MITSUBISHI ELECTRIC

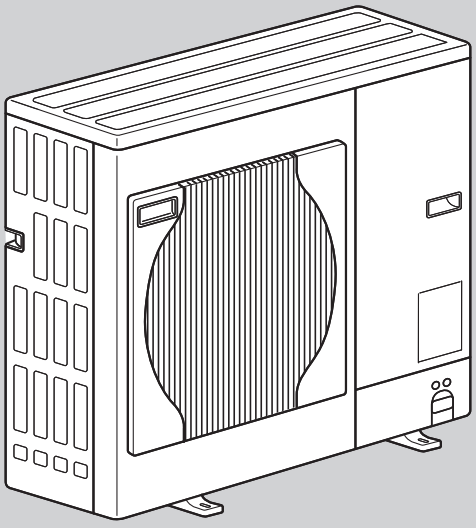
SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

October 2016
No. OCH646

SERVICE MANUAL R410A

Outdoor unit [Model Name]	[Service Ref.]
PUHZ-P100VHA5	PUHZ-P100VHA5.UK
PUHZ-P125VHA4	PUHZ-P125VHA4.UK
PUHZ-P140VHA4	PUHZ-P140VHA4.UK
PUHZ-P100YHA3	PUHZ-P100YHA3.UK
PUHZ-P125YHA2	PUHZ-P125YHA2.UK
PUHZ-P140YHA2	PUHZ-P140YHA2.UK

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



PUHZ-P100VHA5.UK
PUHZ-P100YHA3.UK

CONTENTS

PARTS CATALOG (OCB646)

Mr.SLIM

1 REFERENCE MANUAL

INDOOR UNIT'S SERVICE MANUAL

Model Name	Service Ref.	Service Manual No.
PLA-RP35/50/60/71/125/140EA	PLA-RP35/50/60/71/125/140EA.UK	OCH626 OCB626
PCA-RP71/125HA	PCA-RP71/125HA(#1)	OC328
PKA-RP60/71/100KAL	PKA-RP60/71/100KALR1.TH	OCH452 OCB452
PKA-RP35/50HAL	PKA-RP35/50HALR1	OCH453 OCB453
PCA-RP50/60/71/100/125/140KA	PCA-RP50/60/71/100/125/140KA	OCH454 OCB454
PEAD-RP35/50/60/71/100/125/140JA(L)	PEAD-RP35/50/60/71/100/125/140JA(L).UK	HWE08130 BWE08240

2 SAFETY PRECAUTION

2-1. ALWAYS OBSERVE FOR SAFETY

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

2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R410A

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.

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the followings.
· Be sure to clean the pipes and make sure that the insides of the pipes are clean.
· 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 contaminants such as sulfur, oxides, dirt, shaving particles, etc, which are hazard to refrigerant cycle.
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.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

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.

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.

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

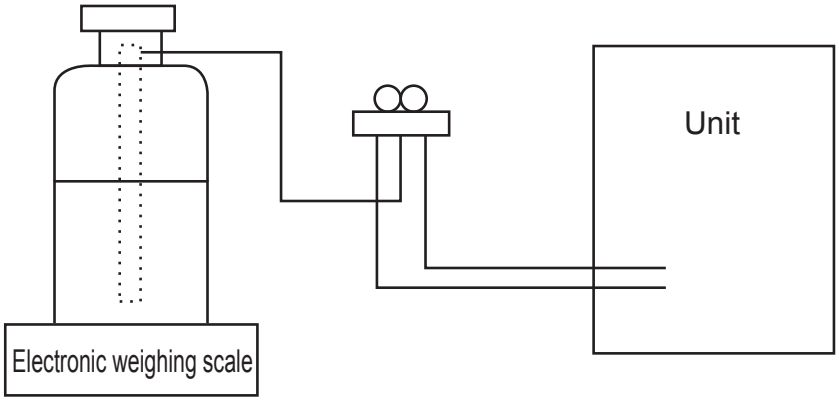
[1] Cautions for service

(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) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[2] Additional refrigerant charge

When charging directly from cylinder

(1) Check that cylinder for R410A on the market is 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 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	—

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 0.7 mm or below.)

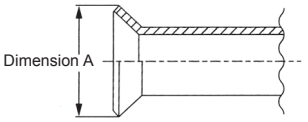
Diagram below: Piping diameter and thickness

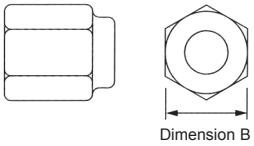
Nominal dimensions (inch)	Outside diameter (mm)	Thickness (mm)	
		R410A	R22
1/4	6.35	0.8	0.8
3/8	9.52	0.8	0.8
1/2	12.70	0.8	0.8
5/8	15.88	1.0	1.0
3/4	19.05	—	1.0

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

Nominal dimensions (in)	Outside diameter (mm)	Dimension A ($^{+0}_{-0.4}$) (mm)	
		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

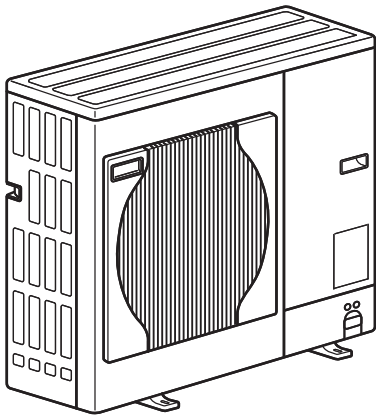
Nominal dimensions (in)	Outside diameter (mm)	Dimension B (mm)	
		R410A	R22
1/4	6.35	17.0	17.0
3/8	9.52	22.0	22.0
1/2	12.70	26.0	24.0
5/8	15.88	29.0	27.0
3/4	19.05	—	36.0

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

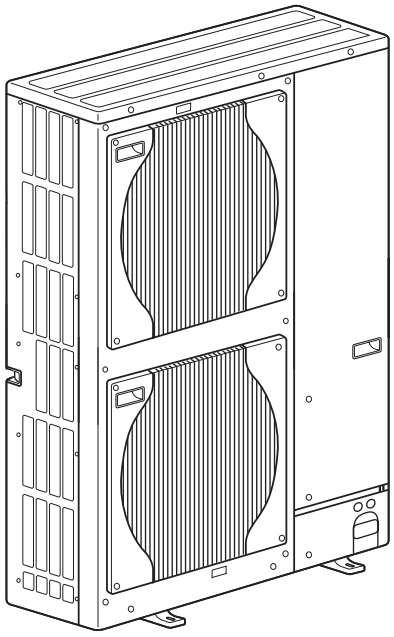
Tools and materials	Use	R410A tools	Can R22 tools be used?	Can R407C tools be used?
Gauge manifold	Air purge, refrigerant charge and Operation check	Tool exclusive for R410A	×	×
Charge hose		Tool exclusive for R410A	×	×
Gas leak detector	Gas leak check	Tool for HFC refrigerant	×	○
Refrigerant recovery 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-P100VHA5.UK
PUHZ-P100YHA3.UK



PUHZ-P125VHA4.UK
PUHZ-P140VHA4.UK
PUHZ-P125YHA2.UK
PUHZ-P140YHA2.UK

CHARGELESS SYSTEM
PRE-CHARGED REFRIGERANT IS SUPPLIED FOR PIPING LENGTH AT SHIPMENT (Maximum 30 m (PUHZ-P125/P140))

The refrigerant circuit with LEV (Linear Expansion Valve) and Accumulator always control the optimal refrigerant level regardless of the length (30 m maximum and 5 m minimum) of piping. The additional refrigerant charging work during installation often causes problems. It is completely eliminated by chargeless system. This unique system improves the quality and reliability of the work done. It also helps to speed up the installation time.

4 SPECIFICATIONS

Service Ref.					PUHZ-P100VHA5.UK	
Mode					Cooling	Heating
OUTDOOR UNIT	Power source (Phase, cycle, voltage)				Single, 50 Hz, 230 V	
		Max. current		A	28	
	External finish				Munsell 3Y 7.8/1.1	
	Refrigerant control				Linear Expansion Valve	
	Compressor				Hermetic	
			Model		TNB220FLHMT	
			Motor output	kW	2.9	
			Starter type		Inverter	
			Protection devices		HP switch Comp. surface thermo	
	Crankcase heater			W	—	
	Heat exchanger				Plate fin coil	
	Fan		Fan (drive) × No.		Propeller fan × 1	
			Fan motor output	kW	0.060	
			Air flow	m³/min (CFM)	60 (2,120)	
	Defrost method				Reverse cycle	
	Sound pressure level		Cooling	dB	50	
			Heating	dB	54	
	Dimensions		W	mm (inch)	950 (37-3/8)	
			D	mm (inch)	330 + 30 (13+1-3/16)	
			H	mm (inch)	943 (37-1/8)	
	Weight			kg (lb)	75 (165)	
	Refrigerant				R410A	
		Charge		kg (lb)	3.0 (6.6)	
		Oil (Model)		L	0.87 (FV50S)	
Refrigerant piping	Pipe size OD		Liquid	mm (inch)	9.52 (3/8)	
			Gas	mm (inch)	15.88 (5/8)	
	Connection method		Indoor side		Flared	
			Outdoor side		Flared	
	Between the indoor & outdoor		Height difference		Maximum 30 m	
			Piping length		Maximum 50 m	

Service Ref.					PUHZ-P125VHA4.UK		PUHZ-P140VHA4.UK	
Mode					Cooling	Heating	Cooling	Heating
OUTDOOR UNIT	Power source (Phase, cycle, voltage)				Single, 50 Hz, 230 V			
		Max. current		A	28		29.5	
	External finish				Munsell 3Y 7.8/1.1			
	Refrigerant control				Linear Expansion Valve			
	Compressor				Hermetic			
			Model		TNB306FPGMT			
			Motor output	kW	3.4		3.9	
			Starter type		Inverter			
			Protection devices		HP switch Comp. surface thermo			
	Crankcase heater			W	30			
	Heat exchanger				Plate fin coil			
	Fan		Fan (drive) × No.		Propeller fan × 2			
			Fan motor output	kW	0.060 + 0.060			
			Air flow	m³/min (CFM)	100 (3,530)			
	Defrost method				Reverse cycle			
	Sound pressure level		Cooling	dB	54		55	
			Heating	dB	55		56	
	Dimensions		W	mm (inch)	950 (37-3/8)			
			D	mm (inch)	330 + 30 (13+1-3/16)			
			H	mm (inch)	1,350 (53-1/8)			
	Weight			kg (lb)	99 (218)			
	Refrigerant				R410A			
		Charge		kg (lb)	4.5 (9.9)			
		Oil (Model)		L	0.87 (FV50S)			
Refrigerant piping	Pipe size OD		Liquid	mm (inch)	9.52 (3/8)			
			Gas	mm (inch)	15.88 (5/8)			
	Connection method		Indoor side		Flared			
			Outdoor side		Flared			
	Between the indoor & outdoor		Height difference		Maximum 30 m			
			Piping length		Maximum 50 m			

Service Ref.				PUHZ-P100YHA3.UK	
Mode				Cooling	Heating
OUTDOOR UNIT	Power source (Phase, cycle, voltage)			3 phase, 50 Hz, 400 V	
		Max. current	A	13	
	External finish			Munsell 3Y 7.8/1.1	
	Refrigerant control			Linear Expansion Valve	
	Compressor			Hermetic	
		Model		TNB220FLCMT	
		Motor output	kW	2.9	
		Starter type		Inverter	
		Protection devices		HP switch Comp. surface thermo	
	Crankcase heater		W	—	
	Heat exchanger			Plate fin coil	
	Fan	Fan (drive) × No.		Propeller fan × 1	
		Fan motor output	kW	0.060	
		Air flow	m³/min (CFM)	60 (2,120)	
	Defrost method			Reverse cycle	
	Sound pressure level	Cooling	dB	50	
		Heating	dB	54	
	Dimensions	W	mm (inch)	950 (37-3/8)	
		D	mm (inch)	330 + 30 (13+1-3/16)	
		H	mm (inch)	943 (37-1/8)	
	Weight		kg (lb)	77 (170)	
	Refrigerant			R410A	
		Charge	kg (lb)	3.0 (6.6)	
		Oil (Model)	L	0.87 (FV50S)	
Refrigerant piping	Pipe size OD	Liquid	mm (inch)	9.52 (3/8)	
		Gas	mm (inch)	15.88 (5/8)	
	Connection method	Indoor side		Flared	
		Outdoor side		Flared	
	Between the indoor & outdoor	Height difference		Maximum 30 m	
		Piping length		Maximum 50 m	

Service Ref.				PUHZ-P125YHA2.UK		PUHZ-P140YHA2.UK	
Mode				Cooling	Heating	Cooling	Heating
OUTDOOR UNIT	Power source (Phase, cycle, voltage)			3 phase, 50 Hz, 400 V			
		Max. current	A	13			
	External finish			Munsell 3Y 7.8/1.1			
	Refrigerant control			Linear Expansion Valve			
	Compressor			Hermetic			
		Model		TNB306FPNMT			
		Motor output	kW	3.4		3.9	
		Starter type		Inverter			
		Protection devices		HP switch Comp. surface thermo			
	Crankcase heater		W	30			
	Heat exchanger			Plate fin coil			
	Fan	Fan (drive) × No.		Propeller fan × 2			
		Fan motor output	kW	0.060 + 0.060			
		Air flow	m³/min (CFM)	100 (3,530)			
	Defrost method			Reverse cycle			
	Sound pressure level	Cooling	dB	54		55	
		Heating	dB	55		56	
	Dimensions	W	mm (inch)	950 (37-3/8)			
		D	mm (inch)	330 + 30 (13+1-3/16)			
		H	mm (inch)	1,350 (53-1/8)			
	Weight		kg (lb)	101 (223)			
	Refrigerant			R410A			
		Charge	kg (lb)	4.5 (9.9)			
		Oil (Model)	L	0.87 (FV50S)			
Refrigerant piping	Pipe size OD	Liquid	mm (inch)	9.52 (3/8)			
		Gas	mm (inch)	15.88 (5/8)			
	Connection method	Indoor side		Flared			
		Outdoor side		Flared			
	Between the indoor & outdoor	Height difference		Maximum 30 m			
		Piping length		Maximum 50 m			

5 DATA

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

Service Ref.	Piping length (one way)					Initial charged
	10 m	20 m	30 m	40 m	50 m	
PUHZ-P100VHA5.UK PUHZ-P100YHA3.UK	2.9	3.0	3.6	4.2	4.8	3.0
PUHZ-P125VHA4.UK PUHZ-P125YHA2.UK	4.3	4.4	4.5	5.1	5.7	4.5
PUHZ-P140VHA4.UK PUHZ-P140YHA2.UK	4.3	4.4	4.5	5.1	5.7	4.5

Additional charge is required for pipes longer than 20 or 30 m.

5-2. COMPRESSOR TECHNICAL DATA

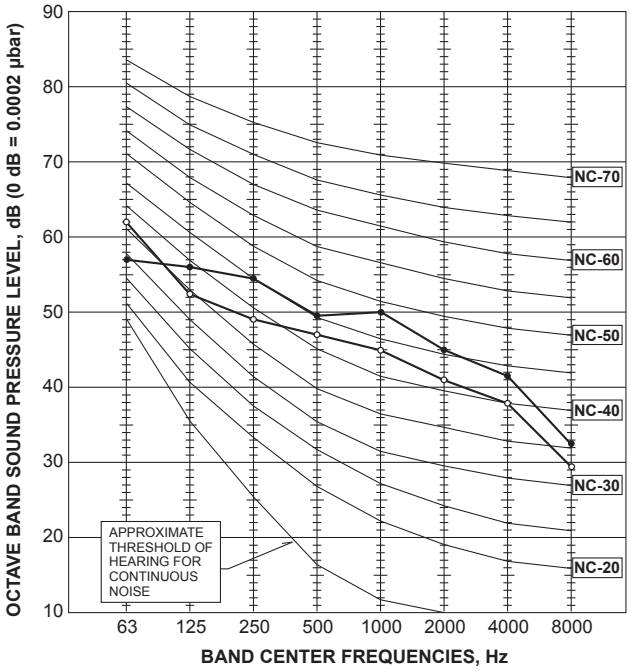
(at 20℃)

Service Ref.		PUHZ-P100VHA5.UK	PUHZ-P125VHA4.UK PUHZ-P140VHA4.UK	PUHZ-P100YHA3.UK	PUHZ-P125YHA2.UK PUHZ-P140YHA2.UK
Compressor model		TNB220FLHMT	TNB306FPGMT	TNB220FLCMT	TNB306FPNMT
Winding Resistance (Ω)	U-V	0.88	0.53	1.41	1.02
	U-W	0.88	0.53	1.41	1.02
	W-V	0.88	0.53	1.41	1.02

5-3. NOISE CRITERION CURVES

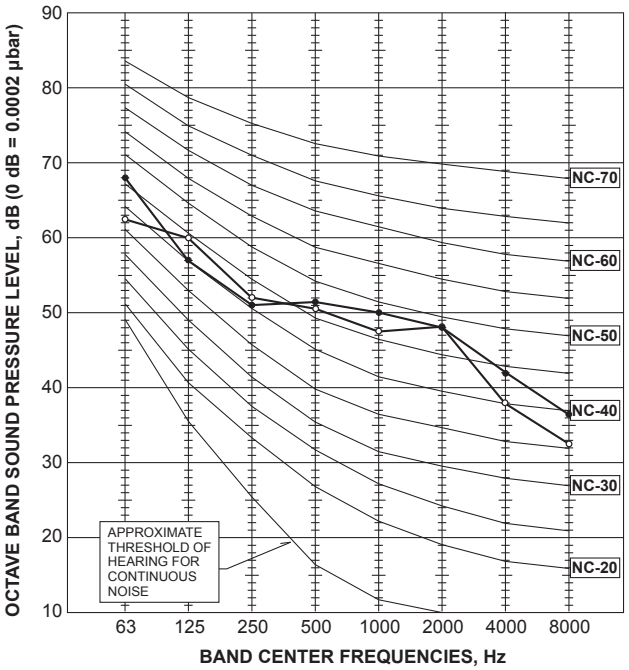
PUHZ-P100VHA5.UK
PUHZ-P100YHA3.UK

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



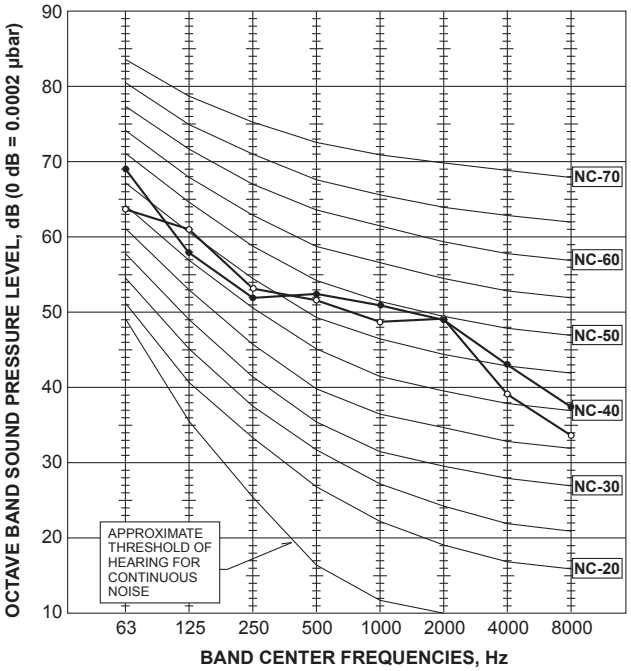
PUHZ-P125VHA4.UK
PUHZ-P125YHA2.UK

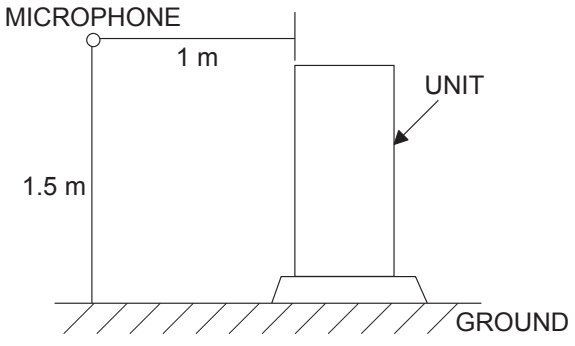
MODE	SPL(dB)	LINE
COOLING	54	○—○
HEATING	55	●—●



PUHZ-P140VHA4.UK
PUHZ-P140YHA2.UK

MODE	SPL(dB)	LINE
COOLING	55	○—○
HEATING	56	●—●





5-4. STANDARD OPERATION DATA

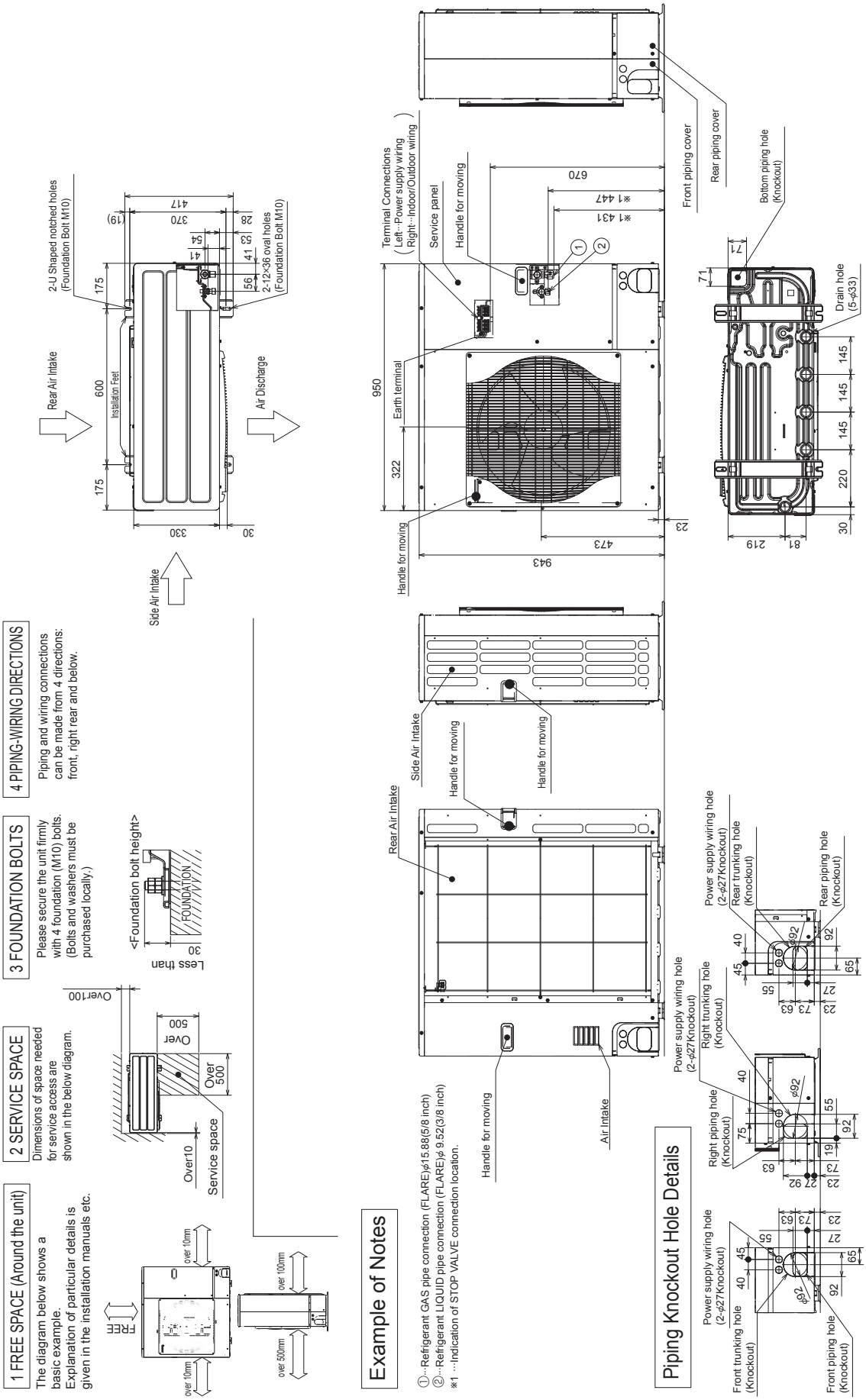
Representative matching				PLA-RP100EA		PLA-RP125EA		PLA-RP140EA	
Mode				Cooling	Heating	Cooling	Heating	Cooling	Heating
Total	Capacity		W	9,400	11,200	12,300	14,000	13,600	16,000
	Input		kW	3.48	3.28	4.08	4.10	5.21	4.98
Electrical circuit	**Indoor unit**			**PLA-RP100EA**		**PLA-RP125EA**		**PLA-RP140EA**	
	Phase , Hz			1, 50		1, 50		1, 50	
	Volts		V	230		230		230	
	Input		kW	0.07	0.07	0.10	0.10	0.10	0.10
	Amperes		A	0.46	0.44	0.66	0.64	0.66	0.64
	Outdoor unit			**PUHZ-P100VHA5 PUHZ-P100YHA3**		**PUHZ-P125VHA4 PUHZ-P125YHA2**		**PUHZ-P140VHA4 PUHZ-P140YHA2**	
	Phase , Hz			1/3, 50		1 /3, 50		1 /3, 50	
	Volts		V	230 / 400		230 / 400		230 / 400	
	Current		A	14.90 / 5.47	14.04 / 5.15	17.23 / 6.24	17.33 / 6.28	22.20 / 8.02	21.10 / 7.66
Refrigerant circuit	Discharge pressure		MPa (kgf/cm²)	3.01 (30.7)	2.65 (27.0)	2.74 (28.0)	2.68 (27.4)	2.84 (29.0)	2.85 (29.1)
	Suction pressure		MPa (kgf/cm²)	0.87 (8.82)	0.61 (6.2)	0.86 (8.8)	0.62 (6.3)	0.78 (8.0)	0.63 (6.4)
	Discharge temperature		°C	77.6	75.4	70.0	70.4	74.7	77.6
	Condensing temperature		°C	49.7	43.9	46.9	46.0	48.0	48.4
	Suction temperature		°C	8.2	−1.6	6.8	−0.26	4.21	−1.42
	Ref. pipe length		m	5	5	5	5	5	5
Indoor side	Intake air temperature	D.B.	°C	27	20	27	20	27	20
		W.B.	°C	19	15	19	15	19	15
	Discharge air temperature	D.B.	°C	13.8	39.4	12.7	37.2	12.6	39.2
Outdoor side	Intake air temperature	D.B.	°C	35	7	35	7	35	7
		W.B.	°C	24	6	24	6	24	6
SHF				0.79	—	0.78	—	0.75	—
BF				0.11	—	0.07	—	0.07	—

The unit of pressure has been changed to MPa based on international SI system.
The conversion factor is : 1 (MPa) = 10.2 (kgf/cm²)

6 OUTLINES AND DIMENSIONS

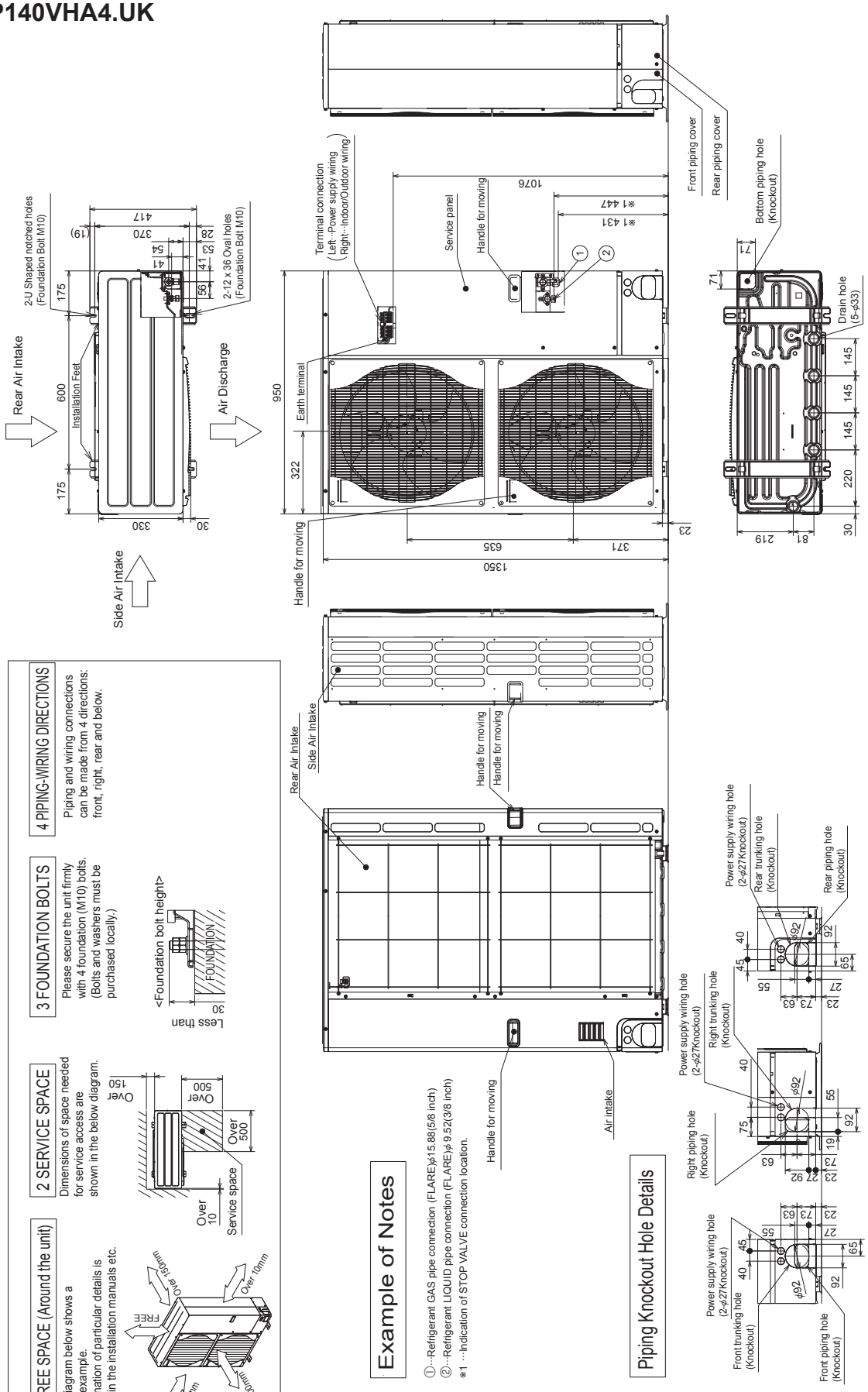
PUHZ-P100VHA5.UK

Unit : mm



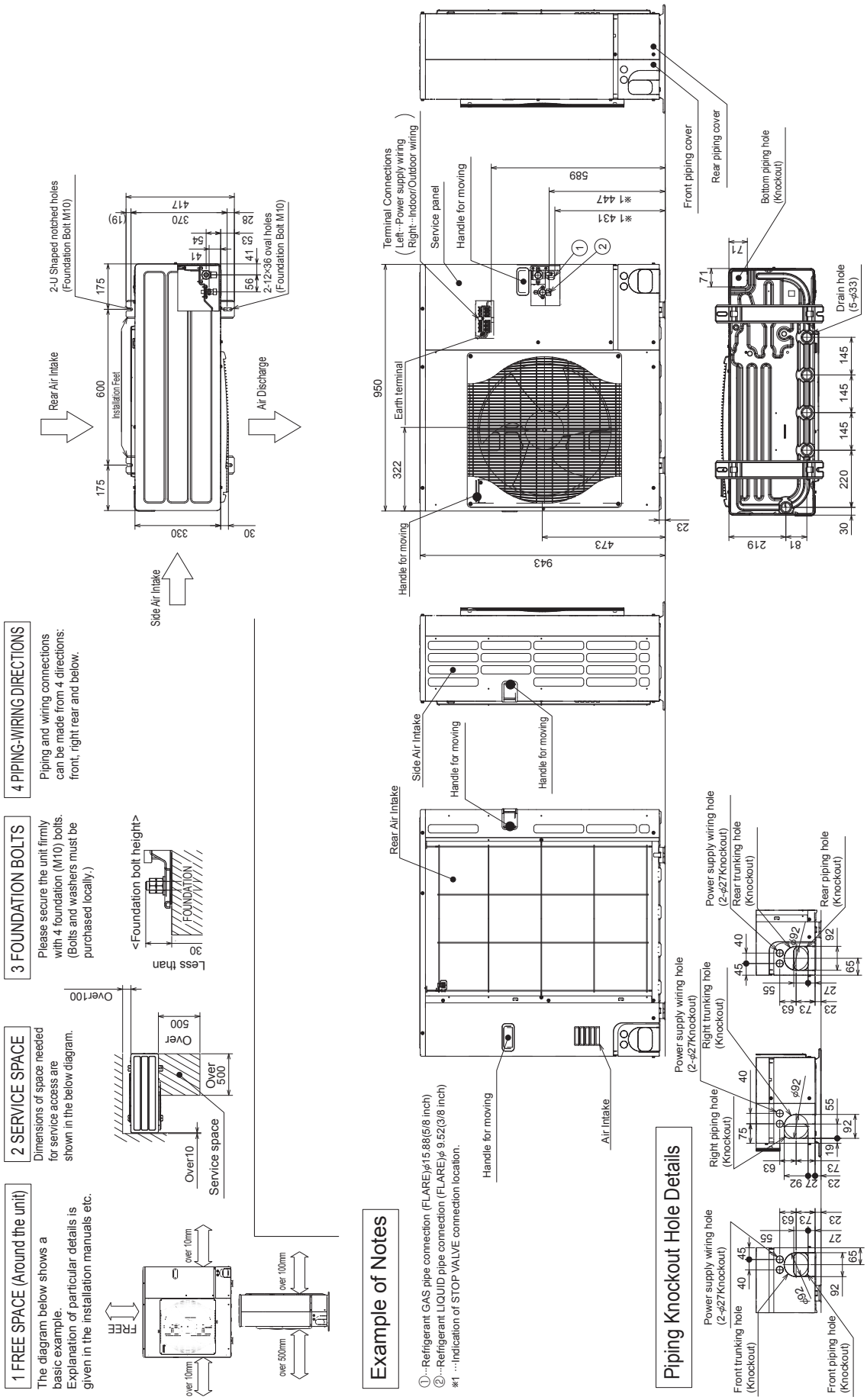
PUHZ-P125VHA4.UK
PUHZ-P140VHA4.UK

Unit : mm



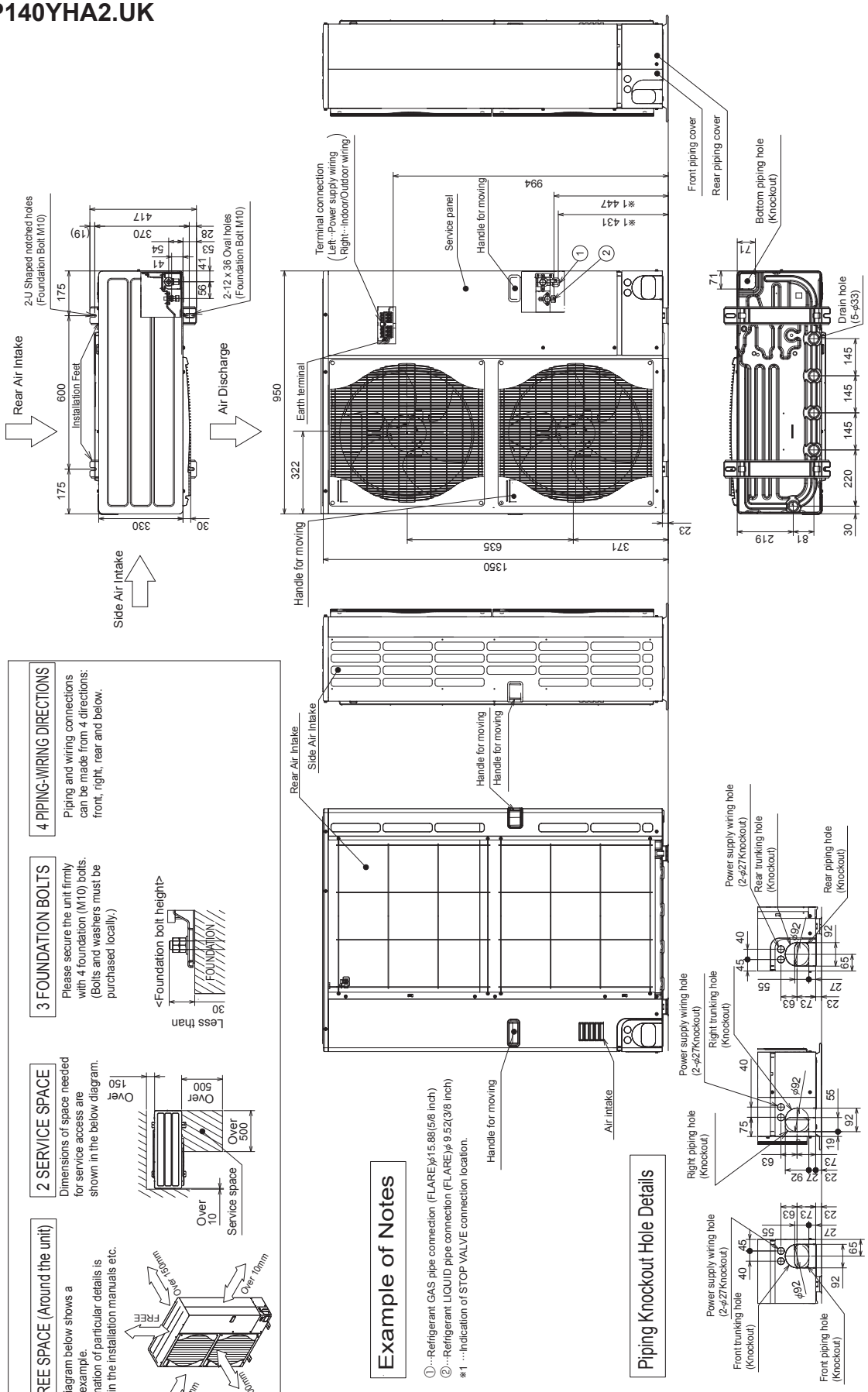
PUHZ-P100YHA3.UK

Unit : mm



PUHZ-P125YHA2.UK
PUHZ-P140YHA2.UK

Unit : mm



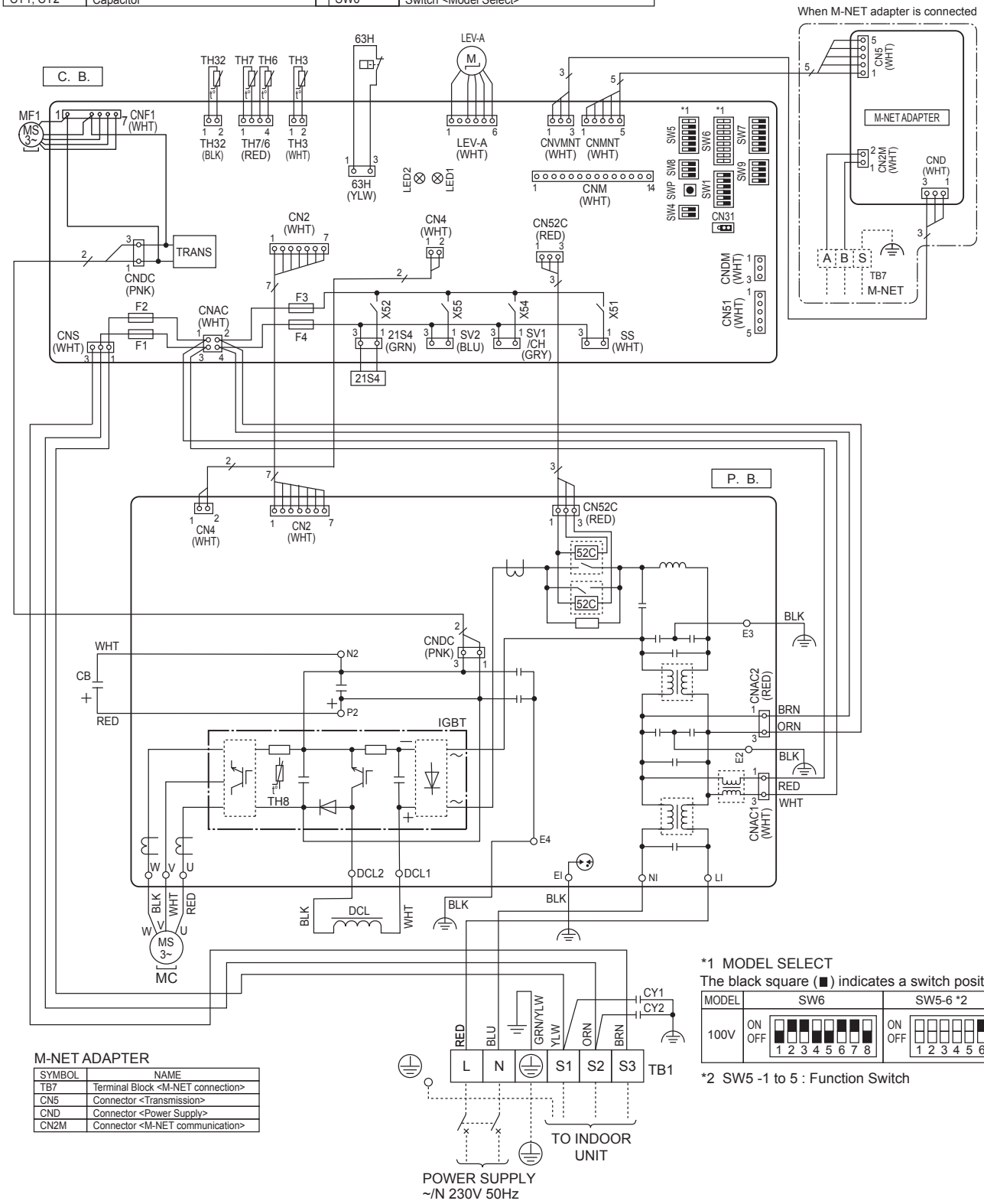
7 WIRING DIAGRAM

PUHZ-P100VHA5.UK

SYMBOL	NAME
TB1	Terminal Block <Power Supply, Indoor/Outdoor>
MC	Motor for Compressor
MF1	Fan Motor
21S4	Solenoid Valve (Four-Way Valve)
63H	High Pressure Switch
TH3	Thermistor <Liquid>
TH6	Thermistor <2-Phase Pipe>
TH7	Thermistor <Ambient>
TH32	Thermistor <Comp. Surface>
LEV-A	Linear Expansion Valve
DCL	Reactor
CB	Main Smoothing Capacitor
CY1, CY2	Capacitor

SYMBOL	NAME
P.B.	Power Circuit Board
U/V/W	Connection Terminal <U/V/W-Phase>
LI	Connection Terminal <L-Phase>
NI	Connection Terminal <N-Phase>
DCL1, DCL2	Connection Terminal <Reactor>
IGBT	Power Module
EI, E2, E3, E4	Connection Terminal <Ground>
C.B.	Controller Circuit Board
SW1	Switch <Manual Defrost, Defect History, Record Reset, Refrigerant Address>
SW4	Switch <Test Operation>
SW5	Switch <Function Switch, Model Select>
SW6	Switch <Model Select>

SYMBOL	NAME
SW7	Switch <Function Switch>
SW8	Switch <Function Switch>
SW9	Switch <Function Switch>
SWP	Switch <Pump Down>
CN31	Connector <Emergency Operation>
SS	Connector <Connection for Option>
CNDM	Connector <Connection for Option>
CNM	Connector <Connection for Option>
LED1, LED2	LED <Operation Inspection Indicators>
F1, F2, F3, F4	Fuse <T6.3AL250V>
X51, X52, X54, X55	Relay



M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block <M-NET connection>
CN5	Connector <Transmission>
CND	Connector <Power Supply>
CN2M	Connector <M-NET communication>

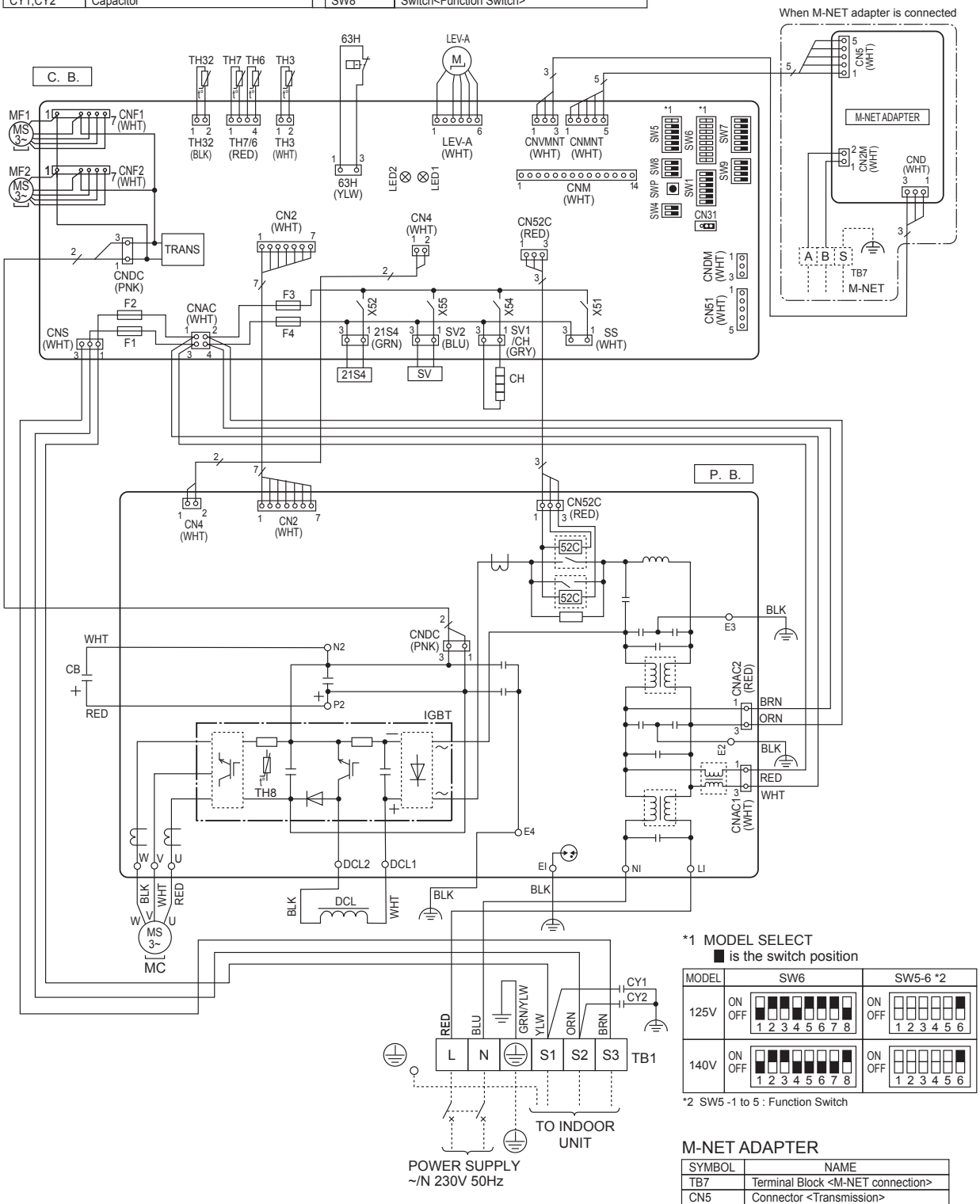
*1 MODEL SELECT
The black square (■) indicates a switch position.

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

*2 SW5 -1 to 5 : Function Switch

PUHZ-P125VHA4.UK PUHZ-P140VHA4.UK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block<Power Supply, Indoor/Outdoor >	P.B.	Power Circuit Board	SW9	Switch<Function Switch>
MC	Motor for Compressor	U/V/W	Connection Terminal<U/V/W-Phase>	SWP	Switch<Pump Down>
MF1, MF2	Fan Motor	LI	Connection Terminal<L-Phase>	CN31	Connector<Emergency Operation>
21S4	Solenoid Valve (Four-Way Valve)	NI	Connection Terminal<N-Phase>	SS	Connector<Connection for Option>
SV	Solenoid Valve (Bypass Valve)	DCL1,DCL2	Connection Terminal<Reactor>	CNDM	Connector < Connection for Option (Contact Input)>
CH	Crankcase Heater	IGBT	Power Module	CNM	Connector<A-Control Service Inspection Kit>
63H	High Pressure Switch	EI,E2,E3,E4	Connection Terminal<Ground>	LED1, LED2	LED<Operation Inspection Indicators>
TH3	Thermistor<Liquid>	C.B.	Controller Circuit Board	F1,F2,F3,F4	Fuse< T6.3AL250V>
TH6	Thermistor<2-Phase Pipe>	SW1	Switch<Manual Defrost, Defect History Record Reset, Refrigerant Address>	X51,X52,X54,X55	Relay
TH7	Thermistor<Ambient>	SW4	Switch<Test Operation>		
TH32	Thermistor<Comp. Surface>	SW5	Switch<Function Switch, Model Select>		
LEV-A	Electronic Expansion Valve	SW6	Switch<Model Select>		
DCL	Reactor	SW7	Switch<Function Switch>		
CB	Main Smoothing Capacitor	SW8	Switch<Function Switch>		
CY1,CY2	Capacitor				



*1 MODEL SELECT
■ is the switch position

MODEL	SW6	SW5-6 *2
125V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
140V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

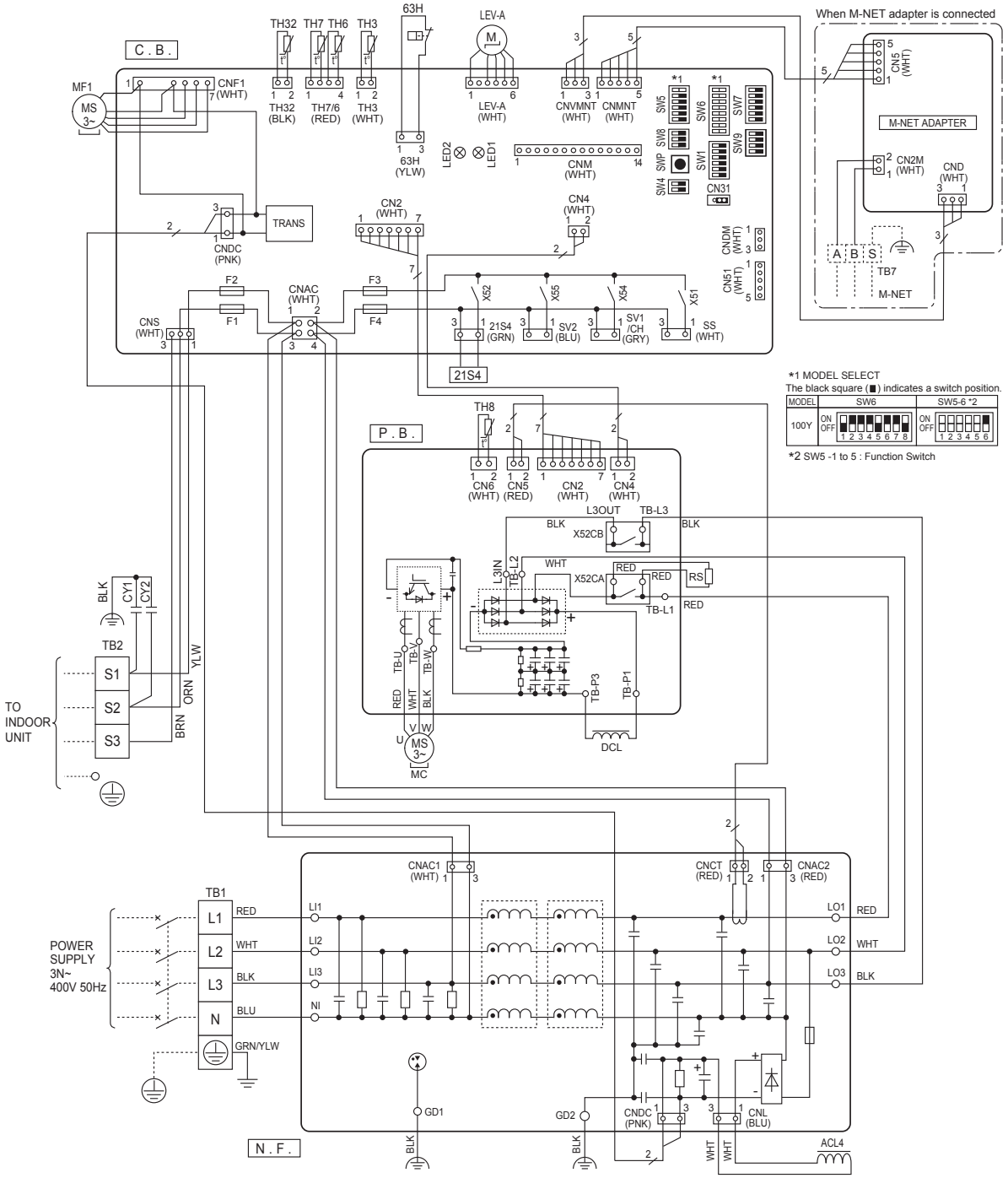
*2 SW5 -1 to 5 : Function Switch

M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block <M-NET connection>
CN5	Connector <Transmission>
CND	Connector <Power Supply>
CN2M	Connector <M-NET communication>

PUHZ-P100YHA3.UK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block <Power Supply>	RS	Rush Current Protect Resistor	SW4	Switch <Test Operation>
TB2	Terminal Block <Indoor/Outdoor>	CY1, CY2	Capacitor	SW5	Switch <Function Switch, Model Select>
MC	Motor for Compressor	P.B.	Power Circuit Board	SW6	Switch <Model Select>
MF1	Fan Motor	TB-U/V/W	Connection Terminal <U/V/W-Phase>	SW7	Switch <Function Switch>
21S4	Solenoid Valve (Four-Way Valve)	TB-L1/L2/L3	Connection Terminal <L1/L2/L3-Power Supply>	SW8	Switch <Function Switch>
63H	Hign Pressure Switch	TB-P1/P3	Connection Terminal	SW9	Switch <Function Switch>
TH3	Thermistor <Liquid>	X52CA/B	52C Relay	SWP	Switch <Pump Down>
TH6	Thermistor <2-Phase Pipe>	N.F.	Noise Filter Circuit Board	CN31	Connector <Emergency Operation>
TH7	Thermistor <Ambient>	LI1/LI2/LI3/NI	Connection Terminal <L1/L2/L3/N-Power Supply>	SS	Connector <Connection for Option>
TH8	Thermistor <Heat Sink>	LO1/LO2/LO3	Connection Terminal <L1/L2/L3-Power Supply>	CNDM	Connector <Connection for Option>
TH32	Thermistor <Comp. Surface>	GD1, GD2	Connection Terminal <Ground>	CNM	Connector <Connection for Option>
LEV-A	Linear Expansion Valve	C.B.	Controller Circuit Board	LED1, LED2	LED <Operation Inspection Indicators>
DCL	Reactor	SW1	Switch <Manual Defrost, Defect History, Record Reset, Refrigerant Address>	F1, F2, F3, F4	Fuse <T6.3AL250V>
ACL4	Reactor			X51, X52, X54, X55	Relay

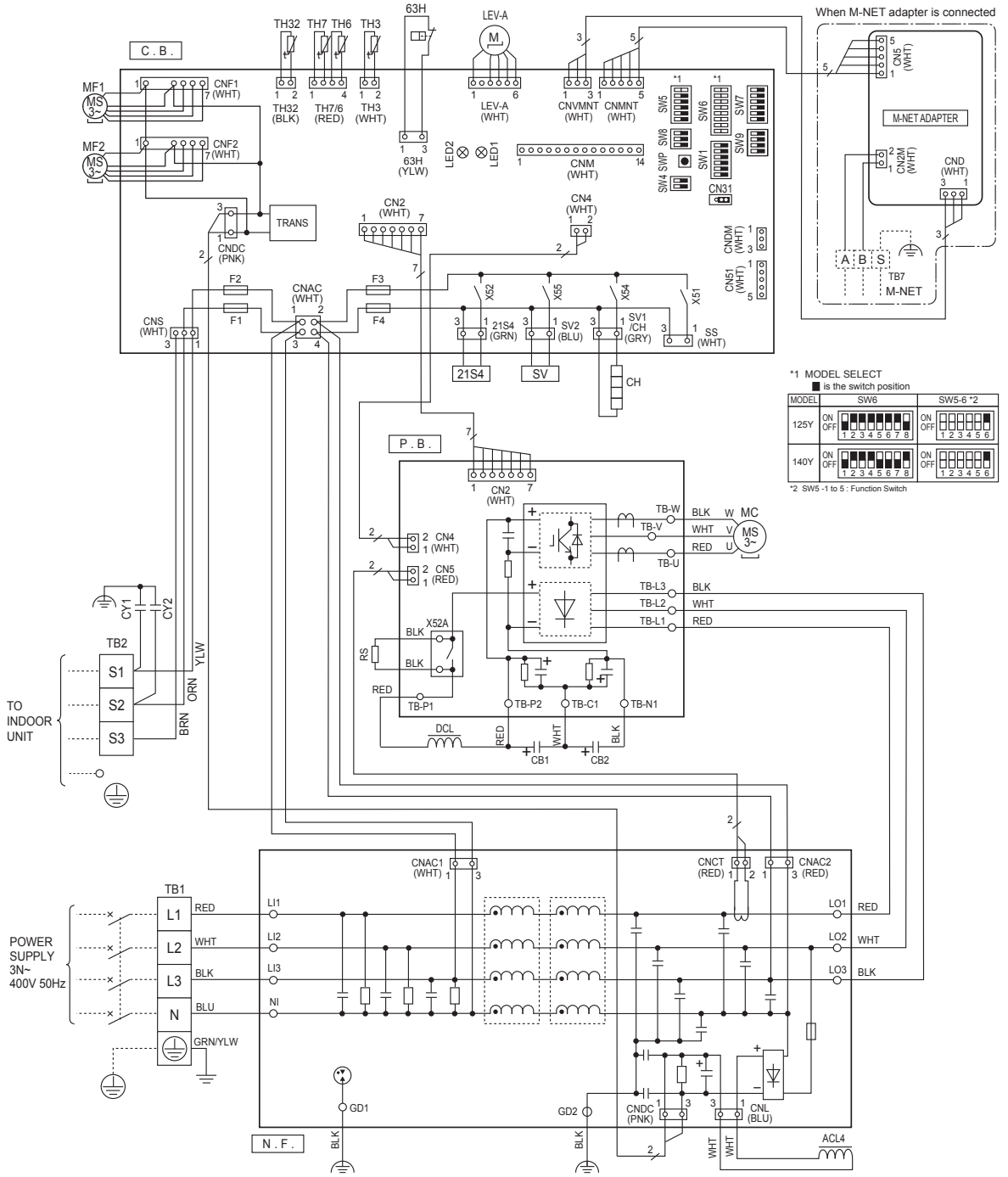


M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block <M-NET connection>
CN5	Connector <Transmission>
CND	Connector <Power Supply>
CN2M	Connector <M-NET communication>

PUHZ-P125YHA2.UK PUHZ-P140YHA2.UK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block<Power Supply >	CY1,CY2	Capacitor	SW5	Switch<Function Switch, Model Select>
TB2	Terminal Block<Indoor/Outdoor >	P.B.	Power Circuit Board	SW6	Switch<Model Select>
MC	Motor for Compressor	TB-U/V/W	Connection Terminal<U/V/W-Phase>	SW7	Switch<Function Switch>
MF1, MF2	Fan Motor	TB-L1/L2/L3	Connection Terminal<L1/L2/L3-Power Supply>	SW8	Switch<Function Switch>
21S4	Solenoid Valve (Four-Way Valve)	TB-P1	Connection Terminal	SW9	Switch<Function Switch>
SV	Solenoid Valve (Bypass Valve)	TB-P2	Connection Terminal	SWP	Switch<Pump Down>
CH	Crankcase Heater	TB-C1	Connection Terminal	CN31	Connector<Emergency Operation>
63H	High Pressure Switch	TB-N1	Connection Terminal	SS	Connector<Connection for Option>
TH3	Thermistor<Liquid>	X52A	52C Relay	CNDM	Connector < Connection for Option(Contact Input)>
TH6	Thermistor<2-Phase Pipe>	N.F.	Noise Filter Circuit Board	CNM	Connector<A-Control Service Inspection Kit>
TH7	Thermistor<Ambient>	LI1/LI2/LI3/NI	Connection Terminal<L1/L2/L3/N-Power Supply>	LED1,LED2	LED<Operatiion Inspection Indicators>
TH32	Thermistor<Comp. Surface>	LO1/LO2/LO3	Connection Terminal<L1/L2/L3/N-Power Supply>	F1,F2,F3,F4	FUSE<T6.3AL250V>
LEV-A	Electronic Expansion Valve	GD1, GD2	Connection Terminal<Ground>	X51,X52,X54,X55	Relay
ACL4	Reactor	C.B.	Controller Circuit Board		
DCL	Reactor	SW1	Switch<Manual Defrost, Defect History Record Reset, Refrigerant Address>		
CB1, CB2	Main Smoothing Capacitor				
RS	Rush Current Protect Resistor	SW4	Switch<Test Operation>		



M-NET ADAPTER

SYMBOL	NAME
TB7	Terminal Block <M-NET connection>
CN5	Connector <Transmission>
CND	Connector <Power Supply>
CN2M	Connector <M-NET communication>

8 WIRING SPECIFICATIONS

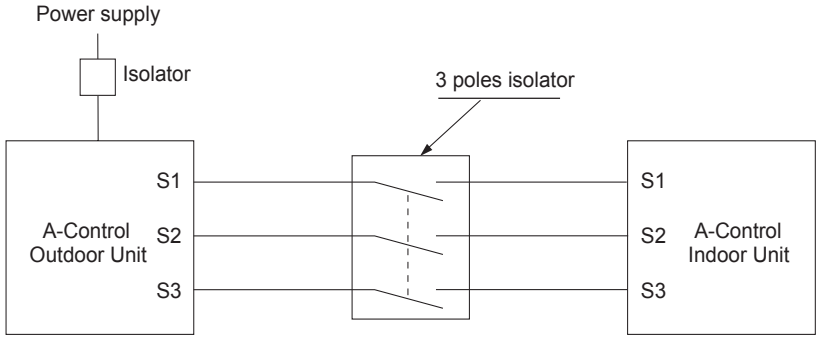
8-1. FIELD ELECTRICAL WIRING (power wiring specifications)

Outdoor unit model			P100/125V	P140V	P100/125/140Y
Outdoor unit power supply			~/N (single), 50 Hz, 230 V	~/N (single), 50 Hz, 230 V	3N~ (3ph, 4-wires), 50 Hz, 400 V
Outdoor unit input capacity main switch (Breaker) *1			32 A	40 A	16 A
Wiring Wire No. × size (mm²)	Outdoor unit power supply		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)
	Indoor unit-Outdoor unit earth	*2	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)
Circuit rating	Outdoor unit L-N (single) Outdoor unit L1-N, L2-N, L3-N (3 phase)	*4	230 V AC	230 V AC	230 V AC
	Indoor unit-Outdoor unit S1-S2	*4	230 V AC	230 V AC	230 V AC
	Indoor unit-Outdoor unit S2-S3	*4	24 V DC	24 V DC	24 V DC
	Remote controller-Indoor unit	*4	12 V DC	12 V DC	12 V DC

*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. Refer to "8-3. INDOOR-OUTDOOR CONNECTING CABLE".
*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 V DC against S2 terminal. However between S3 and S1, these terminals are NOT electrically insulated by the transformer or other device.

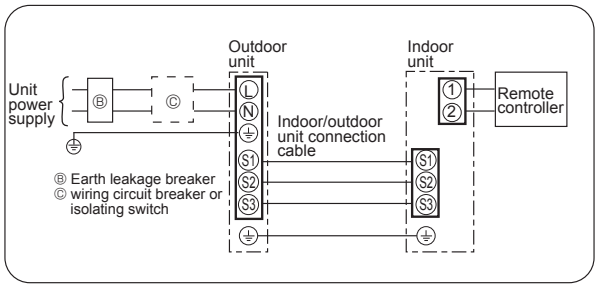
⚠ **Caution: Be sure to install N-Line. Without N-Line, it could cause damage to the unit.**

Notes: 1. Wiring size must comply with the applicable local and national code.
2. Power supply cords and Indoor/Outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)
3. Install an earth longer than other cables.



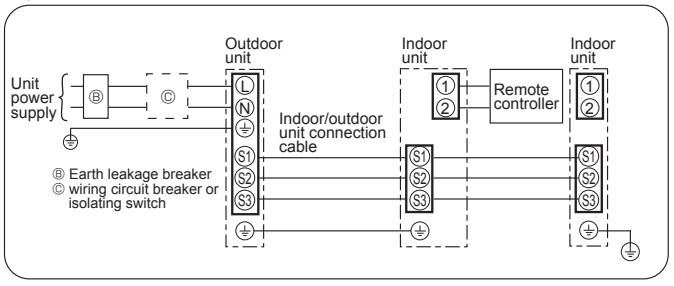
⚠ **Warning:**
In case of A-control wiring, there is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the 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.

1:1 system

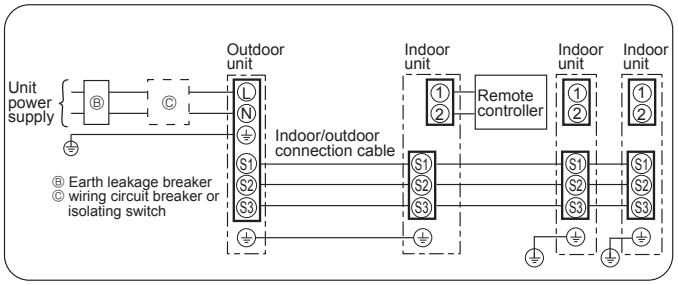


Synchronized twin and triple system Electrical wiring

• Synchronized twin



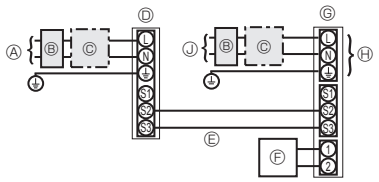
• Synchronized triple



8-2. SEPARATE INDOOR UNIT/OUTDOOR UNIT POWER SUPPLIES

The following connection patterns are available.
The outdoor unit power supply patterns vary on models.

<For models without heater>
The optional indoor power supply terminal kit is required.

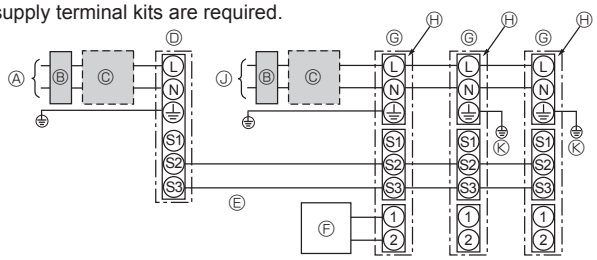


Ⓐ Outdoor unit power supply
Ⓑ Earth leakage breaker
Ⓒ Wiring circuit breaker or isolating switch
Ⓓ Outdoor unit
Ⓔ Indoor unit/outdoor unit connecting cable
Ⓕ Remote controller
Ⓖ Indoor unit
Ⓗ Option
Ⓙ Indoor unit power supply

Affix a label B that is included with the manuals near each wiring diagram for the indoor and outdoor units.

Simultaneous twin/triple system

<For models without heater>
The optional indoor power supply terminal kits are required.



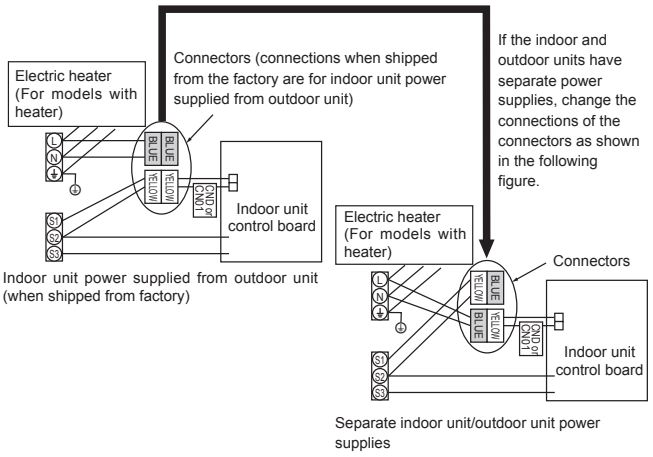
Ⓐ Outdoor unit power supply
Ⓑ Earth leakage breaker
Ⓒ Wiring circuit breaker or isolating switch
Ⓓ Outdoor unit
Ⓔ Indoor unit/outdoor unit connecting cable
Ⓕ Remote controller
Ⓖ Indoor unit
Ⓗ Option
Ⓙ Indoor unit power supply
Ⓚ Indoor unit earth

Affix a label B that is included with the manuals near each wiring diagram for the indoor and outdoor units.

If the indoor and outdoor units have separate power supplies, refer to the table below.
If the optional indoor power supply terminal kit is used, change the indoor unit electrical box wiring referring to the figure in the right and the DIP switch settings of the outdoor unit control board.

	Indoor unit specifications
Indoor power supply terminal kit (option)	Required
Indoor unit electrical box connector connection change	Required
Label affixed near each wiring diagram for the indoor and outdoor units	Required
Outdoor unit DIP switch settings (when using separate indoor unit/outdoor unit power supplies only)	ON ... 3 OFF 1 2 ... (SW8) Set the SW8-3 to ON.

Note: There are 3 types of label; A, B, and C. Affix the appropriate labels to the units according to the wiring method.



Indoor unit model			P35–140
Indoor unit power supply			~/N (single), 50 Hz, 230 V
Indoor unit input capacity Main switch (Breaker)		*1	16 A
Wiring Wire No. × size (mm²)	Indoor unit power supply		2 × Min. 1.5
	Indoor unit power supply earth		1 × Min. 1.5
	Indoor unit-Outdoor unit	*2	2 × Min. 0.3
	Indoor unit-Outdoor unit earth		–
	Remote controller-Indoor unit	*3	2 × 0.3 (Non-polar)
Circuit rating	Indoor unit L-N	*4	230 V AC
	Indoor unit-Outdoor unit S1-S2	*4	–
	Indoor unit-Outdoor unit S2-S3	*4	24 V DC
	Remote controller-Indoor unit	*4	12 V DC

*1. A breaker with at least 3 mm contact separation in each pole shall be provided. Use earth leakage breaker (NV).
*2. Maximum 120 m
*3. The 10 m wire is attached in the remote controller accessory. Maximum 500 m
*4. The figures are NOT always necessarily the voltage to ground.

Notes: 1. Wiring size must comply with the applicable local and national code.
2. Power supply cords and indoor unit/outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)
3. Install an earth longer than power cables.

8-3. INDOOR – OUTDOOR CONNECTING CABLE

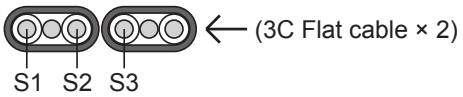
The cable shall not be lighter than design 60245 IEC or 60227 IEC.

The cable length may vary depending on the condition of installation, humidity or materials, etc.

Cross section of cable	Wire size (mm²)	Number of wires	Polarity	L (m)*5
Round 	2.5	3	Clockwise : S1-S2-S3	50 *1
Flat 	2.5	3	Not applicable (since center wire has no cover finish.)	Not applicable *2
Flat 	1.5	4	From left to right : S1-Open-S2-S3	45 *3
Round 	2.5	4	Clockwise : S1-S2-S3-Open (Connect S1 and S3 to the opposite angle.)	60 *4

*1 In case that cable with stripe of yellow and green is available.

*2 In case that the flat cables are connected as this picture, they can be used up to 80 m.



*3 In case of regular polarity connection (S1-S2-S3), wire size is 1.5 mm^2.

*4 In case of regular polarity connection (S1-S2-S3)

*5 Mentioned cable length is just a reference value.
It may be different depending on the condition of installation, humidity or materials, etc.

Outdoor power supply	Wire No. × Size (mm²)		
	Max. 45 m	Max. 50 m	Max. 80 m
Indoor unit-Outdoor unit	3 × 1.5 (polar)	3 × 2.5 (polar)	3 × 2.5 (polar) and S3 separated
Indoor unit-Outdoor unit earth	1 × Min. 1.5	1 × Min. 2.5	1 × Min. 2.5

Note: The Max. cable length may vary depending on the condition of installation, humidity or materials, etc.

Indoor/Outdoor separate power supply	Wire No. × Size (mm²)
	Max. 120 m
Indoor unit-Outdoor unit	2 × Min. 0.3
Indoor unit-Outdoor unit earth	—

Note: The optional indoor power supply terminal kit is necessary

Be sure to connect the indoor-outdoor connecting cables directly to the units (no intermediate connections). Intermediate connections can lead to communication errors if water enters the cables and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point.

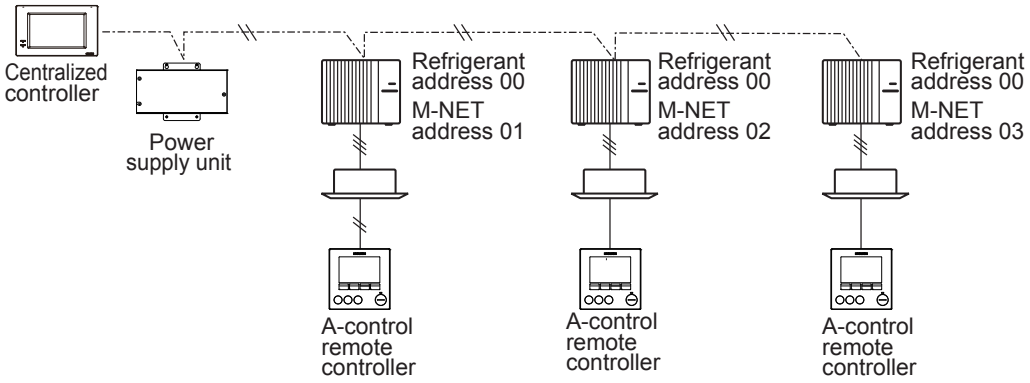
8-4. M-NET WIRING METHOD

Points to note:

(1) Outside the unit, transmission wires should stay away from electric wires in order to prevent electromagnetic noise from making an influence on the signal communication. Place them at intervals of more than 5 cm. Do not put them in the same conduit tube.

(2) Terminal block (TB7) for transmission wires should never be connected to V power supply. If it is connected, electronic parts on M-NET P.C. board may burn out.

(3) Use 2-core × 1.25 mm² shield wire (CVVS, CPEVS) for the transmission wire. Transmission signals may not be sent or received normally if different types of transmission wires are put together in the same multi-conductor cable. Never do this because this may cause a malfunction.

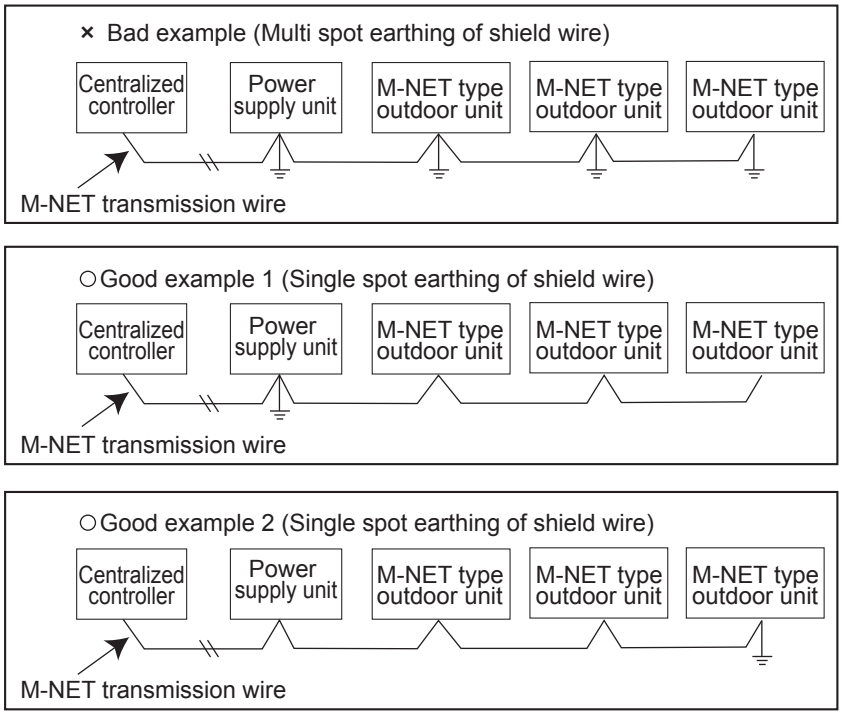


It is acceptable if M-NET wire (non-polar, 2-cores) is arranged in addition to the wiring for A-control.

(4) Earth only one of any appliances through M-NET transmission wire (shield wire). Communication error may occur due to the influence of electromagnetic noise.

"Ed" error will appear on the LED display of outdoor unit.

"0403" error will appear on the central-control remote controller.

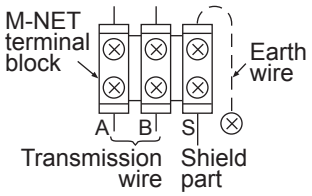


If there are more than 2 grounding spots on the shield wire, noise may enter into the shield wire because the earth wire and shield wire form 1 circuit and the electric potential difference occurs due to the impedance difference among earthing spots. In case of single spot grounding, noise does not enter into the shield wire because the earth wire and shield wire do not form 1 circuit.

To avoid communication errors caused by noise, make sure to observe the single spot grounding method described in the installation manual.

● **M-NET wiring**

(1) Use 2-core × 1.25 mm² shield wire for electric wires.
(Excluding the case connecting to system controller.)
(2) Connect the wire to the M-NET terminal block. Connect one core of the transmission wire (no-polarity) to A terminal and the other to B. Peel the shield wire, twist the shield part to a string and connect it to S terminal.
(3) In the system which several outdoor units are being connected, the terminal (A, B, S) on M-NET terminal block should be individually wired to the other outdoor unit's terminal, i.e. A to A, B to B and S to S. In this case, choose one of those outdoor units and drive a screw to fix an ground wire on the plate as shown on the right figure.



8-4-1. M-NET address setting

In A-control models, M-NET address and refrigerant address should be set only for the outdoor unit. Similar to CITY MULTI system, there is no need to set the address of outdoor unit and remote controller. To construct a central control system, the setting of M-NET address should be conducted only upon the outdoor unit. The setting range should be 1 to 50 (the same as that of the indoor unit in CITY MULTI system), and the address number should be consecutively set in a same group.

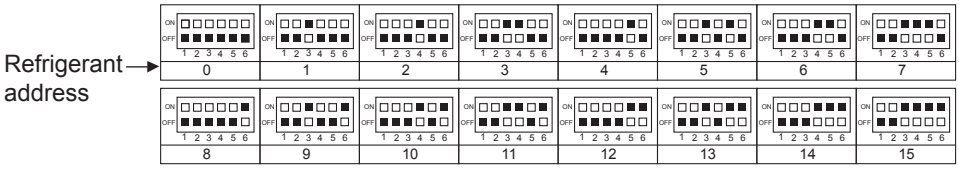
Address number can be set by using rotary switches (SW11 for 1s digit and SW12 for 10s digit), which is located on the M-NET board of outdoor unit. (Factory setting: all addresses are set to "0".)

<Setting example>

M-NET Address No.		1	2		50
Switch setting	SW11 1s digit			~	
	SW12 10s digit				

8-4-2. Refrigerant address setting

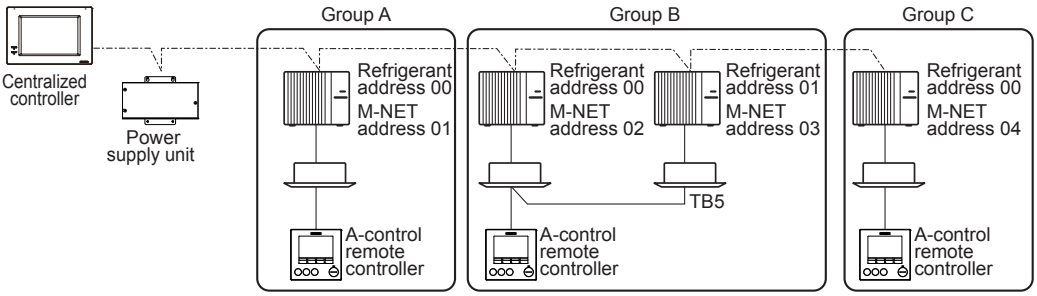
In the case of multiple grouping system (multiple refrigerant circuits in one group), indoor units should be connected by remote controller wiring (TB5) and the refrigerant address needs to be set. Leave the refrigerant addresses to "00" if the group setting is not conducted. Set the refrigerant address by using DIP SW1-3 to -6 on the outdoor controller board. [Initial setting: all switches are OFF. (All refrigerant addresses are "00".)]



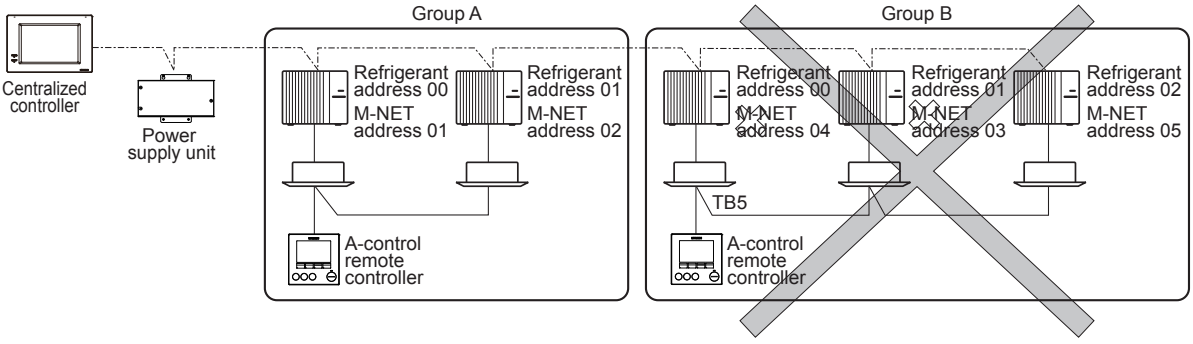
The black square (■) indicates a switch position.

8-4-3. Regulations in address settings

In the case of multiple grouping system, M-NET and refrigerant address settings should be done as explained in the above section. Set the lowest number in the group for the outdoor unit whose refrigerant address is "00" as its M-NET address.



Refrigerant addresses can be overlapped if they are in the different group.

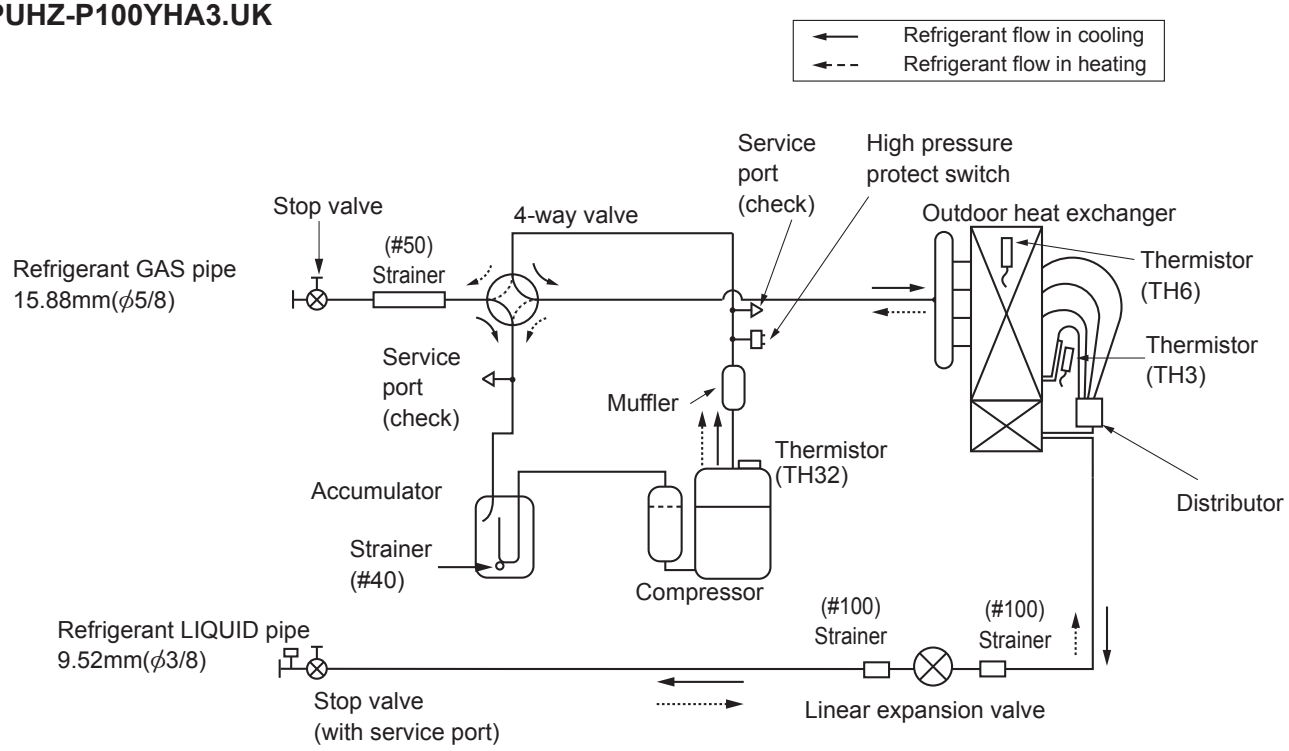


Note: In group B, M-NET address of the outdoor unit whose refrigerant address is "00" is not set to the minimum in the group. As "3" is right for this situation, the setting is wrong. Taking group A as a good sample, set the minimum M-NET address in the group for the outdoor unit whose refrigerant address is "00".

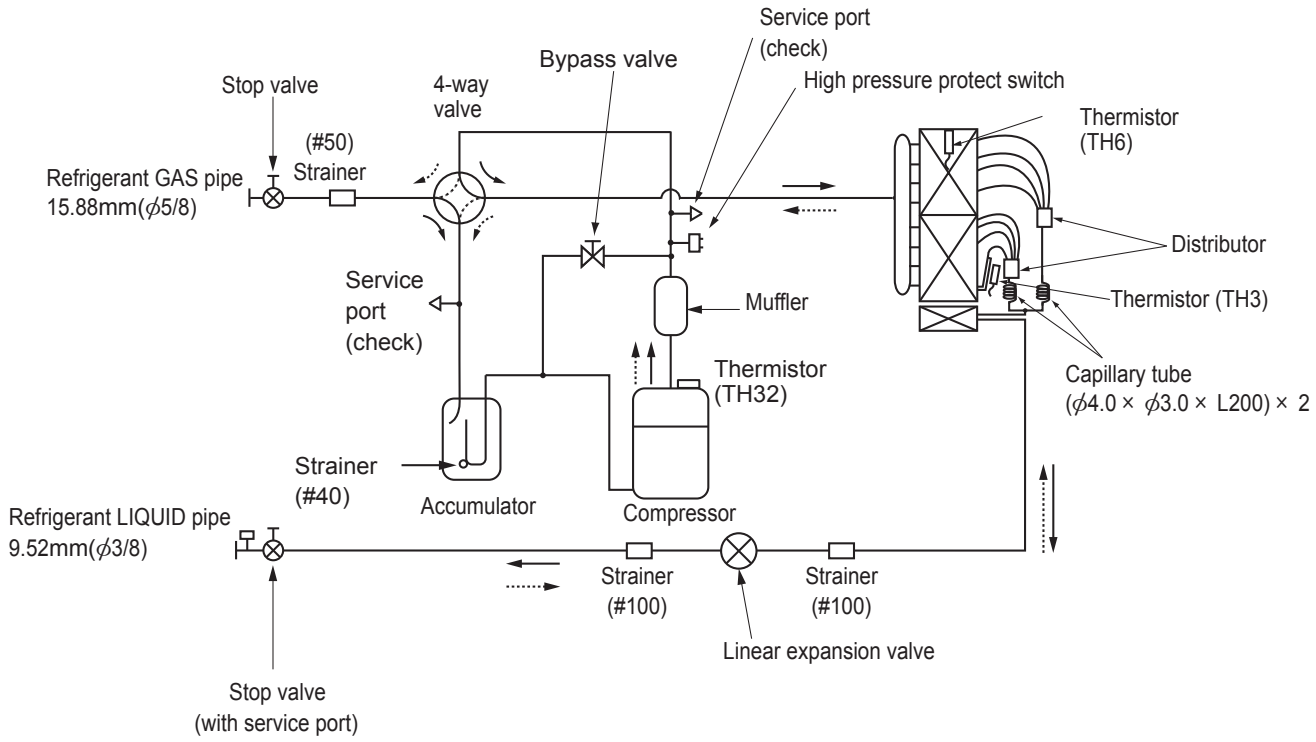
9 REFRIGERANT SYSTEM DIAGRAM

PUHZ-P100VHA5.UK
PUHZ-P100YHA3.UK

Unit : mm (inch)



PUHZ-P125VHA4.UK **PUHZ-P140VHA4.UK**
PUHZ-P125YHA2.UK **PUHZ-P140YHA2.UK**



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).
- When power is supplied, make sure that “CENTRALLY CONTROLLED” is not displayed on the remote controller. If “CENTRALLY CONTROLLED” is displayed, the refrigerant collecting (pump down) cannot be completed normally.
- 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.

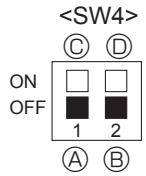
⑥ Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge on the gauge manifold shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm²) and quickly stop the air conditioner.
- Because the unit automatically stops in about 3 minutes when the refrigerant collecting operation is completed (LED1 off, LED2 lit), be sure to quickly close the gas stop 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. START AND FINISH OF TEST RUN

- Operation from the indoor unit
  Execute the test run using the installation manual for the indoor unit.
- Operation from the outdoor unit
  By using the DIP switch SW4 on the control board of outdoor unit, test run can be started and finished, and its operation mode (cooling/heating) can be set up.
  ① Set the operation mode (cooling/heating) using SW4-2.
  ② Turn on SW4-1 to start the test run with the operation mode set by SW4-2.
  ③ Turn off SW4-1 to finish the test run.
- There may be a faint knocking sound around the machine room after power is supplied. However, this is not a problem with product because the linear expansion pipe is just moving to adjust opening pulse.
- There may be a knocking sound around the machine room for several seconds after compressor starts operating. However, this is not a problem with product because the check valve itself generates the sound due to small pressure difference in the refrigerant circuit.



Ⓐ Stop Ⓒ Operation
Ⓑ Cooling Ⓓ Heating

Note:
The operation mode cannot be changed by SW4-2 during test run. (To change test run mode, stop the unit by SW4-1, change the operation mode and restart the test run by SW4-1.)

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 wired remote controller and 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 “10-4. SELF-DIAGNOSIS ACTION TABLE”.
	Not displayed	Conduct trouble shooting and ascertain the cause of the trouble according to “10-5. TROUBLESHOOTING OF PROBLEMS”.
The trouble is not reoccurring.	Logged	①Consider 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. ②Reset check code logs and restart the unit after finishing service. ③There is no abnormality in electrical component, controller board, remote controller, etc.
	Not logged	①Re-check the abnormal symptom. ②Conduct trouble shooting and ascertain the cause of the trouble according to “10-5. TROUBLESHOOTING OF PROBLEMS”. ③Continue to operate unit for the time being if the cause is not ascertained. ④There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.

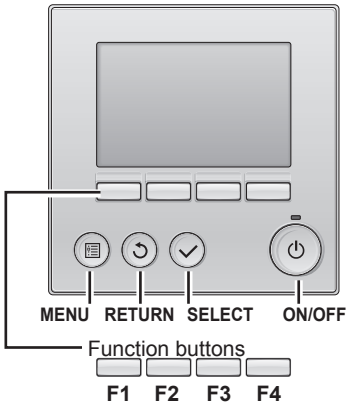
10-2. CHECK POINT UNDER TEST RUN

10-2-1. Before test run

- After installation of indoor and outdoor units, piping work and electric wiring work, re-check that there is no refrigerant leakage, loosened connections and incorrect polarity.
- Measure impedance between the ground and the power supply terminal block (L, N) on the outdoor unit by 500 V Megger and check that it is 1.0 MΩ or over.
- Do not use 500V Megger to indoor/outdoor connecting wire terminal block (S1, S2, S3) and remote controller terminal block (1, 2). This may cause malfunction.
- Make sure that test run switch (SW4) is set to OFF before turning on power supply.
- Turn on power supply 12 hours before test run in order to protect compressor.
- For specific models which requires higher ceiling settings or auto-recovery feature from power failure, make proper changes of settings referring to the description of “Selection of Functions through Remote Controller”.

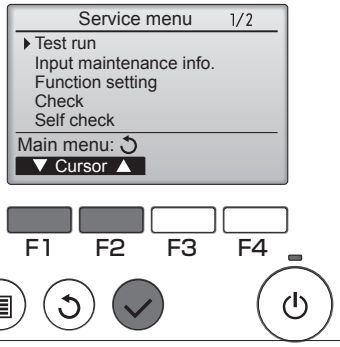
Make sure to read operation manual before test run. (Especially items to secure safety.)

10-2-2. Test run for wired remote controller <PAR-3xMAA ("x" represents 0 or later)>

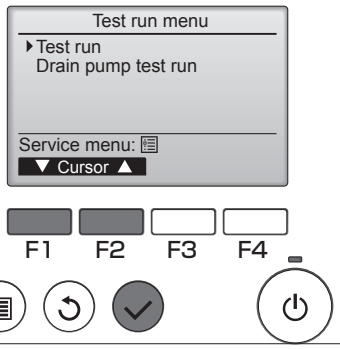


① Select "Service" from the Main menu, and press the ⓥ button.

Select "Test run" with the F1 or F2 button, and press the ⓥ button.



② Select "Test run" with the F1 or F2 button, and press the ⓥ button.

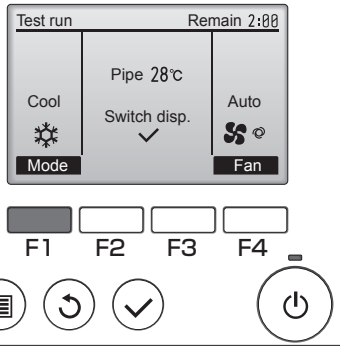


Test run operation

Press the F1 button to go through the operation modes in the order of "Cool and Heat".

Cool mode: Check the cold air blows out.
Heat mode: Check the heat blows out.

Press the ⓥ button and open the Vane setting screen.



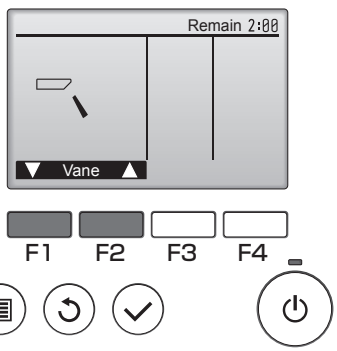
Auto vane check

Check the auto vane with the F1 F2 buttons.
Check the operation of the outdoor unit's fan.

Press the ⓒ button to return to "Test run operation".

Press the ⓟ button.

When the test run is completed, the "Test run menu" screen will appear.
The test run will automatically stop after 2 hours.

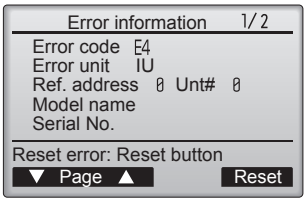


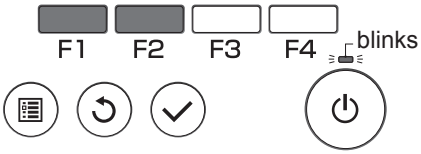
<Error information>

When an error occurs, the following screen will appear.
Check the error status, stop the operation, and consult your dealer.

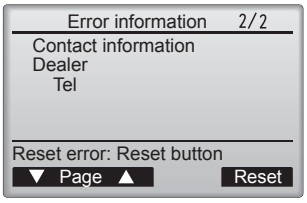
① Check code, error unit, refrigerant address, unit model name, and serial number will appear.
The model name and serial number will appear only if the information have been registered.

Press the F1 or F2 button to go to the next page.





Contact information (dealer's phone number) will appear if the information have been registered.



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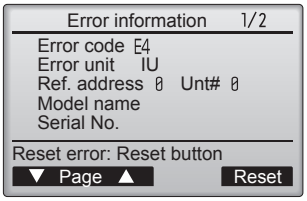
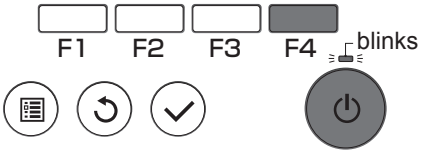
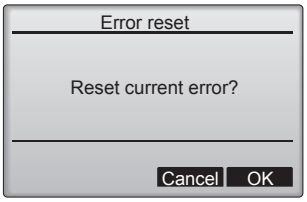
② Press the F4 button or the ⏻ button to reset the error that is occurring.

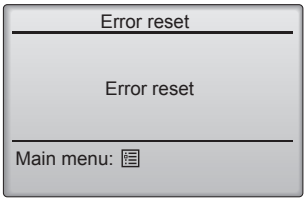
Errors cannot be reset while the ON/OFF operation is prohibited.





Select "OK" with the F4 button.

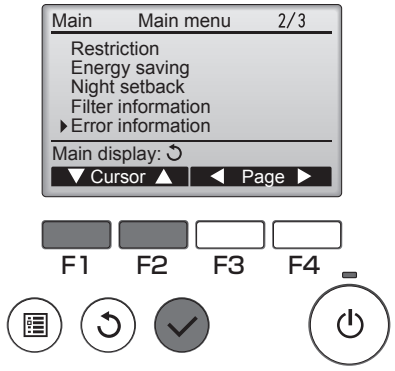




Navigating through the screens
• To go back to the Main menu ..... ⏻ button

<Checking the error information>

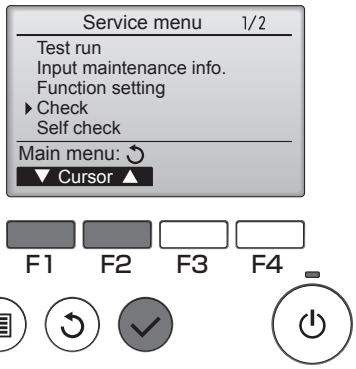
While no errors are occurring, page 2/2 of the error information can be viewed by selecting "Error information" from the Main menu.
Errors cannot be reset from this screen.



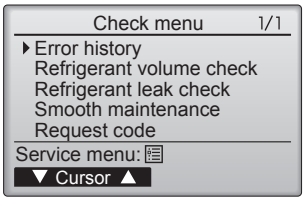
<Error history>

① Select "Service" from the Main menu, and press the ✓ button.

Select "Check" with the F1 or F2 button, and press the ✓ button.



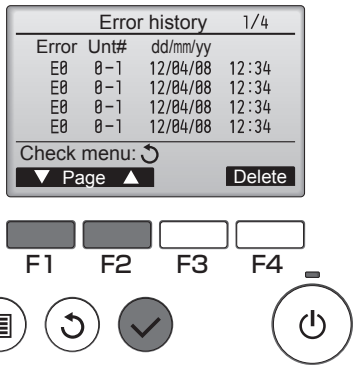
② Select "Error history" with the F1 or F2 button, and press the ✓ button.



Error history

③ Select "Error history" from the Check menu, and press the ✓ button to view up to 16 error history records.

Four records are shown per page, and the top record on the first page indicates the latest error record.



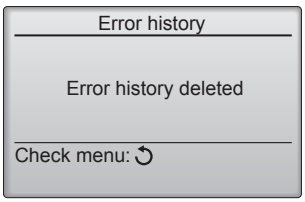
Deleting the error history

④ To delete the error history, press the F4 button (Delete) on the screen that shows error history.
A confirmation screen will appear asking if you want to delete the error history.

Press the F4 button (OK) to delete the history.

"Error history deleted" will appear on the screen.

Press the ↺ button to go back to the Check menu screen.



10-2-3. Test run for wireless remote controller (Type C)

Measure an impedance between the power supply terminal block on the outdoor unit and ground with a 500V Megger and check that it is equal to or greater than 1.0MΩ.

① Turn on the main power to the unit.

② Press the TEST RUN button twice continuously.
(Start this operation from the status of remote controller display turned off.)
A TEST RUN and current operation mode are displayed.

③ Press the MODE (☼⌂✤☼⟳) button to activate COOL ☼ mode, then check whether cool air blows out from the unit.

④ Press the MODE (☼⌂✤☼⟳) button to activate HEAT ☼ mode, then check whether warm air blows out from the unit.

⑤ Press the FAN button and check whether strong air blows out from the unit.

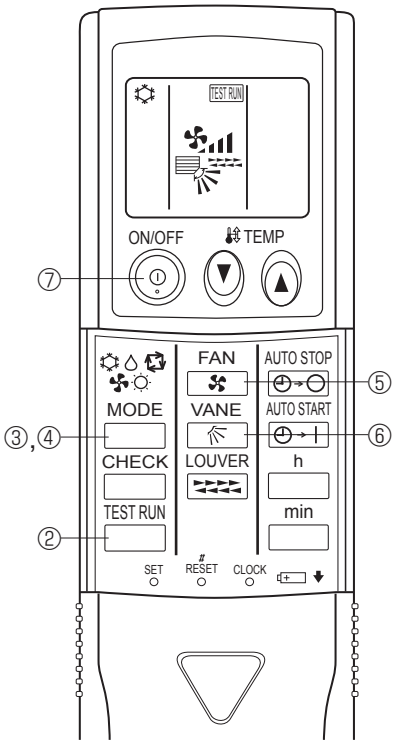
⑥ Press the VANE button and check whether the auto vane operates properly.

⑦ Press the ON/OFF button to stop the test run.

Notes:

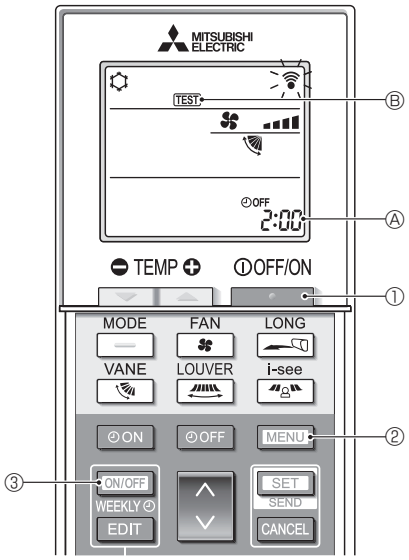
1. Point the remote controller towards the indoor unit receiver while following steps ② to ⑦.

2. It is not possible to run in FAN, DRY or AUTO mode.



10-2-4. Test run for wireless remote controller <PAR-SL100A-E>

1. Press the button ① to stop the air conditioner.
   - If the weekly timer is enabled (WEEKLY is on), press the ON/OFF WEEKLY button ③ to disable it (WEEKLY is off).
2. Press the MENU button ② for 5 seconds.
   - CHECK comes on and the unit enters the service mode.
3. Press the MENU button ②.
   - TEST Ⓑ comes on and the unit enters the test run mode.
4. Press the following buttons to start the test run.
   - : Switch the operation mode between cooling and heating and start the test run.
   - : Switch the fan speed and start the test run.
   - : Switch the airflow direction and start the test run.
   - : Switch the louver and start the test run.
   - SET : Start the test run.
5. Stop the test run.
   - Press the button ① to stop the test run.
   - After 2 hours, the stop signal is transmitted.



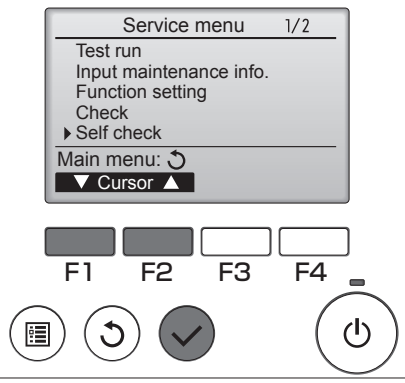
10-3. HOW TO PROCEED "SELF-DIAGNOSIS"

10-3-1. Self-diagnosis <PAR-3xMAA ("x" represents 0 or later)>

① Select "Service" from the Main menu, and press the ✓ button.

▼

Select "Self check" with the F1 or F2 button, and press the ✓ button.



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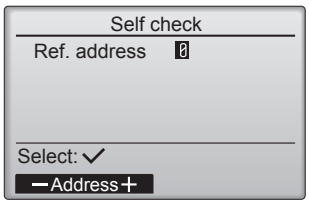
② With the F1 or F2 button, enter the refrigerant address, and press the ✓ button.



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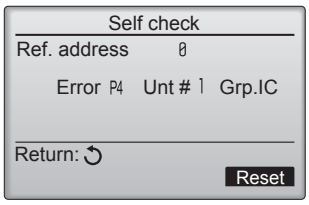
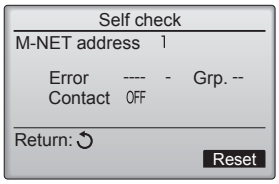
③ Check code, unit number, attribute will appear.
"-" will appear if no error history is available.



When there is no error history



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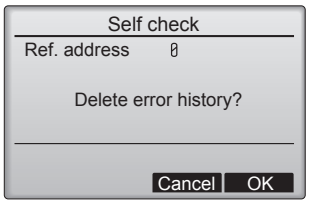
④ <u>Resetting the error history.</u>

Press the F4 button (Reset) on the screen that shows the error history.

▼

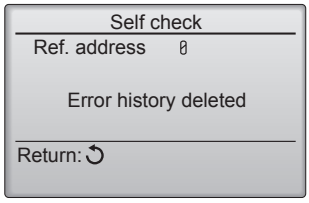
A confirmation screen will appear asking if you want to delete the error history.



▼

Press the F4 button (OK) to delete the error history.

If deletion fails, "Request rejected" will appear.
"Unit not exist" will appear if no indoor units that are correspond to the entered address are found.

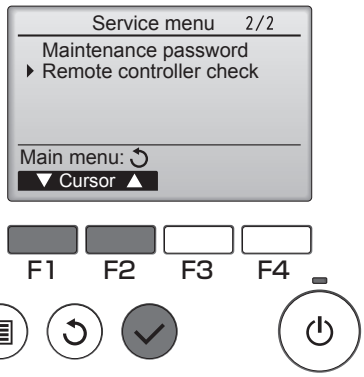


Navigating through the screens
- To go back to the Service menu ..... ▣ button
- To return to the previous screen ..... ↩ button

10-3-2. Remote controller check <PAR-3xMAA ("x" represents 0 or later)>

If operations cannot be completed with the remote controller, diagnose the remote controller with this function.

① Select "Service" from the Main menu, and press the ✓ button.



Select "Remote controller check" with the F1 or F2 button, and press the ✓ button.

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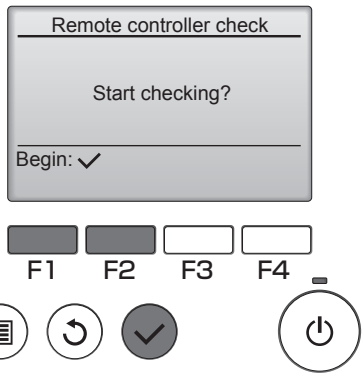
② Select "Remote controller check" from the Service menu, and press the ✓ button to start the remote controller check and see the check results.



To cancel the remote controller check and exit the Remote controller check menu screen, press the ☰ or the ↺ button.

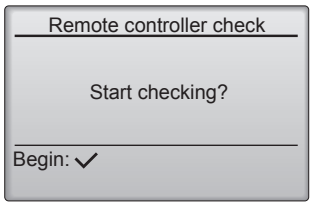
The remote controller will not reboot itself.

---

③

OK: No problems are found with the remote controller. Check other parts for problems.
E3, 6832: There is noise on the transmission line, or the indoor unit or another remote controller is faulty. Check the transmission line and the other remote controllers.
NG (ALL0, ALL1): Send-receive circuit fault. Remote controller needs replacing.
ERC: The number of data errors is the discrepancy between the number of bits in the data transmitted from the remote controller and that of the data that was actually transmitted over the transmission line. If data errors are found, check the transmission line for external noise interference.

Remote controller check results screen



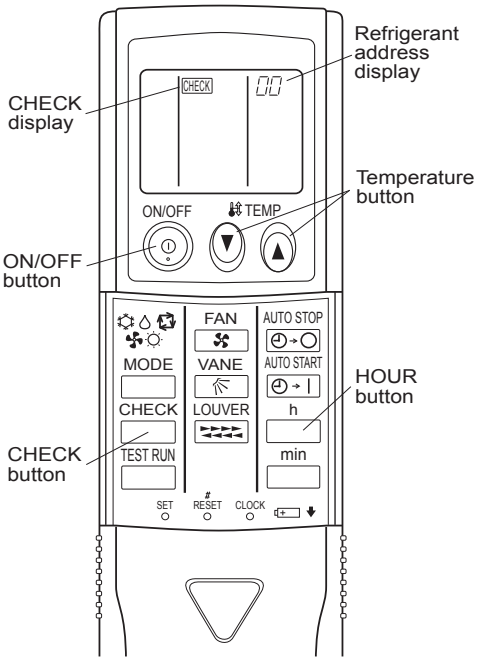
If the ✓ button is pressed after the remote controller check results are displayed, remote controller check will end, and the remote controller will automatically reboot itself.

Check the remote controller display and see if anything is displayed (including lines). Nothing will appear on the remote controller display if the correct voltage (8.5 – 12 VDC) is not supplied to the remote controller. If this is the case, check the remote controller wiring and indoor units.

10-3-3. Self-diagnosis for wireless remote controller (Type C)

When a malfunction occurs to air conditioner, both indoor unit and outdoor unit will stop and operation lamp blinks to inform unusual stop.

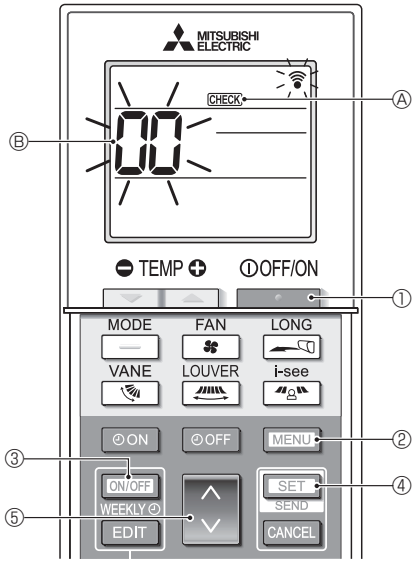
<Malfunction-diagnosis method at maintenance service>



[Procedure]

1. Press the CHECK button twice.	• "CHECK" lights, and refrigerant address "00" flashes. • Check that the remote controller's display has stopped before continuing.
2. Press the TEMP ▽ △ buttons.	• Select the refrigerant address of the indoor unit for the self-diagnosis. Note: Set refrigerant address using the outdoor unit's DIP switch (SW1). (For more information, see the outdoor unit installation manual.)
3. Point the remote controller at the sensor on the indoor unit and press the HOUR button.	• If an air conditioner error occurs, the indoor unit's sensor emits an intermittent buzzer sound, the operation light flashes, and the check code is output. (It takes 3 seconds at most for check code to appear.)
4. Point the remote controller at the sensor on the indoor unit and press the ON/OFF button.	• The check mode is cancelled.

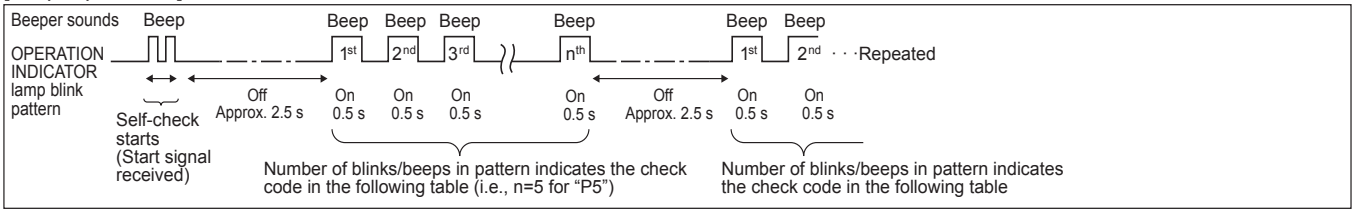
10-3-4. Self-diagnosis for wireless remote controller (PAR-SL100A-E)



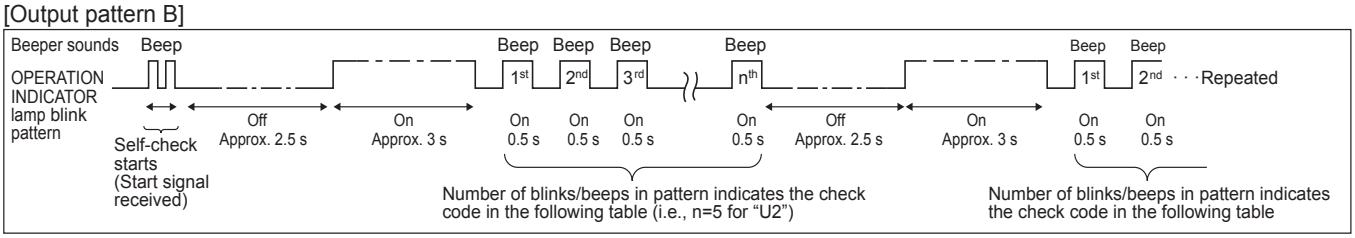
1. Press the [ ] button ① to stop the air conditioner.
   - If the weekly timer is enabled (WEEKLY is on), press the [ON/OFF WEEKLY] button ③ to disable it (WEEKLY is off).
2. Press the [MENU] button ② for 5 seconds.
   - CHECK Ⓐ comes on and the unit enters the self-check mode.
3. Press the [△▽] button ⑤ to select the refrigerant address (M-NET address) Ⓑ of the indoor unit for which you want to perform the self-check.
4. Press the [SET] button ④.
   - If an error is detected, the check code is indicated by the number of beeps from the indoor unit and the number of blinks of the OPERATION INDICATOR lamp.
5. Press the [ ] button ①.
   - CHECK Ⓐ and the refrigerant address (M-NET address) Ⓑ go off and the self-check is completed.

• Refer to the following tables for details on the check codes.

[Output pattern A]



[Output pattern B]



[Output pattern A] Errors detected by indoor unit

Wireless remote controller Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)	Wired remote controller Check code	Symptom	Remark
1	P1	Intake sensor error	As for indoor unit, refer to indoor units service manual.
2	P2	Pipe (TH2) sensor error	
	P9	Pipe (TH5) sensor error	
3	E6,E7	Indoor/outdoor unit communication error	
4	P4	Drain sensor error/Float switch connector (CN4F) open	
5	P5	Drain pump error	
	PA	Forced compressor stop (Due to water leakage abnormality)	
6	P6	Freezing/Overheating protection operation	
7	EE	Communication error between indoor and outdoor units	
8	P8	Pipe temperature error	
9	E4, E5	Remote controller signal receiving error	
10	–	–	
11	–	–	
12	Fb	Indoor unit control system error (memory error, etc.)	
14	PL	Abnormality of refrigerant circuit	
–	E0, E3	Remote controller transmission error	
–	E1, E2	Remote controller control board error	

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

Wireless remote controller Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)	Wired remote controller Check code	Symptom	Remark
1	E9	Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)	For details, check the LED display of the outdoor controller board.
2	UP	Compressor overcurrent interruption	
3	U3,U4	Open/short of outdoor unit thermistors	
4	UF	Compressor overcurrent interruption (When compressor locked)	
5	U2	Abnormal high discharging temperature/49 operated/ insufficient refrigerant	
6	U1,Ud	Abnormal high pressure (63H operated)/Overheating protection operation	
7	U5	Abnormal temperature of heatsink	
8	U8	Outdoor unit fan protection stop	
9	U6	Compressor overcurrent interruption/Abnormal of power module	
10	U7	Abnormality of superheat due to low discharge temperature	
11	U9,UH	Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error	
12	–	–	
13	–	–	
14	Others	Other errors	

Notes:

1. If the beeper does not sound again after the initial 2 beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.
2. If the beeper sounds 3 times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 seconds)" after the initial 2 beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.

10-4. 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 points and detection method	Case	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 supplied 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 :Disconnection of connector LI or NI (V)	② Check following items. a) Connection of power supply terminal block (TB1) b) Connection of terminal on outdoor power circuit board Disconnection of connector LI or NI (V) Refer to "10-9. 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 "10-9. TEST POINT DIAGRAM".
		④ Disconnection of reactor (DCL or ACL)	④ Check connection of reactor. (DCL or ACL) Check connection of “DCL1” and “DCL2” on the power circuit board. (V)
		⑤ Disconnection of outdoor noise filter circuit board or parts failure in outdoor noise filter circuit board (Y) As for V model, it is especially needed to check the resistance R2 on the power circuit board.	⑤ a) Check connection of outdoor noise filter circuit board. (Y) b) Replace outdoor power circuit board (V). Refer to "10-9. TEST POINT DIAGRAM".
		⑥ Defective outdoor power circuit board	⑥ Replace outdoor power circuit board.
		⑦ Defective outdoor controller circuit board	⑦ Replace outdoor controller circuit board (When items above are checked but the units cannot be repaired).
F5 (5201)	**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 "10-9. TEST POINT DIAGRAM".
		② Disconnection or contact failure of 63H	② Check the connecting wire on 63H side.
		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 points and detection method	Case	judgment and action
EA (6844)	**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, etc. after power is turned on for 4 minutes. 2. Abnormal if outdoor controller circuit board recognizes the number of connected indoor units as “4 units or more”.	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 4 or more indoor units are connected to 1 outdoor unit. 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 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 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 (6845)	**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 can not 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 (6846)	**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. 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.	

<Abnormalities detected while unit is operating>

Check code	Abnormal points and detection method	Case	judgment and action
U1 (1302)	**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 Short cycle of indoor unit ② Clogged filter of indoor unit ③ Decreased airflow caused by dirt of indoor fan ④ Dirt of indoor heat exchanger ⑤ Locked indoor fan motor ⑥ Malfunction of indoor fan motor ⑦ Defective operation of stop valve (Not fully open) ⑧ Clogged or broken pipe ⑨ Locked outdoor fan motor ⑩ Malfunction of outdoor fan motor ⑪ Short cycle of outdoor unit ⑫ Dirt of outdoor heat exchanger ⑬ Decreased airflow caused by defective inspection of outside temperature thermistor (It detects lower temperature than actual temperature.) ⑭ Disconnection or contact failure of connector (63H) on outdoor controller board ⑮ Disconnection or contact failure of 63H connection ⑯ Defective outdoor controller board ⑰ Defective action of linear expansion valve ⑱ Malfunction of fan driving circuit	①–⑥Check indoor unit and repair defect. ⑦ Check if stop valve is fully open. ⑧ Check piping and repair defect. ⑨–⑫ Check outdoor unit and repair defect. ⑬ Check the inspected temperature of outside temperature thermistor on LED display. (SW2 on A-Control Service Tool : Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ⑭–⑯ 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. ⑰ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS". ⑱ Replace outdoor controller board.
U2 (1102)	**High discharging temperature** (1) Abnormal if discharge temperature thermistor (TH32) exceeds 125℃ or 110℃ continuously for 5 minutes.Abnormal if condenser/evaporator temperature thermistor (TH5) exceeds 40℃ during defrosting and discharge temperature thermistor (TH32) exceeds 110℃. (2) Abnormal if discharge super heat (Cooling: TH32−TH5/Heating: TH32−TH6) increases. All the conditions in A or B are detected simultaneously for 10 minutes continuously after 6 minutes past from compressor Startup (including the thermostat indication or recovery from defrosting). <Condition A> • Heating mode • When discharge super heat is less than 70℃ • When the TH6 temp is more than the value obtained by TH7−5℃. • When the condensing temp of TH5 is less than 35℃. <Condition B> • During comp operation (Cooling and Heating) • When discharge super heat is less than 80℃ in Cooling. • When discharge super heat is less than 90℃ in Heating. • When condensing temp of TH6 is more than −40℃. (In Cooling only.)	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	① Check intake super heat. Check leakage of refrigerant. Charge additional refrigerant. ② Check if stop valve is full 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 “Judgement and action” for U3. ⑤ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS".
U3 (5104)	**Open/short circuit of discharge temperature thermistor (TH32)** Abnormal if open (3℃ or less) or short (217℃ 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 (TH32) on the outdoor controller circuit board ② Defective thermistor ③ Defective outdoor controller circuit board	① Check connection of connector (TH32) on the outdoor controller circuit board. Check breaking of the lead wire for thermistor (TH32). Refer to "10-9. TEST POINT DIAGRAM". ② Check resistance value of thermistor (TH4) or temperature by microcomputer. (Thermistor/TH32: Refer to "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ③ Replace outdoor controller board.

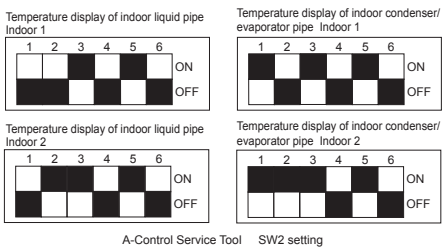
Check code	Abnormal points and detection method	Case	judgment and action
U4 (TH3:5105) (TH6:5107) (TH7:5106) (TH8:5110)	**Open/short of outdoor unit thermistors (TH3, TH6, TH7, and TH8)** Abnormal if open or short is detected during compressor operation. Open detection of thermistors TH3 and TH6 is inoperative 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 "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".)	① Disconnection or contact failure of connectors Outdoor controller circuit board: TH3,TH6/TH7 Outdoor power circuit board: CN3 ② Defective thermistor ③ Defective outdoor controller circuit board	① Check connection of connector (TH3,TH6/TH7) 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 "10-9. TEST POINT DIAGRAM". ② Check resistance value of thermistor (TH3,TH6,TH7,TH8) or check temperature by microcomputer. (Thermistor/TH3,TH6,TH7,TH8: Refer to "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ③ Replace outdoor controller circuit board. Note: Emergency operation is available in case of abnormalities of TH3, TH6 and TH7. Refer to "10-8. EMERGENCY OPERATION".
U5 (4230)	**Temperature of heatsink** Abnormal if heatsink thermistor(TH8) detects temperature indicated below. P100–140V·····79℃ P100–140Y·····85℃	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 air flow 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 "10-6. HOW TO CHECK THE PARTS".) (SW2 on A-Control Service Tool: Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".) ⑥ Replace outdoor power circuit board. ⑦ Replace outdoor controller circuit board.
U6 (4250)	**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 "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check compressor referring to "10-6. HOW TO CHECK THE PARTS". ⑤ Replace outdoor power circuit board.
U8 (4400)	**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 remedy ① above.)

Thermistors		Open detection	Short detection
Symbol	Name		
TH3	Thermistor <Liquid>	– 40℃ or below	90℃ or above
TH6	Thermistor <2-phase pipe>	– 40℃ or below	90℃ or above
TH7	Thermistor <Ambient>	– 40℃ or below	90℃ or above
TH8	Thermistor <Heatsink> (YHA3)	– 27℃ or below	102℃ or above
TH8	Internal thermistor (VHA4/5, YHA2)	– 35℃ or below	170℃ or above

Check Code	Abnormal points and detectio method		Case	Judgment and action
U9 (4220)	Detailed codes	To find out the detail 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 "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS".		
	01	**Overvoltage error** • Increase in DC bus voltage to P·VHA model: 400 V P·YHA model: 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 "10-9. 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 P·VHA model: 200 V P·YHA model: 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 (P·VHA4/5) ③ Defective converter drive circuit of outdoor power circuit board (P·VHA4/5) ④ Defective 52C drive circuit in outdoor power circuit board (P·VHA4/5)/noise filter circuit board (P·YHA2/3) ⑤ Disconnection or loose connection of rush current protect resistor RS (P·YHA2/3) ⑥ Defective rush current protect resistor RS (P·YHA2/3) ⑦ Disconnection or loose connection of main smoothing capacitor CB (P·VHA4/5)/CB1, CB2 (P·YHA2) ⑧ Disconnection or loose connection of CN2 on the outdoor power circuit board /controller circuit board (P·VHA4/5) ⑨ Power circuit failure on DC supply for 18V DC output on outdoor controller circuit board (P·VHA4/5)	① Check the field facility for the power supply. ② Check CN52C wiring. (P·VHA4/5) ③ Replace outdoor power circuit board. (P·VHA4/5) ④ Replace outdoor power circuit board. (P·VHA4/5)/Replace outdoor noise filter circuit board. (P·YHA2/3) ⑤ Check RS wiring. (P·YHA2/3) ⑥ Replace RS. (P·YHA2/3) ⑦ Check CB or CB1,CB2 wiring. (P·VHA4/5) ⑧ Check CN2 wiring. (P·VHA4/5) ⑨Replace outdoor controller circuit board. (P·VHA4/5)
	04	**Input current sensor error/ L1-phase open error** • Decrease in input current through outdoor unit to 0.1A only if operation frequency is more than or equal to 40Hz or compressor current is more than or equal to 6A.	① L1-phase open (P·YHA2/3) ② Disconnection or loose connection between TB1 and outdoor noise filter circuit board (P·YHA2/3) ③ Disconnection or loose connection of CN5 on the outdoor power circuit board/CNCT on the outdoor noise filter board (P·YHA2/3) ④ Defective ACCT(AC current trans) on the outdoor noise filter circuit board (P·YHA2/3) ⑤ Defective input current detection circuit of outdoor power circuit board ⑥ Defective outdoor controller circuit board	① Check the field facility for the power supply. (P·YHA2/3) ② Check the wiring between TB1 and outdoor noise filter circuit board (P·YHA2/3) ③ Check CN5/CNCT wiring. (P·YHA2/3) ④ Replace outdoor noise filter circuit board. (P·YHA2/3) 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 synchrous signal circuit in outdoor controller circuit board ⑤ Defective power synchrous 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.
	10	**PFC error (Overvoltage/ Undervoltage/Overcurrent)** • PFC detected any of the following a) Increase in DC bus voltage to 420V b) Decrease in PFC control voltage to 12V DC or lower c) Increase in input current to 50A peak (For models equipped with single-phase PFC only)	Not applicable for P100, 125, 140VHA and P100, 125, 140YHA models.	Check for the switch settings for Model Select on the outdoor controller circuit board.
	20	**IGBT error (Undervoltage)** • When Compressor is running, DC bus voltage stays at 310 V or lower for consecutive 10 seconds. (P100–140V models 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.

Check code	Abnormal points and detection method	Case	judgment and action
Ud (1504)	**Overheat protection** Abnormal if outdoor pipe thermistor (TH3) detects 70℃ or more during compressor operation.	① Defective outdoor fan (fan motor) or short cycle of outdoor unit during cooling operation. ② Defective outdoor pipe thermistor (TH3) 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.
UF (4100)	**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	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check compressor. Refer to "10-6. HOW TO CHECK THE PARTS". ⑤ Replace outdoor power circuit board.
UH (5300)	**Compressor current sensor error or input current error** • Abnormal if compressor current sensor detects −1.5A to 1.5A during compressor operation. (This error is ignored in case of test run mode.) • Abnormal if the input current of 38A is detected or the input current of 34A or more is detected for 10 seconds. (P100-140V)	① Disconnection of compressor wiring ② Defective circuit of current sensor on outdoor power circuit board	① Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ② Replace outdoor power circuit board.
UL (1300)	**Low pressure** Abnormal if the following conditions are detected for 3 minutes continuously after compressor starts heating operation for 10 minutes. (However, this abnormal detection is disregarded when the compressor driving time exceeds 30 minutes after power is on.) TH7−TH3 ≦ 4℃ TH5−Indoor room temperature ≦ 2℃ Thermistor TH3:Outdoor liquid pipe temperature TH5:Indoor cond./eva. temperature TH7:Outdoor temperature Note: In the case of UL error, the compressor may be damaged if the unit is restarted by remote controller. To avoid the damage, unit has the system that is not able to be restarted unless the power is turned OFF once.	① Stop valve of outdoor unit is closed during operation. ② Leakage or shortage of refrigerant ③ Malfunction of linear expansion valve	① Check stop valve. ② Check intake super heat. Check leakage of refrigerant. Charge additional refrigerant. ③ Check linear expansion valve. Refer to "10-6. HOW TO CHECK THE PARTS".
UP (4210)	**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 indoor/outdoor units ⑤ Short cycle of indoor/outdoor units ⑥ Defective input circuit of outdoor controller board ⑦ Defective compressor	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to "10-9. TEST POINT DIAGRAM" (Outdoor power circuit board). ④ Check indoor/outdoor fan. ⑤ Solve short cycle. ⑥ Replace outdoor controller circuit board. ⑦ Check compressor. Refer to "10-6. HOW TO CHECK THE PARTS". 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.

Check code	Abnormal points and detection method	Case	judgment and action
E0 or E4	**Remote controller transmission error(E0)/signal receiving error(E4)** ① Abnormal if main or sub remote controller cannot receive any transmission normally 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 any data normally 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 Mis-wiring 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. • Total wiring length: max. 500 m (Do not use cable × 3 or more.) • The number of connecting indoor units: max. 16 units • The number of connecting remote controller: max. 2 units If the cause of trouble is not any of ①–③ above, ④ Diagnose remote controllers. a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board. b) When "RC NG" is displayed, replace remote controller. c) When "RC E3"or "ERC 00-66"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 read normally from the nonvolatile memory of the remote controller control board. (Check code: E1) ② Abnormal if the clock function of remote controller cannot be operated normally. (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 and compares the received and transmitted data. Abnormal if these data are judged to be different 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 and compares the received and transmitted data. Abnormal if these data are judged to be different 30 continuous times. (Check code: E5)	① 2 remote controllers 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 Connect remote controller with only one indoor unit. ③ Change the address to a separate setting. ④–⑥ Diagnose remote controller. a) When "RC 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 "RC NG" is displayed, replace remote controller. c) When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality.
E8 (6840)	**Indoor/outdoor unit communication error (Signal receiving error) (Outdoor unit)** (1) 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 (6841)	**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 three 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.

Check code	Abnormal points and detection method	Case	judgment and action
Ed (0403)	**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.
	2. Abnormal if communication between outdoor controller circuit board and M-NET board is not available.	① Breaking of wire or contact failure of connector between outdoor controller circuit board and M-NET board ② Contact failure of M-NET board power supply line ③ Noise has entered into M-NET transmission wire.	① Check disconnection, looseness, or breaking of connection wire between outdoor controller circuit board (CNMNT) and M-NET board (CN5). ② Check disconnection, looseness, or breaking of connection wire between outdoor controller circuit board(CNMNT) and M-NET board (CND). ③ Check M-NET transmission wiring method.
P8	**Pipe temperature** <Cooling mode> Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes later of compressor start and 6 minutes later of the liquid or condenser/evaporator pipe is out of cooling range. Note 1: It takes at least 9 minutes to detect. Note 2: Abnormality P8 is not detected in drying mode. Cooling range : Indoor pipe temperature (TH2 or TH5) − intake temperature (TH1) ≦ −3℃ TH: Lower temperature between liquid pipe temperature and condenser/evaporator temperature <Heating mode> When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/evaporator pipe temperature is not in heating range within 20 minutes. Note 3: It takes at least 27 minutes to detect abnormality. Note 4: It excludes the period of defrosting (Detection restarts when defrosting mode is over) Heating range : 3℃ ≦ (Condenser/Evaporator temperature(TH5)− intake temperature(TH1))	① Slight temperature difference between indoor room temperature and pipe <liquid or condenser/evaporator> temperature thermistor • Shortage of refrigerant • Disconnected holder of pipe <liquid or condenser/evaporator> thermistor • Defective refrigerant circuit ② Converse connection of extension pipe (on plural units connection) ③ Converse wiring of indoor/outdoor unit connecting wire (on plural units connection) ④ Defective detection of indoor room temperature and pipe <condenser/evaporator> temperature thermistor ⑤ Stop valve is not opened completely.	①–④ Check pipe <liquid or condenser/evaporator> temperature with room temperature display on remote controller and outdoor controller circuit board. Pipe <liquid or condenser/evaporator> temperature display is indicated by setting SW2 of outdoor controller circuit board as follows. (Conduct temperature check with outdoor controller circuit board after connecting 'A-Control Service Tool(PAC-SK52ST)'.)  A-Control Service Tool SW2 setting ②③ Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire.
PL	**Abnormal refrigerant circuit** During Cooling, Dry, or Auto Cooling operation, when the following are regarded as failures when detected for one second. a)The compressor continues to run for 30 or more seconds. b)The liquid pipe temperature or the condenser/evaporator temperature is 75°C or more. **<u>These detected errors will not be cancelled until the power source is reset.</u>**	① Abnormal operation of 4-way valve ② Disconnection of or leakage in refrigerant pipes ③ Air into refrigerant piping ④ Abnormal operation (no rotation) of indoor fan · Defective fan motor · Defective indoor control board ⑤ Defective refrigerant circuit (clogging)	① **<u>When this error occurs, be sure to replace the 4-way valve.</u>** ② Check refrigerant pipes for disconnection or leakage. ③ After the recovery of refrigerant, vacuum dry the whole refrigerant circuit. ④ Refer to "10-6. HOW TO CHECK THE PARTS". ⑤ Check refrigerant circuit for operation. **<u>To avoid entry of moisture or air into refrigerant circuit which could cause abnormal high pressure, purge air in refrigerant circuit or replace refrigerant.</u>**

<M-NET communication error>

Note: “Indoor unit” in the text indicates M-NET board in outdoor unit.

Check code	Abnormal points and detection method	Case	judgment and action
A0 (6600)	**Duplicate address definition** This error is displayed when transmission from the units of same address is detected. Note: The address and attribute displayed at remote controller indicate the controller that detected abnormality.	① There are 2 or more same address of controller of outdoor unit, indoor unit, FRESH MASTER, or LOSSNAY. ② Noise has entered into transmission signal and signal was transformed.	Search the unit with same address as abnormality occurred. If the same address is found, turn off the power supply of outdoor unit, indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more after the address is corrected, and turn the power on again. Check transmission wave form or noise on transmission wire.
A2 (6602)	**Hardware error of transmission processor** Transmission processor intended to transmit “0”, but “1” appeared on transmission wire. Note: The address and attribute display at remote controller indicate the controller that detected abnormality.	① Error is detected if wave form is transformed when wiring works of transmission wire of outdoor unit, indoor unit, FRESH MASTER or LOSSNAY are done, or polarity is changed with the power on and transmission data collide each other. ② Defective transmitting receiving circuit of transmission processor ③ Transmission data is changed by the noise on transmission.	① If the work of transmission wire is done with the power on, shut off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. ② Check transmission wave form or noise on transmission wire.
A3 (6603)	**BUS BUSY** 1. Overtime error by signal collision damage Abnormal if transmitting is not possible for 8-10 minutes continuously because of collision of transmission. 2. Data could not reach transmission wire for 8-10 minutes continuously because of noise or etc. Note: The address and attribute displayed at remote controller indicate the controller that detected abnormality.	① Transmission processor could not transmit because short cycle voltage of noise and the like have entered into transmission wire continuously. ② Transmission quantity has increased and transmission is not possible because there was wiring mistake of terminal block for transmission wire (TB3) and terminal block for central control (TB7) in outdoor unit. ③ Transmission is mixed with others and occupation rate on transmission wire rose because of defective repeater (a function to connector or disconnect transmission of control and central control system) of outdoor unit, then abnormality is detected.	① Check if transmission wire of indoor unit, FRESH MASTER, LOSSNAY, or remote controller is not connected to terminal block for central control (TB7) of outdoor unit. ② Check if transmission wire of indoor unit, FRESH MASTER or LOSSNAY is not connected to terminal block for transmission wire of outdoor unit. ③ Check if terminal block for transmission wire (TB3) and terminal block for central control (TB7) is not connected. ④ Check transmission wave form or noise on transmission wire.
A6 (6606)	**Communication error with communication processor** Defective communication between unit processor and transmission processor Note: The address and attribute display at remote controller indicate the controller that detected abnormality.	① Data of transmission processor or unit processor is not transmitted normally because of accidental trouble such as noise or thunder surge. ② Address forwarding from unit processor is not transmitted normally because of defective transmission processor hardware.	Turn off the power supply of outdoor unit, indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. System returns normally if abnormality was accidental malfunction. If the same abnormality generates again, abnormality-generated controller may be defective.

Check code	Abnormal points and detection method	Case	judgment and action
A7 (6607)	**NO ACK signal** 1. Transmitting side controller detects abnormal if a message was transmitted but there is no reply (ACK) that a message was received. Transmitting side detects abnormality every 30 seconds, 6 times continuously. Note) The address and attribute displayed at remote controller is indicate the controller that did not reply (ACK).	Common factor that has no relation with abnormality source ① The unit of former address does not exist as address switch has changed while the unit was energized. ② Extinction of transmission wire voltage and signal is caused by over-range transmission wire. • Maximum distance.....200m • Remote controller line...(12m) ③ Extinction of transmission wire voltage and signal is caused by type-unmatched transmission wire. Type..... With shield wire- CVVS, CPEVS With normal wire (no shield)- VCTF, VCTFK, CVV CVS, VVR, VVF, VCT Diameter....1.25mm² or more ④ Extinction of transmission wire voltage and signal is caused by over-numbered units. ⑤ Accidental malfunction of abnormality-detected controller (noise, thunder surge) ⑥ Defective of abnormality-generated controller	**Always try the followings when the error "A7" occurs.** ① Turn off the power supply of outdoor unit, indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. If malfunction was accidental, the unit returns to normal. ② Check address switch of abnormality-generated address. ③ Check disconnection or looseness of abnormality-generated or abnormality-detected transmission wire (terminal block and connector) ④ Check if tolerance range of transmission wire is not exceeded. ⑤ Check if type of transmission wire is correct or not. If there were some troubles of ①-⑤ above, repair the defective, then turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. • If there was no trouble with ①-⑤ above in single refrigerant system (one outdoor unit), controller of displayed address or attribute is defective. • If there was no trouble with ①-⑤ above in different refrigerant system (two or more outdoor units), judge with ⑥. ⑥ If address of abnormality source is the address that should not exist, there is the unit that memorizes nonexistent address information. Delete useless address information with manual setting function of remote controller. Only the system FRESH MASTER or LOSSNAY are connected to, or the system that is equipped with group setting of different refrigerant system. If there was no trouble with ①-⑥ above, replace the controller board of displayed address or attribute. If the unit does not return normally, multi-controller board of outdoor unit may be defective (repeater circuit). Replace multi-controller board one by one to check if the unit returns normally.
	2. If displayed address or attribute is outdoor unit, indoor unit detects abnormality when indoor unit transmitted to outdoor unit and there was no reply (ACK).	① Contact failure of transmission wire of outdoor unit or indoor unit ② Disconnection of transmission connector (CN2M) of outdoor unit ③ Defective transmitting receiving circuit of outdoor unit or indoor unit	
	3. If displayed address or attribute is indoor unit, remote controller detects abnormality when remote controller transmitted to indoor unit and there was no reply (ACK).	① During group operation with indoor unit of multi- refrigerant system, if remote controller transmit to indoor unit while outdoor unit power supply of one refrigerant system is put off or within two minutes of restart, abnormality is detected. ② Contact failure of transmission wire of remote controller or indoor unit ③ Disconnection of transmission connector (CN2M) of indoor unit ④ Defective transmitting receiving circuit of indoor unit or remote controller	
	4. If displayed address or attribute is remote controller, indoor unit detects abnormality when indoor unit transmitted to remote controller and there was no reply (ACK).	① During group operation with indoor unit of multi- refrigerant system, if indoor unit transmit to remote controller while outdoor unit power supply of one refrigerant system is turned off or within two minutes of restart, abnormality is detected. ② Contact failure of transmission wire of remote controller or indoor unit ③ Disconnection of transmission connector (CN2M) of indoor unit ④ Defective transmitting receiving circuit of indoor unit or remote controller	

Continued to the next page.

From the previous page.

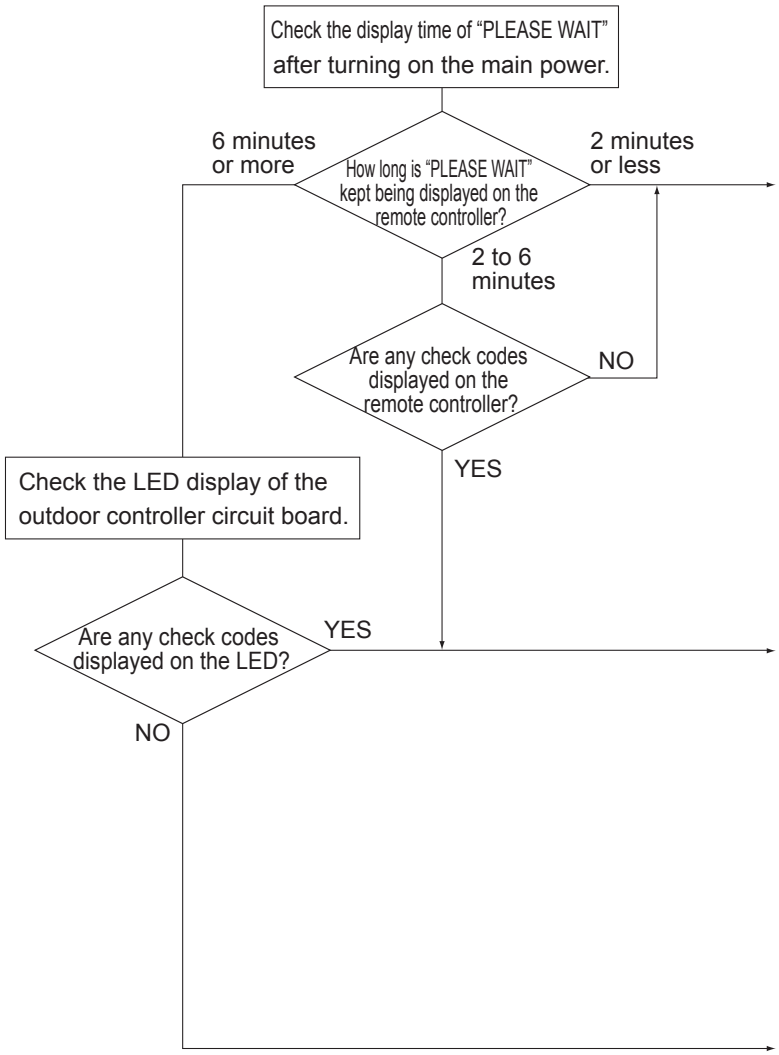
Check code	Abnormal points and detection method	Case	judgment and action
A7 (6607)	5. If displayed address or attribute is FRESH MASTER, indoor unit detects abnormality when indoor unit transmitted to FRESH MASTER and there was no reply (ACK).	① During sequential operation of indoor unit and FRESH MASTER of other refrigerant system, if indoor unit transmits to FRESH MASTER while outdoor unit power supply of same refrigerant system with FRESH MASTER is turned off or within 2 minutes of restart, abnormality is detected. ② Contact failure of transmission wire of indoor unit or FRESH MASTER ③ Disconnection of transmission connector (CN2M) of indoor unit or FRESH MASTER ④ Defective transmitting receiving circuit of indoor unit or FRESH MASTER	**Same as mentioned in "A7" of the previous page**
	6. If displayed address or attribute is LOSSNAY, indoor unit detects abnormality when indoor unit transmitted to LOSSNAY and there was no reply (ACK).	① If the power supply of LOSSNAY is off, indoor unit detects abnormality when it transmits to LOSSNAY. ② During sequential operation of indoor unit and LOSSNAY of other refrigerant system, if indoor unit transmits to LOSSNAY while outdoor unit power supply of same refrigerant system with LOSSNAY is turned off or within 2 minutes of restart, abnormality is detected. ③ Contact failure of transmission wire of indoor unit of LOSSNAY ④ Disconnection of transmission connector (CN2M) of indoor unit ⑤ Defective transmitting receiving circuit of indoor unit or LOSSNAY	
	7. When displayed address or attribute is nonexistent	① The unit of former address does not exist as address switch has changed while the unit was energized. ② Abnormality is detected when indoor unit transmitted because the address of FRESH MASTER and LOSSNAY are changed after sequential operation of FRESH MASTER and LOSSNAY by remote controller.	
A8 (6608)	**M-NET NO RESPONSE** Abnormal if a message was transmitted and there was reply (ACK) that message was received, but response command does not return. Transmitting side detects abnormality every 30 seconds, 6 times continuously. Note: The address and attribute displayed at remote controller indicate the controller that did not reply (ACK).	① Transmitting condition repeats fault because of noise and the like. ② Extension of transmission wire voltage and signal is caused by over-range transmission wire. • Maximum distance.....200 m • Remote controller line...(12 m) ③ Extension of transmission wire voltage and signal is caused by type-unmatched transmission wire. Type..... With shield wire- CVVS, CPEVS With normal wire (no shield)- VCTF, VCTFK, CVV CVS, VVR, VVF, VCT Diameter.....1.25mm² or more ④ Accidental malfunction of abnormality-generated controller	① Check transmission wave form or noise on transmission wire. ② Turn off the power supply of outdoor unit and indoor unit and FRESH MASTER or LOSSNAY at the same time for 2 minutes or more, and turn the power on again. If malfunction was accidental, the unit returns to normal. If the same abnormality generates again, controller of displayed address and attribute may be defective.

10-5. TROUBLESHOOTING OF PROBLEMS

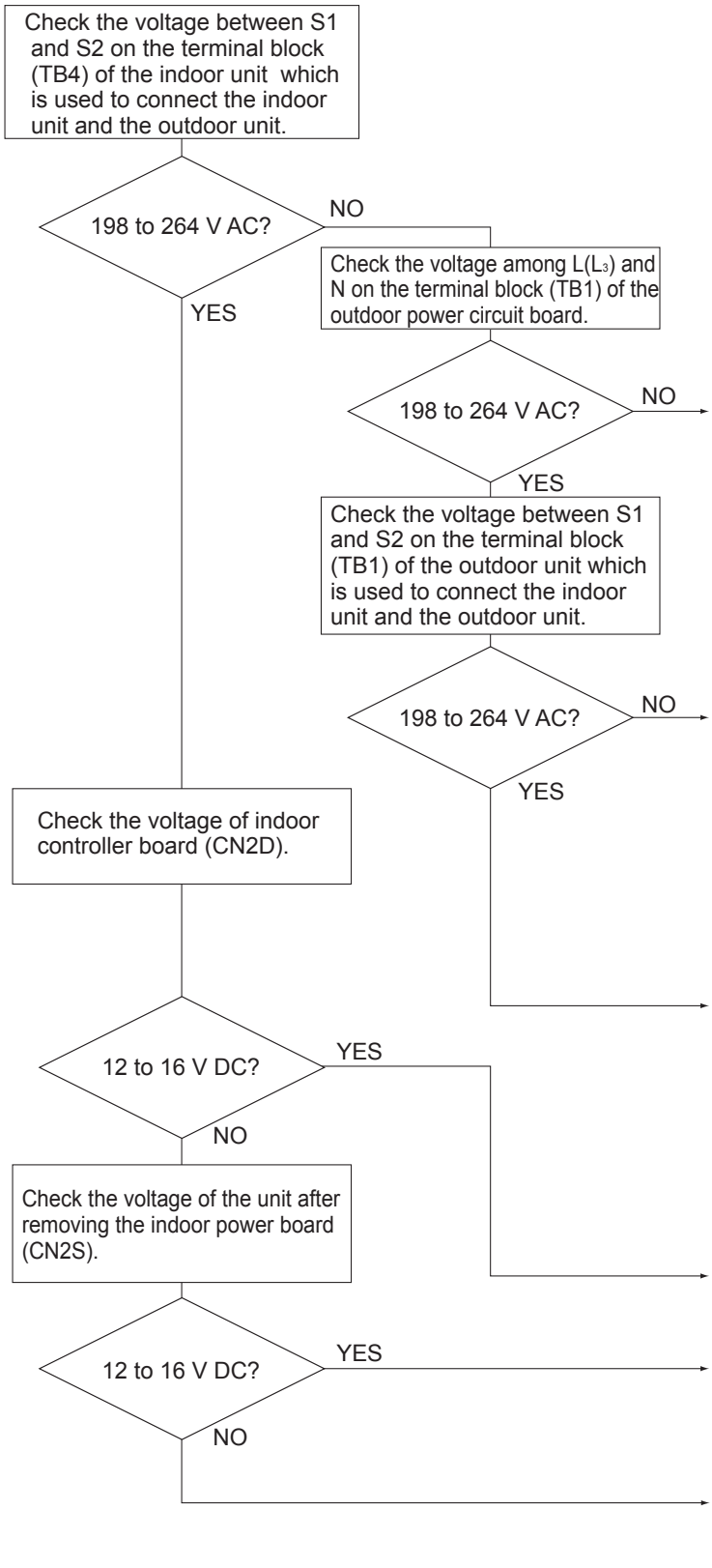
Phenomena	Facor	Countermeasure
1. Remote controller display does not work.	①12 V DC is not supplied to remote controller. (Power supply display is not indicated on LCD.) ②12–15 V DC is supplied to remote controller, however, no display is indicated. • "PLEASE WAIT" is not displayed. • "PLEASE WAIT" is displayed.	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 Phenomena No.3 below. ② Check the following. • Failure of remote controller if "PLEASE WAIT" is not displayed • Refer to Phenomena 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 ④ Outdoor unit protection device connector is open.	① Normal operation ② Self-diagnosis of remote controller ③ "PLEASE WAIT" is displayed for 6 minutes at most, in 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 Check LED display on outdoor controller circuit board. Refer to "10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS". Check protection device connector (63L and 63H) for contact failure. Refer to "10-9. TEST POINT DIAGRAM".
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 be not 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.	① The pair number settings of the wireless remote controller and indoor controller board are mismatched.	① Check the pair number settings.
5. When operating by the wireless remote controller, beep sound is heard, however, unit does not start operating.	① No operation for 2 minutes at most after the power supply ON ② Local remote controller operation is prohibited. • Remote controlling adaptor is connected to CN32 on the indoor controller board. • Local remote controller operation is prohibited by centralised controller etc. since it is connected to MELANS. ③ Refer to Phenomena No.2 on previous page.	① Normal operation ② Normal operation ③ Check Phenomena No.2 on previous page.
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.)	① Refrigerant shortage ② Filter clogging ③ Heat exchanger clogging ④ Air duct short cycle	①• If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. • Check pipe connections for gas leakage. ② Open suction grill 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 discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. • Clean the heat exchanger. ④ Remove the blockage.

Phenomena	Facor	Countermeasure
7. Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	① Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault. ② Refrigerant shortage ③ Lack of insulation for refrigerant piping ④ Filter clogging ⑤ Heat exchanger clogging ⑥ Air duct short cycle ⑦ Bypass circuit of outdoor unit fault	①• Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. • Replace linear expansion valve. ②• If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. • Check pipe connections for gas leakage. ③ Check the insulation. ④ Open suction grill 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 discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. • Clean the heat exchanger. ⑥ Remove the blockage. ⑦ Check refrigerant system during operation.
8. ① For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ② For 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.)	8. ① For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ② For 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.)	①② Normal operation

Symptoms: “PLEASE WAIT” is kept being displayed on the remote controller.

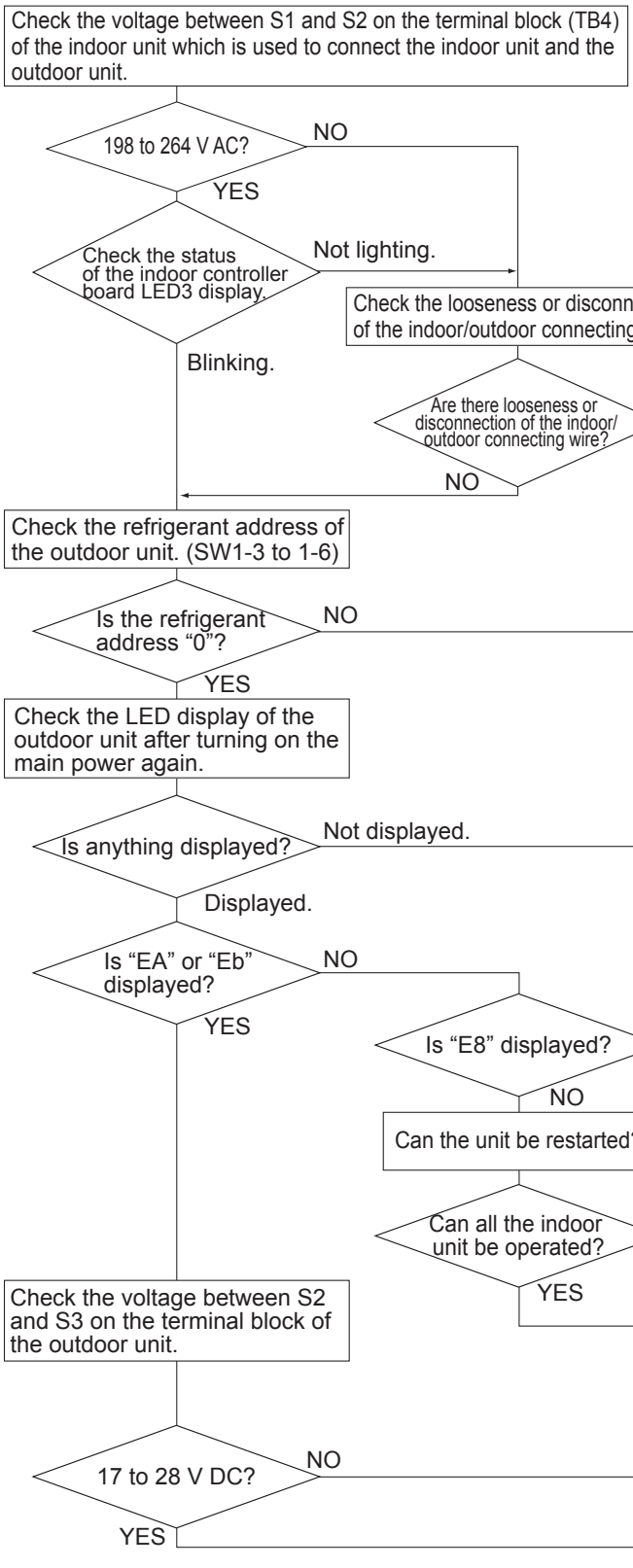
Diagnosis flow	Cause	Inspection method and troubleshooting
	• “PLEASE WAIT” will be displayed during the start-up diagnosis after turning on the main power. • Mis-wiring of indoor/ outdoor connecting wire • Breaking of indoor/ outdoor connecting wire (S3) • Defective indoor controller board • Defective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

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

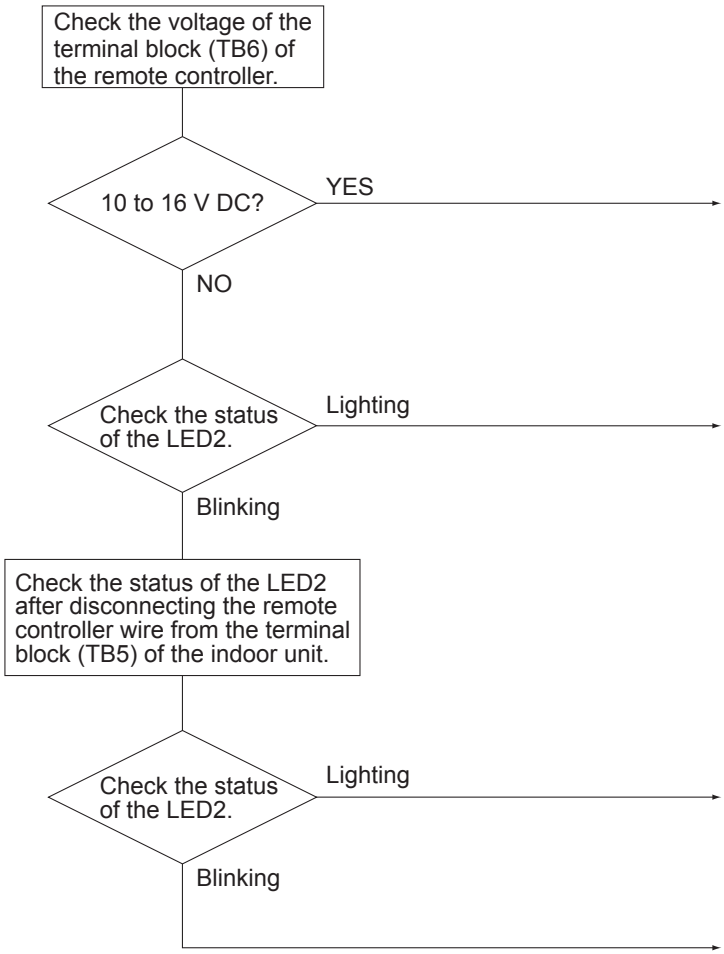


Cause	Inspection method and troubleshooting
• Troubles concerning power supply	• Check the power wiring to the outdoor unit. • Check the breaker.
• Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown.	• Check the wiring of the outdoor unit. • Check 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.
• Bad wiring of the outdoor controller board • The fuses on the outdoor controller circuit board are blown.	• 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.
• Defective indoor controller board	• Replace the indoor controller board.
• Miswiring, breaking or poor connection of indoor/outdoor connecting wire	• Check if there is miswiring or breaking of wire.
• Defective indoor power board	• 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 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 (TB5) connecting the remote controller wire. If it is not between 10 and 16 V DC, the indoor controller board must be defective. • Check if the remote controller wire is short-circuited. • Replace the indoor controller board.

• **Before repair**

Frequent calling from customers

Phone Calls From Customers		How to Respond	Note
Unit does not operate at all.	① The operating display of remote controller does not come on.	① Check if power is supplied to air conditioner. Nothing appears on the display unless power is supplied.	
	② Unit cannot be restarted for a while after it has stopped.	② Wait around 3 minutes to restart unit. The air conditioner is in a state of being protected by the microcomputer's directive. Once the compressor is stopped, the unit cannot be restarted for 3 minutes. This control is also applied when the unit is turned on and off by remote controller or thermostat.	
	③ Check code appears and blinks on the display of remote controller.	③ Check code will be displayed if any protection devices of the air conditioner are actuated. What is check code? ----------→	Refer to "SELF-DIAGNOSIS ACTION TABLE". Check if servicing is required for the error.
Remote controller	① "PLEASE WAIT" is displayed on the screen.	① Wait around 2 minutes. An automatic startup test will be conducted for 2 minutes when power is supplied to the air conditioner. "PLEASE WAIT" will be kept displayed while that time.	
	② "FILTER" is displayed on the screen.	② This indicates that it is time to clean the air filters. Clean the air filters. Press the FILTER button on the remote controller twice to clear "FILTER" from the display. See the operation manual that came with the product for how to clean the filters.	Display time of "FILTER" depends on the model. Long life filter: 2500 hrs. Regular filter: 100 hrs.
	③ "STANDBY" is displayed on the screen.	③ This is displayed when the unit starts HEAT operation, when the thermostat puts the compressor in operation mode, or when the outdoor unit ends DEFROST operation and returns to HEAT operation. The display will automatically disappear around 10 minutes later. While "STANDBY" is displayed on the remote controller, the airflow amount will be restricted because the indoor unit's heat exchanger is not fully heated up. In addition to that, the up/down vane will be automatically set to horizontal blow in order to prevent cold air from directly blowing out to human body. The up/down vane will return to the setting specified by the remote controller when "STANDBY" is released.	
	④ "DEFROSTING" is displayed on the screen. (No air comes out of the unit.)	④ The outdoor unit gets frosted when the outside temperature is low and the humidity is high. "DEFROSTING" indicates the DEFROST operation is being performed to melt this frost. The DEFROST operation ends in around 10 minutes (at most 15 minutes). During the DEFROST operation, the indoor unit's heat exchanger becomes cold, so the blower is stopped. The up/down vane will be automatically set to horizontal blow in order to prevent cold air from directly blowing out to human body. The display will turn into "STANDBY" when DEFROST operation ends.	

Phone Calls From Customers		How to Respond	Note
The room cannot be cooled or heated sufficiently.		① Check the set temperature of remote controller. The outdoor unit cannot be operated if the set temperature is not appropriate. The outdoor unit operates in the following modes. COOL: When the set temperature is lower than the room temperature. HEAT: When the set temperature is higher than the room temperature.	
		② Check if filters are not dirty and clogged. If filters are clogged, the airflow amount will be reduced and the unit capacity will be lowered. See the instruction manual that came with the product for how to clean the filters.	
		③ Check there is enough space around the air conditioner. If there are any obstacles in the air intake or air outlet of indoor/outdoor units, they block the airflow direction so that the unit capacity will be lowered.	
Sound comes out from the air conditioner.	① A gas escaping sound is heard sometimes.	① This is not a malfunction. This is the sound which is heard when the flow of refrigerant in the air conditioner is switched.	
	② A cracking sound is heard sometimes.	② This is not a malfunction. This is the sound which is heard when internal parts of units expand or contract when the temperature changes.	
	③ A buzzing sound is heard sometimes.	③ This is not a malfunction. This is the sound which is heard when the outdoor unit starts operating.	
	④ A ticking sound is heard from the outdoor unit sometimes.	④ This is not a malfunction. This is the sound which is heard when the blower of the outdoor unit is controlling the airflow amount in order to keep the optimum operating condition.	
	⑤ A sound, similar to water flowing, is heard from the unit.	⑤ This is not a malfunction. This is the sound which is heard when the refrigerant is flowing inside the indoor unit.	
Something is wrong with the blower…..	① The fan speed does not match the setting of the remote controller during DRY operation.(No air comes out sometimes during DRY operation.)	① This is not a malfunction. During the DRY operation, the blower's ON/OFF is controlled by the microcomputer to prevent overcooling and to ensure efficient dehumidification. The fan speed cannot be set by the remote controller during DRY operation.	
	② The fan speed does not match the setting of the remote controller in HEAT operation.	② This is not a malfunction. 1) When the HEAT operation starts, to prevent the unit from blowing cold air, the fan speed is gradually increased from zero to the set speed, in proportion to the temperature rise of the discharged air. 2) When the room temperature reaches the set temperature and the outdoor unit stops, the unit starts the LOW AIR operation. 3) During the HEAT operation, the DEFROST operation is performed to defrost the outdoor unit. During the DEFROST operation, the blower is stopped to prevent cold air coming out of the indoor unit.	The up/down vane will be automatically set to horizontal blow in these cases listed up on the left (①–③). After a while, the up/down vane will be automatically moved according to the setting of the remote controller.

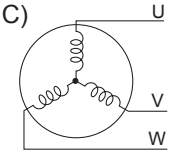
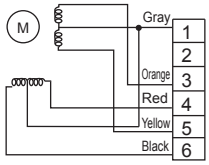
Phone Calls From Customers		How to Respond	Note
Something is wrong with the blower…..	③ Air blows out for a while after HEAT operation is stopped.	③ This is not a malfunction. The blower is operating just for cooling down the heated-up air conditioner. This will be done within one minute. This control is conducted only when the HEAT operation is stopped with the electric heater ON.	However, this control is also applied to the models which has no electric heater.
Something is wrong with the airflow direction….	① The airflow direction is changed during COOL operation.	① If the up/down vane is set to downward in COOL operation, it will be automatically set to horizontal blow by the microcomputer in order to prevent water from dropping down. "1 Hr." will be displayed on the remote controller if the up/down vane is set to downward with the fan speed set to be less than "LOW".	
	② The airflow direction is changed during HEAT operation. (The airflow direction cannot be set by remote controller.)	② In HEAT operation, the up/down vane is automatically controlled according to the temperature of the indoor unit's heat exchanger. In the following cases written below, the up/down vane will be set to horizontal blow, and the setting cannot be changed by remote controller. 1) At the beginning of the HEAT operation 2) While the outdoor unit is being stopped by thermostat or when the outdoor unit gets started to operate. 3) During DEFROST operation The airflow direction will be back to the setting of remote controller when the above situations are released.	"STANDBY" will be displayed on the remote controller in case of ① and ②. "DEFROSTING" will be displayed on the screen in case of ③.
	③ The airflow direction does not change. (Up/down vane, left/right louver)	③ 1) Check if the vane is set to a fixed position. (Check if the vane motor connector is removed.) 2) Check if the air conditioner has a function for switching the air direction. 3) If the air conditioner does not have that function, "NOT AVAILABLE" will be displayed on the remote controller when "AIR DIRECTION" or "LOUVER" button is pressed.	
The air conditioner starts operating even though any buttons on the remote controller are not pressed.		① Check if you set ON/OFF timer. The air conditioner starts operating at the time designated if ON timer has been set before.	
		② Check if any operations are ordered by distant control system or the central remote controller. While "CENTRALLY CONTROLLED INDICATOR" is displayed on the remote controller, the air conditioner is under the control of external directive.	There might be a case that "CENTRALLY CONTROLLED INDICATOR" will not be displayed.
		③ Check if power is recovered from power failure (black out). The units will automatically start operating when power is recovered after power failure (black out) occurs. This function is called "power failure automatic recovery ".	
The air conditioner stops even though any buttons on the remote controller are not pressed.		① Check if you set ON/OFF timer. The air conditioner stops operating at the time designated if OFF timer has been set before. ② Check if any operations are ordered by distant control system or the central remote controller. While "CENTRALLY CONTROLLED INDICATOR" is displayed on the remote controller, the air conditioner is under the control of external directive.	There might be a case that "CENTRALLY CONTROLLED INDICATOR" will not be displayed.

Phone Calls From Customers	How to Respond	Note
A white mist is expelled from the indoor unit.	This is not a malfunction. This may occur when the operation gets started in the room of high humidity.	
Water or moisture is expelled from the outdoor unit.	Cooling; when pipes or piping joints are cooled, they get sweated and water drips down. Heating; water drips down from the heat exchanger. * Make use of optional parts “Drain Socket” and “Drain pan” if these water needs to be collected and drained out for once.	
The display of wireless remote controller gets dim or does not come on. The indoor unit does not receive a signal from remote controller at a long distance.	Batteries are being exhausted. Replace them and press the reset button of remote controller.	

10-6. HOW TO CHECK THE PARTS

PUHZ-P100VHA5.UK PUHZ-P125VHA4.UK PUHZ-P140VHA4.UK
PUHZ-P100YHA3.UK PUHZ-P125YHA2.UK PUHZ-P140YHA2.UK

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Thermistor (TH3)
<Liquid>

Thermistor (TH6)
<2-Phase Pipe>
Thermistor (TH7)
<Ambient>
Thermistor (TH8)
<Heat Sink>
Thermistor (TH32)
<Comp.Surface></td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 10 to 30℃)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH4,TH32</td><td>160 to 410 kΩ</td><td rowspan="4">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 tester.
(At the ambient temperature 20℃)
<table>
<tr><th colspan="2">Normal</th><th>Abnormal</th></tr>
<tr><td>Except P125/P140VHA2</td><td>P125/P140VHA2</td><td rowspan="2">Open or short</td></tr>
<tr><td>1500 ± 150Ω</td><td>1435 ± 150Ω</td></tr>
</table></td></tr>
<tr><td>Motor for Compressor
(MC)
 
</td><td>Measure the resistance between the terminals with a tester.
(Winding temperature 20℃)
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>P100V</td><td>P100Y</td><td>P125/140V</td><td>P125/140Y</td><td rowspan="2">Open or short</td></tr>
<tr><td>0.88Ω</td><td>1.41Ω</td><td>0.53Ω</td><td>1.02Ω</td></tr>
</table></td></tr>
<tr><td>Linear Expansion Valve
(LEV-A)
 
</td><td>Disconnect the connector then measure the resistance with a tester.
(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 ± 3Ω</td></tr>
</table></td></tr>
<tr><td>Solenoid Valve Coil
<Bypass valve>
(SV)
For P125, 140</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 20℃)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1450 ± 150Ω</td><td>Open or short</td></tr>
</table></td></tr>
</table>

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

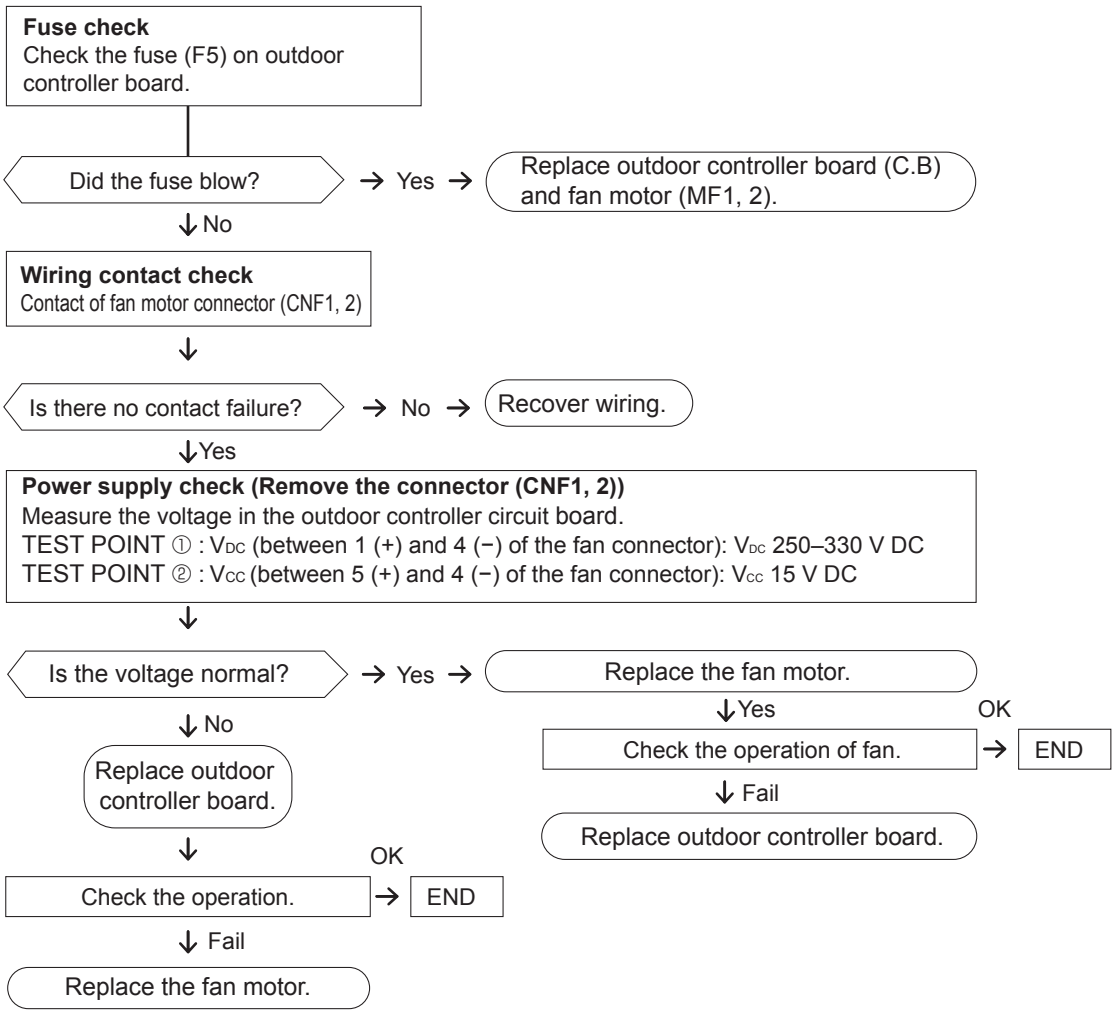
① Notes

· High voltage is applied to the connecter (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 turn around.



10-7. HOW TO CHECK THE COMPONENTS

<Thermistor feature chart>

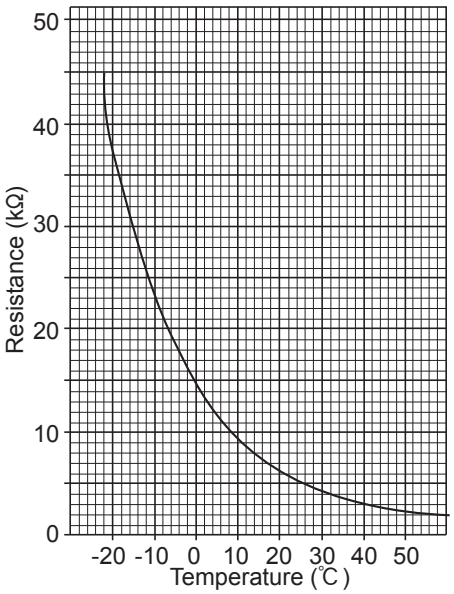
Low temperature thermistors

- Thermistor <Liquid> (TH3)
- Thermistor <2-Phase Pipe> (TH6)
- Thermistor <Ambient> (TH7)

Thermistor R0 = 15 kΩ ± 3%
B constant = 3480 ± 2%

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

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



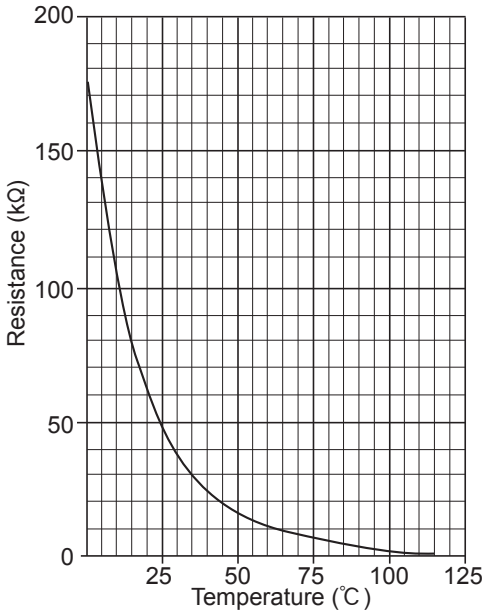
Medium temperature thermistor

- Thermistor <Heat Sink> (TH8): YHA3

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



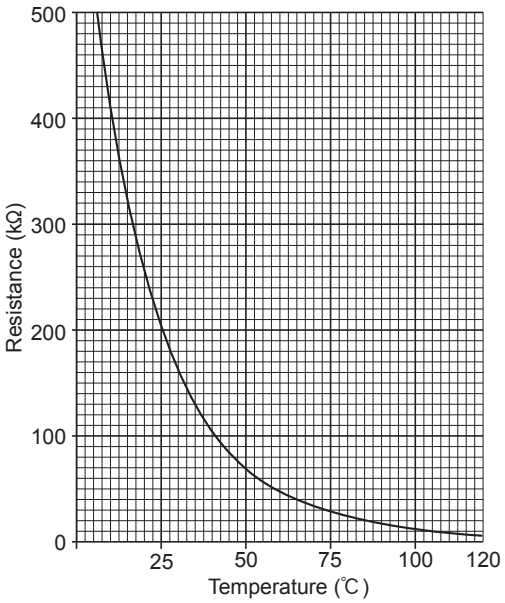
High temperature thermistor

- Thermistor <Comp. Surface> (TH32)

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

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

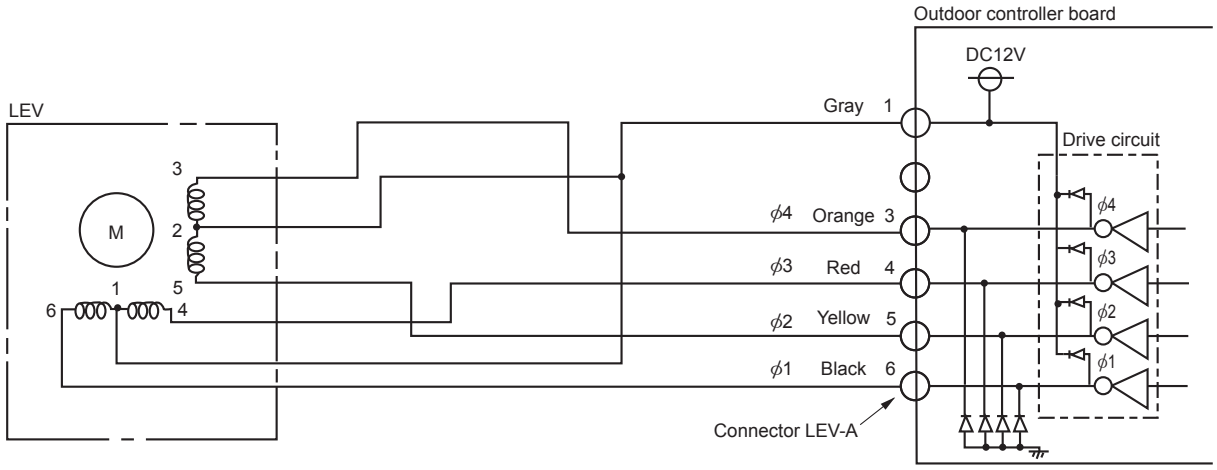
20℃	250 kΩ	70℃	34 kΩ
30℃	160 kΩ	80℃	24 kΩ
40℃	104 kΩ	90℃	17.5 kΩ
50℃	70 kΩ	100℃	13.0 kΩ
60℃	48 kΩ	110℃	9.8 kΩ



Linear expansion valve

(1) Operation summary of the linear expansion valve

• Linear expansion valve open/close 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

Opening a valve : 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8
Closing a valve : 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1

The output pulse shifts in above order.

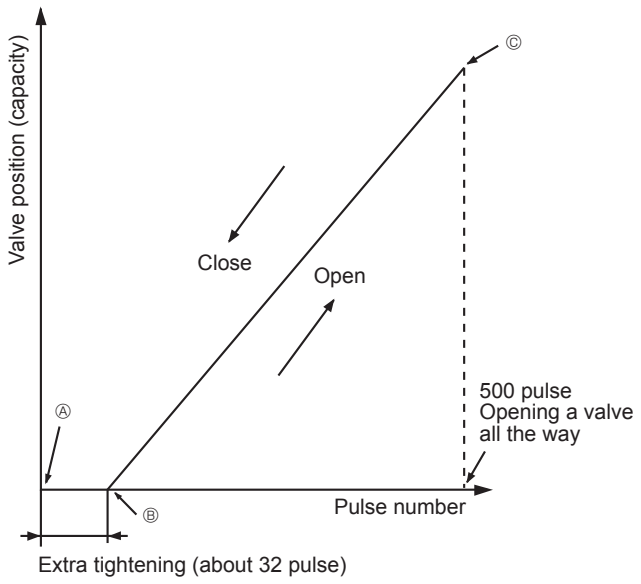
· When linear expansion valve operation stops, all output phase become OFF.

· 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, 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.

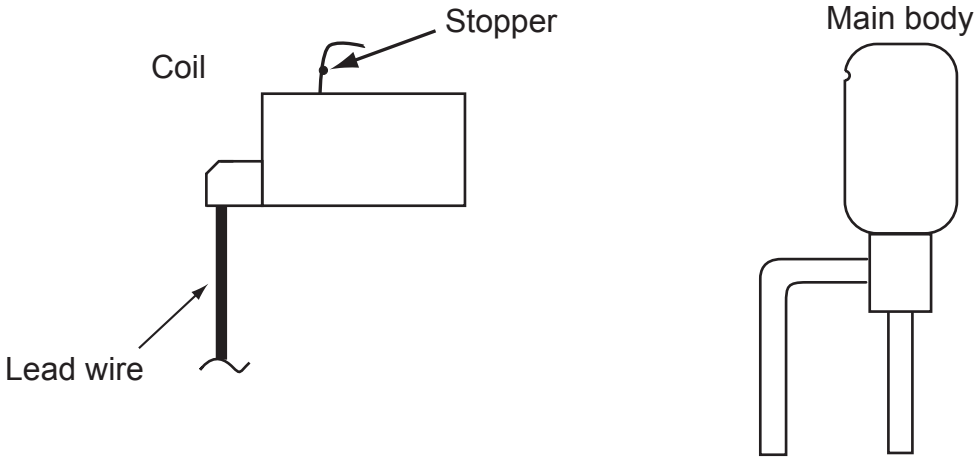
(2) Linear expansion valve operation



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

<Composition>

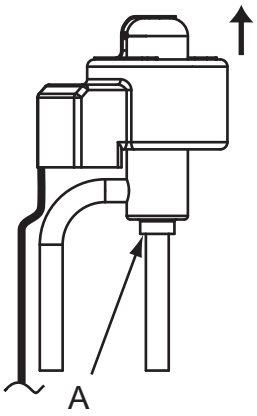
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<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.

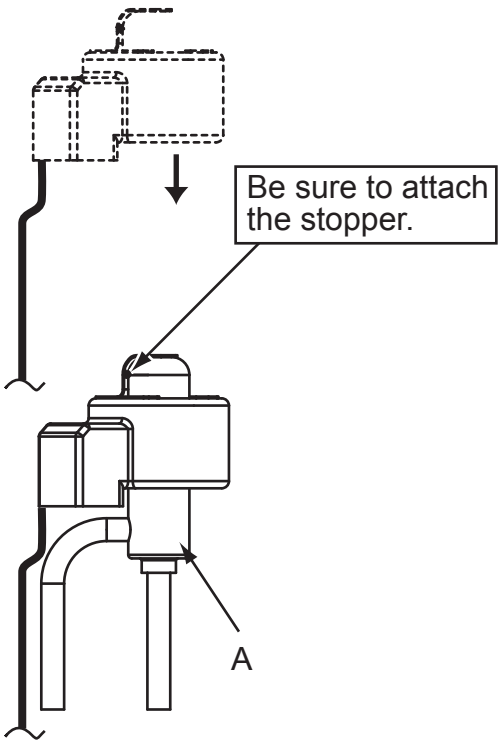
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<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.



10-8. EMERGENCY OPERATION

(1) When the check codes shown below are displayed on outdoor unit or microcomputer for wired remote controller or indoor unit has a failure, but no other problems are found, emergency operation will be available by setting the emergency operation switch (SWE) on indoor controller board to ON and short-circuiting the connector (CN31) on outdoor controller board.

IWhen following abnormalities occur, emergency operation will be available.

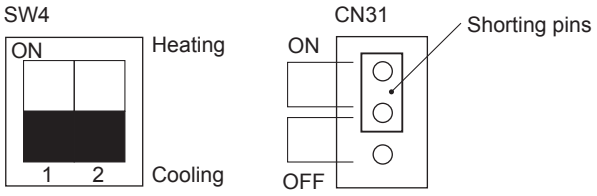
Check code	Inspected content
U4	Open/short of pipe thermistor (TH3/TH6)
E8	Indoor/outdoor unit communication error • Signal receiving error (Outdoor unit)
E9	Indoor/outdoor unit communication error • Transmitting error (Indoor unit)
E0–E7	Communication error other than outdoor unit
Ed	Communication error between outdoor controller board and M-NET board (Serial communication error)

(2) Check the following items and cautions for emergency operation

① Make sure that there is no abnormality in outdoor unit other than the above abnormalities. (Emergency operation will not be available when Check code other than the above are indicated.)
② For emergency operation, it is necessary to set the emergency operation switch (SWE) on indoor controller board. Refer to the electrical wiring diagram of indoor unit for how to set the indoor unit.
③ During emergency operation, the air-conditioner will continuously be operated by supplying power and stopping it: It can not be turned on or off by remote control, and temperature control is not possible.
④ Do not perform emergency heating operation for an extended period of time: If the outdoor unit starts defrosting during this period, cold air will blow out from the indoor unit.
⑤ Do not perform emergency cooling operation for more than 10 hours: Neglecting this could result in freezing the heat exchanger in indoor unit.

(3) Emergency operation procedure

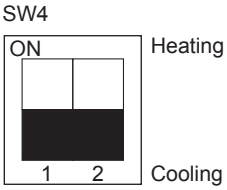
① Turn the main power supply off.
② Turn on the emergency operation switch (SWE) on indoor controller board.
③ Set the shorting pins of emergency operation connector (CN31) on outdoor controller board to ON.
④ Use SW4-2 on outdoor controller board to set the operation mode (cooling or heating). (SW4-1 is not used.)



⑤ Turning the main power supply on will start the emergency operation.

(4) Releasing emergency operation

① Turn the main power supply off.
② Set the emergency operation switch (SWE) on indoor controller board to OFF.
③ Set the shorting pins of emergency operation connector (CN31) on outdoor controller board to OFF.
④ Set SW4-2 on outdoor controller board as shown in the right.



Note: If shorting pins are not set on emergency operation connector (CN31), the setting remains OFF.

(5) Operation data during emergency operation

During emergency operation, no communication is performed with the indoor unit, so the data items needed for operation are set to the following values:

Operation data	Operation mode		Remarks
	COOL	HEAT	
Intake temperature (TH1)	27℃	20.5℃	
Indoor liquid pipe temperature (TH2)	5℃	45℃	
Indoor 2-phase pipe temperature (TH5)	5℃	50℃	
Set temperature	25℃	22℃	
Outdoor fluid pipe temperature (TH3)	45℃	5℃	(*1)
Outdoor 2-phase pipe temperature (TH6)	50℃	5℃	(*1)
Outdoor air temperature (TH7)	35℃	5℃	(*1)
Temperature difference code (room temperature − set temperature)(Tj)	5	5	
Discharge superheat (SHd)	30℃	30℃	(*2)
Sub-cool (SC)	5℃	5℃	(*2)

*1 If the thermistor temperature data is normal (not open/short), that data is loaded into the control as valid data. When the unit enters emergency operation and TH values are mismatched, set the thermistors to open/short. And the unit runs emergency operation with the values listed above.

*2 If one thermistor is set to open/short, the value of SHd/SC will be different from the list above.
[Example] When liquid temperature thermistor (TH3) has an open or short circuit.

Thermistor	COOL	HEAT
TH3	45℃	5℃
TH6	Ta	Tb
	Regard normal figure as effective data.	
TH5	5℃	50℃
TH2	5℃	45℃

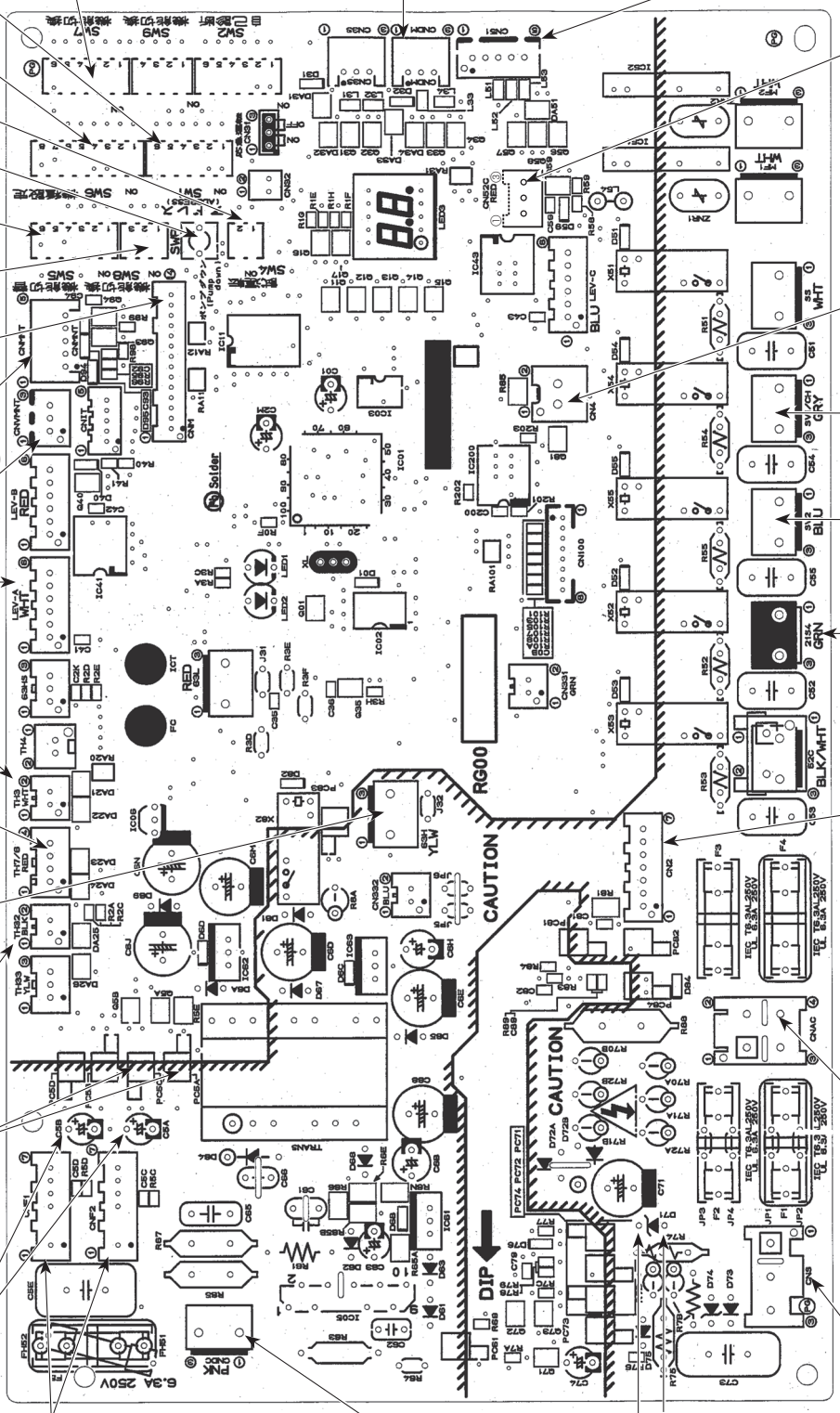
Degree of subcooling (SC)
Cooling = TH6−TH3 = Ta−45
Heating = TH5−TH2 = 50−45 = 5℃

10-9. TEST POINT DIAGRAM

<CAUTION> TEST POINT ① is high voltage.

Outdoor controller circuit board

PUHZ-P100VHA5.UK **PUHZ-P125VHA4.UK** **PUHZ-P140VHA4.UK**
PUHZ-P100YHA3.UK **PUHZ-P125YHA2.UK** **PUHZ-P140YHA2.UK**



SW1
Manual defrost, detect history record reset, refrigerant address

SW7
Demand control setting

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

CN51
External signal output
• Compressor operating signal
• Abnormal signal

CN52C
(Connect to the noise filter circuit board (CN52C)) (P100–140V)

SW6
Model select

SW4
Test operation

SWP
Pump down

SW5
Function switch

SW8
Pipe replace
Wiring replace

CNM
Connect to A control service tool

CNMNT
Connect to M-NET adapter (CN5)

CNVMNT
Connect to M-NET adapter (CND)

LEV-A
Linear Expansion Valve

CN4
Transmission to outdoor power circuit board (CN4)

SV1/CH
Crankcase heater (P125,P140 only)

SV2
Bypass valve (P125,P140 only)

21S4
4-way valve

TH3
Thermistor <Liquid>

TH7/6
Thermistor <Ambient/ 2-phase pipe>

63H
High Pressure Switch

TH32
Thermistor <Comp. Surface>

CN2
Connect to the outdoor power circuit board (CN2)
①–⑤: Reception from power circuit board
②–⑤: Zero cross signal (0–5 V DC)
③,④: Not used
⑥–⑤: 16 V DC
⑦–⑤: 16 V DC

V_{FG}
(Voltage between right pins of PC5C and PC5D, pin 3 and pin 4)
(Same as (CNF1⑦(+)–④(−))

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

V_{SP}
(Voltage between pins of C5A, C5B): 0 V DC (when stopped), 1–6.5 V DC (when operated)

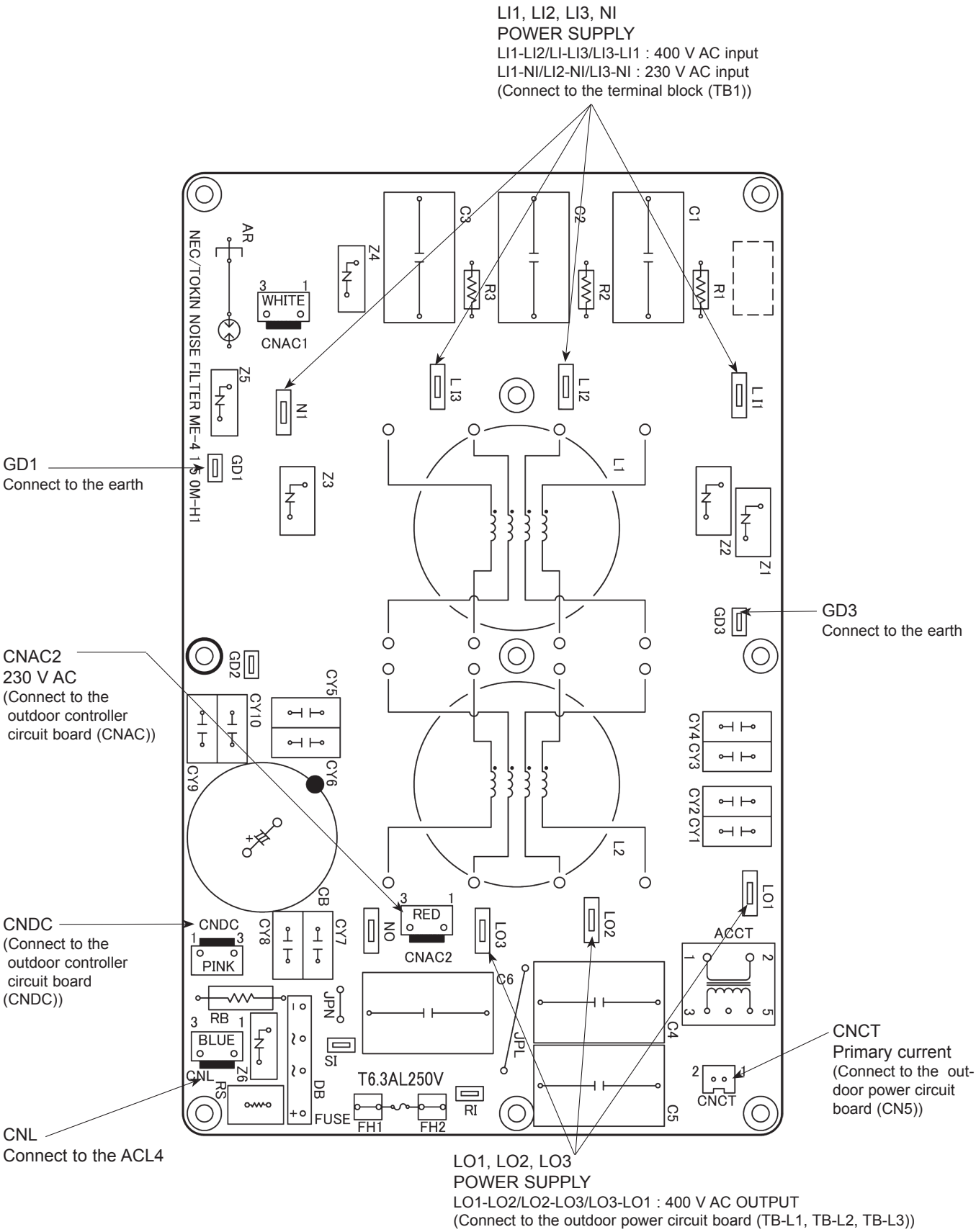
CNS
S1-S2: 230 V AC

CNF1, CNF2
Connect to the fan motor
①–④: 250–330 V DC
⑤–④: 15 V DC
⑥–④: 0–6.5 V DC
⑦–④: 15 V DC(When stopped)
7.5 V DC(When operated)
(0–15 V pulse)

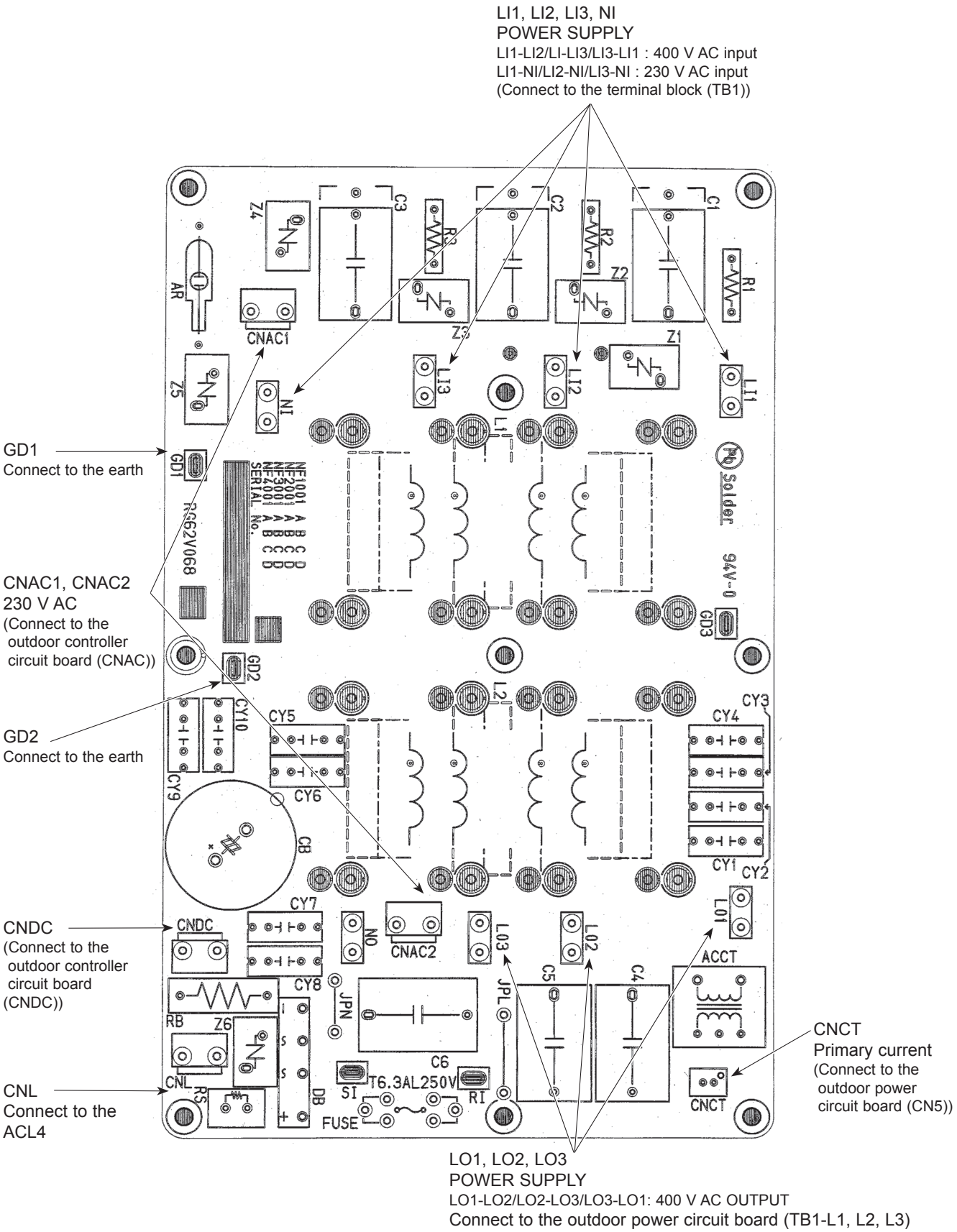
CNDC
280 V DC
(①+, ③−)
(Outdoor power circuit board for P100–140V)
(Noise filter circuit board for P100–140Y)

+ −
Communication power supply
D71 Voltage
24 V DC

Outdoor noise filter circuit board
PUHZ-P100YHA3.UK



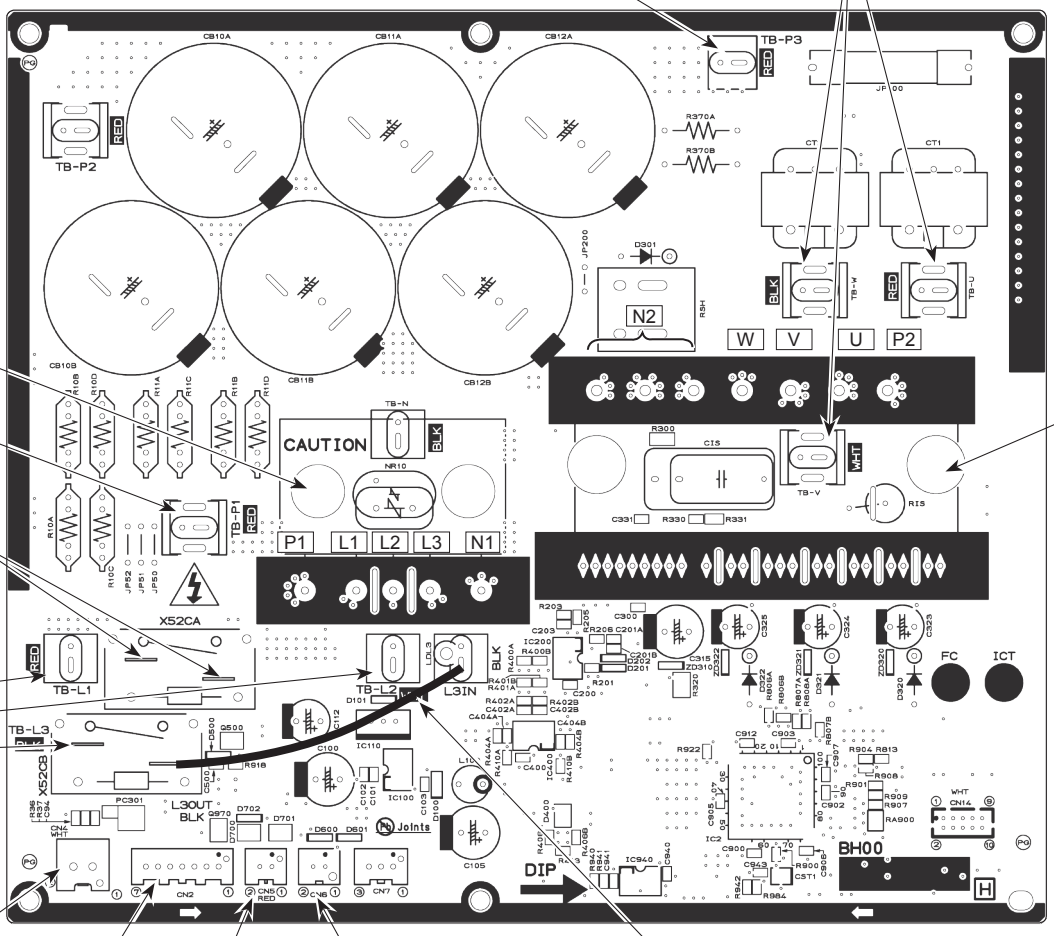
Outdoor noise filter circuit board
PUHZ-P125YHA2.UK PUHZ-P140YHA2.UK



Outdoor power circuit board
PUHZ-P100YHA3.UK

Brief Check of POWER MODULE
Usually, they are in a state of being short-circuited if they are broken.
Measure the resistance in the following points (connectors, etc.).
If they are short-circuited, it means that they are broken.
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.



TB-P3
Connect to the DCL

TB-U, TB-V, TB-W
Connect to the compressor (MC)
Voltage among phases:
10–400 V AC

Diode module

DIP-IPM

TB-P1
Connect to the DCL

TAB connector on X52CA
Connect to the RS resistor

TB-L1,
TB-L2,
TB-L3
Connect to the outdoor noise filter circuit board (LO1, LO2, LO3)
400 V AC

CN4
Connect to the outdoor controller circuit board (CN4)

CN5
Detection of primary current (Connect to the outdoor noise filter circuit board (CNCT))

L3OUT-L3IN
Lead connect

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

CN6
Thermistor
<Heat sink> (TH8)

Outdoor power circuit board
PUHZ-P100VHA5.UK
PUHZ-P125VHA4.UK
PUHZ-P140VHA4.UK

Brief Check of POWER MODULE
Usually, they are in a state of being short-circuited if they are broken.
Measure the resistance in the following points (connectors, etc.).
If they are short-circuited, it means that they are broken.
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.

CN4
Connect to the outdoor controller circuit board (CN4)

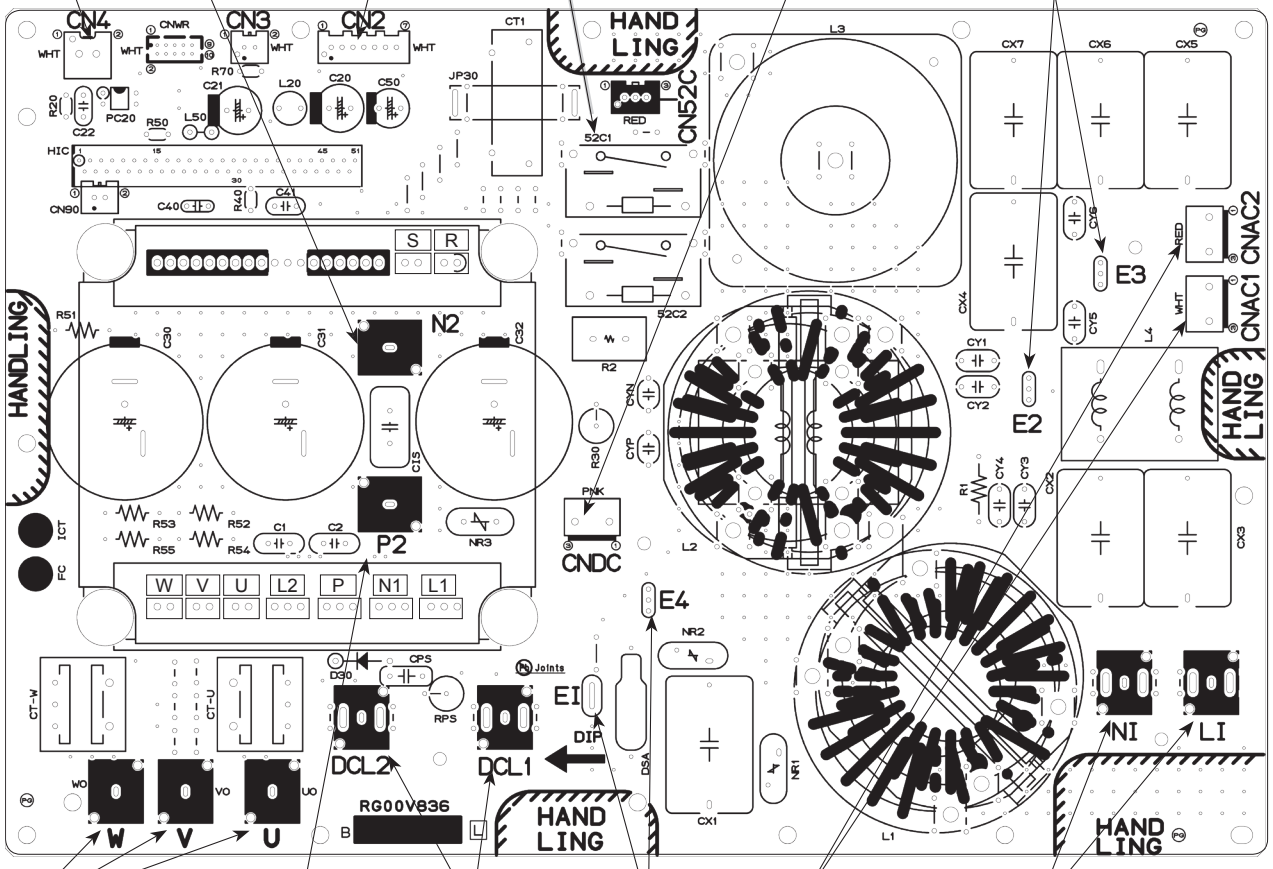
CN2
Connect to the outdoor controller circuit board (CN2)
①–⑤: Transmitting signal to outdoor controller circuit board (0–5 V DC)
②–⑤: Zero cross signal (0–5 V DC)
③–④: 18 V DC
⑥–⑤: 16 V DC
⑦–⑤: 16 V DC

N2
Connect to the smoothing capacitor CB ⊖

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

CNDC
280–380 V DC (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 V AC

P2
Connect to the smoothing capacitor CB ⊕

DCL1, DCL2
Connect to DCL

EI, E4
Connect to the earth

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

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

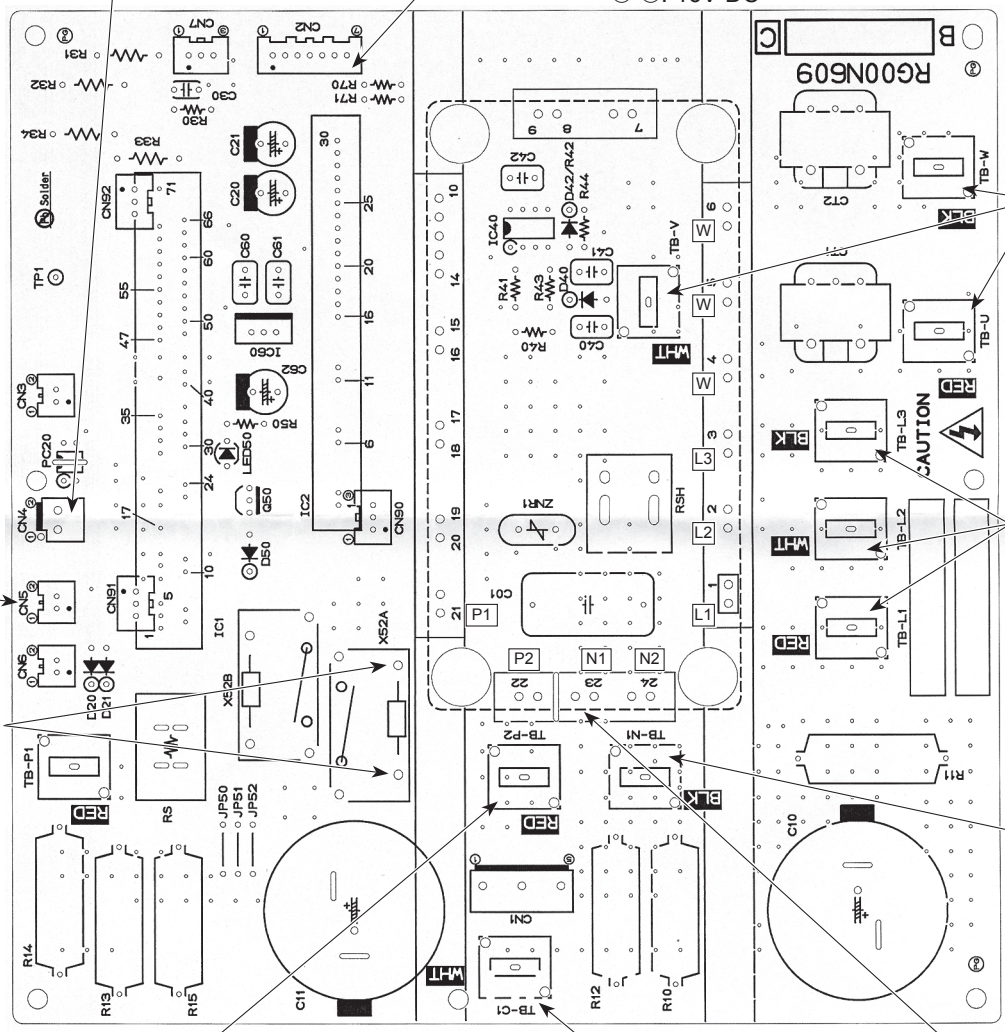
Outdoor power circuit board
PUHZ-P125YHA2.UK
PUHZ-P140YHA2.UK

Brief Check of POWER MODULE
Usually, they are in a state of being short-circuited if they are broken.
Measure the resistance in the following points (connectors, etc.).
If they are short-circuited, it means that they are broken.
1. Check of POWER MODULE
①.Check of DIODE circuit
L1 - P1, L2 - P1, L3 - P1, L1 - N1 , L2 - N1 , L3 - N1
②.Check of IGBT circuit
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.

CN5
Detection of primary current (Connect to the outdoor noise filter circuit board (CNCT))

CN4
Connect to the outdoor controller circuit board (CN4)

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



TB-U, TB-V, TB-W
Connect to the compressor (MC)
Voltage among phases:
10V-400V AC

TB-L1, TB-L2, TB-L3
Connect to the outdoor noise filter circuit board (LO1, LO2, LO3)
400V AC

TAB connecter on X52A
Connect to the RS resistor

TB-N1
Connect to the smoothing capacitor CB2⊖

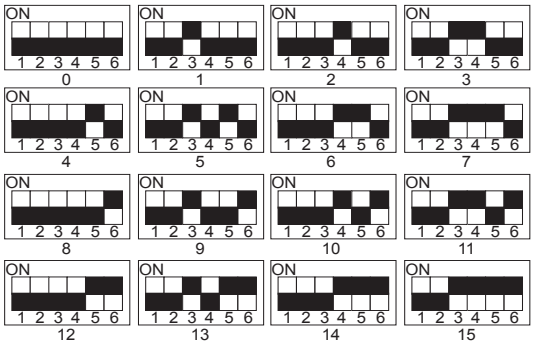
TB-P2
Connect to the smoothing capacitor CB1⊕, reactor(DCL)

TB-C1
Connect to the smoothing capacitor CB1⊖, CB2⊕

POWER MODULE

10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS

(1) Function of switches

Type of switch	Switch	No.	Function	Action by the switch operation		Effective timing
				ON	OFF	
DIP switch	SW1	1	Manual defrost*1	Start	Normal	When compressor is working in heating operation.*2
		2	Abnormal history clear	Clear	Normal	OFF or operating
		3	Refrigerant address setting	 The black square (■) indicates a switch position.		When power supply ON
		4				
		5				
		6				
	SW4	1	Test run	Operating	OFF	Under suspension
		2	Test run mode setting	Heating	Cooling	

*1 Manual defrost should be done as follows:
① Change the DIP SW1-1 on the outdoor controller board from OFF to ON.
② Manual defrost will start by the above operation ① if 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 are satisfied.

*2 Manual defrost can be done if above conditions are 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.

Type of Switch	Switch	No.	Function	Action by the switch operation		Effective timing
				ON	OFF	
DIP switch	SW5	1	No function	—	—	—
		2	Power failure automatic recovery*3	Auto recovery	No auto recovery	When power supply ON
		3,4,5	No function	—	—	—
		6	model select	Refer to next page.		
	SW7*5	1	Setting of demand control*4	SW7-1 / SW7-2 / Power consumption (Demand switch ON): OFF / OFF / 0% (Operation stop); ON / OFF / 50%; OFF / ON / 75%		Always
		2				
		3	Max Hz setting (cooling)	Max Hz(cooling) × 0.8	Normal	Always
		4	Max Hz setting (heating)	Max Hz(heating) × 0.8	Normal	Always
		5	No function	—	—	—
		6	Defrost Hz setting	For high humidity	Normal	Always
	SW8	1	No function	—	—	—
		2	No function	—	—	—
		3	No function	—	—	—
	SW9	1	No function	—	—	—
		2	Function switch	Valid	Normal	Always
		3,4	No function	—	—	—
Push switch	SWP		Pump down	Start	Normal	Under suspension

*3 '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 not all units have DIP SW. Please refer to the indoor unit installation manual.

*4 SW7-1,2 are used for demand control. SW7-1,2 are effective only at the demand control. (Refer to the next page : Special function (b))

*5 Please do not use SW7-3 to 7-5 usually. Trouble might be caused by the usage condition.

(2) Function of connectors and switches

Types	Connector Switch	Function	Action by open/short operation		Effective timing
			Short	Open	
Connector	CN31	Emergency operation	Start	Normal	When power supply ON
SW6 SW5-6	SW6-1 SW6-2 SW6-3 SW6-4 SW6-5 SW6-6 SW6-7 SW6-8 SW5-6	Model select	The black square (■) indicates a switch position.		

MODEL	SW6	SW5-6
100V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
125V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
140V	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
100Y	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
125Y	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6
140Y	ON OFF 1 2 3 4 5 6 7 8	ON OFF 1 2 3 4 5 6

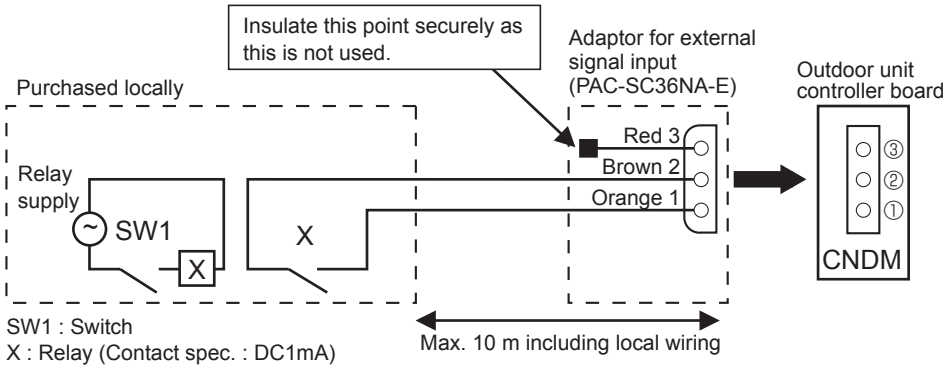
Special function

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

Unit enters into Low-level sound priority mode by external signal input setting.
Inputting external signals to the outdoor unit decreases the outdoor unit operation sound 3 to 4 dB lower than that of usual.
Adding a commercial timer or on-off switch contactor setting to the CNDM connector which is optional contactor for demand input located on the outdoor controller board enables to control compressor operation frequency.
Note: The performance depends on the load of conditioned outdoor temperature.

How to wire

<Low-level sound priority mode circuit>



1) Make the circuit as shown above with Adaptor for external signal input (PAC-SC36NA).
2) Turn SW1 to on for Low-level sound priority mode.
Turn SW1 to off to release Low-level sound priority mode and normal operation.

(b) On demand control (Local wiring)

Demand control is available by external input. In this mode, power consumption is decreased within the range of usual 0–100%.

How to wire

Basically, the wiring is the same with (a).
Connect an SW 1 which is procured at field to the between Orange and Red (1 and 3) of the Adaptor for external signal input (PAC-SC36NA-E), and insulate the tip of the brown lead wire.

It is possible to set it to the following power consumption (compared with ratings) by setting the SW7-1, 2.

SW7-1	SW7-2	Power consumption (SW1 on)
OFF	OFF	0% (Operation stop)
ON	OFF	50%
OFF	ON	75%

<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	Lighted	Lighted	—⇔—	Alternately blinking display
When unit stops	Lighted	Not lighted	00, etc.	Operation mode
When compressor is warming up	Lighted	Not lighted	08, etc.	
When unit operates	Lighted	Lighted	C5, H7, etc.	

(2) Abnormal condition

Indication		Error			
Outdoor controller board		Contents	Error code *1	Inspection method	Detailed reference page
LED1 (Green)	LED2 (Red)				
1 blinking	2 blinking	Connector(63H) is open.	F5	①Check if connector (63H) on the outdoor controller board is not disconnected. ②Check continuity of pressure switch (63H) by tester.	P.36
2 blinking	1 blinking	Miswiring of indoor/outdoor unit connecting wire, excessive number of indoor units (4 units or more)	—	①Check if indoor/outdoor connecting wire is connected correctly. ②Check if 4 or more indoor units are connected to outdoor unit. ③Check if noise entered into indoor/outdoor connecting wire or power supply. ④Re-check error by turning off power, and on again.	P.37 (EA)
		Miswiring of indoor/outdoor unit connecting wire (converse wiring or disconnection)	—		P.37 (Eb)
		Startup time over	—		P.37 (EC)
	2 blinking	Indoor/outdoor unit communication error (signal receiving error) is detected by indoor unit.	E6	①Check if indoor/outdoor connecting wire is connected correctly. ②Check if noise entered into indoor/outdoor connecting wire or power supply. ③Check if noise entered into indoor/outdoor controller board. ④Re-check error by turning off power, and on again.	*2
		Indoor/outdoor unit communication error (transmitting error) is detected by indoor unit.	E7		*2
		Indoor/outdoor unit communication error (signal receiving error) is detected by outdoor unit.	—		P.42 (E8)
		Indoor/outdoor unit communication error (transmitting error) is detected by outdoor unit.	—		P.42 (E9)
	3 blinking	Remote controller signal receiving error is detected by remote controller.	E0	①Check if connecting wire of indoor unit or remote controller is connected correctly. ②Check if noise entered into transmission wire of remote controller. ③Re-check error by turning off power, and on again.	P.42
		Remote controller transmitting error is detected by remote controller.	E3		P.42
		Remote controller signal receiving error is detected by indoor unit.	E4		P.42
		Remote controller transmitting error is detected by indoor unit.	E5		P.42
	4 blinking	Other error codes	–	For details, refer to error codes of the wired remote controller or check the displays on the A-Control Service Tool (PAC-SK52ST) which is connected to the outdoor controller board as shown on the page 78 .	–
		Error code is not defined.	PL	①Be sure to replace the 4-way valve. ②Check refrigerant pipes for disconnection or leakage. ③After the recovery of refrigerant, vacuum dry the whole refrigerant circuit. ④Refer to "10-6. HOW TO CHECK THE PARTS". ⑤Check refrigerant circuit for operation.	P.43
	5 blinking	Serial communication error <Communication between outdoor controller board and outdoor power board> <Communication between outdoor controller board and M-NET P.C. board>	Ed	①Check if connector (CN4) on outdoor controller board and outdoor power board is not disconnected. ②Check if there is poor connection of connector on outdoor controller board (CNMNT and CNVMNT). ③Check M-NET communication signal.	P.43
		Communication error of M-NET system	A0–A8		P.44–P.46

*1. Check code is displayed on remote controller.

*2. Refer to service manual for indoor unit.

Indication		Error			
Outdoor controller board		Contents	Check code *1	Inspection method	Detailed reference page
LED1 (Green)	LED2 (Red)				
3 blinking	1 blinking	Abnormality of shell thermostat	U2	① Check if stop valves are open. ② Check if connectors (LEV-A) on outdoor controller board are not disconnected. ③ Check if unit fills with specified amount of refrigerant. ④ Measure resistance values among terminals on indoor valve and outdoor linear expansion valve using a tester.	P.38
	2 blinking	Abnormal high pressure (High pressure switch 63H operated.)	U1	① Check if indoor/outdoor units have a short cycle on their air ducts. ② Check if connector (63H) on outdoor controller board is not disconnected. ③ Check if heat exchanger and filter are not dirty. ④ Measure resistance values among terminals on linear expansion valve using a tester.	P.38
	3 blinking	Abnormality of outdoor fan motor rotational speed	U8	① Check the outdoor fan motor. ② Check if the connector of TH3 on outdoor controller board is disconnected.	P.39
		Protection from overheat operation (TH3)	Ud		P.41
	4 blinking	Compressor over current breaking (Start-up 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 tester. ④ Check if outdoor unit has a short cycle on its air duct.	P.41
		Compressor over current breaking	UP		P.41
		Abnormality of current sensor (P.B.)	UH		P.41
		Abnormality of power module	U6		P.39
	5 blinking	Open/short of discharge thermistor (TH32)	U3	① Check if connectors (TH3 or TH32, TH6 and TH7) on outdoor controller board and connector (CN3) on outdoor power board are not disconnected. ② Measure resistance value of outdoor thermistors.	P.38
		Open/short of outdoor thermistors (TH3, TH6, TH7 and TH8)	U4		P.39
	6 blinking	Abnormality of heatsink temperature	U5	① Check if indoor/outdoor units have a short cycle on their air ducts. ② Measure resistance value of outdoor thermistor(TH8).	P.39
	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 tester. ③ Check the continuity of contactor (52C). ④ Check if power supply voltage decreases. ⑤ Check the wiring of CNAF.	P.40
4 blinking	1 blinking	Abnormality of room temperature thermistor (TH1)	P1	① Check if connectors (CN20, CN21, CN29 and CN44) on indoor controller board are not disconnected. ② Measure resistance value of indoor thermistors.	*2
		Abnormality of pipe temperature thermistor /Liquid (TH2)	P2		*2
		Abnormality of pipe temperature thermistor/Condenser-Evaporator	P9		*2
	2 blinking	Abnormality of drain sensor (DS) Float switch (FS) connector open	P4	① Check if connector (CN31)(CN4F) 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 tester. ④ Check if drain-up machine works. ⑤ Check drain function.	*2
		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.	*2
	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)	*2

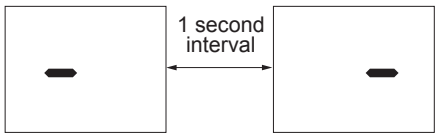
*1. Check code displayed on remote controller
*2. Refer to service manual for indoor unit.

<Outdoor unit operation monitor function>
[When option 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

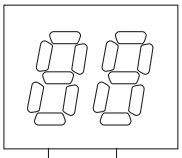
SW2 setting	Display detail	Explanation for display	Unit
ON 1 2 3 4 5 6			

<Digital indicator LED1 working details>
(Be sure 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)
① Operation mode display.

LED1  (Lighting)

SW2
ON 1 2 3 4 5 6 (Initial setting)

The tens digit : Operation mode

Display	Operation Model
O	OFF / FAN
C	COOLING / DRY *
H	HEATING
d	DEFROSTING

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	—

② Display 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.

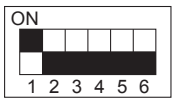
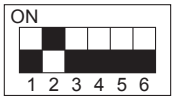
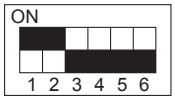
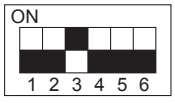
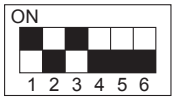
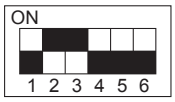
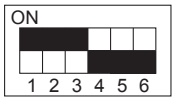
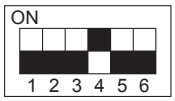
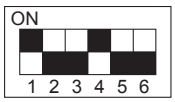
(3) When the display blinks
Inspection code is displayed when compressor stops due to the work of protection devices.

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

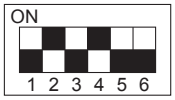
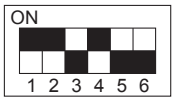
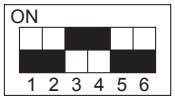
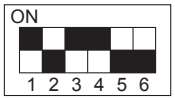
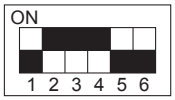
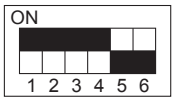
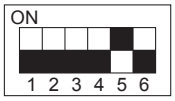
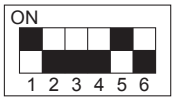
Display	Contents to be inspected (During operation)
U1	Abnormal high pressure (63H operated)
U2	Abnormal high discharging temperature, shortage of refrigerant
U3	Open/short circuit of discharging thermistor (TH32)
U4	Open/short of outdoor unit thermistors (TH3, TH6, TH7 and TH8)
U5	Abnormal temperature of heatsink
U6	Abnormality of power module
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
PL	Abnormality of refrigerant
A0–A7	Communication error of M-NET system

Display	Contents to be inspected (When power is turned on)
F5	63H connector(yellow) is 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

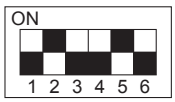
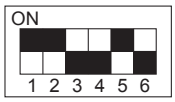
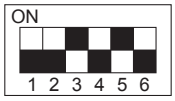
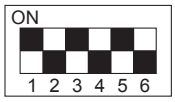
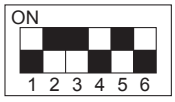
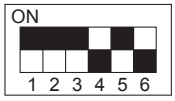
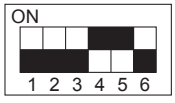
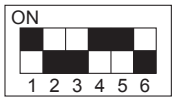
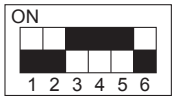
The black square (■) indicates a switch position.

SW2	Display detail	Explanation for display	Unit
	Pipe temperature/Liquid(TH3) −40 to 90	−40 to 90 (When the coil thermistor detects 0℃ or below, "–" and temperature are displayed by turns.) (Example) When −10℃; 0.5 s 0.5 s 2 s −□ →10 →□□	℃
	Comp. surface temperature (TH32) 3 to 217 <VHA4/YHA2> −52 to 221 <VHA5/YHA3>	3 to 217 <VHA4/YHA2> −52 to 221 <VHA5/YHA3> (When the discharge thermistor detects 100℃ or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105℃; 0.5 s 0.5 s 2 s □1 →05 →□□	℃
	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
	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
	Compressor operating current 0 to 50	0 to 50 (Omit the figures after the decimal fractions.)	A
	Compressor operating frequency 0 to 255	0 to 255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 125Hz; 0.5 s 0.5 s 2 s □1 →25 →□□	Hz
	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
	Error postponement code history (1) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement "00" is displayed in case of no postponement.	Code display

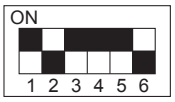
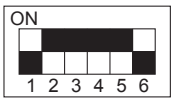
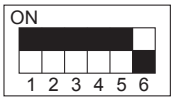
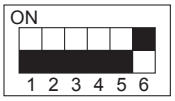
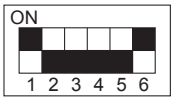
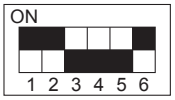
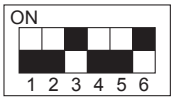
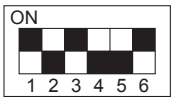
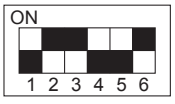
The black square (■) indicates a switch position.

SW2	Display detail	Explanation for display	Unit
	Operation mode on error occurring	Operation mode of when operation stops due to error is displayed by setting SW2 like below. (SW2) 	Code display
	Pipe temperature/Liquid (TH3) on error occurring −40 to 90	−40 to 90 (When the coil thermistor detects 0℃ or below, "–" and temperature are displayed by turns.) (Example) When –15℃; 0.5 s 0.5 s 2 s -□ →15 →□□	
	Comp. surface temperature (TH32) 3 to 217 <VHA4/YHA2> −52 to 221 <VHA5/YHA3>	3 to 217 <VHA4/YHA2> −52 to 221 <VHA5/YHA3> (When the temperature is 100℃ or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130℃; 0.5 s 0.5 s 2 s □1 →30 →□□	℃
	Compressor operating current on error occurring 0 to 20	0 to 20	A
	Error history (1) (latest) Alternate display of abnormal unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Error code history (2) Alternate display of error unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Thermo-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
	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 →50 →□□	Minute
	The number of connected indoor units	0 to 3 (The number of connected indoor units are displayed.)	Unit

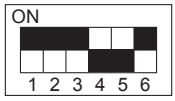
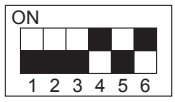
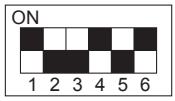
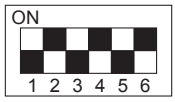
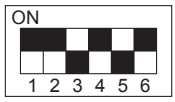
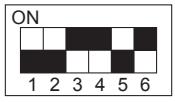
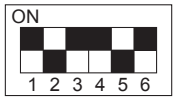
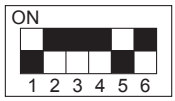
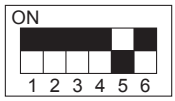
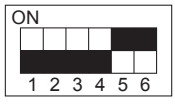
The black square (■) indicates a switch position.

<table>
<tr><th>SW2</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr><td>  </td><td>Capacity setting display</td><td>Displayed as an outdoor capacity code.
<table><tr><th>Capacity</th><th>Code</th></tr><tr><td>P100</td><td>20</td></tr><tr><td>P125</td><td>25</td></tr><tr><td>P140</td><td>28</td></tr></table></td><td>Code display</td></tr>
<tr><td>  </td><td>Outdoor unit setting information</td><td>• The tens digit (Total display for applied setting)
<table><tr><th>Setting details</th><th>Display details</th></tr><tr><td>H·P / Cooling only</td><td>0 : H·P 1 : Cooling only</td></tr><tr><td>Single phase / 3 phase</td><td>0 : Single phase 2 : 3 phase</td></tr></table>• The ones digit
<table><tr><th>Setting details</th><th>Display details</th></tr><tr><td>Defrosting switch</td><td>0 : Normal 1 : For high humidity</td></tr></table>(Example) When heat pump, 3 phase and defrosting (normal) are set up, “20” is displayed.</td><td>Code display</td></tr>
<tr><td>  </td><td>Indoor pipe temperature/Liquid (TH2(1))
Indoor 1
−39 to 88</td><td>−39 to 88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
<tr><td>  </td><td>Indoor pipe temperature/Cond./Eva. (TH5(1))
Indoor 1
−39 to 88</td><td>−39 to 88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
<tr><td>  </td><td>Indoor pipe temperature/Liquid (TH2(2))
Indoor 2
−39 to 88</td><td>−39 to 88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
<tr><td>  </td><td>Indoor pipe temperature/Cond./Eva. (TH5(2))
Indoor 2
−39 to 88</td><td>−39 to 88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
<tr><td>  </td><td>Indoor room temperature (TH1)
8 to 39</td><td>8 to 39</td><td>℃</td></tr>
<tr><td>  </td><td>Indoor setting temperature
17 to 30</td><td>17 to 30</td><td>℃</td></tr>
<tr><td>  </td><td>Outdoor pipe temperature/2-phase (TH6)
−39 to 88</td><td>−39 to 88
(When the temperature is 0℃ or less, “–” and temperature are displayed by turns.)</td><td>℃</td></tr>
</table>

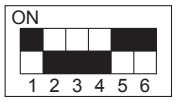
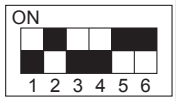
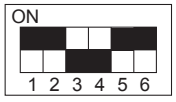
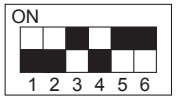
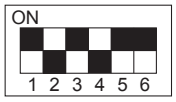
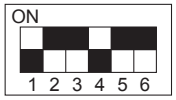
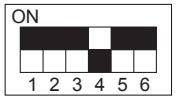
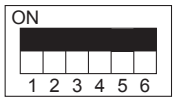
The black square (■) indicates a switch position.

SW2	Display detail	Explanation for display	Unit
	Outdoor ambient temperature (TH7) −39 to 88	−39 to 88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	℃
	Outdoor heatsink 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.)	℃
	Discharge superheat. SHd 0 to 255 Cooling = TH32−TH6 Heating = TH32−TH5	0 to 255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	℃
	Number of defrost cycles 0 to FFFE	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 →□□	2 cycles
	Input current of outdoor unit	0 to 500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)	0.1 A
	U9 error detail history (latest)	Description / Display Normal: 00 Overvoltage error: 01 Undervoltage error: 02 Input current sensor error / L_1-phase open error: 04 Abnormal power synchronous signal: 08 IGBT error (P100–140V) / 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) + IGBT error (20) = 24	Code display
	DC bus voltage 180 to 370	180 to 370 (When it is 100V or more, hundreds digit, tens digit and ones digit are displayed by turns.)	V
	Capacity save 0 to100 When air conditioner is connected to M-NET and capacity save mode is demanded, "0" to "100" is displayed. [When there is no setting of capacity save "100" is displayed.]	0 to 100 (When the capacity is 100% hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 100%; 0.5 s 0.5 s 2 s □1 →00 →□□	%
	Error postponement code history (2) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement "00" is displayed in case of no postponement.	Code display

The black square (■) indicates a switch position.

SW2	Display detail	Explanation for display	Unit
	Error postponement code history (3) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement “00” is displayed in case of no postponement.	Code display
	Error history (3) (Oldest) Alternate display of abnormal unit number and code.	When no error history, “0” and “– –“ are displayed by turns.	Code display
	Error thermistor display [When there is no error thermistor, “–“ is displayed.]	3: Outdoor pipe temperature/Liquid (TH3) 6: Outdoor pipe temperature/2-phase (TH6) 7: Outdoor ambient temperature (TH7) 8: Outdoor heatsink (TH8)	Code display
	Operation frequency on error occurring 0 to 255	0 to 255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 125Hz; 0.5 s 0.5 s 2 s □1 →25 →□□	Hz
	Fan step on error occurring 0 to 10	0 to 10	Step
	LEV-A opening pulse on error occurring 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
	Indoor room temperature (TH1) on error occurring 8 to 39	8 to 39	℃
	Indoor pipe temperature/Liquid (TH2) on error occurring −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 →□□	℃
	Indoor pipe temperature/Cond./Eva. (TH5) on error occurring −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 →□□	℃
	Outdoor pipe temperature/2-phase (TH6) on error occurring −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 →□□	℃

The black square (■) indicates a switch position.

SW2	Display detail	Explanation for display	Unit
	Outdoor ambient temperature (TH7) on error occurring −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 →□□	℃
	Outdoor heatsink temperature (TH8) on error occurring −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.)	℃
	Discharge super heat on error occurring SHd 0 to 255 Cooling = TH32−TH6 Heating = TH32−TH5	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 →□□	℃
	Sub cool on error occurring. SC 0 - 130 [Cooling = TH6-TH3 Heating = TH5-TH2]	0 - 130 (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 secs. 0.5secs. 2 secs. □1 →15 →□□	℃
	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 →□□	℃
	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.)	℃
	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.	℃
	U9 error details (To be shown while error call is deferred.)	Description / Display Normal: 00 Overvoltage error: 01 Undervoltage error: 02 Input current sensor error / L_1-phase open error: 04 Abnormal power synchronous signal: 08 IGBT error (P100–140V) / 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) + IGBT error (20) = 24	Code display

11 FUNCTION SETTING

11-1. UNIT FUNCTION SETTING BY THE REMOTE CONTROLLER

Each function can be set as necessary using the remote controller. The setting of function for each unit can only be done by the remote controller. Select function available from the table 1.

<Table 1> Function selections

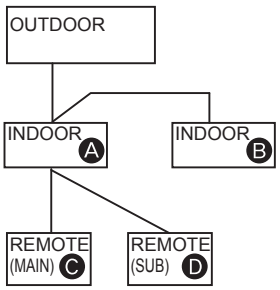
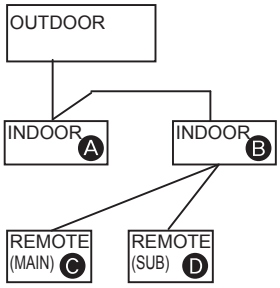
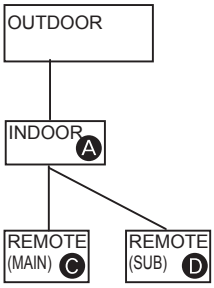
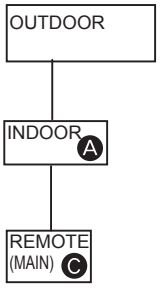
(1) Functions available when setting the unit number to 00 (Select 00 referring to ④ setting the indoor unit number.)

Function	Settings	Mode No.	Setting No.	Initial setting (when sent from the factory)	Remarks
Power failure automatic recovery	OFF	01	1		The setting is applied to all the units in the same refrigerant system.
	ON		2	●	
Indoor temperature detecting *1	Average data from each indoor unit	02	1	●	
	Data from the indoor unit with remote controller		2		
	Data from main remote controller		3		
LOSSNAY connectivity	Not supported	03	1	●	
	Supported (Indoor unit does not intake outdoor air through LOSSNAY)		2		
	Supported (Indoor unit intakes outdoor air through LOSSNAY)		3		
Power supply voltage	240V	04	1		
	220V,230V		2	●	
Frost prevention temperature	2℃ (Normal)	15	1	●	
	3℃		2		
Humidifier control	When the compressor operates, the humidifier also operates.	16	1	●	
	When the fan operates, the humidifier also operates.		2		
Change of defrosting control	Standard	17	1	●	
	For high humidity		2		

*1 The functions above are available only when the wired remote controller is used. The functions are not available for floor standing models.

Meaning of "Function setting"

Mode02: indoor temperature detecting

No.	Indoor temperature(ta)=					
No.1	Average data of the sensor on all the indoor units	Initial setting	ta=(A+B)/2	ta=(A+B)/2	ta=A	ta=A
No.2	The data of the sensor on the indoor unit that connected with remote controller		ta=A	ta=B	ta=A	ta=A
No.3	The data of the sensor on main remote controller.		ta=C	ta=C	ta=C	ta=C

*2 Can be set only when the outdoor unit is an inverter type.

(2) Functions available when setting the unit number to 01–03 or AL (07 in case of wireless remote controller)

- When setting functions for an indoor unit in an independent system, set the unit number to 01 referring to ④ setting the indoor unit number of Operating Procedure.
- When setting functions for a simultaneous- Twin Triple indoor unit system, set the unit number to 01 to 03 for each indoor unit in case of selecting different functions for each unit referring to ④ setting the indoor unit number of Operating Procedure.
- When setting the same functions for an entire simultaneous Twin Triple-indoor unit system, set refrigerant address to AL (07 in case of wireless remote controller) referring to ④ setting the indoor unit number of Operating Procedure.

Function	Settings	Mode No.	Setting No.	Initial setting (factory setting) —: Not available								
				4-way casette	Ceiling concealed	Ceiling suspended			Wall mounted			Floor standing
				PLA-EA	PEAD-EA(2) PEAD-GA	PCA-GA(2)	PCA-KA	PCA-HA	PSA-GAL PKA-FAL(2)	PKA-HAL	PSA-KAL	PSA-GA
Filter sign	100 h	07	1					●	●	●	●	
	2500 h		2	●		●	●					●
	No filter sign indicator		3		●							
Air flow (Fan speed)	Quiet	08	1		–			–	–			–
	Standard		2	●	–	●	●	–	–	●	●	–
	High ceiling		3		–			–	–			–
No. of air outlets	4 directions	09	1	●	–	–	–	–	–	–	–	–
	3 directions		2		–	–	–	–	–	–	–	–
	2 directions		3		–	–	–	–	–	–	–	–
Optional high efficiency filter	Not supported	10	1	●	–	●	●	–	–	–	–	–
	Supported		2		–			–	–	–	–	–
Vane setting	No vanes (Vane No. 3 setting: PLA only)	11	1		–			–	–	–	–	–
	Vane No.1 setting		2		–	●	●	–	–	–	–	–
	Vane No.2 setting		3	●	–			–	–	–	–	–
3D i-See sensor positioning	Position ① ("□" stamp position)	12	1		–	–	–	–	–	–	–	–
	(Position ②)		2		–	–	–	–	–	–	–	–
	Position ③ ("□" stamp position)		3	●	–	–	–	–	–	–	–	–
Optional humidifier (PLA only)	Not supported	13	1	●	–	–	–	–	–	–	–	–
	Supported		2		–	–	–	–	–	–	–	–
Vane differential setting in heating mode (cold wind prevention)	No.1 setting (TH5: 24–28℃)	14	1		–			–				–
	No.2 setting (Standard, TH5: 28–32℃)		2	●	–	●	●	–	●	●	●	–
	No.3 setting (TH5: 32–38℃)		3		–			–				–
Swing	Not available: Swing / Available: Wave air flow } PLA-EA	23	1									–
			2	●	–	●	●	–	●	●	●	–
Set temperature in heating mode (4 deg-up)*	Not available	24	1	●	●	●		●				●
	Available		2						●			
Fan speed during the heating thermo-OFF	Extra low	25	1	●	●	●	●	●	●	●	●	●
	Stop		2									
	Setting fan speed		3									
3D i-See sensor ceilling height setting	Low ceilling	26	1		–	–	–	–	–	–	–	–
	Standard		2	●	–	–	–	–	–	–	–	–
	High ceilling		3		–	–	–	–	–	–	–	–
Fan speed during the cooling thermo-OFF	Setting fan speed	27	1		●	●	●	●	●	●	●	●
	Stop		2									
	Extra low		3	●	–	–	–	–	–	–	–	–
Detection of abnormality of the pipe temperature (P8)	Available	28	1	●	●	●	●	●	●	●	●	●
	Not available		2									

*PKA-HAL/KAL: 2 deg-up

PEAD-RP·JA(L)Q

Function	Settings	Mode No.	Setting No.	● : Initial setting (Factory setting)
Filter sign	100h	07	1	
	2500h		2	
	No filter sign indicator		3	●
External static pressure	35/50/70/100/150Pa	08	Refer to the right table	
External static pressure	35/50/70/100/150Pa	10	Refer to the right table	
Set temperature in heating mode (4 deg up)	Available	24	1	●
	Not available		2	
Fan speed during the heating thermo OFF	Extra low	25	1	●
	Stop		2	
	Set fan speed		3	
Fan speed during the cooling thermo OFF	Set fan speed	27	1	●
	Stop		2	
Detection of abnormality of the pipe	Available	28	1	●
	Not available		2	

External static pressure	Setting No.		Initial setting (Factory setting)
	Mode No. 08	Mode No. 10	
35Pa	2	1	
50Pa	3	1	●
70Pa	1	2	
100Pa	2	2	
150Pa	3	2	

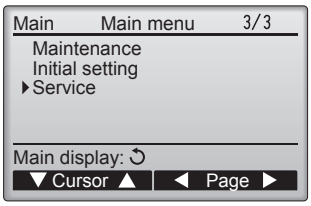
11-1-1. Selecting functions using the wired remote controller <PAR-3xMAA ("x" represents 0 or later)>

<Service menu>

Maintenance password is required

① Select "Service" from the Main menu, and press the ✓ button.

At the main display, the menu buttom and select "Service" to make the maintenance setting.



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② When the Service menu is selected, a window will appear asking for the password.

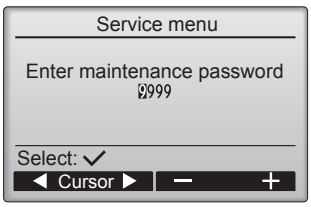
To enter the current maintenance password (4 numerical digits), move the cursor to the digit you want to change with the F1 or F2 button.

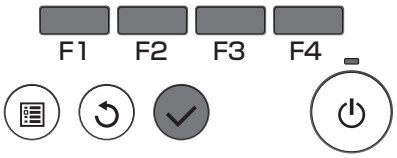
▼

Set each number (0 through 9) with the F3 or F4 button.

▼

Then, press the ✓ button.





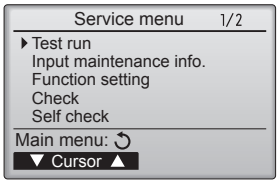
Note: The initial maintenance password is "9999". Change the default password as necessary to prevent unauthorized access. Have the password available for those who need it.

: If you forget your maintenance password, you can initialize the password to the default password "9999" by pressing and holding the F1 and F2 buttons simultaneously for three seconds on the maintenance password setting screen.

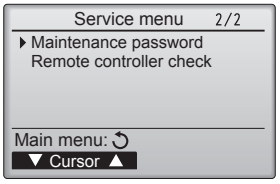
---

③ If the password matches, the Service menu will appear.

The type of menu that appears depends on the connected indoor units' type.



▼



Note: Air conditioning units may need to be stopped to make certain settings. There may be some settings that cannot be made when the system is centrally controlled.

▼

A screen will appear that indicates the setting has been saved.

Navigating through the screens

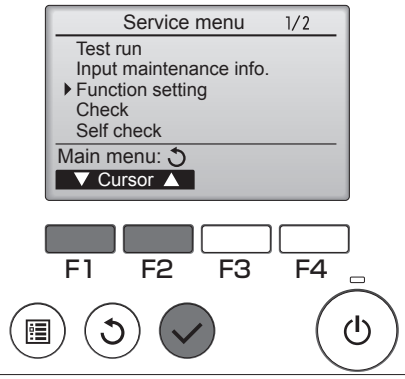
- To go back to the Service menu ..... ▣ button
- To return to the previous screen..... ↺ button

<Function setting>

① Select "Service" from the Main menu, and press the ✓ button.

▼

Select "Function setting" with the F1 or F2 button, and press the ✓ button.



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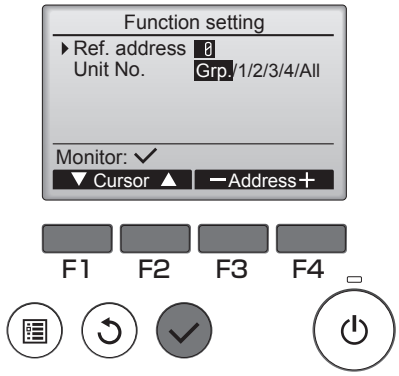
② Set the indoor unit refrigerant addresses and unit numbers with the F1 through F4 buttons, and then press the ✓ button to confirm the current setting.

<Checking the indoor unit No.>
When the ✓ button is pressed, the target indoor unit will start fan operation. If the unit is common or when running all units, all indoor units for the selected refrigerant address will start fan operation.



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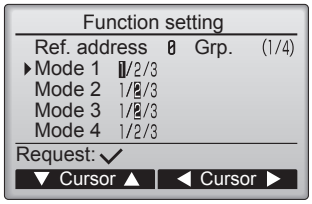
③ When data collection from the indoor units is completed, the current settings appears highlighted.
Non-highlighted items indicate that no function settings are made.
Screen appearance varies depending on the "Unit No." setting.



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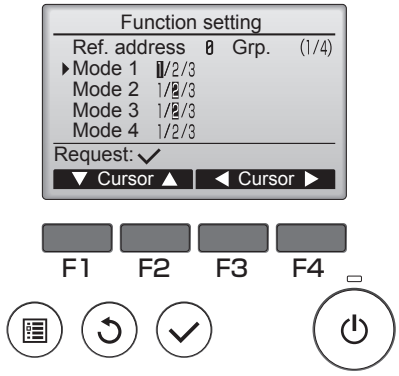
④ Use the F1 or F2 button to move the cursor to select the mode number, and change the setting number with the F3 or F4 button.



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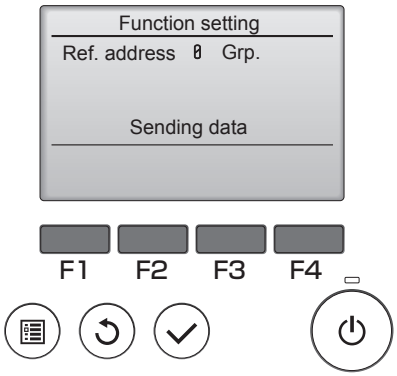
⑤ When the settings are completed, press the ✓ button to send the setting data from the remote controller to the indoor units.
When the transmission is successfully completed, the screen will return to the Function setting screen.

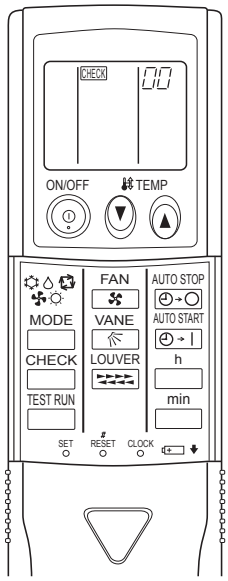
Note: • Make the above settings only on Mr. Slim units as necessary.
• The above function settings are not available for the City Multi units.
• Table 1 summarizes the setting options for each mode number. Refer to the indoor unit Installation Manual for the detailed information about initial settings, mode numbers, and setting numbers for the indoor units.
• Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.



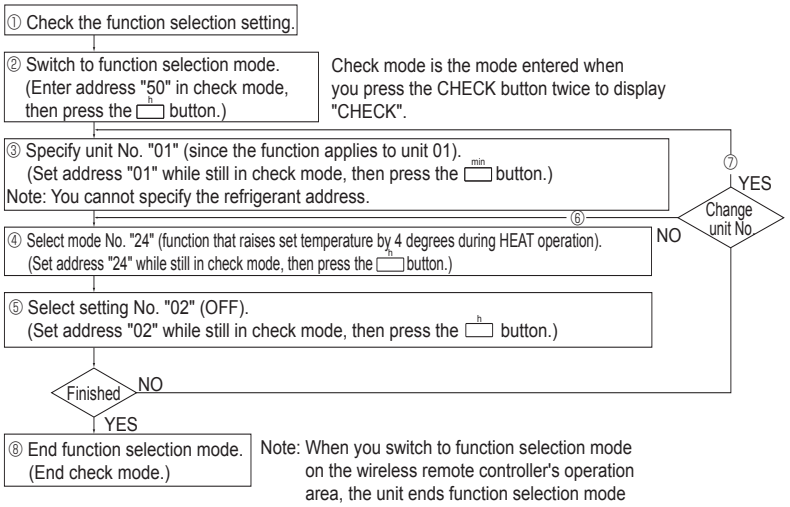
11-1-2. Selecting functions using the wireless remote controller (Type C)

Functions can be selected with the wireless remote controller. Function selection using wireless remote controller is available only for refrigerant system with wireless function. Refrigerant address cannot be specified by the wireless remote controller.

[Flow of function selection procedure]



The flow of the function selection procedure is shown below. This example shows how to turn off the function that raises the set temperature by 4 degrees during HEAT operation. (Mode 24: 2)
The procedure is given after the flow chart.



[Operating instructions]

① Check the function settings.

② Press the CHECK button twice continuously. → CHECK is lit and "00" blinks.
Press the TEMP ▼ button once to set "50". Direct the wireless remote controller toward the receiver of the indoor unit and press the h button.

③ Set the unit number.
Press the TEMP ▲ ▼ button to set the unit number. (Press "01" to specify the indoor unit whose unit number is 01.)
Direct the wireless remote controller toward the receiver of the indoor unit and press the min button.

(By setting unit number with the min button, specified indoor unit starts performing fan operation.
Detect which unit is assigned to which number using this function. If unit number is set to AL, all the indoor units in same refrigerant system start performing fan operation simultaneously.)

Notes:
1. If a unit number that cannot be recognized by the unit is entered, 3 beeps of 0.4 seconds will be heard. Reenter the unit number setting.
2. If the signal was not received by the sensor, you will not hear a beep or a "double beep" may be heard. Reenter the unit number setting.

④ Select a mode.
Press the TEMP ▲ ▼ button to set a mode. Press "24" to turn on the function that raises the set temperature by 4 degrees during heat operation. Direct the wireless remote controller toward the sensor of the indoor unit and press the h button.
→ The sensor-operation indicator will flash and beeps will be heard to indicate the current setting number.
Current setting number: 1 = 1 beep (1 second)
2 = 2 beeps (1 second each)
3 = 3 beeps (1 second each)

Notes:
1. If a mode number that cannot be recognized by the unit is entered, 3 beeps of 0.4 seconds will be heard. Reenter the mode number.
2. If the signal was not received by the sensor, you will not hear a beep or a "double beep" may be heard. Reenter the mode number.

⑤ Select the setting number.
Press the TEMP ▲ ▼ button to select the setting number. (02: Not available)
Direct the wireless remote controller toward the receiver of the indoor unit and press the h button.
→ The sensor-operation indicator will flash and beeps will be heard to indicate the the setting number.
Setting number: 1 = 2 beeps (0.4 seconds each)
2 = 2 beeps (0.4 seconds each, repeated twice)
3 = 2 beeps (0.4 seconds each, repeated 3 times)

Notes:
1. If a setting number that cannot be recognized by the unit is entered, the setting will turn back to the original setting.
2. If the signal was not received by the sensor, you will not hear a beep or a "double beep" may be heard. Reenter the setting number.

⑥ Repeat steps ④ and ⑤ to make an additional setting without changing unit number.

⑦ Repeat steps ③ to ⑤ to change unit number and make function settings on it.

⑧ Complete the function settings
Press ⏻ button.

Do not use the wireless remote controller for 30 seconds after completing the function setting.

11-1-3. Selecting functions using the wireless remote controller <PAR-SL100A-E>

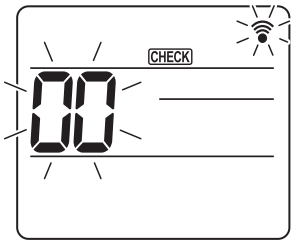


Fig. 11-1

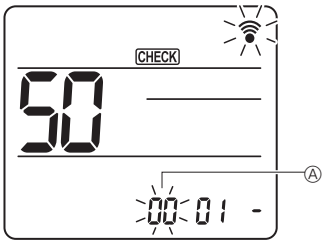


Fig. 11-2

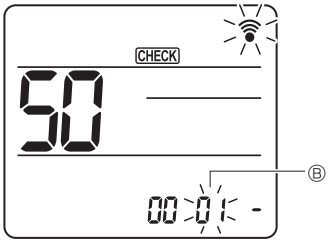


Fig. 11-3

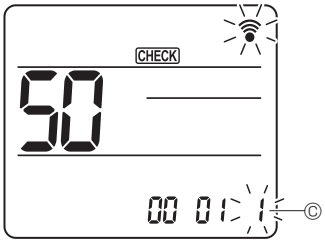


Fig. 11-4

① Going to the function select mode
Press the MENU button between of 5 seconds.
(Start this operation from the status of remote controller display turned off.)
[CHECK] is lighted and "00" blinks. (Fig. 11-1)
Press the ^ v button to set the "50".
Direct the wireless remote controller toward the receiver of the indoor unit and press the SET button.

② Setting the unit number
Press the ^ v button to set unit number Ⓐ. (Fig. 11-2)
Direct the wireless remote controller toward the receiver of the indoor unit and press the SET button.

③ Select a mode
Press the ^ v button to set Mode number Ⓑ. (Fig. 11-3)
Direct the wireless remote controller toward the receiver of the indoor unit and press the SET button.
Current setting number: 1=1 beep (1 second)
2=2 beep (1 second each)
3=3 beep (1 second each)

④ Selecting the setting number
Use the ^ v button to change the Setting number Ⓒ. (Fig. 11-4)
Direct the wireless remote controller toward the receiver of the indoor unit and press the SET button.

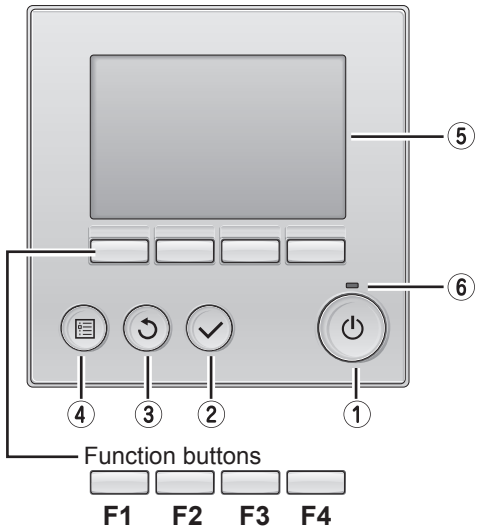
⑤ To select multiple functions continuously
Repeat select ③ and ④ to change multiple function settings continuously.

⑥ Complete function selection
Direct the wireless remote controller toward the sensor of the indoor unit and press the ⏻ OFF/ON button.

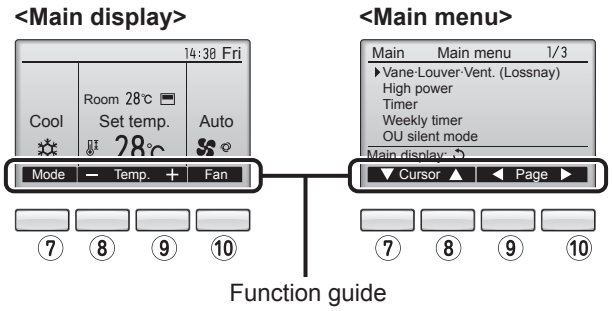
Note:
Make the above settings on Mr. Slim units as necessary.
- **Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.**

11-2. FUNCTION SELECTION OF REMOTE CONTROLLER

11-2-1. <PAR-3xMAA ("x" represents 0 or later)>



The functions of the function buttons change depending on the screen. Refer to the button function guide that appears at the bottom of the LCD for the functions they serve on a given screen.
When the system is centrally controlled, the button function guide that corresponds to the locked button will not appear.



① ON/OFF button

Press to turn ON/OFF the indoor unit.

② SELECT button

Press to save the setting.

③ RETURN button

Press to return to the previous screen.

④ MENU button

Press to bring up the Main menu.

⑤ Backlit LCD

Operation settings will appear.
When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the ⏻ (ON/OFF) button)

⑥ ON/OFF lamp

This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.

⑦ Function button F1

Main display : Press to change the operation mode.
Main menu : Press to move the cursor down.

⑧ Function button F2

Main display : Press to decrease temperature.
Main menu : Press to move the cursor up.

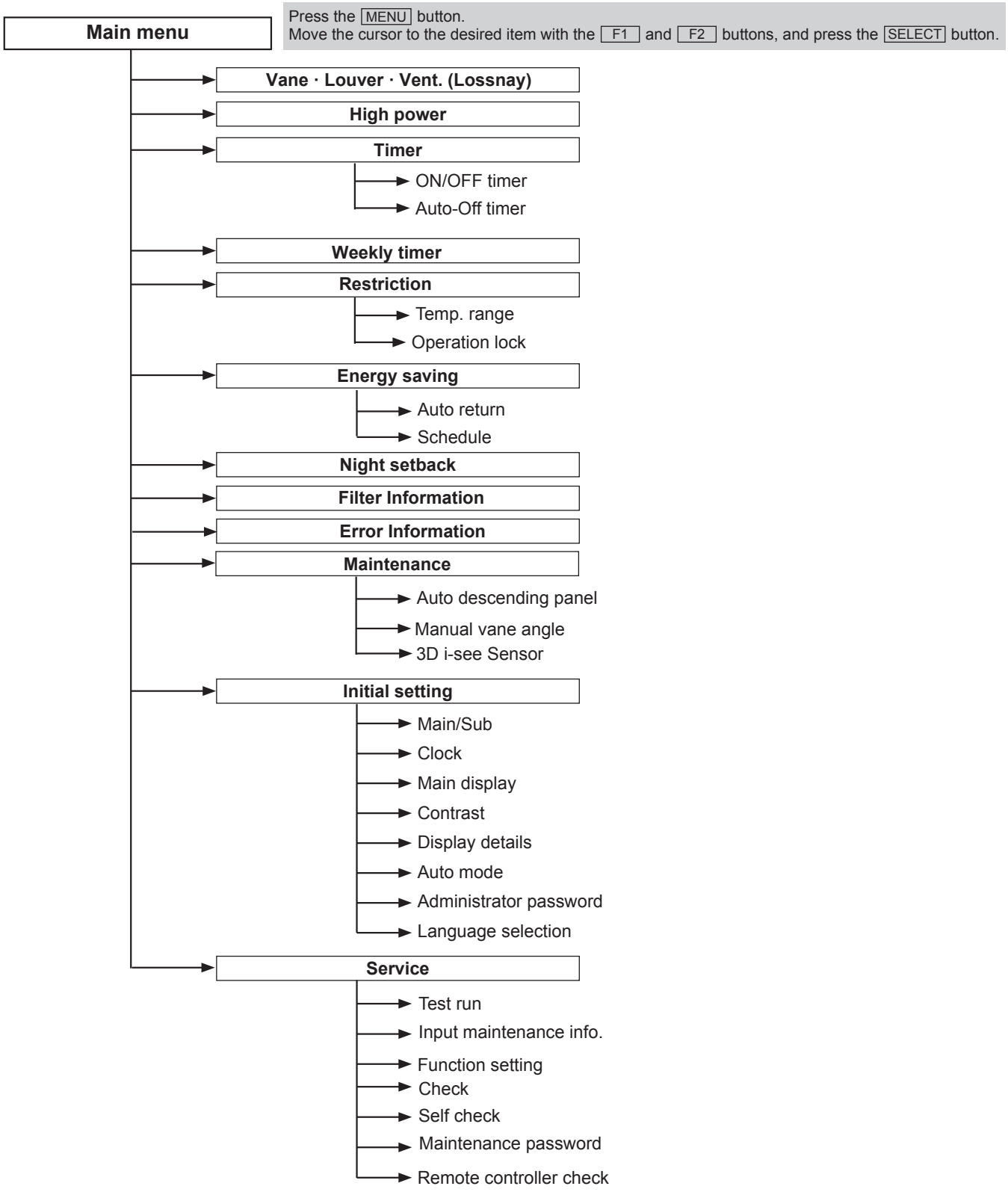
⑨ Function button F3

Main display : Press to increase temperature.
Main menu : Press to go to the previous page.

⑩ Function button F4

Main display : Press to change the fan speed.
Main menu : Press to go to the next page.

<Menu structure>



Not all functions are available on all models of indoor units.

<Main menu list>

Setting and display items		Setting details
Vane · Louver · Vent. (Lossnay)		**Use to set the vane angle.** • Select a desired vane setting from 5 different settings. **Use to turn ON/OFF the louver.** • Select a desired setting from "ON" and "OFF." **Use to set the amount of ventilation.** • Select a desired setting from "Off," "Low," and "High."
High power		**Use to reach the comfortable room temperature quickly.** • Units can be operated in the High-power mode for up to 30 minutes.
Timer	ON/OFF timer*	**Use to set the operation ON/OFF times.** • Time can be set in 5-minute increments.
	Auto-Off timer	**Use to set the Auto-Off time.** • Time can be set to a value from 30 to 240 in 10-minute increments.
Weekly timer*		**Use to set the weekly operation ON/OFF times.** • Up to 8 operation patterns can be set for each day. (Not valid when the ON/OFF timer is enabled.)
Restriction	Temp. range	**Use to restrict the preset temperature range.** • Different temperature ranges can be set for different operation modes.
	Operation lock	**Use to lock selected functions.** • The locked functions cannot be operated.
Energy saving	Auto return	**Use to get the units to operate at the preset temperature after performing energy-save operation for a specified time period.** • Time can be set to a value from 30 and 120 in 10-minute increments. (This function will not be valid when the preset temperature ranges are restricted.)
	Schedule*	**Set the start/stop times to operate the units in the energy-save mode for each day of the week, and set the energy-saving rate.** • Up to 4 energy-save operation patterns can be set for each day. • Time can be set in 5-minute increments. • Energy-saving rate can be set to a value from 0% or 50 to 90% in 10% increments.
Night setback*		**Use to make Night setback settings.** • Select "Yes" to enable the setting, and "No" to disable the setting. The temperature range and the start/stop times can be set.
Filter information		**Use to check the filter status.** • The filter sign can be reset.
Error information		**Use to check error information when an error occurs.** • Check code, error source, refrigerant address, unit model, manufacturing number, contact information (dealer's phone number) can be displayed. (The unit model, manufacturing number, and contact information need to be registered in advance to be displayed.)
Maintenance	Auto descending panel	**Auto descending panel (Optional parts) Up/Down you can do.**
	Manual vane angle	**Use to set the vane angle for each vane to a fixed position.**
	3D i-see Sensor	**Use to set the following functions for 3D i-see Sensor.** • Air distribution • Energy saving option • Seasonal airflow
Initial setting	Main/Sub	**When connecting 2 remote controllers, one of them needs to be designated as a sub controller.**
	Clock	**Use to set the current time.**
	Main display	**Use to switch between "Full" and "Basic" modes for the Main display.** • The initial setting is "Full."
	Contrast	**Use to adjust screen contrast.**
	Display details	**Make the settings for the remote controller related items as necessary.** **Clock:** The initial settings are "Yes" and "24h" format. **Temperature:** Set either Celsius (°C) or Fahrenheit (°F). **Room temp. :** Set Show or Hide. **Auto mode:** Set the Auto mode display or Only Auto display.
	Auto mode	**Whether or not to use the Auto mode can be selected by using the button.** **This setting is valid only when indoor units with the Auto mode function are connected.**
	Administrator password	**The administrator password is required to make the settings for the following items.** • Timer setting • Energy-save setting • Weekly timer setting • Restriction setting • Outdoor unit silent mode setting • Night set back
	Language selection	**Use to select the desired language.**
Service	Test run	**Select "Test run" from the Service menu to bring up the Test run menu.** • Test run • Drain pump test run
	Input maintenance	**Select "Input maintenance Info." from the Service menu to bring up the Maintenance information screen.** **The following settings can be made from the Maintenance Information screen.** • Model name input • Serial No. input • Dealer information input
	Function setting	**Make the settings for the indoor unit functions via the remote controller as necessary.**
	Check	**Error history:** Display the error history and execute “delete error history”. **Refrigerant leak check:** Refrigerant leaks can be judged. **Smooth maintenance:** The indoor and outdoor maintenance data can be displayed. **Request code:** Details of the operation data including each thermistor temperature and error history can be checked.
	Self check	**Error history of each unit can be checked via the remote controller.**
	Maintenance password	**Use to change the maintenance password.**
	Remote controller check	**When the remote controller does not work properly, use the remote controller checking function to trouble-shoot the problem.**

* Clock setting is required.

12 EASY MAINTENANCE FUNCTION

12-1. SMOOTH MAINTENANCE

12-1-1. <PAR-3xMAA ("x" represents 0 or later)>

Maintenance data, such as the indoor/outdoor unit's heat exchanger temperature and compressor operation current can be displayed with "Smooth maintenance".

This cannot be executed during test operation.

Depending on the combination with the outdoor unit, this may not be supported by some models.

Select "Service" from the Main menu, and press the ✓ button.

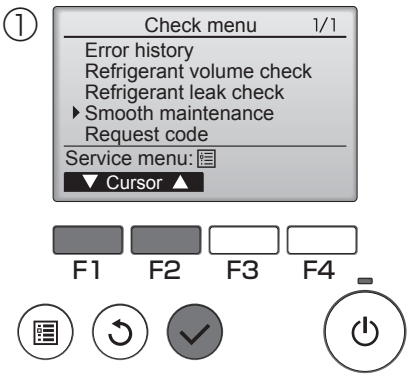
▼

Select "Check" with the F1 or F2 button, and press the ✓ button.

▼

Select "Smooth maintenance" with the F1 or F2 button, and press the ✓ button.

①



Set each item.

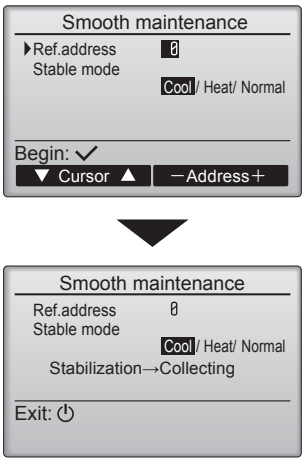
Select the item to be changed with the F1 or F2 button.

Select the required setting with the F3 or F4 button.

■<Ref.address>setting [0] – [15]
■<Stable mode>setting [Cool] / [Heat] / [Normal]

Press the ✓ button, Fixed operation will start.
Note: Stable mode will take approx. 20 minutes.

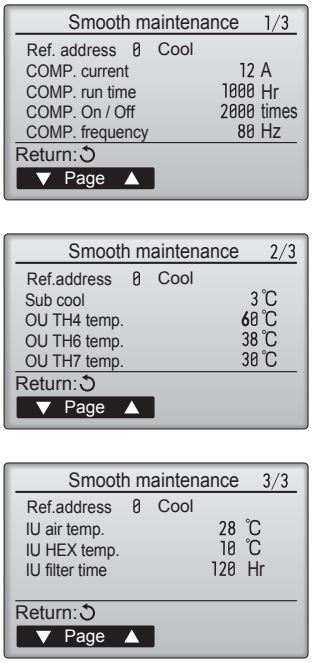
②



The operation data will appear.

The Compressor-Accumulated operating (COMP. run) time is 10-hour unit, and the Compressor-Number of operation times (COMP. ON/OFF) is a 100-time unit (fractions discarded).

③



Navigating through the screens

- To go back to the Service menu ..... ▣ button
- To return to the previous screen ..... ↺ button

<Guide for operation condition>

Inspection item				Result	
Power supply	Loose connection	Terminal block	Breaker	Good	Retightened
			Outdoor Unit	Good	Retightened
			Indoor Unit	Good	Retightened
		(Insulation resistance)			MΩ
		(Voltage)			V
Compressor		① Accumulated operating time			Time
		② Number of ON/OFF times			Times
		③ Current			A
Outdoor Unit	Temperature	④ Refrigerant/heat exchanger temperature		COOL ℃	HEAT ℃
		⑤ Refrigerant/discharge temperature		COOL ℃	HEAT ℃
		⑥ Air/outside air temperature		COOL ℃	HEAT ℃
		(Air/discharge temperature)		COOL ℃	HEAT ℃
	Cleanliness	Appearance		Good	Cleaning required
		Heat exchanger		Good	Cleaning required
		Sound/vibration		None	Present
Indoor Unit	Temperature	⑦ Air/intake air temperature		COOL ℃	HEAT ℃
		(Air/discharge temperature)		COOL ℃	HEAT ℃
		⑧ Refrigerant/heat exchanger temperature		COOL ℃	HEAT ℃
		⑨ Filter operating time*			Time
	Cleanliness	Decorative panel		Good	Cleaning required
		Filter		Good	Cleaning required
		Fan		Good	Cleaning required
		Heat exchanger		Good	Cleaning required
		Sound/vibration		None	Present

* The filter operating time is the time that has elapsed since the filter was reset.

Check Points

Enter the temperature differences between ⑤, ④, ⑦ and ⑧ into the graph given below.
Operation state is determined according to the plotted areas on the graph.
For data measurements, set the fan speed to "Hi" before activating maintenance mode.

Classification		Item	Result	
Cool	Inspection	Is "D000" displayed stably on the remote controller?	Stable	Unstable
	Temperature difference	(⑤ Discharge temperature) – (④ Outdoor heat exchanger temperature)	℃	
		(⑦ Indoor intake air temperature) – (⑧ Indoor heat exchanger temperature)	℃	
Heat	Inspection	Is "D000" displayed stably on the remote controller?	Stable	Unstable
	Temperature difference	(⑤ Discharge temperature) – (⑧ Indoor heat exchanger temperature)	℃	
		(⑧ Indoor heat exchanger temperature) – (⑦ Indoor intake air temperature)	℃	

Notes:
1. Fixed Hz operation may not be possible under the following temperature ranges.
   A) In cool mode, outdoor intake air temperature is 40℃ or higher or indoor intake air temperature is 23℃ or lower.
   B) In heat mode, outdoor intake air temperature is 20℃ or higher or indoor intake air temperature is 25℃ or lower.
2. If the air conditioner is operated at a temperature range other than the ones above but operation is not stabilized after 30 minutes or more have elapsed, carry out inspection.
3. In heat mode, the operation state may vary due to frost forming on the outdoor heat exchanger.

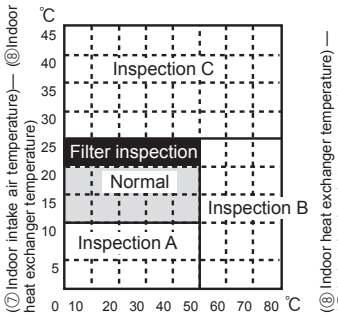
Area	Check item	Judgment	
		Cool	Heat
Normal	Normal operation state		
Filter inspection	Filter may be clogged. *1		
Inspection A	Performance has dropped. Detailed inspection is necessary.		
Inspection B	Refrigerant amount is dropping.		
Inspection C	Filter or indoor heat exchanger may be clogged.		

Note:
The above judgement is just a guide based on Japanese standard conditions. It may be changed depending on the indoor and outdoor temperature.

*1 It may be judged as "Filter inspection" due to the outdoor temperature, even though it is not clogged.

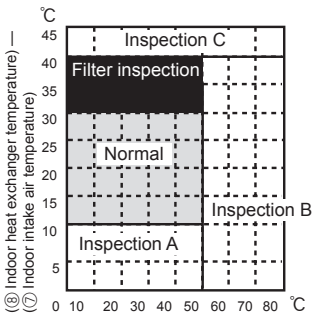
Result

Cool mode



[⑤ Discharge temperature] – [④ Outdoor heat exchanger temperature)

Heat mode



[⑤ Discharge temperature] – [⑧ Indoor heat exchanger temperature)

13 MONITORING THE OPERATION DATA BY THE REMOTE CONTROLLER

13-1. HOW TO "MONITOR THE OPERATION DATA"

13-1-1. <PAR-3xMAA ("x" represents 0 or later)>

Details on the operation data including each thermistor temperature and error history can be confirmed with the remote controller.

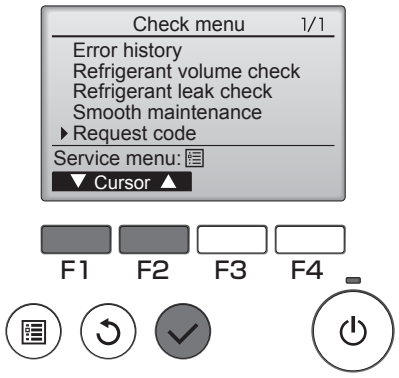
① Select "Service" from the Main menu, and press the ⊙ button.

▼

Select "Check" with the F1 or F2 button, and press the ⊙ button.

▼

Select "Request code" with the F1 or F2 button, and press the ⊙ button.



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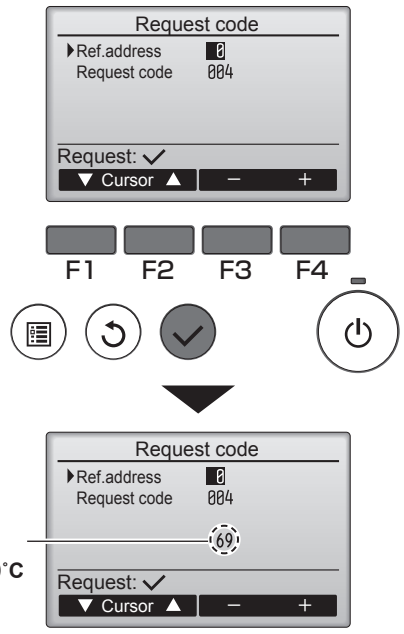
② Set the Refrigerant address and Request code.

Select the item to be changed with the F1 or F2 button.

Select the required setting with the F3 or F4 button.

■<Ref.address>setting [0] – [15]
■<Request code>setting

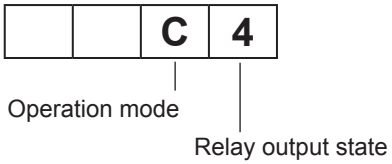
Press the ⊙ button, Data will be collected and displayed.



Request code: 004
Discharge temperature: 69˚C

<Operation state> (Request code "0")

Data display



1) Operation mode

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

2) 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	

13-2. REQUEST CODE LIST

Certain indoor/outdoor combinations do not have the request code function; therefore, no request codes are displayed.

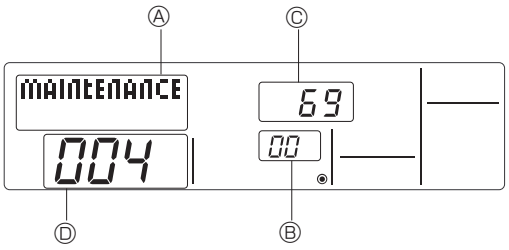
Request code	Request content	Description (Display range)	Unit	Remarks
0	Operation state	Refer to 13-2-1. Detail Contents in Request Code.	–	
1	Compressor-Operating current (rms)	0–50	A	
2	Compressor-Accumulated operating time	0–9999	10 hours	
3	Compressor-Number of operation times	0–9999	100 times	
4	Comp. surface (TH32)	3–214	℃	
5	Outdoor unit - Liquid pipe 1 temperature (TH3)	−40–90	℃	
6	Outdoor unit - Liquid pipe 2 temperature	−40–90	℃	
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 super heat (SHd)	0–255	℃	
13	Sub-cool (SC)	0–130	℃	
14				
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	Number of connected indoor units	0–4	Units	
30	Indoor unit-Setting temperature	17–30	℃	
31	Indoor unit-Intake air temperature <Measured by thermostat>	8–39	℃	
32	Indoor unit-Intake air temperature (Unit No. 1) <Heat mode-4-deg correction>	8–39	℃	"0"is displayed if the target unit is not present.
33	Indoor unit-Intake air temperature (Unit No. 2) <Heat mode-4-deg correction>	8–39	℃	↑
34	Indoor unit-Intake air temperature (Unit No. 3) <Heat mode-4-deg correction>	8–39	℃	↑
35	Indoor unit-Intake air temperature (Unit No. 4) <Heat mode-4-deg correction>	8–39	℃	↑
36				
37	Indoor unit - Liquid pipe temperature (Unit No. 1)	−39–88	℃	"0" is displayed if the target unit is not present.
38	Indoor unit - Liquid pipe temperature (Unit No. 2)	−39–88	℃	↑
39	Indoor unit - Liquid pipe temperature (Unit No. 3)	−39–88	℃	↑
40	Indoor unit - Liquid pipe temperature (Unit No. 4)	−39–88	℃	↑
41				
42	Indoor unit-Cond./Eva. pipe temperature (Unit No. 1)	−39–88	℃	"0" is displayed if the target unit is not present.
43	Indoor unit-Cond./Eva. pipe temperature (Unit No. 2)	−39–88	℃	↑
44	Indoor unit-Cond./Eva. pipe temperature (Unit No. 3)	−39–88	℃	↑
45	Indoor unit-Cond./Eva. pipe temperature (Unit No. 4)	−39–88	℃	↑
46				
47				
48	Thermostat ON operating time	0–999	Minutes	
49	Test run elapsed time	0–120	Minutes	← Not possible to activate maintenance mode during the test run.

Request code	Request content	Description (Display range)	Unit	Remarks
50	Indoor unit-Control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
51	Outdoor unit-Control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
52	Compressor-Frequency control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
53	Outdoor unit-Fan control state	Refer to 13-2-1.Detail Contents in Request Code.	–	
54	Actuator output state		–	
55	Error content (U9)		–	
56				
57				
58				
59				
60	Signal transmission demand capacity	0–255	%	
61	Contact demand capacity	Refer to 13-2-1.Detail Contents in Request Code.	–	
62	External input state (silent mode, etc.)	Refer to 13-2-1.Detail Contents in Request Code.	–	
63				
64				
65				
66				
67				
68				
69				
70	Outdoor unit-Capacity setting display	Refer to 13-2-1.Detail Contents in Request Code.	–	
71	Outdoor unit-Setting information	Refer to 13-2-1.Detail Contents in Request Code.	–	
72				
73				
74				
75				
76				
77				
78				
79				
80				
81				
82				
83				
84	M-NET adapter connection (presence/absence)	"0000": Not connected "0001": Connected	–	
85				
86				
87				
88				
89	Display of execution of replace/wash operation	"0000": Not washed "0001": Washed	–	
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".	Đ	
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	Outdoor unit - Liquid pipe 2 temperature at time of error	−40–90	℃	
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 super heat (SHd) at time of error	0–255	℃	
119	Sub-cool (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				
130	Thermostat ON time until operation stops due to error	0–999	Minutes	
131				
132	Indoor - Liquid pipe temperature at time of error	−39–88	℃	Average value of all indoor units is displayed if the air conditioner consists of two or more indoor units (twin, triple, quad).
133	Indoor-2-phase pipe temperature at time of error	−39–88	℃	Average value of all indoor units is displayed if the air conditioner consists of two or more indoor units (twin, triple, quad).
134	Indoor at time of error • Intake air temperature <Thermostat judge temperature>	−39–88	℃	
135				
136				
137				
138				
139				
140				
~				
146				
147				
148				
149				
150	Indoor-Actual intake air temperature	−39–88	℃	
151	Indoor - Liquid pipe temperature	−39–88	℃	
152	Indoor-condenser/evaporator pipe temperature	−39–88	℃	

Request code	Request content	Description (Display range)	Unit	Remarks
153				
154	Indoor-Fan operating time (After filter is reset)	0–9999	1 hour	
155	Indoor-Total operating time (Fan motor ON time)	0–9999	10 hours	
156				
157	Indoor fan output value (Sj value)	0–255 Fan control data	–	For indoor fan phase control
158	Indoor fan output value (Pulsation ON/OFF)	"00 **" "**" indicates fan control data.	–	For indoor fan pulsation control
159	Indoor fan output value (duty value)	"00 **" "**" indicates fan control data.	–	For indoor DC brushless motor control
160				
161				
162				
163	Indoor unit-Capacity setting information	Refer to 13-2-1. Detail Contents in Request Code.	–	
164	Indoor unit-SW3 information	Undefined	–	
165	Wireless pair No. (indoor control board side) setting	Refer to 13-2-1. Detail Contents in Request Code.	–	
166	Indoor unit-SW5 information	Undefined	–	
167				
~				
189				
190	Indoor unit-Microcomputer version information	Examples) Ver 5.01 → "0501"	Ver	
191	Indoor unit-Microcomputer version information (sub No.)	Auxiliary information (displayed after version information) Examples) Ver 5.01 A000 → "A000"	–	
192				

13-2-1. Detail Contents in Request Code

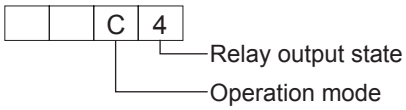


[Example) Request code "004"
Discharge temperature 69℃
Refrigerant address "00"]

B: Refrigerant address
C: Data display area
D: Request code display area

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

Data display



Operation mode

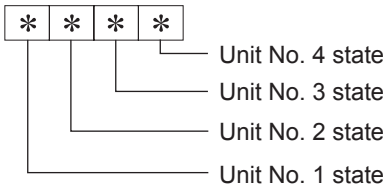
Display	Operation mode
0	STOP • FAN
C	COOL • DRY
H	HEAT
d	Defrost

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	

[Indoor unit – Control state] (Request code :" 50 ")

Data display



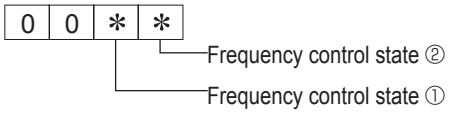
Display	State
0	Normal
1	Preparing for heat operation
2	–
3	–
4	Heater is ON.
5	Anti-freeze protection is ON.
6	Overheat protection is ON.
7	Requesting compressor to turn OFF
F	There are no corresponding units.

[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	Heatsink 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 0 0 * *

- Fan step correction value by heatsink temperature overheat prevention control
- Fan step correction value by cool condensation temperature overheat prevention control

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-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	●	●

[Contact demand capacity] (Request code :"61")

Data display 0 0 0 ✻

Setting content

Setting content

Display	Setting value	Setting	
		SW7-1	SW7-2
0	0%		
1	50%	ON	
2	75%		ON
3	100%	ON	ON

[External input state] (Request code :"62")

Data display 0 0 0 ✻

Input state

Input state

●: Input present

Display	Contact demand input	Silent mode input	Spare 1 input	Spare 2 input
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
A		●		●
b	●	●		●
C			●	●
d	●		●	●
E		●	●	●
F	●	●	●	●

[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

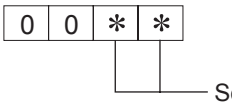
Display	Defrost mode
0	Standard
1	For high humidity

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

[Indoor unit – Capacity setting information] (Request code :"163")

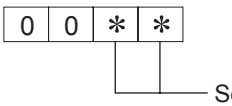
Data display



Display	Capacity setting state	Display	Capacity setting state
00	12	10	112
01	16	11	125
02	22	12	140
03	25	13	160
04	28	14	200
05	32	15	224
06	35, 36	16	250
07	40	17	280
08	45	18	
09	50	19	
0A	56	1A	
0b	63	1b	
0C	71	1C	
0d	80	1d	
0E	90	1E	
0F	100	1F	

[Wireless pair No. (indoor control board side) setting] (Request code :"165")

Data display



Display	Pair No. setting state
00	No. 0
01	No. 1 J41 disconnected
02	No. 2 J42 disconnected
03	No. 3 J41, J42 disconnected

14 DISASSEMBLY PROCEDURE

PUHZ-P100VHA5.UK **PUHZ-P125VHA4.UK** **PUHZ-P140VHA4.UK**
PUHZ-P100YHA3.UK **PUHZ-P125YHA2.UK** **PUHZ-P140YHA2.UK**

OPERATING PROCEDURE

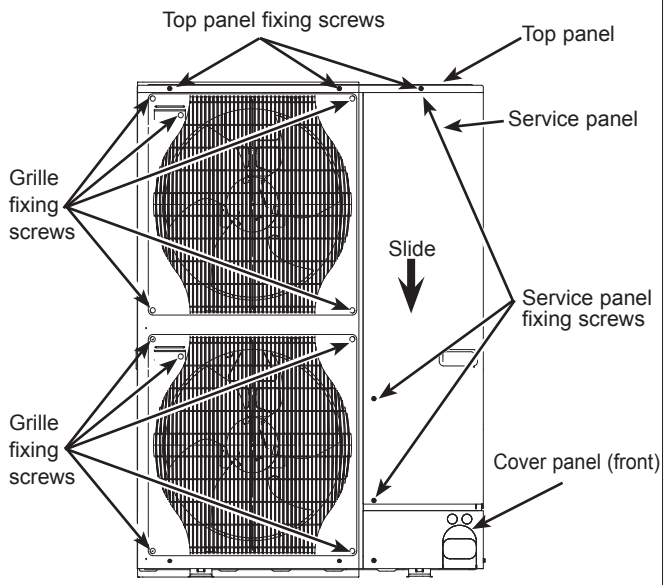
1. Removing the service panel and top panel

(1) Remove the service panel fixing screws (3 for front/ 5 × 12), then slide the service panel downward to remove it.
(The service panel is fixed to the side panel (R) with a hook on the right side.)

(2) Remove the top panel fixing screws (3 for front and 3 for rear/ 5 × 12) to remove the top panel.

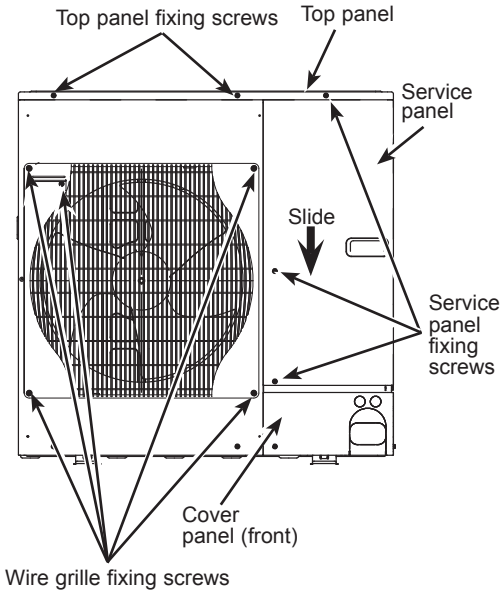
Note: When removing service panel and top panel at the same time, count one less screw since they share a screw.

Figure 2



PHOTOS & ILLUSTRATIONS

Figure 1



2. Removing the fan motor (MF1, MF2*1)

(1) Remove the service panel. (See Figure 1, 2)
(2) Remove the top panel. (See Figure 1, 2)
(3) Remove the grille fixing screws (5 for front/ 5 × 12), then slide the grille forward to remove it. (See Photo 1) (For the each fan motor on top and under)*1
(4) Remove the screw of nut (1 for front/ M6), then slide the propeller fan forward to remove it. (For the each fan motor on top and under)*1
(5) Disconnect the connectors, CNF1 (WHT)(*2) on the controller circuit board in the electrical parts box. (See Photo 3)
(6) Loosen the clamp for the lead wire on motor support and separator.
(7) Remove the fan motor fixing screws (4 for front/ 5 x 20) to remove the fan motor. (See Photo 2) (For the each fan motor on top and under)*1

*1 125/140 only
*2 CNF1 (WHT) and CNF2 (WHT) for 125/140

Photo 1

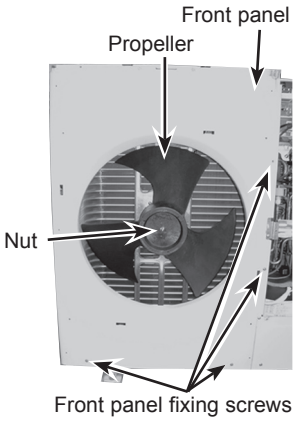
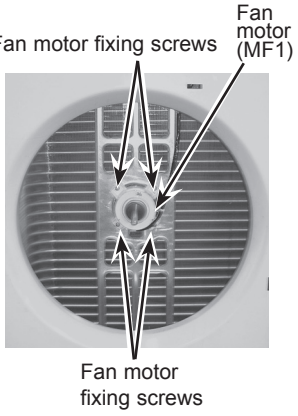


Photo 2



OPERATING PROCEDURE

3. Removing the electrical parts box

(1) Remove the service panel. (See Figure 1, 2)
(2) Remove the top panel. (See Figure 1, 2)
(3) Disconnect the power supply cable from terminal block.
(4) Disconnect the indoor/outdoor connecting wire from terminal block.
(5) Disconnect the connector CNF1 (WHT)*3, TH3 (WHT), TH7/6 (RED), TH32 (BLK), 21S4 (GRN), 63H (YLW), LEV-A (WHT), SV (BLU)*4, and CH (GRY)*4 from the controller circuit board.
<Symbols on the board>
• Fan motor (CNF1)
• Thermistor <Liquid> (TH3)
• Thermistor <Ambient/ 2-Phase Pipe> (TH7/6)
• Thermistor <Comp. Surface> (TH32)
• 4-way valve (21S4)
• High pressure switch (63H)
• LEV (LEV-A)
• Bypass valve (SV)
• Crankcase heater (CH)
(6) Loosen the clamps, fasteners and cable strap for the lead wire in the electrical parts box and separator.
(7) Remove the terminal cover to disconnect the COMP lead wire. (See Photo 5)
(8) Remove the electrical parts box fixing screws (2 for front/4 × 10), then slide the electrical parts box upward to remove it.

*3 CNF1 (WHT) and CNF2 (WHT) for 125/140

*4 125/140 only

PHOTOS

Photo 3 (V model)

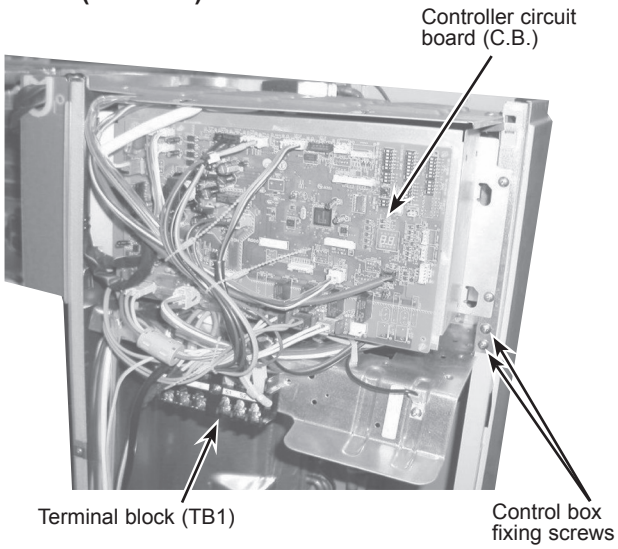


Photo 4 (Y model)

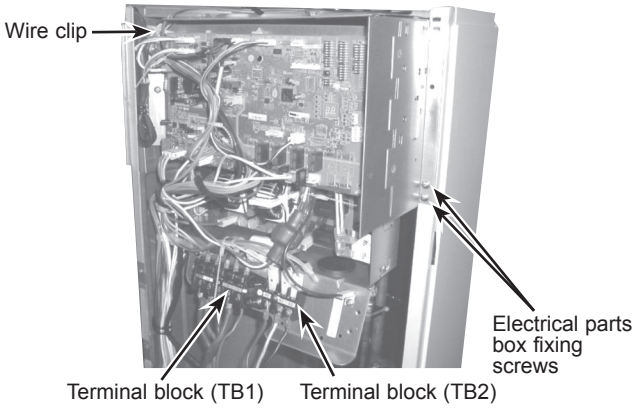
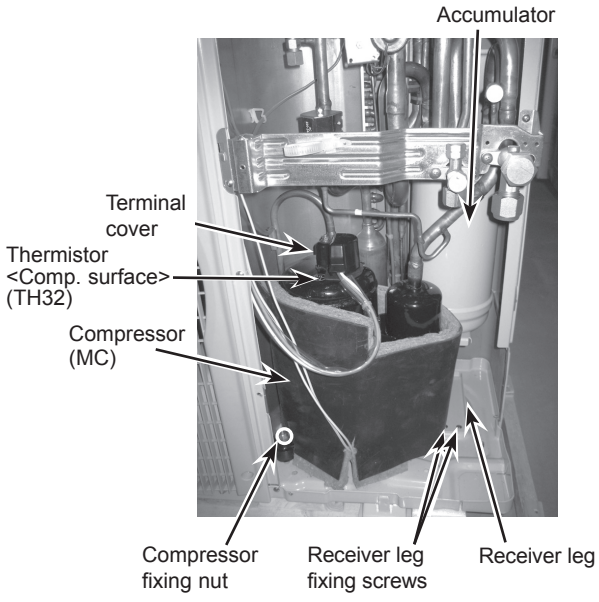
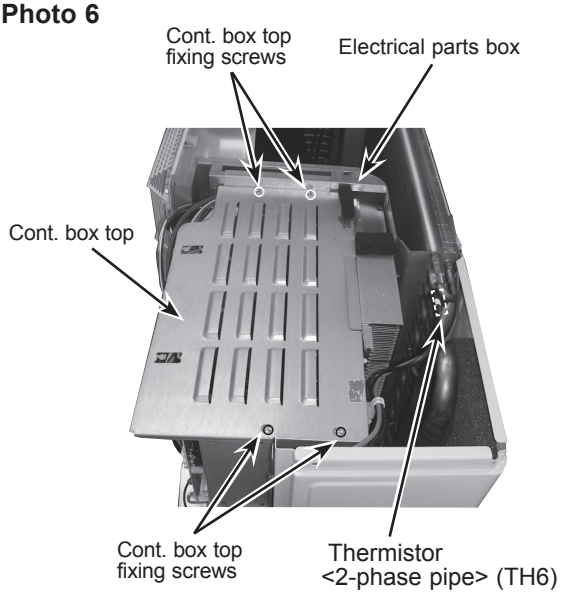
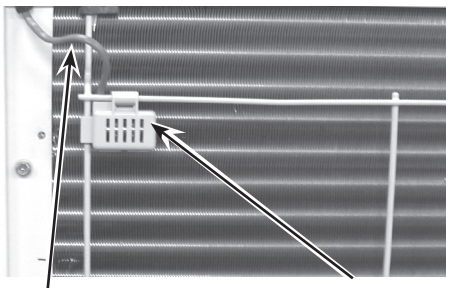
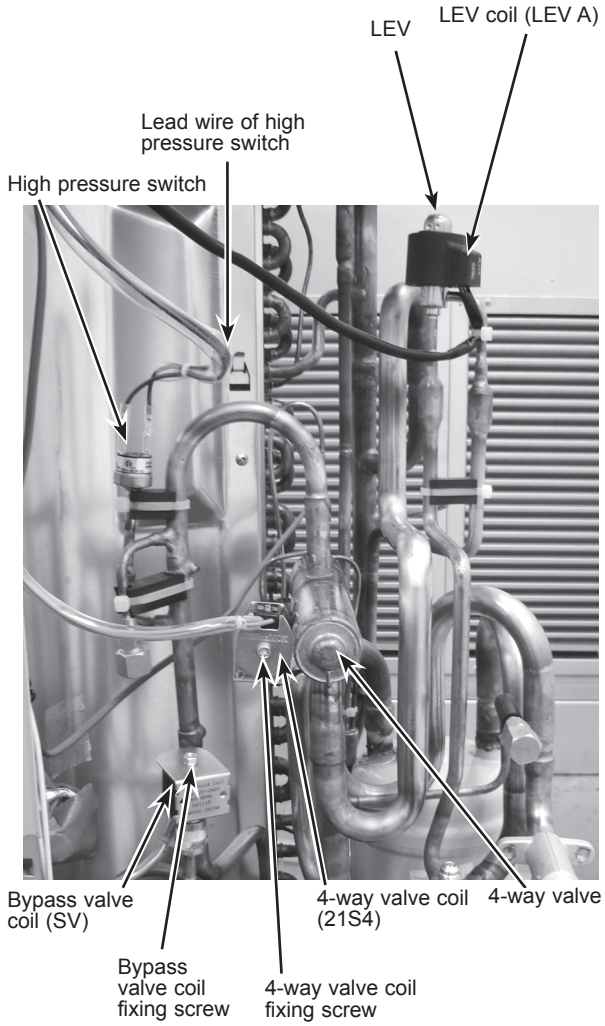


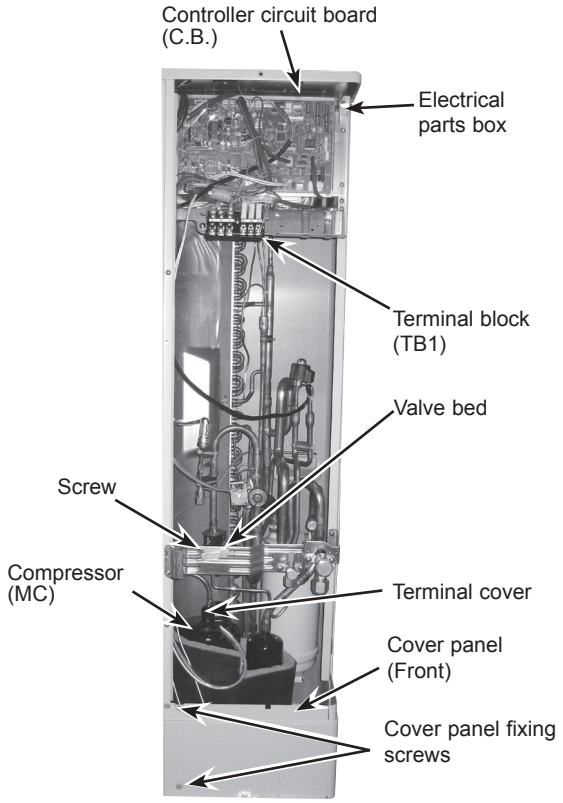
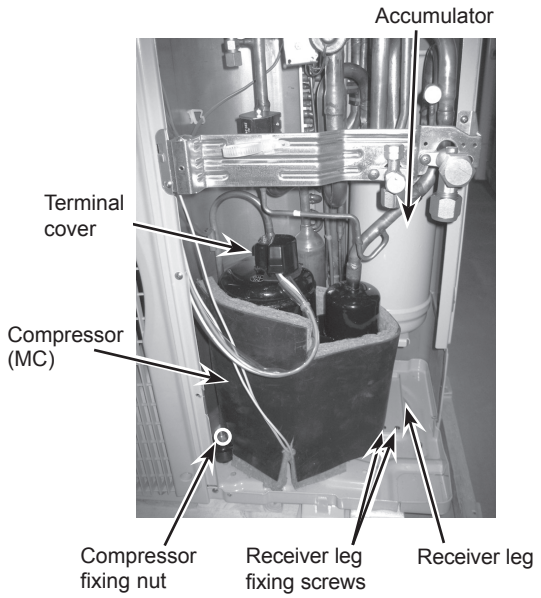
Photo 5

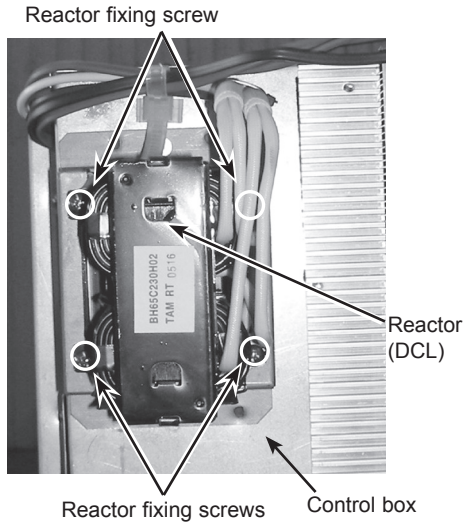
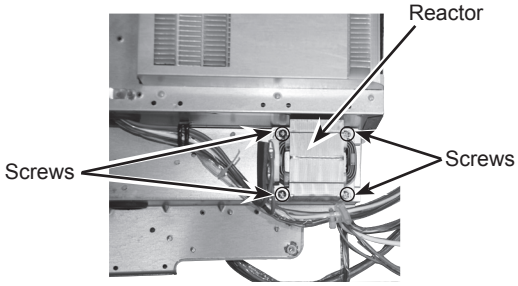


OPERATING PROCEDURE	PHOTOS
4. Removing the thermistor <2-Phase Pipe> (TH6) (1) Remove the service panel. (See Figure 1, 2) (2) Remove the top panel. (See Figure 1, 2) (3) Disconnect the connector TH7/6 (RED) on the controller circuit board in the electrical parts box. (Refer to procedure 3) (4) Loosen the fastener for the lead wire in the electrical parts box. [**Removing the thermistor <2-phase pipe> (TH6) for V model]** (5) Remove the cont. box top fixing screws (4 on top/4 × 10) to remove the cont. box top. (6) Loosen the lead wire from the edge cover in the electrical parts box. (7) Loosen the clamp for the lead wire in the electrical parts box. (8) Pull out the thermistor <2-phase pipe> (TH6) from thermistor holder. **[Removing the thermistor <2-phase pipe> (TH6) for Y model]** (5) Loosen the clamp for the lead wire on the top of electrical parts box. (6) Pull out the thermistor <2-phase pipe> (TH6) from thermistor holder. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together. Refer to procedure No.5 to remove the thermistor <Ambient> (TH7).**	**Photo 6** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Figure 1, 2) (2) Remove the top panel. (See Figure 1, 2) (3) Disconnect the connector TH7/6 (RED) on the controller circuit board in the electrical parts box. (Refer to procedure 3) (4) Loosen the fastener for the lead wire in the electrical parts box. [**Removing the thermistor <Ambient> (TH7) for V model]** (5) Remove the cont. box top fixing screws (4 on top/4 x 10) to remove the cont. box top. (6) Loosen the lead wire from the edge cover in the electrical parts box. (7) Loosen the clamp for the lead wire in the electrical parts box. (8) Pull out the thermistor <Ambient> (TH7) from thermistor holder. [**Removing the thermistor <Ambient> (TH7) for Y model]** (5) Loosen the clamps for the lead wire on top of the electrical parts box. (6) Pull out the thermistor <Ambient> (TH7) from thermistor holder.	**Photo 7**  **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together. Refer to procedure No.4 to remove the thermistor <2-phase pipe>(TH6).**

OPERATING PROCEDURE	PHOTOS
6. Removing the thermistor <Liquid> (TH3) and thermistor <Comp. Surface> (TH32) (1) Remove the service panel. (See Figure 1, 2) (2) Disconnect the connector, TH3 (WHT), and TH32 (BLK) on the controller circuit board in the electrical parts box. (See Photo 3 or 4) (3) Loosen the fastener for the lead wire on the controller circuit board in the electrical parts box. (4) Loosen the clamp for the lead wire on separator. (5) Pull out the thermistor <Liquid> (TH3) from thermistor holder. (6) Remove the top damper, then pull out the thermistor <Comp. surface> (TH32) from thermistor holder. (See Photo 5)	**Photo 8** 
7. Removing the 4-way valve coil (21S4), LEV coil (LEV-A), and lead wire for high pressure switch. (1) Remove the electrical parts box. (Refer to procedure 3) (2) Loosen the clamp for the lead wire on separator. **[Removing the lead wire for high pressure switch]** (3) Disconnect the lead wire from the high pressure switch. **[Removing the 4-way valve coil]** (3) Remove the 4-way valve coil fixing screw (1 for front/ M5) to remove the 4-way valve coil. (4) Slide the 4-way valve coil forward to remove it. **[Removing the LEV coil]** (3) Loosen the lead wires fixed to the pipes with bands. (4) Slide the LEV coil upward to remove it.	

OPERATING PROCEDURE	PHOTOS
8. Removing the 4-way valve, LEV (LEV-A), and high pressure switch (1) Remove the electrical parts box. (Refer to procedure 3) (2) Remove the cover panel (front) fixing screws (2 for front/5×12). (See Photo 10) (3) Remove the cover panel (rear) fixing screws (2 for rear/5×12). (4) Remove the valve bed fixing screws (3 for front/4×10 and 4 for front/5×16). (See Photo 10) (5) Remove the side panel (R).*5 (6) Recover refrigerant. **[Removing the 4-way valve]** (7) Remove the 4-way valve coil. (See photo 9) (8) Remove the welded part of 4-way valve (4 positions) to remove the 4-way valve. **[Removing the LEV]** (7) Remove the LEV coil. (See photo 9) (8) Slide the LEV coil upward to remove it . (9) Remove the welded part of LEV (2 positions) to remove the LEV. **[Removing the high pressure switch]** (7) Disconnect the lead wire from the high pressure switch. (8) Remove the welded part of high pressure switch (1 position) to remove the high pressure switch. *5 Fixing screws (3 for rear/5×12) (100V/Y) Fixing screws (5 for rear/5×12) (125 and 140V/Y) **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the side panel (R).** **Note 3: When installing the following parts, 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, 120°C or more** **• LEV, 120°C or more** **• High pressure switch, 100°C or more**	**Photo 9** 
9. Removing bypass valve coil (SV) and bypass valve (125/140 only) (1) Remove the service panel. (See Figure 2) (2) Remove the top panel. (See Figure 2) (3) Remove the valve bed. (Refer to procedure 8) (4) Remove side panel (R). (Refer to procedure 8) (5) Recover refrigerant. (6) Remove the welded part of bypass valve (2 positions). (7) Remove the bypass valve coil fixing screw (1 for front/M5). (8) Remove the bypass valve by sliding the coil upward. (9) Disconnect the connector SV2 (blue) on the controller circuit board in the control box. (10) Loosen the clamp on the separator and unbind the lead wires. (11) Remove the welded part of bypass valve (2 positions) to remove the bypass valve. **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 bypass valve, 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 oxdized.**	

OPERATING PROCEDURE	PHOTOS
10. Removing the compressor (MC) (1) Remove the electrical parts box. (Refer to procedure 3) (2) Remove the cover panel (front). (Refer to procedure 8) (3) Remove the cover panel (rear). (Refer to procedure 8) (4) Remove the valve bed. (Refer to procedure 8) (5) Remove the side panel (R). (Refer to procedure 8) (6) Remove the front panel fixing screws(*6), then slide the front panel upward to remove it. (The front panel is fixed with 3 or 4 hooks.*7) (7) Release the lead wire for FM1 and FM2.*8 (8) Remove the separator fixing screws(*9), then slide the separator upward to remove it. (The separator is fixed to a hook of the side plate.) (9) Recover refrigerant. (10) Remove the welded part of compressor (2 positions). (11) Remove the 3 compressor fixing nuts (M6) to remove the compressor. **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The compressor can be easily removed by removing separator.** *6 4 for front/ 5×12 and 1 for front/4×10 (100V/Y) 4 for front/ 5×12 and 2 for front/4×10 (125 and 140V/Y) *7 2 on the left side fixing to the side panel (L), and 1 on the right side fixing to the separator (100V/Y) 3 on the left side fixing to the side panel (L), and 1 on the right side fixing to the separator (125 and 140V/Y) *8 125/140 only *9 2 for front/4×10 (100V/Y) 3 for front/4×10 (125 and 140V/Y)	**Photo 10** 
11. Removing the accumulator (1) Remove the electrical parts box. (Refer to procedure 3) (2) Remove the cover panel (front). (Refer to procedure 8) (3) Remove the cover panel (rear). (Refer to procedure 8) (4) Remove the valve bed. (Refer to procedure 8) (5) Remove the side panel (R). (Refer to procedure 8) (6) Recover refrigerant. (7) Remove the welded part of the accumulator (2 positions) to remove it. (8) Remove the receiver leg fixing screws (2 for front/4 x 10), then slide the accumulator forward to remove it. (The accumulator is fixed to the base with a hook on the bottom.) **Note: Recover refrigerant without spreading it in the air.**	**Photo 11** 

OPERATING PROCEDURE	PHOTOS
12. Removing the reactor (DCL) (1) Remove the electrical parts box. (Refer to procedure 3) (2) Remove the cont. box base fixing screws (2 for front/4 × 10) to remove the cont. box base. (3) Disconnect the connector, DCL (WHT)(*10) on the power circuit board. (4) Release the lead wire from the hole on cont. box base. (5) Loosen the cable strap for the lead wire. (6) Remove the screws for reactor (4 for rear/4 × 10) to remove the reactor. *10 DCL1 (WHT) and DCL2 (WHT) for 125/140	**Photo 12 (V model)**  **Photo 13 (Y model)** 

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