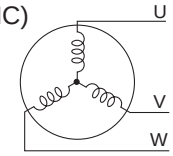
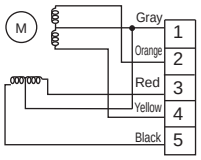
Phone Calls From Customers		How to Respond	Note
The room cannot be cooled or heated sufficiently.		① Check the set temperature of remote controller. The outdoor unit cannot be operated if the set temperature is not appropriate. The outdoor unit operates in the following modes. COOL: When the set temperature 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 fan 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 1 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 "auto recovery feature from power ".	———
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.	COOL: when pipes or piping joints are cooled, they get sweated and water drips down. HEAT: water drips down from the heat exchanger. Note: 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

PUZ-ZM100VKA.UK PUZ-ZM125VKA.UK PUZ-ZM140VKA.UK
PUZ-ZM100YKA.UK PUZ-ZM125YKA.UK PUZ-ZM140YKA.UK

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Thermistor (TH3)
<Liquid>
Thermistor (TH4)
<Discharge>
Thermistor (TH6)
<2-phase pipe>
Thermistor (TH7)
<Ambient>
Thermistor (TH8)*1
<Heat sink>
Thermistor (TH33)
<Comp. Surface></td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 10 to 30°C)
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH4, TH33</td><td>160 to 410 kΩ</td><td rowspan="3">Open or short</td></tr>
<tr><td>TH3
TH6
TH7</td><td>4.3 to 9.6 kΩ</td></tr>
<tr><td>TH8</td><td>39 to 105 kΩ</td></tr>
</table></td></tr>
<tr><td>Fan motor(MF1,MF2)</td><td>Refer to the next page.</td></tr>
<tr><td>Solenoid valve coil
<4-way valve>
(21S4)</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 20°C)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>ZM100–140</td><td rowspan="2">Open or short</td></tr>
<tr><td>1435 ± 150 Ω</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°C)
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>Refer to “5-2. COMPRESSOR TECHNICAL DATA”.</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve
(LEV-A/LEV-B/LEV-C*2)
 
</td><td>Disconnect the connector then measure the resistance with a tester.
(Winding temperature 20°C)
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>Gray - Black</td><td>Gray - Red</td><td>Gray - Yellow</td><td>Gray - Orange</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">46 ± 3 Ω</td></tr>
</table></td></tr>
</table>

*1 ZM100–140Y
*2 LEV-C is for ZM140 model only.

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

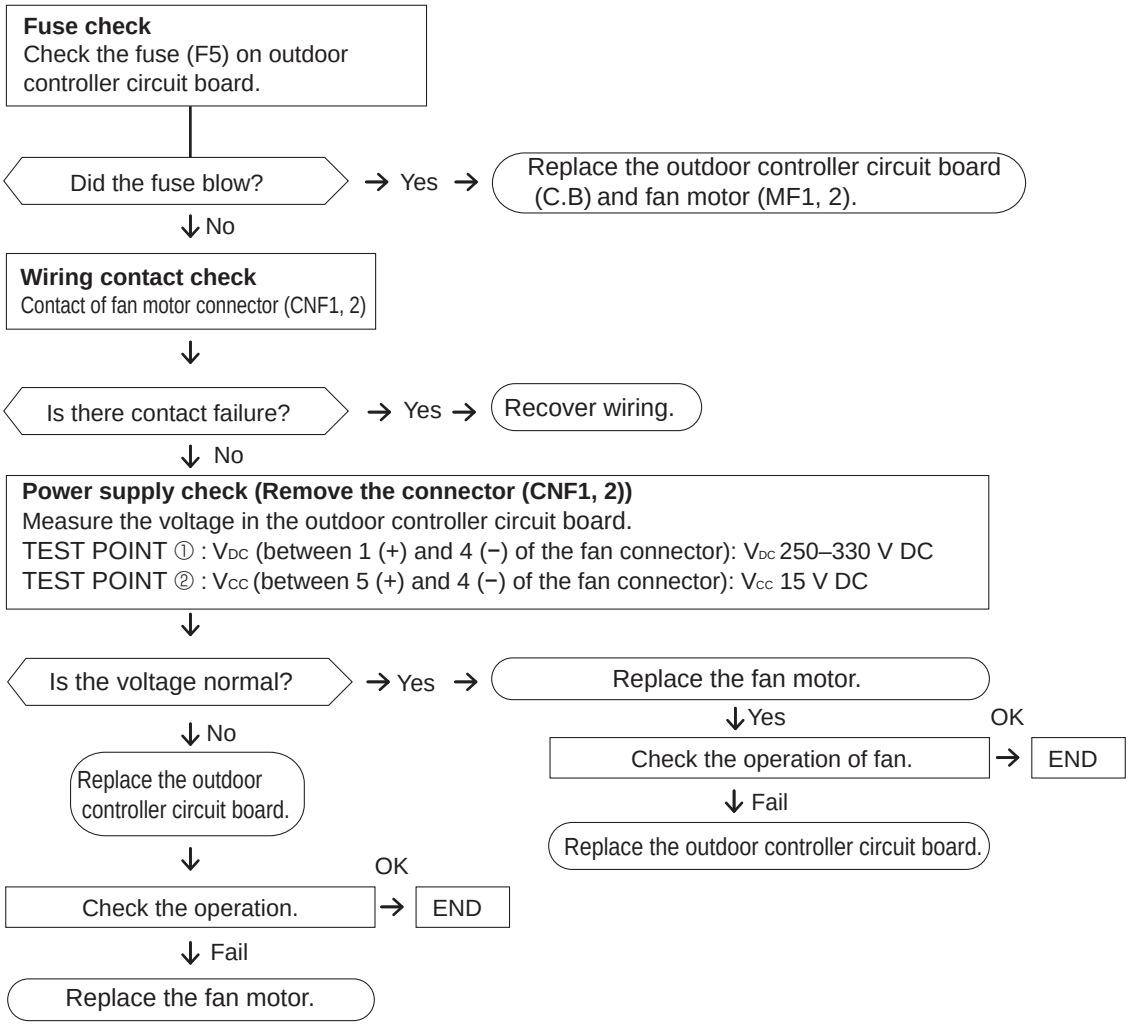
① Notes

· 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 rotate.



10-7. HOW TO CHECK THE COMPONENTS

<Thermistor feature chart>

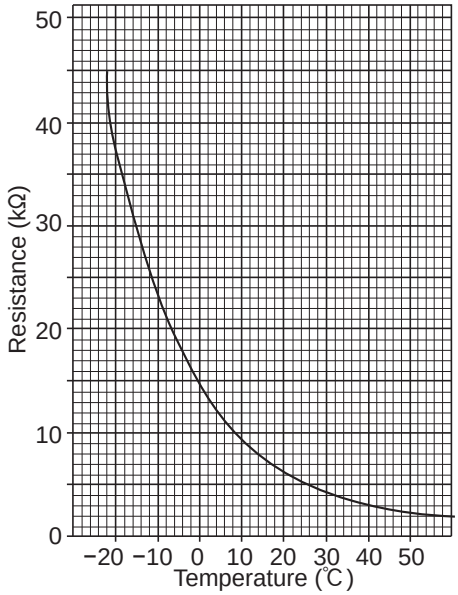
Low temperature thermistors

- 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		



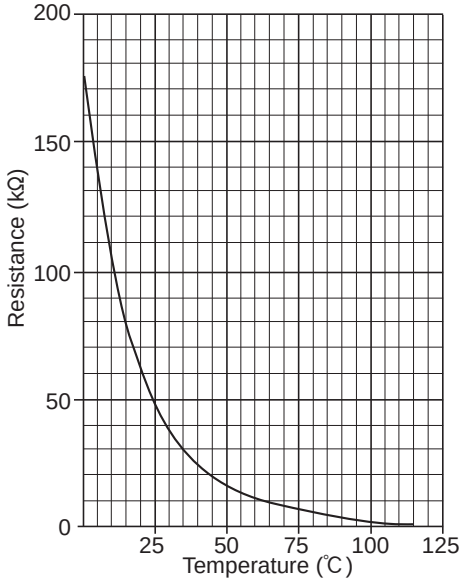
Medium temperature thermistor

- Thermistor <Heat sink> (TH8) (ZM100–140Y only)

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

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

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



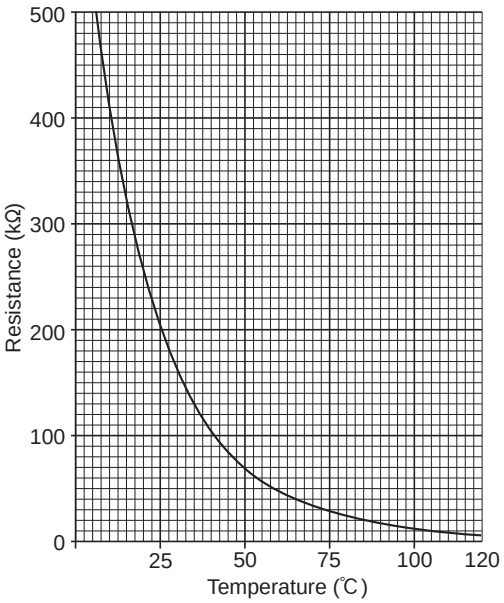
High temperature thermistor

- Thermistor <Discharge> (TH4)
- Thermistor <Comp. Surface> (TH33)

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

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

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



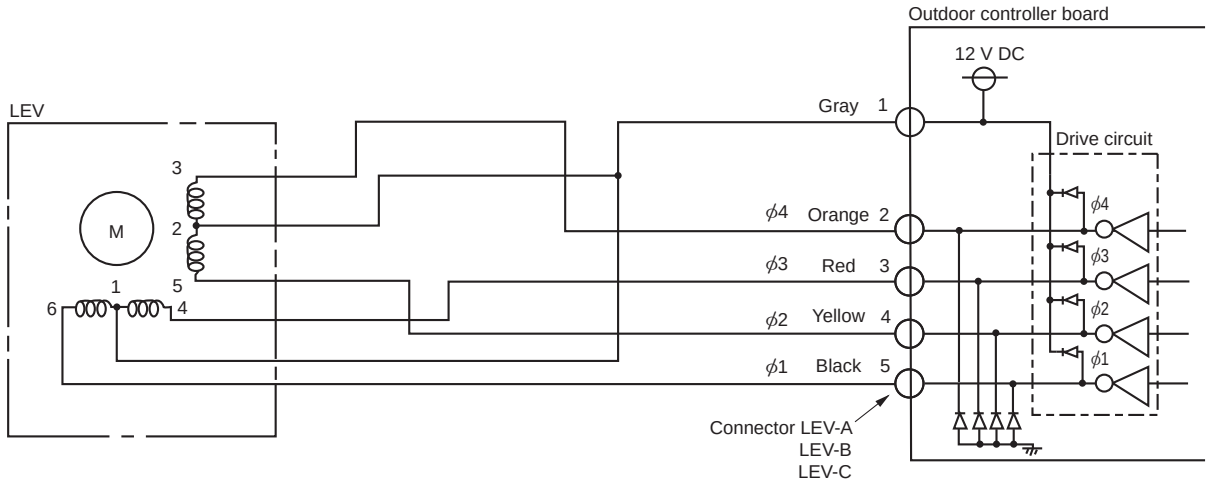
Linear expansion valve

(1) Operation summary of the linear expansion valve

• Linear expansion valve opens/closes through stepping motor after receiving the pulse signal from the outdoor controller circuit 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>



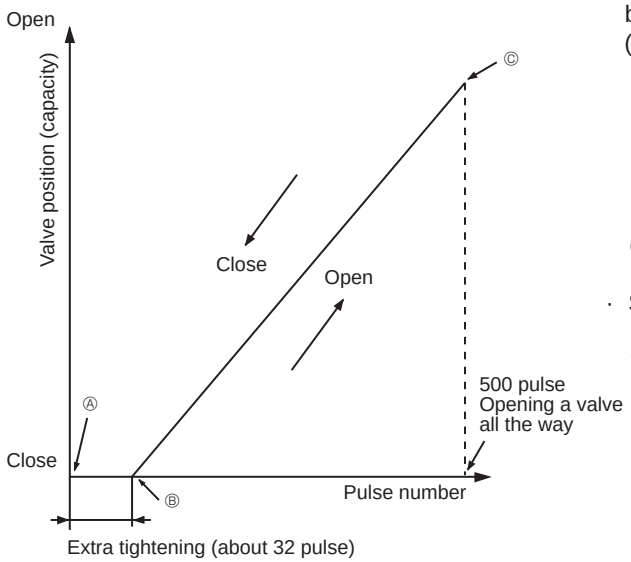
<Output pulse signal and the valve operation>

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 phases become OFF.

(2) Linear expansion valve operation



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

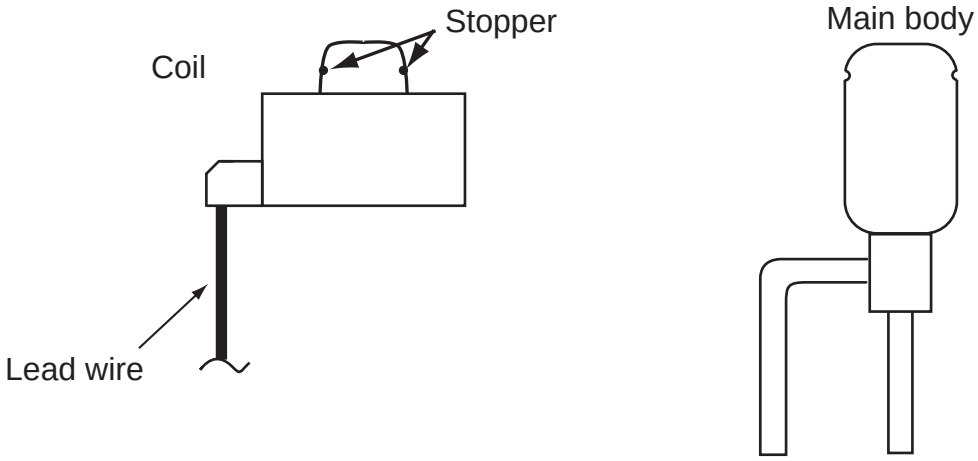
When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve: however, when the pulse number moves from Ⓑ to Ⓐ or when the valve is locked, more sound can be heard.
No sound is heard when the pulse number moves from Ⓑ to Ⓐ in case coil is burnt out or motor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

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

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

<Composition>

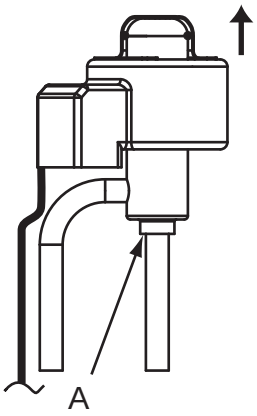
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

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

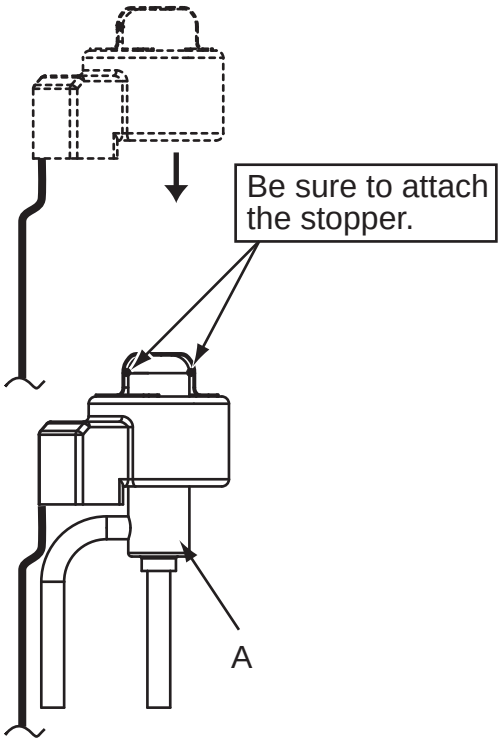
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<How to attach the coil>

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

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



10-8. EMERGENCY OPERATION

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

●When following abnormalities occur, emergency operation will be available.

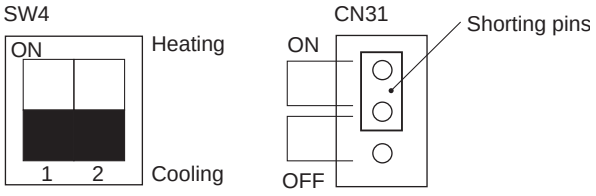
Check code	Inspected content
U4	Open/short of outdoor unit thermistor (TH3/TH6/TH7/TH8)
E8	Indoor/outdoor unit communication error • Signal receiving error (Outdoor unit)
E9	Indoor/outdoor unit communication error • Transmitting error (Indoor unit)
E0–E7	Communication error other than outdoor unit
Ed	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

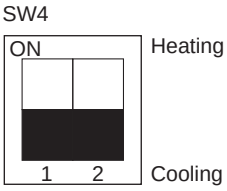
① Turn the main power supply off.
② Turn on the emergency operation switch (SWE) on indoor controller board.
③ Set the shorting pins of emergency operation connector (CN31) on outdoor controller board to ON.
④ Use SW4-2 on outdoor controller board to set the operation mode (cooling or heating). (SW4-1 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 pipe temperature (TH2)	5℃	45℃	—
Indoor 2-phase pipe temperature (TH5)	5℃	50℃	—
Set temperature	25℃	22℃	—
Outdoor liquid pipe temperature (TH3)	45℃	5℃	(*1)
Outdoor discharge pipe temperature (TH4)	80℃	80℃	(*1)
Outdoor comp. surface temperature (TH33)			
Outdoor 2-phase pipe temperature (TH6)	50℃	5℃	(*1)
Outdoor ambient temperature (TH7)	35℃	7℃	(*1)
Temperature difference code (room temperature - set temperature) (ΔTj)	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 values for SHd/SC will be different from the list above.
[Example] When liquid temperature thermistor (TH3) has an open or short circuit.

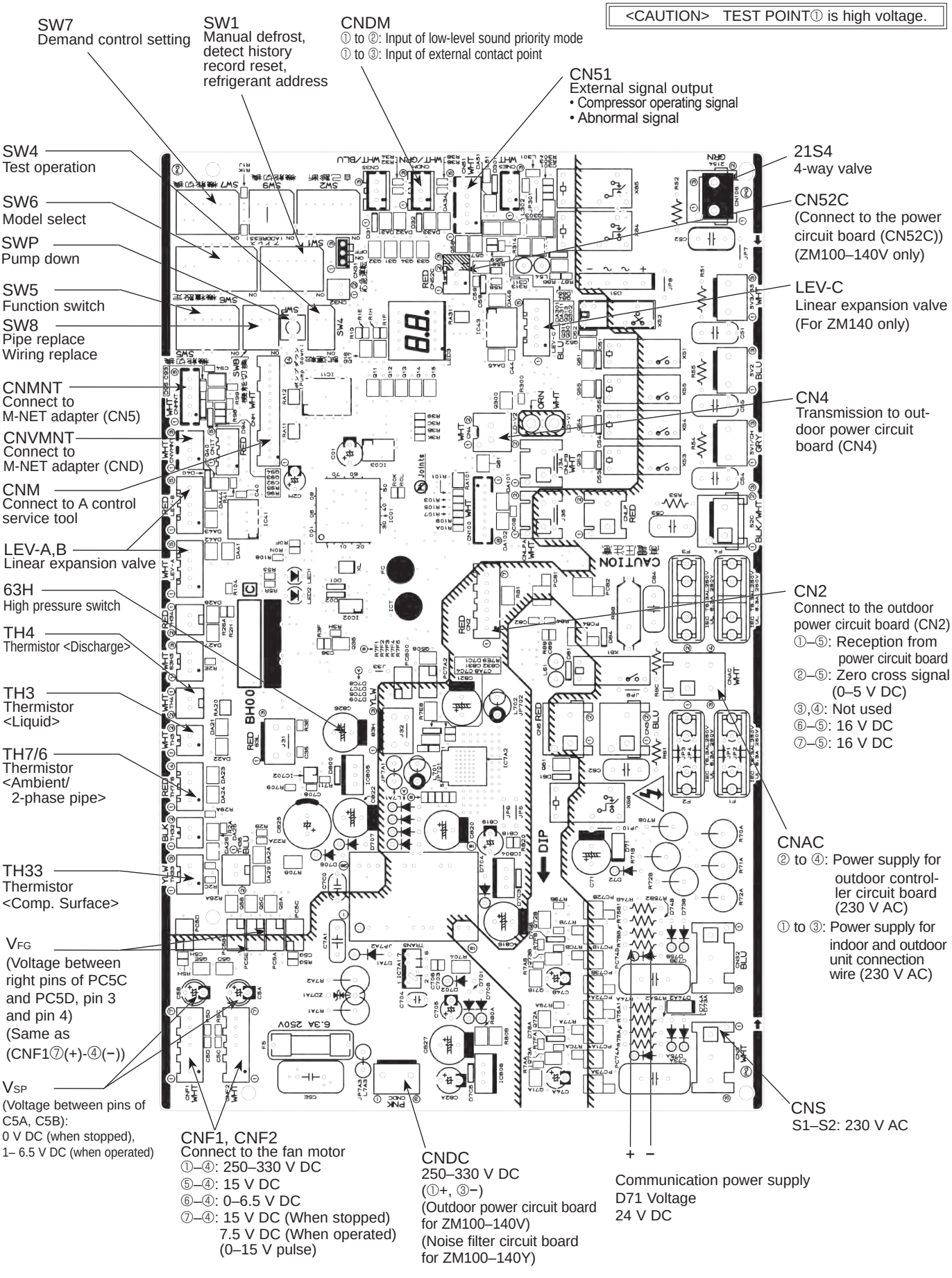
Thermistor	COOL	HEAT
TH3	45℃	5℃
TH6	Ta	Tb
	Regard normal figure as effective data.	
TH4/TH33	Tc	Td
	Regard normal figure as effective data.	
TH5	5℃	50℃
TH2	5℃	45℃

Discharge superheat (SHd)
Cooling = TH4(or TH33)−TH6 = Tc−Ta
Heating = TH4(or TH33)−TH5 = Td−50
Degree of subcooling (SC)
Cooling = TH6−TH3 = Ta−45
Heating = TH5−TH2 = 50−45 = 5℃

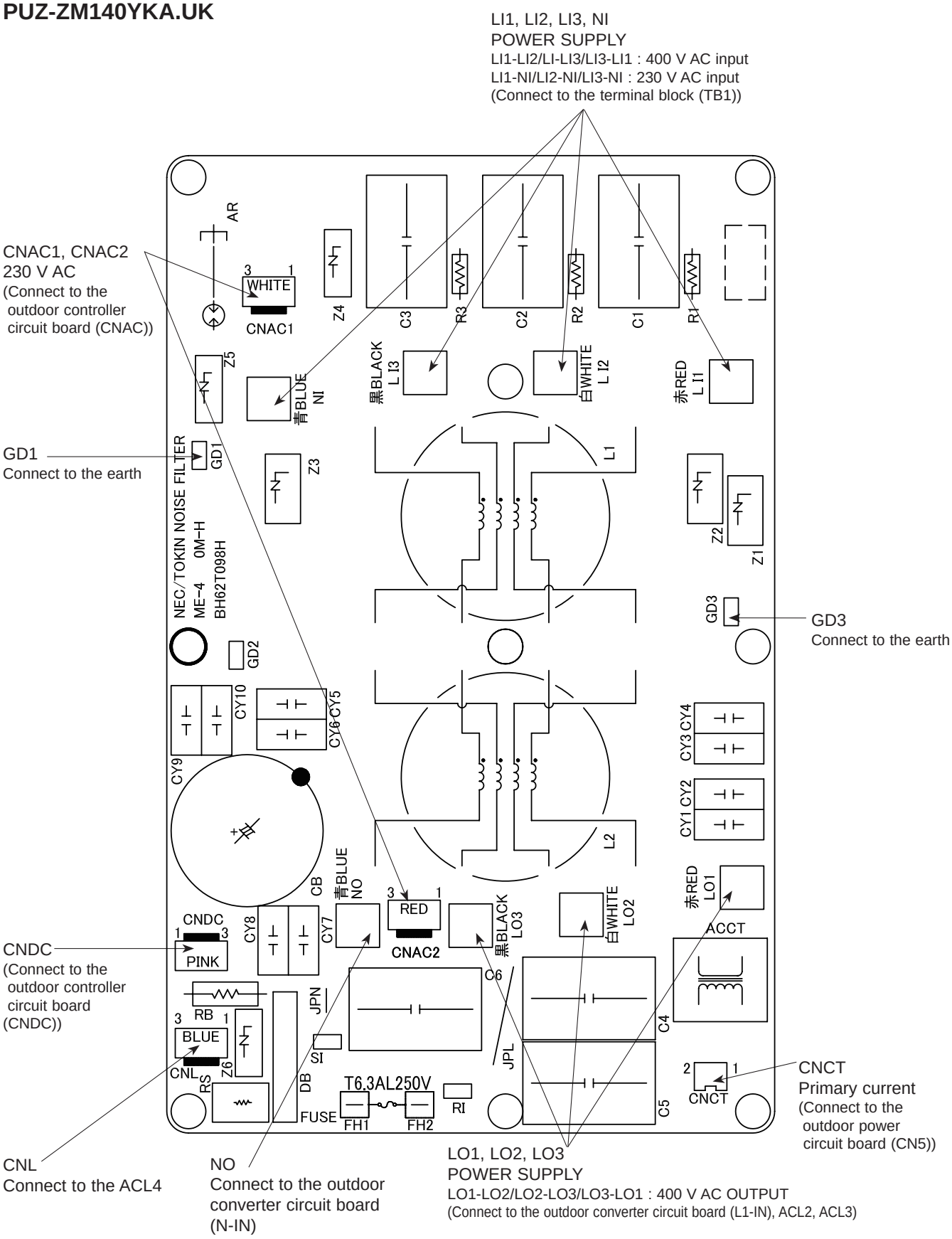
10-9. TEST POINT DIAGRAM

Outdoor controller circuit board

PUZ-ZM100VKA.UK PUZ-ZM125VKA.UK PUZ-ZM140VKA.UK
PUZ-ZM100YKA.UK PUZ-ZM125YKA.UK PUZ-ZM140YKA.UK



Outdoor noise filter circuit board
PUZ-ZM100YKA.UK
PUZ-ZM125YKA.UK
PUZ-ZM140YKA.UK



Outdoor power circuit board
PUZ-ZM100VKA.UK
PUZ-ZM125VKA.UK
PUZ-ZM140VKA.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.

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

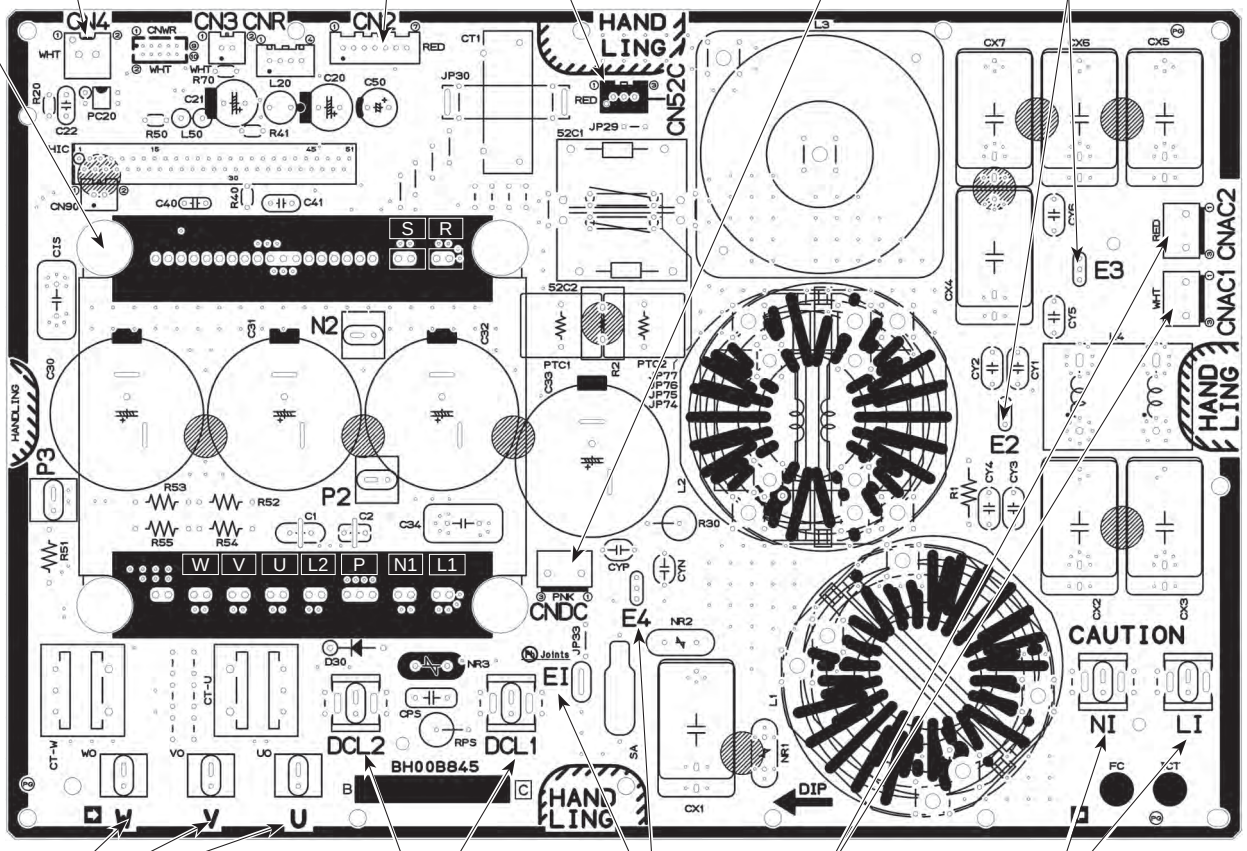
CN4
Connect to the outdoor controller circuit board (CN4)

Power module

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

CNDC
280–380 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

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))

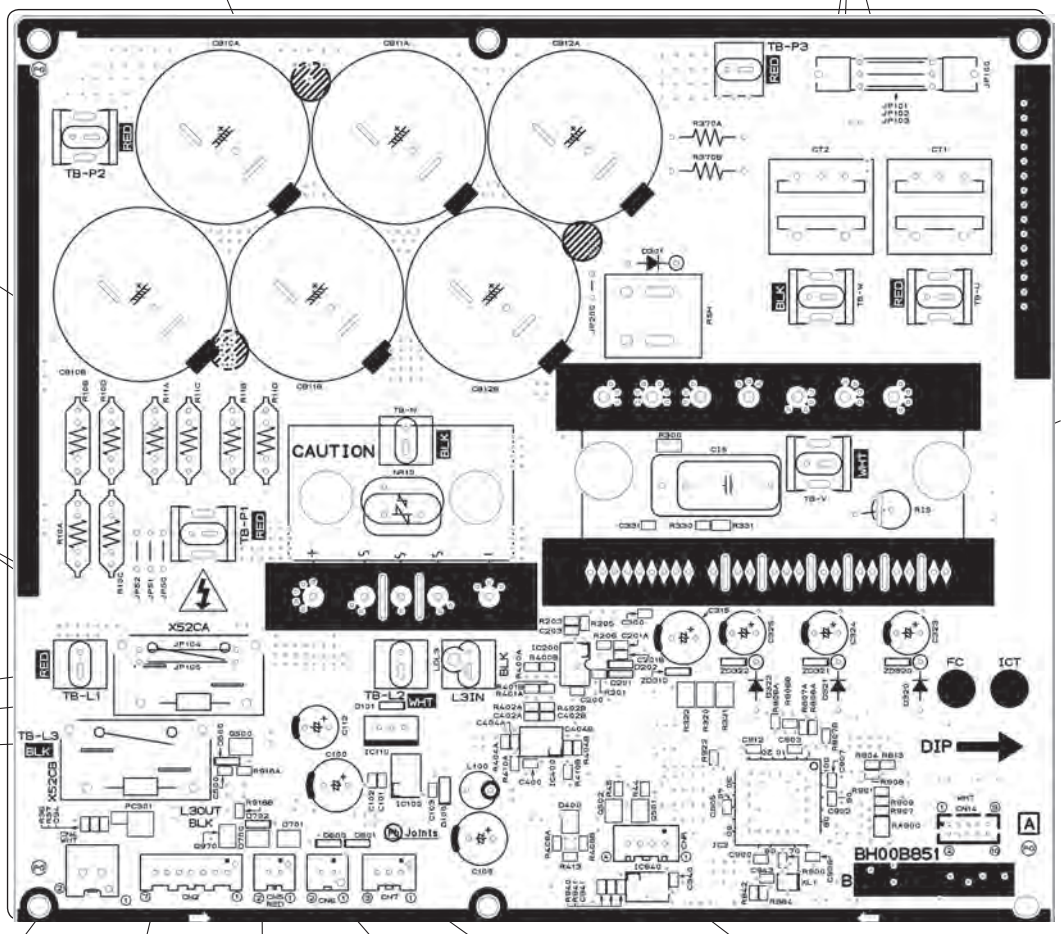
Outdoor power circuit board
PUZ-ZM100YKA.UK
PUZ-ZM125YKA.UK
PUZ-ZM140YKA.UK

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-N
Connect to the CK capacitor

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



Diode module

DIP-IPM

TAB connector on X52CA
Connect to the RS resistor

TB-L1,
TB-L2,
TB-L3
Connect to the outdoor converter circuit board (L1-OU, L2-OU, L3-OU)
400 V AC

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 (0–5 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 : ⊕]

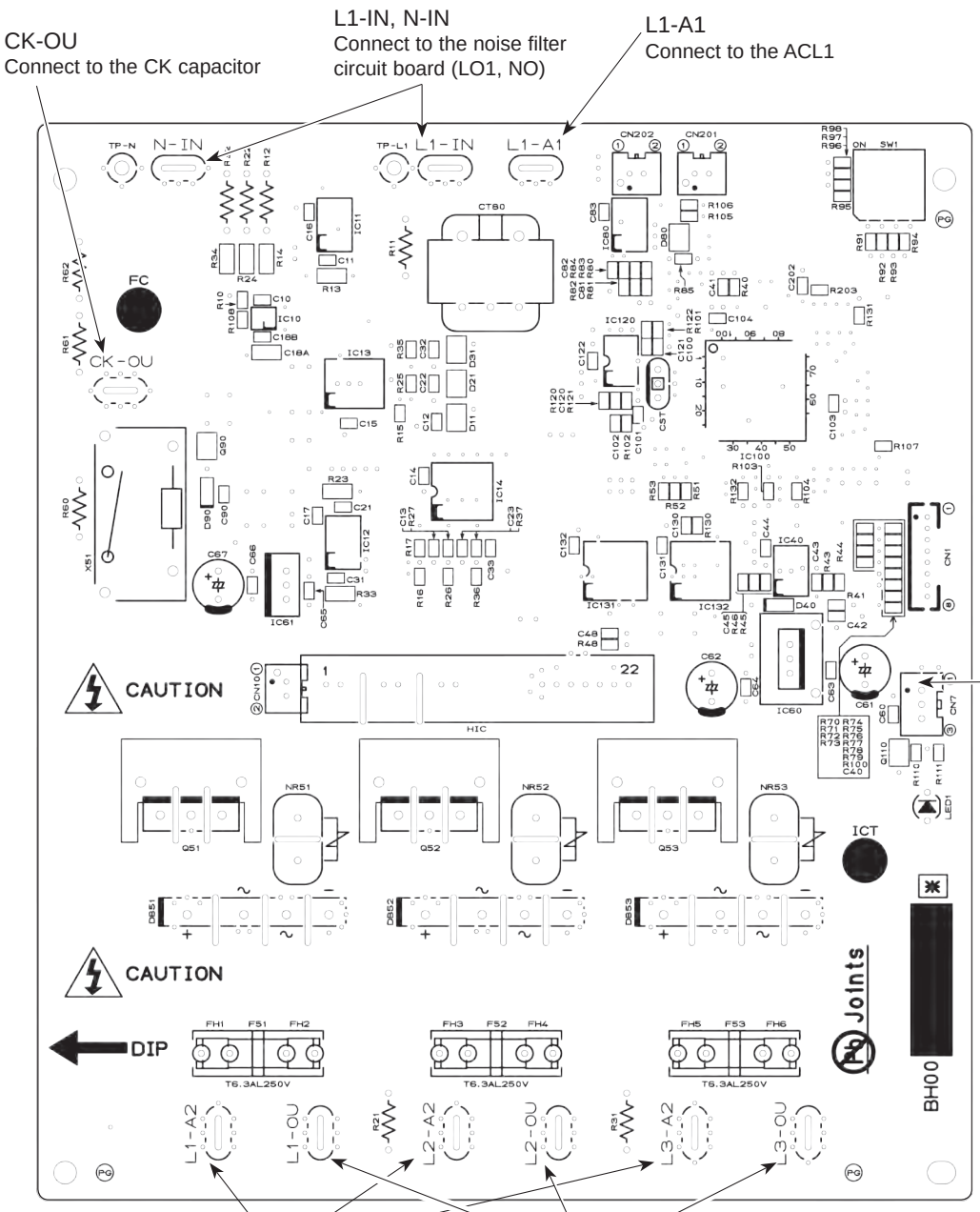
CN5
Detection of primary current (Connect to the outdoor noise filter circuit board (CNCT))

CN6
Thermistor <Heat sink> (TH8)

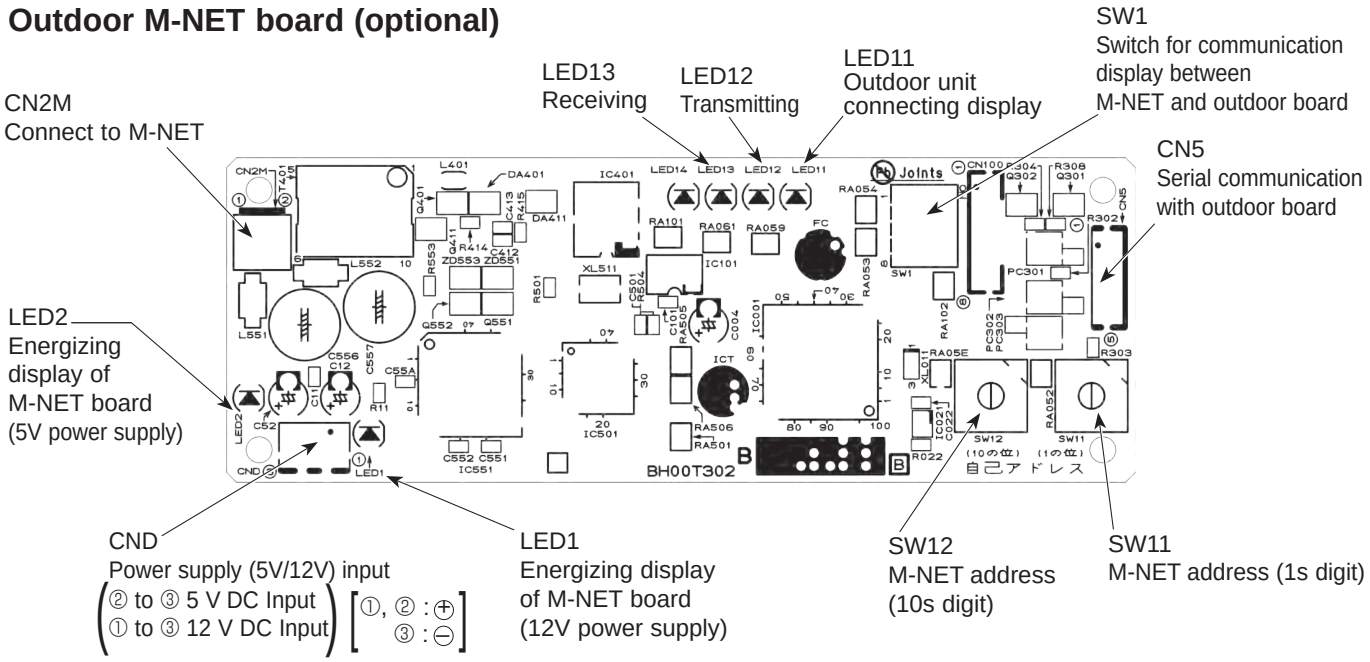
CN7
Connect to the outdoor converter circuit board (CN7)

L3OUT-L3IN
Lead connect

Outdoor converter circuit board
PUZ-ZM100YKA.UK
PUZ-ZM125YKA.UK
PUZ-ZM140YKA.UK



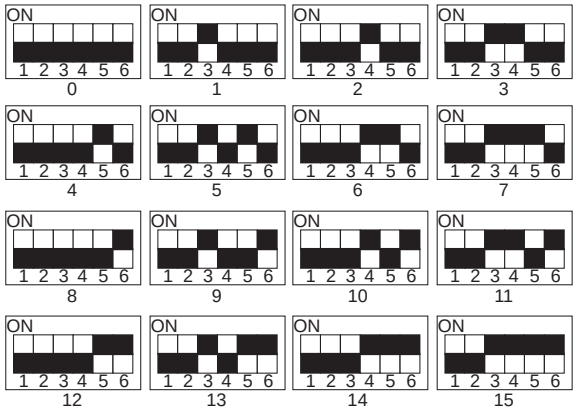
Outdoor M-NET board (optional)



10-10. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS

(1) Function of switches

The black square (■) indicates a switch position.

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. *1
		2	Abnormal history clear	Clear	Normal	off or operating
		3	Refrigerant address setting			When power supply ON
		4				
		5				
		6				
	SW4	1	Test run	Operating	OFF	Under suspension
		2	Test run mode setting	Heating	Cooling	
Push switch	SWP		Pump down	Start	Normal	Under suspension

*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 all these conditions written below are satisfied.

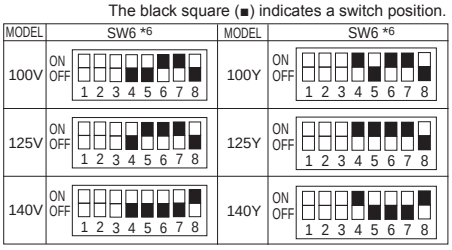
- Heat mode setting
- 10 minutes have passed since compressor started operating or previous manual defrost is finished.
- Pipe temperature is less than or equal to 8°C.

Manual defrost will finish if certain conditions are satisfied.

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.

Continue to the next page

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 *2	Auto recovery	No auto recovery	When power supply ON
		3,4,5	No function	—	—	—
		6	No function	—	—	—
	SW7*4	1	Mode select *3	Demand function	Low noise mode	Always
		2	No function	—	—	—
		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	Breaker capacity setting *5	Decrease capacity	Normal	When power supply ON
		6	Defrost setting	For high humidity	Normal	Always
	SW8	1	No function	—	—	—
		2	No function	—	—	—
		3	No function	—	—	—
	SW9	1	Fan motor switch	High static pressure	Normal	When power supply ON
		2	Function switch	Valid	Normal	Always
		3,4	No function	—	—	—
	SW6	1	No function	—	—	—
		2				
		3				
		4	Model select	The black square (■) indicates a switch position. 		
		5				
		6				
		7				
		8				

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

*3 SW7-1 is setting change over of Demand/Low noise. It is effective only in case of external input. (Local wiring is necessary. Refer to the next page: Special function)

*4 Please do not use SW7-3 to 7-6 usually. Trouble might be caused by the usage condition.

*5 With this switch setting, the capacity decreases up to 30% under peak load condition.

*6 SW6-1 to 3: Function switch

(2) Function of connector

Types	Connector	Function	Action by open/short operation		Effective timing
			Short	Open	
Connector	CN31	Emergency operation	Start	Normal	When power supply ON

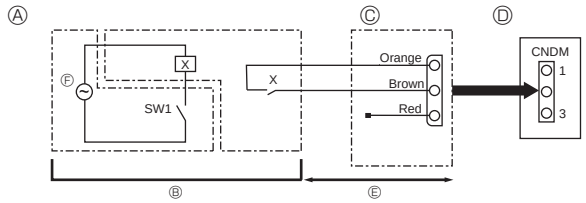
Special function

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

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

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

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



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

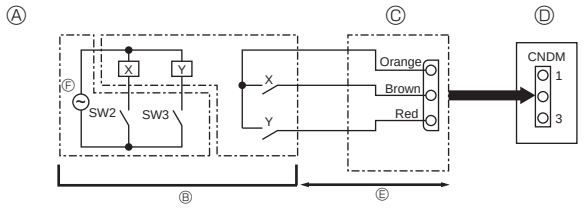
X: Relay
Ⓓ Outdoor unit control board
Ⓔ Maximum 10 m
Ⓕ Power supply for relay

(b) On demand control (Local wiring)

By performing the following modification, energy consumption can be reduced to 0–100% of the normal consumption.
The demand function will be activated when a commercially available timer or the contact input of an ON/OFF switch is added to the CNDM connector (option) on the control board of the outdoor unit.

①Complete the circuit as shown when using the external input adapter (PAC-SC36NA-E). (Option)
②By setting SW7-1 on the control board of the outdoor unit, the energy consumption (compared to the normal consumption) can be limited as shown below.

	SW7-1	SW2	SW3	Energy consumption
Demand function	ON	OFF	OFF	100%
		ON	OFF	75%
		ON	ON	50%
		OFF	ON	0% (Stop)



Ⓐ Circuit diagram example (Demand function)
Ⓑ On-site arrangement
X, Y: Relay

Ⓒ External input adapter (PAC-SC36NA-E)
Ⓓ Outdoor unit control board
Ⓔ Maximum 10 m
Ⓕ Power supply for relay

<Display function of inspection for outdoor unit>

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

[Display]

(1)Normal condition

Unit condition	Outdoor controller board		A-Control Service Tool	
	LED1 (Green)	LED2 (Red)	Check code	Indication of the display
When the power is turned on	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	Check 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.	P.43
		Indoor/outdoor unit communication error (transmitting error) is detected by indoor unit.	E7		P.43
		Indoor/outdoor unit communication error (signal receiving error) is detected by outdoor unit.	–		P.43(E8)
		Indoor/outdoor unit communication error (transmitting error) is detected by outdoor unit.	–		P.44(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.43
		Remote controller signal receiving error is detected by indoor unit.	E4		P.42
		Remote controller transmitting error is detected by indoor unit.	E5		P.43
	4 blinking	Abnormal if a connection of indoor unit and outdoor unit which uses different refrigerant is detected.	EE	Check if indoor/outdoor unit combination is authorized.	P.44
		Check code is not defined.	EF	①Check if noise entered into transmission wire of remote controller. ②Check if noise entered into indoor/outdoor connecting wire. ③Re-check error by turning off power, and on again.	P.44
			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.45
	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.44
		Communication error of M-NET system	A0–A8		P.46–P.49

*1.Check code displayed on remote controller

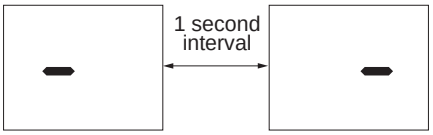
Indication		Error			
Outdoor controller board		Contents	Check code *1	Inspection method	Detailed reference page
LED1 (Green)	LED2 (Red)				
3 blinking	1 blinking	Abnormality of comp. surface thermistor (TH33) and discharge temperature (TH4)	U2	①Check if stop valves are open. ②Check if connectors (TH4, TH33, LEV-A, and LEV-B) on outdoor controller board are not disconnected. ③Check if unit is filled with specified amount of refrigerant. ④Measure resistance values among terminals on indoor valve and outdoor linear expansion valve using a tester.	P.38
		Abnormality of superheat due to low discharge temperature	U7		P.39
	2 blinking	Abnormal high pressure (High pressure switch 63H operated.)	U1	①Check if indoor/outdoor units have a short cycle on their air ducts. ②Check if connector (63H) on outdoor controller board is not disconnected. ③Check if heat exchanger and filter is not dirty. ④Measure resistance values among terminals on linear expansion valve using a tester.	P.38
	3 blinking	Abnormality of outdoor fan motor rotational speed	U8	①Check the outdoor fan motor. ②Check if connector (TH3) on outdoor controller board is disconnected.	P.39
		Protection from overheat operation(TH3)	Ud		P.41
	4 blinking	Compressor overcurrent breaking(Start-up locked)	UF	①Check if stop valves are open. ②Check looseness, disconnection, and converse connection of compressor wiring. ③Measure resistance values among terminals on compressor using a tester. ④Check if outdoor unit has a short cycle on its air duct.	P.41
		Compressor overcurrent breaking	UP		P.42
		Abnormality of current sensor (P.B.)	UH		P.41
		Abnormality of power module	U6		P.39
	5 blinking	Open/short of discharge thermistor (TH4) and comp. surface thermistor (TH33)	U3	①Check if connectors(TH3,TH4,TH6 ,TH7 and TH33) on outdoor controller board and connector (CN3) on outdoor power board are not disconnected. ②Measure resistance value of outdoor thermistors.	P.38
		Open/short of outdoor thermistors (TH3, TH6, TH7 and TH8)	U4		P.39
	6 blinking	Abnormality of heat sink temperature	U5	①Check if indoor/outdoor units have a short cycle on their air ducts. ②Measure resistance value of outdoor thermistor(TH8).	P.39
	7 blinking	Abnormality of voltage	U9	①Check looseness, disconnection, and converse connection of compressor wiring. ②Measure resistance value among terminals on compressor using a tester. ③Check if power supply voltage decreases. ④Check the wiring of CN52C.	P.40
4 blinking	1 blinking	Abnormality of room temperature thermistor (TH1)	P1	①Check if connectors (CN20, CN21, CN29 and CN44) on indoor controller board are not disconnected. ②Measure 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	①Check if connector (CN31)(CN4F) on indoor controller board is not disconnected. ②Measure resistance value of indoor thermistors. ③Measure resistance value among terminals on drain pump using a tester. ④Check if drain pump works. ⑤Check drain function.	*2
		Indoor drain overflow protection	P5		*2
		Leakage error (refrigerant system)	PA	①Converse connection of piping or wiring Note: The error will be cancelled by turning off power, and on again. ②Check if there are any inclination or clogging in drain pipe. ③Check if drain pan or drain sensor is dirty. ④Check if any foreign matter is attached to the moving part of float switch. ⑤Check LEV for proper function.	*2
	3 blinking	Freezing (cooling)/overheating (heating) protection	P6	①Check if indoor unit has a short cycle on its air duct. ②Check if heat exchanger and filter is not dirty. ③Measure resistance value on indoor and outdoor fan motors. ④Check if the inside of refrigerant piping is not clogged.	*2
	4 blinking	Abnormality of pipe temperature	P8	①Check if indoor thermistors(TH2 and TH5) are not disconnected from holder. ②Check if stop valve is open. ③Check converse connection of extension pipe. (on plural units connection) ④Check if indoor/outdoor connecting wire is connected correctly. (on plural units connection)	*2
	5 blinking	Indoor unit fan motor error	PB(Pb)	Defective fan motor winding	*2

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

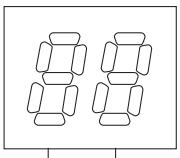
<Outdoor unit operation monitor function>
[When optional part 'A-Control Service Tool (PAC-SK52ST)' is connected to outdoor controller board (CNM)]
Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of check code by controlling DIP SW2 on 'A-Control Service Tool'.
Operation indicator SW2 : Indicator change of self diagnosis

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

<Digital indicator LED1 working details>
(Be sure that the 1 to 6 in the SW2 are set to OFF.)
(1) Display when the power supply ON
When the power supply ON, blinking displays by turns.
Wait for 4 minutes at the longest.
(2) When the display lights (Normal operation)
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

*C5 is displayed during replacement operation.

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.

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	—

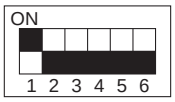
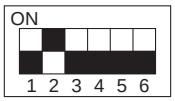
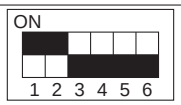
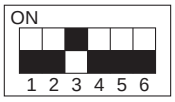
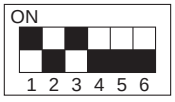
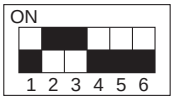
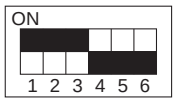
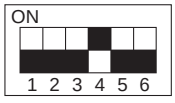
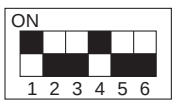
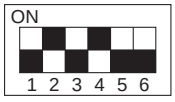
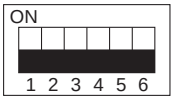
(3) When the display blinks
Inspection code is displayed when compressor stops due to the work of protection devices.

Display	Inspection unit
0	Outdoor unit
1	Indoor unit 1
2	Indoor unit 2
3	Indoor unit 3
4	Indoor unit 4

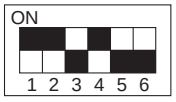
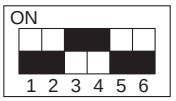
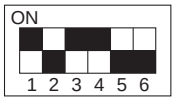
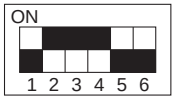
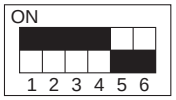
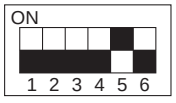
Display	Contents to be inspected (During operation)
U1	Abnormal high pressure (63H operated)
U2	Abnormal high discharge temperature and comp. surface thermistor, shortage of refrigerant
U3	Open/short circuit of discharge thermistor(TH4) and comp. surface thermistor (TH33)
U4	Open/short of outdoor unit thermistors (TH3, TH6, TH7 and TH8)
U5	Abnormal temperature of heat sink
U6	Abnormality of power module
U7	Abnormality of superheat due to low discharge temperature
U8	Abnormality in outdoor fan motor
Ud	Overheat protection
UF	Compressor overcurrent interruption (When Comp. locked)
UH	Current sensor error
UL	Abnormal low pressure
UP	Compressor overcurrent interruption
PL	Abnormality of refrigerant
P1–Pb	Abnormality of indoor units
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

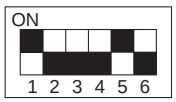
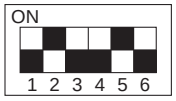
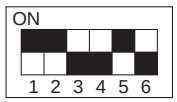
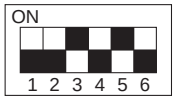
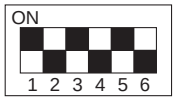
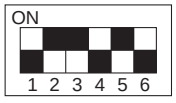
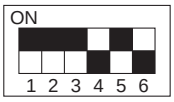
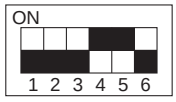
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Pipe temperature/Liquid (TH3) −60 to 91	−60 to 91 (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 →□□	℃
	Discharge temperature (TH4) −52 to 221	−52 to 221 (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 100 Hz 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
	Operation mode on error occurring	Operation mode of when operation stops due to error is displayed by setting SW2 like below. (SW2) 	Code display

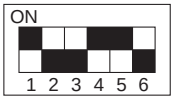
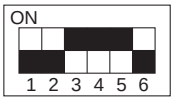
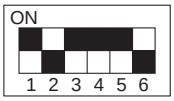
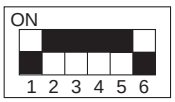
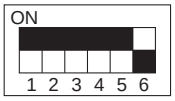
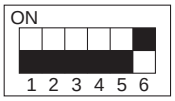
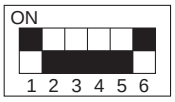
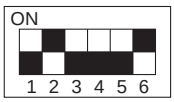
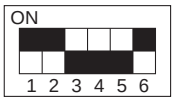
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Pipe temperature/Liquid (TH3) on error occurring −60 to 91	−60 to 91 (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 →□□	℃
	Discharge temperature (TH4) on error occurring −52 to 221	−52 to 221 (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 50	0 to 50	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 history (2) Alternate display of error unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Thermostat ON time 0 to 999	0 to 999 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 245 minutes; 0.5 s 0.5 s 2 s □2 →45 →□□	Minute
	Test run elapsed time 0 to 120	0 to 120 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105 minutes; 0.5 s 0.5 s 2 s □1 →05 →□□	Minute

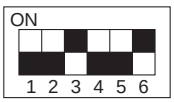
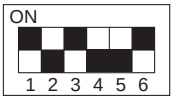
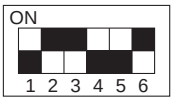
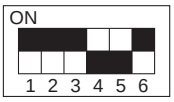
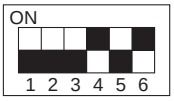
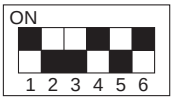
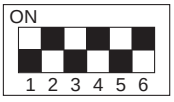
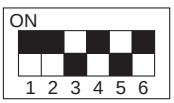
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	The number of connected indoor units	0 to 4 (The number of connected indoor units are displayed.)	Unit
	Capacity setting display	Displayed as an outdoor capacity code. Capacity / Code ZM100 / 20 ZM125 / 25 ZM140 / 28	Code display
	Outdoor unit setting information	• The tens digit (Total display for applied setting) Setting details / Display details H·P / Cooling only: 0 : H·P 1 : Cooling only Single phase / 3 phase: 0 : Single phase 2 : 3 phase • The ones digit Setting details / Display details Defrosting switch: 0 : Normal 1 : For high humidity (Example) When heat pump, 3 phase and defrosting (normal) are set up, "20" is displayed.	Code display
	Indoor pipe temperature/Liquid (TH2(1)) Indoor 1 −39 to 88	−39 to 88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	℃
	Indoor pipe temperature/Cond./Eva. (TH5(1)) Indoor 1 −39 to 88	−39 to 88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	℃
	Indoor pipe temperature/Liquid (TH2(2)) Indoor 2 −39 to 88	−39 to 88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	℃
	Indoor pipe temperature/Cond./Eva. (TH5(2)) Indoor 2 −39 to 88	−39 to 88 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	℃
	Indoor room temperature (TH1) 8 to 39	8 to 39	℃

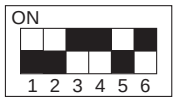
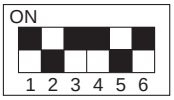
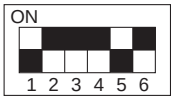
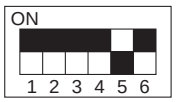
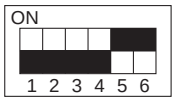
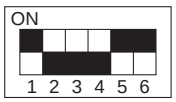
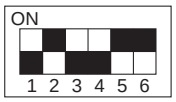
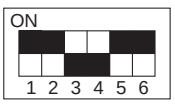
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Indoor setting temperature 17 to 30	17 to 30	°C
	Outdoor pipe temperature/2-phase (TH6) −60 to 91	−60 to 91 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	°C
	Outdoor Ambient temperature (TH7) −60 to 91	−60 to 91 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.)	°C
	Outdoor Heat sink temperature (TH8) −40 to 200	−40 to 200 (When the temperature is 0℃ or less, "–" and temperature are displayed by turns.) (When the thermistor detects 100℃ or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C
	Discharge superheat SHd 0 to 255 [Cooling = TH4−TH6 Heating = TH4−TH5]	0 to 255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C
	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
	LEV-B opening pulse	0 to 480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.)	Pulse
	U9 error detail history (latest)	<table><tr><th>Description</th><th>Display</th></tr><tr><td>Normal</td><td>00</td></tr><tr><td>Overvoltage error</td><td>01</td></tr><tr><td>Undervoltage error</td><td>02</td></tr><tr><td>Input current sensor error L_1-phase open error</td><td>04</td></tr><tr><td>Abnormal power synchronous signal</td><td>08</td></tr><tr><td>PFC/IGBT error (ZM·VKA) Undervoltage</td><td>20</td></tr></table> Display examples for multiple errors: Overvoltage (01) + Undervoltage (02) = 03 Undervoltage (02) + Power-sync signal error (08) = 0A L_1 phase open error (04) + PFC/IGBT error (20) = 24	Code display

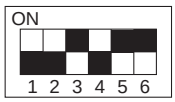
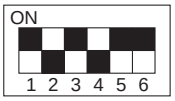
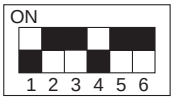
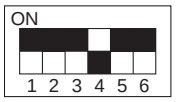
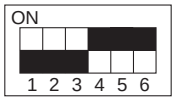
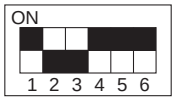
The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	DC bus voltage 150 to 400 (ZM100–140V) 300 to 750 (ZM100–140Y)	150 to 400 (ZM100–140V) 300 to 750 (ZM100–140Y) (When it is 100 V or more, hundreds digit, tens digit and ones digit are displayed by turns.)	V
	Capacity save 0 to 100 When air conditioner is connected to M-NET and capacity save mode is demanded, a value from “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
	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 heat sink (TH8)	Code display
	Operation frequency on error occurring 0 to 255	0 to 255 (When it is 100 Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 125Hz; 0.5 s 0.5 s 2 s □1 →25 →□□	Hz
	Fan step on error occurring 0 to 10	0 to 10	Step

The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	LEV-C opening pulse 0 to 480 (ZM140)	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 temperature/2-phase pipe (TH6) on error occurring −60 to 91	−60 to 91 (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 temperature/Ambient (TH7) on error occurring −60 to 91	−60 to 91 (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 temperature/Heat sink (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 superheat on error occurring SHd 0 to 255 [Cooling = TH4−TH6 Heating = TH4−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 → □□	℃

The black square (■) indicates a switch position.

SW2 setting	Display detail	Explanation for display	Unit
	Sub cool on error occurring SC 0 to 130 [Cooling = TH6−TH3 Heating = TH5−TH2]	0 to 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 s 0.5 s 2 s □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 →□□	Minute
	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.	℃
	Outdoor temperature/Comp. Surface (TH33) −52 to 221	−52 to 221 (When the comp. surface thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105°C; 0.5 s 0.5 s 2 s □1 →05 →□□	℃
	Controlling status of compressor operating frequency	The following code will be a help to know the operating status of unit. •The tens digit Display: 1 — Primary current control; 2 — Secondary current control •The ones digit (In this digit, the total number of activated control is displayed.) Display: 1 — Preventive control for excessive temperature rise of discharge temperature; 2 — Preventive control for excessive temperature rise of condensing temperature; 4 — Frosting preventing control; 8 — Preventive control for excessive temperature rise of heat sink (Example) The following controls are activated. • Primary current control • Preventive control for excessive temperature rise of condensing temperature • Preventive control for excessive temperature rise of heat sink LED 	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

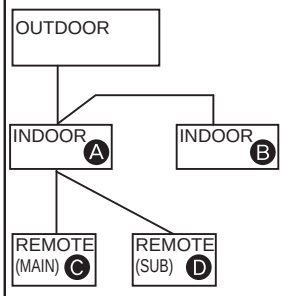
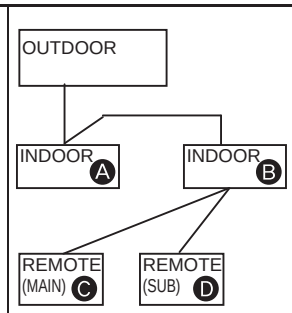
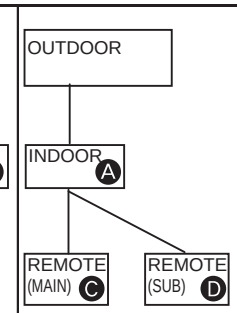
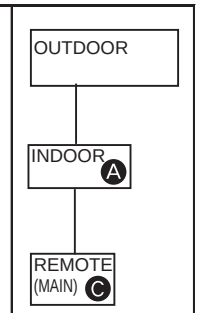
(1) Functions available when setting the unit number to 00 (Select 00 referring to ④ setting the indoor unit number.)

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	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	●	
Auto operation mode	Single set point	06	1		
	Dual set point		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		

*The function is available only when the wired remote controller is used. The function is 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) Functions available when setting the unit number to 01–02 or AL (07 in case of wireless remote controller).

Refer to the service manual that comes with each indoor unit.

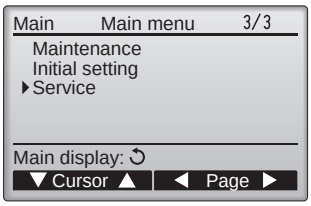
11-1-1. Selecting functions using the wired remote controller <PAR-3xMAA ("x" represents 0 or later)>

<Service menu>

Maintenance password is required

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

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



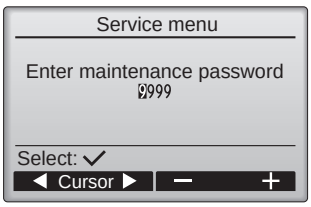
---

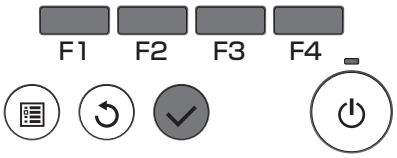
② When the Service menu is selected, a window will appear asking for the password.

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.





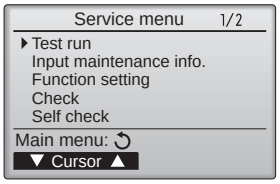
Note: The initial maintenance password is "9999". Change the default password as necessary to prevent unauthorized access. Have the password available for those who need it.

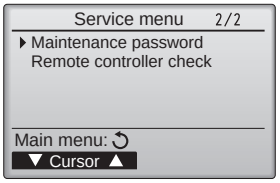
: If you forget your maintenance password, you can initialize the password to the default password "9999" by pressing and holding the F1 and F2 buttons simultaneously for three seconds on the maintenance password setting screen.

---

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

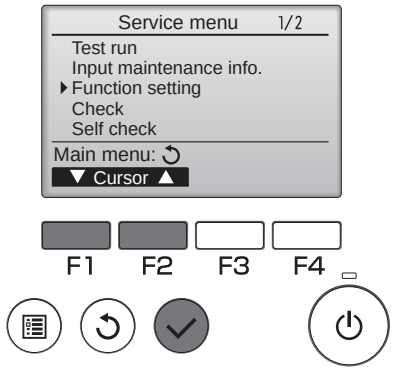
- To go back to the Service menu ..... ▣ button
- To return to the previous screen..... ↺ button

<Function setting>

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

▼

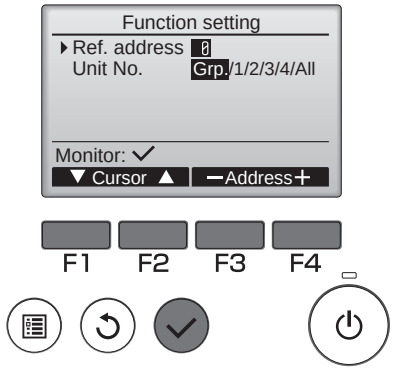
Select "Function setting" with the F1 or F2 button, and press the ✓ button.



---

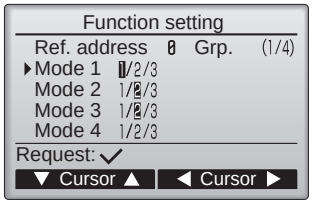
② Set the indoor unit refrigerant addresses and unit numbers with the F1 through F4 buttons, and then press the ✓ button to confirm the current setting.

<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.



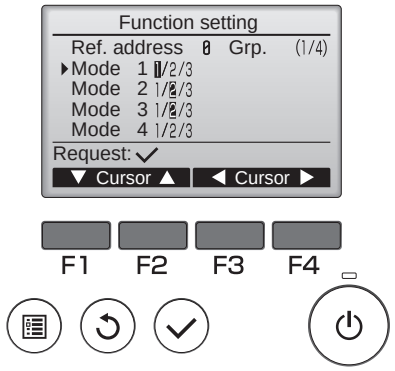
---

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



---

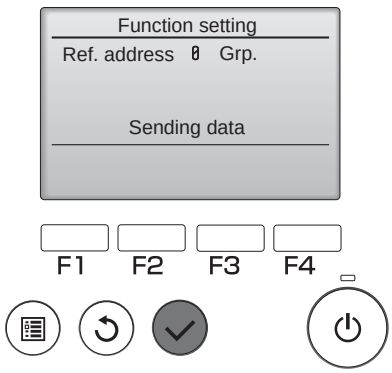
④ Use the F1 or F2 button to move the cursor to select the mode number, and change the setting number with the F3 or F4 button.



---

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.

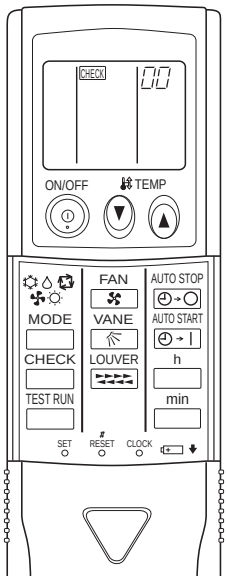
Note: • Make the above settings only on Mr. Slim units as necessary.
• The above function settings are not available for the City Multi units.
• Table 1 summarizes the setting options for each mode number. Refer to the indoor unit Installation Manual for the detailed information about initial settings, 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.



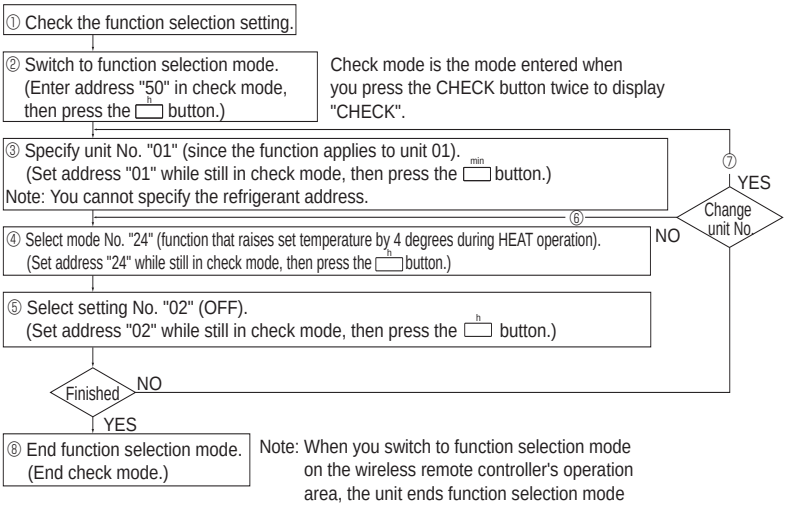
11-1-2. Selecting functions using the wireless remote controller (Type C)

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 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>

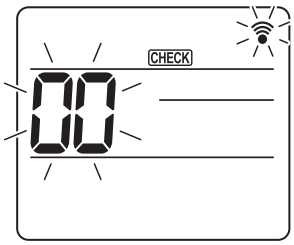


Fig. 11-1

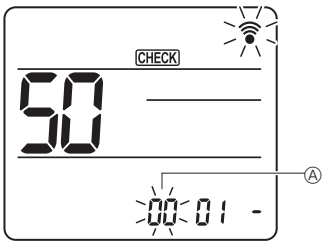


Fig. 11-2

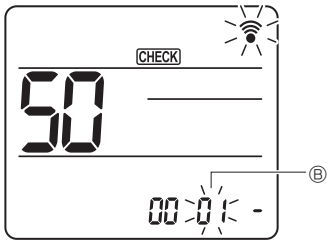


Fig. 11-3

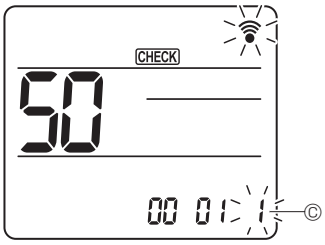


Fig. 11-4

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 ▲▼ 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 ▲▼ button to set unit number A. (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 ▲▼ button to set Mode number B. (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 ▲▼ button to change the Setting number C. (Fig. 11-4)
Direct the wireless remote controller toward the receiver of the indoor unit and press the SET button.

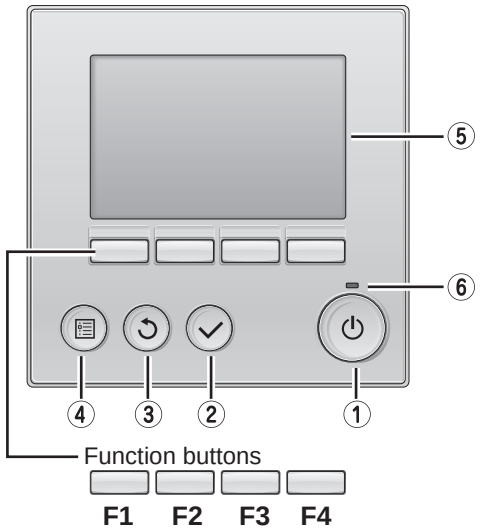
⑤ To select multiple functions continuously
Repeat select 3 and 4 to change multiple function settings continuously.

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

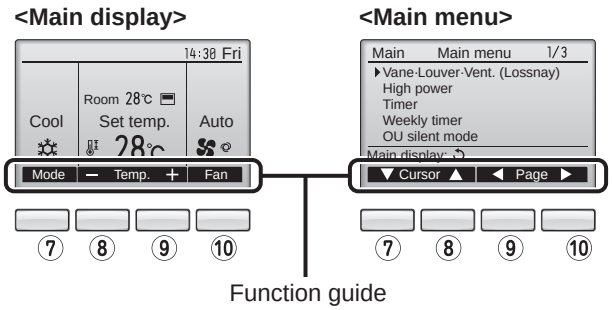
Note:
Make the above settings on Mr. Slim units as necessary.
- **Be sure to write down the settings for all functions if any of the initial settings has been changed after the completion of installation work.**

11-2. FUNCTION SELECTION OF REMOTE CONTROLLER

11-2-1. <PAR-32MAA>



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

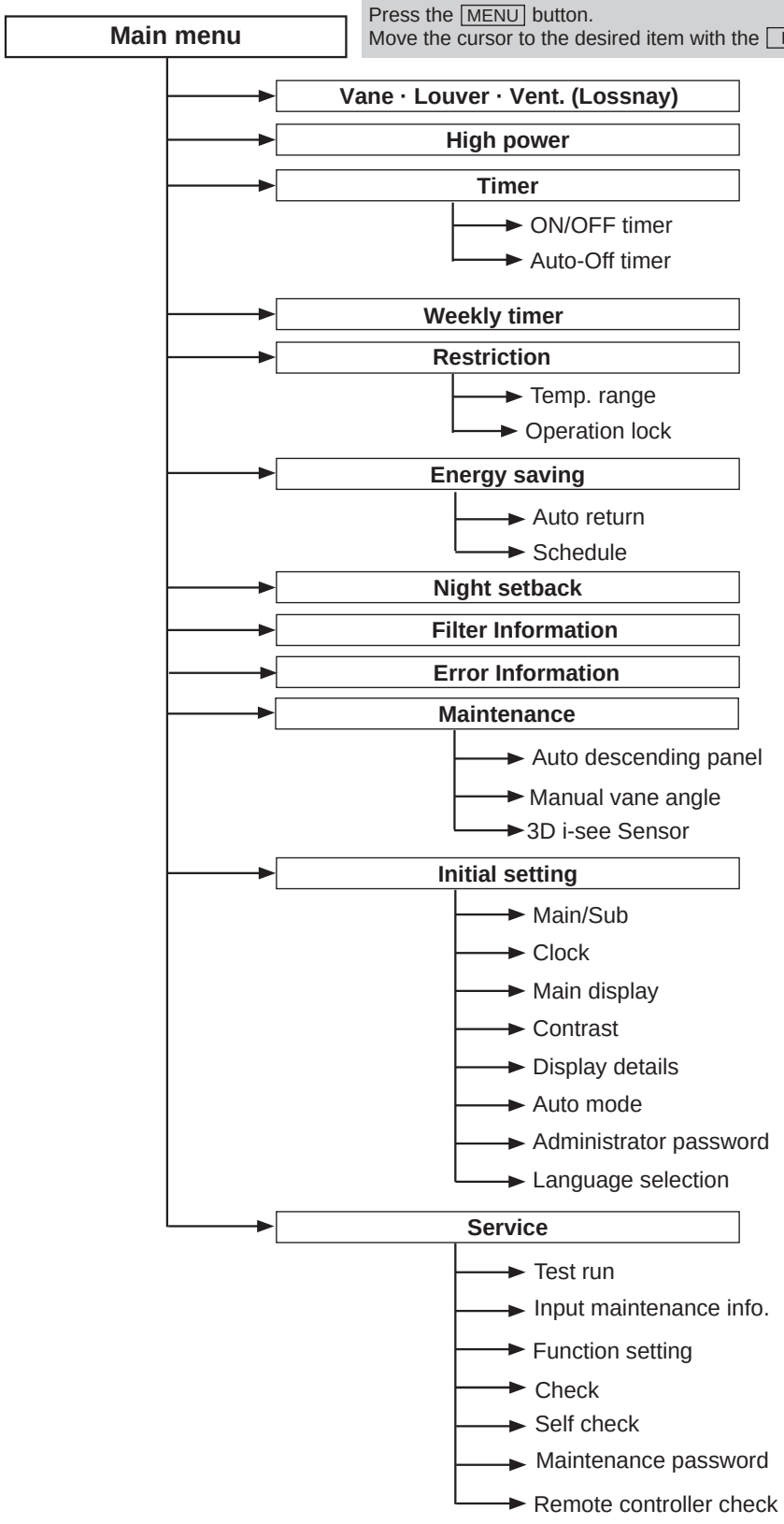
Main display : Press to increase temperature.
Main menu : Press to go to the previous page.

⑩ Function button F4

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

Menu structure

Press the [MENU] button.
Move the cursor to the desired item with the [F1] and [F2] buttons, and press the [SELECT] button.



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 MONITORING THE OPERATION DATA BY THE REMOTE CONTROLLER

12-1. HOW TO "MONITOR THE OPERATION DATA"

12-1-1. <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.

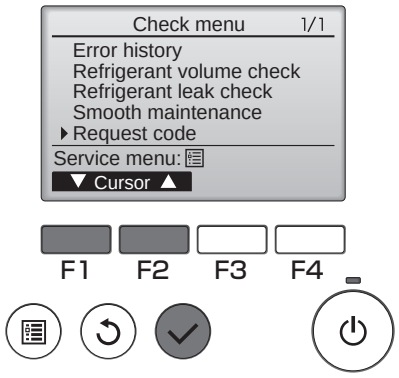
① Select "Service" from the Main menu, and press the ⊙ button.

▼

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.



---

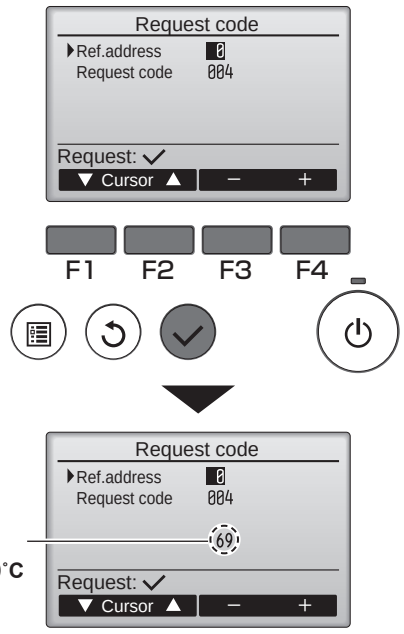
② Set the Refrigerant address and Request code.

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

12-2. 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 12-2-1. 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	Discharge temperature (TH4)	3–217	℃	
5	Outdoor unit -Liquid pipe 1 temperature (TH3)	−40–90	℃	
6				
7	Outdoor unit-2-phase pipe temperature (TH6)	−39–88	℃	
8				
9	Outdoor unit-Outside air temperature (TH7)	−39–88	℃	
10	Outdoor unit-Heatsink temperature (TH8)	−40–200	℃	
11				
12	Discharge superheat (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	LEV (C) opening	5–500	Pulses	
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 12-2-1.Detail Contents in Request Code.	–	
51	Outdoor unit-Control state	Refer to 12-2-1.Detail Contents in Request Code.	–	
52	Compressor-Frequency control state	Refer to 12-2-1.Detail Contents in Request Code.	–	
53	Outdoor unit-Fan control state	Refer to 12-2-1.Detail Contents in Request Code.	–	
54	Actuator output state	Refer to 12-2-1.Detail Contents in Request Code.	–	
55	Error content (U9)	Refer to 12-2-1.Detail Contents in Request Code.	–	
56				
57				
58				
59				
60	Signal transmission demand capacity	0–255	%	
61	Contact demand capacity	Refer to 12-2-1.Detail Contents in Request Code.	–	
62	External input state (silent mode, etc.)	Refer to 12-2-1.Detail Contents in Request Code.	–	
63				
64				
65				
66				
67				
68				
69				
70	Outdoor unit-Capacity setting display	Refer to 12-2-1.Detail Contents in Request Code.	–	
71	Outdoor unit-Setting information	Refer to 12-2-1.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	

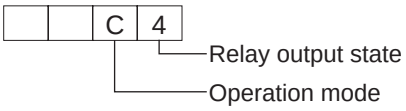
Request code	Request content	Description (Display range)	Unit	Remarks
103	Error history 1 (latest)	Displays error history. ("--" is displayed if no history is present.)	Code	
104	Error history 2 (second to last)	Displays error history. ("--" is displayed if no history is present.)	Code	
105	Error history 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".	–	
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 (TH4) or comp. surface temperature (TH33) at time of error	3–217	℃	
112	Outdoor unit -Liquid pipe 1 temperature (TH3) at time of error	−40–90	℃	
113				
114	Outdoor unit-2-phase pipe temperature (TH6) at time of error	−39–88	℃	
115				
116	Outdoor unit-Outside air temperature (TH7) at time of error	−39–88	℃	
117	Outdoor unit-Heatsink temperature (TH8) at time of error	−40–200	℃	
118	Discharge superheat (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 2 or more indoor units (twin, triple, quad).
133	Indoor -Cond/Eva. pipe temperature at time of error	−39–88	℃	Average value of all indoor units is displayed if the air conditioner consists of 2 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 -Cond/Eva. 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 12-2-1. Detail Contents in Request Code.	–	
164	Indoor unit-SW3 information	Undefined	–	
165	Wireless pair No. (indoor control board side) setting	Refer to 12-2-1. Detail Contents in Request Code.	–	
166	Indoor unit-SW5 information	Undefined	–	
167				
~				
189				
190	Indoor unit-Microprocessor version information	Examples) Ver 5.01 → "0501"	Ver	
191	Indoor unit-Microprocessor version information (sub No.)	Auxiliary information (displayed after version information) Examples) Ver 5.01 A000 → "A000"	–	
192				

12-2-1. Detail Contents in Request Code

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

Data display



Operation mode

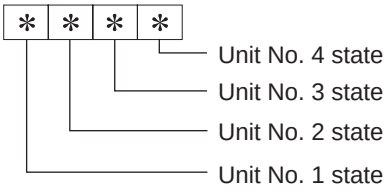
Display	Operation mode
0	STOP • FAN
C	COOL • DRY
H	HEAT
d	DEFROST

Relay output state

Display	Power currently supplied to compressor	Compressor	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	

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

Data display



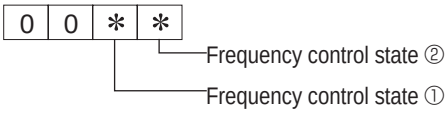
Display	State
0	Normal
1	Preparing for heat operation
2	–
3	–
4	Heater is ON.
5	Anti-freeze protection is ON.
6	Overheat protection is ON.
7	Requesting compressor to turn OFF
F	There are no corresponding units.

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

Actuator output state ②

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

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

Data display 0 0 * *

- Error content ①
- Error content ②

Error content ① ●: Detected

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

Error content ② ●: Detected

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

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

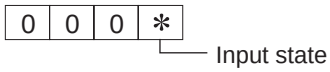
Data display

Setting content

Display	Setting value
0	0%
1	50%
2	75%
3	100%

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

Data display



Input state ●: Input present

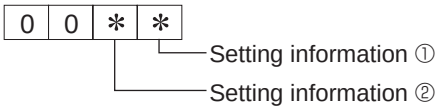
Display	Contact demand input	Silent mode input	Spare 1 input	Spare 2 input
0				
1	●			
2		●		
3	●	●		
4			●	
5	●		●	
6		●	●	
7	●	●	●	
8				●
9	●			●
A		●		●
b	●	●		●
C			●	●
d	●		●	●
E		●	●	●
F	●	●	●	●

[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



Setting information ①

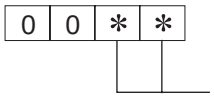
Display	Defrost mode
0	Standard
1	For high humidity

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")

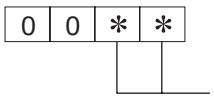
Data display



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

13 EASY MAINTENANCE FUNCTION

13-1. SMOOTH MAINTENANCE

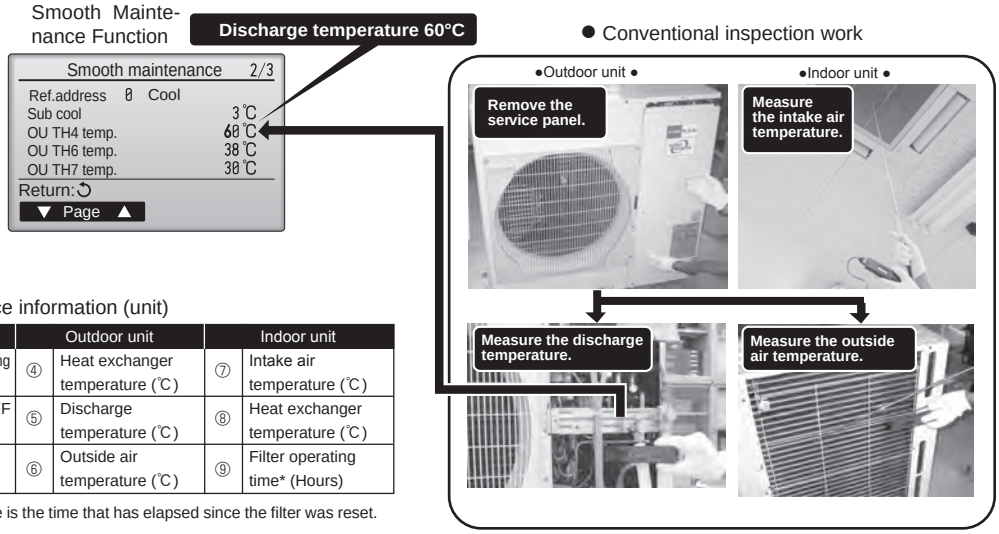
13-1-1. <PAR-3xMAA ("x" represents 0 or later)>

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.

- Reduces maintenance work drastically.
- Enables you to check operation data of the indoor and outdoor units by remote controller.
  Furthermore, use of maintenance stable-operation control that fixes the operating frequency, allows smooth inspection, even for inverter models.



Easy maintenance information (unit)

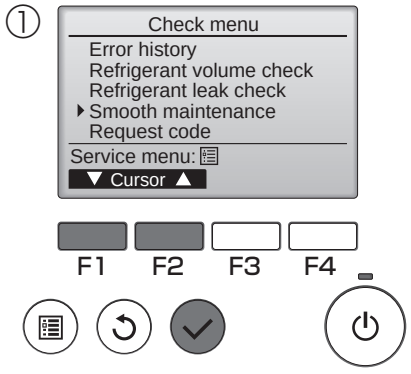
Compressor		Outdoor unit		Indoor unit	
①	Accumulated operating time (×10 hours)	④	Heat exchanger temperature (℃)	⑦	Intake air temperature (℃)
②	Number of ON/OFF times (×10 times)	⑤	Discharge temperature (℃)	⑧	Heat exchanger temperature (℃)
③	Operating current (A)	⑥	Outside air temperature (℃)	⑨	Filter operating time* (Hours)

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

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.



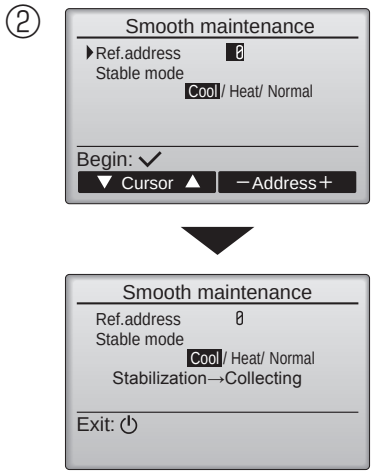
Set each item.

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.
Stable mode will take approx. 20 minutes.

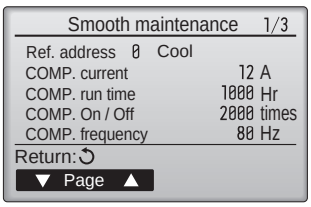


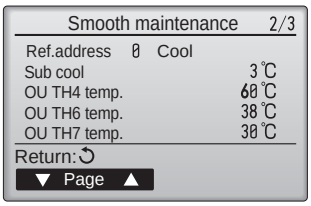
Continue to the next page

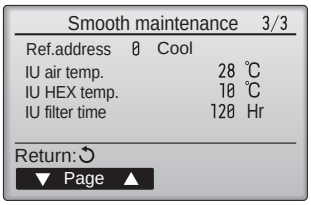
The operation data will appear.

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







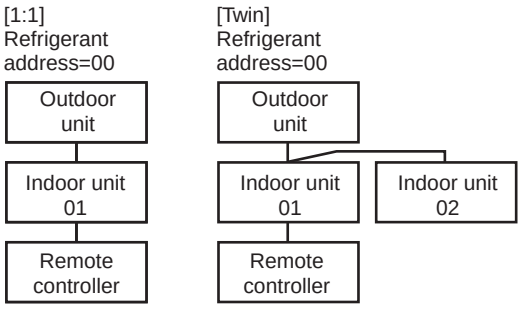
Navigating through the screens

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

■ Refrigerant address

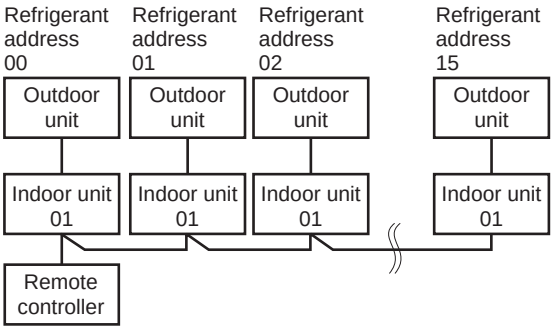
Single refrigerant system

In the case of single refrigerant system, the refrigerant address is "00" and no operation is required.
Simultaneous twin, triple units belong to this category (single refrigerant system).



Multi refrigerant system (group control)

Up to 16 refrigerant systems (16 outdoor units) can be connected as a group by 1 remote controller. To check or set the refrigerant addresses.



<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)	℃	

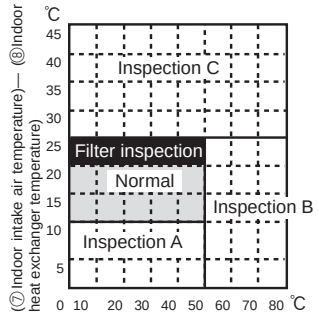
Notes:
1. Fixed Hz operation may not be possible under the following temperature ranges.
   A) In cool mode, outdoor intake air temperature is 40℃ or higher or indoor intake air temperature is 23℃ or lower.
   B) In heat mode, outdoor intake air temperature is 20℃ or higher or indoor intake air temperature 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 tofrost forming on the outdoor heat exchanger.

Area	Check item	Judgement	
		Cool	Heat
Normal	Normal operation state		
Filter inspection	Filter may be clogged.*		
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 guide based on Japanese standard conditions.
It may be changed depending on the indoor and outdoor temperature.
* It may be judged as "Filter inspection" due to the outdoor and indoor temperature, even though it is not clogged.

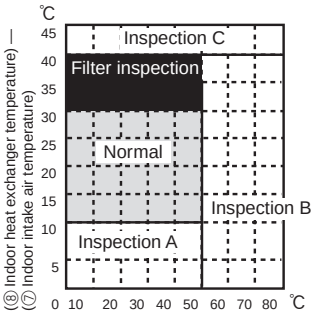
Result

Cool mode



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

Heat mode



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

14 DISASSEMBLY PROCEDURE

PUZ-ZM100VKA.UK **PUZ-ZM125VKA.UK** **PUZ-ZM140VKA.UK**
PUZ-ZM100YKA.UK **PUZ-ZM125YKA.UK** **PUZ-ZM140YKA.UK**

OPERATING PROCEDURE

1. Removing the service panel and top panel

(1) Remove the service panel fixing screws (4 for front/ 5 x 12), then slide the service panel downward to remove it. (The service panel is fixed to the side panel (R) with hooks on the right side.)

(2) Remove the top panel fixing screws (3 for front and 3 for rear/ 5 x 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.

2. Removing the fan motor (MF1, MF2)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the cover panel (front) fixing screws (1 for front/ 5 x 12 and 1 for right side/ 5 x 12), then slide the cover panel (front) upward to remove it. (See Photo 1) (The cover panel (front) is fixed to the cover panel (rear) with hooks on the right side.)
(4) Remove the front panel fixing screws (2 for front/ 4 x 10 and 5 for front/ 5 x 12), then slide the front panel upward to remove it.(See figure 1) (The front panel is fixed to the side panel (L) with hooks on the left side.)
(5) 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)
(6) Disconnect the connectors, CNF1 (WH) and CNF2 (WH) on the controller circuit board in the electrical parts box. (See Photo 4 or 5)
(7) Loosen the clamp for the lead wire on motor support and separator.
(8) Release the lead wire from the hole on separator.
(9) Remove the fan motor fixing screws (4 for front/ 5 x 20) to remove the fan motor. (For the each fan motor on top and under)

Note1: Tighten the propeller fan with a torque of 5.7 ± 0.3 N·m.
Note2: When installing the fan motor, make sure to hook the lead wire to the hook which is located under the fan motor, then fasten it with a clamp. When fastening the clamp, make sure to route the lead wire as shown below.

Figure 2

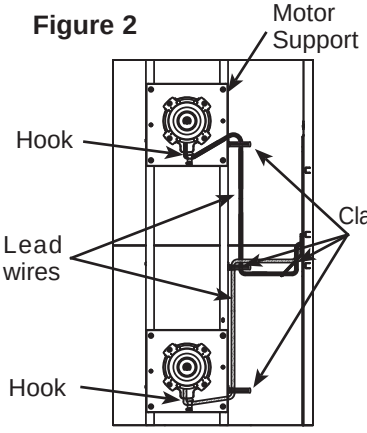
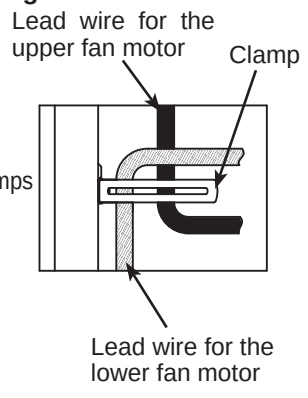


Figure 3



PHOTOS

Photo 1

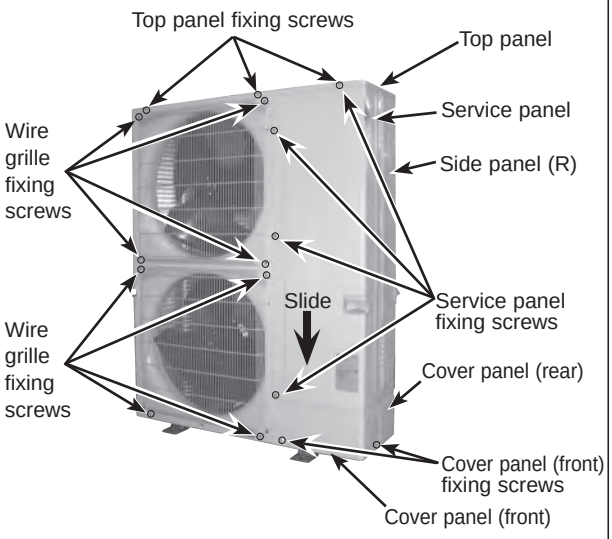


Figure 1

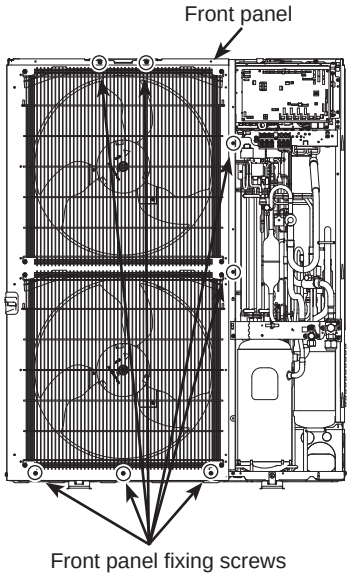


Photo 2

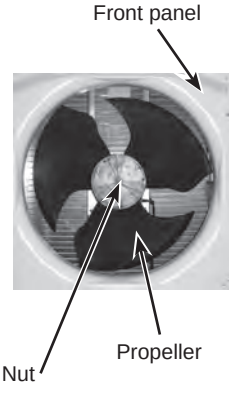
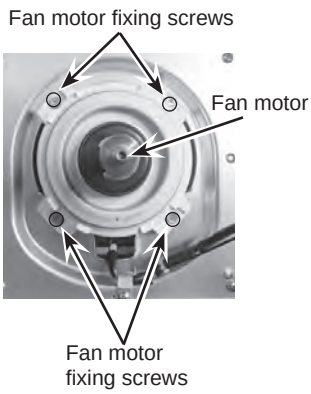
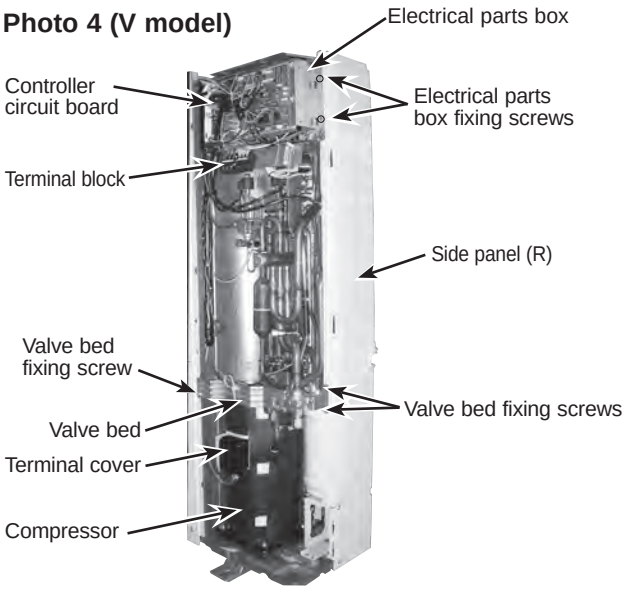
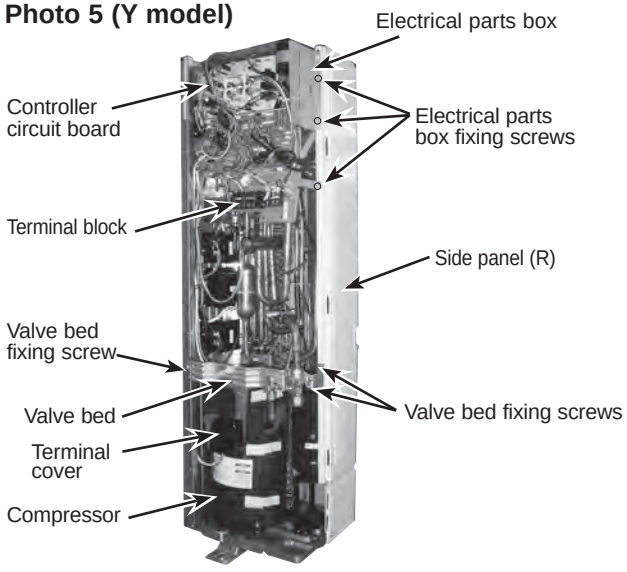


Photo 3



OPERATING PROCEDURE	PHOTOS
3. Removing the electrical parts box (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the power supply cable from terminal block. (4) Disconnect the indoor/outdoor connecting wire from terminal block. (5) Disconnect the connector CNF1 (WH), CNF2 (WH), TH3 (WH), TH4 (WH), TH7/ 6 (RD), TH33 (BK), 21S4 (GN), 63H (YE), LEV-A (WH), LEV-B (RD), and LEV-C (BU) from the controller circuit board. <Symbols on the board> • Fan motor (CNF1, CNF2) • Thermistor <Liquid> (TH3) • Thermistor <Discharge> (TH4) • Thermistor <Ambient/ 2-Phase Pipe> (TH7/6) • Thermistor <Comp. Surface> (TH33) • 4-way valve (21S4) • High pressure switch (63H) • LEV (LEV-A and LEV- B) (LEV-C (140 only)) (6) Loosen the clamps, fasteners and cable strap for the lead wire in the electrical parts box and separator. (See photo 4 or 5) (7) Loosen the lead wires fixed to the pipes with bands. (8) Remove the terminal cover to disconnect the COMP lead wire. (9) Remove the electrical parts box fixing screws, then slide the electrical parts box upward to remove it. Note that number of the electrical parts box fixing screw is different on each model, V or Y. • V model: 2 for front/ 4 x 10 • Y model: 3 for front/ 4 x 10 (The electrical parts box is fixed to the side panel (R) with a hook on the right side, and to the separator duct with hooks on the left side.)	**Photo 4 (V model)**  **Photo 5 (Y model)** 

OPERATING PROCEDURE

4. Disassembling the electrical parts box

(1) Disconnect all the connectors on the controller circuit board.

[Disassembling the electrical parts box for V model]

(2) Remove the 3 screws, screw ①, ② and ③, that fix the plate equipped with the outdoor controller circuit board, and the electrical parts box, screw ①, ② and ③ from the front of the electrical parts box. (See Figure 4)

(3) Remove the plate equipped with the outdoor controller circuit board from the electrical parts box. (The plate is fixed to the cont base piece with hooks on the left side.)

[Disassembling the electrical parts box for Y model]

(2) Remove the 3 screws, screw ①, ② and ③, that fix the plate equipped with the outdoor controller circuit board, and the electrical parts box, screw ① from the front and the screw ② and ③ from the bottom of the electrical parts box. (See Photo 6 and 7)

(3) Slide the plate in the direction of the arrow A and remove it. (See Photo 6.)

(4) Remove the lead wires from the clamp on the bottom of the electrical parts box. (See Photo 6)

(5) Remove the 3 screws, screw ④ and ⑤, that fix the bottom side of the electrical parts box and remove the bottom side plate by sliding in the direction of the arrow B. (See Photo 8 and 9)

(6) Remove the 2 screws, screw ⑥ and ⑦, that fix the plate equipped with the noise filter circuit board and converter circuit board. (See Photo 10)

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

PHOTOS & ILLUSTRATION

Figure 4

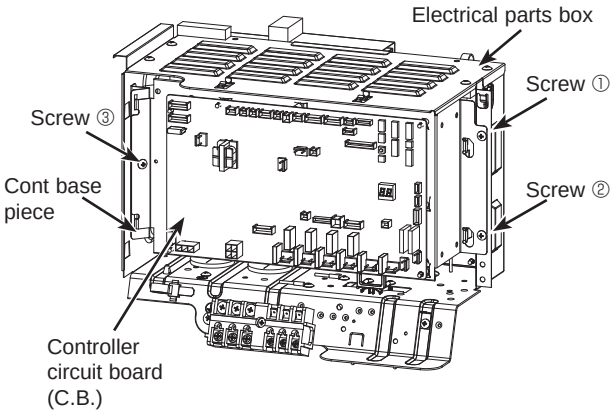


Photo 6

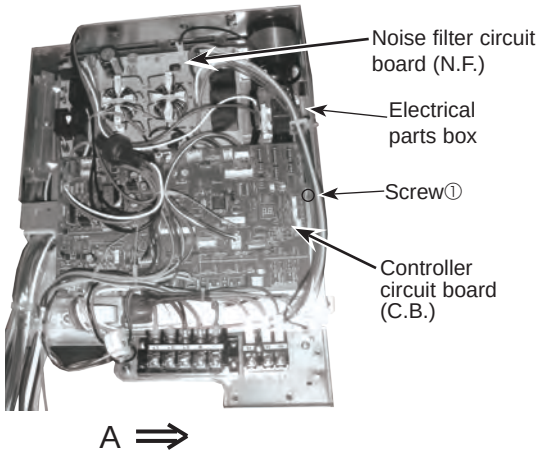


Photo 7

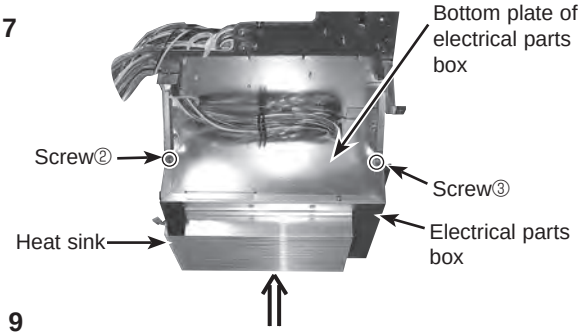


Photo 8

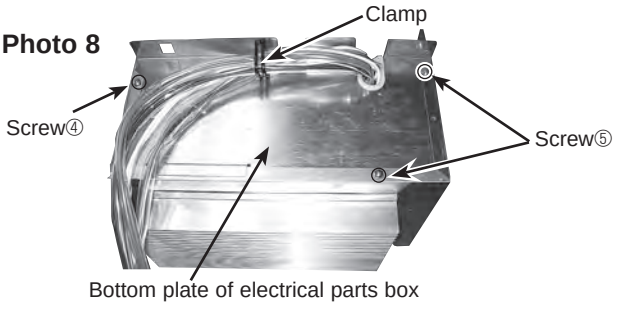


Photo 9

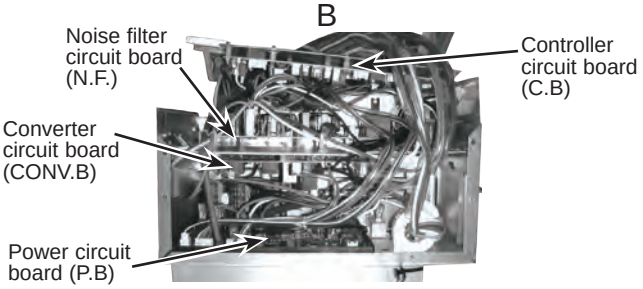
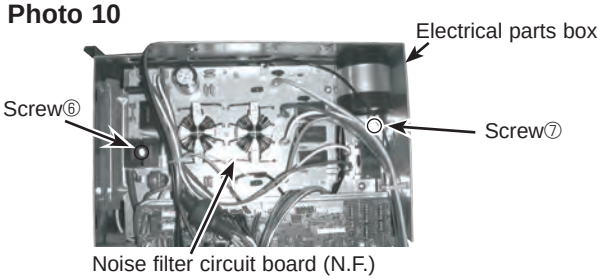
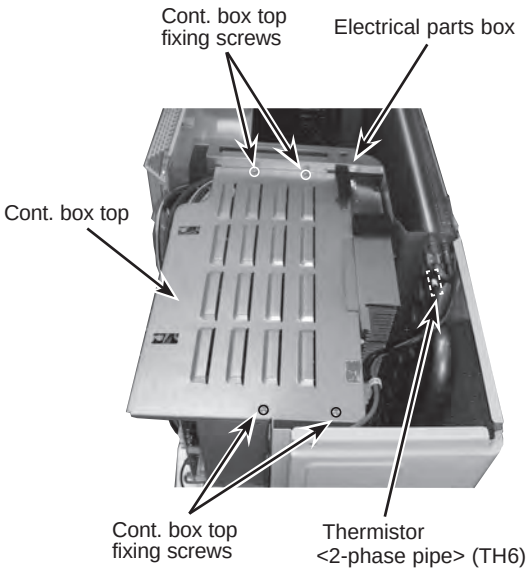
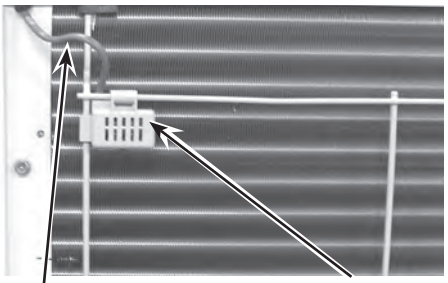
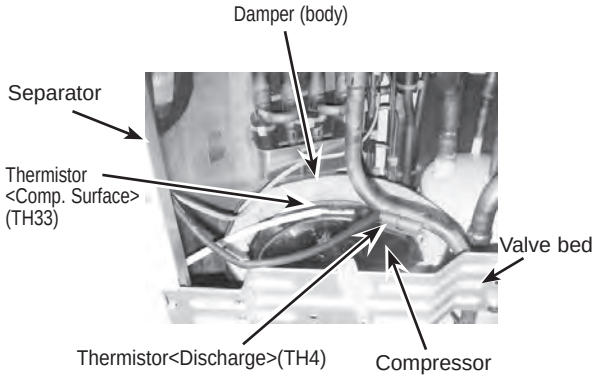
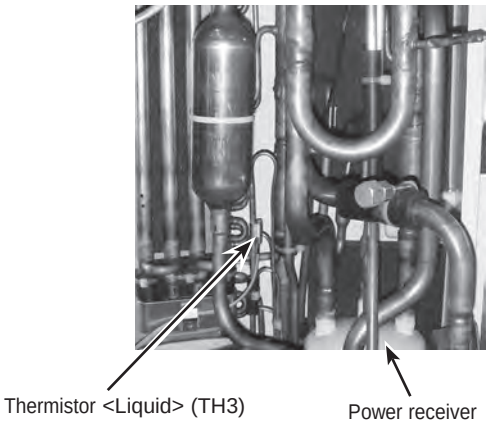


Photo 10



OPERATING PROCEDURE	PHOTOS
5. Removing the thermistor <2-Phase Pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (RD) on the controller circuit board in the electrical parts box. (See Photo 4 or 5) (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 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 <2-phase pipe> (TH6) from thermistor clip. [**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 clip. **Note: When replacing thermistor <2-phase pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together. Refer to procedure No.6 on the next page to remove the thermistor <Ambient> (TH7).**	**Photo 11** 
6. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (RD) on the controller circuit board in the electrical parts box. (See Photo 4 or 5) (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. (See Photo 6) (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. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <2-phase pipe> (TH6), since they are combined together. Refer to procedure No.5 in the previous page to remove the thermistor <2-phase pipe>(TH6).**	**Photo 12** 

OPERATING PROCEDURE	PHOTOS
7. Removing the thermistor <Liquid> (TH3), thermistor <Discharge> (TH4), and thermistor <Comp. Surface> (TH33) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector, TH3 (WH), TH4 (WH), and TH33 (BK) on the controller circuit board in the electrical parts box. (See Photo 4 or 5) (4) Loosen the fastener for the lead wire on the controller circuit board in the electrical parts box. (5) Loosen the clamp for the lead wire on separator. (6) Pull out the thermistor <Liquid> (TH3) from thermistor clip. (7) Pull out the thermistor <Discharge> (TH4) from thermistor holder. (8) Remove the top damper, then pull out the thermistor <Comp. surface> (TH33) from thermistor holder.	**Photo 13**  **Photo 14** 

OPERATING PROCEDURE

8. Removing the 4-way valve coil (21S4), LEV coil (LEV (A), LEV (B), (LEV (C)) and lead wire for high pressure switch.

(1) Remove the electrical parts box. (See Photo 4 or 5)
(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.

Note: LEV-C is for ZM140 model only.

9. Removing the 4-way valve, LEV (LEV (A), LEV (B)), (LEV (C)) and high pressure switch.

(1) Remove the electrical parts box. (See Photo 4 or 5)
(2) Remove the cover panel (front) fixing screws (1 for front and 1 for side/ 5 x 12), then slide the cover panel (front) upward to remove it.
(The cover panel (front) is fixed to the cover panel (rear) with hooks on the rear side.) (See Photo 1)
(3) Remove the cover panel (rear) fixing screw (2 for right side and 2 for rear/ 5 x 12), the slide the cover panel (rear) upward to remove it.
(The cover panel (rear) is fixed to the side plate with hooks on the rear side.) (See Photo 1)
(4) Remove the valve bed fixing screws (3 for front/ 5 x 12) and the ball valve and stop valve fixing screws (4 for front/ 5 x 16) to remove the valve bed.
(5) Remove the side panel (R) fixing screws (3 for rear/ 5 x 12), then slide the side panel (R) upward to remove it.
(The side panel (R) is fixed to the side plate with hooks on the rear side.)
(6) Recover refrigerant.

[Removing the 4-way valve]
(7) Remove the 4-way valve coil. (See Photo 15 or 16)
(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 15 or 16)
(8) 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.

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
Note 4: LEV-C is for ZM140 model only.

PHOTOS

Photo 15 (ZM100/125 model)

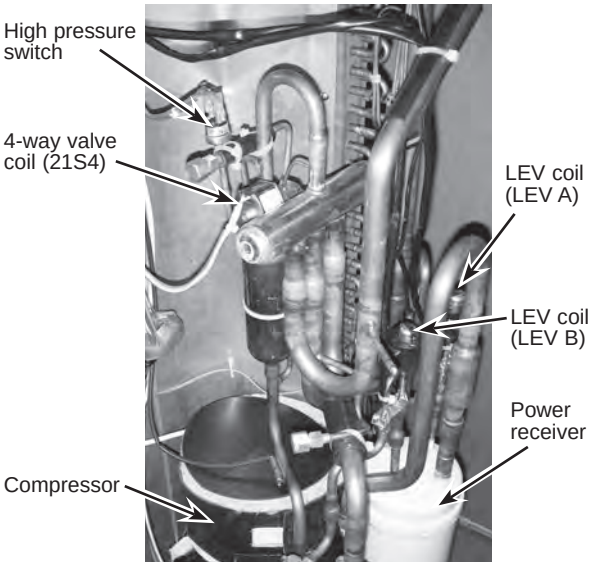


Photo 16 (ZM140 model)