></th><th>Defrieseentuslume</th><th>Installation's pipe length (m)</th></single>	>					ſ	ltem		Provide set of the	Additional char		Defrieseentuslume	Installation's pipe length (m)
Item	Standard refrigerant		Additional charge volume (kg) per meter of refrigerant piping		Installation's pipe length (m) covered without additional				Pipe length for standard refrigerant charge volume (m)	per meter of refrigerant piping (liquid pipe)		Refrigerant volume charged for shipment at the factory (kg)	covered without additional refrigerant charge
Capacity		charge volume (m)		at the factory (kg)	refrigerant charge		Capacity 🔪		charge volume (m)	Main pipe	Branch pipe	at the factory (kg)	renigeran charge
100VN~140VN				3.8			100VN~140VN	2.0				3.8	
100VS~140VS	2.0			5.0			100VS~140VS	2.0				5.0	
100VNX~140VNX	0.7	0	0.06	4.5	30	- 6	100VNX~140VN	(0	0.0	Jb	15	30
100VSX~140VSX	140VSX 2.7			4.5			100VSX~140VS	2.7	I			4.5	

Airtighteness test completed

Fill refrigerant

<Twin, triple, W-twin type>

the refrigerant system.

A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.

When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 2.8kg.
 If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

*When an additional charge volume calculation result is negative Additional charge volume (kg) = { Main pipe length (m) - Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m) it is not necessary to charge refrigerant additionally.

• To charge refrigerant again, recover refrigerant from the system first and then charge the volume calculated from the above table (Standard refrigerant charge volume + branch pipes charge volume)

(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 operation 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 agify upon entering the unit. In charging refrigerant, always charge a calculated volume by using a scale to measure the charge volume.
- When refrigerant is charged with the unit being run, complete a charge operation within 30 minutes. 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 back side of the service panel.

8) Heating and condensation prevention

(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.

(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 deterioration. - Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

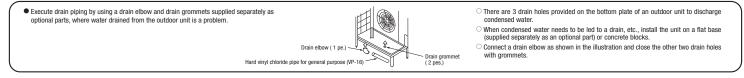
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns Wires for connecting indoo because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.

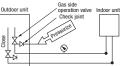
Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).

- 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.

- Although it is verified in a test that this air conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 20 mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.

3. DRAIN PIPING WORK





Band (accessory)

77777

Liquid pipi

Pipe cover (accessory)

111111

Exterior tape

Gas piping

insulation

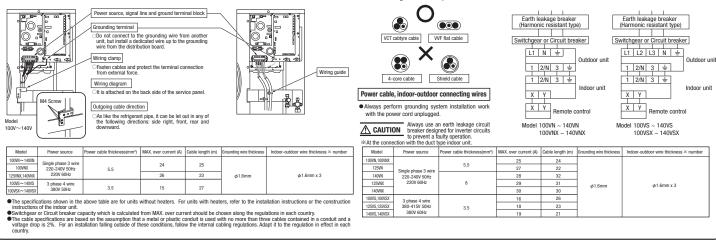
4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

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.

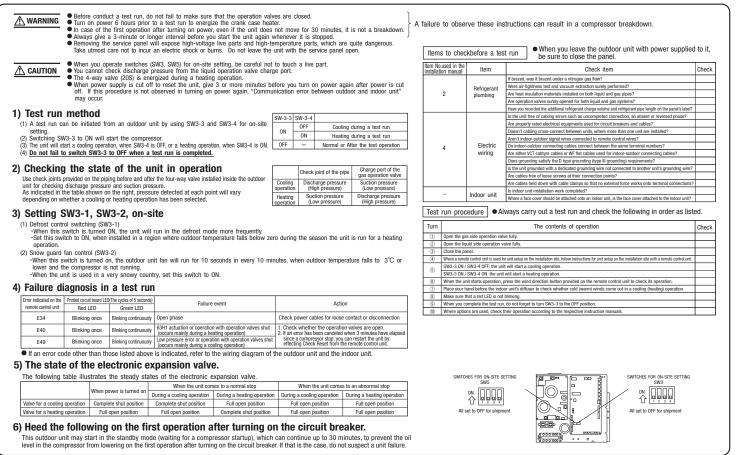
- Do not use any supply cord lighter than one specified in parentheses for each type below.
- braided cord (code designation 60245 IEC 51).
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
- flat twin tinsel cord (code designation 60227 IEC 41);
- Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords 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 grounding wire. If impropery 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 acccident such as an electric shock or a fire.

•Do not turn on the power until the electrical work is completeted .

- •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 supply cables, use conduits.
- Do not la velectronic 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 cables so that 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.) •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. Grounding terminals are provided in the control box.



5. TEST RUN



6. UTILIZATION OF EXISTING PIPING.

Check whether an existing pipe system is reusable or not by using the following flow chart.	<table of="" pipe="" restrictions="" size=""></table>					
START	©:Standard pipe size ⊖:Usable △:Restricted to shorter pipe length limits ×:Not usable					
Are an outdoor unit and an indoor unit connected to the NO	Additional charging amount of refrigerant per 1m 0.06kg/m 0.08kg/m 0.08kg/m 0.08kg/m 0.08kg/m					
existing pipe system to reuse?	Linuid nine do 52 do 52 do 127 do 127 do 127 Linuid nine do 35 do 52 do 52 do 127 do	_				
YES	Pipe size Gas pipe 05.52	_				
Are the existing units our products?		×1				
YES YES Suniso, MS, Barrel Freeze, HAB, Freol, How Freese, HAB, Freol, How Freese, HAB, Freol, How Freese, HAB, Freol, How Freese, HAB,	100VN Maximum and you pice length E0 E0 25 25 100VNX Maximum and you pice length 20 100 100 50 50					
	100VS 100VS	5				
Can Use		5 ≋1				
Desc the existing pipe system to reuse satisfy all of the following?	Anna Anna Anna Anna Anna Anna Anna Anna	0				
 (1) The pipe length is 50m or less. (2) The pipe size conforms to the table of pipe size restrictions. 	125VS 125VSX	5				
(3) The elevation difference between the indoor and outdoor units NO		5 %1				
Where the outdoor unit is above: 30m or less		0				
an existing pipe system is reused for a	140VS maximum one-way pipe lengun 50 50 25 25 140VSX maximum one-way pipe lengun 20 100 100 50 5	-				
YES twin-triple-double-twin model published as a technical data sheet.	Length covered without additional charge 30 30 15 15 Length covered without additional charge 10 30 30 15 1	5				
Is the unit to install in the existing pipe system a YES Changen the branching pipe to a specified type	<pipe after="" branching="" pipe="" system="" the=""></pipe>					
twin-triple-adulie-twin model?	After 1st branch **4 After 2nd branch					
NO Change	Additional charging amount of refrigerant per 1m 0.06kg/m 0.06kg/m					
Is the existing pipe system to reuse free of corrosion, flaws or dents? YES Repair the damaged parts. Repair is impossible.	Liquid pipe dp.52 dp.52 Pipe size Gas pipe dp12.7 dp15.88 dp19.05% 1 dp19.05% 1					
NO . Repair :	Model Combination type Combination of capacity					
Air tightness is	100V Twin 50+50 © ○ ×					
(Check whether refrigerant charge was required frequently for Check the pipe system for air tightness on the site.	125V Twin 60+60 O					
the system before) Air tightness is OK	140V Triple A 50+50+50 O O ×					
NU Remove is	Triple B 50+50+50 × ◎ ※5 ○ ×					
Are there any branch pipes with no indoor unit connected? Remove those branches.	%1 Because of its insufficient pressure resistance, turn the dip switch SW5-1 provided on the outdoor unit board to the ON position for \$\phi\$19.05 \times t1.0.					
NO Remove	(In the case of a twin-triple-double-twin model, this also applies to the case where ϕ 19.05 × t1.0 is used in a pipe system after the first branching point.)					
Are heat insulation materials of the existing pipe system to Repair is impossible.	However, you need not turn the dip switch SW5-1 to the ON position, if 1/2H pipes or pipes having 1.2 or thicker walls are used.					
reuse free of peel-offs or deterioration? Repair the damaged parts.	%2 When the main pipe length exceeds 40m, a significant capacity drop may be experienced due to pressure loss in the liquid pipe system. Use \u03c612.7 for the liquid main.					
(reat insulation is recessary or our gas and inque pipes) Bepair :	%3 Keep the total pipe length, not one-way pipe length, below the specified maximum pipe length.					
	*4 Priping size after branch should be equal or smaller than main pipe size.					
Aren't there any loose pipe supports? Repair the damaged parts.	$\%5$ Piping size from first branch to indoor unit should be ϕ 9.52 (Liquid) / ϕ 12.7 (Gas).					
No loose pipe supports Some loose pipe supports Repair	 When refrigerant piping is shoter than 3m, reduce refrigerant by 1kg from factory charged volume. 					
	Any combinations of pipe sizes not listed in the table or marked with × in the table are not usable.					
The existing pipe system is reusable. The existing pipe system is not reusable.	<the are="" branching="" existing="" model="" of="" pipes="" reusable.="" types="" units="" which=""></the>					
	Models later than Type 8.					
Warning Where the existing unit can be run for a cooling operation.>	●FDC * * * 8 □ □					
	●FDCP * * * 8 □ □ □					
Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))	The branching pipes used with models other than those listed above are not reusable because of their insufficient					
(1) Run the unit for 30 minutes for a cooling operation.	pressure resistance. Please use our genuine branching pipes for R410A.					
 (2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid) (3) Close the liquid side operation valve of the outdoor unit and pump down (refrigerant recovery) 	• * * * are numbers representing horsepower.					
(4) Blow with nitrogen gas, ** If discolored refrigeration oil or any foreign matters is discharged by the blow.						
wash the pipe system or install a new pipe system.	Formula to calculate additional charge volume					
• For the flare nut, do not use the old one, but use the one supplied with the outdoor unit.	Additional charge volume (kg) = {Main pipe length (m) - Length covered without additional charge shown in the table (m)} \times					
Process a flare to the dimensions specified for R410A. • Turn on-site setting switch SW5-1 to the ON position. (Where the gas pipe size is ϕ 19.05)	Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m)× Additional charge volume per meter of pipe shown in the table (kg/m)					
< Where the existing unit cannot be run for a cooling operation.>	st If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.					
Wash the pipe system or install a new pipe system.	Example) When an 140V (single installation) is installed in a 20m long existing pipe system (liquid ϕ 12.7, gas ϕ 19.05),					
If you choose to wash the pipe system, contact our distributor in the area.	the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m = 0.4 kg.					

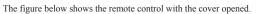
1.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

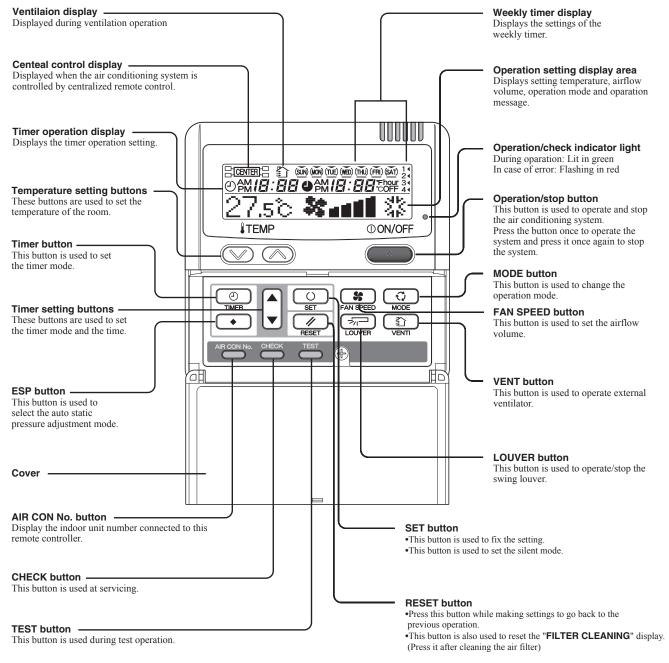
1.10.1 Remote control

(1) Wired remote control

Model RC-E5

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.

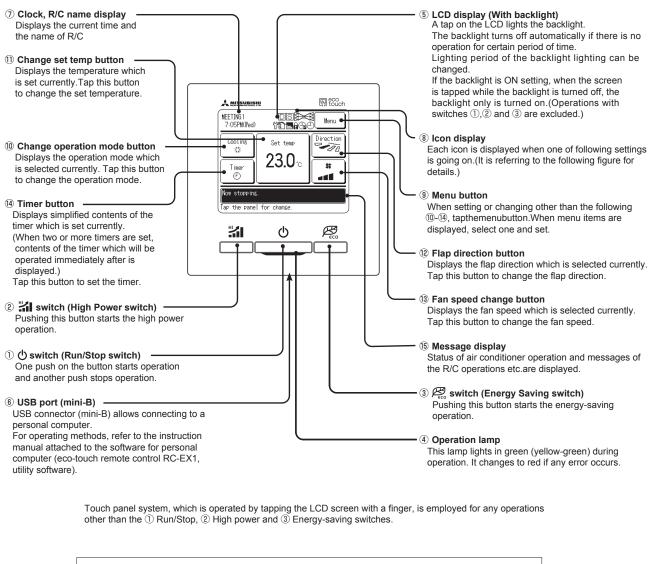


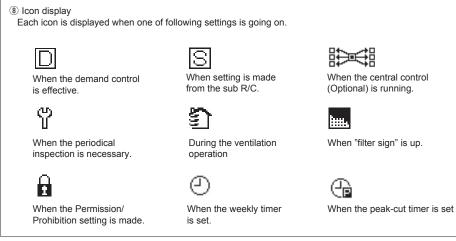


* All displays are described in the liguid crystal display for explanation.

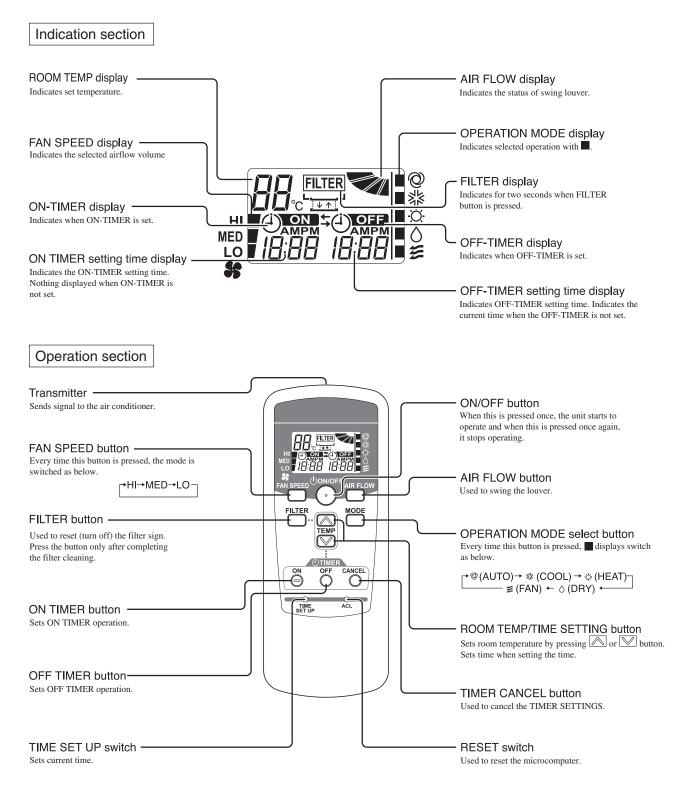
Model RC-EX1A

All icons are shown for the sake of explanation.





(2) Wireless remote control

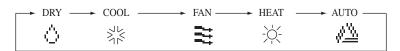


* All displays are described in the liquid crystal display for explanation

1.10.2 Operation control function by the wired remote control

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 supply reset.

(3) Power failure compensation function (Electric power supply failure)

- (a) This becomes effective if "Power failure compensation effective" is selected with the setting of remote control function.
- (b) 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.

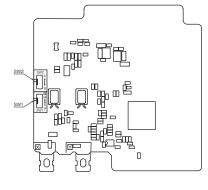
(c) Content memorized with the power failure compensation are as follows.

- Note (1) Items (vi), (vii) and (viii) 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.
 - (i) 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.)

- (ii) Operation mode
- (iii) Airflow volume mode
- (iv) Room temperature setting
- (v) Louver auto swing/stop
- However, the stop position (4-position) is cancelled so that it returns to Position (1).
- (vi) "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.)
- (vii) Upper limit value and lower limit value which have been set with the temperature setting control
- (viii) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

[Parts layout on remote control PCB]

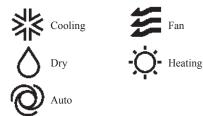


ter/ slave setting when mo aximum of two remote controls			s are used init (or one group of indoor units.
	Switch	Setting	Contents
Indoor units	SW1	М	Master remote control
	5001	S	Slave remote control
Remote control	control cord (no polarity)	ige SW2 becaus	se it is not used normally.
Caution When using multiple rr cannot be done with th the master remote cor ①Louver position setti	emote controls, the ne slave remote cor itrol.	ntrol. It is a	vailable only with
 Setting indoor unit fu Setting temperature Operation data displ Error data display Silent mode setting 	unctions range lay		
⑦Test operation of dra ⑧Remote control sense			

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.

	TOP screen Berney Cooling Set tenp Set tenp	O Menu screen 1 Unr Energy-saving setting Individual flae control External ventilation	(3) Menu screen 3 RCC function settings IJ settings Service & Maintenance ⋒	Service password input
	Timer 23.0 °C **	Filter sign reset Initial settings Relect the iten	Select the language (Ltg. Contact company Provides Select the item. Back	0 1 2 3 4 [belen 5 6 7 8 9 Set 6 Ineut 4 digit number 8 the Earl Back
(Tap the Menu button on the TOP screen.	②,③ Main menu Scree Tap the "Service & Maint	en is displayed. enance" on the menu screen.	Display the service password input screen. Entertheservicepassword(4-digit number). Refer to Installation manual.
	Service & maintenance menu 1 Deration & Mintenance Ju address Mext service date Deration data Error dise law Savins, IU settinss Mext the ites.	Service & maintenance menu 2 Secial setting Previcus Back Select the Itea.	Special settings Bestimestance Grase II address Grase II address Depart Restore of Country Touch panel address Select the iten Back	(3) CPU reset (5) (5) (5) (5) (7) (5) (7)
5)	Power failure com	nce menus are displayed. Densation function (E t function from the remo	⑦ Special settings CPU reset : Microcomputers of I and OUconnected are res (State of restoration aff power failure). Electric power supply failure control as follows.	set other R/Cs, IUs and OUs are reset (State of restoration after power failure). Tap [Yes] to reset CPU
	① TOP screen 6 5294/Hed Cooling 3 Time 23.0 ℃ 	Menu screen 1 Mero Evergy-saving setting individual fac control External ventilation Filter sign reset	Menu screen 3	Service password input
	Now stopping. Tap the panel for change.	Initial settings Next Back Select the item.	Select the language Contact company Back Previous Back Select the item.	5 6 7 8 9 Set
(Now stopping.	Select the iten.	Contact company Provious Back Select the item	5 6 7 8 9 Set
(Now storpping. Tap the panel for change. ① Tap the <u>Menu</u> button	Select the iten.	Contact convery Previous Back Back Back Back Back Back Back	 6 7 8 9 Set Trent 4 digit rather 8 the Earl Body Display the service password input screen. Entertheservicepassword(4-digit number).

Menu 6:53PM(Wed) Coolir Set temp irection 23.0 \$\$ Time C e T operation runr eration mode Fan Heating Back

ns to the state be fore the supply failure as soon as the power is ed (After the end of the primary at the power on). os after the restoration of power

supply, regardless the state of operation before the power failure.

(5),(6),(7) Display the R/C setting menu screens.

18 Auto-restart

Select the item.

Set the state of operation to be started when the power supply is restored after a power failure.

(a) 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.

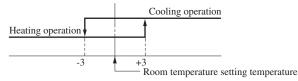
After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.

- (b) Content memorized with the power failure compensation are as follows.
 - Note (1) Items (vi), (vii) and (viii) 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.
 - (i) 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.)
 - (ii) Operation mode
 - (iii) Airflow volume mode
 - (iv) Room temperature setting
 - (v) Louver auto swing/stop
 - However, the stop position (4-position) is cancelled so that it returns to Position (1).
 - (vi) "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.)
 - (vii) Upper limit value and lower limit value which have been set with the temperature setting control
 - (viii) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

1.10.3 Operation control function by the indoor control

(1) Auto operation

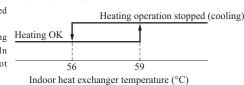
(a) If "Auto" mode is selected by the remote control, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ 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 $\pm 1.0 \sim \pm 4.0$.

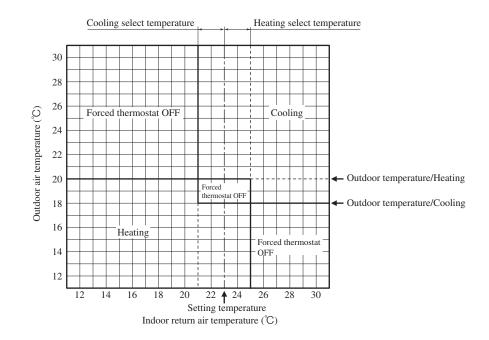
(2) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF: ±1 deg)
(3) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not



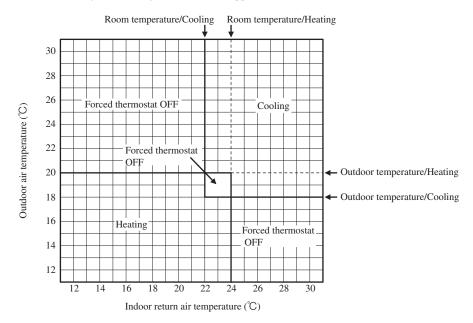
(b) The following automatic controls are performed other than (a) above.

performed, regardless of the temperature shown at right.

- (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".
 - In "Setting temperature Cooling select temperature < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor return air temperature" \Rightarrow Operation mode: Cooling
 - •"Setting temperature + Heating select temperature > Indoor return air temperature" and "Outdoor temperature/Heating > Outdoor air temperature" \Rightarrow Operation mode: Heating
 - The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
 - · In the range where the above cooling and heating zones are overlapped \Rightarrow 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".
 - In case of "Room temperature/Cooling < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor air temperature" ⇒ Operation mode: Cooling
 - In case of "Room temperature/Heating > Indoor return air temperature" and "Outdoor temperature /Heating > Outdoor air temperature" ⇒ Operation mode: Heating
 - The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
 - In the range where the above cooling and heating zones are overlapped \Rightarrow Forced thermostat OFF



(2) Operations of functional items during cooling/heating

Operation	Coc	oling		Heating			
Functional item	Thermostat ON	Thermostat OFF	Fan	Thermostat ON	Thermostat OFF	Hot start (Defrost)	Dehumidify
Compressor	0	×	×	0	×	0	O/×
4-way valve	×	×	×	0	0	\bigcirc (×)	×
Outdoor unit fan	0	×	×	0	×	$\bigcirc(\times)$	O/×
Indoor unit fan	0	0	0	O/×	O/×	O/×	O/×
Drain pump ⁽³⁾	0	× (2)	$\times^{\scriptscriptstyle (2)}$		$O/\times^{(2)}$		$\begin{array}{c} \text{Thermostat ON: } \bigcirc \\ \text{Thermostat OFF: } \times^{\scriptscriptstyle{(2)}} \end{array}$

Note (1) \bigcirc : Operation \times : Stop \bigcirc/\times : 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-EX5

(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	Timer	OFF timer	ON timer	Weekly timer
Timer		×	0	×
OFF timer	×		0	×
ON timer	0	0		×
Weekly timer	×	×	×	

Note (1) \bigcirc : Allowed \times : Not

(2) Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the airconditioner are duplicated, the setting of the OFF timer has priority.

(b) 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.

 $(v) \quad Set \ OFF \ timer \ by \ clock$

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.

$\left(vii\right)$ $% \left(vii\right)$ 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) \bigcirc : Allowed \times : Not

(5) Remote control display during the operation stop

When the operation is stopped (the power supply 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) Form 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
 - 1) 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.
 - 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.

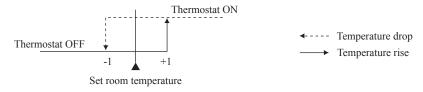
- (a) Control
 - (i) When the indoor heat exchanger temperature (detected with Thi-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.
 - (ii) During the hot keep, the louver is kept at the horizontal position.
- (b) Ending condition

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) Thermostat operation

(a) Cooling

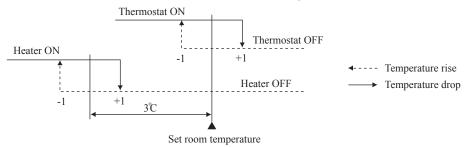
- (i) Thermostat is operated with the room temperature control.
- (ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



(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.

(a) Low fan speed (Factory default), (b) Set fan speed, (c) Intermittence, (d) 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 moves to the hot control and turns OFF the indoor fan if the heat exchanger thermistors (both ThI-R1 and R2) detect 25°C or lower.
 - 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.

(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.

(a) Low fan speed, (b) Set fan speed (Factory default), (c) Intermittence, (d) Fan OFF

- $(ii) \ \ \, \mbox{When the ``Low fan speed'' is selected, the following taps are used for the indoor fans.}$
 - 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 stope.
 - 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, 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 tempenature 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.

(9) 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 centralized 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 1 at the

shipping from factory.)

Filter sign setting	Function
TYPE 1	Setting time: 180 hrs (Factory default)
TYPE 2	Setting time: 600 hrs
TYPE 3	Setting time: 1,000 hrs
TYPE 4	Setting time: 1,000 hrs (Unit stop) ⁽²⁾

(2) 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.

(10) 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.

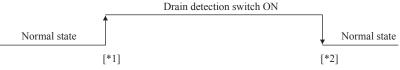
Note (1) The compressor stops when it has entered the protective control.

(11) 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 & dry)] : Drain pump is run during cooling and dry.
 - (ii) 念合部0读〔Operate in standard & heating〕: Drain pump is run during cooling, dry and heating.
 - (iii) ②合剂()运剂() E [Operate in heating & fan]: Drain pump is run during cooling, dry, heating and fan.
 - (iv) 念合部() 話 [Operate in standard & fan]: Drain pump is run during cooling, dry and fan.
 - Note (1) Values in [] are for the RC-EX1A model.

(12) Drain motor (DM) control

(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.

Indoor unit operation mode						
	Stop (1)	Cooling	Dehumidifying	Fan (2)	Heating	Note (1) Including the stop from the cooling, dehumidifying, fan
Compressor ON		Control A				and heating, and the anomalous stop (2) Including the "Fan" operation according to the
Compressor OFF	ompressor OFF Control B				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.)

(13) 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

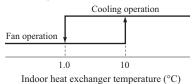
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote control.

(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.

(14) 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 20rpm.
- (ii) If the phenomenon of (i) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20rpm.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

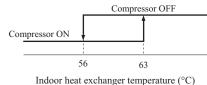
· Compressor frequency drop start temperature

Item	А
Temperature - Low (Factory default)	1.0
Temperature - High	2.5

Note (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote control.

(15) 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.



(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.

(16) Anomalous fan motor

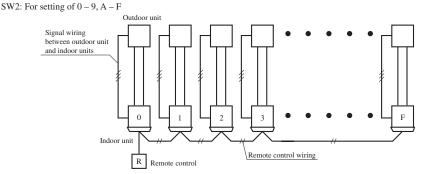
- (a) After starting the fan motor, if the fan motor speed is 200rpm or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).
- (b) If the fan motor fails to reach at -500 rpm less than the required speed, it stops with the anomalous stop (E20).

(17) 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.⁽¹⁾. 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.



(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) Center or each remote control basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the center 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
 - 1) In case of RC-E5 remote control

Pressing "AIR CON No." button on the remote control displays the indoor unit address. If " \blacktriangle " " \checkmark " button is pressed at the next, it is displayed orderly starting from the unit of youngest No.

2) In case of RC-EX1A remote control

If you touch the buttons in the order of "Menu" \rightarrow "Next" \rightarrow "Service & Maintenance" \rightarrow "IU address" on the TOP screen of remote control, the indoor units which are connected are displayed.

- (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.
 - 2) 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 supply wire or wires of other electric devices (AC220V or higher).

(18) 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					
		8 	%all - %alî - %aîî	8 111 - 81 00	8a1 - 8a1		
I FAN SPEED SET	STANDARD	PHi - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me		
	HIGH SPEED1, 2	PHi - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi		

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)

(19) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

(a) Broken wire detection

When the return air temperature thermistor detects -20°C or lower or the heat exchanger temperature thermistor detect -40°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).

(b) 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).

(20) 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. ·CnTA

·CnT

·CIII			CIIIA
CnT Blue 12V 4 - (XR3) + 5	 Operation output Heating output Thermostat ON output Error output Remote operation input 	(CnT-2: XR1) (CnT-3: XR2) (CnT-4: XR3) (CnT-5: XR4) (CnT-6: Volt-free contact)	CnTA Blue 12V XR6 Note (1) CnTA function can be changed by RC-EX1A.

Priority order for combinations of CnT and CnTA input.

\square	<u> </u>		CnTA						
		① Operation stop level	② Operation stop 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		
	(4) Operation permission/prohibition pulse	CnT ④	CnT ④	CnT ④ +CnTA ③米	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. 1.

In case of CnTA "Number", the CnTA "Number" is adopted and CnT is invalidated. 2.

3. 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. 4.

5.

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". 6. (The "Number" above means (1) - (6) in the table.)

Output for external control (remote display) (a)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

- $\widehat{\mathbf{1}}$ **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.
- (4) **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

(b) Remote operation input

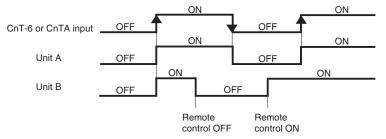
Remote operation input connector (CnT-6 or CnTA) is provided on the indoor control PCB.

However remote operation by CnT-6 or CnTA is not effective, when "Center mode" is selected by center controller. In case of plural unit (twin, triple, double twin), remote operation input to CnT-6 or CnTA on the slave indoor unit is invalid

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 (Factory default) (i)

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.

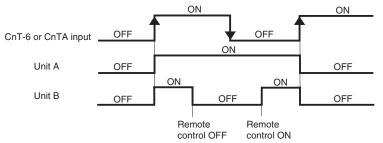


Note: The latest operation has priority

It is available to operate/stop by remote control or center control

(ii) In case of "Pulse input" setting (Local setting)

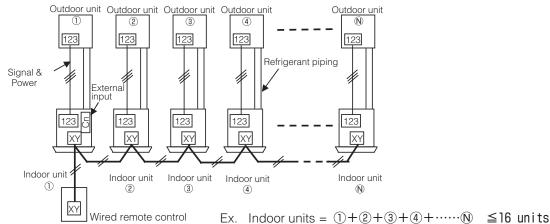
It is effective only when the input signal to CnT-6 or CnTA is changed OFF \rightarrow ON, and at that time unit operation [ON/ OFF] is inverted.



(c) Remote operation

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 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 $\widehat{(1)} - \widehat{(N)}$	Units ① – ℕ	

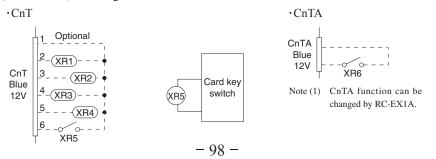
When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote control system:

- (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.

(21) 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 default)	Operation permission/prohibition mode "Valid" (Local setting)		
CnT 6 or	ON	OFF	ON	OFF	
CnT-6 or CnTA	Operation	Stop	Operation permission*1	Operation prohibition (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

		Operation			Operation			Operation	
CnT① Level input			Sto	р		Sto	p		Stop
CnTA(3)	Operatio	on permission		_					
Operation permission/				0	peration prohibit	ion			
prohibition setting		Operation			Operation(※)			Operation	
Actual operation			Stop			Stop			Stop
Operation permission/	Operatio	on permission					C	Operation permis	sion
prohibition zone				Prohib	tion Pro	hibition			

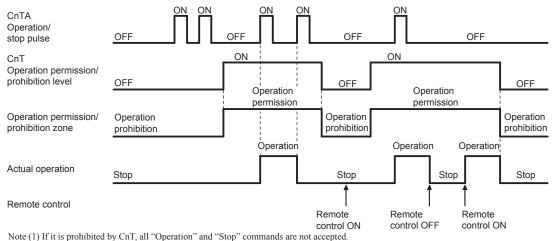
(*) CnT level input supersedes CnTA operation prohibition.

(b) In case of CnT ③ Operation permission/prohibition level + CnTA ③ Operation permission/prohibition level

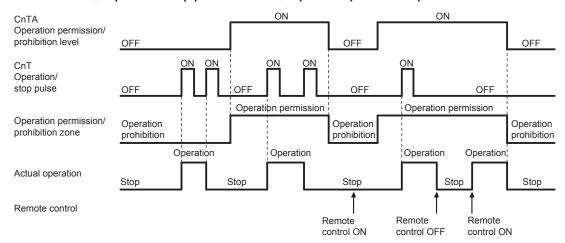
CnT③ Operation permission prohibition setting	Operation permi	mission Operation permissior			Operation permission
CnTA③ Operation permission/ prohibition setting	Operation permission		Operation permission		Operation permission
Operation permission/ prohibition zone	Operation permission		Operation(%)		Operation permission

(*) Operation prohibition zone is determined by the OR judgment between CnT Operation prohibition zone and CnTA Operawtion 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



(22) 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 \rightarrow Cooling operation mode
 - CnT-6 or CnTA: CLOSE \rightarrow 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 \rightarrow CLOSE, operation modes are inverted (Cooling \rightarrow Heating or Heating \rightarrow 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			
External input selection Cooling/heating selection	(5) Level	Cooling/heating	Cooling Cooling Heating			
		Cooling/heating (Competitive)	Auto, cooling, dry mode command 1 1 Heating, auto, heating mode command 1 from remote control			
	6 Pulse	External terminal input (CnT or CnTA)	OFF ON OF ON 1 After setting "Cooling Joning selection", the cooling/heating is selected by the current operation mode. During heating: Set at the heating zone (cooling prohibition zone). During cooling, dry, auto and fan mode: Set at cooling are the heating prohibition zone).			
		Cooling/heating	Auto Cooling Cooling			
		Cooling/heating (Competitive)	Auto Heating Cooling 1 Set "Cooling" 1 Auto, cooling, dry mode command 1 Auto, heating mode Heating "Palse" by remote control			

Notes (1) Regarding the priority order for combinations of CnT and CnTA, refer to Page 97.

(23) Fan control at heating startup

(a) Start conditions

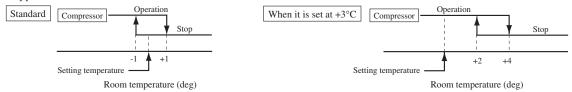
At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

- (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⁻¹.
 - (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⁻¹.
- (c) End 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.

(24) 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 " \otimes \$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.



(25) 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.

(26) 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.

(27) 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%.)

(28) 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.

(29) 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 temp. (factory setting 33°C for cooling, 10°C for heating)
- (b) Set temp and indoor fan speed can be set by RC-EX1A.

(30) Auto temp. 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.

(31) 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.

(32) 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.

(33) 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.

(34) IU overload alarm (RC-EX1A only)

When the indoor air temperature becomes higher or lower than the temperature set with the remote control by more than 5 to 10°C at 30 minutes after starting operation, the signal is transmitted to the external output (CNT). Receipt of the signal by the external output is indicated by lighting an LED or other prepared onsite.

1.10.4 Operation control function by the oudoor control

(1) Determination of compressor speed (frequency)

Required frequency

a)	Cooling/dehumidifying operation					
	Model 71 10				125	140
	Max. required frequency	Usual operation	88	75	95(92)	95(92)
		Silent mode, outdoor temperature $\leq 15^{\circ}C$	80	60	60	70
	Min. required frequency		20	20	20	20

Note (1) Value in () are for the 3 phase models.

(b) Heating operation

Heating operation					Unit: rps
	Model	71	100	125	140
Max. required frequency	Usual operation	112	120	120	120
	Silent mode	90	60	70	70
Min. required freq	Min. required frequency		20	20	20

(c) If the indoor unit fan speed becomes "Me" or "Lo", Max required frequency goes down accordingly depending on indoor unit model.

(d) Max. required frequency under high outdoor air temperature in cooling mode

Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

					Unit: rps
	Model	71	100	125	140
Max. required frequency	Outdoor air temperature is 40°C or higher	76	75	75	75
	Outdoor air temperature is 46°C or higher	62	70	70	70

(e) Max. required frequency under outdoor air temperature in heating mode

Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

					Unit: rps
	Model	71	100	125	140
Max. required frequency	Outdoor air temperature is 18°C or higher	76	75	80	85

- (f) Selection of max. required frequency by heat exchanger temperature
 - (i) Maximum required frequency is selected according to the outdoor unit heat exchanger temperature (Tho-R) during cooling/dehumidifying or according to the indoor unit heat exchanger temperature (Thi-R) during heating mode.
 - (ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), whichever the highest applies,

						Unit: rps
	Model		71	100	125	140
Max. required frequency	Cooling/ dehumidifying	Outdoor unit heat exchanger temperature is 56(61)°C or higher	60	75	95[92]	95[92]
	Heating	Indoor unit heat exchanger temperature is 56(61)°C or higher	60	100	100	100

Note (1) Value in () is for the 71 model.

(2) Value in [] are for the 3 phase models.

- (g) When any of the controls from (a) to (f) above may duplicate, whichever the smallest value among duplicated controls is taken as the maximum required frequency.
- (h) During heating, it is operated with the maximum required frequency until the indoor unit heat exchanger temperature becomes 40°C or higher.

(2) Compressor start control

- (a) Compressor starts upon receipt of the thermostat ON signal from the indoor unit.
- (b) However, at initial start after turning the power supply breaker, it may enter the standby state for maximum 30 minutes (" PREPARATION" is displayed on the remote control) in order to prevent the oil loss in the compressor.

If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby state, " (B) PREPARATION" is displayed for 3 seconds on the remote control.

(3) Compressor soft start control

(a) Compressor protection start I

[Control condition] Normally, the compressor operation frequency is raised in this start pattern.

[Control contents] 1) Starts with the compressor's target frequency at **A** rps.

- However, when the ambient air temperature (Tho-A) is 35° C or higher during cooling/ dehumidifying or the indoor return air temperature (ThI-A) is 25° C or higher during heating, it starts at **C** rps.
- 2) At 30 seconds after the start of compressor, its target frequency changes to **B** rps and the compressor is operated for 2 4 minutes with its operation frequency fixed at **B** rps.

Model	Operation mode	A rps	B rps	C rps
71	Cooling/Dehumidifying	42	42	40
/1	Heating	62	62	40
100	Cooling/Dehumidifying	55	55	30
100	Heating	55	55	30
125 140	Cooling/Dehumidifying	45	45	25
125, 140	Heating	45	45	25

(b) Compressor protection start III

[Control condition] Number of compressor starts is only 1 counted after the power supply breaker ON.

[Control contents] Operates by selecting one of following start patterns according to the operation mode and the outdoor air temperature (Tho-A).

- (i) Low frequency operation control during cooling/dehumidifying
 - [Control condition] Upon establishing the conditions of compressor protection start III, the low frequency operation control is performed during cooling/dehumidifying.
 - [Control contents] a) Starts with the compressor's target frequency at **A** rps. When the outdoor air temperature (Tho-A) is 35°C or higher, it starts at **C** rps.

b) At 30 seconds after the compressor start, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
71	Cooling/Dehumidifying	42	42	40
100	Cooling/Dehumidifying	55	55	30
125, 140	Cooling/Dehumidifying	45	45	25

(ii) Low frequency operation control during heating

[Control condition] When the conditions of compressor protection start III are established and one of following conditions a) is satisfied, the low number of revolutions operation control is performed during heating.

- a) At 30 minutes or more after turning the power supply breaker on
- [Control contents] a) Starts the compressor with its target frequency at **A** rps. However, when the indoor unit return air temperature (ThI-A) is 25°C or higher, it start at **C** rps.

b) At 30 seconds after the start of compressor, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
71	Heating	42	42	40
100	Heating	55	55	30
125, 140	Heating	45	45	25

(4) Outdoor unit fan control

(a) Outdoor unit fan tap and fan motor speed

Unit: min ⁻¹								
Model	Mode	Fan motor tap						
		① speed	2 speed	③ speed	(4) speed	(5) speed	6 speed	⑦ speed
71	Cooling/Dehumidifying	200	400	600	710	810	850	950
	Heating	200	400	600	710	810	850	950
		① speed	2 speed	③ speed	(4) speed	(5) speed	6 speed	7 speed
100	Cooling/Dehumidifying	200	350	600	740	820	870	950
	Heating	200	350	600	740	820	870	950
		① speed	2 speed	③ speed	(4) speed	(5) speed	6 speed	⑦ speed
125, 140	Cooling/Dehumidifying	200	370	560	640	745	870	910
	Heating	200	370	560	640	800	870	910

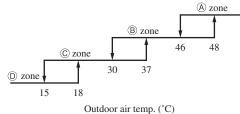
(b) Fan tap control during Cooling/Defumidifying operation

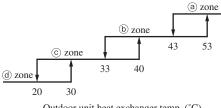
Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A). Note (1) It is detected by Tho-R1 or R2, whichever the higher. • Silent mode only

	(A) zone	B zone	© zone	D zone
(a) zone	Tap 5(6)	Tap 5(6)	Tap 5(6)	Tap 4
(b) zone	Tap 5(6)	Tap 5(6)	Tap 4(6)	Tap 3
© zone	Tap 4	Tap 4	Tap 3	Tap 2
d zone	Tap 3	Tap 3	Tap 2	Tap 1

B zone (A) zone © zone D zone (a) zone Tap 5 Tap 5 Tap 5 Tap 4 Tap 5 Tap 5 Tap 3 Tap 3 (b) zone © zone Tap 4 Tap 3 Tap 3 Tap 2 Tap 3 Tap 3 Tap 2 Tap 1 d zone

Note (1) Value in () is for the 71 model.





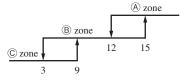


(c) Fan tap control during heating operation

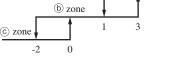
Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A). Note (1) It is detected by Tho-R1 or R2, whichever the lower. • Silent mode only

	(A) zone	(B) zone	© zone		/	(A) zone	(B) zone	© zone
(a) zone	Tap 3	Tap 3	Tap 4		(a) zone	Tap 3	Tap 3	Tap 3
(b) zone	Tap 3	Tap 4(5)	Tap 5		(b) zone	Tap 3	Tap 3	Tap 5
© zone	Tap 4	Tap 5	Tap 6		© zone	Tap 4	Tap 5	Tap 6
Note (1) Value in $()$ is for the 71 model								

Note (1) Value in () is for the 71 mode



Outdoor air temp. (°C)

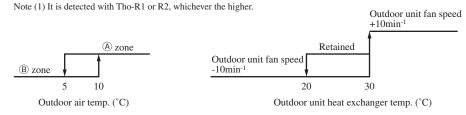


Outdoor unit heat exchanger temp. (°C)

(a) zone

(d) Outdoor unit fan control at cooling low outdoor air

(i) When all the following conditions are established after the start of compressor, the following control is implemented. If the outdoor air temperature (Tho-A) is in the zone (B) in the cooling/dehumidifying mode, it has elapsed 20 seconds from the start of outdoor unit fan and the outdoor unit fan is at the tap 1 speed, the outdoor unit fan speed is controlled according to the outdoor unit heat exchanger temperature (Tho-R1, R2).



- (ii) The outdoor unit heat exchanger temperature is detected always and, when the number of revolutions of the outdoor fan speed has been increased or decreased, there is no change of fan speed for 20 seconds.
- (iii) Rage of the outdoor unit fan speed under this control is as follows.
 - 1) Lower limit: 130rpm
 - 2) Upper limit: 500rpm
- (iv) As any of the following conditions is established, this control terminates.
 - When the outdoor air temperature is in the zone (A) and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
 - 2) When the outdoor fan speed is 500rpm and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
 - 3) When the outdoor unit heat changer temperature at 45° C or higher is established for 40 seconds or more.

(e) Outdoor unit fan control by the power transistor radiator fin temperature

When all the following conditions are established later than 3 minutes after the start of compressor, the following control is implemented.

- (i) Cooling/dehumidifying
 - 1) Outdoor air temperature Tho-A \geq 33°C
 - 2) Compressor's actual frequency $\geq \mathbf{A}$ rps
 - 3) Power transistor radiator fin temperature $\geq \mathbf{C} \circ \mathbf{C}$
- (ii) Heating
 - 1) Outdoor air temperature Tho-A $\geq 16^{\circ}C$
 - 2) Compressor's actual frequency $\geq \mathbf{B}$ rps
 - 3) Power transistor radiator fin temperature $\geq \mathbf{C} \circ \mathbf{C}$
- (iii) Control contents
 - 1) Raises the outdoor unit fan tap by 1 tap.
 - 2) When the sampling is for 60 minutes and the value of power transistor radiator fin temperature (Tho-P) is as follows.
 - a) When the power transistor radiator fin temperature (Tho-P) $\geq \mathbf{C}$ °C, the outdoor unit fan tap is raised by 1 speed further.
 - b) When $\mathbf{C} \circ \mathbf{C} > \text{power transistor radiator fin temperature (Tho-P)} \ge \mathbf{D} \circ \mathbf{C}$, present outdoor unit fan tap is maintained.
 - c) When the power transistor radiator fin temperature (Tho-P) $\geq \mathbf{D}$ °C, the outdoor unit fan tap is dropped by 1 speed.
- (iv) Ending conditions
 - When the operation under the condition of item b), (3) above and with the outdoor unit fan tap, which is determined by the item (b) is detected 2 times consecutively.
 - · Compressor's frequency and power transistor radiator fin temperature

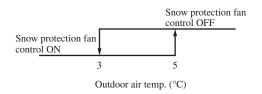
Item	Α	В	С	D
71	60	70	80	75
100	85	85	72	68
125, 140	65	65	72	68

(f) Caution at the outdoor unit fan start control (3 phase model only)

When the outdoor unit fan is running at 400min⁻¹ before operating the compressor, it may operate with the compressor only, without starting up the outdoor fan This is normal.

(g) Snow protection fan control

If the dip switch (SW3-2) on the outdoor unit control PCB is turned ON, the outdoor unit fan is operated for 30 seconds at 4 tap speed once in every 10 minutes depending on the outdoor air temperature (detected with Tho-A) in the stop mode or anomalous stop mode.

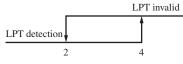


(5) Defrosting

(a) Defrosting start conditions

If all of the following defrosting conditions A or conditions B are met, the defrosting operation starts.

- (i) Defrosting conditions A
 - Cumulative compressor operation time after the end of defrosting has elapsed 37 [45] minutes, and the cumulative compressor operation time after the start of heating operation (remote control ON) has elapsed 30 minutes.
 - 2) After 5 minutes from the compressor ON
 - 3) After 5 minutes from the start of outdoor unit fan
 - After satisfying all above conditions, if temperatures 4) of the outdoor unit heat exchanger temperature thermistor (Tho-R1, R2) and the outdoor air temperature thermistor (Tho-A) become lower than the defrosting start temperature as shown Model 71 by the right figure for 15 seconds continuously, or the suction gas saturation temperature (SST) and the outdoor air temperature (Tho-A), which $\frac{1}{22}$ are obtained from the value detected by the low pressure sensor (LPT) stay for 3 minutes within the range below the defrosting operation start temperature as shown by the right figure. However, it excludes for 10 minutes after the start of compressor and the outdoor air temperature is as shown by the lower figure.



Outdoor air temp. (°C) Note (1) Figures in [] are for 71 model.

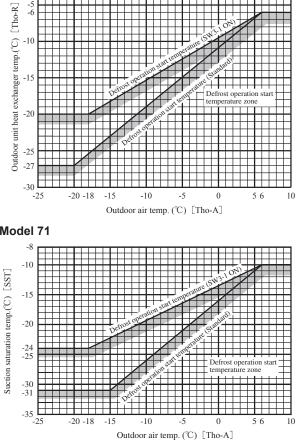
- (ii) Defrosting conditions B
 - When previous defrosting end condition is the time out of defrosting operation and it is in the heating operation after the cumulative compressor operation time after the end of defrosting has become 30 minutes.
 - 2) After 5 minutes from the start of compressor
 - 3) After 5 minutes from the start of outdoor unit fan

(b) Defrosting end conditions

When any of the following conditions is satisfied, the defrosting end operation starts.

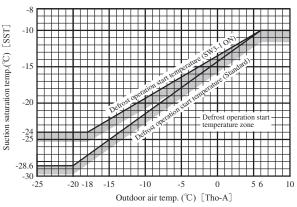
When it has elapsed 8 minutes and 20 seconds after the start of defrosting. (After 10 minutes and 20 seconds for 71 model)

(ii) When the outdoor unit heat exchanger temperatures (Tho-R1, R2), whichever the lower, becomes 12°C or higher for 10 seconds continuously.





Model 71-140



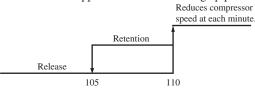
(c) Switching of defrosting control with SW3-1

- (i) If SW3-1 on the outdoor unit control PCB is turned to ON, it becomes easier to enter the defrosting operation. Use this when installing a unit at snowing regions.
- (ii) Control contents
 - 1) It allows entering the defrosting operation under the defrosting condition A when the cumulative heating operation time becomes 30 minutes. It is 37 [45] minutes at SW3-1 OFF (Factory default).
 - 2) It allows entering the defrosting operation under the defrosting condition B when the cumulative heating operation time becomes 25 minutes. It is 30 minutes at SW3-1 OFF (Factory default).
 - 3) It allows the defrosting operation with the outdoor unit heat exchanger temperature (Tho-R) and suction pressure saturation temperature (SST) being higher than normal. Note (1) Figures in [] are for 71 model.

(6) Protective control/anomalous stop control by compressor's number of revolutions

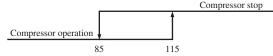
(a) Compressor discharge pipe temperature protection

- (i) Protective control
 - As the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of discharge pipe temperature.



Discharge pipe temperature (°C)

- (ii) Anomalous stop control
 - 1) If the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor stops.
 - When it is detected 2 times within 60 minutes or after continuous 60 minutes, including the stop of compressor, E36 is displayed on the remote control and it enters the anomalous stop mode.



Discharge pipe temperature (°C)

(iii) Reset of anomalous stop mode

As it drops to the reset value of 85°C or lower for 45 minutes continuously, it becomes possible to restart from the remote control.

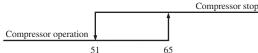
(b) Cooling high pressure protection

(i) Protective control

- 1) When the outdoor air temperature (Tho-A) is 40°C or higher and the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
- 2) Control value A is updated to an optimum value automatically according to the operating conditions.

Reduces compressor	
speed at each minute.	Control value A
Reset	
A	54-60°C
Outdoor unit heat exchanger temp. (°C)	

- (ii) Anomalous stop control
 - 1) As the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor stops.
 - 2) If it is detected 5 times within 60 minutes or 65°C or higher continues for 60 minutes, including the stop of compressor, E35 is displayed on the remote control and it enters the anomalous stop mode.



Outdoor unit heat exchanger temp. (°C)

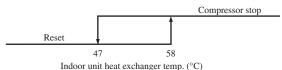
- (iii) Reset of anomalous stop mode
 - As it reaches the reset value of 51°C or lower, it becomes possible to restart from the remote control.

(c) Heating high pressure protection

- (i) Protective control
 - 1) As the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
 - 2) Control value A is updated to an optimum value automatically according to the operating conditions.

Reduces compressor frequency		Existing piping adaptation switch: SW5-1 (SW8-1: 71 model)		
at every 30 seconds.	Model	OFF (Shipping)	ON	
Reset 1		Control value A (°C)		
	71	52-58	16.50	
	100-140	48-54	46-52	
Indoor unit heat exchanger temp. (°C)	Note (1) Adaptation to ex	isting piping is at ON.	·	

- (ii) Anomalous stop control
- Operation control function by the indoor unit controller See the heating overload protection, page 95. (iii) Adaptation to existing piping, stop control
 - If the existing piping adaptation switch, SW5-1 (SW8-1: 71 model), is turned ON, the compressor stops to protect existing piping when the indoor unit heat exchanger temperature (Thi-R) exceeds the setting value.



(d) Anomaly detection control by the high pressure switch (63H1)

- (i) If the pressure rises and operates the high pressure switch (opens at 4.15MPa/closes at 3.15MPa), the compressor stops.
- (ii) Under any of the following conditions, E40 is displayed and it enters the anomalous stop mode.
 - 1) When it occurs 5 times within 60 minutes that pressure rises and the compressor is stopped by 63H1.
 - 2) When 63H1 has been in the open state for 60 minutes continuously, including the stop of compressor.

(e) Low pressure control

(i) Protective control

If the value detected by the low pressure sensor (LPT) exceeds the setting value, the compressor speed (frequency) is controlled to restrain the drop of pressure.

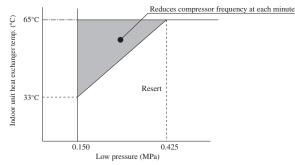
Reduces compressor frequency at every 30 seconds.



- (ii) Anomalous stop control
 - 1) When a value detected by the low pressure sensor (LPT) satisfies any of the following conditions, the compressor stops to run for its protection.
 - a) When the low pressure drops to 0.079MPa or under for 15 seconds continuously.
 - b) At 10 minutes after the start of compressor, the suction overheat becomes 30°C and the low pressure becomes 0.15MPa or under for 60 seconds continuously.
 - 2) E49 is displayed under any of the following conditions and it enters the anomalous stop mode.
 - a) When the low pressure drops 3 times within 60 minutes and the compressor stops under any of the above conditions.
 - b) When a value detected with the low pressure sensor becomes 0.079MPa or under for 5 minutes, including the stop of compressor.
 - 3) However, when the control condition 1). a) is established during the compressor protection start III, E49 is displayed at initial stop and it enters the anomalous stop mode.

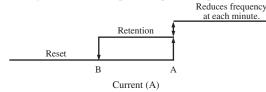
(f) Compressor pressure ratio protection control (Model 100 – 140 only)

- (i) During heating operation, if the indoor unit heat exchanger temperature (Thi-R) and low pressure sensor (LPT) exceed the setting values at 10 minutes after the start of compressor, the compressor speed (frequency) is controlled to protect the compressor.
- (ii) This control is not performed during the outdoor fan ON and for 10 minutes from the start of outdoor unit fan.
- (iii) This control is not performed during defrosting operation and at 10 minutes after the reset of defrosting operation.
- (iv) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the highest temperature is detected.

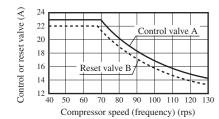


(g) Over-current protection current safe controls I, II

Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.



(Fig. C) The control value "A" and the reset value vary depending on the compressor speed.



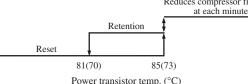
		Coo	ling	Heating		
Mode	1	Control value A	Reset value B	Control value A	Reset value B	
	71	15.0	14.0	16.0	15.0	
Primary current	100	11.0 (23.0)	10.0 (22.0)	11.0 (23.0)	10.0 (22.0)	
side	125, 140	11.0 (23.0)	10.0 (22.0)	11.0 (25.0)	10.0 (24.0)	
	71	13.0	12.0	13.0	12.0	
Secandary	100	11.5 (Fig.C)	10.5 (Fig.C)	11.5 (Fig.C)	10.5 (Fig.C)	
side	125, 140	11.5 (Fig.C)	10.5 (Fig.C)	11.5 (Fig.C)	10.5 (Fig.C)	

Note (1) Value in () are for the single phase models.

(h) Power transistor temperature protection

(i) Protective control

If the power transistor temperature (detected with TIP) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of power transistor temperature. Reduces compressor frequency



Note (1) Value in () are for the single phase 100-140 models.

(i) Anomalous power transistor current

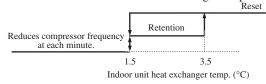
- (i) Prevents over-current on the inverter. If the current value in the power transistor exceeds the setting value, the compressor stops.
- (ii) If the current value in the power transistor exceeds the specified value and the compressor stops 4 times within 30 minutes, E42 is displayed on the remote control and it enters the anomalous stop mode.

(j) Anomalous inverter PCB

If the power transistor detects any anomaly for 15 minutes, including the stop of compressor, E51 is displayed on the remote control and it enters the anomalous stop mode.

(k) Anti-frost control by the compressor frequency control

- (i) If the indoor unit heat exchanger temperature (detected with Thi-R) exceeds the setting value at 4 minutes after the start of compressor, the compressor speed (frequency) is controlled to initiate the anti-frost control of indoor unit heat exchanger.
- (ii) When there are 3 indoor unit heat exchanger temperatures (Thi-R), the lowest temperature is detected.



(iii) Regarding the anti-frost control by the operation stop, refer to the operation control function by the indoor unit controller and the cooling, dehumidifying frost prevention of page 95.

42

60

(I) Dewing prevention control

[Control condition] During cooling and dehumidifying operation, if all the following conditions are established, the compressor speed (frequency) is reduced to prevent dewing and water splash.

- 1) Cooling electronic expansion valve aperture (EEVC) is 500 pulses.
- 2) Suction overheat is 10°C or higher.
- 3) Compressor speed (frequency) is **A** rps or higher.

[Control contents]

- When the suction overheat is 10°C or higher, the compressor speed (frequency) is reduced at each 1 minute.
 Compressor speed (frequency) does not rise till the cooling Model A rps
- expansion valve becomes 460 pulses.
 3) This control takes A rps as its lower limit so that compressor 100-140 speed is not controlled when it is less than A rps.

(m) Refrigerant quantity shortage protection

Under the compressor protection start III control during cooling and dehumidifying operations, the following control is performed by detecting the indoor unit heat exchanger temperature (ThI-R) and the indoor unit return air temperature (ThI-A).

[Control condition] When the state that the indoor unit heat exchanger temperature (ThI-R) does not become lower than the indoor unit return air temperature (ThI-A) by 4°C or more continues for 1 minute.

[Control contents] It judges that the flowing of refrigerant in to the indoor unit is insufficient so that the compressor is stopped and E57 is displayed on the remote control.

(n) Broken wire detection on temperature thermistor and low pressure sensor

- (i) Outdoor unit heat exchanger thermistor, outdoor air thermistor and low pressure 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. Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.
 - Outdoor unit heat exchanger thermistor: -50°C or lower
 - Outdoor air temperature thermistor: -45°C or lower
 - Low pressure sensor: 0V or under or 4.0V or over
- (ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor

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 thermistor: -10°C or lower
- Suction pipe temperature thermistor: -50°C or lower

(o) Fan motor error

- (i) If the fan speed of 100rpm or under is detected for 30 second continuously under the outdoor unit fan control (with the operation command of fan tap at ① speed or higher), the compressor stops.
- (ii) When the fan motor speed drops to 100rpm or under 5 times within 60 minutes and the compressor stops, it enters the anomalous stop mode with E48 displayed on the remote control.

(p) Anomalous stop by the compressor start stop

- (i) When it fails to shift to the compressor DC motor's rotor position defection operation at 5 seconds after establishing the compressor start condition, the compressor stops temporarily and restarts 3 minutes later.
- (ii) If it fails to shift to the position detection operation again at second time, it judges the anomalous compressor start and stops the compressor by the anomalous stop (E59).

(7) Silent mode

- (a) As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor unit fan tap and the compressor speed (frequency).
- (b) For details, refer to items (1) and (4) above.

(8) Test run

(a) It is possible to operate from the outdoor unit using the dip switch on the outdoor unit control PCB.

SW3-3 (SW5-3)	ON	(SW5-4)	ON	Heating test run
	OFF	N	formal and end	of test run

Make sure to turn SW3-3 (SW5-3) to OFF after the end of operation. Note (1) Value in () is for the 71 model.

(b) Test run control

- (i) Operation is performed at the maximum compressor speed (frequency), which is determined for each model.
- (ii) Each protective control and error detection control are effective.
- (iii) If SW3-4 (SW5-4) is switched during test run, the compressor is stoped for once by the stop control and the cooling/ heating operation is switched.

Note (1) Value in () is for the 71 model.

(iv) Setting and display of remote control during test run

Item	Contents of remote control setting/display
Cooling test run	Setting temperature of cooling is 5°C.
Heating test run	Setting temperature of heating (preparation) is 30°C.

(9) Pump-down control

Turning ON the pump-down switch SW1 (SW9) for 2 seconds during the operation stop or anomalous stop (excluding the thermostat OFF), the pump-down operation is performed. (This is invalid when the indoor unit is operating. This is effective even when the indoor unit is stopped by the anomalous stop or the power supply is turned OFF.)

Note (1) Value in () are for the 71 model.

(a) Control contents

- (i) Close the service valve at the liquid side. (It is left open at the gas side.)
- (ii) Compressor is started with the target speed (frequency) at 71:62, 100:55, 125 · 140:45 rps in the cooling mode.
- (iii) Red and green lamps (LED) flash continuously on the outdoor unit control PCB.
- (iv) Each of protection and error detection controls, excluding the low pressure control, anti-frost control and dewing prevention control, is effective.
- (v) Outdoor unit fan is controlled as usual.
- (vi) Electronic expansion valve is fully opened.

(b) Control ending conditions

- Stop control is initiated depending on any of the following conditions.
- (i) Low pressure of 0.087MPa or lower is detected for 5 seconds continuously.
 - 1) Red LED: Light, Green LED: Flashing, Remote control: Displays stop.
 - 2) It is possible to restart when the low pressure is 0.087MPa or higher.
 - 3) Electronic expansion valve (cooling/heating) is kept fully open.
- (ii) Stop by the error detection control
 - 1) Red LED: Flashing, Green LED: Flashing
 - 2) Restart is prohibited. To return to normal operation, reset the power supply.
 - 3) Electronic expansion valve (cooling/heating) is left fully open.
- (iii) When the cumulative operation time of compressor under the pump-down control becomes 5 minutes.
 - 1) Red LED: OFF, Green LED: Flashing, Remote control: Stop
 - 2) It is possible to pump-down again.
 - 3) Electronic expansion valve (cooling/heating) is left fully open.
 - Note (1) After the stop of compressor, close the service valve at the gas side.
- Caution: Since pressing the pump-down switch cancels communications with the indoor unit, the indoor unit and the remote control display "Transmission error E5". This is normal.

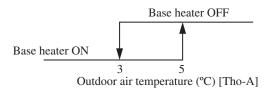
(10) Base heater ON/OFF output control (option)

(a) Base heater ON conditions

- When all of following conditions are met, the base heater is turned ON.
- \cdot Outdoor air temperature (detected with Tho-A) is 3°C or lower.
- \cdot In the heating mode
- \cdot 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.
- \cdot Outdoor air temperature (detected with Tho-A) is 5°C or higher.
- \cdot When the compressor stop has been detected for 30 minutes continuously
- \cdot In the cooling or dehumidifying mode



1.11 MAINTENANCE DATA

1.11.1 Diagnosing of microcomputer circuit

(1) Selfdiagnosis function

(a) Check Indicator Table

Whether a failure exists or not on the indoor unit and outdoor unit can be know by the contents of remote control error code, indoor/outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote	control	Indoor co	ntrol PCB	Outdoor c	ontrol PCB	Location of			Reference	
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	trouble	Description of trouble	Repair method	page	
		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	_	Normal operation	—	—	
No-indication	Store OFF	Stays OFF	Stays OFF	2 times flash	Stays OFF	Indoor unit power supply	Power OFF, broken wire/blown fuse, broken transformer wire	Repair 142		
INO-Indication	Stays OFT	*	Keeps		Keeps	Remote control wires	 Poor connection, breakage of remote control wire * For wire breaking at power ON, the LED is OFF. 	Repair		
		3 times flash	flashing	Stays OFF	flashing	Remote control	Defective remote control PCB	Replacement of remote control	143	
⊕wai INSPEC		Stays OFF	Keeps flashing	2 times flash	Keeps flashing	Indoor-outdoor units connection wire	Poor connection, breakage of indoor-outdoor units connection wire	Repair	144 — 148	
	1					Remote control	Improper setting of master and slave by remote control Poor connection of remote control signal wire (White)			
			*			Remote control wires (Noise)	* For wire breaking at power ON, the LED is OFF	Repair		
E 1		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Remote control indoor control PCB	Intrusion of noise in remote control wire *• Defective remote control or indoor control PCB (defective communication circuit)?	Replacement of remote control or PCB	150	
		2 times flash	Keeps flashing	2 times flash	Keeps flashing	Indoor-outdoor units connection	Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection) According to perform between index subtless units by pairs the provided of the performance of the per	Repair		
ES		2 times	Keeps		Keeps	(Noise)	Anomalous communication between indoor-outdoor units by noise, etc. CPU-runaway on outdoor control PCB	Power reset or Repair		
כס		flash	flashing	Stays OFF	flashing	Outdoor control PCB	*• Occurrence of defective outdoor control PCB on the way of power supply (defective com- munication circuit)?	Replacement of PCB	151	
		2 times flash	Keeps flashing	Stays OFF	Stays OFF	Outdoor control PCB	Defective outdoor control PCB on the way of power supply	Replacement		
	1	nusn	nasining			Fuse	Blown fuse			
EБ		1 time flash	Keeps		Stays OFF	Keeps	Indoor heat exchanger tempera- ture thermistor	 Defective indoor heat exchanger temperature thermistor (defective element, bro- ken wire, short-circuit) Poor contact of temperature thermistor connector 	Replacement, repair of temperature thermistor	152
			flashing	500,5011	flashing	Indoor control PCB	*• Defective indoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB		
57	Keeps		Keeps		Keeps temperature therm- short	Defective indoor return air temperature thermistor (defective element, broken wire, short-circuit)	Replacement, repair of temperature	150		
	flashing	1 time flash	flashing	Stays OFF	flashing	Indoor control PCB	Poor contact of temperature thermistor connector * Defective indoor control PCB (Defective temperature thermistor input circuit)?	thermistor Replacement of PCB	153	
						Installation or oper- ating condition	Heating over-load (Anomalously high indoor heat exchanger temperature)	Repair		
83		1 time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor heat exchanger tempera- ture thermistor	Defective indoor heat exchanger temperature thermistor (short-circuit)	Replacement of temperature therm- istor	154	
						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 of DM		
E9		1 time flesh	Keeps	Store OFF	Keeps	Float switch	Anomalous float switch operation (malfunction)	Repair	155	
	1 time flash flashing St		Stays OFF	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	155		
						Option	Defective optional parts (At optional anomalous input setting)	Repair		
E 10		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Number of con- nected indoor units	When multi-unit control by remote control is performed, the number of units is over	Repair	156	
E 16		1(2) time	Keeps	Stays OFF Keeps		Fan motor	Defective fan motor	Replacement, repair	157	
		flash	flashing	Suysort	flashing	Indoor power PCB	Defective indoor power PCB	Replacement	137	
E 19 E20		1 time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor control PCB	Improper operation mode setting	Repair	158	
Егп		1(2) time flash	Keeps flashing	Stays OFF	Keeps flashing	Fan motor	Indoor fan motor rotation speed anomaly	Replacement, repair	159	
	floohing	114511	masming		-	Indoor power PCB Remote control	Defective indoor power PCB	Replacement		
E28	moning	Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	temperature therm- istor	Broken wire of remote control temperature thermistor	Repair	160	

Note (1) Normal indicator lamp (Indoor, outdoor units: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing 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.

(ii) Outdoor unit

Remote c	control	Indoor control PCB Outdoor control PCI		ontrol PCB	Outdoor inventer PCB				Deferrer		
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	Yellow LED	Location of trouble	Description of trouble	Repair method	Reference page	
							Installation or operating condition	Higher outdoor heat exchanger temperature	Repair		
E35		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Outdoor heat exchanger temperature thermistor	Defective outdoor heat exchanger temperature thermistor	Replacement of temperature thermistor	161	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB		
							Installation or operating condition	Higher discharge temperature	Repair		
E36		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Discharge pipe temperature thermistor	Defective discharge pipe temperature thermistor	Replacement, repair of temperature thermistor	162	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB		
ЕЗЛ		Stays OFF	Keeps	1 time flash	Keeps	Keeps	Outdoor heat exchanger temperature thermistor	Defective outdoor heat exchanger temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	163	
יכס		Stays OFF	flashing	1 time masi	flashing	flashing	Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	105	
E 38		Stove OFF	Keeps	1 time flach	Keeps		Outdoor air temperature thermistor	Defective Outdoor air temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	164	
		Stays OFF	flashing	1 time flash	flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	104	
E 3 9		Stays OFF	Keeps	1 time flash	Keeps		Discharge pipe temperature thermistor	Defective discharge pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	165	
		Stays OFF	flashing	1 time nasii	flashing	flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	105
ЕЧО		Stays OFF	Keeps	1 time flash	Keeps		Installation or operating condition	Rising high pressure (Operation of 63H1) • Service valve closing operation	Repair	166	
			flashing		flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective 63H input circuit)?	Replacement of PCB		
E4 1		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	6 times flash	Inverter PCB or radiator fin	Power transistor overheat	Replacement of PCB or Repair	167	
ЕЧ2	Keeps	Stays OFF	Keeps	1 time flash	Keeps	1 time flash	Outdoor control PCB compressor	Current cut (Anomalous compressor over-current)	Replacement of PCB	168•169	
	flashing	Stays OFF	flashing	1 time nasi	flashing	i une nasi	Installation or operating condition	Service valve closing operation	Repair	108•109	
ЕЧБ		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	Keeps flashing	Outdoor control PCB	Anomalous outdoor control PCB communication	Replacement of PCB	170	
		-	0		U	nasning	Inverter PCB	Anomalous inverter PCB communication			
ЕЧЛ		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	7 times flash	Inverter PCB activefilter	Defective outdoor inverter PCB (Model FDC 71 only) Defective active filter of control.	Replacement	171	
ЕЧВ		Stays OFF	Keeps	1 time flash	Keeps		Outdoor fan motor	Anomalous outdoor fan motor	Replacement, repair	172	
		54,5011	flashing	1 1110 11101	flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective motor input circuit)?	Replacement of PCB		
						Keeps flashing	Installation or operating condition	Low pressure error Service valve closing operation	Repair		
E49		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	nasning	Low pressure sensor	Anomalous low pressure, broken wire of low pressure sensor or poor connector connection	Replacement, repair of sensor	173•174	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB		
E5 1		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	6 times flash	Inverter PCB	Anomalous inverter PCB	Replacement of PCB	175	
E53		Stays OFF	Keeps	1 time flash	Keeps		Suction pipe temperature thermistor	Defective suction pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	176	
		Stays OFF	flashing	1 time masir	flashing		Outdoor control PCB	*• Defective outdoor PCB (Defective thermistor input circuit)?	Replacement of control PCB	170	
ESY		Stays OFF	Keeps	1 time flash	Keeps	Keeps	Low pressure sensor	Defective low pressure sensor	Replacement of sensor	177	
רכם		Stays OFF	flashing	1 unie nash	flashing	flashing	Outdoor control PCB	Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	1//	
E57		Stays OFF	Keeps	1 time flash	Keeps		Operation status	Shortage in refrigerant quantity	Repair	178	
		54,5011	flashing		flashing		Installation status	Service valve closing operation	Service valve opening check		
E59		Stays OFF	Keeps flashing	5 times flash	Keeps flashing	Stays OFF	Compressor inverter PCB	Anomalous compressor startup	Replacement	179•180	

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.

(iii) Optional control in-use

Remo	te control	Indoor unit	control PCB	Outdoor unit	control PCB	Depaription of trauble	Repair method
Error code	Red LED	Red LED	Green LED	Red LED	Green LED	Description of trouble	
E75	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Communication error (Defective communication circuit on the main unit of SC-SL2N-E or SC-SL3N-E) ete.	Replacement

(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 control	• Displays the error of higher priority (When plural errors are persisting)						
Red LED on indoor control PCB	E I>ES>·····>E IO>E32>·····E60						
Red LED on outdoor 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)	69	Whenever float switch is activated after 30 second had past since power ON.
	Communication error at initial operation	"''BWAIT'®''	No communication between indoor and outdoor units is established at initial operation.
	Remote control communication circuit error	EI	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	65	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	Eη	-20°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	68	-40°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 thermistor anomaly	838	-45°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -45°C or higher is detected for 5 seconds continuously within 20 seconds after compressor ON.
	Outdoor heat exchanger temperature thermistor anomaly	637	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -50°C or lower is detected for 5 seconds continuously within 20 seconds after compressor ON.
Outdoor	Discharge pipe temperature thermistor anomaly	639	-10°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Suction pipe temperature thermistor anomaly	653	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Low pressure sensor anomaly	654	0V or lower or 4.0V or higher is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous pressure.
	Underneath temperature thermistor anomaly	855	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.

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
Red LED on indoor control PCB	• Not memorized.	switch of remote control. • If the unit has recovered from anomaly, it
Red LED on outdoor control PCB	• Memorizes a mode of higher priority.	can be operated.

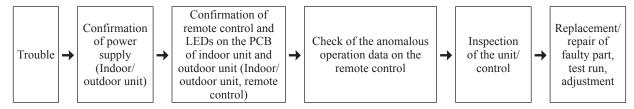
Resetting the error log

- 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
- 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 supply PCB, temperature thermistor (return air, indoor heat exchanger), remote control switch, limit switch, transformer 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. WARNING 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. WARNING • 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 \wedge 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) Control PCB

PSB012D990B

Replace and set up the PCB according to this instruction.

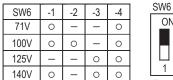
- 1) Set to an appropriate address and function using switch on PCB.
- Select the same setting with the removed PCB.

item	switch	Content of control		
Address	SW2	Plural indoor units control by 1 remote control		
Test run	SW7-1	_	Normal	
restruit	3007-1	0	Operation check/drain motor test run	
		0.01	OFF	

O:ON -:OFF

2) Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.



2 3 4 1 Example setting fro 140V

ON

3) Replace the PCB

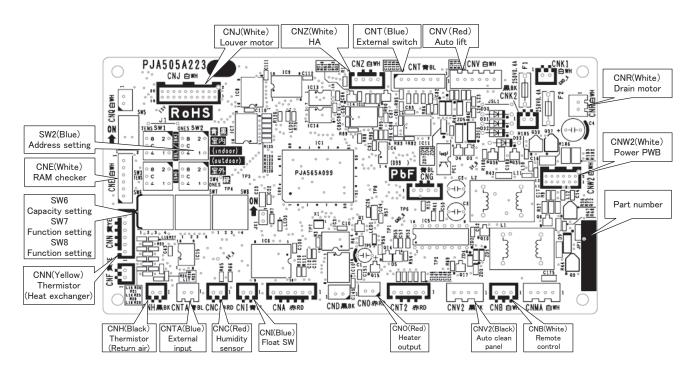
a) Exchange PCB after detaching all connectors connected with the PCB.

b) Fix the PCB so as not to pitch the wiring.

c) Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

4) Control PCB

Parts mounting are different by the kind of PCB.



(ii) Power PCB

PSC012D021

This PCB is a general PCB. Replace the PCB according to this instruction.

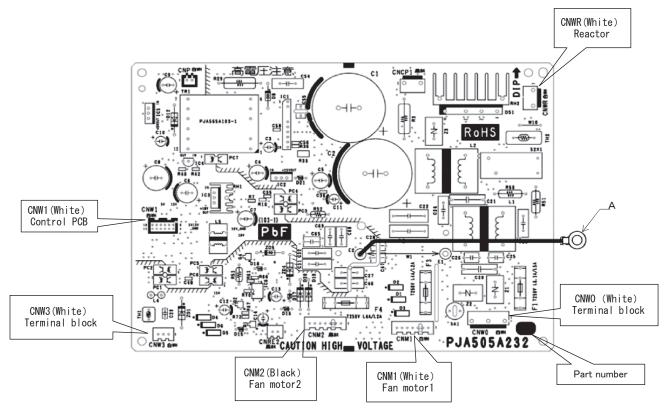
1) Replace the PCB

a) Unscrew terminal(Arrow A) of the "E2" wiring(yellow/green) that is connected to PCB.

- 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(Arrow A) of the "E2" wiring, that was removed in 1.

2) Power PCB

Parts mounting are different by the kind of PCB.



•DIP switch setting list

Switches	Description			efault setting	Remarks
SW2	Address No. setting at plural indoor u	inits 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			nodel	See table 1
SW6-3	would selection		1 is per i	liodel	
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	Setting of the External static pressure	Normal*/Range expand	OFF	Normal	keep OFF
JSL1	Superlink terminal spare	Normal*/switch to spare	With		

* Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

			0: OI	FF 1:ON
	71V	100V	125V	140V
SW6-1	1	1	0	1
SW6-2	0	1	0	0
SW6-3	0	0	1	1
SW6-4	1	1	1	1

(4) Troubleshooting at the outdoor unit

When troubleshooting the outdoor unit, firstly assess the overview of malfunction and try to presume the cause and the faulty part by checking the error cord dispalyed on the remote control and flashing pattern of indicator lamps (Red LED and Green LED), and then proceed further inspection and remedy it.

Self-diagnosis system by microcomputor on indoor and outdoor PCB can assist to find the cause of malfunction smoothly by making a diagnosis of not only the anomaly of microcomutor, but also the anomaly in power supply system, installation space, overload resulting from improper charging amount of refrigerant and etc.

Unless the power is reset, the error log is saved in memory and the inspection indicator lamps on outdoor PCB keep flashing after automatical recovering from malfunction.

After automatical recovering from malfunction, if any another error mode which has a higher priority than the previous error saved in memory occurs, it is overwritten in memory and is displayed.

[Reset of power supply]

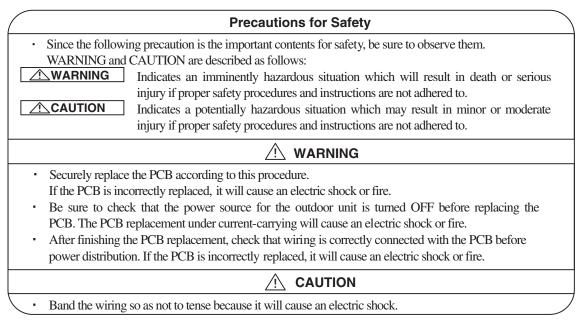
Be sure to avoid electrical shock, when replacing or checking the outdoor control PCB, because some voltage is still retained in the electrolytic capacitor on the PCB even after shutting down the power supply to the outdoor unit.

Be sure to start repairing work, after confirming that the Green LED on the PCB has been extiguished for more than 10 seconds after more than 3 minutes had been passed since power shut down, and reconfirming that voltage has been discharged sufficiently by measuring the voltage (DC) between both terminals of electrolytic capacitor (C58) (Measurment of voltage may be disturbed by the moisture-proof coating. In such case, remove the coating and measure it by taking care of avoiding electrical shock)

(a) Module of part to be replaced for outdoor unit control

Outdoor control PCB, Inverter PCB, Temperature thermistor (of outdoor heat exchanger, discharge pipe, outdoor air, IPM and suction pipe), Fuses (for power supply and control PCB), Noise filter, Capacitor, Reactor and Transformer

(b) Replacement procedure of outdoor control PCB

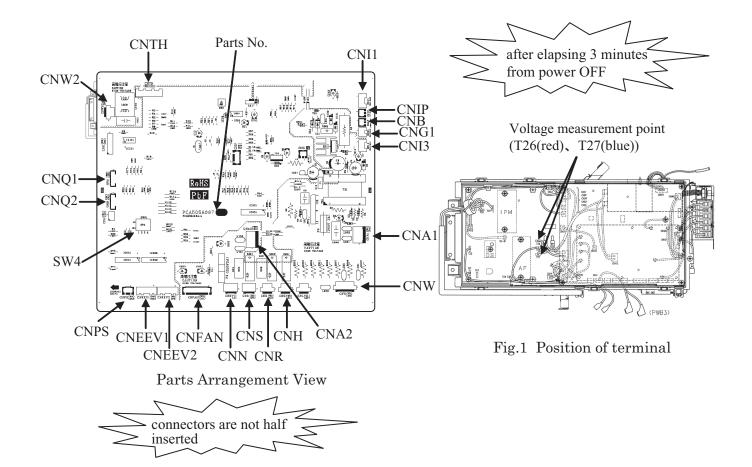


(i) Model FDC71VNX

PCA012D021C

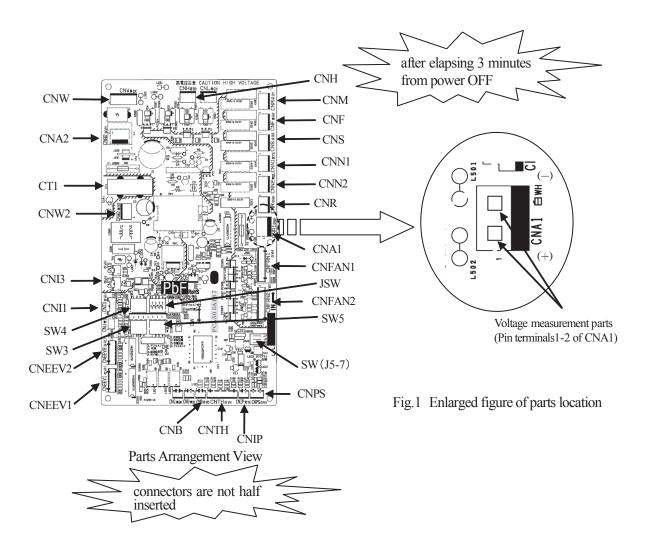
Replace the PCB after elapsing 3 minutes from power OFF.
 (Be sure to measure voltage (DC) between T26 and T27 on inverter PCB, and check that the voltage is discharged sufficiently(10V or less). (Refer to Fig.1))

- 2) Disconnect the connectors from the control PCB.
- 3) Match the switches setting (SW4) with the former PCB.
- 4) Connect the connectors to the control PCB. (Confirm the connectors are not half inserted.)

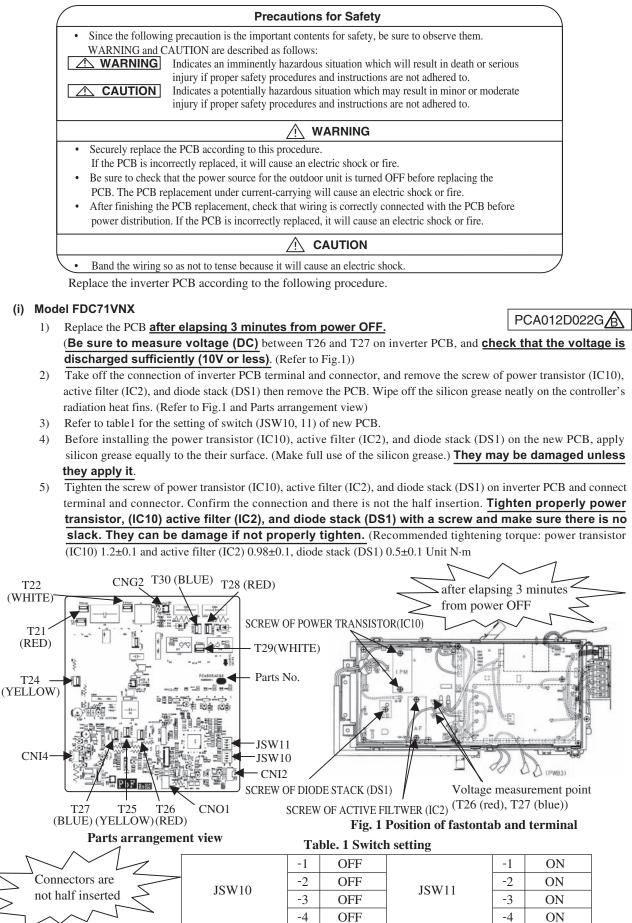


(ii) Model FDC100VNX, 125VNX, 140VNX FDC100VSX, 125VSX, 140VSX

- 1) Replace the PCB after elapsing 3 minutes from power OFF.
- 2) Measurement was done on both ends of connector (CNA1) during measurement, the voltage (DC) might charged the electrolytic capacitor, be sure that the voltage is discharged sufficiently. (Refer to Fig.1)
- 3) Disconnect the connectors from the control PCB.
- 4) Disconnect the white or blue wiring passing through CT1 on the PCB before replacing the PCB.
- 5) Match the setting switches (SW3-5, JSW, SW(J5-7)) with the former PCB.
- 6) Tighten up a screw after passing white or blue wiring through CT1 of the changed.
- 7) Please connect the connectors with the same place. (Confirm the **connectors are not half inserted**.)

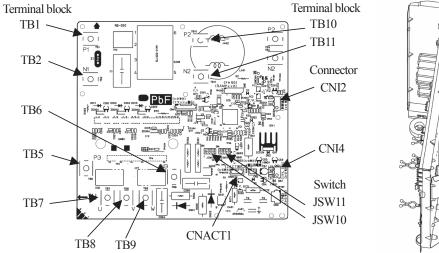


(c) Outdoor inverter PCB replacement procedure



(ii) Models FDC100VNX, 125VNX, 140VNX

- Replace the PCB after elapsing 3 minutes from power OFF. (Be sure to measure voltage (DC) on both capacitor terminals located in controller back, and check that the voltage is discharged sufficiently. (Refer to Fig.1))
- Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then 2) remove the PCB. Wipe off the silicon grease neatly on the controller's radiation heat fins.
- Match the setting switches (JSW10,11) of new PCB with the former PCB. 3)
- 4) Before installing the power transistor on the new PCB, Apply uniformly a bundled of silicon grease first on the surface of power transistor. Make sure it is applied to prevent damage on power transistor.
- Tighten the screw of power transistor on inverter PCB and connect the terminal block.Confirm the connection 5) and don't use soldering in the connection. Tighten properly the power transistor with a screw and make sure there is no slack. Power transistor can be damage if not properly tighten. (Recommended power transistor tightening torque:0.98~1.47N·m)



Parts arrangement view

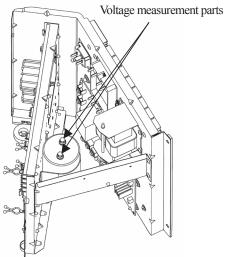


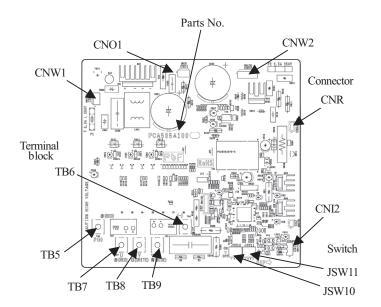
Fig.1 Position of capacitor

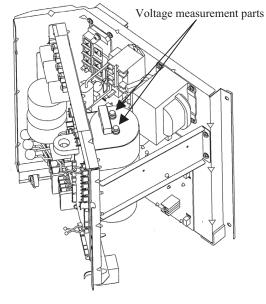
	Tal	ole. 1 Switch	setting		
	-1	OFF		-1	OFF
ICW10	-2	OFF	JSW11	-2	OFF
JSW10	-3	OFF	J5 W 11	-3	ON
	-4	OFF		-4	ON

PCA012D025D

PCA012D025F

- Replace the PCB <u>after elapsing 3 minutes from power OFF</u>.
 (Be sure to measure voltage (DC) on both capacitor terminals located in controller back, and <u>check that the</u> voltage is discharged sufficiently. (Refer to Fig.1))
- 2) Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then remove the PCB. Wipe off the silicon grease neatly on the controller's radiation heat fins.
- 3) Match the setting switches (JSW10,11) of new PCB with the former PCB.
- 4) Before installing the power transistor on the new PCB, <u>Apply uniformly a bundled of silicon grease</u> first on the surface of power transistor. Make sure it is <u>applied to prevent damage on power transistor</u>.
- 5) Tighten the screw of power transistor on inverter PCB and connect the terminal block. Confirm the connection and don't use soldering in the connection. Tighten properly the power transistor with a screw and <u>make sure there</u> is no slack. Power transistor can be damage if not properly tighten. (Recommended power transistor tightening torque:0.98~1.47N·m)





Parts arrangement view

Fig.1 Position of capacitor

	1 au	ie. I Switch set	ling		
	-1	OFF		-1	ON
LCW10	-2	OFF	JSW11	-2	OFF
JSW10	-3	OFF		-3	ON
	-4	OFF		-4	ON

Table. 1 Switch setting

•DIP switch setting list (Outdoor unit)

(1) Control PCB

Model FDC71VNX

Switches	Description		E	Default setting	Remarks
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Model selection	Cooling only/Heat pump*	OFF	Heat pump	Keep OFF
SW3-4	Defrost prohibition time	ON: 37min*/OFF: 45min	ON	37min.	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	Keep ON
SW4-2	Model selection	3-phase/Single phase*	ON	Single phase	Keep ON
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Model selection		OFF		Keep OFF
SW5-2	Model selection		OFF		Keep OFF
SW5-3	Test run SW	Normal*/Test run	OFF	Normal	
SW5-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW7-1	Reserved		OFF		Keep OFF
SW7-2	Reserved		OFF		Keep OFF
SW7-3	Reserved		OFF		Keep OFF
SW8-1	Reserved		OFF		Keep OFF
SW8-2	Reserved		OFF		Keep OFF
SW8-3	Reserved		OFF		Keep OFF
SW9	Pump down operation	Normal*/Pump down	OFF	Normal	

Models FDC100,125,140VNX,100,125,140VSX

* Default setting

Switches		Description	E	Remarks	
SW1	Pump down operation	Normal*/Pump down	OFF	Normal	
JSW1-1					
JSW1-2	Model selection				See table 1
JSW1-3	Model selection		As per model		See table 1
JSW1-4					
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Test run SW	Normal*/Test run	OFF	Normal	
SW3-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	See table 1
SW4-2	Model selection	3-phase/Single phase	As per	model	See table 1
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Reserved		OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW5-3	Reserved		OFF		Keep OFF
SW5-4	Reserved		OFF		Keep OFF

	* Default setting
Table 1: Outdoor unit model selection with JSW1-1-JS	W1-4 and SW4-1-SW4-2
	A OFF 1 ON

					0: OF	F 1:ON
	100VNX	100VSX	125VNX	125VSX	140VNX	140VSX
JSW1-1	0	0	1	1	0	0
JSW1-2	0	0	0	0	1	1
JSW1-3	0	0	0	0	0	0
JSW1-4	0	0	0	0	0	0
SW4-1	1	1	1	1	1	1
SW4-2*	1	0	1	0	1	0
			* 2 .	hasa OF	E/Cincles	hasa ON

* 3-phase: OFF/Single phase: ON

(2) Inverter PCB

Cit-la-	71VNX	100, 125, 140VNX	100, 125, 140VSX
Switches	Single phase models	Single phase models	3-phase models
JSW10-1	OFF	OFF	OFF
JSW10-2	OFF	OFF	OFF
JSW10-3	OFF	OFF	OFF
JSW10-4	OFF *	OFF *	OFF *
JSW11-1	ON	OFF	ON
JSW11-2	ON	OFF	OFF
JSW11-3	ON	ON	ON
JSW11-4	ON	ON	ON

* When checking inverter PCB of FDC71 - 140 models with inverter checker, turn JSW10-4 ON. (Regarding the checking method of inverter PCB with inverter checker, refer to page 131 for details)

(Pulse of The Outdoor Unit Expansion Valve EEVC)

(Pulse of The Outdoor Unit Expansion Valve EEVH)

(5) Check of anomalous operation data with the remote control		
(5) Check of anomalous operation data with the remote control(a) In case of RC-E5 remote control	Number	Data Item
	01	2 (Operation Mode)
Operation data can be checked with remote control unit operation.	02	SET TEMPC (Set Temperature)
(i) Press the CHECK button.	03	RETURN AIRc (Return Air Temperature)
The display change " OPER DATA ▼"	04	SENSORC (Remote Control Thermistor Tempeature)
(ii) Press the ○ (SET) button while " OPER DATA ▼" is displayed.	05	THI-R1C (Indoor Heat Exchanger Thermistor / U Bend)
	06	THI-R2C (Indoor Heat Exchanger Thermistor /Capillary)
(iii) When only one indoor unit is connected to remote control,	07	THI-R3C (Indoor Heat Exchanger Thermistor /Gas Header)
"DATA LOADING" is displayed (blinking indication during data loading).	08	I/U FANSPEED (Indoor Unit Fan Speed)
Next, operation data of the indoor unit will be displayed. Skip to step ⑦.	09	DEMAND Hz (Frequency Requirements)
	10	ANSWER Hz (Response Frequency)
(iv) When plural indoor units is connected, the smallest address number of	11	I/U EEV P (Pulse of Indoor Unit Expansion Value)
indoor unit among all connected indoor unit is displayed.	12	TOTAL I/U RUN (Total Running Hours of The Indoor Unit)
[Example]:	21	OUTDOOR (Outdoor Air Temperature)
	22	THD-R1C (Outdoor Heat Exchanger Thermistor)
"⊕ \clubsuit SELECT I/U" (blinking 1 seconds) → "I/U000 \blacktriangle " blinking.	23	THD-R2C (Outdoor Heat Exchanger Thermistor)
(v) Select the indoor unit number you would like to have data displayed	24 25	COMP_Hz (Compressor Frequency) HP_MPa (High Pressure)
with the \blacktriangle \forall button.	25	1
	20	LH (Low Pressure) Td C (Discharge Pipe Temperature)
(vi) Determine the indoor unit number with the O (SET) button.	27	COMP BOTTOM (Comp Bottom Temperature)
(The indoor unit number changes from blinking indication to	20	CT(Current)
continuous indication)	30	TARGET SH (Target Super Heat)
" $[/ 000]$ " (The address of selected indoor unit is blinking for 2 seconds.)	31	SH
	32	TDSH (Discharge Pipe Super Heat)
\downarrow	33	PROTECTION No. (Protection State No. of The Compressor)
"DATA LOADING" (A blinking indication appears while data loaded.)	34	0/UFANSPEED (Outdoor Unit Fan Speed)
Next, the operation data of the indoor unit is indicated.	35	63H1 (63H1 On/Off)
	36	DEFROST (Defrost Control On/Off)
(vii) Upon operation of the \blacksquare \blacksquare button, the current operation data is	37	TOTAL COMP RUN H (Total Running Hours of The Compressor)

(vii) Upon operation of the $|\blacktriangle|$ $|\nabla|$ 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 not displayed.

- (viii) 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.
- (ix) 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.

OIf 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.)

No.	Contents of display	Reference page	Note(1) Operati
"0"	Normal		•Data is
"1"	Discharge pipe temperature protection control	P.108, (6).(a).(i)	 In case
"2"	Discharge pipe temperature anomaly	P.108, (6).(a).(ii)	Note(2) Comm
"3"	Current safe control of inverter primary current	P.110, (6).(g)	① In hea Durin
"4"	High pressure protection control	P.108, (6).(b).(i), P.109, (6).(c).(i)	freque
"5"	High pressure anomaly	P.108, (6).(b).(ii)	2 In co
"6"	Low pressure protection control	P.109, (6).(e).(i)	Durin
"7"	Low pressure anomaly	P.109, (6).(e).(ii)	freque
"8"	Anti-frost prevention control	P.110, (6).(k)	
"9"	Current cut	P.110, (6).(g)	
"10"	Power transistor protection control	P.110, (6).(h)	
"11"	Power transistor anomaly (Overheat)	P.110, (6).(i)	
"12"	Compression ratio control	P.109, (6).(f)	
"13"	Spare		
"14"	Dewing prevention control	P.111, (6).(l)	
"15"	Current safe control of inverter secondary current	P.110, (6).(g)	
"16"	Stop by compressor rotor lock		
"17"	Stop by compressor startup failure	P.111, (6).(p)	

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.

38

39

0/UEEV1.

0/UEEV2

Р

P

g mode. otection control by the command signal for reducing compressor

y from indoor unit, No. "4" is displayed. ng and dehumidifying mode.

otection control by the command signal for reducing compressor r from indoor unit, No. "8" is displayed.

(b) In case of RC-EX1A remote control

[Operating procedure]

- (i) On the TOP screen, touch the buttons in the order of "Menu" \rightarrow "Next" \rightarrow "Service & Maintenance" \rightarrow "Service password" \rightarrow "Set" \rightarrow "Error display" \rightarrow "Error history".
- (ii) 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.

(iii) 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".

(iv) If you press [RUN/STOP] button, the display returns to the TOP screen.

◎ 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.)

Number		Data Item
01	**	(Operation Mode)
02	SET TEMPC	(Set Temperature)
03	RETURN AIR`c	(Return Air Temperature)
04	⊜SENSORc	(Remote Control Thermistor Tempeature)
05	THI-R1c	(Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2ზ	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3c	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED	(Indoor Unit Fan Speed)
09	DEMAND Hz	(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	OUTDOORზ	(Outdoor Air Temperature)
22	tho-Ri°	(Outdoor Heat Exchanger Thermistor)
23	THO-R2ზ	(Outdoor Heat Exchanger Thermistor)
24	COMPHz	(Compressor Frequency)
25	HPMPa	(High Pressure)
26	LPMPa	(Low Pressure)
27	ĭdč	(Discharge Pipe Temperature)
28	<u>COMP BOTTOM to</u>	(Comp Bottom Temperature)
29	CTAMP	(Current)
30	TARGET SHරු	(Target Super Heat)
31	SHč	(Super Heat)
32	TDSH2	(Discharge Pipe Super Heat)
33	PROTECTION No	(Protection State No. of The Compressor)
34	0/UFANSPEED	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN_	(Total Running Hours of The Compressor)
38	0/U ₩1P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	0/U & V2P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

Anomaly operation data (Corresponding data may not be provided depending on models. Such items will not be displayed.)

No.	Contents of display	Reference page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P.108, (6).(a).(i)
"2"	Discharge pipe temperature anomaly	P.108, (6).(a).(ii)
"3"	Current safe control of inverter primary current	P.110, (6).(g)
"4"	High pressure protection control	P.108, (6).(b).(i), P.109, (6).(c).(i)
"5"	High pressure anomaly	P.108, (6).(b).(ii)
"6"	Low pressure protection control	P.109, (6).(e).(i)
"7"	Low pressure anomaly	P.109, (6).(e).(ii)
"8"	Anti-frost prevention control	P.110, (6).(k)
"9"	Current cut	P.110, (6).(g)
"10"	Power transistor protection control	P.110, (6).(h)
"11"	Power transistor anomaly (Overheat)	P.110, (6).(i)
"12"	Compression ratio control	P.109, (6).(f)
"13"	Spare	
"14"	Dewing prevention control	P.111, (6).(1)
"15"	Current safe control of inverter secondary current	P.110, (6).(g)
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	P.111, (6).(p)

Note(1) Operation data display on the remote control.

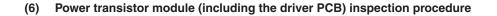
• Data is dispalyed until canceling the protection control. • In case of multiple protections controlled, only the younger No. is displayed. Note(2) Common item

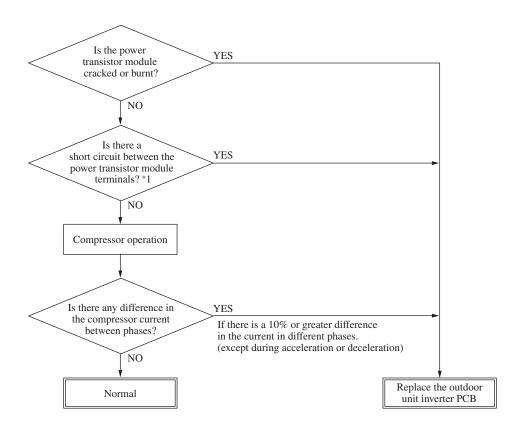
In heating mode.

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.





*1 Power transistor module terminal short circuit check procedure

Disconnect the compressor wiring, then conduct a short circuit check.

P-U, P-V, P-W

N-U, N-V, N-W

Check between the P-N terminals.

Bring the tester probes in contact with the following

places on each te rminal.

- P: Power transistor P terminal,
- N: Power transistor N terminal,
- U: End of red harness to compressor

V: End of white harness to compressor

W: End of black or blue harness to compressor

Check for a power transistor short circuit.

- When you do not have a diagnostic checker for judging if the inverter is defective, measure between the terminals of the power transistor parts, judge whether the power transistor is defective or not.
- Disconnect the compressor, then measure with the controller incorporated.

Tes	ster	Normal values (Ω)				
Terminal (+)	Terminal (-)	Model 71	Models 100-140			
Р	Ν	0 -	Approx. 1 M			
N	Р	(Numerical value rises.)	Approx. 300-400			
Р	U	Several M				
Р	V	(Numerical	0			
Р	W	value rises.)				
N	U					
N	V	Approx. 650 k	Approx. 1.2 M			
N	W					
U	Р	Approx. 670 k				
V	Р	Approx. 4.4 M	Approx. 1.3 M			
W	Р	Approx. 4.4 M				
U	N	Approx. 650 k				
V	N	Approx. 4.8 M	0			
W	N	Approx. 4.9 M				

If the measured values range from $0 \sim$ several kW, there is a possibility that the elements are damaged, so replace the power transistor parts.

(7) Inverter checker for diagnosis of inverter output

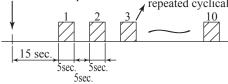
• Checking method

- (a) Setup procedure of checker.
- (i) Power OFF (Turn off the breaker).
- (ii) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.
- (iii) Connect the wires U (Red), V (White) and W (Black) of checker to the terminal of disconnected wires (U, V, W) from compressor respectively.
- (b) Operation for judgment.
- (i) Power ON after JSW10-4 on outdoor inverter PCB was turned ON.
- (ii) After 15 seconds since power has turned ON, LED start ON/OFF for 5 seconds cyclically and it repeats 10 times.
- (iii) Check ON/OFF status of 6 LED's on the checker.
- (iv) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Inverter PCB	Normal	Anomalous

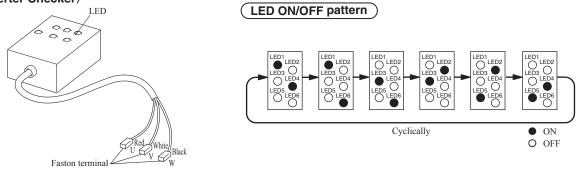
Power ON or start check operation

During this period, ON/OFF status of LED is repeated cyclically according to following pattern



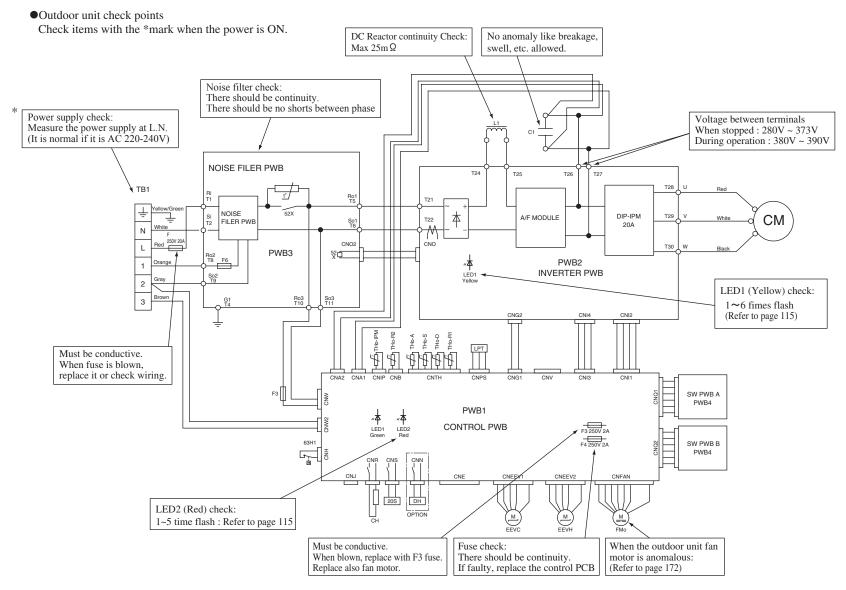
(v) Be sure to turn off JSW10-4 on outdoor inverter PCB, after finishing the check operation.

(Inverter Checker)



Connect to the terminal of the wires which are disconnected from compressor.

Model FDC71VNX

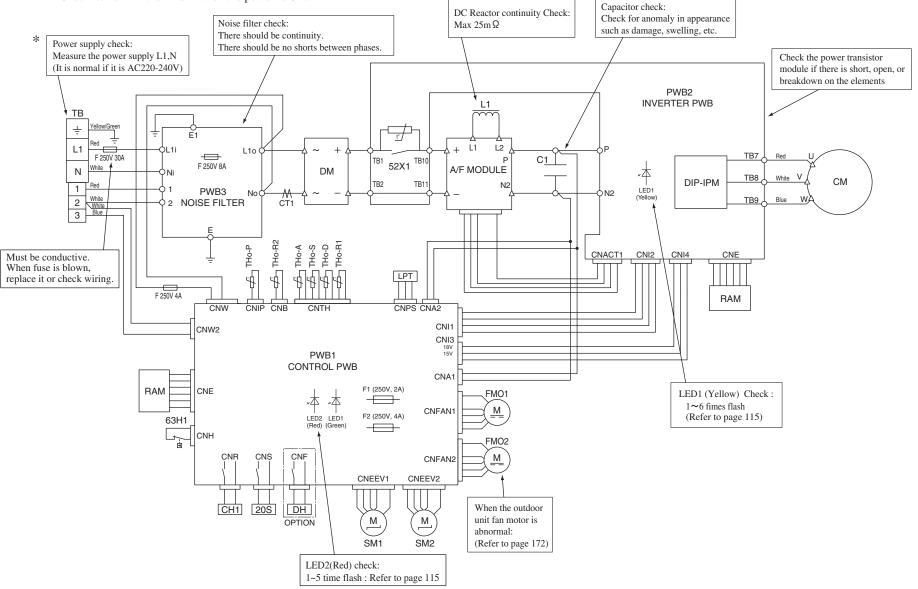


8

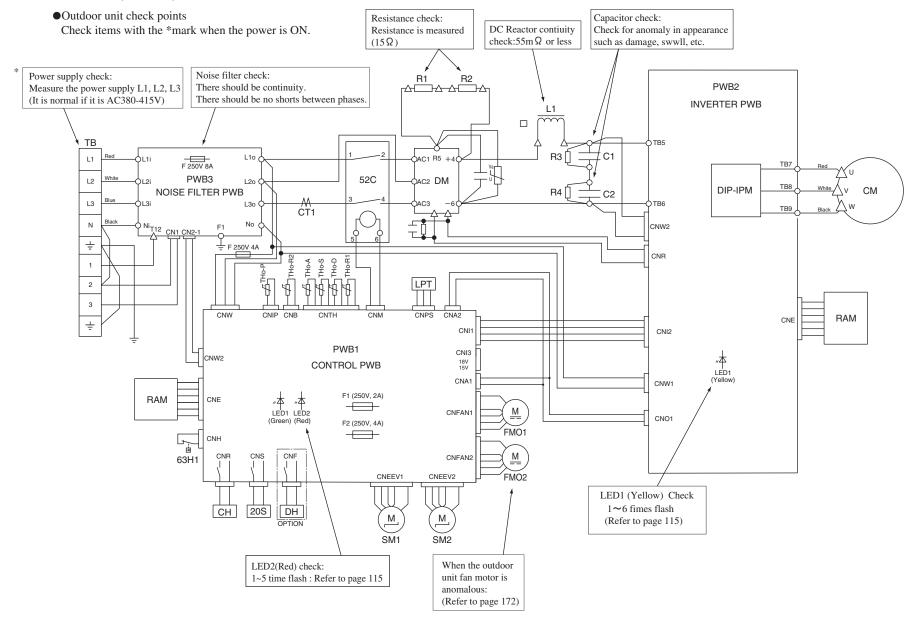
Models FDC100VNX,125VNX,140VNX

•Outdoor unit check points

Check items with the *mark when the power is ON.



FDC100VSX, 125VSX, 140VSX



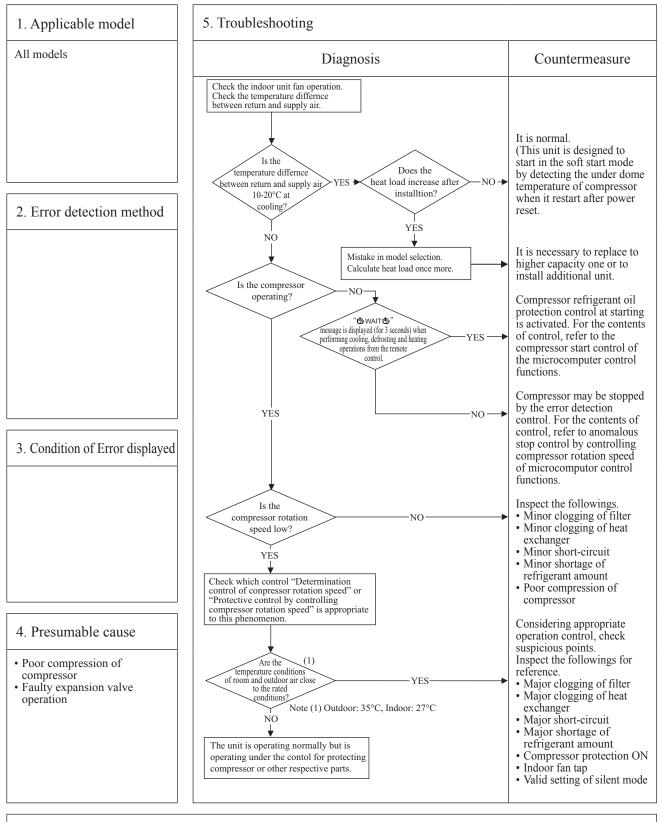
1.11.2 Troubleshooting flow (1) List of troubles

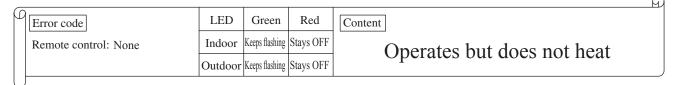
Remote control display	Description of trouble	Reference page
None	Operates but does not cool.	136
None	Operates but does not heat.	137
None	Earth leakage breaker activated	138
None	Excessive noise/vibration (1/3)	139
None	Excessive noise/vibration (2/3)	140
None	Excessive noise/vibration (3/3)	141
None	Power supply system error (Power supply to indoor control PCB)	142
None	Power supply system error (Power supply to remote control)	143
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	144
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	145
₿WAIT®	Communication error at initial operation	146-148
None	No display	149
E1	Remote control communication circuit error	150
E5	Communication error during operation	151
E6	Indoor heat exchanger temperature thermistor anomaly	152
E7	Return air temperature thermistor anomaly	153
E8	Heating overload operation	154
E9	Drain trouble	155
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	156
E16	Indoor fan motor anomaly	157
E19	Indoor unit operation check, drain motor check setting error	158
E20	Indoor fan motor rotation speed anomaly	159
E28	Remote control temperature thermistor anomaly	160
E35	Cooling overload operation	161
E36	Discharge pipe temperature error	162
E37	Outdoor heat exchanger temperature thermistor anomaly	163
E38	Outdoor air temperature thermistor anomaly	164
E39	Discharge pipe temperature thermistor anomaly	165
E40	High pressure error (63H1 activated)	166
E41	Power transistor overheat	167
E42	Current cut	168 · 169
E45	Communication error between inverter PCB and outdoor control PCB	170
E47	Inverter PCB A/F module anomaly (Model FDC71 only)	171
E48	Outdoor fan motor anomaly	172
E49	Low pressure error or low pressure sensor anomaly	173 · 174
E51	Inverter and fan motor anomaly	175
E53	Suction pipe temperature thermistor anomaly	176
E54	Low pressure sensor anomaly	177
E57	Insufficient refrigerant amount or detection of service valve closure	178
E59	Compressor startup failure	179 · 180

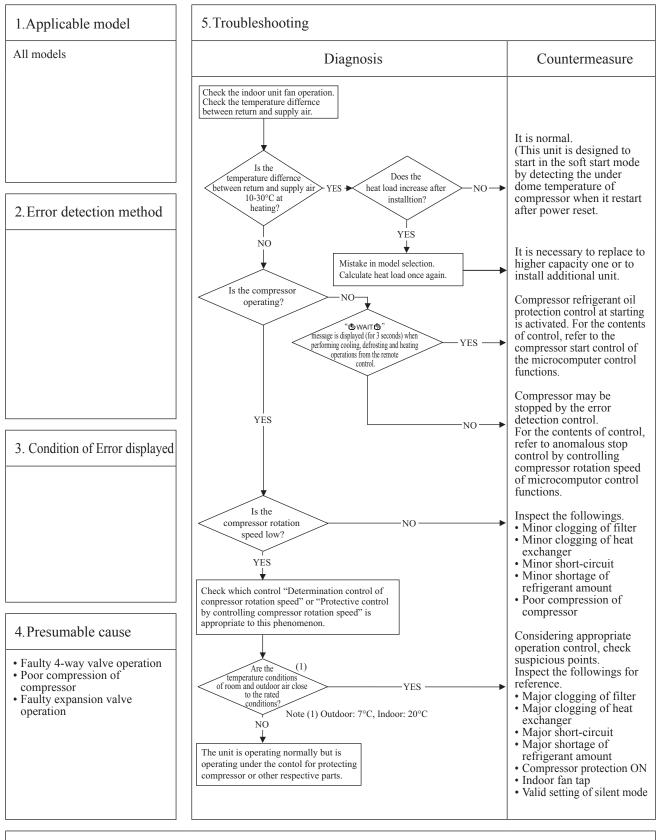
M

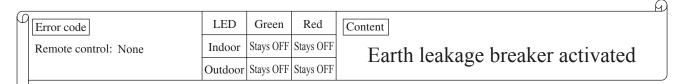
(2) Troubleshooting

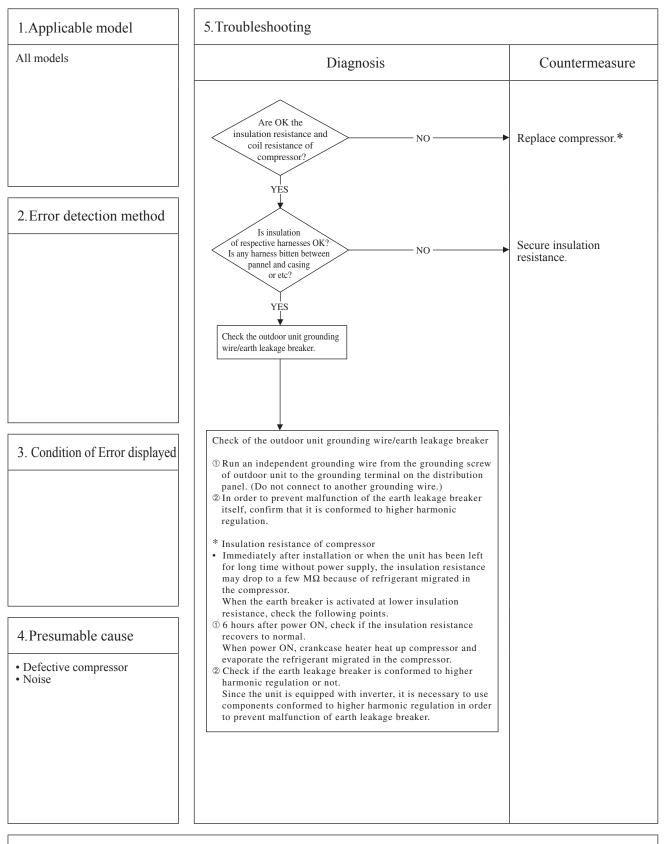
β	Error code	LED	Green	Red	Content
	Remote control: None	Indoor	Keeps flashing	Stays OFF	Operates but does not cool
		Outdoor	Keeps flashing	Stays OFF	Operates but does not coor
L)				



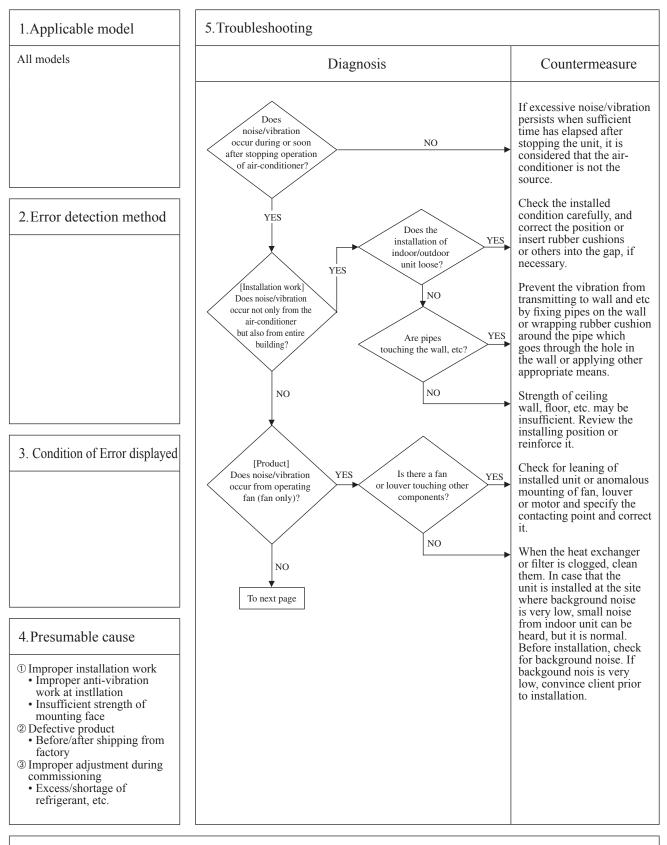






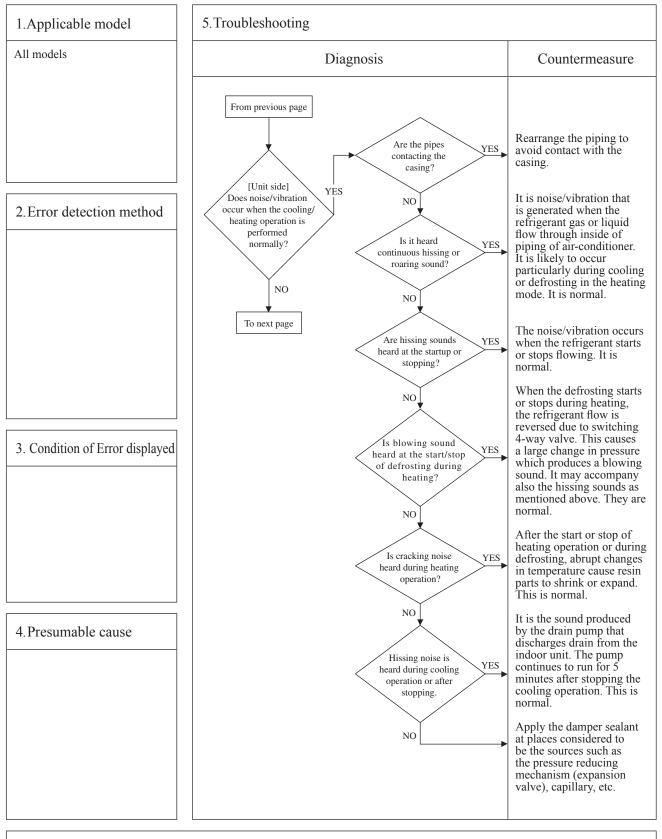


ſ	Error code	LED	Green	Red	Content
	Remote control: None	Indoor	_	-	Excessive noise/vibration (1/3)
		Outdoor	-	-	Excessive noise/violation (1/5)
L	J				

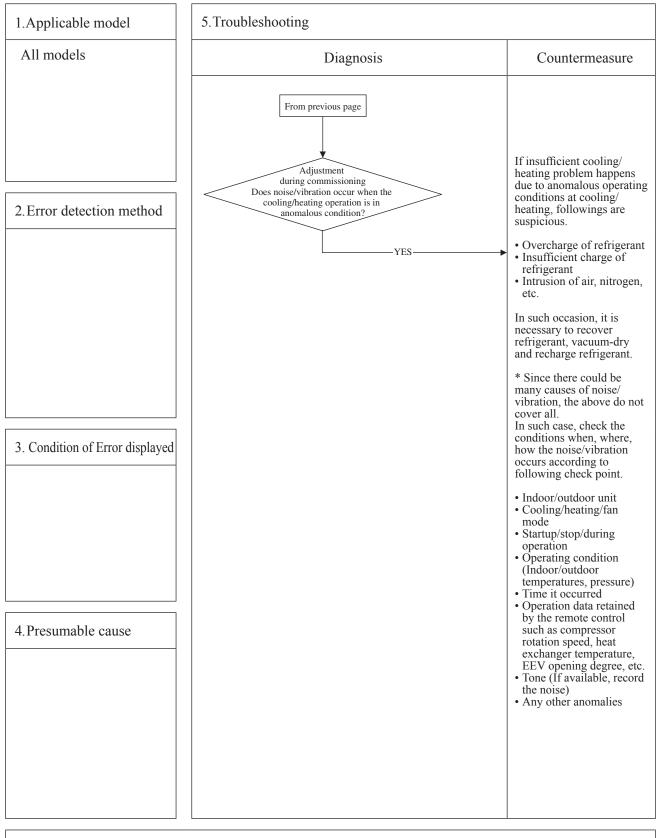


Note:

						Ð
ſ	Error code	LED	Green	Red	Content	
	Remote control: None	Indoor	_	_	Excessive noise/vibration (2/3)	
		Outdoor	-	_	Excessive noise/vioration (2/5)	J
L	<u>, </u>					

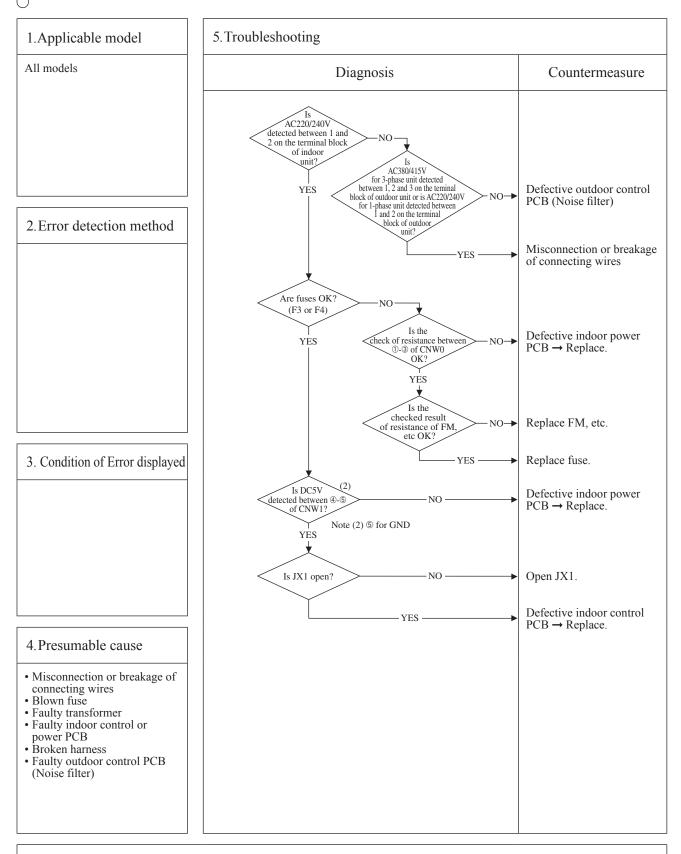


						A
F	Error code	LED	Green	Red	Content	
	Remote control: None	Indoor	_	-	Excessive noise/vibration (3/3)	
		Outdoor	_	-		
l						



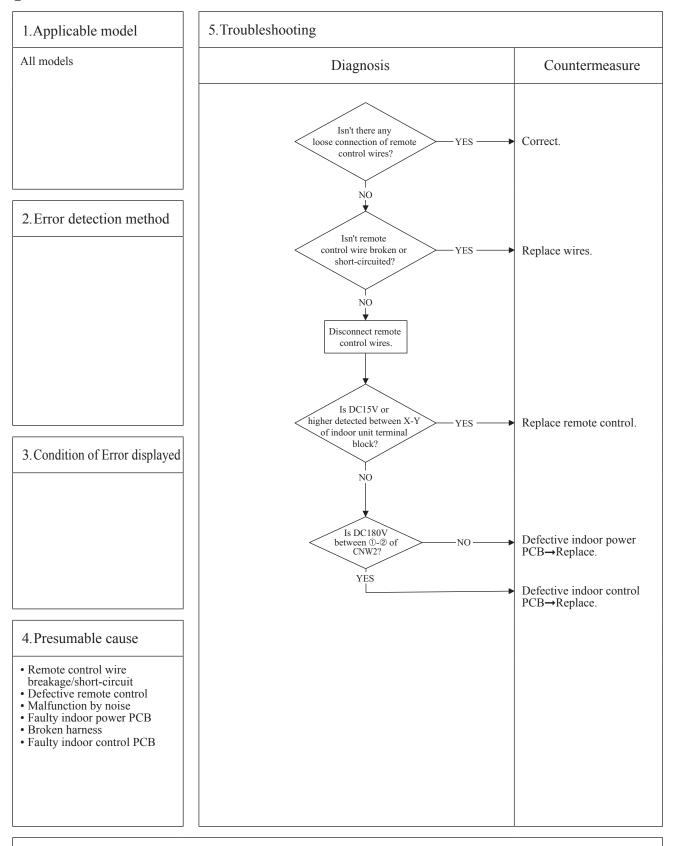
M

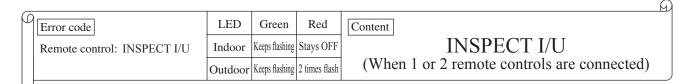
β	Error code	LED	Green	Red	Content Power supply system error
	Remote control: None	Indoor	Stays OFF	Stays OFF	(Dower supply to indeer control DCD)
		Outdoor	Stays OFF	2 time flash	(Power supply to indoor control PCB)

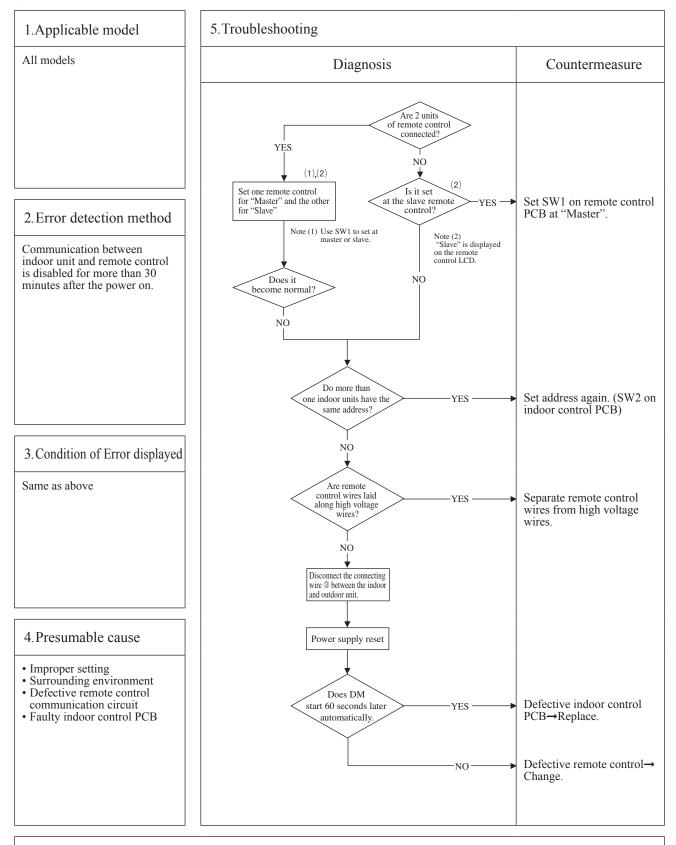


D

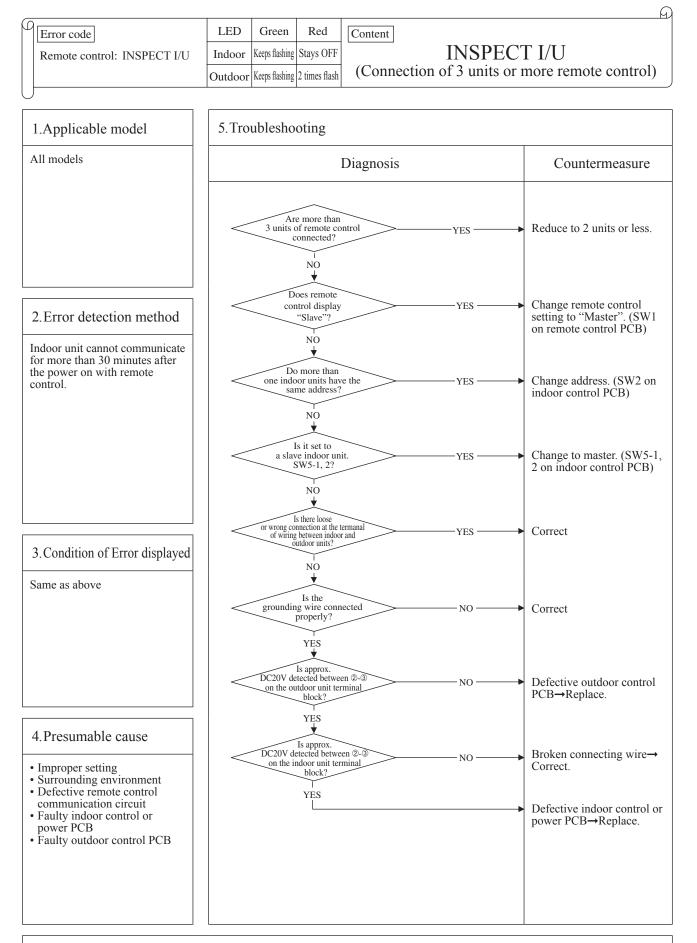
9	Error code	LED	Green	Red	Content Power supply system error
	Remote control: None	Indoor	Keeps flashing	3 times flash	(Power supply to remote control)
		Outdoor	Keeps flashing	Stays OFF	(I ower suppry to remote control)



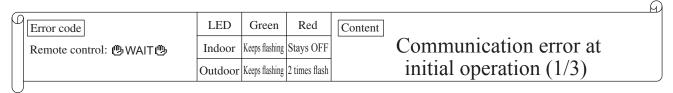


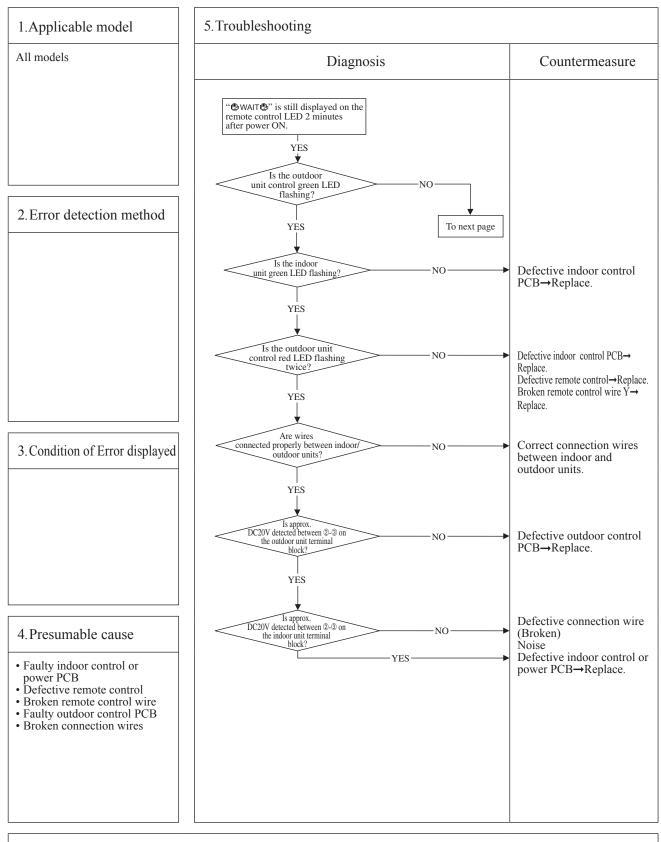


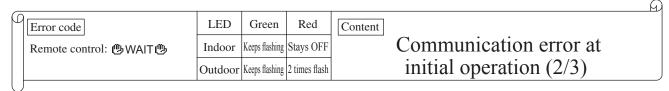
Note: If any error is detected 30 minutes after displaying "WAIT" on the remote control, the display changes to "INSPECT I/U".

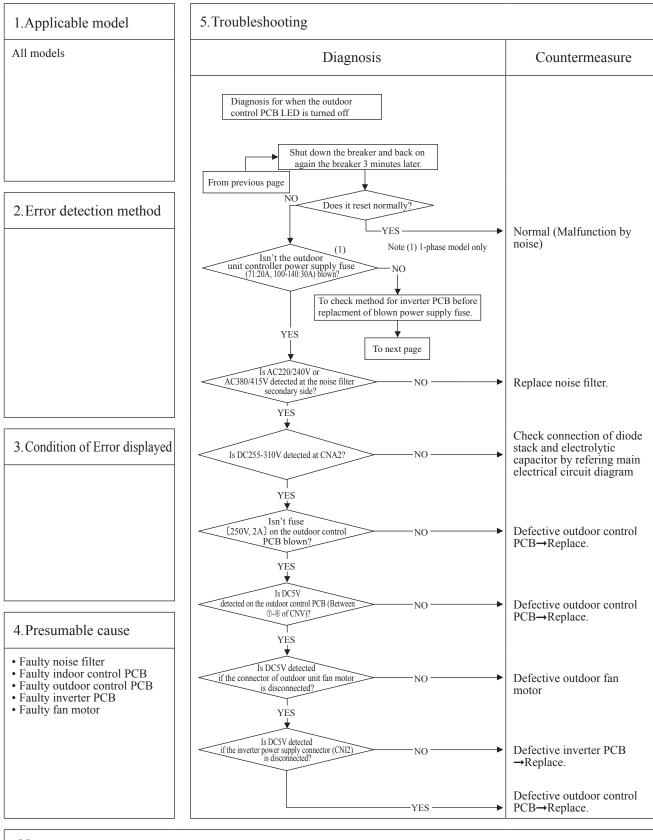


Note: If any error is detected 30 minutes after displaying "WAIT®" on the remote control, the display changes to "INSPECT I/U".

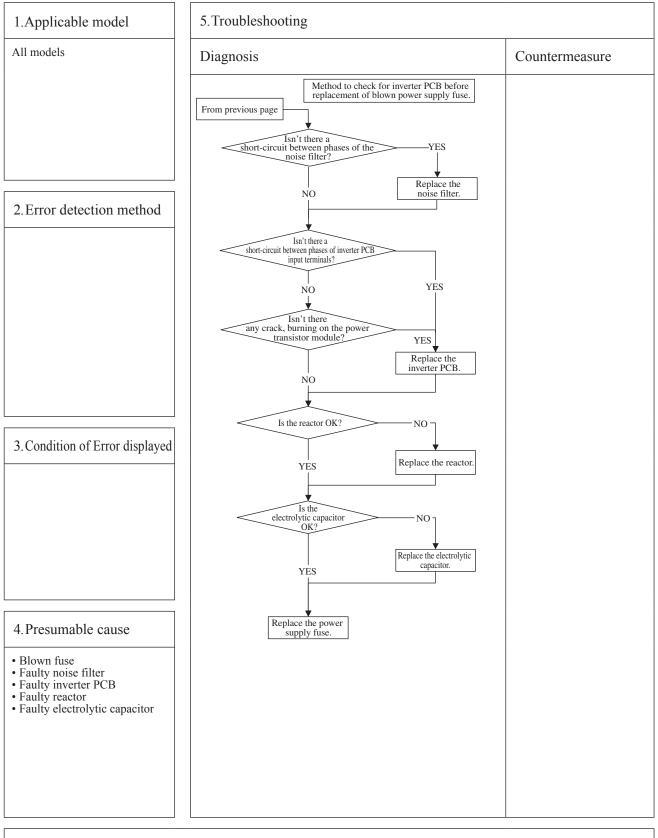


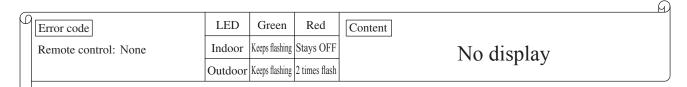


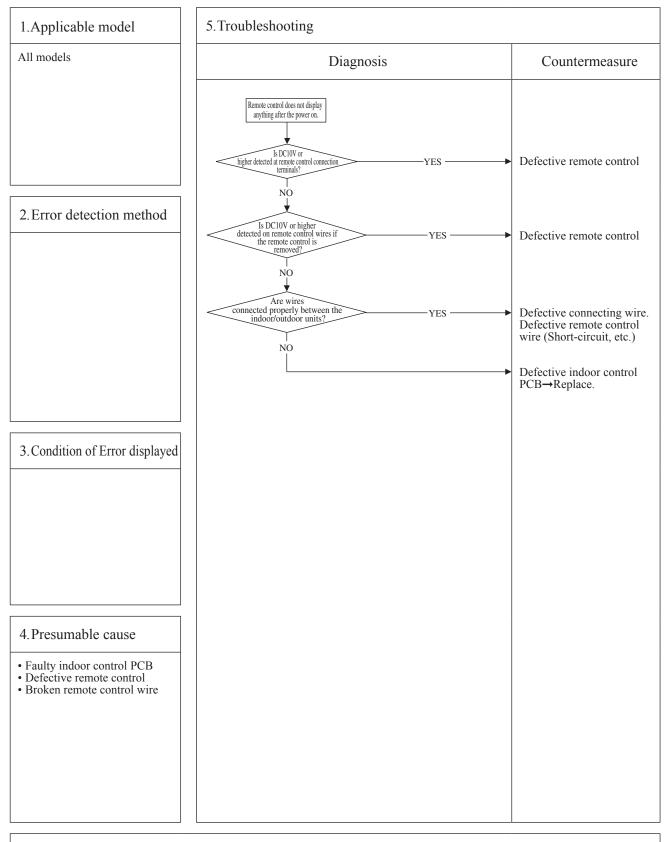


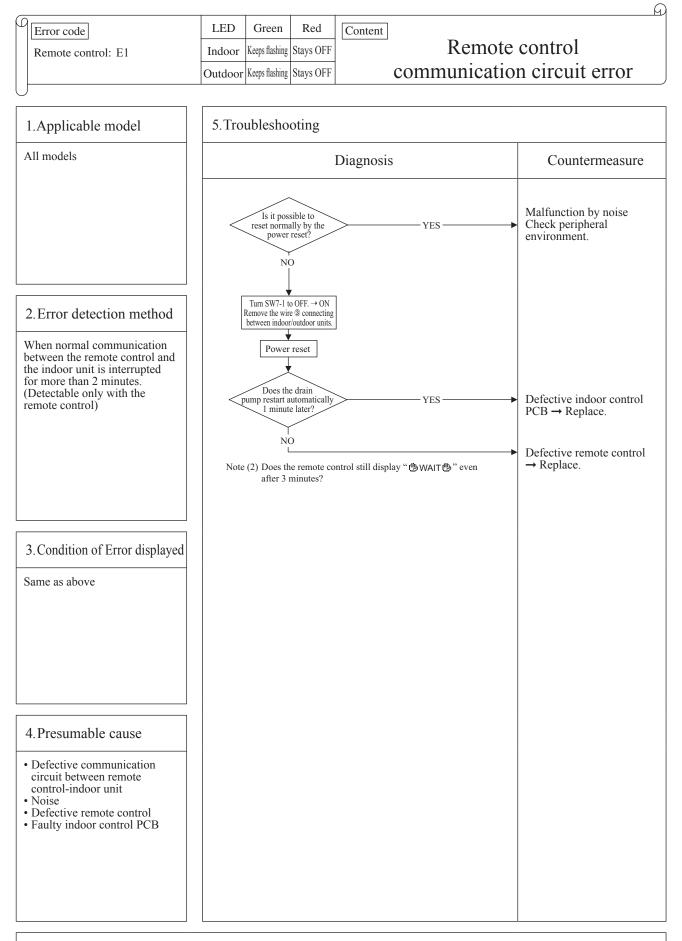


_							9
μ	Error code	LED	Green	Red	Content		
	Remote control: "WAIT	Indoor	Keeps flashing	Stays OFF		Communication error at	
		Outdoor	Keeps flashing	2 times flash		initial operation $(3/3)$	J
L)						

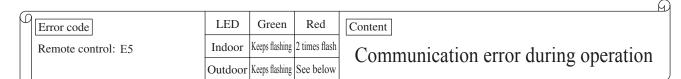


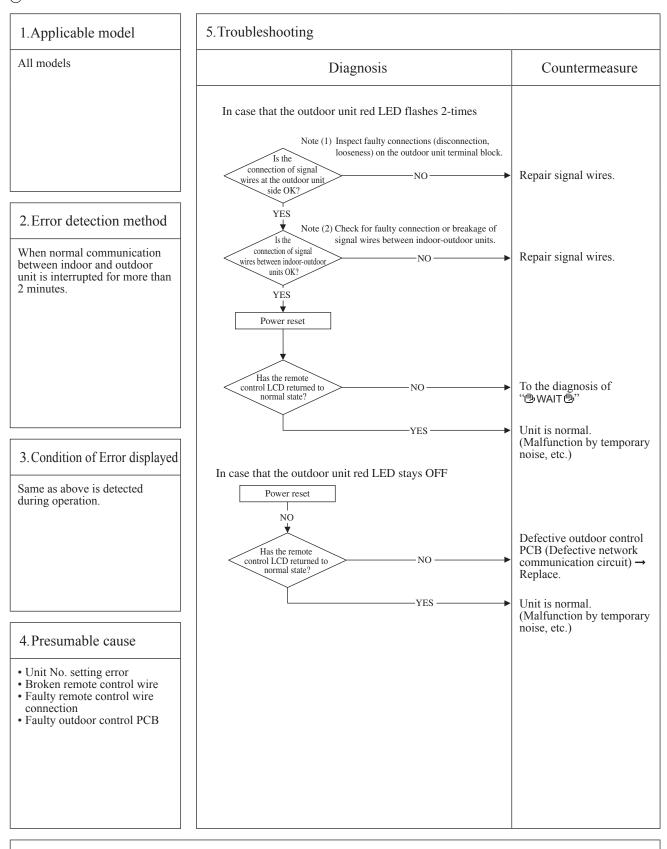




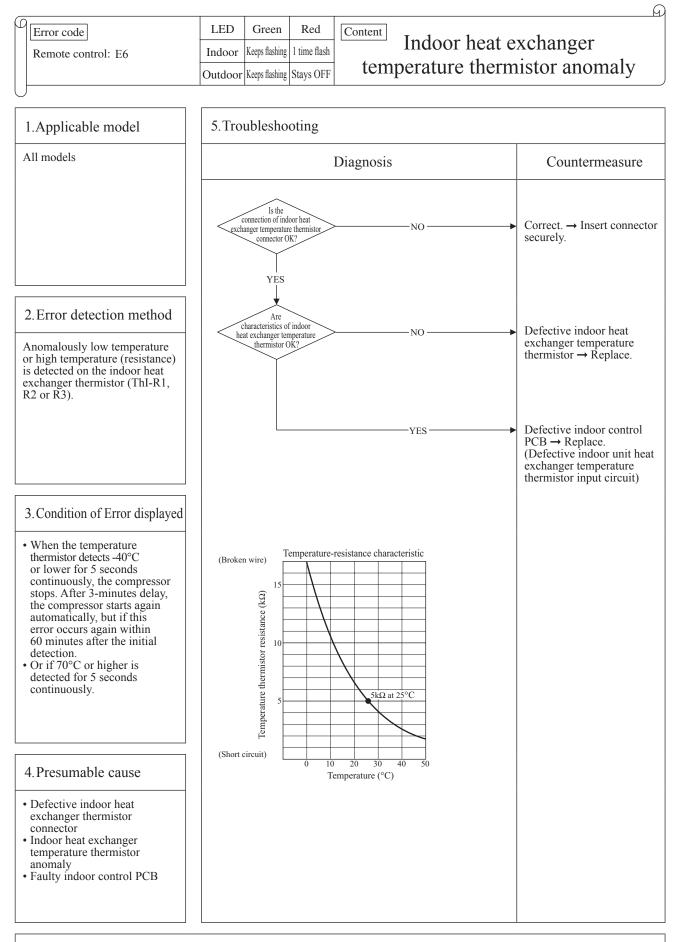


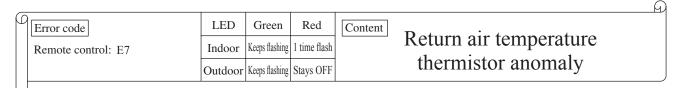
Note: If the indoor unit cannot communicate normally with the remote control for 180 seconds, the indoor unit PCB starts to reset automatically.

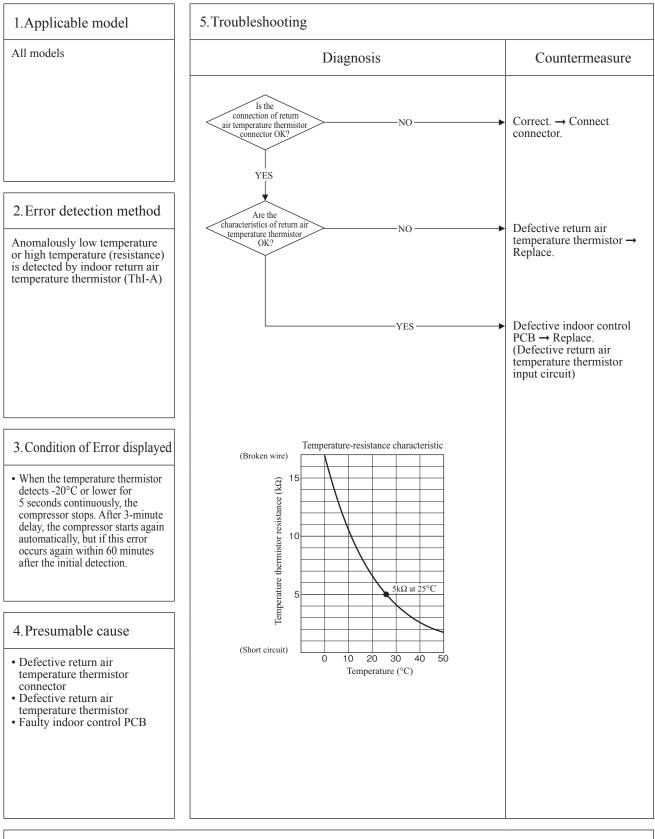


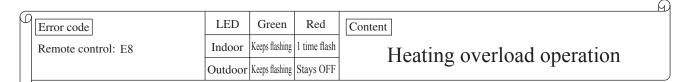


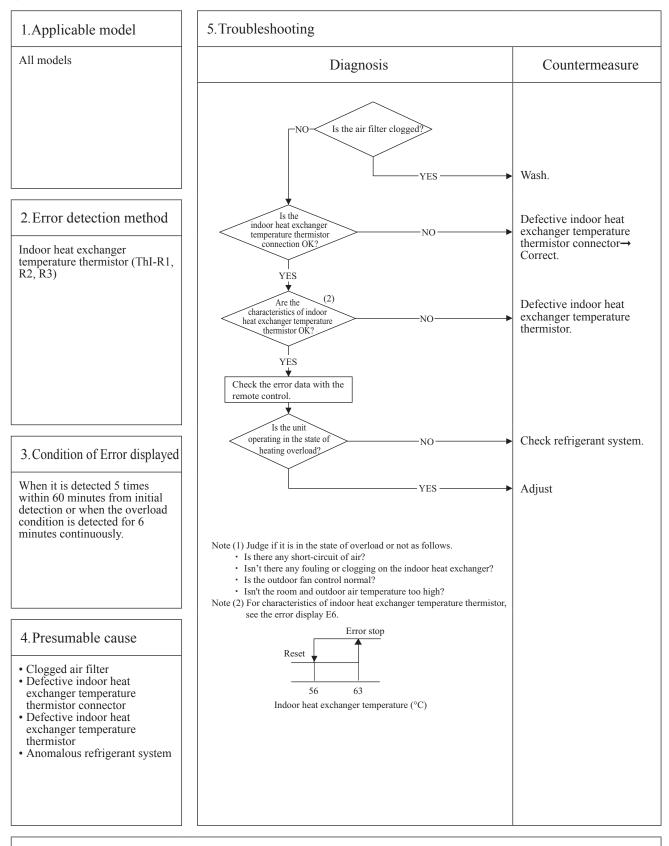
Note: Pressing the pump-down switch cancels communications between indoor and outdoor unit so that "communication error-E5" is displayed on indoor unit and remote control, but it is normal.





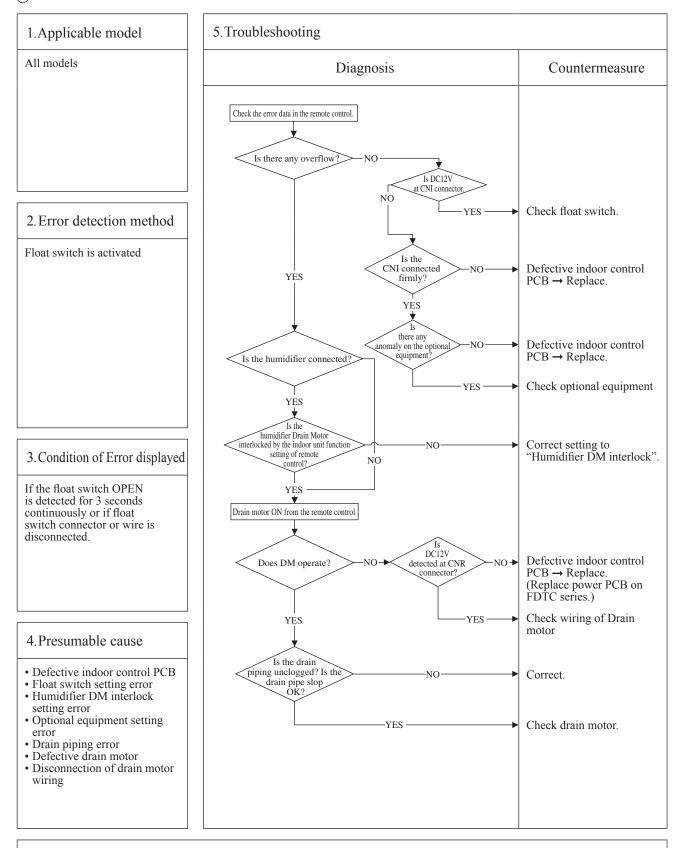






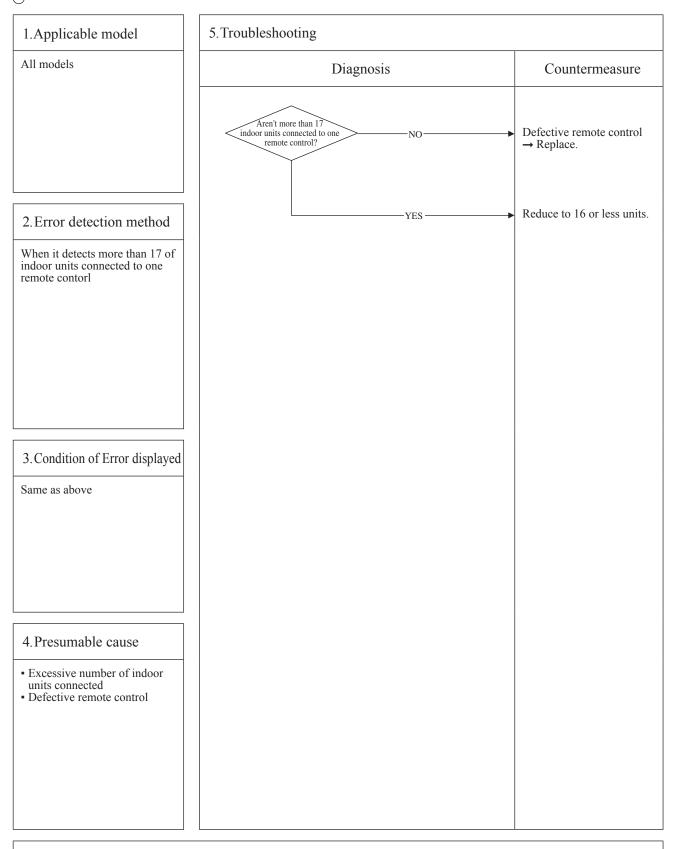
Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (ThI-R) in order to control high pressure.



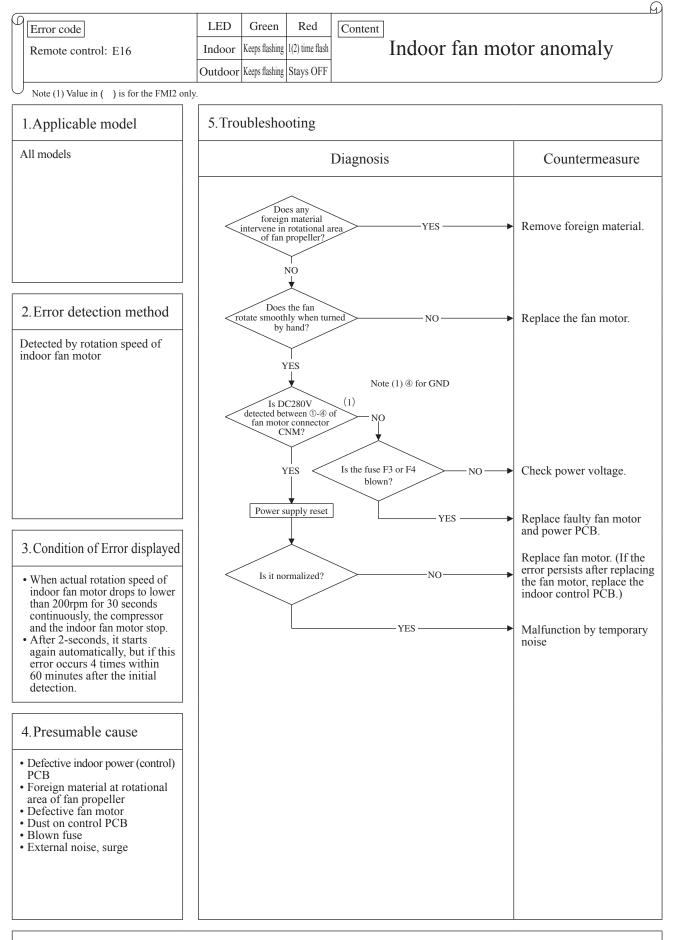


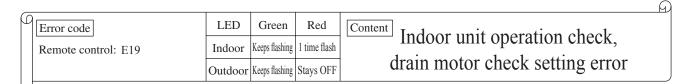
Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

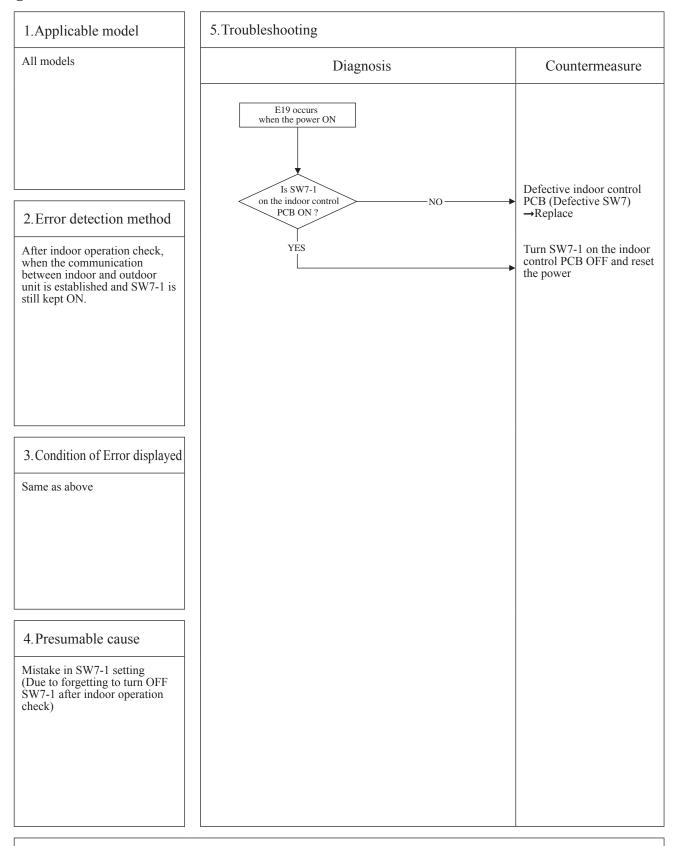
					A
ſ	Error code	LED	Green	Red	Content Excessive number of connected
	Remote control: E10	Indoor	Keeps flashing	Stays OFF	
		Outdoor	Keeps flashing	Stays OFF	by controlling with one remote control

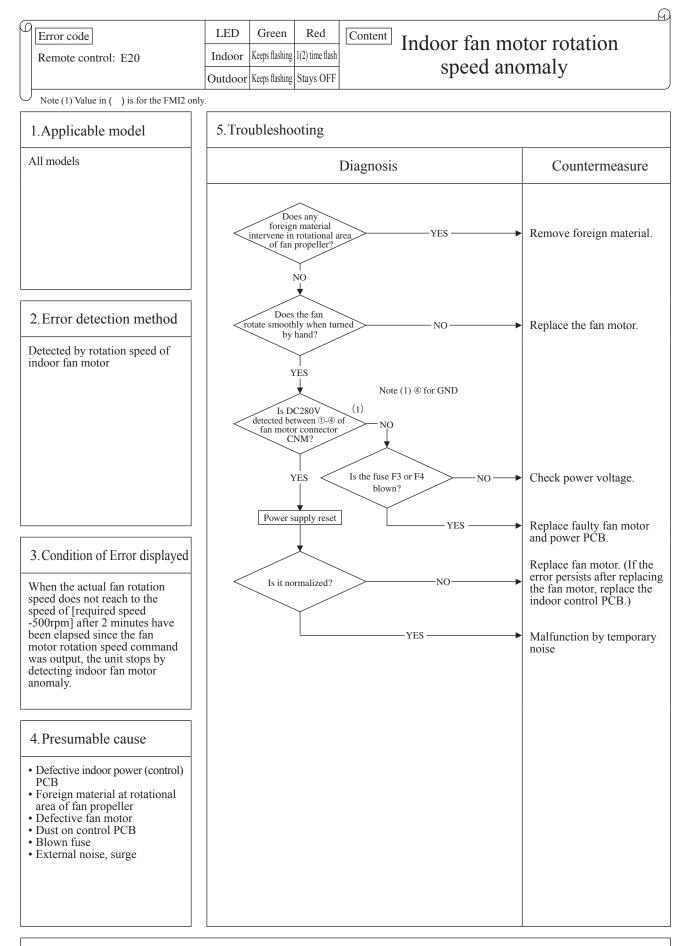


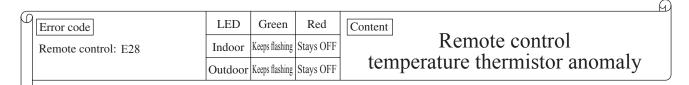
'12 • PAC-T-178

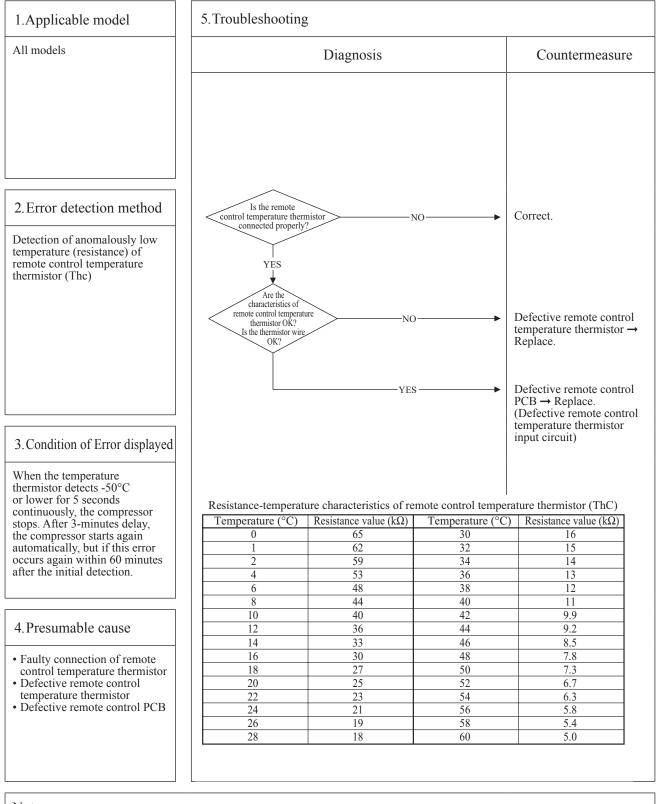




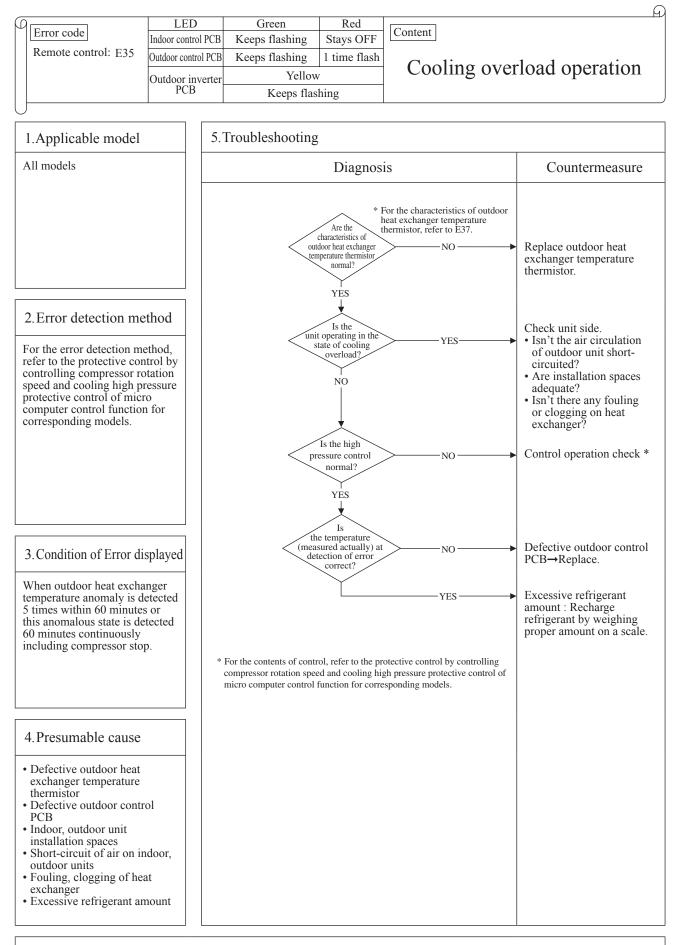


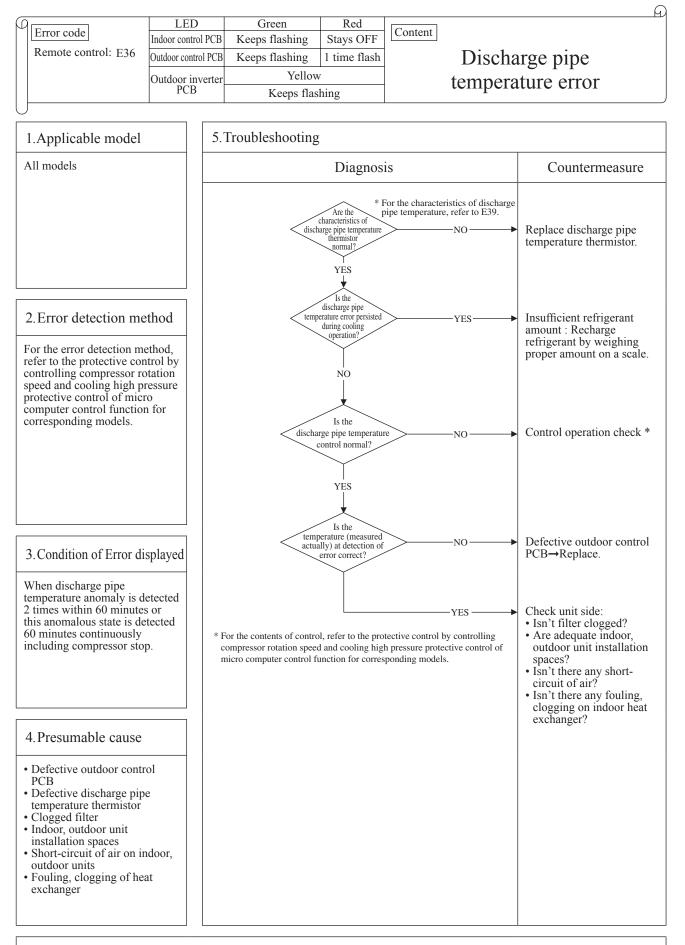


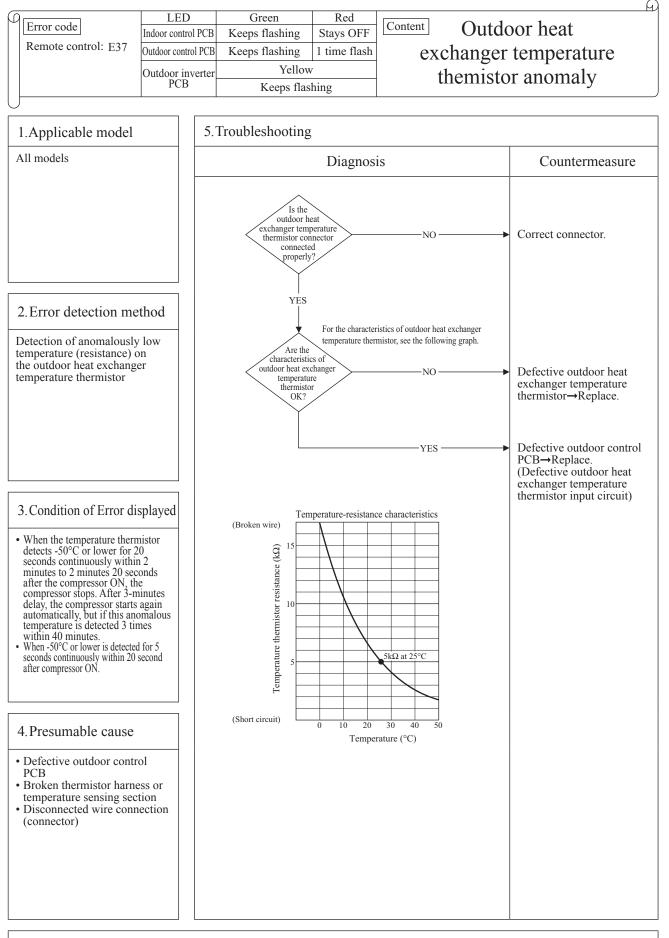


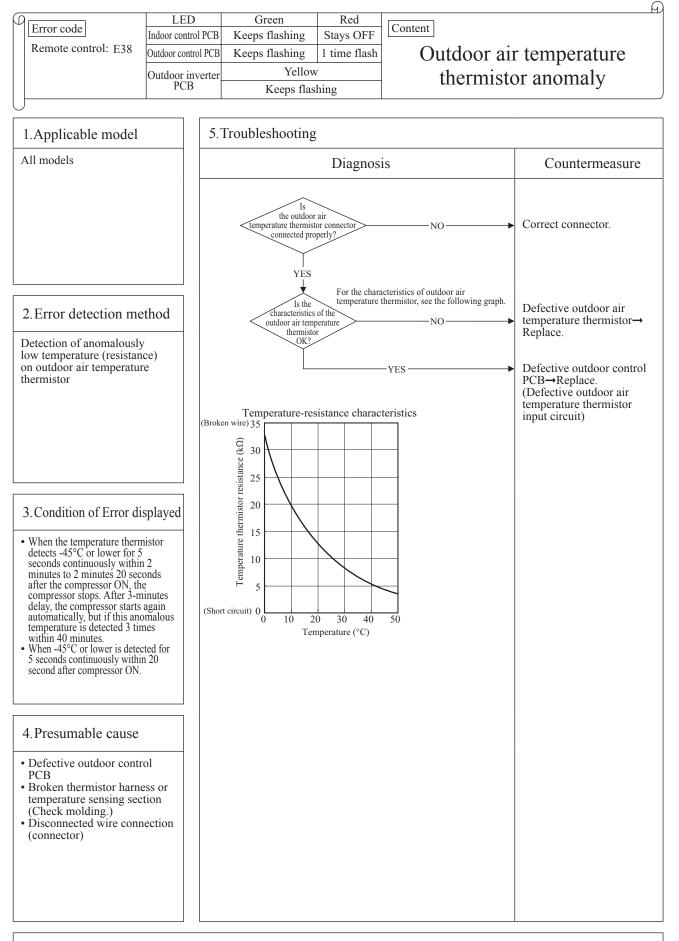


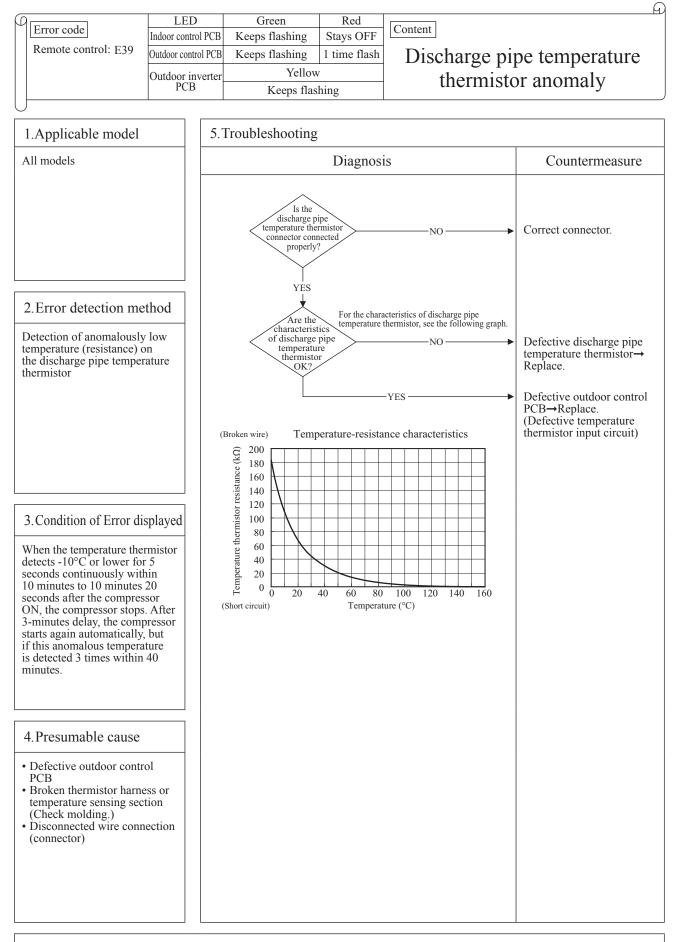
Note: After 10 seconds has passed since remote control thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote control thermistor to indoor return air temperature 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.

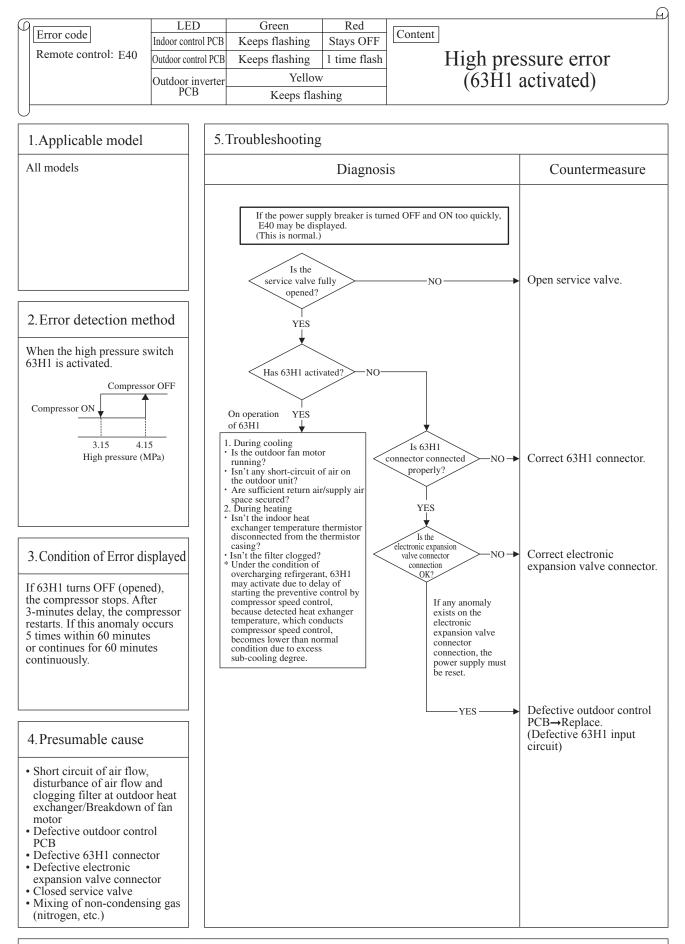




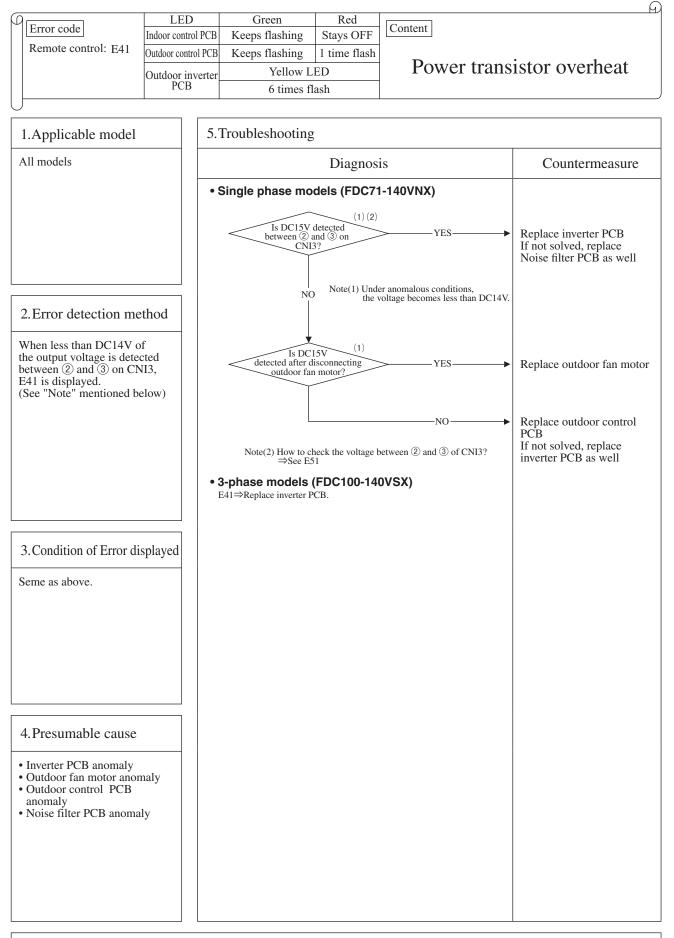






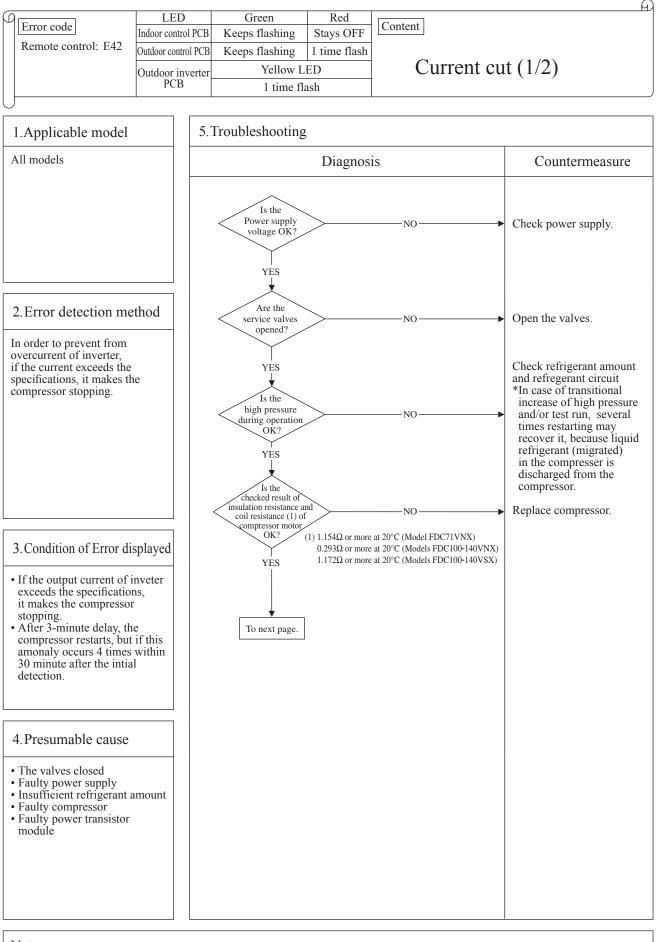


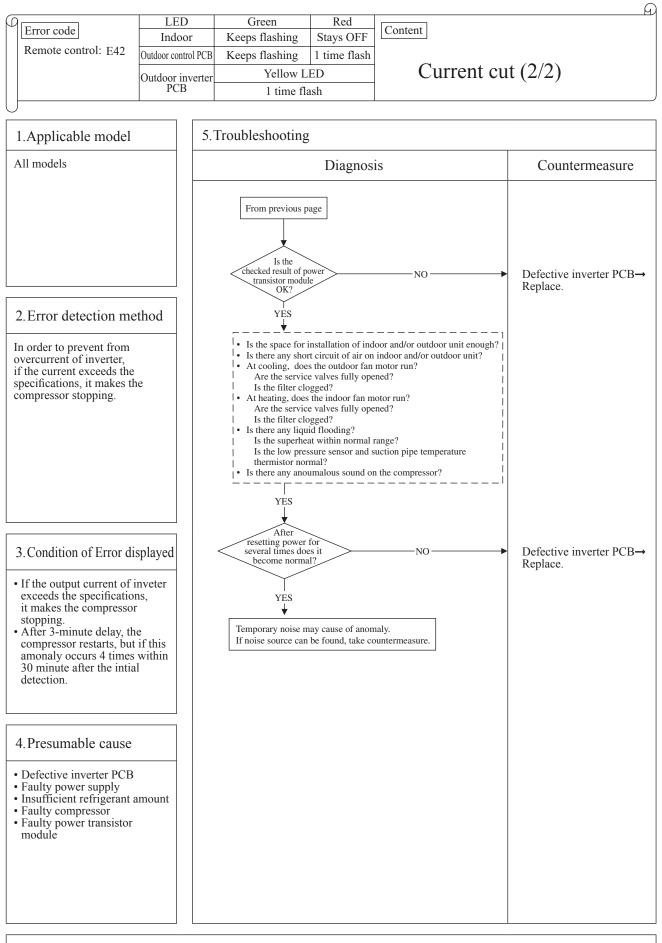
Note: In the protective control range for compressor startup (initial startup after power ON), even if 63H1 is activated only once (63H1turns OFF), immediately the error is displayed.

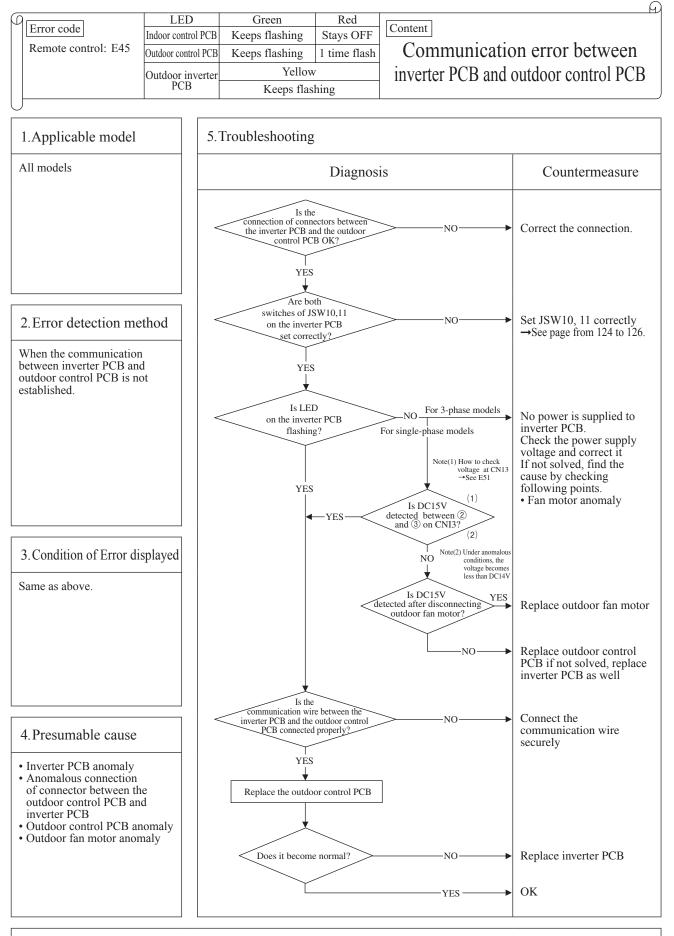


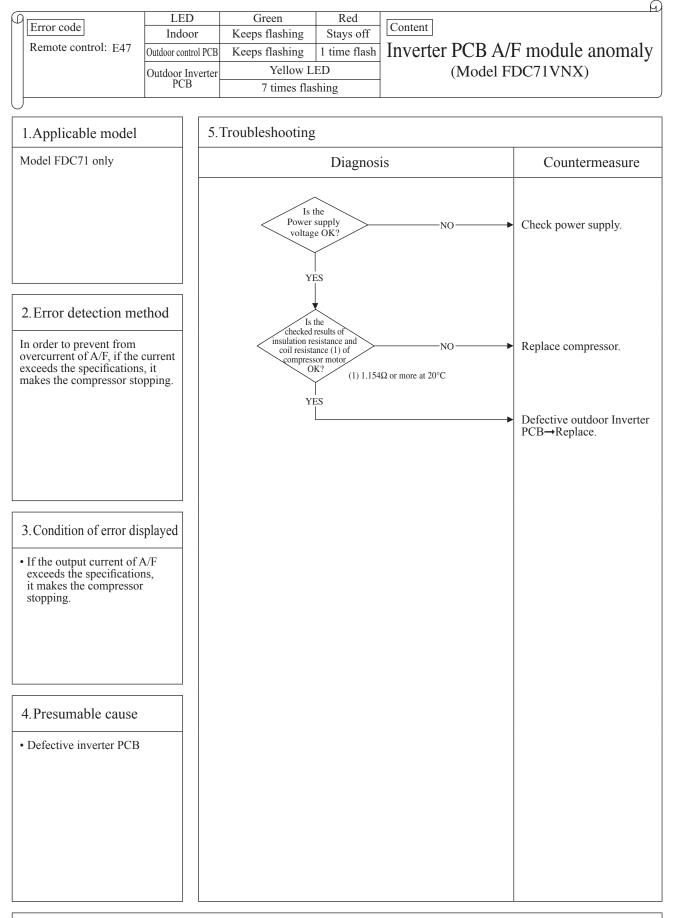
Note: The "Single phase models" of inverter PAC have no function to output the signal for the power transistor overheat. However since the power source for the power transistor and the outdoor fan motor is in the same line, when the anomaly of the outdoor fan motor occurs, E41 is displayed.

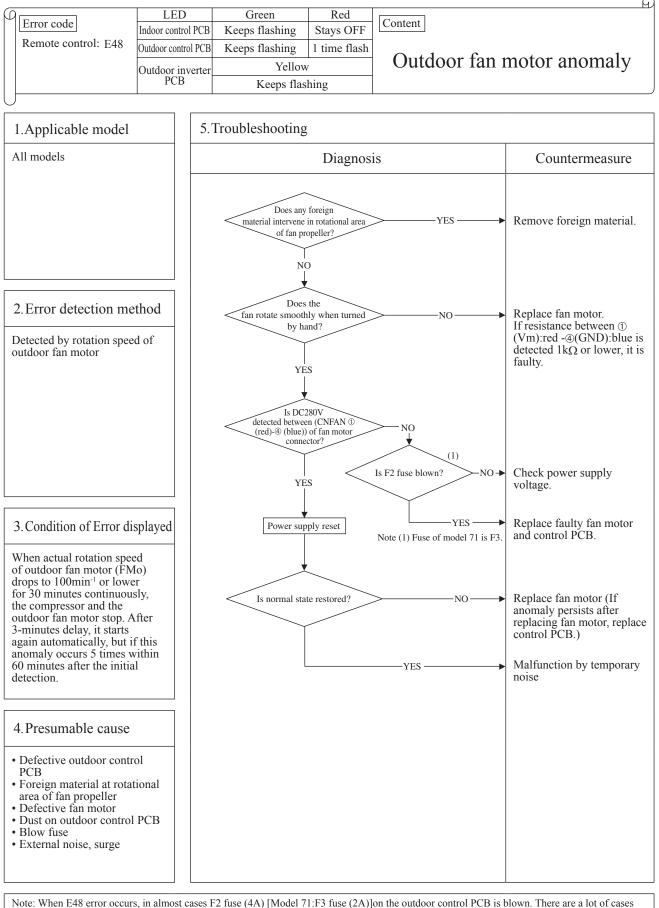
'12 • PAC-T-178



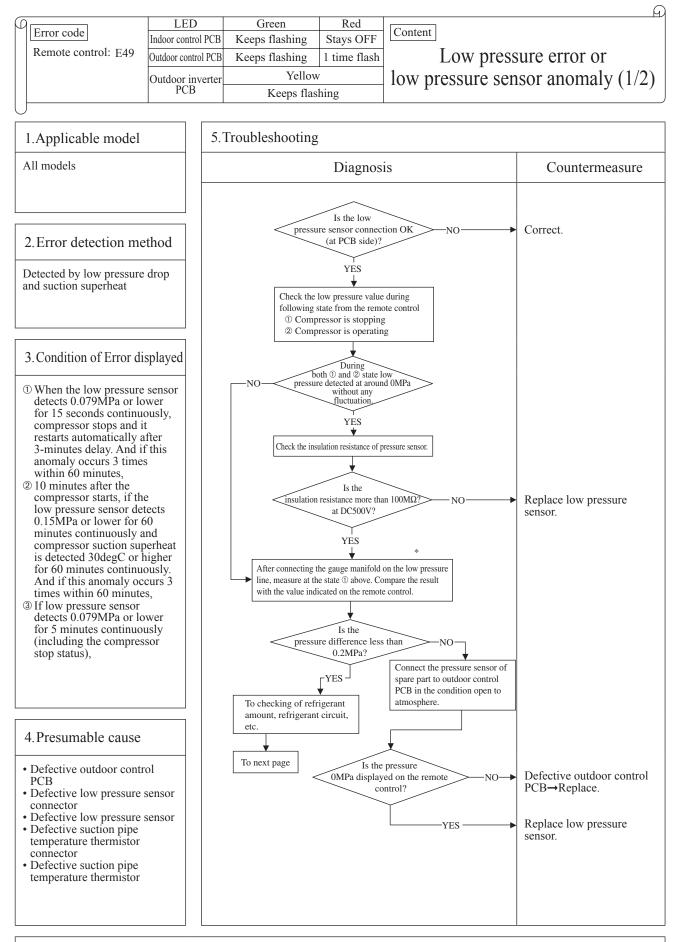




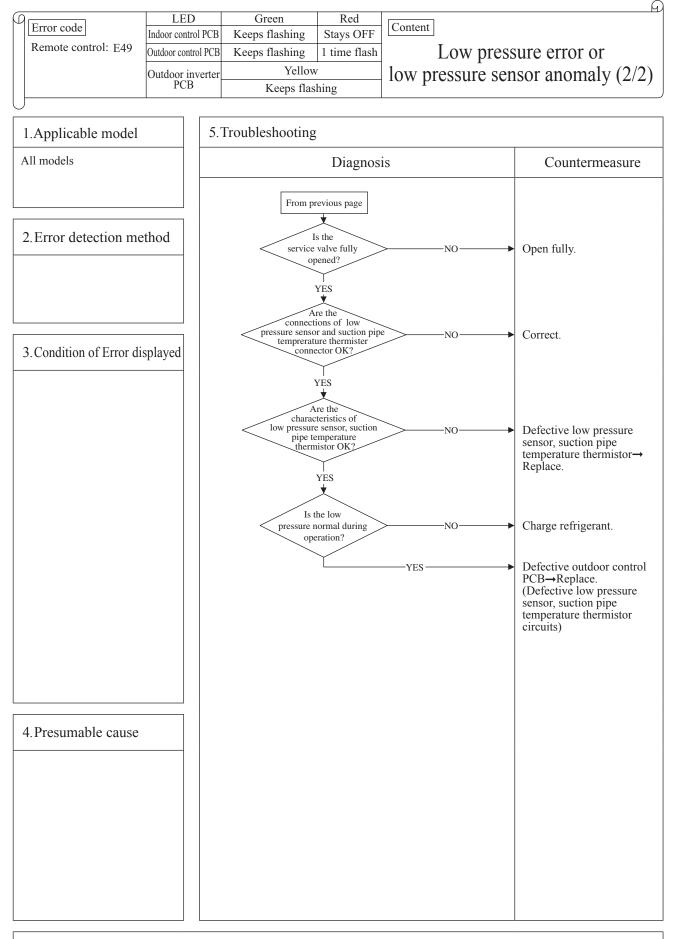


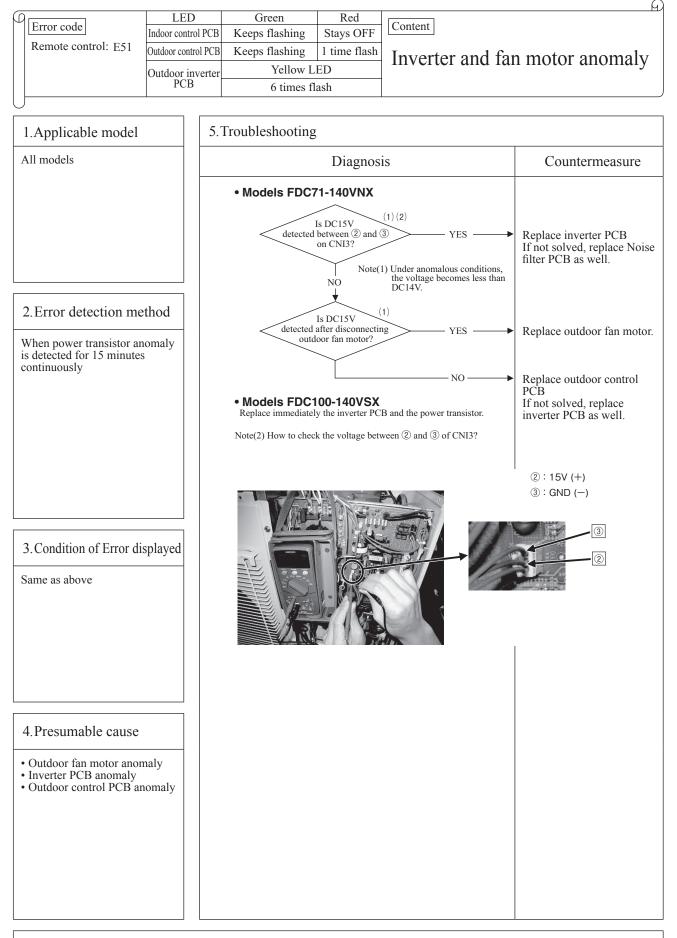


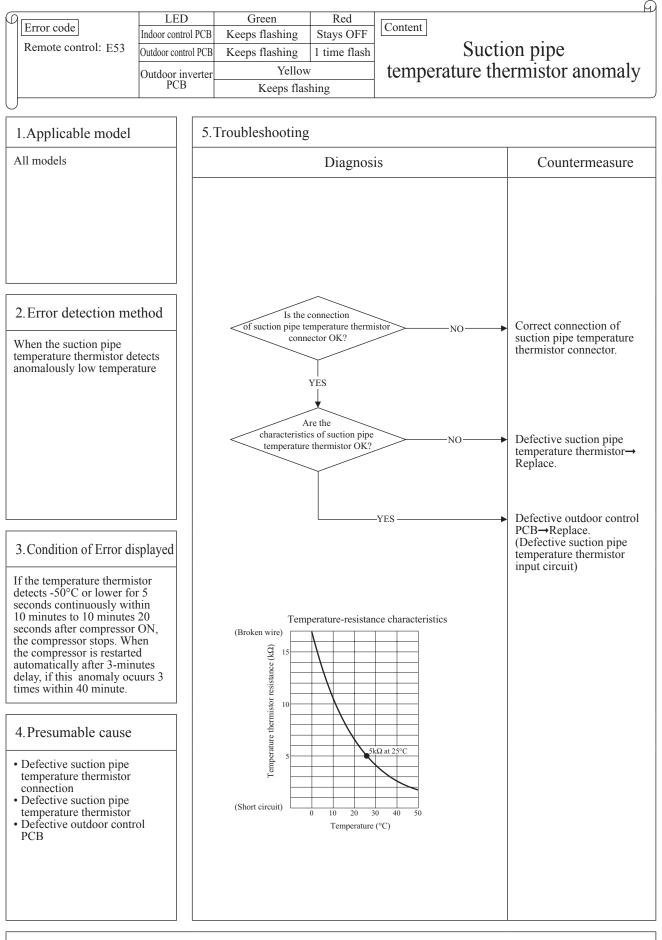
Note: When E48 error occurs, in almost cases F2 fuse (4A) [Model 71:F3 fuse (2A)]on the outdoor control PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor control PCB (or fuse) is replaced,, another trouble (*1) could 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.) *1 The error which does not seem to relate E48 may occur like as "<code>WWAIT</code>", Stay OFF of LED on outdoor control PCB, inverter communication error (E45) and etc.

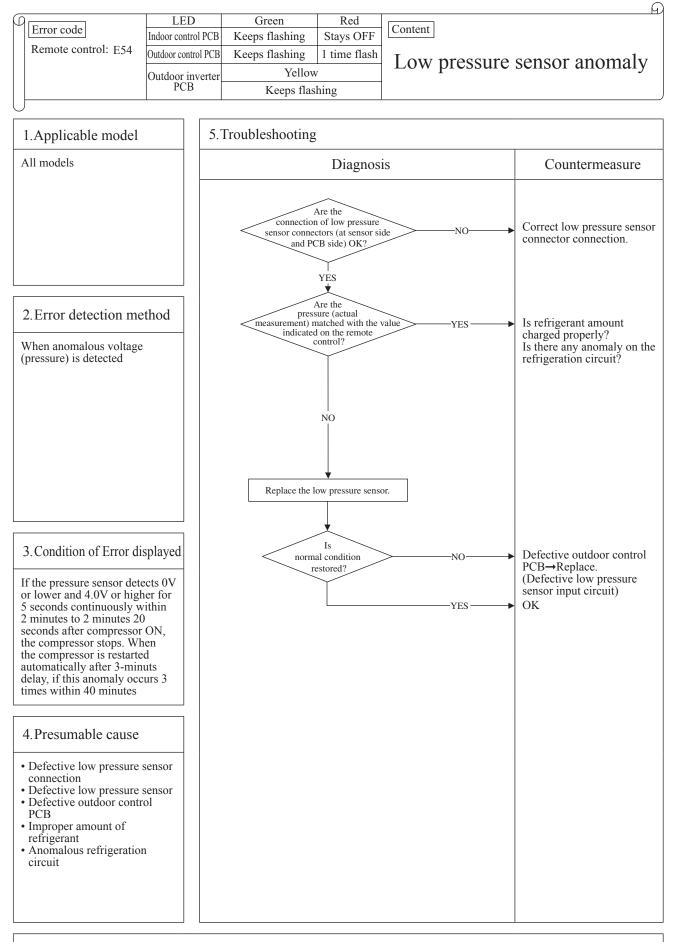


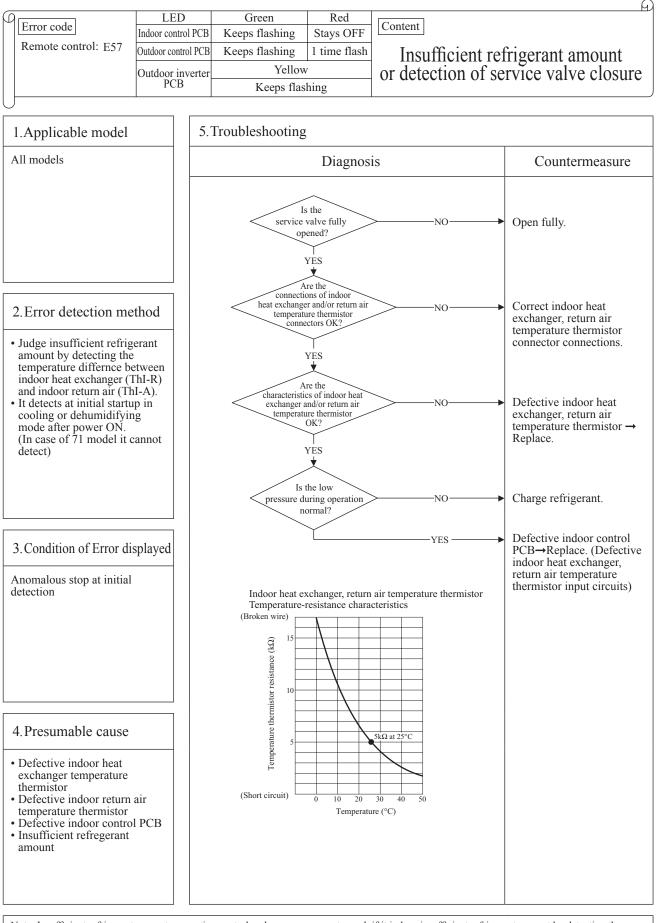
Note: * Connect the gauge manifold to the service valve check joint during cooling, or connect it to the check joint at internal piping of outdoor unit during heating.



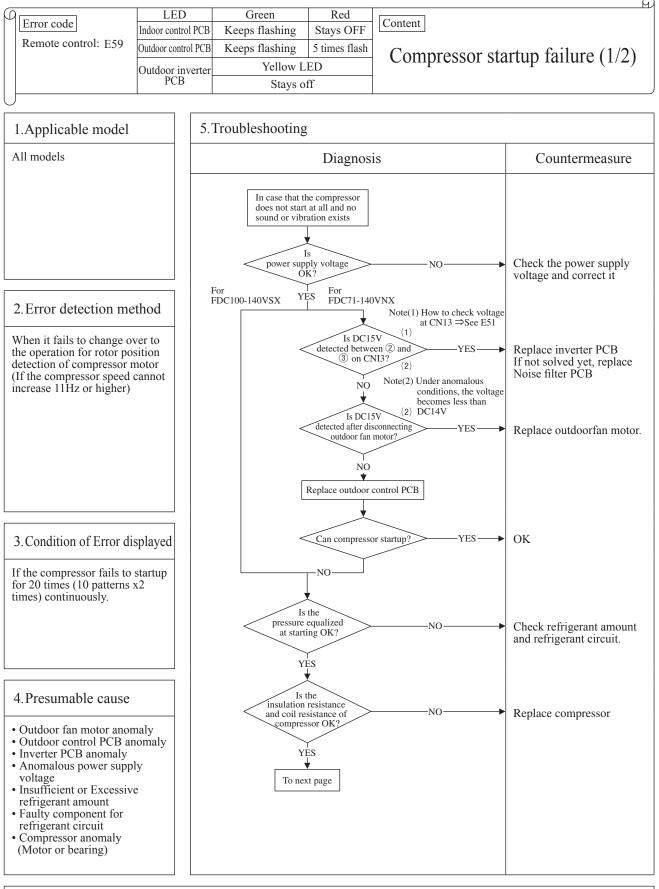








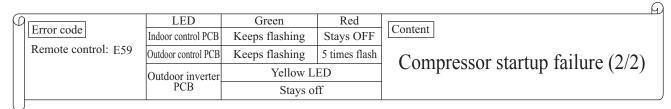
Note: Insufficient refrigerant amount preventive control makes compressor stopped, if it judges insufficient refrigerant amount by detecting the temperature difference between indoor heat exchanger (ThI-R) and return air temperature (ThI-A) for 1 minute after compressor ON in cooling or dehumidifying mode and for 9 minutes after compressor ON in heating mode. [in cooling mode: (ThI-A)-(ThI-R)>4degC, in heating mode: (ThI-R)-(ThI-A)-(ThI-A)-4degC]

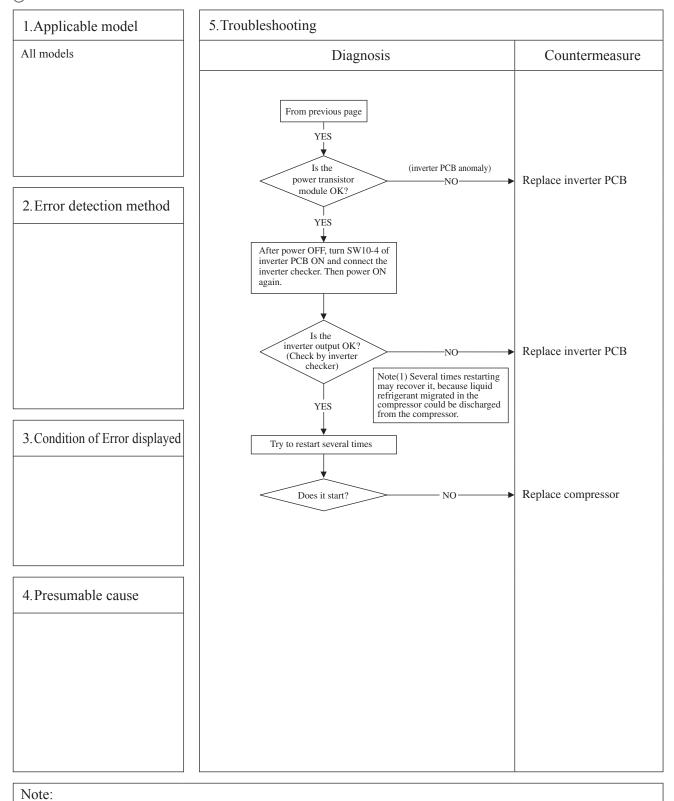


Note: Insulation resistance

The unit is left for long period without power supply or soon after installation, insulation resistance may decrease to several M Ω or lower due to the liquid refrigerant migrated in the refrigerant oil in compressor. If the electric leakage breaker is activated due to low insulation resistance, check followings. ① Check whether the insulation resistance can recover or not, after 6 hours has passed since power ON. (By energize the crankcase heater, liquid refrigerant migrated in the refrigerant oil in compressor can be evaporated)

© Check whether the electric leakage breaker conforms to high-harmonic specifications (As inverter PAC units has inverter, in order to prevent from improper operation, be sure to use the breaker of high-harmonic type)





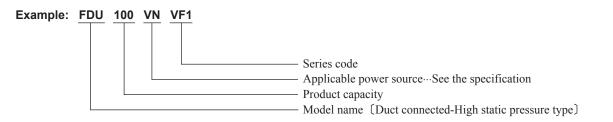
2 MICRO INVERTER CONTENTS

2.1 SPECIFICATIONS	
2.2 EXTERIOR DIMENSIONS	
(1) Indoor units	
(2) Outdoor units	
(3) Remote control (Option parts)	192
2.3 ELECTRICAL WIRING	195
(1) Indoor units	195
(2) Outdoor units	196
2.4 NOISE LEVEL	
2.5 CHARACTERISTICS OF FAN	
2.6 PIPING SYSTEM	202
2.7 RANGE OF USAGE & LIMITATIONS	
2.8 SELECTION CHART	
2.8.1 Capacity tables	
2.8.2 Correction of cooling and heating capacity in relation to air flow rate control (fan speed)	210
2.8.3 Correction of cooling and heating capacity in relation to one way length of refrigerant piping	210
2.8.4 Height difference between the indoor unit and outdoor unit	210
2.9 APPLICATION DATA	211
2.9.1 Installation of indoor unit	211
2.9.2 Electric wiring work installation	217
2.9.3 Installation of wired remote control (option)	221
2.9.4 Installation of outdoor unit	235
2.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER	242
2.10.1 Remote control	242
2.10.2 Operation control function by the wired remote control	245
2.10.3 Operation control function by the indoor control	248
(1) Auto operation	248
(2) Operations of functional items during cooling/heating	
(3) Dehumidifying operation	249
(4) Timer operation	
(5) Remote control display during the operation stop	251
(6) Hot start (Cold draft prevention at heating)	251
(7) Hot keep	251
(8) Thermostat operation	
(9) Filter sign	
(10) Compressor inching prevention control	
(11) Drain pump control	254
(12) Drain motor (DM) control	

(13)	Operation check/drain pump test run operation mode	254
(14)	Cooling, dehumidifying frost protection	255
(15)	Heating overload protection	255
(16)	Anomalous fan motor	255
(17)	Plural unit control - Control of 16 units group by one remote control	256
(18)	High ceiling control	256
(19)	Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection	256
(20)	External input/output control (CnT or CnTA)	257
(21)	Operation permission/prohibition	258
(22)	Selection of cooling/heating external input function	260
(23)	Fan control at heating startup	261
(24)	Room temperature detection temperature compensation during heating	261
(25)	Return air temperature compensation	261
(26)	High power operation (RC-EX1A only)	261
(27)	Energy-saving operation (RC-EX1A only)	261
(28)	Warm-up control (RC-EX1A only)	261
(29)	Home leave mode (RC-EX1A only)	261
(30)	Auto temp. setting (RC-EX1A only)	261
(31)	Fan circulator operation (RC-EX1A only)	262
(32)	The operation judgment is executed every 5 minutes (RC-EX1A only)	262
(33)	Auto fan speed control (RC-EX1A only)	262
(34)	IU overload alarm (RC-EX1A only)	262
2.10.4	Operation control function by the outdoor control	263
(1)	Determination of compressor speed (frequency)	263
(2)	Compressor start control	263
(3)	Compressor soft start control	264
(4)	Outdoor unit fan control	265
(5)	Defrosting	267
(6)	Protective control/anomalous stop control by compressor's number of revolutions	268
(7)	Silent mode	271
(8)	Test run	271
(9)	Pump-down control	272
(10)	Base heater ON/OFF output control (option)	272
2.11 MA	INTENANCE DATA	273
2.11.1	Diagnosing of microcomputer circuit	273
(1)	Selfdiagnosis function	
(2)	Troubleshooting procedure	276
(3)	Troubleshooting at the indoor unit	
(4)	Troubleshooting at the outdoor unit	280

(5)	Check of anomalous operation data with the remote control	285
(6)	Power transistor module (including the driver PCB) inspection procedure	287
(7)	Inverter checker for diagnosis of inverter output	288
(8)	Outdoor unit controller failure diagnosis circuit diagram	289
2.11.2	Troubleshooting flow	291
(1)	List of troubles	291
(2)	Troubleshooting	292

How to read the model name



2.1 SPECIFICTIONS

Adapted	to t	RoHS	directive
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Item Power source Operation da Nominal ca Power cons Running cur Power facto Inrush curre	ta pacity umption		Inc	loor unit FDU1	00VF1		Outdoor unit FDC100VN		
Operation da Nominal ca Power cons Running cur Power facto Inrush curre	ta pacity umption								
Nominal ca Power cons Running cur Power facto Inrush curre	pacity sumption						220-240V~50Hz / 220V~60Hz		
Power cons Running cur Power facto Inrush curre	umption			Cooling			Heating		
Running cur Power facto Inrush curre		kW	10.0 [4.0 (Min.) ~ 11.	2 (Max.)]		11.2 [4.0 (Min.)~12.5 (Max.)]		
Power facto Inrush curre		kW		2.80			3.02		
Inrush curre	rrent	Α		12.6 / 13.2			13.5 / 14.1		
	or	%		97 / 96			97		
	ent	Α			5 <ma< td=""><td>k.runnir</td><td>ng current 25></td></ma<>	k.runnir	ng current 25>		
Sound Pres	sure Level	dB(A)	P-Hi : 4	4 Hi:38 Me:	36 Lo:30		49		
Exterior dime Height × Wi		mm	n 280 × 1,370 × 740				845 × 970 × 370		
Exterior appe (Munsell col				_		Stucco White (4.2Y7.5/1.1) near equivalent			
Net weight	,	kg		54			81		
Refrigerant e	quipment r type & Q'ty			_		RMT5126MDE6 × 1			
Starting met				_			Direct line start		
Refrigerant							0.9 M-MA68		
Heat exchar		~	Louver	fin & inner groo	ved tubina		M shape fin & inner grooved tubing		
	erant control –						Electronic expansion valve		
Air bandling equipment			Propeller fan × 1						
	ting method>	W	100 -	130 <direct line="" start=""></direct>			86 <direct line="" start=""></direct>		
Air flow (Sta							Cooling : 75, Heating : 73		
External sta	,	Pa Standard : 60 Max : 200					0		
Outside air i				Possible		_			
Air filter, Q't				Procure local	lv				
	ation absorber		Bubb	ber sleeve (for fan motor)			Rubber sleeve (for Compressor)		
	ation (noise & heat) Polyurethane form -								
Electric heate		W			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		20 (Crank case heater)		
Remote conti				wired : BC	-EX1A_BC-E5	(option)	wireless : RCN-KIT3-E (option)		
Room temperature control		The	rmostat by elec						
Safety equipment			Overload protection for fan motor Frost protection thermostat			Internal thermostat for fan motor Abnormal discharge temperature protectior			
Installation da	ata					Pipe d	$9.52 (3/8") \times 0.8 \text{ O/U} \phi 9.52 (3/8")$		
Refrigerant		mm		Gas line :			$(5.88 (5/8") \times 1.0 \ \phi \ 15.88 (5/8")$		
Connecting				Flare piping	, ,	γ φ	Flare piping		
	e (one way) length		Max.50m						
	difference between		Max.30m (Outdoor unit is higher)			See page 205			
outdoor unit an				,	Outdoor unit is	· ·			
Refrigerant				,		<u>_</u>	the amount for the piping of : 30m)		
Drain pump	,		E	Built-in Drain pu	-		_		
Drain			Hose Connectabl			2mm)	Holes size $\phi 20 \times 3pcs$		
IP code				IPXO		,	IPX4		
Insulation for	piping			-	Necessary	(both L	iquid & Gas lines)		
Standard Acc				Drain hose	,		Edging		
Notes (1) The data are n	neasured	d at the following co						
(·	Item		air temperature	Outdoor air	temperature	Ev+	ternal static pressure of indoor unit		
-			WB	DB	WB		Pa		
-	Operation						га		
-	Cooling	27°C	19°C	35°C	24°C		60		
		re level i	20°C ditioner is manufact ndicates the value in				e ISO. tion these value are somewhat higher due to		
(5	 i) The operation i) The factory E. changed to 10 	data ind S.P. sett I-200 Pa	•	range of 80-15	0 Pa. If SW8-4	is turne	d to "ON", E.S.P. setting range can be		

Adapted to Ro	HS directive
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	Model							
Item		Inc	loor unit FDU10	00VF1		Outdoor unit FDC100VS		
Power source						380-415V 3N~50Hz / 380V 3N~60Hz		
Operation data						Heating		
Nominal capacity	kW	10.0	Cooling 10.0 [4.0 (Min.)~11.2 (Max.)] 2.80 4.2 / 4.4 96 / 97 5 <max.running 16<="" current="" td=""> P-Hi : 44 Hi : 38 Me : 36 Lo : 30 280 × 1,370 × 740 - 54 - - - - - - - - - - - - - - - - -</max.running>			11.2 [4.0 (Min.)~12.5 (Max.)]		
Power consumption	kW				3.02			
Running current	A					4.5 / 4.7		
Power factor	%		96 / 97			97 / 98		
Inrush current	A		4 11: 00 14		x.runnır			
Sound Pressure Level	dB(A)	P-Hi : 4	4 HI:38 Me:	36 Lo:30		49		
Exterior dimensions Height × Width × Depth	mm		280 × 1,370 × 7	740		845 × 970 × 370		
Exterior appearance (Munsell color)			_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight	kg		54			83		
Refrigerant equipment						DMT5126MDE7 v 1		
Compressor type & Q'ty			—			RMT5126MDE7 × 1		
Starting method			_			Direct line start		
Refrigerant oil				0.9 M-MA68				
Heat exchanger				M shape fin & inner grooved tubing				
Refrigerant control			_			Electronic expansion valve		
Air handling equipment Fan type & Q'ty			Centrifugal fan	× 3		Propeller fan × 1		
Motor <starting method=""> W</starting>		100 + 130 <direct line="" start=""></direct>			86 <direct line="" start=""></direct>			
Air flow (Standard)	CMM					Cooling : 75, Heating : 73		
External static pressure	Pa	Sta	ndard : 60 Max	<: 200		0		
Outside air intake						_		
	Air filter, Q'ty			v	-			
Shock & vibration absorber		,			Rubber sleeve (for Compressor)			
Insulation (noise & heat)			,					
Electric heater	W					20 (Crank case heater)		
Remote control			wired : RC	-EX1A. RC-E5	(option)	· · · · ·		
Room temperature control		Thermostat by electronics			-			
			d protection for			Internal thermostat for fan motor		
Safety equipment		Fros	t protection the	rmostat		Abnormal discharge temperature protectio		
Installation data	mm		Liquid line :	l/Uφ9.52 (3/8")	Pipe <i>d</i>	ϕ 9.52 (3/8") × 0.8 O/U ϕ 9.52 (3/8")		
Refrigerant piping size	111111		Gas line :	ϕ 15.88 (5/8	") ¢	φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")		
Connecting method		Flare piping			Flare piping			
Refrigerant line (one way) len	gth	Max.50m						
Vertical height difference betw	een	Max.30m (Outdoor unit is higher) See page 205				See page 205		
outdoor unit and indoor unit				Outdoor unit is				
Refrigerant Quantity				-	it (incl.	the amount for the piping of : 30m)		
Drain pump			Built-in Drain pu			-		
Drain		Hose Connectabl		0.25mm, O.D.3	2mm)	Holes size $\phi 20 \times 3pcs$		
IP code			IPXO			IPX4		
Insulation for piping				Necessary	(both L	Liquid & Gas lines)		
Standard Accessories			Drain hose			Edging		
Notes (1) The data a	1		1					
Item	Indoor	air temperature	Outdoor air	temperature	Ext	ternal static pressure of indoor unit		
Operation	DB	WB	DB	WB		Pa		
Cooling	27°C	19°C	35°C	24°C		60		
Heating		20°C	7°C	6°C		00		
(3) Sound pres ambient te	ssure level in mperature.		n an anechoic c	hamber. During	g opera	tion these value are somewhat higher due to		
(5) The factory			range of 80-15	0 Pa. If SW8-4		ed to "ON", E.S.P. setting range can be		

Adapted to RoHS directive		Adapted	to	RoHS	directive
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		Model							
Item			In	door unit FDU1	25VF		Outdoor unit FDC125VN		
Power sourc	-								
Operation da				ě					
Nominal ca	1 2	kW	12.5		0 (Max.)]				
Power cons	sumption	kW		3.90	3.90		3.88		
Running cu	irrent	A				17.4 / 18.2			
Power facto	or	%		97			97		
Inrush curre	ent	Α				220-240V50Hz / 220V60/ Cooling Heating 12.5 [5.0 (Min.) ~ 14.0 (Max.)] 14.0 [4.0 (Min.) ~ 16.0 (Max.)] 3.90 3.88 17.5 / 18.3 17.4 / 18.2 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 97 260 × 1,370 × 740 845 × 970 × 370 Stucco White (4.2Y7.5/1.1) near equivalent - Stucco White - (4.2Y7.5/1.1) near equivalent - Direct line start - 0.9 M-MA68 Louver fin & inner grooved tubing M shape fin & inner grooved tub - Electronic expansion valve Centrifugal fan × 3 Propeller fan × 1 100 + 200 - Obrect line start> 86 < Direct line start			
Sound Pres	ssure Level	dB(A)	P-Hi : 4	5 Hi:40 Me:	34 Lo:29		Cooling : 50 Heating : 51		
Exterior dime Height × W	ensions ′idth × Depth	mm		280 × 1,370 × 7	740		845 × 970 × 370		
Exterior app (Munsell co				_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight		kg		54			81		
Refrigerant e Compresso	equipment or type & Q'ty		_			RMT5126MDE6 × 1			
Starting me	ethod			_			Direct line start		
Refrigerant oil l –				0.9 M-MA68					
Heat excha	anger		Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tubing		
Refrigerant	control			_	_		Electronic expansion valve		
Air handling equipment Fan type & Q'ty			Centrifugal fan × 3				Propeller fan × 1		
Motor <starting method=""> W</starting>			100 + 200 <direct line="" start=""></direct>				86 < Direct line start>		
Air flow (Sta		· · · · · · · · · · · · · · · · · · ·							
	atic pressure	Pa							
Outside air									
				lv		_			
		,		Bubber sleeve (for Compressor)					
Electric heat	,	W			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		20 (Crank case heater)		
				wired · BC	-EX1A BC-E5	(ontion)	· · · · · · · · · · · · · · · · · · ·		
Remote control Room temperature control									
noom temp			-			Internal thermostat for fan motor			
Safety equi	ipment								
Installation d	lata		1100			Pine d			
	piping size	mm		-					
Connecting				, , , , ,					
	ne (one way) length								
-	t difference between			Max.30m (Outdoor unit is	· ·	See page 205		
Refrigerant	Quantity						the amount for the piping of : 30m)		
Drain pump			l		-				
Drain						2mm)	Holes size $\phi 20 \times 3pcs$		
IP code					,	,			
Insulation for	r piping				Necessarv	(both L	I		
Standard Ac				Drain hose	· · · · · · · · · · · · · · · · · · ·	, l	, , , , , , , , , , , , , , , , , , , ,		
		neasured	d at the following co						
Γ					tomporatura	E4	tornal statio prossure of indeer unit		
ŀ	Item		air temperature			EXT			
-	Operation	DB 27°C	WB	DB	WB		Pa		
Cooling			19°C	35°C	24°C		60		
	Heating		20°C	7°C	6°C				
(;	3) Sound pressur ambient tempe	re level i erature.		n an anechoic d	chamber. During	g operat	tion these value are somewhat higher due to		
	5) The factory E. changed to 10	S.P. sett -200 Pa	•	range of 80-15	0 Pa. If SW8-4	is turne	ed to "ON", E.S.P. setting range can be		

Adapted	to	RoHS	directive
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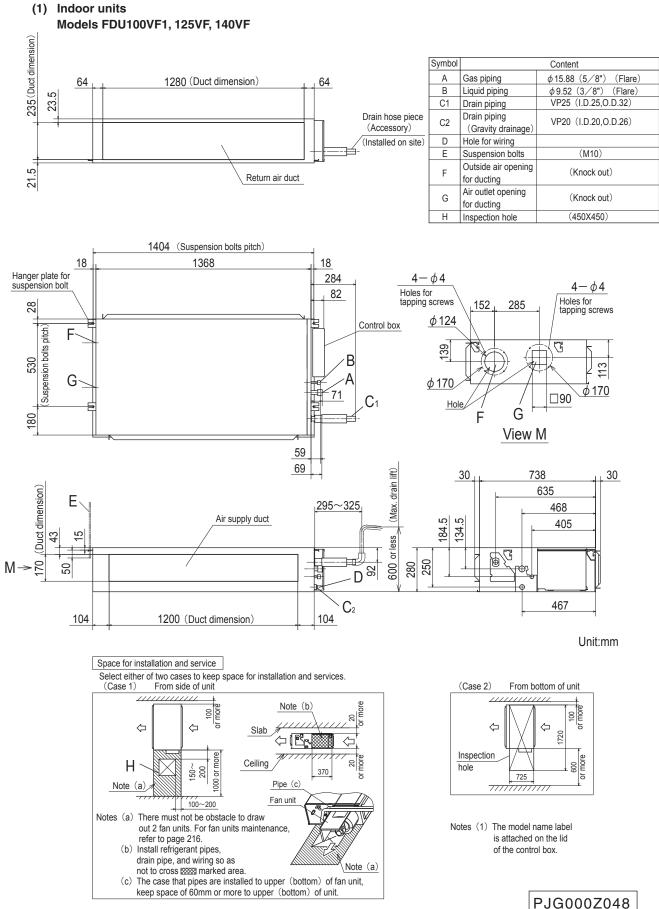
		Model FDU125VSVF							
Item			Inc	door unit FDU1	25VF		Outdoor unit FDC125VS		
Power sour	er source						380-415V 3N~50Hz / 380V 3N~60Hz		
Operation c		Cooling			Heating				
Nominal of	1 ,	kW	12.5 [5.0 (Min.) ~ 14.	0 (Max.)]		14.0 [4.0 (Min.)~16.0 (Max.)]		
Power cor	nsumption	kW		3.90			3.88		
Running c	urrent	A		5.8 / 6.1			5.8 / 6.1		
Power fac	-	%		97			97		
Inrush cur	-	A				x.runnir	ng current 18>		
	essure Level	dB(A)	P-Hi : 4	5 Hi:40 Me:	34 Lo:29		Cooling : 50 Heating : 51		
Exterior dim Height × V	nensions Vidth × Depth	mm		280 × 1,370 × 7	740		845 × 970 × 370		
Exterior app (Munsell c				_			Stucco White (4.2Y7.5/1.1) near equivaler	nt	
Net weight		kg		54			83		
Refrigerant	equipment			_			RMT5126MDE7 × 1		
Compress	or type & Q'ty			_					
Starting m	ethod			-			Direct line start		
Refrigeran	t oil	l					0.9 M-MA68		
Heat exch	anger		Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tu	lbing	
Refrigerant control –					Electronic expansion valve	9			
Air handling Fan type &) equipment k Q'ty			Centrifugal fan	× 3		Propeller fan × 1		
Motor <st< td=""><td>arting method></td><td>W</td><td>100 +</td><td>- 200 <direct lir<="" td=""><td>ne start></td><td></td><td colspan="3">86 <direct line="" start=""></direct></td></direct></td></st<>	arting method>	W	100 +	- 200 <direct lir<="" td=""><td>ne start></td><td></td><td colspan="3">86 <direct line="" start=""></direct></td></direct>	ne start>		86 <direct line="" start=""></direct>		
Air flow (S	tandard)	CMM	P-Hi : 3	9 Hi:32 Me:	26 Lo:20		Cooling : 75, Heating : 73		
External st	tatic pressure	Pa	Sta	ndard : 60 Ma	x : 200		0		
Outside ai	r intake			Possible			_		
Air filter, C	?'ty			Procure local	ly		-		
Shock & vik	pration absorber		Rubb	er sleeve (for fa	in motor)		Rubber sleeve (for Compress	sor)	
Insulation (r	noise & heat)			Polyurethane fo	,			,	
Electric hea	,	W					20 (Crank case heater)		
Remote cor				wired : RC	-EX1A. RC-E5	(option)) wireless : RCN-KIT3-E (option)		
Room temperature control			The	rmostat by elec		<u> </u>			
· · · ·				d protection fo			Internal thermostat for fan mo	otor	
Safety equ	upment		Frost protection thermostat			Abnormal discharge temperature p	rotection.		
Installation	data			Liquid line :	I/U φ 9.52 (3/8")	Pipe¢	b 9.52 (3/8") × 0.8 O/U φ 9.52 (3/8")		
Refrigeran	t piping size	mm		Gas line :	φ 15.88 (5/8	") ¢	φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")		
Connectin	g method			Flare piping		, .	Flare piping		
Refrigerant l	ine (one way) length				Max.50m		· · · · ·		
Vertical heigh	nt difference between		Max.30m (Outdoor unit is higher) See page 205 Max.15m (Outdoor unit is lower)						
	and indoor unit					,	the employet for the picture of (00m)		
Refrigeran	-				•	ir (IIICI. I	the amount for the piping of : 30m)		
Drain pump	1			Built-in Drain pu	•)	-		
Drain			Hose Connectabl		J.25mm, O.D.3	∠mm)	Holes size ϕ 20 × 3pcs		
IP code				IPXO	N1	<i>(</i>	IPX4		
Insulation fo				Durai	Necessary	(both L	_iquid & Gas lines)		
Standard A				Drain hose			Edging		
Notes	(1) The data are n	neasured	d at the following co						
	Item	Indoor	air temperature	Outdoor air	temperature	Ext	ternal static pressure of indoor unit		
	Operation	DB	WB	DB	WB		Pa		
Cooling		27°C	19°C	35°C	24°C				
	Heating		20°C	7°C	6°C		60		
	 (3) Sound pressul ambient temp (4) The operation (5) The factory E. changed to 10 	re level i erature. data ind S.P. sett 0-200 Pa	icates when the air- ing is set within the	n an anechoic o -conditioner is o range of 80-15	chamber. During operated at 400 0 Pa. If SW8-4	g opera IV50Hz is turne	tion these value are somewhat higher due or 380V60Hz. ed to "ON", E.S.P. setting range can be	e to	

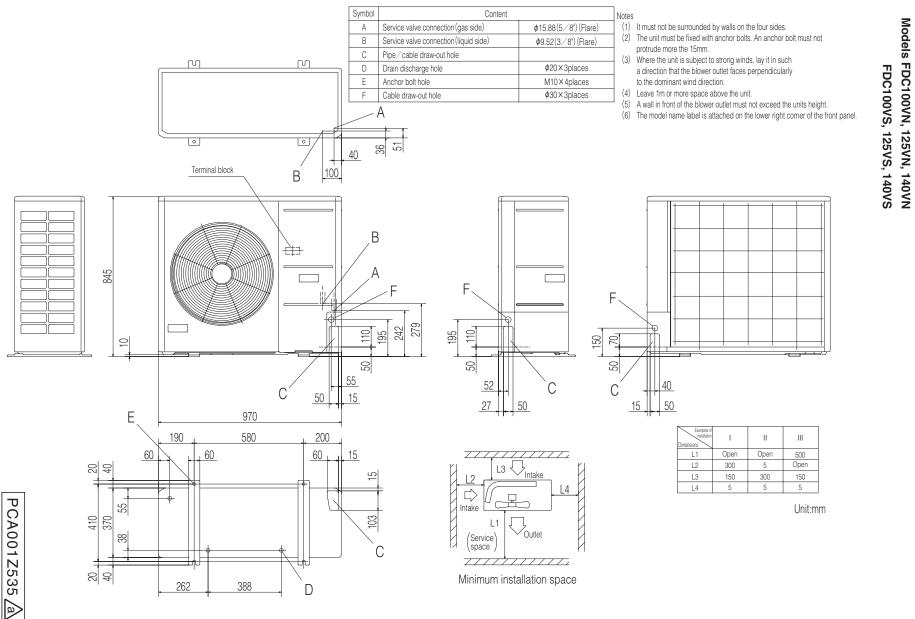
		Model				FDU14			
Item			Inc	door unit FDU1	40VF		Outdoor unit FDC140VN		
Power source							220-240V~50Hz / 220V~60Hz		
Operation data				Cooling			Heating		
Nominal capacit		kW	14.0 [5.0 (Min.) ~ 14.	5 (Max.)]		16.0 [4.0 (Min.)~16.5 (Max.)]		
Power consumpt	tion	kW		4.95			4.69		
Running current		A		22.2 / 23.2			21.0 / 22.0		
Power factor		%		97			97		
Inrush current		Α				x.runnir	ng current 28>		
Sound Pressure	Level	dB(A)	P-Hi : 4	7 Hi:40 Me:	35 Lo:30		51		
Exterior dimensior Height × Width ×	-	mm		280 × 1,370 × 7	740		845 × 970 × 370		
Exterior appearan (Munsell color)	ce			_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight		kg		54			81		
Refrigerant equipr Compressor type				_			RMT5126MDE6 × 1		
Starting method				_			Direct line start		
Refrigerant oil		l		_			0.9 M-MA68		
Heat exchanger			Louver	fin & inner groo	ved tubing		M shape fin & inner grooved tubing		
Refrigerant contr	rol			_	~		Electronic expansion valve		
Air handling equip Fan type & Q'ty	oment			Centrifugal fan	× 3		Propeller fan × 1		
Motor <starting< td=""><td>method></td><td>W</td><td>100 +</td><td>- 200 <direct lir<="" td=""><td>ne start></td><td></td><td>86 <direct line="" start=""></direct></td></direct></td></starting<>	method>	W	100 +	- 200 <direct lir<="" td=""><td>ne start></td><td></td><td>86 <direct line="" start=""></direct></td></direct>	ne start>		86 <direct line="" start=""></direct>		
Air flow (Standar		CMM	P-Hi : 48 Hi : 35 Me : 28 Lo : 22			Cooling : 75, Heating : 73			
External static pr	,	Pa	Standard : 60 Max : 200			0			
Outside air intake			Possible			_			
Air filter, Q'ty	-		Procure locally			_			
Shock & vibration	absorber		Rubber sleeve (for fan motor)			Rubber sleeve (for Compressor)			
Insulation (noise &			Polyurethane form						
Electric heater		W	_			20 (Crank case heater)			
Remote control			wired : RC-EX1A, RC-E5 (option)						
Room temperatu	ire control		Thermostat by electronics						
- Hoom tomporata			Overload protection for fan motor			Internal thermostat for fan motor			
Safety equipmen	nt		Frost protection thermostat			Abnormal discharge temperature protection.			
Installation data			Liquid line : I/U ϕ 9.52 (3/8") Pipe ϕ						
Refrigerant piping	a size	mm					$5152(5/8") \times 1.0 \qquad \phi \ 15.88(5/8")$		
Connecting meth			Flare piping			Flare piping			
Refrigerant line (one			Max.50m						
Vertical height differe outdoor unit and indo	ence between		Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)			See page 205			
Refrigerant Quan						the amount for the piping of : 30m)			
Drain pump	·-,		F	Built-in Drain pu	•				
Drain			Hose Connectabl			2mm)	Holes size $\phi 20 \times 3pcs$		
IP code				IPXO	, 0.0.0		IPX4		
Insulation for pipir	าต				Necessary	(both I	iquid & Gas lines)		
Standard Accesso	-			Drain hose	, tooosal y	,	Edging		
			at the following co						
	1								
Item			air temperature		temperature	Ext	ternal static pressure of indoor unit		
· · ·	eration	DB 27°C	WB	DB	WB		Pa		
Co	Cooling		19°C	35°C	24°C		60		
He	Heating 20°C 7°C 6°C								
(3) Sou am	und pressur bient tempe	re level in erature.		n an anechoic c	chamber. During	g operat	tion these value are somewhat higher due to		
(5) The		S.P. sett	•				or 220v60Hz. d to "ON", E.S.P. setting range can be		

Adapted to RoHS directive

		Model				FDU14	OVSVF		
ltem				ndoor unit FDU	140VF		Outdoor unit FDC140VS		
Power source	се						380-415V 3N~50Hz / 380V 3N~60	OHz	
Operation d	ata			Cooling			Heating		
Nominal c	apacity	kW	14.0	[5.0 (Min.)~14	.5 (Max.)]		16.0 [4.0 (Min.)~16.5 (Max.)]		
Power con	sumption	kW		4.95			4.69		
Running cu	urrent	A		7.4 / 7.8			7.0 / 7.4		
Power fact	tor	%		97 / 96			97 / 96		
Inrush curr	rent	A			5 <ma< td=""><td>x.runnin</td><td>ng current 19></td><td></td></ma<>	x.runnin	ng current 19>		
Sound Pre	ssure Level	dB(A)	P-Hi :	47 Hi:40 Me:	: 35 Lo : 30		51		
Exterior dim Height × W	ensions /idth × Depth	mm		280 × 1,370 ×	740		845 × 970 × 370		
Exterior app (Munsell co				_			Stucco White (4.2Y7.5/1.1) near equivalent		
Net weight		kg		54			83		
Refrigerant Compress	equipment or type & Q'ty			-			RMT5126MDE7 × 1		
Starting m	ethod			_			Direct line start		
Refrigeran		l		_			0.9 M-MA68		
Heat excha			Louve	r fin & inner groo	oved tubing		M shape fin & inner grooved tubin	g	
Refrigeran	•	İ		_			Electronic expansion valve		
	equipment		-	Centrifugal fan	ı × 3		Propeller fan × 1		
	arting method>	W	100	+ 200 <direct li<="" td=""><td>ine start></td><td></td><td>86 <direct line="" start=""></direct></td><td></td></direct>	ine start>		86 <direct line="" start=""></direct>		
Air flow (St		CMM	P-Hi :	48 Hi:35 Me:	: 28 Lo : 22		Cooling : 75, Heating : 73		
	atic pressure	Pa	Standard : 60 Max : 200				0		
Outside air			Possible			_			
Air filter, Q			Procure locally			_			
	ration absorber		Rubber sleeve (for fan motor)			Rubber sleeve (for Compressor)			
	oise & heat)		Polyurethane form				_		
Electric heater		w	_				20 (Crank case heater)		
Remote cor			wired : RC-EX1A, RC-E5 (option)			(option)	· · · · · · · · · · · · · · · · · · ·		
	perature control		Thermostat by electronics			(0,0.1.)			
			Overload protection for fan motor				Internal thermostat for fan motor		
Safety equ	lipment		Frost protection thermostat			Abnormal discharge temperature prote			
Installation of	data		Liquid line : I/U ϕ 9.52 (3/8") Pipe) Pipe d			
	t piping size	mm					φ 15.88 (5/8") × 1.0 φ 15.88 (5/8")		
Connecting			Flare piping				Flare piping		
	ne (one way) length		Max.50m						
-	t difference between		Max.30m (Outdoor unit is higher			hiaher)	er) See page 205		
	and indoor unit				(Outdoor unit is	0 /			
Refrigeran	t Quantity			R410A 3.8k	kg in outdoor un	it (incl. t	the amount for the piping of : 30m)		
Drain pump	,			Built-in Drain p	-				
Drain			Hose Connectal			2mm)	Holes size $\phi 20 \times 3pcs$		
IP code				IPXO	,	,	IPX4		
Insulation fo	or piping			_	Necessary	/ (both L	Liquid & Gas lines)		
Standard Ad	11 0			Drain hose	,		Edging		
		neasureo	d at the following o						
			0	1	tomporatura	Ev4	ternal static pressure of indoor unit		
			air temperature		temperature	EXT	· · · · · · · · · · · · · · · · · · ·		
	Operation	DB	WB	DB	WB		Pa		
Cooling		27°C	19°C	35°C	24°C		60		
	Heating		20°C	7°C	6°C				
	(3) Sound pressu ambient temp(4) The operation	re level i erature. data ind S.P. sett	licates when the a ing is set within th	in an anechoic r-conditioner is	chamber. Durin	g operat)V50Hz	tion these value are somewhat higher due to		

2.2 EXTERIOR DIMENSIONS



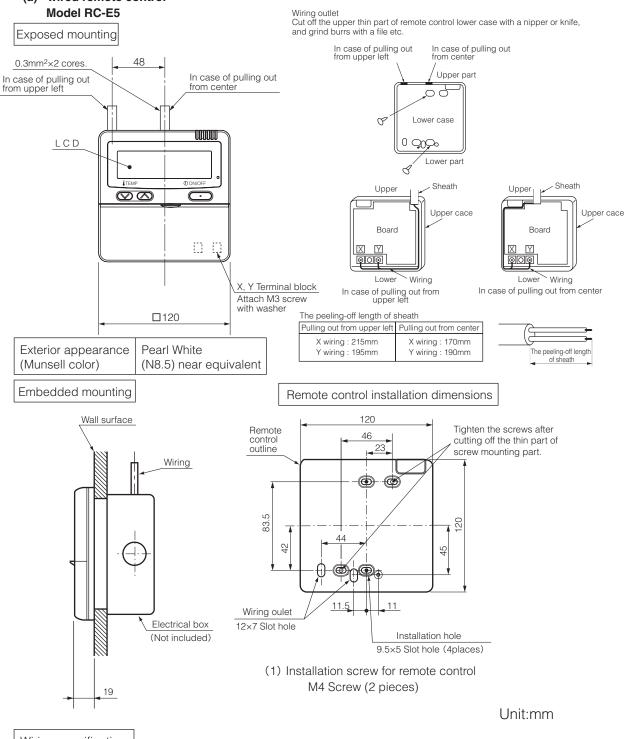


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(2)

Outdoor units

(3) Remote control (Option parts)(a) wired remote control

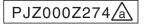


Wiring specifications

(1) If the prolongation is over 100m, change to the size below.

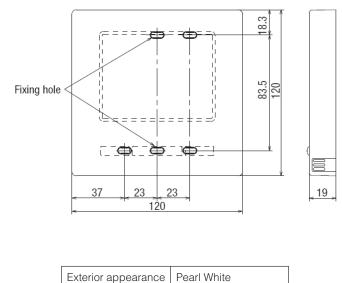
But, wiring in the remote control case should be under 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

Length	Wiring thickness
100 to 200m	0.5mm ² ×2 cores
Under 300m	0.75mm ² ×2 cores
Under 400m	1.25mm ² ×2 cores
Under 600m	2.0mm ² ×2 cores



Model : RC-EX1A

Dimensions (Viewed from front)



Cautions fo	r selecting	installation	place
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(Munsell color)

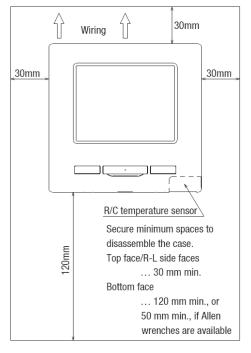
(1) Installation surface must be flat and sufficiently strong. R/C case must not be deformed.

(N8.5) near equivalent

- (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.
 - \cdot Install the R/C sufficiently separated from a heat source.
 - · 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

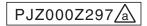


R/C cable: 0.3 mm² × 2-core

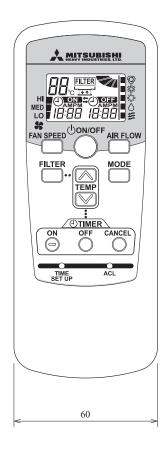
When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm^2 . Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

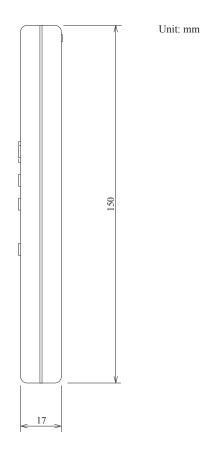
< 200 m	0.5 mm ² x 2-core
< 300 m	0.75 mm ² x 2-core
< 400 m	1.25 mm ² x 2-core
< 600 m	2.0 mm ² x 2-core

Adapted to RoHS directive



(b) Wireless remote control (RCN-E1R)





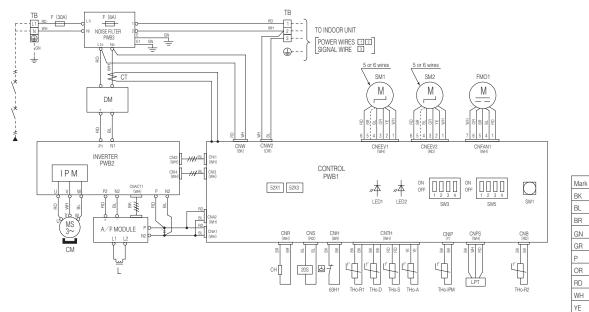
						CIND: -Z	CONNECION		
						DM	Drain motor		
						F1,3,4	Fuse		
						FM:1,2	Fan motor (wit	th thermost	at)
						FS	Float switch		
	Remote con	trol	Control PCB	1	Thi-R1	L	Reactor		
		Х <u>Х</u> WH Y ВК	¹ CNB	2		LED · 2	Indication lamp	(Green-N	ormal operation)
			3 WH LED · 2 LED	, CNN ³	Thi-R2	LED · 3	Indication lamp	(Red-Insp	pection)
				YE 4		SW2	Remote contro	l communic	ation address
Connecting line between		Power PCB	Å Å	5	Thi-R3	SW5	Plural units Ma	ster/Slave	e setting
indoor unit and outdoor unit	RD 3 F1 (6.3A) WH 5 Power circu		1 2 SW2	6		SW6	Model capacity	setting	
Power source line 12 2	Power circu	4 WH	³ ⁴ ⁵ CNW2	CNH ¹		SW7-1	Operation chec	k, Drain m	otor test run
Signal line 3		WH 7 WH	6 WH	BK 2	<u>вк </u> Thı-А	SW7-3	Powerful mode	Valid / Inv	alid
	BL 3 WH	9 WH	7 8 9 SW5		L B FS	TB1	Terminal block	(Power sc	ource) (□mark)
		11 WH	10 11 12	CNI ¹		TB2	Terminal block	(Signal lin	e) (□mark)
	F3 (2A)		SW7	BL 2		Thc	Thermistor (R	emote cont	rol)
	CNWR			+12		Thi-A	Thermistor (R	eturn air)	
		s 6 7 WH YE BL CNM2	For HA	+12 CNR H WH 2	WH (<u>M</u>) DM	Thi-R1,2,3	B Thermistor (H	eat exchan	ger)
		BK CNM2		VVH 2					
195				+12 1	Prepare on site	Color Mark	S		
	FMi1 FMi2	<u>M</u>		CNT 3	XR1(Operation) (XR2(Heating)	Mark	Color	Mark	Color
	\bigcirc	<u> </u>		BL 4	- XR3 + (Compressor ON)		Black	RD	Red
			CNTA	5			Blue	WH	White
			1 ^{BL} 2		XR5 (Remote operation input:volt-free contact)	YE	Yellow	YE/GN	Yellow/Green
inside unit an 3. Use twin core	is wiring on site. g diagram of outside unit about the line between d outside unit. cord (0.3mm ²) at remote control line. note control line alongside power source line.		(Remote operar volt-free contac						

2.3 ELECTRICAL WIRING (1) Indoor units Models FDU100VF1, 125VF, 140VF

CNB~Z

Connector

POWER SOURCE 1~220-240V 50Hz / 1~220V 60Hz



		Item	Description
		CnA~Z	Connector
		СН	Crankcase heater
		CM	Compressor motor
		CT	Current sensor
		DM	Diode module
		F	Fuse
		FM01	Fan motor
		IPM	Intelligent power module
		L	Reactor
		LED1	Indication lamp (GREEN)
		LED2	Indication lamp (RED)
		LPT	Low pressure sensor
		SM1	Expansion valve for cooling
Mark	Color	SM2	Expansion valve for heating
BK	Black	SW1	Pump down switch
BL	Blue	SW3,5	Local setting switch
BR	Brown	TB	Terminal block
GN	Green	THo-A	Thermistor (Outdoor air temp.)
GR	Gray	THo-D	Thermistor (Discharge pipe temp.)
Р	Pink	THo-IPM	Thermistor (IPM)
OR	Orange	THo-R1,2	Thermistor (Heat exchanger pipe temp.)
RD	Red	THo-S	Thermistor (Suction pipe temp.)
WH	White	20S	Solenoid valve for 4 way valve
YE	Yellow	52X1	Auxilliary relay (for CH)
YE/GN	Yellow/Green	52X3	Auxilliary relay (for 20S)
		63H1	High pressure switch

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm ²)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size
100	25	5.5	24		(mm)
125	27	5.5	22	Ф1.6mm x 3	
140	28	8	32		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.

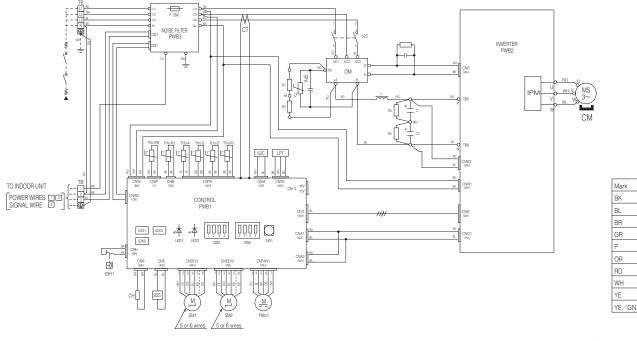
Local setting switch SW3 (Set up at shipment OFF)

Eoda Setting Switch Ovo (Get up at shiphent Orly)						
SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.				
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3°C or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.				
SW3-3,4	Trial operation	Method of trial operation () Trial operation can be performed by using SW3-3,4. () Compressor will be in the operation when SW3-3 is ON. () Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. () Be sure to turn OFF SW3-3 after the trial operation is finished.				

PCA001Z539 a

'12 • PAC-T-178

POWER SOURCE 3N~380-415V 50Hz



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

Model	MAX over current (A)	Power cable size (mm ²)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size (mm)	
100	16		26			
125	18	3.5	23	Ф1.6mm x 3	φ1.6	
140	19		21			

- 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.

		Item	Description
		CnA~Z	Connector
		СН	Crankcase heater
		CM	Compressor motor
		CT	Current sensor
		DM	Diode module
		F	Fuse
		FM01	Fan motor
		IPM	Intelligent power module
		L	Reactor
		LED1	Indication lamp (GREEN)
		LED2	Indication lamp (RED)
		LPT	Low pressure sensor
		SM1	Expansion valve for cooling
Mark	Color	SM2	Expansion valve for heating
3K	Black	SW1	Pump down switch
3L	Blue	SW3,5	Local setting switch
 3R	Brown	TB	Terminal block
GR	Gray	THo-A	Thermistor (Outdoor air temp.)
>	Pink	THo-D	Thermistor (Discharger pipe temp.)
OR	Orange	THo-IPM	Thermistor (IPM)
RD	Red	THo-R1,2	Thermistor (Heat exchanger pipe temp.)
NH	White	THo-S	Thermistor (Suction pipe temp.)
ΥE	Yellow	20S	Solenoid valve for 4 way valve
YE/GN	Yellow/Green	52X1	Auxilliary relay (for CH)
		52X3	Auxilliary relay (for 20S)
		52X6	Auxilliary relay (for 52C)
at shipm	nent OFF)	63H1	High pressure switch

Local set	ting switch SW3(Set up at sh	nipment OFF)	63H1	High pressure switch
SW3-1	Defrost control change	The defrosting operation by turning ON this switch turned ON in the area wh becomes below the free:	n. This switch s nere outside te	hould be
SW3-2	Snow guard fan control	When this switch is turner fan will run for 30 second when outdoor temperatu the compressor is not ru in a very snowy country,	ds in every 10 r re falls to 3°C o nnning when th	minutes, or lower and ne unit is used
SW3-3,4	Trial operation	Method of trial operation () Trial operation can be () Compressor will be in SW3-3 is ON. () Cooling trial operation SW3-4 is OFF, and hes SW3-4 is OFF, and hes SW3-4 is OFF. () Be sure to turn OFF SV is finished.	performed by the operation v will be perform ating trial opera	vhen ned when ation when

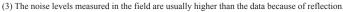
1

2.4 NOISE LEVEL

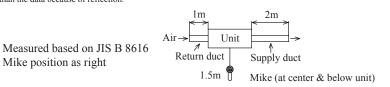
Notes(1) The data are based on the following conditions.

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

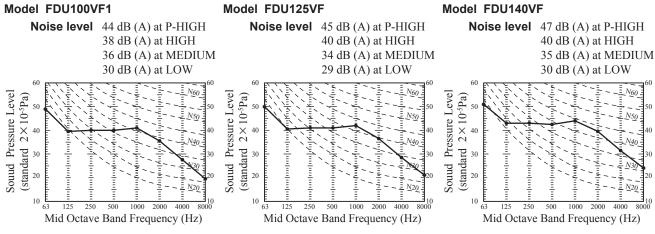
(2) The data in the chart are measured in an anechoic room.



(1) Indoor units



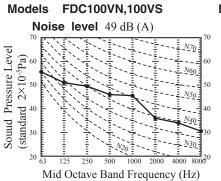
Model FDU140VF



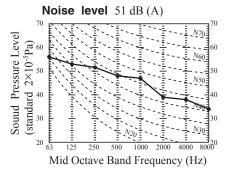
Mike position as right

(2) Outdoor units

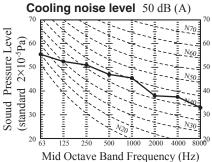
Measured based on JIS B 8616 Mike position: at highest noise level in position as mentioned below Distance from front side 1m Height 1m

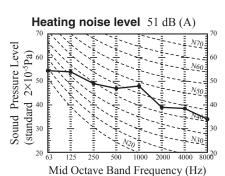






Models FDC125VN,125VS





2.5 CHARACTERISTICS OF FAN

- · 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 FDU100VF1

10

15

20

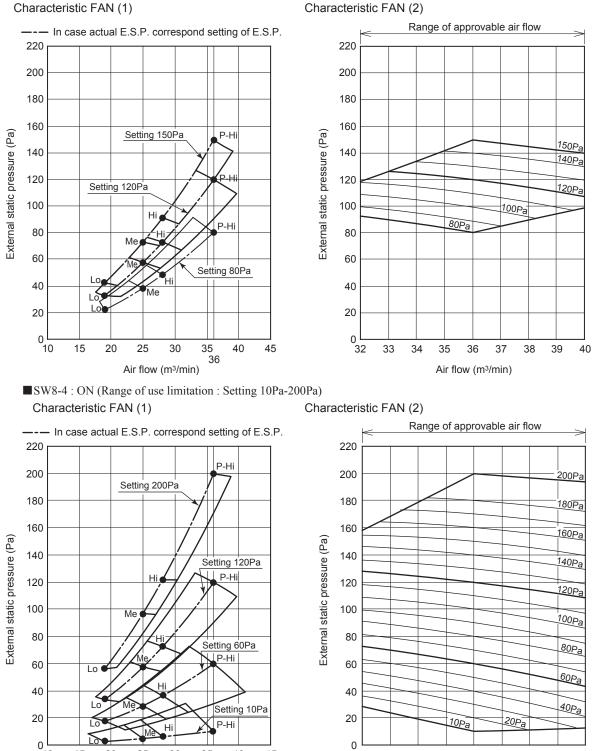
25

Air flow (m3/min)

30

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

Characteristic FAN (1)



35 36

40

45

0

32

33 34 35

36 37

Air flow (m3/min)

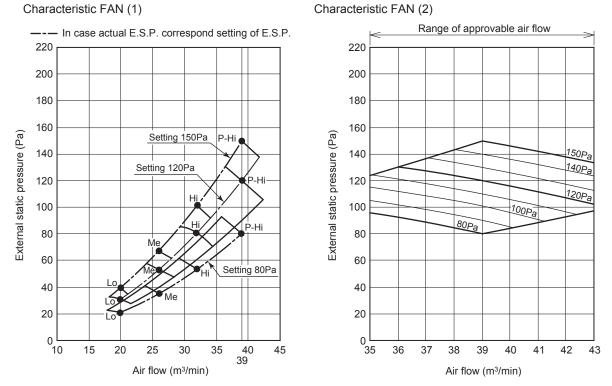
38

39

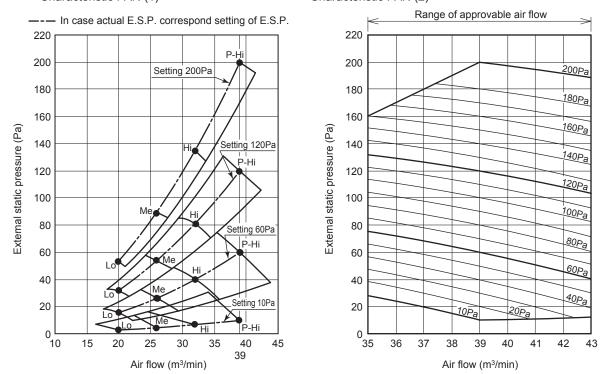
40

Model FDU125VF

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



SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa) Characteristic FAN (1) Characteristic FAN (2)



200p;

180Pa

160Pa

140Pa

20r

OOPa

80Pa

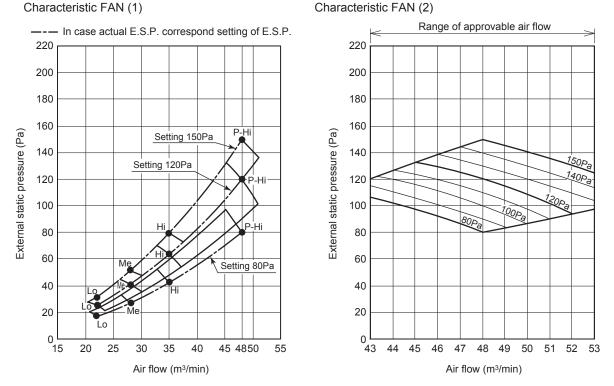
50Pa

40pa

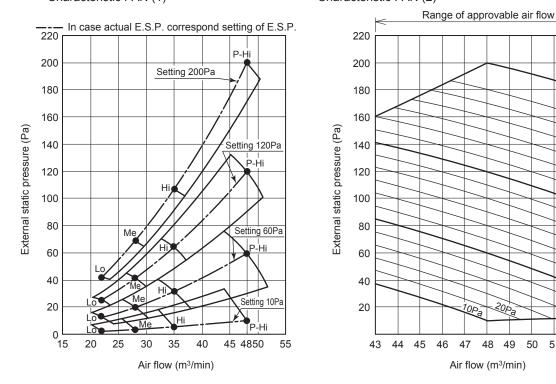
50 51 52 53

Model FDU140VF

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

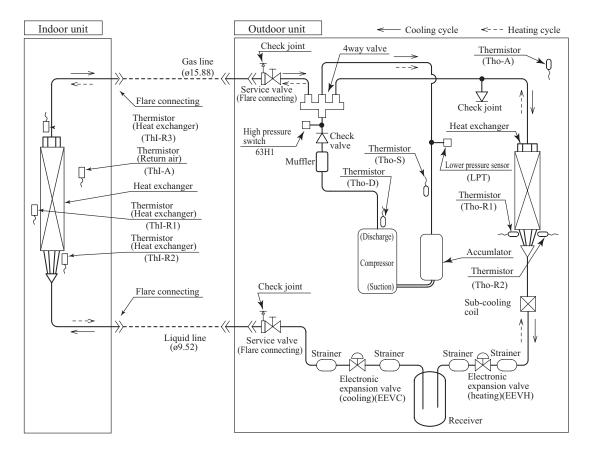


SW8-4 : ON (Range of use limitation : Setting 10Pa-200Pa) Characteristic FAN (1) Characteristic FAN (2)



2.6 PIPING SYSTEM

Models 100, 125, 140



Preset point of the protective devices

Parts name	Mark	Equipped unit	100, 125, 140 model
Thermistor (for protection over- loading in heating)	Thl-R.1.2	Indoor unit	ON 63°C OFF 56°C
Thermistor (for frost prevention)	Thl-R.1.2		ON 1.0°C OFF 10°C
Thermistor (for protection high pressure in cooling.)	Tho-R.1.2	Outdoor unit	ON 65°C OFF 51°C
Thermistor (for detecting dis- charge pipe temp.)	Tho-D	Outdoor unit	ON 115°C OFF 185°C
High pressure switch (for protection)	63H1	Outdoor unit	ON 4.15MPa OFF 3.15MPa
Low pressure sensor (for protection)	LPT	Outdoor unit	ON 0.079MPa OFF 0.227MPa

2.7 RANGE OF USAGE & LIMITATIONS

		See next page.
Operating temperature rar	ige	When used below -5°C, install a snow hood (option).
Recommendable area to i	nstall	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 in the ceiling (N	conditions surrounding the lote 3)	Dew point temperature : 28° C or less, relative hummdity : 80% or less
Limitations on unit and pip	ing installation	See page 205
Compressor	Cycle Time	7 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).

16) Indoor units of twin, triple and double-twin specifications separately in a room with partition.

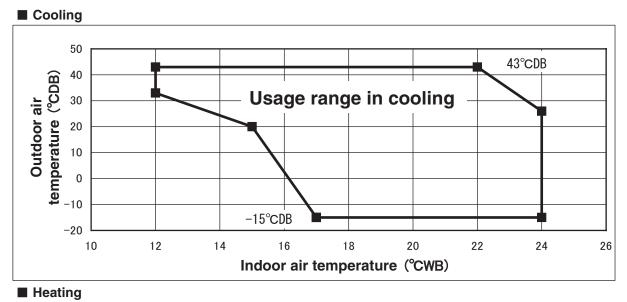
Note 2. If the surrounding temperature and humidity exceed above values, paste polyurethane.

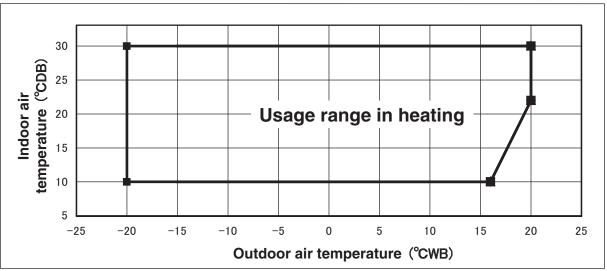
Note 3. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation on the outer plate (10mm or thicker) of indoor unit.

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

PJG000Z055

Operating temperature range





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.

PJG000Z055

"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 optional 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° 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 piping installatio	n - single.		1	I
Descriptions	Model for outd	oor units	Dimensional limitations	Marks appearing in the drawing
One-way pipe length	100 · 125 ·	• 140	≦ 50m	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher	100 • 125 • 140	≦ 30m	н
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned lower	100 · 125 · 140	≦ 15m	
(1) Reduce refrigerant amount by according to ta	L L below from factory cha	arge when refrigera	nt piping is shorter than 3r	n.

PJG000Z055

(kW

PJG000Z046

(kw) Heat Mode HC

2.8 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 (2.8.1) × Correction factors shown in the table (2.8.2) (2.8.3) (2.8.4).

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.

2.8.1 Capacity tables

Model FDU100VNVF1 Indoor unit FDU100VF1 Outdoor unit FDC100VN Cool Mode

			Indoor air temperature													((()))							(1.44
Outdoor							Indo	or air t	empera	ature							Οι	tdoor	In	door a	ir temp	peratur	е
air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB	air	temp.			°CDB		
un tomp.	12°C	WB	14°C	WB	16°C	WB	18°C	WB	19°C	WB	20°C	WB	22°C	WB	24°C	WB	°CDE	°CWB	16	18	20	22	24
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	-19.8	-20	5.64	5.62	5.60	5.58	5.56
11					8.12	6.88	8.59	7.50	8.82	7.38	9.07	7.26	9.56	7.69	10.06	7.42	-17.7	-18	5.97	5.95	5.92	5.90	5.87
13					8.50	6.99	9.00	7.61	9.26	7.48	9.52	7.36	10.06	7.78	10.60	7.49	-15.7	-16	6.30	6.27	6.25	6.22	6.19
15					8.88	7.10	9.42	7.71	9.69	7.58	9.98	7.45	10.56	7.87	11.14	7.57	-13.	-14	6.66	6.63	6.60	6.57	6.54
17					9.26	7.21	9.84	7.82	10.12	7.69	10.43	7.56	11.05	7.96	11.67	7.65	-11.	-12	7.03	6.99	6.96	6.93	6.90
19					9.46	7.27	10.05	7.88	10.34	7.74	10.65	7.60	11.29	8.01	11.92	7.69	-9.5	-10	7.39	7.36	7.32	7.29	7.25
21					9.65	7.33	10.25	7.93	10.56	7.80	10.88	7.66	11.52	8.06	12.16	7.73	-7.5	-8	7.75	7.72	7.68	7.64	7.60
23					9.65	7.33	10.28	7.94	10.59	7.80	10.91	7.66	11.56	8.06	12.21	7.74	-5.5	-6	7.92	7.88	7.85	7.80	7.76
25			8.93	7.64	9.64	7.33	10.31	7.95	10.62	7.81	10.95	7.67	11.61	8.07	12.27	7.75	-3.0	-4	8.10	8.05	8.01	7.97	7.92
27			8.86	7.62	9.64	7.33	10.34	7.95	10.65	7.82	10.96	7.68	11.57	8.06			-1.0	-2	8.27	8.22	8.18	8.13	8.08
29			8.80	7.59	9.50	7.29	10.17	7.91	10.49	7.78	10.81	7.64	11.45	8.04			1.0	0	8.44	8.39	8.34	8.29	8.24
31			8.73	7.57	9.35	7.24	9.99	7.86	10.32	7.74	10.66	7.61	11.32	8.02			2.0	1	8.52	8.47	8.42	8.37	8.32
33	8.22	7.04	8.58	7.52	9.21	7.20	9.82	7.82	10.16	7.70	10.51	7.57	11.19	7.99			3.0	2	9.08	9.03	8.98	8.94	8.90
35	8.05	6.98	8.44	7.47	9.06	7.15	9.64	7.77	10.00	7.66	10.36	7.54	11.07	7.97			5.0	4	10.21	10.15	10.09	10.08	10.07
37	7.92	6.93	8.30	7.43	8.91	7.11	9.46	7.72	9.79	7.61	10.13	7.49	10.80	7.92			7.0	6	11.33	11.27	11.20	11.22	11.23
39	7.78	6.88	8.16	7.38	8.75	7.06	9.28	7.68	9.59	7.56	9.90	7.44	10.53	7.87			9.0	8	11.78	11.71	11.64	11.62	11.59
41	7.64	6.83	8.02	7.33	8.60	7.02	9.09	7.63	9.38	7.51	9.68	7.39	10.26	7.82			11.5	10	12.23	12.16	12.09	12.02	11.94
43	7.50	6.77	7.88	7.29	8.45	6.97	8.91	7.58	9.18	7.46	9.45	7.34	9.99	7.77			13.5	12	12.91	12.83	12.75	12.65	12.60
																	15.5	14	13.59	13.50	13.42	13.29	13.26

Model FDU100VSVF1 Indoor unit FDU100VF1 Cool Mode

Outdoor unit FDC100VS

(kW) Indoor air temperature Outdoo 18°CDB 21°CDB 23°CDB 26°CDB 27°CDB 28°CDB 31°CDB 33°CDB air temp 12°CWB 14°CWB 16°CWB 18°CWB 19°CWB 20°CWB 22°CWB 24℃WB °CDB тс SHC тс SHC тс SHC SHC SHC SHC SHC SHC тс тс тс тс тс 8.12 6.88 8.59 7.50 8.82 7.38 9.07 7.26 9.56 7.69 10.06 7.42 11 13 8.50 6.99 9.00 7.61 9.26 7.48 9.52 7.36 10.06 7.78 10.60 7.49 15 8.88 7.10 9.42 7.71 9.69 7.58 9.98 7.45 10.56 7.87 11.14 7.57 17 9.26 7.21 9.84 7.82 10.12 7.69 10.43 7.56 11.05 7.96 11.67 7.65 19 9.46 7.27 7.88 10.34 7.74 11.29 7.69 10.05 10.65 7.60 8.01 11.92 21 9.65 7.33 10.25 7.93 10.56 7.80 10.88 7.66 11.52 8.06 12.16 7.73 23 7.94 10.59 7.80 11.56 9.65 7.33 10.28 10.91 7.66 8.06 12.21 7.74 25 8.93 7.64 9.64 7.33 10.31 7.95 10.62 7.81 10.95 7.67 11.61 8.07 12.27 7.75 27 8.86 7.62 9.64 7.33 10.34 7.95 10.65 7.82 10.96 7.68 11.57 8.06 29 7.59 9.50 7.29 7.91 10.49 7.78 10.81 7.64 11.45 8.04 8.80 10.17 31 8.73 7.57 9.35 7.24 9.99 7.86 10.32 7.74 10.66 7.61 11.32 8.02 33 8.22 7 04 8.58 7.52 9 21 7 20 9.82 7.82 10 16 7 70 10.51 7.57 11.19 7 99 35 8.05 8.44 7.47 10.00 7.66 10.36 7.54 11.07 7.97 6.98 9.06 7.15 9.64 7.77 37 7.92 6.93 8.30 7.43 8.91 9.46 7.72 9.79 7.61 10.13 7.49 10.80 7.92 7.11 39 6.88 7.38 7.06 9.90 7.44 10.53 7.87 7.78 8.16 8.75 9.28 7.68 9.59 7.56 7.33 7.02 9.38 41 7.64 6.83 8.02 8.60 9.09 7.63 7.51 9.68 7.39 10.26 7.82 43 7.50 6.77 7.88 7.29 8.45 6.97 8.91 7.58 9.18 7.46 9.45 7.34 9.99 7.77

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)

HC : Heating capacity (kW)

Heat I	Mode:	HC				(kW)
	door	In	door a	ir tem	peratu	re
air te	emp.			°CDB		
°CDB	°CWB	16	18	20	22	24
-19.8	-20	5.64	5.62	5.60	5.58	5.56
-17.7	-18	5.97	5.95	5.92	5.90	5.87
-15.7	-16	6.30	6.27	6.25	6.22	6.19
-13.5	-14	6.66	6.63	6.60	6.57	6.54
-11.5	-12	7.03	6.99	6.96	6.93	6.90
-9.5	-10	7.39	7.36	7.32	7.29	7.25
-7.5	-8	7.75	7.72	7.68	7.64	7.60
-5.5	-6	7.92	7.88	7.85	7.80	7.76
-3.0	-4	8.10	8.05	8.01	7.97	7.92
-1.0	-2	8.27	8.22	8.18	8.13	8.08
1.0	0	8.44	8.39	8.34	8.29	8.24
2.0	1	8.52	8.47	8.42	8.37	8.32
3.0	2	9.08	9.03	8.98	8.94	8.90
5.0	4	10.21	10.15	10.09	10.08	10.07
7.0	6	11.33	11.27	11.20	11.22	11.23
9.0	8	11.78	11.71	11.64	11.62	11.59
11.5	10	12.23	12.16	12.09	12.02	11.94
13.5	12	12.91	12.83	12.75	12.65	12.60
15.5	14	13.59	13.50	13.42	13.29	13.26
16.5	16	13.93	13.84	13.75	13.61	13.59

16.5 16 13.93 13.84 13.75 13.61 13.59

PJG000Z046

Model FDU125VNVF Indoor unit FDU125VF Outdoor unit FDC125VN Cool Mode

Outdoor							Indo	or air t	emper	ature						
air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB
un temp.	12℃	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					10.15	9.23	10.74	10.04	11.03	9.97	11.34	9.90	11.96	10.51	12.57	10.34
13					10.63	9.44	11.26	10.24	11.57	10.17	11.91	10.11	12.58	10.72	13.25	10.55
15					11.10	9.63	11.78	10.44	12.11	10.37	12.47	10.31	13.20	10.92	13.92	10.75
17					11.58	9.84	12.29	10.64	12.65	10.58	13.04	10.52	13.82	11.13	14.59	10.96
19					11.82	9.94	12.56	10.75	12.92	10.68	13.32	10.62	14.11	11.23	14.90	11.06
21					12.06	10.04	12.82	10.86	13.19	10.79	13.60	10.73	14.40	11.33	15.20	11.15
23					12.06	10.04	12.85	10.87	13.23	10.80	13.64	10.74	14.45	11.35	15.27	11.17
25			11.16	10.20	12.06	10.04	12.89	10.88	13.27	10.82	13.68	10.76	14.51	11.37	15.34	11.20
27			11.08	10.16	12.05	10.04	12.92	10.90	13.31	10.83	13.69	10.76	14.47	11.35		
29			11.00	10.12	11.87	9.96	12.71	10.81	13.11	10.76	13.51	10.69	14.31	11.30		
31			10.92	10.09	11.69	9.88	12.49	10.72	12.90	10.67	13.32	10.62	14.15	11.24		
33	10.27	9.37	10.72	9.99	11.51	9.81	12.27	10.64	12.70	10.60	13.13	10.55	13.99	11.19		
35	10.07	9.28	10.55	9.92	11.33	9.73	12.06	10.55	12.50	10.52	12.94	10.48	13.83	11.14		
37	9.90	9.19	10.38	9.84	11.13	9.65	11.83	10.46	12.24	10.42	12.66	10.38	13.50	11.02		
39	9.72	9.11	10.20	9.76	10.94	9.57	11.60	10.37	11.99	10.33	12.38	10.28	13.16	10.91		
41	9.55	9.02	10.02	9.68	10.75	9.49	11.37	10.28	11.73	10.23	12.09	10.17	12.82	10.80		
43	9.38	8.94	9.85	9.60	10.56	9.41	11.14	10.19	11.47	10.13	11.81	10.07	12.48	10.68		

Heat Mode:HC (kW) Outdoor Indoor air temperature													
Outo	loor	In	door a	ir temp	peratu	e							
air te	emp.			°CDB									
°CDB	°CWB	16	18	20	22	24							
-19.8	-20	7.06	7.03	7.00	6.97	6.95							
-17.7	-18	7.46	7.43	7.41	7.37	7.34							
-15.7	-16	7.87	7.84	7.81	7.77	7.74							
-13.5	-14	8.33	8.29	8.26	8.22	8.18							
-11.5	-12	8.78	8.74	8.70	8.66	8.62							
-9.5	-10	9.24	9.19	9.15	9.11	9.06							
-7.5	-8	9.69	9.65	9.60	9.55	9.50							
-5.5	-6	9.91	9.86	9.81	9.75	9.70							
-3.0	-4	10.12	10.07	10.01	9.96	9.90							
-1.0	-2	10.33	10.28	10.22	10.16	10.10							
1.0	0	10.55	10.49	10.43	10.36	10.30							
2.0	1	10.65	10.59	10.53	10.47	10.40							
3.0	2	11.36	11.29	11.22	11.18	11.13							
5.0	4	12.76	12.69	12.61	12.60	12.58							
7.0	6	14.16	14.08	14.00	14.02	14.04							
9.0	8	14.72	14.64	14.56	14.52	14.49							
11.5	10	15.28	15.20	15.11	15.02	14.93							
13.5	12	16.13	16.04	15.94	15.82	15.75							
15.5	14	16.98	16.88	16.77	16.62	16.58							
16.5	16	17.41	17.30	17.19	17.02	16.99							

PJG000Z046

																(kW)	Heat	woue.	нс				(kV
)utdoor							Indo	or air t	empera	ature							Out	door	In	door a	ir temp	peratu	re
ir temp.	18℃	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB	air t	emp.			°CDB		
	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	°CWB	16	18	20	22	24
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	-19.8	-20	7.06	7.03	7.00	6.97	6.9
11					10.15	9.23	10.74	10.04	11.03	9.97	11.34	9.90	11.96	10.51	12.57	10.34	-17.7	-18	7.46	7.43	7.41	7.37	7.3
13					10.63	9.44	11.26	10.24	11.57	10.17	11.91	10.11	12.58	10.72	13.25	10.55	-15.7	-16	7.87	7.84	7.81	7.77	7.7
15					11.10	9.63	11.78	10.44	12.11	10.37	12.47	10.31	13.20	10.92	13.92	10.75	-13.5	-14	8.33	8.29	8.26	8.22	8.1
17					11.58	9.84	12.29	10.64	12.65	10.58	13.04	10.52	13.82	11.13	14.59	10.96	-11.5	-12	8.78	8.74	8.70	8.66	8.6
19					11.82	9.94	12.56	10.75	12.92	10.68	13.32	10.62	14.11	11.23	14.90	11.06	-9.5	-10	9.24	9.19	9.15	9.11	9.0
21					12.06	10.04	12.82	10.86	13.19	10.79	13.60	10.73	14.40	11.33	15.20	11.15	-7.5	-8	9.69	9.65	9.60	9.55	9.5
23					12.06	10.04	12.85	10.87	13.23	10.80	13.64	10.74	14.45	11.35	15.27	11.17	-5.5	-6	9.91	9.86	9.81	9.75	9.7
25			11.16	10.20	12.06	10.04	12.89	10.88	13.27	10.82	13.68	10.76	14.51	11.37	15.34	11.20	-3.0	-4	10.12	10.07	10.01	9.96	9.9
27			11.08	10.16	12.05	10.04	12.92	10.90	13.31	10.83	13.69	10.76	14.47	11.35			-1.0	-2	10.33	10.28	10.22	10.16	10.
29			11.00	10.12	11.87	9.96	12.71	10.81	13.11	10.76	13.51	10.69	14.31	11.30			1.0	0	10.55	10.49	10.43	10.36	10.3
31			10.92	10.09	11.69	9.88	12.49	10.72	12.90	10.67	13.32	10.62	14.15	11.24			2.0	1	10.65	10.59	10.53	10.47	10.4
33	10.27	9.37	10.72	9.99	11.51	9.81	12.27	10.64	12.70	10.60	13.13	10.55	13.99	11.19			3.0	2	11.36	11.29	11.22	11.18	11.
35	10.07	9.28	10.55	9.92	11.33	9.73	12.06	10.55	12.50	10.52	12.94	10.48	13.83	11.14			5.0	4	12.76	12.69	12.61	12.60	12.
37	9.90	9.19	10.38	9.84	11.13	9.65	11.83	10.46	12.24	10.42	12.66	10.38	13.50	11.02			7.0	6	14.16	14.08	14.00	14.02	14.
39	9.72	9.11	10.20	9.76	10.94	9.57	11.60	10.37	11.99	10.33	12.38	10.28	13.16	10.91			9.0	8	14.72	14.64	14.56	14.52	14.
41	9.55	9.02	10.02	9.68	10.75	9.49	11.37	10.28	11.73	10.23	12.09	10.17	12.82	10.80			11.5	10	15.28	15.20	15.11	15.02	14.
43	9.38	8.94	9.85	9.60	10.56	9.41	11.14	10.19	11.47	10.13	11.81	10.07	12.48	10.68			13.5	12	16.13	16.04	15.94	15.82	15.
ote(1) Th	ese data	show av	erage st	atuses													15.5	14	16.98	16.88	16.77	16.62	16.

(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)

PJG000Z046

- 207 -

Model FDU140VNVF Cool Mode Indoor unit FDU140VF Outdoor unit FDC140VN

0							Indo	or air t	empera	ature						
Outdoor air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31°C	DB	33°C	DB
un temp.	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	SHO
11					11.37	9.97	12.02	10.86	12.35	10.73	12.70	10.60	13.39	11.24	14.08	10.9
13					11.90	10.15	12.61	11.04	12.96	10.90	13.33	10.77	14.09	11.41	14.84	11.0
15					12.43	10.33	13.19	11.22	13.57	11.08	13.97	10.94	14.78	11.57	15.59	11.2
17					12.96	10.51	13.77	11.40	14.17	11.26	14.61	11.12	15.48	11.75	16.34	11.4
19					13.24	10.61	14.06	11.49	14.48	11.35	14.92	11.21	15.80	11.83	16.68	11.4
21					13.51	10.71	14.36	11.59	14.78	11.44	15.23	11.30	16.12	11.91	17.02	11.5
23					13.51	10.71	14.40	11.60	14.82	11.45	15.28	11.31	16.19	11.93	17.10	11.5
25			12.50	11.04	13.50	10.71	14.43	11.61	14.86	11.47	15.33	11.33	16.25	11.94	17.18	11.5
27			12.41	11.00	13.50	10.71	14.47	11.62	14.91	11.48	15.34	11.33	16.20	11.93		
29			12.32	10.97	13.29	10.63	14.23	11.54	14.68	11.41	15.13	11.27	16.02	11.88		
31			12.23	10.93	13.09	10.56	13.99	11.47	14.45	11.34	14.92	11.21	15.85	11.84		
33	11.51	10.16	12.01	10.85	12.89	10.49	13.75	11.39	14.23	11.28	14.71	11.15	15.67	11.79		
35	11.28	10.06	11.82	10.77	12.68	10.42	13.50	11.31	14.00	11.21	14.50	11.09	15.49	11.75		
37	11.08	9.98	11.62	10.70	12.47	10.34	13.25	11.23	13.71	11.12	14.18	11.00	15.12	11.66		
39	10.89	9.90	11.43	10.62	12.26	10.27	12.99	11.15	13.43	11.04	13.86	10.91	14.74	11.56		
41	10.70	9.82	11.23	10.55	12.04	10.20	12.73	11.07	13.14	10.95	13.55	10.83	14.36	11.47		
43	10.51	9.74	11.03	10.47	11.83	10.12	12.47	10.99	12.85	10.87	13.23	10.74	13.98	11.38		

Heat	Mode:	HC				(kW)
	door	In	door a	ir tem	peratu	e
air te	emp.			°CDB		
°CDB	°CWB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PJG000Z046

Cool Me	ode															(kW)	Heat	Mode:	НС				(k)
Outdoor							Indo	or air te	emper	ature							Out	door	In	door a	ir temp	peratu	re
air temp.	18°C	DB	21°C	DB	23°C	DB	26°C	DB	27°C	DB	28°C	DB	31℃	DB	33°C	DB	air t	emp.			°CDB		
	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	°CWB	16	18	20	22	2
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	-19.8	-20	8.06	8.03	8.00	7.97	7.
11					11.37	9.97	12.02	10.86	12.35	10.73	12.70	10.60	13.39	11.24	14.08	10.93	-17.7	-18	8.53	8.50	8.46	8.43	8.
13					11.90	10.15	12.61	11.04	12.96	10.90	13.33	10.77	14.09	11.41	14.84	11.09	-15.7	-16	9.00	8.96	8.92	8.88	8.
15					12.43	10.33	13.19	11.22	13.57	11.08	13.97	10.94	14.78	11.57	15.59	11.25	-13.5	-14	9.52	9.48	9.43	9.39	9.
17					12.96	10.51	13.77	11.40	14.17	11.26	14.61	11.12	15.48	11.75	16.34	11.41	-11.5	-12	10.04	9.99	9.95	9.90	9.
19					13.24	10.61	14.06	11.49	14.48	11.35	14.92	11.21	15.80	11.83	16.68	11.48	-9.5	-10	10.56	10.51	10.46	10.41	10
21					13.51	10.71	14.36	11.59	14.78	11.44	15.23	11.30	16.12	11.91	17.02	11.56	-7.5	-8	11.08	11.02	10.97	10.91	10
23					13.51	10.71	14.40	11.60	14.82	11.45	15.28	11.31	16.19	11.93	17.10	11.58	-5.5	-6	11.32	11.26	11.21	11.15	11
25			12.50	11.04	13.50	10.71	14.43	11.61	14.86	11.47	15.33	11.33	16.25	11.94	17.18	11.59	-3.0	-4	11.56	11.50	11.44	11.38	11
27			12.41	11.00	13.50	10.71	14.47	11.62	14.91	11.48	15.34	11.33	16.20	11.93			-1.0	-2	11.81	11.75	11.68	11.61	11
29			12.32	10.97	13.29	10.63	14.23	11.54	14.68	11.41	15.13	11.27	16.02	11.88			1.0	0	12.05	11.99	11.92	11.84	11
31			12.23	10.93	13.09	10.56	13.99	11.47	14.45	11.34	14.92	11.21	15.85	11.84			2.0	1	12.18	12.11	12.04	11.96	11
33	11.51	10.16	12.01	10.85	12.89	10.49	13.75	11.39	14.23	11.28	14.71	11.15	15.67	11.79			3.0	2	12.98	12.90	12.83	12.77	12
35	11.28	10.06	11.82	10.77	12.68	10.42	13.50	11.31	14.00	11.21	14.50	11.09	15.49	11.75			5.0	4	14.58	14.50	14.41	14.40	14
37	11.08	9.98	11.62	10.70	12.47	10.34	13.25	11.23	13.71	11.12	14.18	11.00	15.12	11.66			7.0	6	16.19	16.09	16.00	16.02	16
39	10.89	9.90	11.43	10.62	12.26	10.27	12.99	11.15	13.43	11.04	13.86	10.91	14.74	11.56			9.0	8	16.83	16.73	16.63	16.59	16
41	10.70	9.82	11.23	10.55	12.04	10.20	12.73	11.07	13.14	10.95	13.55	10.83	14.36	11.47			11.5	10	17.46	17.37	17.27	17.17	17
43	10.51	9.74	11.03	10.47	11.83	10.12	12.47	10.99	12.85	10.87	13.23	10.74	13.98	11.38			13.5	12	18.44	18.33	18.22	18.08	18
ote(1) Th	ese data	show av	erage sta	atuses.													15.5	14	19.41	19.29	19.17	18.99	1

te(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)

PJG000Z046

19.90 19.77 19.64 19.45 19.42

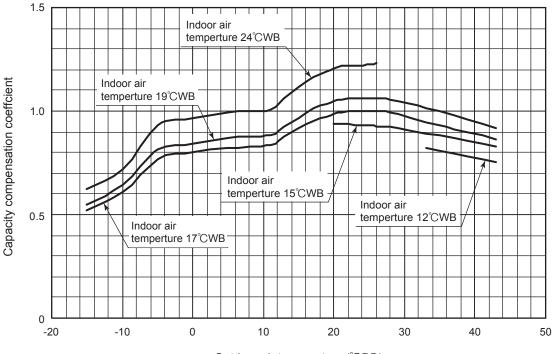
16.5 16

- 208 -

[References data]

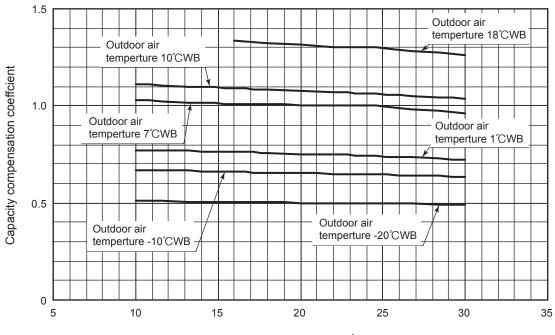
Capacity variation against outdoor and indoor temperature at rated capacity condition.

1 Cooling



Outdoor air temperature (°CDB)

2 Heating



Indoor air temperature (°CDB)

2.8.2 Correction of cooling and heating capacity in relation to air flow rate control (fan speed)

Fan speed	P-Hi or Hi	Me	Lo
Coefficient	1.00	0.97	0.95

2.8.3 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.

Equivale	nt piping length ⁽¹⁾ (n	n)	7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
	100 model		1	0.991	0.978	0.964	0.951	0.937	0.924	0.910	0.897	0.883	0.870
	125 model	φ15.88	1	0.986	0.968	0.950	0.932	0.914	0.896	0.878	0.860	0.842	0.824
Cooling	140 model		1	0.985	0.966	0.946	0.927	0.907	0.888	0.868	0.849	0.829	0.810
coomig	100 model		1.016	1.013	1.007	1.002	0.996	0.991	0.985	0.980	0.974	0.969	0.963
	125 model	φ 19.05	1.022	1.018	1.009	1.001	0.992	0.984	0.975	0.967	0.958	0.950	0.941
	140 model		1.026	1.021	1.011	1.002	0.992	0.983	0.973	0.964	0.954	0.945	0.935

Note (1) Calculate the equivalent length using the following formula.

However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.

• Equivalent Length =Actual Length + (Equivalent bend length x number of bends in the piping.) Equivalent length per bend.

Gas Pipe Diameter (mm)	φ12.7	φ15.88	φ19.05
Equivalent Bend Length	0.20	0.25	0.30

2.8.4 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	25m	30m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94

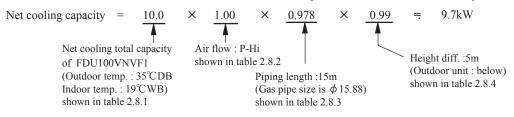
Piping length limitations

Item Model	100, 125, 140
Max. one way piping length	50m
Max. vertical height difference	Outdoor unit is higher 30m Outdoor unit is lower 15m

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 FDU100VNVF1 with the air flow "P-High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is



PJG012D004

2.9 APPLICATION DATA

2.9.1 Installation of indoor unit

(1) Indoor unit

This manual is for the installation of an indoor unit. For electrical wiring work (Indoor), refer to page 217. For remote control installation, refer to page 221. For wireless kit installation, refer to page 337. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer page 235.

SAFETY PRECAUTIONS

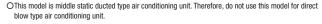
- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, <u>[AWARNING]</u> and <u>[ACAUTION]</u>, [<u>AWARNING]</u>: Wrong installation would 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.
 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.

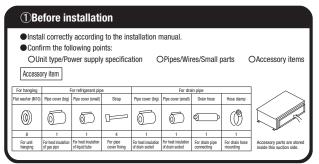
Pinstallation should be performed by the specialist. If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overtum	0
of the unit.	_
Install the system correctly according to these installation manuals. Improper installation may cause explosion, injury, water leakage, electric shock, and fire.	0
	-
Check the density refered by the fournula (accordance with ISO5149). If the density exceeds the limit density, please consult the dealer and installate the ventilation system.	0
•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.	0
Oventilate the working area well in case the refrigerant leaks during installation. If the refrigerant contacts the fire, toxic gas is produced.	0
Install the unit in a location that can hold heavy weight.	-
Improper installation may cause the unit to fall leading to accidents.	0
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.	0
Do not mix air in to the cooling cycle on installation or removal of the air conditioner.	5
If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.	\bigcirc
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.	0
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.	Ø
Loose connections or hold could result in abnormal heat generation or fire.	U
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.	0
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.	0
Use the specified pipe, flare nut, and tools for R410A.	0
Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.	U
Tighten the flare nut according to the specified method by with torque wrench.	0
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.	\sim
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.	\bigcirc
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.	0
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.	0
Only use prescribed optional 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.	0
Do not repair by yourself. And consult with the dealer about repair.	
Improper repair may cause water leakage, electric shock or fire.	$\underline{\bigcirc}$
Consult the dealer or a specialist about removal of the air conditioner.	0
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.	0
	-
O o 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 burned, or electric shock.	\bigcirc
banou, or orona orona	
Shut off the power before electrical wiring work.	

Perform earth wiring surely. Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth co cause unit failure and electric shock or fire due to a short circuit. • Earth leakage breaker must be installed. 0 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. Ø 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. \cap 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 \bigcirc 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 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. \bigcirc 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 instrument, preservation of animals, plants, and a work of art. \bigcirc 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 cosmetics or special sprays are 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 sufficient as, acid, alkali or ammonic atmospheres. Places exposed to oil mist or steam directly. On vehicles and ships Highly salted area such as beach. Heavy snow area Places where the system is affected by smoke from a chimney. 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) According to the instantation manual for each model because each moder incluses each moder unit has each minitation, Locations with any obstacles which can prevent inite 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. (IV set or radio receiver is placed within 5m) \bigcirc 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 da • 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. 0 Install the drain pipe to drain the water surely according to the installation manual. 0 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 user's health and safety. Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping worl 0 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 accider • For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, Ø and not to make air-bleeding. Check if the drainage is correctly done during commissioning and ensure the space for inspection a • 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 use 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. (n)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. (n)The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or fro 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





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.
- 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.)

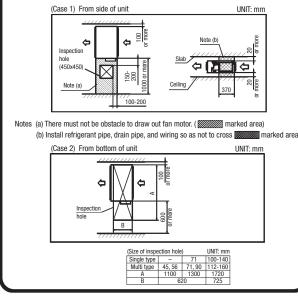
② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

Space for installation and service

•Make installation altitude over 2.5m.

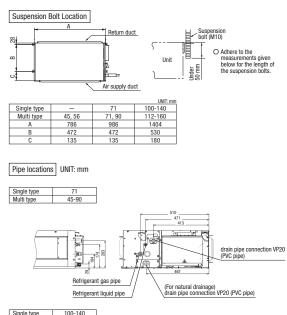
(Indoor Unit)

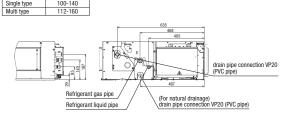
Select either of two cases to keep space for installation and services

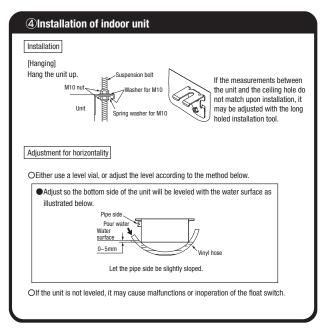


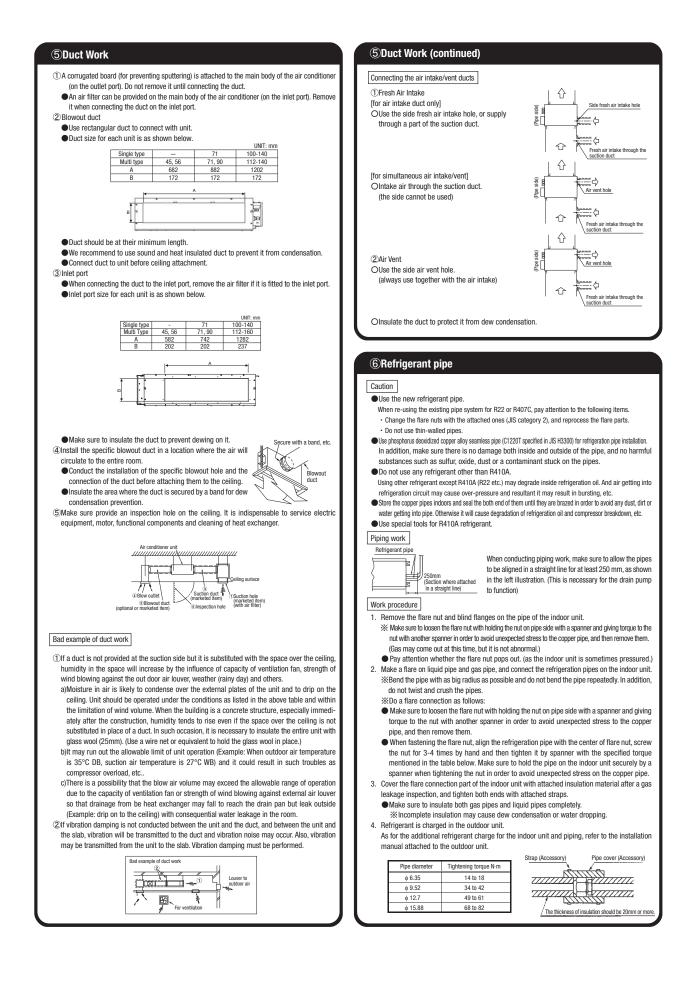
③Preparation before installation

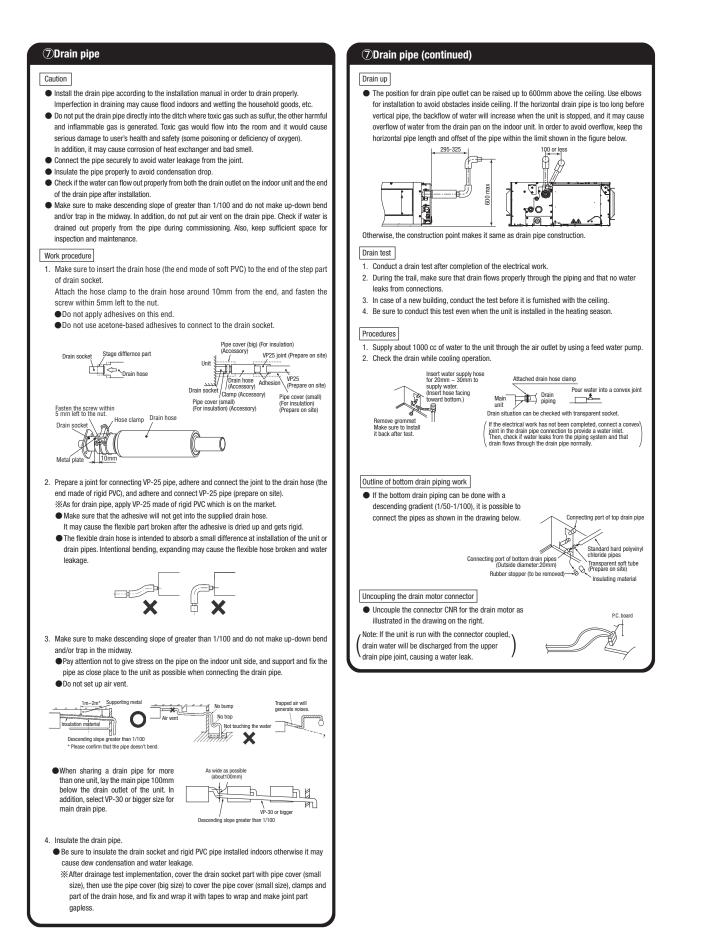
- If suspension bolt becomes longer, do reinforcement of earthquake resistant. OFor grid ceiling
 - When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
- Oin case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
- When suspension boil 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.





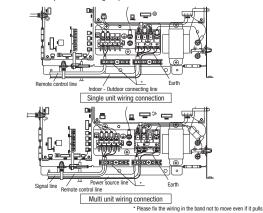






8Wiring-out position and wiring connection

- 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.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.
- 1. Remove a lid of the control box (2 screws).
- 2. 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.



9 External static pressure setting

You can set External Static Pressure (E.S.P) by method of MANUAL SETTING on remote control. Indoor unit will control fan-speed to keep rated air flow volume at each fan speed setting (Lo-Uhi) You can set required E.S.P. by wired remote control that calculated with the set air flow rate and pressure loss of the duct connected.

X

- How to set E.S.P. by wired remote control
 1 Push "
 " marked button(E.S.P. button).

 2 Select indoor unit No. by using
 button.
- (2) Select indoor unit No. by using ◆ button
 (3) Select setting No. by using ◆ button and
- set E.S.P. by CO button. See detailed procedure in technical manual.

Notice

You can NOT set E.S.P. by wireless remote control.

With E.S.P. setting, confirm that actual E.S.P. agrees with E.S.P. setting.

When E.S.P. setting is higher than actual E.S.P., the airflow rate becomes excessively higher. This will cause water leakage if water splashes.

When E.S.P.setting is lower than actual E.S.P, the airflow rate becomes excessively lower and the cooling or heating may become ineffective.

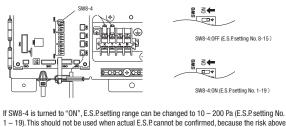
E.S.P. butt

to order to reduce the risk above the factory E.S.P.setting is set within the range of 80 - 150 Pa (E.S.P.setting No. 8 - 15). Be sure to use within the range of 80 - 150 Pa in actual operations. If actual E.S.P. is lower than 80 Pa, it may cause water leakage.

 Setting No.
 8
 9
 10
 11
 12
 13
 14
 15

 E.S.P (Pa)
 80
 90
 100
 110
 120
 130
 140
 150

% If 1 – 7 is selected for the setting No. on the remote control, the setting No. shows No. 8. If 16 – 20 is selected for the setting No. on the remote control, the setting No. shows No. 15. Factory default is No. 8.



1 - 10). This should not be used when actual E.S.P. cannot be confirmed, because the risk above becomes higher.

 Setting No.
 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19

 ES.P.(Pa)
 10
 20
 30
 40
 50
 60
 70
 80
 90
 100
 110
 120
 130
 140
 150
 160
 170
 180
 200

 Xif 20 is selected for the setting No. on the remote control, the setting No. shows No. 19.
 100
 110
 120
 130
 140
 150
 160
 170
 180
 200

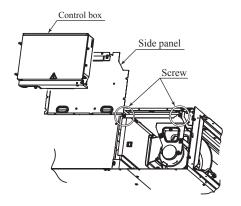
(1) Check list after installation

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	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
No 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	
Is setting of E.S.P finished?	Excessive air flow, water drop blow out	

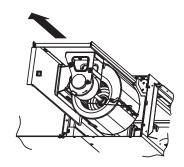
(2) Replacement procedure of the fan unit

- 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 212.
- (a) 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.

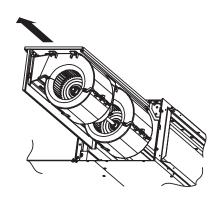


- (c) Remove the screws marked in the circles (2 places) from the fan unit located at the far side.
 - Screw Screw

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



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



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2.9.2 Electric wiring work installation

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 instructions

- 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. O O 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, O and use exclusive circuit Power source with insufficient capacity and improper work can cause electric shock and fire. Ouse 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 O rising. Fit the lid of the services panel property. Improper fitting may cause abnormal heat and fire. Ouse the genuine optional 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 \bigcirc Improper repair may cause water leakage, electric shock or fire. Consult the dealer or a specialist about removal of the air conditioner. 0 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 0 shock and injury by the operating fan. Shut off the power before electrical wiring work. 0 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. 0 If the earth leakage breaker is not installed, it could cause electric shocks or fire Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.) Q 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. O 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 \cap 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. $oldsymbol{0}$ 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 \bigcirc breakdown • Do not control the operation with the circuit breaker. \bigcirc It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

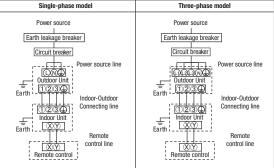
①Electrical Wiring Connection

- Use three-core cable as wiring between indoor and outdoor unit. As for detail, refer to "INSTAL-LATION MANUAL" of outdoor Unit.
- Set earth of D-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.)
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- 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.
- Connection of the line ("Between indoor and outdoor unit", Earth and Remote control) ①Remove 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 nower source
- ②Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as earth leakage breaker.
- ③If 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 breaker
- ④Install isolator or disconnect switch on the power supply wiring 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 source line to inside unit.
- % As for exceptional connecting method of power souce, discuss with the power provider of the country with referring to technical documents, and follow its instruction.
- ②For cable size and circuit breaker selection, refer to the outdoor unit installation manual.

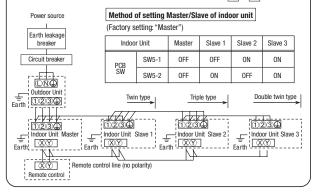


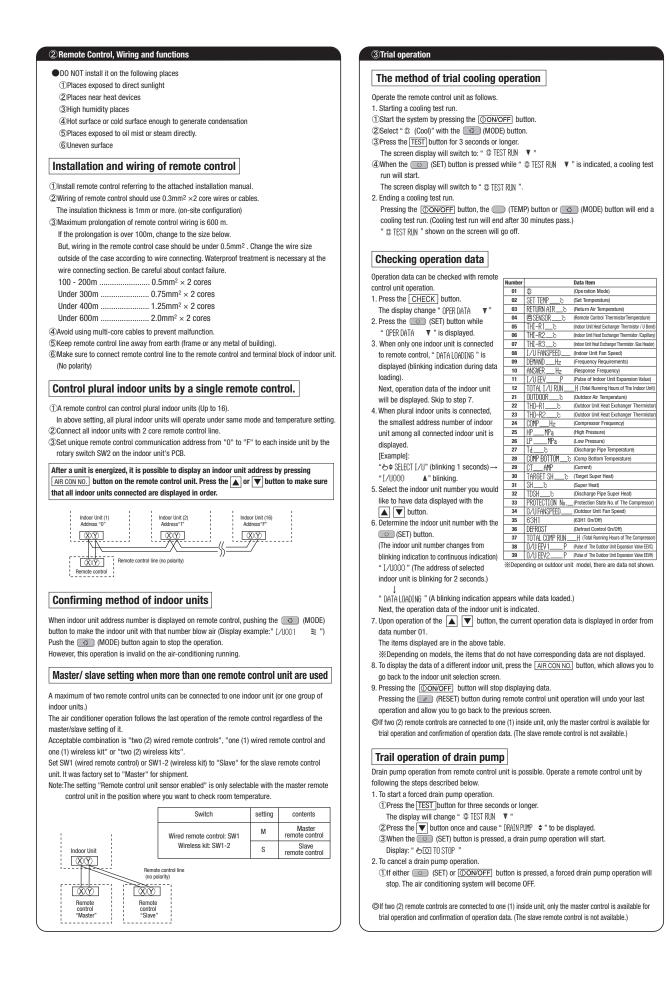
Cable connection for a V multi configuration installation

(1) Connect the same pairs number of terminal block "(1), (2), and (3)" and "(X) and (Y)" between master and slave indoor units.

(2)Do 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.
 ④When the <u>AIR CON NO.</u> 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 viton.

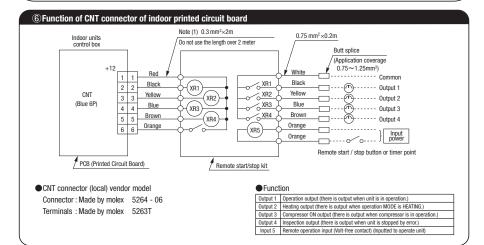




Function Setting by Remote Control			
he functional setting. The initial function setting for typical using is performed automatically for a remote control unit and an indoor unit by the door unit conner	cted when	Note 1: The initial setting marked defined as following table	" $\%$ " is decided by connected indoor and outdoor unit, and is automate.
rme initial initial of setung for typical using is performed automatically for a remote control unit and an indoor unit by the door unit conne remote control and inside unit are connected.	cieu, wiien	Function No. Item	Default Model
As long as they are used in a typical manner, there will be no need to change the initial settings.		Function 02 of remote control AUTO RUN SET	AUTO RUN ON "Auto-RUN" mode selectable indoor unit. AUTO RUN OFF Indoor unit without "Auto-RUN" mode
If you would like to change the initial setting marked " () ", set your desired setting as for the selected item.			the PERTURNING Independent with two or three steps of sight our entries
The procedure of functional setting is shown as the following diagram.	remote control	See INVALID Indoor unit with only one of air flow setting	
As for detail of setting, refer to the installation manual of remote control.		Function 07 of remote control	승교 VALID Indoor unit with automatically swing louver 승교 INVALID Indoor unit without automatically swing louver
[Flow of function setting] Start : While indoor unit do not operate, press " () (SET) and " () " (MODE) button for 3 seconds at the same time.			HI-HID-LO Indoor unit with three step of air flow setting
Finalize : Press " () " (SET) button.		Function 13 of remote control I/U FAN	HI-L0 Indoor unit with two step of air flow setting
Reset : Press " (RESET) button.		Temple condu	HI-MID 1 FAN SPEED Indoor unit with only one of air flow setting
Select : Press 🔊 🔽 button.		Function 15 of NOOEL TYPE	HEAT FUMP Heat pump unite
End : Press ON/OFF button.		remote control NURL ITT	COULING ONLY Exclusive cooling unite
It is possible to finish above setting on the way, and unfinished change of setting is unavailable.		Note 2: Fan setting of "HIGH SPI	FED."
" () " : Initial settings " ※ " : Automatic criterion			Indoor unit air flow setting
As for detail, refer to the installation manual of remote control.		Fan tap	inder anten ner senig inder anten ner senig
		FAN SPEED SET STANDARD	UH - Hi - Me - Lo Hi - Me - Lo Hi - Me
(SET) + CO (MODE) button	nd save the	HIGH SPEEDT, 2	UH - UH - Hi - Me UH - Hi - Me UH - Hi
simultaneously for 3 seconds Consult the technical data etc for each control details	tting	Initial function setting of some i	ndoor unit is "HIGH SPEED"
FUNCTION SET V		Note 3: As for plural indoor unit,	set indoor functions to each master and slave indoor unit.
Only when	plural indoor units are connected		unit is received the setting change of indoor unit function "05 EXTE
10% T (Remote control function) (Indoor unit function) 1/0 RMCTION A Indoor No (Note3)	selection Function	INPUT" and "06 PERMIS	SION / PROHIBISHION".
Function 1/1000 4	02 FAN SPEED SET Setting		
01 A000 ESF SET setting 1/000 € 04 A000 ESF Will ○ Validate setting of ESP:External Static Pressure 1/000 €	STANDARD O HIGH SPEED 1 (Not	to 7)	
MAC EXP MINLID Invalidate setting of ESP 1/1003 +	HIGH SPEED 1 (NOT HIGH SPEED 2	1023	
02 AUTO RUN SET 1/0004 +	03 FILTER SIGN SET		
AITO RIN (W) ** AITO RIN (OF) ** Automatic operation is impossible	INDICATION OFF	e filter sign is indicated after running for 1	80 hours.
03 [2023 1649: 30	TYPE 2 The	e filter sign is indicated after running for 6	600 hours.
	TYPE 3 The TYPE 4 The	e filter sign is indicated after running for 1 e filter sign is indicated after running for 1	000 hours. 000 hours, then it will be stopped by compulsion after 24 hours.
04 CE MODE SW button, and indoor selection indication			
(for example: I/U 000) is set back. (for example: I/U 000) is set back.	04 중규POSITION If to	o change the indoor function "O4 रून POSIT e remote control function "14 रून POSITION "	rion ",
05 © 0N/OFF SW		ect the louver stop position in four.	should be changed accordingly.
50 VALID O	FREE STOP The	e louver can stop at any positon.	
66 [EF:WI SPEED SW] 0n/Off button is not working	05 EXTERNAL INPUT		
es wito ∗	PULSE INPUT		
参図 INVALID ※ Fan speed button is not working 07 [空 LOUVER SW	06 PREINTRESSONTEREITER		
6EZ WILD ×	INWILD O VALID Mai	ke permission/prohibition control of funct	ion be in effect.
B⊡ INWLID × Louver button is not working	07 ENERGENCY STOP		
80 [01] [05] [05] [05] [05] [05] [05] [05] [05	INWALID O VALID With	th the VRF series, it is used to stop all indo	oor units connected with the same outdoor unit immediately.
も図 INWLID Timer button is not working	Whi	en stop signal is inputed from remote on-	off terminal "CNT-6", all indoor units are stopped immediately.
09 ESRIAR SET ESRIAR OFF CRemote thermistor is not working.	OFFSET +3.0% To t	be reset for producing +3.0°C increase in	temperature during beating
Exercision Remote thermistor is working.	OFFSET +2.0% To b	be reset for producing +3.0°C increase in be reset for producing +2.0°C increase in	
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.		be reset for producing +1.0°C increase in	temperature during heating.
BONDR +2.0% Remote thermistor is working, and to be set for producing +2.0% Increase in temperature. BONDR +1.0% Remote thermistor is working, and to be set for producing +1.0% Increase in temperature.	NO OFFSET O		
BSB00R - 1.0c Remote thermistor is working, and to be set for producing -1.0°C increase in temperature.		be reset producing +2.0°C increase in ref	
BSNDR-20b Remote thermistor is working, and to be set for producing ~2.0°C increase in temperature. BSNDR-3.0b Remote thermistor is working, and to be set for producing ~3.0°C increase in temperature.	OFFSET +1.5c To t 09 RETURN AIR TEMP OFFSET +1.0c To t	be reset producing +1.5°C increase in ret be reset producing +1.0°C increase in ret	turn air temperature of indoor unit. turn air temperature of indoor unit.
10 AUTO RESTART	NO OFFSET O		
INWALID O VALID	OFFSET -1.0c To t OFFSET -1.5c To t	be reset producing -1.0°C increase in reto be reset producing -1.5°C increase in reto	urn air temperature of indoor unit.
11 VET LINK SET	OFFSET -2.0c To t	be reset producing -2.0°C increase in ret	
ND VENT O Connect the Single split series and the VRF series to the indoor board CNT and indoor board CND respectively. If a	10 🔆 FAN CONTROL		
Ventilation device is connected, been geared with the motion of indoor device, the ventilation device is operated/stopped.		en heating thermostat is off, to be operation on heating thermostat is off, to be operation	
NO YENT LINK By connecting the ventilation device with the Single split series device to indoor board CNT, the VRF series device to CND, you can operate/stop the ventilation device independently by the handling of ventilation button.	SET FAIN SPEED		
12 TOHP RIVIDE SET	INTERMITTENCE Who FAN OFF Who	en heating thermostat is off, to be operati Ien heating thermostat is off, the fan stops	ea intermittently. s
INN CHANGE If you change the range of set temperature, the indication of set temperature will vary following the control.	Whe	en the remote thermistor is working, "FAI	N OFF" is set automatically.
NU INUM CHINKS: keep the set temperature.		not set when the indoor unit's thermistor	
13 J/JFM	11 ROST PREVENTION TEMP HIGH Cha	ange of indoor heat exchanger temperatur	re to start frost prevention control.
HI-HUD-L0 X HII-HUD-L0 X HII-L0 X Airflow of fan becomes the two speed of \$**** - \$*****************************	TEMP LOW O		
HI-MID Airflow of fan becomes the two speed of $\vartheta_{extl} - \vartheta_{tll}'$.		rking only with the size	
I FMI SPEED ※ Airflow of fan is fixed at one speed.		rking only with the single split series. control frost prevention, the indoor fan tap	o is raised.
14 카카RSTIUN If you want to change the remote control function "14 카카RSTIUN",	FAN CONTROL OFF		
You must change the indoor function "04 :===restrice" accordingly.	13 DRAIN PUNPLINK	in numn is on during cooling and dra	
FREE STOP The Lower can stop us at any position.	\$0 AND * Dra	ain pump is on during cooling and dry. ain pump is on during cooling, dry and hea	ating.
	©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©©	ain pump is on during cooling, dry, heating	g and fan.
	I4 © FAN REMAINLING BOAND SE Dra	ain pump is on during cooling, dry and fan	L
COULING ONLY 🙁	NO REMAINING O Afte		at is off, the fan does not perform extra operation.
COXLING ON Y × T6 [STREWN CONTROL ST]	0.5 HOUR After		at is off, the fan perform extra operation for half an hour. at is off, the fan perform extra operation for an hour.
TE [ZTRINK CHITEST] From outside, the indoor device will be operated independently			at is off, the fan perform extra operation for an nour. at is off, the fan perform extra operation for six hours.
DOUBLIE GUT IDE [CITION CONTRECT] IF you input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently following the input from outside. IF You input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently following the input from outside. IF You input into the indoor printed circuit board CNT from outside, All units which share the same one remote control	1 HOUR After 6 HOUR After		
Interview Interview <t< td=""><td>I HOUR Afte 6 HOUR Afte</td><td></td><td></td></t<>	I HOUR Afte 6 HOUR Afte		
DOUBLIE GUT IDE [CITION CONTRECT] IF you input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently following the input from outside. IF You input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently following the input from outside. IF You input into the indoor printed circuit board CNT from outside, All units which share the same one remote control	I HOUR Afte [6 HOUR Afte 15 [% FAN REMAINING NO REMAINING Afte 0.5 HOUR Afte Afte		at is off, the fan does not perform extra operation. at is off the fan oerform extra operation for half an hour.
Image: Control of the second	I HUR Afte 15 % FAN REMEINING 6 HOUR Afte NO REMAINING 0.5 HOUR Afte 0.5 HOUR Afte 2 HOUR Afte	er heating is stopped or heating thermost er heating is stopped or heating thermost	at is off,the fan perform extra operation for half an hour. at is off,the fan perform extra operation for two hours.
Image: Control of the second	I HUR Afte 15]% FAN REMINING 6 HOUR Afte 15]% FAN REMINING 00 REMAINING Afte 0.05 HUR Afte Afte 2 HOUR Afte Afte 6 HOUR Afte Afte	er heating is stopped or heating thermost er heating is stopped or heating thermost	at is off,the fan perform extra operation for half an hour.
Image: Section Control Contrect Control Control Control Control Control Control	I HAR Ante G HAR Ante IS % FAN REMAINING NO FERMINING NO FERMINING Ante QUAR Ante 2 MAR Ante 16 (% FAN INTIGIC Ante 16 (% FAN INTIGIC NO FERMINING	er heating is stopped or heating thermost er heating is stopped or heating thermost er heating is stopped or heating thermost	at is off, the fan perform extra operation for half an hour. at is off, the fan perform extra operation for two hours. at is off, the fan perform extra operation for six hours.
Is [EXTING ONTEXT] If you input into the indoor printed circuit board ONT from outside, the indoor device will be operated independently following the input from outside. If (EXTING CONTEXT) If you input into the indoor printed circuit board ONT from outside, All units which share the same one remote control network work following the input from outside. If (EXTING CONTEXT) If you input into the indoor printed circuit board ONT from outside, All units which share the same one remote control network work following the input from outside. If (EXTING CONTEXT) Incommal working indication, indoor unit temperature is indicated instead of airflow. If (EXTING CONTEXT) Incommal working indication, indoor unit temperature is indicated. If (EXTING CONTEXT) Incommal working indication should not be indicated.	11 HBR Antre 15 5: FM RFMINING 6 HBR Antre 15 5: FM RFMINING MD RFMINING Antre 2 HBR Antre 6 HBR Antre 16 5: FM RFMINING MD RFMINING Antre 0.5 HBR Antre MD RFMINING Antre 0.5 HBR Antre MD RFMINING Antre	er heating is stopped or heating thermost er heating is stopped or heating thermost er heating is stopped or heating thermost ring heating is stopped or heating thermost	at is off,the fan perform extra operation for half an hour. at is off,the fan perform extra operation for two hours.
Image: Instruction of the index is a set of the index printed circuit board CNT from outside, the index device will be operated independently following the input from outside. If (INTERNET SET is a set of the index printed circuit board CNT from outside, the index device will be operated independently following the input from outside. 17 (INTE INF MUDILINE) Interview of the index of the input from outside. If (INTERNET is a set of the index of the input from outside. 17 (INTE INF MUDILINE) Interview work following the input from outside. Interview work following the input from outside. 17 (INTE INF MUDILINE) Interview of the index of the input from outside. Interview of the input from outside. 17 (INTE INF MUDILINE) Interview of the input from outside. Interview of the input from outside. 17 (INTE INF MUDILINE) Interview of the input from outside. Interview of the input from outside. 18 (INTE INF INF INFORMATION INFORMATIO	[] HUR Antr. [] S. FAN RYMINING FORZAR [] S. FAN RYMINING Antr. [] B. RYMINING Antr. [] B. RYMINING Dur. [] B. RYMINING Dur. [] Constraint F. Sandow Dur.	er heating is stopped or heating thermosts er heating is stopped or heating thermost er heating is stopped or heating thermost ring heating is stopped or heating thermost h low airflow. In gheating is stopped or heating thermos	at is off, the fan perform extra operation for half an hour. at is off, the fan perform extra operation for two hours. at is off, the fan perform extra operation for six hours.
Is [000000 cm/list 31] INVIVUAN C Is [000000 cm/list 32] INVIVUAN C If you input into the indoor printed circuit board CNT from outside, the indoor device will be operated independently following the input from outside. Invivuent into indoor printed circuit board CNT from outside, All units which share the same one remote control network work following the input from outside. If you input into the indoor formation indoor you input into the input from outside. Interview work following the input from outside. If generation information information indoor you input into the indicated instead of airflow. Only the master remote control can be indicated. If generation information indication should not be indicated. Indicated instead of airflow. If generation indication should not be indicated. Indicated instead of airflow.	[] HUR Antr. [] S. FAN RYMINING FORZAR [] S. FAN RYMINING Antr. [] B. RYMINING Antr. [] B. RYMINING Dur. [] B. RYMINING Dur. [] Constraint F. Sandow Dur.	er heating is stopped or heating thermost er heating is stopped or heating thermost er heating is stopped or heating thermost ring heating is stopped or heating thermost h low airflow.	at is off, the fan perform exits operation for half an hour, at is off the fan perform exits operation for two hours. at is off, the fan perform exits operation for six hours. stat is off, the fan perform intermittent operation for five minutes after twenty minute
Image: Status But Y	[] HUR Antr. [] S. FAN RYMINING FORZAR [] S. FAN RYMINING Antr. [] B. RYMINING Antr. [] B. RYMINING Dur. [] B. RYMINING Dur. [] Constraint F. Sandow Dur.	er heating is stopped or heating thermosts er heating is stopped or heating thermost er heating is stopped or heating thermost ring heating is stopped or heating thermost h low airflow. In gheating is stopped or heating thermos	at is off, the fan perform exits operation for half an hour, at is off the fan perform exits operation for two hours. at is off, the fan perform exits operation for six hours. stat is off, the fan perform intermittent operation for five minutes after twenty minu

5 Control mode switching

Switch No.	Control	Content		
SW2	Indoor ι	unit address (0-Fh)		
SW5-1	Master	Slave Switching (plural /Slave unit Setting)		
SW5-2	maston	Sidvo Switching (plana / Sidvo and Sodang)		
SW6-1~4	Model of	capacity setting		
SW7 – 1 ON Operation check, Drain mot		Operation check, Drain motor test run		
5w/ 1	OFF Normal operation			



Error Code of indoor unit

LED on indoor

red (checking)

Off

Off

Off

Not sure Blinking twice

Blinking once

Blinking once

Blinking once

Blinking once Blinking twice

Off

nking for three tim

Blinking once

Blinking twice

Blinking once

Blinking once Blinking twice

Off

Off

circuit board

green (normal)

Continuous blinking

Off

Continuous blinking

Not sure Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Continuous blinking

Content

Normal ult on power, indoor power off or lack

phase Fault on the transmission between indoor circuit board and remote control

Indoor computer abnormal Fault on outdoor-indoor transmission

Indoor air inhaling sensor broken or short-circuit The temperature of heat exchange abnormal

Float SW actions (only with FS)

Drain pump over current Excess number of remote control

connections The communication fault for maste

Fan motor (1) abnormal Fan motor (2) abnormal Configuration fault on running checking model

an motor (1) abnormal rotation

Fan motor (2) abnormal rotation Remote control sensor interrupte Outdoor unit checking (outdoor cir

short-circuit

ndoor units

Config nodel

ing

Display or remote controller

Off

F1

E6

E7

E8

E9

E10

E14

F16

F19

E20

E28

Over E30

(7)Troubleshooting

The operation data is saved when the situation of abnormal operation happen, and the data can be confirmed by remote control. [Operating procedure]

- 1. Press the CHECK button.
- ₹" The display change " OPFR DATA
- 2. Once, press the button, and the display change
- " ERROR DATA 🐪 3. Press the O (SET) button and abnormal operation data mode is started.
- 4. When only one indoor unit is connected to remote control, following is displayed.
- $\textcircled{\sc l}$ The case that there is history of abnormal operation. \rightarrow Error code and " DATA LOADING " is displayed.
- [Example]: [E8] (ERROR CODE) "DATA LOADING" 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. \rightarrow " 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)
- ▲ " blinking 1711000
- (2) The case that there is not history of abnormal operation. → Only address number is displayed.
- 6. Select the indoor unit number you would like to have data displayed with the 🔺 🔻 button.
- 7. Determine the indoor unit number with the O (SET) button.
- [Example]: [E8] (ERROR CODE)
- (The address of selected indoor unit is blinking for 2 seconds.) " I/U000
- [E8] "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 (3) Trial operation .
- *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.

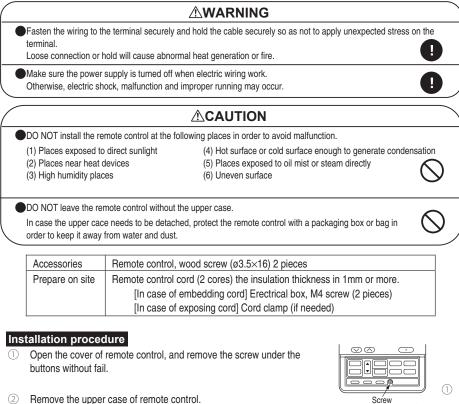
Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

Sif two (2) remote controls are connected to one (1) indoor unit, only the master control is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

2.9.3 Installation of wired remote control (option)

(1) Model RC-E5

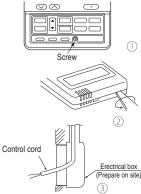
Read together with indoor unit's installation manual.



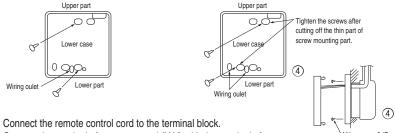
Insert a flat-blade screwdriver into the dented part of the upper part of the remote control, and wrench slightly.

[In case of embedding cord]

3 Embed the erectrical box and remote control cord beforehand.



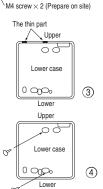
Prepare two M4 screws (recommended length is 12-16mm) on site, and install the lower case to erectrical box. Choose either of the following two positions in fixing it with screws.



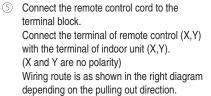
- Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)
- Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.

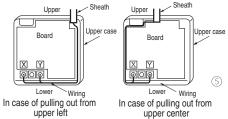
[In case of exposing cord]

- ③ 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.



PJA012D730





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	The peeling-off length
Y wiring : 195mm	Y wiring : 190mm	of sheath

- 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

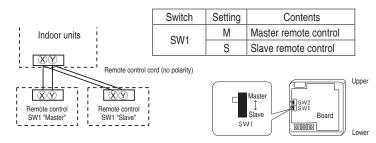
- ① Wiring of remote control should use 0.3mm² × 2 core wires or cables. (on-site configuration)
- 2 Maximum prolongation of remote control wiring is 600 m.

If the prolongation is over 100m, change to the size below. But, wiring in the remote control case should be under 0.5mm². 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.

100 - 200m ······	····0.5mm ² × 2 cores
Under 300m	$\cdots 0.75 \text{mm}^2 \times 2 \text{ cores}$
Under 400m	····1.25mm ² × 2 cores
Under 500m	$\cdots 2.0$ mm ² \times 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 : " @WAI T@	Μ"
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)

Oupper 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.

1. When (2) 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 (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]

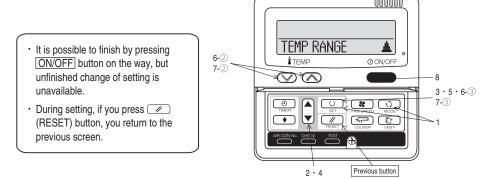
During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

How to set upper and lower limit value

1. Stop the air-conditioner, and press O (SET) and C (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 O (SET) button, and enter the temperature range setting mode.
- 4. Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using ▲ ▼ button.
- 5. Press <u>(SET)</u> button to fix.
- 6. When "UPPER LIMIT ▼ " is selected (valid during heating)
 - ① Indication: " $⊕ \lor \land$ SET UP" → "UPPER 30°C ∨"
 - \odot Select the upper limit value with temperature setting button \bigtriangledown . Indication example: "UPPER 26°C \lor \land " (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 ▲" is selected (valid during cooling, dry, fan, automatic)
 - (1) Indication: " $\textcircled{b} \lor \land$ SET UP" \rightarrow "LOWER 18°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.

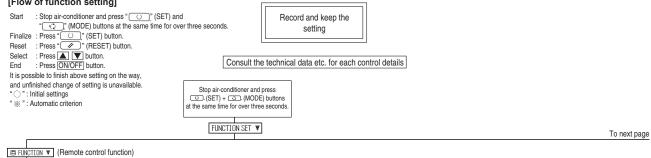


The functional setting

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 "○", set your desired setting as for the selected item. The procedure of functional setting is shown as the following diagram.

[Flow of function setting]



Function	setting		
01 620 ESP SET			Validate setting of ESP:External Static Pressure
	USE ESP VALID	+	Invalidate setting of ESP:External Static Pressure
02 AUTO RUN SET	CORRECTED FOR THANKET		invalidate setting of ESP
	AUTO RUN ON	*	4
	AUTO RUN OFF	- *	Automatical operation is impossible
)3 ⊠⊠ TEMP SW		1 //	
	8년 VALID 8년 INVALID		
	⊕⊠⊠ INVALID		Temperature setting button is not working
04 📧 MODE SW			
	கு 🖾 VALID	0	
	5 C INVALID		Mode button is not working
05 ON/OFF SW			
	CO VALID	0	
	ூர INVALID		On/Off button is not working
06 🖾 FAN SPEED SW		Laz	
	6년 VALID 6년 MALID	<u>×</u>	
	CONSTINUTION	*	Fan speed button is not working
07 🖾 LOUVER SW	ండా VALID	*	
	SE INVALID	*	Louver button is not working
08 💿 TIMER SW		×	Louver builton is not working
70 CELITICK OW	டூ @ VALID	10	1
	50 INVALID	+	Timer button is not working
09 SENSOR SET			
	SENSOR OFF	10	Remote thermistor is not working.
	SENSOR ON	Ť	Remote thermistor is working.
	SENSOR +3.0%		Remote thermistor is working, and to be set for producing +3.0 °C increase in temperature.
	SENSOR +2.0°C		Remote thermistor is working, and to be set for producing +2.0°C increase in temperature.
	SENSOR +1.0°C		Remote thermistor is working, and to be set for producing +1.0 °C increase in temperature.
	SENSOR - 1.0°C		Remote thermistor is working, and to be set for producing -1.0°C increase in temperature.
	ESENSOR -2.0%		Remote thermistor is working, and to be set for producing -2.0°C increase in temperature.
	SENSOR -3.0%		Remote thermistor is working, and to be set for producing -3.0°C increase in temperature.
10 AUTO RESTART	1	1.0	
	INVALID	0	
	VALID		
11 VENT LINK SET	NO VENT		4
	NU VENT	$+ \circ$	In case of Single split series, by connecting ventilation device to CNT of the
			indeer printed circuit beard (in case of VRF series, by connecting it to CND of the
	VENT LINK		indoor printed circuit board, inte operation of ventilation device is linked with the
			Index printed sheard, and operation of ventilation device is inked with the operation of index unit.
		-	Deretation on incorto ninc. In case of Single split series, by connecting ventilation device to CNT of the indoor printed
	NO VENT LINK		circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit
	NO YEAT ETAIS		board), you can operate /stop the ventilation device independently by 😰 (VENT) button.
12 TEMP RANGE SET		-	
		0	If you change the range of set temperature, the indication of set temperature
	INDN CHANGE	10	will vary following the control.
	NO INDN CHANGE		If you change the range of set temperature, the indication of set temperature
			will not vary following the control, and keep the set temperature.
13 I/UFAN	1		
	HI-MID-LO	*	Airflow of fan becomes of 🗞 🖬 - 🗞 🛍 - 🛠 aul or the four speed of 📽 aul - 🛠 aul - 🛠 aul - 🛠 aul - 🛠 aul -
	HI-LO	*	Airflow of fan becomes of 🗞 📶 - 🍇 🛍
	HI-MID		Airflow of fan becomes of &ast- &ast.
	1 FAN SPEED	*	Airflow of fan is fixed at one speed.
14 🖘 POSITION			If you change the remote control function "14 ⇒,POSITION ",
14 1 20 T FUOLITUN	7		you must change the indoor function "04 ->POSITION" accordingly.
	4POSITION STOP		You can select the louver stop position in the four.
	FREE STOP	+	The louver can stop at any position.
15 MODEL TYPE	L'une or or		ווים וסטיפו כמו פוסף מו מוץ ףטפונטוו.
	HEAT PUMP	1 *	1
	COOLING ONLY	*	1
16 EXTERNAL CONTROL SET			1
	THEFT	0	If you input signal into CNT of the indoor printed circuit board from external, the
	INDIVIDUAL	10	indoor unit will be operated independently according to the input from external.
	FOR ALL UNITS		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.
17 ROOM TEMP INDICATION SET			
	INDICATION OFF	10	
	INDICATION ON		In normal working indication, indoor unit temperature is indicated instead of airflow.
			(Only the master remote control can be indicated.)
18 🔅 INDICATION	INDICATION ON		4
		+	l leading propagation indication should not be indicated
	INDICATION OFF		Heating preparation indication should not be indicated.
19 °c∕*⊨ SET			1
	č	0	Temperature indication is by degree C
	ΤF		Temperature indication is by degree F To next page
			ON/OFF button
			(finished)

Note 1: The initial setting marked " X " 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	[∞]FAN SPEED SW	ය VALID	Indoor unit with two or three step of air flow setting			
function06		கன INVALID	Indoor unit with only one of air flow setting			
Remote control	🖾 LOUVER SW	R SW & C VALID Indoor unit with automatically swing louver				
function07		கன 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			

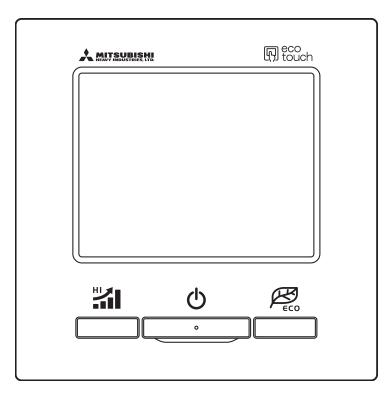
Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit. But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".

rom previous page						Note2: Fan set	ting of "HI	GH SPEED"			
			No. are indicated only whe	n		Fan ta		Indo	or unit air flow se		
(Indoor uni	it function) I/U FUNCTIO	N 🔺 plural indo	or units are connected. Function				٣	8adi - 8ad - 8ad - 8ad	8afi - 8afi - 8afi	Rand - Rand	Stati - Stati
		I/U000 🔺	02 FAN SPEED SET	setting			TANDARD	UH - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
		I/U001≑			Ж	SPEED SET	HIGH	UH - UH - Hi - Me	UH - Hi - Me	UH - Me	UH - Hi
		I/U002≑ I/U003≑		HIGH SPEED 1 HIGH SPEED 2	*	SI	PEED1, 2				
		I/U004 ≑	03 FILTER SIGN SET					ome indoor unit is "HIGH 5 set with wireless remote co			
				INDICATION OFF TYPE 1		· ·		ter running for 180 hours.			
	-			TYPE 2				ter running for 600 hours.			
	To set other indoo AIRCON NO. but			TYPE 3				ter running for 1000 hours.	the set the standard second		and to a
	allows you to go b		r	TYPE 4		I he filter sign is in compulsion after 2		ter running for 1000 hours,	then the indoor un	it will be stopp	ed by
	unit selection scre		04 🖘 POSITION	_				ction "04 🖘 POSITION"			
	(for example: I/U			4POSITION STOP)	you must change	the remote	e control function "14 🖘 🖃		ngly.	
				FREE STOP	_	You can select the The louver can sto		op position in the four.			
			05 EXTERNAL INPUT				op at any p	ookon.			
				LEVEL INPUT PULSE INPUT	<u> </u>						
			06 OPERATION PERMISSION/PROHIBITION		_						
				INVALID VALID	<u> </u>	Dormicsion/prohib	ition contr	ol of operation will be valid			
			07 EMERGENCY STOP	THEID	- '	remission/promu		or of operation will be value			
				INVALID	<u> </u>						
				VALID				ed to stop all indoor units c from remote on-off termina			
					ľ	mon stop signal	io inputou				ppeu inineuie
				OFFSET +3.0%		Ta ha waasi fay aw	oducion . O	0°C increases in termostet	ve during besting		
				OFFSET +2.0%				.0°C increase in temperatu .0°C increase in temperatu			
			08 🔅 SP OFFSET	OFFSET +1.0% NO OFFSET		To be reset for pro	oducing +1	.0°C increase in temperatu	ire during heating.		
				NU UFFOEI	4						
				OFFSET +2.0%				C increase in return air terr			
			09 RETURN AIR TEMP	OFFSET + 1.5% OFFSET + 1.0%				C increase in return air terr C increase in return air terr			
				NO OFFSET	0		ionig i no			unit.	
				OFFSET - 1.0% OFFSET - 1.5%				increase in return air tem			
				OFFSET -2.0°c				c increase in return air tem c increase in return air tem			
			10 🔅 FAN CONTROL	LOW FAN SPEED			-				
								OFF, fan speed is low spe OFF, fan speed is set spee			
				SET FAN SPEED		-					
				INTERMITTENCE FAN OFF				OFF, fan speed is operate OFF, the fan is stopped.	a intermittentiy.		
				mitori	1	When the remote	thermistor	is working, "FAN OFF" is a	set automatically.		
						Do not set "FAN C	OFF" when	the indoor unit's thermisto	r is working.		
			11 FROST PREVENTION TEMP		(Change of indoor	heat excha	anger temperature to start	frost prevention cor	ntrol.	
				TEMP HIGH TEMP LOW	0						
					9						
			12 FROST PREVENTION CONTROL			Working only with					
				FAN CONTROL ON FAN CONTROL OFF	<u> </u>	To control frost pro	revention, t	he indoor fan tap is raised.			
			13 DRAIN PUMP LINK	· · · · ·							
				恭心 恭心 AND ※		Drain pump is run Drain pump is run		bling and dry. bling, dry and heating.			
				\$¢ AND⊗ AND≋	(Drain pump is run	during co	bling, dry, heating and fan.			
			14 🗱 FAN REMAINING	\$\$ O AND ■	[Drain pump is run	during co	bling, dry and fan.			
			14 3811010000000000	NO REMAINING		After coolina is sto	opped. the	fan does not perform extra	operation.		
				0.5 HOUR	/	After cooling is sto	opped, the	fan perform extra operatio	n for half an hour.		
				1 HOUR 6 HOUR				fan perform extra operatio fan perform extra operatio			
			15 🔅 FAN REMAINING		_						
				NO REMAINING 0.5 HOUR				eating thermostat is OFF, eating thermostat is OFF,			
				2 HOUR	/	After heating is sto	opped or h	eating thermostat is OFF,	the fan perform ext	ra operation for	or two hours.
			16 × FAN INTERMITTENCE	6 HOUR	7	After heating is sto	opped or h	eating thermostat is OFF,	the fan perform ext	ra operation f	or six hours.
				NO REMAINING	0						
				20minOFF 5minON				heating thermostat is OFF	, the fan perform ir	itermittent ope	eration for five
						with low fan speed During heating is s		hty minutes' OFF. heating thermostat is OFF	, the fan perform ir	termittent one	eration for five
				sminOFF sminON		with low fan speed					
			17 PRESSURE CONTROL	STANDARD	*						
						Connected "OA P	rocessing"	type indoor unit, and is au	tomatically defined		
m previous page											

1. 2. 3.	Ytoset function Stop air-conditioner and press ○. (SET) <>. (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼ " will be displayed.	Operation message Function description: (®), setting description: (®) HUTO RUN SET TEMP OCHOEF TemP OCHOEF TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent TemP Concernent Concernent TemP Concernent Con
5.	Press O (SET) button.	6 — (8) Indoor unit selection button Previous screen button
	 IOn the occasion of remote control function selection I "DATA LOADING" (Indication with blinking) jusplay is changed to "01 b@@ESP SET". Press or or button. "No. and function" are indicated by turns on the remote control function table, then you can select from them. (For example) <u>are function No.</u> AUTO RUN SET <u>function No.</u> Press (SET) button. The current setting of selected function is indicated. (for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected <u>attor RUN ON</u> ← If "02 AUTO RUN SET" is selected <u>are function are indicated.</u> (or example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected <u>are function are indicated.</u> (or example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected <u>are function are indicated.</u> (or example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected <u>are function are indicated.</u> Press of or button. Select the setting. <u>are function are are indicated.</u> 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. <u>BET COMPLETE</u> Press ON/OFF button. Setting is finished. 	 Con 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". Go to ②. [Note] (1) 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 or button. (4) Press or button. (5) Press or button. (6) Press or button. (7) Press or or button. (8) Press or or button. (9) Press or or or or button. (9) Press or or button. (9) Press or or button. (9) Press o
	 It is possible to finish by pressing ON/OFF butt unavailable. During setting, if you press (RESET) but Setting is memorized in the control and it is save 	on on the way, but unfinished change of setting is tton, you return to the previous screen.
	[How to check the current setting]	by the previous operation, the "Setting" displayed first is the current

PJZ012D077

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 optional 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.

Failure to follow these instructions properly may result in serious consequences such as death, severe injury, etc
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.



Never do.



Always follow the instructions given.

•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.

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 supply 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.

Seal the inlet hole for remote control cable with putty.

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.

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 C8340 or equivalent)	1	These are not required when installing
Thin wall steel pipe for electric appliance (JIS C8305 or equivalent)	As required	directly on a wall.
Lock nut, bushing (JIS C8330 or equivalent)	As required	
Lacing (JIS C8425 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 ² 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 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 mm ² x 2-core
< 300 m	0.75 mm ² x 2-core
< 400 m	1.25 mm ² x 2-core
< 600 m	2.0 mm ² x 2-core

3. Remote control installation procedure

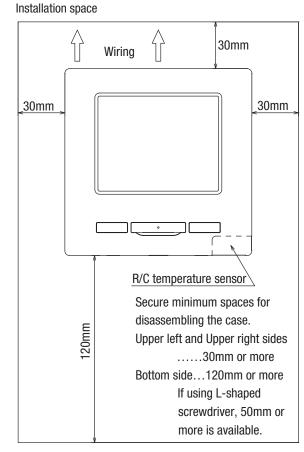
Determine where to install the remote control

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.
 - \cdot 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.



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.

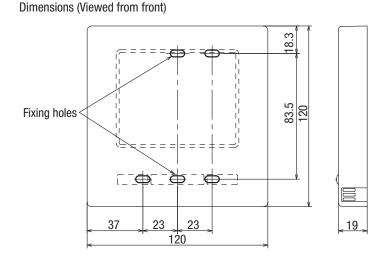
Difference between detected temperature and actual room temperature could cause troubles. The correction for detected temperature by the R/C cannot offset such temperature difference because it corrects the detected temperatures itself.

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



① To remove the upper case from the bottom cases of R/C

 \cdot 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.
P(2) wires (Y, Y) have as aclarity.

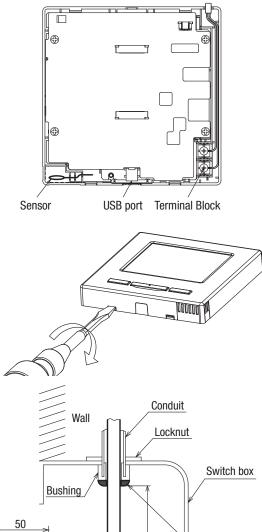
R/C wires (X, Y) have no polarity.

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.

PCB side (Viewed from rear)

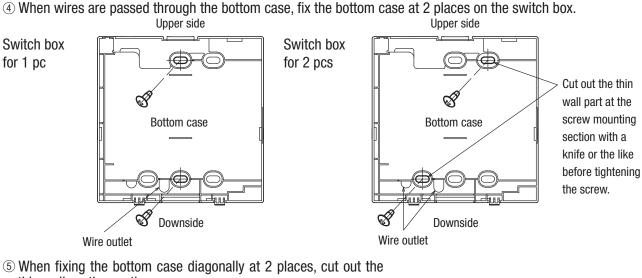


Seal with putty

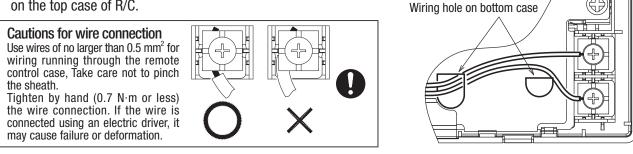
R/C cable

8

200



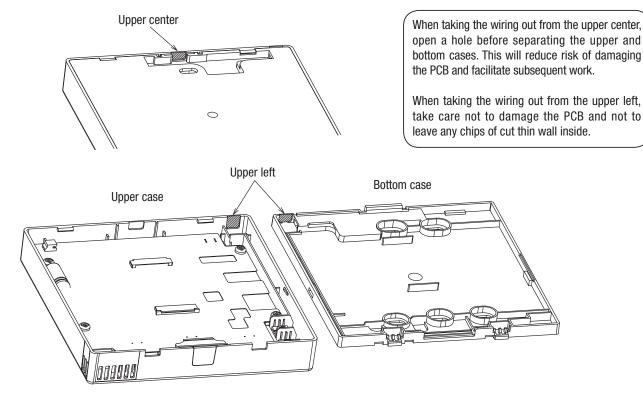
- thin wall section on the case.
- (6) Fix wires such that the wires will run around the terminal screws on the top case of R/C.

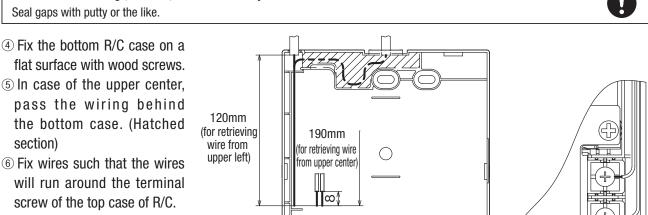


 \bigcirc Install the upper case with care not to pinch wires of R/C.

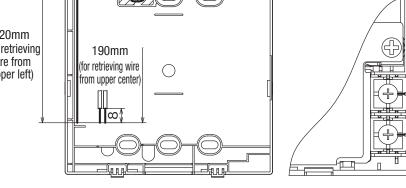
In case of exposing wiring (When the wiring is taken out from the "upper center" or "upper left" of R/C)

③ Cut out the thin wall sections on the cases for the size of wire.





⑦ Install the top case with care not to pinch wires of R/C.



Main/Sub setting when more than one remote control are used

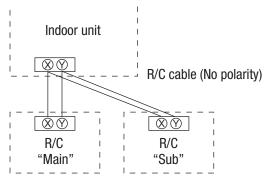
Main-Sub setting for use of two or more R/Cs

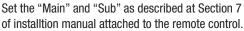
If the hole is cut too large, moisture, dust or insects may enter.

Up to two units of R/C can be used at the maximum for 1 indoor unit or 1 group.

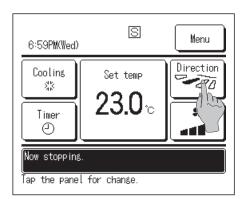
One is main R/C and the other is sub R/C.

Operating range is different depending on the main or sub R/C.





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	\bigcirc	—
Room temperature range setting	\bigcirc	—
Indoor unit settings	\bigcirc	—
Individual flap control	\bigcirc	_
Operation data display	0	_
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.

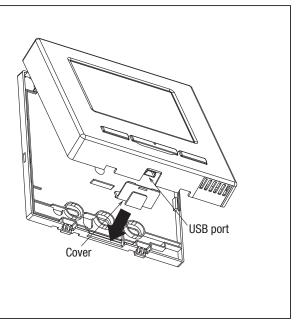
For details, view the web site or refer to the engineering data.

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

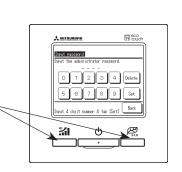
It could cause malfunction or breakdown of R/C or personal computer.



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 [Highpower] and the [Energy-saving] buttons are pushed simultaneously for 5 seconds on the administrator password input screen.
- Service password is "9999", which cannot be changed.
 When the administrator password is input, the service password is also accepted.



Note: Combination of R/C and indoor unit

(1) It can be used as the combination of Main and Sub with RC-E3 to -E5 type of wireless R/C (option part).

(2) It can be combined with FD-V or FD-KX E6 type and later types of indoor units

(3) In cases of combination with FD-V or FD-KX E6 type unit, there are some controlling items which cannot be used. If operating such items, the message "Invalid request" is displayed.

For details, refer to the installation manual attached to the remote control.

2.9.4 Installation of outdoor unit

This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 211.
 When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, nower supply voltage and etc.) and installation paces



For 3 phase power source outdoor unit,EN61000-3-2 is not applicable if consent by the utility company or nortification to the utility company is given before usage
 3 phase power source unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic interference.

- 5 and 6 HP units of single phase power source are equipment complying with IEC 61000-3-12.
- 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.
- 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



Inverter driven single split PAC
100V • 125V • 140V
Designed for R410A refrigerant

Check before installation work

[Accessory]



Model name and power source

Refrigerant piping length

• Piping, wiring and miscellaneous small parts

Indoor unit installation manual

\wedge	WARN	ling		
Installation must be carried out by the qualified installer. 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		Do not perform brazing work in the airtight room It can cause lack of oxygen.		
maifunction. Install the system in full accordance with the instruction manual. Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.		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.		
incorrect instantiation may cause outsis, personal multiply, water leaves, electric strucks and me. Use the original accessories and the specified components for installation. If parts other than those prescribed by us are used, it may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard performance, control failure and personal injury.		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.		
When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with IS05149. Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.	-	Do not open the service 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 completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause		
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.		burst or personal injury due to anomalously high pressure in the refrigerant Only use prescribed optional parts. The installation must be carried out by the qualified installer.		
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.		If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire. Do not perform any change of protective device itself or its setup condition		
Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid joiting out of alignment, be sure to hang up the unit at 4-point support. An improper name of portage such as 3-point support can cause death or serious personal injury due to falling of the unit	1 _	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.		
		Be sure to switch off the power supply in the event of installation, inspection or servicing. If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start.		
Install the unit in a location with good support. Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury. 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 personal injury.		Consult the dealer or an expert regarding removal of the unit.		
		Incorrect installation can cause water leaks, electric shocks or fire. Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.		
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 supply with instificient capacity and incorrect function done by improver work can cause electric shocks and fire.	1	If disconnecting retrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit		
Be sure to shut off the power before starting electrical work. Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.	$ (n) ^{-1}$	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 invity.		
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.		Do not run the unit with removed panels or protections		
Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent		Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.		
overloading the terminal blocks. Loose connections or cable mountings can cause anomalous heat production or fire.	•	Be sure to fix up the service panels. Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.		
• 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.		Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair. If you repair or modify the unit, it can cause water leaks, electric shocks or fire.		

	\wedge	CAUTI	ON
9	Carry out the electrical work for ground lead with care Do not connect the ground lead to the gas line, water line, lighthing conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuitine. Never connect the grounding wire to a gas pice because if gas leaks it oud cause explosion or ignition.	$(\) \ $	Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation. Using an old and damage base flame can cause the unit falling down and cause personal injury.
0	electric shocks due to short-oricaling, every connect me grounding where a gas pipe because in gas early, it could cause explosion or ground. Using the incorrect circuit breaker of all pipe with correct capacity. Using the incorrect circuit breaker, it can cause the unit maliunction and fire. Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations. The isolator should be locked in accordanced with EN02024-1. Take care when carrying the unit by hand. If the unit vehichs more than 2006, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the		Do not install the unit in the locations listed below - Locations where ards not like 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. - Venticles and ships - Locations where cosmetic or special gorays are often used. - Locations with direct exposure of oil mick distant such as kitcher and machine plant. - Locations where any machines which generative high frequency harmonics are used.
-	unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins. Dispose of any packing materials correctly. 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.		Locations with sally atmospheres such as coastlines Locations with sally atmospheres such as coastlines Locations with the with is exposed to chimney smoke Locations at high attitude (more than 1000m high) Locations at high attitude (more than 1000m high) Locations with a momoic atmospheres
	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.		Locations where heat radiation from other heat source can affect the unit Locations without good air circulation.
	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.		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 hows against the air autoutef of outdoor unit
	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.		It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
	Perform installation work properly according to this installation manual. Improper installation can cause abnormal vibrations or increased noise generation.	-	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. The outlet air can affect adversely to the plant etc.
	Earth leakage breaker must be installed If the earth leakage breaker is not installed, it can cause fire or electric shocks.		 Locations where vibration can be amplified and transmitted due to insufficient 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)
	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.		 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 sately. It can affect survoinding 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.	•	To do a more some some more than a constraint of the constraint of
	O not install the unit where corrosive gas (such as suffurous 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 exchange, treakage of plastic parts and etc. And combustible gas can cause fire.	•	Do not touch any buttons with wet hands It can cause ledric shocks
	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 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.
	• 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.	•	being operation to renge any poor became and many net or entering you approving the operating containing and the an eaced bein may you react many. Do not clean up the unit with water If can cause electric shocks
	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 mailunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its hunction or cause jamming.	•	Do not operate the outdoor unit with any article placed on it. You may incur property damage or personal injure from a fall of the article.
Γ	Do not install the outdoor unit in a location where insects and small animals can inhabit. Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.		Do not step onto the outdoor unit. You may incur injury from a drop or fall.

Notabilia as a unit designed for R410A

Notabilia as a unit designed for R410A		Dedicated R410A tools
	a)	Gauge manifold
• Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.	b)	Charge hose
A cylinder containing R410A has a pink indication mark on the top.	c)	Electronic scale for refrigerant charging
• A unit designed for R410A has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake.	d)	Torque wrench
The processed dimension of the flared part of a refrigerant pipe and a flare nul's parallel side measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange	e)	Flare tool
dedicated R410A tools listed in the table on the right 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.	f)	Protrusion control copper pipe gauge
 In charging efficient, always take it out from a cylinder in the liquid phase. 	g)	Vacuum pump adapter
• 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)	h)	Gas leak detector

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.)

 CAUTION
 When a unit is hoisted with slings for haulage, take into consideration the offset of its gravity center position.

 I) Determine
 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 the packaging.
- When some compelling reason necessitates the unpacking of the unit before it is carried in use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.
- Pad 2) Portage

Wooden pallet

• The right hand side of the unit as viewed from the front (diffuser 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.



1

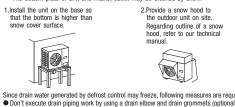
3) Selection of installation location for the outdoor unit

Be sure to select a suitable installation place in consideration of following conditions.

- O A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- O A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
- O A place where the unit is not exposed to oil splashes.
- O A place where it can be free from danger of flammable gas leakage. O A place where drain water can be disposed without any trouble.
- O A place where the unit will not be affected by heat radiation from other heat source.
- O A place where snow will not accumulate.
- O A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any radio or TV interference. O A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely.
- O A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment.
- O 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.
- O A place where strong wind will not blow against the outlet air blow of the unit.

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.





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.]

Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]

(2) If the unit can be affected by strong wind, following measures are required.

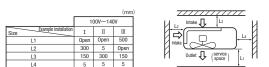
Strong wind can cause damage of fan (fan motor), or can cause performance degradation, or can trigger anomalous stop of the unit due to rising of high pressure.

1.Install the outlet air blow side of the 2.Install the outlet air blow side of 3. The unit should be installed on unit to face a wall of building, or the unit in a position perpendicular the stable and level foundation. provide a fence or a windbreak screen. to the direction of wind If the foundation is not level,

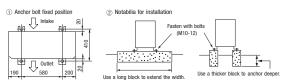


5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- 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 occur. Where piling snow can bury the outdoor unit, provide proper snow guards.
- A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.



6) Installation



• In installing the unit, fix the unit's legs with bolts specified on the left.

• The protrusion of an anchor bolt on the front side must be kept within 15 mm.

• Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.

Refer to the left illustrations for information regarding concrete foundations.

Install the unit in a level area. (With a gradient of 5 mm 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.

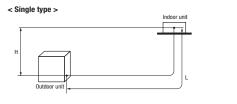
2. REFRIGERANT PIPING WORK

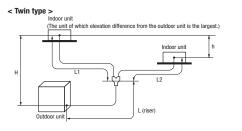
1) Restrictions on unit installation and use

Check the following points in light of the indoor unit specifications and the installation site.

Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

				Marks appearting in the drawing					
December 1		One-way pipe length difference	from the first branching po	int to the indoor u	nit	< 3m	≥ 3m		
Descriptions	Model for outdoor units		Dimensional limitations	Single type	Twin type	Triple type A	Triple type B		
One-way pipe length of	100V,125V		≤ 50m		1+11+12	-	-		
refrigerant piping	140V		2 SOIII	L	L+L1+L2	L+L1+L2+L3	L+La+L1+L2+L3		
Main pipe length	100V,125V		≤ 50m			-	-		
Main pipe rengan	140V		= 30m	-	L	L	L		
One-way pipe length between the first branching point from to the second branching point	140V		≦ 5m	-	-	-	La		
One-way pipe length after the first	100V,125V 140V		≤ 30m	-	L1, L2	-	-		
branching point						L1, L2, L3	L1 (1)		
One-way pipe length after the first branching point and second branching point	140V		≦ 27m	-	-	-	La+L2, La+L3 (1)		
One-way pipe length difference	Twin type		≦ 10m			-	_		
from the first branching point to	Triple type	140V	≦ 3m] –	L1-L2	L1-L2 , L2-L3 , L3-L1			
the indoor unit	Tiple type 1404		≦ 10m		1.2. 22.1	-	L-(La+L2), L1-(La+L3) (1)		
One-way pipe length difference from the second branching point to the indoor unit	140V		≦ 10m	-	-	-	L2—L3		
Elevation difference between	When the outdoor unit is positioned higher,		≦ 30m		н		H		
indoor and outdoor units	When the outdoor unit is positioned lower,		≦ 15m	н	н	н	н		
Elevation difference between indoor units		≦ 0.5m	-	h	h1, h2, h3	h1, h2, h3			

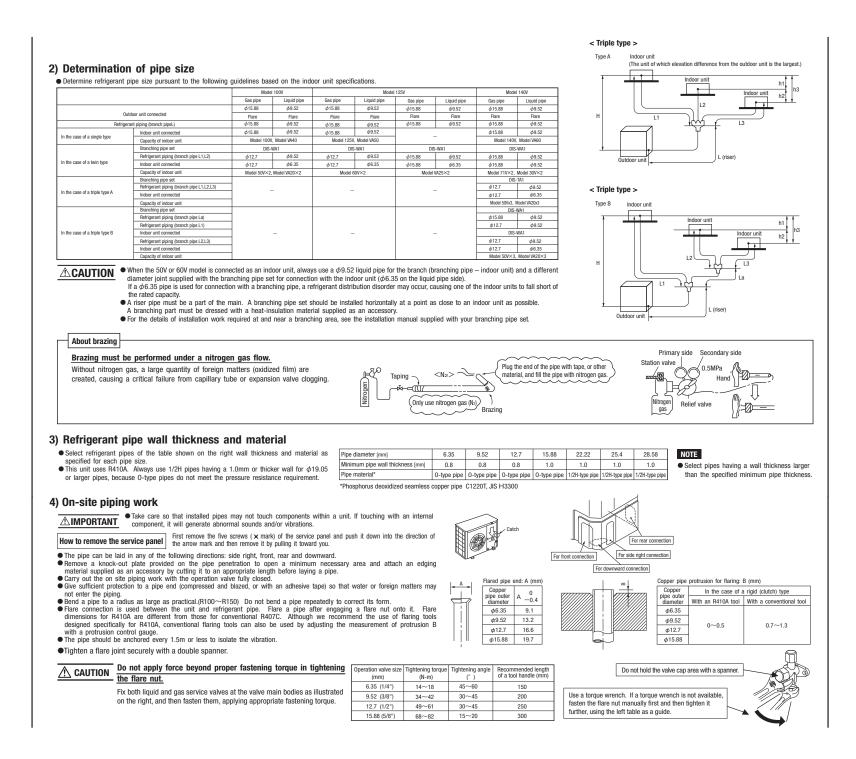




• The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, see " 6. UTILIZATION OF EXISTING PIPING. • With the triple pipe connection, the way of use is different when the difference of one-way pipe length after the first branching point is 3m to 10m. For details, refer to the above table and right figure.

Note (1) Install the indoor units so that L + L1 becomes the longest one-way pipe.

Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.



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 operation valve's check joint equipped on the outdoor unit side. While conducting a test, keep the operation valve shut all the time.
- a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
- b) Then raise the pressure to 1.5 MPa, and stop, Leave it for five more minutes to see if the pressure drops,
- c) Then raise the pressure to the specified level (4.15 MPa), 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 1°C, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for, of 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.



6) Evacuation

., =		1	
<work flow=""> When the system has remaining moisture</work>	· · · · · · · · · · · · · · · · · · ·	Vacuuming begins	Pay attention to the follo
inside or a leaky point, the vacuum	Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower, (-755mmHg or lower)		the R410A and compatib
gauge indicator will rise.	· · · · · · · · · · · · · · · · · · ·	Vacuuming completed	○To prevent a different oil finance
Check the system for a leaky point and	Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.		refrigerant type. Under no hose in particular be shared
then draw air to create a vacuum again.		Vacuum gauge check	OUse a counterflow prevent
		1	

llowing points in addition to the above for tible machines

Outdoor unit

from entering, assign dedicated tools, etc. to each o circumstances must a gauge manifold and a charge red with other refrigerant types (R22, R407C, etc.). ention 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.

								,											
<single td="" type<=""><td>e></td><td></td><td></td><td></td><td></td><td></td><td>Item</td><td></td><td>Pipe length for</td><td>Additional char</td><td></td><td>Refrigerant volume</td><td>Installation's pipe length (m)</td></single>	e>						Item		Pipe length for	Additional char		Refrigerant volume	Installation's pipe length (m)						
Item	Standard refrigerant		Additional charge volume (kg) per meter of refrigerant piping		Installation's pipe length (m) covered without additional									charge volume (kg)	standard refrigerant charge volume (m)			charged for shipment at the factory (kg)	covered without additional refrigerant charge
Capacity	charge volume (kg)			at the factory (kg)	refrigerant charge		Capacity		charge volume (m)	Main pipe	Branch pipe	at the factory (kg)	remgerant charge						
Model 100V							Model 100V												
Model 125V	2.0	0	0.06	3.8	30		Model 125V	2.0	0	0.	06	3.8	30						
Model 140V]						Model 140V]											

Airtighteness test completed

Fill refrigerant

<Twin triple W-twin types

- A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
- This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.
- When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 2.8kg.
- If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

*When an additional charge volume calculation result is negative, Model 100~140V Additional charge volume (kg) = { Main pipe length (m) – Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

it is not necessary to charge refrigerant additionally.

• To charge refrigerant again, recover refrigerant from the system first and then charge the volume calculated from the above table (Standard refrigerant charge volume + branch pipes charge volume)

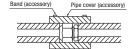
(2) Charging refrigerant

- 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 operation 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 volume.
- When refrigerant is charged with the unit being run, complete a charge operation within 30 minutes. 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 back side of the service panel.

8) Heating and condensation prevention

(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.



Liquid pipi

Exterior tape

Gas piping

insulation

- (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 deterioration. - Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.
 - 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 Wires for connecting indoor burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation. and outdoor units
 - 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.

- Although it is verified in a test that this air conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 20 mm 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 optional parts, where water drained from the outdoor unit is a problem. Drain elbow (1 pe.) Drain elbow (1 pe.) Drain grometer (2 pe.) Drain grow (2 pe	 There are 3 drain holes provided on the bottom plate of an outdoor unit to discharge condensed water. When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks. Connect a drain elbow as shown in the illustration and close the other two drain holes with grommets.
---	--

Check joint \odot

Gas side

operation valve Indoor unit

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 gualified 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

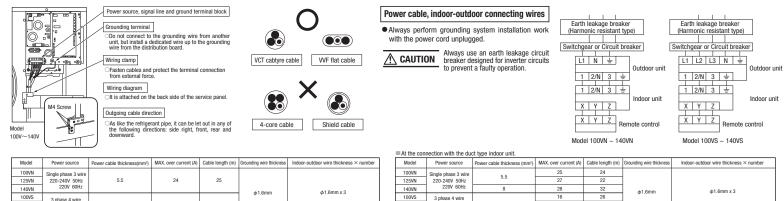
- •Do not use any supply cord lighter than one specified in parentheses for each type below.
- braided cord (code designation 60245 IEC 51),
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
- flat twin tinsel cord (code designation 60227 IEC 41);
- Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords 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 grounding wire. If impropery 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 acccident such as an electric shock or a fire.

•Do not turn on the power until the electrical work is completeted .

- •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 supply cables, use conduits,
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- . Fasten cables so that 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.)

- . 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. • Grounding terminals are provided in the control box.



140VN	2204 00112	8	28	32	φ1.6mm	φ1.6mm x 3
100VS	3 phase 4 wire		16	26		
125VS	380-415V 50Hz	3.5	18	23		
140VS	380V 60Hz		19	21		
The specifications shown in the above table are for units without heaters.				For units with	heaters, refer to the	installation instructions or the construction

:tion The specifications of the indoor unit.
 Switchgear or 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 contained 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. TEST RUN

380-415V 50H

380V 60Hz

3.5

15

27

125VS

140VS

WARNING Before conduct a test run, do not fail to make sure that the operation ve Turn on power 6 hours prior to a test run to energize the crank case he In case of the first operation after turning on power, even if the unit doe Always give a 3-minute or longer interval before you start the unit again Removing the service panel will expose high-voltage live parts and high- Take utmost care not to incur an electric shock or burns. Do not leave the	ater. s not move whenever temperature e unit with	re for 30 minutes, it r it is stopped. re parts, which are o the service panel op	uite dangerous.	A fa	ailure to obser Items to checl		tructions can result in a compressor breakdown. • When you leave the outdoor unit with power supplied be sure to close the panel.	d to it,								
CAUTION When you operate switches (SW3, SW5) for on-site setting, be careful not to touch a live part. You cannot check discharge pressure from the liquid operation valve charge port.					Item No.used in the installation manual	Item	Check item	Check								
 The 4-way valve (20S) is energized during a heating operation. 	3			- F	inclanation manual		If brazed, was it brazed under a nitrogen gas flow?									
When power supply is cut off to reset the unit, give 3 or more minutes	efore you	ı turn on power agaiı	n after power is cut				Were air-tightness test and vacuum extraction surely performed?									
off. If this procedure is not observed in turning on power again, "Comm		unication error between outdoor and indoor unit"			2	Refrigerant plumbing	Are heat insulation materials installed on both liquid and gas pipes?									
may occur.					-	planbing	Are operation valves surely opened for both liquid and gas systems?									
							Have you recorded the additional refrigerant charge volume and refrigerant pipe length on the panel's label?	?								
1) Test run method	SW-3-3 S	SW-3-4		i t			Is the unit free of cabling errors such as uncompleted connection, an absent or reversed phase?									
(1) A test run can be initiated from an outdoor unit by using SW3-3 and SW3-4 for on-site	ON C	011 0 0 0	011 0 0 0					011 0 0 0	011 0 0 0						Are properly rated electrical equipments used for circuit breakers and cables?	
settina.			during a test run				Doesn't cabling cross-connect between units, where more than one unit are installed?									
(2) Switching SW3-3 to ON will start the compressor.		ON Heating	during a test run				Aren't indoor-outdoor signal wires connected to remote control wires?									
(3) The unit will start a cooling operation, when SW3-4 is OFF, or a heating operation, when SW3-4 is ON.	OFF	 Normal or Af 	ter the test operation		4	Electric	Do indoor-outdoor connecting cables connect between the same terminal numbers?									
(4) Do not fail to switch SW3-3 to OFF when a test run is completed.					-	wiring	Are either VCT cabtyre cables or WF flat cables used for indoor-outdoor connecting cables?									
							Does grounding satisfy the D type grounding (type III grounding) requirements?									
2) Checking the state of the unit in operation		Check joint of the pipe	Charge port of the				Is the unit grounded with a dedicated grounding wire not connected to another unit's grounding wire?	?								
Use check joints provided on the piping before and after the four-way valve installed inside the		Check joint of the pipe	gas operation valve				Are cables free of loose screws at their connection points?									
outdoor unit for checking discharge pressure and suction pressure.	Cooling	Discharge pressure	Suction pressure				Are cables held down with cable clamps so that no external force works onto terminal connections?	?								
As indicated in the table shown on the right, pressure detected at each point will vary	operation		(Low pressure)	[_	In data series 10	Is indoor unit installation work completed?									
depending on whether a cooling or heating operation has been selected.	Heating	Suction pressure (Low pressure)	Discharge pressure (High pressure)	l	_	Indoor unit	Where a face cover should be attached onto an indoor unit, is the face cover attached to the indoor unit?									

2 • PAC-T-178

3) Setting SW3-1, SW3-2, on-site

(1) Defrost control switching (SW3-1)

•When this switch is turned ON, the unit will run in the defrost mode more frequently.

Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.

(2) Snow guard fan control (SW3-2)

When this switch is turned on, the outdoor unit fan will run for 10 seconds in every 10 minutes, when outdoor temperature falls to 3°C or lower and the compressor is not running.

·When the unit is used in a very snowy country, set this switch to ON.

4) Failure diagnosis in a test run

Error indicated on the	Printed circuit board LED	(The cycles of 5 seconds)	Failure event	Action		
remote control unit	Red LED	Green LED	i alure event	Action		
E34	Blinking once	Blinking continuously	Open phase	Check power cables for loose contact or disconnection		
E40	Blinking once	Blinking continuously	63H1 actuation or operation with operation valves shut (occurs mainly during a heating operation)	1. Check whether the operation valves are open. 2. If an error has been canceled when 3 minutes have elapsed		
E49	Blinking once	Blinking continuously	Low pressure error or operation with operation valves shut (occurs mainly during a cooling operation)	since a compressor stop, you can restart the unit by effecting Check Reset from the remote control unit.		

• If an error code other than those listed above is indicated, refer to the wiring diagram of the outdoor unit and the indoor unit.

5) The state of the electronic expansion valve.

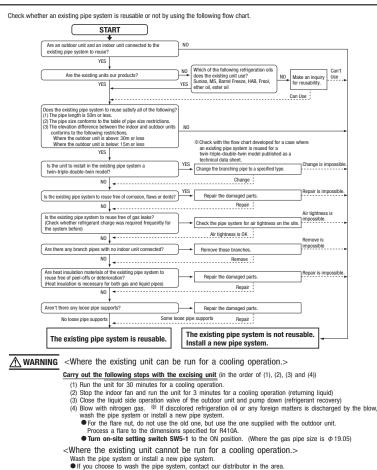
The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on -	When the unit com	nes to a normal stop	When the unit comes to an abnormal stop		
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation	
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position	
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position	

6) Heed the following on the first operation after turning on the circuit breaker.

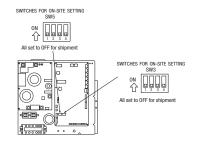
This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.

6. UTILIZATION OF EXISTING PIPING.



Test run procedure	• Always carry out a test run and check the following in order as listed.
--------------------	---

Turn	The contents of operation	Check
1	Open the gas side operation valve fully.	
2	Open the liquid side operation valve fully.	
3	Close the panel.	
4	Where a remote control unit is used for unit setup on the installation site, follow instructions for unit setup on the installation site with a remote control unit.	
(5)	SW3-3 ON / SW3-4 OFF: the unit will start a cooling operation.	
9	SW3-3 ON / SW3-4 ON: the unit will start a heating operation.	
6	When the unit starts operation, press the wind direction button provided on the remote control unit to check its operation.	
1	Place your hand before the indoor unit's diffuser to check whether cold (warm) winds come out in a cooling (heating) operation.	
8	Make sure that a red LED is not blinking.	
9	When you complete the test run, do not forget to turn SW3-3 to the OFF position.	
(10)	Where options are used, check their operation according to the respective instruction manuals.	



<table< th=""><th>of pipe size restriction</th><th>ons></th><th></th><th></th><th></th><th></th></table<>	of pipe size restriction	ons>				
	lard pipe size ():Usable icted to shorter pipe length	limits				
Additional	charging amount of refrigerant per 1m	%1 Because of its insufficien				
Pipe size	Liquid pipe	φ9.52	φ9.52	φ12.7	φ12.7	Switch SW5-1 provided ON position for \$\phi 19.05\$
Pipe size	Gas pipe	φ15.88	φ19.05	φ15.88	φ19.05	(In the case of a twin-triple
	Usability	0	O %1		△※1	to the case where ϕ 19.0
100V	Maximum one-way pipe length	50	50	25	25	after the first branching po
	Length covered without additional charge	30	30	15	15	However, you need not tu
	Usability	0	○%1	\bigtriangleup	∆%1	position, if 1/2H pipes of
125V	Maximum one-way pipe length	50	50	25	25	are used.
	Length covered without additional charge	30	30	15	15	%2 When the main pipe le capacity drop may be exp
	Usability	0	○*1	\bigtriangleup	△※1	liquid pipe system. Use ϕ
140V	Maximum one-way pipe length	50	50	25	25	%3 Keep the total pipe length.
	Length covered without additional charge	30	30	15	15	specified maximum pipe l

nt pressure resistance. turn the dip on the outdoor unit board to the × 11 0

le-double-twin model, this also applies $05 \times t1.0$ is used in a pipe system oint.

turn the din switch SW5-1 to the ON or pipes having 1.2 or thicker walls

length exceeds 40m, a significant perienced due to pressure loss in the ϕ 12.7 for the liquid main.

n, not one-way pipe length, below the length.

• When refrigerant piping is shoter than 3m, reduce refrigerant by 1kg from factory charged volume and adjust to 2.8kg.

Any combinations of pipe sizes not listed in the table or marked with × in the table are not usable

<Pipe system after the branching pipe> ©:Standard pipe size ○:Usable ×:Not usable

• Any combinations of pipe sizes not listed in the table or

marked with \times in the table are not usable

			After 1st branch **4			After 2nd branch		
Addition	nal charging amount of	refrigerant per 1m		0.06kg/m		0.06kg/m		
Liquid pipe			φ9.52			<i>φ</i> 9.52		
Pipe size	Gas pipe		φ12.7	<i>φ</i> 15.88	φ19.05 × 1	φ12.7	φ15.88	φ19.05%
Model	Combination type	Combination of capacity						
100V	Twin	50+50	0	0	×	-	-	-
125V	Twin	60+60	0	0	х	-	-	-
	Twin	71+71	×	0	0	-	-	-
140V	Triple A	50+50+50	0	0	×	-	-	-
	Triple B	50+50+50	×	0 * 5	○ ※5	0	0	×

※4 Piping size after branch should be equal or smaller than main pipe size. %5 Piping size from first branch to indoor unit should be $\phi 9.52$ (Liquid) / $\phi 12.7$ (Gas).

<The model types of existing units of which branching pipes are reusable.>

Models later than Type 8.

- •FDC * * * 8 🗌 🗌
- ●FDCP * * * 8 □ □ □

The branching pipes used with models other than those listed above are not reusable because of their insufficient pressure resistance. Please use our genuine branching pipes for R410A.

• * * * are numbers representing horsepower.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) - Length covered without additional charge shown in the table (m)} \times Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

* If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged Example) When an 140V (single installation) is installed in a 20m long existing pipe system (liquid \$\phi12.7\$, gas \$\phi19.05\$), the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m = 0.4 kg.

2.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

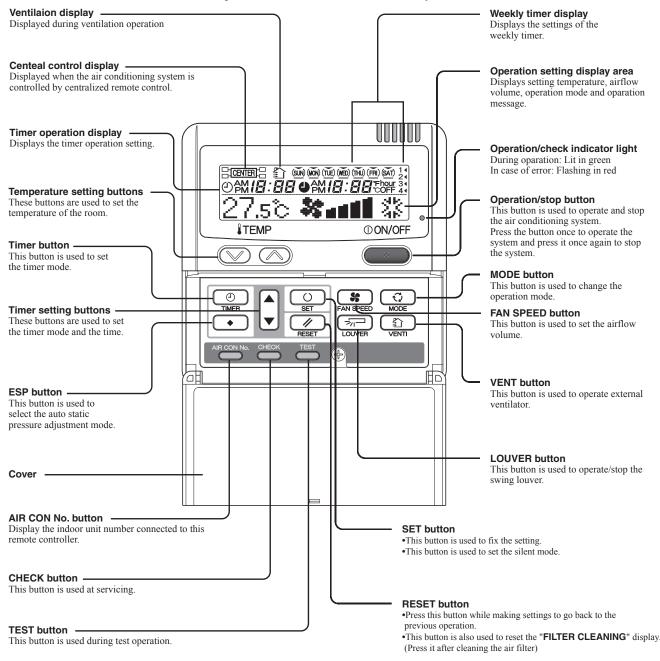
2.10.1 Remote control

(1) Wired remote control

Model RC-E5

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.

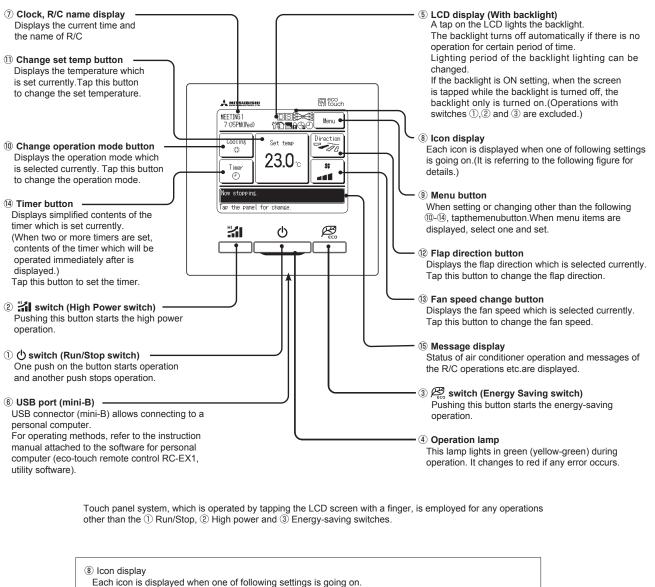
The figure below shows the remote control with the cover opened.

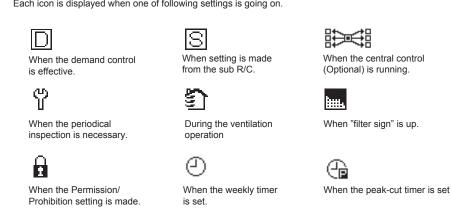


* All displays are described in the liguid crystal display for explanation.

Model RC-EX1A

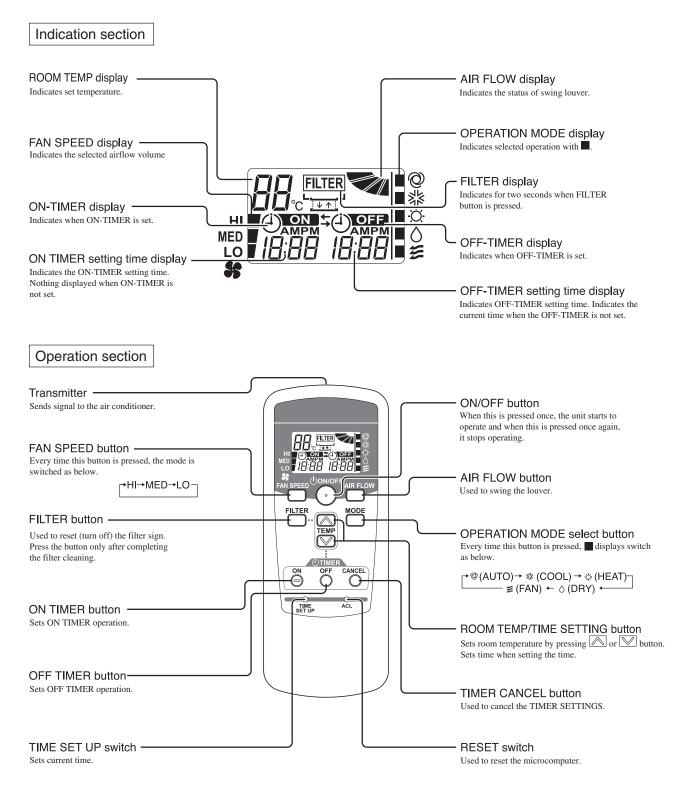
All icons are shown for the sake of explanation.





- 243 -

(2) Wireless remote control



* All displays are described in the liquid crystal display for explanation

2.10.2 Operation control function by the wired remote control

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 supply reset.

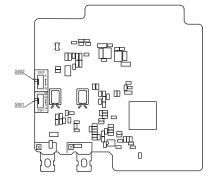
(3) Power failure compensation function (Electric power supply failure)

- (a) This becomes effective if "Power failure compensation effective" is selected with the setting of remote control function.
- (b) 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.
- (c) Content memorized with the power failure compensation are as follows.
 - Note (1) Items (vi), (vii) and (viii) 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.
 - (i) 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.)

- (ii) Operation mode
- (iii) Airflow volume mode
- (iv) Room temperature setting
- (v) Louver auto swing/stop
- However, the stop position (4-position) is cancelled so that it returns to Position (1).
- (vi) "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.)
- (vii) Upper limit value and lower limit value which have been set with the temperature setting control
- (viii) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

[Parts layout on remote control PCB]

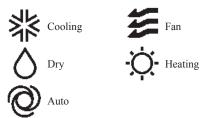


Master/ slave setting when more t	han one remot	e controls	s are used
A maximum of two remote controls can b			
	Switch	Setting	Contents
Indoor units	SW1	<u>M</u>	Master remote control
	Note (1) Depit shap	S	Slave remote control
Bemote control	l cord (no polarity)	ye owz becau	e it is not used normally.
	roord (no polarity)		
	-		
Remote control Remote control	i		
SW1 "Master" SW1 "Slave"	1		
Caution			
When using multiple remot	e controls, the	following c	lispiays or settings
cannot be done with the sla	ave remote con	trol. It is a	vailable only with
the master remote control.			
①Louver position setting (s	set upper or lov	ver limit of	swinging range)
②Setting indoor unit function	ons		
③Setting temperature range	ae		
Operation data display			
5 Error data display			
©Silent mode setting			
Test operation of drain p	ump		
8 Remote control sensor s			
	9		

Model RC-EX1A

(1) Switching sequence of the operation mode switches of remote control

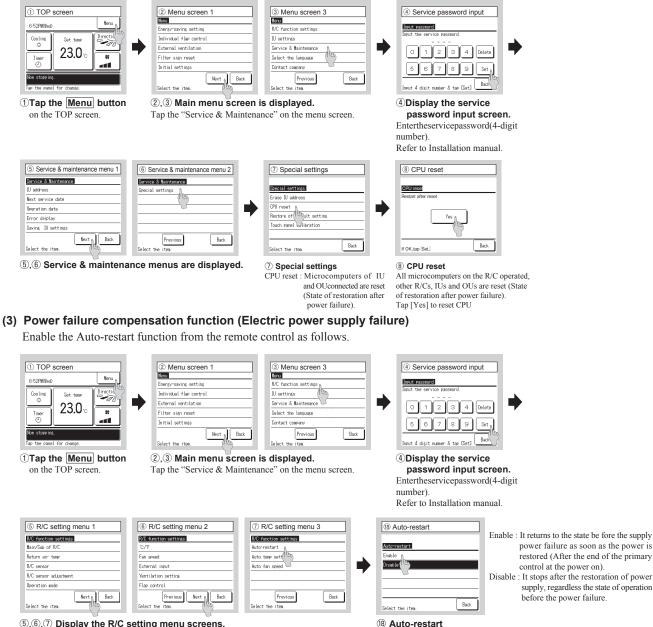
- (a) Tap the change operation mode button on the TOP screen.
- (b) When the change operation mode screen is displayed, tap the button of desired mode. (c) When the operation mode is selected, the display returns to the TOP screen.
 - Icons displayed have the following meanings.



- 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.

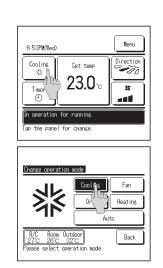
(2) CPU reset

Reset CPU from the remote control as follows.



(5),(6),(7) Display the R/C setting menu screens.

Set the state of operation to be started when the power supply is restored after a power failure.



(a) 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.

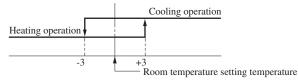
After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.

- (b) Content memorized with the power failure compensation are as follows.
 - Note (1) Items (vi), (vii) and (viii) 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.
 - (i) 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.)
 - (ii) Operation mode
 - (iii) Airflow volume mode
 - (iv) Room temperature setting
 - (v) Louver auto swing/stop
 - However, the stop position (4-position) is cancelled so that it returns to Position (1).
 - (vi) "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.)
 - (vii) Upper limit value and lower limit value which have been set with the temperature setting control
 - (viii) Sleep timer and weekly timer settings (Other timer settings are not memorized.)

2.10.3 Operation control function by the indoor control

(1) Auto operation

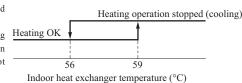
(a) If "Auto" mode is selected by the remote control, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ 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 $\pm 1.0 \sim \pm 4.0$.

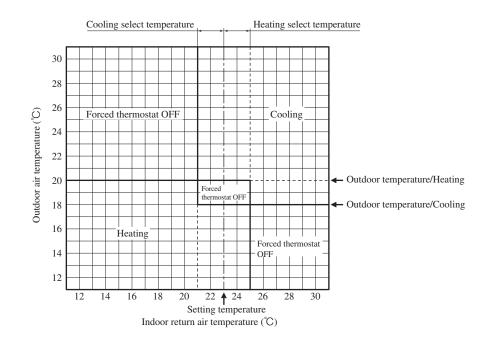
(2) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF: ±1 deg)
(3) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not



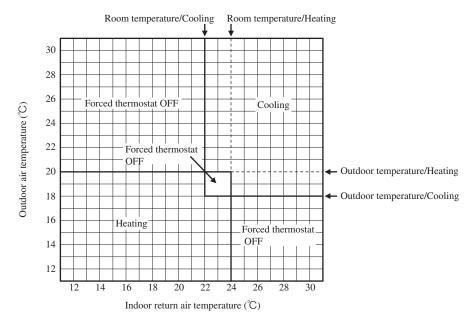
(b) The following automatic controls are performed other than (a) above.

performed, regardless of the temperature shown at right.

- (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".
 - In "Setting temperature Cooling select temperature < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor return air temperature" \Rightarrow Operation mode: Cooling
 - •"Setting temperature + Heating select temperature > Indoor return air temperature" and "Outdoor temperature/Heating > Outdoor air temperature" \Rightarrow Operation mode: Heating
- The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
- \cdot In the range where the above cooling and heating zones are overlapped \Rightarrow 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".
 - In case of "Room temperature/Cooling < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor air temperature" ⇒ Operation mode: Cooling
 - In case of "Room temperature/Heating > Indoor return air temperature" and "Outdoor temperature /Heating > Outdoor air temperature" ⇒ Operation mode: Heating
 - The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
 - · In the range where the above cooling and heating zones are overlapped \Rightarrow Forced thermostat OFF



(2) Operations of functional items during cooling/heating

Operation	Cooling						
Functional item	Thermostat ON	Thermostat OFF	Fan	Thermostat ON	Thermostat OFF	Hot start (Defrost)	Dehumidify
Compressor	0	×	×	0	×	0	O/×
4-way valve	×	×	×	0	0	\bigcirc (×)	×
Outdoor unit fan	0	×	×	0	×	$\bigcirc(\times)$	O/×
Indoor unit fan	0	0	0	O/×	O/×	O/×	O/×
Drain pump ⁽³⁾	0	× (2)	\times (2)		$O/\times^{(2)}$		Thermostat ON: O Thermostat OFF: X ⁽²⁾

Note (1) \bigcirc : Operation \times : Stop \bigcirc/\times : 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-EX5

(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) \bigcirc : Allowed \times : Not

(2) Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the airconditioner are duplicated, the setting of the OFF timer has priority.

(b) 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.

$\left(vii\right)$ $% \left(vii\right)$ 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) \bigcirc : Allowed \times : Not

(5) Remote control display during the operation stop

When the operation is stopped (the power supply 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) Form 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
 - 1) 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
 - ① Operates according to the fan control setting at heating thermostat OFF.
 - 2 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.
 - ③ 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
 - ① 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.
 - 2 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.
 - ③ 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.
 - 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.

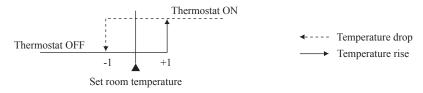
- (a) Control
 - (i) When the indoor heat exchanger temperature (detected with Thi-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.
 - (ii) During the hot keep, the louver is kept at the horizontal position.
- (b) Ending condition

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) Thermostat operation

(a) Cooling

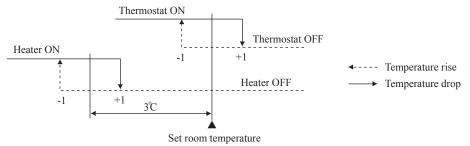
- (i) Thermostat is operated with the room temperature control.
- (ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



(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 moves to the hot control and turns OFF the indoor fan if the heat exchanger thermistors (both ThI-R1 and R2) detect 25°C or lower.
 - 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.

(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 stope.
 - 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, 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 tempenature 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.(

(9) 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 centralized 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 1 at the

shipping	from	factory)

Filter sign setting	Function
TYPE 1	Setting time: 180 hrs (Factory default)
TYPE 2	Setting time: 600 hrs
TYPE 3	Setting time: 1,000 hrs
TYPE 4	Setting time: 1,000 hrs (Unit stop) ⁽²⁾

(2) 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.

(10) 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.

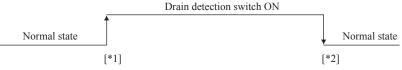
Note (1) The compressor stops when it has entered the protective control.

(11) 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 & dry)] : Drain pump is run during cooling and dry.
 - (ii) 🗱 (Operate in standard & heating) : Drain pump is run during cooling, dry and heating.
 - (iii) ②◇AND☆AND : [Operate in heating & fan]: Drain pump is run during cooling, dry, heating and fan.
 - (iv) 禁合訊[D註 [Operate in standard & fan]: Drain pump is run during cooling, dry and fan. Note (1) Values in [__] are for the RC-EX1A model.

(12) Drain motor (DM) control

(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.

Indoor unit operation mode						
	Stop (1)	Cooling	Dehumidifying	Fan (2)	Heating	Note (1) Including the stop from the cooling, dehumidifying, fan
Compressor ON			Cont	rol A	and heating, and the anomalous stop (2) Including the "Fan" operation according to the mismatch of operation modes	
Compressor OFF	ressor OFF Control B					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.)

(13) 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

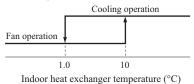
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote control.

(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.

(14) 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 20rpm.
- (ii) If the phenomenon of (i) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20rpm.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

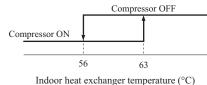
· Compressor frequency drop start temperature

Item	А
Temperature - Low (Factory default)	1.0
Temperature - High	2.5

Note (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote control.

(15) 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.



(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.

(16) Anomalous fan motor

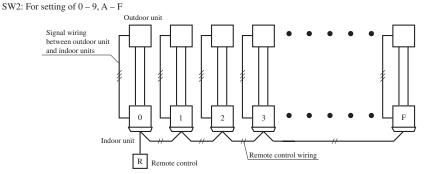
- (a) After starting the fan motor, if the fan motor speed is 200rpm or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).
- (b) If the fan motor fails to reach at -500 rpm less than the required speed, it stops with the anomalous stop (E20).

(17) 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.⁽¹⁾. 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.



(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) Center or each remote control basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the center 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
 - 1) In case of RC-E5 remote control

Pressing "AIR CON No." button on the remote control displays the indoor unit address. If " \blacktriangle " " \checkmark " button is pressed at the next, it is displayed orderly starting from the unit of youngest No.

2) In case of RC-EX1A remote control

If you touch the buttons in the order of "Menu" \rightarrow "Next" \rightarrow "Service & Maintenance" \rightarrow "IU address" on the TOP screen of remote control, the indoor units which are connected are displayed.

- (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.
 - 2) 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 supply wire or wires of other electric devices (AC220V or higher).

(18) 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					
Fai	гар	80 011 - 8001 - 8000 - 80 00	\$*** 1 - \$ **0 - \$**00	8adl - 8a(i)	Statt - Statt		
FAN SPEED SET	STANDARD	PHi - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me		
FAN SPEED SET	HIGH SPEED1, 2	PHi - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi		

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)

(19) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

(a) Broken wire detection

When the return air temperature thermistor detects -20°C or lower or the heat exchanger temperature thermistor detect -40°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).

(b) 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).

(20) 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. ·CnTA

·CnT

·CIII			CIIIA
CnT Blue 12V 4-(XR3)+ 5(XR4)+ 6	 Operation output Heating output Thermostat ON output Error output Remote operation input 	(CnT-2: XR1) (CnT-3: XR2) (CnT-4: XR3) (CnT-5: XR4) (CnT-6: Volt-free contact)	CnTA Blue 12V XR6 Note (1) CnTA function can be changed by RC-EX1A.

Priority order for combinations of CnT and CnTA input.

\square	<u> </u>	CnTA								
		① Operation stop level	② Operation stop 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			
	(4) 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

1. 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. 2.

3. 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. 4.

5.

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". 6. (The "Number" above means (1) - (6) in the table.)

Output for external control (remote display) (a)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

- \bigcirc **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.
- (4) **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

(b) Remote operation input

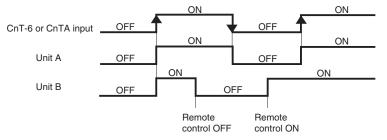
Remote operation input connector (CnT-6 or CnTA) is provided on the indoor control PCB.

However remote operation by CnT-6 or CnTA is not effective, when "Center mode" is selected by center controller. In case of plural unit (twin, triple, double twin), remote operation input to CnT-6 or CnTA on the slave indoor unit is invalid

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 (Factory default) (i)

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.

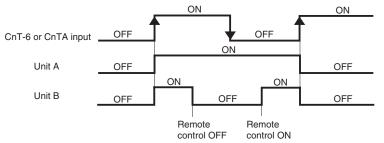


Note: The latest operation has priority

It is available to operate/stop by remote control or center control

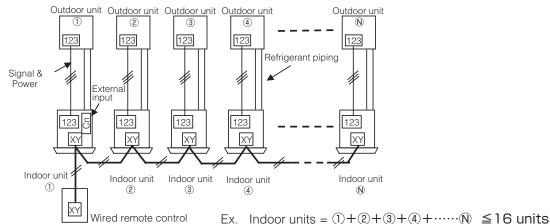
(ii) In case of "Pulse input" setting (Local setting)

It is effective only when the input signal to CnT-6 or CnTA is changed OFF \rightarrow 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 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 $(1) - (N)$	Units $(1 - N)$	

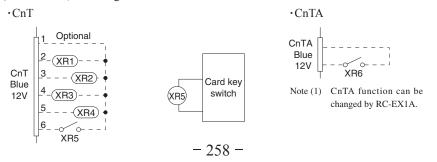
When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote control system:

- (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.

(21) 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 default)	Operation permission/prohibition mode "Valid" (Local setting)		
CnT 6 or	ON	OFF	ON	OFF	
CnT-6 or CnTA	Operation	Stop	Operation permission*1	Operation prohibition (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

		Operation			Operation			Operation	
CnT① Level input			Sto	р		Sto	op [Stop
CnTA(3)	Operatio	on permission		_					
Operation permission/				0	peration prohibit	ion			
prohibition setting		Operation			Operation(※)			Operation	
Actual operation			Stop			Stop			Stop
Operation permission/	Operatio	on permission					C	Operation permis	ssion
prohibition zone				Prohibi	tion Pro	hibition			

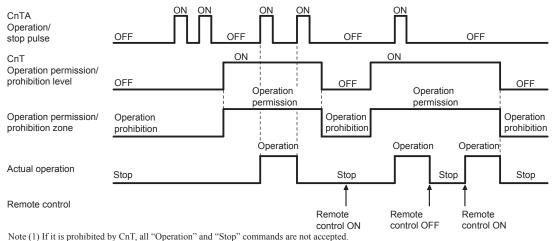
(*) CnT level input supersedes CnTA operation prohibition.

(b) In case of CnT ③ Operation permission/prohibition level + CnTA ③ Operation permission/prohibition level

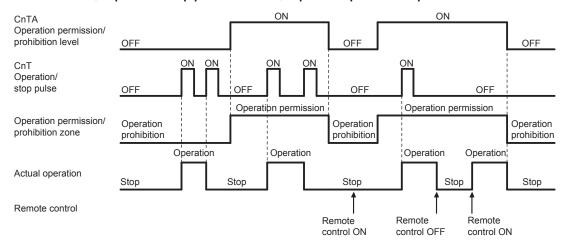
CnT③ Operation permission prohibition setting	Operation permi	ssion Operation permission		Operation permission
CnTA③ Operation permission/ prohibition setting	Operation permission		Operation permission	Operation permission
Operation permission/ prohibition zone	Operation permission		Operation(※) permission	Operation permission

(*) Operation prohibition zone is determined by the OR judgment between CnT Operation prohibition zone and CnTA Operawtion 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



(22) 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 \rightarrow Cooling operation mode
 - CnT-6 or CnTA: CLOSE \rightarrow 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 \rightarrow CLOSE, operation modes are inverted (Cooling \rightarrow Heating \rightarrow 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		
	(5) Level	Cooling/heating	Cooling Cooling Heating		
External input selection		Cooling/heating (Competitive)	Auto, cooling, dry mode command 1 1 Heating, auto, heating mode command 1 from remote control		
External input selection Cooling/heating selection	6 Pulse	External terminal input (CnT or CnTA)	OFF ON OFF Cooling zone 1 After setting "Cooling Jonaing selection", the cooling/heating is selected by the current operation mode. During beating: Set at the beating zone (cooling prohibition zone). During cooling, dry, auto and fan mode: Set at cooling area the heating prohibition zone).		
		Cooling/heating	Auto Cooling Cooling		
		Cooling/heating (Competitive)	Auto Cooling Heating Cooling 1 Ser "Cooling" 1 Auto, cooling, dry mode command 1 Auto, heating mode Heating "Palse" by remote control 1 Auto, heating mode remote Control		

Notes (1) Regarding the priority order for combinations of CnT and CnTA, refer to Page 257.

(23) Fan control at heating startup

(a) Start conditions

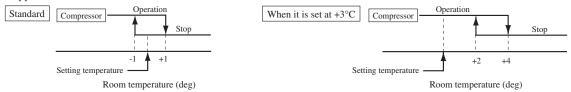
At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

- (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⁻¹.
 - (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⁻¹.
- (c) End 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.

(24) 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 " \otimes \$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.



(25) 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.

(26) 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.

(27) 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%.)

(28) 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.

(29) 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 temp. (factory setting 33°C for cooling, 10°C for heating)
- (b) Set temp and indoor fan speed can be set by RC-EX1A.

(30) Auto temp. 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.

(31) 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.

(32) 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.

(a) Operate 5 minutes forcedry.

- (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.

(33) 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.

(34) IU overload alarm (RC-EX1A only)

When the indoor air temperature becomes higher or lower than the temperature set with the remote control by more than 5 to 10°C at 30 minutes after starting operation, the signal is transmitted to the external output (CNT). Receipt of the signal by the external output is indicated by lighting an LED or other prepared onsite.

2.10.4 Operation control function by the outdoor control

(1) Determination of compressor speed (frequency)

Required frequency

(a)	Cooling/dehumidifying operation				
		Model	100	125	140
	Max. required	Usual operation	90	105	105
	frequency	Silent mode, outdoor temperature $\leq 15^{\circ}C$	60	80	85
	Min. required frequency		20	20	20
(b)	Heating operation			Unit: rps	
		Model		125	140
	Max. required	Usual operation	90	105	110
	frequency	Silent mode	60	80	85
	Min. required free	quency	20	20	20

(c) If the indoor unit fan speed becomes "Me" or "Lo", Max required frequentcy goes down accordingly depending on indoor unit model.

Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

				Unit: rps
	Model	100	125	140
Max. required frequency	Outdoor air temperature is 40°C or higher	75	90	96
	Outdoor air temperature is 46°C or higher	75	75	75

(e) Max. required frequency under outdoor air temperature in heating mode

Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

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	Model	100	125	140	
Max. requercy	Outdoor air temperature is 18°C or higher	60	80	85	

(f) Selection of max. required frequency by heat exchanger temperature

- (i) Maximum required frequency is selected according to the outdoor unit heat exchanger temperature (Tho-R) during cooling/dehumidifying or according to the indoor unit heat exchanger temperature (Thi-R) during heating mode.
- (ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), whichever the highest applies,

					Unit: rps
Model			100	125	140
Max. required frequency	Cooling/ dehumidifying	Outdoor unit heat exchanger temperature is 56°C or higher	90	100	100
	Heating	Indoor unit heat exchanger temperature is 56°C or higher	90	100	100

Note (1) Value in () are for the 3 phase models.

(g) When any of the controls from (a) to (f) above may duplicate, whichever the smallest value among duplicated controls is taken as the maximum required frequency.

(h) During heating, it is operated with the maximum required frequency until the indoor unit heat exchanger temperature becomes 40°C or higher.

(2) Compressor start control

- (a) Compressor starts upon receipt of the thermostat ON signal from the indoor unit.
- (b) However, at initial start after turning the power supply breaker, it may enter the standby state for maximum 30 minutes (" PREPARATION" is displayed on the remote control) in order to prevent the oil loss in the compressor. If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby
 - If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby state, " (b) PREPARATION" is displayed for 3 seconds on the remote control.

⁽d) Max. required frequency under high outdoor air temperature in cooling mode

(3) Compressor soft start control

(a) Compressor protection start I

[Control condition] Normally, the compressor operation frequency is raised in this start pattern.

[Control contents] (i) Starts with the compressor's target frequency at **A** rps.

- However, when the ambient air temperature (Tho-A) is 35° C or higher during cooling/ dehumidifying or the indoor return air temperature (ThI-A) is 25° C or higher during heating, it starts at **C** rps.
- (ii) At 30 seconds after the start of compressor, its target frequency changes to **B** rps and the compressor is operated for 2 4 minutes with its operation frequency fixed at **B** rps.

Model	Operation mode	A rps	B rps	C rps
100-140	Cooling/Dehumidifying	55	55	30
100-140	Heating	55	55	30

(b) Compressor protection start III

[Control condition] Number of compressor starts is only 1 counted after the power supply breaker ON.

[Control contents] Operates by selecting one of following start patterns according to the operation mode and the outdoor air temperature (Tho-A).

- (i) Low frequency operation control during cooling/dehumidifying
 - [Control condition] Upon establishing the conditions of compressor protection start III, the low frequency operation control is performed during cooling/dehumidifying.

[Control contents] (i) Starts with the compressor's target frequency at **A** rps. When the outdoor air temperature (Tho-A) is 35°C or higher, it starts at **C** rps.

(ii) At 30 seconds after the compressor start, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

<u>^</u>				
Model	Operation mode	A rps	B rps	C rps
100-140	Cooling/Dehumidifying	55	55	30

(ii) Low frequency operation control during heating

[Control condition] When the conditions of compressor protection start III are established and one of following conditions At 30 minutes or more after turning the power supply breaker on

[Control contents]

(i) Starts the compressor with its target frequency at **A** rps. However, when the indoor unit return air temperature (ThI-A) is 25°C or higher, it start at **C** rps.

(ii) At 30 seconds after the start of compressor, the compressor's target frequency is changed toB rps and the compressor's operation frequency is fixed for 10 minutes.

*	* *			
Model	Operation mode	A rps	B rps	C rps
100-140	Heating	55	55	30

Unit: min-1

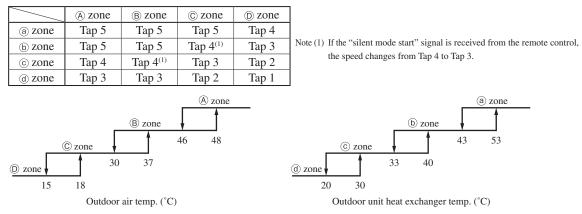
(4) Outdoor unit fan control

(a) Outdoor unit fan tap and fan motor speed

								Unit. min
Model	Mode		Fan motor tap					
		① speed	2 speed	③ speed	(4) speed	(5) speed	6 speed	⑦ speed
100	Cooling/Dehumidifying	200	350	600	740	820	870	910
	Heating	200	350	600	740	820	870	910
		① speed	2 speed	3 speed	(4) speed	(5) speed	6 speed	⑦ speed
125, 140	Cooling/Dehumidifying	200	350	600	740	820	870	950
	Heating	200	350	600	740	820	870	950

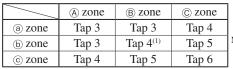
(b) Fan tap control during Cooling/Defumidifying operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A). Note (1) It is detected by Tho-R1 or R2, whichever the higher.

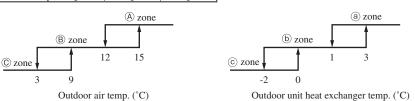


(c) Fan tap control during heating operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A). Note (1) It is detected by Tho-R1 or R2, whichever the lower.

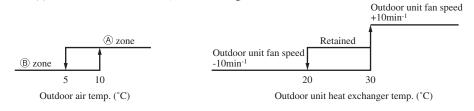


Note (1) If the "silent mode start" signal is received from the remote control, the speed changes from Tap 4 to Tap 3.



(d) Outdoor unit fan control at cooling low outdoor air

(i) When all the following conditions are established after the start of compressor, the following control is implemented. If the outdoor air temperature (Tho-A) is in the zone (B) in the cooling/dehumidifying mode, it has elapsed 20 seconds from the start of outdoor unit fan and the outdoor unit fan is at the tap 1 speed, the outdoor unit fan speed is controlled according to the outdoor unit heat exchanger temperature (Tho-R1, R2). Note (1) It is detected with Tho-R1 or R2, whichever the higher.



- (ii) The outdoor unit heat exchanger temperature is detected always and, when the number of revolutions of the outdoor fan speed has been increased or decreased, there is no change of fan speed for 20 seconds.
- (iii) Rage of the outdoor unit fan speed under this control is as follows.
 - 1) Lower limit: 130rpm
 - 2) Upper limit: 500rpm
- (iv) As any of the following conditions is established, this control terminates.
 - When the outdoor air temperature is in the zone (A) and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
 - 2) When the outdoor fan speed is 500rpm and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
 - 3) When the outdoor unit heat changer temperature at 45° C or higher is established for 40 seconds or more.

(e) Outdoor unit fan control by the power transistor radiator fin temperature

When all the following conditions are established later than 3 minutes after the start of compressor, the following control is implemented.

- (i) Cooling/dehumidifying
 - 1) Outdoor air temperature Tho-A \geq 33°C
 - 2) Compressor's actual frequency $\geq \mathbf{A}$ rps
 - 3) Power transistor radiator fin temperature $\geq \mathbf{C} \circ \mathbf{C}$
- (ii) Heating
 - 1) Outdoor air temperature Tho-A $\geq 16^{\circ}C$
 - 2) Compressor's actual frequency $\geq \mathbf{B}$ rps
 - 3) Power transistor radiator fin temperature $\geq \mathbf{C} \circ \mathbf{C}$
- (iii) Control contents
 - 1) Raises the outdoor unit fan tap by 1 tap.
 - 2) When the sampling is for 60 minutes and the value of power transistor radiator fin temperature (Tho-P) is as follows.
 - a) When the power transistor radiator fin temperature (Tho-P) $\geq \mathbf{C}$ °C, the outdoor unit fan tap is raised by 1 speed further.
 - b) When $\mathbf{C} \circ \mathbf{C} > \text{power transistor radiator fin temperature (Tho-P)} \ge \mathbf{D} \circ \mathbf{C}$, present outdoor unit fan tap is maintained.
 - c) When the power transistor radiator fin temperature (Tho-P) $\geq \mathbf{D}$ °C, the outdoor unit fan tap is dropped by 1 speed.
- (iv) Ending conditions
 - When the operation under the condition of item ii), ③ above and with the outdoor unit fan tap, which is determined by the item 2) is detected 2 times consecutively.
 - · Compressor's frequency and power transistor radiator fin temperature

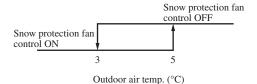
Item	А	В	С	D
100-140	85	85	72	68

(f) Caution at the outdoor unit fan start control (3 phase models only)

When the outdoor unit fan is running at 400min⁻¹ before operating the compressor, it may operate with the compressor only, without starting up the outdoor fan This is normal.

(g) Snow protection fan control

If the dip switch (SW3-2) on the outdoor unit control PCB is turned ON, the outdoor unit fan is operated for 30 seconds at 4 tap speed once in every 10 minutes depending on the outdoor air temperature (detected with Tho-A) in the stop mode or anomalous stop mode.

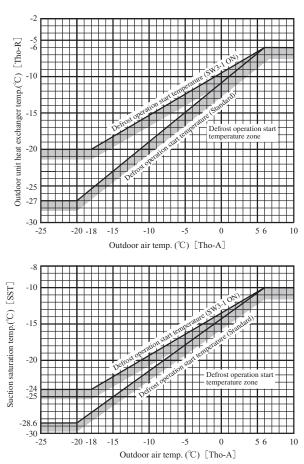


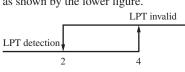
(5) Defrosting

(a) Defrosting start conditions

If all of the following defrosting conditions A or conditions B are met, the defrosting operation starts.

- (i) Defrosting conditions A
 - Cumulative compressor operation time after the end of defrosting has elapsed 37 minutes, and the cumulative compressor operation time after the start of heating operation (remote control ON) has elapsed 30 minutes.
 - 2) After 5 minutes from the compressor ON
 - 3) After 5 minutes from the start of outdoor unit fan
 - 4) After satisfying all above conditions, if temperatures of the outdoor unit heat exchanger temperature thermistor (Tho-R1, R2) and the outdoor air temperature thermistor (Tho-A) become lower than the defrosting start temperature as shown by the right figure for 15 seconds continuously, or the suction gas saturation temperature (SST) and the outdoor air temperature (Tho-A), which are obtained from the value detected by the low pressure sensor (LPT) stay for 3 minutes within the range below the defrosting operation start temperature as shown by the right figure. However, it excludes for 10 minutes after the start of compressor and the outdoor air temperature is as shown by the lower figure.





Outdoor air temp. (°C)

- (ii) Defrosting conditions B
 - 1) When previous defrosting end condition is the time out of defrosting operation and it is in the heating operation after the cumulative compressor operation time after the end of defrosting has become 30 minutes.
 - 2) After 5 minutes from the start of compressor
 - 3) After 5 minutes from the start of outdoor unit fan

(b) Defrosting end conditions

When any of the following conditions is satisfied, the defrosting end operation starts.

(i) When it has elapsed 8 minutes and 20 seconds after the start of defrosting.

(ii) When the outdoor unit heat exchanger temperatures (Tho-R1, R2), whichever the lower, becomes 12°C or higher for 10 seconds continuously.

(c) Switching of defrosting control with SW3-1

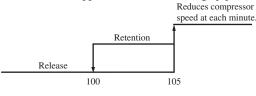
- (i) If SW3-1 on the outdoor unit control PCB is turned to ON, it becomes easier to enter the defrosting operation. Use this when installing a unit at snowing regions.
- (ii) Control contents
 - 1) It allows entering the defrosting operation under the defrosting condition A when the cumulative heating operation time becomes 30 minutes. It is 37 minutes at SW3-1 OFF (Factory default).
 - It allows entering the defrosting operation under the defrosting condition B when the cumulative heating operation time becomes 25 minutes. It is 30 minutes at SW3-1 OFF (Factory default).
 - 3) It allows the defrosting operation with the outdoor unit heat exchanger temperature (Tho-R) and suction pressure saturation temperature (SST) being higher than normal.

(6) Protective control/anomalous stop control by compressor's number of revolutions

(a) Compressor discharge pipe temperature protection

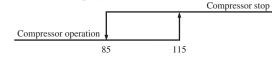
(i) Protective control

As the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of discharge pipe temperature.



Discharge pipe temperature (°C)

- (ii) Anomalous stop control
 - 1) If the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor stops.
 - 2) When it is detected 2 times within 60 minutes or after continuous 60 minutes, including the stop of compressor, E36 is displayed on the remote control and it enters the anomalous stop mode.



Discharge pipe temperature (°C)

(iii) Reset of anomalous stop mode

As it drops to the reset value of 85°C or lower for 45 minutes continuously, it becomes possible to restart from the remote control.

(b) Cooling high pressure protection

- (i) Protective control
 - 1) When the outdoor air temperature (Tho-A) is 40°C or higher and the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
 - 2) Control value A is updated to an optimum value automatically according to the operating conditions.



(ii) Anomalous stop control

- 1) As the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor stops.
- If it is detected 5 times within 60 minutes or 65°C or higher continues for 60 minutes, including the stop of compressor, E35 is displayed on the remote control and it enters the anomalous stop mode.



Outdoor unit heat exchanger temp. (°C)

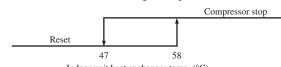
- (iii) Reset of anomalous stop mode
 - As it reaches the reset value of 51°C or lower, it becomes possible to restart from the remote control.

(c) Heating high pressure protection

- (i) Protective control
 - 1) As the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
 - 2) Control value A is updated to an optimum value automatically according to the operating conditions.

Reduces compressor frequency		Existing piping adaptation switch: SW5-1 (SW8-1: model 80)		
at every 30 seconds.	Model	OFF (Shipping)	ON	
Reset 🕴		Control va	llue A (°C)	
A	100-140	48-54	46-52	
Indoor unit heat exchanger temp. (°C)	Note (1) Adaptation to ex	isting piping is at ON.		

- (ii) Anomalous stop control
- Operation control function by the indoor unit controller See the heating overload protection, page 255. (iii) Adaptation to existing piping, stop control
- If the existing piping adaptation switch, SW5-1, is turned ON, the compressor stops to protect existing piping when the indoor unit heat exchanger temperature (Thi-R) exceeds the setting value.



Indoor unit heat exchanger temp. (°C)

(d) Anomaly detection control by the high pressure switch (63H1)

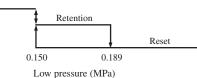
- If the pressure rises and operates the high pressure switch (opens at 4.15MPA/closes at 3.15MPa), the compressor stops. (i)
- Under any of the following conditions, E40 is displayed and it enters the anomalous stop mode. (ii)
 - When it occurs 5 times within 60 minutes that pressure rises and the compressor is stopped by 63H1. 1)
 - 2) When 63H1 has been in the open state for 60 minutes continuously, including the stop of compressor.

(e) Low pressure control

(i) Protective control

If the value detected by the low pressure sensor (LPT) exceeds the setting value, the compressor speed (frequency) is controlled to restrain the drop of pressure.

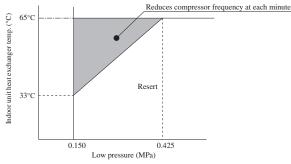
Reduces compressor frequency at every 30 seconds.



- (ii) Anomalous stop control
 - When a value detected by the low pressure sensor (LPT) satisfies any of the following conditions, the 1) compressor stops to run for its protection.
 - When the low pressure drops to 0.079MPa or under for 15 seconds continuously. a)
 - At 10 minutes after the start of compressor, the suction overheat becomes 30°C and the low pressure b) becomes 0.15MPa or under for 60 seconds continuously.
 - 2) E49 is displayed under any of the following conditions and it enters the anomalous stop mode.
 - When the low pressure drops 3 times within 60 minutes and the compressor stops under any of the above conditions. a)
 - When a value detected with the low pressure sensor becomes 0.079MPa or under for 5 minutes, including b) the stop of compressor.
 - 3) However, when the control condition 1) a) is established during the compressor protection start III, E49 is displayed at initial stop and it enters the anomalous stop mode.

(f) Compressor pressure ratio protection control

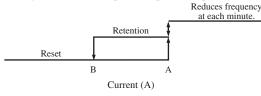
- (i) During heating operation, if the indoor unit heat exchanger temperature (Thi-R) and the low pressure sensor (LPT) exceed the setting values at 10 minutes after the start of compressor, the compressor speed (frequency) is controlled to protect the compressor.
- This control is not performed during the outdoor fan ON and for 10 minutes from the start of outdoor unit fan. (ii)
- This control is not performed during defrosting operation and at 10 minutes after the reset of defrosting operation. (iii)
- (iv) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the highest temperature is detected.



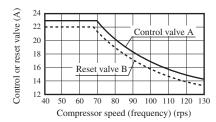
(g) Over-current protection current safe controls I, II

Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.

at each minute



(Fig. C) The control value "A" and the reset value vary depending on the compressor speed.

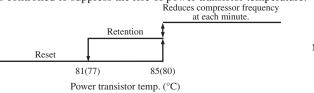


		Coo	ling	Heating		
Mode	1	Control value A	Reset value B	Control value A	Reset value B	
Primary	100	13.5 (23.0)	12.5 (22.0)	13.5 (23.0)	12.5 (22.0)	
current side	125, 140	13.5 (23.0)	12.5 (22.0)	13.5 (23.0)	12.5 (22.0)	
Secandary current side	100	13.0 (Fig.C)	12.0 (Fig.C)	13.0 (Fig.C)	12.0 (Fig.C)	
	105	13.0 (Fig.C)	12.0 (Fig.C)	13.0 (Fig.C)	12.0 (Fig.C)	

Note (1) Value in () are for the single phase models.

(h) Power transistor temperature protection

- (i) Protective control
 - If the power transistor temperature (detected with TIP) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of power transistor temperature.



Note (1) Value in () are for the single phase 100~140 model.

(i) Anomalous power transistor current

- (i) Prevents over-current on the inverter. If the current value in the power transistor exceeds the setting value, the compressor stops.
- (ii) If the current value in the power transistor exceeds the specified value and the compressor stops 4 times within 30 minutes, E42 is displayed on the remote control and it enters the anomalous stop mode.

(j) Anomalous inverter PCB

If the power transistor detects any anomaly for 15 minutes, including the stop of compressor, E51 is displayed on the remote control and it enters the anomalous stop mode.

(k) Anti-frost control by the compressor frequency control

- (i) If the indoor unit heat exchanger temperature (detected with Thi-R) exceeds the setting value at 4 minutes after the start of compressor, the compressor speed (frequency) is controlled to initiate the anti-frost control of indoor unit heat exchanger.
- (ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the lowest temperature is detected.

Reduces compressor frequency at each minute.	Retention	1
1	.5 3	3.5
Indoo	r unit heat exchange	er temp. (°C)

(iii) Regarding the anti-frost control by the operation stop, refer to the operation control function by the indoor unit controller and the cooling, dehumidifying frost prevention of page 255.

(I) Dewing prevention control

[Control condition] During cooling and dehumidifying operation, if all the following conditions are established, the compressor speed (frequency) is reduced to prevent dewing and water splash.

① Cooling electronic expansion valve aperture (EEVC) is 500 pulses.

⁽²⁾ Suction overheat is 10°C or higher.

③Compressor speed (frequency) is 60 rps or higher.

- [Control contents] ① When the suction overheat is 10°C or higher, the compressor speed (frequency) is reduced at each 1 minute.
 - (2) Compressor speed (frequency) does not rise till the cooling expansion valve becomes 460 pulses.
 - ③ This control takes 60 rps as its lower limit so that compressor speed is not controlled when it is less than 60 rps.

(m) Refrigerant quantity shortage protection

Under the compressor protection start III control during cooling and dehumidifying operations, the following control is performed by detecting the indoor unit heat exchanger temperature (Thi-R) and the indoor unit return air temperature (Thi-A).

[Control condition] When the state that the indoor unit heat exchanger temperature (ThI-R) does not become lower than the indoor unit return air temperature (ThI-A) by 4°C or more continues for 1 minute.

[Control contents]

It judges that the flowing of refrigerant in to the indoor unit is insufficient so that the compressor is stopped and E57 is displayed on the remote control.

(n) Broken wire detection on temperature thermistor and low pressure sensor

(i) Outdoor unit heat exchanger thermistor, outdoor air thermistor and low pressure 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.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Outdoor unit heat exchanger thermistor: -50°C or lower
- Outdoor air temperature thermistor: -45°C or lower
- Low pressure sensor: 0V or under or 4.0V or over
- (ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor

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 thermistor: -10°C or lower
- Suction pipe temperature thermistor: -50°C or lower

(o) Fan motor error

- (i) If the fan speed of 100rpm or under is detected for 30 second continuously under the outdoor unit fan control (with the operation command of fan tap at ① speed or higher), the compressor stops.
- (ii) When the fan motor speed drops to 100rpm or under 5 times within 60 minutes and the compressor stops, it enters the anomalous stop mode with E48 displayed on the remote control.

(p) Anomalous stop by the compressor start stop

- (i) When it fails to shift to the compressor DC motor's rotor position defection operation at 5 seconds after establishing the compressor start condition, the compressor stops temporarily and restarts 3 minutes later.
- (ii) If it fails to shift to the position detection operation again at second time, it judges the anomalous compressor start and stops the compressor by the anomalous stop (E59).

(7) Silent mode

- (a) As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor unit fan tap and the compressor speed (frequency).
- (b) For details, refer to items (1) and (4) above.

(8) Test run

(a) It is possible to operate from the outdoor unit using the dip switch on the outdoor unit control PCB.

SW3-3	ON	SW3-4	OFF	Cooling test run
	UN	S W 3-4	ON	Heating test run
	OFF	N	Normal and end of test run	

Make sure to turn SW3-3 to OFF after the end of operation.

(b) Test run control

- (i) Operation is performed at the maximum compressor speed (frequency), which is determined for each model.
- (ii) Each protective control and error detection control are effective.
- (iii) If SW3-4 is switched during test run, the compressor is stoped for once by the stop control and the cooling/heating operation is switched.
- (iv) Setting and display of remote control during test run

Item	Contents of remote control setting/display
Cooling test run	Setting temperature of cooling is 5°C.
Heating test run	Setting temperature of heating (preparation) is 30°C.

(9) Pump-down control

Turning ON the pump-down switch SW1 for 2 seconds during the operation stop or anomalous stop (excluding the thermostat OFF), the pump-down operation is performed. (This is invalid when the indoor unit is operating. This is effective even when the indoor unit is stopped by the anomalous stop or the power supply is turned OFF.)

(a) Control contents

- (i) Close the service valve at the liquid side. (It is left open at the gas side.)
- (ii) Compressor is started with the target speed (frequency) at 55 rps in the cooling mode.
- (iii) Red and green lamps (LED) flash continuously on the outdoor unit control PCB.
- (iv) Each of protection and error detection controls, excluding the low pressure control, anti-frost control and dewing prevention control, is effective.
- (v) Outdoor unit fan is controlled as usual.
- (vi) Electronic expansion valve is fully opened.

(b) Control ending conditions

Stop control is initiated depending on any of the following conditions.

- (i) Low pressure of 0.087MPa or lower is detected for 5 seconds continuously.
 - 1) Red LED: Light, Green LED: Flashing, Remote control: Displays stop.
 - 2) It is possible to restart when the low pressure is 0.087MPa or higher.
 - 3) Electronic expansion valve (cooling/heating) is kept fully open.
- (ii) Stop by the error detection control
 - 1) Red LED: Flashing, Green LED: Flashing
 - 2) Restart is prohibited. To return to normal operation, reset the power supply.
 - 3) Electronic expansion valve (cooling/heating) is left fully open.
- (iii) When the cumulative operation time of compressor under the pump-down control becomes 5 minutes.
 - 1) Red LED: OFF, Green LED: Flashing, Remote control: Stop
 - 2) It is possible to pump-down again.
 - 3) Electronic expansion valve (cooling/heating) is left fully open.

Note (1) After the stop of compressor, close the service valve at the gas side.

Caution: Since pressing the pump-down switch cancels communications with the indoor unit, the indoor unit and the remote control display "Transmission error – E5". This is normal.

(10) Base heater ON/OFF output control (option)

(a) Base heater ON conditions

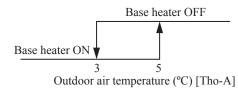
When all of following conditions are met, the base heater is turned ON.

- Outdoor air temperature (detected with Tho-A) is 3°C or lower.
- In the heating mode
- 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.

- Outdoor air temperature (detected with Tho-A) is 5°C or higher.
- When the compressor stop has been detected for 30 minutes continuously
- In the cooling or dehumidifying mode



2.11 MAINTENANCE DATA

2.11.1 Diagnosing of microcomputer circuit

(1) Selfdiagnosis function

(a) Check Indicator Table

Whether a failure exists or not on the indoor unit and outdoor unit can be know by the contents of remote control error code, indoor/outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote	control	Indoor co	ntrol PCB	Outdoor c	ontrol PCB	Location of			Reference		
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	trouble	Description of trouble	Repair method	page		
		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	_	Normal operation	_	_		
No-indication	Stays OFF	Stays OFF	Stays OFF	2 times flash	Stays OFF	Indoor unit power supply	Power OFF, broken wire/blown fuse, broken transformer wire	Repair	298		
		*	Keeps	Stars OFF	Keeps	Remote control wires	 Poor connection, breakage of remote control wire * For wire breaking at power ON, the LED is OFF. 	Repair	200		
		3 times flash	flashing	Stays OFF	flashing	Remote control	Defective remote control PCB	Replacement of remote control	299		
⊕WAI INSPE		Stays OFF	Keeps flashing	2 times flash	Keeps flashing	Indoor-outdoor units connection wire	Poor connection, breakage of indoor-outdoor units connection wire	Repair	300-304		
						Remote control	Improper setting of master and slave by remote control				
Ε 1		Stays OFF	* Keeps	Stays OFF	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	306		
			flashing		flashing	Remote control indoor control PCB	*• Defective remote control or indoor control PCB (defective communication circuit)?	Replacement of remote control or PCB			
		2 times flash	Keeps flashing	2[6] times flash	Keeps 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			
ES		2 times	Keeps	G. OFF	Keeps	(Noise)	CPU-runaway on outdoor control PCB	Power reset or Repair			
		flash	flashing	Stays OFF	flashing	Outdoor control PCB	*• Occurrence of defective outdoor control PCB on the way of power supply (defective com- munication circuit)?	Replacement of PCB	307		
		2 times	Keeps			Stays OFF	Stays OFF	Outdoor control PCB	Defective outdoor control PCB on the way of power supply	Replacement	
		flash	flashing			Fuse	Blown fuse		<u> </u>		
E6		1 time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor heat exchanger tempera- ture thermistor	Defective indoor heat exchanger temperature thermistor (defective element, bro- ken wire, short-circuit) Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	308		
			nasning		nashing	Indoor control PCB	*• Defective indoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB			
Ε7		1 time flash	Keeps	Stays OFF	Keeps	Indoor return air temperature therm- istor	Defective indoor return air temperature thermistor (defective element, broken wire, short-circuit) Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	309		
	Keeps		flashing		flashing	Indoor control PCB	*• Defective indoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	507		
	flashing					Installation or oper- ating condition	Heating over-load (Anomalously high indoor heat exchanger temperature)	Repair			
E8		1 time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor heat exchanger tempera- ture thermistor	Defective indoor heat exchanger temperature thermistor (short-circuit)	Replacement of temperature therm- istor	310		
						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 of DM			
E9		1 time flash	Keeps	Stays OFF	Keeps	Float switch	Anomalous float switch operation (malfunction)	Repair	311		
		i tine nasi	flashing	51493 011	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	511		
						Option	Defective optional parts (At optional anomalous input setting)	Repair			
E 10		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Number of con- nected indoor units	When multi-unit control by remote control is performed, the number of units is over	Repair	312		
F IF		1(2) time flash	Keeps flashing	Stays OFF	Keeps flashing	Fan motor	Defective fan motor	Replacement, repair	313		
E 16 E 16 E 20 E 28		1 time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor power PCB Indoor control PCB	Defective indoor power PCB Improper operation mode setting	Replacement Repair	314		
<u>הכא</u>		1(2) time	Keeps	Stays OFF	Keeps	Fan motor	Indoor fan motor rotation speed anomaly	Replacement, repair	315		
		flash	flashing	Stays OFF	flashing	Indoor power PCB	Defective indoor power PCB	Replacement	515		
E28		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Remote control tem- perature thermistor	Broken wire of remote control temperature thermistor	Repair	316		

Note (1) Normal indicator lamp (Indoor, outdoor units: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing 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.

(ii) Outdoor unit

Remote control		Indoor control PCB		B Outdoor control PCB		Outdoor inventer PCB	Location of trouble	Description of trouble	Repair method	Reference
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	Yellow LED	Location of trouble		nepair metriou	page
							Installation or operating condition	Higher outdoor heat exchanger temperature	Repair	
E35		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Outdoor heat exchanger temperature thermistor	Defective outdoor heat exchanger temperature thermistor	Replacement of temperature thermistor	317
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
							Installation or operating condition	Higher discharge temperature	Repair	
E36		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Discharge pipe temperature thermistor	Defective discharge pipe temperature thermistor	Replacement, repair of temperature thermistor	318
					_		Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E37		Staria OEE	Keeps	1 time flash	Keeps	Keeps	Outdoor heat exchanger temperature thermistor	 Defective outdoor heat exchanger temperature thermistor, broken wire or poor connector connection 	Replacement, repair of temperature thermistor	319
יכס		Stays OFF	flashing	1 unie nasii	flashing	flashing	Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	519
E 38		OFF	Keeps	1 days float	Keeps		Outdoor air temperature thermistor	Defective Outdoor air temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	220
		Stays OFF	flashing	1 time flash	flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	320
E39		0. OFF	Keeps		Keeps	1	Discharge pipe temperature thermistor	Defective discharge pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	221
ככס		Stays OFF	flashing	1 time flash	flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	321
ЕЧО		Stays OFF	Keeps	1 time flash	Keeps		Installation or operating condition	Rising high pressure (Operation of 63H1) Service valve closing operation	Repair	322
			flashing		flashing		Outdoor control PCB	*• Defective outdoor control PCB (Defective 63H input circuit)?	Replacement of PCB	\square
<u>E4 1</u>		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	6 times flash	Inverter PCB or radiator fin	Power transistor overheat	Replacement of PCB or Repair	323
ЕЧ2	Keeps flashing	Stays OFF	Keeps	1 time flash	Keeps	1 time flash	Outdoor control PCB compressor	Current cut (Anomalous compressor over-current)	Replacement of PCB	324.325
		Stays Of F	flashing	I unic nasi	flashing	I unic nasi	Installation or operating condition	Service valve closing operation	Repair	524 525
EYS		Stays OFF	Keeps	1 time flash	Keeps		Outdoor control PCB	Anomalous outdoor control PCB communication	Service valve opening check	326
			flashing		flashing		Inverter PCB	Anomalous inverter PCB communication	Replacement of PCB	
ЕЧВ		Stays OFF	Keeps	1 time flash	Keeps		Outdoor fan motor	Anomalous outdoor fan motor	Replacement, repair	327
			flashing		flashing	Keeps flashing	Outdoor control PCB	*• Defective outdoor control PCB (Defective motor input circuit)?	Replacement of PCB	
						mashing	Installation or operating condition	Low pressure error Service valve closing operation	Repair	
E49		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Low pressure sensor	 Anomalous low pressure, broken wire of low pressure sensor or poor connector connection 	Replacement, repair of sensor	328•329
							Outdoor control PCB	*• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
<u>ES 1</u>		Stays OFF	Keeps flashing	1 time flash	Keeps flashing	2 times flash	Inverter PCB	Anomalous inverter PCB	Replacement of PCB	330
E53		Stays OFF	Keeps	1 time flash	Keeps		Suction pipe temperature thermistor	Defective suction pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	331
			flashing		flashing		Outdoor control PCB	*• Defective outdoor PCB (Defective thermistor input circuit)?	Replacement of control PCB	
Е5Ч		Stays OFF	Keeps	1 time flash	Keeps	Keeps flashing	Low pressure sensor	Defective low pressure sensor	Replacement of sensor	332
			flashing		flashing		Outdoor control PCB	Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
E 57		Stays OFF	Keeps flashing	1 time flash	Keeps flashing		Operation status Installation status	Shortage in refrigerant quantity Service valve closing operation	Repair Service valve opening	333
E 5 9		Stays OFF	Keeps flashing	5 times flash	Keeps flashing	Stays OFF	Compressor inverter PCB	Anomalous compressor startup	check Replacement	334•335

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.

(iii) Optional control in-use

Remot	e control	Indoor unit control PCB		Indoor unit control PCB		nit control PCB Outdoor unit control PCB		Description of trouble	Repair method
Error code	Red LED	Red LED	Green LED	Red LED	Green LED	Description of trouble	nepair methou		
E 75	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Communication error (Defective communication circuit on the main unit of SC-SL2N-E or SC-SL3N-E) ete.	Replacement		

(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 plu	Occurrence of plural kinds of error						
Section	Category of display						
Error code on remote control	• Displays the error of higher priority (When plural errors are persisting)						
Red LED on indoor control PCB	E 1>E5>·····>E 10>E35>·····E60						
Red LED on outdoor 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)	69	Whenever float switch is activated after 30 second had past since power ON.
	Communication error at initial operation	ՙՙ֎wait֎՚՚	No communication between indoor and outdoor units is established at initial operation.
	Remote control communication circuit error	EI	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	65	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	Ε'n	-20°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	68	-40 °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 thermistor anomaly	E 38	-45°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -45°C or higher is detected for 5 seconds continuously within 20 seconds after compressor ON.
	Outdoor heat exchanger temperature thermistor anomaly	637	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -50°C or lower is detected for 5 seconds continuously within 20 seconds after compressor ON.
Outdoor	Discharge pipe temperature thermistor anomaly	639	-10°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Suction pipe temperature thermistor anomaly	653	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Low pressure sensor anomaly	654	0V or lower or 4.0V or higher is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous pressure.
	Underneath temperature thermistor anomaly	855	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.

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
Red LED on indoor control PCB	• Not memorized.	switch of remote control.If the unit has recovered from anomaly, it
Red LED on outdoor control PCB	• Memorizes a mode of higher priority.	can be operated.

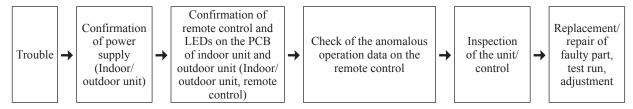
Resetting the error log

- 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 controller.
- Resetting the memorized error log
- 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 supply PCB, temperature thermistor (return air, indoor heat exchanger), remote control switch, limit switch, transformer 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.
▲ WARNING 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.
A WARNING
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.

PSB012D990B

(i) Control PCB

Replace and set up the PCB according to this instruction.

1) 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	_	Normal	
restruit	307-1	0	Operation check/drain motor test run	
O:ON -:OFF				

2) Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit. _____ SW6

SW6	-1	-2	-3	-4
100V	0	0	—	0
125V	-	_	0	0
140V	0	_	0	0

ON 1 2 3 4 Example setting for 140V

3) Replace the PCB

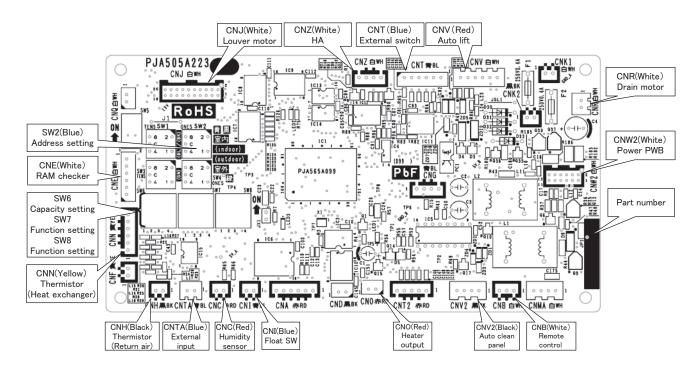
a) Exchange PCB after detaching all connectors connected with the PCB.

b) Fix the PCB so as not to pitch the wiring.

c) Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

4) Control PCB

Parts mounting are different by the kind of PCB.



(ii) Power PCB

PSC012D021

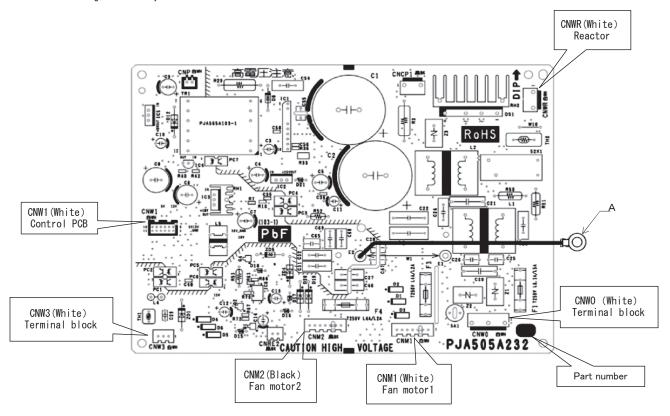
This PCB is a general PCB. Replace the PCB according to this instruction.

1) Replace the PCB

a) Unscrew terminal(Arrow A) of the "E2" wiring(yellow/green) that is connected to PCB.

- 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(Arrow A) of the "E2" wiring, that was removed in 1.
- 2) Power PCB

Parts mounting are different by the kind of PCB.



DIP switch setting list

Switches	Description			efault setting	Remarks
SW2	Address No. setting at plural indoor u	nits control by 1 R/C	0		0-F
SW5-1	Reserved		OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW6-1 SW6-2 SW6-3 SW6-4	Model selection		As per 1	nodel	See table 1
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				keep OFF
SW8-1	Reserved				keep OFF
SW8-2	Reserved		OFF		keep OFF
SW8-3	Reserved		OFF		keep OFF
SW8-4	Setting of the External static pressure	Normal*/Range expand	OFF	Normal	keep OFF
JSL1	Superlink terminal spare	Normal*/switch to spare	With		

* Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

		0: OFF	1:ON
	100V	125V	140V
SW6-1	1	0	1
SW6-2	1	0	0
SW6-3	0	1	1
SW6-4	1	1	1

(4) Troubleshooting at the outdoor unit

When troubleshooting the outdoor unit, firstly assess the overview of malfunction and try to presume the cause and the faulty part by checking the error cord dispalyed on the remote control and flashing pattern of indicator lamps (Red LED and Green LED), and then proceed further inspection and remedy it.

Self-diagnosis system by microcomputor on indoor and outdoor PCB can assist to find the cause of malfunction smoothly by making a diagnosis of not only the anomaly of microcomutor, but also the anomaly in power supply system, installation space, overload resulting from improper charging amount of refrigerant and etc.

Unless the power is reset, the error log is saved in memory and the inspection indicator lamps on outdoor PCB keep flashing after automatical recovering from malfunction.

After automatical recovering from malfunction, if any another error mode which has a higher priority than the previous error saved in memory occurs, it is overwritten in memory and is displayed.

[Reset of power supply]

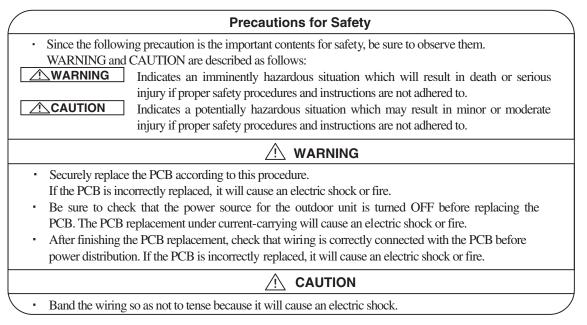
Be sure to avoid electrical shock, when replacing or checking the outdoor control PCB, because some voltage is still retained in the electrolytic capacitor on the PCB even after shutting down the power supply to the outdoor unit.

Be sure to start repairing work, after confirming that the Green LED on the PCB has been extiguished for more than 10 seconds after more than 3 minutes had been passed since power shut down, and reconfirming that voltage has been discharged sufficiently by measuring the voltage (DC) between both terminals of electrolytic capacitor (C58) (Measurment of voltage may be disturbed by the moisture-proof coating. In such case, remove the coating and measure it by taking care of avoiding electrical shock)

(a) Module of part to be replaced for outdoor unit control

Outdoor control PCB, Inverter PCB, Temperature thermistor (of outdoor heat exchanger, discharge pipe, outdoor air, IPM and suction pipe), Fuses (for power supply and control PCB), Noise filter, Capacitor, Reactor and Transformer

(b) Replacement procedure of outdoor control PCB

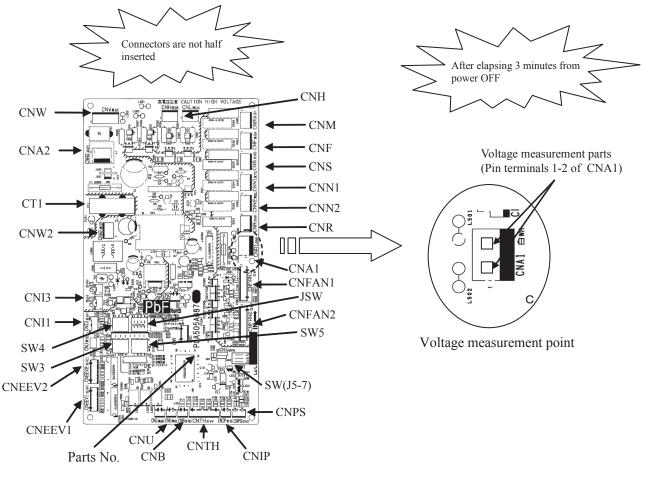


PCA012D043

(i) Model FDC100VN, 125VN, 140VN

FDC100VS, 125VS, 140VS

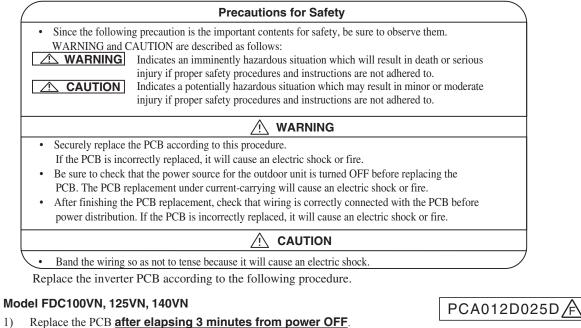
- Replace the PCB <u>after elapsing 3 minutes from power OFF.</u>
 (Be sure to measure voltage (DC) on both capacitor terminals located in controller back, and <u>check that the</u> voltage is discharged sufficiently.)
- 2) Disconnect the connectors from the control PCB.
- 3) Disconnect the white wiring passing through CT1 on the PCB before replacing the PCB.
- 4) Match the setting switches (SW3-5,JSW) with the former PCB.
- 5) Tighten up a screw after passing white wiring through CT1 of the changed.
- 6) Connect the connectors to the control PCB.(Confirm the <u>connectors are not half inserted</u>.)



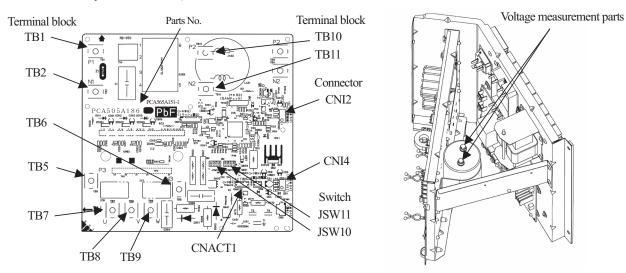
Parts Arrangement

(c) Outdoor inverter PCB replacement procedure

(i)



- (Be sure to measure voltage (DC) on both capacitor terminals located in controller back, and <u>check that the</u> voltage is discharged sufficiently. (Refer to Fig.1))
- 2) Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then remove the PCB. Wipe off the silicon grease neatly on the controller's radiation heat fins.
- 3) Refer to table1 for the setting of switch (JSW10,11) of new PCB.
- 4) Before installing the power transistor on the new PCB, Apply uniformly a bundled of silicon grease first on the surface of power transistor. Make sure it is applied to prevent damage on power transistor.
- 5) Tighten the screw of power transistor on inverter PCB and connect the terminal block.Confirm the connection and don't use soldering in the connection. Tighten properly the power transistor with a screw and make sure there is no clearance gap. Power transistor can be damage if not properly tighten. (Recommended power transistor tightening torque:0.98~1.47N·m)



Parts arrangement view

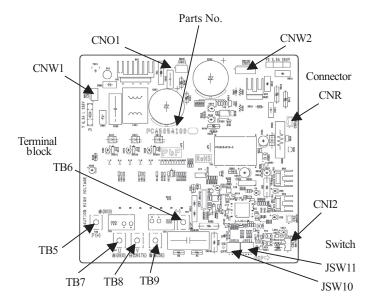
Fig.1 Position of capacitor

Table. T Switch setting					
	-1	OFF		-1	ON
JSW10	-2	OFF	JSW11	-2	OFF
JS W 10	-3	OFF	JS W 11	-3	OFF
	-4	OFF		-4	ON
		•			

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(ii) Model FDC100VS, 125VS, 140VS

- Replace the PCB <u>after elapsing 3 minutes from power OFF</u>.
 (Be sure to measure voltage (DC) on both capacitor terminals located in controller back, and <u>check that the</u> voltage is discharged sufficiently. (Refer to Fig.1))
- 2) Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then remove the PCB. Wipe off the silicon grease neatly on the controller's radiation heat fins.
- 3) Refer to table1 for the setting of switch (JSW10,11) of new PCB.
- 4) Before installing the power transistor on the new PCB, Apply uniformly a bundled of silicon grease first on the surface of power transistor. Make sure it is applied to prevent damage on power transistor.
- 5) Tighten the screw of power transistor on inverter PCB and connect the terminal block. Confirm the connection and don't use soldering in the connection. Tighten properly the power transistor with a screw and make sure there is no clearance gap. Power transistor can be damage if not properly tighten. (Recommended power transistor tightening torque:0.98~1.47N·m)



Parts arrangement view

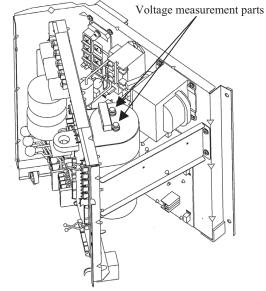


Fig.1 Position of capacitor

Table. 1 Switch setting					
	-1	OFF		-1	OFF
ISW10	-2	OFF	ICW/11	-2	ON
JSW10	-3	OFF	JSW11	-3	OFF
	-4	OFF		-4	ON

Table. 1 Switch setting

•DIP switch setting list (Outdoor unit)

(1) Control PCB

Switches	Description			efault setting	Remarks
SW1	Pump down operation	Normal*/Pump down	OFF	Normal	
JSW1-1					
JSW1-2					C + - h 1 - 1
JSW1-3	Model selection		As per	model	See table 1
JSW1-4					
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Test run SW	Normal*/Test run	OFF	Normal	
SW3-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	See table 1
SW4-2	Model selection	3-phase/Single phase	As per	model	See table 1
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Reserved		OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW5-3	Reserved		OFF		Keep OFF
SW5-4	Reserved		OFF		Keep OFF

*	D	efault setting	
CITER	4	1 011/4 1 011/4	~

Table 1: Outdoor unit model selection with JSW1-1-JSW1-4 and SW4-1-SW4-2 0: OFF 1:ON

					0.01	T 1.0N
	100VN	100VS	125VN	125VS	140VN	140VS
JSW1-1	0	0	1	1	0	0
JSW1-2	0	0	0	0	1	1
JSW1-3	0	0	0	0	0	0
JSW1-4	0	0	0	0	0	0
SW4-1	1	1	1	1	1	1
SW4-2*	1	0	1	0	1	0
	* 3-phase: OFF/Single phase: ON				N	

(2) Inverter PCB

Switches	100, 125, 140VN	100, 125, 140VS
Switches	Single phase models	3-phase models
JSW10-1	OFF	OFF
JSW10-2	OFF	OFF
JSW10-3	OFF	OFF
JSW10-4	OFF *	OFF *
JSW11-1	ON	OFF
JSW11-2	OFF	ON
JSW11-3	OFF	OFF
JSW11-4	ON	ON

* When checking inverter PCB of FDC100-140 models with inverter checker, turn JSW10-4 ON. (Regarding the checking method of inverter PCB with inverter checker, refer to page 282 for details)

(5) Check of anomalous operation data with the remote control(a) In case of RC-E5 remote control	Number		Data Item
	01	*	(Operation Mode)
Operation data can be checked with remote control unit operation.	02	SET TEMP°	(Set Temperature)
(i) Press the CHECK button.	03	RETURN AIR_~~`c	(Return Air Temperatu
The display change "OPER DATA ▼"	04	©SENSORč	(Remote Control Thermis
(ii) Press the O (SET) button while "OPER DATA ▼" is displayed.	05	THI-R1°	(Indoor Heat Exchanger T
	06	THI-R2°	(Indoor Heat Exchanger Th
(iii) When only one indoor unit is connected to remote control,	07	THI-R3_č	(Indoor Heat Exchanger The
"DATA LOADING" is displayed (blinking indication during data loading).	08	I/U FANSPEED	(Indoor Unit Fan Spee
Next, operation data of the indoor unit will be displayed. Skip to step \mathbb{O} .	09	DEMANDHz	(Frequency Requirem
	10	ANSWER Hz	(Response Frequency
(iv) When plural indoor units is connected, the smallest address number of	11	<u>I/UEEVP</u>	(Pulse of Indoor Unit E
indoor unit among all connected indoor unit is displayed.	12	TOTAL I/U RUN	H (Total Running Hours
[Example]:	21	OUTDOOR&	(Outdoor Air Tempera
	22	THO-RIb	(Outdoor Heat Exchar
" \bigcirc \$ELECT I/U" (blinking 1 seconds) → " I/U000 Å" blinking.	23	THO-R2C	(Outdoor Heat Exchar
(v) Select the indoor unit number you would like to have data displayed	24	COMPHz	(Compressor Frequen
with the \checkmark button.	25	HPMPa	(High Pressure)
	26	LPMPa	(Low Pressure)
(vi) Determine the indoor unit number with the O (SET) button.	27 28	Tdと COMP ROTTOM と	(Discharge Pipe Temp (Comp Bottom Tempe
(The indoor unit number changes from blinking indication to continuous	20	CTAMP	(Current)
indication)	30	ుnnr TARGET SH స	(Target Super Heat)
,	30	SHC	(Super Heat)
"[/U000" (The address of selected indoor unit is blinking for 2 seconds.)	32	TDSH°	(Discharge Pipe Supe
\downarrow	33	PROTECTION No	(Protection State No. of
"DATA LOADING" (A blinking indication appears while data loaded.)	34	0/UFANSPEED	(Outdoor Unit Fan Spe
			(educer offici di opt

Next, the operation data of the indoor unit is indicated.

(vii) Upon operation of the \blacktriangle \bigtriangledown 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 not displayed.

- (viii) 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.
- (ix) 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.

OIf 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 Compresso	r protection status No. 33
----------------------	----------------------------

No.	Contents of display	Reference page	Note(1) Operation data display on the remote control.
"0"	Normal		·Data is dispalyed until canceling the protection control.
"1"	Discharge pipe temperature protection control	P.268, (6).(a).(i)	•In case of multiple protections controlled, only the younger No. is displayed.
"2"	Discharge pipe temperature anomaly	P.268, (6).(a).(ii)	Note(2) Common item. ① In heating mode.
"3"	Current safe control of inverter primary current	P.269, (6).(g)	During protection control by the command signal for reducing compressor
"4"	High pressure protection control	P.268, (6).(b).(i),(c).(i)	frequency from indoor unit, No. "4" is displayed.
"5"	High pressure anomaly	P.268, (6).(b).(ii)	② In cooling and dehumidifying mode.
"6"	Low pressure protection control	P.269, (6).(e).(i)	During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.
"7"	Low pressure anomaly	P.269, (6).(e).(ii)	nequency non indoor unit, No. 8 is displayed.
"8"	Anti-frost prevention control	P.270, (6).(k)	
"9"	Current cut	P.269, (6).(g)	
"10"	Power transistor protection control	P.270, (6).(h)	
"11"	Power transistor anomaly (Overheat)	P.270, (6).(i)	
"12"	Compression ratio control	P.269, (6).(f)	
"13"	Spare		
"14"	Dewing prevention control	P.270, (6).(1)	
"15"	Current safe control of inverter secondary current	P.269, (6).(g)	
"16"	Stop by compressor rotor lock		
"17"	Stop by compressor startup failure	P.271, (6).(p)	

Number		Data Item
01	**	(Operation Mode)
02	SET TEMP°	(Set Temperature)
03	RETURN AIR`c	(Return Air Temperature)
04	⊠SENSOR°c	(Remote Control Thermistor Tempeature)
05	THI-R12	(Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2C	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3c	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED	(Indoor Unit Fan Speed)
09	DEMANDHz	(Frequency Requirements)
10	ANSWERHz	(Response Frequency)
11	I/UEEVP	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I /U RUN	_H (Total Running Hours of The Indoor Unit)
21	OUTDOORర	(Outdoor Air Temperature)
22	THO-RI°c	(Outdoor Heat Exchanger Thermistor)
23	THO-R2c	(Outdoor Heat Exchanger Thermistor)
24	COMPHz	(Compressor Frequency)
25	HPMPa	(High Pressure)
26	LPMPa	(Low Pressure)
27	Td°	(Discharge Pipe Temperature)
28	COMP BOTTOMర	(Comp Bottom Temperature)
29	CTAMP	(Current)
30	TARGET SH°	(Target Super Heat)
31	SH~~	(Super Heat)
32	TDSHోం	(Discharge Pipe Super Heat)
33	PROTECTION No	(Protection State No. of The Compressor)
34	0/UFANSPEED	(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/UEEV1P	(Pulse of The Outdoor Unit Expansion Valve EEVC)

0/UEEV2

Р

39

(Pulse of The Outdoor Unit Expansion Valve EEVH)

(b) In case of RC-EX1A remote control

[Operating procedure]

(i) On the TOP screen, touch the buttons in the order of "Menu" \rightarrow "Next" \rightarrow "Service & Maintenance" \rightarrow "Service password" \rightarrow "Set" \rightarrow "Error display" \rightarrow "Error history".

(ii) 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.

(iii) 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".

(iv) If you press [RUN/STOP] button, the display returns to the TOP screen.

◎ 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.)

06 THI-R2た (Indoor Heat Exchanger Thermistor /Capillary) 07 THI-R3C (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 EVP (Pulse of Indoor Unit Expansion Value) 12 TOTAL I./U RUNH (Total Running Hours of The Indoor Unit) 21 DUTDOORC (Outdoor Heat Exchanger Thermistor) 22 THO-R1C (Outdoor Heat Exchanger Thermistor) 23 THO-R2C (Outdoor Heat Exchanger Thermistor) 24 COMPHz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Comp Bottom Temperature) 28 COMP BOTTOM_C (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SH_C (Discharge Pipe Super Heat) 31 SHC (Discharge Pipe Super Heat) 32 <td< th=""><th>Number</th><th></th><th>Data Item</th></td<>	Number		Data Item
03 RETURN AIRた (Return Air Temperature) 04 ■SENSORた (Remote Control Thermistor Tempeature) 05 THI-R1た (Indoor Heat Exchanger Thermistor / U Bend) 06 THI-R2た (Indoor Heat Exchanger Thermistor /Capillary) 07 THI-R3C (Indoor Heat Exchanger Thermistor /Capillary) 07 THI-R3C (Indoor Unit Fan Speed) 08 I./U FANSPEED (Indoor Unit Fan Speed) 09 DEMAND_Hz (Frequency Requirements) 10 ANSWER_Hz (Response Frequency) 11 I./U EEV_P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I./U RUN_H (Total Running Hours of The Indoor Unit) 21 OUTAL I./U RUN_H (Total Running Hours of The Indoor Unit) 22 THO-R1_C (Outdoor Heat Exchanger Thermistor) 23 THO-R1_C (Outdoor Heat Exchanger Thermistor) 24 COMP_Hz (Compressor Frequency) 25 HP_MPa (High Pressure) 26 IP_MPa (Low Pressure) 27 Td_C (Discharge Pipe Temperature) 28 COMP BOTTOM_C (Courrent)	01	ar ar	(Operation Mode)
03 RETURN AIRた (Return Air Temperature) 04 ■SENSORた (Remote Control Thermistor Tempeature) 05 THI-R1た (Indoor Heat Exchanger Thermistor / U Bend) 06 THI-R2た (Indoor Heat Exchanger Thermistor /Capillary) 07 THI-R3C (Indoor Heat Exchanger Thermistor /Capillary) 07 THI-R3C (Indoor Unit Fan Speed) 08 I./U FANSPEED (Indoor Unit Fan Speed) 09 DEMAND_Hz (Frequency Requirements) 10 ANSWER_Hz (Response Frequency) 11 I./U EEV_P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I./U RUN_H (Total Running Hours of The Indoor Unit) 21 OUTAL I./U RUN_H (Total Running Hours of The Indoor Unit) 22 THO-R1_C (Outdoor Heat Exchanger Thermistor) 23 THO-R1_C (Outdoor Heat Exchanger Thermistor) 24 COMP_Hz (Compressor Frequency) 25 HP_MPa (High Pressure) 26 IP_MPa (Low Pressure) 27 Td_C (Discharge Pipe Temperature) 28 COMP BOTTOM_C (Courrent)	02	SET TEMPb	(Set Temperature)
05 THI-R1_::::::::::::::::::::::::::::::::::::	03		(Return Air Temperature)
06 THI = R2 _ ℃ (Indoor Heat Exchanger Thermistor /Gapillary) 07 THI = R3 _ ℃ (Indoor Heat Exchanger Thermistor /Gas Header) 08 I./U FANSPEED (Indoor Unit Fan Speed) 09 DEMAND _ Hz (Frequency Requirements) 10 ANSWER _ Hz (Response Frequency) 11 I./U EEVP (Pulse of Indoor Unit Expansion Value) 12 TOTAL I./U RUNH (Total Running Hours of The Indoor Unit) 21 OUTDOOR _ Č (Outdoor Heat Exchanger Thermistor) 23 THO = R1 _ Č (Outdoor Heat Exchanger Thermistor) 24 COMP _ Hz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 Td Č (Comp Bottom Temperature) 27 Td Č (Courrent) 30 TARGET SH _ Č (Super Heat) 31 SH _ Č (Super Heat) 32 TDSH _ Č (Discharge Pipe Super Heat) 33 PROTECTION No (Protection State No. of The Compressor) 34 0.//UFANSPEED	04	ESENSORC	(Remote Control Thermistor Tempeature)
07 THI -R3_ to (Indoor Heat Exchanger Thermistor /Gas Header) 08 I/U FANSPEED. (Indoor Unit Fan Speed) 09 DEMAND _Hz (Frequency Requirements) 10 ANSWER _Hz (Response Frequency) 11 I/U EV P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I/U RUN _H (Total Running Hours of The Indoor Unit) 21 DUTDOOR _to (Outdoor Air Temperature) 22 THO-R1 _to (Outdoor Heat Exchanger Thermistor) 23 THO-R2 _to (Outdoor Heat Exchanger Thermistor) 24 COMP _Hz (Compressor Frequency) 25 HP MPa (Low Pressure) 26 LP MPa (Low Pressure) 27 Td to (Courned to Temperature) 28 COMP BOTTOM _to (Courrent) 30 TARGET SH _to (Super Heat) 31 SH _to (Super Heat) 32 TDSH _to (Discharge Pipe Super Heat) 33 PROTECTION No (Protection State No. of The Compressor) 34 0.//UFANSPEED (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 D./U EEV 1	05	THI-R1°	(Indoor Heat Exchanger Thermistor / U Bend)
08 I/U FANSPEED. (Indoor Unit Fan Speed) 09 DEMAND Hz (Frequency Requirements) 10 ANSWER Hz (Response Frequency) 11 I/U EV. P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I/U RUN H (Total Running Hours of The Indoor Unit) 21 OUTDOOR C (Outdoor Air Temperature) 22 THD-R1 C (Outdoor Heat Exchanger Thermistor) 23 THD-R2 C (Outdoor Heat Exchanger Thermistor) 24 COMP_Hz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Discharge Pipe Temperature) 28 COMP BOTTOM_C (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SHC (Super Heat) 31 SHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED (Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off)	06	THI-R2c	(Indoor Heat Exchanger Thermistor /Capillary)
09 DEMAND_Hz (Frequency Requirements) 10 ANSWER_Hz (Response Frequency) 11 I./UEEV_P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I./URUN_H (Total Running Hours of The Indoor Unit) 21 OUTDOOR_C (Outdoor Air Temperature) 22 THO-R1_C (Outdoor Heat Exchanger Thermistor) 23 THO-R2_C (Outdoor Heat Exchanger Thermistor) 24 COMP_Hz (Compressor Frequency) 25 HP_MPa (High Pressure) 26 LP_MPa (Low Pressure) 27 Td_C (Comp Bottom Temperature) 29 CT_AMP (Current) 30 TARGET SH_C (Super Heat) 31 SH_C (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0./UFANSPED_(Outdoor Unit Fan Speed) 63H1 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUN_H Total Running Hours of The Compressor) 38 D./UEEV1_P P	07	1114 11V - V	(Indoor Heat Exchanger Thermistor /Gas Header)
10 ANSWER	08	I/U FANSPEED	(Indoor Unit Fan Speed)
11 I/U EEV P (Pulse of Indoor Unit Expansion Value) 12 TOTAL I/U RUN H (Total Running Hours of The Indoor Unit) 21 OUTDOOR C (Outdoor Air Temperature) 22 THO-RI C (Outdoor Heat Exchanger Thermistor) 23 THO-R2 C (Outdoor Heat Exchanger Thermistor) 24 COMP Hz (Compressor Frequency) 25 HP MPa (High Pressure) 26 LP MPa (Low Pressure) 27 Td C (Discharge Pipe Temperature) 28 COMP BDTTOM C (Comp Bottom Temperature) 29 CT AMP (Current) 30 TARGET SH C (Super Heat) 31 SH C (Super Heat) 32 TDSH C (Discharge Pipe Super Heat) 33 PROTECTION No (Protection State No. of The Compressor) 34 0// U FANSPEED (Outdoor Unit Fan Speed) 63H1 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUN H (Total Running Hours of The Compressor) 38 D// U EEV 1 P (Pulse	09	DEMAND Hz	(Frequency Requirements)
12 TOTAL I // URUNH (Total Running Hours of The Indoor Unit) 12 TOTAL I // URUNH (Total Running Hours of The Indoor Unit) 21 DUTDOORC (Outdoor Air Temperature) 22 THO-R1C (Outdoor Heat Exchanger Thermistor) 23 THO-R2C (Outdoor Heat Exchanger Thermistor) 24 COMPHz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Discharge Pipe Temperature) 28 COMP BOTTOMC (Comp Bottom Temperature) 29 CTAMP_ (Current) 30 TARGET SHC (Discharge Pipe Super Heat) 31 SHC (Discharge Pipe Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0// UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D// UEEV1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	10		(Response Frequency)
21 OUTDODRC (Outdoor Air Temperature) 22 THO_R1C (Outdoor Heat Exchanger Thermistor) 23 THO_R2C (Outdoor Heat Exchanger Thermistor) 24 COMPHz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Discharge Pipe Temperature) 28 COMP BDTTOMC (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SHC (Super Heat) 31 SHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D//U EEV 1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	11	I/U EEYP	(Pulse of Indoor Unit Expansion Value)
22 THO-RIC (Outdoor Heat Exchanger Thermistor) 23 THO-R2C (Outdoor Heat Exchanger Thermistor) 24 COMPHz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Discharge Pipe Temperature) 28 COMP BDTTOMC (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SHC (Super Heat) 31 SHC (Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D//U EEV1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	12		H (Total Running Hours of The Indoor Unit)
23 TH0-R2C (Outdoor Heat Exchanger Thermistor) 24 COMPHz (Compressor Frequency) 25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 TdC (Discharge Pipe Temperature) 28 COMP_BOTTOMC (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SHC (Target Super Heat) 31 SHC (Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D//UEEV1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	21	OUTDOORზ	(Outdoor Air Temperature)
24 COMP Hz (Compressor Frequency) 25 HP MPa (High Pressure) 26 LP MPa (Low Pressure) 27 Td 2 (Discharge Pipe Temperature) 28 COMP BOTTOM 2 (Comp Bottom Temperature) 29 CT AMP (Current) 30 TARGET SH 2 (Target Super Heat) 31 SH 2 (Discharge Pipe Super Heat) 32 TDSH 2 (Discharge Pipe Super Heat) 33 PROTECTION No. (Protection State No. of The Compressor) 34 0//UFANSPEED (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 D//U EEV 1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	22		(Outdoor Heat Exchanger Thermistor)
25 HPMPa (High Pressure) 26 LPMPa (Low Pressure) 27 Td© (Discharge Pipe Temperature) 28 COMP BDTTOM© (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SH© (Target Super Heat) 31 SH© (Super Heat) 32 TDSH© (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D//U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	23		(Outdoor Heat Exchanger Thermistor)
26 LP MPa (Low Pressure) 27 Td< (Discharge Pipe Temperature) 28 COMP BOTTOM (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SH (Target Super Heat) 31 SH (Super Heat) 32 TDSH (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0//U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	24		(Compressor Frequency)
27 Td≿ (Discharge Pipe Temperature) 28 COMP BOTTOM_È (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SH_È (Target Super Heat) 31 SH_È (Super Heat) 32 TDSH_È (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(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 1_P P	25		(High Pressure)
28 COMP B0TTOMC (Comp Bottom Temperature) 29 CTAMP (Current) 30 TARGET SHC (Target Super Heat) 31 SHC (Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0./U EEV 1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	26		1 /
29 CTAMP (Current) 30 TARGET SHC (Target Super Heat) 31 SHC (Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0./U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	27	·	
30 TÄRGET SH℃ (Target Super Heat) 31 SH℃ (Super Heat) 32 TDSH℃ (Discharge Pipe Super Heat) 33 PRDTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0//U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	28		
31 SHC (Super Heat) 32 TDSHC (Discharge Pipe Super Heat) 33 PROTECTION No(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFR0ST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0//U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	29		· · · ·
32 TDSHC (Discharge Pipe Super Heat) 33 PR0TECTION N₀(Protection State No. of The Compressor) 34 0//UFANSPEED(Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFR0ST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0//U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	30		
33 PROTECTION No. (Protection State No. of The Compressor) 34 0//UFANSPEED. (Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFR0ST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 0./U EEV 1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)	• •		
34 0//UFANSPEED (Outdoor Unit Fan Speed) 35 63H1 (63H1 On/Off) 36 DEFR0ST (Defrost Control On/Off) 37 TOTAL COMP RUN H (Total Running Hours of The Compressor) 38 0./U EEV 1 P (Pulse of The Outdoor Unit Expansion Valve EEVC)			
35 63H1 (63H1 On/Off) 36 DEFR0ST (Defrost Control On/Off) 37 TOTAL COMP RUN_H (Total Running Hours of The Compressor) 38 D//U EEV1_P P			-\ /
36 DEFROST (Defrost Control On/Off) 37 TOTAL COMP RUNH (Total Running Hours of The Compressor) 38 D/U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	•••		
37 TOTAL COMP RUN_H (Total Running Hours of The Compressor) 38 D/U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)	35	*****	(63H1 On/Off)
38 0/U EEV 1P (Pulse of The Outdoor Unit Expansion Valve EEVC)			
	37		H (Total Running Hours of The Compressor)
39 0/0 EEV2 P (Pulse of The Outdoor Unit Expansion Valve EEVH)	38		(Pulse of The Outdoor Unit Expansion Valve EEVC)
	39	0/U EEV2P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

Anomaly operation data (Corresponding data may not be provided depending on models. Such items will not be displayed.)

. Contents of display	Reference page
Normal	
Discharge pipe temperature protection control	P.268, (6).(a).(i)
Discharge pipe temperature anomaly	P.268, (6).(a).(ii)
Current safe control of inverter primary current	P.269, (6).(g)
High pressure protection control	P.268, (6).(b).(i),(c).(i)
High pressure anomaly	P.268, (6).(b).(ii)
Low pressure protection control	P.269, (6).(e).(i)
Low pressure anomaly	P.269, (6).(e).(ii)
Anti-frost prevention control	P.270, (6).(k)
Current cut	P.269, (6).(g)
" Power transistor protection control	P.270, (6).(h)
" Power transistor anomaly (Overheat)	P.270, (6).(i)
" Compression ratio control	P.269, (6).(f)
" Spare	
" Dewing prevention control	P.270, (6).(1)
" Current safe control of inverter secondary current	P.269, (6).(g)
" Stop by compressor rotor lock	
" Stop by compressor startup failure	P.271, (6).(p)

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

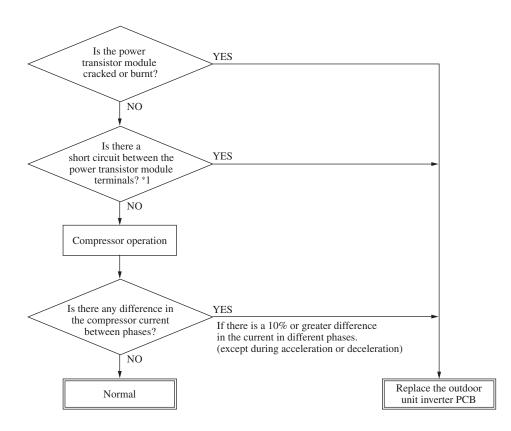
1 In heating mode.

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.





*1 Power transistor module terminal short circuit check procedure

Disconnect the compressor wiring, then conduct a short circuit check.

- P-U, P-V, P-W
- N-U, N-V, N-W

Check between the P-N terminals.

Bring the tester probes in contact with the following places on each te rminal.

- P: Power transistor P terminal,
- N: Power transistor N terminal,
- U: End of red harness to compressor
- V: End of white harness to compressor
- W: End of black or blue harness to compressor

Check for a power transistor short circuit.

- When you do not have a diagnostic checker for judging if the inverter is defective, measure between the terminals of the power transistor parts, judge whether the power transistor is defective or not.
- Disconnect the compressor, then measure with the controller incorporated.

Tester		Normal values (Ω)
Terminal (+)	Terminal (-)	Model 100-140
Р	N	Approx. 1 M
N	Р	Approx. 300-400
Р	U	
Р	V	0
Р	W	
N	U	
Ν	V	Approx. 1.2 M
Ν	W	
U	Р	
V	Р	Approx. 1.3 M
W	Р	
U	N	
V	N	0
W	N	

If the measured values range from $0 \sim$ several kW, there is a possibility that the elements are damaged, so replace the power transistor parts.

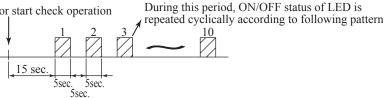
(7) Inverter checker for diagnosis of inverter output

Checking method

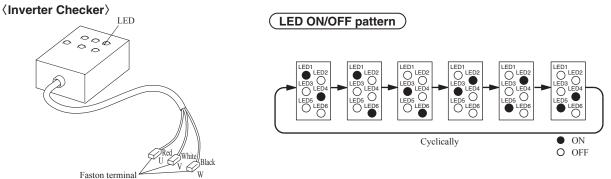
- (a) Setup procedure of checker.
 - (i) Power OFF (Turn off the breaker).
 - (ii) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.
 - (iii) Connect the wires U (Red), V (White) and W (Black) of checker to the terminal of disconnected wires (U, V, W) from compressor respectively.
- (b) Operation for judgment.
 - (i) Power ON after JSW10-4 on outdoor inverter PCB was turned ON.
 - (ii) After 15 seconds since power has turned ON, LED start ON/OFF for 5 seconds cyclically and it repeats 10 times.
- (iii) Check ON/OFF status of 6 LED's on the checker.
- (iv) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Inverter PCB	Normal	Anomalous

Power ON or start check operation



5) Be sure to turn off JSW10-4 on outdoor inverter PCB, after finishing the check operation.

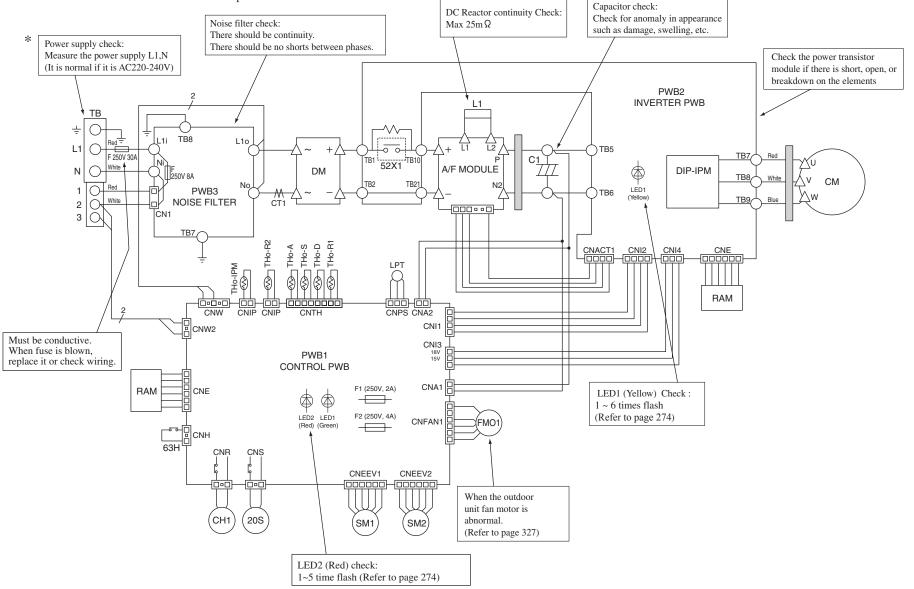


Connect to the terminal of the wires which are disconnected from compressor.

Models FDC100,125,140VN

•Outdoor unit check points

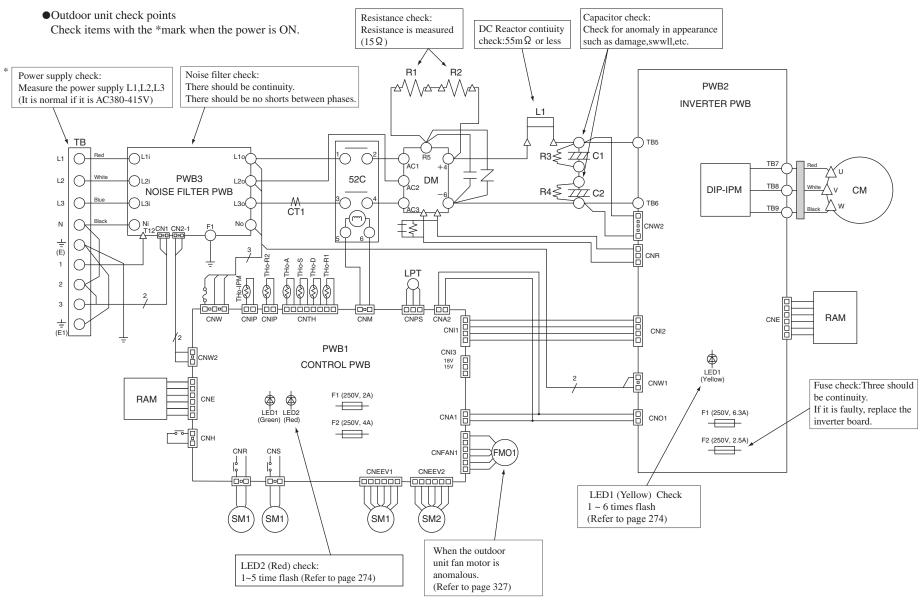
Check items with the *mark when the power is ON.



(8) Outdoor unit control failure diagnosis circuit diagram

'12 • PAC-T-178

FDC100,125,140VS



2.11.2 Troubleshooting flow

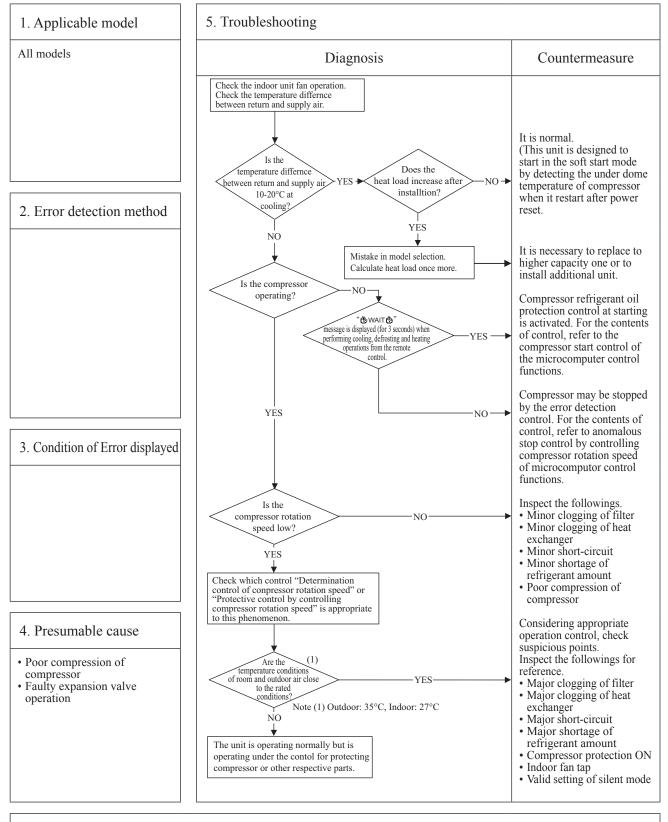
(1) List of troubles

Remote control display	Description of trouble	Reference page
None	Operates but does not cool.	292
None	Operates but does not heat.	293
None	Earth leakage breaker activated	294
None	Excessive noise/vibration (1/3)	295
None	Excessive noise/vibration (2/3)	296
None	Excessive noise/vibration (3/3)	297
None	Power supply system error (Power supply to indoor control PCB)	298
None	Power supply system error (Power supply to remote control)	299
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	300
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	301
டூwait டூ	Communication error at initial operation	302-304
None	No display	305
E1	Remote control communication circuit error	306
E5	Communication error during operation	307
E6	Indoor heat exchanger temperature thermistor anomaly	308
E7	Return air temperature thermistor anomaly	309
E8	Heating overload operation	310
Е9	Drain trouble	311
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	312
E16	Indoor fan motor anomaly	313
E19	Indoor unit operation check, drain motor check setting error	314
E20	Indoor fan motor rotation speed anomaly	315
E28	Remote control temperature thermistor anomaly	316
E35	Cooling overload operation	317
E36	Discharge pipe temperature error	318
E37	Outdoor heat exchanger temperature thermistor anomaly	319
E38	Outdoor air temperature thermistor anomaly	320
E39	Discharge pipe temperature thermistor anomaly	321
E40	High pressure error (63H1 activated)	322
E41	Power transistor overheat	323
E42	Current cut	324 · 325
E45	Communication error between inverter PCB and outdoor control PCB	326
E48	Outdoor fan motor anomaly	327
E49	Low pressure error or low pressure sensor anomaly	328 · 329
E51	Inverter and fan motor anomaly	330
E53	Suction pipe temperature thermistor anomaly	331
E54	Low pressure sensor anomaly	332
E57	Insufficient refrigerant amount or detection of service valve closure	333
E59	Compressor startup failure	334 · 335

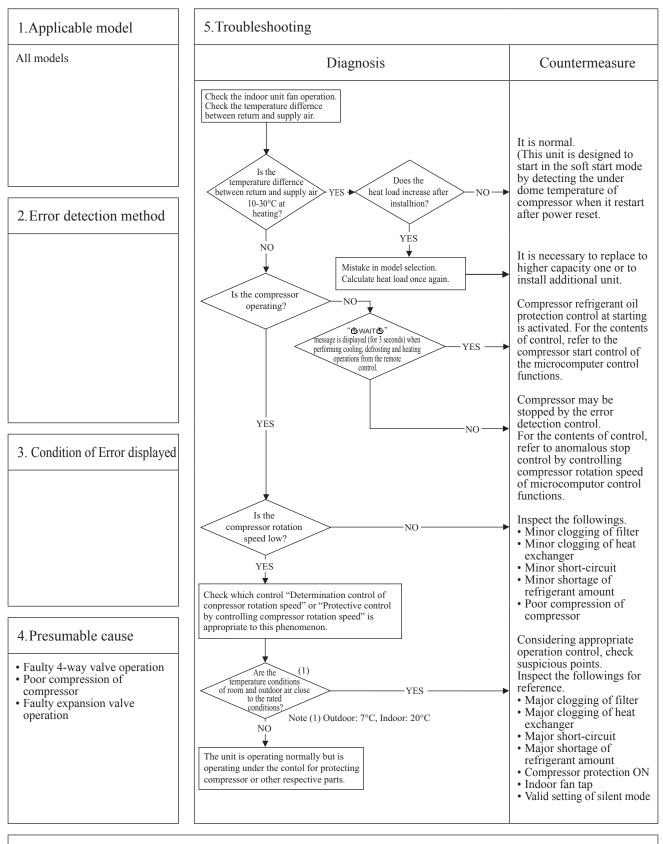
A

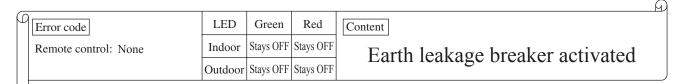
(2) Troubleshooting

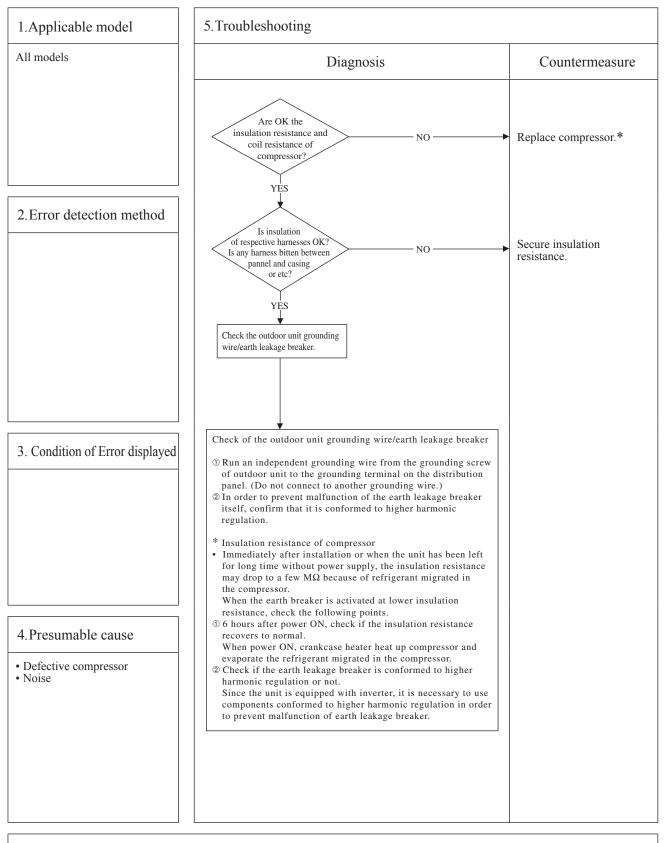
ſ	Error code	LED	Green	Red	Content
	Remote control: None	Indoor	Keeps flashing	Stays OFF	Operates but does not cool
		Outdoor	Keeps flashing	Stays OFF	Operates but does not coor
L					



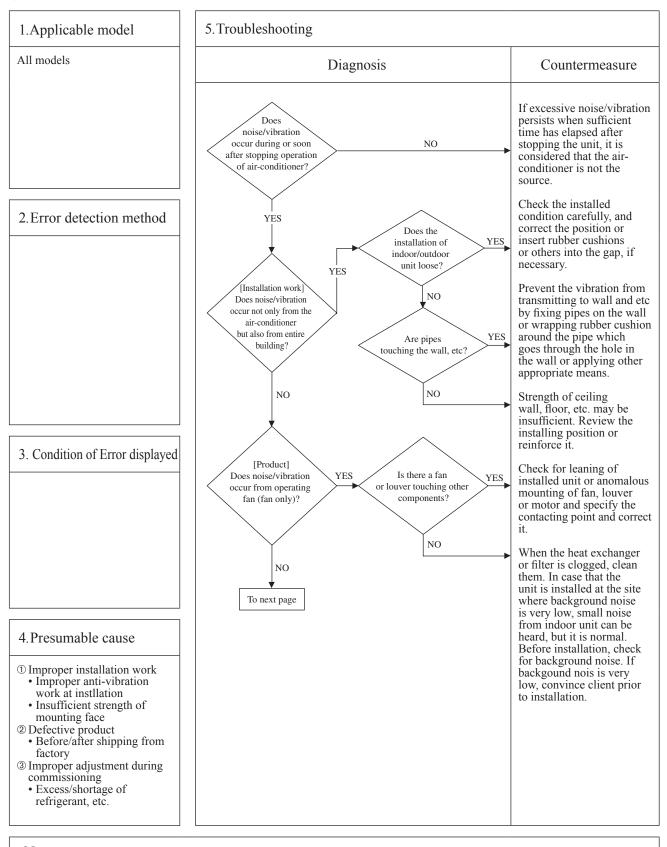




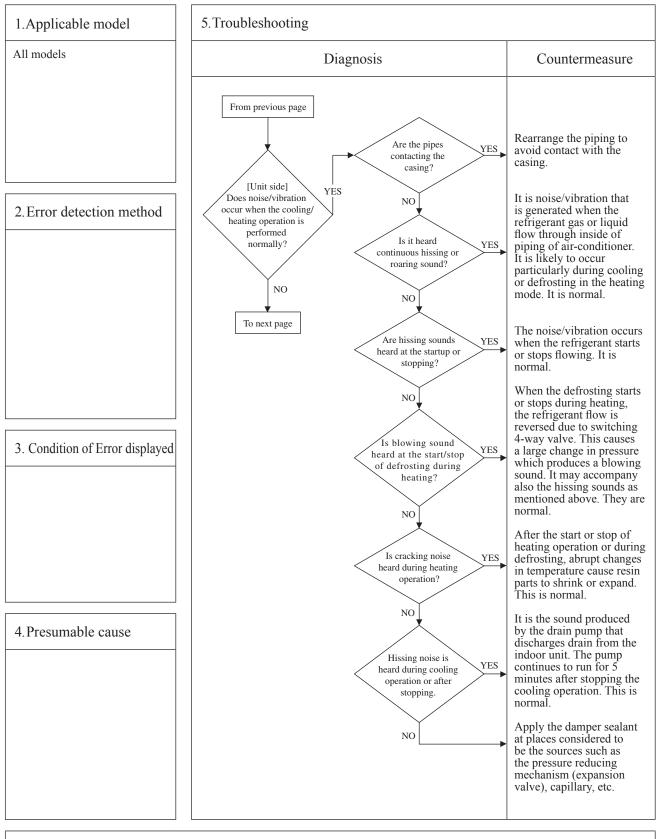




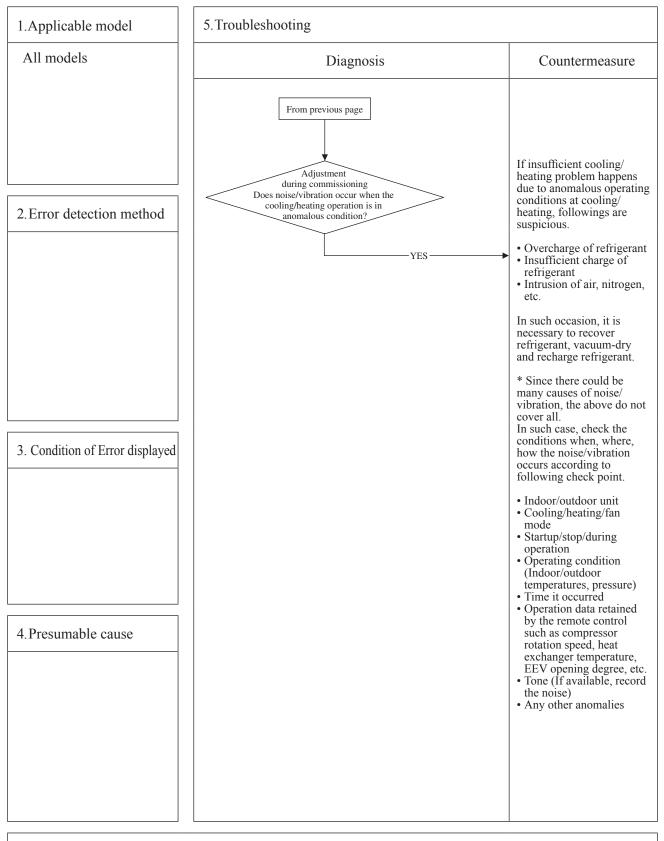
ſ	Error code	LED	Green	Red	Content
	Remote control: None	Indoor	_	-	Excessive noise/vibration (1/3)
		Outdoor	-	-	Excessive noise/violation (1/5)
L					



						Ð
ſ	Error code	LED	Green	Red	Content	
	Remote control: None	Indoor	_	-	Excessive noise/vibration (2/3)	
		Outdoor	-	_	Excessive horse/vioration (2/3)	
L)					

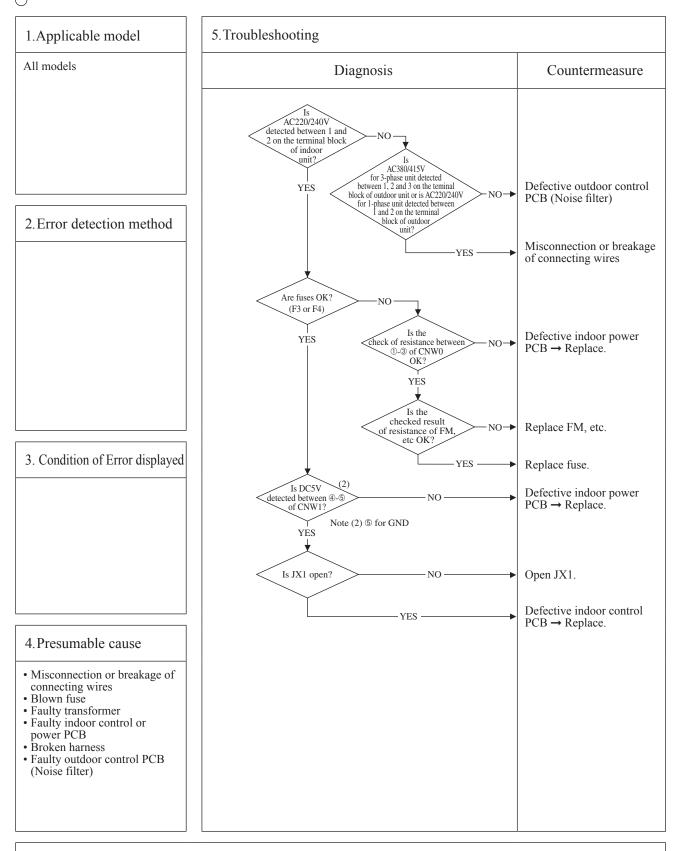


						A
F	Error code	LED	Green	Red	Content	
	Remote control: None	Indoor	_	-	Excessive noise/vibration (3/3)	
		Outdoor	_	-	Excessive noise/violation (3/3)	
l						



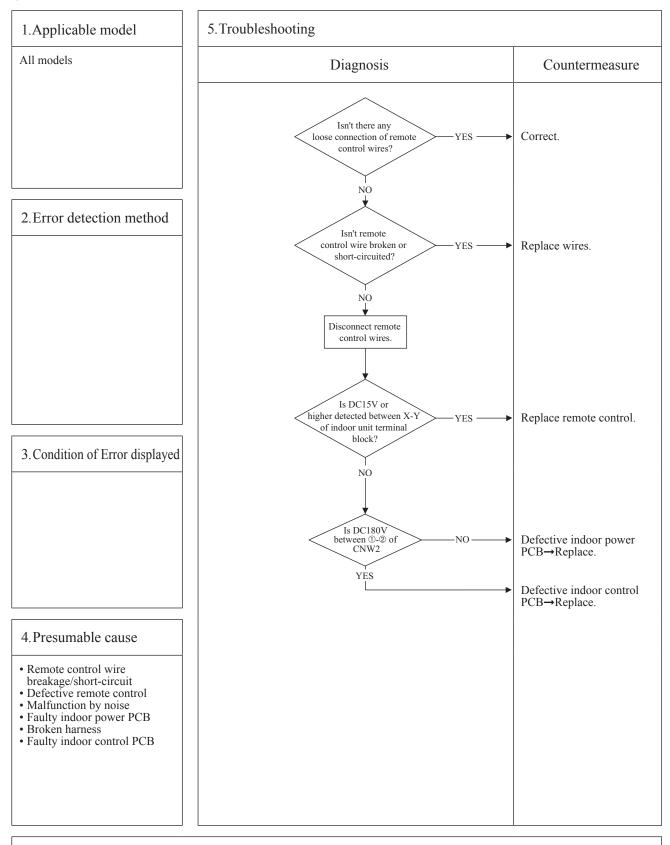
G

ſ	Error code	LED	Green	Red	Content Power supply system error
	Remote control: None	Indoor	Stays OFF	Stays OFF	(Dewer supply to indeer central DCD)
		Outdoor	Stays OFF	2 times flash	(Power supply to indoor control PCB)



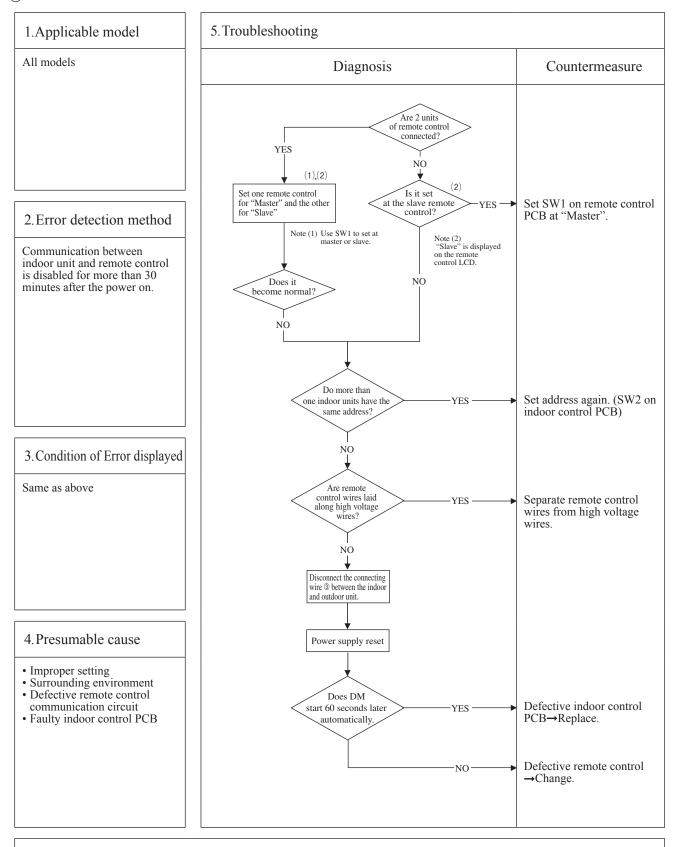
M

β	Error code	LED	Green	Red	Content Power supply system error
	Remote control: None	Indoor	Keeps flashing	3 times flash	(Power supply to remote control)
		Outdoor	Keeps flashing	Stays OFF	(rower suppry to remote control)
U)				

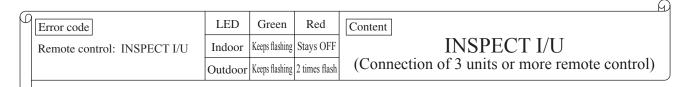


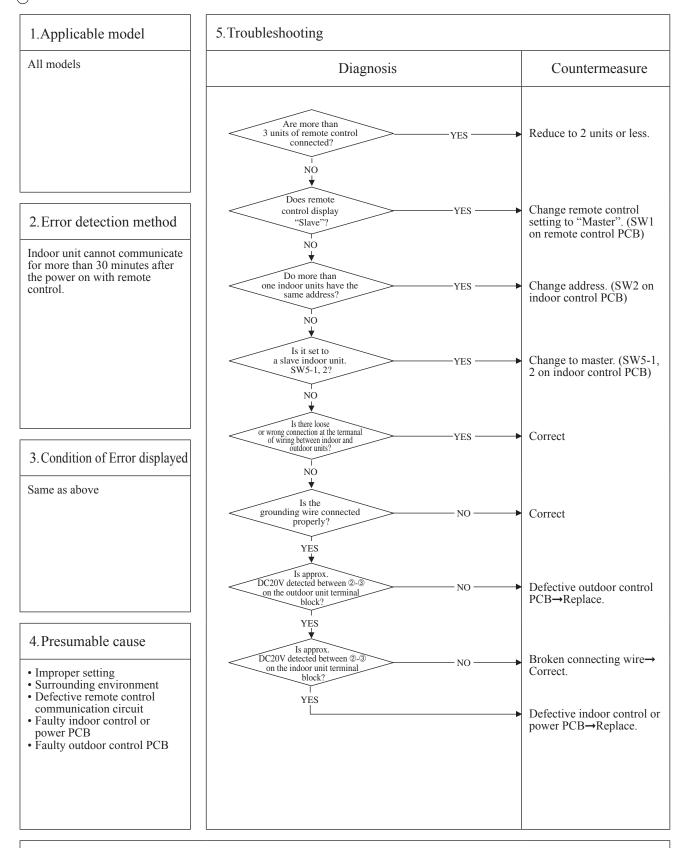
M

P	Error code	LED	Green	Red	Content
	Remote control: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U
		Outdoor	Keeps flashing	2 times flash	(When 1 or 2 remote controls are connected)



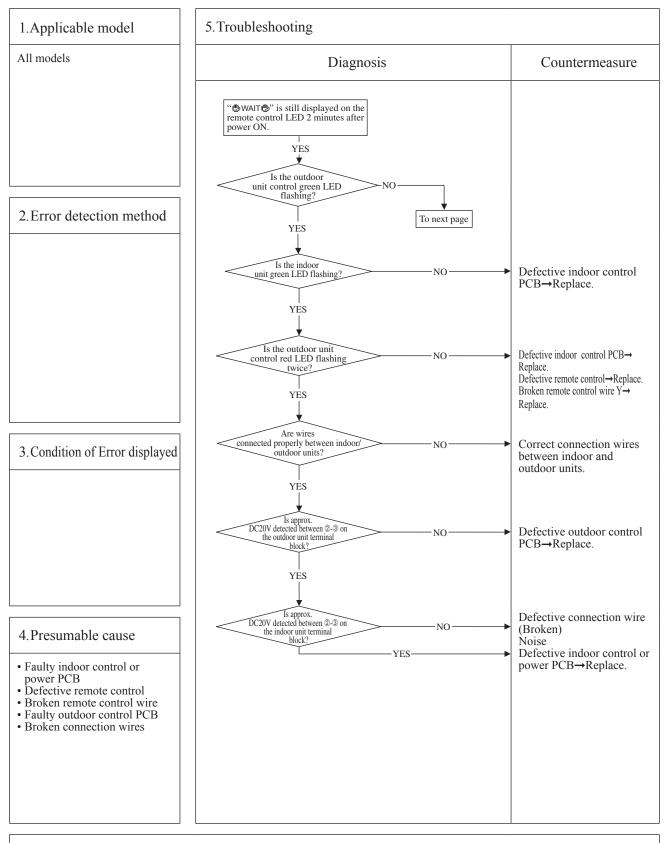
Note: If any error is detected 30 minutes after displaying "OWAITO" on the remote control, the display changes to "INSPECT I/U".

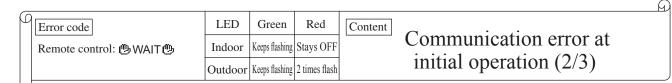


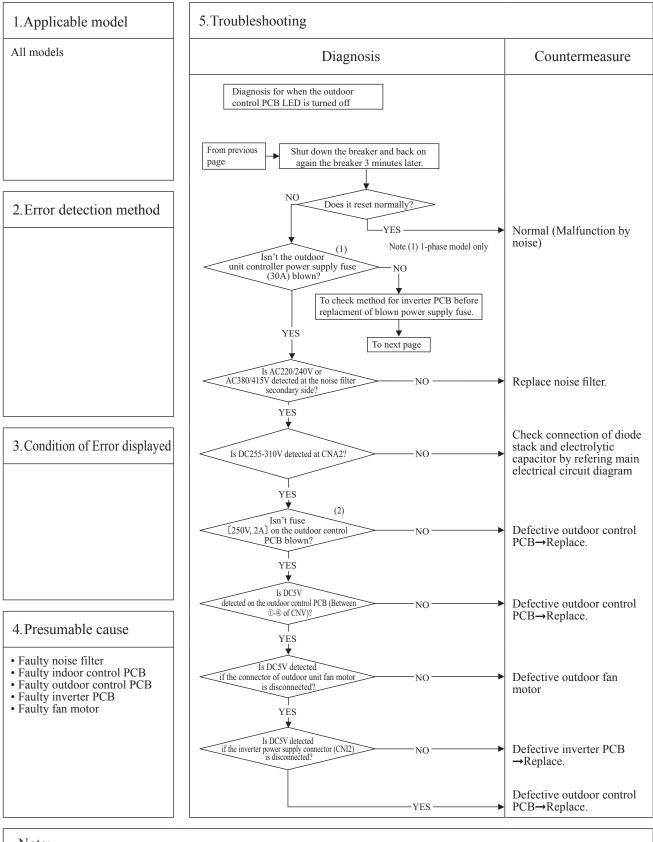


Note: If any error is detected 30 minutes after displaying "WAIT "on the remote control, the display changes to "INSPECT I/U".



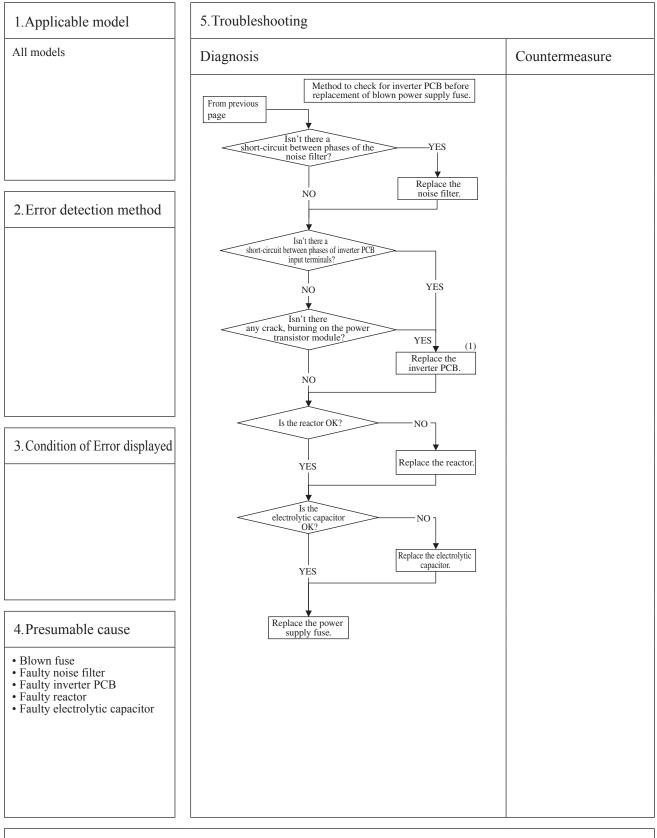




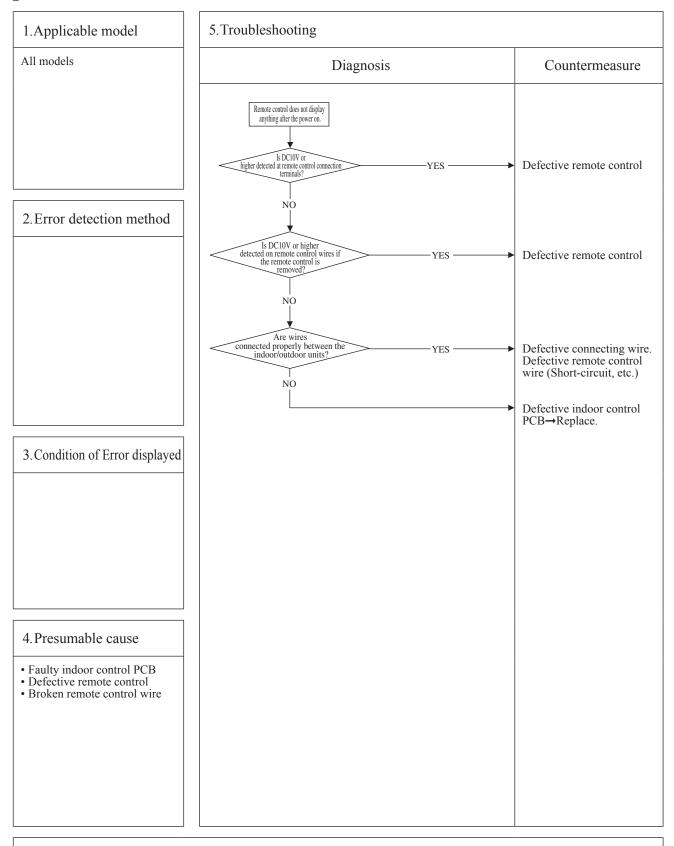


D

β	Error code	LED	Green	Red	Content
	Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	
		Outdoor	Keeps flashing	2 times flash	initial operation $(3/3)$

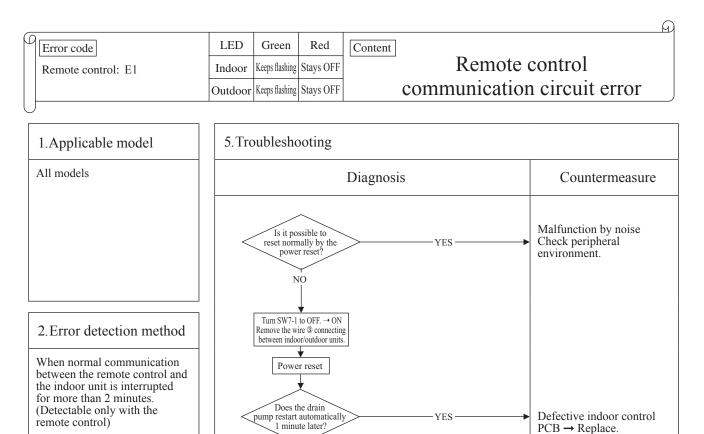


					(A)
-	Error code	LED	Green	Red	Content
	Remote control: None	Indoor	Keeps flashing	Stays OFF	No display
		Outdoor	Keeps flashing	2 times flash	i to display



Defective remote control

 \rightarrow Replace.



Note (2) Does the remote control still display "BWAITB" even

NO

after 3 minutes?



4. Presumable cause

• Defective communication circuit between remote control-indoor unit

Defective remote controlFaulty indoor control PCB

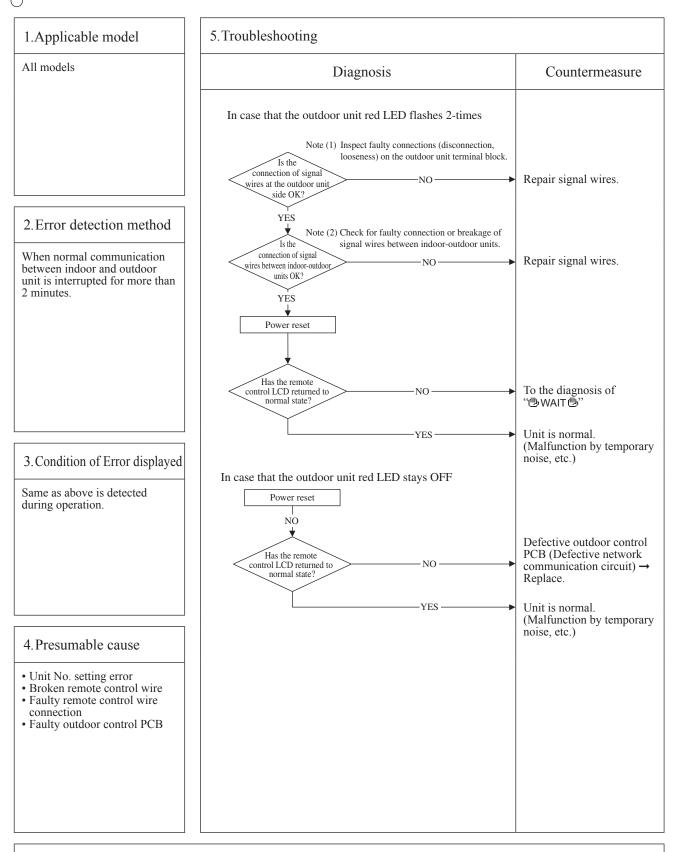
• Noise

3. Condition of Error displayed

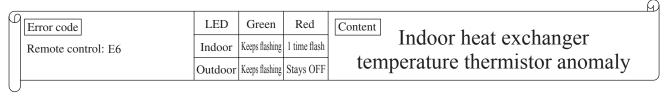
Same as above

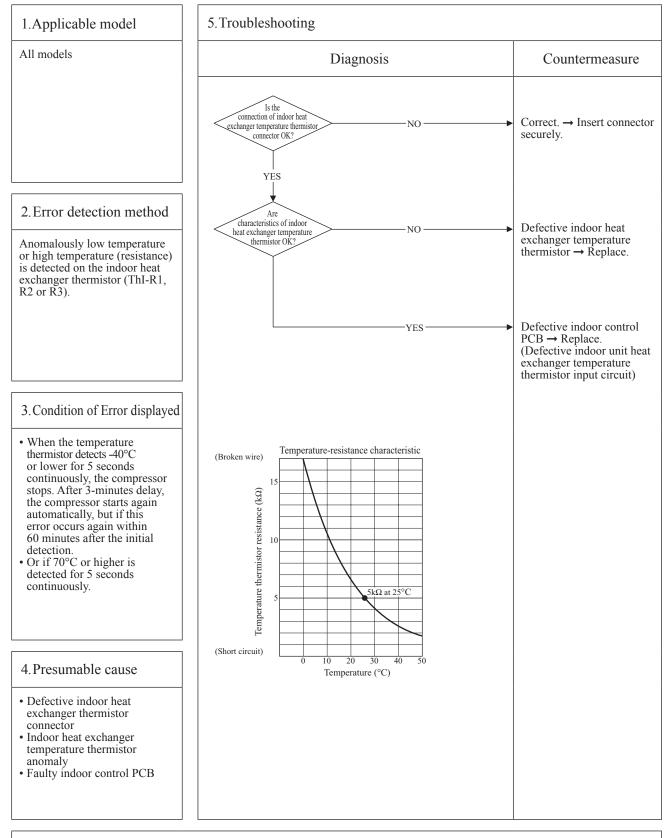
Note: If the indoor unit cannot communicate normally with the remote control for 180 seconds, the indoor unit PCB starts to reset automatically.

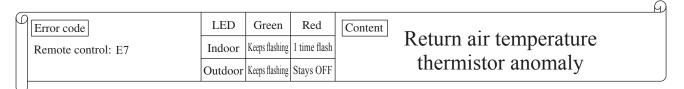
_					<u> </u>
φ	Error code	LED	Green	Red	Content
	Remote control: E5	Indoor	Keeps flashing	2 times flash	Communication error during operation
		Outdoor	Keeps flashing	See below	Communication error during operation

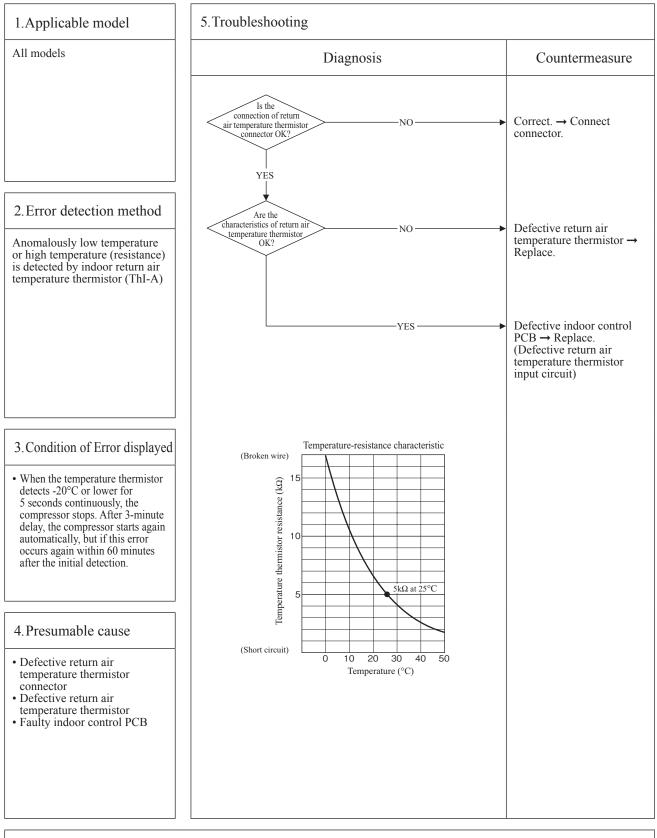


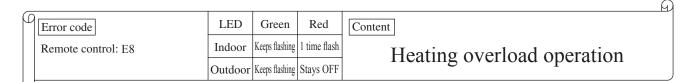
Note: Pressing the pump-down switch cancels communications between indoor and outdoor unit so that "communication error-E5" is displayed on indoor unit and remote control, but it is normal.

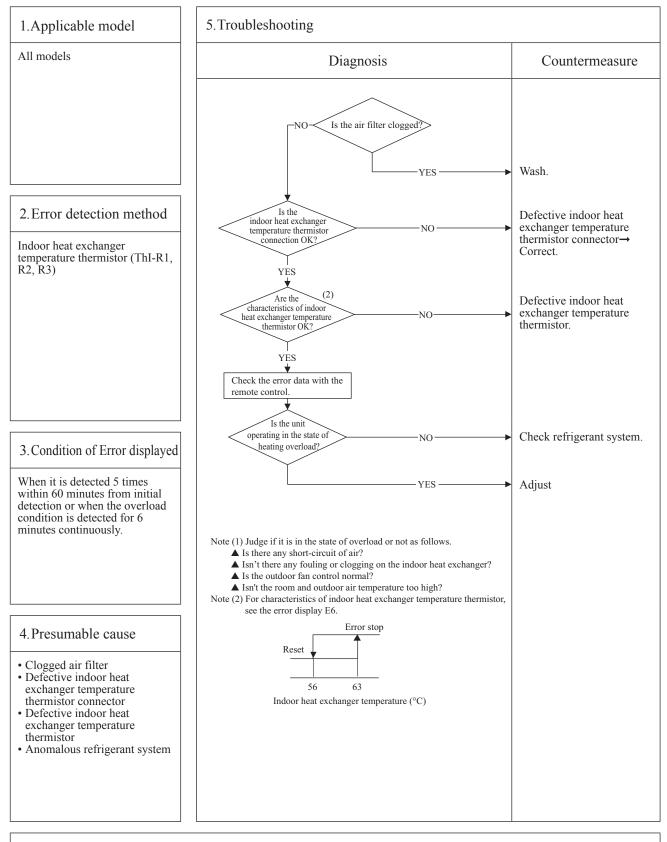




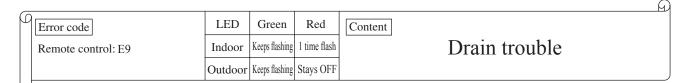


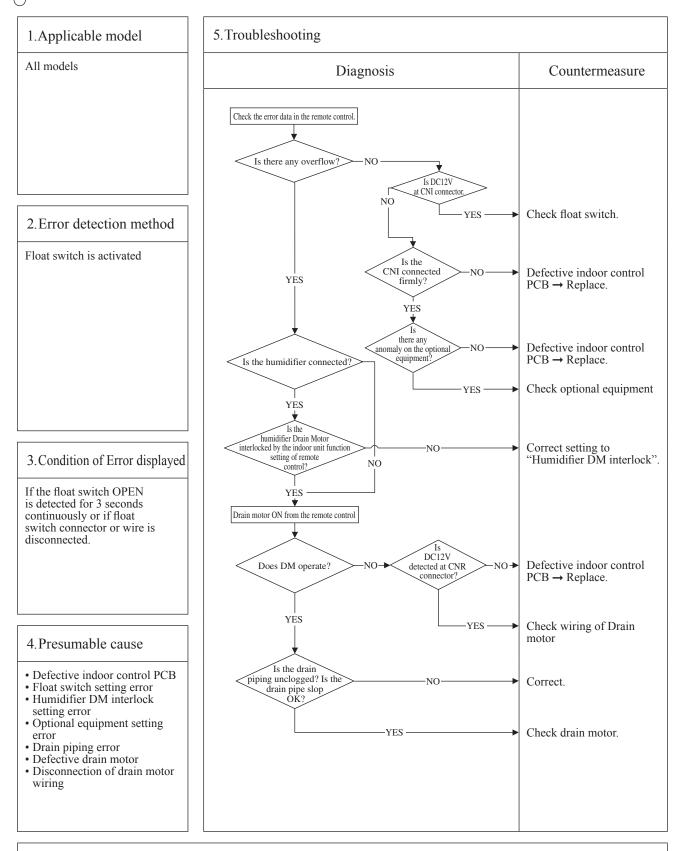






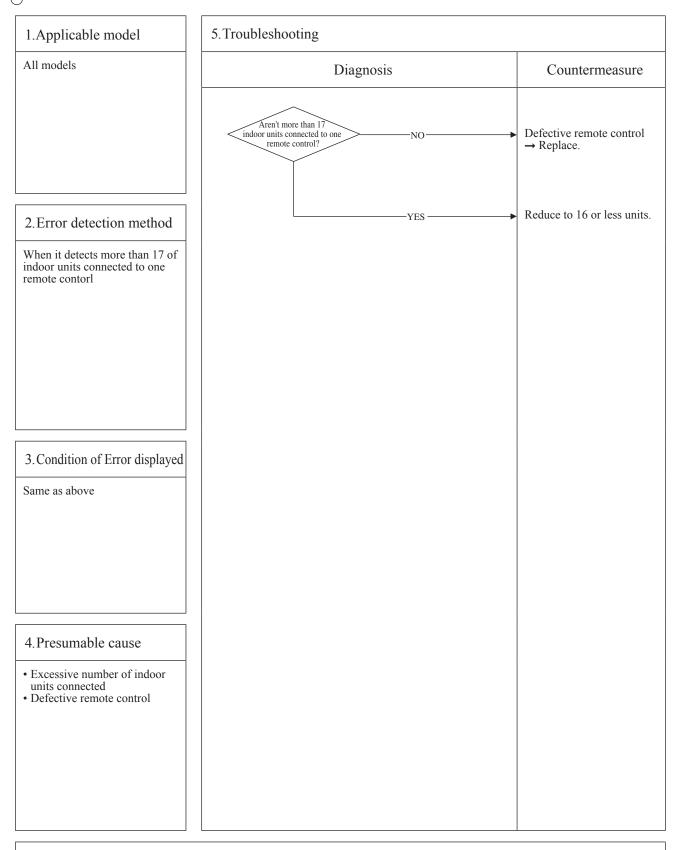
Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (ThI-R) in order to control high pressure.



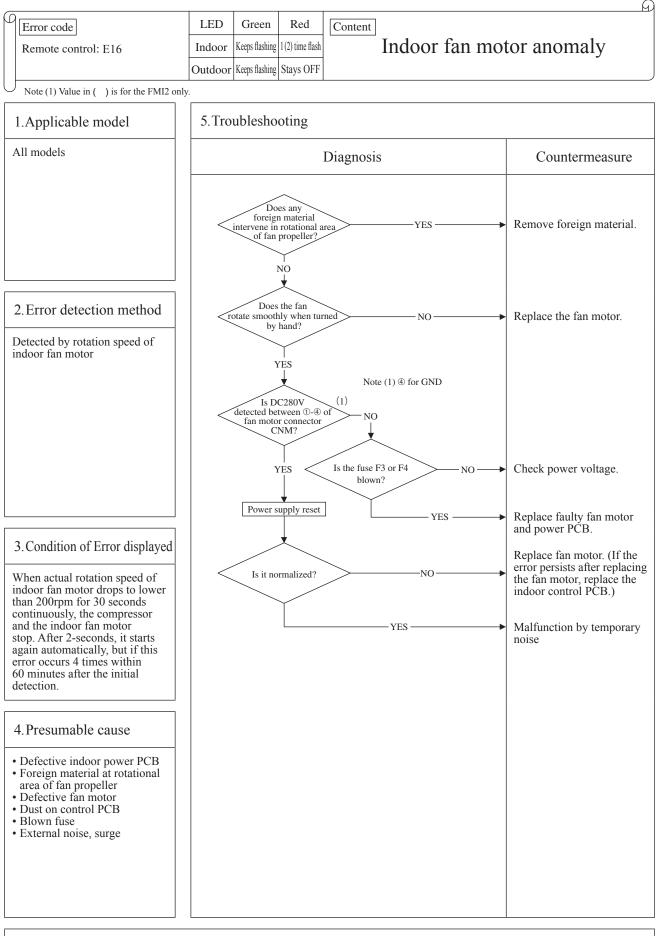


Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

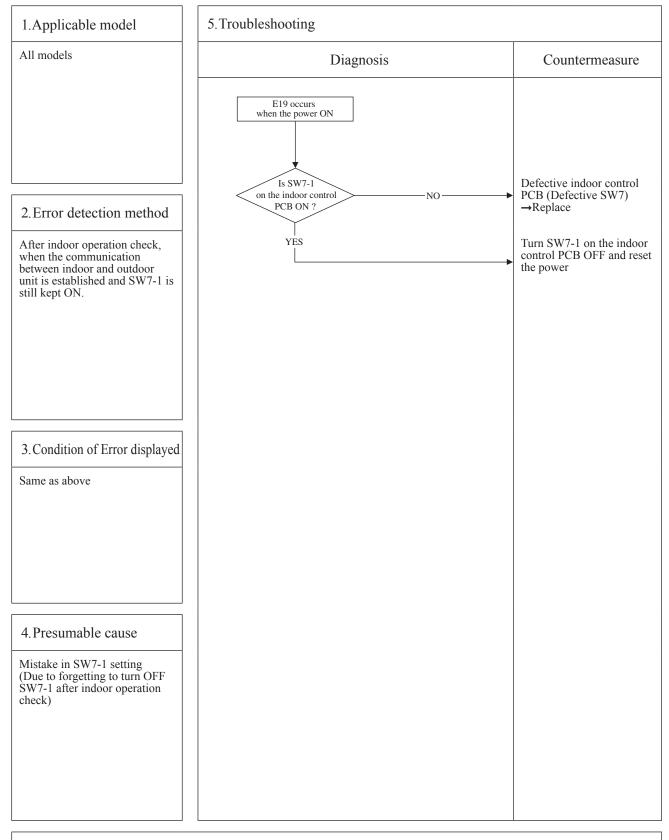
					Q
ſ	Error code	LED	Green	Red	Content Excessive number of connected
	Remote control: E10	Indoor	Keeps flashing	Stays OFF	
		Outdoor	Keeps flashing	Stays OFF	by controlling with one remoto control

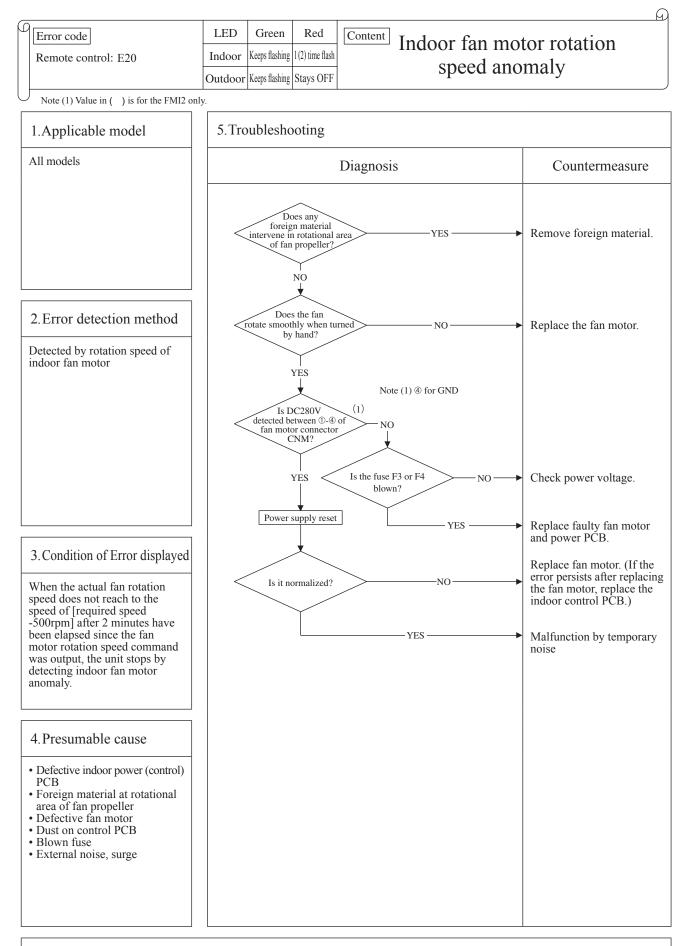


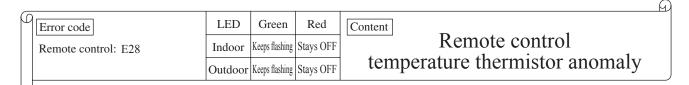
'12 • PAC-T-178

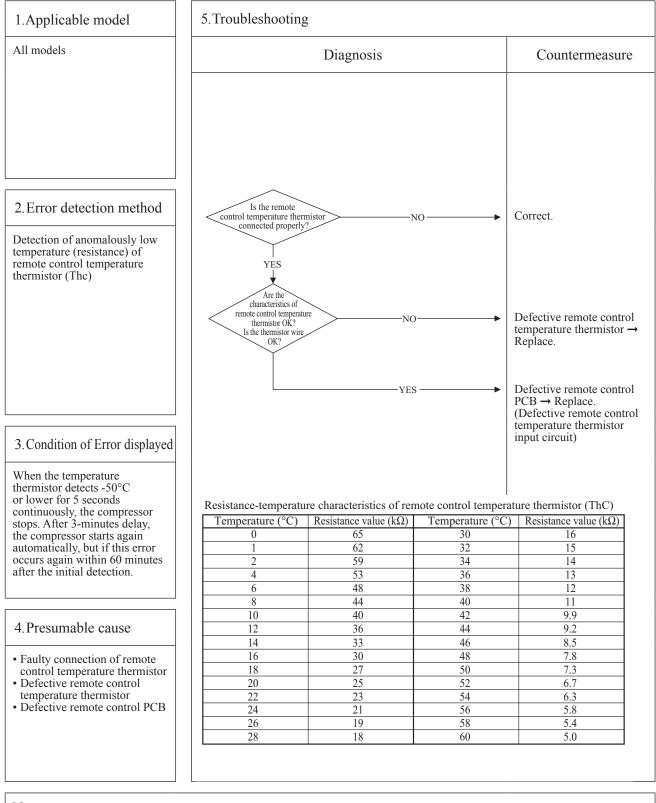




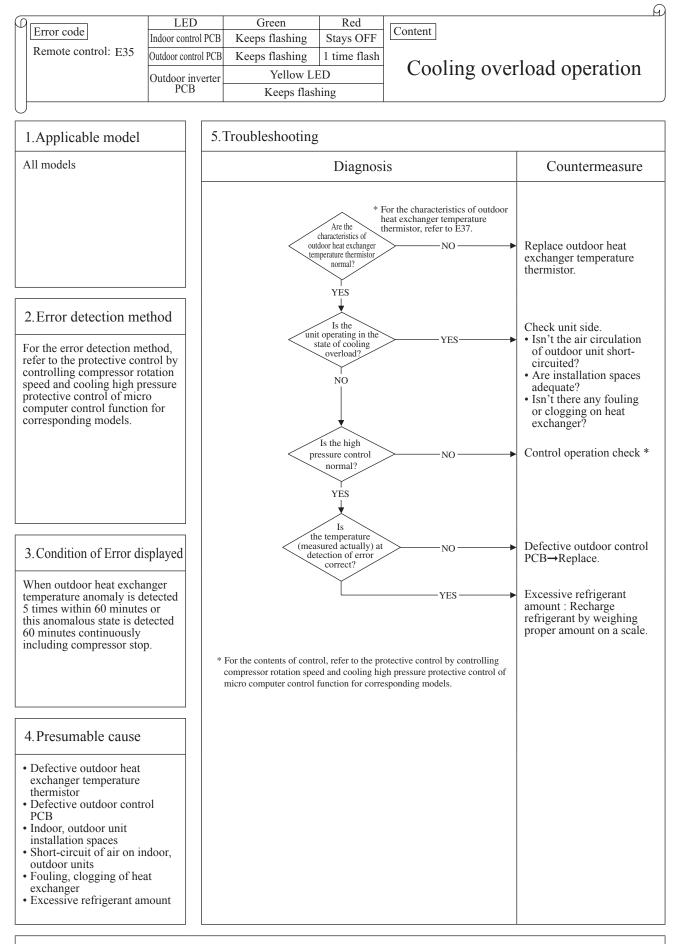


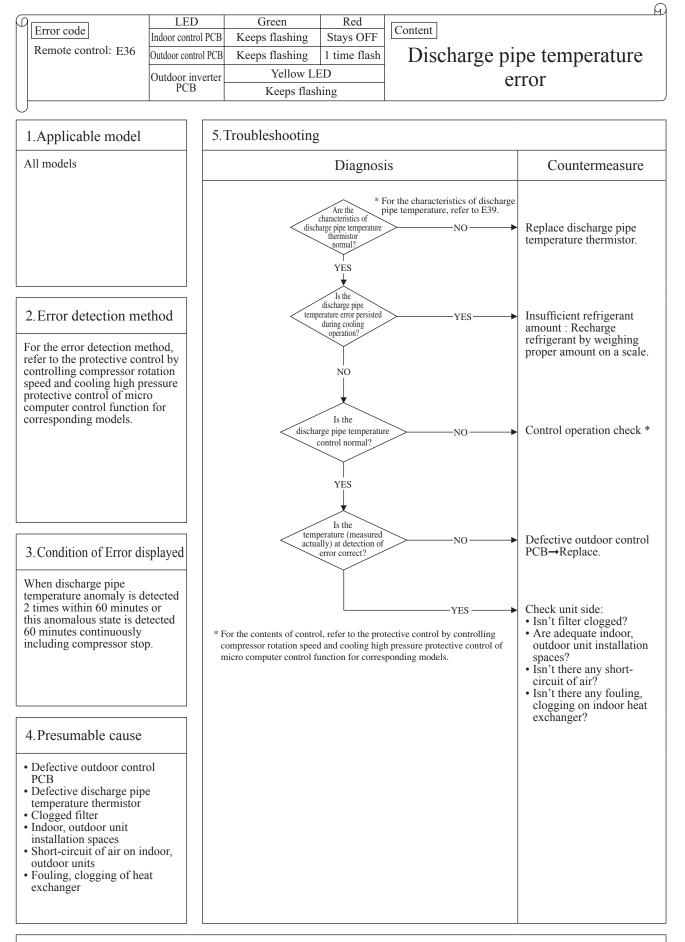


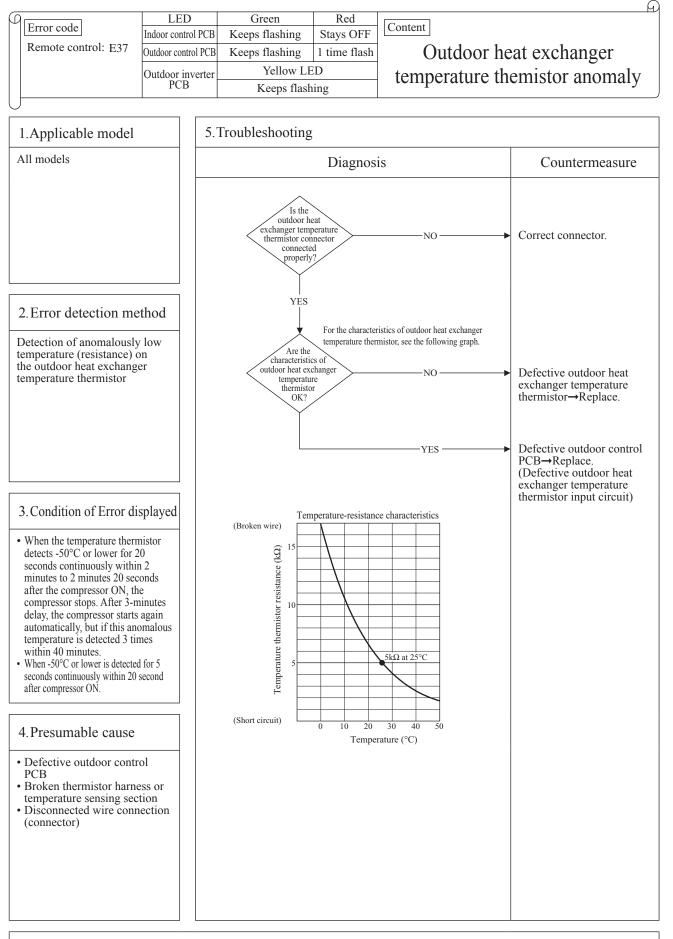


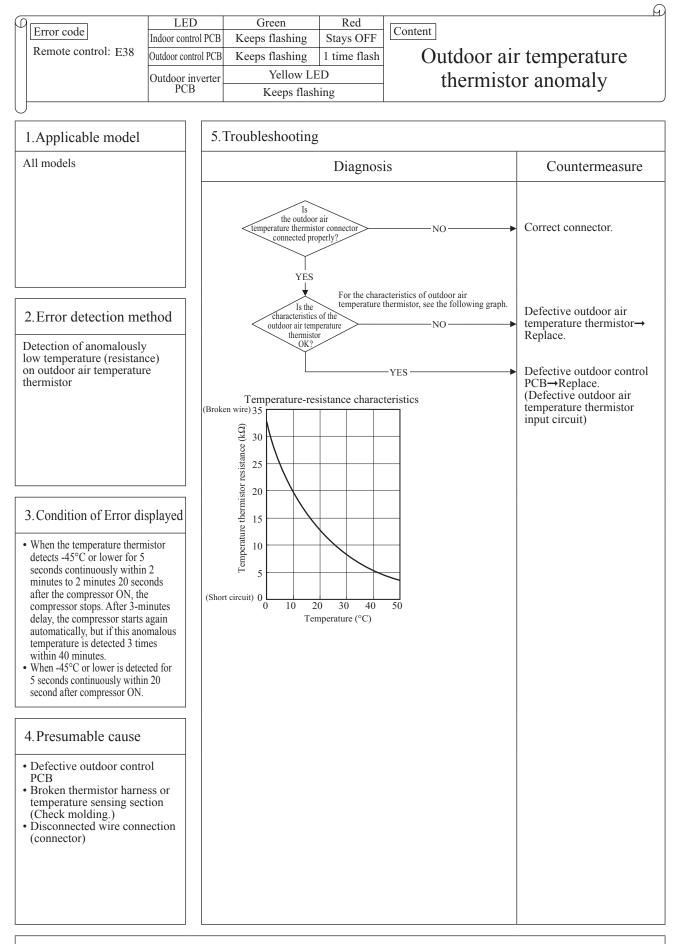


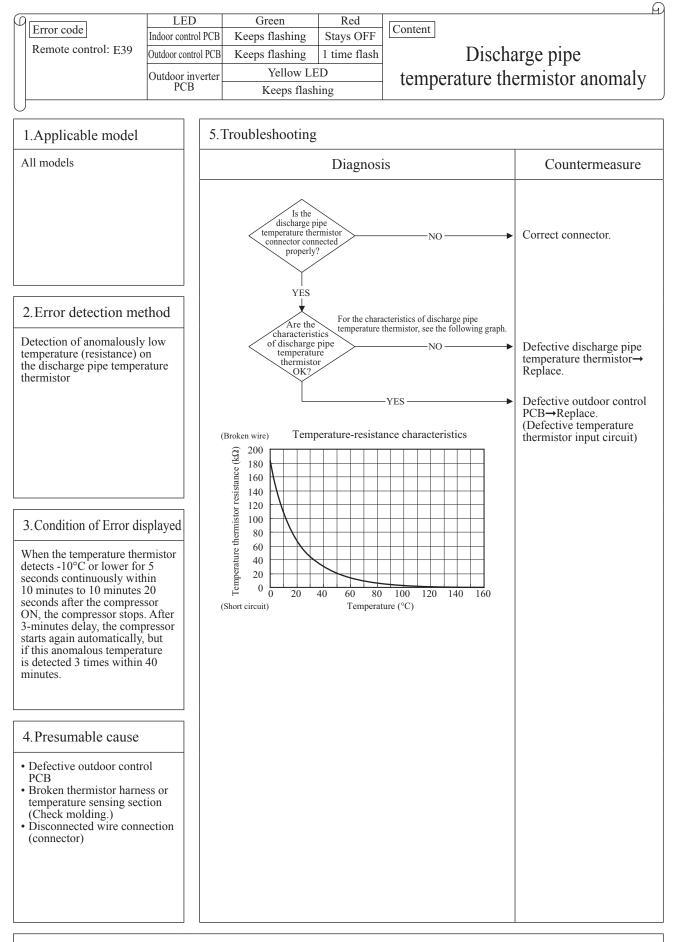
Note: After 10 seconds has passed since remote control thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote control thermistor to indoor return air temperature 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.

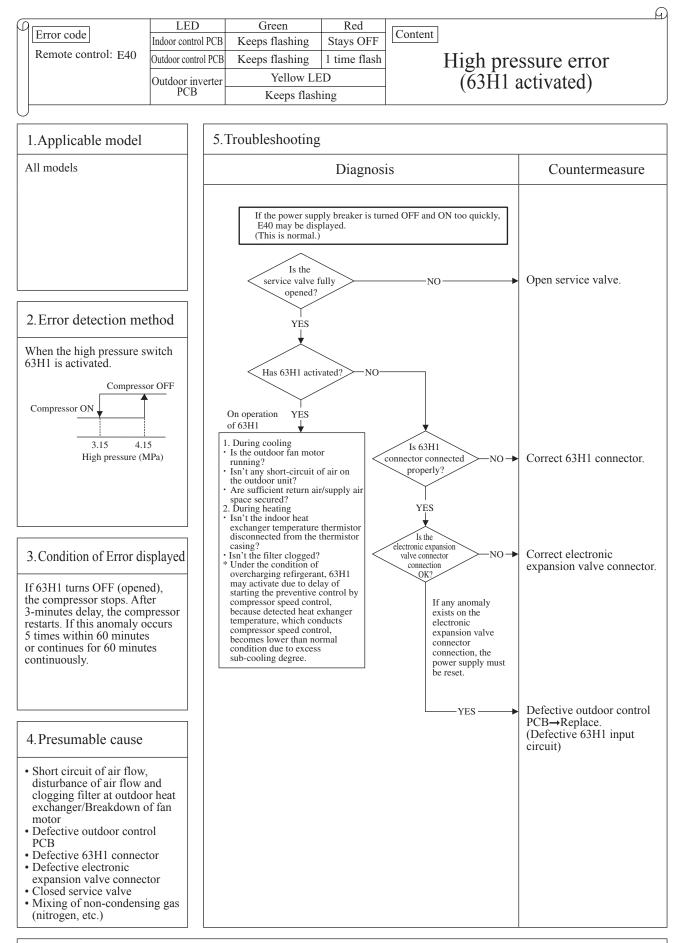




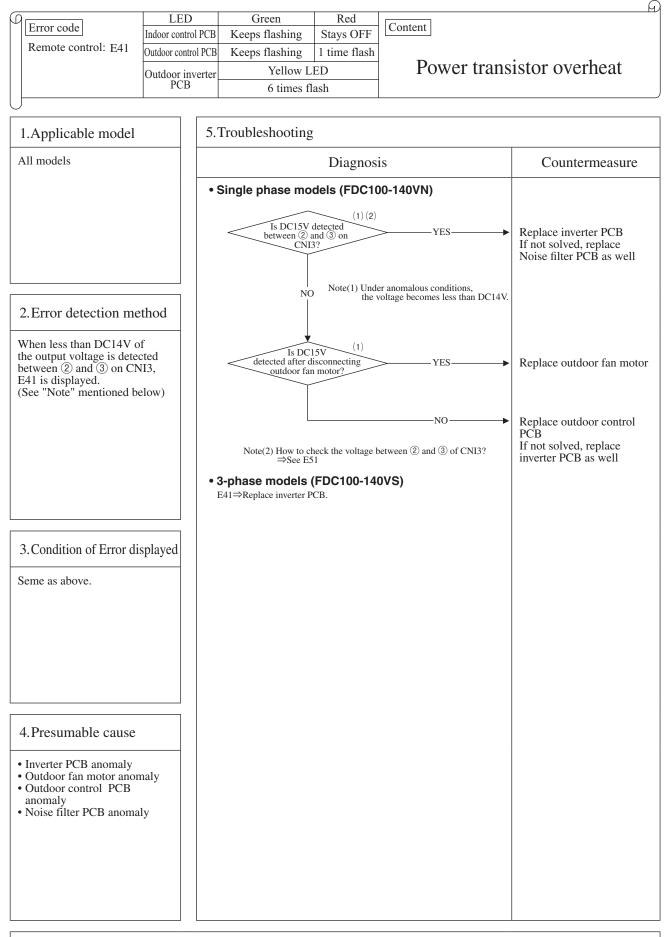






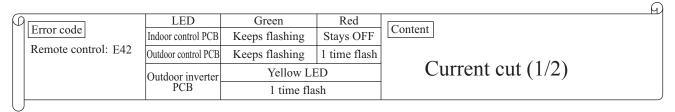


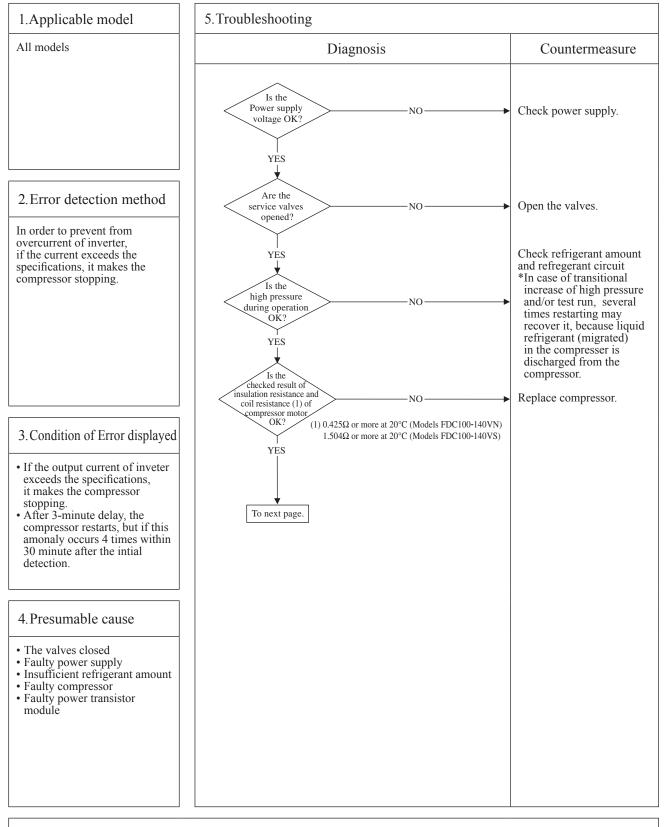
Note: In the protective control range for compressor startup (initial startup after power ON), even if 63H1 is activated only once (63H1turns OFF), immediately the error is displayed.



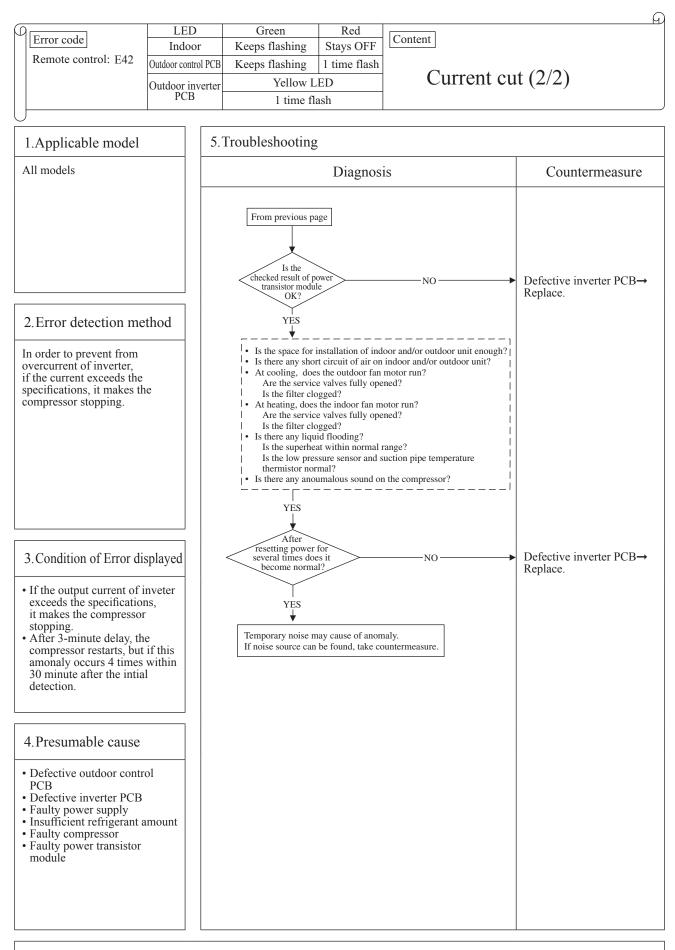
Note: The "Single phase models" of inverter PAC have no function to output the signal for the power transistor overheat. However since the power source for the power transistor and the outdoor fan motor is in the same line, when the anomaly of the outdoor fan motor occurs, E41 is displayed.

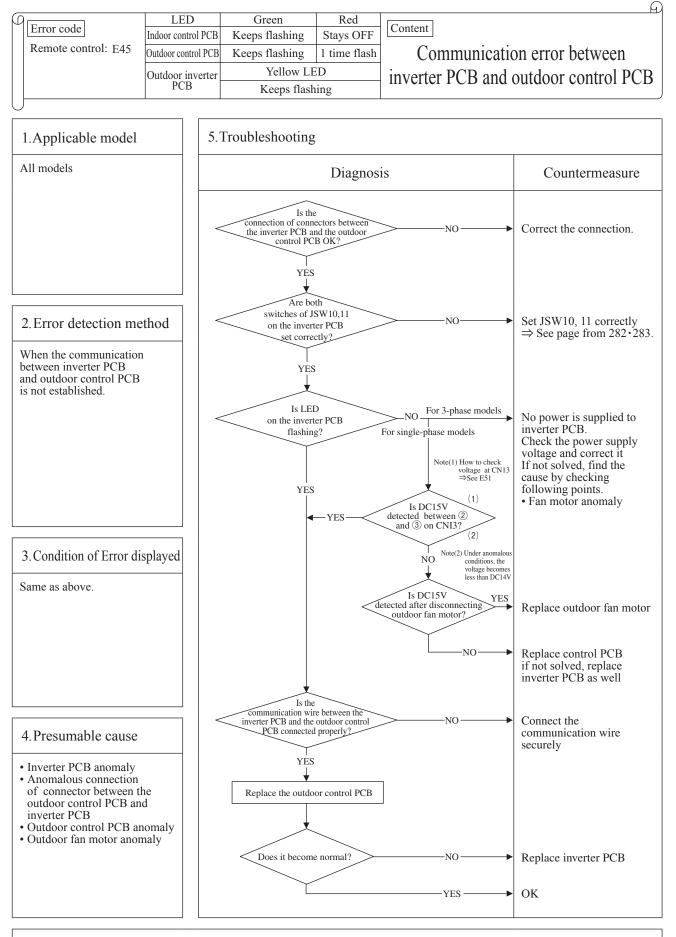
'12 • PAC-T-178

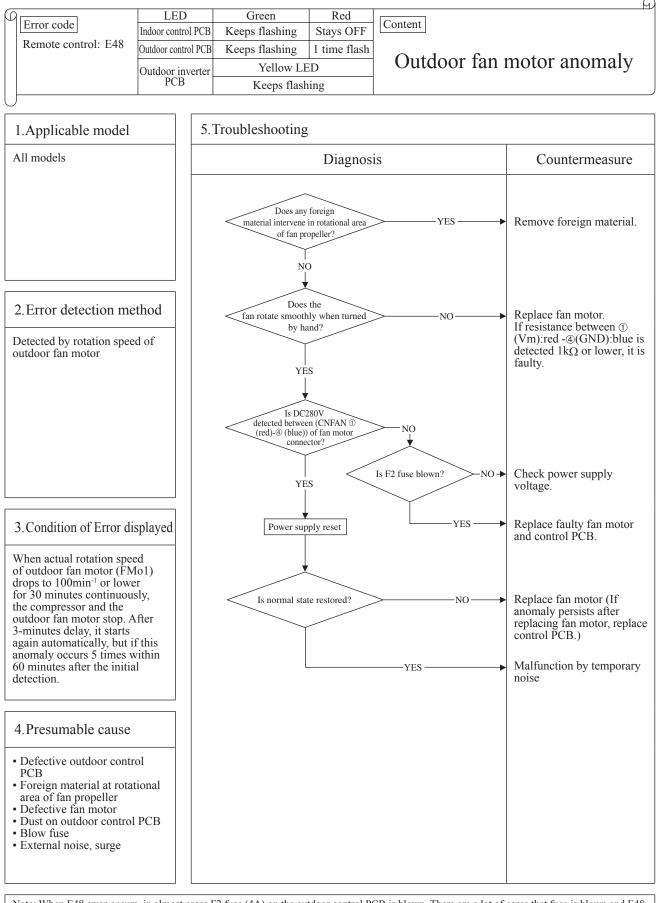




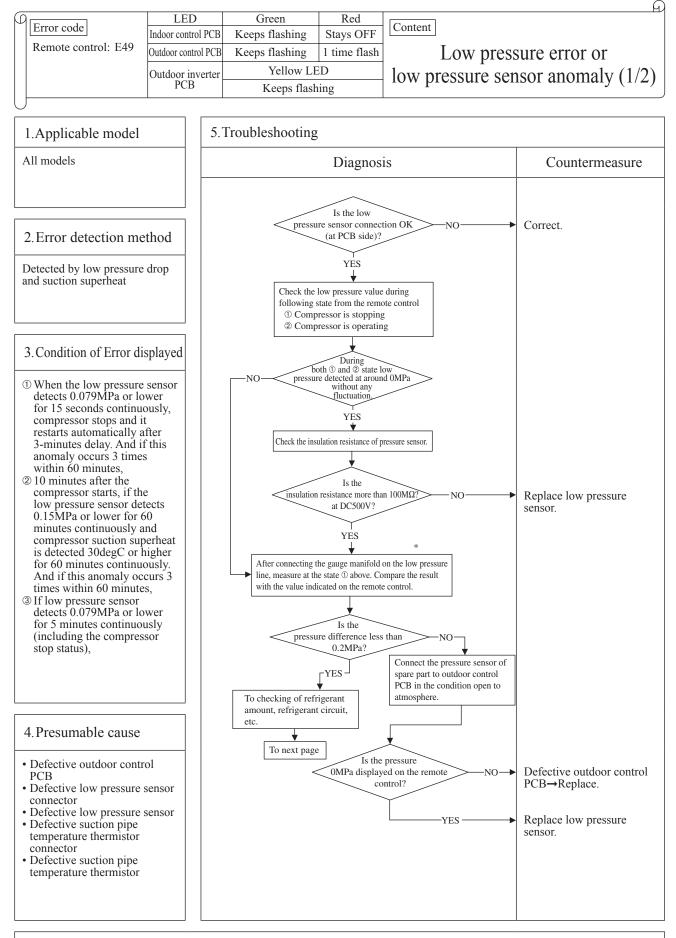
'12 • PAC-T-178



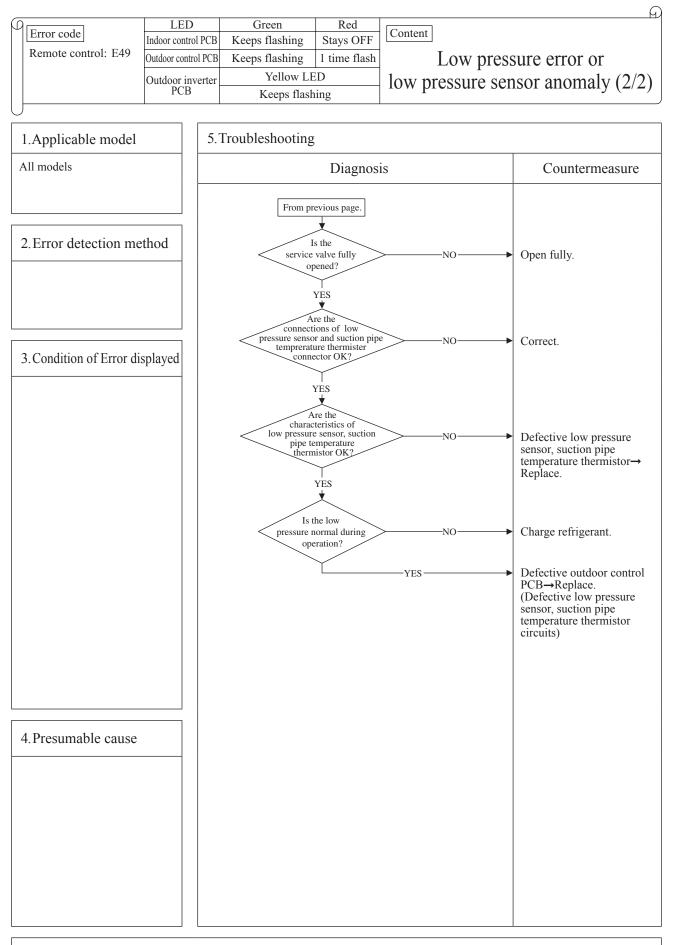


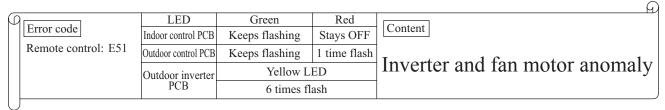


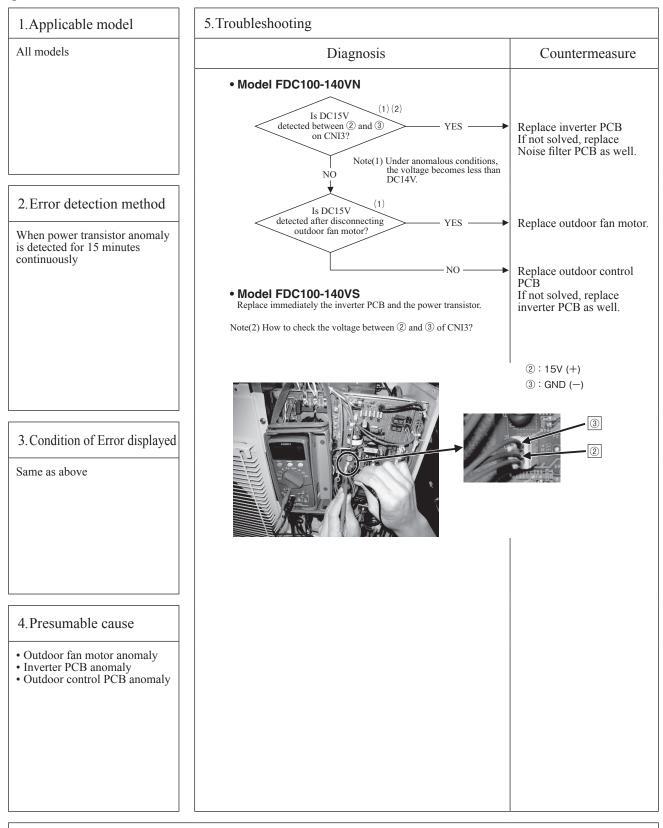
Note: When E48 error occurs, in almost cases F2 fuse (4A) on the outdoor control PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor control PCB (or fuse) is replaced,, another trouble (*1) could occur. Therefore when fuse 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.) *1 The error which does not seem to relate E48 may occur like as "WAIT", Stay OFF of LED on outdoor control PCB, inverter communication error (E45) and etc.

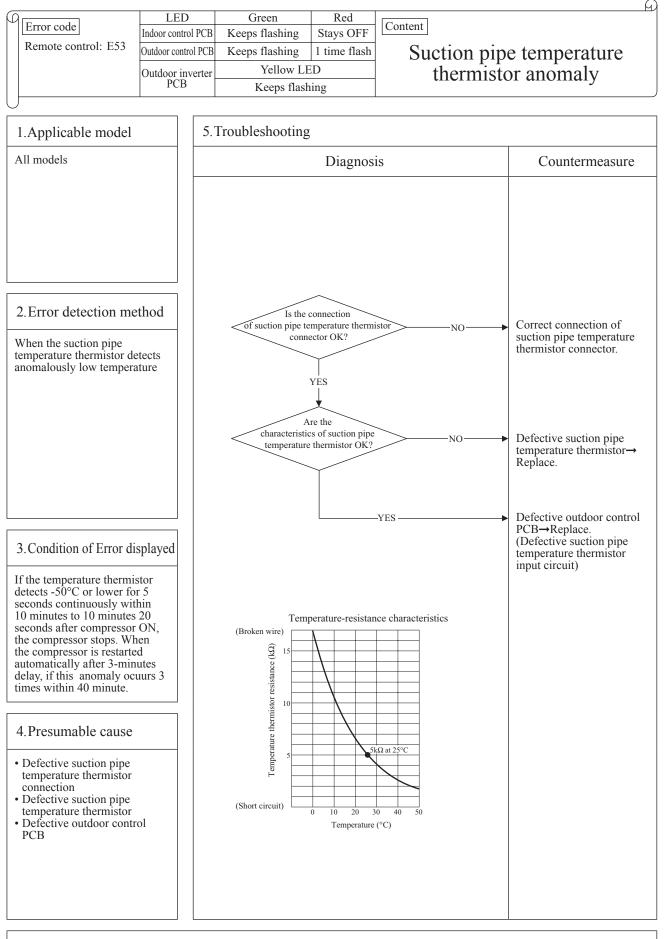


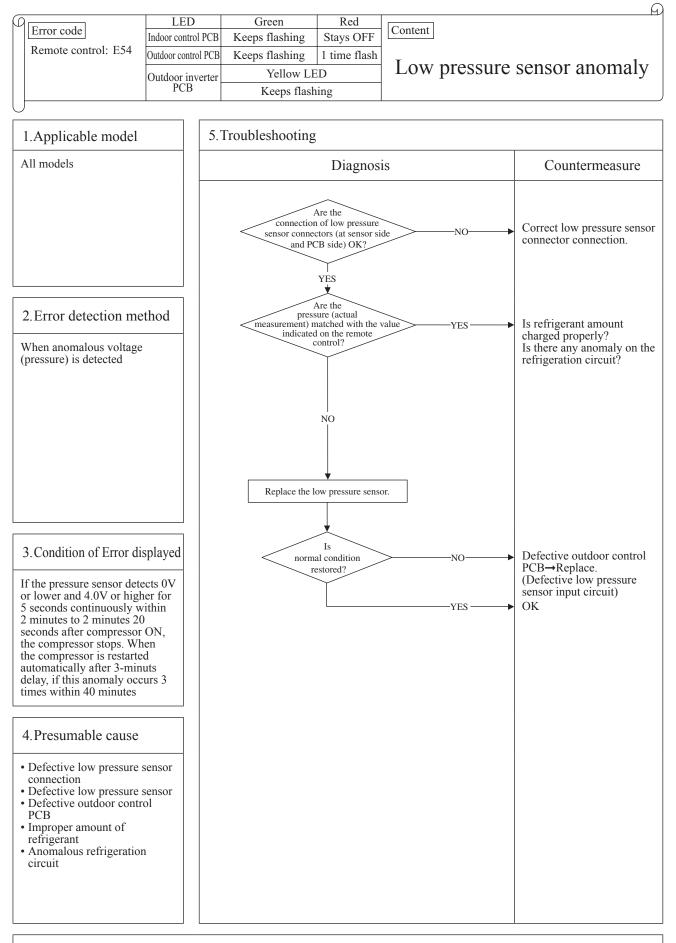
Note: * Connect the gauge manifold to the service valve check joint during cooling, or connect it to the check joint at internal piping of outdoor unit during heating.

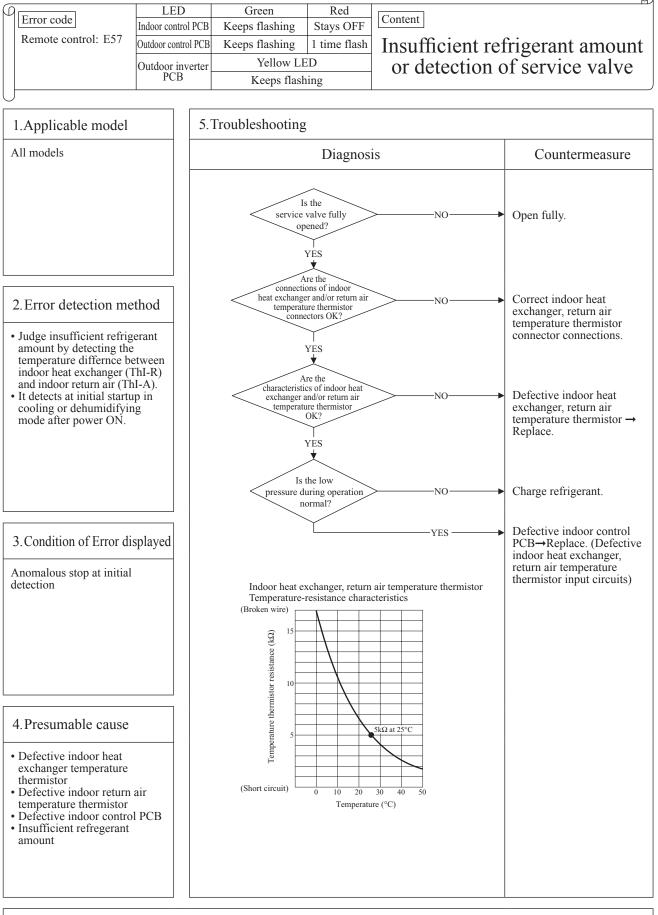




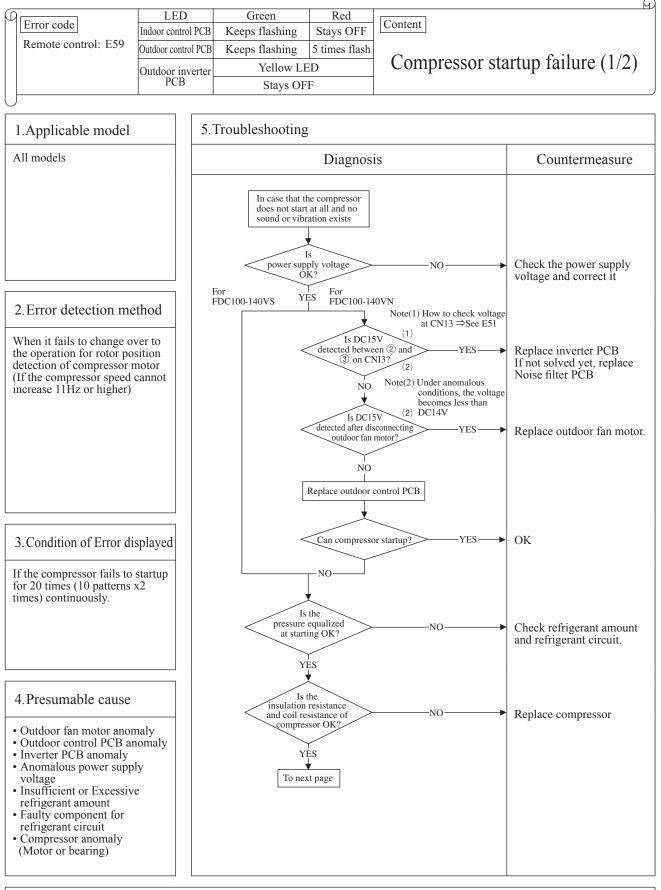








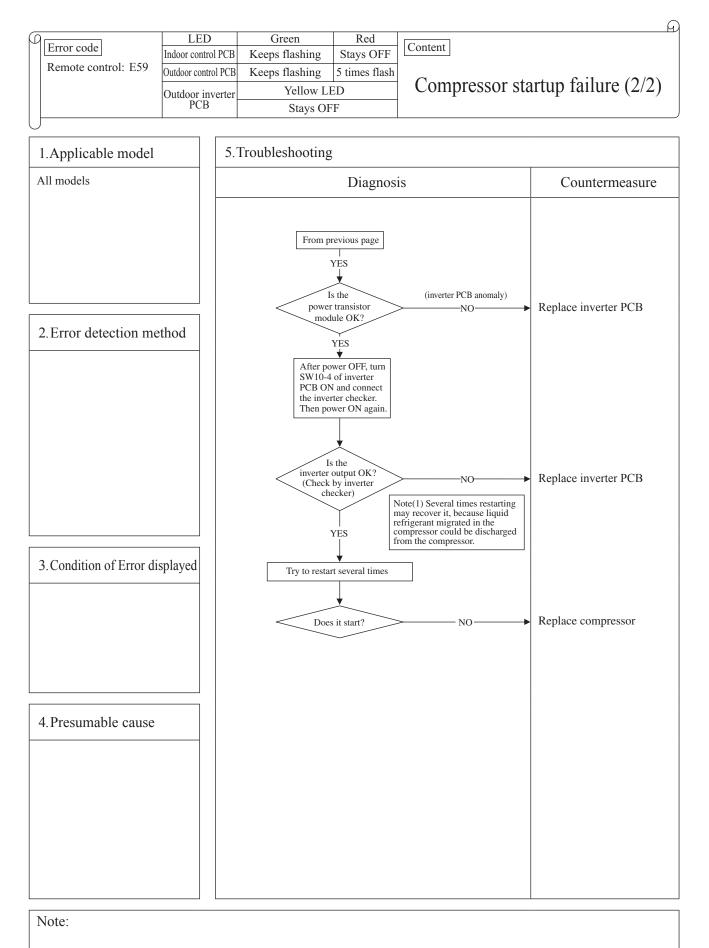
Note: Insufficient refrigerant amount preventive control makes compressor stopped, if it judges insufficient refrigerant amount by detecting the temperature difference between indoor heat exchanger (ThI-R) and return air temperature (ThI-A) for 1 minute after compressor ON in cooling or dehumidifying mode and for 9 minutes after compressor ON in heating mode. [in cooling mode: (ThI-A)-(ThI-R)>4degC, in heating mode: (ThI-R)-(ThI-A)-(ThI-A)-4degC]



Note: Insulation resistance

The unit is left for long period without power supply or soon after installation, insulation resistance may decrease to several M Ω or lower due to the liquid refrigerant migrated in the refrigerant oil in compressor. If the electric leakage breaker is activated due to low insulation resistance, check followings. ① Check whether the insulation resistance can recover or not, after 6 hours has passed since power ON. (By energize the crankcase heater, liquid refrigerant migrated in the refrigerant oil in compressor can be evaporated)

© Check whether the electric leakage breaker conforms to high-harmonic specifications (As INV PAC units has inverter, in order to prevent from improper operation, be sure to use the breaker of high-harmonic type)



3 OPTION PARTS

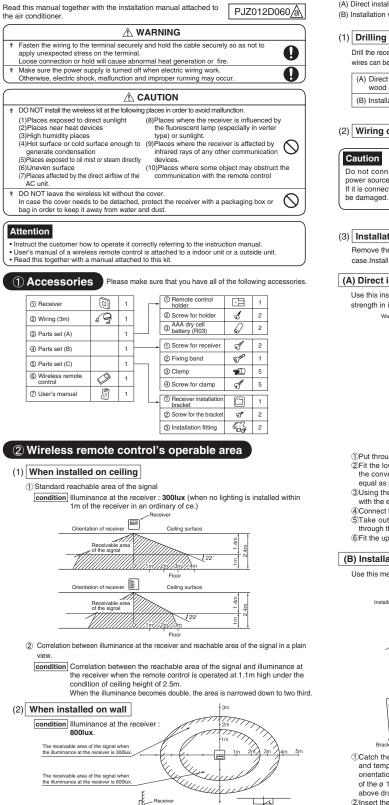
CONTENTS

3.1	WIRELESS KIT (RCN-KIT3-E)	
3.2	SIMPLE WIRED REMOTE CONTROL (RCH-E3)
3.3	BASE HEATER KIT (CW-H-E1)	

3.1 WIRELESS KIT (RCN-KIT3-E)

Following functions of FDU 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)

1. 4 fait speed setting (i high weizer) - o fait speed setting (i high ele



5m or le

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

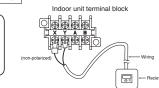
(1) **Drilling of the ceiling (ceiling opening)**

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)	
		w

(2) Wiring connection of receiver



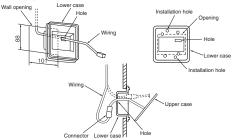


(3) Installation of the receiver

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.

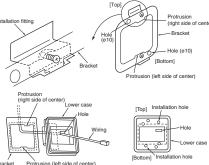


O Put through the wiring from the back side to the hole of the lower case.

- (2) Fit 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.)
- ④Connect the wiring with the wiring from the upper case by the connector.
 ⑤Take 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.



Bracket Protrusion (left side of center)

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.

- 337 -

④ Remote control

Installation of the control holder

Caution

- DO NOT install it on the follow ng places
- 1) Places exposed to direct sunlight 2) Places near heat devices



- Places near near devices
 Plah humidity places
 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 to plaster wall.
- How to insert batteries

1 Detach the back lid

- 2 Insert the batteries. (two AAA batteries)
- Reattach the back lid.

(5) Cooling test run operation

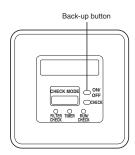
•After safety con rmation, turn on the power.

•Transmit a cooling operation command with wireless remote control, while the backup button on the receiver is pressed.

Wood screw

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.

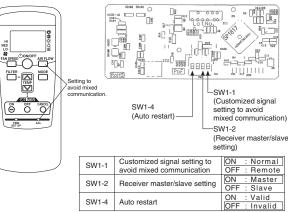


6 Setting of wireless remote control and receiver

(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 <u>ACL</u> and <u>AIRFLOW</u> button at the same time or inserting the batteries with pressing <u>AIRFLOW</u> 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
- Turn SW1-1 off

+ •Wireless remote control ↑ ●PCB of the receiver

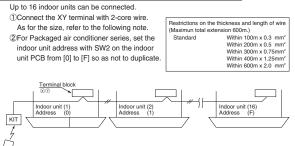


: Default setting

²0:___:

10

(B) Control plural indoor units with one remote control



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.

Indoor unit	
	Remote control line (Non-polarized)
RCN-KIT SW1[Master]	RCN-KIT SW1[Slave]

Holder for remote control

Switch	Setting	Function
SW1-2	ON	Master
5001-2	OFF	Slave

(D) Change setting of auto mode operation

Auto mode operation is prohibited to be selected for KX models (except for KXR models).

Therefore be sure to change setting of remote control to disable the auto mode operation for these models according to the following procedure. While present the state in the state of the can be invalid.

Attention When the batteries are removed, it is returned to initial setting (Auto mode

becomes valid). Accordingly when replacing the batteries, be sure to perform the above operation once again.

(E) Change setting of fan speed

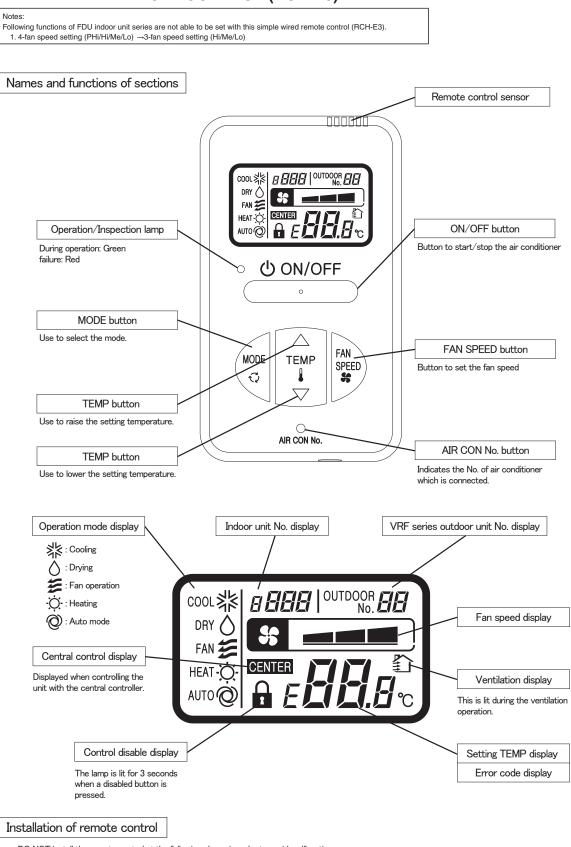
While pressing the [FAN SPEED] button, press the [ACL] switch, or while pressing the [FAN SPEED] button, insert the batteries to the remote control. Then the fan speed can be changed from 2-speed setting to 3-speed setting. When changing fan speed setting of remote control, be sure to perform the same fan speed setting as that of the indoor unit model to be used.

Attention

When the batteries are removed, it is returned to initial setting (Fan speed setting is 2-speed).

Accordingly when replacing the batteries, be sure to perform the above operation once agair

3.2 SIMPLE WIRED REMOTE CONTROL (RCH-E3)

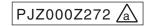


DO NOT install the remote control at the following places in order to avoid malfunction.

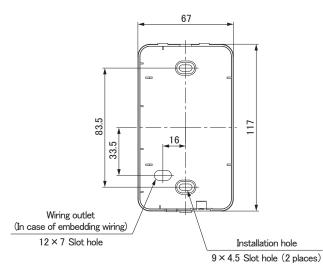
(2) Places near heat devices

(3) High humidity places

(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 (6) Uneven surface







Note: Installation screw for remote control M4 Screw (2 pieces)

心 ON/OFF

70

FAN Spee

0

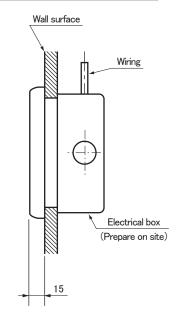
Wiring specifications



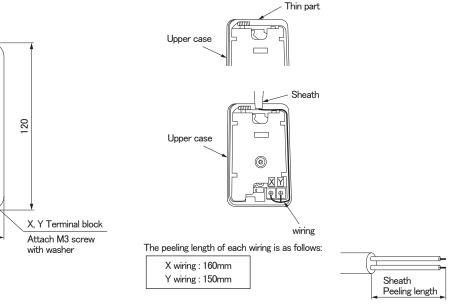
0.3mm² × 2 cores.

LCD





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.



(1) Wiring of remote control should use 0.3mm² imes 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 0.3mm² (recommended) to 0.5mm².

Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire

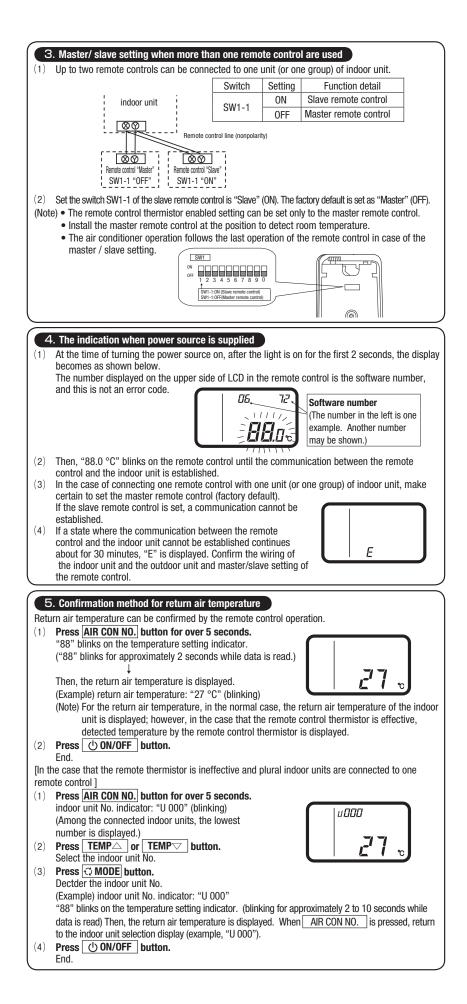
connecting section. Be careful about contact failure.

Length	Wiring thickness	
100 to 200m	0.5mm ² × 2 cores	
Under 300m	0.75mm ² × 2 cores	
Under 400m	1.25mm ² × 2 cores	
Under 600m	2.0mm ² × 2 cores	

Adapted to **RoHS** directive

Unit:mm





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

(1) Function	n setting ite	em by switch on PCB						
Switch No.	Setting	Setting detail	Initial setting	Switch No.	Setting	Setting detail	Initial setting	
SW1-1	ON	Slave remote control		SW1-5	ON	"TEMP" button prohibited		0 TF 1 2 3 4 5 6 7 8 9 0
5W1-1	0FF	Master remote control	0	5001-5	0FF	"TEMP" button enabled	0	
SW1-2	ON	Remote control thermistor enabled		SW1-6	ON	"FAN SPEED" button prohibited	% Note 1	
5W1-2	0FF	Remote control thermistor disabled	0	3001-0	0FF	"FAN SPEED" button enabled	※ Note 1	
SW1-3	ON	"MODE" button prohibited		SW1-7	ON	Auto restart function enabled		· As for the slave remote control, function setting is impossible other
3₩1-3	OFF	"MODE" button enabled	0	3001-7	OFF	Auto restart function disabled	0	than SW1-1.
SW1-4	ON	"ON/OFF" button prohibited		SW1-8, 9, 0	ON	- Not used		 In the indoor unit with only one fan speed, "FAN SPEED" button cannot
3W1-4	OFF	"ON/OFF" button enabled	0	3001-0, 9, 0	OFF	Not used		be enabled.

(2) Function setting item by button operation

Jassincation	Function No.	Function	Setting No.	Setting	Initial setting	Remarks
			01	Fan speed: three steps	% Note 1	The fan speed is three steps, 🗱 🖬 🖩 🗧 📽 🖬 - 🗱 🖬 .
	01	Indoor unit fan speed	02	Fan speed: two steps (Hi-Lo)	※ Note 1	The fan speed is two steps, 🏶 💵 🖩 - 🏶 🖬 .
	01	inuoor unit ian speeu	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.
1		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 control			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.
			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.
l		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.
l	06	"Auto" operation setting	01	"Auto" operation enabled	% Note 1	
			02	"Auto" operation disabled	% Note 1	"Auto" operation disabled
-		Operation permission/	01	Disabled	0	
	07	prohibition	02	Enabled		Operation permission/prohibition controller is enabled.
		-	01	Level input	0	ale and the second second second
	08	External input	02	Pulse input		
	09	Fan speed setting	01	Standard	Note2	
l			02	High speed 1	Note2	
			03	High speed 2	Note2	
l		Fan remaining operation at the time of cooling	01	No remaining operation	0	After cooling stopped, no fan remaining operation
			02	0.5 hours		After cooling stopped, fan remaining operation for 0.5 hours
	10		03	1 hour		After cooling stopped, fan remaining operation for 1 hour
1			04	6 hours		After cooling stopped, fan remaining operation for 6 hours
l			01	No remaining operation	0	After heating stopped or after heating thermostat OFF, no fan remaining operation
l		Fan remaining operation at the time of heating	02	0.5 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 0.5 hours
l	11		03	2 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 2 hours
			00	6 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 6 hours
Indoor unit			01	No offset	0	
function		Setting temperature	02	Setting temperature offset + 3.0 °C		The setting temperature at the time of heating is offset by +3.0 °C.
l	12	offset at the time of	03	Setting temperature offset + 2.0 °C		The setting temperature at the time of heating is offset by $+2.0$ °C.
l		heating	00	Setting temperature offset + 1.0 °C		The setting temperature at the time of heating is offset by $+1.0$ °C.
1			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.
	10	Heating fan controller	02	Intermittent operation	% Note 1	At the time of heating thermostat OFF, intermittently operate.
	13		05		% NOLE I	At the time of heating thermostat OFF, a fan will be stopped.
	13	nearing fair controller	04	Fan off		When the remote control thermistor is enabled automatically set to "Fan off". Do not set at the time of the indeer unit thermistor
	13					When the remote control thermistor is enabled, automatically set to "Fan off". Do not set at the time of the indoor unit thermistor.
	13		01	No offset	0	
	13		01 02	No offset Return air temperature offset +2.0 °C	0	Offset the return air temperature of the indoor unit by +2.0 °C.
		Return air temperature	01 02 03	No offset Return air temperature offset +2.0 °C Return air temperature offset +1.5 °C	0	Offset the return air temperature of the indoor unit by +2.0 °C. Offset the return air temperature of the indoor unit by +1.5 °C.
	13		01 02 03 04	No offset Return air temperature offset +2.0 °C Return air temperature offset +1.5 °C Return air temperature offset +1.0 °C	0	Offset the return air temperature of the indoor unit by +2.0 °C. Offset the return air temperature of the indoor unit by +1.5 °C. Offset the return air temperature of the indoor unit by +1.0 °C.
		Return air temperature	01 02 03	No offset Return air temperature offset +2.0 °C Return air temperature offset +1.5 °C	0	Offset the return air temperature of the indoor unit by +2.0 °C. Offset the return air temperature of the indoor unit by +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:

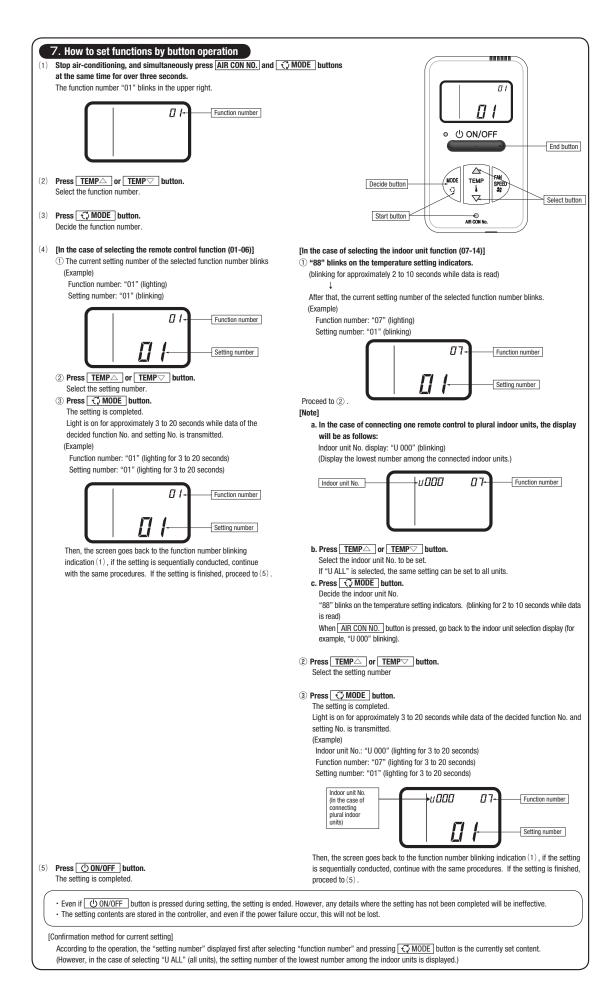
Swith No. Function No.	Function	Setting	Product model		
	"FAN SPEED"	"FAN SPEED" button prohibited	Product model whose indoor fan speed is only one step		
SW1-6		"FAN SPEED" button enabled	Product model whose indoor fan speed is two steps or three		
	DULION	FAIN SPEED DULLOIT EITADIEU	steps		
	Indoor unit fan	Fan speed: three steps	Product model whose indoor unit fan speed is three steps		
Remote control function 01		Fan speed: two steps (Hi-Lo)	Product model whose indoor unit fan speed is two steps		
Remote control function of	speed	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		
Remote 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		
	control	Intermittent operation	FDUS		

Note	2:	Fan	speed	of	"High	speed"	set

Note 2: Fan speed of "High speed" setting								
Fan speed setting	Indoor unit fan speed setting							
Fail speed setting	\$t = # # - \$t = # - \$t =	왕 프로젝 - 왕 프	\$t a # # - \$t a #					
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".								

ligh sp ng

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".



3.3 BASE HEATER KIT (CW-H-E1)

WARNING

Follow the instruction and installation manual for

• This heater must be installed by authorized

• Turn off the power supply when the kit is installed.

• Failure to follow the above will result in serious

AREAS TO BE APPLIED

This kit is to be used in an area where the lowest

▲ 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

/!\

personnel.

outdoor unit when installing the heater.

accident like electrical shock or fire.

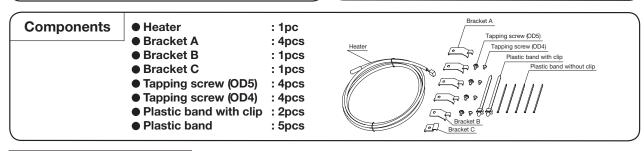
temperature drops below zero.

be given.

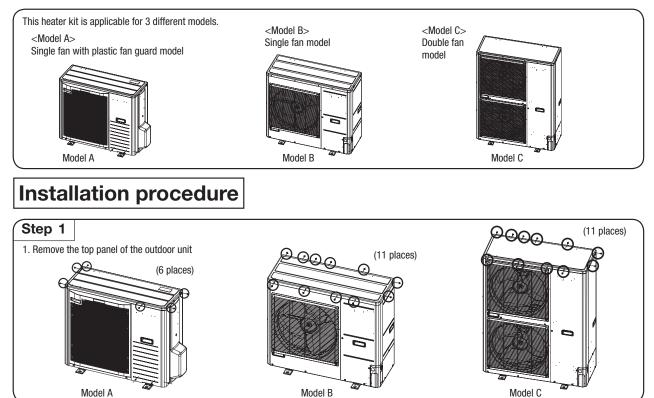
PCZ012D007A

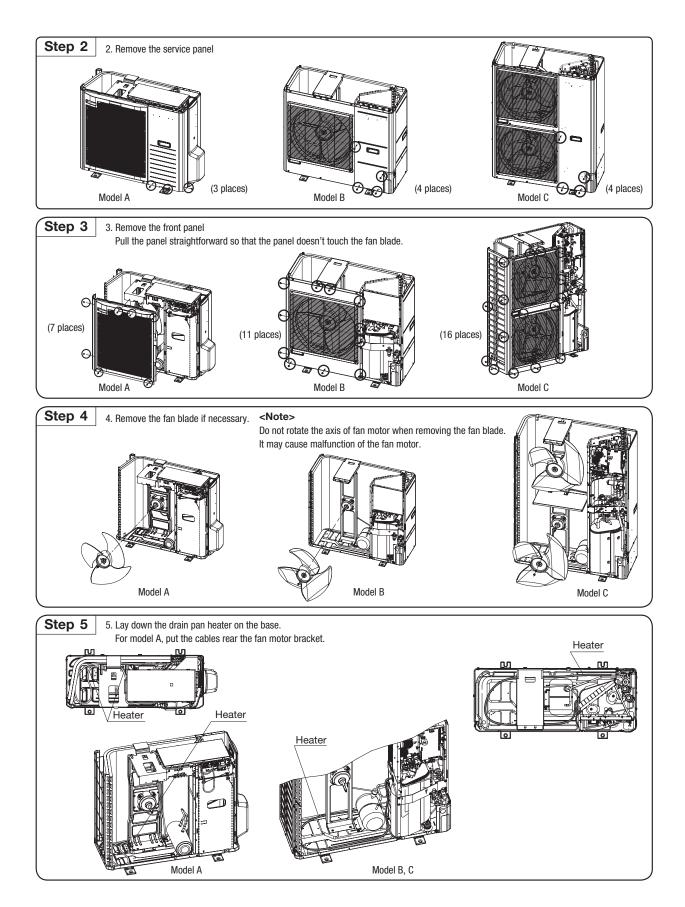
Model Name: CW-H-E1

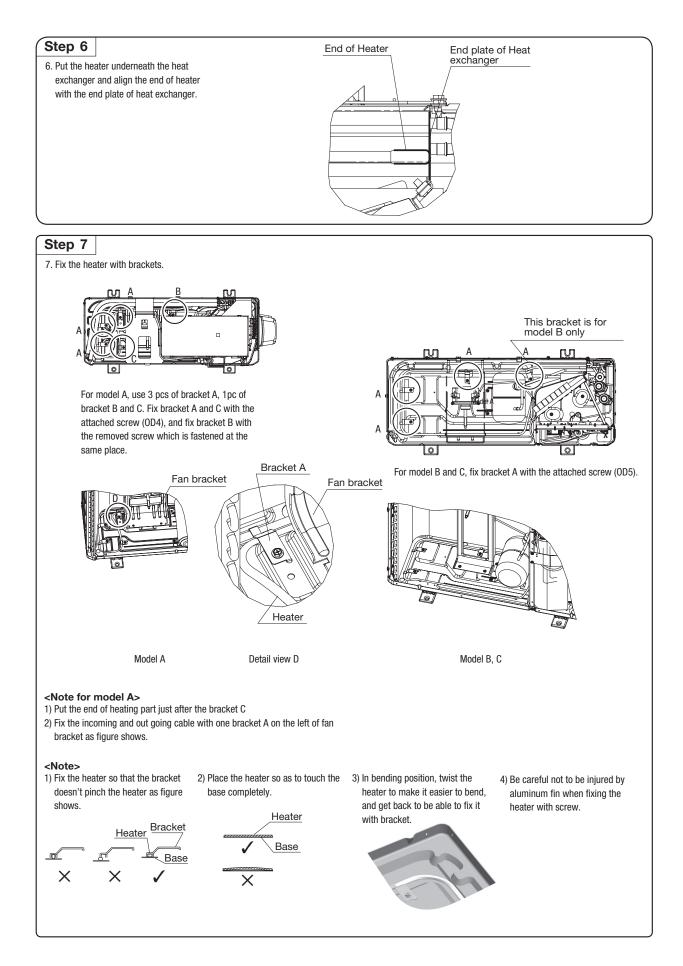
- Follow the law or regulation of the country where it is installed.
- Do not alter the heater.
- Lay down the heater so that the edge of the sheet metal does not damage the heater.
- Bending radius must be bigger than 25mm.
- Do not use the heater near flammable substances.
- Be sure to check the electrical insulation before use.
- Be sure to check the drain is not trapped by the heater.
- Do not leave refrigerant oil on the base.

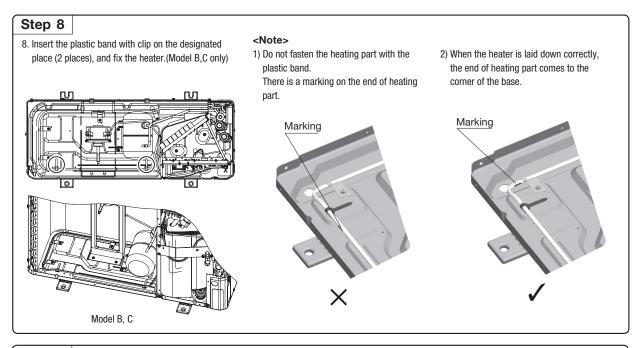


Applicable model



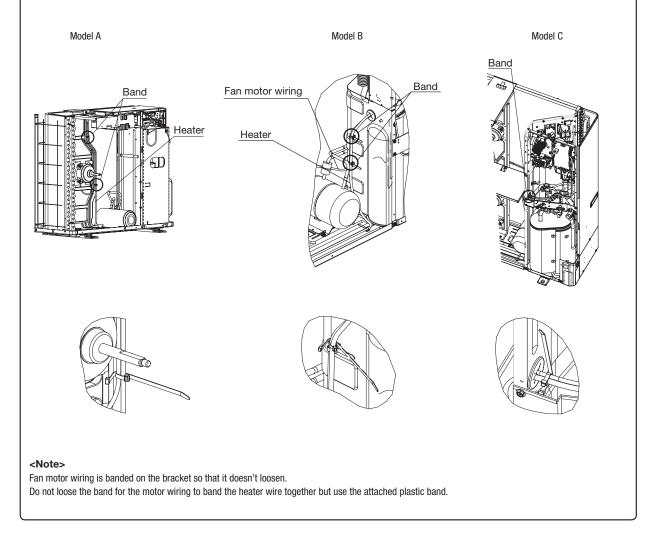


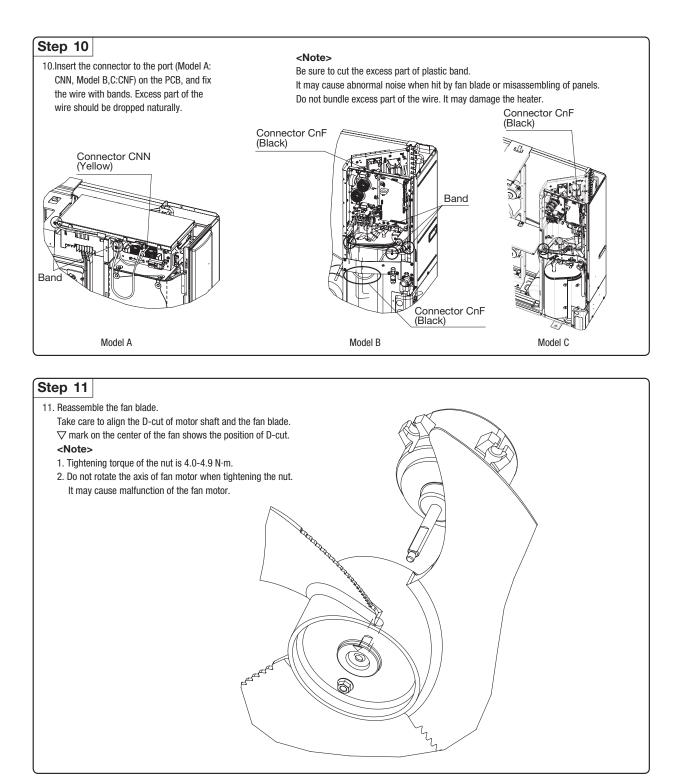




Step 9

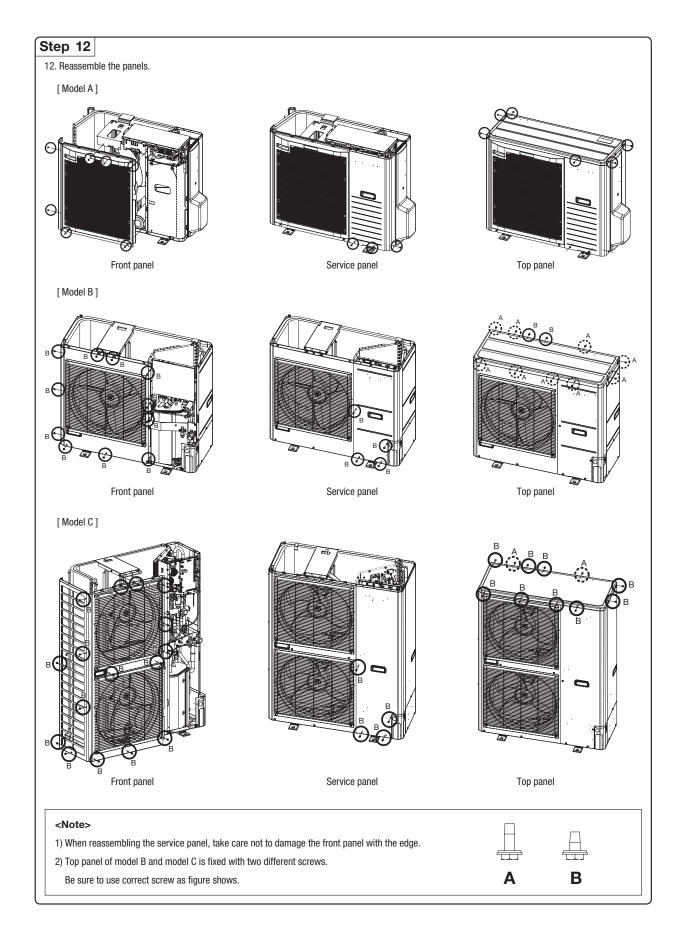
9. Lay down the wiring on the same route of fan motor wiring, and fix the wire with attached plastic band at the same place where the fan motor wiring is banded.





<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.



Information to identify the model(s)	to which the inf	ormation re	elates to:	If function includes heating: Indicate			
Indoor unit model name	FDU71VF			information relates to. Indicated value			
Outdoor unit model name	FDC71V	XV		heating season at a time. Include at I	east the heatir	ng season	'Average'.
Function(indicate if present)	Vee			Average(mandatory)	Yes		
cooling	Yes			Warmer(if designated)	No		
heating	Yes			Colder(if designated)	No		
Itom	symbol	value	unit	Item	symbol	value	class
Item Design load	Symbol	value	unit	Seasonal efficiency and energy effici		value	01055
cooling	Pdesignc	7.1	kW	cooling	SEER	5.24	А
heating / Average	Pdesignh		kW	heating / Average	SCOP/A	3.90	A
heating / Warmer	Pdesignh		kW	heating / Warmer	SCOP/W		-
heating / Colder	Pdesignh		kW	heating / Colder	SCOP/C	-	-
	i deeligiiii	1				4	unit
Declared capacity at outdoor tempe	rature Tdesign	h		Back up heating capacity at outdoor	temperature T	desianh	
heating / Average (-10°C)	Pdh	5.92	kW	heating / Average (-10°C)	elbu	1.08	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
		1	1				
Declared capacity for cooling, at ind	oor temperatur	e 27(19)°C	and	Declared energy efficiency ratio, at ir	door tempera	ture 27(19)°C and
outdoor temperature Tj		. ,		outdoor temperature Tj			
Tj=35°C	Pdc	7.10	kW	Tj=35℃	EERd	3.46	7-
Tj=30°C	Pdc	5.23	kW	Tj=30°C	EERd	4.72]-
Tj=25°C	Pdc	3.37	kW	Tj=25°C	EERd	7.94]-
Tj=20°C	Pdc	3.20	kW	Tj=20°C	EERd	10.38	-
Declared capacity for heating / Aver		indoor		Declared coefficient of performance	Average seas	son, at inde	oor
temperature 20°C and outdoor temp		<u> </u>		temperature 20°C and outdoor temperature	,	<u> </u>	-
Tj=-7°C	Pdh	6.20	kW	Tj=-7°C	COPd	2.53	-
Tj=2°C	Pdh	3.85	kW	Tj=2°C	COPd	3.82	-
Tj=7°C	Pdh	2.45	kW	Tj=7°C	COPd	5.15	-
Tj=12°C	Pdh	2.56	kW	Tj=12℃	COPd	6.28	-
Tj=bivalent temperature	Pdh	6.20	kW	Tj=bivalent temperature	COPd	2.53	-
Tj=operating limit	Pdh	5.00	kW	Tj=operating limit	COPd	2.06	-
Declared capacity for heating / War		indoor		Declared coefficient of performance		ion, at indo	oor
temperature 20°C and outdoor temp			1	temperature 20°C and outdoor tempe			-
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	-
Tj=7°C	Pdh	-	kW	Tj=7℃	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	-	-
Declared consolity for besting / Cold	lar accor at in	alaan		Declared coefficient of norfermence		n at indad	
Declared capacity for heating / Cold temperature 20°C and outdoor temp		10001		Declared coefficient of performance / temperature 20°C and outdoor temper		n, at muoc	זו
Tj=-7°C	Pdh	-	kW	Tj=-7°C	COPd	-	٦
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	-
Tj=7°C	Pdh		kW	Tj=7℃	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	-	4_
Tj=-15°C	Pdh	-	kW	Tj=-15°C	COPd	-	-[
1 10 0	1 dil			1 10 0	0014		
Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-7	°C	heating / Average	Tol	-20	°C
heating / Warmer	Tbiv	-	°C	heating / Warmer	Tol	-	°C
heating / Colder	Tbiv	-	°C	heating / Colder	Tol	-	°C
		1	1	5			
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				Annual electricity consumption	-		-
off mode	Poff	15	W	cooling	Qce	475	kWh/a
standby mode	Psb	15	W	heating / Average	Qhe	2513	kWh/a
thermostat-off mode	Pto	18	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	22	W	heating / colder	Qhe	-	kWh/a
Operative and 10 Parts 1				Others thereas			
Capacity control(indicate one of three	e options)			Other items	Luce	<u> </u>	
				Sound power level(indoor)	Lwa	65 66	dB(A)
fixed	Na			Sound power level(outdoor)	Lwa		dB(A)
fixed	No			Global warming potential	GWP	1975	kgCO2eq.
staged	No Yes			Rated air flow(indoor)	-	1440	m3/h m3/h
variable	res			Rated air flow(outdoor)		3600	m3/h
Contact details for obtaining	Nome cr	d address	of the man	ufacturer or of its authorised representa	ativo		
	SUBISHI HEAV				AUVC.		
	CONDITIONIN						
				way, London, WC2B 6ST United Kingo	mot		
			J -				

Information to identify the model(s) to which the info	ormation r	elates to:	If function includes heating: Indicate			
Indoor unit model name	FDU100V			information relates to. Indicated value			
Outdoor unit model name	FDC100V	/NX		heating season at a time. Include at	least the heati	ng season	'Average'.
					- V		
Function(indicate if present)	Vee			Average(mandatory)	Yes		
cooling	Yes			Warmer(if designated)	No		
heating	Yes			Colder(if designated)	No		
Itom	symbol	value	unit	Item	symbol	value	class
Item Design load	Symbol	value	unit	Seasonal efficiency and energy efficiency		value	01055
cooling	Pdesignc	10.0	kW	cooling	SEER	5.22	А
heating / Average	Pdesignh		kW	heating / Average	SCOP/A	4.10	A+
heating / Warmer	Pdesignh		kW	heating / Warmer	SCOP/W		-
heating / Colder	Pdesignh		kW	heating / Colder	SCOP/C	-	-
	1 designin	_		ricating / Colder	000170	_	unit
Declared capacity at outdoor temp	erature Tdesign	ı		Back up heating capacity at outdoor	r temperature T	designh	unit
heating / Average (-10°C)	Pdh	10.91	kW	heating / Average (-10°C)	elbu	2.09	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
					0.04		
Declared capacity for cooling, at ir	door temperatur	e 27(19)°C	and	Declared energy efficiency ratio, at i	indoor tempera	ture 27(19)°C and
outdoor temperature Tj		0 =: (:0) 4	und	outdoor temperature Tj) e ana
Tj=35℃	Pdc	10.00	kW	Ti=35℃	EERd	3.73	7-
Tj=30°C	Pdc	7.42	kW	Tj=30°C	EERd	4.84	1_
Tj=25℃	Pdc	5.58	kW	Tj=25℃	EERd	7.43	1_
Tj=20°C	Pdc	5.87	kW	Tj=20°C	EERd	10.46	-
Declared capacity for heating / Av	erage season, at	indoor		Declared coefficient of performance	/ Average sea	son, at ind	oor
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp	erature Ti	,	
Tj=-7℃	Pdh	11.50	kW	Tj=-7℃	COPd	2.54	-
Tj=2°C	Pdh	6.89	kW	Tj=2°C	COPd	4.07	-
Tj=7°C	Pdh	4.50	kW	Tj=7°C	COPd	5.52	-
Tj=12°C	Pdh	5.20	kW	Tj=12°C	COPd	6.50	-
Tj=bivalent temperature	Pdh	11.50	kW	Tj=bivalent temperature	COPd	2.54	-
Tj=operating limit	Pdh	8.96	kW	Tj=operating limit	COPd	2.16	-
Declared capacity for heating / Wa	armer season, at	indoor		Declared coefficient of performance	/ Warmer seas	son, at indo	oor
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp			
Tj=2℃	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	Ti=operating limit	COPd	-	-
Declared capacity for heating / Co	lder season, at ir	ndoor		Declared coefficient of performance	/ Colder seaso	on, at indoc	or
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp	erature Tj		
Tj=-7°C	Pdh	-	kW	Tj=-7°C	COPd	-	7-
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	7-
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	-	7-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	1-
Tj=-15℃	Pdh	-	kW	Tj=-15°C	COPd	-	-
Bivalent temperature			_	Operating limit temperature			_
heating / Average	Tbiv	-7	°C	heating / Average	Tol	-20	°C
heating / Warmer	Tbiv	-	°C	heating / Warmer	Tol	-	°C
heating / Colder	Tbiv	-	°C	heating / Colder	Tol	-	°C
Cycling interval capacity		·	-	Cycling interval efficiency			-
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-
Degradation coefficient	<u>.</u>		-	Degradation coefficient	o "		-
cooling	Cdc	0.25	-	heating	Cdh	0.25	-
Electric power input in power mod			7.47	Annual electricity consumption	0	070	
off mode	Poff	20	W	cooling	Qce	670	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	4437	kWh/a
thermostat-off mode	Pto	45 25	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a
Canacity control/indicate and of th	raa antiana)			Other items			
Capacity control(indicate one of th	ree options)			Other items Sound power level(indoor)	Lwo	65	
				Sound power level(indoor) Sound power level(outdoor)	Lwa Lwa	65 70	dB(A) dB(A)
fixed	Na						
fixed	No			Global warming potential	GWP	1975	kgCO2eq.
staged	No Yes			Rated air flow(indoor)	-	2160	m3/h m3/h
variable	res			Rated air flow(outdoor)	-	6000	m3/h
Contact datails for obtaining	Nomer	d address	of the mar	utacturar or of its sutherized reasons	tativo		
Contact details for obtaining more information MI	Name and TSUBISHI HEAV			ufacturer or of its authorised represen	lalive.		
	R-CONDITIONIN						
				way, London, WC2B 6ST United King	mobr		
40	. 1001 11101101				,		

Outdoor unit model name FDC100VSX heating season at a time. Include at least the heating season 'Werage' Function(indicate if present) Ves No Noting Yes No Heating Season at a time. Include at least the heating season 'Werage' No Heating / Wareage Poesigne 100 No Design load cooling Feasing 'Wareage' SCOPK - Design load cooling Feasing 'Wareage' SCOPK - Declared capacity at outdoor temperature Telesign' No - - Declared capacity at outdoor temperature Telesign' No - - Declared capacity at outdoor temperature 7 (2°C) elbu - WW Heating 'Wareage (1°C') Poh - WW Heating 'Coder (2°C) Poh - WW Heating 'Wareage (1°C') Poh - WW Tig-SC Pod 6.87 W - WW Tig-SC Pod 6.87 W - - W	Information to identify the model(s)	to which the inf	ormation r	elates to:	If function includes heating: Indicate			
Function/indicate if present) Yes cooling Anarge personal Pdesign food cooling Anarge personal Pdesign food personal	Indoor unit model name				information relates to. Indicated values should relate to one			
Cooling Yes Warminf (f disignaled) No tem opmbol value unit symbol value class. besign toal opmbol value unit tem symbol value class. besign toal Paesign (100, Warmer Paesign (100, Warmer SEER A A besign (20, Warmer Paesign (100, Warmer Paesign (100, Path Yarmer SECR A A A besign (20, Warmer Paesign (100, Path Path Yarmer SECR A </td <td colspan="4">Outdoor unit model name FDC100VSX</td> <td>heating season at a time. Include at</td> <td>least the heati</td> <td>ng season</td> <td>'Average'.</td>	Outdoor unit model name FDC100VSX				heating season at a time. Include at	least the heati	ng season	'Average'.
Cooling Yes Warminf (f disignaled) No tem opmbol value unit symbol value class. besign toal opmbol value unit tem symbol value class. besign toal Paesign (100, Warmer Paesign (100, Warmer SEER A A besign (20, Warmer Paesign (100, Warmer Paesign (100, Path Yarmer SECR A A A besign (20, Warmer Paesign (100, Path Path Yarmer SECR A </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Interfig Yes Colder(if designated) No Item symbol value Item symbol value Item symbol value Item symbol value Status		Vee						
Item symbol value Item symbol value class Design (Average Pdesign 0.0 KW Seasonal efficiency and energy efficiency datas 5 A Design (Average Pdesign XW Nearer Seasonal efficiency and energy efficiency datas 5 A A Design (Average Pdesign XW Nearer SCOPN -	5							
Design load Operating / Average Poesign (13.0) WW Instanting / Variange SCOPR (10.0) Instanting / Variange SCOPR (10.0) Declared capacity at outdoor temperature Telesign (10.0) Poh Instanting / Variange SCOPR (10.0) Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature 7(1)°FC and for enset with temperature 7(1)°FC and outdoor temperature 7(1)°FC and for enset with temperatur	neating	Yes			Colder(if designated)	NO		
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Tj=7°C Pdh - kW Tj=7°C COPd - Tj=12°C Pdh - kW Tj=2°C COPd - Tj=obvalent temperature Pdh - kW Tj=bivalent temperature COPd - Tj=obvalent temperature Pdh - kW Tj=obvalent temperature COPd - Bivalent temperature Pdh - KW Tj=obvalent temperature COPd - heating / Average Toiv -7 °C heating / Average Toi -20 °C heating / Average Toiv -7 °C heating / Average Toi - °C heating / Average Toiv - °C heating / Average Toi - °C for coling for cooling Pcycc - kW for cooling interval representation coefficient - - - for heating Pcycc - kW For cooling CCPcyc - - - Degradation coefficient cooling Cdc 0.25 - - - -			-				-	1
Tj=12°C Pdh - kW Tj=12°C COPd - Tj=bivalent temperature Pdh - kW Tj=bivalent temperature COPd - Tj=operating limit Pdh - kW Tj=bivalent temperature COPd - Bivalent temperature Pdh - kW Tj=12°C COPd - Bivalent temperature Pdh - kW Tj=12°C COPd - Bivalent temperature Pdh - kW Tj=12°C COPd - Bivalent temperature - Pdh - KW Tj=15°C COPd - - Bivalent temperature - - - - COParage Tol - 0 - *C heating / Warmer Toi - °C - - - *C - <	Ti=7°C		-				-	1
Tj=bivalent temperature Pdh - kW Tj=bivalent temperature COPd - Tj=operating limit Pdh - kW Tj=operating limit COPd - Tj=tS*C Pdh - kW Tj=operating limit COPd - Bivalent temperature Pdh - kW Tj=operating limit COPd - Bivalent temperature heating / Average Toi - - - - heating / Average Toiv - - - - - - heating / Average Toiv - <td< td=""><td></td><td></td><td>-</td><td></td><td></td><td></td><td>-</td><td>1_</td></td<>			-				-	1_
Tj=operating limit Pdh - kW Tj=operating limit COPd - Bivalent temperature heating / Average Tbiv -7 °C heating / Average Tol -20 °C heating / Warmer Tbiv - °C heating / Average Tol -20 °C heating / Colder Tbiv - °C heating / Varmer Tol - °C Cycling interval capacity for cooling Pcycc - kW Cycling interval efficiency for cooling COPcyc - - - - - - - - °C - °C heating / Warmer Tol - °C - °C - *C - - °C - - °C - *C - - *C - - *C - *C +C *C +C *C +C K/Wh/#	-							1_
Tj=-15°C Pdh - kW Tj=-15°C COPd - Bivalent temperature heating / Average Tbiv -7 °C heating / Average Tol -20 °C heating / Warmer Tbiv - °C heating / Average Tol -20 °C heating / Colder Toi -°C heating / Average Tol -°C -°C Cycling interval capacity for heating Pcycc - kW For cooling EERcyc - - Degradation coefficient cooling Cdc 0.25 - Degradation coefficient heating / Average Ohe 675 kWh/a Electric power input in power modes other than 'active mode' coling Oce 675 W/ha Attandby mode Psb 20 W heating / Average Ohe 675 kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) Global warming potential GWP Yes No Rated air flow(indoor) - 2160 m3/h Kred No No <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td>-</td> <td>1_</td>			-				-	1_
Bivalent temperature Provident temperature heating / Average Tbiv -7 °C heating / Warmer Tbiv -°C heating / Average Tol -20 °C heating / Colder Tbiv - °C heating / Warmer Tol - °C · °C Cycling interval capacity for cooling Pcycc - kW Cycling interval efficiency for cooling COPcyc - · - Degradation coefficient cooling Cdc 0.25 - Degradation coefficient heating / Average Cdh 0.25 - Electric power input in power modes other than 'active mode' Ow Poff 40 W No Sound power level(undoor) Lwa 65 dB(A) 1975 kgCo2ex fixed No No No No Sound power level(undoor) Lwa 65 dB(A) 1975 kgCo2ex fixed No No Sound power level(undoor) Lwa 65 dB(A) <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1_</td>								1_
heating / Average Tbiv -7 °C heating / Average Tol -20 °C heating / Varmer Tbiv - °C heating / Warmer Tol - °C heating / Colder - °C heating / Colder - °C	1) 100	1 dif	_		1) 100	001 0	_	
heating / Average Tbiv -7 °C heating / Average Tol -20 °C heating / Varmer Tbiv - °C heating / Warmer Tol - °C heating / Colder - °C heating / Colder - °C	Bivalent temperature				Operating limit temperature			
heating / Warmer Tbiv - °C heating / Warmer Tol - °C heating / Colder Tbiv - °C heating / Warmer Tol - °C Cycling interval capacity for cooling Pcycc - kW For cooling EERcyc - - Degradation coefficient cooling Pcych - kW For heating COPcyc -		Tbiv	-7	°C		Tol	-20	°℃
heating / Colder Tol - °C Cycling interval capacity for cooling for heating Pcycc - kW Degradation coefficient cooling Pcych - kW Degradation coefficient cooling Cdc 0.25 Degradation coefficient cooling Cdc 0.25 Electric power input in power modes other than 'active mode' off mode Poff 40 Mthermostat-off mode Poff 40 Pto 65 W heating / Average Annual electricity consumption cooling Qce 675 kWh/a 65 W heating / Average heating / Colder Ohe 4441 kWh/a heating / Colder Che crankcase heater mode Pck 25 W fixed No Sound power level(indoor) Lwa Global warming potential GWP 1975 kgCo2ec staged No Rated air flow(outdoor) - 6000 m3/h Global warming potential GWP 1975 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer o								
Cycling interval capacity for cooling Pcycc - kW Cycling interval efficiency for cooling EERcyc -	0						-	
for cooling for heating Pcycc - kW for cooling for heating EERcyc - - Degradation coefficient cooling Cdc 0.25 - Degradation coefficient heating -			1	1-			1	1 -
for cooling for heating Pcycc - kW for cooling for heating EERcyc - - Degradation coefficient cooling Cdc 0.25 - Degradation coefficient heating -	Cycling interval capacity				Cycling interval efficiency			
for heating Pcych - kW for heating COPcyc - Degradation coefficient cooling Cdc 0.25 - Degradation coefficient heating Cdh 0.25 - Electric power input in power modes other than 'active mode' off mode Poff 40 W Annual electricity consumption cooling Qce 675 kWh/a standby mode Psb 20 W heating / Average Qhe 4441 kWh/a thermostat-off mode Pto 65 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Global warming potential GWP 1975 kgCO2ec staged No Rated air flow(indoor) - 2160 m3/h Variable Yes Name and address of the manufacturer or of its authorised representative. 6000 m3/h MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION		Pcvcc	-	kW		EERcvc	-	7-
Degradation coefficient cooling Cdc 0.25 Degradation coefficient cooling Cdc 0.25 Electric power input in power modes other than 'active mode' off mode Poff 40 W standby mode Psb 20 W Pasting / Average Qce 675 kWh/a standby mode Psb 20 W Poff 40 W Poff 4441 kWh/a thermostat-off mode Pto 65 W Pote - kWh/a crankcase heater mode Pck 25 W Poter items Sound power level(indoor) Lwa 65 dB(A) Global warming potential GWP 1975 kgCO2ec Rated air flow(indoor) Lwa 65 dB(A) global warming potential GWP - 2160 m3/h variable No Rated air flow(indoor) - 2160 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. AIR-CONDITIONING DIVISION	5		-	kW			-	1-
cooling Cdc 0.25 heating Cdh 0.25 - Electric power input in power modes other than 'active mode' Annual electricity consumption Coling Qce 675 kWh/a standby mode Psb 20 W heating / Average Qhe 4441 kWh/a thermostat-off mode Pto 65 W heating / Colder Qhe - kWh/a crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) Sound power level(outdoor) Lwa 65 dB(A) Global warming potential GWP 1975 kgCO2ec fixed No Sound power level(outdoor) Lwa 65 dB(A) Global warming potential GWP 1975 kgCO2ec m3/h rated air flow(indoor) - 6000 m3/h m3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. 6000 m3/h <tr< td=""><td></td><td>,</td><td></td><td></td><td>5</td><td>,</td><td></td><td></td></tr<>		,			5	,		
cooling Cdc 0.25 heating Cdh 0.25 - Electric power input in power modes other than 'active mode' Annual electricity consumption Coling Qce 675 kWh/a standby mode Psb 20 W heating / Average Qhe 4441 kWh/a thermostat-off mode Pto 65 W heating / Colder Qhe - kWh/a crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) Sound power level(outdoor) Lwa 65 dB(A) Global warming potential GWP 1975 kgCO2ec fixed No Sound power level(outdoor) Lwa 65 dB(A) Global warming potential GWP 1975 kgCO2ec m3/h rated air flow(indoor) - 6000 m3/h m3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. 6000 m3/h <tr< td=""><td>Degradation coefficient</td><td></td><td></td><td></td><td>Degradation coefficient</td><td></td><td></td><td></td></tr<>	Degradation coefficient				Degradation coefficient			
off mode Poff 40 W cooling Qce 675 kWh/a standby mode Psb 20 W heating / Average Qhe 4441 kWh/a thermostat-off mode Pto 65 W heating / Average Qhe - kWh/a crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Other items Sound power level(outdoor) Lwa 70 dB(A) staged No Rated air flow(indoor) - 2160 m3/h variable Yes Yes 6000 m3/h 3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION KM AIR-CONDITIONING DIVISION		Cdc	0.25	7-		Cdh	0.25	7-
off mode Poff 40 W cooling Qce 675 kWh/a standby mode Psb 20 W heating / Average Qhe 4441 kWh/a thermostat-off mode Pto 65 W heating / Average Qhe - kWh/a crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Other items Sound power level(outdoor) Lwa 70 dB(A) staged No Rated air flow(indoor) - 2160 m3/h variable Yes Yes 6000 m3/h 3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION KM AIR-CONDITIONING DIVISION								
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thermostat-off mode crankcase heater mode Pto 65 W heating / Warmer heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Other items Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Other items Sound power level(outdoor) Lwa 70 dB(A) global warming potential GWP 1975 kgCO2ec Rated air flow(indoor) - 2160 m3/h variable Yes Name and address of the manufacturer or of its authorised representative. 6000 m3/h MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION LTD. AIR-CONDITIONING DIVISION	off mode	Poff	40	W	cooling	Qce	675	kWh/a
crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Global warming potential GWP 1975 kgCO2ec staged No Rated air flow(indoor) - 2160 m3/h Variable Yes Rated air flow(outdoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD.	standby mode	Psb	20	W	heating / Average	Qhe	4441	kWh/a
crankcase heater mode Pck 25 W heating / colder Qhe - kWh/a Capacity control(indicate one of three options) Other items Other items Sound power level(indoor) Lwa 65 dB(A) fixed No Global warming potential GWP 1975 kgCO2ec staged No Rated air flow(indoor) - 2160 m3/h Variable Yes Rated air flow(outdoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD.								
Capacity control(indicate one of three options) Other items Capacity control(indicate one of three options) Other items Sound power level(indoor) Lwa Sound power level(outdoor) Lwa Fixed No staged No variable Yes Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION								
fixed No Sound power level(indoor) Lwa 65 dB(A) fixed No Global warming potential GWP 1975 kgCO2ec staged No Rated air flow(indoor) - 2160 m3/h variable Yes Atted air flow(outdoor) - 6000 m3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION								
fixed No Sound power level(indoor) Lwa 65 dB(A) fixed No Global warming potential GWP 1975 kgCO2ec staged No Rated air flow(indoor) - 2160 m3/h variable Yes Atted air flow(outdoor) - 6000 m3/h Contact details for obtaining Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION	Capacity control(indicate one of thr	ee options)			Other items			
No Global warming potential GWP 1975 kgCO2ed staged variable No - 2160 m3/h Variable Yes Rated air flow(indoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION		. ,			Sound power level(indoor)	Lwa	65	dB(A)
No Global warming potential GWP 1975 kgCO2ed staged variable No - 2160 m3/h Variable Yes Rated air flow(indoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION					,	Lwa	70	
No Rated air flow(indoor) - 2160 m3/h variable Yes Rated air flow(outdoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION	fixed	No						kgCO2eq.
Variable Yes Rated air flow(outdoor) - 6000 m3/h Contact details for obtaining more information Name and address of the manufacturer or of its authorised representative. MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION AIR-CONDITIONING DIVISION						-		· ·
Contact details for obtaining Name and address of the manufacturer or of its authorised representative. more information MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION	-					-		
more information MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION								
more information MITSUBISHI HEAVY INDUSTRIES EUROPE, LTD. AIR-CONDITIONING DIVISION	Contact details for obtaining	Name an	d address	of the man	ufacturer or of its authorised represen	tative.		
AIR-CONDITIONING DIVISION								
4th Floor International Buildings 71 Kingsway, London, WC2B 6ST United Kingdom								
	4th	Floor Internatior	nal Building	gs 71 Kings	sway, London, WC2B 6ST United King	dom		

Information to identify the model(s			elates to:	If function includes heating: Indicate			
Indoor unit model name	FDU100V			information relates to. Indicated values should relate to one			
Outdoor unit model name FDC100VN				heating season at a time. Include at least the heating season 'Average'.			
Function(indicate if present)	Vee			Average(mandatory)	Yes		
cooling	Yes			Warmer(if designated)	No		
heating	Yes			Colder(if designated)	No		
Item	symbol	value	unit	Item	symbol	value	class
Item Design load	Symbol	value	unit	Seasonal efficiency and energy efficiency		value	01055
cooling	Pdesignc	10.0	kW	cooling	SEER	5.06	В
heating / Average	Pdesignh		kW	heating / Average	SCOP/A	3.94	Ā
heating / Warmer	Pdesignh		kW	heating / Warmer	SCOP/W		-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-
	1 designin	_		ricating / colder	000170	_	unit
Declared capacity at outdoor temp	erature Tdesignh	ı		Back up heating capacity at outdoor	r temperature T	designh	unit
heating / Average (-10°C)	Pdh	7.86	kW	heating / Average (-10°C)	elbu	1.44	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
					0.04		
Declared capacity for cooling, at ir	door temperatur	e 27(19)°C	C and	Declared energy efficiency ratio, at i	indoor tempera	ture 27(19)°C and
outdoor temperature Tj		: (::) :		outdoor temperature Tj			,
Tj=35°C	Pdc	10.00	kW	Ti=35℃	EERd	3.57	7-
Tj=30°C	Pdc	7.37	kW	Tj=30°C	EERd	4.40	1_
Tj=25℃	Pdc	4.74	kW	Tj=25℃	EERd	7.07	1_
Tj=20°C	Pdc	4.58	kW	Tj=20°C	EERd	10.11	-
Declared capacity for heating / Av	erage season, at	indoor		Declared coefficient of performance	/ Average sea	son, at ind	oor
temperature 20°C and outdoor ten		'		temperature 20°C and outdoor temp		,	
Tj=-7℃	Pdh	8.23	kW	Tj=-7°C	COPd	2.68	-
Tj=2°C	Pdh	5.00	kW	Tj=2°C	COPd	3.70	-
Tj=7°C	Pdh	3.22	kW	Tj=7°C	COPd	5.45	-
Tj=12°C	Pdh	3.70	kW	Tj=12°C	COPd	6.64	-
Tj=bivalent temperature	Pdh	8.23	kW	Tj=bivalent temperature	COPd	2.68	-
Tj=operating limit	Pdh	6.64	kW	Tj=operating limit	COPd	2.17	-
Declared capacity for heating / Wa	armer season, at	indoor		Declared coefficient of performance	/ Warmer seas	son, at indo	oor
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp			
Tj=2°C	Pdh	-	kW	Tj=2℃	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	-	-
Declared capacity for heating / Co	lder season, at ir	ndoor		Declared coefficient of performance	/ Colder seaso	on, at indoc	or
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp	perature Tj		
Tj=-7°C	Pdh	-	kW	Tj=-7°C	COPd	-	7-
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	7-
Tj=7°C	Pdh	-	kW	Tj=7°C	COPd	-	-
Tj=12°C	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	7-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	1-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-
			-				
Bivalent temperature			_	Operating limit temperature			_
heating / Average	Tbiv	-7	°C	heating / Average	Tol	-20	°C
heating / Warmer	Tbiv	-	°C	heating / Warmer	Tol	-	°C
heating / Colder	Tbiv	-	°C	heating / Colder	Tol	-	°C
Cycling interval capacity			-	Cycling interval efficiency			-
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-
Degradation coefficient	<u>.</u>		7	Degradation coefficient	o "		-
cooling	Cdc	0.25	-	heating	Cdh	0.25	-
Electric power input in power mod				Annual electricity consumption	0	000	
off mode	Poff	20	W	cooling	Qce	692	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	3303	kWh/a
thermostat-off mode	Pto	45	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a
				Others iterate			
Capacity control(indicate one of th	ree options)			Other items Sound power level(indoor)	Lwo	65	
				,	Lwa	65	dB(A)
fixed				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 m3/h
variable	Yes			Rated air flow(outdoor)	-	4500	m3/h
Contact datails for obtaining	Nomer	d address	of the mar	utacturar or of its sutharized reserves	tativo		
Contact details for obtaining more information MI	Name and TSUBISHI HEAV			ufacturer or of its authorised represen	lalive.		
	R-CONDITIONIN						
				way, London, WC2B 6ST United King	mobr		
40	. 1001 11101101		as i i ninga				

Information to identify the model(s			elates to:	If function includes heating: Indicate			
Indoor unit model name	FDU100\			information relates to. Indicated values should relate to one			
Outdoor unit model name FDC100VS				heating season at a time. Include at	t least the heati	ng season	'Average'.
					×		
Function(indicate if present)	No.			Average(mandatory)	Yes		
cooling	Yes			Warmer(if designated)	No		
heating	Yes			Colder(if designated)	No		
Item	symbol	value	unit	Item	symbol	value	class
Item Design load	Symbol	value	unit	Seasonal efficiency and energy efficiency		value	61055
cooling	Pdesignc	10.0	kW	cooling	SEER	5.03	В
heating / Average	Pdesignh		kW	heating / Average	SCOP/A	3.94	A
heating / Warmer	Pdesignh		kW	heating / Warmer	SCOP/W		-
heating / Colder	Pdesignh		kW	heating / Colder	SCOP/C	-	-
	i desigini	_		fielding / colder	000170	_	unit
Declared capacity at outdoor temp	erature Tdesign	า		Back up heating capacity at outdoor	r temperature T	designh	unit
heating / Average (-10°C)	Pdh	7.86	kW	heating / Average (-10°C)	elbu	1.44	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
					0.00		
Declared capacity for cooling, at ir	door temperatur	e 27(19)°0	C and	Declared energy efficiency ratio, at	indoor tempera	ture 27(19)°C and
outdoor temperature Tj		0 ()	ana	outdoor temperature Tj	indeen tempera		, e ana
Tj=35℃	Pdc	10.00	kW	Ti=35℃	EERd	3.57	7-
Tj=30°C	Pdc	7.37	kW	Tj=30°C	EERd	4.40	1_
Tj=25℃	Pdc	4.74	kW	Tj=25℃	EERd	7.07	1_
Tj=20°C	Pdc	4.58	kW	Tj=20°C	EERd	10.11	-
	*		•				1
Declared capacity for heating / Av	erage season, at	indoor		Declared coefficient of performance	/ Average sea	son, at ind	oor
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp		, .	
Tj=-7℃	Pdh	8.23	kW	Tj=-7°C	COPd	2.68	7-
Tj=2°C	Pdh	5.00	kW	Tj=2°C	COPd	3.70	7-
Tj=7°C	Pdh	3.22	kW	Tj=7°C	COPd	5.45	1-
Tj=12°C	Pdh	3.70	kW	Tj=12°C	COPd	6.64	7-
Tj=bivalent temperature	Pdh	8.23	kW	Tj=bivalent temperature	COPd	2.68	-
Tj=operating limit	Pdh	6.64	kW	Tj=operating limit	COPd	2.17	1-
Declared capacity for heating / Wa	irmer season, at	indoor		Declared coefficient of performance	/ Warmer seas	son, at inde	oor
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp			
Tj=2℃	Pdh	-	kW	Tj=2°C	COPd	-	7-
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	-	-
Declared capacity for heating / Co	lder season, at ir	ndoor		Declared coefficient of performance	/ Colder seaso	on, at indoo	or
temperature 20°C and outdoor ten				temperature 20°C and outdoor temp	perature Tj		
Tj=-7°C	Pdh	-	kW	Tj=-7°C	COPd	-	7-
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	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-]-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	1-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-
Bivalent temperature			_	Operating limit temperature			
heating / Average	Tbiv	-7	°C	heating / Average	Tol	-20	°C
heating / Warmer	Tbiv	-	°C	heating / Warmer	Tol	-	°C
heating / Colder	Tbiv	-	°C	heating / Colder	Tol	-	°C
Cycling interval capacity		·	-	Cycling interval efficiency			-
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-
Degradation coefficient	<u>.</u>		-	Degradation coefficient	0.11		-
cooling	Cdc	0.25	-	heating	Cdh	0.25	-
Electric power input in power mod				Annual electricity consumption	0	000	
off mode	Poff	40	W	cooling	Qce	696	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	3307	kWh/a
thermostat-off mode	Pto	65	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a
				Othern items			
Capacity control(indicate one of th	ree options)			Other items Sound power level(indoor)	Lwo	65	
					Lwa	65	dB(A)
for a d	N			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 datails for obtaining	Nomer	d addraa-	of the mer-	utacturar or of its sutherized terms	tativo		
Contact details for obtaining more information MI	Name an SUBISHI HEAV			ufacturer or of its authorised represen	nalive.		
	R-CONDITIONIN						
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INVERTER DUCT CONNECTED-HIGH STATIC PRESSURE TYPE AIR-CONDITIONERS



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