MITSUBISHI ELECTRIC

SPLIT-TYPE, AIR TO WATER HEAT PUMP

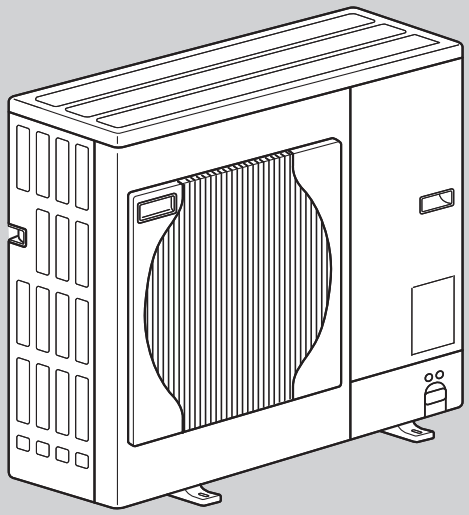
September 2020

No. OCH755

SERVICE MANUAL R410A

Outdoor unit [Model Name]	[Service ref.]
PUHZ-SW75VHA	PUHZ-SW75VHAR6
PUHZ-SW100VHA	PUHZ-SW100VHAR6
PUHZ-SW120VHA	PUHZ-SW120VHAR6
PUHZ-SW100YHA	PUHZ-SW100YHAR6
PUHZ-SW120YHA	PUHZ-SW120YHAR6

Note:
- This manual describes service data of the outdoor units only.



PUHZ-SW75VHAR6

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PARTS CATALOG (OCB755)

1 REFERENCE MANUAL

INDOOR UNIT SERVICE MANUAL

Model name		Service ref.		Service manual No.
EHST20C-VM6HB EHST20C-YM9HB EHST20C-TM9HB EHST20C-VM2B	EHST20C-VM6B EHST20C-YM9B EHST20C-VM6EB EHST20C-YM9EB EHST20C-VM6SB	EHST20C-VM6HB.UK EHST20C-YM9HB.UK EHST20C-TM9HB.UK EHST20C-VM2B.UK	EHST20C-VM6B.UK EHST20C-YM9B.UK EHST20C-VM6EB.UK EHST20C-YM9EB.UK EHST20C-VM6SB.UK	OCH531/OCB531
EHSC-VM2B EHSC-VM6B EHSC-YM9B EHSC-TM9B	EHSC-VM6EB EHSC-YM9EB ERSC-VM2B	EHSC-VM2B.UK EHSC-VM6B.UK EHSC-YM9B.UK EHSC-TM9B.UK	EHSC-VM6EB.UK EHSC-YM9EB.UK ERSC-VM2B.UK	OCH532/OCB532
EHST20C-VM2C EHST20C-VM6C EHST20C-YM9C EHST20C-TM9C EHST20C-VM2EC EHST20C-VM6EC EHST20C-YM9EC EHST20C-MHCW EHST20C-MEC ERST20C-VM2C ERST20C-MEC	EHST20D-VM2C EHST20D-VM2EC EHST20D-YM9C EHST20D-MHCW EHST20D-MEC EHST20D-MHC ERST20D-VM2C ERST20D-MEC	EHST20C-VM2C(R2).UK EHST20C-VM6C(R2).UK EHST20C-YM9C(R2).UK EHST20C-TM9C(R2).UK EHST20C-VM2EC(R2).UK EHST20C-VM6EC(R2).UK EHST20C-YM9EC(R2).UK EHST20C-MHCW(R2).UK EHST20C-MEC(R2).UK ERST20C-VM2C(R2).UK ERST20C-MEC(R2).UK	EHST20D-VM2C(R2).UK EHST20D-VM2EC(R2).UK EHST20D-YM9C(R2).UK EHST20D-MHCW(R2).UK EHST20D-MEC(R2).UK EHST20D-MHC(R2).UK ERST20D-VM2C(R2).UK ERST20D-MEC(R2).UK	OCH570/OCB570
EHSC-MEC EHSC-VM2C EHSC-VM2EC EHSC-VM6C EHSC-VM6EC EHSC-YM9C EHSC-YM9EC EHSC-TM9C ERSC-MEC ERSC-VM2C	EHSD-MC EHSD-MEC EHSD-VM2C EHSD-YM9C ERSD-VM2C	EHSC-MEC(R2).UK EHSC-VM2C(R2).UK EHSC-VM2EC(R2).UK EHSC-VM6C(R2).UK EHSC-VM6EC(R2).UK EHSC-YM9C(R2).UK EHSC-YM9EC(R2).UK EHSC-TM9C(R2).UK ERSC-MEC(R2).UK ERSC-VM2C(R2).UK	EHSD-MC(R1/R2).UK EHSD-MEC(R2).UK EHSD-VM2C(R2).UK EHSD-YM9C(R2).UK ERSD-VM2C(R2).UK	OCH571/OCB571
EHSC-MED EHSC-VM2D EHSC-VM6D EHSC-YM9D EHSC-YM9ED EHSC-TM9D	ERSC-MED ERSC-VM2D ERSC-VM6D ERSC-YM9D	EHSC-MED.UK EHSC-VM2D.UK EHSC-VM6D.UK EHSC-YM9D.UK EHSC-YM9ED.UK EHSC-TM9D.UK	ERSC-MED.UK ERSC-VM2D.UK ERSC-VM6D.UK ERSC-YM9D.UK	OCH712/OCB712
EHST20C-MED EHST20C-VM2D EHST20C-VM6D EHST20C-YM9D EHST20C-YM9ED EHST20C-TM9D ERST20C-VM2D ERST20C-VM6D ERST20C-YM9D	EHST30C-MED EHST30C-VM6ED EHST30C-YM9ED EHST30C-TM9ED ERST30C-VM2ED ERST30C-VM6ED ERST30C-YM9ED	EHST20C-MED(R1).UK EHST20C-VM2D(R1).UK EHST20C-VM6D(R1).UK EHST20C-YM9D(R1).UK EHST20C-YM9ED(R1).UK EHST20C-TM9D(R1).UK ERST20C-VM2D(R1).UK ERST20C-VM6DR1.UK ERST20C-YM9DR1.UK	EHST30C-MED(R1).UK EHST30C-VM6ED(R1).UK EHST30C-YM9ED(R1).UK EHST30C-TM9ED(R1).UK ERST30C-VM2ED(R1).UK ERST30C-VM6EDR1.UK ERST30C-YM9EDR1.UK	OCH714/OCB714

2 SAFETY PRECAUTION

2-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuits must be disconnected.

Preparation before the repair service.

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air conditioner, turn off the power-supply breaker.
- Discharge the condenser before the work involving the electric parts.

Precautions during the repair service.

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigerating cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.

2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R410A

Use new refrigerant pipes.

In the case of using the existing pipes for R22, be careful with the following:
· Be sure to perform replacement operation before test run.
· Change flare nut to the one provided with this product. Use a newly flared pipe.
· Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc.
In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil, etc.

Store the piping indoors, and both ends of the piping sealed until just before brazing.
(Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use ester oil, ether oil or alkylbenzene oil (small amount) as the refrigerant oil applied to flares and flange connections.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil, etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

Do not use refrigerant other than R410A.

If other refrigerant (R22, etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil, etc.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil, etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Use the specified refrigerant only.

Never use any refrigerant other than that specified.
Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.
Correct refrigerant is specified in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

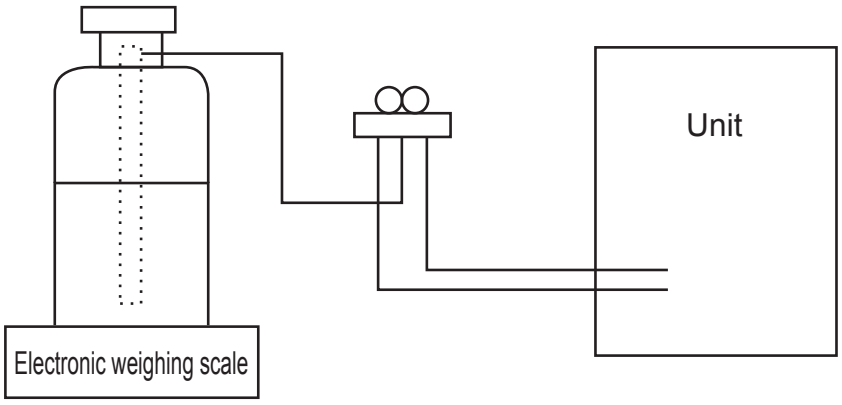
[1] Cautions for service

(1) Perform service after recovering the refrigerant left in unit completely.
(2) Do not release refrigerant in the air.
(3) After completing service, charge the cycle with specified amount of refrigerant.
(4) If moisture or foreign matter might have entered the refrigerant piping during service, ensure to remove them.

[2] Additional refrigerant charge

When charging directly from cylinder

(1) Check that cylinder for R410A on the market is a syphon type.
(2) Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



[3] Service tools

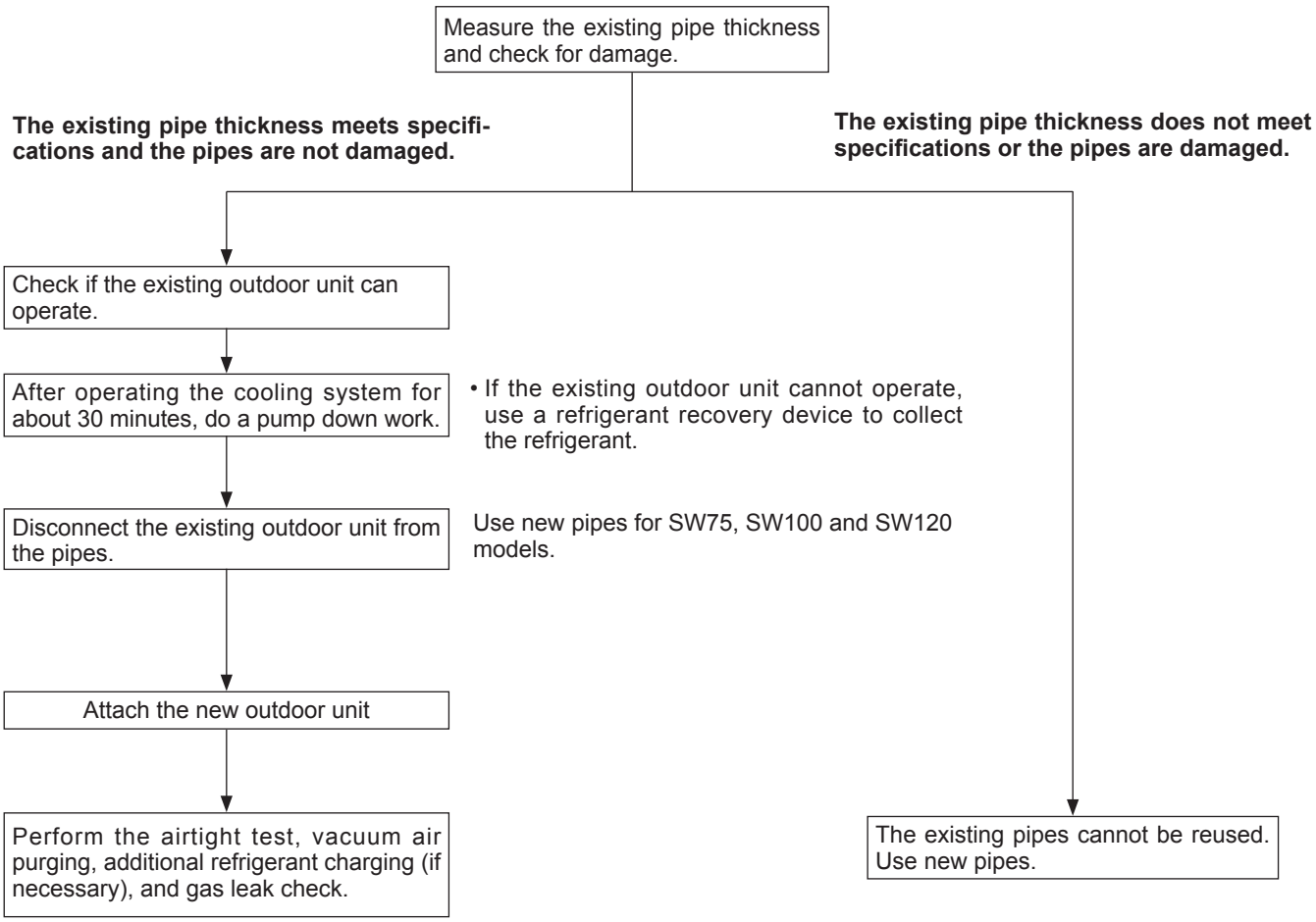
Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R410A
		· Use the existing fitting specifications. (UNF1/2)
		· Use high-tension side pressure of 5.3 MPa·G or over.
②	Charge hose	· Only for R410A
		· Use pressure performance of 5.09 MPa·G or over.
③	Electronic weighing scale	—
④	Gas leak detector	· Use the detector for R134a, R407C or R410A.
⑤	Adaptor for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· Only for R410A · Top of cylinder (Pink) · Cylinder with syphon
⑧	Refrigerant recovery equipment	—

2-3. PRECAUTIONS WHEN REUSING EXISTING R22 REFRIGERANT PIPES

Flowchart

• Refer to the flowchart below to determine if the existing pipes can be used and if it is necessary to use a filter dryer.
• If the diameter of the existing pipes is different from the specified diameter, refer to technical data materials to confirm if the pipes can be used.



Cautions for refrigerant piping work

New refrigerant R410A is adopted for replacement inverter series. Although the refrigerant piping work for R410A is same as for R22, exclusive tools are necessary so as not to mix with different kind of refrigerant. Furthermore as the working pressure of R410A is 1.6 times higher than that of R22, their sizes of flared sections and flare nuts are different.

① Thickness of pipes

Because the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 0.7mm or below.)

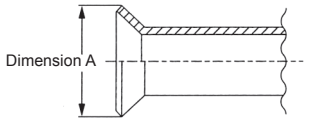
Diagram below: Piping diameter and thickness

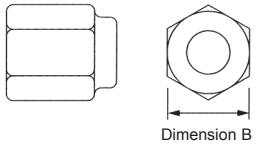
Nominal dimensions(inch)	Outside diameter (mm)	Thickness (mm)	
		R410A	R22
1/4	6.35	0.8	0.8
3/8	9.52	0.8	0.8
1/2	12.70	0.8	0.8
5/8	15.88	1.0	1.0
3/4	19.05	—	1.0

② Dimensions of flare cutting and flare nut

The component molecules in HFC refrigerant are smaller compared to conventional refrigerants. In addition to that, R410A is a refrigerant, which has higher risk of leakage because its working pressure is higher than that of other refrigerants. Therefore, to enhance airtightness and strength, flare cutting dimension of copper pipe for R410A has been specified separately from the dimensions for other refrigerants as shown below. The dimension B of flare nut for R410A also has partly been changed to increase strength as shown below. Set copper pipe correctly referring to copper pipe flaring dimensions for R410A below. For 1/2 and 5/8 inch pipes, the dimension B changes.

Use torque wrench corresponding to each dimension.





Flare cutting dimensions (mm)

Nominal dimensions(inch)	Outside diameter	Dimension A ($^{+0}_{-0.4}$)	
		R410A	R22
1/4	6.35	9.1	9.0
3/8	9.52	13.2	13.0
1/2	12.70	16.6	16.2
5/8	15.88	19.7	19.4
3/4	19.05	—	23.3

Flare nut dimensions (mm)

Nominal dimensions(inch)	Outside diameter	Dimension B	
		R410A	R22
1/4	6.35	17.0	17.0
3/8	9.52	22.0	22.0
1/2	12.70	26.0	24.0
5/8	15.88	29.0	27.0
3/4	19.05	—	36.0

③ Tools for R410A (The following table shows whether conventional tools can be used or not.)

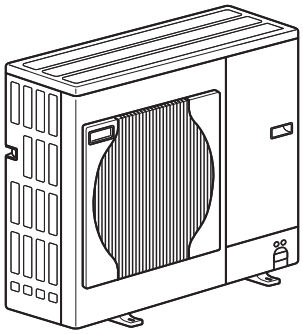
Tools and materials	Use	R410A tools	Can R22 tools be used?	Can R407C tools be used?
Gauge manifold	Air purge, refrigerant charge and operation check	Tool exclusive for R410A	×	×
Charge hose		Tool exclusive for R410A	×	×
Gas leak detector	Gas leak check	Tool for HFC refrigerant	×	○
Refrigerant recovery equipment	Refrigerant recovery	Tool exclusive for R410A	×	×
Refrigerant cylinder	Refrigerant charge	Tool exclusive for R410A	×	×
Applied oil	Apply to flared section	Ester oil and alkylbenzene oil (minimum amount)	×	Ester oil: ○ Alkylbenzene oil: minimum amount
Safety charger	Prevent compressor malfunction when charging refrigerant by spraying liquid refrigerant	Tool exclusive for R410A	×	×
Charge valve	Prevent gas from blowing out when detaching charge hose	Tool exclusive for R410A	×	×
Vacuum pump	Vacuum drying and air purge	Tools for other refrigerants can be used if equipped with adapter for reverse flow check	△ (Usable if equipped with adapter for reverse flow)	△ (Usable if equipped with adapter for reverse flow)
Flare tool	Flaring work of piping	Tools for other refrigerants can be used by adjusting flaring dimension	△ (Usable by adjusting flaring dimension)	△ (Usable by adjusting flaring dimension)
Bender	Bend the pipes	Tools for other refrigerants can be used	○	○
Pipe cutter	Cut the pipes	Tools for other refrigerants can be used	○	○
Welder and nitrogen gas cylinder	Weld the pipes	Tools for other refrigerants can be used	○	○
Refrigerant charging scale	Refrigerant charge	Tools for other refrigerants can be used	○	○
Vacuum gauge or thermistor vacuum gauge and vacuum valve	Check the degree of vacuum. (Vacuum valve prevents back flow of oil and refrigerant to thermistor vacuum gauge)	Tools for other refrigerants can be used	○	○
Charging cylinder	Refrigerant charge	Tool exclusive for R410A	×	—

× : Prepare a new tool. (Use the new tool as the tool exclusive for R410A.)

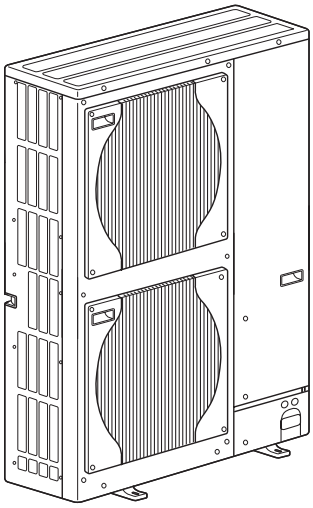
△ : Tools for other refrigerants can be used under certain conditions.

○ : Tools for other refrigerants can be used.

3 FEATURES



PUHZ-SW75VHA



PUHZ-SW100VHA
PUHZ-SW100YHA
PUHZ-SW120VHA
PUHZ-SW120YHA

CHARGELESS SYSTEM
PRE-CHARGED REFRIGERANT IS SUPPLIED FOR PIPING LENGTH AT SHIPMENT.
(Maximum 10 m (PUHZ-SW75–120))

The refrigerant circuit with LEV (Linear Expansion Valve) and accumulator always control the optimal refrigerant level regardless of the length (10 m maximum and 5 m minimum) of piping. The additional refrigerant charging work during installation often causes problems. Heretofore it is completely eliminated. This unique system improves the quality and reliability of the work done. It also helps to speed up the installation time.

4 SPECIFICATIONS

<Reference data> Plate heat exchanger (ACH70-40 plates)

PUHZ-SW75VHAR6

Nominal water flow		L/min	22.9
Heating (A7/W35)	Capacity	kW	8.00
	COP		4.40
	Power input	kW	1.82
Heating (A7/W45)	Capacity	kW	8.00
	COP		3.40
	Power input	kW	2.35
Heating (A2/W35)	Capacity	kW	7.50
	COP		3.40
	Power input	kW	2.20
Heating (A2/W45)	Capacity	kW	7.50
	COP		2.83
	Power input	kW	2.65
Nominal water flow		L/min	18.9
Cooling (A35/W7)	Capacity	kW	6.60
	EER		2.82
	Power input	kW	2.34
Cooling (A35/W18)	Capacity	kW	7.10
	EER		4.43
	Power input	kW	1.60

PUHZ-SW120VHAR6 **PUHZ-SW120YHAR6**

Nominal water flow		L/min	45.9
Heating (A7/W35)	Capacity	kW	16.0
	COP		4.10
	Power input	kW	3.90
Heating (A7/W45)	Capacity	kW	16.0
	COP		3.23
	Power input	kW	4.95
Heating (A2/W35)	Capacity	kW	12.0
	COP		3.24
	Power input	kW	3.70
Heating (A2/W45)	Capacity	kW	12.0
	COP		2.52
	Power input	kW	4.76
Nominal water flow		L/min	35.8
Cooling (A35/W7)	Capacity	kW	12.5
	EER		2.32
	Power input	kW	5.39
Cooling (A35/W18)	Capacity	kW	14.0
	EER		4.08
	Power input	kW	3.43

PUHZ-SW100VHAR6 **PUHZ-SW100YHAR6**

Nominal water flow		L/min	32.1
Heating (A7/W35)	Capacity	kW	11.2
	COP		4.45
	Power input	kW	2.51
Heating (A7/W45)	Capacity	kW	11.2
	COP		3.42
	Power input	kW	3.27
Heating (A2/W35)	Capacity	kW	10.0
	COP		3.32
	Power input	kW	3.01
Heating (A2/W45)	Capacity	kW	10.0
	COP		2.66
	Power input	kW	3.76
Nominal water flow		L/min	26.1
Cooling (A35/W7)	Capacity	kW	9.10
	EER		2.75
	Power input	kW	3.31
Cooling (A35/W18)	Capacity	kW	10.0
	EER		4.35
	Power input	kW	2.30

Note: "COP" and "Power input" in the above table do **NOT** contain the "pump input (based on EN 14511)".

Rating conditions

Nominal operating condition	
Heating (A7/W35)	
Outside air temperature (Dry-bulb)	+ 7°C
Outside air temperature (Wet-bulb)	+ 6°C
Water temperature (inlet/outlet)	+ 30°C/+ 35°C
Heating (A7/W45)	
Outside air temperature (Dry-bulb)	+ 7°C
Outside air temperature (Wet-bulb)	+ 6°C
Water temperature (inlet/outlet)	+ 40°C/+ 45°C
Heating (A2/W35)	
Outside air temperature (Dry-bulb)	+ 2°C
Outside air temperature (Wet-bulb)	+ 1°C
Water temperature (inlet/outlet)	+ 30°C/+ 35°C
Heating (A2/W45)	
Outside air temperature (Dry-bulb)	+ 2°C
Outside air temperature (Wet-bulb)	+ 1°C
Water temperature (inlet/outlet)	+ 40°C/+ 45°C
Cooling (A35/W7)	
Outside air temperature (Dry-bulb)	+ 35°C
Outside air temperature (Wet-bulb)	+ 24°C
Water temperature (inlet/outlet)	+ 12°C/+ 7°C
Cooling (A35/W18)	
Outside air temperature (Dry-bulb)	+ 35°C
Outside air temperature (Wet-bulb)	+ 24°C
Water temperature (inlet/outlet)	+ 23°C/+ 18°C

Service Ref.				PUHZ-SW				
				75VHAR6	100VHAR6	120VHAR6	100YHAR6	120YHAR6
OUTDOOR UNIT	Power source (Phase, cycle, voltage)			Single 50 Hz, 230 V			3-Phase 50 Hz, 400 V	
		Max. current	A	17.0	29.5	29.5	13.0	13.0
	External finish			Munsell 3Y 7.8/1.1				
	Refrigerant control			Linear Expansion Valve				
	Compressor			Hermetic				
		Model		SNB220FAGMC-L1	ANB33FNEMT	ANB42FNEMT	ANB33FNDMT	ANB42FNDMT
		Motor output	kW	1.5	2.5	2.5	2.5	2.5
		Starter type		Inverter				
		Protection devices		HP switch Comp. surface thermo Discharge thermo Overcurrent detection	HP switch LP switch Comp. surface thermo Discharge thermo Over current detection			
	Crankcase heater		W	—				
	Heat exchanger			Plate fin coil				
	Fan	Fan (drive) × No.		Propeller fan x 1	Propeller fan x 2			
		Fan motor output	kW	0.074	0.074+0.074			
		Airflow	m³/min (CFM)	55 (1,940)	100 (3,353)			
	Defrost method			Reverse cycle				
	Noise level	Cooling	dB	48	50	51	50	51
		Heating	dB	51	54	54	54	54
	Dimensions	W	mm (in)	950 (37-13/32)				
		D	mm (in)	330+30 (13+1-3/16)				
		H	mm (in)	943 (37-1/8)	1,350 (53-1/8)			
	Weight		kg (lb)	75 (166)	118 (261)		130(287)	
	Refrigerant			R410A				
		Quantity chargeless	kg (lb)	3.2 (7.0)	4.6 (10.1)			
		Oil (Model)	L	0.60 (FV50S)	1.40 (FV50S)			
Refrigerant piping	Pipe size OD	Liquid	mm (in)	9.52 (3/8)				
		Gas	mm (in)	15.88 (5/8)				
	Connection method	Indoor side		Flared				
		Outdoor side		Flared				
	Between the indoor & outdoor	Height difference		Maximum 30 m				
		Piping length		2 to 40 m	2 to 75 m			

5 DATA

5-1. REFILLING REFRIGERANT CHARGE (R410A : kg)

Service Ref.	Piping length (one way)							Initial charge
	10 m	20 m	30 m	40 m	50 m	60 m	75 m	
PUHZ-SW75VHAR6	3.2	3.35	3.5	4.1	—	—	—	3.2
PUHZ-SW100V/YHAR6	4.6	4.8	5.0	5.6	6.2	6.8	7.5	4.6
PUHZ-SW120V/YHAR6	4.6	4.8	5.0	5.6	6.2	6.8	7.5	4.6

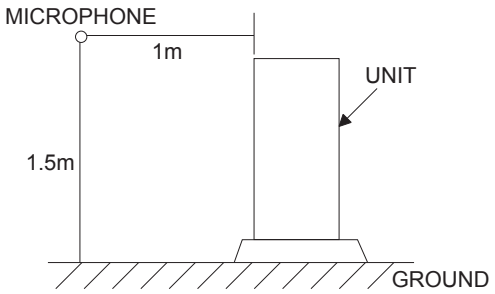
Additional charge is required for pipes longer than 10 m.

5-2. COMPRESSOR TECHNICAL DATA

(Winding temperature at 20°C)

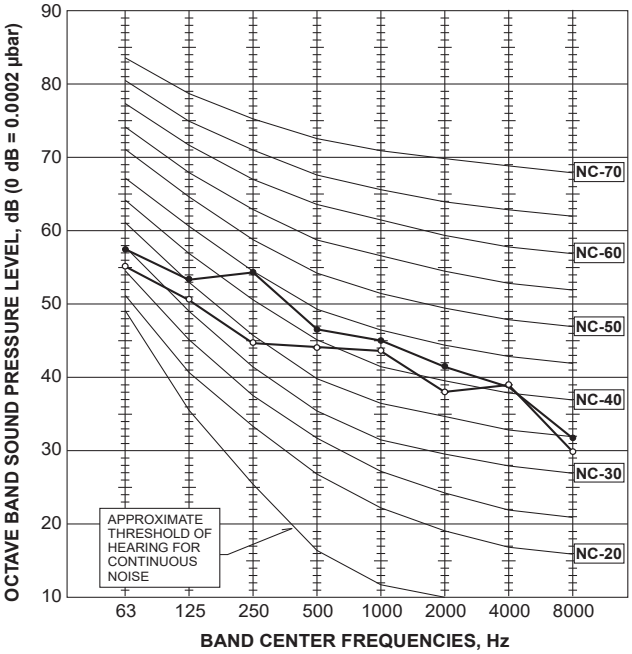
Service Ref.		PUHZ-SW75VHAR6	PUHZ-SW100VHAR6	PUHZ-SW120VHAR6	PUHZ-SW100YHAR6	PUHZ-SW120YHAR6
Compressor model		SNB220FAGMC-L1	ANB33FNEMT	ANB42FNEMT	ANB33FNDMT	ANB42FNDMT
Winding Resistance (Ω)	U-V	0.95	0.19		0.30	
	U-W	0.95	0.19		0.30	
	W-V	0.95	0.19		0.30	

5-3. NOISE CRITERION CURVES



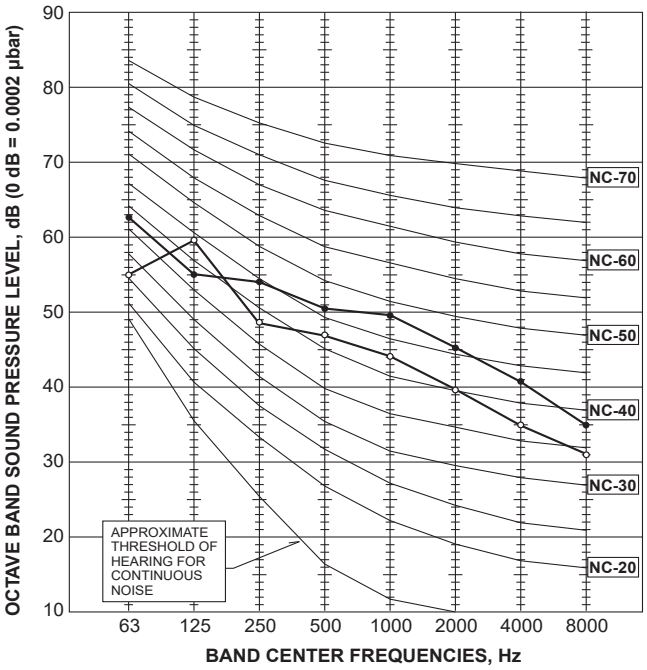
PUHZ-SW75VHAR6

MODE	SPL(dB)	LINE
COOLING	48	○—○
HEATING	51	●—●



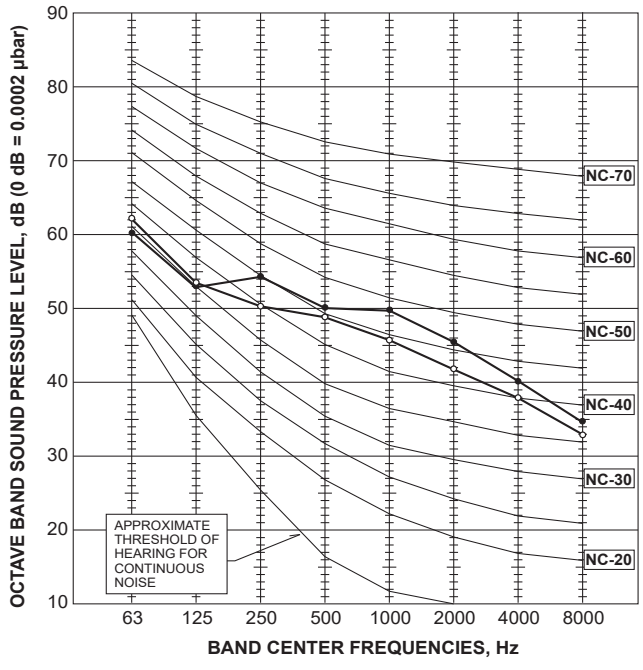
PUHZ-SW100VHAR6
PUHZ-SW100YHAR6

MODE	SPL(dB)	LINE
COOLING	50	○—○
HEATING	54	●—●



PUHZ-SW120VHAR6
PUHZ-SW120YHAR6

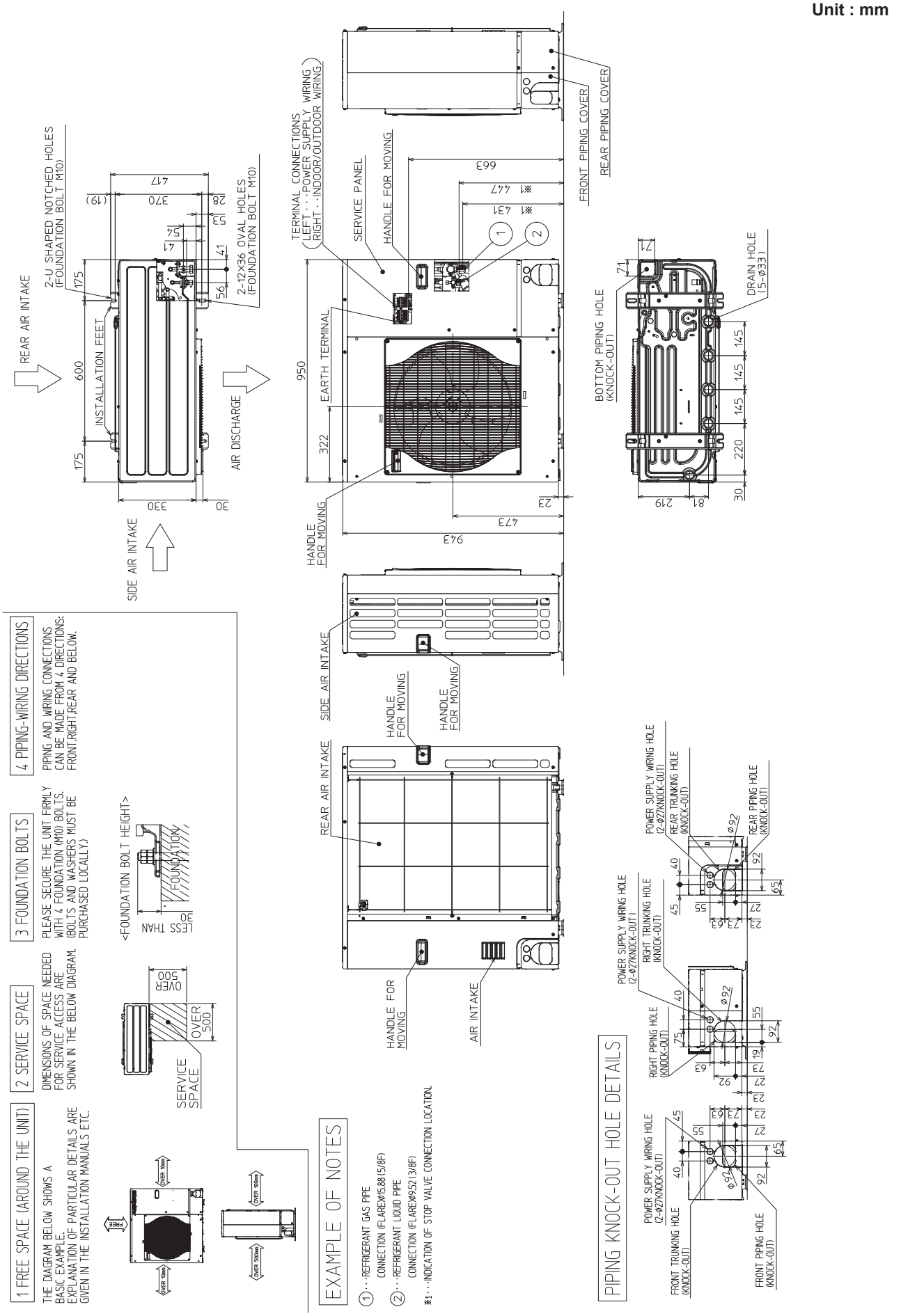
MODE	SPL(dB)	LINE
COOLING	51	○—○
HEATING	54	●—●



6 OUTLINES AND DIMENSIONS

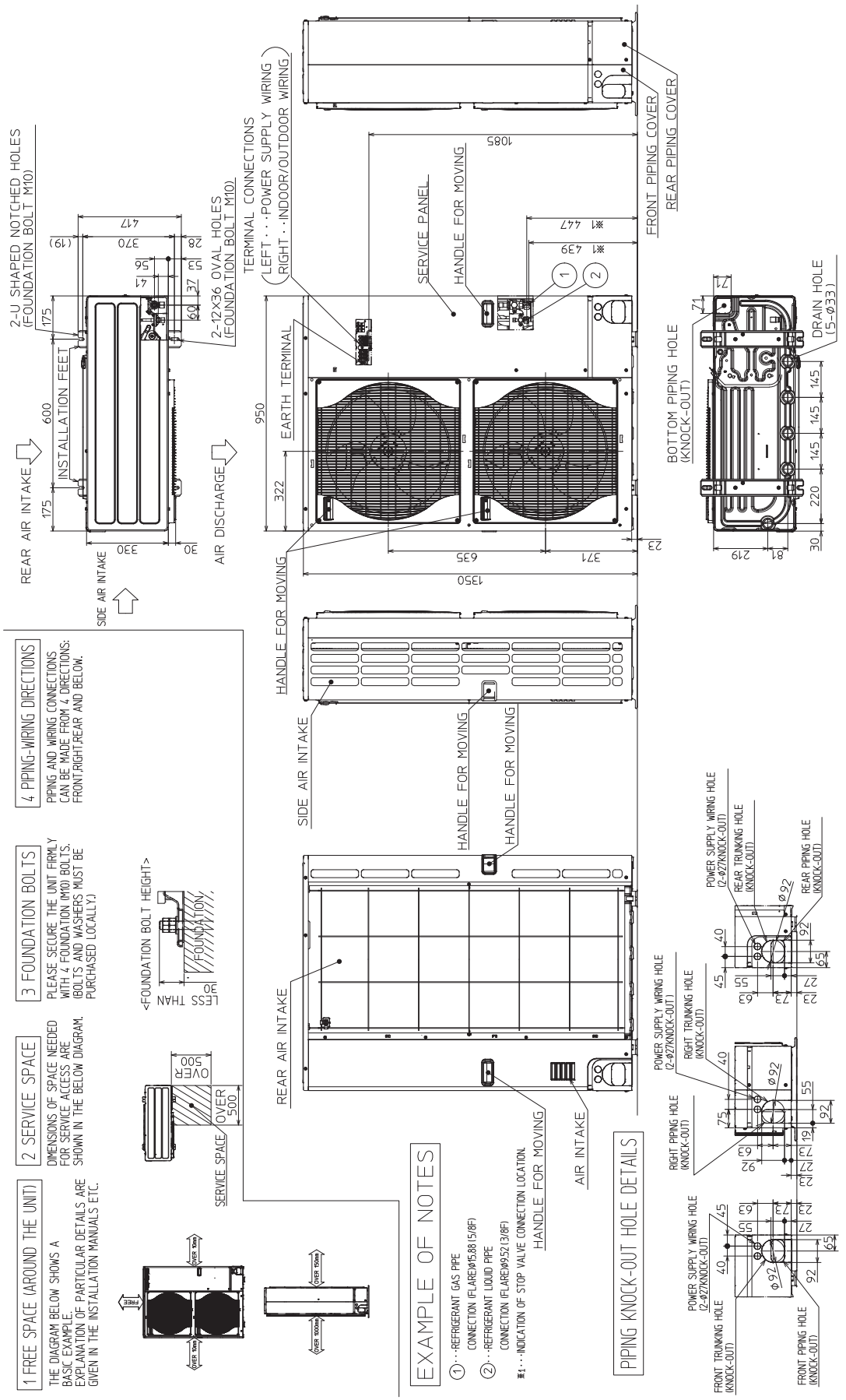
PUHZ-SW75VHAR6

Unit : mm



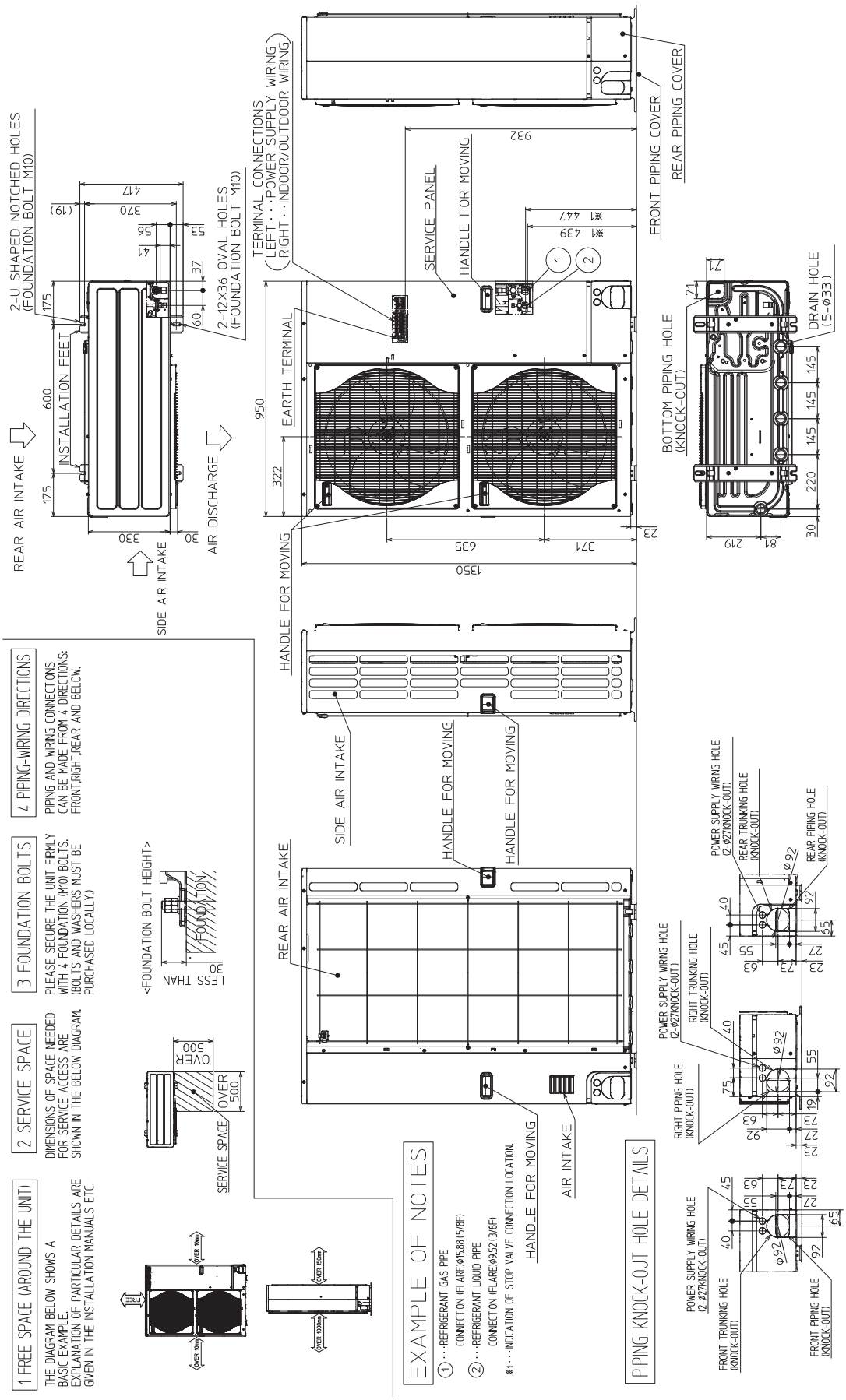
PUHZ-SW100VHAR6 **PUHZ-SW120VHAR6**

Unit : mm



PUHZ-SW100YHAR6 **PUHZ-SW120YHAR6**

Unit : mm



7 WIRING DIAGRAM

PUHZ-SW75VHAR6

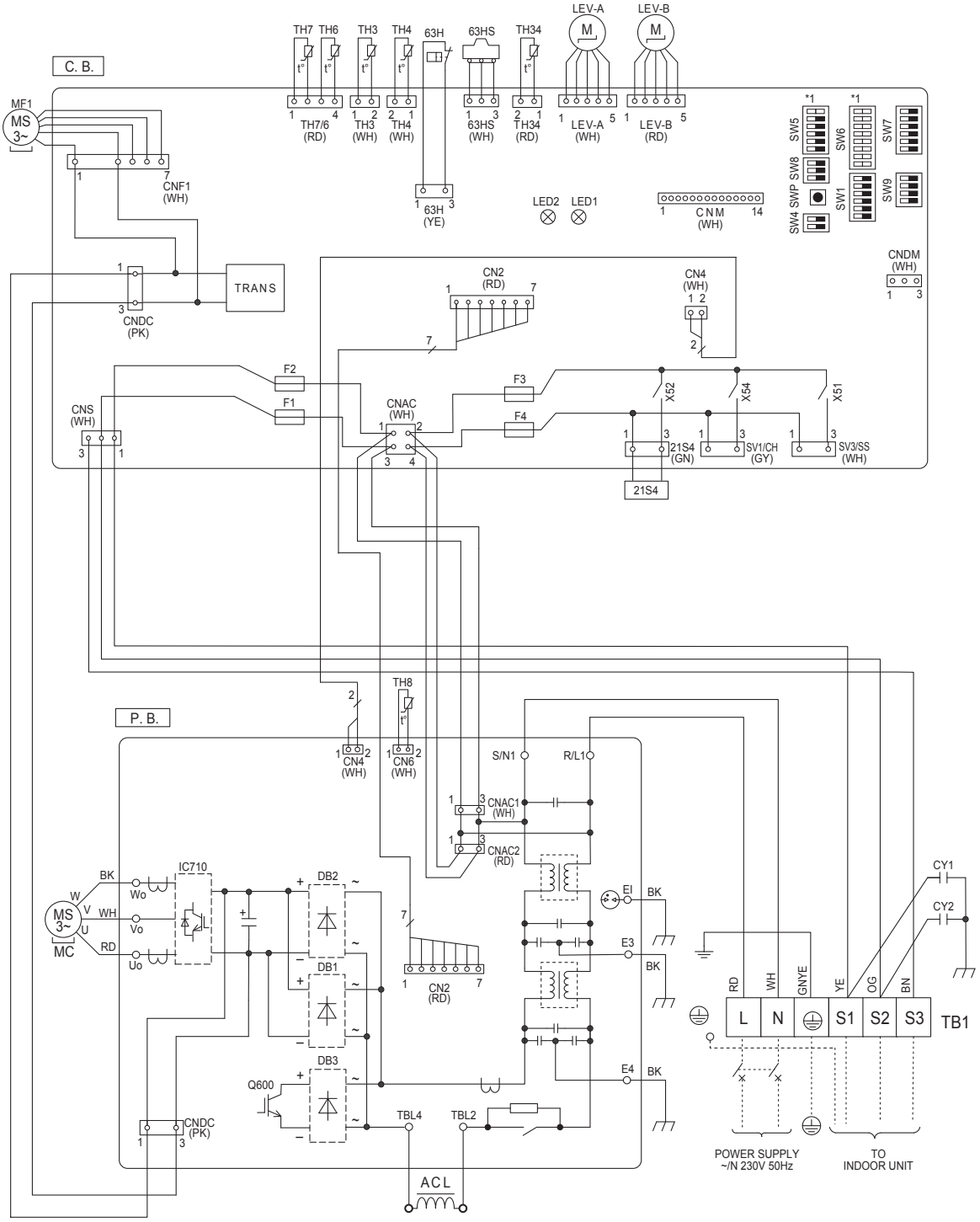
SYMBOL	NAME
TB1	Terminal Block <Power Supply, Indoor/Outdoor>
MC	Motor for Compressor
MF1	Fan Motor
21S4	Solenoid Valve (4-Way Valve)
63H	High Pressure Switch
63HS	High Pressure Sensor
TH3	Thermistor <Liquid>
TH4	Thermistor <Discharge>
TH6	Thermistor <2-Phase Pipe>
TH7	Thermistor <Ambient>
TH8	Thermistor <Heat Sink>
TH34	Thermistor <Comp. Surface>
LEV-A, LEV-B	Linear Expansion Valve
ACL	Reactor
CY1, CY2	Capacitor
P.B.	Power Circuit Board

SYMBOL	NAME
C.B.	Controller Circuit Board
F1, F2, F3, F4	Fuse <T6.3AL250V>
SW1	Switch <Manual Defrost, Defect History Record Reset, Refrigerant Address>
SW4	Switch <Function Switch>
SW5	Switch <Function Switch, Model Select>
SW6	Switch <Model Select>
SW7	Switch <Function Switch>
SW8	Switch <Function Switch>
SW9	Switch <Function Switch>
SWP	Switch <Pump Down>
CNDM	Connector <Connection for Option>
SV1/CH	Connector <Connection for Option>
SV3/SS	Connector <Connection for Option>
CNM	Connector <Connection for Option>

*1 MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6	SW5-6 *2
75V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

*2 SW5 -1 to 5 : Function Switch



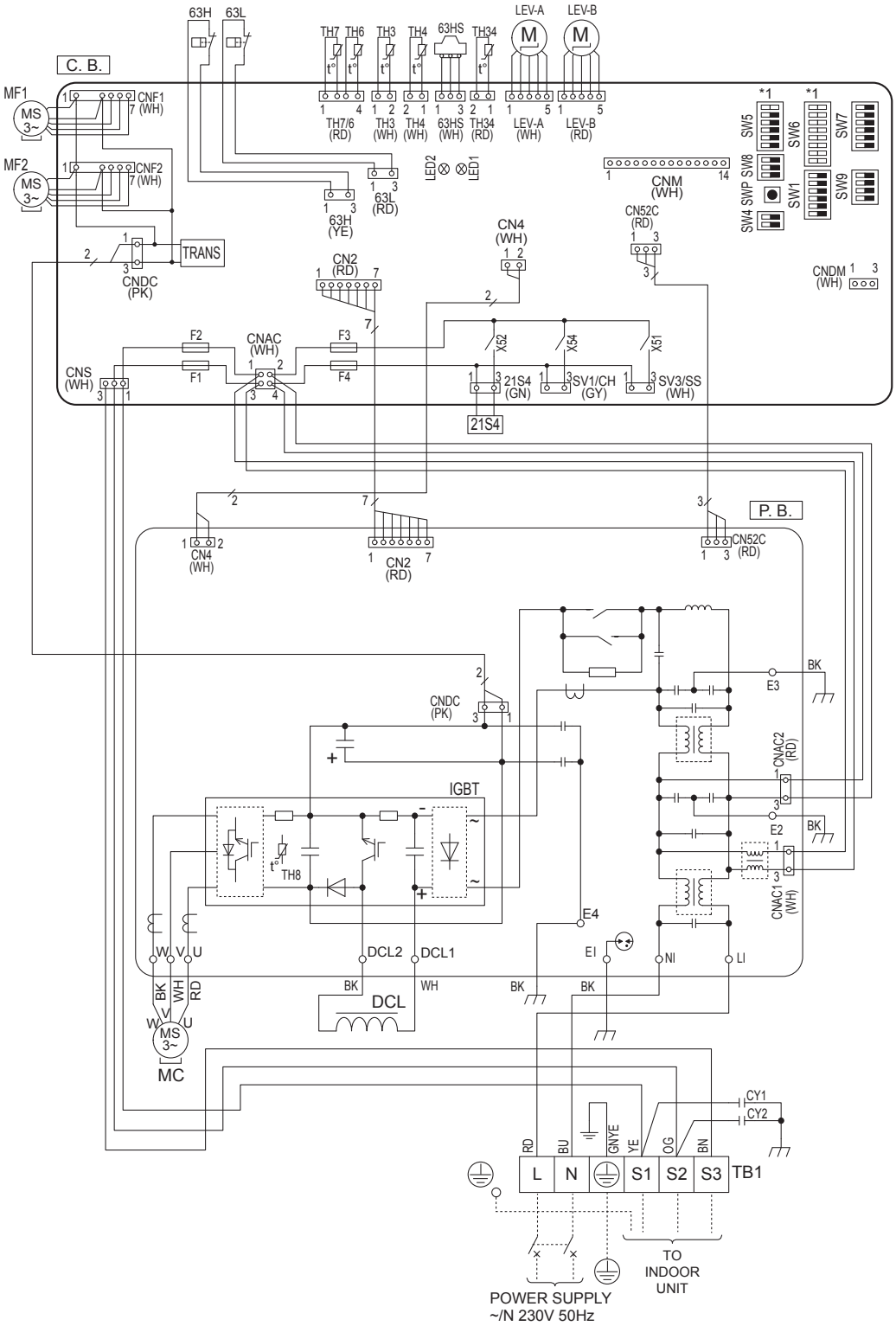
PUHZ-SW100VHAR6 PUHZ-SW120VHAR6

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block <Power Supply, Indoor/Outdoor>	TH7	Thermistor <Ambient>	SW5	Switch <Function Switch, Model Select>
		TH8	Thermistor internal <Heat Sink>	SW6	Switch <Model Select>
MC	Motor for Compressor	TH34	Thermistor <Comp. Surface>	SW7	Switch <Function Switch>
MF1, MF2	Fan Motor	LEV-A, LEV-B	Linear Expansion Valve	SW8	Switch <Function Switch>
21S4	Solenoid Valve (4-Way Valve)	DCL	Reactor	SW9	Switch <Function Switch>
63H	High Pressure Switch	CY1, CY2	Capacitor	SWP	Switch <Pump Down>
63L	Low Pressure Switch	P. B.	Power Circuit Board	CNDM	Connector <Connection for Option>
63HS	High Pressure Sensor	C. B.	Controller Circuit Board	SV1/CH	Connector <Connection for Option>
TH3	Thermistor <Liquid>	SW1	Switch <Manual Defrost, Defect History Record Reset, Refrigerant Address>	SV3/SS	Connector <Connection for Option>
TH4	Thermistor <Discharge>			CNM	Connector <Connection for Option>
TH6	Thermistor <2-Phase Pipe>	SW4	Switch <Function Switch>	F1, F2, F3, F4	Fuse <T6.3AL250V>

*1 MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6	SW5-6 *2
100V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
120V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

*2 SW5 -1 to 5 : Function Switch



PUHZ-SW100YHAR6 PUHZ-SW120YHAR6

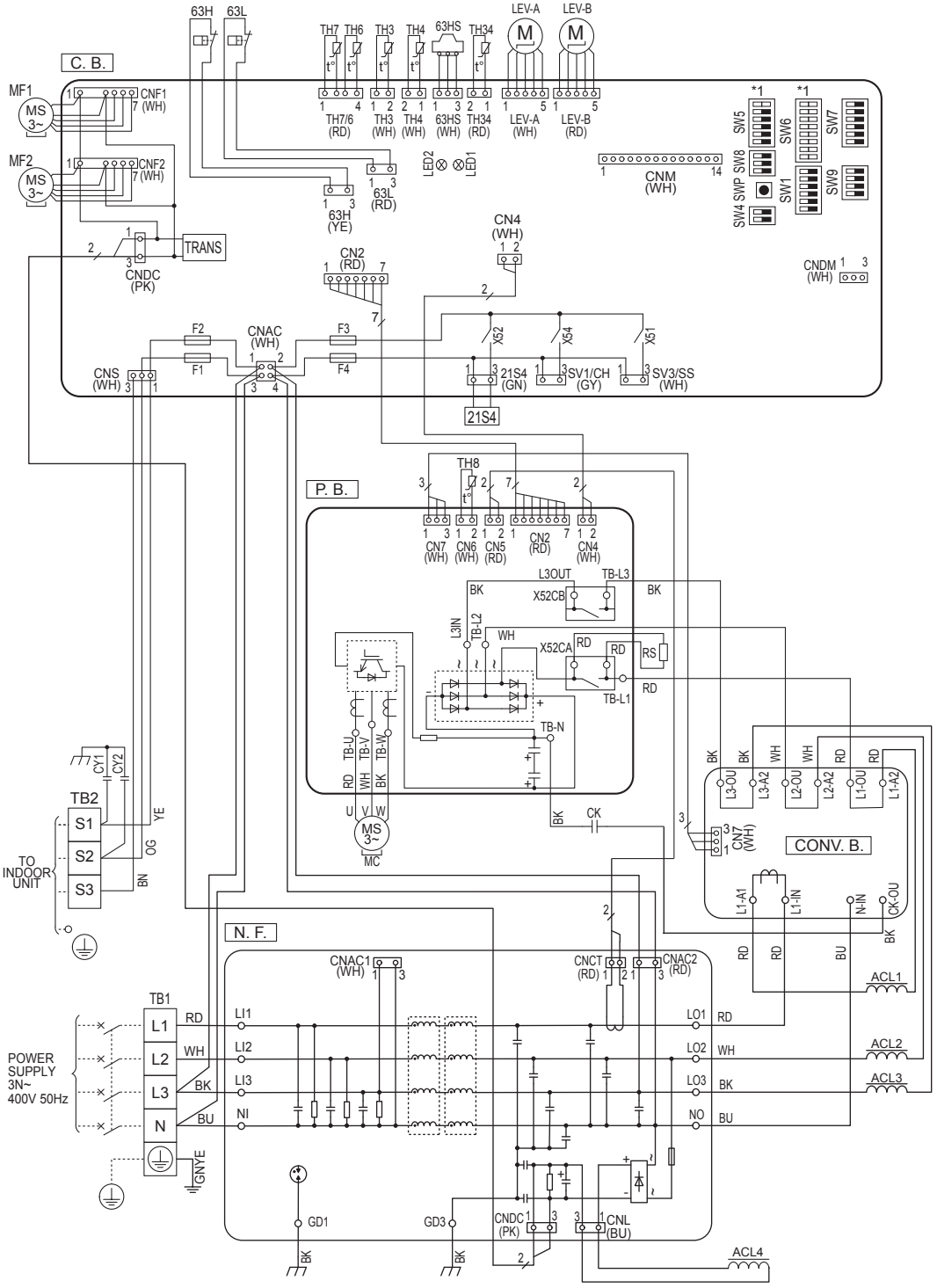
SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block <Power Supply>	TH34	Thermistor <Comp. Surface>
TB2	Terminal Block <Indoor/Outdoor>	LEV-A, LEV-B	Linear Expansion Valve
MC	Motor for Compressor	ACL1, ACL2, ACL3, ACL4	Reactor
MF1, MF2	Fan Motor	CY1, CY2	Capacitor
21S4	Solenoid Valve (4-Way Valve)	CK	Capacitor
63H	High Pressure Switch	RS	Rush Current Protect Resistor
63L	Low Pressure Switch	P. B.	Power Circuit Board
63HS	High Pressure Sensor	N. F.	Noise Filter Circuit Board
TH3	Thermistor <Liquid>	CONV. B.	Converter Circuit Board
TH4	Thermistor <Discharge>	C. B.	Controller Circuit Board
TH6	Thermistor <2-Phase Pipe>	SW1	Switch <Manual Defrost, Defect History Record Reset, Refrigerant Address>
TH7	Thermistor <Ambient>		
TH8	Thermistor <Heat Sink>		

SYMBOL	NAME
SW4	Switch <Function Switch>
SW5	Switch <Function Switch, Model Select>
SW6	Switch <Model Select>
SW7	Switch <Function Switch>
SW8	Switch <Function Switch>
SW9	Switch <Function Switch>
SWP	Switch <Pump Down>
CNDM	Connector <Connection for Option>
SV1/CH	Connector <Connection for Option>
SV3/SS	Connector <Connection for Option>
CNM	Connector <Connection for Option>
F1, F2, F3, F4	Fuse <T6.3AL250V>

*1 MODEL SELECT
The black square (■) indicates a switch position.

MODEL	SW6	SW5-6 *2
100Y	ON / OFF 1 2 3 4 5 6 7 8	ON / OFF 1 2 3 4 5 6
120Y	ON / OFF 1 2 3 4 5 6 7 8	ON / OFF 1 2 3 4 5 6

*2 SW5 -1 to 5 : Function Switch



8 WIRING SPECIFICATIONS

FIELD ELECTRICAL WIRING (power wiring specifications)

Outdoor model name			SW75V	SW100V	SW120V	SW100, 120Y
Outdoor unit power supply			~/N (single), 50 Hz, 230 V	~/N (single), 50 Hz, 230 V	~/N (single), 50 Hz, 230 V	3N~ (3 ph 4-wires), 50 Hz, 400 V
Outdoor unit input capacity Main switch (Breaker)		*1	25 A	32 A	40 A	16 A
Wiring Wire No. × size (mm^2)	Outdoor unit power supply		3 × Min 2.5	3 × Min 4	3 × Min 6	5 × Min 1.5
	Indoor unit-Outdoor unit	*2	3 × 1.5 (Polar)	3 × 1.5 (Polar)	3 × 1.5 (Polar)	3 × 1.5 (Polar)
	Indoor unit-Outdoor unit earth	*2	1 × Min 1.5	1 × Min 1.5	1 × Min 1.5	1 × Min 1.5
	Remote controller-Indoor unit	*3	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)	2 × 0.3 (Non-polar)
Circuit rating	Outdoor unit L-N (single) Outdoor unit L1-N, L2-N, L3-N (3 phase)	*4	230 VAC	230 VAC	230 VAC	230 VAC
	Indoor unit-Outdoor unit S1-S2	*4	230 VAC	230 VAC	230 VAC	230 VAC
	Indoor unit-Outdoor unit S2-S3	*4	24 VDC	24 VDC	24 VDC	24 VDC
	Remote controller-Indoor unit	*4	12 VDC	12 VDC	12 VDC	12 VDC

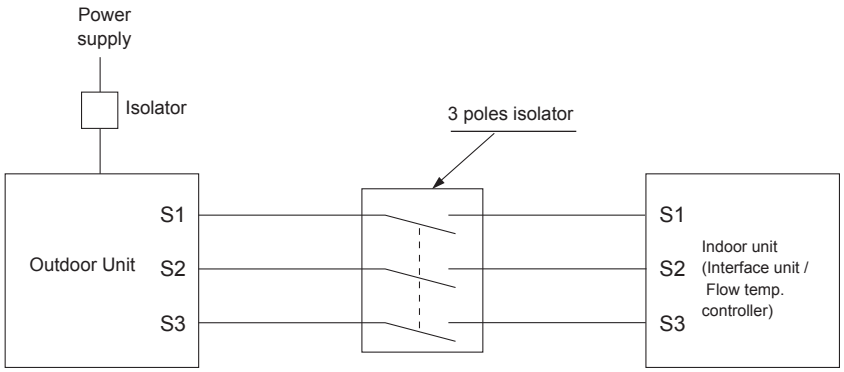
*1. A breaker with at least 3.0 mm contact separation in each pole shall be provided. Use earth leakage breaker (NV).
Make sure that the current leakage breaker is one compatible with higher harmonics.
Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter.
The use of an inadequate breaker can cause the incorrect operation of inverter.

*2. Maximum 45 m
If 2.5 mm^2 is used, maximum 50 m.
If 2.5 mm^2 is used and S3 is separated, maximum 80 m.

*3. The 10 m wire is attached in the remote controller accessory.

*4. The figures are NOT always against the ground.
S3 terminal has 24 VDC against S2 terminal. However between S3 and S1, these terminals are NOT electrically insulated by the transformer or other device.

Notes: 1. Wiring size must comply with the applicable local and national codes.
2. Power supply cables and the cables between Interface unit/Flow temp. controller and outdoor unit shall not be lighter than polychloroprene sheathed flexible cables. (Design 60245 IEC 57)
3. Be sure to connect the cables between Interface unit/Flow temp. controller and outdoor unit directly to the units (no intermediate connections are allowed).
Intermediate connections may result in communication errors. If water enters at the intermediate connection point, it may cause insufficient insulation to ground or a poor electrical contact .
(If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cables.)
4. Install an earth longer than power cables.
5. Do not construct a system with a power supply that is turned ON and OFF frequently.



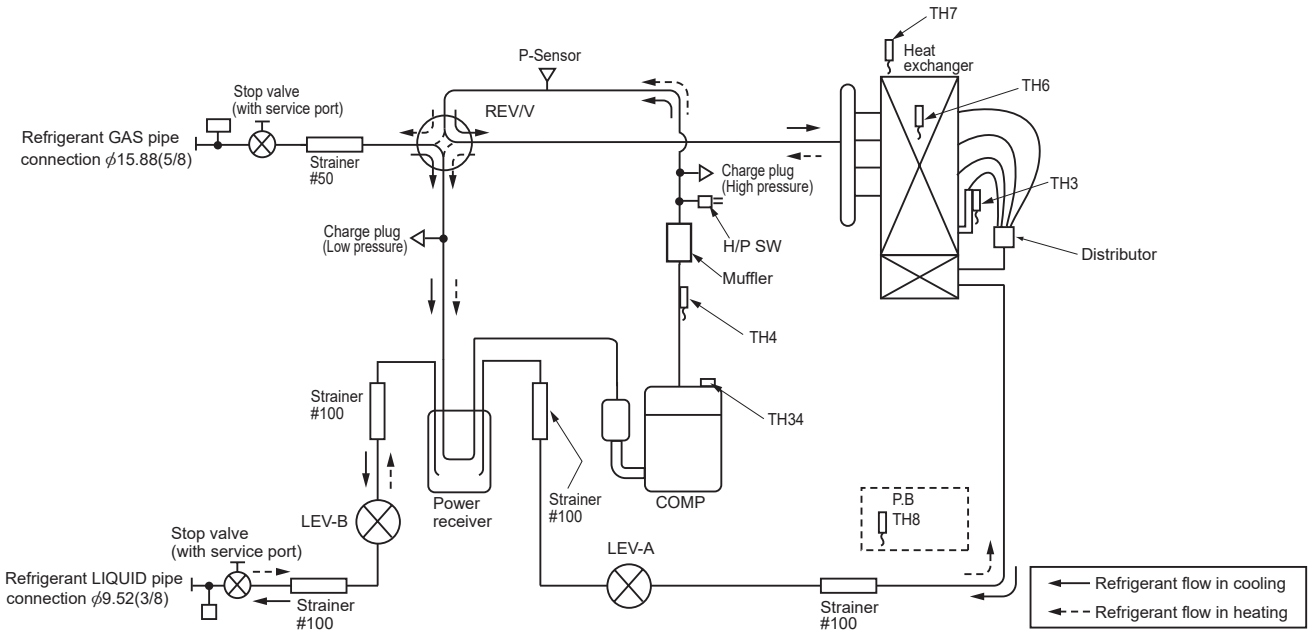
⚠ **Warning:**
· In the case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between indoor unit and outdoor unit, please use 3-pole type.

Never splice the power cable or the Interface unit/Flow temp. controller - outdoor unit connection cable, otherwise it may result in smoke emission, a fire or communication failure.

9 REFRIGERANT SYSTEM DIAGRAM

PUHZ-SW75VHAR6

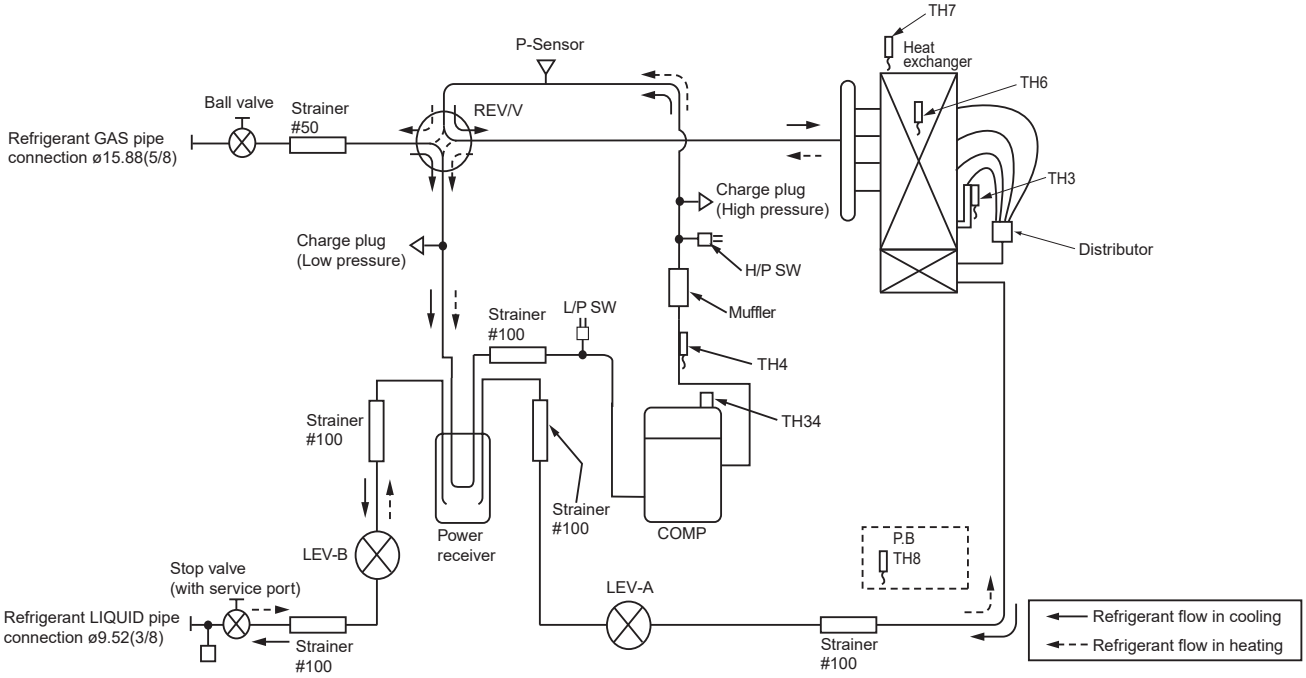
unit: mm



Symbol	Part name	Detail
COMP	Compressor	DC inverter twin rotary compressor (Mitsubishi Electric Corporation)
Muffler	Muffler	Discharge muffler
H/P SW	High pressure switch (63H)	For protection (OFF: 4.15MPa)
REV/V	Reversing (4-way) valve (21S4)	Change the refrigerant circuit (Heating / Cooling) and for Defrosting
Charge plug	Charge plug	High pressure / Low pressure
P-Sensor	Pressure sensor (63HS)	For calculation of the condensing temperature from high pressure
LEV-A	Linear expansion valve -A	Heating: Secondary LEV Cooling: Primary LEV
LEV-B	Linear expansion valve -B	Heating: Primary LEV Cooling: Secondary LEV
TH3	Liquid temperature thermistor	Heating: Evaporating temperature Cooling: Subcooled liquid temperature
TH4	Discharge temperature thermistor	For LEV control and for compressor protection
TH6	2-phase pipe temperature thermistor	Outdoor 2-phase pipe temperature
TH7	Ambient temperature thermistor	For fan control and for compressor frequency control
TH34	Comp. surface temperature thermistor	For compressor protection
Power Receiver	Power Receiver	For accumulation of refrigerant

PUHZ-SW100VHAR6 **PUHZ-SW100YHAR6**
PUHZ-SW120VHAR6 **PUHZ-SW120YHAR6**

unit: mm



Symbol	Part name	Detail
COMP	Compressor	DC inverter scroll compressor (Mitsubishi Electric Corporation)
Muffler	Muffler	Discharge muffler
H/P SW	High pressure switch (63H)	For protection (OFF: 4.15MPa)
L/P SW	Low pressure switch (63L)	For protection (OFF: -0.03MPa)
REV/V	Reversing (4-way) valve (21S4)	Change the refrigerant circuit (Heating / Cooling) and for Defrosting
Charge plug	Charge plug	High pressure / Low pressure
P-Sensor	Pressure sensor (63HS)	For calculation of the condensing temperature from high pressure
LEV-A	Linear expansion valve -A	Heating: Secondary LEV Cooling: Primary LEV
LEV-B	Linear expansion valve -B	Heating: Primary LEV Cooling: Secondary LEV
TH3	Liquid temperature thermistor	Heating: Evaporating temperature Cooling :Subcooled liquid temperature
TH4	Discharge temperature thermistor	For LEV control and for compressor protection
TH6	2-phase pipe temperature thermistor	Outdoor 2-phase pipe temperature
TH7	Ambient temperature thermistor	For fan control and for compressor frequency control
TH34	Comp. surface temperature thermistor	For compressor protection
Power Receiver	Power Receiver	For accumulation of refrigerant

9-1. REFRIGERANT COLLECTING (PUMP DOWN)

When relocating or disposing of the indoor/outdoor unit, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

① Turn off the power supply (circuit breaker).
② Connect the low pressure valve on the gauge manifold to the charge plug (low pressure side) on the outdoor unit.
③ Close the liquid stop valve completely.
④ Supply power (circuit breaker).
- Even if power can be supplied, the pump down procedure cannot be completed depending on the unit's status. For more information, refer to the FTC Installation Manual or Service Manual.
- Startup of the indoor-outdoor communication takes about 3 minutes after the power (circuit breaker) is turned on. Start the pump-down operation 3 to 4 minutes after the power (circuit breaker) is turned on.

⑤ Perform the refrigerant collecting operation (cooling test run).
- Push the pump-down SWP switch (push-button type) on the control board of the outdoor unit. The compressor and ventilators (indoor and outdoor units) start operating (refrigerant collecting operation begins). (LED1 and LED2 on the control board of the outdoor unit are lit.)
- Only push the pump-down SWP switch if the unit is stopped. However, even if the unit is stopped and the pump-down SWP switch is pushed less than 3 minutes after the compressor stops, the refrigerant collecting operation cannot be performed. Wait until the compressor has been stopped for 3 minutes and then push the pump-down SWP switch again.

⑥ Fully close the ball valve on the gas pipe side of the outdoor unit when the pressure gauge on the gauge manifold shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm²) and quickly stop the air conditioner.
- Since the unit automatically stops in about 3 minutes when the refrigerant collecting operation is completed (LED1 off, LED2 lit), be sure to quickly close the gas ball valve. However, if LED1 is lit, LED2 is off, and the unit is stopped, open the liquid stop valve completely, close the valve completely after 3 minutes or more have passed, and then repeat step ⑤. (Open the gas ball valve completely.)
- If the refrigerant collecting operation has been completed normally (LED1 off, LED2 lit), the unit will remain stopped until the power supply is turned off.
- Note that when the extension piping is very long with a large refrigerant amount, it may not be possible to perform a pump-down operation. In this case, use refrigerant recovery equipment to collect all of the refrigerant in the system.

⑦ Turn off the power supply (circuit breaker), remove the gauge manifold, and then disconnect the refrigerant pipes.

⚠ Warning:
When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes.
- **If the refrigerant pipes are disconnected while the compressor is operating and the stop valve (ball valve) is open, the pressure in the refrigeration cycle could become extremely high if air is drawn in, causing the pipes to burst, personal injury, etc.**

9-2. UNIT REPLACEMENT OPERATION

When reusing the existing pipes that carried R22 refrigerant, replacement operation must be performed before performing a test run.

① If new pipes are used, these procedures are not necessary.
② If existing pipes that carried R22 refrigerant are used, these procedures are not necessary.
(The replacement operation cannot be performed.)
③ During replacement operation, “C5” is displayed on “A-Control Service Tool (PAC-SK52ST)”.

10 TROUBLESHOOTING

10-1. TROUBLESHOOTING

<Check code displayed by self-diagnosis and actions to be taken for service (summary)>
Present and past check codes are logged, and they can be displayed on the control board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring in the field, are summarized in the table below. Check the contents below before investigating details.

Unit conditions at service	Check code	Actions to be taken for service (summary)
The trouble is reoccurring.	Displayed	Judge what is wrong and take a corrective action according to "10-2. SELF-DIAGNOSIS ACTION TABLE".
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble.
The trouble is not reoccurring.	Logged	① Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise, etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring, etc. ② Reset check code logs and restart the unit after finishing service. ③ There is no abnormality in electrical component, controller board, etc.
	Not logged	① Re-check the abnormal symptom. ② Conduct troubleshooting and ascertain the cause of the trouble. ③ Continue to operate unit for the time being if the cause is not ascertained. ④ There is no abnormality concerning of parts such as electrical component, controller board, etc.

10-2. SELF-DIAGNOSIS ACTION TABLE

<Abnormalities detected when the power is turned on>

Note: Refer to indoor unit section for code P and code E.

Check code	Abnormal point and detection method	Cause	Judgment and action
None	—	① No voltage is supplied to terminal block (TB1) of outdoor unit. a) Power supply breaker is turned off. b) Contact failure or disconnection of power supply terminal c) Open phase (L or N phase)	① Check following items. a) Power supply breaker b) Connection of power supply terminal block (TB1) c) Connection of power supply terminal block (TB1)
		② Electric power is not charged to power supply terminal of outdoor power circuit board. a) Contact failure of power supply terminal b) Open phase on the outdoor power circuit board SW75V: Disconnection of connector R or S SW100/120V: Disconnection of connector LI or NI	② Check following items. a) Connection of power supply terminal block (TB1) b) Connection of terminal on outdoor power circuit board SW75V: Check connection of the connector R or S. Refer to "10-6. TEST POINT DIAGRAM". SW100/120V: Check connection of the connector LI or NI. Refer to "10-6. TEST POINT DIAGRAM".
		③ Electric power is not supplied to outdoor controller circuit board. a) Disconnection of connector (CNDC)	③ Check connection of the connector (CNDC) on the outdoor controller circuit board. Check connection of the connector, CNDC on the outdoor power circuit board(V)/the noise filter(Y). Refer to "10-6. TEST POINT DIAGRAM".
		④ Disconnection of reactor (DCL or ACL)	④ Check connection of reactor. (DCL or ACL) SW75V: Check connection of "TBL2" and "TBL4" on the outdoor power circuit board. "10-6. TEST POINT DIAGRAM". SW100/120V: Check connection of "DCL1" and "DCL2" on the outdoor power circuit board. Refer to "10-6. TEST POINT DIAGRAM".
		⑤ Disconnection of outdoor noise filter circuit board or parts failure in outdoor noise filter circuit board It is especially needed to check the resistance RS on the noise filter circuit board.	⑤ a) Check connection of outdoor noise filter circuit board. b) Replace outdoor noise filter circuit board. Refer to "10-6. TEST POINT DIAGRAM".
		⑥ Defective outdoor power circuit board	⑥ Replace outdoor power circuit board.
		⑦ Defective outdoor controller circuit board	⑦ Replace controller board (When items above are checked but the units cannot be repaired).
F3	**63L connector open (SW100/120 only)** Abnormal if 63L connector circuit is open for 3 minutes continuously after power supply. 63L: Low pressure switch	① Disconnection or contact failure of 63L connector on outdoor controller circuit board	① Check connection of 63L connector on outdoor controller circuit board. Refer to "10-6. TEST POINT DIAGRAM".
		② Disconnection or contact failure of 63L	② Check the 63L side of connecting wire.
		③ 63L is working due to refrigerant leakage or defective parts.	③ Check refrigerant pressure. Charge additional refrigerant. Check continuity by tester. Replace the parts if the parts are defective.
		④ Defective outdoor controller circuit board	④ Replace outdoor controller circuit board.
F5	**63H connector open** Abnormal if 63H connector circuit is open for 3 minutes continuously after power supply. 63H: High pressure switch	① Disconnection or contact failure of 63H connector on outdoor controller circuit board	① Check connection of 63H connector on outdoor controller circuit board. Refer to "10-6. TEST POINT DIAGRAM".
		② Disconnection or contact failure of 63H	② Check the 63H side of connecting wire.
		③ 63H is working due to defective parts.	③ Check continuity by tester. Replace the parts if the parts are defective.
		④ Defective outdoor controller circuit board	④ Replace outdoor controller circuit board.

Check code	Abnormal point and detection method	Cause	Judgment and action
F9	**2 connector open (SW100/120 only)** Abnormal if both 63H and 63L connector circuits are open for three minutes continuously after power supply. 63H: High pressure switch 63L: Low pressure switch	① Disconnection or contact failure of connector (63H,63L) on outdoor controller circuit board ② Disconnection or contact failure of 63H, 63L ③ 63H and 63L are working due to defective parts. ④ Defective outdoor controller board	① Check connection of connector (63H,63L) on outdoor controller circuit board. Refer to "10-6. TEST POINT DIAGRAM". ② Check the 63H and 63L side of connecting wire. ③ Check continuity by tester. Replace the parts if the parts are defective. ④ Replace outdoor controller circuit board.
EA	**Indoor/outdoor unit connector miswiring, excessive number of units (4 units or more)** 1. Outdoor controller circuit board can automatically check the number of connected indoor units. Abnormal if the number cannot be checked automatically due to miswiring of indoor/outdoor unit connecting wire and etc. after power is turned on for 4 minutes. 2. Abnormal if outdoor controller circuit board recognizes excessive number of indoor units.	① Contact failure or miswiring of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ③ Excessive number of indoor units are connected to 1 outdoor unit (2 units or more). ④ Defective transmitting receiving circuit of outdoor controller circuit board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Defective indoor power board ⑦ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ⑧ Noise has entered into power supply or indoor / outdoor unit connecting wire.	① Check disconnection or looseness or polarity of indoor/outdoor unit connecting wire of indoor and outdoor units. ② Check diameter and length of indoor/outdoor unit connecting wire. Total wiring length: 80 m (including wiring connecting each indoor unit and between indoor and outdoor unit) Also check if the connection order of flat cable is S1, S2, S3. ③ Check the number of indoor units that are connected to one outdoor unit. (If EA is detected) ④–⑥ Turn the power off once, and on again to check. Replace outdoor controller circuit board, indoor controller board or indoor power board if abnormality occurs again. ⑦ Check if refrigerant addresses (SW1-3 to SW1-6 on outdoor controller circuit board) are overlapping in the case of group control system. ⑧ Check transmission path, and remove the cause. Note: The descriptions above, ①–⑧, are for EA, Eb and EC.
Eb	**Miswiring of indoor/outdoor unit connecting wire (converse wiring or disconnection)** Outdoor controller circuit board can automatically set the unit number of indoor units. Abnormal if the indoor unit number cannot be set within 4 minutes after power on because of miswiring (converse wiring or disconnection) of indoor/outdoor unit connecting wire.	① Contact failure or miswiring of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ④ Defective transmitting receiving circuit of outdoor controller circuit board ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Defective indoor power board ⑦ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ⑧ Noise has entered into power supply or indoor/outdoor unit connecting wire.	
EC	**Startup time over** The unit cannot finish startup process within 4 minutes after power on.	① Contact failure of indoor/outdoor unit connecting wire ② Diameter or length of indoor/outdoor unit connecting wire is out of specified capacity. ③ 2 or more outdoor units have refrigerant address “0” . (In the case of group control) ④ Noise has entered into power supply or indoor/outdoor unit connecting wire.	
EE	**Incorrect connection** The outdoor unit does not receive the signals of I/F or FTC.	① A device other than Interface unit or Flow temp. controller unit is connected to the unit.	① Connect I/F or FTC to the unit.

<Abnormalities detected while unit is operating>

Check code	Abnormal point and detection method	Cause	Judgment and action
U1	**High pressure (High pressure switch 63H operated)** Abnormal if high pressure switch 63H operated (4.15 MPa) during compressor operation. 63H: High pressure switch	① Defective operation of stop valve (Not fully open) ② Clogged or broken pipe ③ Locked outdoor fan motor ④ Malfunction of outdoor fan motor ⑤ Short cycle of outdoor unit ⑥ Dirt of outdoor heat exchanger ⑦ Decreased airflow caused by defective inspection of outside temperature thermistor (It detects lower temperature than actual temperature.) ⑧ Disconnection or contact failure of connector (63H) on outdoor controller board ⑨ Disconnection or contact failure of 63H connection ⑩ Defective outdoor controller board ⑪ Defective action of linear expansion valve ⑫ Malfunction of fan driving circuit	① Check if stop valve is fully open. ② Check piping and repair defect. ③–⑥ Check outdoor unit and repair defect. ⑦ Check the detected temperature of outside temperature thermistor on LED display. (SW2 on A-Control Service Tool : Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ⑧–⑩ Turn the power off and check F5 is displayed when the power is turned again. When F5 is displayed, refer to “Judgment and action” for F5. ⑪ Check linear expansion valve. Refer to "10-4. HOW TO CHECK THE PARTS". ⑫ Replace outdoor controller board.
U2	**High discharge temperature** (1) Abnormal if discharge temperature thermistor (TH4) exceeds 125°C or 110°C continuously for 5 minutes. Abnormal if discharge temperature thermistor (TH4) exceeds 110°C or more continuously for 30 seconds after 90 seconds have passed since the defrosting operation started. (2) Abnormal if discharge superheat (Cooling: TH4−T_{63HS} / Heating: TH4−T_{63HS}) exceeds 70°C continuously for 10 minutes. **High comp. surface temperature** Abnormal if comp. surface temperature (TH34) exceeds 125°C. In the case of high comp. surface temperature error, compressor does not restart unless the thermistor (TH34) becomes less than 95°C.	① Overheated compressor operation caused by shortage of refrigerant ② Defective operation of stop valve ③ Defective thermistor ④ Defective outdoor controller board ⑤ Defective action of linear expansion valve ⑥ Clogging with foreign objects in refrigerant circuit Note: Clogging occur in the parts which become below freezing point when water enters in refrigerant circuit.	① Check intake superheat. Check leakage of refrigerant. Charge additional refrigerant. ② Check if stop valve is fully open. ③④ Turn the power off and check if U3 is displayed when the power is turned on again. When U3 is displayed, refer to “Judgment and action” for U3. ⑤ Check linear expansion valve. Refer to "10-4. HOW TO CHECK THE PARTS". ⑥ After recovering refrigerant, remove water from entire refrigerant circuit under vacuum more than 1 hour.
U3	**Open/short circuit of discharge temperature thermistor (TH4) / Comp. surface temperature thermistor (TH34)** Abnormal if open (3°C or less) or short (217°C or more) is detected during compressor operation. (Detection is inoperative for 10 minutes of compressor starting process and for 10 minutes after and during defrosting.)	① Disconnection or contact failure of connector (TH4/TH34) on the outdoor controller circuit board ② Defective thermistor ③ Defective outdoor controller circuit board	① Check connection of connector (TH4/TH34) on the outdoor controller circuit board. Check breaking of the lead wire for thermistor (TH4/TH34). Refer to "10-6. TEST POINT DIAGRAM". ② Check resistance value of thermistor (TH4/TH34) or temperature by microprocessor. (Thermistor/TH4/TH34: Refer to "10-4. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ③ Replace outdoor controller board.

Check code	Abnormal point and detection method	Cause	Judgment and action
U4	**Open/short of outdoor unit thermistors (TH3, TH6, TH7, and TH8)** Abnormal if open or short is detected during compressor operation. Open detection of thermistors TH3 and TH6 is inoperative for 10 seconds to 10 minutes after compressor starting and 10 minutes after and during defrosting. Note: Check which unit has abnormality in its thermistor by switching the mode of SW2. (PAC-SK52ST) (Refer to "11-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) Note: SW100/120V, Heat sink thermistor(TH8) is in the power module.	① Disconnection or contact failure of connectors (Outdoor controller circuit board: TH3, TH7/6 / Outdoor power circuit board: CN3) ② Defective thermistor ③ Defective outdoor controller circuit board	① Check connection of connector (TH3, TH7/6) on the outdoor controller circuit board. Check connection of connector (CN3) on the outdoor power circuit board. Check breaking of the lead wire for thermistor (TH3, TH6,TH7,TH8). Refer to "10-6. TEST POINT DIAGRAM". ② Check resistance value of thermistor (TH3, TH6,TH7,TH8) or check temperature by microprocessor. (Thermistor/TH3,TH6,TH7,TH8: Refer to "10-4. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ③ Replace outdoor controller circuit board. Note: Emergency operation is available in the case of abnormalities of TH3, TH6 and TH7.

Thermistors		Open detection	Short detection
Symbol	Name		
TH3	Thermistor <Liquid>	−40°C or below	90°C or above
TH6	Thermistor <2-phase pipe>	−40°C or below	90°C or above
TH7	Thermistor <Ambient>	−40°C or below	90°C or above
TH8	Thermistor <Heat sink> SW75V SW100/120Y	−27°C or below	102°C or above
TH8	Internal thermistor SW100/120V	−35°C or below	170°C or above

U5	**Temperature of heat sink** Abnormal if heat sink thermistor (TH8) detects temperature indicated below. SW75V ····· 77°C SW100V ····· 94°C SW100Y ····· 84°C SW120V ····· 94°C SW120Y ····· 84°C	① The outdoor fan motor is locked. ② Failure of outdoor fan motor ③ Airflow path is clogged. ④ Rise of ambient temperature ⑤ Defective thermistor ⑥ Defective input circuit of outdoor power circuit board ⑦ Failure of outdoor fan drive circuit	①② Check outdoor fan. ③ Check airflow path for cooling. ④ Check if there is something which causes temperature rise around outdoor unit. (Upper limit of ambient temperature is 46℃.) Turn off power, and on again to check if U5 is displayed within 30 minutes. If U4 is displayed instead of U5, follow the action to be taken for U4. ⑤ Check resistance value of thermistor (TH8) or temperature by microprocessor. (Thermistor/TH8: Refer to "10-4. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ⑥ Replace outdoor power circuit board. ⑦ Replace outdoor controller circuit board.
U6	**Power module** Check abnormality by driving power module in case overcurrent is detected. (UF or UP error condition)	① Outdoor stop valve is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective compressor ⑤ Defective outdoor power circuit board	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check compressor referring to "10-5. HOW TO CHECK THE PARTS". ⑤ Replace outdoor power circuit board.
U7	**Too low superheat due to low discharge temperature** Abnormal if discharge superheat is continuously detected less than or equal to −15℃ for 3 minutes even though linear expansion valve has minimum open pulse after compressor starts operating for 10 minutes.	① Disconnection or loose connection of discharge temperature thermistor (TH4) ② Defective holder of discharge temperature thermistor ③ Disconnection or loose connection of linear expansion valve's coil ④ Disconnection or loose connection of linear expansion valve's connector ⑤ Defective linear expansion valve	①② Check the installation conditions of discharge temperature thermistor (TH4). ③ Check the coil of linear expansion valve. Refer to "10-5. HOW TO CHECK THE COMPONENTS". ④ Check the connection or contact of LEV-A and LEV-B on outdoor controller circuit board. ⑤ Check linear expansion valve. Refer to "10-4. HOW TO CHECK THE PARTS".
U8	**Outdoor fan motor** Abnormal if rotational frequency of the fan motor is not detected during DC fan motor operation. Fan motor rotational frequency is abnormal if; • 100 rpm or below detected continuously for 15 seconds at 20℃ or more outside air temperature. • 50 rpm or below or 1500 rpm or more detected continuously for 1 minute.	① Failure in the operation of the DC fan motor ② Failure in the outdoor circuit controller board	① Check or replace the DC fan motor. ② Check the voltage of the outdoor circuit controller board during operation. ③ Replace the outdoor circuit controller board. (When the failure is still indicated even after performing the action ① above.)

Check code	Abnormal point and detection method	Cause	Judgment and action
U9	Detailed codes	To find out the details about U9 error, turn ON SW2-1, 2-2, 2-3, 2-4, 2-5 and 2-6 when U9 error occurs. To find out the detail history (latest) about U9 error, turn ON SW2-1, 2-2 and 2-6. Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".	
	01 **Overvoltage error** • Increase in DC bus voltage to SW75V: 400 V SW100, 120V: 400 V SW100, 120Y: 760 V	① Abnormal increase in power source voltage ② Disconnection of compressor wiring ③ Defective outdoor power circuit board ④ Compressor has a ground fault.	① Check the field facility for the power supply. ② Correct the wiring (U·V·W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM" (Outdoor power circuit board). ③ Replace outdoor power circuit board. ④ Check compressor for electrical insulation. Replace compressor.
	02 **Undervoltage error** • Instantaneous decrease in DC bus voltage to SW75, 100, 120V: 200 V SW100, 120Y: 350 V	① Decrease in power source voltage, instantaneous stop ② Disconnection or loose connection of CN52C on the outdoor power circuit board/controller circuit board (SW100, 120V) ③ Defective converter drive circuit in outdoor power circuit board (SW·V) ④ Defective 52C drive circuit in outdoor power circuit board (SW75V, SW100, 120V/Y) ⑤ Defective outdoor converter circuit board (SW·Y) ⑥ Disconnection or loose connection of rush current protect resistor RS (SW·Y) ⑦ Defective rush current protect resistor RS (SW·Y) ⑧ Disconnection or loose connection of main smoothing capacitor CB (SW100,120V) ⑨ Disconnection or loose connection of CN2 on the outdoor power circuit board /controller circuit board (SW100,120V) ⑩ Power circuit failure on DC supply for 18VDC output on outdoor controller circuit board (SW100,120V)	① Check the field facility for the power supply. ② Check CN52C wiring. (SW100, 120V) ③ Replace outdoor power circuit board. (SW·V) ④ Replace outdoor power circuit board. (SW75V, SW100,120V/Y) ⑤ Replace outdoor converter circuit board. (SW·Y) ⑥ Check RS wiring. (SW·Y) ⑦ Replace RS. (SW·Y) ⑧ Check CB wiring. (SW100,120V) ⑨ Check CN2 wiring. (SW100,120V) ⑩ Replace outdoor controller circuit board. (SW100,120V)
	04 **Input current sensor error/ L1-phase open error** • Decrease in input current through outdoor unit to 0.1 A only if operation frequency is more than or equal to 40 Hz or compressor current is more than or equal to 6 A.	① L1-phase open (SW•Y) ② Disconnection or loose connection between TB1 and outdoor noise filter circuit board (SW•Y) ③ Disconnection or loose connection of CN5 on the outdoor power circuit board/CNCT on the outdoor noise filter board ④ Defective ACCT (AC current trans) on the outdoor noise filter circuit board (SW•Y) ⑤ Defective input current detection circuit in outdoor power circuit board ⑥ Defective outdoor controller circuit board	① Check the field facility for the power supply. (SW•Y) ② Check the wiring between TB1 and outdoor noise filter circuit board.(SW•Y) ③ Check CN5/CNCT wiring. (SW•Y) ④ Replace outdoor noise filter circuit board. (SW•Y) ⑤ Replace outdoor power circuit board. ⑥ Replace outdoor controller circuit board.
	08 **Abnormal power synchronous signal** • No input of power synchronous signal to power circuit board • Power synchronous signal of 44 Hz or less, or 65 Hz or more is detected on power circuit board.	① Distortion of power source voltage, Noise superimposition. ② Disconnection or loose connection of earth wiring ③ Disconnection or loose connection of CN2 on the outdoor power circuit board /controller circuit board ④ Defective power synchronous signal circuit in outdoor controller circuit board ⑤ Defective power synchronous signal circuit in outdoor power circuit board	① Check the field facility for the power supply. ② Check earth wiring. ③ Check CN2 wiring. ④ Replace outdoor controller circuit board. ⑤ Replace outdoor power circuit board.

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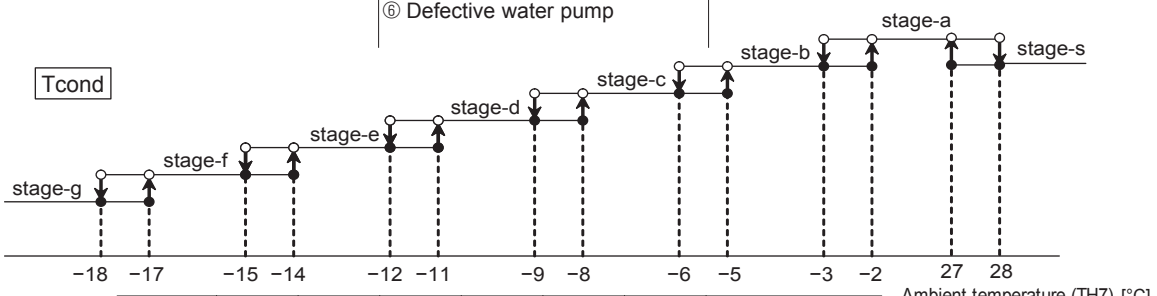
Check code	Abnormal point and detection method		Cause	Judgment and action
U9	Detailed codes: 10	**PFC error (Overvoltage/ Undervoltage/Overcurrent)** • PFC detected any of the following a) Increase of DC bus voltage to 400 V (SW75V) b) Decrease in PFC control voltage to 12 VDC or lower c) Increase in input current to 50A peak (SW75V only)	① Abnormal increase in power source voltage ② Decrease in power source voltage, instantaneous stop ③ Disconnection of compressor wiring ④ Misconnection of reactor (ACL) ⑤ Defective outdoor power circuit board ⑥ Defective reactor (ACL) ⑦ Disconnection or loose connection of CN2 on the outdoor power circuit board/controller circuit board	①② Check the field facility for the power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Correct the wiring of reactor (ACL). ⑤ Replace outdoor power circuit board. ⑥ Replace reactor (ACL). ⑦ Check CN2 wiring.
	20	**PFC/IGBT error (Undervoltage)** • When Compressor is running, DC bus voltage stays at 310 V or lower for consecutive 10 seconds (V-type only)	① Incorrect switch settings on the outdoor controller circuit board for model select ② Defective outdoor power circuit board ③ Defective outdoor controller circuit board	① Correction of a model select ② Replace outdoor power circuit board. ③ Replace outdoor controller circuit board.
Ud	**Overheat protection** Abnormal if liquid thermistor (TH3), condensing temperature T_{63HS} detects 70℃ or more during compressor operation.		① Defective outdoor fan (fan motor) or short cycle of outdoor unit during cooling operation ② Defective TH3, condensing temperature T_{63HS} ③ Defective outdoor controller board	① Check outdoor unit air passage. ②③ Turn the power off and on again to check the check code. If U4 is displayed, follow the U4 processing direction.
UE	**Abnormal pressure of pressure sensor (63HS)** Abnormal if pressure sensor (63HS) detects 0.1 MPa or less. Detection is inoperative for 3 minutes after compressor starting and 3 minutes after and during defrosting.		① Disconnection or contact failure of connector (63HS) on the outdoor controller circuit board ② Defective pressure sensor ③ Defective outdoor controller circuit board	① Check connection of connector (63HS) on the outdoor controller circuit board. Check breaking of the lead wire for thermistor (63HS). ② Check pressure by microprocessor. (Pressure sensor/ 63HS) (SW2: Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ③ Replace outdoor controller board.
UF	**Compressor overcurrent interruption (When compressor locked)** Abnormal if overcurrent of DC bus or compressor is detected within 30 seconds after compressor starts operating.		① Stop valve is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective compressor ⑤ Defective outdoor power board ⑥ Incorrect switch settings on the outdoor controller circuit board for model select	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM". (Outdoor power circuit board). ④ Check compressor. Refer to "10-4. HOW TO CHECK THE PARTS". ⑤ Replace outdoor power circuit board. ⑥ Correction of a model select
UH	**Current sensor error or input current error** • Abnormal if current sensor detects −1.0A to 1.0A during compressor operation. (This error is ignored in the case of test run mode.) • Abnormal if 40A (SW75/100/120V) of input current is detected or 37A (SW75/100/120V) or more of input current is detected for 10 seconds continuously.		① Disconnection of compressor wiring ② Defective circuit of current sensor on outdoor power circuit board ③ Decrease of power supply voltage ④ Leakage or shortage of refrigerant	① Correct the wiring (U·V·W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM" (Outdoor power circuit board). ② Replace outdoor power circuit board. ③ Check the facility of power supply. ④ Check leakage of refrigerant.
UL	**Low pressure (63L operated) (SW100/120 only)** Abnormal if 63L is operated (under −0.03MPa) during compressor operation. 63L: Low pressure switch		① Stop valve of outdoor unit is closed during operation. ② Disconnection or loose connection of connector (63L) on outdoor controller board ③ Disconnection or loose connection of 63L ④ Defective outdoor controller board ⑤ Leakage or shortage of refrigerant ⑥ Malfunction of linear expansion valve	① Check stop valve. ②–④ Turn the power off and on again to check if F3 is displayed on restarting. If F3 is displayed, follow the F3 processing direction. ⑤ Correct to proper amount of refrigerant. ⑥ Check linear expansion valve. Refer to "10-4. HOW TO CHECK THE PARTS".

Check code	Abnormal point and detection method	Cause	Judgment and action
UP	**Compressor overcurrent interruption** Abnormal if overcurrent DC bus or compressor is detected after compressor starts operating for 30 seconds.	① Stop valve of outdoor unit is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective fan of outdoor units ⑤ Short cycle of outdoor units ⑥ Defective input circuit of outdoor controller board ⑦ Defective compressor ⑧ Defective outdoor power circuit board ⑨ Dip switch setting difference of outdoor controller circuit board	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U•V•W phase) to compressor. Refer to "10-6. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check outdoor fan. ⑤ Solve short cycle. ⑥ Replace outdoor controller circuit board. Note: Before the replacement of the outdoor controller circuit board, disconnect the wiring to compressor from the outdoor power circuit board and check the output voltage among phases, U, V, W, during test run. No defect on board if voltage among phases (U-V, V-W and W-U) is same. Make sure to perform the voltage check with same performing frequency. ⑦ Check compressor. Refer to "10-4. HOW TO CHECK THE PARTS". ⑧ Replace outdoor power circuit board. ⑨ Check the DIP switch setting of outdoor controller circuit board.
E0 or E4	**Remote controller transmission error (E0)/signal receiving error (E4)** ① Abnormal if main or sub remote controller cannot receive normally any transmission from indoor unit of refrigerant address “0” for 3 minutes. (Check code : E0) ② Abnormal if sub remote controller could not receive any signal for 2 minutes. (Check code: E0) ① Abnormal if indoor controller board cannot receive normally any data from remote controller board or from other indoor controller board for 3 minutes. (Check code: E4) ② Indoor controller board cannot receive any signal from remote controller for 2 minutes. (Check code: E4)	① Contact failure at transmission wire of remote controller ② All remote controllers are set as “sub” remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board. ③ Miswiring of remote controller ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board of refrigerant address “0” ⑥ Noise has entered into the transmission wire of remote controller.	① Check disconnection or looseness of indoor unit or transmission wire of remote controller. ② Set one of the remote controllers “main” if there is no problem with the action above. ③ Check wiring of remote controller. Refer to the indoor unit's Installation Manual for remote controller connection. If the cause of trouble is not in above ①–③, ④ Diagnose remote controllers. a) When “OK” is displayed, remote controllers have no problem. Turn the power off, and on again to check. If abnormality occurs again, replace indoor controller board. b) When “NG” is displayed, Replace remote controller. c) When "E3" or "ERC" is displayed, noise may be causing abnormality. Note: If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address “0” may be abnormal.
E1 or E2	**Remote controller control board** ① Abnormal if data cannot be normally read from the nonvolatile memory of the remote controller control board. (Check code: E1) ② Abnormal if the clock function of remote controller cannot be normally operated. (Check code: E2)	① Defective remote controller	① Replace remote controller.
E3 or E5	**Remote controller transmission error (E3)/signal receiving error (E5)** ① Abnormal if remote controller could not find blank of transmission path for 6 seconds and could not transmit. (Check code: E3) ② Remote controller receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Check code: E3) ① Abnormal if indoor controller board could not find blank of transmission path. (Check code: E5) ② Indoor controller board receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Check code: E5)	① 2 remote controller are set as “main.” (In the case of 2 remote controllers) ② Remote controller is connected with 2 indoor units or more. ③ Repetition of refrigerant address ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Noise has entered into transmission wire of remote controller.	① Set a remote controller to main, and the other to sub. ② Remote controller is connected with only one indoor unit. ③ The address changes to a separate setting. ④–⑥ Diagnose remote controller. a) When “OK” is displayed, remote controllers have no problem. Turn the power off, and on again to check. When becoming abnormal again, replace indoor controller board. b) When “NG” is displayed, replace remote controller. c) When “E3” or “ERC” is displayed, noise may be causing abnormality.

Check code	Abnormal point and detection method	Cause	Judgment and action
E6	**Interface unit/Flow temp. controller or outdoor unit communication error (Signal receiving error)** ① Abnormal if Interface unit/Flow temp. controller cannot receive any signal normally for 6 minutes after turning the power on. ② Abnormal if Interface unit/Flow temp. controller cannot receive any signal normally for 3 minutes.	① Contact failure, short circuit or, miswiring (converse wiring) of Interface unit/Flow temp. controller or outdoor unit connecting wire ② Defective transmitting receiving circuit of outdoor controller circuit board ③ Defective transmitting receiving circuit of Interface unit/Flow temp. controller ④ Noise has entered into Interface unit/Flow temp. controller or outdoor unit connecting wire.	Note: Check LED display on the outdoor controller circuit board. (Connect A-control service tool, PAC-SK52ST.) ① Check disconnection or looseness of Interface unit/Flow temp. controller or outdoor unit connecting wire of Interface unit/Flow temp. controller or outdoor unit. ②–④ Turn the power off, and on again to check. If abnormality occurs again, replace Interface unit/Flow temp. controller or outdoor controller circuit board.
E8	**Indoor/outdoor unit communication error (Signal receiving error) (Outdoor unit)** Abnormal if outdoor controller circuit board could not receive anything normally for 3 minutes.	① Contact failure of indoor/ outdoor unit connecting wire ② Defective communication circuit of outdoor controller circuit board ③ Defective communication circuit of indoor controller board ④ Noise has entered into indoor/ outdoor unit connecting wire.	① Check disconnection or looseness of indoor/ outdoor unit connecting wire of indoor or outdoor units. ②–④ Turn the power off, and on again to check. Replace indoor controller board or outdoor controller circuit board if abnormality is displayed again.
E9	**Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)** ① Abnormal if “0” receiving is detected 30 times continuously though outdoor controller circuit board has transmitted “1”. ② Abnormal if outdoor controller circuit board could not find blank of transmission path for 3 minutes.	① Indoor/ outdoor unit connecting wire has contact failure. ② Defective communication circuit of outdoor controller circuit board ③ Noise has entered power supply. ④ Noise has entered indoor/ outdoor unit connecting wire.	① Check disconnection or looseness of indoor/ outdoor unit connecting wire. ②–④ Turn the power off, and on again to check. Replace outdoor controller circuit board if abnormality is displayed again.
EF	**Non defined check code** This code is displayed when non defined check code is received.	① Noise has entered transmission wire of remote controller. ② Noise has entered indoor/ outdoor unit connecting wire. ③ Outdoor unit is not inverter models.	①② Turn the power off, and on again to check. Replace indoor controller board or outdoor controller circuit board if abnormality is displayed again. ③ Replace outdoor unit with inverter type outdoor unit.
Ed	**Serial communication error** ① Abnormal if serial communication between outdoor controller circuit board and outdoor power circuit board is defective.	① Breaking of wire or contact failure of connector CN2 between the outdoor controller circuit board and the outdoor power circuit board ② Breaking of wire or contact failure of connector CN4 between the outdoor controller circuit board and the outdoor power circuit board ③ Defective communication circuit of outdoor power circuit board ④ Defective communication circuit of outdoor controller circuit board for outdoor power circuit board	①② Check connection of each connector CN2 and CN4 between the outdoor controller circuit board and the outdoor power circuit board. ③ Replace outdoor power circuit board. ④ Replace outdoor controller circuit board.
P6	**Freezing/overheating protection is working** Overheating protection <HEAT mode> Abnormal if condensing temperature of pressure sensor (63HS) detects Tcond. °C or more and compressor operation frequency is less than or equal to 25 Hz. Detection is inoperative during defrosting.	① Overcharge of refrigerant ② Defective refrigerant circuit (clogs) ③ Malfunction of linear expansion valve ④ Reduced water flow · Clogged filter · Leakage of water ⑤ High temperature · Overload · Inlet water is too warm. ⑥ Defective water pump	①② Check operating condition of refrigerant circuit. ③ Check linear expansion valve. ④⑤ Check water piping. ⑥ Check water pump.



Tcond	stage-a	stage-b	stage-c	stage-d	stage-e	stage-f	stage-g	stage-s
SW75	63	61	60	58	56	53	50	61
SW100/120	63	62	61	60	59	57	51	61

Check code	Abnormal point and detection method	Cause	Judgment and action
P9	**Actual tank temperature thermistor (TH5)** ① The unit is 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally) ② Constantly detected during cooling, heating, heating ECO, anti freeze and hot water operation.	① Defective thermistor characteristics ② Contact failure of interface unit/ Flow temp. controller Refer to the indoor unit's Installation Manual for TH5 connection. ③ Breaking of wire or contact failure of thermistor wiring ④ Defective PCB of interface unit/ Flow temp. controller	①–③ Check resistance value of thermistor. 0℃ ···15.0 kΩ 30℃ 4.3 kΩ 10℃ ·····9.6 kΩ 40℃ 3.0 kΩ 20℃ ·····6.3 kΩ If you put force on (draw or bend) the lead wire with measuring resistance value of thermistor, breaking of wire or contact failure can be detected. ② Check contact failure of Interface unit/Flow temp. controller. Refer to the indoor unit's Installation Manual. Turn the power on again and check restart after inserting connector again. ④ Check actual tank temperature display on remote controller. Replace PCB of Interface unit/Flow temp. controller if there is abnormal difference with actual tank temperature. Turn the power off, and on again to operate after check.
L3–LL	**Indoor unit failure during defrosting.**	Indoor unit failure	Refer to the indoor unit's service manual.

10-3. TROUBLESHOOTING

Phenomena	Factor	Countermeasure
1. Remote controller display does not work.	①12 VDC is not supplied to remote controller.	① Check LED2 on indoor controller board. (1) When LED2 is lit: Check the remote controller wiring for breaking or contact failure. (2) When LED2 is blinking: Check short circuit of remote controller wiring. (3) When LED2 is not lit: Refer to No.3 below.
	②12–15 VDC is supplied to remote controller, however, no display is indicated. • "Please Wait" is not displayed. • "Please Wait" is displayed.	② Check the following. • Failure of remote controller if "Please Wait" is not displayed • Refer to No.2 below if "Please Wait" is displayed.
2. "Please Wait" display is remained on the remote controller.	① At longest 2 minutes after the power supply "Please Wait" is displayed to start up. ② Communication error between the remote controller and indoor unit ③ Communication error between the indoor and outdoor unit	① Normal operation ② Self-diagnosis of remote controller ③ "Please Wait" is displayed for 6 minutes at most in the case of indoor/outdoor unit communication error. Check LED3 on indoor controller board. (1) When LED3 is not blinking: Check indoor/outdoor connecting wire for miswiring. (Converse wiring of S1 and S2, or break of S3 wiring.) (2) When LED3 is blinking: Indoor/outdoor connecting wire is normal.
	④ Outdoor unit protection device connector is open.	④ Check LED display on outdoor controller circuit board. Refer to "10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS". Check protection device connector (63L and 63H) for contact failure. Refer to "10-6. TEST POINT DIAGRAM".

Phenomena	Factor	Countermeasure
3. When pressing the remote controller operation switch, the OPERATION display is appeared but it will be turned off soon.	① After cancelling to select function from the remote controller, the remote controller operation switch will not be accepted for approx. 30 seconds.	① Normal operation
4. Even controlling by the wireless remote controller, no beep is heard and the unit does not start operating. Operation display is indicated on wireless remote controller.	①The pair number settings of the wireless remote controller and indoor controller board are mismatched.	①Check the pair number settings.
5. When operating by the wireless remote controller, beep sound is heard, however, unit does not start operating.	①No operation for 2 minutes at most after the power supply ON. ②Local remote controller operation is prohibited. • Remote controlling adaptor is connected to CN32 on the indoor controller board. • Local remote controller operation is prohibited by centralized controller etc. since it is connected to MELANS. ③Phenomena of No.2.	①Normal operation ②Normal operation ③Check the phenomena No.2.
6. Remote controller display works normally and the unit performs cooling operation, however, the capacity cannot be fully obtained. (The air does not cool well.)	①Refrigerant shortage ②Filter clogging ③Heat exchanger clogging ④Air duct short cycle	①• If refrigerant leaks, discharge temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. • Check pipe connections for gas leakage. ②Open intake grille and check the filter. Clean the filter by removing dirt or dust on it. ③• If the filter is clogged, indoor pipe temperature rises and discharge pressure increases. Check if heat exchanger is clogged by inspecting discharge pressure. • Clean the heat exchanger. ④Remove the blockage.
7. Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	①Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault. ②Refrigerant shortage ③Lack of insulation for refrigerant piping ④Filter clogging ⑤Heat exchanger clogging ⑥Air duct short cycle ⑦Bypass circuit of outdoor unit fault	①• Discharge temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharge pressure. • Replace linear expansion valve. ②• If refrigerant leaks, discharge temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. • Check pipe connections for gas leakage. ③Check the insulation. ④Open intake grille and check the filter. Clean the filter by removing dirt or dust on it. ⑤• If the filter is clogged, indoor pipe temperature rises and discharge pressure increases. Check if heat exchanger is clogged by inspecting discharge pressure. • Clean the heat exchanger. ⑥Remove the blockage. ⑦Check refrigerant system during operation.
8. ①For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ②For 3 minutes after temperature adjuster turns on, the compressor will not stop operating even if temperature adjuster is turned off. (Compressor stops operating immediately when turning off by the remote controller.)	①②Normal operation (For protection of compressor)	①②Normal operation

Phenomena	Countermeasure
A flowing water sound or occasional hissing sound is heard.	■ These sounds can be heard when refrigerant and/or water is (are) flowing in the indoor unit or refrigerant pipe, or when the refrigerant and/or water is (are) chugging.
Water does not heat or cool well.	■ Clean the filter of water piping. (Flow is reduced when the filter is dirty or clogged.) ■ Check the temperature adjustment and adjust the set temperature. ■ Make sure that there is plenty of space around the outdoor unit.
Water is dripping or vapour is emitted from the outdoor unit.	■ During COOL mode, water may form and drip from the cool pipes and joints. ■ During HEAT mode, water may form and drip from the heat exchanger of outdoor unit. ■ During defrosting mode, water on the heat exchanger of outdoor unit evaporates and water vapour may be emitted.
The operation indicator does not appear in the remote controller display.	■ Turn on the power switch. "◉" will appear in the remote controller display.
"▨" appears in the remote controller display.	■ During external signal control, "▨" appears in the remote controller display and FTC operation cannot be started or stopped using the remote controller.
When restarting the outdoor unit soon after stopping it, it does not operate even though the ON/OFF button is pressed.	■ Wait approximately 3 minutes. (Operation has stopped to protect the outdoor unit.)
FTC operates without the ON/OFF button being pressed.	■ Is the on timer set? Press the ON/OFF button to stop operation. ■ Is the FTC connected to an external signal? Consult the concerned people who control the FTC. ■ Does "▨" appear in the remote controller display? Consult the concerned people who control the FTC. ■ Has the auto recovery feature from power failures been set? Press the ON/OFF button to stop operation.
FTC stops without the ON/OFF button being pressed.	■ Is the off timer set? Press the ON/OFF button to restart operation. ■ Is the air conditioner connected to a central remote controller? Consult the concerned people who control the FTC. ■ Does "▨" appear in the remote controller display? Consult the concerned people who control the FTC.
Remote controller timer operation cannot be set.	■ Are timer settings invalid? If the timer can be set, (WEEKLY) , (SIMPLE) , or (AUTO OFF) appears in the remote controller display.
"Please Wait" appears in the remote controller display.	■ The initial settings are being performed. Wait approximately 3 minutes. ■ If the remote controller is not only for FTC, change it.
A check code appears in the remote controller display.	■ The protection devices have operated to protect the FTC and outdoor unit. ■ Do not attempt to repair this equipment by yourself. Turn off the power switch immediately and consult your dealer. Be sure to provide the dealer with the model name and information that appeared in the remote controller display.

• If the unit cannot be operated properly after test run, refer to the following table to find the cause.

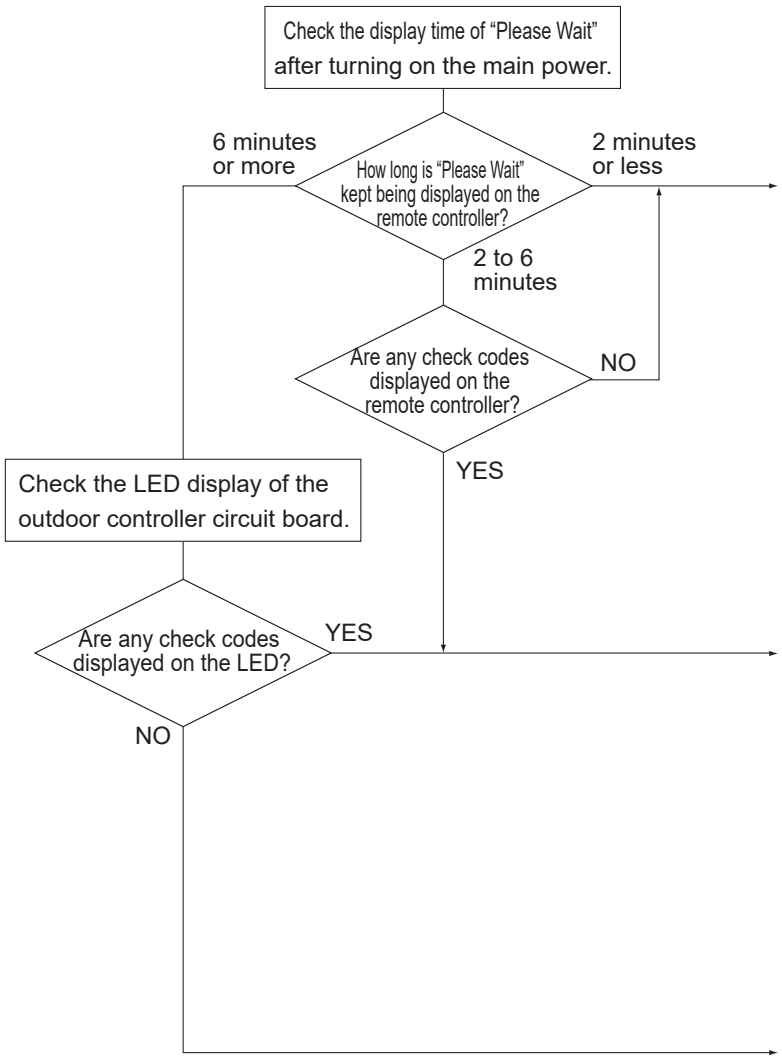
Symptom			Cause
Wired remote controller		LED 1, 2 (PCB in outdoor unit)	
Please Wait	For about 2 minutes after power-on	After LED 1, 2 are lit, LED 2 is turned off, then only LED 1 is lit. (Correct operation)	• For about 2 minutes following power-on, operation of the remote controller is not possible due to system startup. (Correct operation)
Please Wait → Check code	Subsequent to about 2 minutes after power-on	Only LED 1 is lit. → LED 1, 2 blink.	• Connector for the outdoor unit's protection device is not connected. • Reverse or open phase wiring for the outdoor unit's power terminal block (L1, L2, L3)
Display messages do not appear even when operation switch is turned ON (operation lamp does not light up).		Only LED 1 is lit. → LED 1 blinks twice, LED 2 blinks once.	• Incorrect wiring between FTC and outdoor (incorrect polarity of S1, S2, S3) • Remote controller wire short

Note: Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)

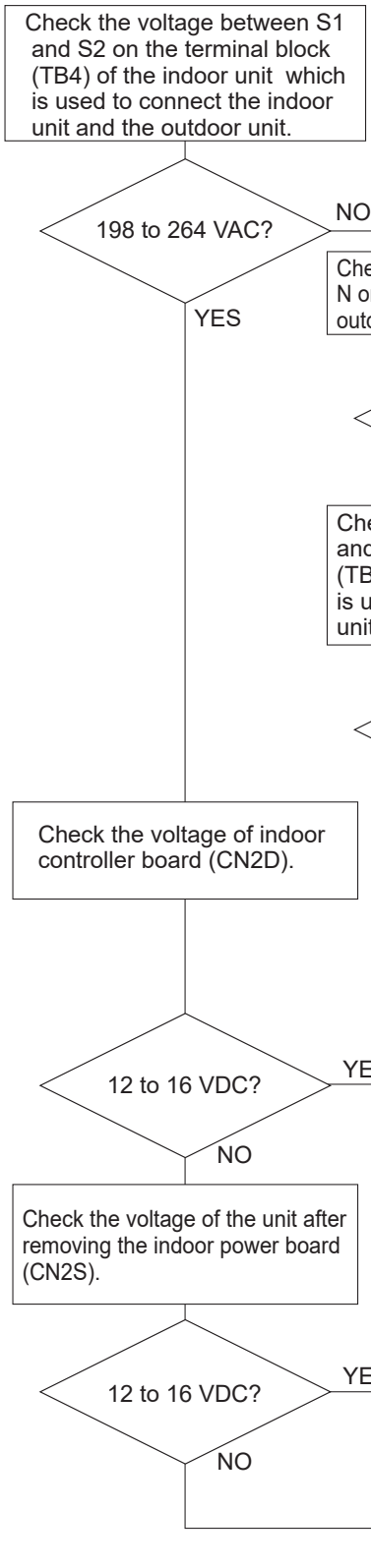
For description of each LED (LED1, 2, 3) provided on the FTC, refer to the following table.

LED1 (power for microprocessor)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED2 (power for remote controller)	Indicates whether power is supplied to the remote controller. This LED lights only in the case of the FTC which is connected to the outdoor unit refrigerant addresses "0".
LED3 (communication between FTC and outdoor units)	Indicates state of communication between the FTC and outdoor units. Make sure that this LED is always blinking.

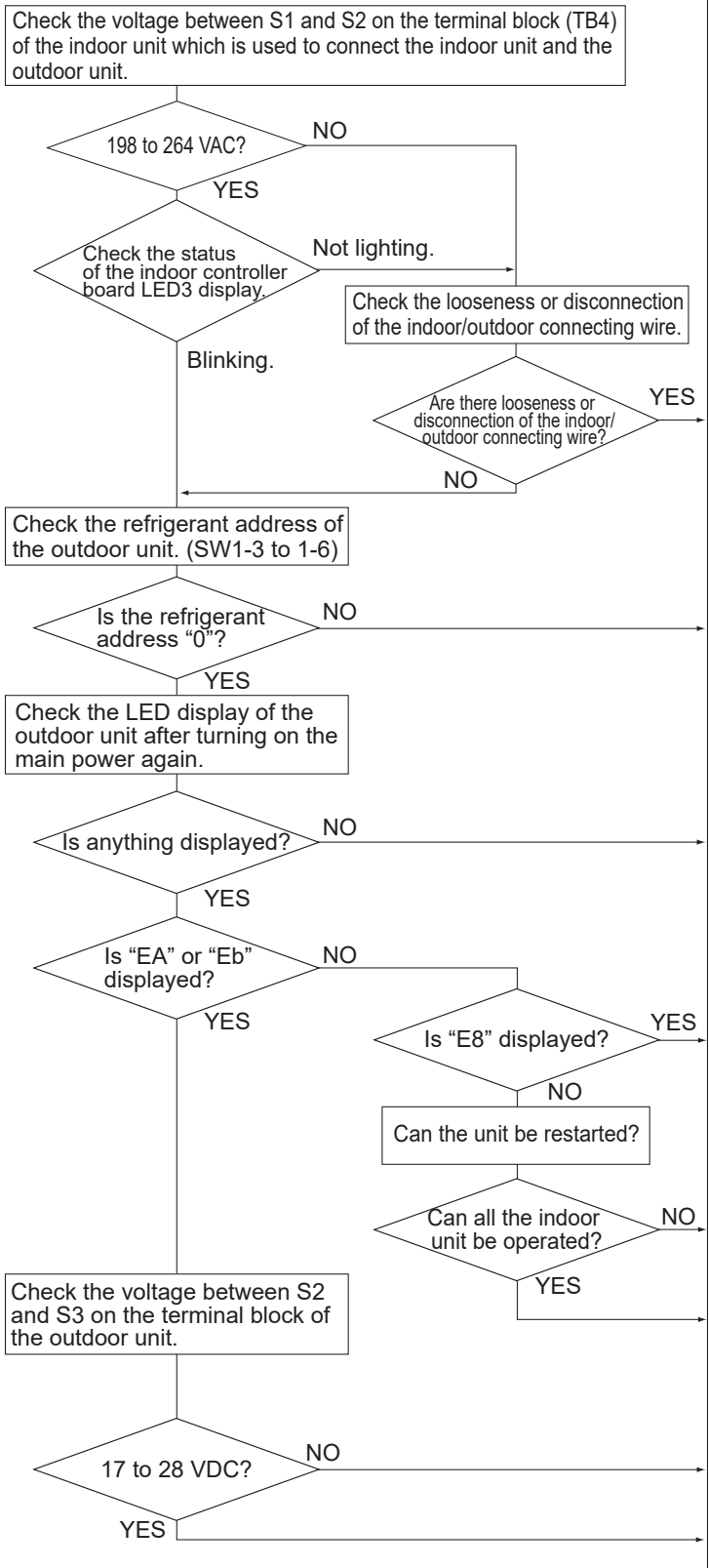
Symptoms: “Please Wait” is kept being displayed on the remote controller.

Diagnosis flow	Cause	Inspection method and troubleshooting
	• “Please Wait” will be displayed during the startup diagnosis after turning on the main power.	• Normal The startup diagnosis will be over in around 2 minutes.
	• Miswiring of indoor/ outdoor connecting wire • Breaking of indoor/ outdoor connecting wire (S3) • Defective indoor controller board • Defective outdoor controller circuit board	• Refer to “Self-diagnosis action table” in order to solve the trouble. • In the case of communication errors, the display of remote controller may not match the LED display of the outdoor unit.
	• Defective indoor controller board • Defective remote controller	

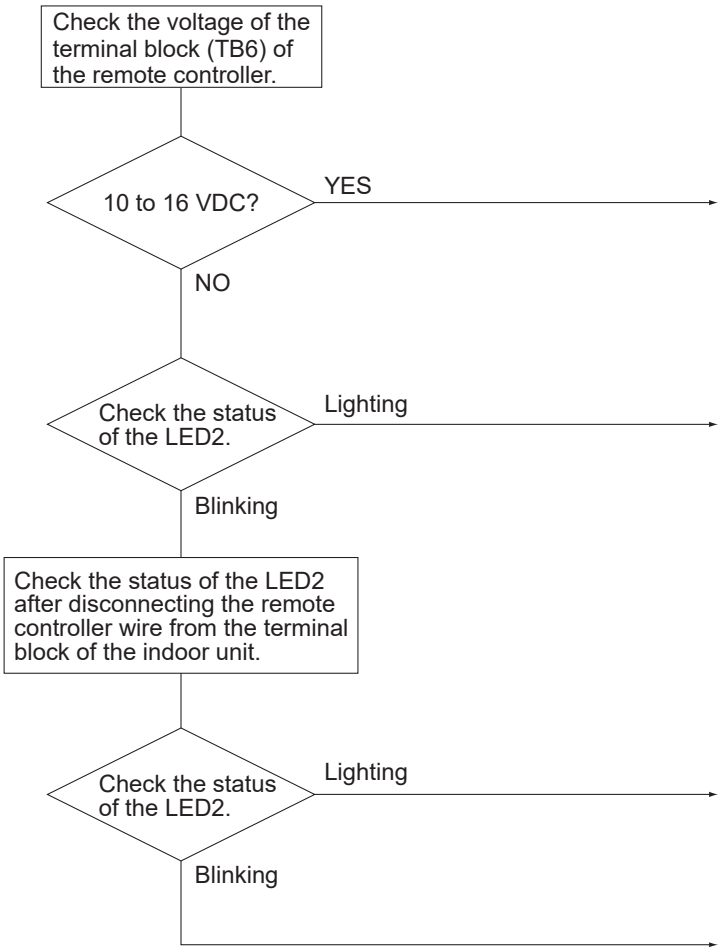
Symptoms: Nothing is displayed on the remote controller. ①	LED display of the indoor controller board LED1 : ○ LED2 : ○ LED3 : ○

Diagnosis flow	Cause	Inspection method and troubleshooting
	• Troubles concerning power supply • Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown. • Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown. • Defective indoor controller board • Miswiring, breaking or poor connection of indoor/outdoor connecting wire • Defective indoor power board	• Check the power wiring to the outdoor unit. • Check the breaker. • Check the wiring of the outdoor unit. • Check if the wiring is bad. Check if the fuses are blown. The fuses on the outdoor controller circuit board will be blown when the indoor /outdoor connecting wire short-circuits. • Check if miswiring, breaking or poor contact is causing this problem. Indoor/outdoor connecting wire is polarized 3-core type. Connect the indoor unit and the outdoor unit by wiring each pair of S1, S2 and S3 on the both side of indoor/outdoor terminal blocks. • Replace the indoor controller board. • Check if there is miswiring or breaking of wire. • Replace the indoor power board.

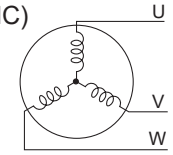
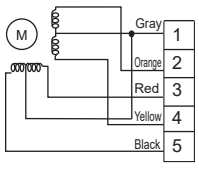
Symptoms: Nothing is displayed on the remote controller. ②	LED display of the indoor controller board LED1 : ☀ LED2 : ○ LED3 : ○ or ◐

Diagnosis flow	Cause	Inspection method and troubleshooting
	• Breaking or poor contact of the indoor/outdoor connecting wire • Normal Only the unit which has the refrigerant address “0” supplies power to the remote controller. • Defective outdoor controller circuit board • Defective outdoor controller circuit board • Defective indoor controller board • Influence of electromagnetic noise • Defective outdoor power circuit board • Defective indoor power board	• Fix the breaking or poor contact of the indoor/outdoor connecting wire. • Set the refrigerant address to “0”. In the case of the multiple grouping system, recheck the refrigerant address again. • Replace the outdoor controller circuit board. • Replace the outdoor controller circuit board. • Replace the indoor controller board of the indoor unit which does not operate. • Not abnormal. There may be the influence of electromagnetic noise. Check the transmission wire and get rid of the causes. • Replace the outdoor power circuit board. • Replace the indoor power board.

Symptoms: Nothing is displayed on the remote controller. ③	LED display of the indoor controller board LED1 : ● LED2 : ◐ or ● LED3 : —

Diagnosis flow	Cause	Inspection method and troubleshooting
	• Defective remote controller • Breaking or poor contact of the remote controller wire • The remote controller wire short-circuits • Defective indoor controller board	• Replace the remote controller. • Check if there is breaking or poor contact of the remote controller wire. Check the voltage of the terminal block connecting the remote controller wire. If it is not between 10 and 16 VDC, the indoor controller board must be defective. • Check if the remote controller wire is short-circuited. • Replace the indoor controller board.

10-4. HOW TO CHECK THE PARTS

<table>
<tr><th>Parts name</th><th>Checkpoints</th></tr>
<tr><td>Thermistor (TH3)
<Liquid>
Thermistor (TH4)
<Discharge>
Thermistor (TH6)
<2-phase pipe>
Thermistor (TH7)
<Ambient>
Thermistor (TH8)
<Heat sink>
(SW75V, SW100/120Y)
Thermistor (TH34)
<Comp. surface></td><td>Disconnect the connector then measure the resistance with a multimeter.
(At the ambient temperature 10 to 30℃)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH4
TH34</td><td>160 to 410 kΩ</td><td rowspan="3">Open or short</td></tr>
<tr><td>TH3
TH6
TH7</td><td>4.3 to 9.6 kΩ</td></tr>
<tr><td>TH8</td><td>39 to 105 kΩ</td></tr>
</table></td></tr>
<tr><td>Fan motor
(MF1,MF2)</td><td>Refer to the next page.</td></tr>
<tr><td>Solenoid valve coil
<4-way valve>
(21S4)</td><td>Measure the resistance between the terminals with a multimeter.
(At the ambient temperature 20℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1435±150 Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Motor for compressor
(MC)
 
</td><td>Measure the resistance between the terminals with a multimeter.
(Winding temperature 20℃)
<table>
<tr><th colspan="3">Normal</th><th>Abnormal</th></tr>
<tr><td>SW75V</td><td>SW100/120V</td><td>SW100/120Y</td><td rowspan="2">Open or short</td></tr>
<tr><td>0.95 Ω</td><td>0.19 Ω</td><td>0.30 Ω</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve
(LEV-A/LEV-B)
 
</td><td>Disconnect the connector then measure the resistance with a multimeter.
(Winding temperature 20℃)
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>Gray - Black</td><td>Gray - Red</td><td>Gray - Yellow</td><td>Gray - Orange</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">46±3 Ω</td></tr>
</table></td></tr>
</table>

Check method of DC fan motor (fan motor/outdoor controller circuit board)

① Notes
- High voltage is applied to the connector (CNF1, 2) for the fan motor. Pay attention to the service.
- Do not pull out the connector (CNF1, 2) for the motor with the power supply on.
  (It causes trouble of the outdoor controller circuit board and fan motor.)

② Self check
Symptom : The outdoor fan cannot rotate.

Fuse check
Check the fuse (F5) on outdoor controller board.

↓

Did the fuse blow? → Yes → Replace the outdoor controller board (C.B) and the defective fan motor (MF1, 2).

↓ No

Wiring contact check
Contact of fan motor connector (CNF1, 2)

↓

Is there contact failure? → Yes → Correct the wiring.

↓ No

Fan motor check (CNF1, CNF2)
CNF1: ALL
CNF2: SW100/120 only

UNIT	SW75V, SW100/120
FAN MOTOR	RG61V143
Measuring points	Resistance
pin1–pin4	∞
pin5–pin4	50 kΩ
pin6–pin4	150 kΩ
pin7–pin4	∞

↓

Is the resistance abnormal? → Yes → Replace the defective fan motor

↓ No

Power supply check (Remove the connector (CNF1, 2))
Measure the voltage in the outdoor controller circuit board.
TEST POINT ① : V_{DC} (between 1 (+) and 4 (−) of the fan connector):V_{DC} 250–330 VDC
TEST POINT ② : V_{CC} (between 5 (+) and 4 (−) of the fan connector):V_{CC} 15 VDC

↓

Is the voltage normal? → Yes → Replace the defective fan motor.

↓ No

Replace the outdoor controller board.

↓

Check the operation. → OK → COMPLETE

↓ Fail

Replace the defective fan motor.

Replace the defective fan motor. → ↓ Yes

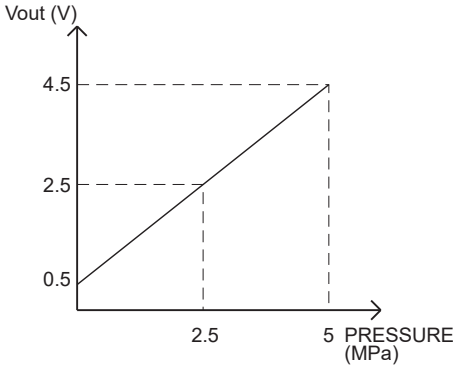
Check the operation of fan. → OK → COMPLETE

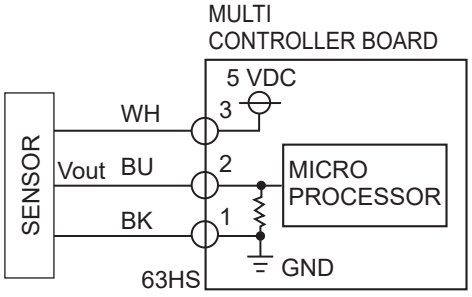
↓ Fail

Replace the outdoor controller board.

10-5. HOW TO CHECK THE COMPONENTS

<HIGH PRESSURE SENSOR>





③-① : 5 V (DC)
②-① : Output Vout (DC)

<Thermistor feature chart>

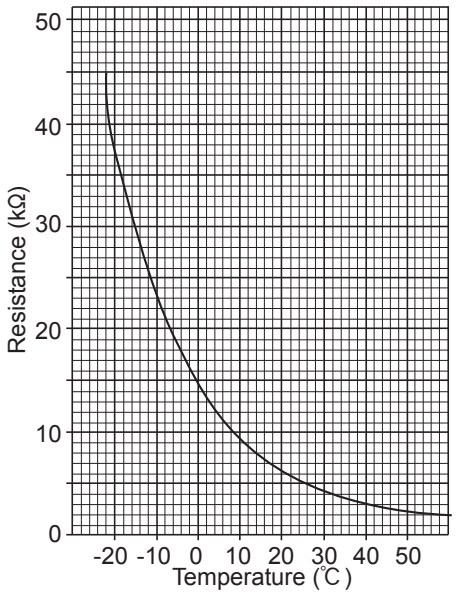
Low temperature thermistors

- Thermistor <Liquid> (TH3)
- Thermistor <2-phase pipe> (TH6)
- Thermistor <Ambient> (TH7)

Thermistor R0 = 15 kΩ ± 3%
B constant = 3480 ± 1%

$$R_t = 15\exp\{3480(\frac{1}{273+t} - \frac{1}{273})\}$$

0℃	15 kΩ	30℃	4.3 kΩ
10℃	9.6 kΩ	40℃	3.0 kΩ
20℃	6.3 kΩ		
25℃	5.2 kΩ		



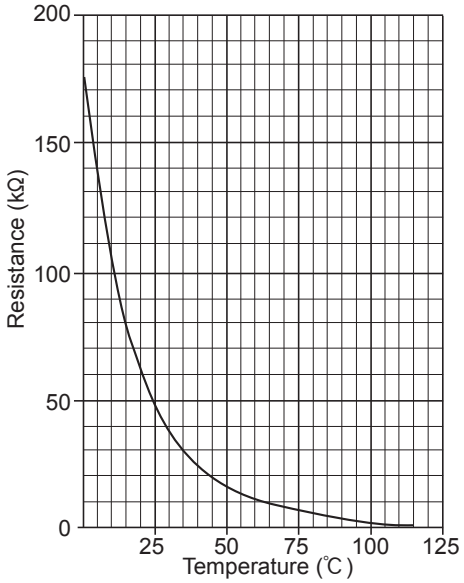
Medium temperature thermistor

- Thermistor <Heat sink> (TH8)
  (SW75V, SW100/120Y only)

Thermistor R50 = 17 kΩ ± 2%
B constant = 4150 ± 3%

$$R_t = 17\exp\{4150(\frac{1}{273+t} - \frac{1}{323})\}$$

0℃	180 kΩ
25℃	50 kΩ
50℃	17 kΩ
70℃	8 kΩ
90℃	4 kΩ



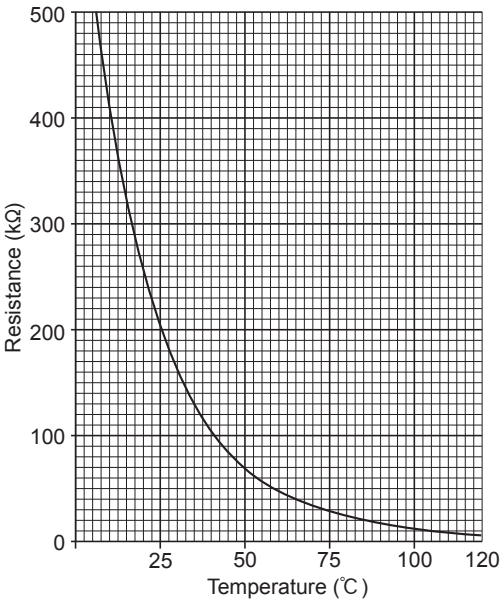
High temperature thermistors

- Thermistor <Discharge> (TH4)
- Thermistor <Comp. surface> (TH34)

Thermistor R120 = 7.465 kΩ ± 2%
B constant = 4057 ± 2%

$$R_t = 7.465\exp\{4057(\frac{1}{273+t} - \frac{1}{393})\}$$

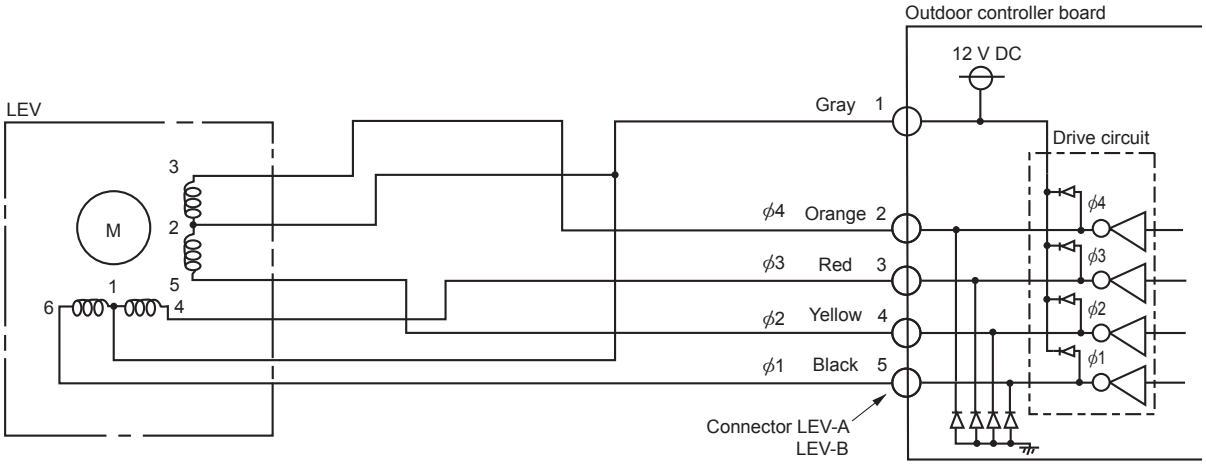
20℃	250 kΩ	70℃	34 kΩ
30℃	160 kΩ	80℃	24 kΩ
40℃	104 kΩ	90℃	17.5 kΩ
50℃	70 kΩ	100℃	13.0 kΩ
60℃	48 kΩ	110℃	9.8 kΩ



Linear expansion valve

(1) Operation summary of the linear expansion valve

• Linear expansion valve opens/closes through stepping motor after receiving the pulse signal from the outdoor controller board.
• Valve position can be changed in proportion to the number of pulse signal.
<Connection between the outdoor controller board and the linear expansion valve>



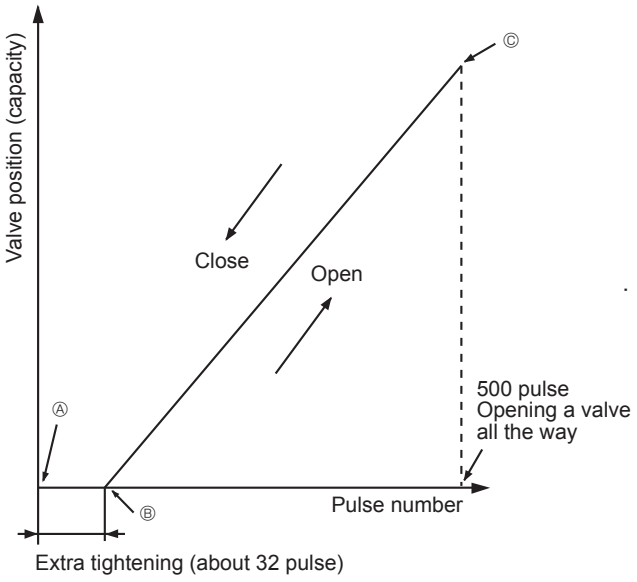
<Output pulse signal and the valve operation>

Output (Phase)	Output							
	1	2	3	4	5	6	7	8
ϕ1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
ϕ2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
ϕ3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
ϕ4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

The output pulse shifts in the following order.
Opening a valve : 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8
Closing a valve : 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1

· When linear expansion valve operation stops, all output phases become OFF.

(2) Linear expansion valve operation



· When the power is turned on, 700 pulse closing valve signal will be sent till it goes to Ⓐ point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)

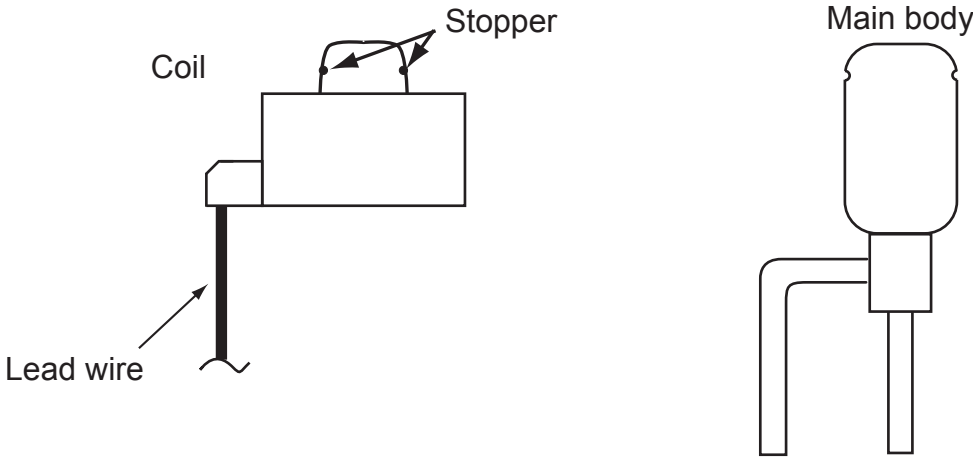
When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓑ to Ⓐ or when the valve is locked, more sound can be heard.
No sound is heard when the pulse number moves from Ⓑ to Ⓐ in case coil is burnt out or motor is locked by open-phase.

· Sound can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

(3) How to attach and detach the coil of linear expansion valve

<Composition>

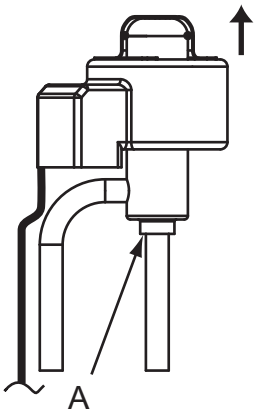
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and detach the coil by pulling it upward.

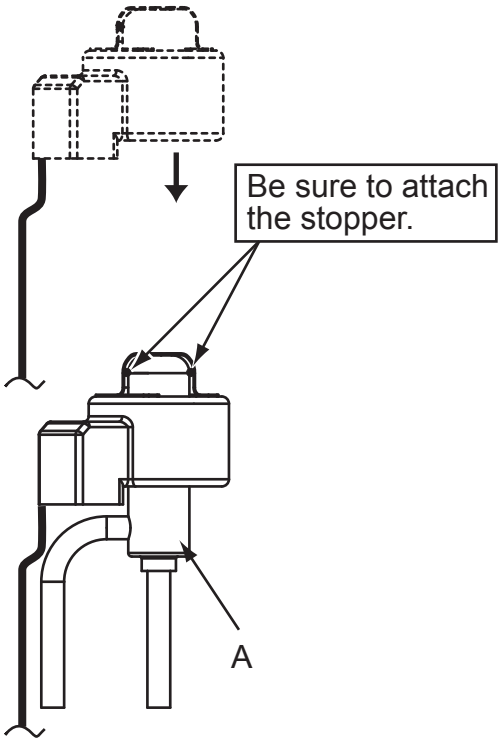
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<How to attach the coil>

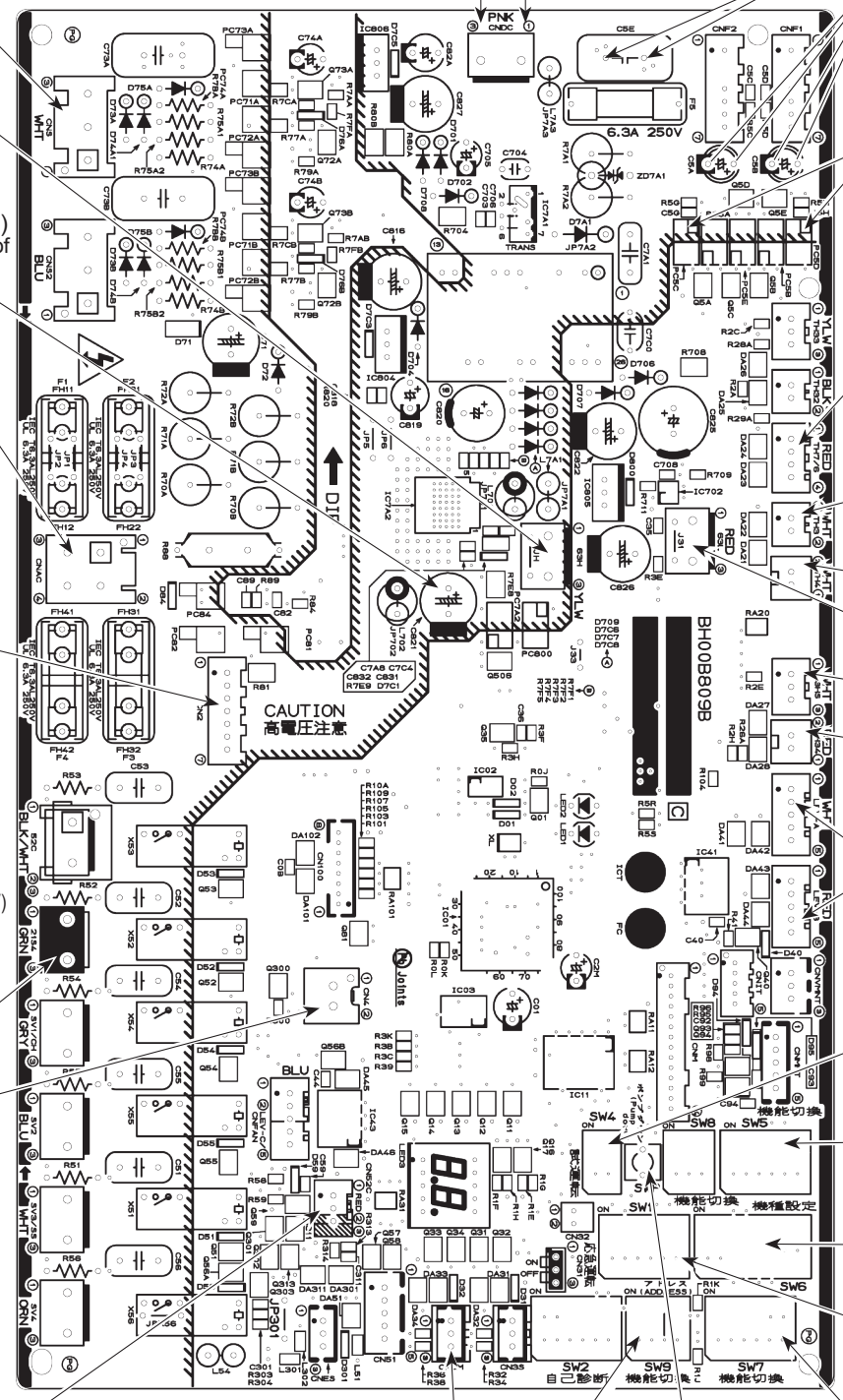
Hold the lower part of the main body (shown as A) firmly so that the main body does not move and attach the coil by inserting it downward into the main body. Then securely attach the coil stopper to main body. (At this time, be careful that stress is not added to lead wire and main body is not wound by lead wire.) If the stopper is not firmly attached to main body, coil may be detached from the main body and that can cause defective operation of linear expansion valve.

To prevent piping stress, be sure to attach the coil holding the main body of linear expansion valve firmly. Otherwise pipe may break.



10-6. TEST POINT DIAGRAM
Outdoor controller circuit board

<CAUTION> TEST POINT① is high voltage.



CNDC
280–380 VDC Connect from outdoor power circuit board for VHA, connect from noise filter board for YHA(CNDC)

V_{DC} (TEST POINT ①)
(voltage between pins of C5E)
: 250–380 VDC

CNS
(Indoor/outdoor unit connecting wire)

V_{SP} (TEST POINT ③)
(voltage between pins of C5A, C5B): 0 VDC (when stopped), 1–6.5 VDC (when operated)

63H
High pressure switch

V_{FG} (TEST POINT ④)
(voltage between right pins of PC5C and PC5D, pin 3 and pin 4)

V_{CC} (TEST POINT ②)
(voltage between pins of C821): 15 VDC

TH6
Thermistor
<2-phase pipe>
TH7
Thermistor<Ambient>

CNAC
②–④: Power supply for outdoor controller circuit board (230 VAC)
①–③: Power supply for indoor and outdoor unit connection wire (230 VAC)

TH3
Thermistor
<Liquid>

TH4
Thermistor <Discharge>

63L
Low pressure switch
(SW100/120)

CN2
Connect to the outdoor power circuit board (CN2)
①–⑤: Power circuit board → Transmitting signal to the controller circuit board (0–5 VDC)
②–⑤: Zero cross signal (0-5VDC)
③–④: Not used. (SW75V,100/120Y) 18 VDC (SW100/120V)
⑥–⑤: 16 VDC
⑦–⑤: 16 VDC
[⑤: ⊖ ①,②,⑥,⑦: ⊕]

63HS
High pressure sensor

TH34
Thermistor
<Comp. surface>

LEV-A,-B
Linear expansion valve

21S4
4-way valve

SW4
Test operation

CN4
Transmission to outdoor power circuit board (CN4)

SW5
Function switch,
Model select

SW6
Model select

SW1
Manual defrost, detect history record reset, refrigerant address

CN52C
(Connect to the outdoor noise filter circuit board (SW75V)/ the outdoor power circuit board (SW100/120V))
Only for SW·VHA

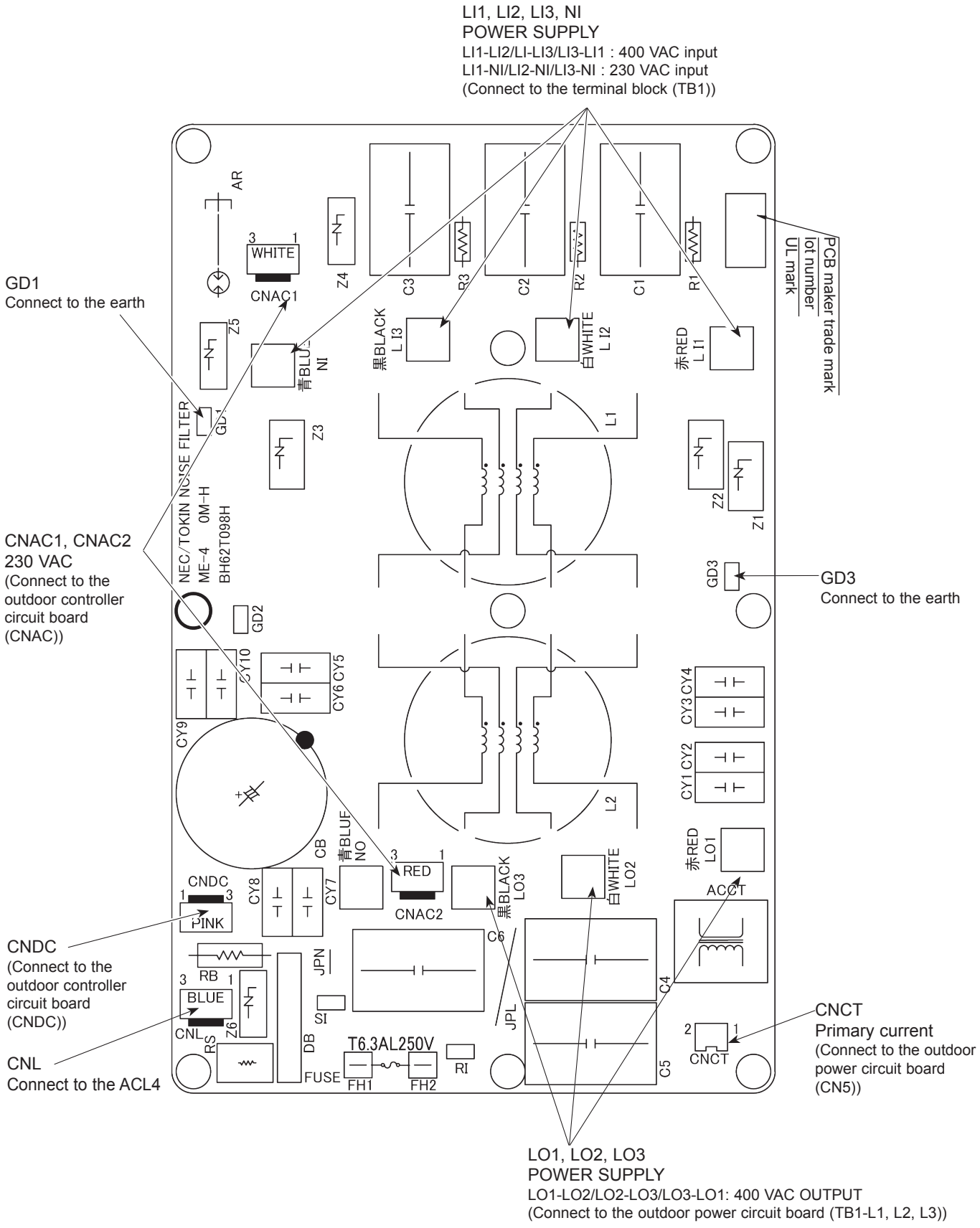
SW9
Function switch

SWP
Pump down

SW7
Demand control setting

CNDM
①–②: Input of low-level sound priority mode
①–③: Input of external contact point

Outdoor noise filter circuit board
PUHZ-SW100YHAR6 PUHZ-SW120YHAR6



Outdoor power circuit board
PUHZ-SW75VHAR6

Brief Check of DIP-IPM and D.B.
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).
1. Check of DIP-IPM
P2 - U , P2 - V , P2 - W , N2 - U , N2 - V , N2 - W
2. Check of IGBT (Q600)
DB3 + - DB3 −
3. Check of diode bridge
P2 - L, P2 - N, N2 - L, N2 - N
Note: The marks N1 , N2 , P1 , P2 , U , V , W , L , N , + and − shown in the diagram are not actually printed on the board.

U, V, W
Connect to the compressor (MC)
Voltage among phases: 10–180 VAC

DIP-IPM

IGBT (Q600)

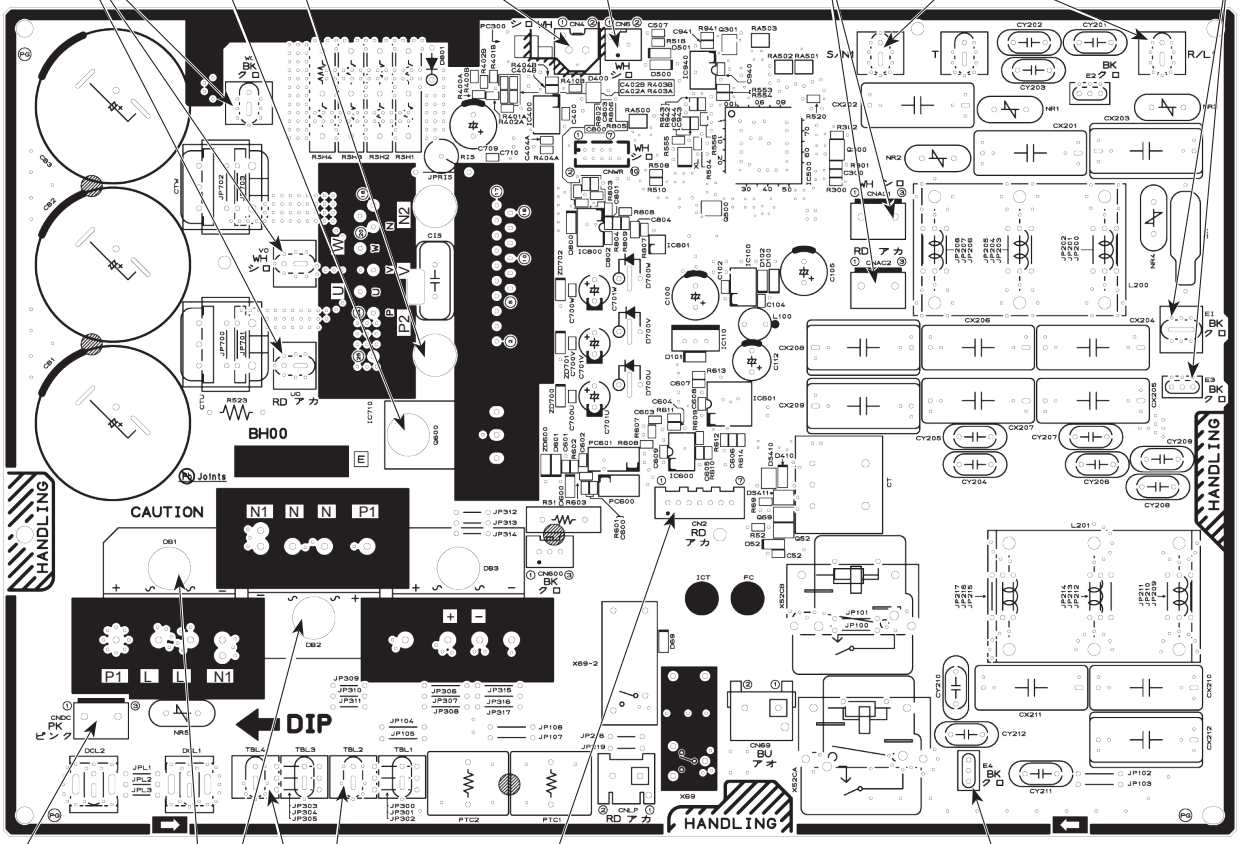
CN4
Connect to the outdoor controller circuit board (CN4)

CN6
Thermistor (TH8)
<Heat sink>

CNAC1, CNAC
Connect to the outdoor controller circuit board (230 VAC)

R/L1, S/N1
Voltage of 230 VAC is input. (Connect to the terminal block (TB1))

EI, E3
Connect to the earth



E4
Connect to the earth

CNDC
280–380 VDC
Connect to the outdoor controller circuit board (CNDC)

Diode bridge (DB1, DB2)

TBL2, TBL4
Connect to ACL

CN2
Connect to the outdoor controller circuit board (CN2)
①–⑤: Outdoor power circuit board → Transmitting signal to the outdoor controller circuit board (0–5 VDC)
②–⑤: Zero cross signal (0–5 VDC)
③–④: 15 VDC
⑥–⑤: 16 VDC
⑦–⑤: 16 VDC
[①, ②, ⑥, ⑦ : ⊕ ; ⑤ : ⊖]

Outdoor power circuit board
PUHZ-SW100VHAR6
PUHZ-SW120VHAR6

Brief Check of POWER MODULE
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).
1. Check of POWER MODULE
 ① Check of DIODE circuit
 R-L1, S-L1, R-N1, S-N1
 ② Check of IGBT circuit
 L2- N1
 ③ Check of INVERTER circuit
 P-U, P-V, P-W, N1-U, N1-V, N1-W
Note: The marks R, S, L1, L2, P, N1, U, V and W shown in the diagram are not actually printed on the board.

CN2
Connect to the outdoor controller circuit board (CN2)
①–⑤:Transmitting signal to outdoor controller circuit board (0–5 VDC)
②–⑤: Zero cross signal (0–5 VDC)
③–④: 18 VDC
⑥–⑤: 16 VDC
⑦–⑤: 16 VDC

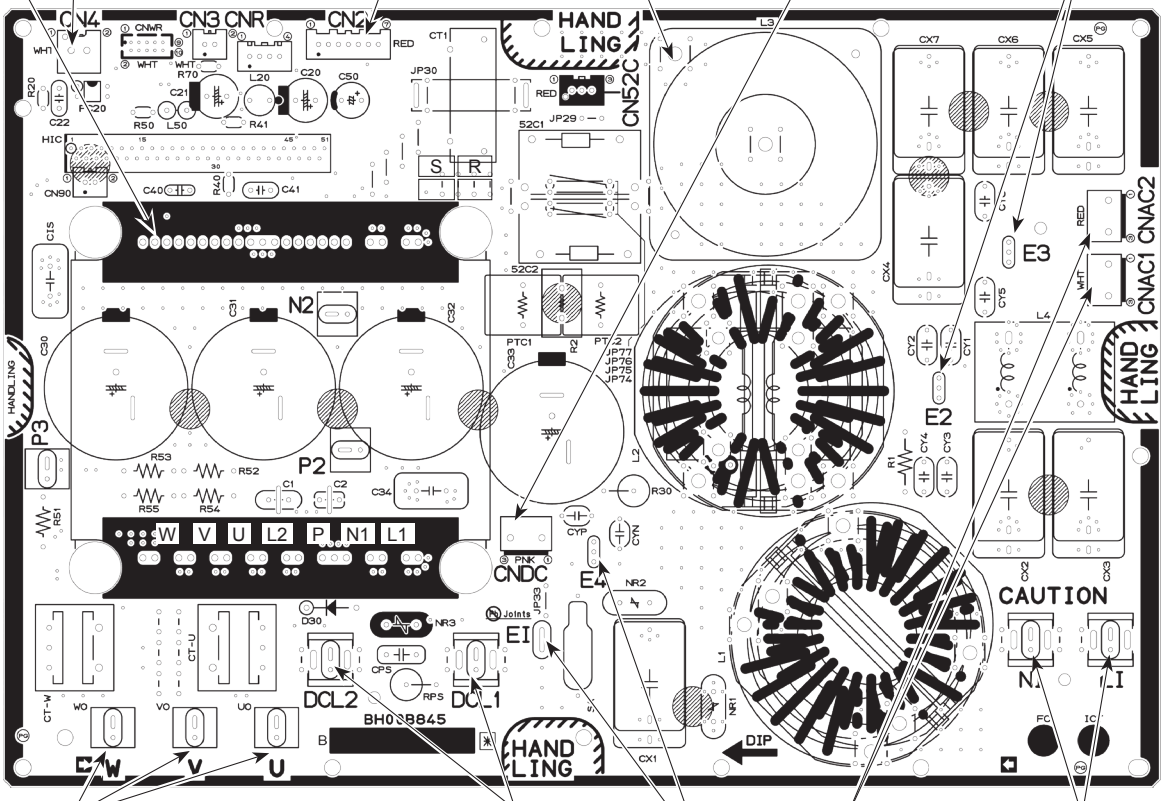
CN4
Connect to the outdoor controller circuit board (CN4)

Power module

CN52C
52C driving signal
Connect to the outdoor controller circuit board (CN52C)

CNDC
280–380 VDC (①+, ③−)
Connect to the outdoor controller circuit board (CNDC)

E2, E3
Connect to the earth



U/V/W
Connect to the compressor (MC) Voltage among phases: 10–180 VAC

DCL1, DCL2
Connect to DCL

EI, E4
Connect to the earth

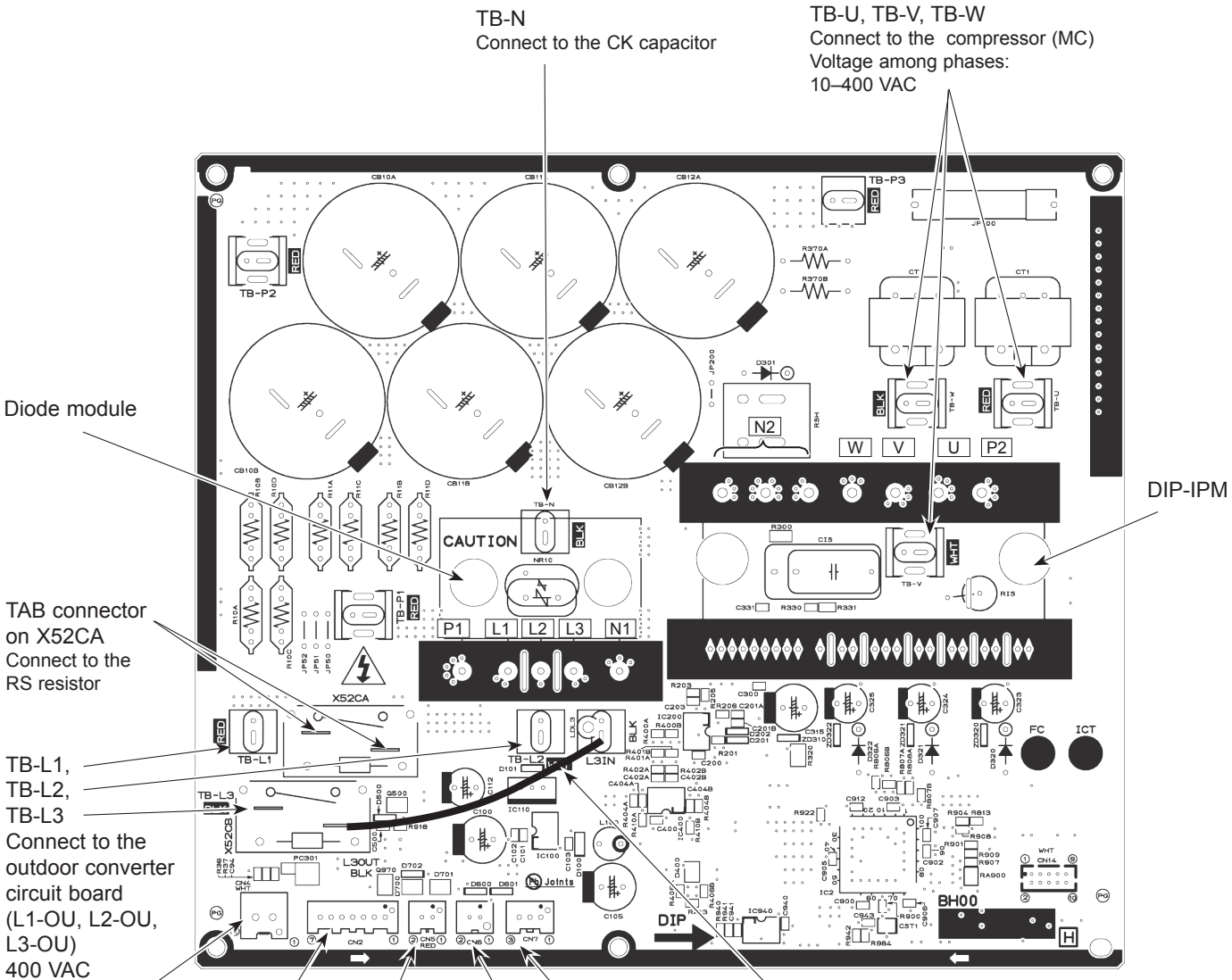
CNAC1, CNAC2
230 VAC
Connect to the outdoor controller circuit board (CNAC)

NI, LI
Voltage of 230 VAC is input (Connect to the terminal block (TB1))

Outdoor power circuit board
PUHZ-SW100YHAR6
PUHZ-SW120YHAR6

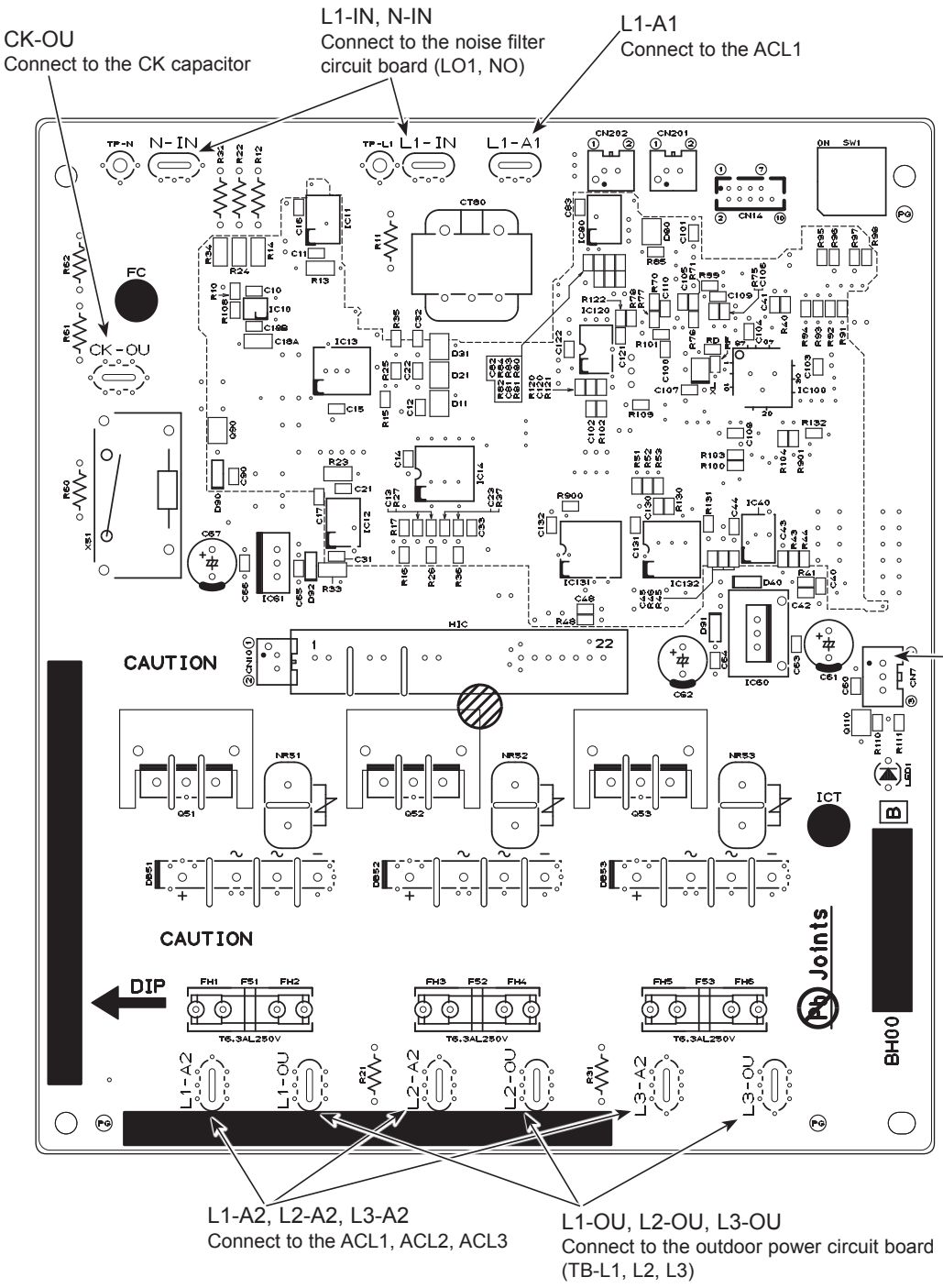
Brief Check of POWER MODULE
If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).
1. Check of DIODE MODULE
L1 - P1, L2 - P1, L3 - P1, L1 - N1 , L2 - N1 , L3 - N1
2. Check of DIP-IPM
P2 - U , P2 - V , P2 - W , N2 - U , N2 - V , N2 - W

Note: The marks L1 , L2, L3 , N1 ,N2, P1, P2, U , V and W shown in the diagram are not actually printed on the board.



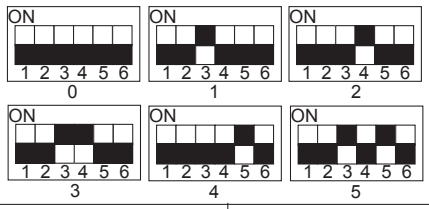
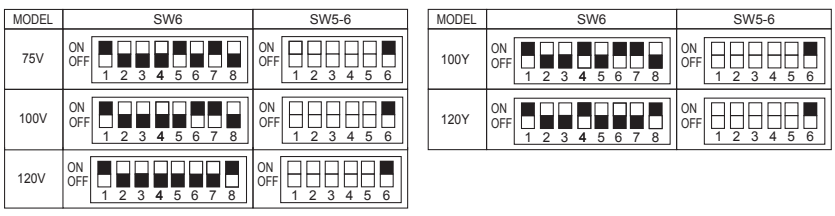
CN2
Connect to the outdoor controller circuit board (CN2)
①–⑤: Power circuit board → Transmitting signal to the controller board (0–5 VDC)
②–⑤: Zero cross signal (0–5 VDC)
③–④: Not used
⑥–⑤: 16 VDC
⑦–⑤: 16 VDC
[⑤ :⊖ ①, ②, ⑥, ⑦ :⊕]

Outdoor converter circuit board
PUHZ-SW100YHAR6 PUHZ-SW120YHAR6



10-7. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS

(1) Function of switches

<table>
<tr><th rowspan="2">Type of Switch</th><th rowspan="2">Switch</th><th rowspan="2">No.</th><th rowspan="2">Function</th><th colspan="2">Action by the switch operation</th><th rowspan="2">Effective timing</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="7">DIP switch</td><td rowspan="5">SW1</td><td>1</td><td>Manual defrost *1</td><td>Start</td><td>Normal</td><td>When compressor is working in heating operation. *1</td></tr>
<tr><td>2</td><td>Abnormal history clear</td><td>Clear</td><td>Normal</td><td>Off or operating</td></tr>
<tr><td>3</td><td rowspan="4">Refrigerant address setting</td><td colspan="2" rowspan="4"> 
</td><td rowspan="4">When power supply ON</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td></tr>
<tr><td>6</td></tr>
<tr><td rowspan="2">SW4</td><td>1</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>2</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Push switch</td><td colspan="2">SWP</td><td>Pump down</td><td>Start</td><td>Normal</td><td>Under suspension</td></tr>
<tr><td rowspan="20">DIP switch</td><td rowspan="4">SW5</td><td>1</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>2</td><td>Power failure automatic recovery *2</td><td>Auto recovery</td><td>No auto recovery</td><td>When power supply ON</td></tr>
<tr><td>3,4,5</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>6</td><td>model select</td><td colspan="3">Following SW5-6 reference</td></tr>
<tr><td rowspan="6">SW7*3</td><td>1</td><td>Mode select *4</td><td>No function</td><td>Low noise mode</td><td>Always</td></tr>
<tr><td>2</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>3</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>4</td><td rowspan="2">Breaker size setting (Only SW75)</td><td colspan="2" rowspan="2"><table>
<tr><th colspan="2">SW7</th><th colspan="2">Breaker size</th></tr>
<tr><th>4</th><th>5</th><th>Both for indoor unit and outdoor unit</th><th>Only for outdoor unit</th></tr>
<tr><td>OFF</td><td>OFF</td><td>25A (Default)</td><td>20A</td></tr>
<tr><td>OFF</td><td>ON</td><td>20A</td><td>16A</td></tr>
<tr><td>ON</td><td>ON</td><td>16A</td><td>—</td></tr>
</table></td><td rowspan="2">When power supply ON</td></tr>
<tr><td>5</td></tr>
<tr><td>6</td><td>Defrost setting</td><td>For high humidity</td><td>Normal</td><td>Always</td></tr>
<tr><td rowspan="3">SW8</td><td>1</td><td>Use of existing pipe</td><td>Used</td><td>Not used</td><td>Always</td></tr>
<tr><td>2</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>3</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td rowspan="3">SW9</td><td>1</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>2</td><td>Function switch</td><td>Valid</td><td>Normal</td><td>Always</td></tr>
<tr><td>3,4</td><td>No function</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td rowspan="8">SW6</td><td>1</td><td rowspan="9">Model select</td><td colspan="3" rowspan="9"> 
</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td></tr>
<tr><td>6</td></tr>
<tr><td>7</td></tr>
<tr><td>8</td></tr>
<tr><td>SW5</td><td>6</td></tr>
</table>

*1 Manual defrost should be done as follows.
①Change the DIP SW1-1 on the outdoor controller board from OFF to ON.
②Manual defrost will start by the above operation ① if all these conditions written below are satisfied.
• Heat mode setting
• 10 minutes have passed since compressor started operating or previous manual defrost is finished.
• Pipe temperature is less than or equal to 8℃.
Manual defrost will finish if certain conditions have been satisfied.
Manual defrost can be done if above conditions have been satisfied when DIP SW1-1 is changed from OFF to ON.
After DIP SW1-1 is changed from OFF to ON, there is no problem if DIP SW1-1 is left ON or changed to OFF again. This depends on the service conditions.

*2 'Power failure automatic recovery' can be set by either remote controller or this DIP SW. If one of them is set to ON, 'Auto recovery' activates. Please set "Auto recovery" basically by remote controller because all units do not have DIP SW. Please refer to the indoor unit installation manual.

*3 Please do not use SW7-3 to 6 usually. Trouble might be caused by the usage condition.

*4 It is effective only in the case of external input. (Local wiring is necessary. Refer to the next page: Special function.)

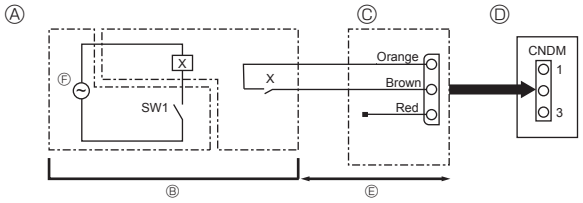
Special function

(a) Low-level sound priority mode (Local wiring)

By performing the following modification, operation noise of the outdoor unit can be reduced by about 3-4 dB.
The low noise mode will be activated when a commercially available timer or the contact input of an ON/OFF switch is added to the CNDM connector (option) on the control board of the outdoor unit.

- The ability varies according to the outdoor temperature and conditions, etc.

①Complete the circuit as shown when using the external input adapter (PAC-SC36NA-E). (Option)
②SW7-1 (Outdoor unit control board): OFF
③SW1 ON: Low noise mode
SW1 OFF: Normal operation



Ⓐ Circuit diagram example (low noise mode)
Ⓑ On-site arrangement
Ⓒ External input adapter (PAC-SC36NA-E)

X: Relay
Ⓓ Outdoor unit control board
Ⓔ Maximum 10 m
Ⓕ Power supply for relay

<Display function of inspection for outdoor unit>

The blinking patterns of both LED1 (green) and LED2 (red) indicate the types of abnormality when it occurs. Types of abnormality can be indicated in details by connecting an optional part “A-Control Service Tool (PAC-SK52ST)” to connector CNM on outdoor controller board.

[Display]

(1) Normal condition

Unit condition	Outdoor controller board		A-Control Service Tool	
	LED1 (Green)	LED2 (Red)	Check code	Indication of the display
When the power is turned on	Lit	Lit	— ⇔ —	Alternately blinking display
When unit stops	Lit	Not lit	00, etc.	Operation mode
When compressor is warming up	Lit	Not lit	08, etc.	
When unit operates	Lit	Lit	C5, H7, etc.	

(2) Abnormal condition

Indication		Error			
Outdoor controller board		Contents	Check code*	Inspection method	Detailed reference page
LED1 (Green)	LED2 (Red)				
1 blinking	2 blinking	Connector(63L) is open.	F3	① Check if connector (63H or 63L) on the outdoor controller board is not disconnected. ② Check continuity of pressure switch (63H or 63L) by multimeter.	P.22
		Connector(63H) is open.	F5		P.22
		2 connectors are open.	F9		P.23
2 blinking	1 blinking	Miswiring of I/F or FTC or outdoor unit connecting wire, excessive number of indoor units (2 units or more)	—	① Check if I/F or FTC or outdoor connecting wire is connected correctly. ② Check if 2 or more I/F or FTC units are connected to outdoor unit. ③ Check if noise entered into I/F or FTC or outdoor connecting wire or power supply. ④ Re-check error by turning off power, and on again.	P.23 (EA)
		Miswiring of I/F or FTC or outdoor unit connecting wire (converse wiring or disconnection)	—		P.23 (Eb)
		Startup time over	—		P.23 (EC)
	2 blinking	I/F or FTC or outdoor unit communication error (signal receiving error) is detected by FTC unit.	E6	① Check if I/F or FTC or outdoor connecting wire is connected correctly. ② Check if noise entered into I/F or FTC or outdoor connecting wire or power supply. ③ Check if noise entered into I/F or FTC or outdoor controller board. ④ Re-check error by turning off power, and on again.	**
		I/F or FTC or outdoor unit communication error (signal receiving error) is detected by outdoor unit.	—		P.29 (E8)
		I/F or FTC or outdoor unit communication error (transmitting error) is detected by outdoor unit.	—		P.29 (E9)
	3 blinking	Remote controller signal receiving error is detected by remote controller.	E0	① Check if connecting wire of I/F or FTC unit or remote controller is connected correctly. ② Check if noise entered into transmission wire of remote controller. ③ Re-check error by turning off power, and on again.	P.28
		Remote controller transmitting error is detected by remote controller.	E3		P.28
		Remote controller signal receiving error is detected by I/F or FTC unit.	E4		P.28
		Remote controller transmitting error is detected by I/F or FTC unit.	E5		P.28
	4 blinking	Check code is not defined.	EF	① Check if noise entered into transmission wire of remote controller. ② Check if noise entered into I/F or FTC or outdoor connecting wire. ③ Re-check error by turning off power, and on again.	P.29

* Check code displayed on remote controller

** Refer to Technical manual of ATW, I/F, FTC.

Continue to the next page

Indication		Error			
Outdoor controller board		Contents	Check code*	Inspection method	Detailed reference page
LED1 (Green)	LED2 (Red)				
3 blinking	1 blinking	Abnormality of comp. surface thermistor (TH34) and discharge temperature (TH4)	U2	① Check if stop valves are open. ② Check if connectors (TH4, TH34, LEV-A, and LEV-B) on outdoor controller board are not disconnected. ③ Check if unit is filled with specified amount of refrigerant. ④ Measure resistance values among terminals on indoor valve and outdoor linear expansion valve using a multimeter.	P.24
		Abnormality of superheat due to low discharge temperature	U7		P.25
	2 blinking	Abnormal high pressure (High pressure switch 63H operated.)	U1	① Check if outdoor units have a short cycle on their air ducts. ② Check if connector (63H/63L) on outdoor controller board is not disconnected. ③ Check if heat exchanger and filter is not dirty. ④ Measure resistance values among terminals on linear expansion valve using a multimeter.	P.24
		Abnormal low pressure (Low pressure switch 63L operated.)	UL		P.27
	3 blinking	Abnormality of outdoor fan motor rotational speed	U8	① Check the outdoor fan motor. ② Check if connector (TH3) on outdoor controller board is disconnected.	P.25
		Protection from overheat operation (TH3)	Ud		P.27
	4 blinking	Compressor overcurrent breaking (Startup locked)	UF	① Check if stop valves are open. ② Check looseness, disconnection, and converse connection of compressor wiring. ③ Measure resistance values among terminals on compressor using a multimeter. ④ Check if outdoor unit has a short cycle on its air duct. ⑤ Check leakage of refrigerant.	P.27
		Compressor overcurrent breaking	UP		P.28
		Abnormality of current sensor (P.B.)	UH		P.27
		Abnormality of power module	U6		P.25
	5 blinking	Open/short of discharge thermistor (TH4) and comp. surface thermistor (TH34)	U3	① Check if connectors (TH3, TH4, TH6, TH7 and TH34) on outdoor controller board and connector (CN3) on outdoor power board are not disconnected. ② Measure resistance value of outdoor thermistors.	P.24
		Open/short of outdoor thermistors (TH3, TH6, TH7 and TH8)	U4		P.25
	6 blinking	Abnormality of heat sink temperature	U5	① Check if outdoor units have a short cycle on their air ducts. ② Measure resistance value of outdoor thermistor (TH8).	P.25
	7 blinking	Abnormality of voltage	U9	① Check looseness, disconnection, and converse connection of compressor wiring. ② Measure resistance value among terminals on compressor using a multimeter. ③ Check the continuity of contactor (52C). ④ Check if power supply voltage decreases. ⑤ Check the wiring of CN52C. ⑥ Check the wiring of CNAF.	P.26–P.27
4 blinking	1 blinking	Abnormality of room temperature thermistor (TH1)	P1	① Check if connectors (CN20, CN21, CN29 and CN44) and terminal blocks on indoor controller board are not disconnected. ② Measure resistance value of indoor thermistors. Note: Refer to the indoor unit's Installation Manual.	**
		Abnormality of pipe temperature thermistor /Liquid (TH2)	P2		**
		Abnormality of pipe temperature thermistor/Condenser-Evaporator	P9		**
	2 blinking	Abnormality of drain sensor (DS) Float switch (FS) connector open	P4	① Check if connector (CN31)(CN4F) and terminal blocks on indoor controller board is not disconnected. ② Measure resistance value of indoor thermistors. ③ Measure resistance value among terminals on drain-up machine using a multimeter. ④ Check if drain pump works. ⑤ Check drain function. Note: Refer to the indoor unit's Installation Manual.	**
		Indoor drain overflow protection	P5		
	3 blinking	Freezing (cooling)/overheating (heating) protection	P6	① Check if indoor unit has a short cycle on its air duct. ② Check if heat exchanger and filter is not dirty. ③ Measure resistance value on indoor and outdoor fan motors. ④ Check if the inside of refrigerant piping is not clogged.	**
	4 blinking	Abnormality of pipe temperature	P8	① Check if indoor thermistors (TH2 and TH5) are not disconnected from holder. ② Check if stop valve is open. ③ Check converse connection of extension pipe. (on plural units connection) ④ Check if indoor/outdoor connecting wire is connected correctly. (on plural units connection)	**

* Check code displayed on remote controller

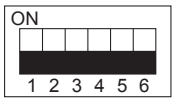
** Refer to service manual for indoor unit.

<Outdoor unit operation monitor function>

[When optional part 'A-Control Service Tool (PAC-SK52ST)' is connected to outdoor controller board (CNM)]

Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of check code by controlling DIP SW2 on 'A-Control Service Tool'.

Operation indicator SW2 : Indicator change of self-diagnosis

SW2 setting	Display detail	Explanation for display	Unit
			

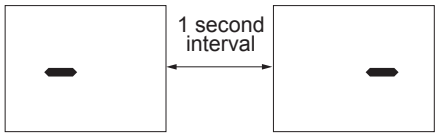
<Digital indicator LED1 working details>

(Be sure that the 1 to 6 in the SW2 are set to OFF.)

(1) Display when the power supply ON

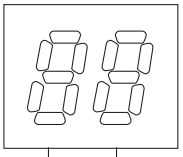
When the power supply ON, blinking displays by turns.

Wait for 4 minutes at the longest.

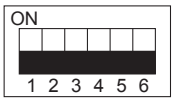


(2) When the display lights (Normal operation)

①Operation mode display.

LED1  (Lighting)

SW2



(Initial setting)

The tens digit : Operation mode

Display	Operation Model
O	OFF/FAN
C	COOL
H	HEAT
d	DEFROST

The ones digit : Relay output

Display	Warming-up Compressor	Compressor	4-way valve	Solenoid valve
0	—	—	—	—
1	—	—	—	ON
2	—	—	ON	—
3	—	—	ON	ON
4	—	ON	—	—
5	—	ON	—	ON
6	—	ON	ON	—
7	—	ON	ON	ON
8	ON	—	—	—
A	ON	—	ON	—

②Display during error postponement

Postponement code is displayed when compressor stops due to the work of protection device.

Postponement code is displayed while error is being postponed.

(3) When the display blinks

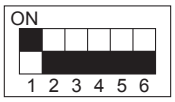
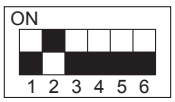
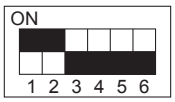
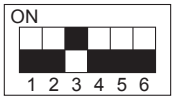
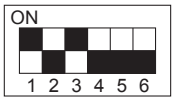
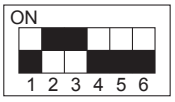
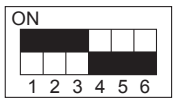
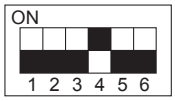
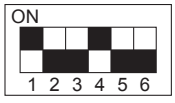
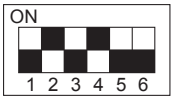
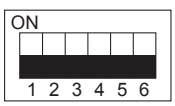
Inspection code is displayed when compressor stops due to the work of protection devices.

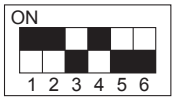
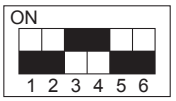
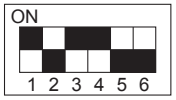
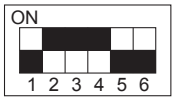
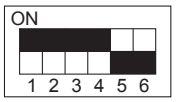
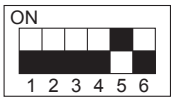
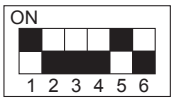
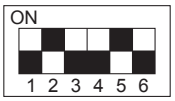
Display	Inspection unit
0	Outdoor unit
1	Indoor unit 1
2	Indoor unit 2
3	Indoor unit 3

Display	Contents to be inspected (During operation)
U1	Abnormal high pressure (63H worked)
U2	Abnormal high discharge temperature and comp. surface thermistor, shortage of refrigerant
U3	Open/short circuit of discharge thermistor (TH4) and comp. surface thermistor (TH34)
U4	Open/short of outdoor unit thermistors (TH3, TH6, TH7 and TH8)
U5	Abnormal temperature of heat sink
U6	Abnormality of power module
U7	Abnormality of superheat due to low discharge temperature
U8	Abnormality in outdoor fan motor
Ud	Overheat protection
UF	Compressor overcurrent interruption (When Comp. locked)
UH	Current sensor error
UL	Abnormal low pressure
UP	Compressor overcurrent interruption
P1–P8	Abnormality of indoor units
A0–A7	Communication error of M-NET system

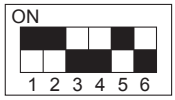
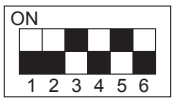
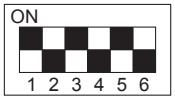
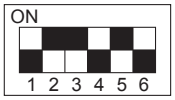
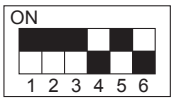
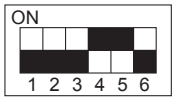
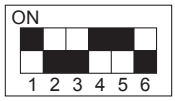
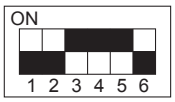
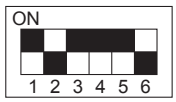
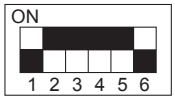
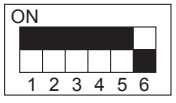
Display	Contents to be inspected (When power is turned on)
F3	63L connector (red) is open.
F5	63H connector (yellow) is open.
F9	2 connectors (63H/63L) are open.
E8	Indoor/outdoor communication error (Signal receiving error) (Outdoor unit)
E9	Indoor/outdoor communication error (Transmitting error) (Outdoor unit)
EA	Miswiring of indoor/outdoor unit connecting wire, excessive number of indoor units (4 units or more)
Eb	Miswiring of indoor/outdoor unit connecting wire (converse wiring or disconnection)
EC	Startup time over
E0–E7	Communication error except for outdoor unit

The black square (■) indicates a switch position.

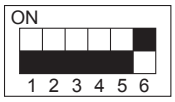
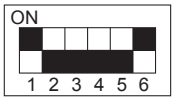
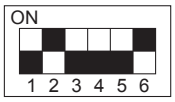
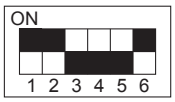
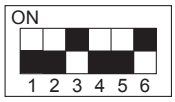
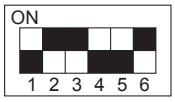
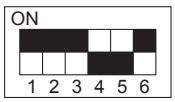
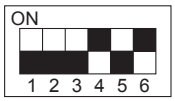
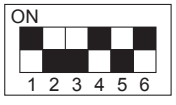
SW2 setting	Display detail	Explanation for display	Unit
	The pipe temperature/Liquid (TH3) −40 to 90	−40 to 90 (When the coil thermistor detects 0°C or below, "–" and temperature are displayed by turns.) Example: When −10°C 0.5 s 0.5 s 2 s -□ →10 →□□	°C
	The discharge temperature (TH4) 3 to 217	3 to 217 (When the discharge thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 105°C 0.5 s 0.5 s 2 s □1 →05 →□□	°C
	The output step of outdoor FAN 0 to 10	0 to 10	Step
	The number of ON/OFF times of compressor 0 to 9999	0 to 9999 (When the number of times is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 42500 times (425 ×100 times) 0.5 s 0.5 s 2 s □4 →25 →□□	100 times
	The compressor integrating operation times 0 to 9999	0 to 9999 (When it is 100 hours or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 2450 hours (245 ×10 hours) 0.5 s 0.5 s 2 s □2 →45 →□□	10 hours
	The compressor operating current 0 to 50	0 to 50 Note: Omit the figures after the decimal fractions.	A
	The compressor operating frequency 0 to 255	0 to 255 (When it is 100 Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 125 Hz 0.5 s 0.5 s 2 s □1 →25 →□□	Hz
	The LEV-A opening pulse 0 to 480	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 150 pulse 0.5 s 0.5 s 2 s □1 →50 →□□	Pulse
	The error postponement code history (1) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement "00" is displayed in the case of no postponement.	Code display
	The operation mode when the last error occurred	Operation mode of when operation stops due to error is displayed by setting SW2 like below. (SW2) 	Code display

SW2 setting	Display detail	Explanation for display	Unit
	The pipe temperature/Liquid (TH3) when the last error occurred −40 to 90	−40 to 90 (When the coil thermistor detects 0℃ or below, "–" and temperature are displayed by turns.) Example: When −15°C 0.5 s 0.5 s 2 s -□ →15 →□□	°C
	The compressor temperature (TH34) or the discharge temperature (TH4) when the last error occurred 3 to 217	3 to 217 (When the temperature is 100℃ or more, the hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 130°C 0.5 s 0.5 s 2 s □1 →30 →□□	°C
	The compressor operating current when the last error occurred 0 to 50	0 to 50	A
	The error history (1) (latest) The alternate display of abnormal unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	The error history (2) The alternate display of error unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	The thermostat ON time 0 to 999	0 to 999 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 245 minutes 0.5 s 0.5 s 2 s □2 →45 →□□	Minute
	The test run elapsed time 0 to 120	0 to 120 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 105 minutes 0.5 s 0.5 s 2 s □1 →05 →□□	Minute
	The number of connected indoor units 0 to 3	0 to 3 (The number of connected indoor units is displayed.)	Unit
	The capacity setting display	Displayed as an outdoor capacity code. Capacity / Code SW75V: 14 SW100V, 100Y: 20 SW120V, 120Y: 25	Code display

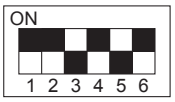
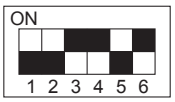
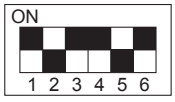
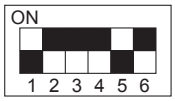
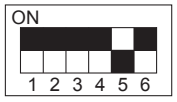
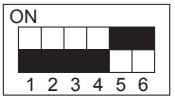
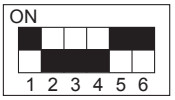
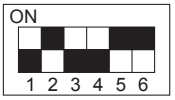
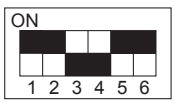
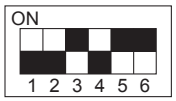
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	The outdoor unit setting information	• The tens digit (Total display for applied setting) Setting details: H·P / Cooling only — Display details: 0: H·P 1: Cooling only Setting details: Single phase / 3 phase — Display details: 0: Single phase 2: 3 phase • The ones digit Setting details: Defrosting switch — Display details: 0: Normal 1: For high humidity (Example) When heat pump, 3 phase and defrosting (normal) are set up, "20" is displayed.	Code display
	The indoor pipe temperature/Liquid (TH2(1)) Indoor 1 −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The indoor pipe temperature/Cond./Eva. (TH5(1)) Indoor1 -39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The indoor pipe temperature/Liquid (TH2(2)) Indoor 2 −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The indoor pipe temperature/Cond./Eva. (TH5(2)) Indoor 2 −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The indoor room temperature (TH1) 8 to 39	8 to 39	°C
	The indoor setting temperature 17 to 30	17 to 30	°C
	The pressure saturation temperature (T_{63HS}) −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The ambient temperature (TH7) −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The outdoor heat sink temperature (TH8) −40 to 200	−40 to 200 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.) (When the thermistor detects 100℃ or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C
	The discharge superheat (SHd) 0 to 255 [Cooling = TH4−T_{63HS} Heating = TH4−T_{63HS}]	0 to 255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C

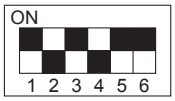
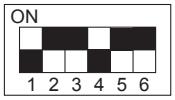
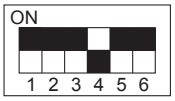
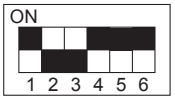
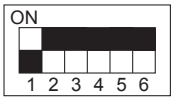
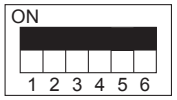
The black square (■) indicates a switch position.

<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr><td>  </td><td>Number of defrost cycles
0 to FFFE</td><td>0 to FFFE (in hexadecimal notation)
(When more than FF in hex (255 in decimal), the number is displayed in order of 16^3's and 16^2's, and 16^1's and 16^0's places.
(Example) When 5000 cycles;
0.5 s 0.5 s 2 s
□9 →C4 →□□</td><td>2 cycles</td></tr>
<tr><td>  </td><td>The input current of outdoor unit
0 to 500</td><td>0 to 500
(When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)</td><td>0.1 A</td></tr>
<tr><td>  </td><td>The LEV-B opening pulse
0 to 480</td><td>0 to 480
(When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.)</td><td>Pulse</td></tr>
<tr><td>  </td><td>The U9 error detail history (latest)</td><td><table><tr><th>Description</th><th>Display</th></tr><tr><td>No error</td><td>00</td></tr><tr><td>Overvoltage error</td><td>01</td></tr><tr><td>Undervoltage error</td><td>02</td></tr><tr><td>Input current sensor error
L_1-phase open error</td><td>04</td></tr><tr><td>Abnormal power synchronous signal</td><td>08</td></tr><tr><td>PFC error (SW75VHA)
(Overvoltage/ Undervoltage/ Overcurrent)</td><td>10</td></tr><tr><td>PFC/ IGBT error (SW•VHA)
(Undervoltage)</td><td>20</td></tr></table>• Display examples for multiple errors:
Overvoltage (01) + Undervoltage (02) = 03
Undervoltage (02) + Power-sync signal error (08) = 0A
L_1 phase open error (04) + PFC error (10) = 14</td><td>Code display</td></tr>
<tr><td>  </td><td>The DC bus voltage
180 to 370 (SW75/100/120V)
300 to 750 (SW100/120Y)</td><td>180 to 370 (SW75/100/120V)
300 to 750 (SW100/120Y)
(When it is 100V or more, hundreds digit, tens digit and ones digit are displayed by turns.)</td><td>V</td></tr>
<tr><td>  </td><td>The error postponement code history (2) of outdoor unit</td><td>Postponement code display
Blinking: During postponement
Lighting: Cancellation of postponement
“00” is displayed in the case of no postponement.</td><td>Code display</td></tr>
<tr><td>  </td><td>The error postponement code history (3) of outdoor unit</td><td>Postponement code display
Blinking: During postponement
Lighting: Cancellation of postponement
“00” is displayed in the case of no postponement.</td><td>Code display</td></tr>
<tr><td>  </td><td>The error history (3) (Oldest)
Alternate display of abnormal unit number and code</td><td>When no error history, “0” and “– –“ are displayed by turns.</td><td>Code display</td></tr>
<tr><td>  </td><td>The error thermistor display
[When there is no error thermistor, “–“ is displayed.]</td><td>3: Outdoor pipe temperature/Liquid (TH3)
4: Discharge thermistor (TH4)
6: 2-phase pipe (TH6)
7: Ambient temperature (TH7)
8: Outdoor heat sink (TH8)
34: Comp. surface thermistor (TH34)</td><td>Code display</td></tr>
<tr><td>  </td><td>The operation frequency when the last error occurred
0 to 255</td><td>0 to 255
(When it is 100 Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.)
Example: When 125 Hz
0.5 s 0.5 s 2 s
□1 →25 →□□</td><td>Hz</td></tr>
</table>

The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	The fan step when the last error occurred 0 to 10	0 to 10	Step
	The LEV-A opening pulse when the last error occurred 0 to 480	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 130 pulse 0.5 s 0.5 s 2 s □1 →30 →□□	Pulse
	The indoor room temperature (TH1) the last error occurred 8 to 39	8 to 39	°C
	The indoor pipe temperature/Liquid (TH2) when the last error occurred −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) Example: When –15°C 0.5 s 0.5 s 2 s -□ →15 →□□	°C
	The pressure saturation temperature (T_{63HS}) when the last error occurred -39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) Example: When –15°C 0.5 s 0.5 s 2 s -□ →15 →□□	°C
	The 2-phase pipe (TH6) when the last error occurred -39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) Example: When –15°C 0.5 s 0.5 s 2 s -□ →15 →□□	°C
	The ambient temperature (TH7) when the last error occurred −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) Example: When −15°C 0.5 s 0.5 s 2 s -□ →15 →□□	°C
	The outdoor heat sink temperature (TH8) when the last error occurred −40 to 200	−40 to 200 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C
	The discharge superheat (SHd) when the last error occurred 0 to 255 [Cooling = TH4−T_{63HS} Heating = TH4−T_{63HS}]	0 to 255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 150°C 0.5 s 0.5 s 2 s □1 →50 →□□	°C
	The degree of subcooling (SC) when the last error occurred 0 to 255 [Cooling = T_{63HS}-TH3 Heating = T_{63HS}-TH2]	0 to 255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 115°C 0.5 s 0.5 s 2 s □1 →15 →□□	°C

The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	The thermo-on time until error stops 0 to 999	0 to 999 (When it is 100 minutes or more, hundreds digit, tens digit and ones digit are displayed by turns.) Example: When 415 minutes 0.5 s 0.5 s 2 s □4 →15 →□□	Minute
	The indoor pipe temperature/Liquid (TH2 (3)) Indoor 3 −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C
	The indoor pipe temperature/Cond./Eva. (TH5 (3)) Indoor 3 −39 to 88	−39 to 88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.) When there is no indoor unit, "00" is displayed.	°C
	The controlling status of compressor operating frequency	The following code will be a help to know the operating status of unit. • The tens digit Display: 1 – Primary current control; 2 – Secondary current control • The ones digit (In this digit, the total number of activated control is displayed.) Display: 1 – Preventive control for excessive temperature rise of discharge temperature; 2 – Preventive control for excessive temperature rise of condensing temperature; 4 – Frost prevention control; 8 – Preventive control for excessive temperature rise of heat sink Example: The following controls are activated. • Primary current control • Preventive control for excessive temperature rise of condensing temperature • Preventive control for excessive temperature rise of heat sink LED: 1A	Code display
	The comp. surface temperature (TH34) 3 to 217	3 to 217 (When the comp. surface thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105°C; 0.5 s 0.5 s 2 s □1 →05 →□□	°C
	The U9 Error details (To be shown while error call is deferred.)	Description / Display: No error / 00 Overvoltage error / 01 Undervoltage error / 02 Input current sensor error L_1-phase open error / 04 Abnormal power synchronous signal / 08 PFC error (SW75VHA) (Overvoltage/ Undervoltage/ Overcurrent) / 10 PFC/ IGBT error (SW•VHA) (Undervoltage) / 20 • Display examples for multiple errors: Overvoltage (01) + Undervoltage (02) = 03 Undervoltage (02) + Power-sync signal error (08) = 0A L_1 phase open error (04) + PFC error (10) = 14	Code display

10-8. Request code list

Certain indoor/outdoor combinations do not have the request code function; therefore, no request codes are displayed.
Refer to indoor unit service manual for how to use the controllers and request codes for indoor unit.

Request code	Request content	Description (Display range)	Unit	Remarks
0	Operation state	Refer to 10-8-1. Detail Contents in Request Code.	–	
1	Compressor-Operating current (rms)	0–50	A	
2	Compressor-Accumulated operating time	0–9999	10 hours	
3	Compressor-Number of operation times	0–9999	100 times	
4	Discharge temperature (TH4)	3–217	℃	
5	Outdoor unit -Liquid pipe 1 temperature (TH3)	−40–90	℃	
6				
7	Outdoor unit-2-phase pipe temperature (TH6)	−39–88	℃	
8				
9	Outdoor unit-Outside air temperature (TH7)	−39–88	℃	
10	Outdoor unit-Heat sink temperature (TH8)	−40–200	℃	
11				
12	Discharge superheat (SHd)	0–255	℃	
13	Degree of subcooling (SC)	0–130	℃	
14	Condensing temperature (T_{63HS})	−39–88	℃	
15				
16	Compressor-Operating frequency	0–255	Hz	
17	Compressor-Target operating frequency	0–255	Hz	
18	Outdoor unit-Fan output step	0–10	Step	
19	Outdoor unit-Fan 1 speed (Only for air conditioners with DC fan motor)	0–9999	rpm	
20	Outdoor unit-Fan 2 speed (Only for air conditioners with DC fan motor)	0–9999	rpm	"0" is displayed if the air conditioner is a single-fan type.
21				
22	LEV (A) opening	0–500	Pulses	
23	LEV (B) opening	0–500	Pulses	
24				
25	Primary current	0–50	A	
26	DC bus voltage	180–370	V	
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48	Thermostat ON operating time	0–999	Minutes	
49				

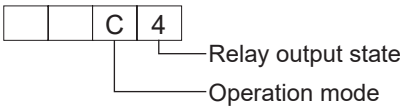
Request code	Request content	Description (Display range)	Unit	Remarks
50				
51	Outdoor unit-Control state	Refer to 10-8-1.Detail Contents in Request Code.	–	
52	Compressor-Frequency control state	Refer to 10-8-1.Detail Contents in Request Code.	–	
53	Outdoor unit-Fan control state	Refer to 10-8-1.Detail Contents in Request Code.	–	
54	Actuator output state	Refer to 10-8-1.Detail Contents in Request Code.	–	
55	Error content (U9)	Refer to 10-8-1.Detail Contents in Request Code.	–	
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70	Outdoor unit-Capacity setting display	Refer to 10-8-1.Detail Contents in Request Code.	–	
71	Outdoor unit-Setting information	Refer to 10-8-1.Detail Contents in Request Code.	–	
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84				
85				
86				
87				
88				
89				
90	Outdoor unit-Microprocessor version information	Examples) Ver 5.01 → "0501"	Ver	
91	Outdoor unit-Microprocessor version information (sub No.)	Auxiliary information (displayed after version information) Examples) Ver 5.01 A000 → "A000"	–	
92				
93				
94				
95				
96				
97				
98				
99				
100	Outdoor unit - Error postponement history 1 (latest)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	
101	Outdoor unit - Error postponement history 2 (previous)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	
102	Outdoor unit - Error postponement history 3 (last but one)	Displays postponement code. (" - - " is displayed if no postponement code is present)	Code	

Request code	Request content	Description (Display range)	Unit	Remarks
103	Error history 1 (latest)	Displays error history. ("--" is displayed if no history is present.)	Code	
104	Error history 2 (second to last)	Displays error history. ("--" is displayed if no history is present.)	Code	
105	Error history 3 (third to last)	Displays error history. ("--" is displayed if no history is present.)	Code	
106	Abnormal thermistor display (TH3/TH6/TH7/TH8)	3 : TH3 6 : TH6 7 : TH7 8 : TH8 0 : No thermistor error	Sensor number	
107	Operation mode at time of error	Displayed in the same way as request code "0".	–	
108	Compressor-Operating current at time of error	0–50	A	
109	Compressor-Accumulated operating time at time of error	0–9999	10 hours	
110	Compressor-Number of operation times at time of error	0–9999	100 times	
111	Discharge temperature at time of error	3–217	℃	
112	Outdoor unit-Liquid pipe 1 temperature (TH3) at time of error	−40–90	℃	
113				
114	Outdoor unit-2-phase pipe temperature (TH6) at time of error	−39–88	℃	
115				
116	Outdoor unit-Outside air temperature (TH7) at time of error	−39–88	℃	
117	Outdoor unit-Heat sink temperature (TH8) at time of error	−40–200	℃	
118	Discharge superheat (SHd) at time of error	0–255	℃	
119	Degree of subcooling (SC) at time of error	0–130	℃	
120	Compressor-Operating frequency at time of error	0–255	Hz	
121	Outdoor unit at time of error • Fan output step	0–10	Step	
122	Outdoor unit at time of error • Fan 1 speed (Only for air conditioners with DC fan)	0–9999	rpm	
123	Outdoor unit at time of error • Fan 2 speed (Only for air conditioners with DC fan)	0–9999	rpm	"0"is displayed if the air conditioner is a single-fan type.
124				
125	LEV (A) opening at time of error	0–500	Pulses	
126	LEV (B) opening at time of error	0–500	Pulses	
127				
128				
129	Condensing temperature (T_{63HS}) at the time of error	−39–88	℃	
130	Thermostat ON time until operation stops due to error	0–999	Minutes	

10-8-1. Detail Contents in Request Code

[Operation state] (Request code: "0")

Data display



Operation mode

Display	Operation mode
0	STOP • FAN
C	COOL • DRY
H	HEAT
d	DEFROST

Relay output state

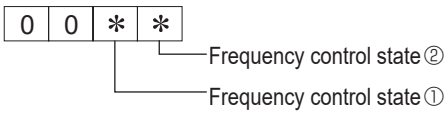
Display	Power currently supplied to compressor	Compressor	Four-way valve	Solenoid valve
0	–	–	–	–
1				ON
2			ON	
3			ON	ON
4		ON		
5		ON		ON
6		ON	ON	
7		ON	ON	ON
8	ON			
A	ON		ON	

[Outdoor unit – Control state] (Request code: "51")

Data display				State
0	0	0	0	Normal
0	0	0	1	Preparing for heat operation
0	0	0	2	Defrost

[Compressor – Frequency control state] (Request code: "52")

Data display



Frequency control state ①

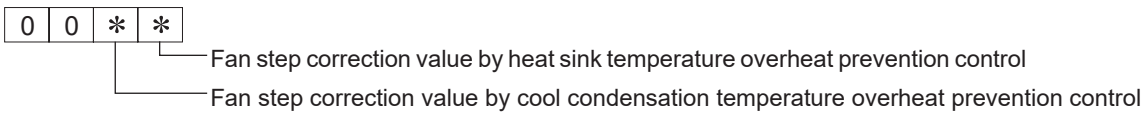
Display	Current limit control
0	No current limit
1	Primary current limit control is ON.
2	Secondary current limit control is ON.

Frequency control state ②

Display	Discharge temperature overheat prevention	Condensation temperature overheat prevention	Anti-freeze protection control	Heat sink temperature overheat prevention
0				
1	Controlled			
2		Controlled		
3	Controlled	Controlled		
4			Controlled	
5	Controlled		Controlled	
6		Controlled	Controlled	
7	Controlled	Controlled	Controlled	
8				Controlled
9	Controlled			Controlled
A		Controlled		Controlled
b	Controlled	Controlled		Controlled
C			Controlled	Controlled
d	Controlled		Controlled	Controlled
E		Controlled	Controlled	Controlled
F	Controlled	Controlled	Controlled	Controlled

[Fan control state] (Request code: "53")

Data display



Display	Correction value
− (minus)	−1
0	0
1	+1
2	+2

[Actuator output state] (Request code: "54")

Data display 0 0 * *

- Actuator output state ①
- Actuator output state ②

Actuator output state ①

Display	SV1	Four-way valve	Compressor	Compressor is warming up
0				
1	ON			
2		ON		
3	ON	ON		
4			ON	
5	ON		ON	
6		ON	ON	
7	ON	ON	ON	
8				ON
9	ON			ON
A		ON		ON
b	ON	ON		ON
C			ON	ON
d	ON		ON	ON
E		ON	ON	ON
F	ON	ON	ON	ON

Actuator output state ②

Display	52C	SV2	SS
0			
1	ON		
2		ON	
3	ON	ON	
4			ON
5	ON		ON
6		ON	ON
7	ON	ON	ON

[Error content (U9)] (Request code: "55")

Data display 0 0 * *

- Error content ①
- Error content ②

Error content ① ●: Detected

Display	Overvoltage error	Undervoltage error	L_1-phase open error	Power synchronizing signal error
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
A		●		●
b	●	●		●
C			●	●
d	●		●	●
E		●	●	●
F	●	●	●	●

Error content ② ●: Detected

Display	Converter Fo error	PAM error
0		
1	●	
2		●
3	●	●

[Outdoor unit − Capacity setting display] (Request code: "70")

Data display	Capacity
9	35
10	50
11	60
14	71
20	100
25	125
28	140
40	200
50	250

[Outdoor unit – Setting information] (Request code: "71")

Data display

0	0	✻	✻

Setting information ①

Setting information ②

Setting information ①

Display	Defrost mode
0	Standard
1	For high humidity

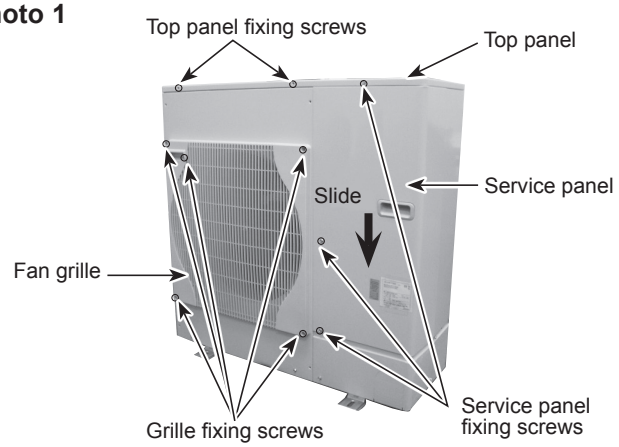
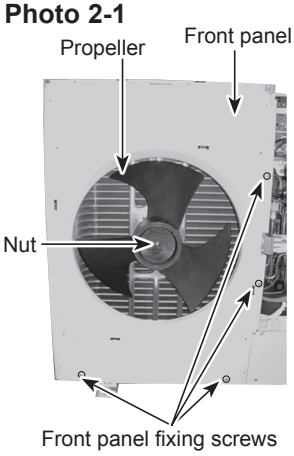
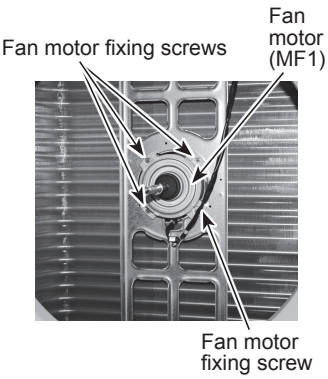
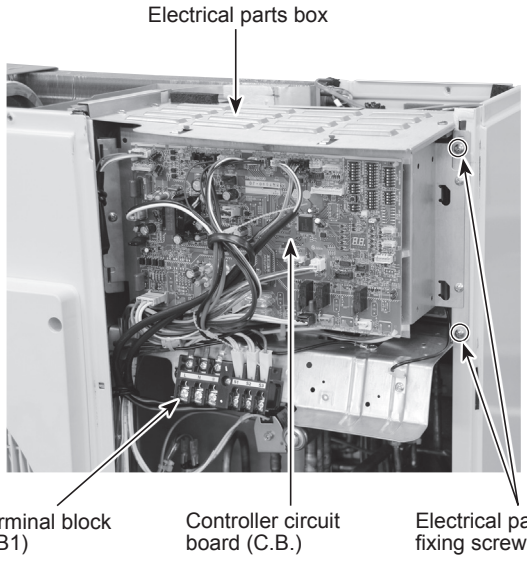
Setting information ②

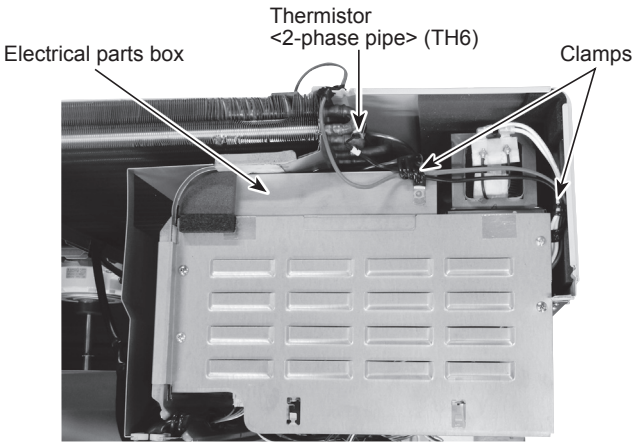
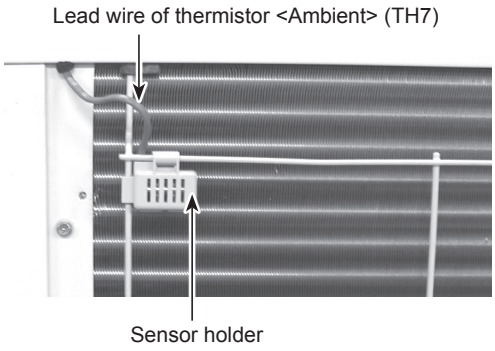
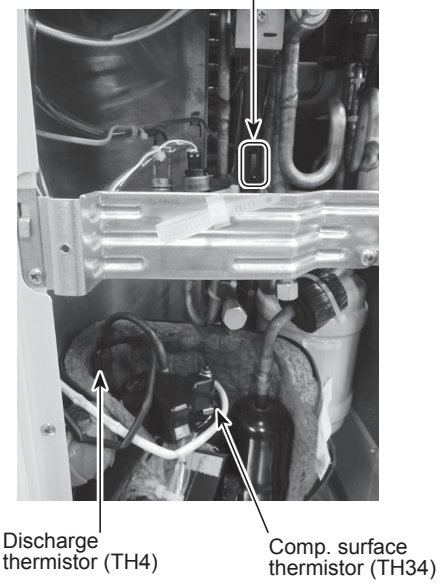
Display	Single-/ 3-phase	Heat pump/ cooling only
0	Single-phase	Heat pump
1		Cooling only
2	3-phase	Heat pump
3		Cooling only

11 DISASSEMBLY PROCEDURE

PUHZ-SW75VHAR6

→ : Indicates the visible parts in the photos/figures.
⇢ : Indicates the invisible parts in the photos/figures.

OPERATING PROCEDURE	PHOTOS/FIGURES
1. Removing the service panel and top panel (1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel. (2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it. **Note: When removing service panel and top panel at the same time, count one less screw since they share a screw.**	**Photo 1** 
2. Removing the fan motor (MF1) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 5 fan grille fixing screws (5 × 12) to detach the fan grille. (See Photo 1) (4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2-1) (5) Disconnect the connector CNF1 on the controller circuit board. (See Photo 3) <Symbol on the board> • CNF1: Fan motor (6) Loosen 3 clamps on the separator and motor support, then unbind the lead wires. (7) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (See Photo 2-2) **Note: When attaching the fan motor, make sure to route the cable through the hook below the fan motor and fix firmly with the clamp.**	**Photo 2-1**  **Photo 2-2** 
3. Removing the electrical parts box (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the indoor/outdoor connecting wire and the power supply wire from the terminal block. (4) Disconnect the connector CNF1, LEV-A, and LEV-B on the controller circuit board. <Symbols on the board> • CNF1: Fan motor • LEV-A, LEV-B: LEV **Note: The lead wire for LEV is fixed with a clamp on the bottom of the electrical parts box. Loosen the clamp** **before removing the lead wire.** (5) Disconnect the pipe-side connections of the following parts. • Thermistor <Liquid> (TH3) • Thermistor <Discharge> (TH4) • Thermistor <Ambient, 2-phase pipe> (TH7/6) • High pressure sensor (63HS) • High pressure switch (63H) • 4-way valve coil (21S4) • Thermistor <Comp. surface> (TH34) (6) Remove the terminal cover and disconnect the compressor lead wire. (7) Loosen 2 clamps on the separator and unbind the lead wires. (8) Remove electrical parts box fixing screws (4 × 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.	**Photo 3** 

OPERATING PROCEDURE	PHOTOS/FIGURES
4. Removing the thermistor <2-phase pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 on the controller circuit board. (See Photo 3) <Symbol on the board> • TH7/6: Thermistor <Ambient, 2-phase pipe> (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the clamp for the lead wire in the rear of the electrical parts box. (6) Pull out the thermistor <2-phase pipe> (TH6) from the sensor holder. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7), since they are combined together.** **Refer to procedure 5 to remove thermistor <Ambient>.**	**Photo 4** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 on the controller circuit board. (See Photo 3) <Symbol on the board> • TH7/6: Thermistor <Ambient, 2-phase pipe> (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See Photo 4) (6) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together.** **Refer to procedure 4 to remove thermistor <2-phase pipe>.**	**Photo 5** 
6. Removing the thermistor <Liquid> (TH3), thermistor <Discharge> (TH4) and thermistor <Comp. surface> (TH34) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connector TH3, TH4, and TH34 on the controller circuit board. (See Photo 3) <Symbols on the board> • TH3: Thermistor <Liquid> • TH4: Thermistor <Discharge> • TH34: Thermistor <Comp. surface> (3) Loosen the fastener and the cable strap on the electrical parts box and unbind the lead wires. (4) Loosen the clamp on the separator and unbind the lead wires. (5) Pull out the thermistor <Liquid> (TH3) and thermistor <Discharge> (TH4) from the sensor holder. [Removing the thermistor<Comp. surface> (TH34)] (6) Remove the compressor cover (upper) and pull out the thermistor <Comp. surface> (TH34) from the holder of the compressor Comp.surface.	**Photo 6** 

OPERATING PROCEDURE

7. Removing the 4-way valve coil (21S4), LEV coil (LEV-A, LEV-B)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)

[Removing the 4-way valve coil]
(3) Remove 4-way valve coil fixing screw (M5 × 6). (See Photo 7)
(4) Remove the 4-way valve coil by sliding the coil toward you.
(5) Disconnect the connector 21S4 on the controller circuit board.
<Symbol on the board>
• 21S4: 4-way valve coil
(6) Loosen the clamp on the separator and unbind the lead wires.

[Removing the LEV coil]
(3) Remove the LEV coil by sliding the coil upward.
(4) Disconnect the connector LEV-A and LEV-B on the controller circuit board.
<Symbols on the board>
• LEV-A, LEV-B: LEV
(5) Loosen the clamp on the separator and under the electrical parts box, then unbind the lead wires.

8. Removing the 4-way valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 3)
(4) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) and then remove the valve bed.
(5) Remove 2 cover panel (front) fixing screws (5 × 12) and remove the front cover panel. (See Photo 2-1)
(6) Remove 2 cover panel (rear) fixing screws (5 × 12) and remove the back cover panel.
(7) Remove 4 side panel (R) fixing screws (5 × 12) in the rear of the unit and then remove the side panel (R).
(8) Recover refrigerant.
(9) Remove the welded part of 4-way valve.

Refer to the notes below.

9. Removing the LEV

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 3)
(4) Remove the valve bed. (Refer to procedure 8)
(5) Remove the cover panel (front). (Refer to procedure 8)
(6) Remove the cover panel (rear). (Refer to procedure 8)
(7) Remove the side panel (R). (Refer to procedure 8)
(8) Remove the LEV coil.
(9) Recover refrigerant.
(10) Remove the welded part of linear expansion valve.

Refer to the notes below.

10. Removing the high pressure switch (63H)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the electrical parts box. (See Photo 3)
(4) Remove the valve bed. (Refer to procedure 8)
(5) Remove the cover panel (front). (Refer to procedure 8)
(6) Remove the cover panel (rear). (Refer to procedure 8)
(7) Remove the side panel (R). (Refer to procedure 8)
(8) Pull out the lead wire of high pressure switch.
(9) Recover refrigerant.
(10) Remove the welded part of high pressure switch.

Refer to the notes on the right.

PHOTOS/FIGURES

Photo 7

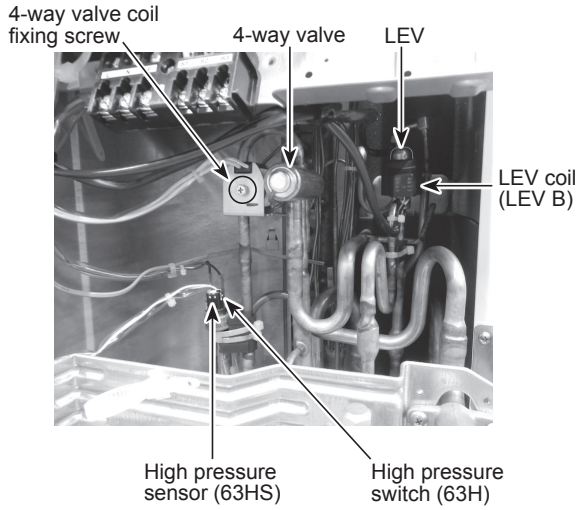
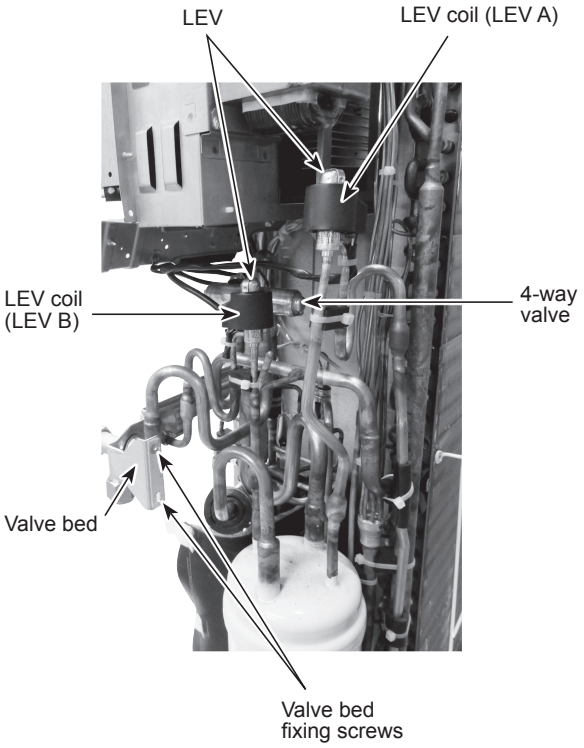
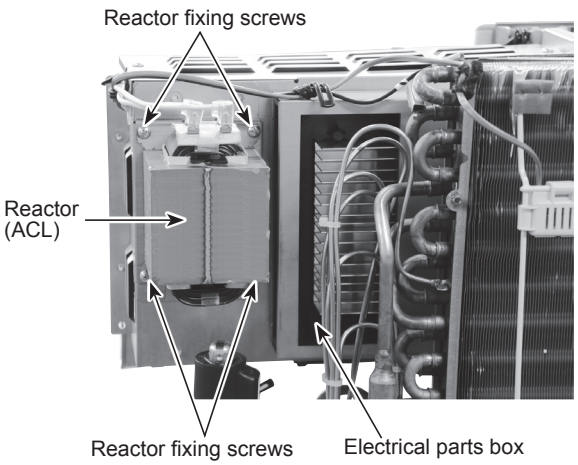
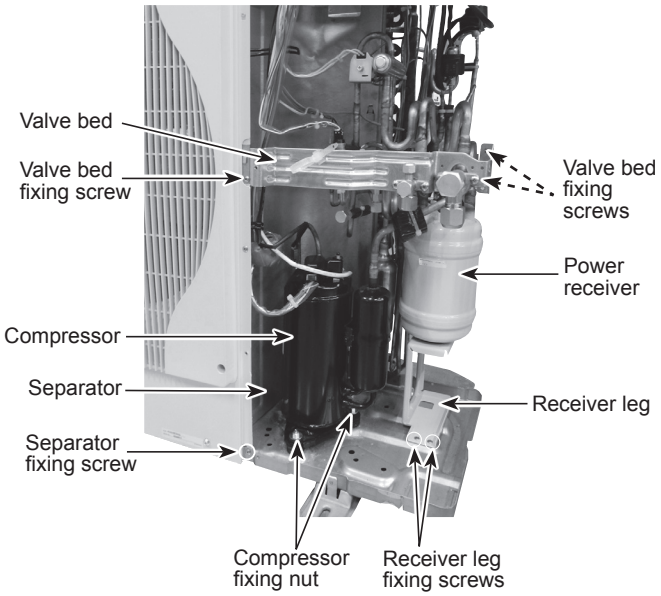
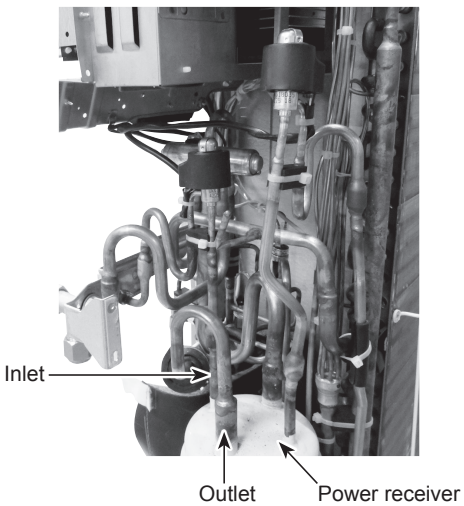


Photo 8



Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing following parts, make sure to cover it with a wet cloth to prevent it from heating as the temperature below, then braze the pipes so that the inside of pipes are not oxidized;
• 4-way valve (procedure 8), 120°C or more
• LEV (procedure 9), 120°C or more
• High pressure switch (procedure 10), 100°C or more

OPERATING PROCEDURE	PHOTOS/FIGURES
11. Removing the reactor (ACL) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 3) (4) Pull out the lead wire of reactor (ACL). (5) Remove 4 reactor fixing screws (4 × 20) and remove the reactor. **Note: The reactor is attached to the rear of the electrical parts box.**	**Photo 9** 
12. Removing the compressor (MC) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the cover panel (front). (Refer to procedure 8) (4) Remove the cover panel (rear). (Refer to procedure 8) (5) Remove the electrical parts box. (See Photo 3) (6) Remove the valve bed. (Refer to procedure 8) (7) Remove the side panel (R). (Refer to procedure 8) (8) Remove 2 separator fixing screws (4 × 10) and remove the separator. (9) Remove the soundproof cover for compressor. (10) Recover refrigerant. (11) Remove the welded pipe of compressor inlet and outlet then remove the compressor. (12) Remove the 3 points of the compressor fixing nut using a spanner or an adjustable wrench. **Note: Recover refrigerant without spreading it in the air.**	**Photo 10** 
13. Removing the power receiver (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the cover panel (front). (Refer to procedure 8) (4) Remove the cover panel (rear). (Refer to procedure 8) (5) Remove the electrical parts box. (See Photo 3) (6) Remove the valve bed. (Refer to procedure 8) (7) Remove the side panel (R). (Refer to procedure 8) (8) Recover refrigerant. (9) Remove 4 welded pipes of power receiver inlet and outlet. (10) Remove 2 receiver leg fixing screws (4 × 10). (See Photo 10) **Note: Recover refrigerant without spreading it in the air.**	**Photo 11** 

OPERATING PROCEDURE	PHOTOS/FIGURES
14. Removing the muffler (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 3) (4) Remove the valve bed. (Refer to procedure 8) (5) Remove the cover panel (front). (Refer to procedure 8) (6) Remove the cover panel (rear). (Refer to procedure 8) (7) Remove the side panel (R). (Refer to procedure 8) (8) Recover refrigerant. (9) Remove the pipe (C-R) assy. (The muffler can be easily removed if the whole piping is removed.) (10) Remove the muffler.	**Photo 12**  Muffler

PUHZ-SW100VHAR6 PUHZ-SW120VHAR6

OPERATING PROCEDURE

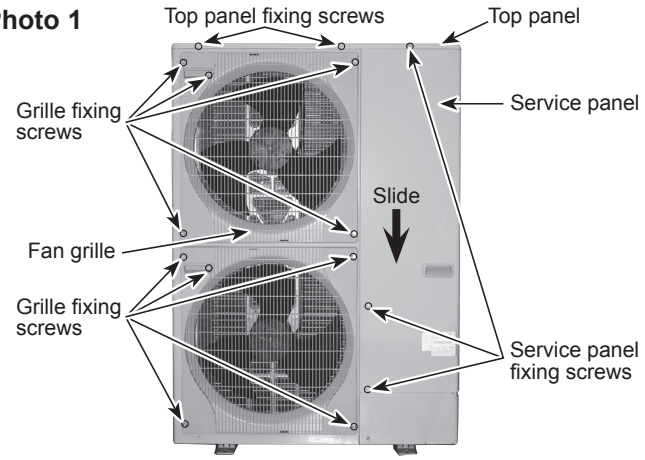
1. Removing the service panel and top panel

(1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel.
(2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it.

Note: When removing service panel and top panel at the same time, count one less screw since they share a screw.

PHOTOS/FIGURES

Photo 1



2. Removing the fan motor (MF1, MF2)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 5 fan grille fixing screws (5 × 12) to detach the fan grille. (Top and bottom) (See Photo 1)
(4) Remove a nut (for right handed screw of M6) to detach the propeller. (Top and bottom) (See Photo 2-1)
(5) Disconnect the connectors, CNF1, CNF2 on controller circuit board in electrical parts box.
(6) Loosen 6 clamps on the separator and motor support, then unbind the lead wires.
(7) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (Top and bottom) (See Photo 2-2)

Note: When attaching the fan motor, make sure to route the cable through the hook below the fan motor and fix firmly with the clamp.

Photo 2-1

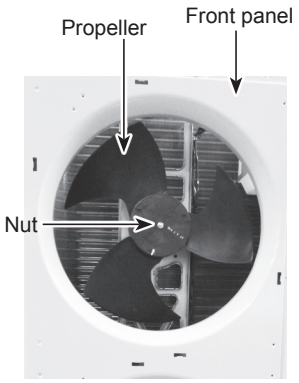
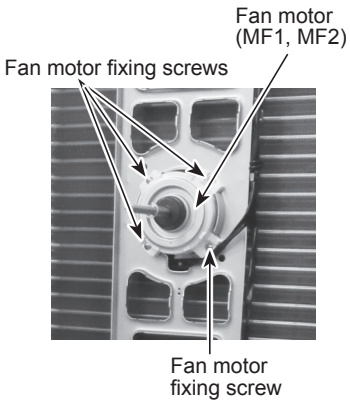


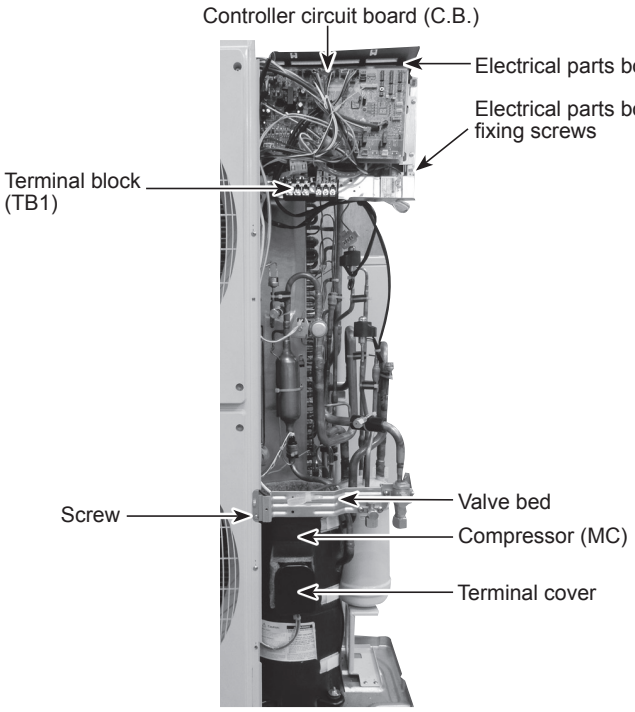
Photo 2-2

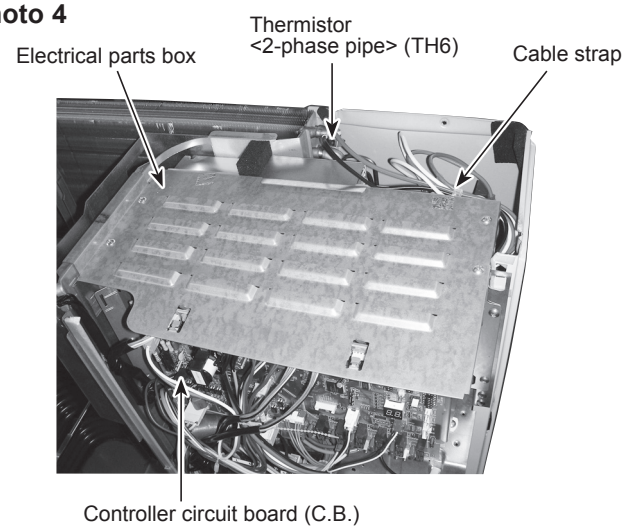
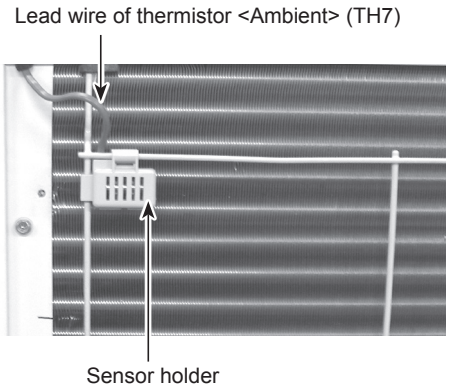
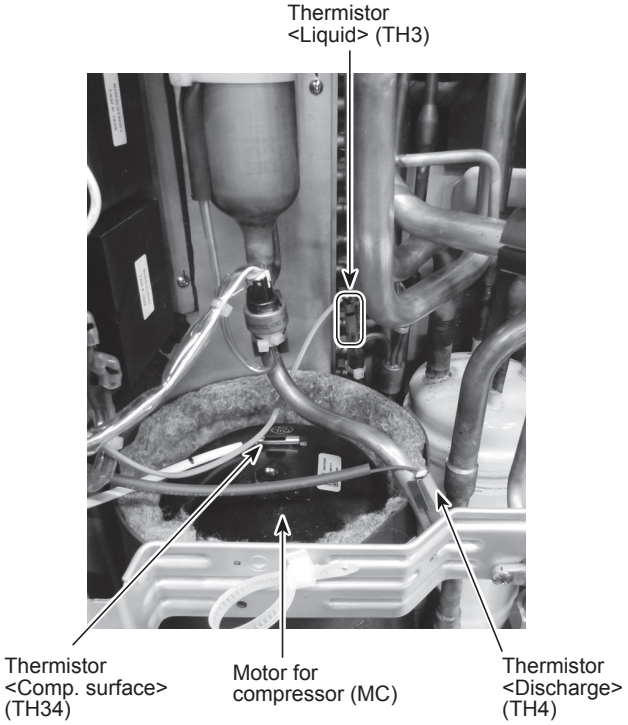


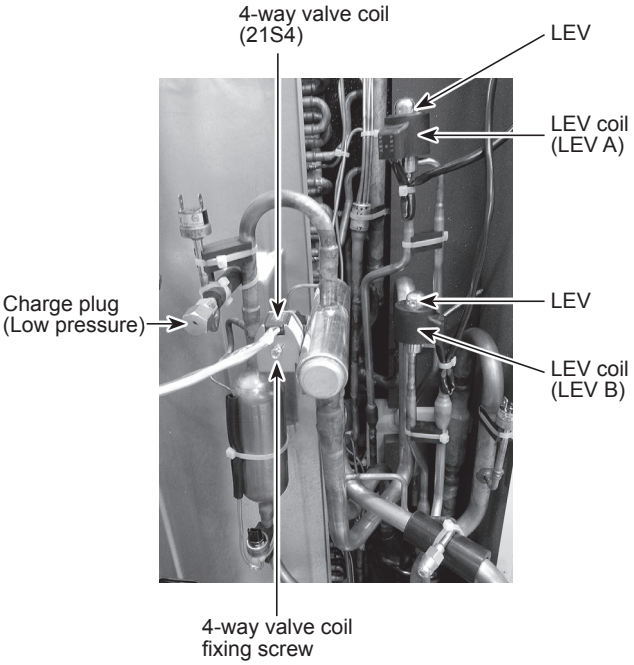
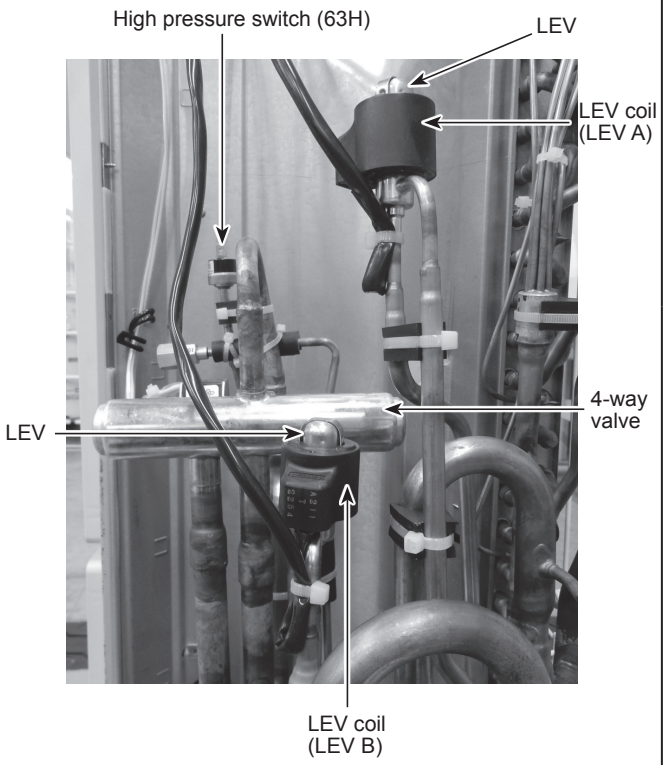
3. Removing the electrical parts box

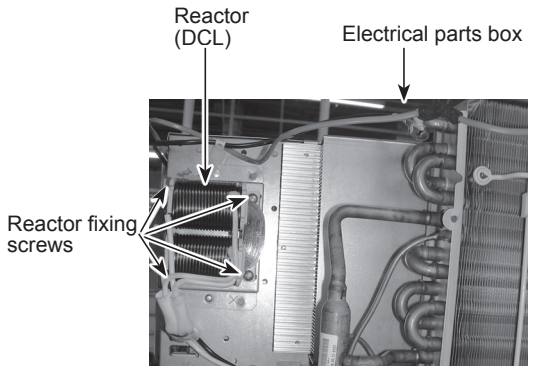
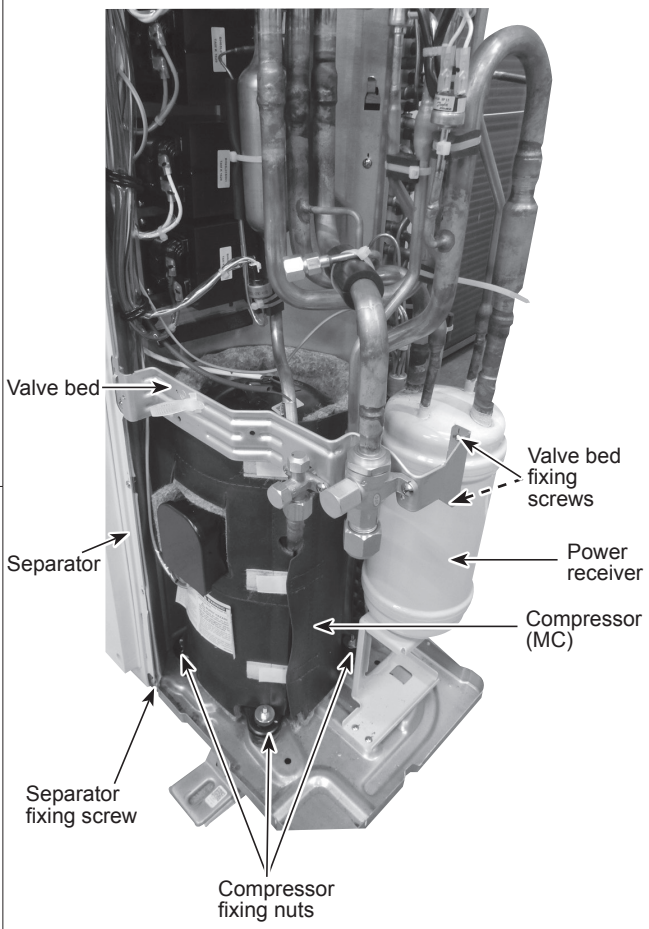
(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Disconnect the indoor/outdoor connecting wire and power supply wire from terminal block.
(4) Disconnect the connector CNF1, CNF2, LEV-A and LEV-B on the controller circuit board.
<Symbols on the board>
• CNF1, CNF2 : Fan motor
• LEV-A, LEV-B : LEV
(5) Disconnect the pipe-side connections of the following parts.
<Diagram symbol in the connector housing>
• Thermistor <Liquid> (TH3)
• Thermistor <Discharge> (TH4)
• Thermistor <2-phase pipe, Ambient> (TH6/7)
• High pressure switch (63H)
• High pressure sensor (63HS)
• Low pressure switch (63L)
• 4-way valve coil (21S4)
• Thermistor <Comp. surface> (TH34)
(6) Remove the terminal cover and disconnect the compressor lead wire.
(7) Loosen 2 clamps on the separator and unbind the lead wires.
(8) Remove 2 electrical parts box fixing screws (4 × 10) and detach the electrical parts box by pulling it upward.
The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.

Photo 3



OPERATING PROCEDURE	PHOTOS/FIGURES
4. Removing the thermistor <2-phase pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connectors, TH7/6 (red), on the controller circuit board in the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the cable strap for the lead wire in the rear of the electrical parts box. (6) Pull out the thermistor <2-phase pipe> (TH6) from the sensor holder. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together.** **Refer to procedure 5 below to remove thermistor <Ambient>.**	**Photo 4** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6(red) on the controller circuit board in the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the cable strap for the lead wire in the rear of the electrical parts box. (See Photo 4) (6) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together.** **Refer to procedure 4 above to remove thermistor <2-phase pipe>.**	**Photo 5** 
6. Removing the thermistor <Liquid> (TH3), thermistor <Discharge> (TH4) and thermistor <Comp. surface> (TH34) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connectors, TH3 (white) and TH4 (white), TH34 (red) on the controller circuit board in the electrical parts box. (3) Loosen the cable strap for the lead wire in the front of the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Pull out the thermistor <Liquid> (TH3), and thermistor <Discharge> (TH4) from the sensor holder. [Removing the thermistor<Comp. surface> (TH34)] (6) Remove the sound proof cover (upper) for compressor. (7) Pull out the thermistor <Comp. surface> (TH34) from the holder of the compressor shell.	**Photo 6** 

OPERATING PROCEDURE	PHOTOS/FIGURES
7. Removing the 4-way valve coil (21S4), and LEV coil (LEV(A), LEV(B)) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) [Removing the 4-way valve coil] (3) Remove 4-way valve coil fixing screw (M5 × 6). (4) Remove the 4-way valve coil by sliding the coil toward you. (5) Disconnect the connector 21S4 (green) on the controller circuit board in the electrical parts box. (6) Loosen the clamp on the separator and unbind the lead wires. [Removing the LEV coil] (3) Remove the LEV coil by sliding the coil upward. (4) Disconnect the connectors, LEV A (white) and LEV B (red), on the controller circuit board in the electrical parts box. (5) Loosen the clamp on the separator and under the electrical parts box, then unbind the lead wires.	**Photo 7** 
8. Removing the 4-way valve (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) then remove the valve bed. (4) Remove 9 side panel (R) fixing screws (5 × 12) in the rear of the unit then remove the side panel (R). (5) Remove the 4-way valve coil. (See Photo 7) (6) Recover refrigerant. (7) Remove the welded part of 4-way valve.	**Photo 8** 
9. Removing LEV (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the valve bed. (Refer to procedure 8) (4) Remove the side panel (R). (Refer to procedure 8) (5) Remove the LEV. (See Photo 7) (6) Recover refrigerant. (7) Remove the welded part of LEV.	
10. Removing the high pressure switch (63H) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the valve bed. (Refer to procedure 8) (4) Remove the side panel (R). (Refer to procedure 8) (5) Pull out the lead wire of high pressure switch. (6) Recover refrigerant. (7) Remove the welded part of high pressure switch.	**Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the right side panel.** **Note 3: When installing the 4-way valve and LEV cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.** **Note 4: When installing the high pressure switch, cover it with a wet cloth to prevent it from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.**

OPERATING PROCEDURE	PHOTOS/FIGURES
11. Removing the reactor (DCL) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 3) <Removing the reactor> (4) Remove 4 reactor fixing screws (4 × 10) and remove the reactor. **Note: The reactor is attached to the rear of the electrical parts box.**	**Photo 9** 
12. Removing the compressor (MC) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 2 cover panel (front) fixing screws (5 × 12) and remove the cover panel (front). (See Photo 3.) (4) Remove 2 cover panel (rear) fixing screws (5 × 12) and remove the cover panel (rear). (5) Remove the electrical parts box. (See Photo 3) (6) Remove the valve bed. (Refer to procedure 8) (7) Remove the side panel (R). (Refer to procedure 8) (8) Remove 3 separator fixing screws (4 × 10) and remove the separator. (9) Remove the soundproof cover for compressor. (10) Recover refrigerant. (11) Remove the welded pipe of compressor inlet and outlet then remove the compressor. (12) Remove the 3 points of the compressor fixing nut using a spanner or an adjustable wrench. **Note: Recover refrigerant without spreading it in the air.**	**Photo 10** 
13. Removing the power receiver (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the cover panel (front). (Refer to procedure 12) (4) Remove the cover panel (rear). (Refer to procedure 12) (5) Remove the electrical parts box. (See Photo 3) (6) Remove the valve bed. (Refer to procedure 8) (7) Remove the side panel (R). (Refer to procedure 8) (8) Recover refrigerant. (9) Remove 4 welded pipes of power receiver inlet and outlet. (10) Remove 2 receiver leg fixing screws (4 × 10). **Note: Recover refrigerant without spreading it in the air.**	

PUHZ-SW100YHAR6 PUHZ-SW120YHAR6

OPERATING PROCEDURE

1. Removing the service panel and top panel

(1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel.

(2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it.

Note: When removing service panel and top panel at the same time, count one less screw since they share a screw.

2. Removing the fan motor (MF1, MF2)

(1) Remove the service panel. (See Photo 1)

(2) Remove the top panel. (See Photo 1)

(3) Remove 5 fan grille fixing screws (5 × 12) to detach the fan grille. (Top and bottom) (See Photo 1)

(4) Remove a nut (for right handed screw of M6) to detach the propeller. (Top and bottom) (See Photo 2-1)

(5) Disconnect the connectors, CNF1, CNF2 on controller circuit board in electrical parts box.

(6) Loosen 6 clamps on the separator and motor support, then unbind the lead wires.

(7) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (Top and bottom) (See Photo 2-2)

Note: When attaching the fan motor, make sure to route the cable through the hook below the fan motor and fix firmly with the clamp.

3. Removing the electrical parts box

(1) Remove the service panel. (See Photo 1)

(2) Remove the top panel. (See Photo 1)

(3) Disconnect the indoor/outdoor connecting wire and power supply wire from terminal block.

(4) Disconnect the connector CNF1, CNF2, LEV-A and LEV-B on the controller circuit board.
<Symbols on the board>
• CNF1, CNF2 : Fan motor
• LEV-A, LEV-B : LEV

(5) Disconnect the pipe-side connections of the following parts.
<Diagram symbol in the connector housing>
• Thermistor <Liquid> (TH3)
• Thermistor <Discharge> (TH4)
• Thermistor <2-phase pipe, Ambient> (TH6/7)
• High pressure switch (63H)
• High pressure sensor (63HS)
• Low pressure switch (63L)
• 4-way valve coil (21S4)
• Thermistor <Comp. surface> (TH34)

(6) Remove the terminal cover and disconnect the compressor lead wire.

(7) Loosen 3 clamps on the separator and unbind the lead wires.

(8) Remove 3 electrical parts box fixing screws (4 × 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.

PHOTOS/FIGURES

Photo 1

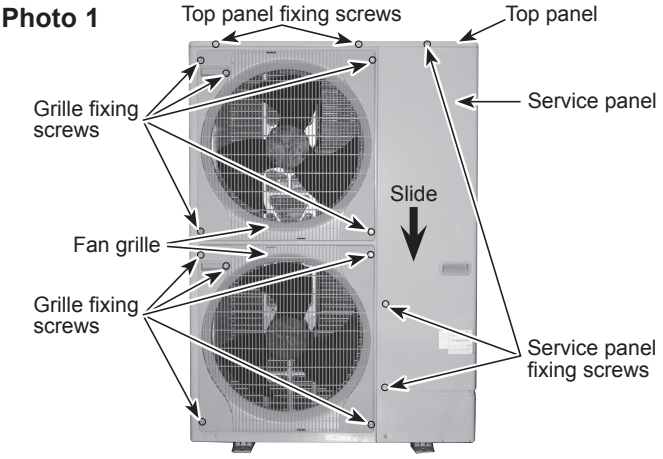


Photo 2-1

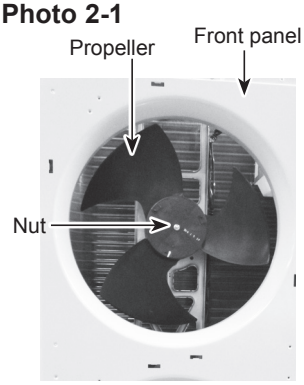


Photo 2-2

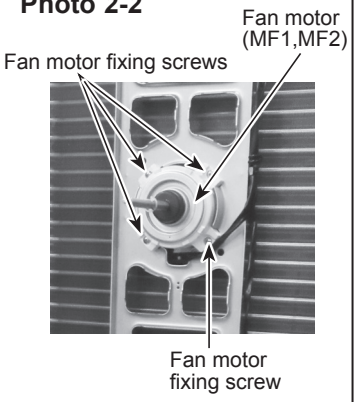
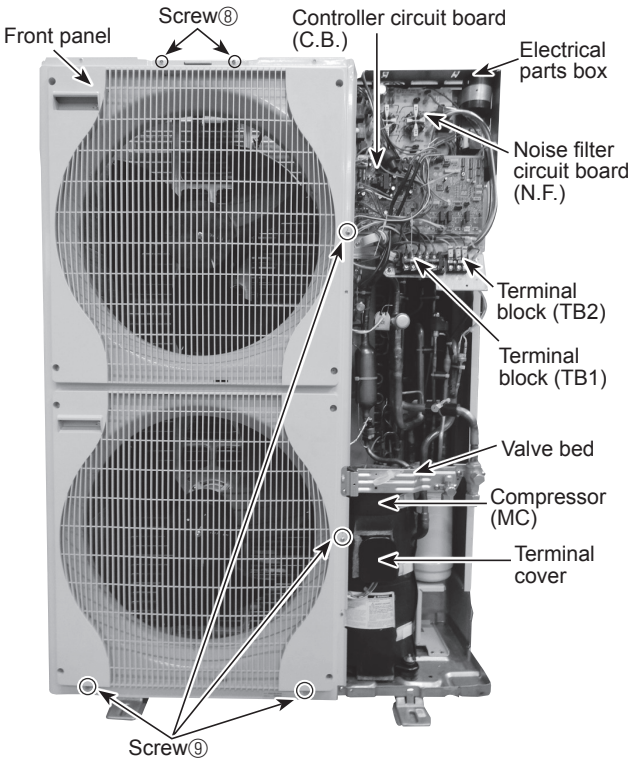


Photo 3-1



Continue to the next page

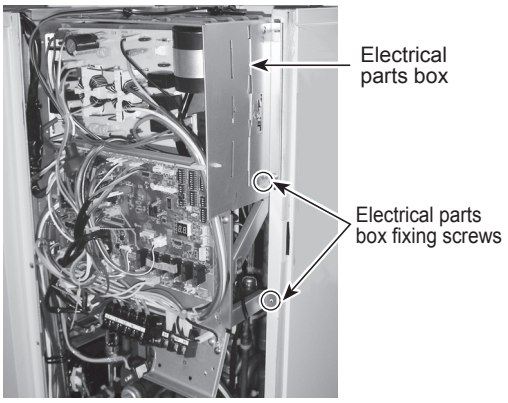
From the previous page

OPERATING PROCEDURE

(9) Remove the terminal cover and disconnect the compressor lead wire.
(10) Remove 3 electrical parts box fixing screws (4 × 10) and detach the electrical parts box by pulling it upward.
The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.

PHOTOS/FIGURES

Photo 3-2



4. Disassembling the electrical parts box

(1) Disconnect all the connectors on the controller circuit board.
(2) Remove the 3 screws, screw ①, ② and ③, that fix the plate equipped with the outdoor controller circuit board, and the electrical parts box, screw ① from the front and the screw ② and ③ from the bottom of the electrical parts box. (See Photo 4-1 and 4-2)
(3) Slide the plate in the direction of the arrow A and remove it. (See Photo 4-1)
(4) Remove the lead wires from the clamp on the bottom of the electrical parts box. (See Photo 4-3)
(5) Remove the 3 screws, screw ④ and ⑤, that fix the bottom side of the electrical parts box and remove the bottom side plate by sliding in the direction of the arrow B. (See Photo 4-3 and 4-4)
(6) Remove the outdoor noise filter circuit board from the electrical parts box. Then remove the 2 screws, screw ⑥ and ⑦, that fix the plate equipped with the noise filter circuit board and converter circuit board. (See Photo 4-5)

Note: When reassembling the electrical parts box, make sure the wirings are correct.

Photo 4-1

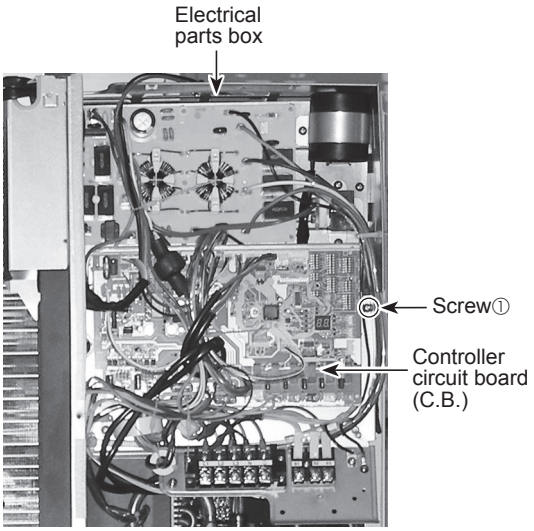


Photo 4-2

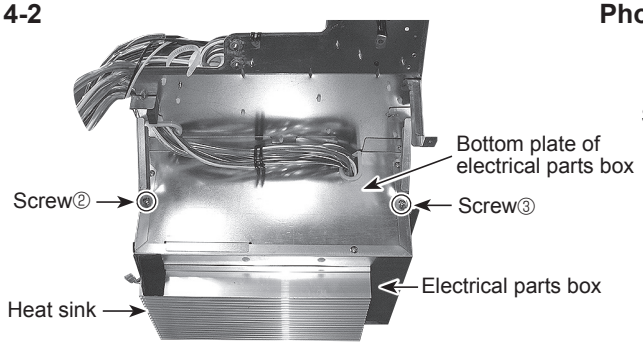


Photo 4-3

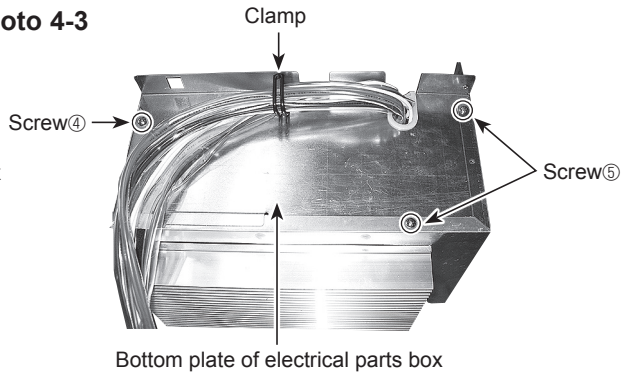


Photo 4-4

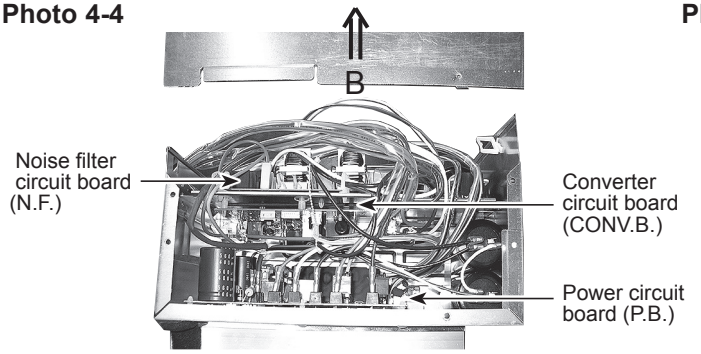
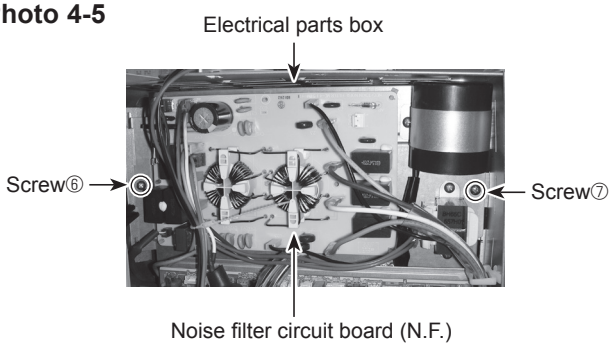
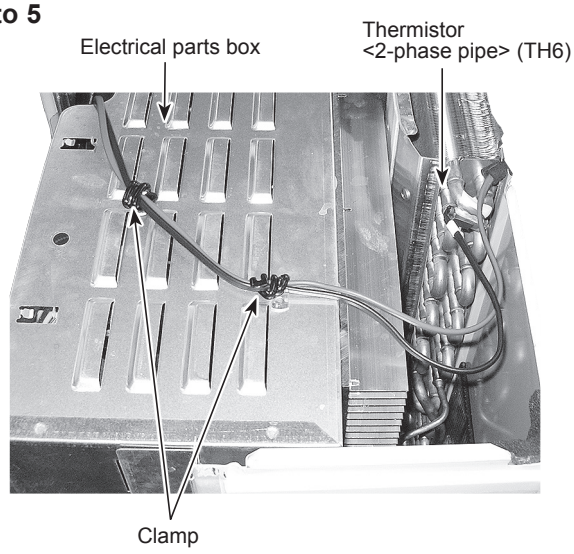
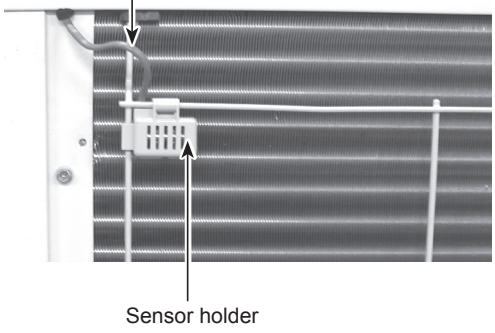
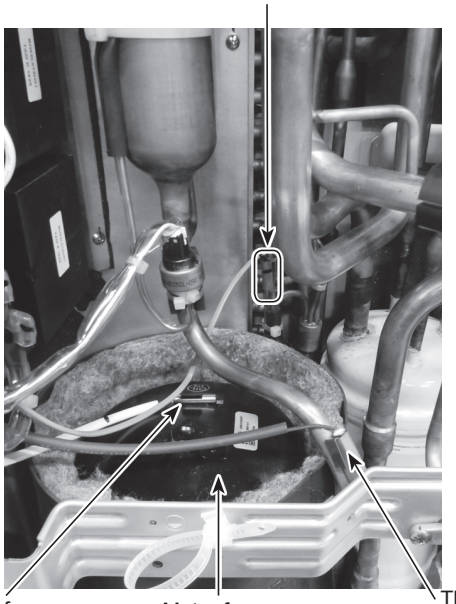


Photo 4-5



OPERATING PROCEDURE	PHOTOS/FIGURES
5. Removing the thermistor <2-phase pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (red), on the outdoor controller circuit board in the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the 2 wire clamps on top of the electrical parts box. (6) Pull out the thermistor <2-phase pipe> (TH6) from the sensor holder. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together.** **Refer to procedure 6 below to remove thermistor <Ambient>.**	**Photo 5** 
6. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6(red) on the controller circuit board in the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Loosen the 2 wire clamps on top of the electrical parts box. (See Photo 5) (6) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together.** **Refer to procedure 5 above to remove thermistor <2-phase pipe>.**	**Photo 6** 
7. Removing the thermistor <Liquid> (TH3), thermistor <Discharge> (TH4) and thermistor <Comp. surface> (TH34) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connectors, TH3 (white) and TH4 (white), TH34 (red) on the controller circuit board in the electrical parts box. (3) Loosen the cable strap for the lead wire in the front of the electrical parts box. (4) Loosen the fastener on the electrical parts box and unbind the lead wires. (5) Pull out the thermistor <Liquid> (TH3) and thermistor <Discharge> (TH4) from the sensor holder. [Removing the thermistor<Comp. surface> (TH34)] (6) Remove the sound proof cover (upper) for compressor. (7) Pull out the thermistor <Comp. surface> (TH34) from the holder of the compressor shell.	**Photo 7** 

OPERATING PROCEDURE

8. Removing the 4-way valve coil (21S4), and LEV coil (LEV(A), LEV(B))

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)

[Removing the 4-way valve coil]
(3) Remove 4-way valve coil fixing screw (M5 × 6).
(4) Remove the 4-way valve coil by sliding the coil toward you.
(5) Disconnect the connector 21S4 (green) on the controller circuit board in the electrical parts box.
(6) Loosen the clamp on the separator and unbind the lead wires.

[Removing the LEV coil]
(3) Remove the LEV coil by sliding the coil upward.
(4) Disconnect the connectors, LEV A (white) and LEV B (red), on the controller circuit board in the electrical parts box.
(5) Loosen the clamp on the separator and under the electrical parts box, then unbind the lead wires.

9. Removing the 4-way valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) then remove the valve bed.
(4) Remove 9 side panel (R) fixing screws (5 × 12) in the rear of the unit then remove the side panel (R).
(5) Remove the 4-way valve coil. (See Photo 8)
(6) Recover refrigerant.
(7) Remove the welded part of 4-way valve.

10. Removing LEV

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the valve bed. (Refer to procedure 9)
(4) Remove the side panel (R). (Refer to procedure 9)
(5) Remove the LEV. (See Photo 8)
(6) Recover refrigerant.
(7) Remove the welded part of LEV.

11. Removing the high pressure switch (63H)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the valve bed. (Refer to procedure 9)
(4) Remove the side panel (R). (Refer to procedure 9)
(5) Pull out the lead wire of high pressure switch.
(6) Recover refrigerant.
(7) Remove the welded part of high pressure switch.

PHOTOS/FIGURES

Photo 8

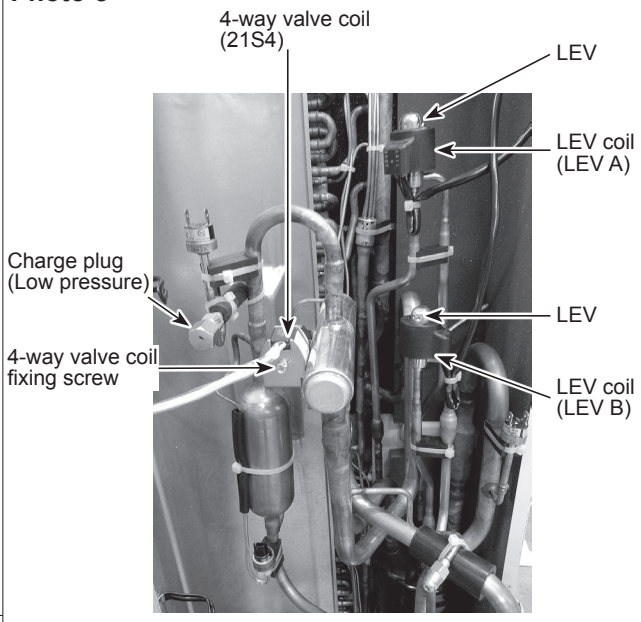
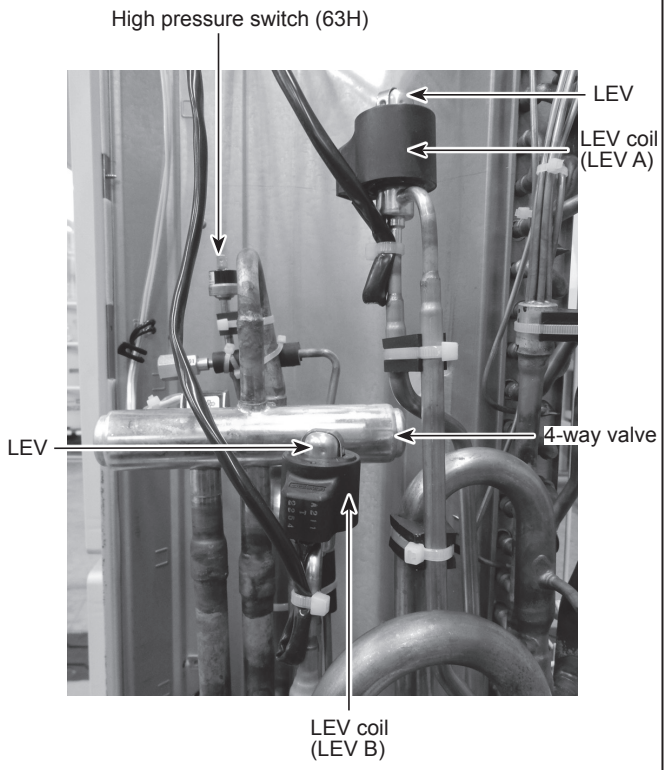


Photo 9



Note 1: Recover refrigerant without spreading it in the air.
Note 2: The welded part can be removed easily by removing the right side panel.
Note 3: When installing the 4-way valve and LEV cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.
Note 4: When installing the high pressure switch, cover it with a wet cloth to prevent it from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.

OPERATING PROCEDURE

12. Removing the reactors (ACL1, ACL2, ACL3)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the 6 screws, screw ⑧ and ⑨ (5 × 12), that fix the front panel and remove the front panel. (See Photo 3)
(4) Remove the 2 screws, screw ⑩ and ⑪ (both 4 × 10), that fix the separator, screw ⑩ from the valve bed and screw ⑪ from the bottom of the separator, and tilt the separator to the side of the fan motor slightly. (See Photo 10-1 and 10-2)
(5) Disconnect the lead wires from the reactor and remove the 4 screws, screw ⑫, that fix the reactor to remove the reactor. (See Photo 10-3 and 10-4)

Note 1: The reactor is very heavy (4kg)! Be careful when handling it.
Note 2: The reactor box is also removable.

PHOTOS/FIGURES

Photo 10-1

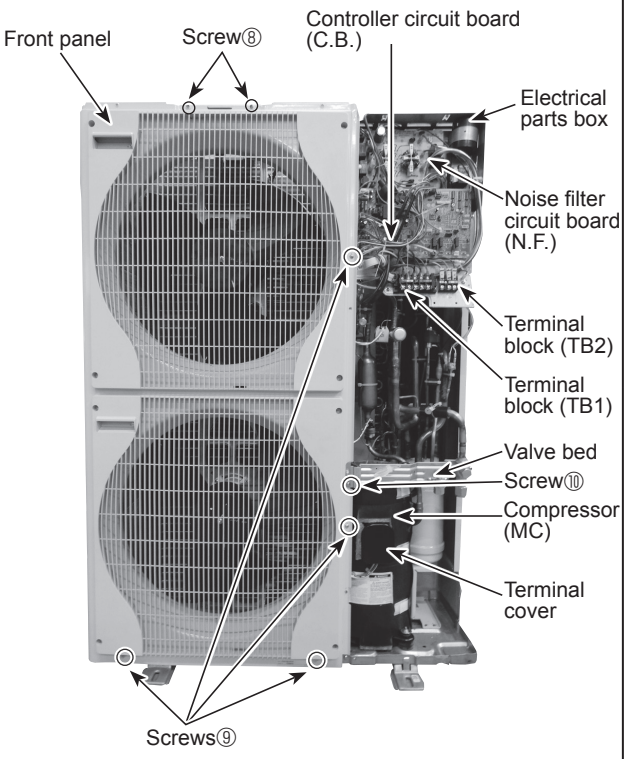


Photo 10-2

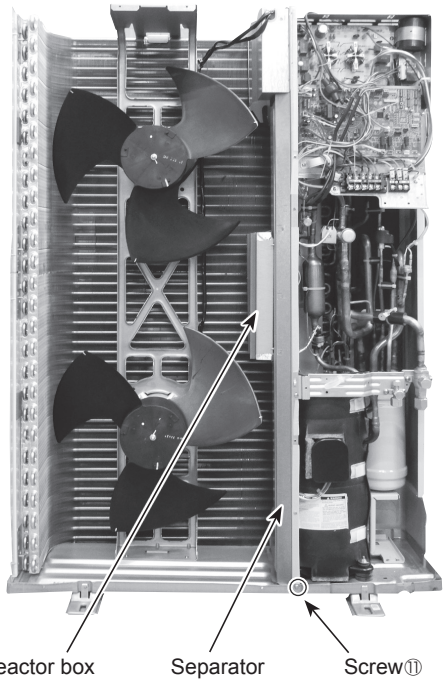


Photo 10-3

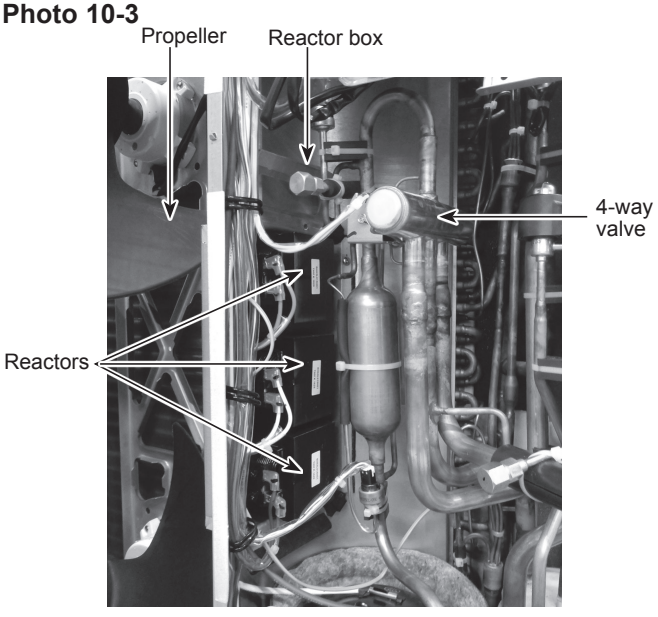
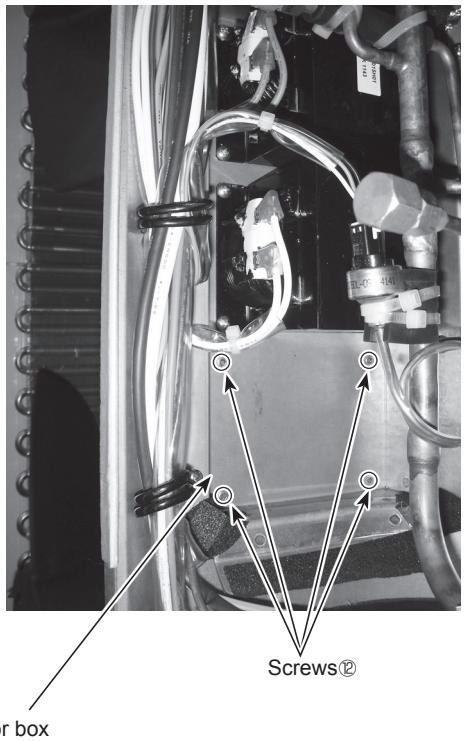
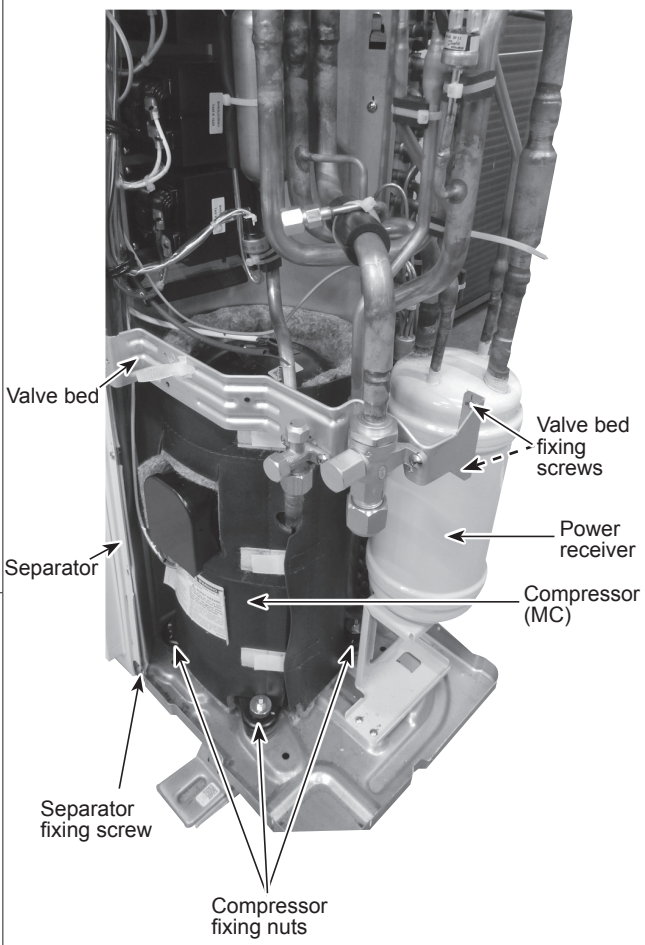


Photo 10-4



OPERATING PROCEDURE	PHOTOS/FIGURES
13. Removing the compressor (MC) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 2 cover panel (front) fixing screws (5 × 12) and remove the cover panel (front). (See Photo 3-1) (4) Remove 2 cover panel (rear) fixing screws (5 × 12) and remove the cover panel (rear). (5) Remove the electrical parts box. (See Photo 3-2) (6) Remove the valve bed. (Refer to procedure 9) (7) Remove the side panel (R). (Refer to procedure 9) (8) Remove 3 separator fixing screws (4 × 10) and remove the separator. (9) Remove the soundproof cover for compressor. (10) Recover refrigerant. (11) Remove the welded pipe of compressor inlet and outlet then remove the compressor. (12) Remove the 3 points of compressor fixing nut using a spanner or an adjustable wrench. **Note: Recover refrigerant without spreading it in the air.**	**Photo 11** 
14. Removing the power receiver (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the cover panel (front). (Refer to procedure 13) (4) Remove the cover panel (rear). (Refer to procedure 13) (5) Remove the electrical parts box. (See Photo 3-2) (6) Remove the valve bed. (Refer to procedure 9) (7) Remove the side panel (R). (Refer to procedure 9) (8) Recover refrigerant. (9) Remove 4 welded pipes of power receiver inlet and outlet. (10) Remove 2 receiver leg fixing screws (4 × 10). **Note: Recover refrigerant without spreading it in the air.**	

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