

August 2007

 No. OC316  
 REVISED EDITION-D


# TECHNICAL & SERVICE MANUAL

**[Model name]**
**<Outdoor unit>**
**MXZ-8A140VA**
**[Service Ref.]**
**MXZ-8A140VA  
 MXZ-8A140VA<sub>1</sub>  
 MXZ-8A140VA<sub>2</sub>  
 MXZ-8A140VA<sub>3</sub>**
**Revision:**

- MXZ-8A140VA<sub>3</sub> is added in REVISED EDITION-D.
- Some descriptions have been modified.

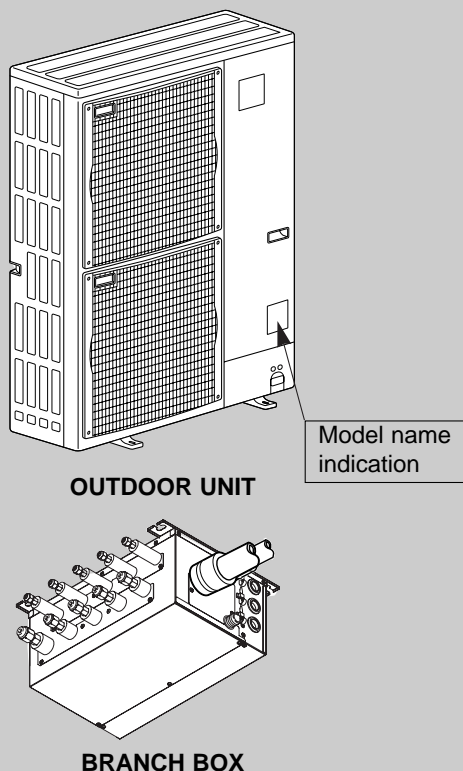
- Please void OC316 REVISED EDITION-C.

**NOTE:**

- This service manual describes technical data of outdoor unit and branch box. As for indoor units, refer to its service manual.
- RoHS compliant products have <G> mark on the spec name plate.
- For servicing RoHS compliant products, refer to the RoHS PARTS LIST.

**<Branch box>**
**PAC-AK50BC**
**PAC-AK30BC**

 (Indispensable optional parts  
 for MXZ-8A140VA)

**PAC-AK50BC  
 PAC-AK30BC**

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**MXZ-8A140VA<sub>2</sub> → MXZ-8A140VA<sub>3</sub>**

The parts below have been changed.

- THERMISTOR (DISCHARGE/TH4) (Connector change)
- CONTROLLER CIRCUIT BOARD(C.B)
- NOISE FILTER CIRCUIT BOARD(N.F.)
- ACTIVE FILTER MODULE(ACTM)
- RELAY(52C), RESISTOR(RS)(including N.F.)

**MXZ-8A140VA<sub>1</sub> → MXZ-8A140VA<sub>2</sub>**

The parts below have been changed.

- FOUR-WAY VALVE AND COIL(21S4)
- CONTROLLER CIRCUIT BOARD(C.B.)
- FAN MOTOR(MF1, MF2)
- SOLENOID VALVE AND COIL(SV2)

**MXZ-8A140VA → MXZ-8A140VA<sub>1</sub>**

The parts below have been changed.

- POWER CIRCUIT BOARD(P.B.)
- NOISE FILTER CIRCUIT BOARD(N.F.)
- THERMISTOR (OUTDOOR / TH7)  
(Length change)

## 2-1. ALWAYS OBSERVE FOR SAFETY

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

## 2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Caution for units utilizing refrigerant R410A

**Use new refrigerant pipes.**

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

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

**Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)**

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

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

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

**Charge refrigerant from liquid phase of gas cylinder.**

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

**Do not use refrigerant other than R410A.**

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

**Use a vacuum pump with a reverse flow check valve.**

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

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

The following tools are necessary to use R410A refrigerant.

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

**Keep the tools with care.**

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

**Do not use a charging cylinder.**

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

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

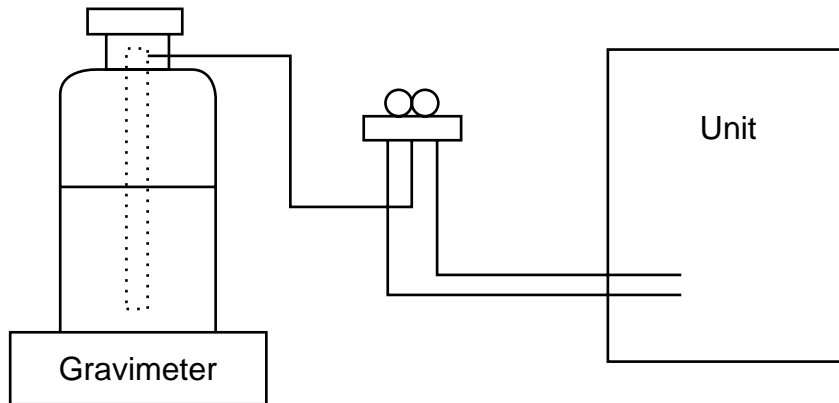
## [1] Cautions for service

- (1) Perform service after recovering the refrigerant left in unit completely.
- (2) Do not release refrigerant in the air.
- (3) After completing service, charge the cycle with specified amount of refrigerant.
- (4) When performing service, install a filter drier simultaneously.  
Be sure to use a filter drier for new refrigerant.

## [2] Additional refrigerant charge

### When charging directly from cylinder

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



## [3] Service tools

- (1) Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	<ul style="list-style-type: none"> <li>·Only for R410A</li> <li>·Use the existing fitting specifications. (UNF1/2)</li> <li>·Use high-tension side pressure of 5.3MPa-G or over.</li> </ul>
②	Charge hose	<ul style="list-style-type: none"> <li>·Only for R410A</li> <li>·Use pressure performance of 5.09MPa-G or over.</li> </ul>
③	Electronic scale	—
④	Gas leak detector	·Use the detector for R134a, R407C or R410A.
⑤	Adaptor for reverse flow check	·Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	<ul style="list-style-type: none"> <li>·Only for R410A   ·Top of cylinder (Pink)</li> <li>·Cylinder with syphon</li> </ul>
⑧	Refrigerant recovery equipment	—

## (2) Cautions for refrigerant piping work

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

### ① Thickness of pipes

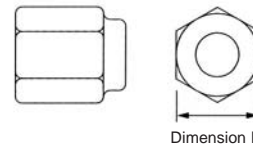
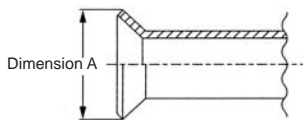
Because the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 0.7mm or below.)

Diagram below: Piping diameter and thickness

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

### ② Dimensions of flare cutting and flare nut

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



Flare cutting dimensions (mm)

Nominal dimensions(inch)	Outside diameter	Dimension A ( $\pm 0.4$ )	
		R410A	R22
1/4	6.35	9.1	9.0
3/8	9.52	13.2	13.0
1/2	12.70	16.6	16.2
5/8	15.88	19.7	19.4
3/4	19.05	—	23.3

Flare nut dimensions (mm)

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

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

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

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

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

○ : Tools for other refrigerants can be used.

# 3 OVERVIEW OF UNITS

## 3-1. CONSTRUCTION OF SYSTEM

<b>Outdoor unit</b>		MXZ-8A140VA/ MXZ-8A140VA <sub>1</sub> / MXZ-8A140VA <sub>2</sub> / MXZ-8A140VA <sub>3</sub>	
		Rated capacity (kW) (Cooling/Heating)	14.0/16.0
		5HP	
		R410A	
Indoor unit that can be connected	<b>Capacity</b>	Type 22 ~ Type 80 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> <b>CAUTION</b> : The indoor unit which rated capability exceeds 8.0kW (80 type) can NOT be connected.         </div>	
	Number of units	2 ~ 8 units	
	Total system wide capacity	31 ~ 132 % of outdoor unit capacity (4.4 kW ~ 18.5 kW)	
Branch box that can be connected	Number of units	1 ~ 2 units	



Connectable indoor unit lineup (Heat pump inverter type)										
Model type		Model name	Capacity class							
			2.2kW	2.5kW	3.5kW	5.0kW	6.0kW	7.1kW	8.0kW	
Wall mounted	deluxe	MSZ-FA25/35, FD25/35		●	●					
	standard	MSZ-GA22/25/35/50/60/71/80, GB50, GC22/25/35	●	●	●	●	●	●	●	●
		MSXZ-DB25/35		●	●					
Ceiling concealed	Low static pressure	SEZ-KC25, KA35/50/60/71, KD25/35/50/60/71		●	●	●	●	●	●	
	Low static pressure	MEXZ-GA25/35/50/60		●	●	●	●			
	High static pressure	PEAD-RP50/60/71EA.UK				●	●	●		
	High static pressure	PEAD-RP60/71GA.UK					●	●		
	High static pressure	PEA-RP71EA							●	
4-way ceiling cassette	2 by 2 type	SLZ-KA25/35/50		●	●	●				
	standard	PLA-RP35/50/60/71BA(.UK)			●	●	●	●		
Floor standing		MFZ-KA25/35/50		●	●	●				

<NOTE> The lineup of a connectable indoor unit depends on a district/areas/country.



Branch box	PAC-AK50BC	PAC-AK30BC
Number of branches (Indoor unit that can be connected)	5 branches (MAX. 5 units)	3 branches (MAX. 3 units)

\* Max. 2 branch boxes can be connected to 1 outdoor unit.



2- branch pipe (joint) : Optional parts							
In case of using 1- branch box	No need						
In case of using 2- branch boxes	<table border="1" style="width: 100%;"> <thead> <tr> <th>Model name</th> <th>Connection method</th> </tr> </thead> <tbody> <tr> <td>MSDD-50AR-E</td> <td>flare</td> </tr> <tr> <td>MSDD-50BR-E</td> <td>brazing</td> </tr> </tbody> </table>	Model name	Connection method	MSDD-50AR-E	flare	MSDD-50BR-E	brazing
	Model name	Connection method					
	MSDD-50AR-E	flare					
MSDD-50BR-E	brazing						
* According to the connection method, you can choose the favorite one.							

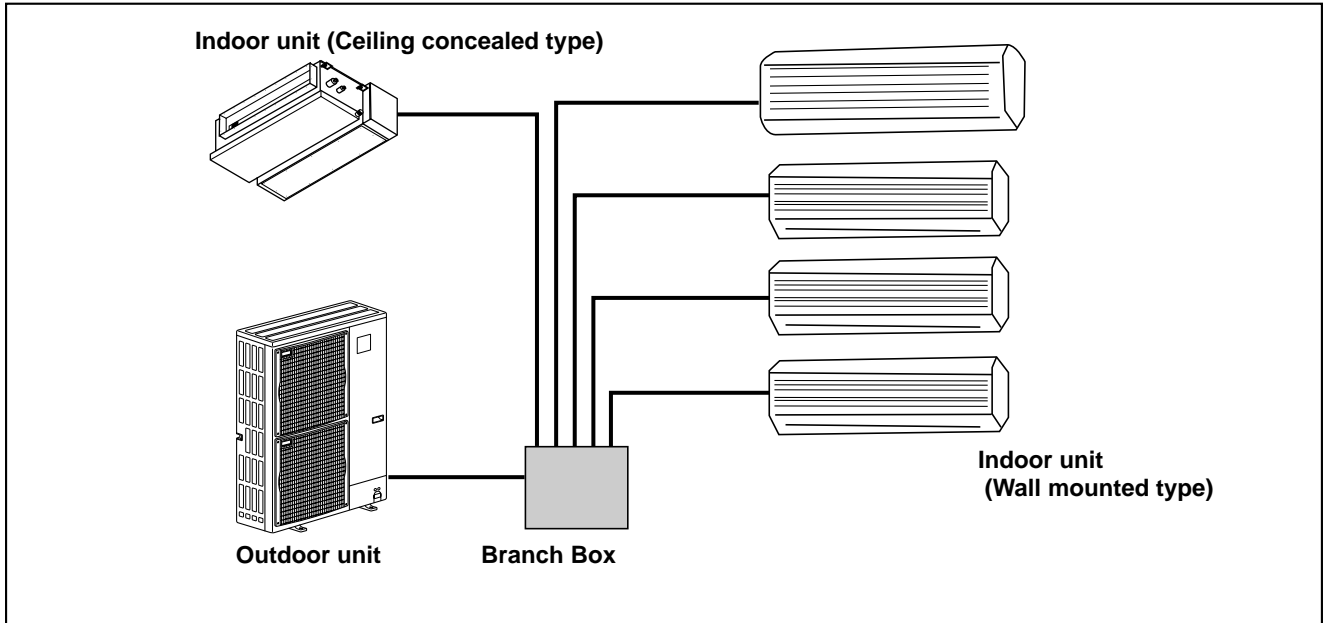


Option	Optional accessories of indoor units and outdoor units are available.
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### 3-2. SYSTEM OUTLINE

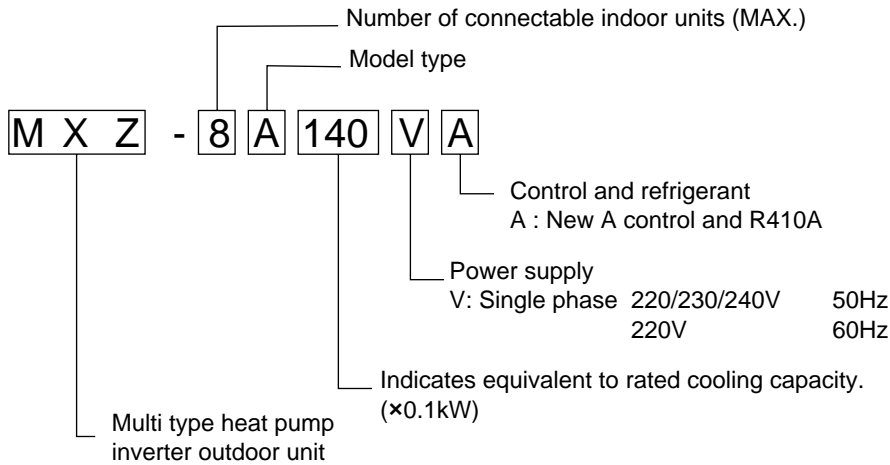
The additional connection of the Branch Box together with employment of the compact trunk-looking outdoor unit can successfully realize a long distance piping for big houses. Equipped with a microcomputer, the Branch Box can translate the transmission signal of indoor units to achieve the optimum control.

#### 3-2-1. System example

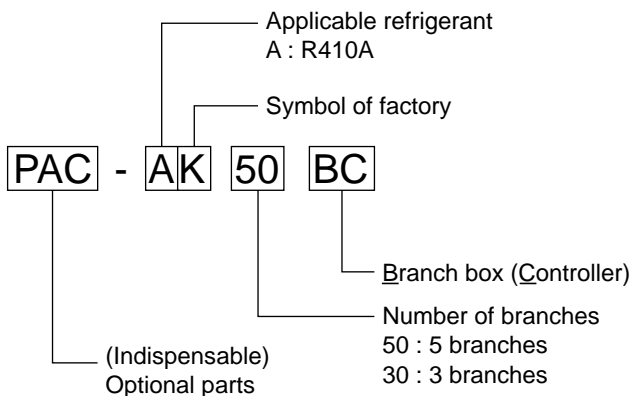


#### 3-2-2. Method for identifying

##### ■ Outdoor unit

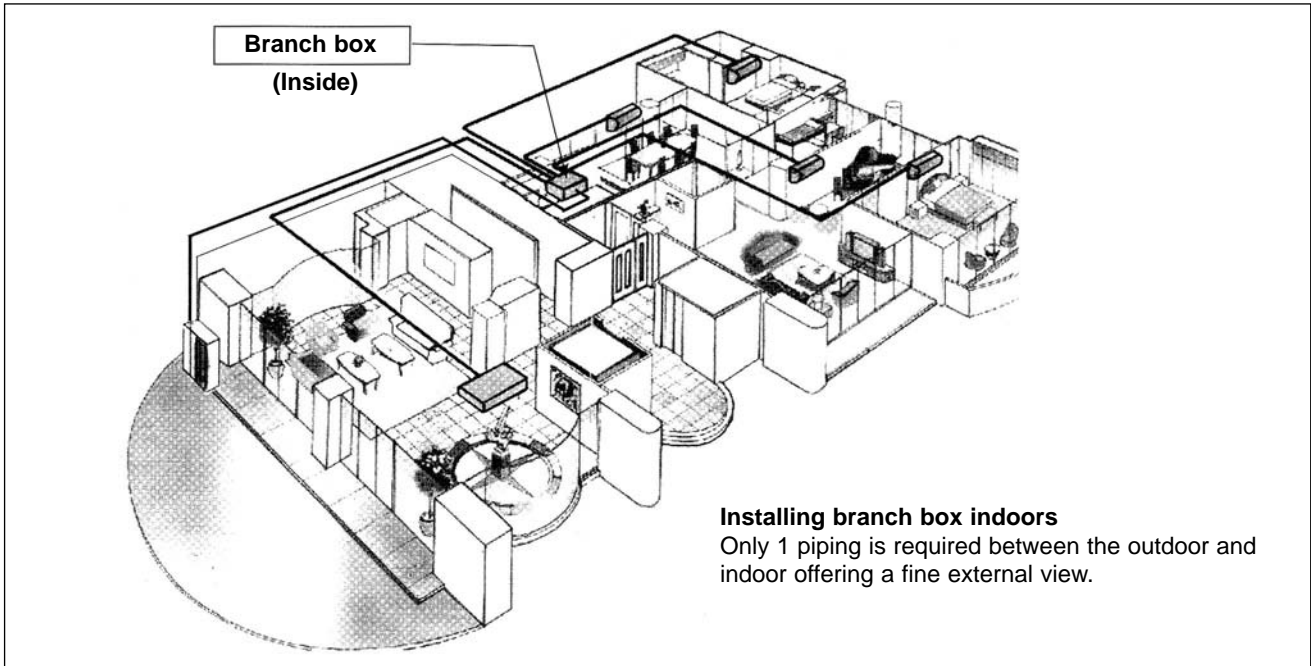


##### ■ Branch box

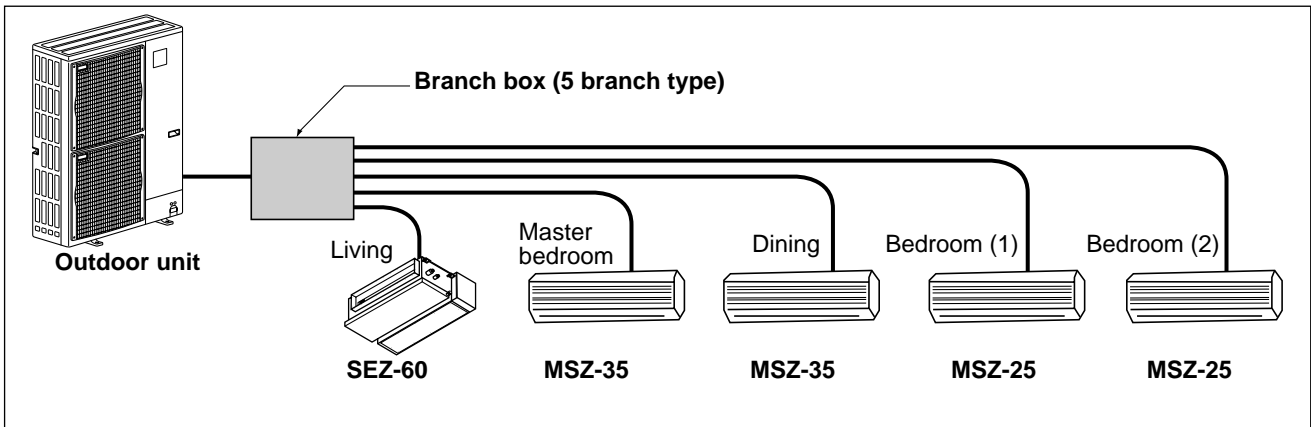


### 3-3. TYPICAL COMBINATION EXAMPLE

Branch box is located INSIDE of condominium



#### ■ System example of 5 indoor units



#### ■ Verification

The rated capacity should be determined by observing the table below. The unit's quantities are limited in 2 to 8 units. For the next step, make sure that the selected total rated capacity is in a range of 4.4 ~ 18.5kW.

The total indoor unit capacity should be within the outdoor units. (=14.0kW is preferred).

Combination of excessive indoor units and an outdoor unit may reduce the capacity of each indoor unit.

The rated indoor capacity is as the table below.

#### Example:

$$\begin{array}{r}
 \text{SEZ-60} = 6.0 \\
 + \\
 \text{MSZ-35} = 3.5 \\
 + \\
 \text{MSZ-35} = 3.5 \\
 + \\
 \text{MSZ-25} = 2.5 \\
 + \\
 \text{MSZ-25} = 2.5 \\
 \hline
 \text{Total rated capacity} \\
 18.0 \leq 18.5\text{kW}
 \end{array}$$

Indoor unit type (capacity class)	22	25	35	50	60	71	80
Rated capacity (cooling) (kW)	2.2	2.5	3.5	5.0	6.0	7.1	8.0



## 3-4. INSTALLATION

### 3-4-1. Outdoor unit installation location

For best performance, select proper position.

- Avoid places where combustible gas may be generated or leak.
- Avoid direct sunlight or other sources of heat.
- Install sunshade to protect the outdoor unit if direct sunlight hits the unit.
- Install the outdoor unit with enough distance between neighbours as operation noise may disturb the neighbours.
- Avoid the position that the unit is covered by snow or snow blows directly against the air outlet. The snow block or blow will reduce the airflow of the outdoor unit.

In the areas of heavy snow, special countermeasures must be taken at installation to protect the outdoor unit from malfunction caused by snow.

- Select a location permitting easy wiring and pipe access to the power source and indoor unit.
- Drain water must be drained freely during operation. Check for draining.

### 3-4-2. Ventilation and service space

#### (1) Windy location installation

When installing the outdoor unit on a rooftop or other location unprotected from the wind, situate the air outlet of the unit so that it is not directly exposed to strong winds. Strong wind entering the air outlet may impede the normal airflow and a malfunction may result.

The following shows 3 examples of precautions against strong winds.

- Face the air outlet towards the nearest available wall about 50 cm away from the wall. (Fig. 2-1)
- Install an optional air guide if the unit is installed in a location where strong winds from a typhoon, etc. may directly enter the air outlet. (Fig. 2-2)
  - Ⓐ Air guide
- Position the unit so that the air outlet blows perpendicularly to the seasonal wind direction, if possible. (Fig. 2-3)
  - Ⓑ Wind direction

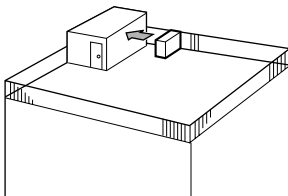


Fig.2-1

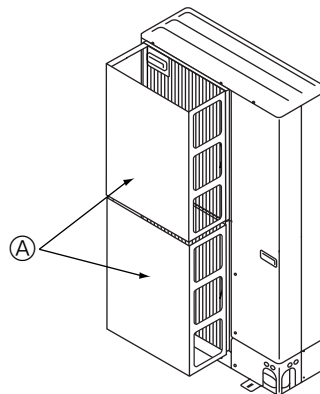


Fig.2-2

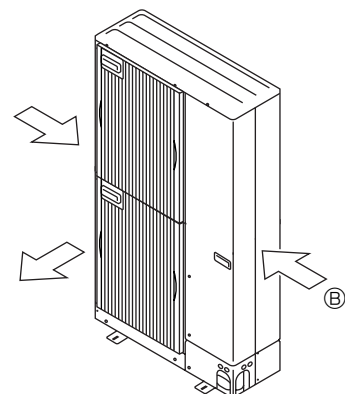


Fig.2-3

## (2) When installing a single outdoor unit

Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated.

Refer to the figures for each case.

- Obstacles at rear only (Fig. 2-4)
- Obstacles at rear and above only (Fig. 2-5)
  - Do not install the optional air outlet guides for upward airflow.
- Obstacles at rear and sides only (Fig. 2-6)
- Obstacles at front only (Fig. 2-7)
  - ※ When using an optional air outlet guide, the clearance is 500 mm or more.
- Obstacles at front and rear only (Fig. 2-8)
  - ※ When using an optional air outlet guide, the clearance is 500 mm or more.
- Obstacles at rear, sides, and above only (Fig. 2-9)
  - Do not install the optional air outlet guides for upward airflow.

unit : mm

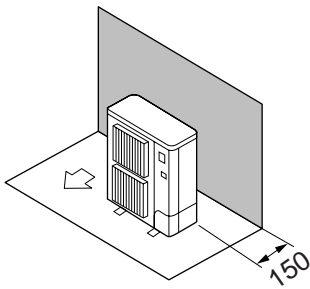


Fig.2-4

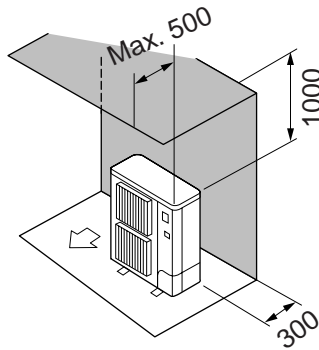


Fig.2-5

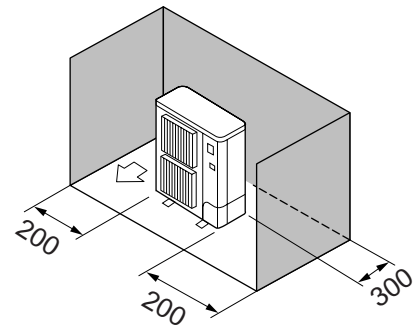


Fig.2-6

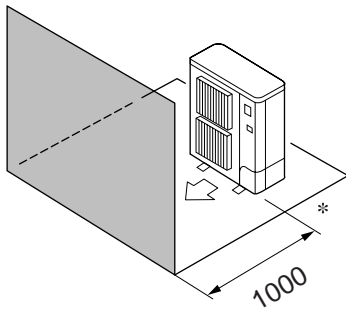


Fig.2-7

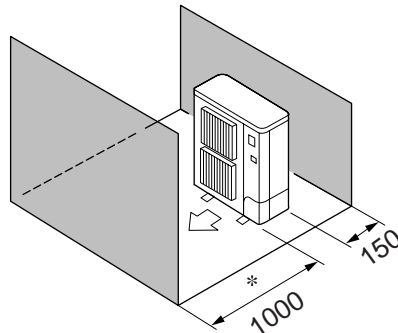


Fig.2-8

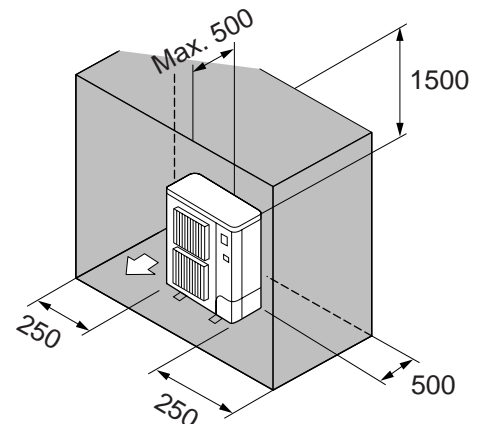
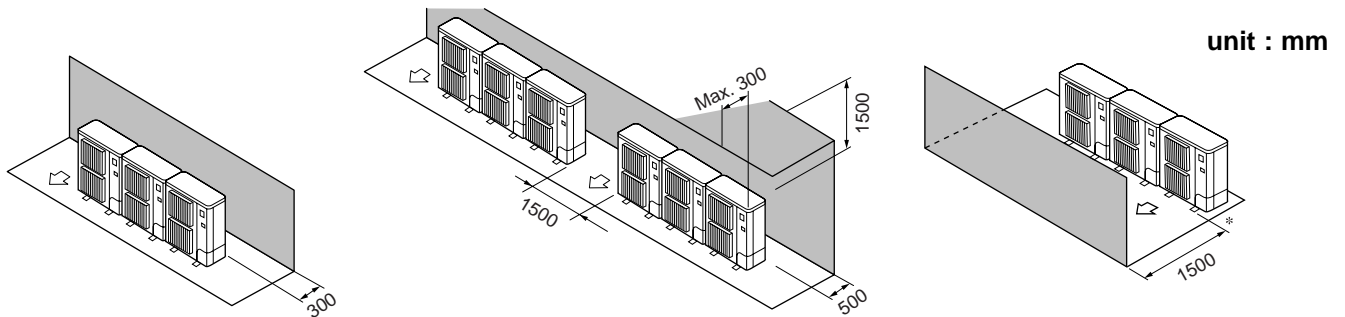


Fig.2-9

**(3) When installing multiple outdoor units**

Leave 10 mm space or more between the units.

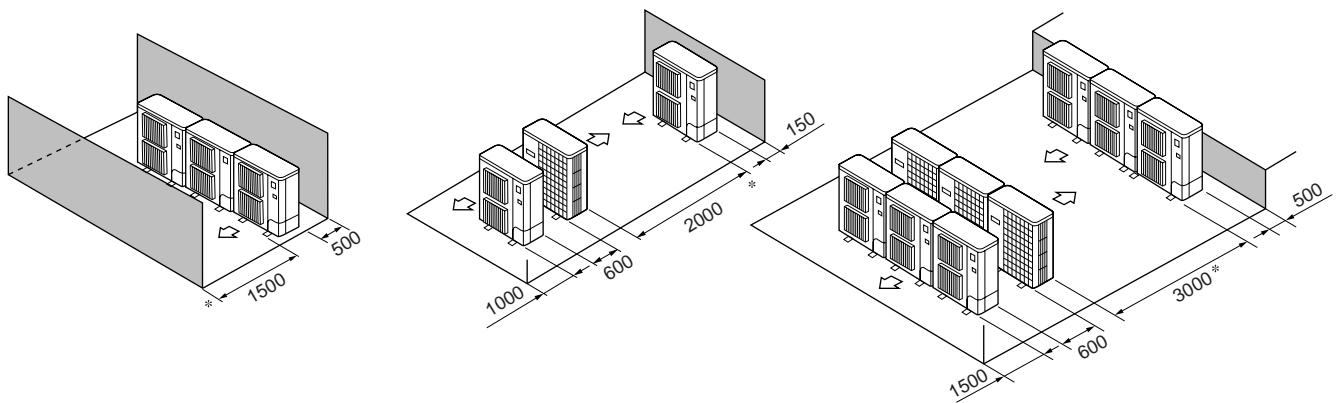
- Obstacles at rear only (Fig. 2-10)
- Obstacles at rear and above only (Fig. 2-11)
  - No more than 3 units must be installed side by side. In addition, leave space as shown.
  - Do not install the optional air outlet guides for upward airflow.
- Obstacles at front only (Fig. 2-12)
  - \* When using an optional air outlet guide, the clearance is 1000 mm or more.
- Obstacles at front and rear only (Fig. 2-13)
  - \* When using an optional air outlet guide, the clearance is 500 mm or more.
- Single parallel unit arrangement (Fig. 2-14)
  - \* When using an optional air outlet guide installed for upward airflow, the clearance is 1000 mm or more.
- Multiple parallel unit arrangement (Fig. 2-15)
  - \* When using an optional air outlet guide installed for upward airflow, the clearance is 1500 mm or more.
- Stacked unit arrangement (Fig. 2-16)
  - The units can be stacked up to 2 units high.
  - No more than 2 stacked units must be installed side by side. In addition, leave space as shown.



**Fig.2-10**

**Fig.2-11**

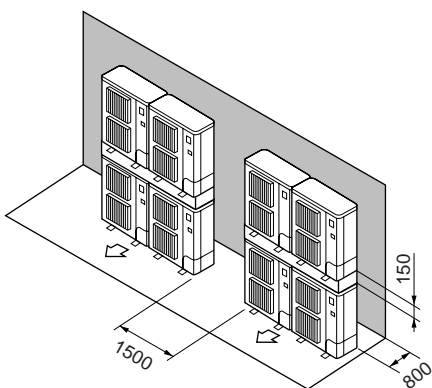
**Fig.2-12**



**Fig.2-13**

**Fig.2-14**

**Fig.2-15**



**Fig.2-16**

### 3-4-3. Space required for Installation and servicing for Branch box.

#### (1) Front View (Fig. 3-1)

- Ⓐ Branch box
- Ⓑ On the side of piping

#### (2) Side View (Fig. 3-2, Fig. 3-3)

- Ⓒ For indoor installations
- Ⓓ Ceiling board
- Ⓔ Maintenance hole
- Ⓕ PCB side

※1: A minimum 350 mm is required for 90° bends in refrigerant piping.

※2: Ⓐ is "Min. 200 mm".

**(Premise: The slope of drain piping is securable 1/100 or more. Required 200 mm or more, when not securable.)**

In the case of less than 200 mm (for example Ⓐ is 100 mm), the exchange work of Branch box from a maintenance hole becomes difficult (Only exchange work of a PCB, linear expansion valve coils, sensors and drain pan is possible).

※3: Ⓑ is "□600".

In the case of "□450", prepare a maintenance hole at a PCB side as it is shown in Fig. 3-3, and "Min. 300 mm" is needed as distance Ⓐ.

In the case of less than 300 mm (for example Ⓐ is 100 mm), the exchange work of Branch box, linear expansion valve coils, sensors, and drain pan from a maintenance hole becomes difficult. Only exchange work of a PCB is possible.

#### (3) Top View (Fig. 3-4)

- Ⓒ Refrigerant piping
- Ⓖ When facing in the opposite direction to the refrigerant piping.

NOTE1: The branch box is only for indoor use.

NOTE2: Please attach the special optional cover (PAC-AK350CVR-E) to install branch box in the outdoors.

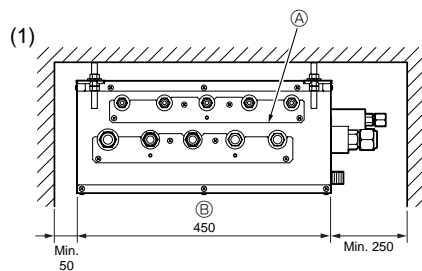


Fig.3-1

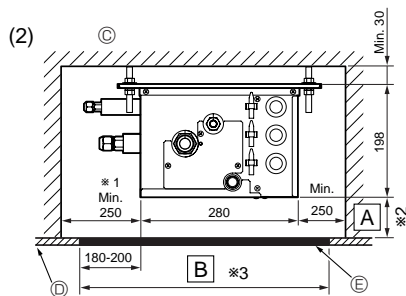


Fig.3-2

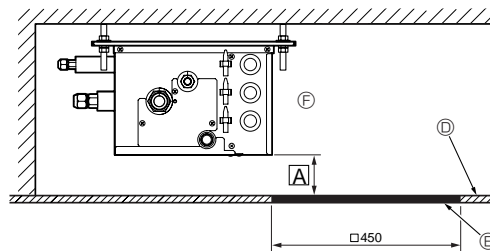


Fig.3-3

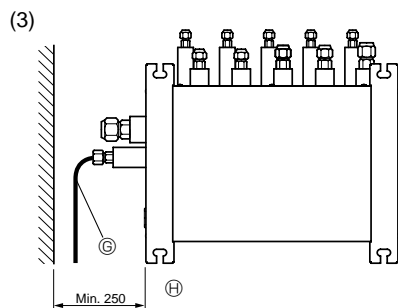


Fig.3-4

unit : mm

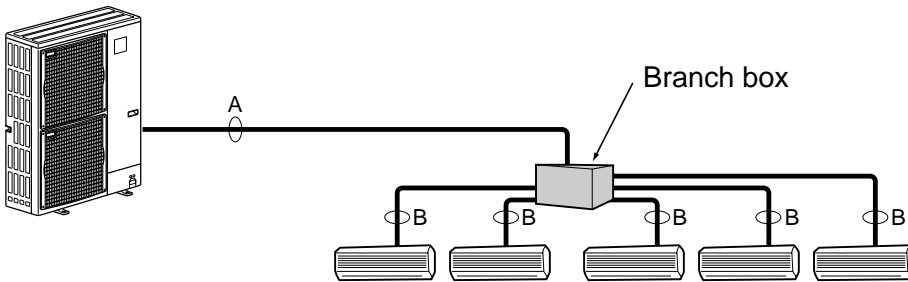
### 3-5. SIMPLIFIED PIPING SYSTEM

#### Piping connection size

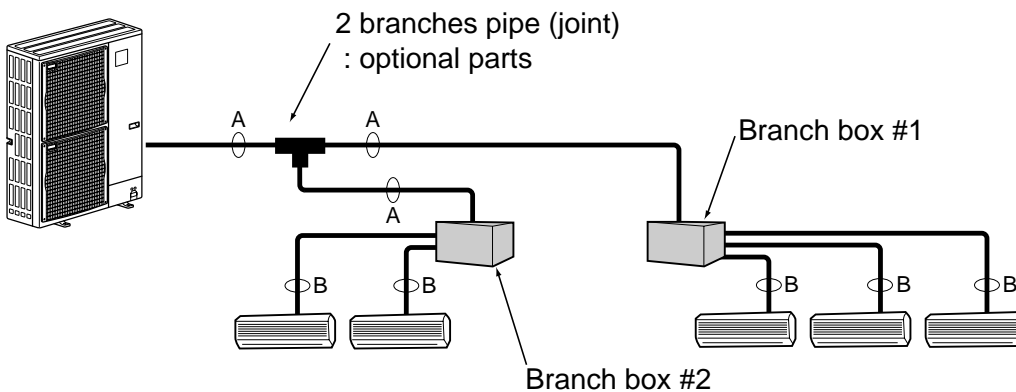
		A	B
Liquid	(mm)	φ9.52	The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size of branch box with indoor unit. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)
Gas	(mm)	φ15.88	

Flare connection employed. (No brazing!)

- In case of using 1-branch box  
Flare connection employed (No. brazing)



- In case of using 2-branch boxes



- Installation procedure (2 branch pipe (joint))  
Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.

# 4

# SPECIFICATIONS

- Outdoor unit : **MXZ-8A140VA**    **MXZ-8A140VA<sub>1</sub>**  
                                  **MXZ-8A140VA<sub>2</sub>**    **MXZ-8A140VA<sub>3</sub>**

Conversion formula:	kcal/h = kW × 860
	Btu/h = kW × 3412
	CFM = m <sup>3</sup> /min × 35.31

Service Ref.				MXZ-8A140VA/ MXZ-8A140VA <sub>1</sub> / MXZ-8A140VA <sub>2</sub> / MXZ-8A140VA <sub>3</sub>	
Standard performance	Cooling	Rated Cooling capacity	kW	14.0	
		Rated power consumption ※1	kW	3.79	
		Operating current ※1	A	17.30/16.55/15.86, 17.30	
		Operating power factor ※1	%	99.6	
		Starting current (Outdoor unit)	A	14	
	Heating	Rated Heating capacity	kW	16.0	
		Rated power consumption ※1	kW	3.90	
		Operating current ※1	A	17.82/17.05/16.33, 17.82	
		Operating power factor ※1	%	99.5	
		Starting current (Outdoor unit)	A	14	
OUTDOOR UNIT	Breaker		Please refer to "10.ELECTRICAL WIRING".		
	Max. current (Outdoor unit only)		A	29.5	
	Power supply (phase, cycle, voltage)		Single, 50Hz, 220/230/240V, Single, 60Hz, 220V		
	External finish		Munsell 3Y 7.8/1.1		
	Refrigerant control		Linear Expansion Valve (In branch box)		
	Compressor		Hermetic		
	Model		ANB33FDCMT		
	Motor output		kW	2.9	
	Starter type		Line start		
	Protection devices		HP switch, LP switch, Discharge thermo		
	Crankcase heater		W	—	
	Heat exchanger		Plate fin coil		
	Fan	Fan (drive) × No.		Propeller fan × 2	
		Fan motor output		kW	0.060 +0.060
		Airflow		m <sup>3</sup> /min (CFM)	100 (3,530)
	Defrost method		Reverse cycle		
	Noise level	Cooling	dB	50	
		Heating	dB	52	
	Dimensions	W	mm (in.)	950 (37-3/8)	
		D	mm (in.)	330+30 (13+1-3/16)	
		H	mm (in.)	1,350 (53-1/8)	
	Weight		kg (lbs)	128 (282)	
	Refrigerant		R410A		
	REFRIGERANT PIPING	Charge		kg (lbs)	8.5 (18.7), 40m
		Oil (Model)		L	2.3 (MEL56)
Pipe size O.D.		Liquid	mm	φ9.52	
	Gas	mm	φ15.88		
Connection method	Indoor side		Flared		
	Outdoor side		Flared		

※1 In case of connecting 3 indoor units (6.0kW class), electrical data is only for outdoor unit.

### Conversion formula

φ6.35mm	φ9.52mm	φ12.7mm	φ15.88mm	φ19.05mm
1/4 inch	3/8 inch	1/2 inch	5/8 inch	3/4 inch

### Notes 1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27°C (80°F), W.B. 19°C (66°F)    Outdoor : D.B. 35°C (95°F), W.B. 24°C (75°F)

Heating : Indoor : D.B. 20°C (68°F)    Outdoor : D.B. 7°C (45°F), W.B. 6°C (43°F)

Refrigerant piping length (one way) : Main Piping (From outdoor unit to branch box) : 5m

Branch Piping (From branch box to each indoor units) : each 3m

### 2. Guaranteed operating range

		Indoor		Outdoor
		P-series	M-series, S-series	
Cooling	Upper limit	D.B. 35°C, W.B. 22.5°C	D.B. 32°C, W.B. 23°C	D.B. 46°C
	Lower limit	D.B. 19°C, W.B. 15°C	D.B. 21°C, W.B. 15°C	D.B. -5°C
Heating	Upper limit	D.B. 28°C	D.B. 27°C	D.B. 21°C, W.B. 15°C
	Lower limit	D.B. 17°C	D.B. 20°C	D.B. -15°C, W.B. -15°C

### 3. Guaranteed voltage

198~264V, 50Hz    198~242V, 60Hz

### 4. Above data are based on the indicated voltage.

Single, 50Hz, 220/230/240V, Single, 60Hz, 220V

### 5. Refer to the service manual of indoor unit for the indoor unit's specifications.

• Branch box : PAC-AK50BC PAC-AK30BC

Model name				PAC-AK50BC	PAC-AK30BC
Connectable number of indoor units				MAX. 5	MAX. 3
Power supply (from outdoor unit)				Single phase, 220/230/240V, 50Hz, Single phase, 220V, 60Hz	
Input		kW		0.003	
Running current		A		0.05	
External finish				Galvanized sheets	
Drain hose size (on site)		mm		O.D.20 (VP-16)	
Dimensions	Width		mm	450	
	Depth		mm	280	
	Height		mm	198	
Weight		kg		9.3	8.1
Piping connection (Flare)	Branch (indoor side) *	Liquid	mm	$\phi 6.35 \times 5$ {A,B,C,D,E}	
		Gas	mm	$\phi 9.52 \times 4$ {A,B,C,D}, $\phi 12.7 \times 1$ {E}	
	Main (outdoor side)	Liquid	mm	$\phi 9.52$	
		Gas	mm	$\phi 15.88$	
Wiring	To indoor unit			Each 3-wire, plus earth wire	
	To outdoor unit			3-wire, plus earth wire	

\* The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size for indoor and branch box. If the piping connection size of branch box does not match the piping connection size of indoor units, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)

## 5-1. CAPACITY AND CHARACTERISTICS

Note:

- Cooling capacity is based on D.B. 27°C / W.B. 19.0°C (indoor temperature), D.B. 35°C (outdoor temperature).
  - Heating capacity is based on D.B. 20°C (indoor temperature), D.B. 7°C / W.B. 6°C (outdoor temperature).
- The rated capacities below show the rise in the indoor unit connection capacity when operating frequency is constant. Values for changes in capacity are fixed after accounting for variations in operating frequency and should be used as reference values.
- **Please refer not to the table below but to "10. ELECTRICAL WIRING" for the breaker selection.**

### (1) Cooling mode

<Cooling>

	Number of operated indoor unit		Capacity of each unit (W)		Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit A	Unit B			230V	240V	220V
1	22	–	2200	–	2200	1050	4.6	4.4	4.8
	25	–	2500	–	2500	1140	5.0	4.8	5.2
	35	–	3500	–	3500	1410	6.2	5.9	6.5
	50	–	5000	–	5000	1700	7.5	7.2	7.8
	60	–	6000	–	6000	2000	8.8	8.4	9.2
	71	–	7100	–	7100	2310	10.1	9.7	10.6
2	22	22	2200	2200	4400	1590	7.0	6.7	7.3
	22	25	2200	2500	4700	1650	7.2	6.9	7.6
	22	35	2200	3500	5700	1910	8.4	8.0	8.8
	22	50	2200	5000	7200	2340	10.3	9.8	10.7
	22	60	2200	6000	8200	2620	11.5	11.0	12.0
	22	71	2200	7100	9300	2910	12.8	12.2	13.4
	25	25	2500	2500	5000	1700	7.5	7.2	7.8
	25	35	2500	3500	6000	2000	8.8	8.4	9.2
	25	50	2500	5000	7500	2430	10.7	10.2	11.2
	25	60	2500	6000	8500	2700	11.9	11.4	12.4
	25	71	2500	7100	9600	2990	13.1	12.6	13.7
	35	35	3500	3500	7000	2290	10.1	9.6	10.5
	35	50	3500	5000	8500	2700	11.9	11.4	12.4
	35	60	3500	6000	9500	2960	13.0	12.5	13.6
	35	71	3500	7100	10600	3370	14.8	14.2	15.5
	50	50	5000	5000	10000	3090	13.6	13.0	14.2
	50	60	5000	6000	11000	3560	15.6	15.0	16.3
	50	71	5000	7100	12100	4140	18.2	17.4	19.0
	60	60	6000	6000	12000	4080	17.9	17.2	18.7
	60	71	6000	7100	13100	4720	20.7	19.9	21.7
71	71	7000	7000	14000	5220	22.9	22.0	24.0	



<Cooling>

	Number of operated indoor unit			Capacity of each unit (W)			Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C			230V	240V	220V
3	22	22	22	2200	2200	2200	6600	2170	9.5	9.1	10.0
	22	22	25	2200	2200	2500	6900	2260	9.9	9.5	10.4
	22	22	35	2200	2200	3500	7900	2540	11.2	10.7	11.7
	22	22	50	2200	2200	5000	9400	2940	12.9	12.4	13.5
	22	22	60	2200	2200	6000	10400	3270	14.4	13.8	15.0
	22	22	71	2200	2200	7100	11500	3810	16.7	16.0	17.5
	22	25	25	2200	2500	2500	7200	2340	10.3	9.8	10.7
	22	25	35	2200	2500	3500	8200	2620	11.5	11.0	12.0
	22	25	50	2200	2500	5000	9700	3010	13.2	12.7	13.8
	22	25	60	2200	2500	6000	10700	3410	15.0	14.4	15.7
	22	25	71	2200	2500	7100	11800	3970	17.4	16.7	18.2
	22	35	35	2200	3500	3500	9200	2880	12.6	12.1	13.2
	22	35	50	2200	3500	5000	10700	3410	15.0	14.4	15.7
	22	35	60	2200	3500	6000	11700	3920	17.2	16.5	18.0
	22	35	71	2200	3500	7100	12800	4540	19.9	19.1	20.8
	22	50	50	2200	5000	5000	12200	4190	18.4	17.6	19.2
	22	50	60	2200	5000	6000	13200	4780	21.0	20.1	21.9
	22	50	71	2150	4900	6950	14000	5220	22.9	22.0	24.0
	22	60	60	2170	5920	5920	14000	5220	22.9	22.0	24.0
	22	60	71	2010	5490	6500	14000	5040	22.1	21.2	23.1
	22	71	71	1880	6060	6060	14000	4450	19.5	18.7	20.4
	25	25	25	2500	2500	2500	7500	2430	10.7	10.2	11.2
	25	25	35	2500	2500	3500	8500	2700	11.9	11.4	12.4
	25	25	50	2500	2500	5000	10000	3090	13.6	13.0	14.2
	25	25	60	2500	2500	6000	11000	3560	15.6	15.0	16.3
	25	25	71	2500	2500	7100	12100	4140	18.2	17.4	19.0
	25	35	35	2500	3500	3500	9500	2960	13.0	12.5	13.6
	25	35	50	2500	3500	5000	11000	3560	15.6	15.0	16.3
	25	35	60	2500	3500	6000	12000	4080	17.9	17.2	18.7
	25	35	71	2500	3500	7100	13100	4720	20.7	19.9	21.7
	25	50	50	2500	5000	5000	12500	4360	19.1	18.4	20.0
	25	50	60	2500	5000	6000	13500	4970	21.8	20.9	22.8
	25	50	71	2400	4790	6810	14000	5220	22.9	22.0	24.0
	25	60	60	2410	5790	5790	14000	5220	22.9	22.0	24.0
	25	60	71	2240	5380	6370	14000	4870	21.4	20.5	22.4
	25	71	71	2100	5950	5950	14000	4310	18.9	18.1	19.8
	35	35	35	3500	3500	3500	10500	3320	14.6	14.0	15.2
	35	35	50	3500	3500	5000	12000	4080	17.9	17.2	18.7
	35	35	60	3500	3500	6000	13000	4660	20.5	19.6	21.4
	35	35	71	3480	3480	7050	14000	5220	22.9	22.0	24.0
	35	50	50	3500	5000	5000	13500	4970	21.8	20.9	22.8
	35	50	60	3380	4830	5790	14000	5220	22.9	22.0	24.0
35	50	71	3140	4490	6370	14000	4870	21.4	20.5	22.4	
35	60	60	3160	5420	5420	14000	4920	21.6	20.7	22.6	
35	60	71	2950	5060	5990	14000	4350	19.1	18.3	20.0	
35	71	71	2770	5620	5620	14000	3900	17.1	16.4	17.9	
50	50	50	4670	4670	4670	14000	5240	23.0	22.1	24.1	
50	50	60	4380	4380	5250	14000	4650	20.4	19.6	21.3	
50	50	71	4090	4090	5810	14000	4140	18.2	17.4	19.0	
50	60	60	4120	4940	4940	14000	4180	18.4	17.6	19.2	
50	60	71	3870	4640	5490	14000	3760	16.5	15.8	17.3	
60	60	60	4670	4670	4670	14000	3790	16.6	15.9	17.3	

<Cooling>

Number of operated indoor unit				Capacity of each unit (W)				Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D			230V	240V	220V
22	22	22	22	2200	2200	2200	2200	8800	2780	12.2	11.7	12.8
22	22	22	25	2200	2200	2200	2500	9100	2860	12.6	12.0	13.1
22	22	22	35	2200	2200	2200	3500	10100	3130	13.7	13.2	14.4
22	22	22	50	2200	2200	2200	5000	11600	3870	17.0	16.3	17.8
22	22	22	60	2200	2200	2200	6000	12600	4420	19.4	18.6	20.3
22	22	22	71	2200	2200	2200	7100	13700	5100	22.4	21.5	23.4
22	22	25	25	2200	2200	2500	2500	9400	2940	12.9	12.4	13.5
22	22	25	35	2200	2200	2500	3500	10400	3270	14.4	13.8	15.0
22	22	25	50	2200	2200	2500	5000	11900	4030	17.7	17.0	18.5
22	22	25	60	2200	2200	2500	6000	12900	4600	20.2	19.4	21.1
22	22	25	71	2200	2200	2500	7100	14000	5220	22.9	22.0	24.0
22	22	35	35	2200	2200	3500	3500	11400	3760	16.5	15.8	17.3
22	22	35	50	2200	2200	3500	5000	12900	4600	20.2	19.4	21.1
22	22	35	60	2200	2200	3500	6000	13900	5230	23.0	22.0	24.0
22	22	35	71	2050	2050	3270	6630	14000	5240	23.0	22.1	24.1
22	22	50	50	2140	2140	4860	4860	14000	5220	22.9	22.0	24.0
22	22	50	60	2000	2000	4550	5450	14000	4980	21.9	21.0	22.9
22	22	50	71	1870	1870	4240	6020	14000	4400	19.3	18.5	20.2
22	22	60	60	1880	1880	5120	5120	14000	4450	19.5	18.7	20.4
22	22	60	71	1760	1760	4800	5680	14000	3980	17.5	16.8	18.3
22	25	25	25	2200	2500	2500	2500	9700	3010	13.2	12.7	13.8
22	25	25	35	2200	2500	2500	3500	10700	3410	15.0	14.4	15.7
22	25	25	50	2200	2500	2500	5000	12200	4190	18.4	17.6	19.2
22	25	25	60	2200	2500	2500	6000	13200	4780	21.0	20.1	21.9
22	25	25	71	2150	2450	2450	6950	14000	5220	22.9	22.0	24.0
22	25	35	35	2200	2500	3500	3500	11700	3920	17.2	16.5	18.0
22	25	35	50	2200	2500	3500	5000	13200	4780	21.0	20.1	21.9
22	25	35	60	2170	2460	3450	5920	14000	5220	22.9	22.0	24.0
22	25	35	71	2010	2290	3200	6500	14000	5040	22.1	21.2	23.1
22	25	50	50	2100	2380	4760	4760	14000	5220	22.9	22.0	24.0
22	25	50	60	1960	2230	4460	5350	14000	4810	21.1	20.2	22.1
22	25	50	71	1830	2080	4170	5920	14000	4260	18.7	17.9	19.6
22	25	60	60	1840	2100	5030	5030	14000	4310	18.9	18.1	19.8
22	25	60	71	1730	1970	4720	5580	14000	3860	17.0	16.2	17.7
22	35	35	35	2200	3500	3500	3500	12700	4480	19.7	18.9	20.6
22	35	35	50	2170	3450	3450	4930	14000	5220	22.9	22.0	24.0
22	35	35	60	2030	3220	3220	5530	14000	5110	22.4	21.5	23.5
22	35	35	71	1890	3010	3010	6090	14000	4500	19.8	18.9	20.7
22	35	50	50	1960	3120	4460	4460	14000	4810	21.1	20.2	22.1
22	35	50	60	1840	2930	4190	5030	14000	4310	18.9	18.1	19.8
22	35	50	71	1730	2750	3930	5580	14000	3860	17.0	16.2	17.7
22	35	60	60	1730	2770	4750	4750	14000	3900	17.1	16.4	17.9
22	50	50	50	1790	4070	4070	4070	14000	4090	18.0	17.2	18.8
22	50	50	60	1690	3850	3850	4610	14000	3730	16.4	15.7	17.1
25	25	25	25	2500	2500	2500	2500	10000	3090	13.6	13.0	14.2
25	25	25	35	2500	2500	2500	3500	11000	3560	15.6	15.0	16.3
25	25	25	50	2500	2500	2500	5000	12500	4360	19.1	18.4	20.0
25	25	25	60	2500	2500	2500	6000	13500	4970	21.8	20.9	22.8
25	25	25	71	2400	2400	2400	6800	14000	5220	22.9	22.0	24.0
25	25	35	35	2500	2500	3500	3500	12000	4080	17.9	17.2	18.7
25	25	35	50	2500	2500	3500	5000	13500	4970	21.8	20.9	22.8
25	25	35	60	2410	2410	3380	5790	14000	5220	22.9	22.0	24.0
25	25	35	71	2240	2240	3140	6370	14000	4870	21.4	20.5	22.4
25	25	50	50	2330	2330	4670	4670	14000	5240	23.0	22.1	24.1
25	25	50	60	2190	2190	4380	5240	14000	4650	20.4	19.6	21.3
25	25	50	71	2050	2050	4090	5810	14000	4140	18.2	17.4	19.0
25	25	60	60	2060	2060	4940	4940	14000	4180	18.4	17.6	19.2
25	25	60	71	1930	1930	4640	5490	14000	3760	16.5	15.8	17.3
25	35	35	35	2500	3500	3500	3500	13000	4660	20.5	19.6	21.4
25	35	35	50	2410	3380	3380	4830	14000	5220	22.9	22.0	24.0
25	35	35	60	2260	3160	3160	5420	14000	4920	21.6	20.7	22.6
25	35	35	71	2110	2950	2950	5990	14000	4350	19.1	18.3	20.0
25	35	50	50	2180	3060	4380	4380	14000	4650	20.4	19.6	21.3
25	35	50	60	2060	2880	4120	4940	14000	4180	18.4	17.6	19.2
25	35	50	71	1930	2710	3870	5490	14000	3760	16.5	15.8	17.3
25	35	60	60	1940	2720	4670	4670	14000	3790	16.6	16.0	17.4
25	50	50	50	2000	4000	4000	4000	14000	3980	17.5	16.8	18.3
25	50	50	60	1890	3780	3780	4540	14000	3630	15.9	15.3	16.7
35	35	35	35	3500	3500	3500	3500	14000	5220	22.9	22.0	24.0
35	35	35	50	3160	3160	3160	4520	14000	4920	21.6	20.7	22.6
35	35	35	60	2970	2970	2970	5090	14000	4400	19.3	18.5	20.2
35	35	35	71	2780	2780	2780	5650	14000	3940	17.3	16.6	18.1
35	35	50	50	2880	2880	4120	4120	14000	4180	18.4	17.6	19.2
35	35	50	60	2720	2720	3890	4670	14000	3790	16.6	16.0	17.4
35	50	50	50	2650	3780	3780	3780	14000	3630	15.9	15.3	16.7

<Cooling>

Number of operated indoor unit					Capacity of each unit (W)					Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit C	Unit D	Unit E	Unit A	Unit B	Unit C	Unit D	Unit E			230V	240V	220V
22	22	22	22	22	2200	2200	2200	2200	2200	11000	3450	15.2	14.5	15.8
22	22	22	22	25	2200	2200	2200	2200	2500	11300	3610	15.9	15.2	16.6
22	22	22	22	35	2200	2200	2200	2200	3500	12300	4190	18.4	17.6	19.2
22	22	22	22	50	2200	2200	2200	2200	5000	13800	5200	22.8	21.9	23.9
22	22	22	22	60	2080	2080	2080	2080	5680	14000	5220	22.9	22.0	24.0
22	22	22	22	71	1940	1940	1940	1940	6240	14000	4700	20.6	19.8	21.6
22	22	22	25	25	2200	2200	2200	2500	2500	11600	3780	16.6	15.9	17.4
22	22	22	25	35	2200	2200	2200	2500	3500	12600	4370	19.2	18.4	20.1
22	22	22	25	50	2180	2180	2180	2480	4960	14000	5220	22.9	22.0	24.0
22	22	22	25	60	2040	2040	2040	2320	5560	14000	5170	22.7	21.8	23.7
22	22	22	25	71	1900	1900	1900	2160	6140	14000	4550	20.0	19.1	20.9
22	22	22	35	35	2200	2200	2200	3500	3500	13600	5060	22.2	21.3	23.2
22	22	22	35	50	2040	2040	2040	3250	4630	14000	5170	22.7	21.8	23.7
22	22	22	35	60	1910	1910	1910	3040	5220	14000	4600	20.2	19.4	21.1
22	22	22	35	71	1790	1790	1790	2850	5780	14000	4090	18.0	17.2	18.8
22	22	22	50	50	1860	1860	1860	4210	4210	14000	4350	19.1	18.3	20.0
22	22	22	50	60	1750	1750	1750	3980	4770	14000	3940	17.3	16.6	18.1
22	22	25	25	25	2200	2200	2500	2500	2500	11900	3950	17.3	16.6	18.1
22	22	25	25	35	2200	2200	2500	2500	3500	12900	4570	20.1	19.2	21.0
22	22	25	25	50	2140	2140	2430	2430	4860	14000	5220	22.9	22.0	24.0
22	22	25	25	60	2000	2000	2270	2270	5450	14000	4980	21.9	21.0	22.9
22	22	25	25	71	1870	1870	2120	2120	6020	14000	4400	19.3	18.5	20.2
22	22	25	35	35	2200	2200	2500	3500	3500	13900	5280	23.2	22.2	24.2
22	22	25	35	50	2000	2000	2270	3180	4550	14000	4980	21.9	21.0	22.9
22	22	25	35	60	1880	1880	2130	2990	5120	14000	4450	19.5	18.7	20.4
22	22	25	35	71	1760	1760	2000	2800	5680	14000	3980	17.5	16.8	18.3
22	22	25	50	50	1820	1820	2070	4140	4140	14000	4220	18.5	17.8	19.4
22	22	25	50	60	1720	1720	1960	3910	4690	14000	3830	16.8	16.1	17.6
22	22	35	35	35	2060	2060	3290	3290	3290	14000	5220	22.9	22.0	24.0
22	22	35	35	50	1880	1880	2990	2990	4260	14000	4450	19.5	18.7	20.4
22	22	35	35	60	1770	1770	2820	2820	4820	14000	4010	17.6	16.9	18.4
22	22	35	35	71	1660	1660	2650	2650	5370	14000	3630	15.9	15.3	16.7
22	22	35	50	50	1720	1720	2740	3910	3910	14000	3830	16.8	16.1	17.6
22	25	25	25	25	2200	2500	2500	2500	2500	12200	4120	18.1	17.3	18.9
22	25	25	25	35	2200	2500	2500	2500	3500	13200	4770	20.9	20.1	21.9
22	25	25	25	50	2100	2380	2380	2380	4760	14000	5220	22.9	22.0	24.0
22	25	25	25	60	1960	2230	2230	2230	5350	14000	4810	21.1	20.2	22.1
22	25	25	25	71	1830	2080	2080	2080	5920	14000	4260	18.7	17.9	19.6
22	25	25	35	35	2170	2460	2460	3450	3450	14000	5220	22.9	22.0	24.0
22	25	25	35	50	1960	2230	2230	3120	4460	14000	4810	21.1	20.2	22.1
22	25	25	35	60	1840	2100	2100	2930	5030	14000	4310	18.9	18.1	19.8
22	25	25	35	71	1730	1970	1970	2750	5580	14000	3860	17.0	16.2	17.7
22	25	25	50	50	1790	2030	2030	4070	4070	14000	4090	18.0	17.2	18.8
22	25	25	50	60	1690	1920	1920	3850	4620	14000	3730	16.4	15.7	17.1
22	25	35	35	35	2030	2300	3220	3220	3220	14000	5110	22.4	21.5	23.5
22	25	35	35	50	1840	2100	2930	2930	4190	14000	4310	18.9	18.1	19.8
22	25	35	35	60	1740	1980	2770	2770	4740	14000	3900	17.1	16.4	17.9
22	25	35	50	50	1690	1920	2690	3850	3850	14000	3730	16.4	15.7	17.1
22	35	35	35	35	1900	3020	3020	3020	3020	14000	4550	20.0	19.1	20.9
22	35	35	35	50	1740	2770	2770	2770	3950	14000	3900	17.1	16.4	17.9
25	25	25	25	25	2500	2500	2500	2500	2500	12500	4310	18.9	18.1	19.8
25	25	25	25	35	2500	2500	2500	2500	3500	13500	4980	21.9	21.0	22.9
25	25	25	25	50	2330	2330	2330	2330	4670	14000	5240	23.0	22.1	24.1
25	25	25	25	60	2190	2190	2190	2190	5240	14000	4650	20.4	19.6	21.3
25	25	25	25	71	2050	2050	2050	2050	5800	14000	4140	18.2	17.4	19.0
25	25	25	35	35	2410	2410	2410	3380	3380	14000	5220	22.9	22.0	24.0
25	25	25	35	50	2190	2190	2190	3060	4370	14000	4650	20.4	19.6	21.3
25	25	25	35	60	2060	2060	2060	2880	4940	14000	4180	18.4	17.6	19.2
25	25	25	35	71	1930	1930	1930	2710	5490	14000	3760	16.5	15.8	17.3
25	25	25	50	50	2000	2000	2000	4000	4000	14000	3980	17.5	16.8	18.3
25	25	25	50	60	1890	1890	1890	3780	4540	14000	3630	15.9	15.3	16.7
25	25	35	35	35	2260	2260	3160	3160	3160	14000	4920	21.6	20.7	22.6
25	25	35	35	50	2060	2060	2880	2880	4120	14000	4180	18.4	17.6	19.2
25	25	35	35	60	1940	1940	2720	2720	4670	14000	3790	16.6	16.0	17.4
25	25	35	50	50	1890	1890	2650	3780	3780	14000	3630	15.9	15.3	16.7
25	35	35	35	35	2120	2970	2970	2970	2970	14000	4400	19.3	18.5	20.2
25	35	35	35	50	1940	2720	2720	2720	3890	14000	3790	16.6	16.0	17.4
35	35	35	35	35	2800	2800	2800	2800	2800	14000	3980	17.5	16.8	18.3

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<Cooling>

Number of operated indoor unit							Capacity of each unit (W)						Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	230V			240V	220V	
22	22	22	22	22	22	2200	2200	2200	2200	2200	2200	13200	4770	20.9	20.1	21.9	
22	22	22	22	22	25	2200	2200	2200	2200	2200	2500	13500	4980	21.9	21.0	22.9	
22	22	22	22	22	35	2120	2120	2120	2120	2120	3380	14000	5220	22.9	22.0	24.0	
22	22	22	22	22	50	1920	1920	1920	1920	1920	4380	14000	4650	20.4	19.6	21.3	
22	22	22	22	22	60	1810	1810	1810	1810	1810	4940	14000	4180	18.4	17.6	19.2	
22	22	22	22	22	71	1700	1700	1700	1700	1700	5490	14000	3760	16.5	15.8	17.3	
22	22	22	22	25	25	2200	2200	2200	2200	2500	2500	13800	5200	22.8	21.9	23.9	
22	22	22	22	25	35	2080	2080	2080	2080	2360	3310	14000	5220	22.9	22.0	24.0	
22	22	22	22	25	50	1890	1890	1890	1890	2150	4290	14000	4500	19.8	18.9	20.7	
22	22	22	22	25	60	1780	1780	1780	1780	2020	4860	14000	4050	17.8	17.0	18.6	
22	22	22	22	25	71	1670	1670	1670	1670	1900	5400	14000	3660	16.1	15.4	16.8	
22	22	22	22	35	35	1950	1950	1950	1950	3100	3100	14000	4750	20.9	20.0	21.8	
22	22	22	22	35	50	1780	1780	1780	1780	2830	4050	14000	4050	17.8	17.0	18.6	
22	22	22	22	35	60	1680	1680	1680	1680	2680	4590	14000	3690	16.2	15.5	16.9	
22	22	22	25	25	25	2180	2180	2180	2480	2480	2480	14000	5220	22.9	22.0	24.0	
22	22	22	25	25	35	2040	2040	2040	2320	2320	3240	14000	5170	22.7	21.8	23.7	
22	22	22	25	25	50	1860	1860	1860	2100	2100	4220	14000	4350	19.1	18.3	20.0	
22	22	22	25	25	60	1750	1750	1750	1990	1990	4770	14000	3940	17.3	16.6	18.1	
22	22	22	25	35	35	1910	1910	1910	2170	3040	3040	14000	4600	20.2	19.4	21.1	
22	22	22	25	35	50	1750	1750	1750	1990	2780	3980	14000	3940	17.3	16.6	18.1	
22	22	22	35	35	35	1800	1800	1800	2860	2860	2860	14000	4140	18.2	17.4	19.0	
22	22	25	25	25	25	2140	2140	2430	2430	2430	2430	14000	5220	22.9	22.0	24.0	
22	22	25	25	25	35	2000	2000	2270	2270	2270	3180	14000	4980	21.9	21.0	22.9	
22	22	25	25	25	50	1820	1820	2070	2070	2070	4140	14000	4220	18.5	17.8	19.4	
22	22	25	25	25	60	1720	1720	1960	1960	1960	4680	14000	3830	16.8	16.1	17.6	
22	22	25	25	35	35	1880	1880	2130	2130	2990	2990	14000	4450	19.5	18.7	20.4	
22	22	25	25	35	50	1720	1720	1960	1960	2740	3900	14000	3830	16.8	16.1	17.6	
22	22	25	35	35	35	1770	1770	2000	2820	2820	2820	14000	4010	17.6	16.9	18.4	
22	22	35	35	35	35	1670	1670	2660	2660	2660	2660	14000	3660	16.1	15.4	16.8	
22	25	25	25	25	25	2100	2380	2380	2380	2380	2380	14000	5220	22.9	22.0	24.0	
22	25	25	25	25	35	1960	2230	2230	2230	2230	3120	14000	4810	21.1	20.2	22.1	
22	25	25	25	25	50	1790	2030	2030	2030	2030	4070	14000	4090	18.0	17.2	18.8	
22	25	25	25	25	60	1690	1920	1920	1920	1920	4620	14000	3730	16.4	15.7	17.1	
22	25	25	25	35	35	1840	2100	2100	2100	2930	2930	14000	4310	18.9	18.1	19.8	
22	25	25	25	35	50	1690	1920	1920	1920	2690	3850	14000	3730	16.4	15.7	17.1	
22	25	25	35	35	35	1730	1980	1980	2770	2770	2770	14000	3900	17.1	16.4	17.9	
25	25	25	25	25	25	2330	2330	2330	2330	2330	2330	14000	5240	23.0	22.1	24.1	
25	25	25	25	25	35	2190	2190	2190	2190	2190	3050	14000	4650	20.4	19.6	21.3	
25	25	25	25	25	50	2000	2000	2000	2000	2000	4000	14000	3980	17.5	16.8	18.3	
25	25	25	25	25	60	1890	1890	1890	1890	1890	4540	14000	3630	15.9	15.3	16.7	
25	25	25	25	35	35	2060	2060	2060	2060	2880	2880	14000	4180	18.4	17.6	19.2	
25	25	25	25	35	50	1890	1890	1890	1890	2650	3780	14000	3630	15.9	15.3	16.7	
25	25	25	35	35	35	1940	1940	1940	2720	2720	2720	14000	3790	16.6	16.0	17.4	

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**<Cooling>**

	Number of operated indoor unit							Capacity of each unit (W)							Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G			230V	240V	220V
7	22	22	22	22	22	22	22	2000	2000	2000	2000	2000	2000	2000	14000	4980	21.9	21.0	22.9
	22	22	22	22	22	22	25	1960	1960	1960	1960	1960	1960	2230	14000	4810	21.1	20.2	22.1
	22	22	22	22	22	22	35	1840	1840	1840	1840	1840	1840	2930	14000	4310	18.9	18.1	19.8
	22	22	22	22	22	22	50	1690	1690	1690	1690	1690	1690	3850	14000	3730	16.4	15.7	17.1
	22	22	22	22	22	25	25	1920	1920	1920	1920	1920	2190	2190	14000	4650	20.4	19.6	21.3
	22	22	22	22	22	25	35	1810	1810	1810	1810	1810	2060	2880	14000	4180	18.4	17.6	19.2
	22	22	22	22	22	25	50	1660	1660	1660	1660	1660	1890	3780	14000	3630	15.9	15.3	16.7
	22	22	22	22	22	35	35	1710	1710	1710	1710	1710	2720	2720	14000	3790	16.6	16.0	17.4
	22	22	22	22	25	25	25	1890	1890	1890	1890	2140	2140	2140	14000	4500	19.8	18.9	20.7
	22	22	22	22	25	25	35	1780	1780	1780	1780	2020	2020	2830	14000	4050	17.8	17.0	18.6
	22	22	22	22	25	35	35	1680	1680	1680	1680	1910	2680	2680	14000	3690	16.2	15.5	16.9
	22	22	22	25	25	25	25	1850	1850	1850	2110	2110	2110	2110	14000	4350	19.1	18.3	20.0
	22	22	22	25	25	25	35	1750	1750	1750	1990	1990	1990	2780	14000	3940	17.3	16.6	18.1
	22	22	25	25	25	25	25	1820	1820	2070	2070	2070	2070	2070	14000	4220	18.5	17.8	19.4
	22	22	25	25	25	25	35	1710	1710	1960	1960	1960	1960	2740	14000	3830	16.8	16.1	17.6
	22	25	25	25	25	25	25	1790	2030	2030	2030	2030	2030	2030	14000	4090	18.0	17.2	18.8
	22	25	25	25	25	25	35	1690	1920	1920	1920	1920	1920	2690	14000	3730	16.4	15.7	17.1
25	25	25	25	25	25	25	2000	2000	2000	2000	2000	2000	2000	14000	3980	17.5	16.8	18.3	
25	25	25	25	25	25	35	1890	1890	1890	1890	1890	1890	2650	14000	3630	15.9	15.3	16.7	

**<Cooling>**

	Number of operated indoor unit								Capacity of each unit (W)								Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H			230V	240V	220V
8	22	22	22	22	22	22	22	22	1750	1750	1750	1750	1750	1750	1750	1750	14000	3940	17.3	16.6	18.1
	22	22	22	22	22	22	22	25	1720	1720	1720	1720	1720	1720	1720	1960	14000	3830	16.8	16.1	17.6
	22	22	22	22	22	22	25	25	1690	1690	1690	1690	1690	1690	1920	1920	14000	3730	16.4	15.7	17.1
	22	22	22	22	22	25	25	25	1660	1660	1660	1660	1660	1890	1890	1890	14000	3630	15.9	15.3	16.7

**(2) Heating mode**  
**<Heating>**

Number of operated indoor unit			Capacity of each unit (W)		Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit A	Unit B	230V			240V	220V	
1	22	–	3300	–	3300	1130	5.0	4.8	5.2
	25	–	3600	–	3600	1240	5.4	5.2	5.7
	35	–	4000	–	4000	1370	6.0	5.8	6.3
	50	–	7200	–	7200	2470	10.8	10.4	11.3
	60	–	7900	–	7900	2740	12.0	11.5	12.6
	71	–	8600	–	8600	3020	13.3	12.7	13.9
2	22	22	2500	2500	5000	1720	7.6	7.2	7.9
	22	25	2530	2870	5400	1860	8.2	7.8	8.5
	22	35	2510	3990	6500	2250	9.9	9.5	10.3
	22	50	2510	5690	8200	2880	12.6	12.1	13.2
	22	60	2520	6880	9400	3340	14.7	14.1	15.3
	22	71	2510	8090	10600	3810	16.7	16.0	17.5
	25	25	2850	2850	5700	1960	8.6	8.2	9.0
	25	35	2880	4020	6900	2400	10.5	10.1	11.0
	25	50	2870	5730	8600	3030	13.3	12.8	13.9
	25	60	2850	6850	9700	3450	15.2	14.5	15.8
	25	71	2860	8140	11000	3960	17.4	16.7	18.2
	35	35	4000	4000	8000	2810	12.3	11.8	12.9
	35	50	3990	5710	9700	3450	15.2	14.5	15.8
	35	60	4020	6880	10900	3920	17.2	16.5	18.0
	35	71	4000	8100	12100	4350	19.1	18.3	20.0
	50	50	5700	5700	11400	4120	18.1	17.3	18.9
	50	60	5730	6870	12600	4510	19.8	19.0	20.7
	50	71	5700	8100	13800	4880	21.4	20.5	22.4
	60	60	6850	6850	13700	4850	21.3	20.4	22.3
60	71	6870	8130	15000	5260	23.1	22.1	24.2	
71	71	8000	8000	16000	5430	23.8	22.9	24.9	

<Heating>

	Number of operated indoor unit			Capacity of each unit (W)			Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C			230V	240V	220V
3	22	22	22	2500	2500	2500	7500	2620	11.5	11.0	12.0
	22	22	25	2520	2520	2860	7900	2770	12.2	11.7	12.7
	22	22	35	2510	2510	3980	9000	3190	14.0	13.4	14.6
	22	22	50	2500	2500	5690	10700	3850	16.9	16.2	17.7
	22	22	60	2520	2520	6860	11900	4280	18.8	18.0	19.7
	22	22	71	2510	2510	8090	13100	4660	20.5	19.6	21.4
	22	25	25	2500	2850	2850	8200	2880	12.6	12.1	13.2
	22	25	35	2520	2870	4010	9400	3340	14.7	14.1	15.3
	22	25	50	2520	2860	5720	11100	4000	17.6	16.8	18.4
	22	25	60	2510	2850	6840	12200	4380	19.2	18.4	20.1
	22	25	71	2520	2860	8120	13500	4790	21.0	20.2	22.0
	22	35	35	2510	3990	3990	10500	3770	16.6	15.9	17.3
	22	35	50	2510	3990	5700	12200	4380	19.2	18.4	20.1
	22	35	60	2520	4010	6870	13400	4760	20.9	20.0	21.9
	22	35	71	2510	3990	8100	14600	5130	22.5	21.6	23.6
	22	50	50	2500	5700	5700	13900	4910	21.6	20.7	22.5
	22	50	60	2520	5720	6860	15100	5290	23.2	22.3	24.3
	22	50	71	2460	5590	7940	16000	5370	23.6	22.6	24.7
	22	60	60	2480	6760	6760	16000	5430	23.8	22.9	24.9
	22	60	71	2300	6270	7420	16000	4880	21.4	20.5	22.4
	22	71	71	2140	6930	6930	16000	4430	19.5	18.6	20.3
	25	25	25	2860	2860	2860	8600	3030	13.3	12.8	13.9
	25	25	35	2850	2850	3990	9700	3450	15.2	14.5	15.8
	25	25	50	2850	2850	5700	11400	4120	18.1	17.3	18.9
	25	25	60	2860	2860	6870	12600	4510	19.8	19.0	20.7
	25	25	71	2850	2850	8100	13800	4880	21.4	20.5	22.4
	25	35	35	2860	4020	4020	10900	3920	17.2	16.5	18.0
	25	35	50	2860	4010	5730	12600	4510	19.8	19.0	20.7
	25	35	60	2850	4000	6850	13700	4850	21.3	20.4	22.3
	25	35	71	2860	4010	8130	15000	5260	23.1	22.1	24.2
	25	50	50	2860	5720	5720	14300	5040	22.1	21.2	23.1
	25	50	60	2850	5700	6840	15400	5380	23.6	22.6	24.7
	25	50	71	2740	5480	7780	16000	5210	22.9	21.9	23.9
	25	60	60	2760	6620	6620	16000	5270	23.1	22.2	24.2
	25	60	71	2560	6150	7280	16000	4750	20.9	20.0	21.8
	25	71	71	2400	6800	6800	16000	4320	19.0	18.2	19.8
	35	35	35	4000	4000	4000	12000	4320	19.0	18.2	19.8
	35	35	50	4000	4000	5700	13700	4850	21.3	20.4	22.3
	35	35	60	4010	4010	6880	14900	5230	23.0	22.0	24.0
	35	35	71	3970	3970	8060	16000	5480	24.1	23.1	25.2
	35	50	50	3990	5700	5700	15400	5380	23.6	22.6	24.7
	35	50	60	3860	5520	6620	16000	5270	23.1	22.2	24.2
35	50	71	3590	5130	7280	16000	4750	20.9	20.0	21.8	
35	60	60	3610	6190	6190	16000	4790	21.0	20.2	22.0	
35	60	71	3370	5780	6840	16000	4350	19.1	18.3	20.0	
35	71	71	3160	6420	6420	16000	3990	17.5	16.8	18.3	
50	50	50	5330	5330	5330	16000	5020	22.0	21.1	23.0	
50	50	60	5000	5000	6000	16000	4580	20.1	19.3	21.0	
50	50	71	4680	4680	6640	16000	4180	18.4	17.6	19.2	
50	60	60	4700	5650	5650	16000	4210	18.5	17.7	19.3	
50	60	71	4420	5300	6280	16000	3870	17.0	16.3	17.8	
60	60	60	5330	5330	5330	16000	3900	17.1	16.3	17.8	

<Heating>

Number of operated indoor unit				Capacity of each unit (W)				Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D			230V	240V	220V
22	22	22	22	2520	2520	2520	2520	10100	3610	15.9	15.2	16.6
22	22	22	25	2510	2510	2510	2860	10400	3730	16.4	15.7	17.1
22	22	22	35	2500	2500	2500	3990	11500	4150	18.2	17.5	19.1
22	22	22	50	2520	2520	2520	5730	13300	4730	20.8	19.9	21.7
22	22	22	60	2510	2510	2510	6860	14400	5070	22.3	21.3	23.3
22	22	22	71	2520	2520	2520	8140	15700	5470	24.0	23.0	25.1
22	22	25	25	2500	2500	2850	2850	10700	3850	16.9	16.2	17.7
22	22	25	35	2520	2520	2860	4000	11900	4280	18.8	18.0	19.7
22	22	25	50	2510	2510	2860	5710	13600	4820	21.2	20.3	22.1
22	22	25	60	2510	2510	2850	6830	14700	5160	22.7	21.7	23.7
22	22	25	71	2510	2510	2860	8110	16000	5540	24.3	23.3	25.4
22	22	35	35	2510	2510	3990	3990	13000	4630	20.3	19.5	21.3
22	22	35	50	2510	2510	3990	5690	14700	5160	22.7	21.7	23.7
22	22	35	60	2520	2520	4000	6860	15900	5530	24.3	23.3	25.4
22	22	35	71	2350	2350	3730	7570	16000	5020	22.0	21.1	23.0
22	22	50	50	2440	2440	5560	5560	16000	5320	23.4	22.4	24.4
22	22	50	60	2290	2290	5190	6230	16000	4830	21.2	20.3	22.2
22	22	50	71	2130	2130	4850	6880	16000	4390	19.3	18.5	20.2
22	22	60	60	2150	2150	5850	5850	16000	4430	19.5	18.6	20.3
22	22	60	71	2010	2010	5490	6490	16000	4050	17.8	17.0	18.6
22	25	25	25	2520	2860	2860	2860	11100	4000	17.6	16.8	18.4
22	25	25	35	2510	2850	2850	3990	12200	4380	19.2	18.4	20.1
22	25	25	50	2510	2850	2850	5690	13900	4910	21.6	20.7	22.5
22	25	25	60	2520	2860	2860	6860	15100	5290	23.2	22.3	24.3
22	25	25	71	2460	2800	2800	7940	16000	5370	23.6	22.6	24.7
22	25	35	35	2520	2860	4010	4010	13400	4760	20.9	20.0	21.9
22	25	35	50	2520	2860	4000	5720	15100	5290	23.2	22.3	24.3
22	25	35	60	2480	2820	3940	6760	16000	5430	23.8	22.9	24.9
22	25	35	71	2300	2610	3660	7420	16000	4880	21.4	20.5	22.4
22	25	50	50	2390	2720	5440	5440	16000	5160	22.7	21.7	23.7
22	25	50	60	2240	2550	5100	6110	16000	4700	20.6	19.8	21.6
22	25	50	71	2100	2380	4760	6760	16000	4280	18.8	18.0	19.7
22	25	60	60	2100	2400	5750	5750	16000	4320	19.0	18.2	19.8
22	25	60	71	1980	2250	5390	6380	16000	3960	17.4	16.7	18.2
22	35	35	35	2500	4000	4000	4000	14500	5100	22.4	21.5	23.4
22	35	35	50	2480	3940	3940	5630	16000	5430	23.8	22.9	24.9
22	35	35	60	2320	3680	3680	6320	16000	4920	21.6	20.7	22.6
22	35	35	71	2160	3440	3440	6960	16000	4460	19.6	18.8	20.5
22	35	50	50	2230	3570	5100	5100	16000	4700	20.6	19.8	21.6
22	35	50	60	2110	3350	4790	5750	16000	4320	19.0	18.2	19.8
22	35	50	71	1980	3150	4490	6380	16000	3960	17.4	16.7	18.2
22	35	60	60	1990	3160	5420	5420	16000	3990	17.5	16.8	18.3
22	50	50	50	2050	4650	4650	4650	16000	4150	18.2	17.5	19.1
22	50	50	60	1930	4400	4400	5270	16000	3850	16.9	16.2	17.7
25	25	25	25	2850	2850	2850	2850	11400	4120	18.1	17.3	18.9
25	25	25	35	2860	2860	2860	4010	12600	4510	19.8	19.0	20.7
25	25	25	50	2860	2860	2860	5720	14300	5040	22.1	21.2	23.1
25	25	25	60	2850	2850	2850	6840	15400	5380	23.6	22.6	24.7
25	25	25	71	2740	2740	2740	7780	16000	5210	22.9	21.9	23.9
25	25	35	35	2850	2850	4000	4000	13700	4850	21.3	20.4	22.3
25	25	35	50	2850	2850	3990	5700	15400	5380	23.6	22.6	24.7
25	25	35	60	2760	2760	3860	6620	16000	5270	23.1	22.2	24.2
25	25	35	71	2560	2560	3590	7280	16000	4750	20.9	20.0	21.8
25	25	50	50	2670	2670	5330	5330	16000	5020	22.0	21.1	23.0
25	25	50	60	2500	2500	5000	6000	16000	4580	20.1	19.3	21.0
25	25	50	71	2340	2340	4680	6640	16000	4180	18.4	17.6	19.2
25	25	60	60	2350	2350	5650	5650	16000	4210	18.5	17.7	19.3
25	25	60	71	2210	2210	5300	6280	16000	3870	17.0	16.3	17.8
25	35	35	35	2870	4010	4010	4010	14900	5230	23.0	22.0	24.0
25	35	35	50	2760	3860	3860	5520	16000	5270	23.1	22.2	24.2
25	35	35	60	2580	3610	3610	6190	16000	4790	21.0	20.2	22.0
25	35	35	71	2410	3370	3370	6840	16000	4350	19.1	18.3	20.0
25	35	50	50	2500	3500	5000	5000	16000	4580	20.1	19.3	21.0
25	35	50	60	2350	3290	4710	5650	16000	4210	18.5	17.7	19.3
25	35	50	71	2210	3090	4420	6280	16000	3870	17.0	16.3	17.8
25	35	60	60	2220	3110	5330	5330	16000	3900	17.1	16.4	17.9
25	50	50	50	2290	4570	4570	4570	16000	4050	17.8	17.0	18.6
25	50	50	60	2160	4320	4320	5190	16000	3760	16.5	15.8	17.3
35	35	35	35	4000	4000	4000	4000	16000	5540	24.3	23.3	25.4
35	35	35	50	3610	3610	3610	5160	16000	4790	21.0	20.2	22.0
35	35	35	60	3390	3390	3390	5820	16000	4390	19.3	18.5	20.2
35	35	35	71	3180	3180	3180	6450	16000	4020	17.7	16.9	18.5
35	35	50	50	3290	3290	4710	4710	16000	4210	18.5	17.7	19.3
35	35	50	60	3110	3110	4440	5330	16000	3900	17.1	16.4	17.9
35	50	50	50	3030	4320	4320	4320	16000	3760	16.5	15.8	17.3



<Heating>

	Number of operated indoor unit					Capacity of each unit (W)					Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit D	Unit E	Unit A	Unit B	Unit C	Unit D	Unit E			230V	240V	220V
	22	22	22	22	22	2520	2520	2520	2520	2520	12600	4510	19.8	19.0	20.7
	22	22	22	22	25	2510	2510	2510	2510	2850	12900	4600	20.2	19.4	21.1
	22	22	22	22	35	2520	2520	2520	2520	4010	14100	4980	21.9	21.0	22.9
	22	22	22	22	50	2520	2520	2520	2520	5720	15800	5500	24.2	23.1	25.3
	22	22	22	22	60	2380	2380	2380	2380	6480	16000	5110	22.4	21.5	23.5
	22	22	22	22	71	2210	2210	2210	2210	7140	16000	4620	20.3	19.4	21.2
	22	22	22	25	25	2520	2520	2520	2870	2870	13300	4730	20.8	19.9	21.7
	22	22	22	25	35	2510	2510	2510	2860	4000	14400	5070	22.3	21.3	23.3
	22	22	22	25	50	2500	2500	2500	2840	5660	16000	5480	24.1	23.1	25.2
	22	22	22	25	60	2330	2330	2330	2650	6360	16000	4970	21.8	20.9	22.8
	22	22	22	25	71	2170	2170	2170	2470	7010	16000	4500	19.8	18.9	20.7
	22	22	22	35	35	2510	2510	2510	3980	3980	15500	5410	23.8	22.8	24.8
	22	22	22	35	50	2330	2330	2330	3710	5300	16000	4970	21.8	20.9	22.8
	22	22	22	35	60	2190	2190	2190	3480	5950	16000	4540	19.9	19.1	20.8
	22	22	22	35	71	2050	2050	2050	3260	6590	16000	4150	18.2	17.5	19.1
	22	22	22	50	50	2120	2120	2120	4820	4820	16000	4350	19.1	18.3	20.0
	22	22	22	50	60	2000	2000	2000	4550	5450	16000	4020	17.7	16.9	18.5
	22	22	25	25	25	2510	2510	2860	2860	2860	13600	4820	21.2	20.3	22.1
	22	22	25	25	35	2510	2510	2850	2850	3980	14700	5160	22.7	21.7	23.7
	22	22	25	25	50	2440	2440	2780	2780	5560	16000	5320	23.4	22.4	24.4
	22	22	25	25	60	2290	2290	2600	2600	6220	16000	4830	21.2	20.3	22.2
	22	22	25	25	71	2130	2130	2420	2420	6880	16000	4390	19.3	18.5	20.2
	22	22	25	35	35	2520	2520	2860	4000	4000	15900	5530	24.3	23.3	25.4
	22	22	25	35	50	2290	2290	2600	3640	5180	16000	4830	21.2	20.3	22.2
	22	22	25	35	60	2150	2150	2440	3410	5850	16000	4430	19.5	18.6	20.3
	22	22	25	35	71	2010	2010	2290	3200	6490	16000	4050	17.8	17.0	18.6
	22	22	25	50	50	2080	2080	2370	4730	4730	16000	4250	18.7	17.9	19.5
	22	22	25	50	60	1970	1970	2230	4470	5360	16000	3930	17.3	16.5	18.0
	22	22	35	35	35	2360	2360	3760	3760	3760	16000	5060	22.2	21.3	23.2
	22	22	35	35	50	2150	2150	3410	3410	4880	16000	4430	19.5	18.6	20.3
	22	22	35	35	60	2020	2020	3220	3220	5520	16000	4080	17.9	17.2	18.7
	22	22	35	35	71	1900	1900	3030	3030	6140	16000	3760	16.5	15.8	17.3
	22	22	35	50	50	1970	1970	3120	4470	4470	16000	3930	17.3	16.5	18.0
	22	25	25	25	25	2500	2850	2850	2850	2850	13900	4910	21.6	20.7	22.5
	22	25	25	25	35	2520	2860	2860	2860	4000	15100	5290	23.2	22.3	24.3
	22	25	25	25	50	2390	2720	2720	2720	5440	16000	5160	22.7	21.7	23.7
	22	25	25	25	60	2240	2550	2550	2550	6110	16000	4700	20.6	19.8	21.6
	22	25	25	25	71	2100	2380	2380	2380	6760	16000	4280	18.8	18.0	19.7
	22	25	25	35	35	2480	2820	2820	3940	3940	16000	5430	23.8	22.9	24.9
	22	25	25	35	50	2240	2550	2550	3570	5090	16000	4700	20.6	19.8	21.6
	22	25	25	35	60	2110	2400	2400	3350	5740	16000	4320	19.0	18.2	19.8
	22	25	25	35	71	1980	2250	2250	3150	6370	16000	3960	17.4	16.7	18.2
	22	25	25	50	50	2040	2330	2330	4650	4650	16000	4150	18.2	17.5	19.1
	22	25	25	50	60	1930	2200	2200	4400	5270	16000	3850	16.9	16.2	17.7
	22	25	35	35	35	2320	2630	3680	3680	3680	16000	4920	21.6	20.7	22.6
	22	25	35	35	50	2110	2400	3350	3350	4790	16000	4320	19.0	18.2	19.8
	22	25	35	35	60	1990	2260	3160	3160	5420	16000	3990	17.5	16.8	18.3
	22	25	35	50	50	1920	2200	3080	4400	4400	16000	3850	16.9	16.2	17.7
	22	35	35	35	35	2160	3460	3460	3460	3460	16000	4500	19.8	18.9	20.7
	22	35	35	35	50	1990	3160	3160	3160	4520	16000	3990	17.5	16.8	18.3
	25	25	25	25	25	2860	2860	2860	2860	2860	14300	5040	22.1	21.2	23.1
	25	25	25	25	35	2850	2850	2850	2850	3990	15400	5380	23.6	22.6	24.7
	25	25	25	25	50	2670	2670	2670	2670	5320	16000	5020	22.0	21.1	23.0
	25	25	25	25	60	2500	2500	2500	2500	6000	16000	4580	20.1	19.3	21.0
	25	25	25	25	71	2340	2340	2340	2340	6640	16000	4180	18.4	17.6	19.2
	25	25	25	35	35	2760	2760	2760	3860	3860	16000	5270	23.1	22.2	24.2
	25	25	25	35	50	2500	2500	2500	3500	5000	16000	4580	20.1	19.3	21.0
	25	25	25	35	60	2350	2350	2350	3290	5650	16000	4210	18.5	17.7	19.3
	25	25	25	35	71	2210	2210	2210	3090	6280	16000	3870	17.0	16.3	17.8
	25	25	25	50	50	2290	2290	2290	4560	4560	16000	4050	17.8	17.0	18.6
	25	25	25	50	60	2160	2160	2160	4320	5190	16000	3760	16.5	15.8	17.3
	25	25	35	35	35	2580	2580	3610	3610	3610	16000	4790	21.0	20.2	22.0
	25	25	35	35	50	2350	2350	3290	3290	4710	16000	4210	18.5	17.7	19.3
	25	25	35	35	60	2220	2220	3110	3110	5330	16000	3900	17.1	16.4	17.9
	25	25	35	50	50	2160	2160	3030	4320	4320	16000	3760	16.5	15.8	17.3
	25	35	35	35	35	2420	3390	3390	3390	3390	16000	4390	19.3	18.5	20.2
	25	35	35	35	50	2220	3110	3110	3110	4440	16000	3900	17.1	16.4	17.9
	35	35	35	35	35	3200	3200	3200	3200	3200	16000	4050	17.8	17.0	18.6

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Number of operated indoor unit						Capacity of each unit (W)						Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F			230V	240V	220V
22	22	22	22	22	22	2510	2510	2510	2510	2510	2510	15100	5290	23.2	22.3	24.3
22	22	22	22	22	25	2510	2510	2510	2510	2510	2850	15400	5380	23.6	22.6	24.7
22	22	22	22	22	35	2430	2430	2430	2430	2430	3850	16000	5270	23.1	22.2	24.2
22	22	22	22	22	50	2200	2200	2200	2200	2200	5000	16000	4580	20.1	19.3	21.0
22	22	22	22	22	60	2070	2070	2070	2070	2070	5650	16000	4210	18.5	17.7	19.3
22	22	22	22	22	71	1940	1940	1940	1940	1940	6280	16000	3870	17.0	16.3	17.8
22	22	22	22	25	25	2520	2520	2520	2520	2860	2860	15800	5500	24.2	23.1	25.3
22	22	22	22	25	35	2380	2380	2380	2380	2700	3780	16000	5110	22.4	21.5	23.5
22	22	22	22	25	50	2160	2160	2160	2160	2450	4910	16000	4460	19.6	18.8	20.5
22	22	22	22	25	60	2030	2030	2030	2030	2310	5550	16000	4120	18.1	17.3	18.9
22	22	22	22	25	71	1910	1910	1910	1910	2170	6170	16000	3790	16.6	16.0	17.4
22	22	22	22	35	35	2230	2230	2230	2230	3540	3540	16000	4660	20.5	19.6	21.4
22	22	22	22	35	50	2030	2030	2030	2030	3240	4620	16000	4120	18.1	17.3	18.9
22	22	22	22	35	60	1920	1920	1920	1920	3060	5250	16000	3820	16.8	16.1	17.5
22	22	22	25	25	25	2500	2500	2500	2830	2830	2830	16000	5480	24.1	23.1	25.2
22	22	22	25	25	35	2330	2330	2330	2650	2650	3710	16000	4970	21.8	20.9	22.8
22	22	22	25	25	50	2120	2120	2120	2410	2410	4820	16000	4350	19.1	18.3	20.0
22	22	22	25	25	60	2000	2000	2000	2270	2270	5450	16000	4020	17.7	16.9	18.5
22	22	22	25	35	35	2190	2190	2190	2470	3480	3480	16000	4540	19.9	19.1	20.8
22	22	22	25	35	50	2000	2000	2000	2270	3180	4550	16000	4020	17.7	16.9	18.5
22	22	22	35	35	35	2060	2060	2060	3270	3270	3270	16000	4180	18.4	17.6	19.2
22	22	25	25	25	25	2440	2440	2780	2780	2780	2780	16000	5320	23.4	22.4	24.4
22	22	25	25	25	35	2280	2280	2600	2600	2600	3640	16000	4830	21.2	20.3	22.2
22	22	25	25	25	50	2080	2080	2370	2370	2370	4730	16000	4250	18.7	17.9	19.5
22	22	25	25	25	60	1970	1970	2230	2230	2230	5360	16000	3930	17.3	16.5	18.0
22	22	25	25	35	35	2150	2150	2440	2440	3410	3410	16000	4430	19.5	18.6	20.3
22	22	25	25	35	50	1970	1970	2230	2230	3130	4470	16000	3930	17.3	16.5	18.0
22	22	25	35	35	35	2020	2020	2300	3220	3220	3220	16000	4080	17.9	17.2	18.7
22	22	35	35	35	35	1910	1910	3040	3040	3040	3040	16000	3790	16.6	16.0	17.4
22	25	25	25	25	25	2390	2720	2720	2720	2720	2720	16000	5160	22.7	21.7	23.7
22	25	25	25	25	35	2240	2550	2550	2550	2550	3560	16000	4700	20.6	19.8	21.6
22	25	25	25	25	50	2040	2330	2330	2330	2330	4640	16000	4150	18.2	17.5	19.1
22	25	25	25	25	60	1930	2200	2200	2200	2200	5270	16000	3850	16.9	16.2	17.7
22	25	25	25	35	35	2100	2400	2400	2400	3350	3350	16000	4320	19.0	18.2	19.8
22	25	25	25	35	50	1930	2200	2200	2200	3080	4390	16000	3850	16.9	16.2	17.7
22	25	25	35	35	35	1990	2260	2260	3160	3160	3160	16000	3990	17.5	16.8	18.3
25	25	25	25	25	25	2660	2660	2660	2660	2660	2660	16000	5020	22.0	21.1	23.0
25	25	25	25	25	35	2500	2500	2500	2500	2500	3500	16000	4580	20.1	19.3	21.0
25	25	25	25	25	50	2280	2280	2280	2280	2280	4570	16000	4050	17.8	17.0	18.6
25	25	25	25	25	60	2160	2160	2160	2160	2160	5190	16000	3760	16.5	15.8	17.3
25	25	25	25	35	35	2350	2350	2350	2350	3290	3290	16000	4210	18.5	17.7	19.3
25	25	25	25	35	50	2160	2160	2160	2160	3030	4320	16000	3760	16.5	15.8	17.3
25	25	25	35	35	35	2220	2220	2220	3110	3110	3110	16000	3900	17.1	16.4	17.9

6

<Heating>

	Number of operated indoor unit							Capacity of each unit (W)							Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G			230V	240V	220V
	7	22	22	22	22	22	22	22	2280	2280	2280	2280	2280	2280			2280	16000	4830
22		22	22	22	22	22	25	2240	2240	2240	2240	2240	2240	2550	16000	4700	20.6	19.8	21.6
22		22	22	22	22	22	35	2110	2110	2110	2110	2110	2110	3340	16000	4320	19.0	18.2	19.8
22		22	22	22	22	22	50	1930	1930	1930	1930	1930	1930	4400	16000	3850	16.9	16.2	17.7
22		22	22	22	22	25	25	2200	2200	2200	2200	2200	2500	2500	16000	4580	20.1	19.3	21.0
22		22	22	22	22	25	35	2070	2070	2070	2070	2070	2350	3290	16000	4210	18.5	17.7	19.3
22		22	22	22	22	25	50	1900	1900	1900	1900	1900	2160	4320	16000	3760	16.5	15.8	17.3
22		22	22	22	22	35	35	1960	1960	1960	1960	1960	3100	3100	16000	3900	17.1	16.4	17.9
22		22	22	22	25	25	25	2160	2160	2160	2160	2450	2450	2450	16000	4460	19.6	18.8	20.5
22		22	22	22	25	25	35	2030	2030	2030	2030	2310	2310	3240	16000	4120	18.1	17.3	18.9
22		22	22	22	25	35	35	1920	1920	1920	1920	2190	3060	3060	16000	3820	16.8	16.1	17.5
22		22	22	25	25	25	25	2120	2120	2120	2410	2410	2410	2410	16000	4350	19.1	18.3	20.0
22		22	22	25	25	25	35	2000	2000	2000	2270	2270	2270	3180	16000	4020	17.7	16.9	18.5
22		22	25	25	25	25	25	2070	2070	2370	2370	2370	2370	2370	16000	4250	18.7	17.9	19.5
22		22	25	25	25	25	35	1970	1970	2230	2230	2230	2230	3130	16000	3930	17.3	16.5	18.0
22		25	25	25	25	25	25	2050	2320	2320	2320	2320	2320	2320	16000	4150	18.2	17.5	19.1
25		25	25	25	25	25	25	2280	2280	2280	2280	2280	2280	2280	16000	4050	17.8	17.0	18.6
25	25	25	25	25	25	35	2160	2160	2160	2160	2160	2160	3030	16000	3760	16.5	15.8	17.3	

<Heating>

	Number of operated indoor unit								Capacity of each unit (W)								Total rated capacity (W)	Outdoor unit input (W)	Outdoor unit current (A)		
	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H			230V	240V	220V
	8	22	22	22	22	22	22	22	22	2000	2000	2000	2000	2000	2000	2000			2000	16000	4020
22		22	22	22	22	22	22	25	1960	1960	1960	1960	1960	1960	1960	2230	16000	3930	17.3	16.5	18.0
22		22	22	22	22	22	25	25	1930	1930	1930	1930	1930	1930	2200	2200	16000	3850	16.9	16.2	17.7
22		22	22	22	22	25	25	25	1900	1900	1900	1900	1900	2160	2160	2160	16000	3760	16.5	15.8	17.3

## 5-2. CORRECTING COOLING AND HEATING CAPACITY

### 5-2-1. Correcting Changes in Air Conditions

(1) The performance curve charts (Figure 1-1, 1-2, 2-1, 2-2) show the change ratio of capacity and input (power consumption) according to the indoor and outdoor temperature condition when define the rated capacity (total capacity) and rated input under the standard condition in standard piping length (5m) as "1.0".

- Standard conditions:

Rated cooling capacity	Indoor D.B. 27°C / W.B. 19°C Outdoor D.B. 35°C
Rated heating capacity	Indoor D.B. 20°C Outdoor D.B. 7°C / W.B. 6°C

- Use the rated capacity and rated power values given in the characteristics table for each indoor unit.
- The capacity is the single value on the side of the outdoor unit;  
The capacity on the sides of each indoor unit must be added to obtain the total capacity.

(2) The capacity of each indoor unit may be obtained by multiplying the total capacity obtained in (1) by the ratio between the individual capacity at the rated time and the total capacity at the rated time.

$$\text{Individual capacity under stated conditions} = \text{Total capacity under the stated conditions} \times \frac{\text{Individual capacity at the rated time}}{\text{Total capacity at the rated time}}$$

(3) Capacity correction factor curve

Fig.1-1  
Cooling capacity

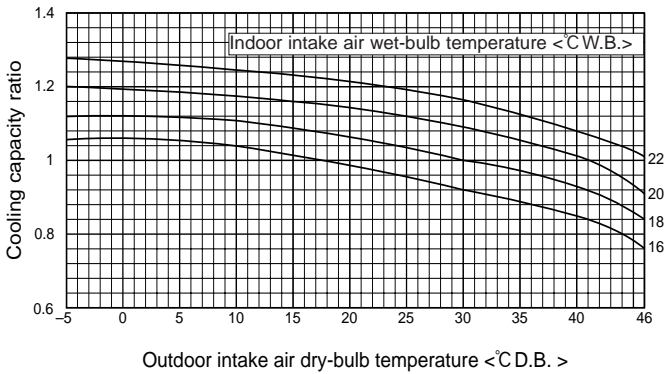


Fig.1-2  
Cooling input

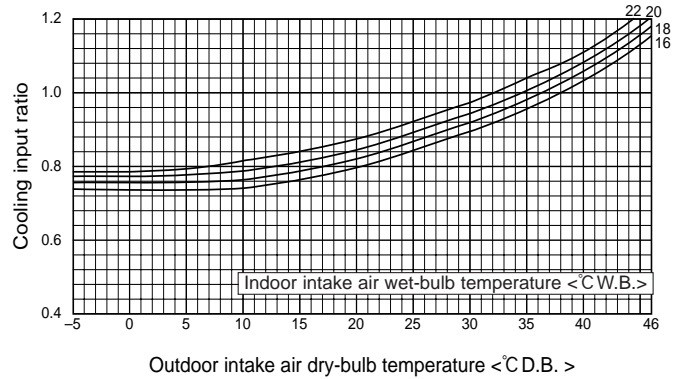


Fig.2-1  
Heating capacity

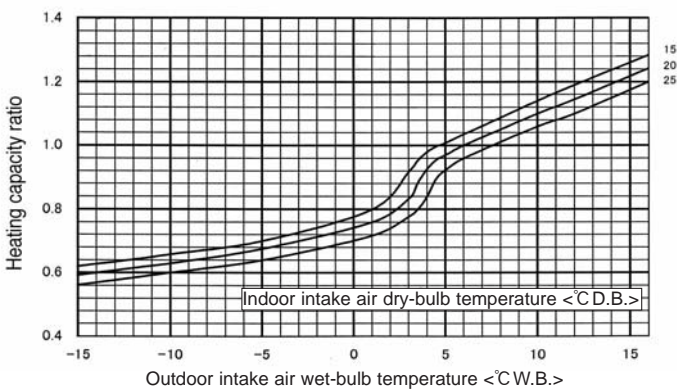
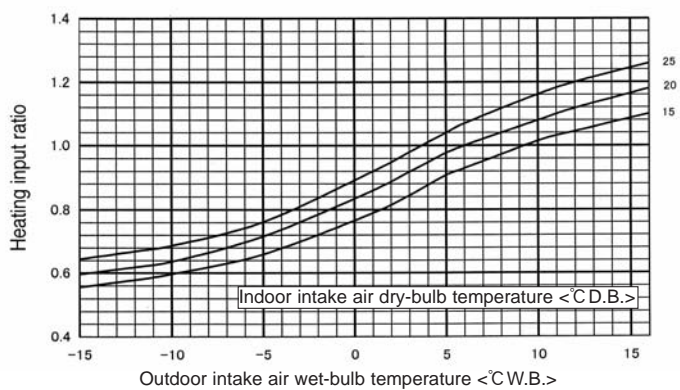


Fig.2-2  
Heating input



**Note :** These diagrams show the case where the operation frequency of a compressor is fixed.



### 5-2-2. Correcting Capacity for Changes in the Length of Refrigerant Piping

To obtain the ratio (and the corrected piping length) of the outdoor units rated capacity and the total in-use indoor capacity, first find the capacity ratio corresponding to the standard piping length from Fig.3, Fig.4 and then multiply by the capacity from Fig.1-1, 1-2, Fig.2-1, 2-2 to obtain the actual capacity.

#### (1) Capacity correction factor

Fig.3 Cooling capacity correction curve

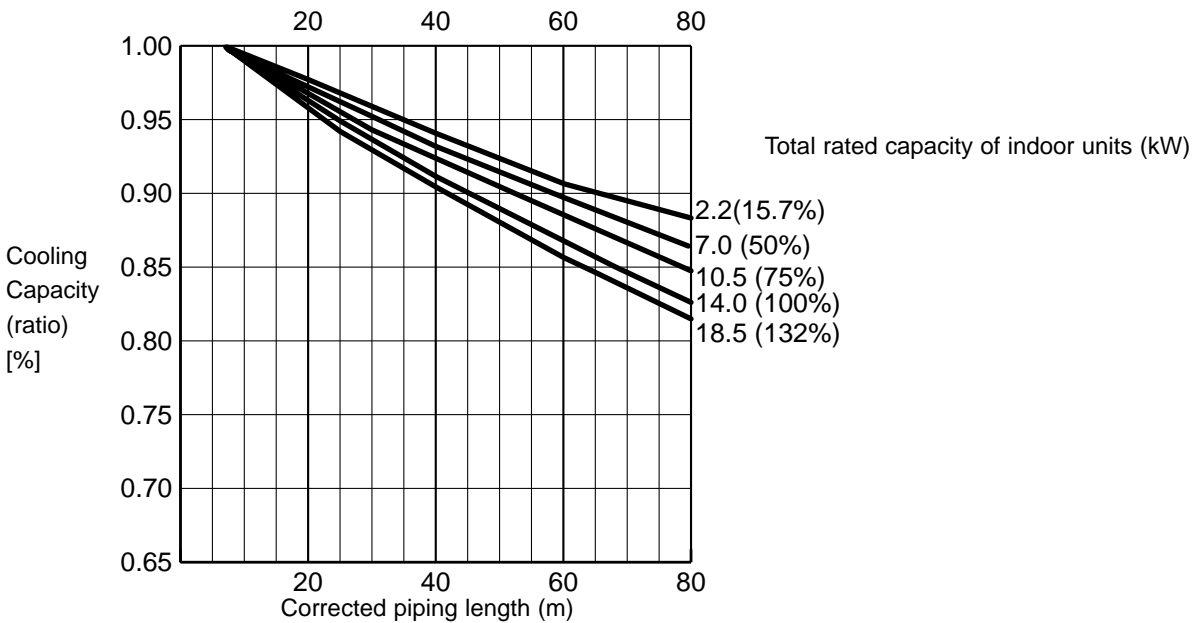
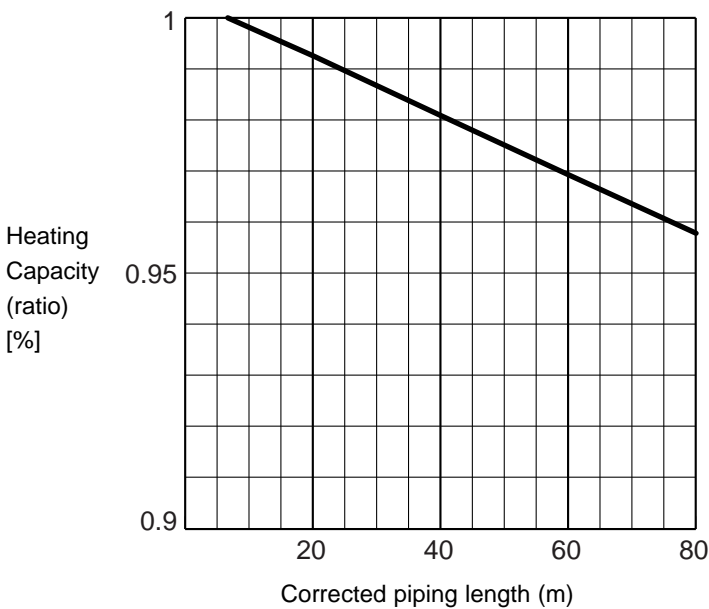


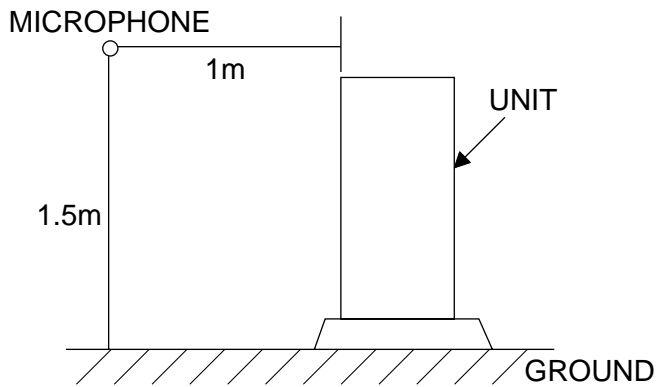
Fig.4 Heating capacity correction curve



#### (2) Method for Obtaining the Corrected Piping Length

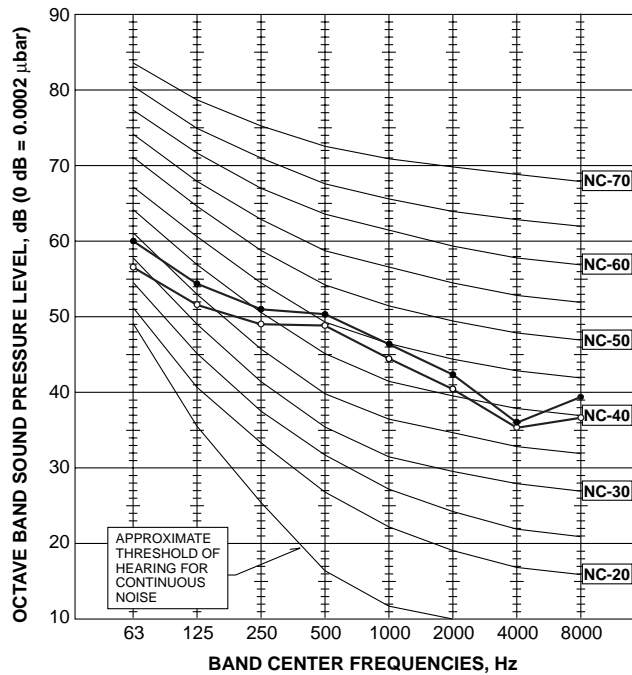
Corrected piping length = (Actual piping length between outdoor unit and the farthest indoor unit) + (0.30 × number of bends in the piping) (m)

### 5-3. NOISE CRITERION CURVES



**MXZ-8A140VA**  
**MXZ-8A140VA<sub>1</sub>**  
**MXZ-8A140VA<sub>2</sub>**  
**MXZ-8A140VA<sub>3</sub>**

MODE	SPL(dB)	LINE
COOLING	50	○—○
HEATING	52	●—●



# 6

# OUTLINES AND DIMENSIONS

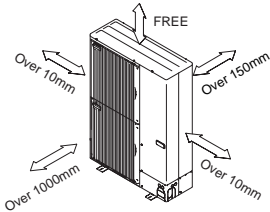
## 6-1. OUTDOOR UNIT

MXZ-8A140VA MXZ-8A140VA<sub>1</sub> MXZ-8A140VA<sub>2</sub>

unit : mm

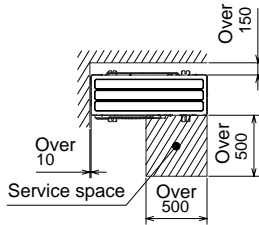
### 1 FREE SPACE (Around the unit)

The diagram below shows a basic example.  
Explanation of particular details are given in the installation manuals etc.



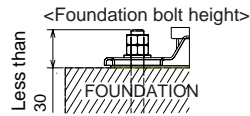
### 2 SERVICE SPACE

Dimensions of space needed for service access are shown in the below diagram.



### 3 FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10) bolts. (Bolts and washers must be purchased locally.)

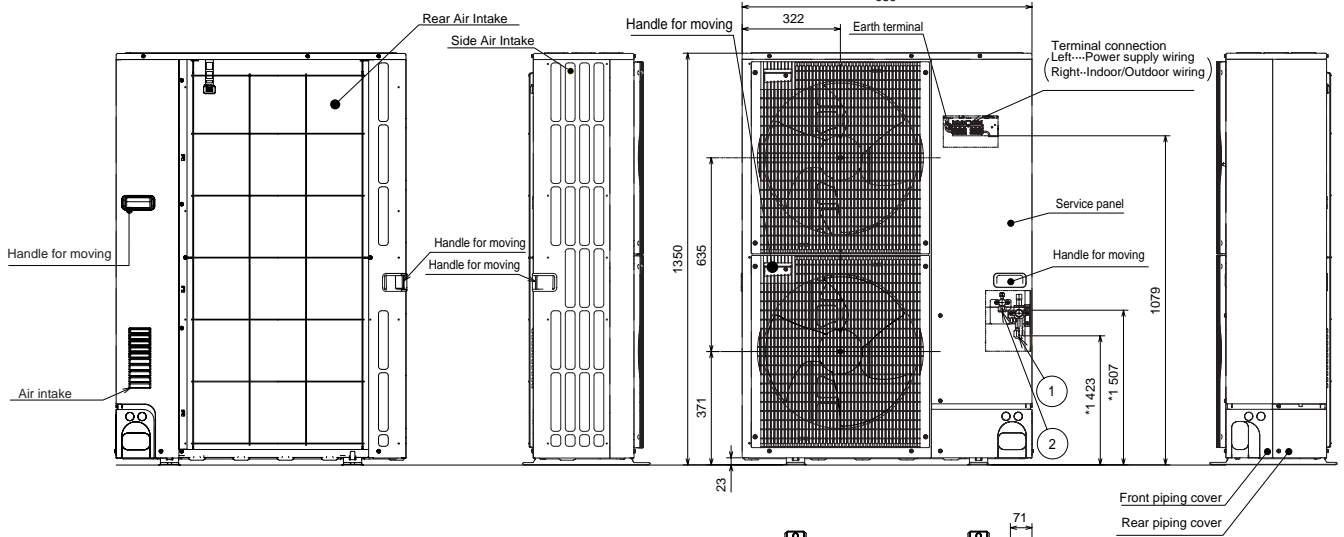
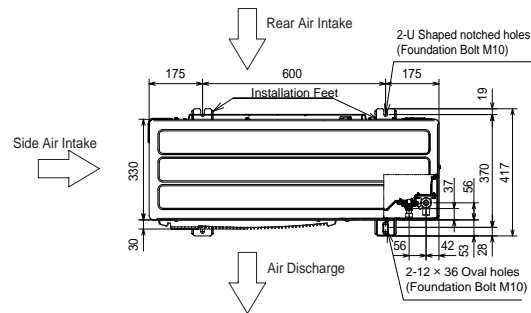


### 4 PIPING-WIRING DIRECTIONS

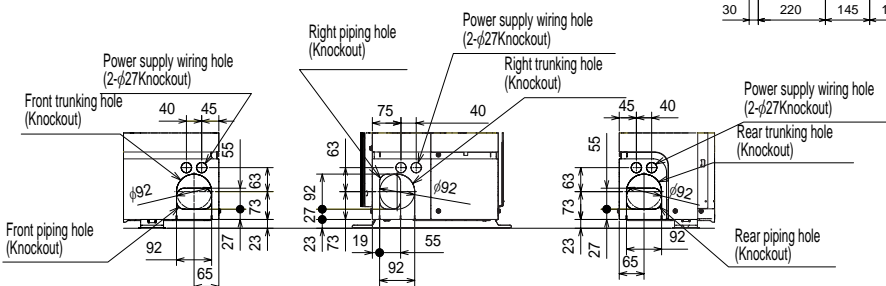
Piping and wiring connections can be made from 4 directions: front, right, rear and below.

### Example of Notes

- ①--Refrigerant GAS pipe connection (FLARE)φ15.88(5/8 inch)
  - ②--Refrigerant LIQUID pipe connection (FLARE)φ9.52(3/8 inch)
- Indication of STOP VALVE connection location



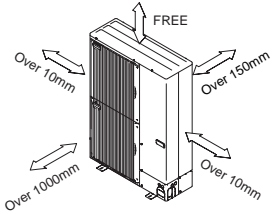
### Piping Knockout Hole Details



# MXZ-8A140VA<sub>3</sub>

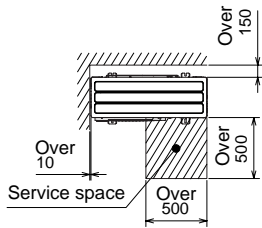
## 1 FREE SPACE (Around the unit)

The diagram below shows a basic example. Explanation of particular details are given in the installation manuals etc.



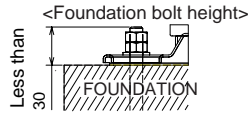
## 2 SERVICE SPACE

Dimensions of space needed for service access are shown in the below diagram.



## 3 FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10) bolts. (Bolts and washers must be purchased locally.)

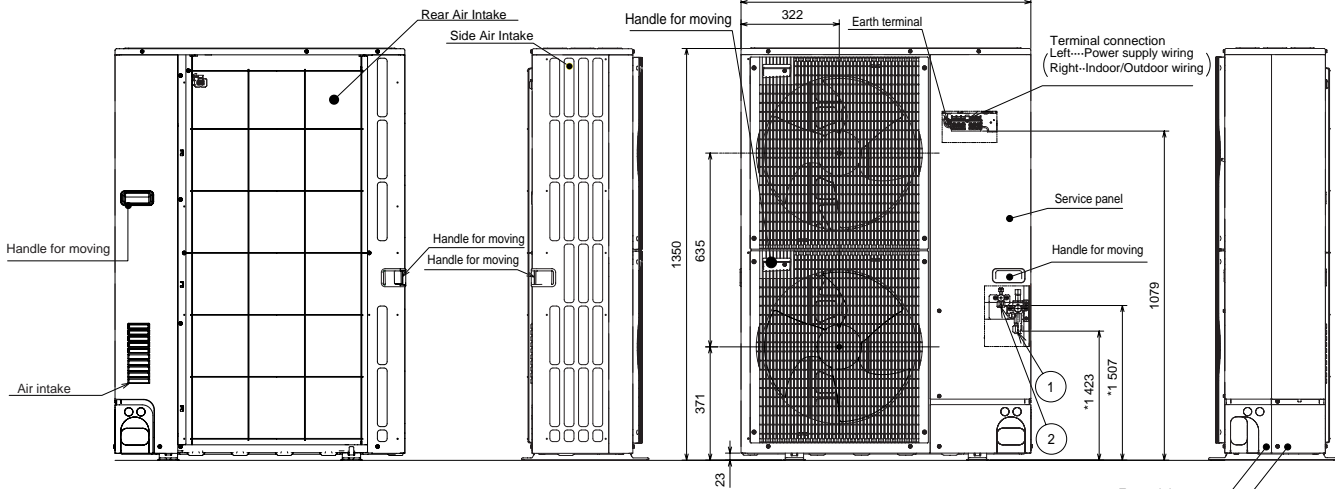
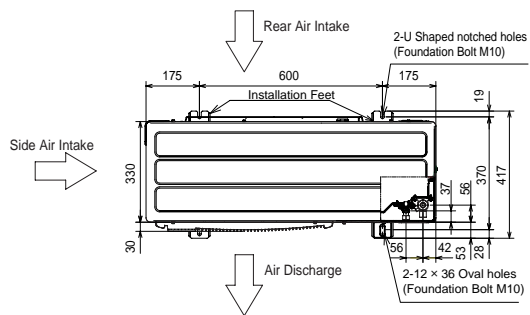


## 4 PIPING-WIRING DIRECTIONS

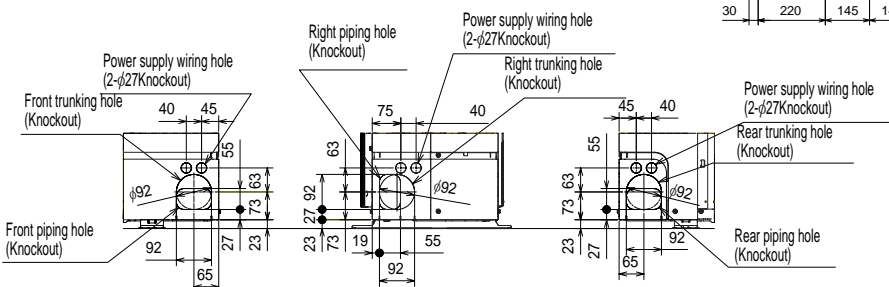
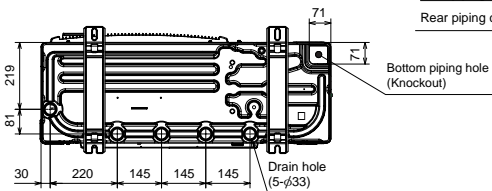
Piping and wiring connections can be made from 4 directions: front, right, rear and below.

### Example of Notes

- ①...Refrigerant GAS pipe connection (FLARE)φ15.88(5/8 inch)
  - ②...Refrigerant LIQUID pipe connection (FLARE)φ9.52(3/8 inch)
- Indication of STOP VALVE connection location



### Piping Knockout Hole Details





## 6-2. BRANCH BOX UNIT PAC-AK50BC

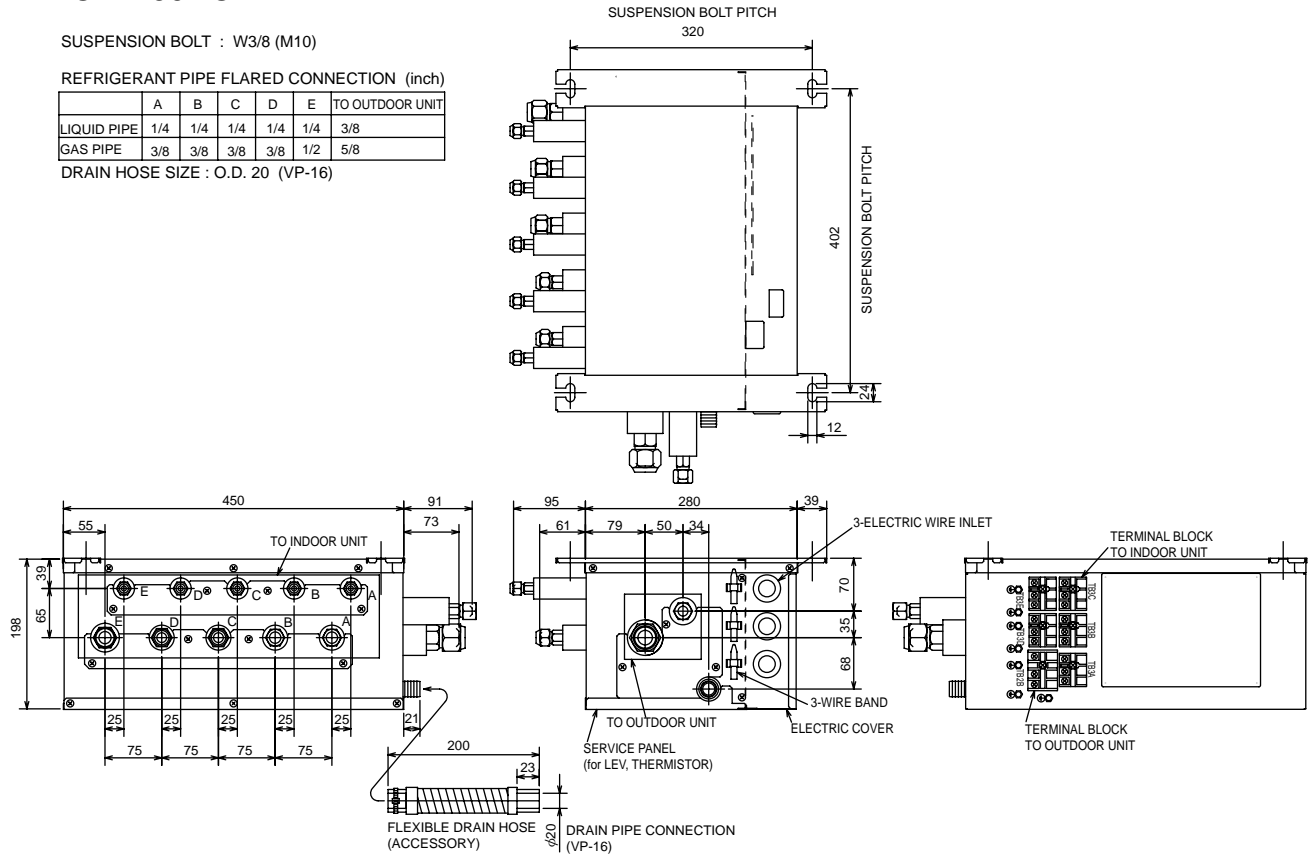
unit : mm

SUSPENSION BOLT : W3/8 (M10)

REFRIGERANT PIPE FLARED CONNECTION (inch)

	A	B	C	D	E	TO OUTDOOR UNIT
LIQUID PIPE	1/4	1/4	1/4	1/4	1/4	3/8
GAS PIPE	3/8	3/8	3/8	3/8	1/2	5/8

DRAIN HOSE SIZE : O.D. 20 (VP-16)



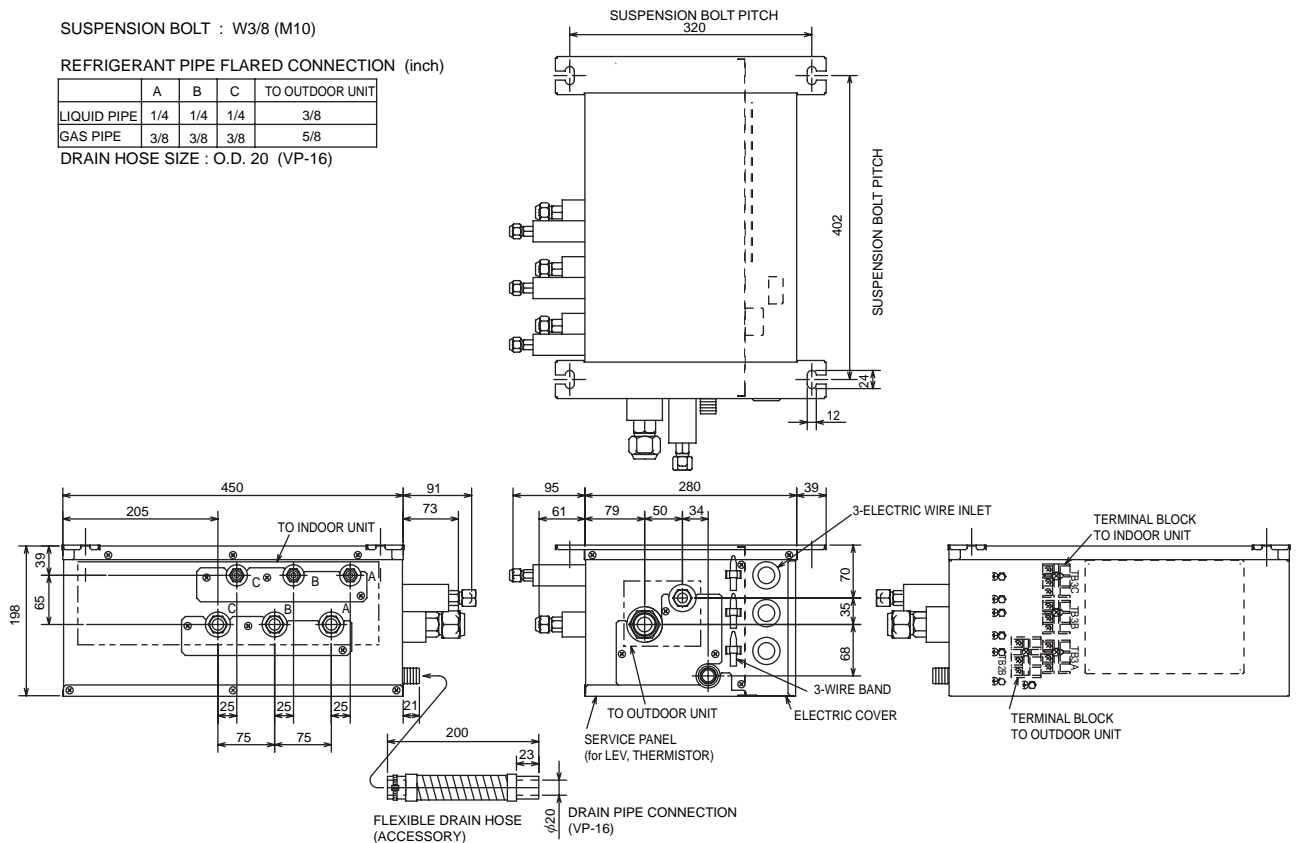
## PAC-AK30BC

SUSPENSION BOLT : W3/8 (M10)

REFRIGERANT PIPE FLARED CONNECTION (inch)

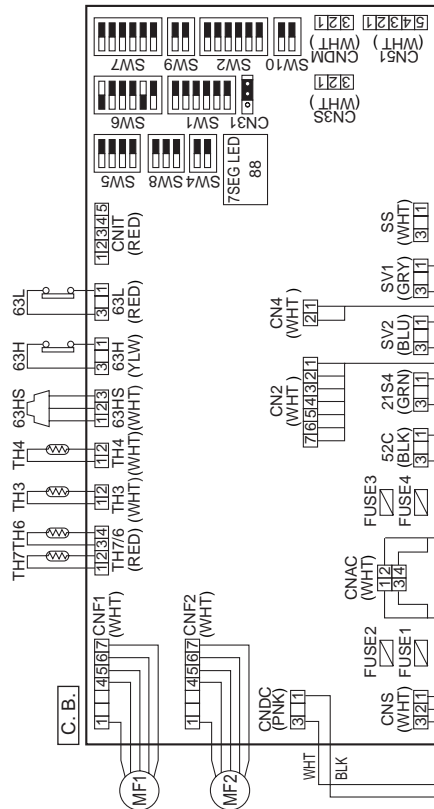
	A	B	C	TO OUTDOOR UNIT
LIQUID PIPE	1/4	1/4	1/4	3/8
GAS PIPE	3/8	3/8	3/8	5/8

DRAIN HOSE SIZE : O.D. 20 (VP-16)



7-1. OUTDOOR UNIT  
MXZ-8A140VA

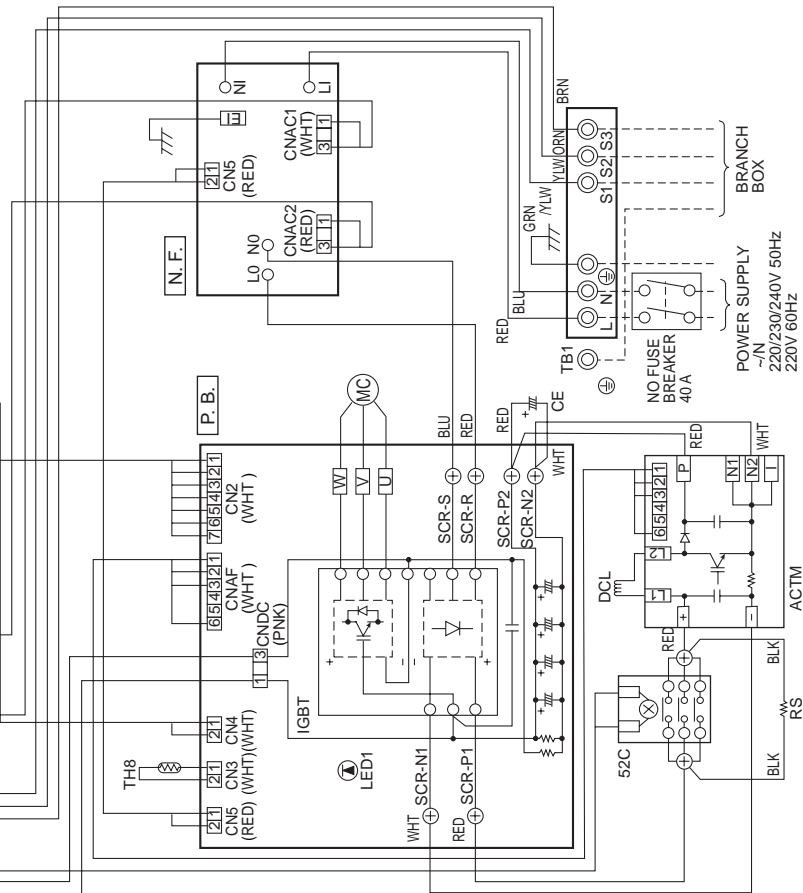
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply, Branch)	SC - R / S	Screw Type Terminal (L / N - Phase)	SW6	Switch (Model Select)
MC	Motor for Compressor	SC - P1, P2	Screw Type Terminal (DC Voltage)	SW7	Switch (Function Setup)
MF1, MF2	Fan Motors	SC - N1, N2	Screw Type Terminal (DC Voltage)	SW8	Switch
21S4	Solenoid Valve (Four-Way Valve)	CNDC	Connector	SW9	Switch (Function for option)
SV2	Solenoid Valve (Hot Gas Bypass)	CNAF	Connector	CN31	Connector
63HS	High pressure Sensor	IGBT	Converter, Inverter	LED	Light Emitting Diodes (Operation Inspection Indicators)
63L	Low pressure Switch	N, F	Light Emitting Diodes (Inverter Control Status)	CNAC	Connector
TH3	Thermistor (Outdoor Pipe)	LI / LO	Noise Filter Circuit Board	CNDC	Connector
TH4	Thermistor (Outdoor 2-Phase Pipe)	NI / NO	Connection Lead (L - Phase)	CNS	Connector
TH7	Thermistor (Outdoor)	CNAC1 / 2	Connection Terminal (Ground)	CNF1	Connector
TH8	Thermistor (Heatsink)	CN5	Connector	CNF2	Connector
DCL	Reactor	C, B	Controller Circuit Board	SV1	Connector
52C	52C Relay	FUSE1 ~ 4	Fuse (6, 3A)	SV2	Connector
RS	Rush Current Protect Resistor	SW1	Switch (Forced Defrost, Error History Record Reset)	CN3S	Connector (Connection for Option)
ACTM	Active Filter Module	SW2	Switch (Self Diagnosis Switch)	CNDM	Connector (Connection for Option (Contact Input))
CE	Main Smoothing Capacitor	SW4	Switch (Test Operation)	CN51	Connector (Connection for Option)
P.B.	Power Circuit Board	SW5	Switch (Function Switch)	CN1T	Connector (Connection for Option)
U / V / W	Connection Terminal (U / V / W - Phase)				



Operation / Inspection Display

LED on the controller board display the operation and inspection status as follows.  
If LED does not light, it indicates that no power is supplied to the board:

Power turned on	Details	Code
Normal status		Operation status display, such as C5, H7
Faulty status (blinking)	Connector (63H) open, connector (63L) open	F3
	At least 2 connectors open	F9
	Incorrect wiring in indoor / outdoor unit connection	EA, Eb, EC
	Indoor / outdoor unit communication error	E6-E9
	Remote controller communication error	E0, E3-E5
	Combination error, undefined error	EE, EF
	Serial communication error	Ed
	Discharge temperature fault	U2
	Low-discharge superheating fault, Erroneous connection of refrigerant pipes or the connecting wires	U7
	High pressure fault (63H operates)	U1
	Low pressure fault (63L operates)	U1
	Abnormality of power modules	U6
	Compressor overcurrent shutoff (Start up locked)	UF
	Current sensor fault (P. B.)	UH
	Compressor overcurrent shutoff fault	UP
	Discharge pipe/compressor thermistor (TH4) open or short-circuit	U3
	Outdoor unit thermistors (TH3, TH6, TH7, and TH8), 63HS, and branch box thermistors open or short-circuit	U4
	Heatsink temperature fault	U5
	Abnormality in outdoor fan motor	U8
	Voltage fault, current sensor fault (N. F.)	U9
	Forced compressor stop (Overlap malfunction of drain pump in indoor unit and linear expansion valve in branch box)	PA



Cautions when Servicing

- ⚠️ WARNING: When the main supply is turned off, the voltage [340 V] in the main capacitor will drop to 20 V in approx.2 minutes (input voltage : 240 V). When servicing, make sure that LED on the outdoor circuit board goes out, and then wait for at least 1 minute.
- Components other than the outdoor board may be faulty : Check and take corrective action, referring to the service manual. Do not replace the outdoor board without checking.

# MXZ-8A140VA<sub>1</sub> MXZ-8A140VA<sub>2</sub>

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply, Branch)	TAB-S/T	Terminal (L/N - Phase)	SW6	Switch (Model Select)
MC	Motor for Compressor	TAB-PP1/P2	Terminal (DC Voltage)	SW7	Switch (Function Setup)
MF1, MF2	Fan Motors	TAB-N1/N2/N3	Terminal (DC Voltage)	SW8	Switch
21S4	Solenoid Valve (Four-Way Valve)	CND2 - 5	Connector	SW9	Switch (Function for option)
SV1	Solenoid Valve (Hot Gas Bypass)	CN3F	Connector	SW10	Switch (Function for option)
SV2	Solenoid Valve (Returning oil Bypass)	CN4F	Connector	CN31	Connector
63HS	High pressure sensor	IPM	Inverter	LED	Light Emitting Diodes (Operation/Inspection Indicators)
63H	High pressure switch	N.F.	Noise Filter Circuit Board	CNAC	Connector
63L	Low pressure switch	L1/L0	Connection Lead (L - Phase)	CNDC	Connector
TH3	Thermistor (Outdoor Pipe)	N1/NO	Connection Lead (L - Phase)	CNS	Connector
TH4	Thermistor (Discharge)	EI	Connection Terminal (Ground)	CNF1	Connector
TH6	Thermistor (Outdoor)	CNAC1/2	Connector	CNF2	Connector
TH7	Thermistor (Outdoor)	CN5	Connector	SS	Connector (Connection for Option)
TH8	Thermistor (Heatsink)	C.B.	Controller Circuit Board	SV1	Connector
DCL	Reactor	FUSE1-4	Fuse (6.3A)	SV2	Connector
RS	52C Relay	SV1	Switch (Forced Defrost, Error History Record Reset)	CN5S	Connector (Connection for Option)
ACTM	Rush Current Protect Resistor	SV2	Switch (Self Diagnosis Switch)	CNDM	Connector (Connection for Option)
CE	Active Filter Module	SW4	Switch (Test Operation)	CN51	Connector (Connection for Option)
P.B.	Main Smoothing Capacitor	SW5	Switch (Function Switch)	CN1T	Connector (Connection for Option)
U/V/V/W	Power Circuit Board				
	Connection Terminal (U/V/W - Phase)				

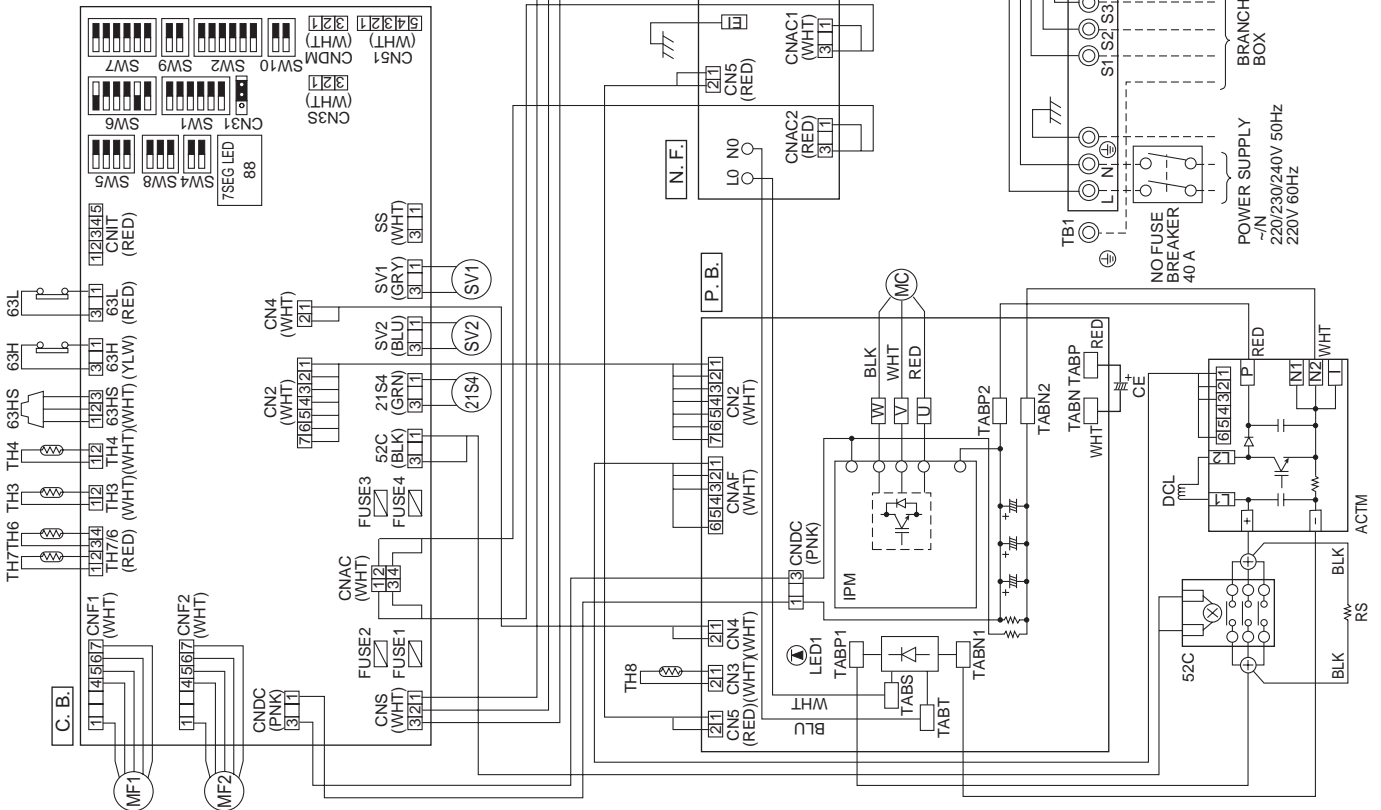
### Operation / Inspection Display

LED on the controller board display the operation and inspection status as follows.  
If LED does not light, it indicates that no power is supplied to the board.

Code	Details
→ ← → (blinks)	Operation status display, such as Cs, H7
F3	63L connector (red) is open.
F5	63H connector (yellow) is open.
F9	2 connectors (63H/63L) are open.
E8	Branch box/outdoor communication error (Signal receiving error) (Outdoor unit)
E9	Indoor/branch box communication error (Signal receiving error) (Branch box)
E9	Branch box/outdoor communication error (Transmitting error) (Outdoor unit)
E9	Indoor/branch box communication error (Transmitting error) (Branch box)
EA	Miswiring of indoor-branch box / branch box-outdoor unit connecting wire. Too many indoor units / branch box are in the system.
Eb	Miswiring of indoor-branch box/branch box-outdoor unit connecting wire (reverse wiring or disconnection)
Ec	Startup time over
E0 E7	Communication error except for outdoor unit
EE, EF	Combination error, undefined error
Ed	Serial communication error
U2	Discharge temperature fault
U7	Low-discharge superheating fault, Erroneous connection of refrigerant pipes or the connecting wires
U1	High pressure fault (63H operates)
U6	Low pressure fault (63L operates)
UF	Abnormality of power modules
UH	Compressor overcurrent shutdown (Start up locked)
UH	Current sensor fault (P. B.)
UP	Compressor overcurrent shutdown fault
U3	Discharge pipe/compressor thermistor (TH4) open or short-circuit
U4	Outdoor unit thermistors (TH3, TH6, TH7, and TH8), 63HS, and branch box thermistors open or short-circuit
U5	Heatsink temperature fault
U8	Abnormality in outdoor fan motor
U9	Voltage fault, current sensor fault (N. F.)
PA	Forced compressor stop (Overlap malfunction of drain pump in indoor unit and linear expansion valve in branch box)

### Cautions when Servicing

- ⚠ **WARNING:** When the main supply is turned off, the voltage(340 V) in the main capacitor will drop to 20 V in approx.2 minutes (input voltage : 240 V). When servicing, make sure that LED on the outdoor circuit board goes out, and then wait for at least 1 minute.
- Components other than the outdoor board may be faulty. Check and take corrective action, referring to the service manual.
- Do not replace the outdoor board without checking.



# MXZ-8A140VA<sub>3</sub>

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply, Branch Box)	P. B.	Power Circuit Board	SW5	Switch (Function Switch)
MC	Motor for Compressor	TABU / V / W	Connection Terminal (U / V / W - Phase)	SW6	Switch (Model Select)
MF1, MF2	Fan Motors	TABS / T	Connection Terminal (L / N - Phase)	SW7	Switch (Function Setup)
21S4	Solenoid Valve (Four-Way Valve)	TABN1/N2/N	Connection Terminal (DC Voltage)	SW8	Switch (Function Setup)
63H	High Pressure Switch	DS2, DS3	Diode Bridge	CN31	Connector
63HS	High Pressure Sensor	IPM	Power Module	SS	Connector (Connection for Option)
SV1, SV2	Solenoid Valve (Bypass Valve)	N. F.	Noise Filter Circuit Board	CN3S	Connector (Connection for Option)
TH3	Thermistor (Outdoor Pipe)	LI / LO	Connection Terminal (L - Phase)	CNIT	Connector (Connection for Option)
TH4	Thermistor (Discharge)	NI / NO	Connection Terminal (N - Phase)	CNDM	Connector (Connection for Option)
TH6	Thermistor (Outdoor 2 + Phase Pipe)	E1, E2	Connection Terminal (Ground)	LED	Light Emitting Diode (Operation Inspection Indicators)
TH7	Thermistor (Outdoor)	C. B.	Controller Circuit Board	F1 ~ F4	Fuse (T6.3AL250V)
TH8	Thermistor (Radiator Panel)	SW1	Switch (Forced Defrost, Defect History Record Reset)	X51 ~ X55	Relay
DCL	Reactor	SW2	Switch (Self Diagnosis Switch)		
ACTM	Active Filter Module	SW4	Switch (Test Operation)		
CB	Main Smoothing Capacitor				

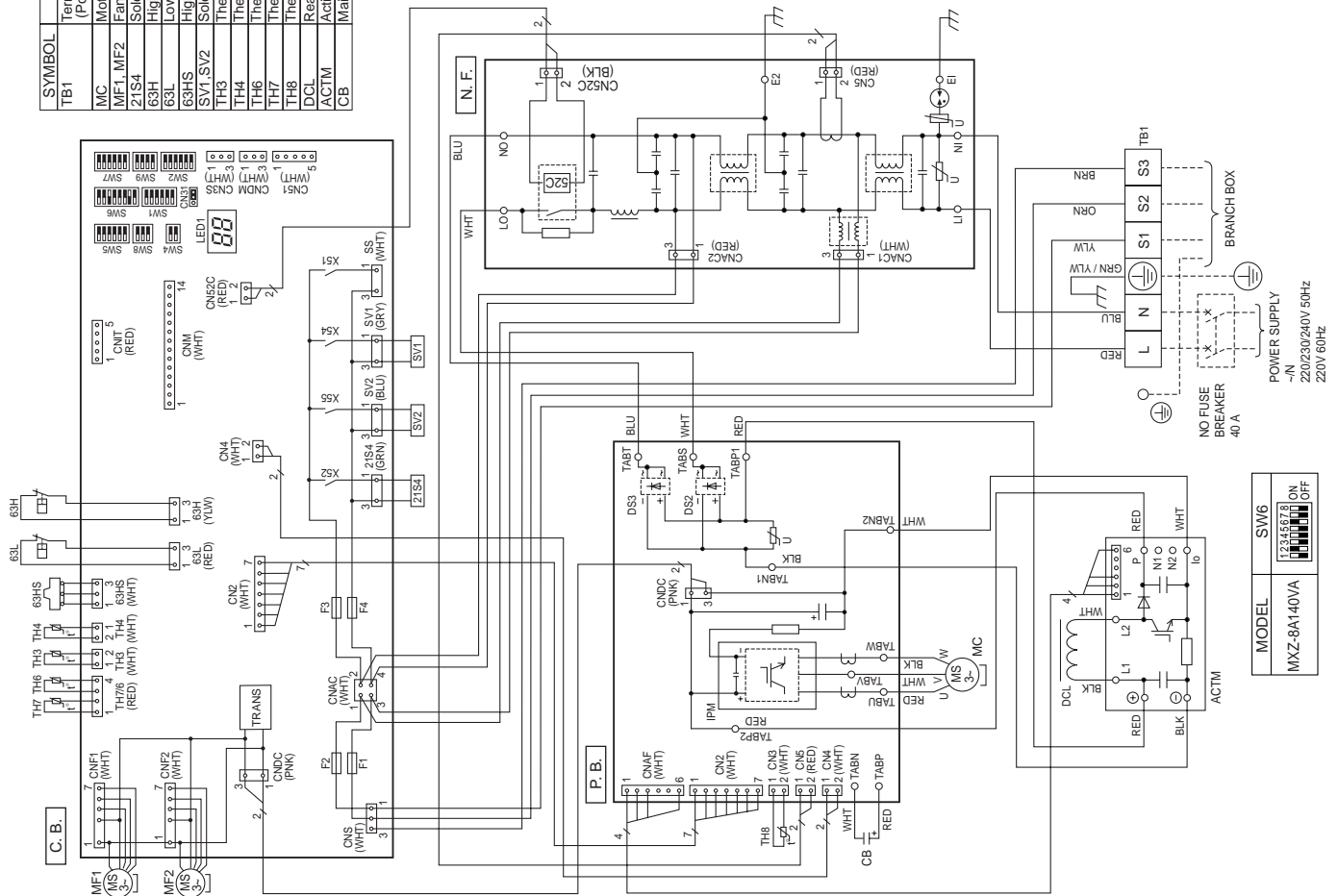
## Operation / Inspection Display

LED on the controller board display the operation and inspection status as follows.  
If LED does not light, it indicates that no power is supplied to the board:

Power turned on	Details	Code
Normal status		— ↔ — (blinks)
Faulty status (blinking)	63L connector (red) is open.	F3
	63H connector (yellow) is open.	F5
	2 connectors (63H/63L) are open.	F9
	Branch box/outdoor communication error. (Signal receiving error)(Outdoor unit)	E8
	Indoor/branch box communication error. (Signal receiving error)(Branch box)	E9
	Indoor/branch box communication error. (Transmitting error)(Outdoor unit)	E9
	Indoor/branch box communication error. (Transmitting error)(Branch box)	E9
	Miswiring of indoor-branch box / branch box-outdoor unit connecting wire.	Ea
	Too many indoor units / branch box are in the system.	Ea
	Miswiring of indoor-branch box/branch box-outdoor unit connecting wire (converse wiring or disconnection)	Eb
	Startup time over	Ec
	Communication error except for outdoor unit	E0 - E7
	Combination error, undefined error	EE, EF
	Serial communication error	Ed
	Discharge temperature fault	U2
	Low-discharge superheating fault. Erroneous connection of refrigerant pipes or the connecting wires	U7
	High pressure fault (63H operates)	U1
	Low pressure fault (63L operates)	UL
	Abnormality of power modules	UL
	Compressor over current shutdown (Start up locked)	UF
	Current sensor fault (P. B.)	UH
	Compressor overcurrent shutdown fault	UP
	Discharge pipe/compressor thermistor (TH4) open or short-circuit	U3
	Outdoor unit thermistors (TH3, TH6, TH7, and TH8), 63HS, and branch box thermistors open or short-circuit	U4
	Heatsink temperature fault	U5
	Abnormality in outdoor fan motor	U8
	Voltage fault, current sensor fault (N. F.)	U9
	Forced compressor stop	PA
	(Overlap malfunction of drain pump in indoor unit and linear expansion valve in branch box)	

## Cautions when Servicing

- ▲ **WARNING:** When the main supply is turned off, the voltage (340 V) in the main capacitor will drop to 20 V in approx. 2 minutes (input voltage : 240 V). When servicing, make sure that LED on the outdoor circuit board goes out, and then wait for at least 1 minute.
- Components other than the outdoor board may be faulty : Check and take corrective action, referring to the service manual. Do not replace the outdoor board without checking.





MODEL	SW16
MXZ-8A140VA	12345678 ON OFF

## 7-2. BRANCH BOX : PAC-AK50BC PAC-AK30BC

Note : " PAC - AK30 · 50BC " is only for R410A.

SYMBOL	NAME
B.C	Branch box controller board
F1 <B.C>	Fuse 250V 6.3A
SW1<B.C>	Switch for service
CNM<B.C>	Connector
LED1-5< B.C>	Light emitting diode
LEV-A~E	Linear expansion valve
TH-A~E	Thermistor Pipe temp.detection / Gas (0 °C / 15kΩ, 25 °C / 5.4kΩ)
TB2B	Terminal block / To outdoor unit
TB3A	Terminal block / To indoor unit - A
TB3B	Terminal block / To indoor unit - B
TB3C	Terminal block / To indoor unit - C
TB3D	Terminal block / To indoor unit - D
TB3E	Terminal block / To indoor unit - E

Note

1. At servicing for outdoor unit, always follow the wiring diagram of Outdoor unit.
2. Symbols used in wiring diagram above are,  : terminal block,  : connector.  
(Combination of indoor units)

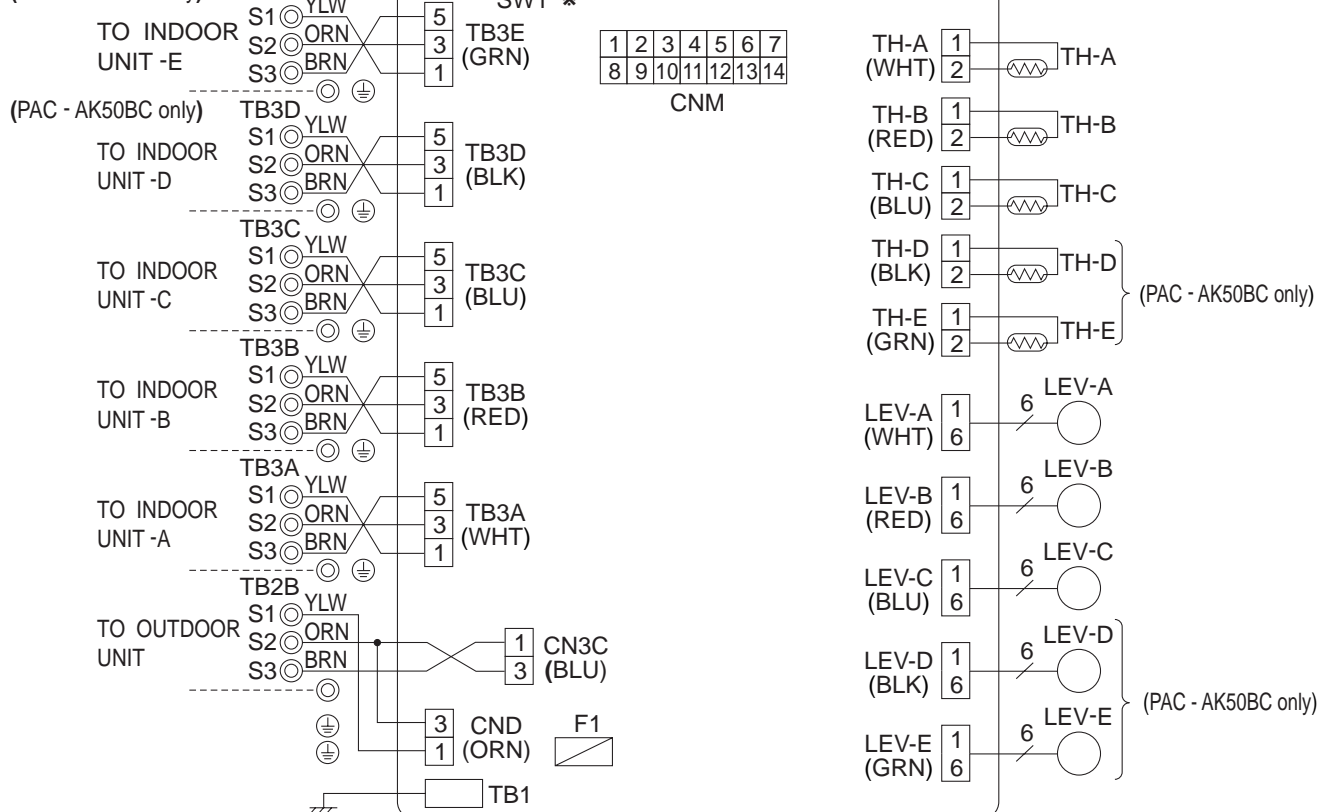
Fill out the location of combined indoor units with model name in each blank below because it is necessary for service and maintenance.

Indoor unit - A	Indoor unit - B	Indoor unit - C	Indoor unit - D	Indoor unit - E

### \*Setup of SW1

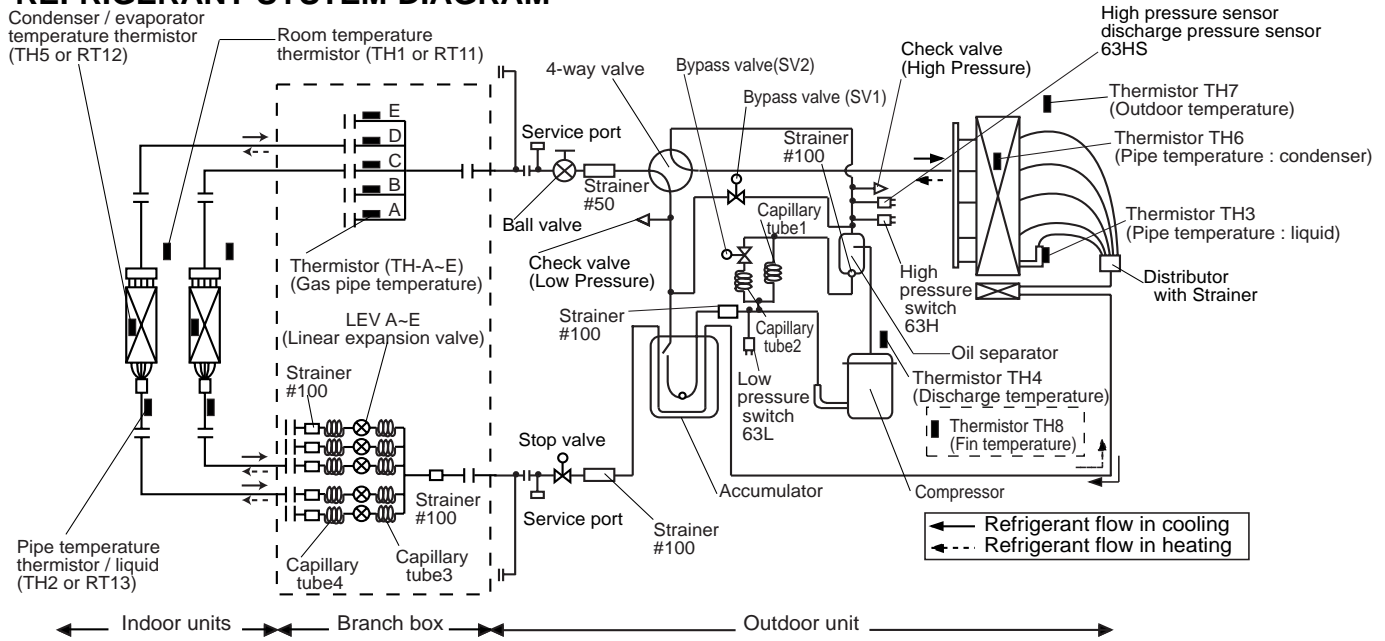
Make it the same setup as former one when exchanging PCB.

(PAC - AK50BC only)



# 8 NECESSARY CONDITIONS FOR SYSTEM CONSTRUCTION

## REFRIGERANT SYSTEM DIAGRAM



unit : mm

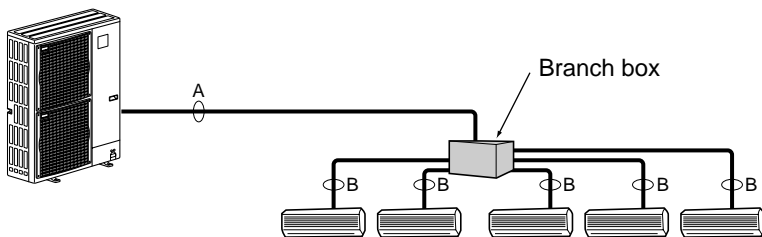
		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 (For SV2)	Capillary tube 3 ahead of LEV (in cooling mode)	Capillary tube 4 behind LEV (in cooling mode)
Outdoor unit	MXZ-8A140VA	$\phi 2.5 \times \phi 0.8 \times L1000$	$\phi 4 \times \phi 2.4 \times L250$	—	—
	MXZ-8A140VA <sub>1</sub>				
	MXZ-8A140VA <sub>2</sub>				
	MXZ-8A140VA <sub>3</sub>				
Branch box	PAC-AK50BC	—	—	$(\phi 4 \times \phi 2.4 \times L140) \times 5$	$(\phi 4 \times \phi 2.2 \times L130) \times 5$
	PAC-AK30BC	—	—	$(\phi 4 \times \phi 2.4 \times L140) \times 3$	$(\phi 4 \times \phi 2.2 \times L130) \times 3$

### Piping connection size

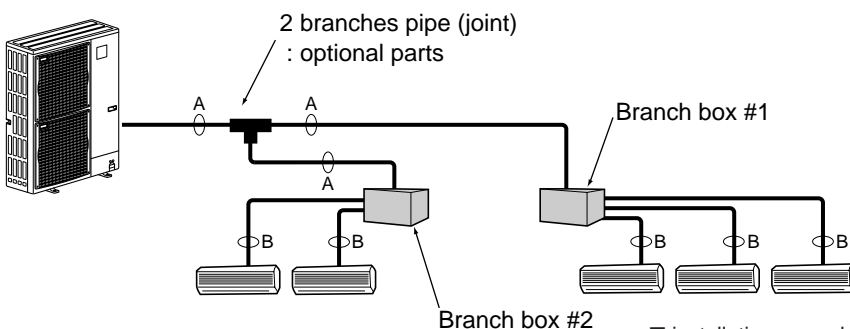
	A	B
Liquid (mm)	$\phi 9.52$	The pipe connection size differs according to the type and capacity of indoor units. Match the piping connection size of branch box with indoor unit. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)
Gas (mm)	$\phi 15.88$	

#### ■ In case of using 1-branch box

Flare connection employed (No. brazing)



#### ■ In case of using 2-branch boxes



■ installation procedure (2 branch pipe (joint))

Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.



■ Pipe size (Branch box-Indoor unit) \*Case of M series or S series Indoor unit

Indoor unit type	(kW)	22	25	35	50	60	71	80
Pipe size (mm)	Liquid	φ6.35	φ6.35	φ6.35	φ6.35	φ6.35	φ9.52	φ9.52
	Gas	φ9.52	φ9.52	φ9.52	φ12.7	φ15.88 *	φ15.88	φ15.88

**When using 60 type indoor unit of MEXZ series, use the flare nut in the indoor unit accessory for the gas side connecting of indoor unit.  
Do not use the flare nut (gas side) attached to the indoor unit. If it is used, a gas leakage or even a pipe extraction may occur.**

■ Pipe size (Branch box-Indoor unit) \*Case of P series Indoor unit

Indoor unit type	(kW)	35	50	60	71
Pipe size (mm)	Liquid	φ6.35	φ6.35	φ9.52	φ9.52
	Gas	φ12.7	φ12.7	φ15.88	φ15.88

**When using 35, 50 type indoor unit of P series, use the flare nut (for R410A) attached to the indoor unit.  
Do not use the flare nut (for R407C) in the indoor unit accessory. If it is used, a gas leakage or even a pipe extraction may occur.**

(1) Valve size for outdoor unit

For liquid	φ9.52mm
For gas	φ15.88mm

(2) Valve size for branch unit

* [A] UNIT	Liquid pipe	φ6.35 mm
	Gas pipe	φ9.52 mm
* [B] UNIT	Liquid pipe	φ6.35 mm
	Gas pipe	φ9.52 mm
* [C] UNIT	Liquid pipe	φ6.35 mm
	Gas pipe	φ9.52 mm
[D] UNIT	Liquid pipe	φ6.35 mm
	Gas pipe	φ9.52 mm
[E] UNIT	Liquid pipe	φ6.35 mm
	Gas pipe	φ12.7 mm

\* 3- branch type is only for [A], [B], and [C] unit.

**Different-diameter joint (optional parts) (Fig.7-1)**

Model name	Connected pipes diameter	Diameter A	Diameter B
	mm	mm	mm
MAC-A454JP	φ9.52 → φ12.7	φ9.52	φ12.7
MAC-A455JP	φ12.7 → φ9.52	φ12.7	φ9.52
MAC-A456JP	φ12.7 → φ15.88	φ12.7	φ15.88
PAC-493PI	φ6.35 → φ9.52	φ6.35	φ9.52
PAC-SG76RJ-E	φ9.52 → φ15.88	φ9.52	φ15.88

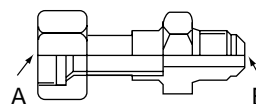


Fig.7-1

Conversion formula

1/4 inch	φ6.35mm
3/8 inch	φ9.52mm
1/2 inch	φ12.7mm
5/8 inch	φ15.88mm
3/4 inch	φ19.05mm

### 9-1. TROUBLESHOOTING

#### <Error code display by self-diagnosis and actions to be taken for service (summary)>

Present and past error codes are logged and displayed on the wired remote controller and control board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring at service, are summarized in the table below. Check the contents below before investigating details.

Unit conditions at service	Error code	Actions to be taken for service (summary)
The trouble has recurred.	Displayed	Judge what is wrong and take a corrective action according to "9-3. SELF-DIAGNOSIS ACTION TABLE".
	Not displayed	Conduct trouble shooting and ascertain the cause of the trouble according to "9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA".
The trouble is not reoccurring.	Logged	<ul style="list-style-type: none"> <li>①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise and etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring and etc.</li> <li>②Reset error code logs and restart the unit after finishing service.</li> <li>③There is no abnormality concerning of parts such as electrical component, controller board, remote controller and etc.</li> </ul>
	Not logged	<ul style="list-style-type: none"> <li>①Re-check the abnormal symptom.</li> <li>②Conduct trouble shooting and ascertain the cause of the trouble according to "9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA".</li> <li>③Continue to operate unit for the time being if the cause is not ascertained.</li> <li>④There is no abnormality concerning of parts such as electrical component, controller board, remote controller and etc.</li> </ul>



## 9-2. CHECK POINTS FOR TEST RUN

### 9-2-1. Before test run

- Turn on the main power switch more than 12 hours before starting operation. Starting operation just after turning on the power switch can severely damage the internal parts. Keep the main power switch turned on during the operation season.
- After completing installation and the wiring and piping of the indoor and outdoor units, check for refrigerant leakage, looseness in the power supply or control wiring, wrong polarity, and no disconnection of one phase in the supply.
- Use a 500-volt M-ohm tester to check that the resistance between the power supply terminals and ground is at least 1 MΩ.
- Do not carry out this test on the control wiring (low voltage circuit) terminals.

⚠ **Warning: Do not use the air conditioner if the insulation resistance is less than 1 MΩ.**

#### Insulation resistance

After installation or after the power source to the unit has been cut for an extended period, the insulation resistance will drop below 1 MΩ due to refrigerant accumulating in the compressor. This is not a malfunction. Perform the following procedures.

1. Remove the wires from the compressor and measure the insulation resistance of the compressor.
2. If the insulation resistance is below 1 MΩ, the compressor is faulty or the resistance dropped due to the accumulation of refrigerant in the compressor.
3. After connecting the wires to the compressor, the compressor will start to warm up after power is supplied. After supplying power for the times indicated below, measure the insulation resistance again.
  - The insulation resistance drops due to accumulation of refrigerant in the compressor. The resistance will rise above 1MΩ after the compressor is warmed up for 4 hours. (The time necessary to warm up the compressor varies according to atmospheric conditions and refrigerant accumulation.)
  - To operate the compressor with refrigerant accumulated in the compressor, the compressor must be warmed up at least 12 hours to prevent breakdown.
4. If the insulation resistance rises above 1 MΩ, the compressor is not faulty.

#### ⚠ **Caution:**

- **The compressor will not operate unless the power supply phase connection is correct.**
- **Turn on the power at least 12 hours before starting operation.**  
Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operational season.
- **The followings must be checked as well.**
  - The outdoor unit is not faulty. LED on the control board of the outdoor unit flashes when the outdoor unit is faulty.
  - Both the gas and liquid stop valves are completely open.

### 9-2-2. Test run

(1) Using remote controller

Refer to the indoor unit installation manual.

- Be sure to perform the test run for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
- If you perform the test run for all indoor units at once, you cannot detect any erroneous connection, if any, of the refrigerant pipes and the connecting wires.
  - \* The compressor operation is not available for 3 minutes at least after the power is supplied.
- The compressor can emit noise just after turn on the power supply or in case of low outside air temperature.

#### **About the restart protective mechanism**

Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

(2) Using SW4 in outdoor unit

**In case of the test run from outdoor unit, all indoor units operate. Therefore, you cannot detect any erroneous connection of refrigerant pipes and the connecting wires. If it aims at detection of any erroneous connection, be sure to carry out the test run from remote controller with reference to "(1) Using remote controller."**

SW4-1	ON	Cooling operation
SW4-2	OFF	
SW4-1	ON	Heating operation
SW4-2	ON	

\* After performing the test run, set SW4-1 to OFF.

- A few seconds after the compressor starts, a clanging noise may be heard from the inside of the outdoor unit. The noise is coming from the check valve due to the small difference in pressure in the pipes. The unit is not faulty.

**The test run operation mode cannot be changed by DIP switch SW4-2 during the test run. To change the test run operation mode during the test run, stop the test run by DIP switch SW4-1. After changing the test run operation mode, resume the test run by switch SW4-1.**

**When a test run is started by "Using SW4 in outdoor unit", even if it carries out stop instructions by remote controller, outdoor unit does not stop. A test run is not ended. In this case, please set SW4 in outdoor unit to off.**

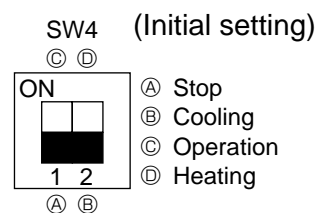
- After power is supplied or after an operation stop for a while, a small clicking noise may be heard from the inside of the branch box. The electronic expansion valve is opening and closing. The unit is not faulty.

NOTE: Be sure to wait at least 3 minutes after turning on the power supply before setting SW4-1 and SW4-2. If the DIP switches are set before 3 minutes has elapsed, the test run may not start.

### 9-2-3. Test run by outdoor unit SW4

The setting of test run (ON/OFF) and its operation mode (cooling/heating) can be set by SW4 on the controller board of outdoor unit.

- ① Set operation mode (cooling or heating) by SW4-2.
- ② Start test run by setting SW4-1 to ON ( ⤴ ) with the indicated operation mode of SW4-2.
- ③ Finish test run by setting SW4-1 to OFF ( ⤵ ).
  - Operation mode cannot be changed by SW4-2 during test run.
  - Stop test run to change operation mode by SW4-1, and restart test run by SW4-1 after the mode is changed.
  - Test run automatically stops 2 hours later by 2-hour OFF timer function.
  - Test run can be performed by the remote controller.
  - The remote controller display of test run by outdoor unit is the same as that of test run by remote controller.
  - If test run is set with the outdoor unit, the test run is performed for all indoor units.
  - The remote controller operation becomes unavailable once the test run is set with the outdoor unit.



During the test run set with the outdoor unit, operation on/off or operation mode change cannot be performed by the remote controller, and the operation relating to the test run which is made with the outdoor unit will be prior to any other commands from the remote controller. Set the SW4-1 to OFF ( ⤵ ) to finish test run. Emergency operation is not available for this model.

### 9-3. SELF-DIAGNOSIS ACTION TABLE

<Abnormalities detected when the power is put on> (Note 1) Refer to indoor unit section for code P and code E.

Error Code	Abnormal point and detection method	Case	Judgment and action
None	—	<p>① No voltage is supplied to terminal block(TB1) of outdoor unit. a) Power supply breaker is turned off. b) Contact failure or disconnection of power supply terminal c) Open phase (L or N phase)</p> <p>② Electric power is not charged to power supply terminal of outdoor power circuit board. a) Contact failure of power supply terminal b) Open phase on the outdoor power circuit board Disconnection of connector SC-R or SC-S</p> <p>③ Electric power is not supplied to outdoor controller circuit board. a) Disconnection of connector (CNDC)</p> <p>④ Disconnection of reactor (DCL)</p> <p>⑤ Disconnection of outdoor noise filter circuit board or parts failure in outdoor noise filter circuit board</p> <p>⑥ Defective outdoor power circuit board</p> <p>⑦ Defective outdoor controller circuit board</p>	<p>① Check following items. a) Power supply breaker b) Connection of power supply terminal block. (TB1) c) Connection of power supply terminal block. (TB1)</p> <p>② Check following items. a) Connection of power supply terminal block. (TB1) b) Connection of terminal on outdoor power circuit board. Disconnection of connector SC-R or SC-S Refer to 9-7.</p> <p>③ Check connection of the connector (CNDC) on the outdoor controller circuit board. Check connection of the connector, CNDC on the outdoor power circuit board. Refer to 9-7.</p> <p>④ Check connection of reactor. (DCL) Check connection of "L1" and "L2" on the active filter module.(ACTM)</p> <p>⑤ a) Check connection of outdoor noise filter circuit board. b) Replace outdoor noise filter circuit board. Refer to 9-7.</p> <p>⑥ Replace outdoor power circuit board.</p> <p>⑦ Replace controller board (When items above are checked but the units cannot be repaired.)</p>
F3 (5202)	<b>63L connector open</b> Abnormal if 63L connector circuit is open for 3 minutes continuously after power supply 63L: Low-pressure switch	<p>① Disconnection or contact failure of 63L connector on outdoor controller circuit board</p> <p>② Disconnection or contact failure of 63L</p> <p>③ 63L is working due to refrigerant leakage or defective parts.</p> <p>④ Defective outdoor controller circuit board</p>	<p>① Check connection of 63L connector on outdoor controller circuit board. Refer to 9-7.</p> <p>② Check the 63L side of connecting wire.</p> <p>③ Check refrigerant pressure. Charge additional refrigerant. Check continuity by tester. Replace the parts if the parts are defective.</p> <p>④ Replace outdoor controller circuit board.</p>
F5 (5201)	<b>63H connector open</b> Abnormal if 63H connector circuit is open for 3 minutes continuously after power supply 63H: High-pressure switch	<p>① Disconnection or contact failure of 63H connector on outdoor controller circuit board</p> <p>② Disconnection or contact failure of 63H</p> <p>③ 63H is working due to defective parts.</p> <p>④ Defective outdoor controller circuit board</p>	<p>① Check connection of 63H connector on outdoor controller circuit board. Refer to 9-7.</p> <p>② Check the 63H side of connecting wire.</p> <p>③ Check continuity by tester. Replace the parts if the parts are defective.</p> <p>④ Replace outdoor controller circuit board.</p>
F9 (4119)	<b>2 connector open</b> Abnormal if both 63H and 63L connector circuits are open for 3 minutes continuously after power supply 63H: High-pressure switch 63L: Low-pressure switch	<p>① Disconnection or contact failure of connector (63H,63L) on outdoor controller circuit board.</p> <p>② Disconnection or contact failure of 63H, 63L</p> <p>③ 63H and 63L are working due to defective parts.</p> <p>④ Defective outdoor controller board</p>	<p>① Check connection of connector(63H,63L) on outdoor controller circuit board. Refer to 9-7.</p> <p>② Check the 63H and 63L side of connecting wire.</p> <p>③ Check continuity by tester. Replace the parts if the parts are defective.</p> <p>④ Replace outdoor controller circuit board.</p>



Error Code	Abnormal point and detection method	Case	Judgment and action
EA (6844)	<p><b>Indoor-branch box/branch box-outdoor unit connector miswiring, excessive number of units</b></p> <p>1. Outdoor/branch box controller circuit board can automatically check the number of connected indoor units. Abnormal if the number cannot be checked automatically due to miswiring of indoor-branch box/branch box-outdoor unit connecting wire and etc. after power is turned on for 4 minutes.</p>	<p>① Contact failure or miswiring of indoor/outdoor unit connecting wire</p> <p>② Diameter or length of indoor-branch box/branch box-outdoor unit connecting wire is out of specified capacity. There are 9 or more indoor units in the system. There are 3 or more branch boxes in the system.</p> <p>③ Defective transmitting receiving circuit of outdoor/branch box controller circuit board</p> <p>④ Defective transmitting receiving circuit of branch box/indoor controller board</p> <p>⑤ Defective branch box/indoor power board</p> <p>⑥ Noise has entered into power supply or indoor-branch box /branch box-outdoor unit connecting wire.</p>	<p>① Check disconnection or looseness or polarity of indoor-branch box/branch box-outdoor unit connecting wire of indoor and outdoor units.</p> <p>② Check diameter and length of indoor-branch box/branch box-outdoor unit connecting wire. Total wiring length: 55m (outdoor-branch box) (including wiring connecting each branch box unit and between branch box and outdoor unit) Also check if the connection order of flat cable is S1, S2, S3.</p> <p>If the error "EA" is detected, check the number of the indoor units and the branch box in the system.</p> <p>③-⑤ Turn the power off once, and on again to check. Replace outdoor controller circuit board, branch box controller board, indoor controller board or indoor power board if abnormality occurs again.</p> <p>⑥ Check transmission path, and remove the cause.</p>
Eb (6845)	<p><b>Miswiring of indoor-branch box/branch box-outdoor unit connecting wire (converse wiring or disconnection)</b></p> <p>Outdoor/branch box controller circuit board can automatically set the unit number of indoor units. Abnormal if the indoor unit number can not be set within 4 minutes after power on because of miswiring (converse wiring or disconnection) of indoor-branch box/branch box-outdoor unit connecting wire.</p>	<p>① Contact failure or miswiring of indoor-branch box/branch box-outdoor unit connecting wire</p> <p>② Diameter or length of indoor-branch box/branch box-outdoor unit connecting wire is out of specified capacity.</p> <p>④ Defective transmitting receiving circuit of outdoor/branch box controller circuit board</p> <p>⑤ Defective transmitting receiving circuit of indoor/branch box controller board</p> <p>⑥ Defective indoor/branch box power board</p> <p>⑦ Noise has entered into power supply or indoor-branch box/branch box-outdoor unit connecting wire.</p>	<p>※ The descriptions above, ①-⑥, are for EA, Eb and EC.</p>
EC (6846)	<p><b>Start-up time over</b></p> <p>The unit cannot finish start-up process within 4 minutes after power on.</p>	<p>① Contact failure of indoor-branch box/branch box-outdoor unit connecting wire</p> <p>② Diameter or length of indoor-branch box/branch box-outdoor unit connecting wire is out of specified capacity.</p> <p>③ Noise has entered into power supply or indoor-branch box/branch box-outdoor unit connecting wire.</p>	

<Abnormalities detected while unit is operating>

Error Code	Abnormal point and detection method	Case	Judgment and action
U1 (1302)	<p><b>(1) High-pressure switch (63H) worked</b> Abnormal if high-pressure switch 63H worked (※) during compressor operation. ※ 4.15 MPa</p> <p>63H: High-pressure switch</p> <p><b>(2) High pressure</b> (High - pressure sensor 63HS detect)</p> <p>① When high-pressure pressure sensor detects 4.31MPa or more (or over 4.15MPa for 3 minutes) (1st detection) during the compressor operation, the compressor stops and restarts operation in 3 minutes.</p> <p>② When the sensor detects 4.31MPa or more (or over 4.15MPa for 3 minutes) again (2nd detection) within 30 minutes since the compressor has stopped, the compressor stops again and restarts operation in 3 minutes.</p> <p>③ When the sensor detects 4.31MPa or more (or over 4.15MPa for 3 minutes) again (3rd detection) within 30 minutes since the compressor has stopped, the compressor stops again and restarts operation in 3 minutes.</p> <p>④ When the sensor detects 4.31MPa or more (or over 4.15MPa for 3 minutes) again (4th detection) within 30 minutes after 3rd compressor stop, it stops abnormally. In this time &lt;U1&gt; is displayed.</p> <p>⑤ When the sensor detects 4.31MPa or more (or over 4.15MPa for 3 minutes) after 30 minutes since the compressor has stopped (1st or 2nd or 3rd time), it becomes the 1st detection or the same performance as above-mentioned ①.</p> <p>⑥ It is being delay for abnormal stop during 30 minutes since the compressor has stopped. In this time, check delay code &lt;U1&gt; will be displayed.</p>	<p>1) Short cycle of indoor unit</p> <p>2) Clogged filter of indoor unit</p> <p>3) Decreased airflow caused by dirt of indoor fan</p> <p>4) Dirt of indoor heat exchanger</p> <p>5) Locked indoor fan motor</p> <p>6) Malfunction of indoor fan motor</p> <p>7) Defective operation of stop valve (Not fully opened)</p> <p>8) Clogged or broken pipe</p> <p>9) Locked outdoor fan motor</p> <p>10) Malfunction of outdoor fan motor</p> <p>11) Short cycle of outdoor unit</p> <p>12) Dirt of outdoor heat exchanger</p> <p>13) Decreased airflow caused by defective inspection of outside temperature thermistor (It detects lower temperature than actual temperature.)</p> <p>14) Disconnection or contact failure of connector (63H) on outdoor controller board</p> <p>15) Disconnection or contact failure of 63H connection</p> <p>16) Defective outdoor controller board</p> <p>17) Defective action of linear expansion valve</p> <p>18) Malfunction of fan driving circuit</p> <p>19) Solenoid valve (SV1) performance failure (High-pressure pressure cannot be controlled by SV1)</p> <p>20) High-pressure pressure sensor defective</p> <p>21) High-pressure pressure sensor input circuit defective in multi controller board</p>	<p>1)~6) Check indoor unit and repair defect.</p> <p>7) Check if stop valve is fully open.</p> <p>8) Check piping and repair defectives.</p> <p>9)~12) Check outdoor unit and repair defect.</p> <p>13) Check the detected temperature of outside temperature thermistor on LED display.</p> <p>14)~16) Put the power off and check F5 is displayed when the power is put again. When F5 is displayed, refer to "Judgment and action" for F5.</p> <p>17) Check linear expansion valve. Refer to 9-6.</p> <p>18) Replace outdoor controller board.</p> <p>19) Check the solenoid valve performance.</p> <p>20) Check the high-pressure pressure sensor.</p> <p>21) Check the high-pressure pressure sensor.</p>



Error Code	Abnormal point and detection method	Case	Judgment and action
<p style="text-align: center;">U2 (1102)</p>	<p><b>(1) High discharging temperature</b> Abnormal if discharge temperature thermistor (TH4) exceeds 125°C or 110°C continuously for 5 minutes. Abnormal if pressure detected by high pressure sensor and converted to saturation temperature exceeds 40°C during defrosting and discharge temperature thermistor (TH4) exceeds 110°C.</p>	<p>① Overheated compressor operation caused by shortage of refrigerant ② Defective operation of stop valve ③ Defective thermistor ④ Defective outdoor controller board ⑤ Defective action of linear expansion valve</p>	<p>① Check intake superheat. Check leakage of refrigerant. Charge additional refrigerant. ② Check if stop valve is fully open. ③④ Turn the power off and check if U3 is displayed when the power is turned on again. When U3 is displayed, refer to “Judgement and action” for U3. ⑤ Check linear expansion valve. Refer to 9-6.</p>
	<p><b>(2) Refrigerant shortage abnormality</b> ① When the conditions of below detecting mode I or II are satisfied (1st detection) during the compressor operation, the compressor stops and restarts operation in 3 minutes. &lt;Detecting mode I &gt; When the below conditions are satisfied completely. 1. Compressor is operating in HEAT mode. 2. Discharge superheat is 70°C or more. 3. Difference of outer temperature thermistor (TH7) and outdoor piping temp. thermistor (TH3) applies to the formula of (TH7-TH3)&lt;5°C. 4. High-pressure pressure sensor is below about 2.04MPa. &lt;Detecting mode II &gt; When the below conditions are satisfied completely. 1. Compressor is operating. 2. When cooling, discharge superheat is 80°C or more. When heating, discharge superheat is 90°C or more. High pressure sensor is below about 2.32MPa. ② When the conditions of detecting mode I and II are satisfied again (2nd detection) within 30 minutes since the compressor has stopped, it stops abnormally. In this time, &lt;U2&gt; is displayed. ③ When the conditions of detecting mode I and II are satisfied again after 30 minutes since the compressor has stopped (1st time), it becomes the 1st detection and same performance as above ①. ④ It is being delay for abnormal stop during 30 minutes since the compressor has stopped. In this time, check delay code &lt;U2&gt; will be displayed.</p>	<p>① Gas leakage, Gas shortage ② When heating operation, scant refrigerant operation (When heating, airflow or thermo OFF are mixed-operation, it cause a refrigerant shortage operation.) ③ Ball valve performance failure (Not fully opened.) ④ Error detection of discharge super heat 1) High-pressure pressure sensor defective 2) Discharge temperature thermistor defective 3) Thermistor input circuit defective and high-pressure pressure sensor defective in multi controller board ⑤ Error detection of TH7/TH3 1) Thermistor defective 2) Thermistor input circuit defective in multi controller board</p>	<p>① Check the refrigerant amount. ② Check the operation condition and refrigerant amount. ③ Check the ball valve is fully opened. ④ 1) Check the ball valve is fully opened. 2) Check the resistance of discharge temperature thermistor. 3) According to “Monitoring function for outdoor unit”, set the SW2 and check the high-pressure pressure sensor level.  According to “Monitoring function for outdoor unit”, set the SW2 and check the discharge temp. thermistor level. When the high-pressure sensor and discharge temp. thermistor are normal, if the above mentioned detecting pressure level and temp. are big different from the actual pressure and temp., replace the multi controller board.  ⑤ 1) Check the resistance of thermistor. 2) According to “Monitoring function for outdoor unit”, set the SW2 and check the outdoor pipe temp. thermistor level. 3) According to “Monitoring function for outdoor unit”, set the SW2 and check the outer temp. thermistor level.</p>
<p style="text-align: center;">U3 (5104)</p>	<p><b>Open/short circuit of discharge temperature thermistor (TH4)</b> Abnormal if open (3°C or less) or short (217°C or more) is detected during compressor operation. (Detection is inoperative for 10 minutes of compressor starting process and for 10 minutes after and during defrosting.)</p>	<p>① Disconnection or contact failure of connector (TH4) on the outdoor controller circuit board ② Defective thermistor  ③ Defective outdoor controller circuit board</p>	<p>① Check connection of connector (TH4) on the outdoor controller circuit board. Check breaking of the lead wire for thermistor (TH4). Refer to 9-6. ② Check resistance value of thermistor (TH4) or temperature by microcomputer. (Thermistor/TH4: Refer to 9-6.) (SW2 on A-Control Service Tool: Refer to 9-8.) ③ Replace outdoor controller board.</p>



Error Code	Abnormal point and detection method	Case	Judgment and action																									
U4 (TH3:5105) (TH7:5106) (TH8:5110) (63HS:5201) (TH-A-E :5131)	<b>(1) Open/short circuit in the outdoor unit thermistors (TH3, TH7, and TH8) and branch box's thermistors(TH-A-E)</b> Abnormal if open or short circuit is detected while the compressor is operating. Open detection of thermistors TH3 is inoperative for 10 seconds to 10 minutes after compressor starting and 10 minutes after and during defrosting. *Check which unit has abnormality in its thermistor by switching the mode of SW2. (Refer to 9-8.) Open/short circuit in the branch box thermistor. (TH-A-TH-E)	①One or more connectors on outdoor controller circuit board (TH3, TH7 and TH8) and branch box controller board (TH-A-E) have contact failure or disconnection. ②Defective thermistor ③Outdoor controller circuit board is defective.	①Check the connector's contact and the electric wires of thermistor. ②Check the resistance value of thermistors or the temperatures by referring to the section of "Monitoring function for outdoor unit". (Convert modes by SW2.) ③Replace the whole outdoor controller board.																									
	<table border="1"> <thead> <tr> <th colspan="2">Thermistors</th> <th rowspan="2">Open detection</th> <th rowspan="2">Short detection</th> </tr> <tr> <th>Symbol</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>TH3</td> <td>Thermistor &lt;Outdoor pipe&gt;</td> <td>- 40°C or below</td> <td>90°C or above</td> </tr> <tr> <td>TH7</td> <td>Thermistor &lt;Outdoor&gt;</td> <td>- 40°C or below</td> <td>90°C or above</td> </tr> <tr> <td>TH8</td> <td>Thermistor &lt;Heatsink&gt;</td> <td>- 27°C or below</td> <td>102°C or above</td> </tr> <tr> <td colspan="4">Branch box unit</td> </tr> <tr> <td>TH-A-E (Room A-E)</td> <td>Thermistor (Gas pipe temperature detection)</td> <td>- 40°C or below</td> <td>90°C or above</td> </tr> </tbody> </table>	Thermistors		Open detection	Short detection	Symbol	Name	TH3	Thermistor <Outdoor pipe>	- 40°C or below	90°C or above	TH7	Thermistor <Outdoor>	- 40°C or below	90°C or above	TH8	Thermistor <Heatsink>	- 27°C or below	102°C or above	Branch box unit				TH-A-E (Room A-E)	Thermistor (Gas pipe temperature detection)	- 40°C or below	90°C or above	
Thermistors		Open detection	Short detection																									
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TH3	Thermistor <Outdoor pipe>	- 40°C or below	90°C or above																									
TH7	Thermistor <Outdoor>	- 40°C or below	90°C or above																									
TH8	Thermistor <Heatsink>	- 27°C or below	102°C or above																									
Branch box unit																												
TH-A-E (Room A-E)	Thermistor (Gas pipe temperature detection)	- 40°C or below	90°C or above																									
	<b>(2) High-Pressure sensor (63HS) abnormality</b> ①When detected pressure in high-pressure pressure sensor is 1MPa or less during the operation, the compressor stops and restarts operation in 3 minutes. ②When the detected pressure is 1MPa or less at just before of restarting, the compressor stops abnormally. In this time, <U4> is displayed. ③For 3 minutes after the compressor stops, the unit delays to abnormal stop. Then, the outdoor unit address No. and check delay code <U4> blinks alternately on the 7 SEG digital display. ④For 3 minutes after starting compressor, for defrosting or for 3 minutes after recovery from defrosting, abnormality is not determined as abnormality.	①High-pressure sensor failure ②Internal pressure decrease by gas leakage ③Connector contact failure disconnection ④Controller board input circuit failure	① Check the high-pressure pressure sensor. ② Check the internal pressure. ③ Check the high-pressure pressure sensor. ④ Check the controller board																									
U5 (4230)	<b>Abnormal temperature of heatsink</b> Abnormal if heatsink thermistor(TH8) detects temperature indicated 85°C	① The outdoor fan motor is locked. ② Failure of outdoor fan motor ③ Air flow path is clogged. ④ Rise of ambient temperature ⑤ Defective thermistor ⑥ Defective input circuit of outdoor power circuit board ⑦ Failure of outdoor fan drive circuit	①② Check outdoor fan. ③ Check air flow path for cooling. ④ Check if there is something which causes temperature rise around outdoor unit. (Upper limit of ambient temperature is 46°C.) Turn off power, and on again to check if U5 is displayed within 30 minutes. If U4 is displayed instead of U5, follow the action to be taken for U4. ⑤ Check resistance value of thermistor (TH8) or temperature by microcomputer. (Thermistor/TH8: Refer to 9-6.) (SW2 on A-Control Service Tool: Refer to 9-8.) ⑥ Replace outdoor power circuit board. ⑦ Replace outdoor controller circuit board.																									
U6 (4250)	<b>Abnormality of power module</b> Check abnormality by driving power module in case overcurrent is detected. (UF or UP error condition)	① Outdoor stop valve is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective compressor ⑤ Defective outdoor power circuit board	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U-V-W phase) to compressor. Refer to 9-7. ④ Check compressor referring to 9-6. ⑤ Replace outdoor power circuit board.																									



Error Code	Abnormal point and detection method	Case	Judgment and action
U7 (1520)	<p><b>(1) Too low superheat due to low discharge temperature</b> Abnormal if discharge superheat is continuously detected -15°C or less even though linear expansion valve has minimum open pulse after compressor starts operating for 10 minutes.</p> <p><b>(2) Erroneous connection of refrigerant pipes or the connecting wires</b> Consider the stopping indoor unit abnormal if condenser/evaporator temperature thermistor (TH5 or RT12) detects -5°C or below continuously for 5 minutes during a compressor's operation in cooling mode.</p>	<p>① Disconnection or loose connection of discharge temperature thermistor. (TH4) ② Defective holder of discharge temperature thermistor</p> <p>① Failure in piping / wiring ② Pipe (liquid) is clogged or crushed.</p>	<p>①② Check the installation conditions of discharge temperature thermistor (TH4).</p> <p>① Check piping / wiring between branch box and indoor unit. Refer to "Test run (Using remote controller)". ② Check the pipe for refrigerant and change the wrong parts.</p>
U8 (4400)	<p><b>Outdoor fan motor</b> The outdoor fan motor is considered to be abnormal if the rotational frequency of fan motor is abnormal when detected during operation. Fan motor rotational frequency is abnormal if;</p> <ul style="list-style-type: none"> <li>• 100 rpm or below detected continuously for 15 seconds at 26°C or more outside air temperature</li> <li>• 50 rpm or below or 1500 rpm or more detected continuously for 1 minute.</li> </ul>	<p>① Failure in the operation of the DC fan motor ② Failure in the outdoor circuit controller board</p>	<p>① Check or replace the DC fan motor. ② Check the voltage of the outdoor circuit controller board during operation. ③ Replace the outdoor circuit controller board. (when the failure is still indicated even after performing the remedy ① above.)</p>
U9 (4220)	<p><b>Overvoltage or voltage shortage and abnormal synchronous signal to main circuit</b></p> <p>Abnormal if any of followings are detected during compressor operation;</p> <ul style="list-style-type: none"> <li>• Decrease of DC bus voltage to 310V</li> <li>• Instantaneous decrease of DC bus voltage to 200V</li> <li>• Increase of DC bus voltage to 400V</li> <li>• Decrease of input current of outdoor unit to 0.5A only if operation frequency is more than or equal to 40Hz or compressor current is more than or equal to 5A.</li> </ul>	<p>① Decrease of power supply voltage ② Disconnection of compressor wiring ③ Defective 52C ④ Defective ACT module ⑤ Defective ACT module drive circuit of outdoor power circuit board ⑥ Disconnection or loose connection of CNAF ⑦ Defective 52C drive circuit of outdoor controller circuit board ⑧ Disconnection or loose connection of CN5 on the outdoor power circuit board ⑨ Disconnection or loose connection of CN2 on the outdoor power circuit board</p>	<p>① Check the facility of power supply. ② Correct the wiring (U·V·W phase) to compressor. Refer to 9-7. ③ Replace 52C.(VA/VA<sub>1</sub>/VA<sub>2</sub>) Replace noise filter circuit board.(VA<sub>3</sub>) ④ Replace ACT module. ⑤ Replace outdoor power circuit board. ⑥ Check CNAF wiring. ⑦ Replace outdoor controller circuit board. (220-240VAC output : VA/VA<sub>1</sub>/VA<sub>2</sub>) (12V DC output : VA<sub>3</sub>) ⑧ Check CN5 wiring on the outdoor power circuit board. Refer to 9-7. ⑨ Check CN2 wiring on the outdoor power circuit board. Refer to 9-7.</p>
UF (4100)	<p><b>Compressor overcurrent interruption (When compressor locked)</b> Abnormal if overcurrent of DC bus or compressor is detected within 30 seconds after compressor starts operating.</p>	<p>① Stop valve is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective compressor ⑤ Defective outdoor power board</p>	<p>① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U·V·W phase) to compressor. Refer to 9-7. ④ Check compressor. Refer to 9-6. ⑤ Replace outdoor power circuit board.</p>





Error Code	Abnormal point and detection method	Case	Judgment and action
UH (5300)	<b>Current sensor error</b> Abnormal if current sensor detects -1.5A to 1.5A during compressor operation. (This error is ignored in case of test run mode.)	① Disconnection of compressor wiring ② Defective circuit of current sensor on outdoor power circuit board	① Correct the wiring (U-V-W phase) to compressor. Refer to 9-7. ② Replace outdoor power circuit board.
	Abnormal if input current exceeds 38 A or 34A continuously 10 seconds.(Current sensor on noise filter board detects input current)	① Decrease of power supply voltage	① Check the facility of power supply.
UL (1300)	<b>Low pressure (63L worked)</b> Abnormal if 63L is worked (under-0.03MPa) during compressor operation. 63L: Low-pressure switch	① Stop valve of outdoor unit is closed during operation. ② Disconnection or loose connection of connector (63L) on outdoor controller board ③ Disconnection or loose connection of 63L ④ Defective outdoor controller board ⑤ Leakage or shortage of refrigerant ⑥ Malfunction of linear expansion valve	① Check stop valve. ②~④ Turn the power off and on again to check if F3 is displayed on restarting. If F3 is displayed, follow the F3 processing direction. ⑤ Correct to proper amount of refrigerant. ⑥ Check linear expansion valve. Refer to 9-6.
UP (4210)	<b>Compressor overcurrent interruption</b> Abnormal if overcurrent DC bus or compressor is detected after compressor starts operating for 30 seconds.	① Stop valve of outdoor unit is closed. ② Decrease of power supply voltage ③ Looseness, disconnection or converse of compressor wiring connection ④ Defective fan of indoor/outdoor units ⑤ Short cycle of indoor/outdoor units ⑥ Defective input circuit of outdoor controller board ⑦ Defective compressor	① Open stop valve. ② Check facility of power supply. ③ Correct the wiring (U-V-W phase) to compressor. Refer to 9-7. ④ Check indoor/outdoor fan. ⑤ Solve short cycle. ⑥ Replace outdoor controller circuit board. ⑦ Check compressor. Refer to 9-6. * Before the replacement of the outdoor controller circuit board, disconnect the wiring for compressor from the outdoor power circuit board and check the output voltage among phases, U, V, W, during test run. No defect on board if voltage among phases (U-V, V-W and W-U) is same. Make sure to perform the voltage check with same performing frequency.
E0 (No display)	<b>Remote controller communication error (Signal receiving error)</b> (1) Abnormal if any signal from IC of refrigerant address "0" could not be normally received for 3 minutes. (2) Abnormal if sub remote controller could not receive any signal for 2 minutes.	① Defective communication circuit of remote controller ② Defective communication circuit of indoor controller board of refrigerant address "0" ③ Noise has entered into transmission line of remote controller. ④ All remote controllers are set as "sub" remote controller. In this case, E4 is displayed at outdoor LED, and E0 is displayed at remote controller.	①~③ Diagnose remote controller. Take actions as follows according to diagnosis result. a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. If, "PLEASE WAIT" or "HO" is displayed for 4 minutes or more, replace indoor controller board. b) When "RC NG" is displayed, replace remote controller. c) When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality. ④ Set a remote controller to main, and the other to sub. * The descriptions above, ①-③, are for E0 and E3.
		① Defective communication circuit of remote controller ② Noise has entered into transmission line of remote controller. ③ Two remote controllers are set as "main." (In case of 2 remote controllers)	
E3 (No display)	<b>Remote controller communication error (Transmitting error)</b> (1) Abnormal if sub remote controller could not find blank of transmission path for 6 seconds. (2) Abnormal if remote controller could not finish transmitting 30 times continuously.		
E8 (6840)	<b>Indoor - branch box/branch box - outdoor unit communication error (Signal receiving error) (Branch box/outdoor unit)</b> (1) Abnormal if branch box/outdoor controller circuit board could not receive anything normally for 3 minutes.	① Contact failure of indoor/outdoor unit connecting wire ② Defective communication circuit of branch box/outdoor controller circuit board ③ Defective communication circuit of indoor/branch box controller board ④ Noise has entered into indoor-branch box/branch box-outdoor unit connecting wire.	① Check disconnection or looseness of indoor-branch box/branch box-outdoor unit connecting wire of indoor or branch box or outdoor units. ②~④ Turn the power off, and on again to check. Replace indoor controller board or branch controller board or outdoor controller circuit board if abnormality is displayed again.



Error Code	Abnormal point and detection method	Case	Judgment and action
E9 (6841)	<b>Indoor - branch box/branch box - outdoor unit communication error (Transmitting error) (Branch box/outdoor unit)</b> (1) Abnormal if "0" receiving is detected 30 times continuously though branch box/outdoor controller circuit board has transmitted "1". (2) Abnormal if branch box/outdoor controller circuit board could not find blank of transmission path for 3 minutes.	① Indoor-branch box/branch box-outdoor unit connecting wire has contact failure. ② Defective communication circuit of outdoor controller circuit board ③ Noise has entered power supply. ④ Noise has entered Indoor-branch box/branch box-outdoor unit connecting wire.	① Check disconnection or looseness of indoor-branch box/branch box-outdoor unit connecting wire. ②~④ Turn the power off, and on again to check. Replace outdoor controller circuit board if abnormality is displayed again.
EF (6607 or 6608)	<b>Non defined error code</b> This code is displayed when non defined error code is received.	① Noise has entered transmission wire of remote controller. ② Noise has entered Indoor-branch box/branch box-outdoor unit connecting wire. ③ Model name of remote controller is PAR-S25A.	①② Turn the power off, and on again to check. Replace indoor controller board or branch controller board or outdoor controller circuit board if abnormality is displayed again. ③ Replace remote controller with MA remote controller.
Ed (0403)	<b>Serial communication error</b> 1. Abnormal if serial communication between outdoor controller circuit board and outdoor power circuit board is defective.	① Breaking of wire or contact failure of connector CN2 between the outdoor controller circuit board and the outdoor power circuit board ② Breaking of wire or contact failure of connector CN4 between the outdoor controller circuit board and the outdoor power circuit board ③ Defective communication circuit of outdoor power circuit board ④ Defective communication circuit of outdoor controller circuit board for outdoor power circuit board	①② Check connection of each connector CN2 and CN4 between the outdoor controller circuit board and the outdoor power circuit board. ③ Replace outdoor power circuit board. ④ Replace outdoor controller circuit board.
PA (2520)	<b>Forced compressor stop.</b> (Overlap multi function of drain pump in indoor unit and linear expansion valve in branch box.)  When condition which the outdoor unit is stopped forcibly consists, or the drain sensor detects continuously to go under water 5 times, and also detects "[liquid pipe temperature-suction temperature][ -10deg" for 30 minutes continuously, the indoor unit stops abnormally (however, fan operates by normal control) that indoor unit and excluding [Fan mode or OFF] in same refrigerant system. Also, the outdoor unit which is connected to that indoor unit with refrigerant system stops abnormality (compressor is inhibited to operation). In this time, <PA> is displayed.	① Drain pump trouble ② Drain defective · Drain pump clogging · Drain pipe clogging ③ Open circuit of drain sensor side heater ④ Contact failure of drain sensor connector ⑤ Dew condensation on drain sensor · Drain water descends along lead wire. · Drain water waving due to filter clogging ⑥ Indoor controller board defective · Drain pump drive circuit failure · Drain heater output circuit failure ⑦ Both of above mentioned ①~⑥ and the linear expansion valve full closed failure happens synchronistically.	① Check the drain pump. Performance ② Please confirm whether water can be drained. ③ Confirm the resistance of the drain sensor side heater. ④ Check the connector contact failure. ⑤ Check the drain sensor leadwire mounted. Check the filter clogging. ⑥ If the above mentioned checkpoints has any problem, replace the indoor controller board. ⑦ Check whether the indoor linear expansion valve leaks or not.

## 9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA

Phenomena	Factor	Countermeasure
1. Remote controller display works normally and the unit performs cooling operation, however, the capacity cannot be fully obtained. (The air does not cool well.)	<ul style="list-style-type: none"> <li>①Refrigerant shortage</li> <li>②Filter clogging</li> <li>③Heat exchanger clogging</li> <li>④Air duct short cycle</li> </ul>	<ul style="list-style-type: none"> <li>① If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.</li> <li>② Open intake grille and check the filter. Clean the filter by removing dirt or dust on it.</li> <li>③ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.</li> <li>④ Remove the shield.</li> </ul>
2. Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	<ul style="list-style-type: none"> <li>①Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault.</li> <li>②Refrigerant shortage</li> <li>③Lack of insulation for refrigerant piping</li> <li>④Filter clogging</li> <li>⑤Heat exchanger clogging</li> <li>⑥Air duct short cycle</li> <li>⑦Bypass circuit of outdoor unit fault</li> </ul>	<ul style="list-style-type: none"> <li>① Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. Replace linear expansion valve.</li> <li>② If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.</li> <li>③ Check the insulation.</li> <li>④ Open intake grille and check the filter. Clean the filter by removing dirt or dust on it.</li> <li>⑤ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.</li> <li>⑥ Remove the shield.</li> <li>⑦ Check refrigerant system during operation.</li> </ul>
3.①For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ②For 3 minutes after temperature adjuster turns on, the compressor will not stop operating even if temperature adjuster is turned off. (Compressor stops operating immediately when turning off by the remote controller.)	<ul style="list-style-type: none"> <li>①②Normal operation (For protection of compressor)</li> </ul>	<ul style="list-style-type: none"> <li>①②Normal operation</li> </ul>

## 9-5. SPECIAL FUNCTIONS

### 9-5-1. Low noise mode (on-site modification) (Fig. 9-1)

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 (optional parts) on the control board of the outdoor unit.

- The capacity may be insufficient according to the outdoor temperature and conditions, etc.
- ① Complete the circuit as shown when using the external input adapter (PAC-SC36NA). (Optional parts)

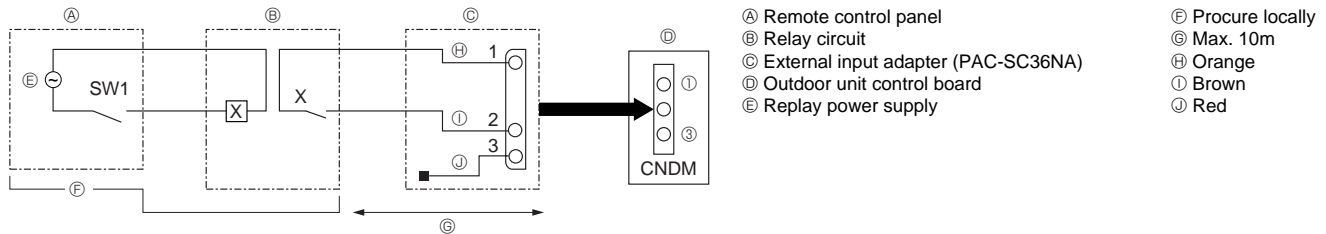


Fig.9-1

### 9-5-2. Demand function (on-site modification) (Fig. 9-2)

- It is possible to reduce electricity consumption within a range from 0 to 100 % by performing the following on-site installation.

The demand function can be enabled by adding a commercially available input contact point ON/OFF switch to the CNDM connector (the contact point demand input, optional parts).

- ① Incorporate the "Adapter for external input (PAC-SC36NA)" into the circuit as shown in the diagram below.
- ② By switching SW7-1 on the control circuit board for the outdoor unit, the following power consumption restrictions (compared to rated power) can be set.

SW7-1	Power consumption when SW2 is on
OFF	0% (Forced compressor stop)
ON	50%

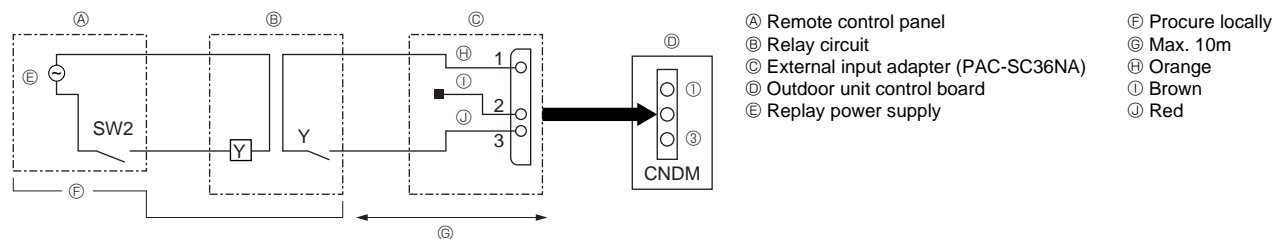


Fig.9-2

### 9-5-3. Error and compressor operation monitoring function (CN51)

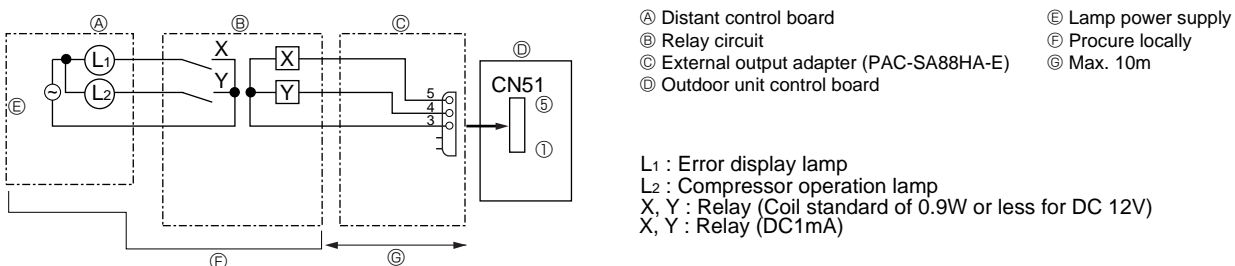
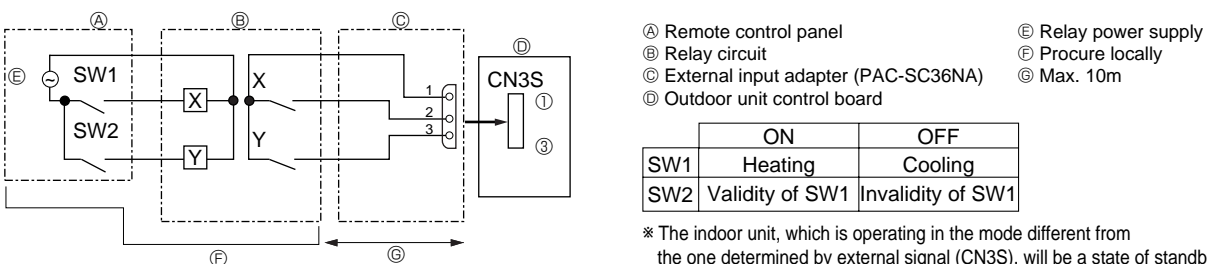


Fig.9-3

### 9-5-4. Auto change over - Operation mode locking function by external signal (CN3S)

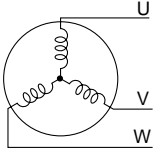


- \* The indoor unit, which is operating in the mode different from the one determined by external signal (CN3S), will be a state of standby.
- \* The setting becomes effective when the outdoor unit is under stop.
- \* The operation mode specified by test run will be prior to the mode of this function.

Fig.9-4

## 9-6. HOW TO CHECK THE PARTS

### OUTDOOR UNIT : MXZ-8A140VA MXZ-8A140VA<sub>1</sub> MXZ-8A140VA<sub>2</sub> MXZ-8A140VA<sub>3</sub>

Parts name	Check points												
Thermistor (TH3) <Outdoor pipe>  Thermistor (TH4) <Discharge>  Thermistor (TH7) <Outdoor>  Thermistor (TH8) <Heatsink>	Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 10°C ~30°C ) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>TH4</td> <td>160kΩ~410kΩ</td> <td rowspan="3">Open or short</td> </tr> <tr> <td>TH3</td> <td rowspan="2">4.3kΩ~9.6kΩ</td> </tr> <tr> <td>TH7</td> </tr> <tr> <td>TH8</td> <td>39kΩ~105kΩ</td> <td></td> </tr> </tbody> </table>		Normal	Abnormal	TH4	160kΩ~410kΩ	Open or short	TH3	4.3kΩ~9.6kΩ	TH7	TH8	39kΩ~105kΩ	
	Normal	Abnormal											
TH4	160kΩ~410kΩ	Open or short											
TH3	4.3kΩ~9.6kΩ												
TH7													
TH8	39kΩ~105kΩ												
Fan motor(MF1,MF2)	Refer to next page.												
Solenoid valve coil <Four-way valve> (21S4)	Measure the resistance between the terminals with a tester. (At the ambient temperature 20°C ) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>MXZ-8A140VA<sub>(1)</sub></td> <td>MXZ-8A140VA<sub>2, 3</sub></td> <td rowspan="2">Open or short</td> </tr> <tr> <td>1370±100Ω</td> <td>1435±150Ω</td> </tr> </tbody> </table>	Normal		Abnormal	MXZ-8A140VA <sub>(1)</sub>	MXZ-8A140VA <sub>2, 3</sub>	Open or short	1370±100Ω	1435±150Ω				
Normal		Abnormal											
MXZ-8A140VA <sub>(1)</sub>	MXZ-8A140VA <sub>2, 3</sub>	Open or short											
1370±100Ω	1435±150Ω												
Motor for compressor (MC) 	Measure the resistance between the terminals with a tester. (Winding temperature 20°C ) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>0.188Ω</td> <td>Open or short</td> </tr> </tbody> </table>	Normal	Abnormal	0.188Ω	Open or short								
Normal	Abnormal												
0.188Ω	Open or short												
Solenoid valve coil <Bypass valve> (SV1)	Measure the resistance between the terminals with a tester. (At the ambient temperature 20°C ) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>1327±10Ω</td> <td>Open or short</td> </tr> </tbody> </table>	Normal	Abnormal	1327±10Ω	Open or short								
Normal	Abnormal												
1327±10Ω	Open or short												
Solenoid valve coil <Bypass valve> (SV2)	Measure the resistance between the terminals with a tester. (At the ambient temperature 20°C ) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>MXZ-8A140VA<sub>(1)</sub></td> <td>MXZ-8A140VA<sub>2, 3</sub></td> <td rowspan="2">Open or short</td> </tr> <tr> <td>1197±10Ω</td> <td>1450±150Ω</td> </tr> </tbody> </table>	Normal		Abnormal	MXZ-8A140VA <sub>(1)</sub>	MXZ-8A140VA <sub>2, 3</sub>	Open or short	1197±10Ω	1450±150Ω				
Normal		Abnormal											
MXZ-8A140VA <sub>(1)</sub>	MXZ-8A140VA <sub>2, 3</sub>	Open or short											
1197±10Ω	1450±150Ω												

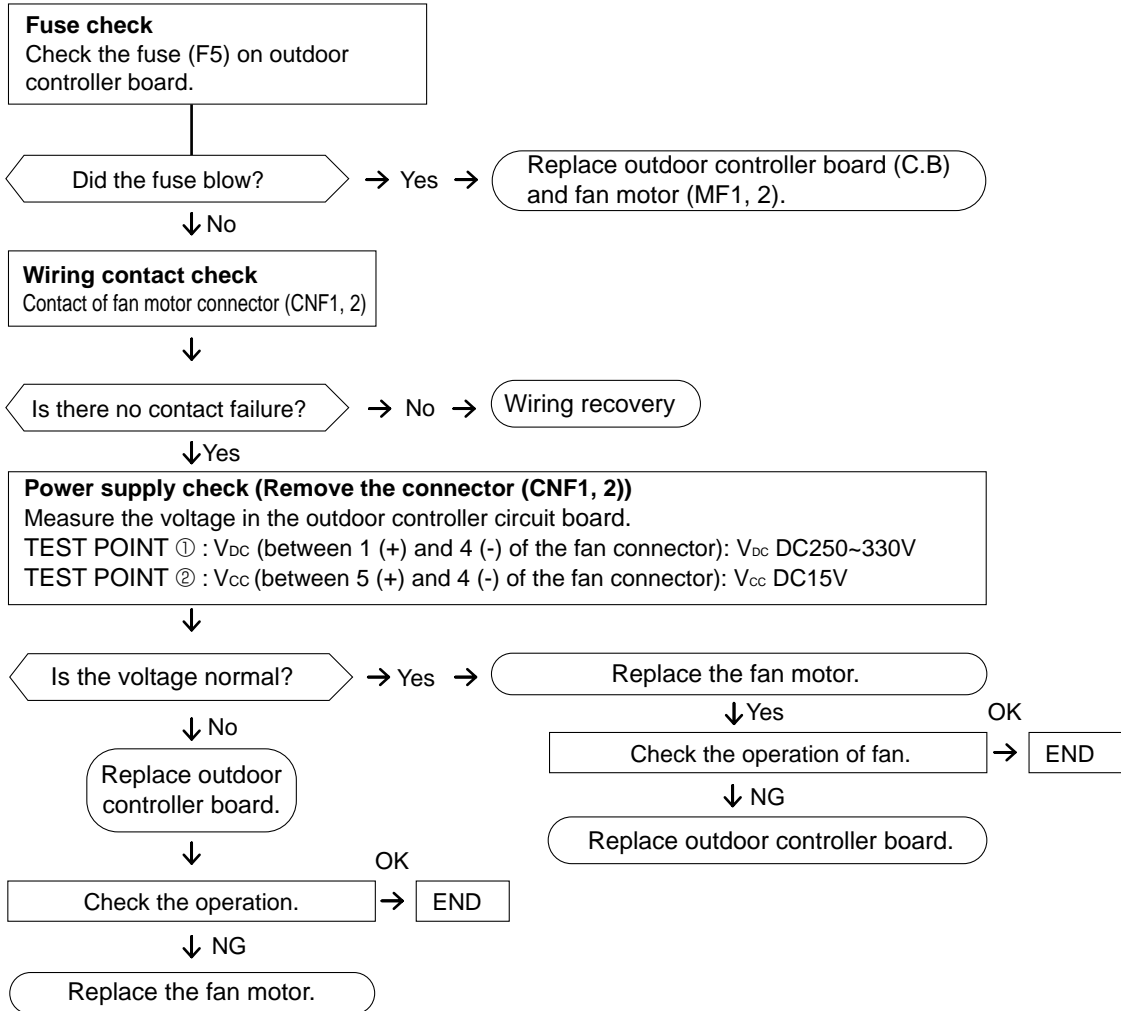
## Check method of DC fan motor (fan motor / outdoor controller circuit board)

### ① Notes

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

### ② Self check

Symptom : The outdoor fan cannot turn around.



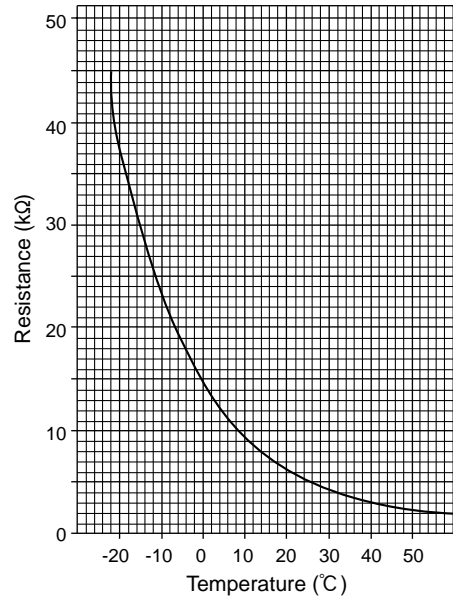
**<Thermistor feature chart>**

**Low temperature thermistors**

Pipe temperature thermistor <Liquid> (TH3)  
 Pipe temperature thermistor <cond.> (TH6)  
 Outdoor temperature thermistor (TH7)  
 Gas pipe temperature thermistor (TH-A ~ TH-E).... Branch box  
 Thermistor R0 = 15kΩ ± 3%  
 B constant = 3480 ± 2%

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

0°C	15kΩ	30°C	4.3kΩ
10°C	9.6kΩ	40°C	3.0kΩ
20°C	6.3kΩ		
25°C	5.4kΩ		

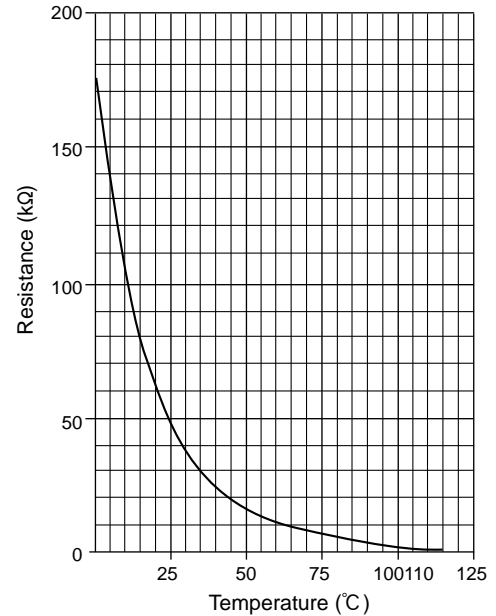


**Medium temperature thermistor**

Heatsink temperature thermistor (TH8)  
 Thermistor R50 = 17kΩ ± 2%  
 B constant = 4170 ± 3%

$$R_t = 17 \exp\left\{4170 \left(\frac{1}{273+t} - \frac{1}{323}\right)\right\}$$

0°C	180kΩ
25°C	50kΩ
50°C	17kΩ
70°C	8kΩ
90°C	4kΩ

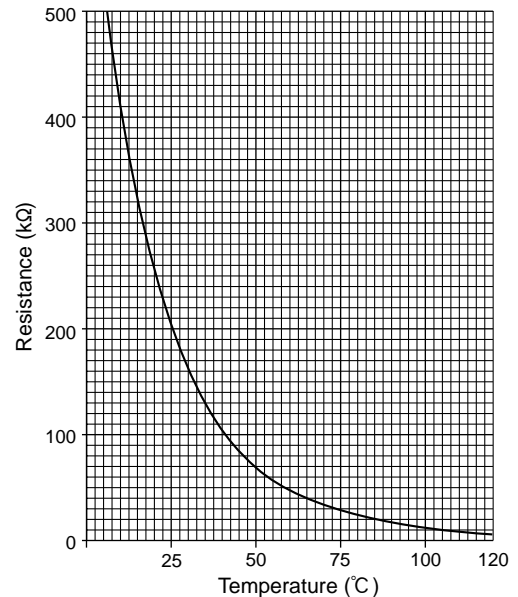


**High temperature thermistor**

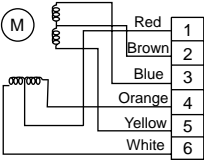
Discharge temperature thermistor (TH4)  
 Thermistor R120 = 7.465kΩ ± 2%  
 B constant = 4057 ± 2%

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

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



**BRANCH BOX : PAC-AK50BC  
PAC-AK30BC**

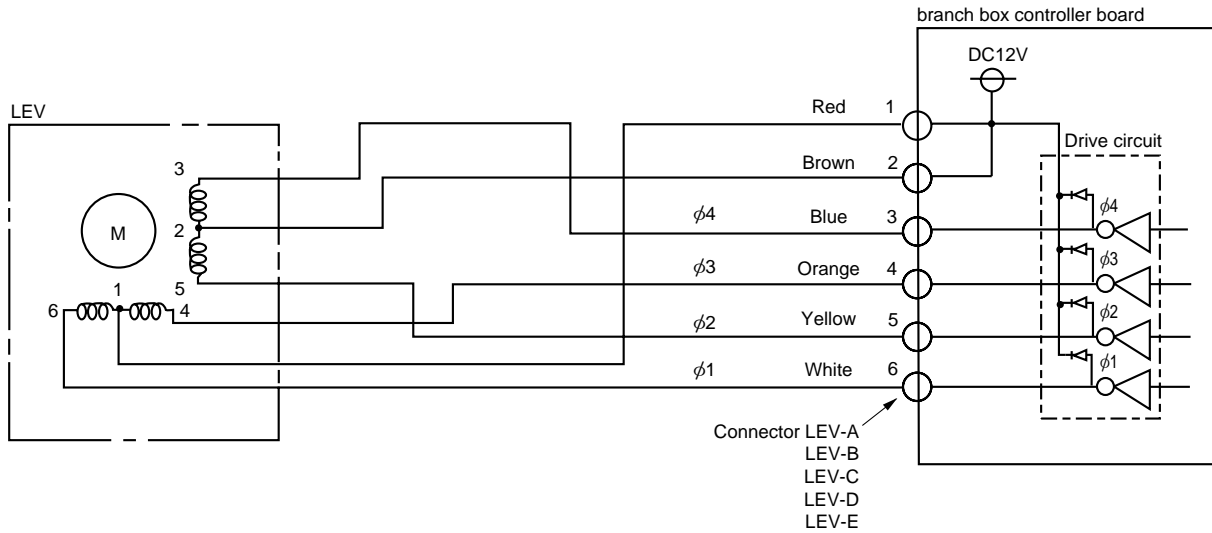
Parts name	Check points																	
Thermistor (TH-A~E) <Gas pipe>	Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 10°C ~30°C) <table border="1" data-bbox="338 414 1160 506"> <thead> <tr> <th colspan="2" data-bbox="338 414 748 452">Normal</th> <th colspan="2" data-bbox="748 414 1160 452">Abnormal</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="338 452 748 506">4.3kΩ~9.6kΩ</td> <td colspan="2" data-bbox="748 452 1160 506">Open or short</td> </tr> </tbody> </table>				Normal		Abnormal		4.3kΩ~9.6kΩ		Open or short							
Normal		Abnormal																
4.3kΩ~9.6kΩ		Open or short																
Linear expansion valve ( LEV-A~E )  	Disconnect the connector then measure the resistance with a tester. (Winding temperature 20°C) <table border="1" data-bbox="338 604 1160 741"> <thead> <tr> <th colspan="4" data-bbox="338 604 887 651">Normal</th> <th colspan="1" data-bbox="887 604 1160 651">Abnormal</th> </tr> </thead> <tbody> <tr> <td data-bbox="338 651 475 698">Red - White</td> <td data-bbox="475 651 612 698">Red - Orange</td> <td data-bbox="612 651 750 698">Brown - Yellow</td> <td data-bbox="750 651 887 698">Brown - Blue</td> <td data-bbox="887 651 1160 698" rowspan="2">Open or short</td> </tr> <tr> <td colspan="4" data-bbox="338 698 887 741">46±4Ω</td> </tr> </tbody> </table>				Normal				Abnormal	Red - White	Red - Orange	Brown - Yellow	Brown - Blue	Open or short	46±4Ω			
Normal				Abnormal														
Red - White	Red - Orange	Brown - Yellow	Brown - Blue	Open or short														
46±4Ω																		



## Linear expansion valve (LEV) in Branch box

### (1) Operation summary of the linear expansion valve

- Linear expansion valve open/close through stepping motor after receiving the pulse signal from the branch box controller board.
  - Valve position can be changed in proportion to the number of pulse signal.
- <Connection between the branch box 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
$\phi 1$	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
$\phi 2$	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
$\phi 3$	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
$\phi 4$	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

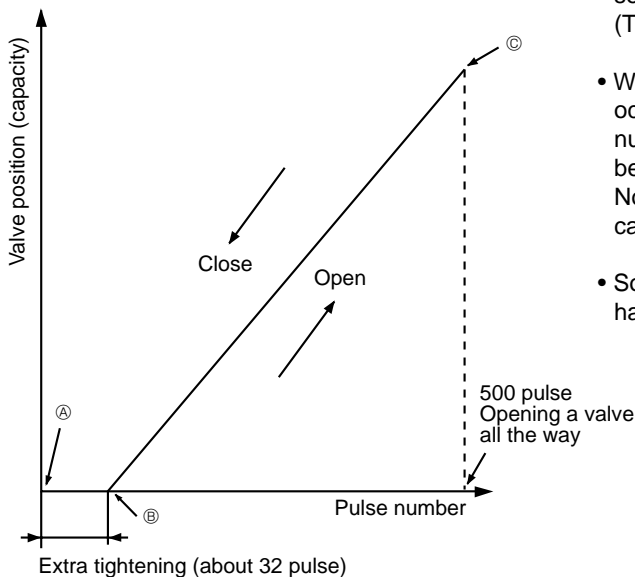
Opening a valve : 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8

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

The output pulse shifts in above order.

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

### (2) Linear expansion valve operation

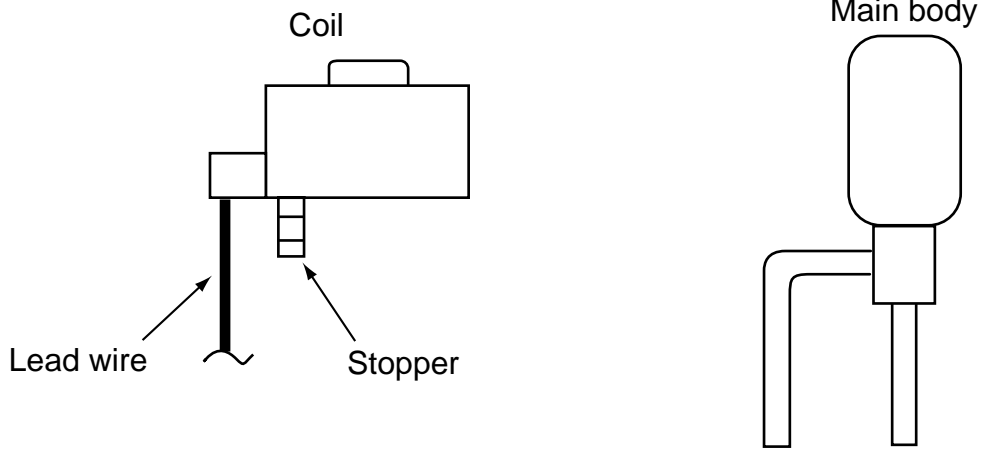


- When the switch is turned on, 700 pulse closing valve signal will be sent till it goes to ㉞ point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)
- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve : however, when the pulse number moves from ㉞ to ㉞ or when the valve is locked, sound can be heard. No sound is heard when the pulse number moves from ㉞ to ㉞ 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>

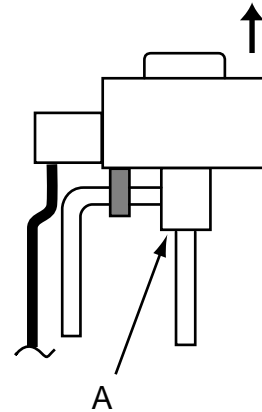
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



#### <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.

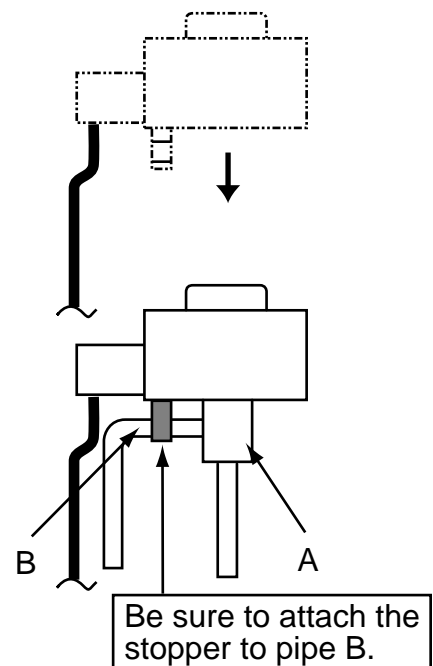
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to pressure.



#### <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 pipe B. (At this time, be careful that stress is not added to lead wire and main body is not wounded by lead wire.) If the stopper is not firmly attached to pipe B, 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.



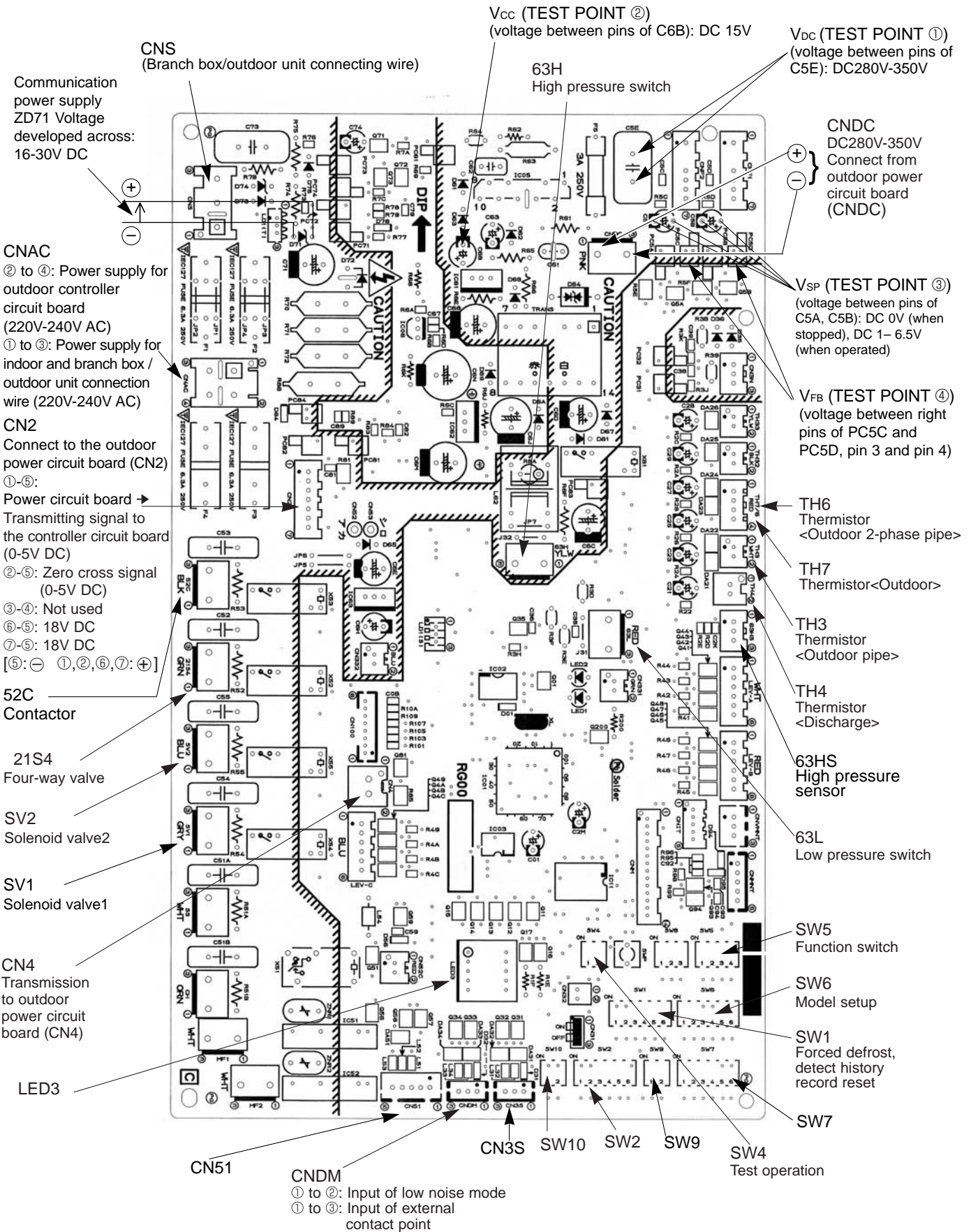
## Troubleshooting

Problem	Check point	Corrective measure
Locked expansion valve	If the linear expansion valve becomes locked and the motor is still operating, the motor will emit a clicking noise and will not function. This clicking noise indicates an abnormality.	Replace the linear expansion valve.
Short circuit or broken circuit in expansion valve motor coil	Use an all-purpose electrical meter to measure the resistance between the different coils (red-white, red-orange, brown-yellow, brown-blue). Normal resistance is within a range of $46\Omega \pm 4\%$ .	Replace the linear expansion valve.
Valve does not close completely.	In order to check the linear expansion valve, operate 1 indoor unit in the fan mode and another in the cooling mode. Then, use the outdoor multi controller board to operate the monitor and check the pipe temperature of the indoor unit. The linear expansion valve should be fully closed when the fan is operating. The temperature measured by the temperature sensor will drop if there is any leakage. If the measured temperature is significantly lower than that on the remote controller, this indicates that the valve is not closed. It is not necessary to replace the linear expansion valve if the leak of refrigerant is small and does not cause a malfunction.	Replace the linear expansion valve if there is a major leak of refrigerant.
Incorrect connection or connection failure	① Check improperly connected connector terminals and the wire colors. ② Remove the connector on the controller board side and check electrical conductance.	Continuity check of wrong part

# 9-7. TEST POINT DIAGRAM

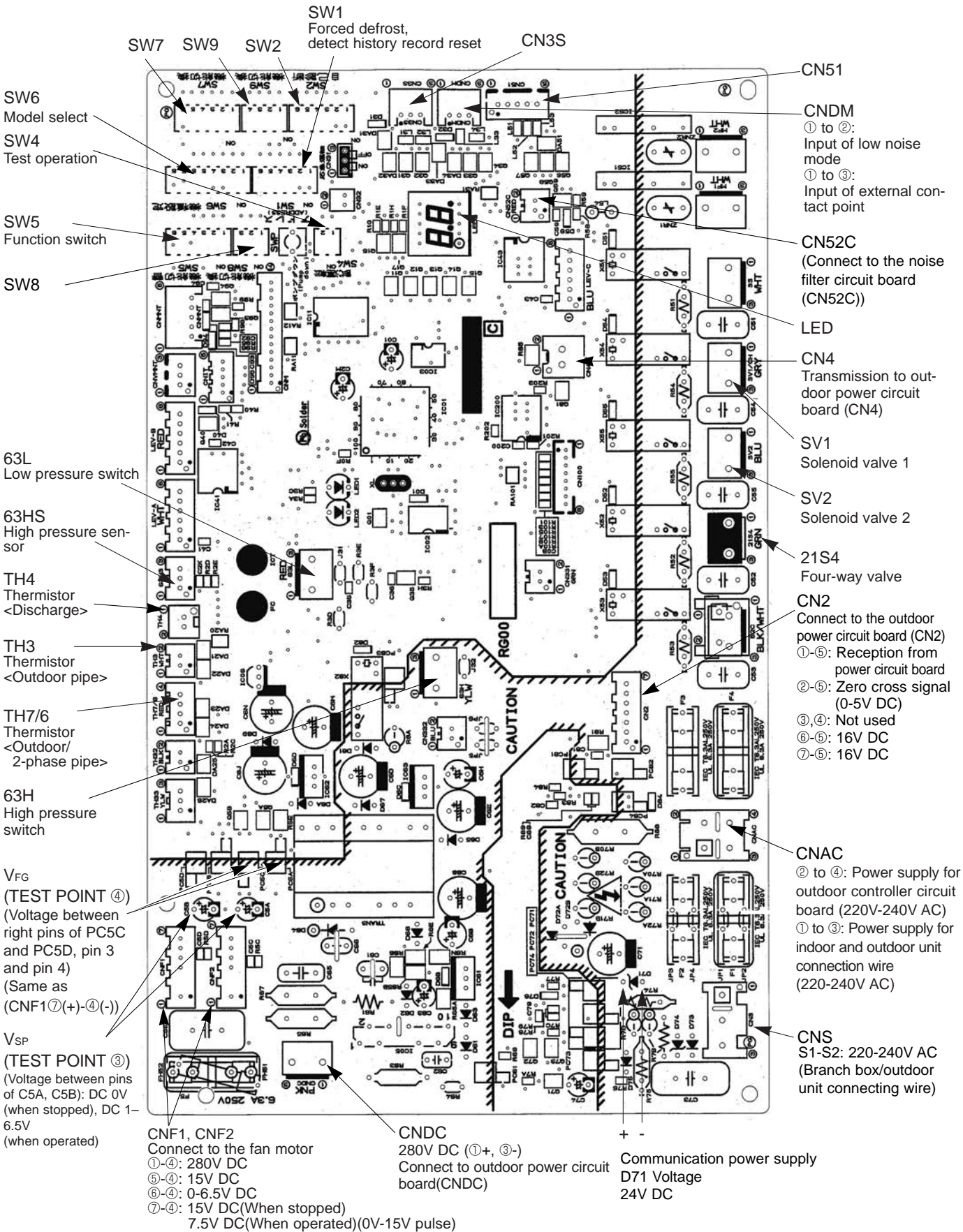
<CAUTION> TEST POINT ① is high voltage.

## 9-7-1. Outdoor controller circuit board MXZ-8A140VA MXZ-8A140VA<sub>1</sub> MXZ-8A140VA<sub>2</sub>



# Outdoor controller circuit board MXZ-8A140VA<sub>3</sub>

<CAUTION> TEST POINT① is high voltage.



**9-7-2. Outdoor noise filter circuit board  
MXZ-8A140VA**

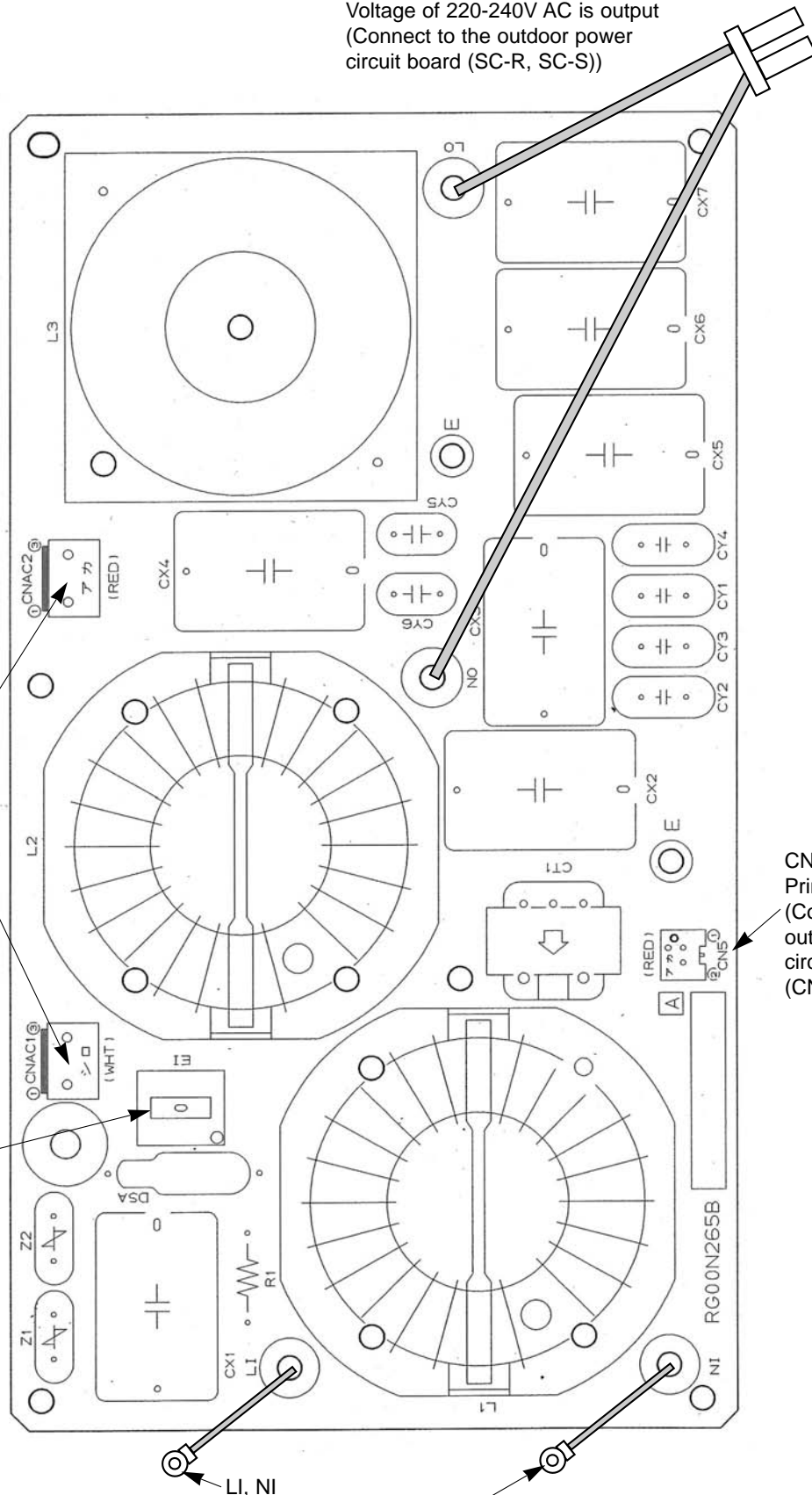
LO, NO  
Voltage of 220-240V AC is output  
(Connect to the outdoor power  
circuit board (SC-R, SC-S))

CNAC1, CNAC2  
220-240V AC  
(Connect to the  
outdoor controller  
circuit board  
(CNAC))

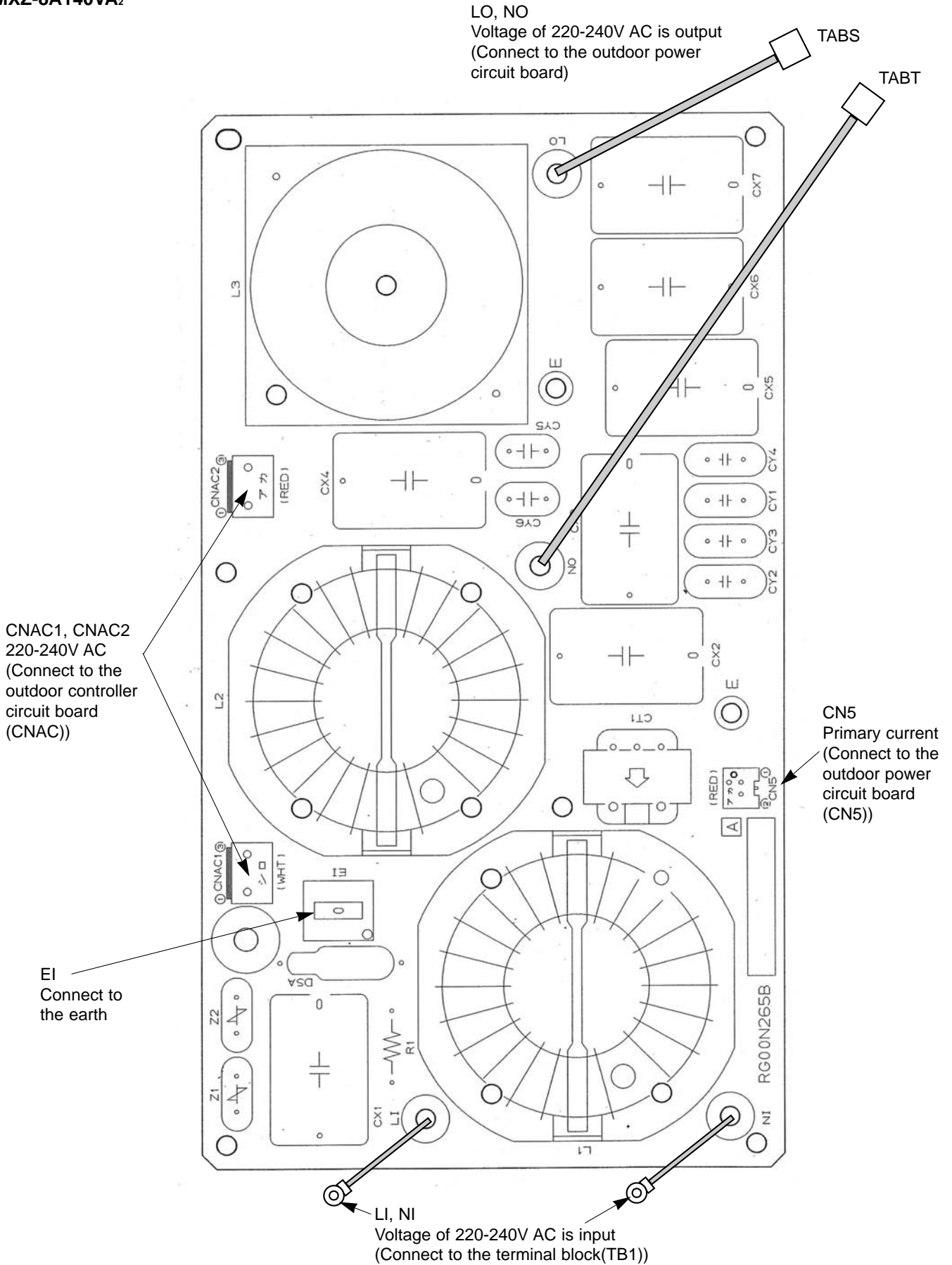
EI  
Connect to  
the earth

CN5  
Primary current  
(Connect to the  
outdoor power  
circuit board  
(CN5))

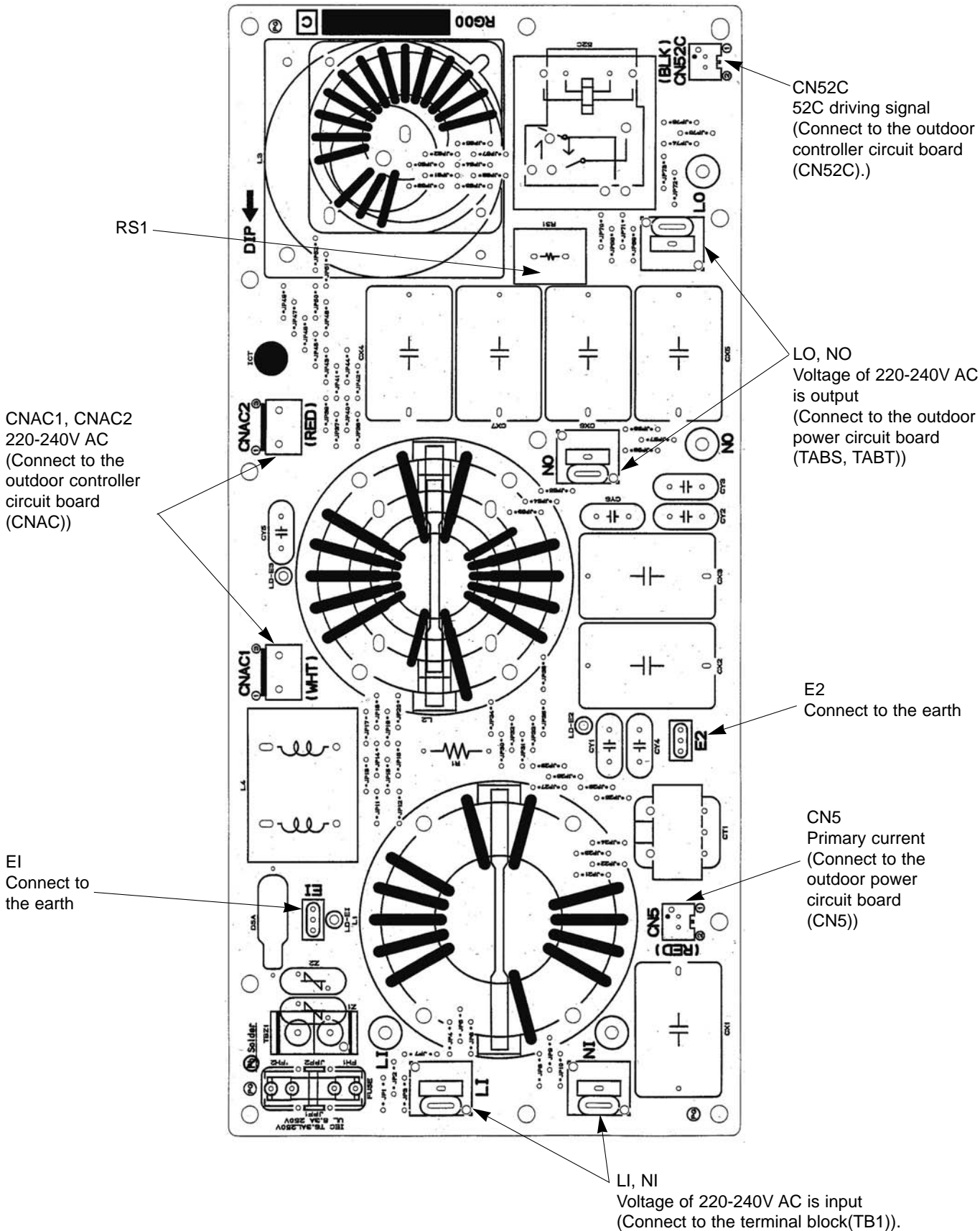
LI, NI  
Voltage of 220-240V AC is input  
(Connect to the terminal block(TB1))



**Outdoor noise filter circuit board**  
**MXZ-8A140VA<sub>1</sub>**  
**MXZ-8A140VA<sub>2</sub>**



# Outdoor noise filter circuit board MXZ-8A140VA<sub>3</sub>





**9-7-3. Outdoor power circuit board  
MXZ-8A140VA**

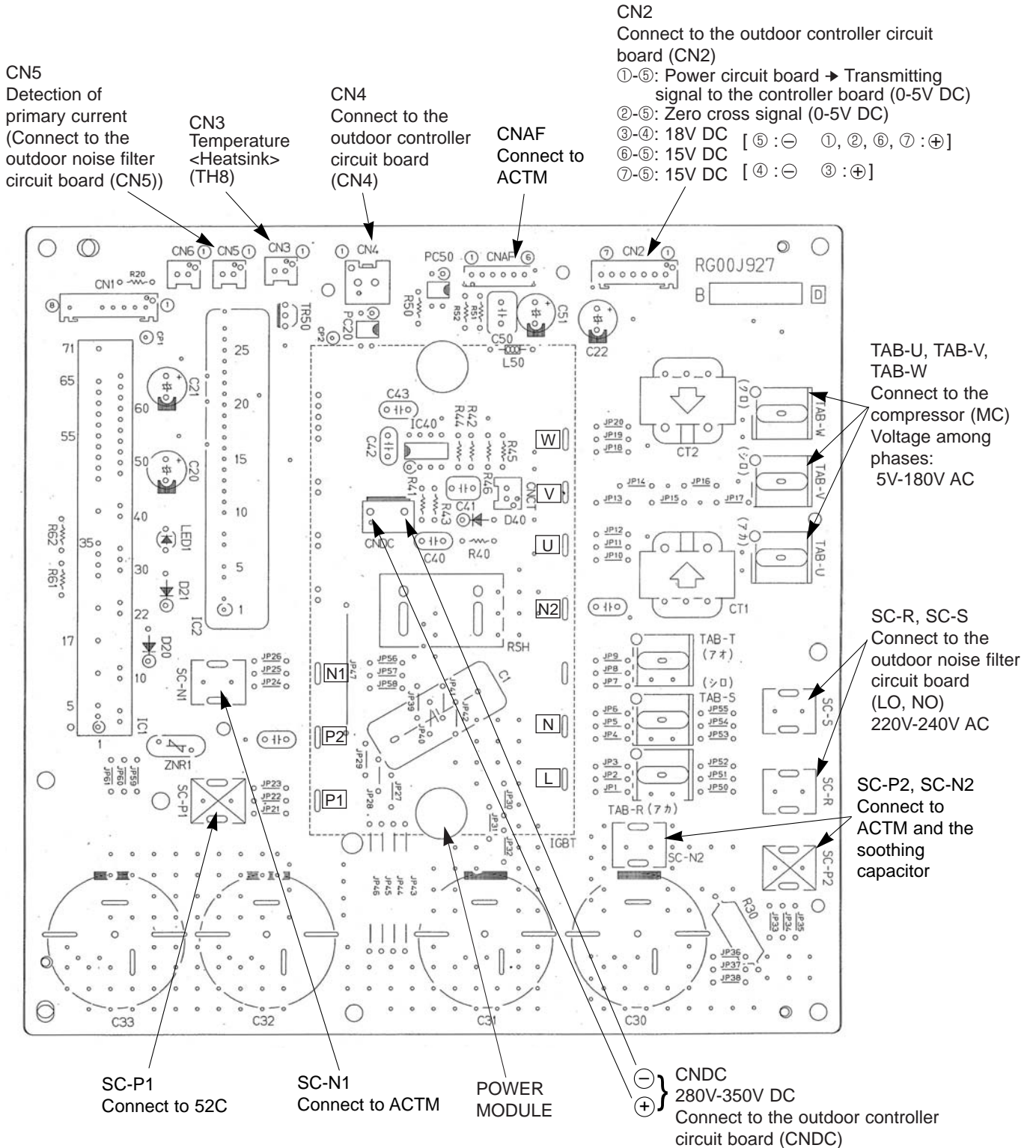
**Brief Check of POWER MODULE**  
 ※ Usually, they are in a state of being short-circuited if they are broken. Measure the resistance in the following points (connectors, etc.). If they are short-circuited, it means that they are broken.

**1. Check of POWER MODULE**

①. Check of DIODE circuit  
 [L]-P1, [N]-P1, [L]-N1, [N]-N1

②. Check of IGBT circuit  
 [P2]-U, [P2]-V, [P2]-W, [N2]-U, [N2]-V, [N2]-W

Note: The marks, [L], [N], [N1], [N2], [P1], [P2], [U], [V] and [W] shown in the diagram are not actually printed on the board.



## Outdoor power circuit board

MXZ-8A140VA<sub>1</sub>

MXZ-8A140VA<sub>2</sub>

MXZ-8A140VA<sub>3</sub>

### 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

[S]-P1, [T]-P1, [S]-N1, [T]-N1

##### ②. Check of IGBT circuit

[P2]-U, [P2]-V, [P2]-W, [N2]-U, [N2]-V, [N2]-W

Note: The marks, [L], [N], [N1], [N2], [P1], [P2], [U], [V] and [W] shown in the diagram are not actually printed on the board.

CN2  
Connect to the outdoor controller circuit board (CN2)

①-⑤: Transmitting signal to the outdoor controller circuit board (0~5V DC)

②-⑤: Zero cross signal (0~5V DC)

③-④: 18V DC

⑥-⑤: 16V DC

⑦-⑤: 16V DC

CN3  
Thermistor (TH8)  
<Heatsink>

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

CN4  
Connect to the outdoor controller circuit board (CN4)

TABP2/SC-P2  
Connect to the ACTM(P)

CNDC  
310V DC (①+, ③-)  
Connect to the outdoor controller circuit board

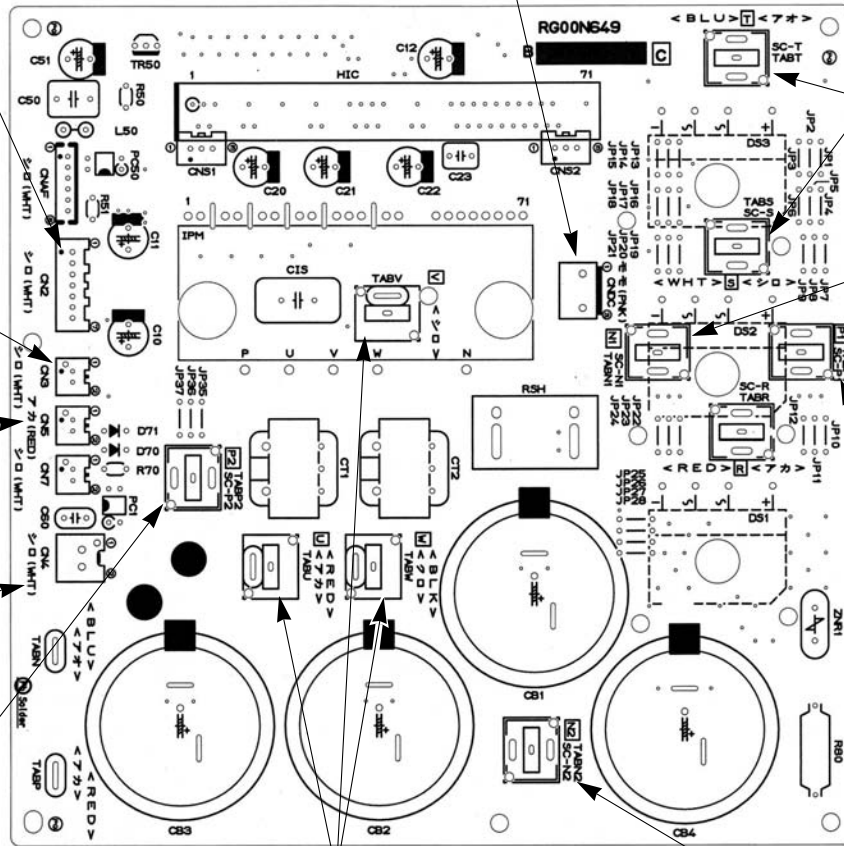
TABS/T  
Connect to the outdoor noise filter circuit board  
Voltage among phases: 220~240V AC

TABN1/SC-N1  
Connect to the ACTM(-)

TABP1/SC-P1  
Connect to 52C

TABU/V/W  
Connect to the compressor (MC)  
Voltage among phases: 10V~180V AC

TABN2/SC-N2  
Connect to the ACTM(N2)



**9-7-4. Branch box controller board  
PAC-AK50BC  
PAC-AK30BC**

TH-A to E Connect to Thermistor-A to E  
TH-A to C for PAC-AK30BC

LED1  
Transmission start-up state display  
Start-up : LED1 blinks  
(0.5sec. : ON, 0.5sec. : OFF)  
Start-up completion: LED1 lights

LEV-A to E  
Connect to LEV-A to E  
LEV-A to C for PAC-AK30BC

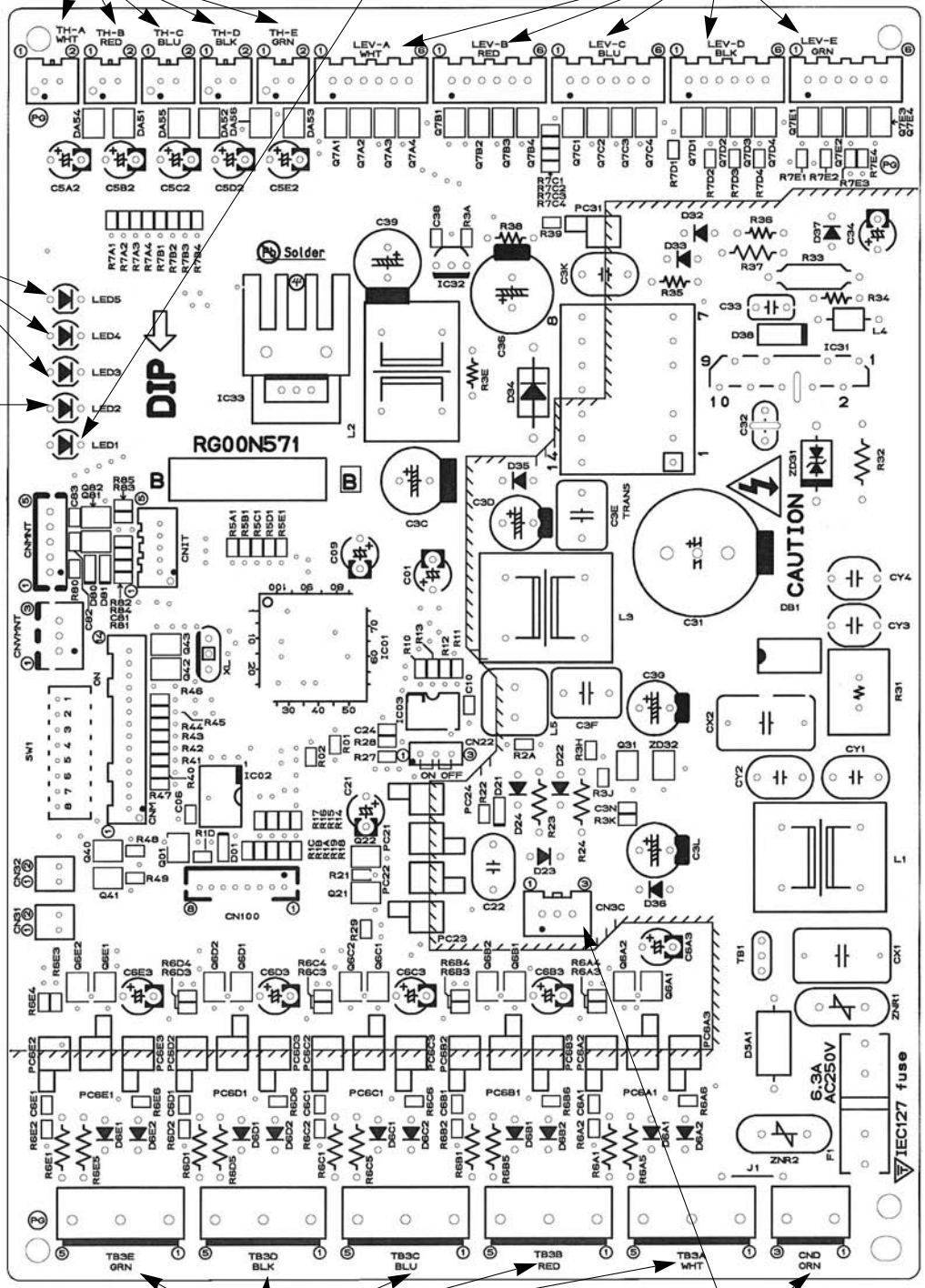
LED3~5  
Not used

LED2  
Transmission  
(Branch box/outdoor)  
Reception state display  
on branch box side

Branch box No.1  
LED2 blinks once.  
(0.1sec. : ON,  
0.9sec. : OFF)

Branch box No.2  
LED2 blinks twice.  
(0.1sec. : ON,  
0.1sec. : OFF  
0.1sec. : ON,  
0.7sec. : OFF)

\*The blinking interval  
might change when  
there are changes in  
states of indoor units.

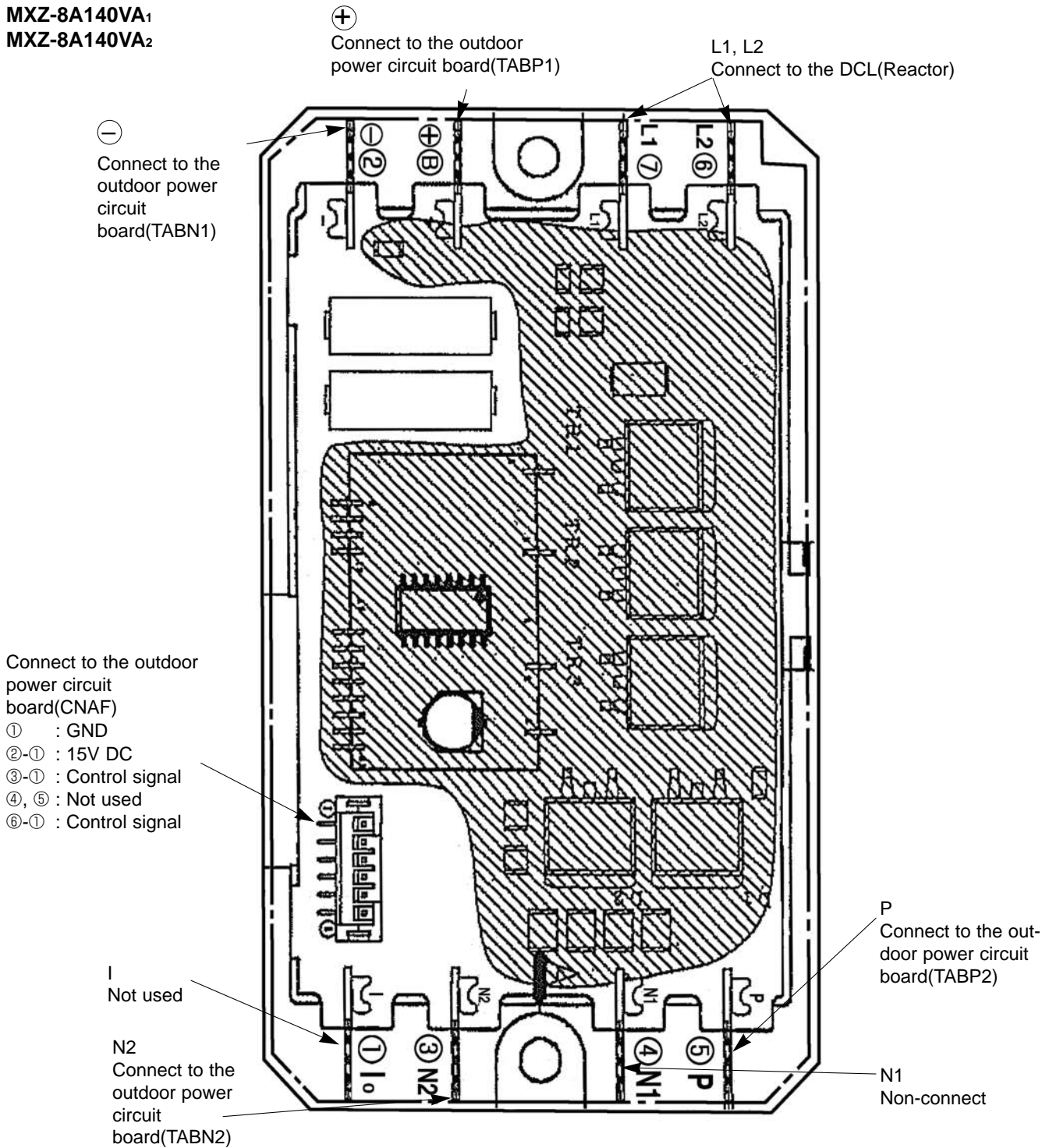


TB3A to TB3E  
Connect to TB3A to TB3E  
(Branch box / Indoor unit connecting wire)  
TB3A to TB3C for PAC-AK30BC

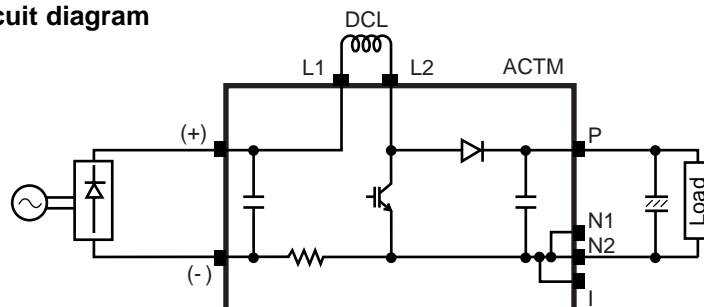
CN3C, CND  
Connect to TB2B  
(Branch box / Outdoor unit  
connecting wire)

### 9-7-5. Active filter module

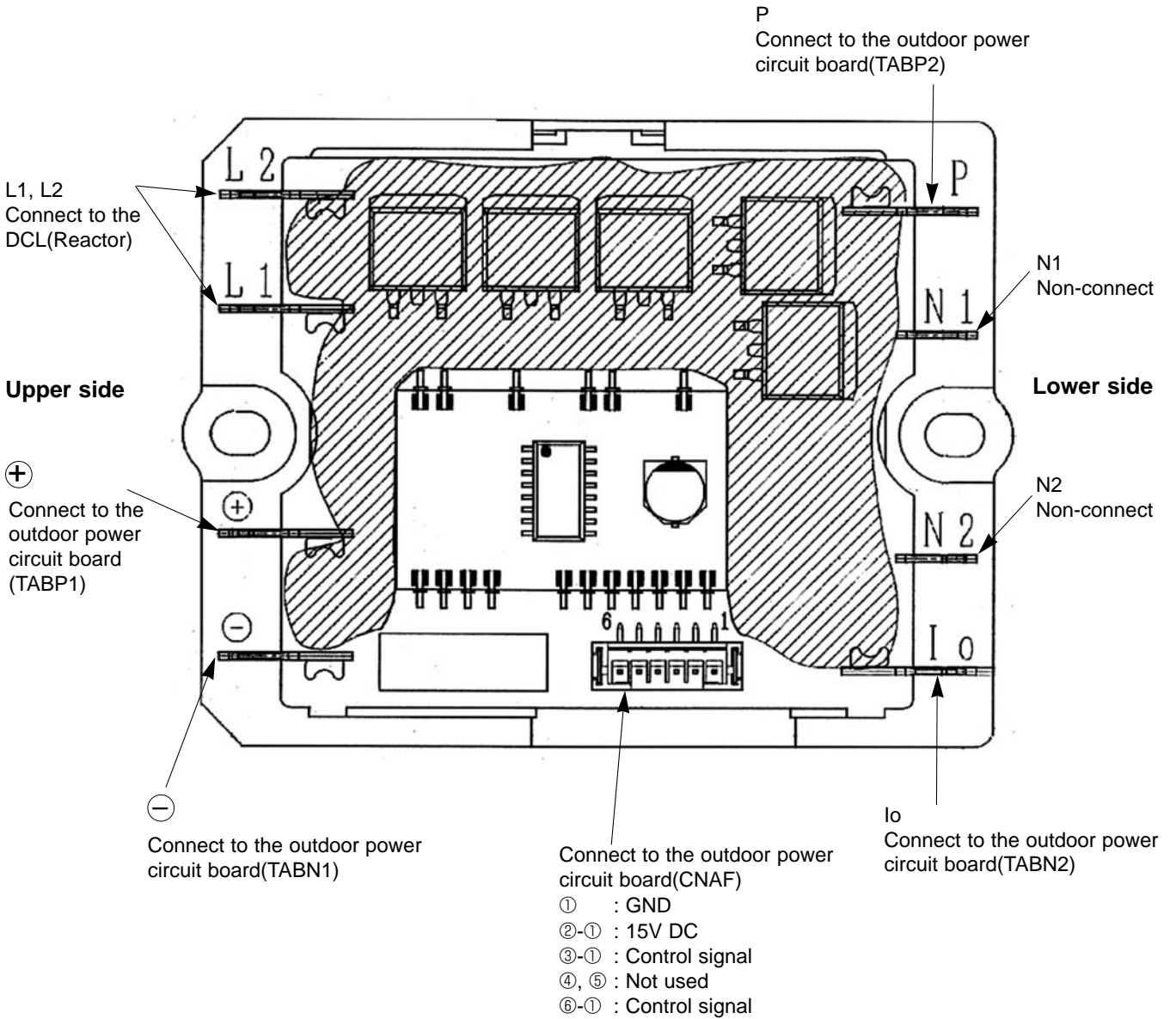
**MXZ-8A140VA**  
**MXZ-8A140VA<sub>1</sub>**  
**MXZ-8A140VA<sub>2</sub>**



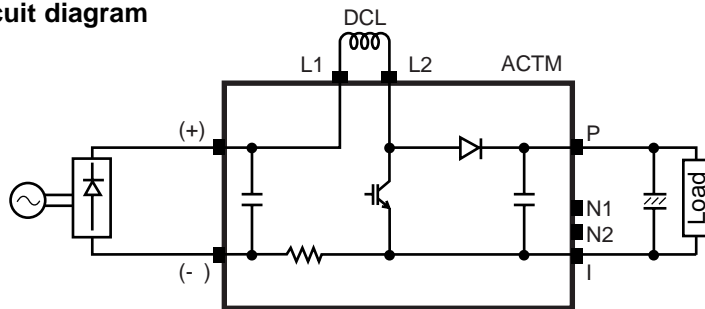
### Connection and internal circuit diagram



**Active filter module  
MXZ-8A140VA<sub>3</sub>**



**Connection and internal circuit diagram**



## 9-8. FUNCTION OF SWITCHES, CONNECTORS AND JUMPERS

### (1) Function of switches

Type of Switch	Switch	No.	Function	Action by the switch operation		Effective timing	
				ON	OFF		
Dip switch	SW1	1	Forced defrost	Start	Normal	When compressor is working in heating operation. *	
		2	Abnormal history clear	Clear	Normal		off or operating
		3	No function	—	—		—
		4	Self-diagnosis (Indoor unit selection)		Indicating a particular self-diagnosis		
		5		<p>&lt;Example&gt;</p> <p>BC#1 : branch box controller unit Number 1 1 blinking LED2 (branch box controller board)</p> <p>BC#2 : branch box controller unit Number 2 2 blinking LED2 (branch box controller board)</p>			
	6						
SW4	1	Test run	Operating	OFF	Under suspension		
	2	Test run mode setting	Heating	Cooling			

Forced defrost should be done as follows.

①Change the DIP SW1-1 on the outdoor controller board from OFF to ON.

②Forced defrost will start by the above operation ① if these conditions written below are satisfied.

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

③Forced defrost will finish if certain conditions are satisfied.

\*Forced 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.



**MXZ-8A140VA MXZ-8A140VA<sub>1</sub> MXZ-8A140VA<sub>2</sub>**

Type of Switch	Switch	No.	Function	Action by the switch operation		Effective timing	
				ON	OFF		
Dip switch	SW5	1	No function	—	—	—	
		2	Switching the target sub-cool (Heating mode)	Target sub-cool down	Normal	Always	
		3	No function	—	—	—	
		4	No function	—	—	—	
	SW7	1	Demand switching function	Capability cut 50%	Normal	Always	
		2	No function	—	—	—	
		3	Max. Frequency down	Active	Normal	Always	
		4	No function	—	—	—	
		5	No function	—	—	—	
		6	No function	—	—	—	
	SW8	1	No function	—	—	—	
		2	No function	—	—	—	
		3	No function	—	—	—	
	SW6	1	Model selection	<div style="text-align: center;"> <p>SW6</p> <p>ON</p> <p>1 2 3 4 5 6</p> </div>			
		2					
		3					
		4					
		5					
		6					
	SW9	1	LEV opening setting function for stopping unit during heating operation	Changed	Normal	Always	
		2	Switching function of defrosting prohibited time	60 minutes	30 minutes (Normal)	Always	
	SW10	1	Switching the Input Current Limit Level	3 A down	Normal	Before turning the power on	
		2	During the FAN or COOL mode, and thermo - OFF in heating operation, set the opening of liner expansion valve on branch box	Active	Inactive	While unit stopping	

**MXZ-8A140VA<sub>3</sub>**

Type of Switch	Switch	No.	Function	Action by the switch operation		Effective timing																	
				ON	OFF																		
Dip switch	SW5	1	No function	—	—	—																	
		2	Switching the target sub-cool (Heating mode)	Target sub-cool down	Normal	Always																	
		3, 4	No function	—	—	—																	
		5, 6	No function	—	—	—																	
	SW7	1	Demand switching function	Capability cut 50%	Normal	Always																	
		2	No function	—	—	—																	
		3	Max. Frequency down	Active	Normal	Always																	
		4	No function	—	—	—																	
		5	No function	—	—	—																	
		6	No function	—	—	—																	
	SW8	1	No function	—	—	—																	
		2	No function	—	—	—																	
		3	No function	—	—	—																	
	SW6	1	Model selection	<div style="text-align: center;"> <p>SW6</p> <p>ON</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 10px; height: 10px; background-color: black;"></td> <td style="width: 10px; height: 10px; background-color: white;"></td> <td style="width: 10px; height: 10px; background-color: black;"></td> <td style="width: 10px; height: 10px; background-color: white;"></td> <td style="width: 10px; height: 10px; background-color: black;"></td> <td style="width: 10px; height: 10px; background-color: white;"></td> <td style="width: 10px; height: 10px; background-color: black;"></td> <td style="width: 10px; height: 10px; background-color: white;"></td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> </tr> </table> </div>												1	2	3	4	5	6	7	8
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		3	Switching the Input Current Limit Level	3 A down	Normal	Before turning the power on																	
		4	During the FAN or COOL mode, and thermo - OFF in heating operation, set the opening of liner expansion valve on branch box	Active	Inactive	While unit stopping																	

**(2) Function of connector**

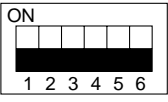
Types	Connector	Function	Action by Pin short operation		Effective timing
			Pin 1-2 Short	Pin 2-3 Short	
Connector	CN31	LEV opening function (at start-up)	Open a little bit	Normal	When power supply ON



**<Outdoor unit operation monitor function>**

Digital indicator LED3 displays 2 digit number or code to inform operation condition and the meaning of error code by controlling DIP SW2 on outdoor controller.

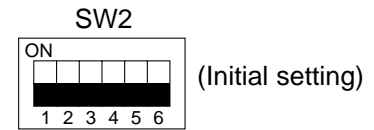
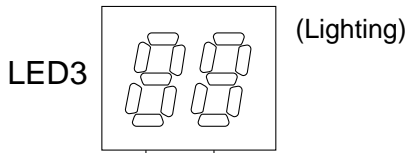
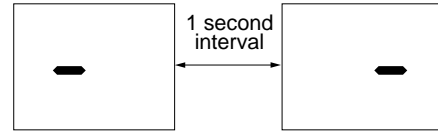
Operation indicator SW2 : Indicator change of self diagnosis

SW2 setting	Display detail	Explanation for display	Unit
			

**<Digital indicator LED3 working details>**

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

- (1) Display when the power supply is ON.  
When the power supply is ON, blinking displays by turns. Wait for 4 minutes at the longest.
- (2) When the display lights (Normal operation)
  - ① Operation mode display



The tens digit : Operation mode

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

The ones digit : Relay output

Display	Warming-up Compressor	Compressor	4-way valve	Solenoid valve (SV1, 2)
0	—	—	—	—
1	—	—	—	ON
2	—	—	ON	—
3	—	—	ON	ON
4	—	ON	—	—
5	—	ON	—	ON
6	—	ON	ON	—
7	—	ON	ON	ON
8	ON	—	—	—
A	ON	—	ON	—

- ② Display during error postponement  
Postponement code is displayed when compressor stops due to the work of protection device.  
Postponement code is displayed while error is being postponed.

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

Display	Inspection unit
0	Outdoor unit, Branch box unit
1	Indoor unit

Display	Contents to be inspected (During operation)
U2	Discharge temperature fault
U7	Low-discharge superheating fault, Erroneous connection of refrigerant pipes or the connecting wires
U1	High pressure fault (63H operates)
UL	Low pressure fault (63L operates)
U6	Abnormality of power modules
UF	Compressor overcurrent shutoff (Start up locked)
UH	Current sensor fault (P. B.)
UP	Compressor overcurrent shutoff fault
U3	Discharge pipe/compressor thermistor (TH4) open or short-circuit
U4	Outdoor unit thermistors (TH3, TH6, TH7, and H8), 63HS, and branch box thermistors open or short-circuit
U5	HEATSINK temperature fault
U8	Abnormality in outdoor fan motor
U9	Voltage fault, current sensor fault (N. F.)
PA	Forced compressor stop (Overlap malfunction of drain pump in indoor unit and linear expansion valve in branch box.)

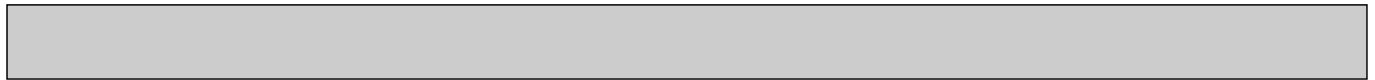
Display	Contents to be inspected (When power is turned on)
F3	63L connector(red) is open.
F5	63H connector(yellow) is open.
F9	2 connectors (63H/63L) are open.
E8	Branch box/outdoor communication error (Signal receiving error) (Outdoor unit) Indoor/branch box communication error (Signal receiving error) (Branch box)
E9	Branch box/outdoor communication error (Transmitting error) (Outdoor unit) Indoor/branch box communication error (Transmitting error) (Branch box)
EA	• Miswiring of indoor - branch box/branch box - outdoor unit connecting wire • Too many indoor units/branch box are in the system.
Eb	Miswiring of indoor - branch box/branch box - outdoor unit connecting wire(converse wiring or disconnection)
Ec	Startup time over
E0~E7	Communication error except for outdoor unit







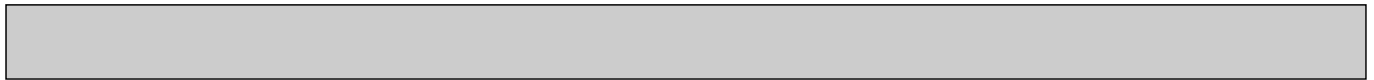
SW2 setting	Display detail	Explanation for display	Unit																																								
	Capacity setting display	Displayed as an outdoor capacity code. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Capacity</th> <th>Code</th> </tr> <tr> <td>MXZ-8A140VA</td> <td>25</td> </tr> </table>	Capacity	Code	MXZ-8A140VA	25	Code display																																				
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MXZ-8A140VA	25																																										
	Outdoor unit setting information	<ul style="list-style-type: none"> <li>The tens digit (Total display for applied setting)               <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Setting details</th> <th>Display details</th> </tr> <tr> <td>H-P / Cooling only</td> <td>0 : H-P      1 : Cooling only</td> </tr> <tr> <td>Single phase / 3 phase</td> <td>0 : Single phase    2 : 3 phase</td> </tr> </table> </li> <li>The ones digit               <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Setting details</th> <th>Display details</th> </tr> <tr> <td>Defrosting switch</td> <td>0 : Normal    1 : For high humidity</td> </tr> </table>               (Example) MXZ-8A140VA, "00" is displayed.             </li> </ul>	Setting details	Display details	H-P / Cooling only	0 : H-P      1 : Cooling only	Single phase / 3 phase	0 : Single phase    2 : 3 phase	Setting details	Display details	Defrosting switch	0 : Normal    1 : For high humidity	Code display																														
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Indoor unit 8	1	1	1																																								
	Targeted evaporating temperature : ETm (Cooling) Targeted high pressure : Pdm (Heating) – 39~88	– 39~88 (When the temperature is 0°C or less, "–" and temperature are displayed by turns.)	°C kgf/cm <sup>2</sup>																																								
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Indoor unit 8	1	1	1																																								




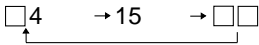
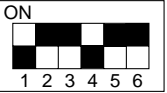
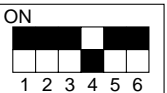
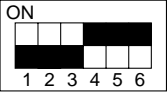
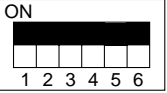
SW2 setting	Display detail	Explanation for display	Unit																																								
	Indoor setting temperature 17~30 <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td></td> <td colspan="3">SW1</td> </tr> <tr> <td></td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </table>		SW1				4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	17~30	°C
	SW1																																										
	4	5	6																																								
Indoor unit 1	0	0	0																																								
Indoor unit 2	1	0	0																																								
Indoor unit 3	0	1	0																																								
Indoor unit 4	1	1	0																																								
Indoor unit 5	0	0	1																																								
Indoor unit 6	1	0	1																																								
Indoor unit 7	0	1	1																																								
Indoor unit 8	1	1	1																																								
	Outdoor pipe temperature / Cond./ Eva. (TH6) - 39~88	- 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.)	°C																																								
	Outdoor temperature (TH7) - 39~88	- 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.)	°C																																								
	Outdoor heatsink temperature (TH8) - 40~200	- 40~200 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (When the thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C																																								
	Discharge superheat. SHd 0~255	0~255 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C																																								
	Sub-cool. SC (cooling mode) 0~130	0~130 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C																																								
	Input current of outdoor unit	0~500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)	0.1 A																																								
	High pressure 63HS	0~500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.) (0~4.9MPa)	0.1 kgf/cm <sup>2</sup>																																								
	Targeted operation frequency 0~255	0~255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.)	Hz																																								
	DC bus voltage 180~370	180~370 (When it is 100V or more, hundreds digit, tens digit and ones digit are displayed by turns.)	V																																								



SW2 setting	Display detail	Explanation for display	Unit																																							
	Target Sub-cool (Cooling mode) : SCm	0~255	°C																																							
	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 code 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) 7: Outdoor outside temperature (TH7) 8: Outdoor radiator panel (TH8) 23: Branch box pipe temperature / Gas (TH-A~E) 63: High pressure sensor (63HS)	Code display																																							
	Operation frequency on error occurring 0~255	0~255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 125Hz; 0.5 secs.    0.5secs.    2 secs. □1            → 25            → □□	Hz																																							
	Fan step on error occurring 0~10	0~10	Step																																							
	LEV opening pulse on error occurring 0~500	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">SW1</th> </tr> <tr> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table> 0~500 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130 pulse; 0.5 secs.    0.5secs.    2 secs. □1            → 30            → □□		SW1			4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	Pulse
	SW1																																									
	4	5	6																																							
Indoor unit 1	0	0	0																																							
Indoor unit 2	1	0	0																																							
Indoor unit 3	0	1	0																																							
Indoor unit 4	1	1	0																																							
Indoor unit 5	0	0	1																																							
Indoor unit 6	1	0	1																																							
Indoor unit 7	0	1	1																																							
Indoor unit 8	1	1	1																																							
	Indoor room temperature on error occurring 8~39	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">SW1</th> </tr> <tr> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table> 8~39		SW1			4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	°C
	SW1																																									
	4	5	6																																							
Indoor unit 1	0	0	0																																							
Indoor unit 2	1	0	0																																							
Indoor unit 3	0	1	0																																							
Indoor unit 4	1	1	0																																							
Indoor unit 5	0	0	1																																							
Indoor unit 6	1	0	1																																							
Indoor unit 7	0	1	1																																							
Indoor unit 8	1	1	1																																							



SW2 setting	Display detail	Explanation for display	Unit																																							
	Indoor pipe temperature / Liquid on error occurring – 39~88 <table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">SW1</th> </tr> <tr> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		SW1			4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	– 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (Example) When –15°C; 0.5 secs. 0.5secs. 2 secs. -□ → 15 → □□	°C
	SW1																																									
	4	5	6																																							
Indoor unit 1	0	0	0																																							
Indoor unit 2	1	0	0																																							
Indoor unit 3	0	1	0																																							
Indoor unit 4	1	1	0																																							
Indoor unit 5	0	0	1																																							
Indoor unit 6	1	0	1																																							
Indoor unit 7	0	1	1																																							
Indoor unit 8	1	1	1																																							
	Indoor pipe temperature / Cond./ Eva. on error occurring – 39~88 <table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">SW1</th> </tr> <tr> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		SW1			4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	– 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (Example) When –15°C; 0.5 secs. 0.5secs. 2 secs. -□ → 15 → □□	°C
	SW1																																									
	4	5	6																																							
Indoor unit 1	0	0	0																																							
Indoor unit 2	1	0	0																																							
Indoor unit 3	0	1	0																																							
Indoor unit 4	1	1	0																																							
Indoor unit 5	0	0	1																																							
Indoor unit 6	1	0	1																																							
Indoor unit 7	0	1	1																																							
Indoor unit 8	1	1	1																																							
	Outdoor pipe temperature / Cond./ Eva. (TH6) on error occurring – 39~88	– 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (Example) When –15°C; 0.5 secs. 0.5secs. 2 secs. -□ → 15 → □□	°C																																							
	Outdoor outside temperature (TH7) on error occurring – 39~88	– 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (Example) When –15°C; 0.5 secs. 0.5secs. 2 secs. -□ → 15 → □□	°C																																							
	Outdoor heatsink temperature (TH8) on error occurring – 40~200	– 40~200 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C																																							
	Discharge superheat on error occurring SHd 0~255	0~255 (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 secs. 0.5secs. 2 secs. □1 → 50 → □□	°C																																							
	Sub-cool on error occurring. SC 0~130	0~130 (When the temperature is 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 115°C; 0.5 secs. 0.5secs. 2 secs. □1 → 15 → □□	°C																																							

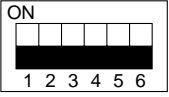
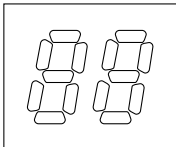
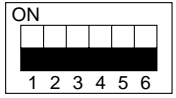
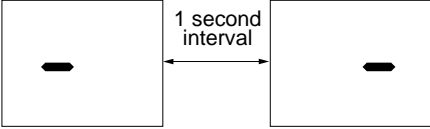
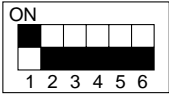
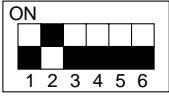
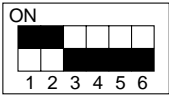
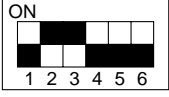
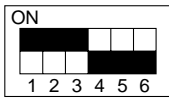
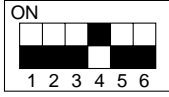
SW2 setting	Display detail	Explanation for display	Unit																																																					
	Thermostat-on time until error stops 0~999	0~999 (When it is 100 minutes or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 415 minutes; 0.5 secs. 0.5secs. 2 secs. 	Minute																																																					
	Target rotation of outdoor fan motor	0~999	rpm																																																					
	Sub-cool (Heating mode) <table border="1" data-bbox="528 757 724 981"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">SW1</th> </tr> <tr> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Indoor unit 1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 2</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Indoor unit 3</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 4</td> <td>1</td> <td>1</td> <td>0</td> </tr> <tr> <td>Indoor unit 5</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 6</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>Indoor unit 7</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>Indoor unit 8</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		SW1			4	5	6	Indoor unit 1	0	0	0	Indoor unit 2	1	0	0	Indoor unit 3	0	1	0	Indoor unit 4	1	1	0	Indoor unit 5	0	0	1	Indoor unit 6	1	0	1	Indoor unit 7	0	1	1	Indoor unit 8	1	1	1	0~130	°C														
	SW1																																																							
	4	5	6																																																					
Indoor unit 1	0	0	0																																																					
Indoor unit 2	1	0	0																																																					
Indoor unit 3	0	1	0																																																					
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Indoor unit 7	0	1	1																																																					
Indoor unit 8	1	1	1																																																					
	Code of the difference between room temperature and set temperature ("ΔTj": 0~99) ■Tens digit of code: current ΔTj ■Units digit of code: ΔTj a minute ago	Code of the difference between room temperature and set temperature ("Δtj") <table border="1" data-bbox="753 1066 1310 1424"> <thead> <tr> <th rowspan="2">Δtj</th> <th>Cooling</th> <th>Heating</th> </tr> <tr> <th>Δtj = room temp. - Set temp.</th> <th>Δtj = Set temp. - room temp.</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Δtj ≤ -0.5</td> <td>Δtj ≤ -0.5</td> </tr> <tr> <td>1</td> <td>-1.0 &lt; Δtj ≤ -0.5</td> <td>-0.5 &lt; Δtj ≤ 0.0</td> </tr> <tr> <td>2</td> <td>-0.5 &lt; Δtj ≤ -0.5</td> <td>0.0 &lt; Δtj ≤ 0.5</td> </tr> <tr> <td>3</td> <td>0.0 &lt; Δtj ≤ 0.0</td> <td>0.5 &lt; Δtj ≤ 1.0</td> </tr> <tr> <td>4</td> <td>0.5 &lt; Δtj ≤ 0.5</td> <td>1.0 &lt; Δtj ≤ 1.5</td> </tr> <tr> <td>5</td> <td>1.0 &lt; Δtj ≤ 1.0</td> <td>1.5 &lt; Δtj ≤ 2.0</td> </tr> <tr> <td>6</td> <td>1.5 &lt; Δtj ≤ 0.5</td> <td>2.0 &lt; Δtj ≤ 2.5</td> </tr> <tr> <td>7</td> <td>2.0 &lt; Δtj ≤ 2.0</td> <td>2.5 &lt; Δtj ≤ 3.0</td> </tr> <tr> <td>8</td> <td>2.5 &lt; Δtj ≤ 2.5</td> <td>3.0 &lt; Δtj ≤ 3.5</td> </tr> <tr> <td>9</td> <td>3.0 &lt; Δtj ≤ 3.0</td> <td>3.5 &lt; Δtj</td> </tr> </tbody> </table> <table border="1" data-bbox="753 1458 1070 1731"> <thead> <tr> <th>SW setting (1-4, 5, 6)</th> <th>Target unit</th> </tr> </thead> <tbody> <tr> <td>000</td> <td>Indoor unit 1</td> </tr> <tr> <td>100</td> <td>Indoor unit 2</td> </tr> <tr> <td>010</td> <td>Indoor unit 3</td> </tr> <tr> <td>110</td> <td>Indoor unit 4</td> </tr> <tr> <td>001</td> <td>Indoor unit 5</td> </tr> <tr> <td>101</td> <td>Indoor unit 6</td> </tr> <tr> <td>011</td> <td>Indoor unit 7</td> </tr> <tr> <td>111</td> <td>Indoor unit 8</td> </tr> </tbody> </table>	Δtj	Cooling	Heating	Δtj = room temp. - Set temp.	Δtj = Set temp. - room temp.	0	Δtj ≤ -0.5	Δtj ≤ -0.5	1	-1.0 < Δtj ≤ -0.5	-0.5 < Δtj ≤ 0.0	2	-0.5 < Δtj ≤ -0.5	0.0 < Δtj ≤ 0.5	3	0.0 < Δtj ≤ 0.0	0.5 < Δtj ≤ 1.0	4	0.5 < Δtj ≤ 0.5	1.0 < Δtj ≤ 1.5	5	1.0 < Δtj ≤ 1.0	1.5 < Δtj ≤ 2.0	6	1.5 < Δtj ≤ 0.5	2.0 < Δtj ≤ 2.5	7	2.0 < Δtj ≤ 2.0	2.5 < Δtj ≤ 3.0	8	2.5 < Δtj ≤ 2.5	3.0 < Δtj ≤ 3.5	9	3.0 < Δtj ≤ 3.0	3.5 < Δtj	SW setting (1-4, 5, 6)	Target unit	000	Indoor unit 1	100	Indoor unit 2	010	Indoor unit 3	110	Indoor unit 4	001	Indoor unit 5	101	Indoor unit 6	011	Indoor unit 7	111	Indoor unit 8	Code display
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**<Branch box unit operation monitor function>**

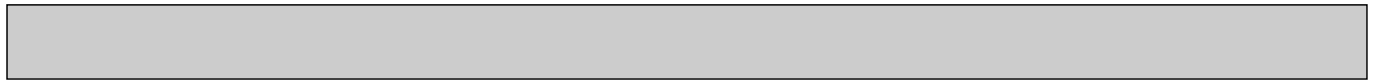
**[When option part 'A-Control Service Tool(PAC-SK52ST)' is connected to branch box controller board(CNM)]**  
 Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of error code by controlling DIP SW2 on 'A-Control Service Tool'.

Operation indicator SW2 : Indicator change of self diagnosis

SW2 setting	Display detail	Explanation for display	Unit
	<p><b>&lt;Digital indicator LED1 working details&gt;</b>                      (Be sure that 1 to 6 in the SW2 are set to OFF.)</p> <p>(1) Display when the power supply is ON.                      When the power supply is ON, blinking displays by turns.                      Wait for 2 minutes at the longest.</p> <p>(2) When the display lights (Normal operation)                      ①The number of connected indoor units to this branch box (0 - 5)</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>LED1</p>  </div> <div> <p>(Lighting)</p> </div> </div> <div style="margin-left: 200px; text-align: center;"> <p>SW2</p>  <p>(Initial setting)</p> </div>		
	<p>Pipe temperature / Liquid(TH3)                      - 40~90</p>	<p>- 40~90                      (When the coil thermistor detects 0°C or below, "-" and temperature are displayed by turns.)                      (Example)                      When -10°C;    0.5 secs.    0.5secs.    2 secs.                      -□                    → 10                    → □□</p>	°C
	<p>Discharge temperature (TH4)                      3~217</p>	<p>3~217                      (When the discharge thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)                      (Example)                      When 105°C;    0.5 secs.    0.5secs.    2 secs.                      □1                    → 05                    → □□</p>	°C
	<p>Output step of outdoor FAN                      0~15</p>	<p>0~15</p>	Step
	<p>Unit number of this branch box                      1~2</p>	<p>1 or 2                      *Omit the figures after the decimal fractions.</p>	code display
	<p>Compressor operating frequency                      0~225</p>	<p>0~255                      (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.)                      (Example)                      When 125Hz;    0.5 secs.    0.5secs.    2 secs.                      □1                    → 25                    → □□</p>	.Hz
	<p>LEV-A opening pulse                      0~500</p>	<p>0~500                      (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.)                      (Example)                      When 150 pulse; 0.5 secs.    0.5secs.    2 secs.                      □1                    → 50                    → □□</p>	Pulse



SW2 setting	Display detail	Explanation for display	Unit																										
	LEV-B opening pulse 0~500	0~500 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 secs. 0.5secs. 2 secs. 	Pulse																										
	LEV-C opening pulse 0~500	0~500 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 secs. 0.5secs. 2 secs. 	Pulse																										
	LEV-D opening pulse 0~500	0~500 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 secs. 0.5secs. 2 secs. 	Pulse																										
	LEV-E opening pulse 0~500	0~500 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 secs. 0.5secs. 2 secs. 	Pulse																										
	Capacity setting indoor-A 0~14	<table border="1"> <thead> <tr> <th>Code display (Not Qj)</th> <th>Rated capacity</th> </tr> </thead> <tbody> <tr><td>2</td><td>22</td></tr> <tr><td>3</td><td>25</td></tr> <tr><td>4</td><td>28</td></tr> <tr><td>5</td><td>32</td></tr> <tr><td>6</td><td>35</td></tr> <tr><td>7</td><td>40</td></tr> <tr><td>8</td><td>45</td></tr> <tr><td>9</td><td>50</td></tr> <tr><td>10</td><td>56</td></tr> <tr><td>11</td><td>60</td></tr> <tr><td>12</td><td>71</td></tr> <tr><td>13</td><td>80</td></tr> </tbody> </table>	Code display (Not Qj)	Rated capacity	2	22	3	25	4	28	5	32	6	35	7	40	8	45	9	50	10	56	11	60	12	71	13	80	Code display
Code display (Not Qj)	Rated capacity																												
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	Capacity setting indoor-D 0~14	Code display																											
	Capacity setting indoor-E 0~14	Code display																											
	Indoor pipe temperature / Liquid TH2 Indoor-A - 39~88	- 39~88 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.)	°C																										



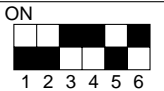

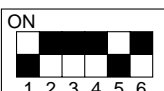
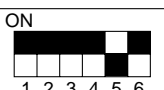
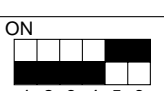
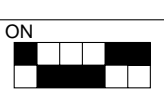
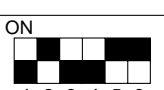
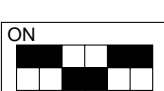


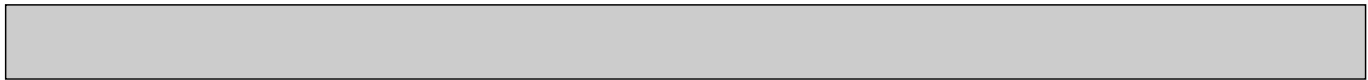
SW2 setting	Display detail	Explanation for display	Unit
	Indoor pipe temperature / Liquid TH2 Indoor-B – 35~88	– 35~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C
	Indoor pipe temperature / Liquid TH2 Indoor-C – 39~88	– 39~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C
	Indoor pipe temperature / Liquid TH2 Indoor-D – 39~88	– 39~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C
	Indoor pipe temperature / Liquid TH2 Indoor-E – 39~88	– 39~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C
	LEV-1 opening pulse 0~500	0~500	Pulse
	LEV-2 opening pulse 0~500	0~500	Pulse
	LEV-3 opening pulse 0~500	0~500	Pulse
	LEV-4 opening pulse 0~500	0~500	Pulse
	LEV-5 opening pulse 0~500	0~500	Pulse
	Outdoor pipe temperature / Cond./Eva. (TH6) – 39~88	– 39~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C
	Outdoor outside temperature (TH7) – 39~88	– 39~88 (When the temperature is 0°C or less, “–” and temperature are displayed by turns.)	°C

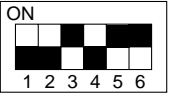

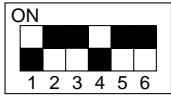
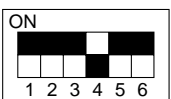
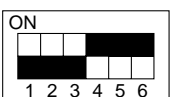


SW2 setting	Display detail	Explanation for display	Unit
	Outdoor heatsink temperature (TH8) – 40~200	– 40~200 (When the temperature is 0°C or less, “-” and temperature are displayed by turns.) (When the thermistor detects 100°C or more, hundreds digit, tens digit and ones digit are displayed by turns.)	°C
	LEV-6 opening pulse 0~500	0~500	Pulse
	LEV-7 opening pulse 0~500	0~500	Pulse
	LEV-8 opening pulse 0~500	0~500	Pulse
	High pressure × 10 (63HS) 0~500	0~500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)	kgf/cm <sup>2</sup>
	Input current 0~50	0~50	A
	Indoor pipe temperature / Cond. / Eva. TH5 Indoor-A	– 39~88	°C
	Indoor pipe temperature / Cond. / Eva. TH5 Indoor-B	– 39~88	°C
	Indoor pipe temperature / Cond. / Eva. TH5 Indoor-C	– 39~88	°C
	Indoor pipe temperature / Cond. / Eva. TH5 Indoor-D	– 39~88	°C
	Indoor pipe temperature / Cond. / Eva. TH5 Indoor-E	– 39~88	°C



SW2 setting	Display detail	Explanation for display	Unit
	Branch pipe temperature TH-A	- 39~88	℃
	Branch pipe temperature TH-B	- 39~88	℃
	Branch pipe temperature TH-C	- 39~88	℃
	Branch pipe temperature TH-D	- 39~88	℃
	Branch pipe temperature TH-E	- 39~88	℃
	TH1 Indoor-A 8~39	8~39	℃
	TH1 Indoor-B 8~39	8~39	℃
	TH1 Indoor-C 8~39	8~39	℃
	TH1 Indoor-D 8~39	8~39	℃
	TH1 Indoor-E 8~39	8~39	℃



SW2 setting	Display detail	Explanation for display	Unit
	Indoor - setting temperature 16~31 Indoor-A	16~31	℃
	Indoor - setting temperature 16~31 Indoor-B	16~31	℃
	Indoor - setting temperature 16~31 Indoor-C	16~31	℃
	Indoor - setting temperature 16~31 Indoor-D	16~31	℃
	Indoor - setting temperature 16~31 Indoor-E	16~31	℃

## 9-9. SELECTING FUNCTIONS USING THE REMOTE CONTROLLER

Each function can be set according to necessity 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.

(1) Functions available when setting the unit number to 00

※1 The functions table below are available only when P-series indoor unit and the wired remote controller is used.

※2 After the power supply returns, the indoor unit does not operate for 3 minutes (Some kind of indoor units operate for 30 seconds, after that, it stops for 3 minutes).

Above operation is normal.

<Table 1> Function selections

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		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		
Frost prevention temperature	2°C (Normal)	15	1	●	
	3°C		2		
Humidifier control	When the compressor operates, the humidifier also operates.	16	1	●	
	When the fan operates, the humidifier also operates.		2		

### Meaning of "Function setting"

Mode02:indoor temperature detecting

No	Indoor temperature(ta)=	Diagram	Initial setting	ta=(A+B)/2	ta=(A+B)/2	ta=A	ta=A
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 is 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

**External wiring procedure (Fig.1)**

Ⓔ Power supply: Single phase 220/230/240V, 50Hz 220V, 60Hz,  
Max. Permissible system Impedance : 0.22(Ω)

Note:

- ① Power supply input: Outdoor unit only. Connect the lines (C), (D) in accordance with the terminal block names to ensure correct polarity.
- ② As for lines (C), S1 and S2 are for connecting the power source. And S2 and S3 are for signals. S2 is a common cable for the power source and signal.

Wire diameter				Breaker	
(A) Main power line	(B) Earth line	(C) Signal line	(D) Signal line	Interrupting current	Performance characteristic
6.0mm <sup>2</sup>	6.0mm <sup>2</sup>	1.5mm <sup>2</sup> *1	1.5mm <sup>2</sup>	40A	40A, 30mA for 0.1sec. or less

When using twisted wire for the wiring, the use of round terminal is required.

\*1 Max 45m("Outdoor unit-Branch box #1" plus "branch box #1-Branch box #2"). If 2.5mm<sup>2</sup> used ,Max 55m.

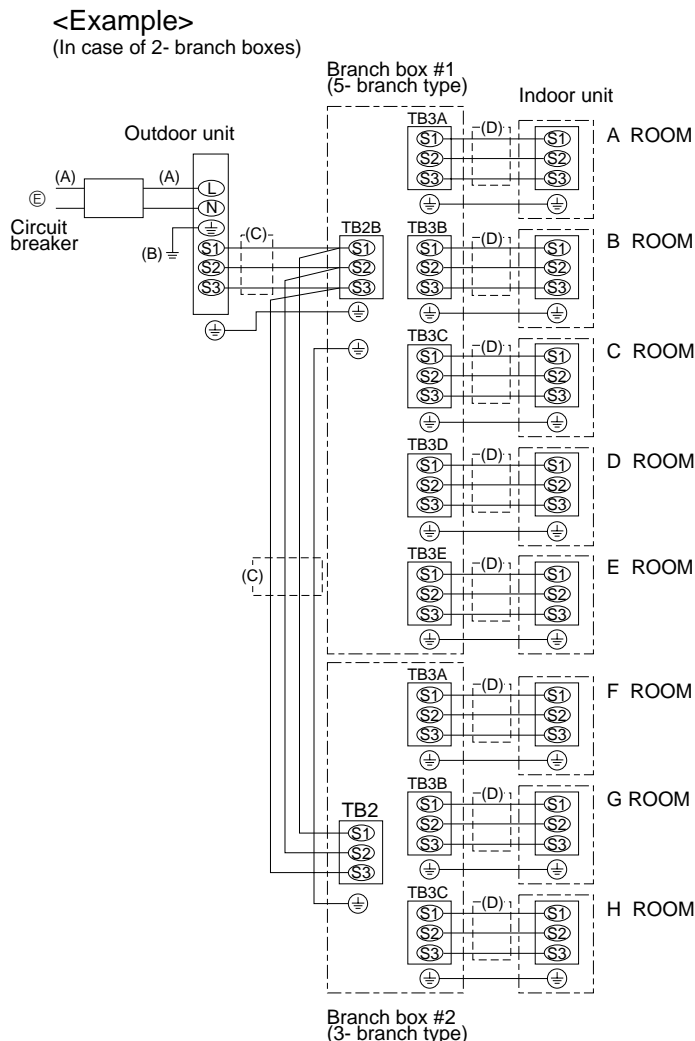
Notes: 1. Wiring size must comply with the applicable local and national code.

- 2. Power supply cords and Indoor unit/Branch box/Outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)
- 3. Install an earth line longer than power cables.

**⚠ Warning:**

There is high voltage potential on the S3 terminal caused by electrical circuit design that has no electrical insulation between power line and communication signal line. Therefore, please turn off the main power supply when servicing. And do not touch the S1, S2, S3 terminals when the power is energized. If isolator should be used between indoor unit, branch box and outdoor unit, please use 3-pole type.

Fig.1



**⚠ Warning:**

Be sure to connect the power supply cords and connecting wires for the indoor units, outdoor units, branch boxes directly to the units (no intermediate connections). Intermediate connections can lead to communication errors in the cords or wires and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point. (If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cords and wires.)

**IMPORTANT**  
Make sure that the current leakage breaker is one compatible with higher harmonics. Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter. The use of an inadequate breaker can cause the incorrect operation of inverter.

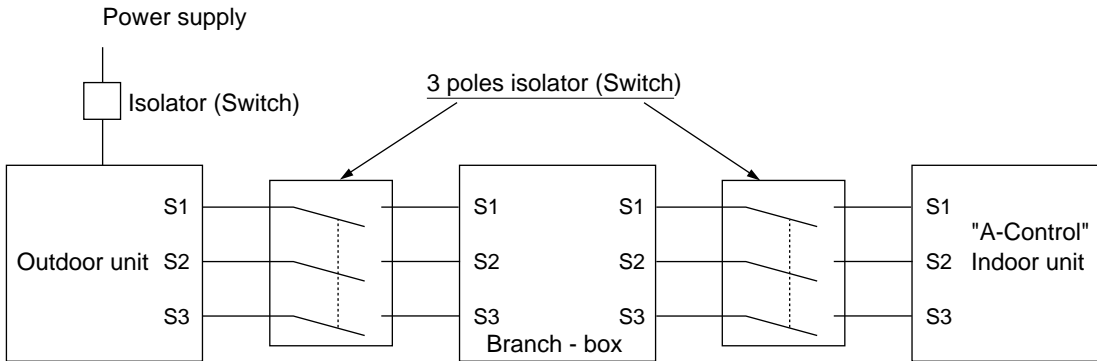


# 11

# WIRING SPECIFICATIONS

### ⚠ Warning:

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



### <CAUTION>

After using isolator, be sure to turn off and on the main power supply to reset the system. Otherwise, outdoor unit may not be able to detect the branch box(es) or indoor units.

### WIRING SPECIFICATIONS (OUTDOOR-BRANCH BOX CONNECTING CABLE)

Cross section of cable	Wire size (mm <sup>2</sup> )	Number of wires	Polarity	L (m) * 6
Round	2.5	3	Clockwise : S1-S2-S3 * Pay attention to stripe of yellow and green.	(50) * 2
Flat	2.5	3	Not applicable (Because center wire has no cover finish)	Not applicable * 5
Flat	1.5	4	From left to right : S1-Open-S2-S3	(45) * 3
Round	2.5	4	Clockwise : S1-S2-S3-Open * Connect S1 and S3 to the opposite angle.	(55) * 4

\* 1 : Power supply cords of appliances shall not be lighter than design 60245 IEC or 60227 IEC.

\* 2 : In case that cable with stripe of yellow and green is available.

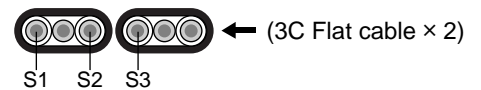
\* 3 : In case of regular polarity connection (S1-S2-S3), wire size is 1.5 mm<sup>2</sup>.

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

\* 5 : In the flat cables are connected as this picture, they can be used up to 55 m.

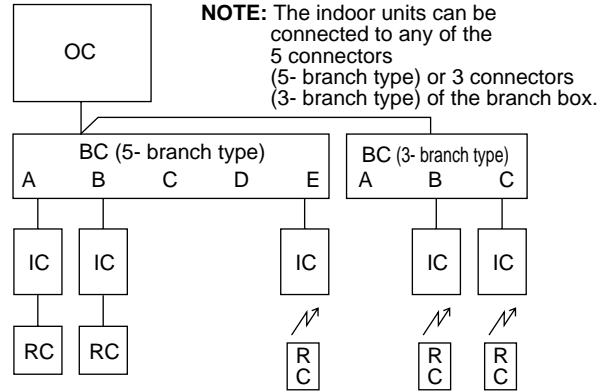
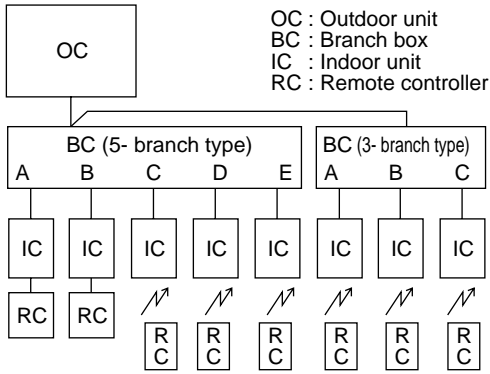
\* 6 : Mentioned cable length is just a reference value.

It may be different depending on the condition of installation, humidity or materials, etc.



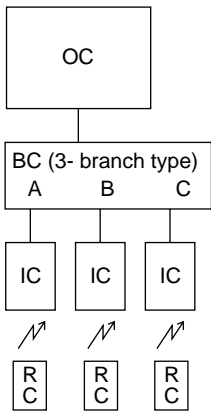
Be sure to connect the outdoor-branch box / indoor units-branch box connecting cables directly to the units (no intermediate connections). Intermediate connections can lead to communication errors if water enters the cables and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point. (If an intermediate connection is necessary, be sure to take measures to prevent water from entering the cables.)

12-1. BASIC SYSTEMS

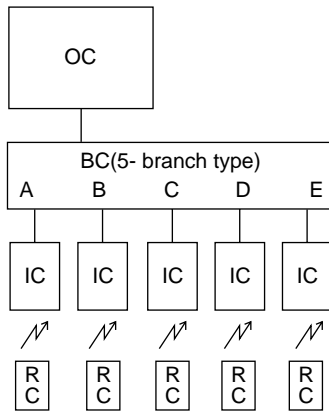


12-2. STANDARD SYSTEMS

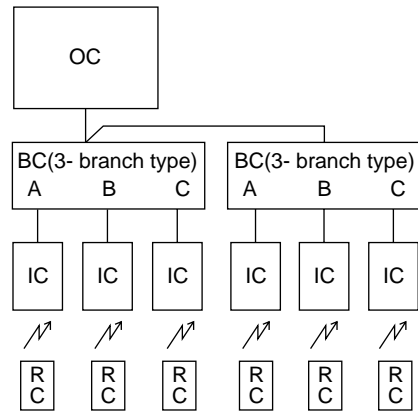
12-2-1. Only 3-branch type



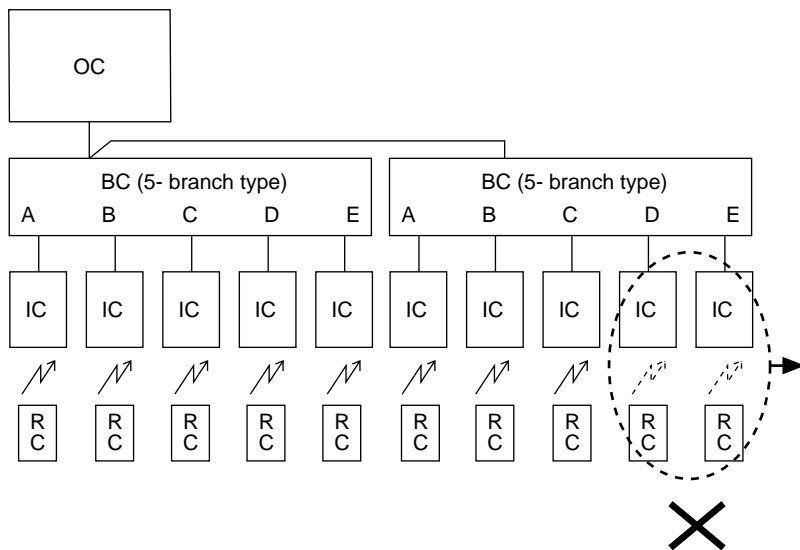
12-2-2. Only 5-branch type



12-2-3. 2-branch boxes (3-branch type)



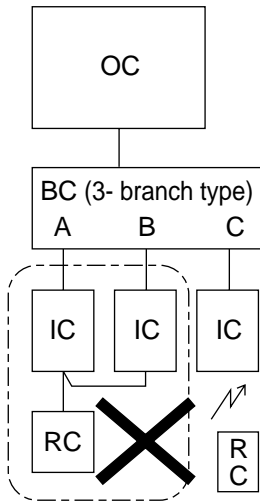
12-2-4. 2-branch boxes (5-branch type, maximum 8 indoor units)



1. Up to 2 branch boxes can be connected to a single outdoor unit.
2. Up to 8 indoor units can be connected to the system.

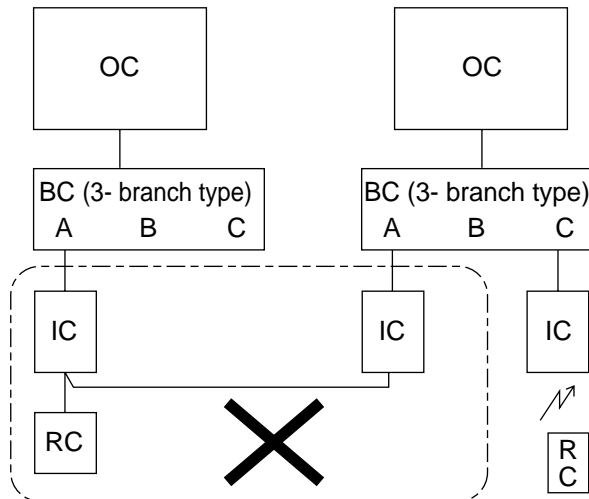
## 12-3. INCORRECT SYSTEMS

### 12-3-1. Group operation by single remote controller



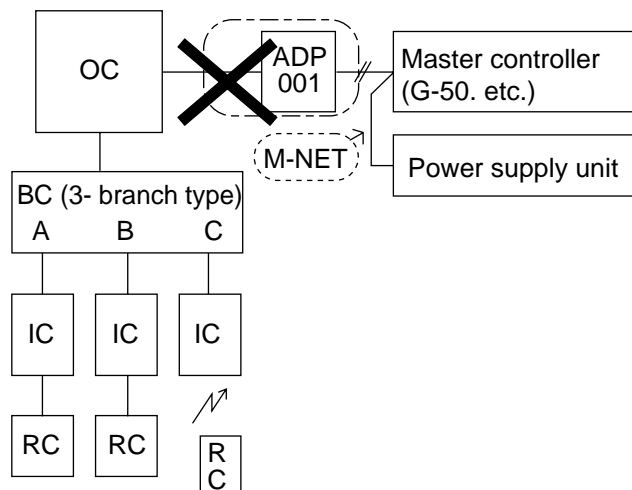
- Plural indoor units cannot be operated by a single remote controller.

### 12-3-2. Group operation between different refrigerant systems



- Different refrigerant systems cannot be connected together.

### 12-3-3. Connection of M-NET adapter to outdoor unit

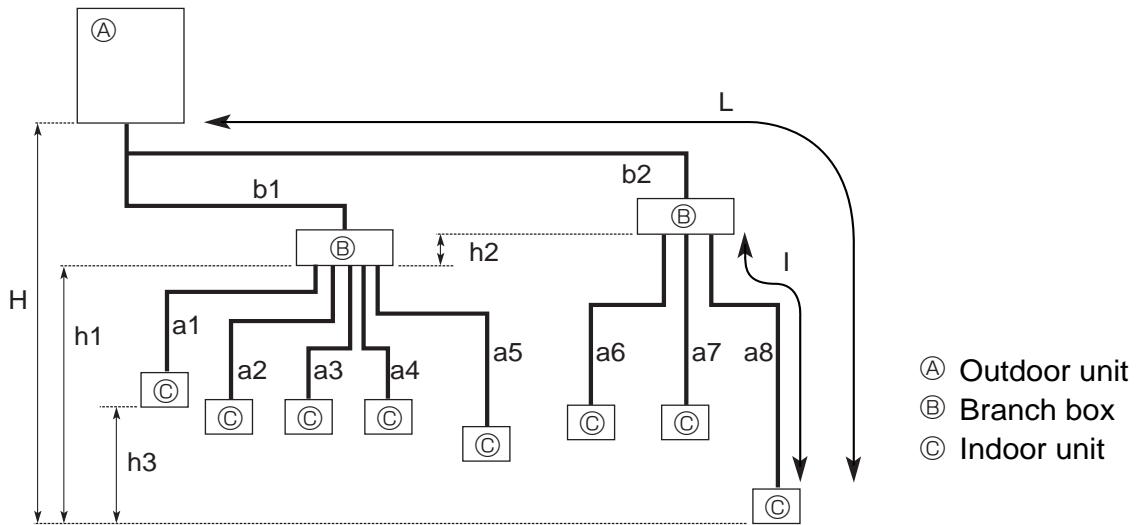


- A M-NET adapter cannot be connected to an outdoor unit.

# 13

# REFRIGERANT PIPING TASK

## 13-1. ADDITIONAL REFRIGERANT CHARGE



Permissible length (one-way)	Total piping length	$b1 + b2 + a1 + a2 + a3 + a4 + a5 + a6 + a7 + a8 \leq 115\text{m}$
	Farthest piping length (L)	$b2 + a8 \leq 70\text{m}$ ( $b2 \leq 55\text{m}$ , $a8 \leq 15\text{m}$ )
	Piping length between outdoor unit and branch boxes	$b1 + b2 \leq 55\text{m}$
	Farthest piping length after branch box (I)	$a8 \leq 15\text{m}$
	Total piping length between branch boxes and indoor units	$a1 + a2 + a3 + a4 + a5 + a6 + a7 + a8 \leq 60\text{m}$
Permissible height difference (one-way)	In indoor / outdoor section (H) *1	$H \leq 30\text{m}$ (In case of that outdoor unit is set higher than indoor unit) $H \leq 20\text{m}$ (In case of that outdoor unit is set lower than indoor unit)
	In branch box / indoor unit section (h1)	$h1 + h2 \leq 15\text{m}$
	In each branch unit (h2)	$h2 \leq 15\text{m}$
	In each indoor unit (h3)	$h3 \leq 12\text{m}$
Number of bends		$ b1 + a1 ,  b1 + a2 ,  b1 + a3 ,  b1 + a4 ,  b1 + a5 ,  b2 + a6 ,  b2 + a7 ,  b2 + a8  \leq 15$

\*1 Branch box should be placed with in the level between the outdoor unit and indoor units.

- Additional charging is not necessary for this unit if the total pipe length ( $b1 + b2 + a1 + a2 + a3 + a4 + a5 + a6 + a7 + a8$ ) does not exceed 40m.
- If the total pipe length exceeds 40 m, charge the unit with additional R410A refrigerant according to the permitted pipe lengths in the chart on the next page.

After charging the unit with refrigerant, note the added refrigerant amount on the service label (attached to the unit).

Refer to the "installation manual" for more information.

<Table 1>

Total piping length (b1+ b2 + a1+ a2 + a3 + a4 + a5 + a6 + a7 + a8)	40m or less	41 – 50m	51 – 70m	71 – 90m	91 – 115m
Additional refrigerant charging amount	0kg (no need)	0.6kg	1.4kg	2.2kg	3.2kg
<b>* Reference (for service)</b> The amount of refilling refrigerant charge	8.5kg (8.5 + 0)	9.1kg (8.5 + 0.6)	9.9kg (8.5 + 1.4)	10.7kg (8.5 + 2.2)	11.7kg (8.5 + 3.2)

If connecting an indoor unit with  $\phi 9.52$  liquid pipes (model number 71 or more for M-and S-series and model number 60 or more for P-series), the additional refrigerant charging amount in Table 1 must be corrected (add the following  $\Delta R$  value from the value given in Table 1).

Additional refrigerant charging correction amount  
 $\Delta R = 0.01 \text{ [kg/m]} \times \phi 9.52 \text{ branch pipe (liquid pipe) total length [m]}$

Example) b1 = 20m, b2 = 25m

Indoor unit A	$\phi 9.52$ liquid pipe	a1 = 12m
Indoor unit B	$\phi 6.35$ liquid pipe	a2 = 11m
Indoor unit C	$\phi 6.35$ liquid pipe	a6 = 14m
Indoor unit D	$\phi 9.52$ liquid pipe	a7 = 13m

Total piping length : b1 + b2 + a1 + a2 + a6 + a7 = 95m  
 → According to Table 1, the additional refrigerant charging amount is 3.2kg.  
 Because indoor units with  $\phi 9.52$  liquid pipes are connected (indoor units A and D in this example), the additional refrigerant charging amount must be corrected.

Additional refrigerant charging correction amount  
 $\Delta R = 0.01 \text{ [kg/m]} \times \phi 9.52 \text{ branch pipe (liquid pipe) total length (a1 + a7)}$   
 $= 0.01 \times (12 + 13\text{m})$   
 $= 0.25\text{kg}$

Therefore, the additional refrigerant charging amount is 3.2kg + 0.25kg = 3.45kg.

\* Reference  
 The refilling amount of refrigerant at servicing

Example) 3.45 + 8.5 = 11.95kg  
 The amount of refrigerant of initial charge (8.5kg) is added.

**Refrigerant collection when relocating the indoor and outdoor units (Pump down)**

- ① Connect gauge manifold valve (pressure gauge included) to the service port near the gas stop valve of the outdoor unit so that the refrigerant pressure can be measured.
- ② Turn on the power supply (circuit breaker).
- ③ Close the liquid stop valve, and then perform the test run for cooling operation (SW4-1 : ON and SW4-2 : OFF).  
 NOTE: Be sure to wait at least 3 minutes after turning on the power supply before setting SW4-1 and SW4-2.  
 If the DIP switches are set before 3 minutes has elapsed, the test run may not start.
- ④ Fully close the gas stop valve when the pressure reading on the gauge drops to 0.05–0.00MPa\* (approximately 0.5–0.0 kg/cm<sup>2</sup>)  
 \* If too much refrigerant has been added to the air conditioner system, the pressure may not drop to 0.5 kg/cm<sup>2</sup>. If this occurs, use a refrigerant collecting device to collect all of the refrigerant in the system, and then recharge the system with the correct amount of refrigerant after the indoor and outdoor units have been relocated.
- ⑤ Stop the air conditioner operation (SW4-1 : OFF and SW4-2 : OFF).
- ⑥ Turn off the power supply (circuit breaker).

## 13-2. PRECAUTIONS AGAINST REFRIGERANT LEAKAGE

### 13-2-1. Introduction

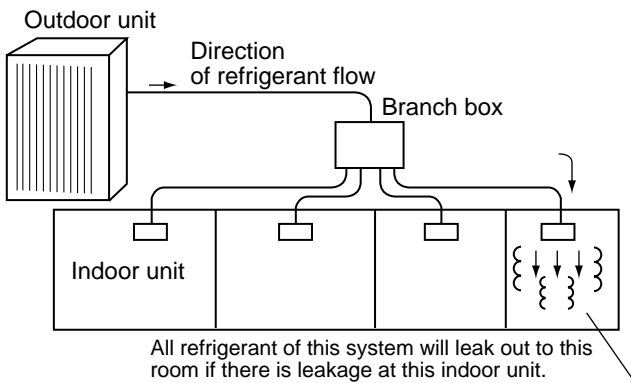
R410A refrigerant of this air conditioner is non-toxic and non-flammable but leaking of large amount from an indoor unit into the room where the unit is installed may be deleterious.

To prevent possible injury, the rooms should be large enough to keep the R410A concentration specified by KHK: (a high pressure gas safety association) installation guidelines S0010 as follows.

Maximum concentration  
Maximum refrigerant concentration of R410A of a room is  $0.3 \text{ kg/m}^3$  accordance with the installation guidelines. To facilitate calculation, the maximum concentration is expressed in units of  $\text{kg/m}^3$  ( kg of R410A per  $\text{m}^3$ )

Maximum concentration of R410A:  $0.3 \text{ kg/m}^3$

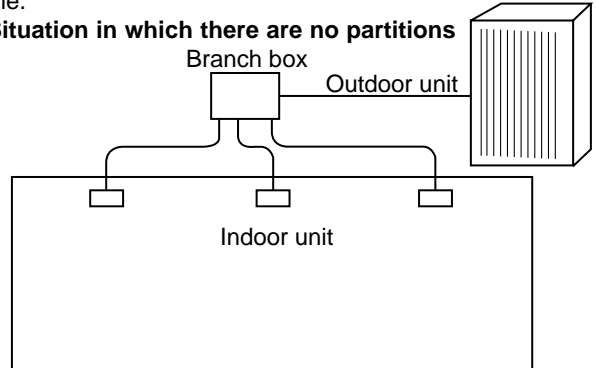
(KHK installation guidelines S0010)



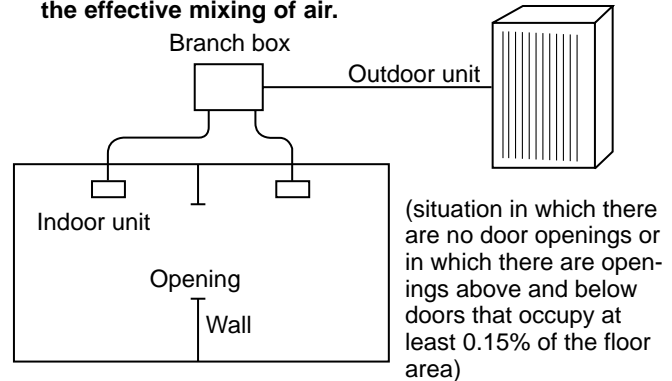
### (2) Calculate room volumes ( $\text{m}^3$ ) and find the room with the smallest volume

The part with  represents the room with the smallest volume.

#### (a) Situation in which there are no partitions



#### (b) There are partitions, but there are openings that allow the effective mixing of air.



### 13-2-2. Confirming procedure of R410A concentration

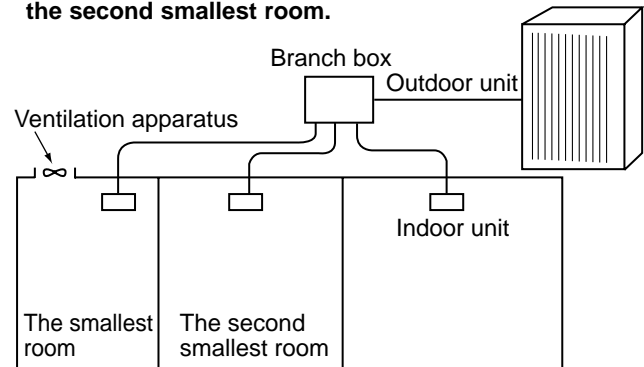
Follow (1) to (3) to confirm the R410A concentration and take appropriate treatment, if necessary.

#### (1) Calculate total refrigerant amount by each refrigerant system.

Total refrigerant amount is precharged refrigerant at ex-factory plus additional charged amount at field installation.

Note:  
When single refrigeration system is consists of several independent refrigeration circuit, figure out the total refrigerant amount by each independent refrigerant circuit.

#### (c) If the smallest room has mechanical ventilation apparatus that is linked to a household gas detection and alarm device, the calculations should be performed for the second smallest room.



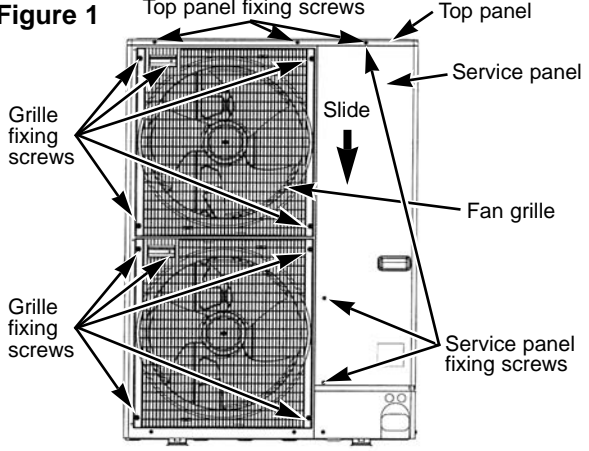
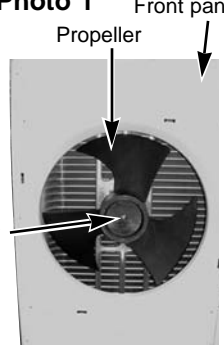
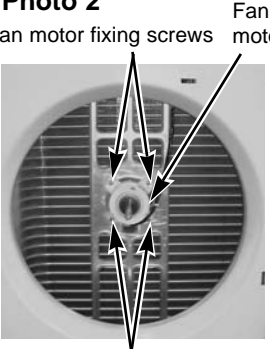
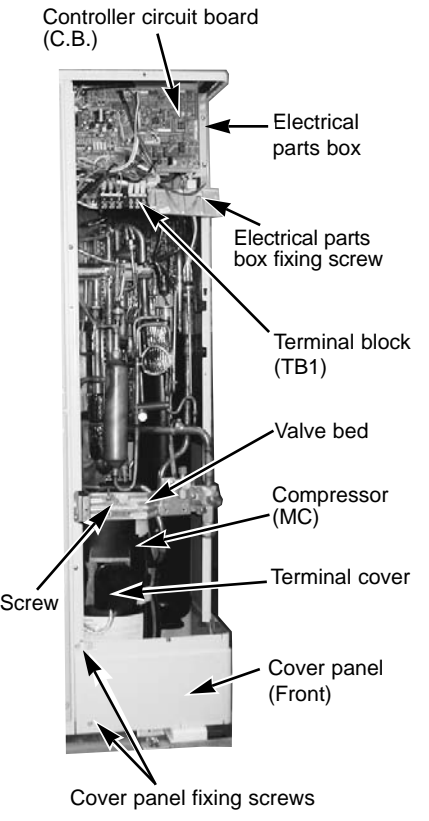
### (3) Use the results of calculations (1) and (2) to calculate the refrigerant concentration:

$$\frac{\text{Total refrigerant in the refrigerating unit (kg)}}{\text{The smallest room in which an indoor unit has been installed (m}^3\text{)}} \leq \text{Maximum concentration (kg/m}^3\text{)}$$

Maximum concentration of R410A:  $0.3 \text{ kg/m}^3$

If the calculation results do not exceed the maximum concentration, perform the same calculations for the larger second and third room, etc., until it has been determined that the maximum concentration does not exceed in each room.

OUTDOOR UNIT : MXZ-8A140VA/ MXZ-8A140VA<sub>1</sub>/ MXZ-8A140VA<sub>2</sub>/ MXZ-8A140VA<sub>3</sub>

OPERATING PROCEDURE	PHOTOS & ILLUSTRATION
<p><b>1. Removing the service panel and top panel</b></p> <ol style="list-style-type: none"> <li>(1) Remove 3 service panel fixing screws (5 X 10) and slide the hook on the right downward to remove the service panel.</li> <li>(2) Remove screws (3 for front, 3 for rear/5 X 10) of the top panel and remove it.</li> </ol>	<p><b>Figure 1</b></p> 
<p><b>2. Removing the fan motor (MF1, MF2)</b></p> <ol style="list-style-type: none"> <li>(1) Remove the service panel. (See figure 1.)</li> <li>(2) Remove the top panel. (See figure 1.)</li> <li>(3) Remove 5 fan grille fixing screws (5 X 10) to detach the fan grille. (See figure 1.)</li> <li>(4) Remove a nut (for right handed screw of M6) to detach the propeller. (See photo 1.)</li> <li>(5) Disconnect the connectors, CNF1 and CNF2 on controller circuit board in electrical parts box.</li> <li>(6) Remove 4 fan motor fixing screws (5 X 25) to detach the fan motor. (See photo 2.)</li> </ol>	<p><b>Photo 1</b></p>  <p><b>Photo 2</b></p> 
<p><b>3. Removing the electrical parts box</b></p> <ol style="list-style-type: none"> <li>(1) Remove the service panel. (See figure 1.)</li> <li>(2) Remove the top panel. (See figure 1.)</li> <li>(3) Disconnect the indoor/outdoor connecting wire from terminal block.</li> <li>(4) Remove all the following connectors from controller circuit board; fan motor, thermistor &lt;Outdoor pipe&gt;, thermistor &lt;Discharge&gt;, thermistor &lt;Outdoor 2-phase pipe&gt;, thermistor &lt;Outdoor&gt;, high pressure switch, high pressure sensor, low pressure switch, solenoid valve coil &lt;4-way valve&gt; and solenoid valve coil &lt;Hot gas bypass&gt;, solenoid valve coil &lt;Returning oil bypass&gt;. Then remove a screw (4 X 8) from the valve bed to remove the lead wire. Pull out the disconnected wire from the electrical parts box. &lt;Diagram symbol in the connector housing&gt; <ul style="list-style-type: none"> <li>• Fan motor (CNF1, CNF2)</li> <li>• Thermistor &lt;Outdoor pipe&gt; (TH3)</li> <li>• Thermistor &lt;Discharge&gt; (TH4)</li> <li>• Thermistor &lt;Outdoor 2-phase pipe, Outdoor&gt; (TH7/6)</li> <li>• High pressure switch (63H)</li> <li>• High pressure sensor (63HS)</li> <li>• Low pressure switch (63L)</li> <li>• Solenoid valve coil &lt;4-way valve&gt; (21S4)</li> <li>• Solenoid valve coil &lt;Bypass valve&gt; (SV1)</li> <li>• Solenoid valve coil (Returning oil bypass) &lt;Bypass valve&gt; (SV2)</li> </ul> </li> <li>(5) Remove the terminal cover and disconnect the compressor lead wire.</li> <li>(6) Remove an electrical parts box fixing screw (4 X 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.</li> </ol>	<p><b>Photo 3</b></p> 

## OPERATING PROCEDURE

### 4. Removing the thermistor <Outdoor 2-phase pipe> (TH6)

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Disconnect the connectors, TH6 and TH7 (red), on the controller circuit board in the electrical parts box.
- (4) Loosen the clamp for the lead wire in the rear of the electrical parts box.
- (5) Pull out the thermistor <Outdoor 2-phase pipe> (TH6) from the sensor holder.

Note: In case of replacing thermistor <Outdoor 2-phase pipe> (TH6), replace it together with thermistor <Outdoor> (TH7) since they are combined together. Refer to No.5 below to remove thermistor <Outdoor>.

### 5. Removing the thermistor <Outdoor> (TH7)

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Disconnect the connector TH7 (red) on the controller circuit board in the electrical parts box.
- (4) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See photo 4.)
- (5) Pull out the thermistor <Outdoor> (TH7) from the sensor holder.

Note: In case of replacing thermistor <Outdoor> (TH7), replace it together with thermistor <Outdoor 2-phase pipe> (TH6), since they are combined together. Refer to No.4 above to remove thermistor <Outdoor 2-phase pipe>.

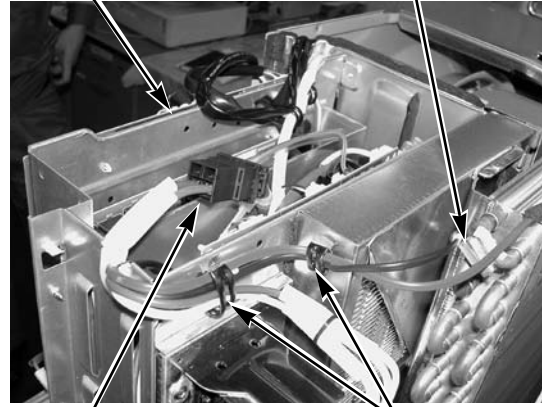
### 6. Removing the thermistor <Outdoor pipe> (TH3) and thermistor <Discharge> (TH4)

- (1) Remove the service panel. (See figure 1.)
- (2) Disconnect the connectors, TH3 (white) and TH4 (white), on the controller circuit board in the electrical parts box.
- (3) Loosen the clamp for the lead wire in the rear of the electrical parts box. (See photo 4.)
- (4) Pull out the thermistor <Outdoor pipe> (TH3) and thermistor <Discharge> (TH4) from the sensor holder.

## PHOTOS

Photo 4

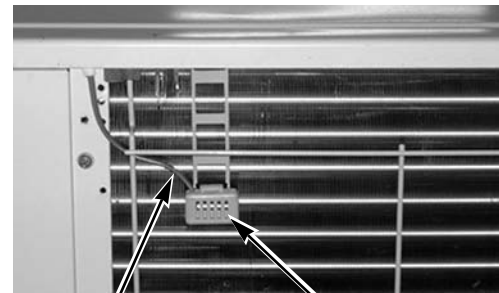
Thermistor <Outdoor 2-phase pipe> (TH6)  
Controller circuit board (C.B.)



\* This connector is not equipped with MXZ-8A140VA<sub>1</sub>/VA<sub>2</sub>/VA<sub>3</sub>.

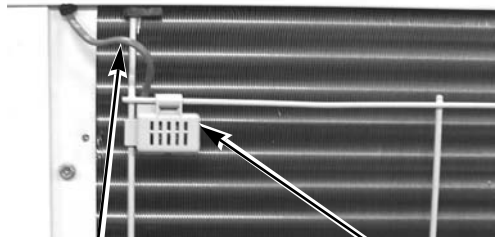
Photo 5

MXZ-8A140VA<sub>1</sub>/VA<sub>2</sub>



Lead wire of thermistor <Outdoor> (TH7) Sensor holder

MXZ-8A140VA<sub>3</sub>



Lead wire of thermistor <Outdoor> (TH7) Sensor holder

Photo 6

Thermistor <Outdoor pipe> (TH3)



Compressor (MC) Thermistor <Discharge> (TH4)



## OPERATING PROCEDURE

### 7. Removing the solenoid valve coil <4-way valve> (21S4)

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)

#### [Removing the solenoid valve coil <4-way valve>]

- (3) Remove 4-way valve solenoid coil fixing screw (M5 X 6 for MXZ-8A140VA<sub>(1)</sub>, M4 X 6 for MXZ-8A140VA<sub>(2/3)</sub>).
- (4) Remove the solenoid valve coil <4-way valve> by sliding the coil toward you.
- (5) Disconnect the connector 21S4 (green) on the controller circuit board in the electrical parts box.

### 8. Removing the 4-way valve

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Remove 3 valve bed fixing screws (4 X 10) and 4 ball valve and stop valve fixing screws (5 X 16) and then remove the valve bed.
- (4) Remove 4 right side panel fixing screws (5 X 10) in the rear of the unit and then remove the right side panel.
- (5) Remove the solenoid valve coil <4-way valve>. (See photo 7.)
- (6) Recover refrigerant.
- (7) Remove the welded part of 4-way valve.

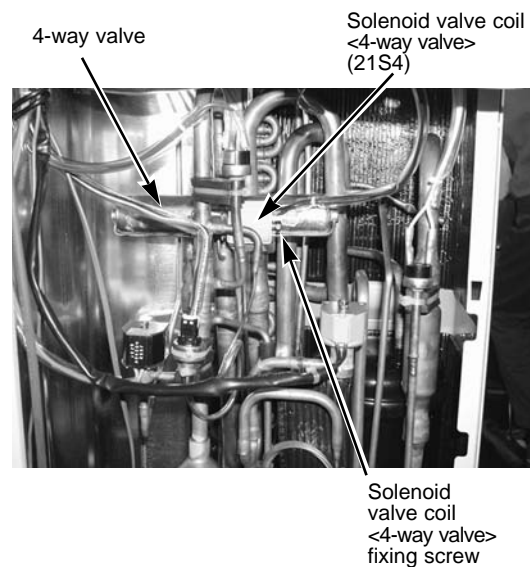
Note 1: Recover refrigerant without spreading it in the air.

Note 2: The welded part can be removed easily by removing the right side panel.

Note 3: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.

## PHOTOS

Photo 7



## OPERATING PROCEDURE

### 9. Removing solenoid valve coil <Bypass valve> (SV1) and bypass valve

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Remove the electrical parts box. (See photo 4.)
- (4) Remove 3 right side panel fixing screws (5 X 10) in the rear of the unit and remove the right side panel.
- (5) Remove the bypass valve coil fixing screw (M4 X 6).
- (6) Remove the solenoid valve coil <Bypass valve> (SV1) by sliding the coil upward.
- (7) Recover refrigerant.
- (8) Remove the welded part of bypass valve.

Note 1: Recover refrigerant without spreading it in the air.  
Note 2: The welded part can be removed easily by removing the right side panel.

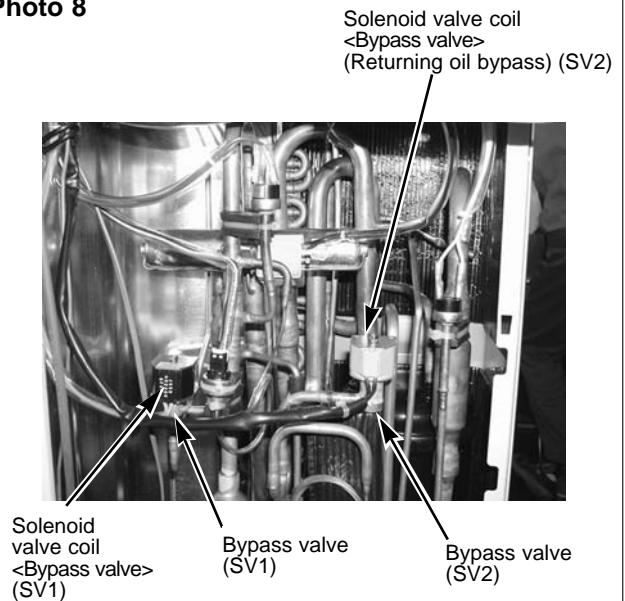
### 10. Removing solenoid valve coil (Returning oil bypass) <Bypass valve> (SV2) and bypass valve

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Remove the electrical parts box. (See photo 4.)
- (4) Remove 3 right side panel fixing screws (5 X 10) in the rear of the unit and remove the right side panel.
- (5) Remove the bypass valve coil fixing screw (M5 X 6).
- (6) Remove the solenoid valve coil (Returning oil bypass) <Bypass valve> (SV2) by sliding the coil upward.
- (7) Recover refrigerant.
- (8) Remove the welded part of bypass valve.

Note 1: Recover refrigerant without spreading it in the air.  
Note 2: The welded part can be removed easily by removing the right side panel.

## PHOTOS

Photo 8



## OPERATING PROCEDURE

### 11. Removing the high pressure switch (63H) and low pressure switch (63L)

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Remove the electrical parts box. (See photo 4.)
- (4) Remove 3 right side panel fixing screws (5 × 10) in the rear of the unit and remove the right side panel.
- (5) Pull out the lead wire of high pressure switch and low pressure switch.
- (6) Recover refrigerant.
- (7) Remove the welded part of high pressure switch and low pressure switch.

Note 1: Recover refrigerant without spreading it in the air.

Note 2: The welded part can be removed easily by removing the right side panel.

Note 3: When installing the high pressure switch and low pressure switch, cover them with a wet cloth to prevent them from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.

### 12. Removing the high pressure sensor (63HS)

- (1) Remove the service panel. (See figure 1.)
- (2) Remove the top panel. (See figure 1.)
- (3) Remove the electrical parts box. (See photo 4.)
- (4) Remove 3 right side panel fixing screws (5 × 10) in the rear of the unit and remove the right side panel.
- (5) Pull out the lead wire of high pressure sensor.
- (6) Recover refrigerant.
- (7) Remove the welded part of high pressure sensor.

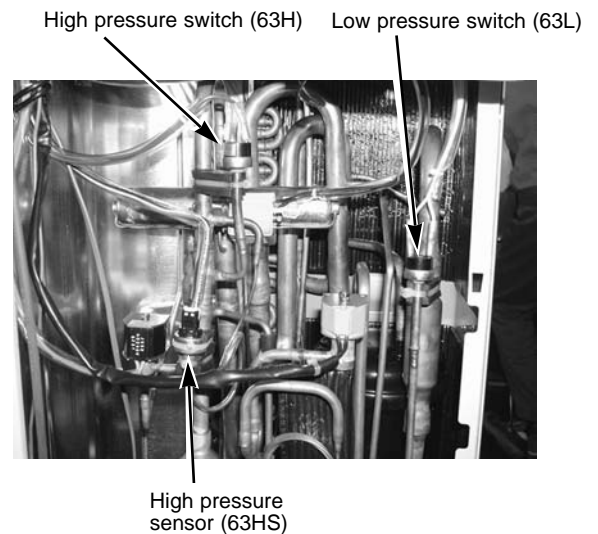
Note 1: Recover refrigerant without spreading it in the air.

Note 2: The welded part can be removed easily by removing the right side panel.

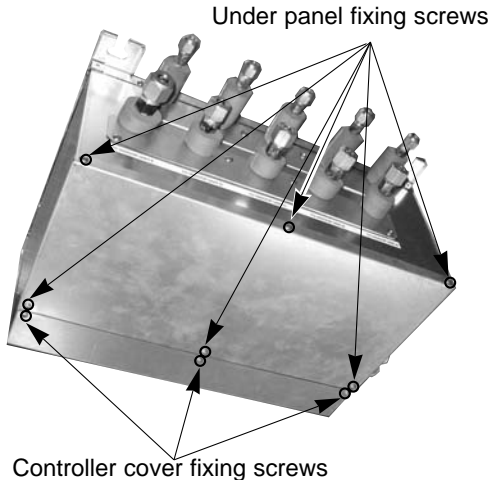
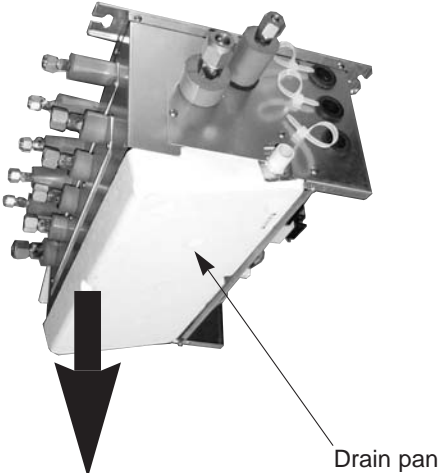
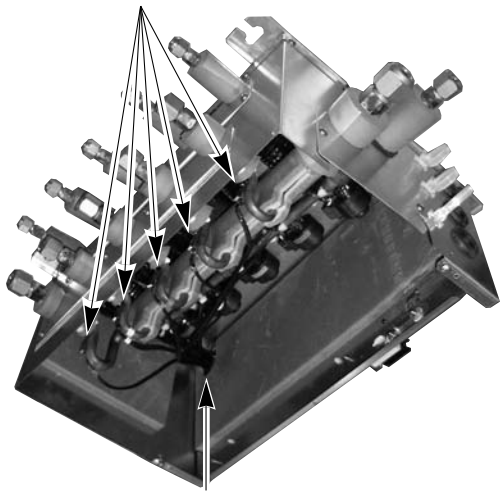
Note 3: When installing the high pressure sensor, cover it with a wet cloth to prevent it from heating (100°C or more), then braze the pipes so that the inside of pipes are not oxidized.

## PHOTOS

Photo 9



## BRANCH BOX : PAC-AK50BC PAC-AK30BC

OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the controller cover and under panel</b></p> <p>(1) Remove 3 controller cover fixing screws (4 × 10) to detach the cover. (See photo 1.)</p> <p>(2) Remove 6 under panel fixing screws (4 × 10) to remove the panel. (See photo 1.)</p>	<p><b>Photo 1</b></p>  <p>Under panel fixing screws</p> <p>Controller cover fixing screws</p>
<p><b>2. Removing the drain pan</b></p> <p>(1) Remove the under panel. (See photo 1.)</p> <p>(2) Remove the drain hose.</p> <p>(3) Incline the side of the drain pan that faces the piping to remove the pan.</p> <p>※ When removing the drain pan, be careful with remaining water on the pan.</p> <p>Also, be careful not to make cracks on the pan.</p>	<p><b>Photo 2</b></p>  <p>Drain pan</p>
<p><b>3. Removing the thermistors (TH-A-E)</b></p> <p>(1) Remove the controller cover. (See photo 1.)</p> <p>(2) Remove the under panel. (See photo 1.)</p> <p>(3) Pull out the thermistors, TH-A-E, from the sensor holders mounted on the gas pipe. (See photo 3.)</p> <p>(4) Pull out those thermistors through the U-shaped hole to the board side.</p> <p>(5) Loosen the side clamps of the board and disconnect the connectors on the board.</p>	<p><b>Photo 3</b></p>  <p>Sensor holder</p> <p>U-shaped hole</p>

## OPERATING PROCEDURE

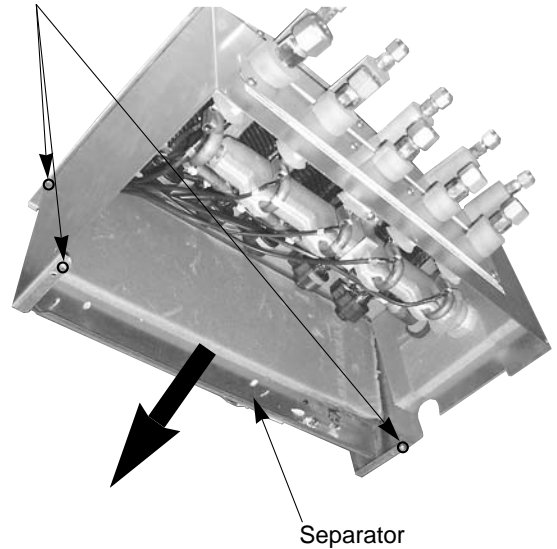
### 4. Removing the LEV coil (LEV-A-E)

- (1) Remove the controller cover. (See photo 1.)
- (2) Remove the under cover. (See photo 1.)
- (3) Remove 4 separator fixing screws (4 × 10) in the side of the branch box. (See photo 4.)
- (4) Tilt the separator to the board side. (See photo 4.)
- (5) Loosen the side clamps of the board and disconnect the connectors on the board.
- (6) Pull out the lead wire through the U-shaped hole. (See photo 3.)
- (7) Cut the band that fixes the lead wire to pull out the LEV coil (LEV-A-E). (See photo 5.)

## PHOTOS

**Photo 4**

Separator fixing screws



**Photo 5**

Separator

LEV coil



Band

# 15

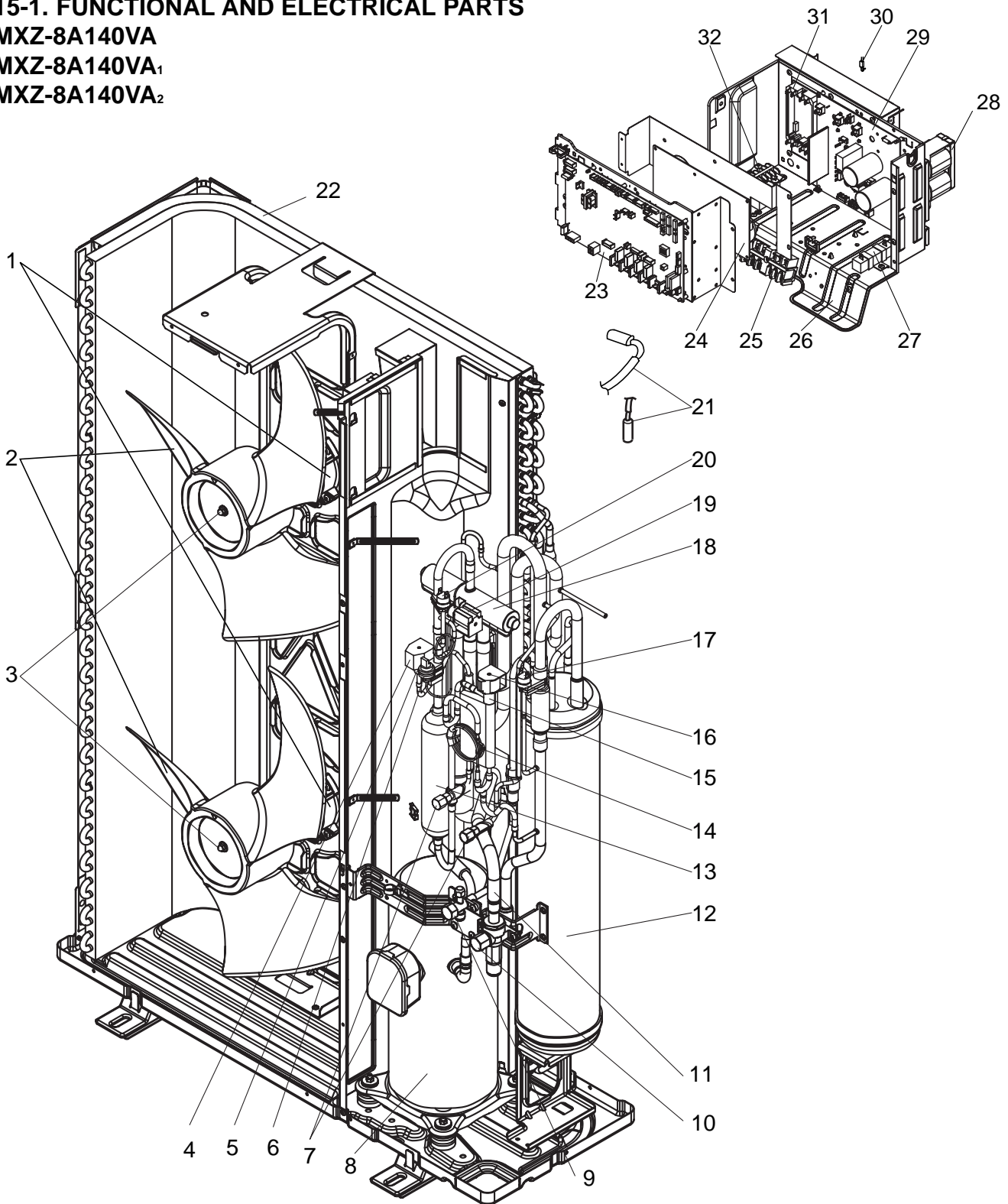
## PARTS LIST (non-RoHS compliant)

### 15-1. FUNCTIONAL AND ELECTRICAL PARTS

MXZ-8A140VA

MXZ-8A140VA<sub>1</sub>

MXZ-8A140VA<sub>2</sub>

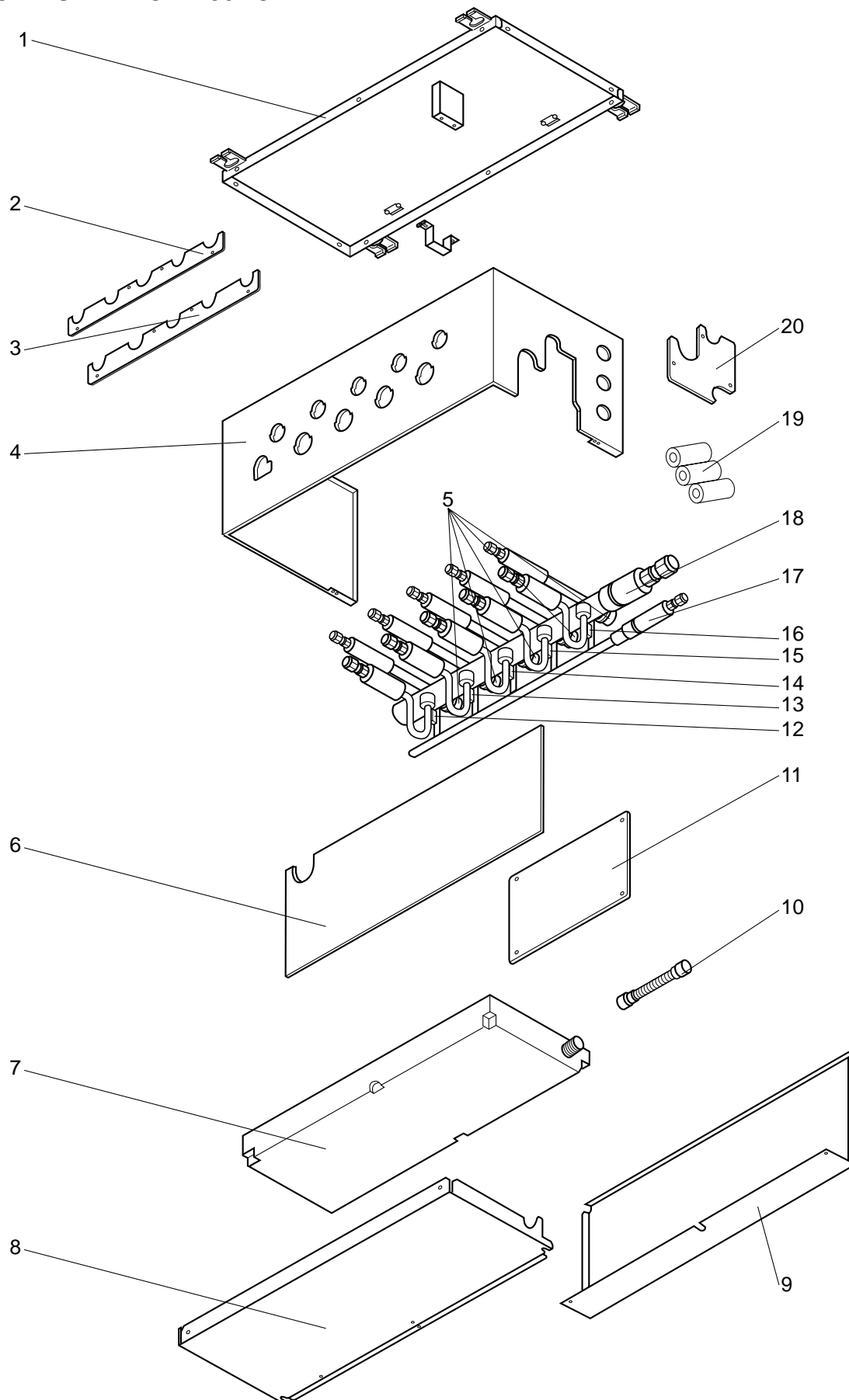


No.	Part No.			Part Name	Specification	Q'ty/set			Remarks	Wiring Diagram Symbol	Recommended Q'ty
						MXZ-8A140					
						VA	VA <sub>1</sub>	VA <sub>2</sub>			
1	R01	E41	221	FAN MOTOR		2	2			MF1, MF2	
	R01	E44	221	FAN MOTOR				2		MF1, MF2	
2	R01	E01	115	PROPELLER		2	2	2			
3	R01	E02	097	NUT		2	2	2			
4	T7W	E08	242	SOLENOID VALVE COIL		1	1	1		SV1	

Part numbers that are circled are not shown in the figure.

No.	Part No.				Part Name	Specification	Q'ty/set			Remarks	Wiring Diagram Symbol	Recommended Q'ty
							MXZ-8A140					
							VA	VA <sub>1</sub>	VA <sub>2</sub>			
5	T7W	E05	428	SOLENOID VALVE (SV1)		1	1			SV1		
	R01	E12	428					1			SV1	
6	T7W	E04	208	HIGH PRESSURE SENSOR		1	1	1		63HS		
7	R01	E06	413	CHARGE PLUG		2	2	2				
8	T97	410	742	COMPRESSOR	ANB33FDCMT	1	1	1		MC		
9	R01	E09	410	STOP VALVE	3/8	1	1	1				
10	T7W	E05	411	BALL VALVE	5/8	1	1					
	R01	E09	411		5/8			1				
11	R01	E03	450	STRAINER		1	1	1				
12	T7W	E14	440	ACCUMULATOR		1	1					
	R01	E34	440					1				
13	T7W	E01	490	OIL SEPARATOR		1	1					
	R01	E09	490					1				
14	R01	E22	425	CAPILLARY TUBE	2.5 × 0.8 × 1000	1	1	1				
15	R01	E03	428	SOLENOID VALVE (SV2)		1	1					
	R01	E11	428					1				
16	T7W	E00	242	SOLENOID VALVE COIL		1	1			SV2		
	T7W	E10	242					1			SV2	
17	R01	25T	209	LOW PRESSURE SWITCH		1	1	1		63L		
18	R01	E06	403	FOUR-WAY VALVE		1						
	R01	E24	403				1					
	R01	E26	403					1				
19	T7W	A01	242	SOLENOID VALVE COIL		1	1			21S4		
	T7W	E29	242	(FOUR-WAY VALVE)				1		21S4		
20	T7W	E02	208	HIGH PRESSURE SWITCH		1	1			63H		
	R01	E04	208					1			63H	
21	R01	E75	202	THERMISTOR		1				TH6,TH7		
	T7W	E43	202	(OUTDOOR 2PHASE PIPE, OUTDOOR)			1	1		TH6,TH7		
22	R01	E78	408	HEAT EXCHANGER		1	1	1				
23	T7W	E24	315	CONTROLLER CIRCUIT BOARD		1	1			C.B.		
	R01	H77	310					1			C.B.	
24	T7W	E07	346	NOISE FILTER CIRCUIT BOARD		1				N.F.		
	T7W	E14	346				1	1			N.F.	
25	T7W	E16	716	TERMINAL BLOCK	6P(L,N,⊙,S1,S2,S3)	1	1	1		TB1		
26	-			ELECTRICAL PARTS BOX		1	1	1	(BK00B055G26)			
27	T7W	E01	234	RESISTOR		1	1	1		RS		
28	T7W	E03	259	REACTOR		1	1			DCL		
	T7W	E09	259					1			DCL	
29	T7W	E12	313	POWER CIRCUIT BOARD		1				P.B.		
	T7W	E26	313				1	1			P.B.	
30	R01	E65	202	THERMISTOR (HEATSINK)		1	1	1		TH8		
31	T7W	E00	233	ACTIVE FILTER MODULE		1	1			ACTM		
	T7W	E01	233					1			ACTM	
32	T7W	E02	259	RELAY		1	1	1		52C		
33	T7W	520	239	FUSE	250V 6.3A	4	4			FUSE1~4		
	R01	E02	239		250V 6.3A			4		FUSE1~4		
34	T7W	E05	254	MAIN SMOOTHING CAPACITOR		1	1			CE		
	T7W	E09	254					1			CE	
35	R01	E00	201	THERMISTOR (DISCHARGE)		1	1	1		TH4		
36	R01	E66	202	THERMISTOR (OUTDOOR PIPE)		1	1	1		TH3		
37	R01	E21	425	CAPILLARY TUBE (SV2)	4 × 2.4 × 250	1	1	1				

**15-2. FUNCTIONAL PARTS**  
**BRANCH BOX : PAC-AK50BC**

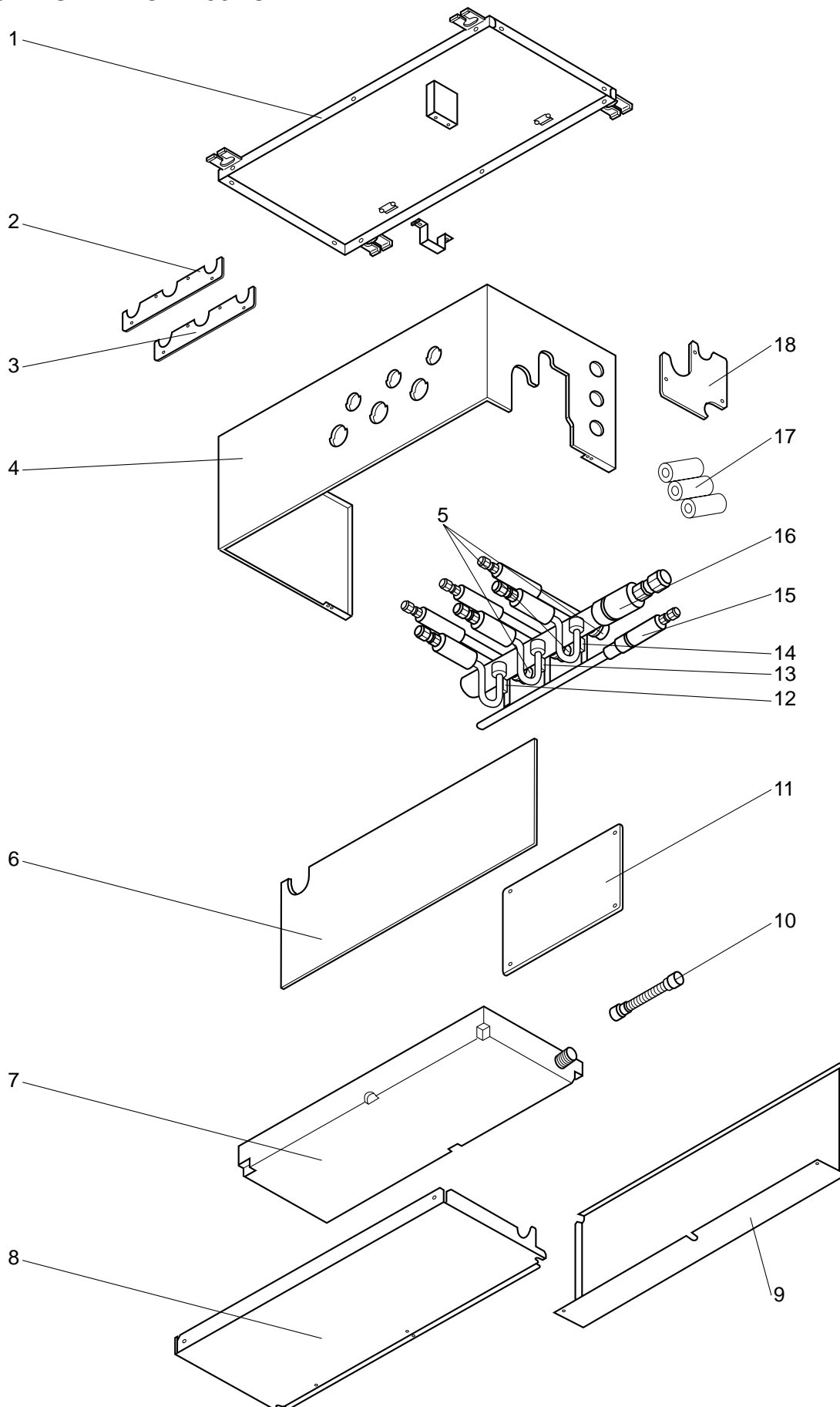




Part numbers that are circled are not shown in the figure.

No.	Part No.	Part Name	Specification	Q'ty/set	Remarks	Wiring Diagram Symbol	Recommended Q'ty
				PAC-AK50BC			
1	T7W E04 641	TOP PANEL		1			
2	T7W E05 689	COVER-L		1			
3	T7W E07 689	COVER-G		1			
4	T7W E13 661	SIDE PANEL		1			
5	R01 E16 242	LEV COIL		5		LEV-A-E	
6	-	SEPARATOR		1	(RG02N539G06)		
7	T7W E18 529	DRAIN PAN		1			
8	T7W E01 669	UNDER PANEL		1			
9	T7W E04 689	CONTROLLER COVER		1			
10	T7W E01 527	DRAIN HOSE		1			
11	R01 H48 310	CONTROLLER BOARD		1		B.C	
12	T7W E38 202	THERMISTOR-A		1		TH-A	
13	T7W E39 202	THERMISTOR-B		1		TH-B	
14	T7W E40 202	THERMISTOR-C		1		TH-C	
15	T7W E41 202	THERMISTOR-D		1		TH-D	
16	T7W E42 202	THERMISTOR-E		1		TH-E	
17	T7W E13 401	LEV ASSY		1			
18	T7W E01 419	HEADER-G ASSY		1			
19	T7W E00 660	PIPE COVER (SET)		1			
20	T7W E09 689	COVER-U		1			
⑳	T7W E14 716	TERMINAL BLOCK	3P(S1, S2, S3)	1		TB2B	
㉑	T7W E23 716	TERMINAL BLOCK	3P(S1, S2, S3)	5		TB3A-E	
㉒	R01 E02 239	FUSE	250V 6.3A	1		F1	

**15-3. FUNCTIONAL PARTS  
BRANCH BOX : PAC-AK30BC**



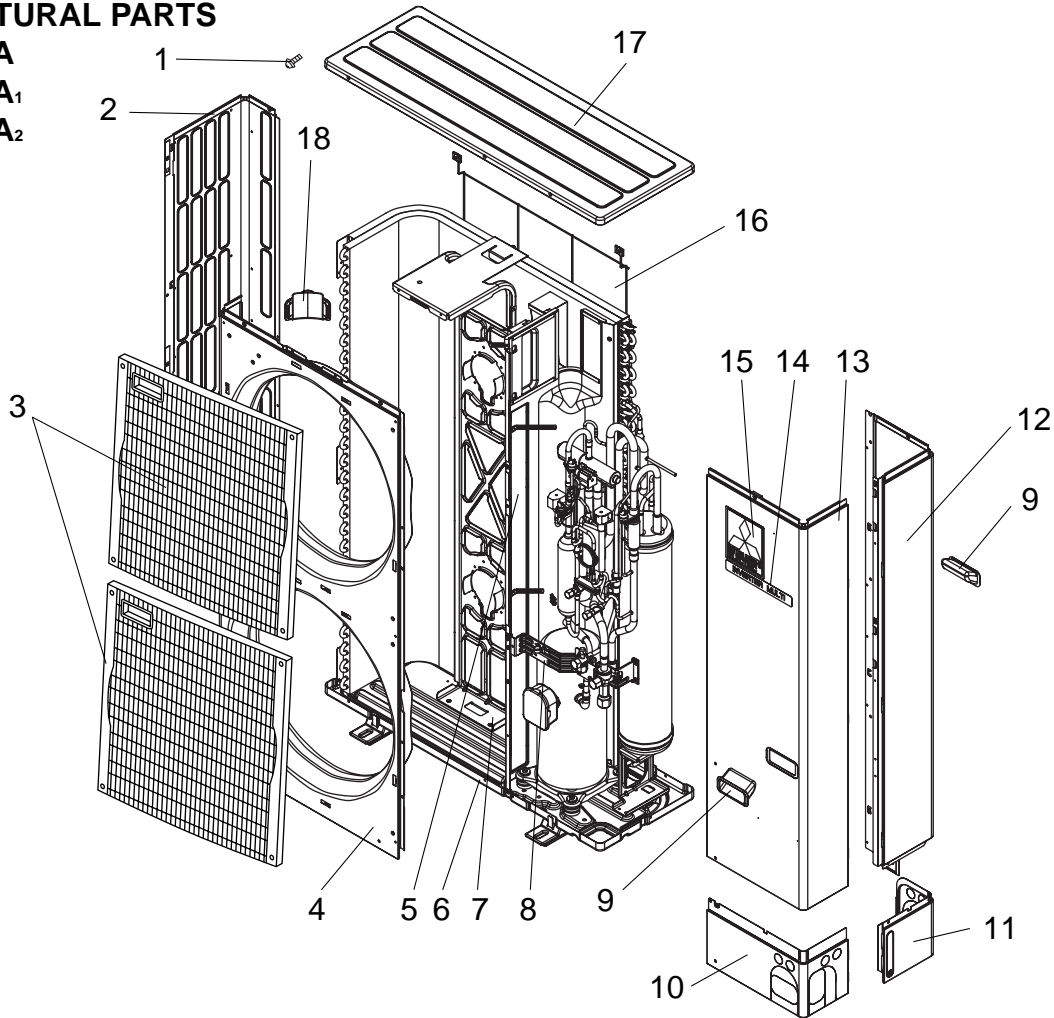


Part numbers that are circled are not shown in the figure.

No.	Part No.	Part Name	Specification	Q'ty/set	Remarks	Wiring Diagram Symbol	Recommended Q'ty
				PAC-AK30BC			
1	T7W E04 641	TOP PANEL		1			
2	T7W E06 689	COVER-L		1			
3	T7W E08 689	COVER-G		1			
4	T7W E14 661	SIDE PANEL		1			
5	R01 E16 242	LEV COIL		3		LEV-A-C	
6	-	SEPARATOR		1	(RG02N539G06)		
7	T7W E18 529	DRAIN PAN		1			
8	T7W E01 669	UNDER PANEL		1			
9	T7W E04 689	CONTROLLER COVER		1			
10	T7W E01 527	DRAIN HOSE		1			
11	R01 H48 310	CONTROLLER BOARD		1		B.C	
12	T7W E38 202	THERMISTOR-A		1		TH-A	
13	T7W E39 202	THERMISTOR-B		1		TH-B	
14	T7W E40 202	THERMISTOR-C		1		TH-C	
15	T7W E14 401	LEV ASSY		1			
16	T7W E02 419	HEADER-G ASSY		1			
17	T7W E00 660	PIPE COVER (SET)		1			
18	T7W E09 689	COVER-U		1			
①9	T7W E14 716	TERMINAL BLOCK	3P(S1, S2, S3)	1		TB2B	
②0	T7W E23 716	TERMINAL BLOCK	3P(S1, S2, S3)	3		TB3A-C	
②1	R01 E02 239	FUSE	250V 6.3A	1		F1	

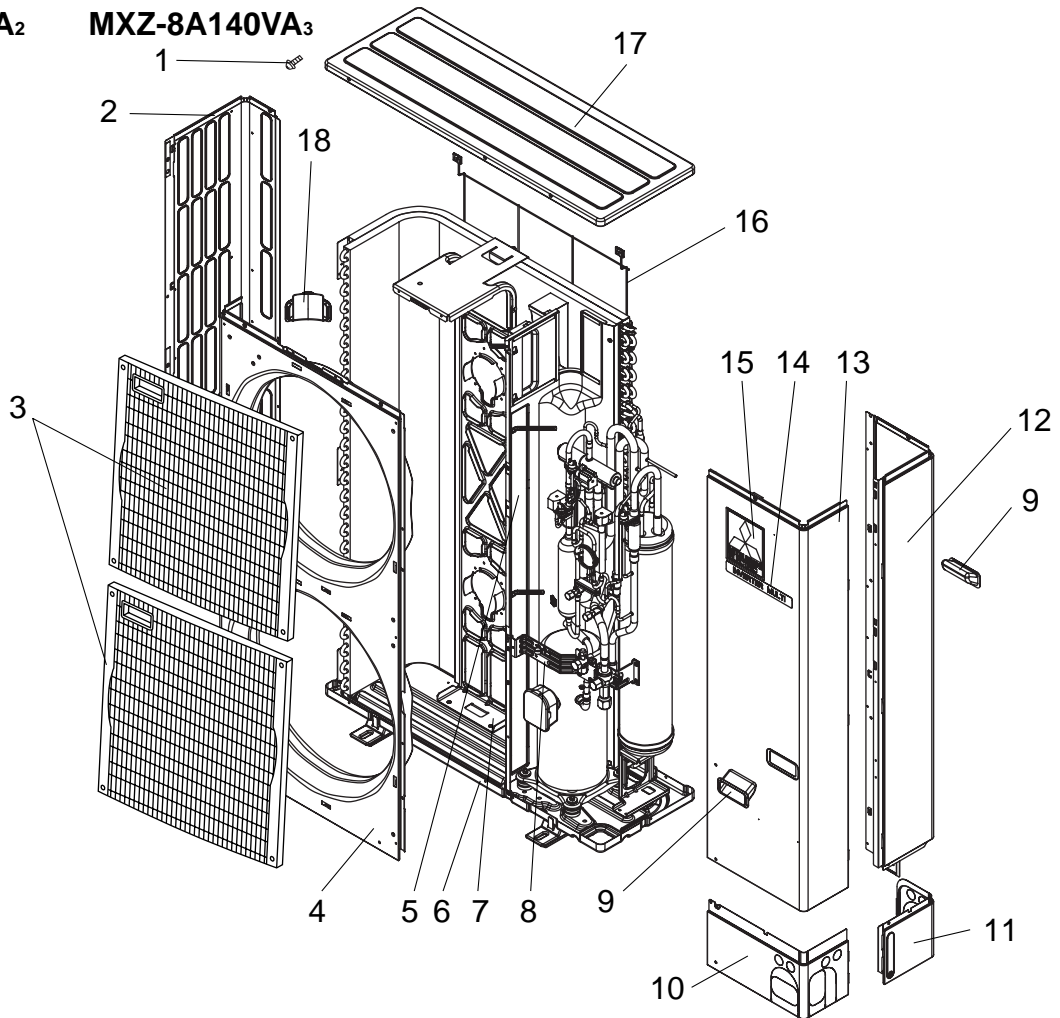
## 15-4. STRUCTURAL PARTS

MXZ-8A140VA  
MXZ-8A140VA<sub>1</sub>  
MXZ-8A140VA<sub>2</sub>



No.	Part No.	Part Name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty
				MXZ-8A140 VA,VA <sub>1</sub>	VA <sub>2</sub>			
1	-	F.ST SCREW	(5X10)	38	38	(DG12F536H10)		
2	R01 E02 662	SIDE PANEL (L)		1				
	T7W E02 662				1			
3	T7W E02 691	FAN GRILLE		2	2			
4	T7W E02 667	FRONT PANEL		1	1			
5	-	SEPARATOR		1	1	(BK00C143G80)		
6	R01 E14 686	BASE ASSY		1	1			
7	R01 E07 130	MOTOR SUPPORT		1				
	R01 E25 130				1			
8	-	VALVE BED ASSY		1	1	(BK00C142G15)		
9	R01 30L 655	HANDLE		2	2			
10	R01 E00 658	COVER PANEL (FRONT)		1				
	R01 E13 658				1			
11	R01 E01 658	COVER PANEL (REAR)		1				
	R01 E11 658				1			
12	T7W E12 661	SIDE PANEL (R)		1				
	R01 E24 661				1			
13	T7W E03 668	SERVICE PANEL		1	1			
14	-	LABEL (BRAND)		1	1	(JG79C259H01)		
15	-	LABEL (MITSUBISHI)		1	1	(DG79R130H01)		
16	R01 E01 698	REAR GUARD		1	1			
17	R01 E04 641	TOP PANEL		1	1			
18	R01 E00 655	HANDLE		1	1			

## 16-1. STRUCTURAL PARTS

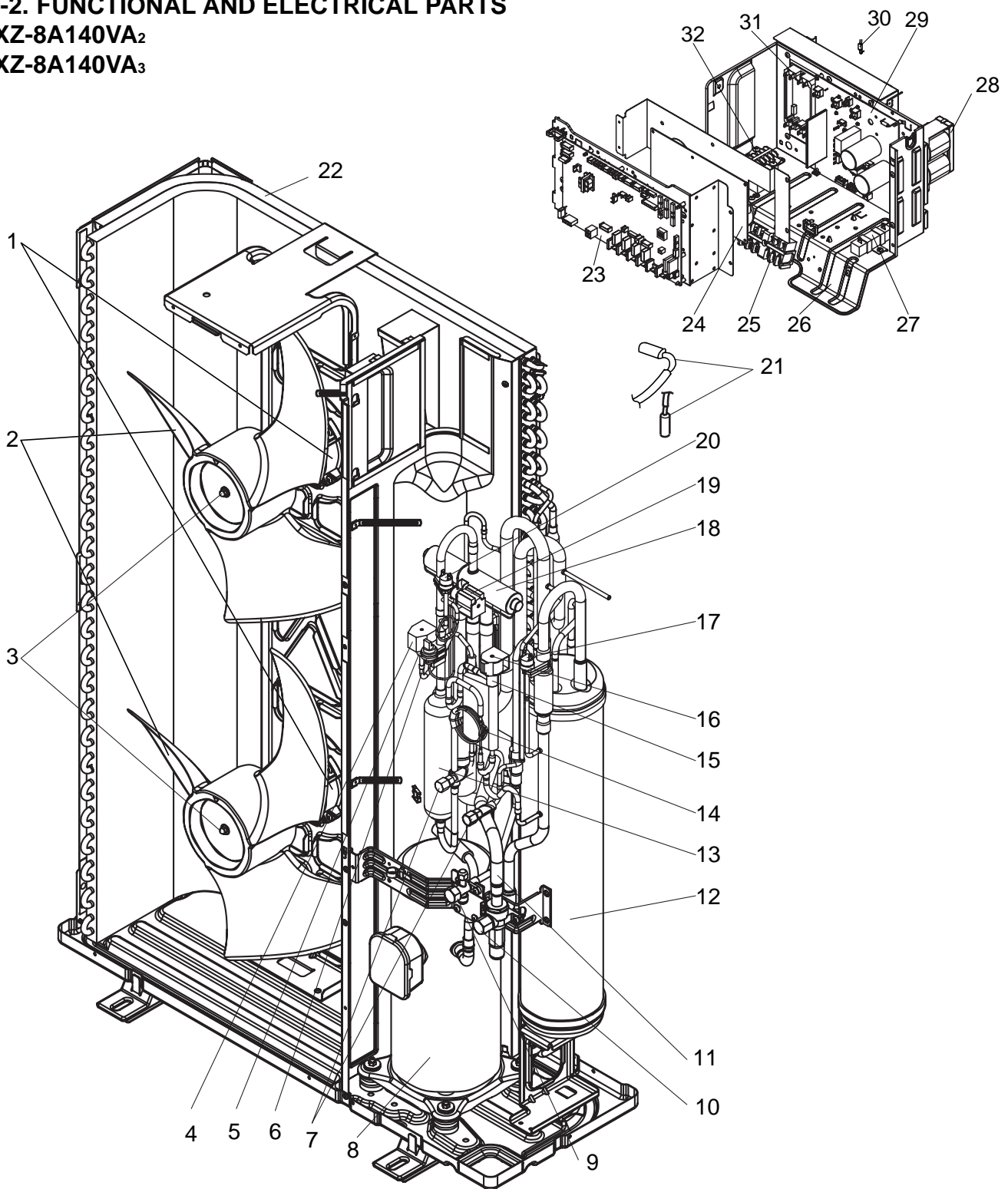
MXZ-8A140VA<sub>2</sub>MXZ-8A140VA<sub>3</sub>

No.	RoHS	Part No.	Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty
					MXZ-8A140VA <sub>2/3</sub>			
1	G	-	F.ST SCREW	(5X10)	38	(DG12F536H10)		
2	G	T7W E03 662	SIDE PANEL (L)		1			
3	G	T7W E03 691	FAN GRILLE		2			
4	G	T7W E06 667	FRONT PANEL		1			
5	G	-	SEPARATOR		1	(BK00C143G99)		
6	G	R01 E31 686	BASE ASSY		1			
7	G	R01 E27 130	MOTOR SUPPORT		1			
8	G	-	VALVE BED ASSY		1	(BK00C142G15)		
9	G	R01 E01 655	HANDLE		2			
10	G	R01 E13 658	COVER PANEL (FRONT)		1			
11	G	R01 E11 658	COVER PANEL (REAR)		1			
12	G	R01 E32 661	SIDE PANEL (R)		1			
13	G	T7W E08 668	SERVICE PANEL		1			
14	G	-	LABEL (BRAND)		1	(JG79C259H01)		
15	G	-	LABEL (MITSUBISHI)		1	(DG79R130H01)		
16	G	R01 E07 698	REAR GUARD		1			
17	G	R01 E14 641	TOP PANEL		1			
18	G	R01 E02 655	HANDLE		1			

## 16-2. FUNCTIONAL AND ELECTRICAL PARTS

MXZ-8A140VA<sub>2</sub>

MXZ-8A140VA<sub>3</sub>

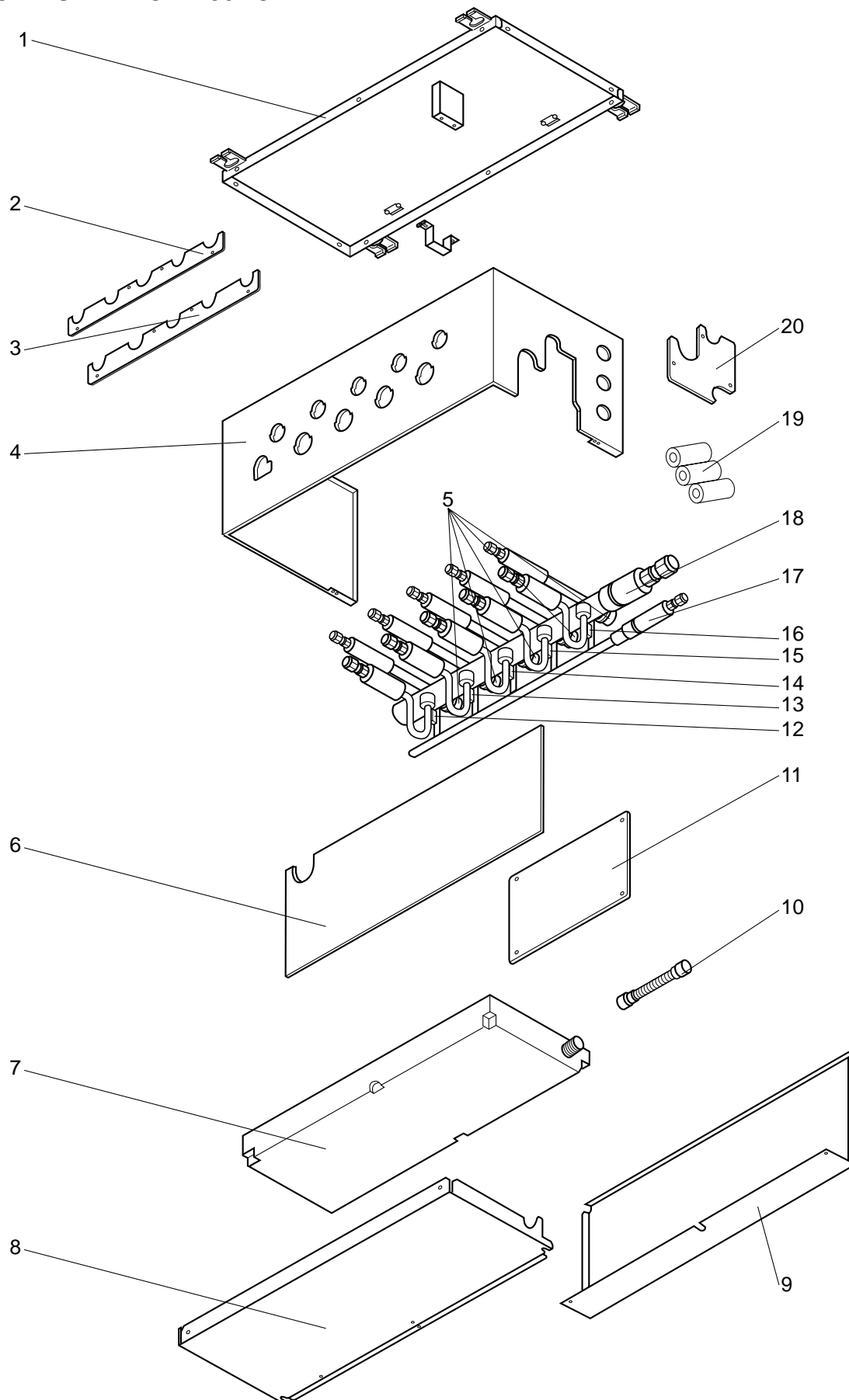


No.	RoHS	Part No.			Part Name	Specification	Q'ty/set		Remarks	Wiring Diagram Symbol	Recommended Q'ty
							MXZ-8A140				
							VA <sub>2</sub>	VA <sub>3</sub>			
1	G	R01	E44	221	FAN MOTOR	2			MF1,MF2		
	G	T7W	E27	763	FAN MOTOR		2		MF1,MF2		
2	G	R01	E08	115	PROPELLER FAN	2	2				
3	G	R01	E09	097	NUT	2	2				
4	G	T7W	E32	242	SOLENOID VALVE COIL	1			SV1		
	G	T7W	E38	242	SOLENOID VALVE COIL		1		SV1		

Part numbers that are circled are not shown in the figure.

No.	RoHS	Part No.			Part Name	Specification	Q'ty/set		Remarks	Wiring Diagram Symbol	Recommended Q'ty
							MXZ-8A140				
							VA <sub>2</sub>	VA <sub>3</sub>			
5	G	R01	E15	428	SOLENOID VALVE (SV1)		1	1			
6	G	R01	E07	208	HIGH PRESSURE SENSOR		1	1		63HS	
7	G	R01	E14	413	CHARGE PLUG		2	2			
8	G	T97	415	742	COMPRESSOR	ANB33FDCMT	1	1		MC	
9	G	R01	E13	410	STOP VALVE	3/8	1	1			
10	G	R01	E11	411	BALL VALVE	5/8	1	1			
11	G	R01	E06	450	STRAINER		1	1			
12	G	R01	E36	440	ACCUMULATOR		1	1			
13	G	R01	E12	490	OIL SEPARATOR		1	1			
14	G	R01	E26	425	CAPILLARY TUBE	2.5 × 0.8 × 1000	1	1			
15	G	R01	E13	428	SOLENOID VALVE (SV2)		1	1			
16	G	T7W	E31	242	SOLENOID VALVE COIL		1	1		SV2	
17	G	R01	E00	209	LOW PRESSURE SWITCH		1	1		63L	
18	G	R01	E26	403	FOUR-WAY VALVE		1				
	G	R01	E32	403	FOUR-WAY VALVE			1			
19	G	T7W	E29	242	SOLENOID VALVE COIL (FOUR-WAY VALVE)		1	1		21S4	
20	G	R01	E06	208	HIGH PRESSURE SWITCH		1	1		63H	
21	G	R01	E94	202	THERMISTOR(OUTDOOR 2PHASE PIPE, OUTDOOR)		1	1		TH6,TH7	
22	G	R01	E91	408	HEAT EXCHANGER		1	1			
23	G	R01	H77	310	CONTROLLER CIRCUIT BOARD		1			C.B.	
	G	T7W	E53	315	CONTROLLER CIRCUIT BOARD			1		C.B.	
24	G	T7W	E16	346	NOISE FILTER CIRCUIT BOARD		1			N.F.	
	G	R01	E18	346	NOISE FILTER CIRCUIT BOARD			1		N.F.	
25	G	T7W	E29	716	TERMINAL BLOCK	6P(L, N, ⊕, S1, S2, S3)	1	1		TB1	
26	G		—		ELECTRICAL PARTS BOX		1		(BK00B055G26)		
	G		—		ELECTRICAL PARTS BOX			1	(BK00B055G32)		
27	G	R01	E00	234	RESISTOR		1			RS	
28	G	R01	E20	259	REACTOR		1	1		DCL	
29	G	T7W	E31	313	POWER CIRCUIT BOARD		1			P.B.	
	G	R01	E64	313	POWER CIRCUIT BOARD			1		P.B.	
30	G	R01	E99	202	THERMISTOR (HEATSINK)		1	1		TH8	
31	G	R01	E09	233	ACTIVE FILTER MODULE		1			ACTM	
	G	R01	E07	233	ACTIVE FILTER MODULE			1		ACTM	
32	G	T7W	E10	259	RELAY		1			52C	
33	G	R01	E06	239	FUSE	250V 6.3A	4	4		FUSE1-4	
34	G	R01	E20	254	MAIN SMOOTHING CAPACITOR		1	1		CE	
35	G	R01	E09	201	THERMISTOR (DISCHARGE)		1			TH4	
	G	T7W	E03	201	THERMISTOR (DISCHARGE)			1		TH4	
36	G	R01	H00	202	THERMISTOR (OUTDOOR PIPE)		1	1		TH3	
37	G	R01	E27	425	CAPILLARY TUBE (SV2)	4 × 2.4 × 250	1	1			

**16-3. FUNCTIONAL PARTS  
BRANCH BOX : PAC-AK50BC**



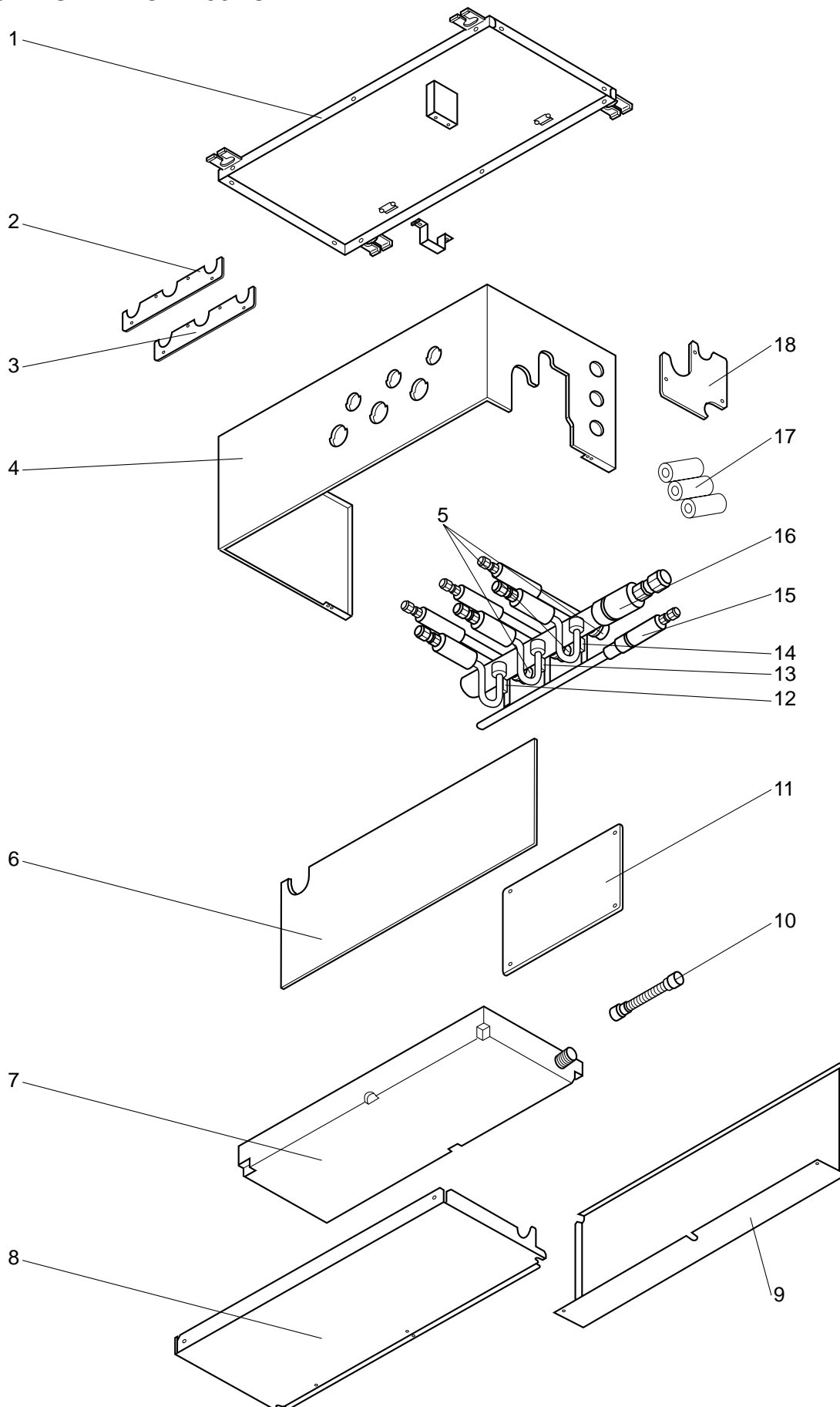




Part numbers that are circled are not shown in the figure.

No.	RoHS	Part No.			Part Name	Specification	Q'ty/set	Remarks	Wiring Diagram Symbol	Recommended Q'ty
							PAC-AK50BC			
1	G	R01	E22	641	TOP PANEL		1			
2	G	R01	E11	689	COVER-L		1			
3	G	R01	E13	689	COVER-G		1			
4	G	R01	E35	661	SIDE PANEL		1			
5	G	R01	E36	242	LEV COIL		5		LEV-A-E	
6	G		-		SEPARATOR		1	(RG02N539G06)		
7	G	R01	E33	529	DRAIN PAN		1			
8	G	R01	E02	669	UNDER PANEL		1			
9	G	R01	E16	689	CONTROLLER COVER		1			
10	G	R01	E07	527	DRAIN HOSE		1			
11	G	R01	H80	310	CONTROLLER BOARD		1		B.C	
12	G	R01	H20	202	THERMISTOR-A		1		TH-A	
13	G	R01	H21	202	THERMISTOR-B		1		TH-B	
14	G	R01	H22	202	THERMISTOR-C		1		TH-C	
15	G	R01	H23	202	THERMISTOR-D		1		TH-D	
16	G	R01	H24	202	THERMISTOR-E		1		TH-E	
17	G	R01	E98	401	LEV ASSY		1			
18	G	R01	E09	419	HEADER-G ASSY		1			
19	G	R01	E01	660	PIPE COVER (SET)		1			
20	G	R01	E15	689	COVER-U		1			
21	G	R01	E31	246	TERMINAL BLOCK	3P(S1, S2, S3)	1		TB2B	
22	G	R01	E20	246	TERMINAL BLOCK	3P(S1, S2, S3)	5		TB3A-E	
23	G	R01	E06	239	FUSE	250V 6.3A	1		F1	

**16-4. FUNCTIONAL PARTS  
BRANCH BOX : PAC-AK30BC**





Part numbers that are circled are not shown in the figure.

No.	RoHS	Part No.			Part Name	Specification	Q'ty/set	Remarks	Wiring Diagram Symbol	Recommended Q'ty
							PAC-AK30BC			
1	G	R01	E22	641	TOP PANEL		1			
2	G	R01	E12	689	COVER-L		1			
3	G	R01	E14	689	COVER-G		1			
4	G	R01	E36	661	SIDE PANEL		1			
5	G	R01	E36	242	LEV COIL		3		LEV-A-C	
6	G		-		SEPARATOR		1	(RG02N539G06)		
7	G	R01	E33	529	DRAIN PAN		1			
8	G	R01	E02	669	UNDER PANEL		1			
9	G	R01	E16	689	CONTROLLER COVER		1			
10	G	R01	E07	527	DRAIN HOSE		1			
11	G	R01	H80	310	CONTROLLER BOARD		1		B.C	
12	G	R01	H20	202	THERMISTOR-A		1		TH-A	
13	G	R01	H21	202	THERMISTOR-B		1		TH-B	
14	G	R01	H22	202	THERMISTOR-C		1		TH-C	
15	G	R01	E99	401	LEV ASSY		1			
16	G	R01	E10	419	HEADER-G ASSY		1			
17	G	R01	E01	660	PIPE COVER (SET)		1			
18	G	R01	E15	689	COVER-U		1			
①9	G	R01	E31	246	TERMINAL BLOCK	3P(S1, S2, S3)	1		TB2B	
②0	G	R01	E20	246	TERMINAL BLOCK	3P(S1, S2, S3)	3		TB3A-C	
②1	G	R01	E06	239	FUSE	250V 6.3A	1		F1	

# 17 OPTIONAL PARTS

## 17-1. FOR OUTDOOR UNIT

### DRAIN SOCKET

Part No.	PAC-SG61DS-E
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### AIR OUTLET GUIDE

Part No.	PAC-SG59SG-E
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\* Need 2 pieces.

### AIR GUIDE

Part No.	PAC-SH63AG-E
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\* Need 2 pieces.

### DRAIN PAN

Part No.	PAC-SG64DP-E
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### FILTER DRYER (For liquid line : $\phi 9.52$ )

Part No.	PAC-SG82DR-E
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\* Only for R410A model (Don't use for R22 model.)

### 2-BRANCH PIPE (Joint) (In case of using 2-branch boxes)

Part No.	Connection method
MSDD-50AR-E	flare
MSDD-50BR-E	brazing

\* According to the connection method, you can choose the favourite one.

## 17-2. FOR BRANCH BOX

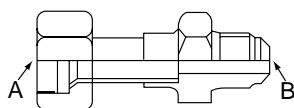
Different-diameter joint (Optional parts)

Part No.	Connected pipes diameter	Diameter A	Diameter B
	mm	mm	mm
MAC-A454JP	$\phi 9.52 \rightarrow \phi 12.7$	$\phi 9.52$	$\phi 12.7$
MAC-A455JP	$\phi 12.7 \rightarrow \phi 9.52$	$\phi 12.7$	$\phi 9.52$
MAC-A456JP	$\phi 12.7 \rightarrow \phi 15.88$	$\phi 12.7$	$\phi 15.88$
PAC-493PI	$\phi 6.35 \rightarrow \phi 9.52$	$\phi 6.35$	$\phi 9.52$
PAC-SG76RJ-E	$\phi 9.52 \rightarrow \phi 15.88$	$\phi 9.52$	$\phi 15.88$

<Reference>

Conversion formula

1/4 inch	$\phi 6.35\text{mm}$
3/8 inch	$\phi 9.52\text{mm}$
1/2 inch	$\phi 12.7\text{mm}$
5/8 inch	$\phi 15.88\text{mm}$
3/4 inch	$\phi 19.05\text{mm}$



Item	Part No.
Special optional cover for outdoor installation of branch box	PAC-AK350CVR-E

**MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE : TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO100-8310, JAPAN