MITSUBISHI ELECTRIC

Changes for the Better

AIR CONDITIONERS

2014

R410A

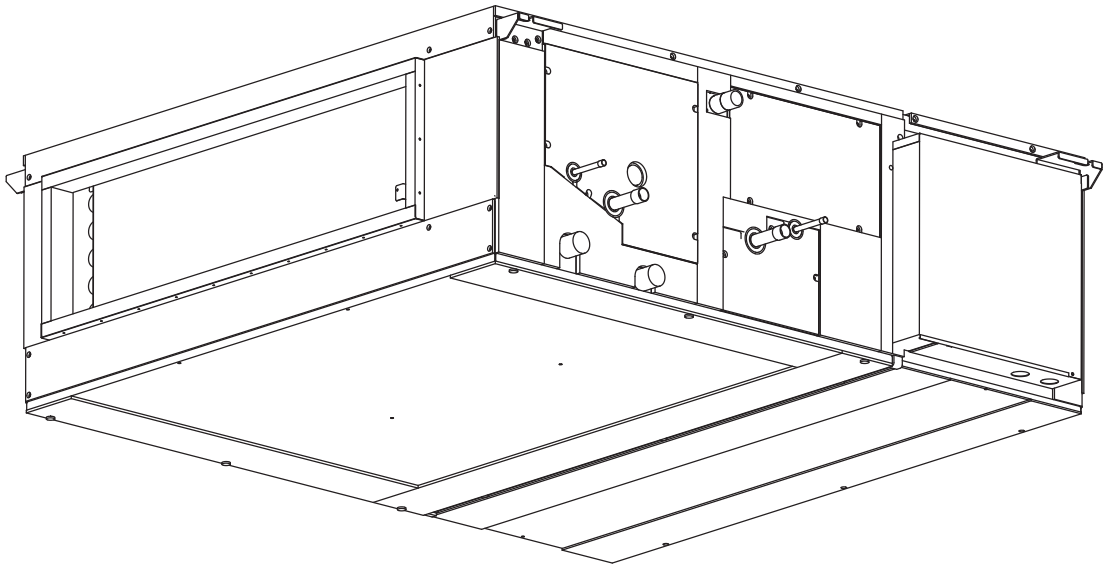
TECHNICAL & SERVICE MANUAL

Model name

<Indoor unit>

PEFY-AF1200CFM-E

PEFY-AF1200CFMR-E



CITY MULTI

Safety Precautions

Read before installation and performing electrical work

- Thoroughly read the following safety precautions prior to installation.
- Observe these safety precautions for your safety.
- This equipment may have adverse effects on the equipment on the same power supply system.
- Contact the local power authority before connecting to the system.

Symbol explanations

⚠ WARNING
This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or death.

⚠ CAUTION
This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or damage to the unit.


Indicates an action that must be avoided.


Indicates important instructions.


Indicates a parts that requires grounding.


Indicates that caution must be taken with rotating parts. (This symbol is on the main unit label.) <Color: Yellow>


Indicates that the parts that are marked with this symbol pose a risk of electric shock. (This symbol is on the main unit label.) <Color: Yellow>

⚠ WARNING
Carefully read the labels affixed to the main unit.

⚠ WARNING

Ask your dealer or a qualified technician to install the unit.
Improper installation by the user may result in water leakage, electric shock, or fire.

Properly install the unit on a surface that can withstand its weight.
Unit installed on an unstable surface may fall and cause injury.

Only use specified cables. Securely connect each cable so that the terminals do not carry the weight of the cable.
Improperly connected cables may produce heat and start a fire.

Take appropriate safety measures against wind gusts and earthquakes to prevent the unit from toppling over.
Improper installation may cause the unit to topple over and cause injury or damage to the unit.

Only use accessories (i.e., air cleaners, humidifiers, electric heaters) recommended by Mitsubishi Electric.

Do not make any modifications or alterations to the unit. Consult your dealer for repair.
Improper repair may result in water leakage, electric shock, or fire.

Do not touch the heat exchanger fins with bare hands.
The fins are sharp and pose a risk of cuts.

In the event of a refrigerant leak, thoroughly ventilate the room.
If gaseous refrigerant leaks out and comes in contact with an open flame, toxic gases will be generated.

Properly install the unit according to the instructions in the Installation Manual.
Improper installation may result in water leakage, electric shock, or fire.

Have all electrical work performed by an authorized electrician according to the local regulations and the instructions in this manual. Use a dedicated circuit.
Insufficient power supply capacity or improper installation of the unit may result in malfunctions of the unit, electric shock, or fire.

⚠ WARNING

Keep electrical parts away from water.
Wet electrical parts pose a risk of electric shock, smoke, or fire.

Securely attach the control box cover.
If the cover is not installed properly, dust or water may infiltrate and pose a risk of electric shock, smoke, or fire.

Only use the type of refrigerant that is indicated on the unit when installing or relocating the unit.
Infiltration of any other types of refrigerant or air into the unit may adversely affect the refrigerant cycle and may cause the pipes to burst or explode.

When installing the unit in a small space, take appropriate precautions to prevent leaked refrigerant from reaching the limiting concentration.
Leaked refrigerant gas will displace oxygen and may cause oxygen starvation. Consult your dealer before installing the unit.

Consult your dealer or a qualified technician when moving or reinstalling the unit.
Improper installation may result in water leakage, electric shock, or fire.

After completing the service work, check for a refrigerant leak.
If leaked refrigerant is exposed to a heat source, such as a fan heater, stove, or electric grill, toxic gases will be generated.

Do not try to defeat the safety features of the unit.
Forced operation of the pressure switch or the temperature switch by defeating the safety features for these devices, or the use of accessories other than the ones that are recommended by Mitsubishi Electric may result in smoke, fire, or explosion.

Consult your dealer for proper disposal method.

Do not use a leak detection additive.

Precautions for handling units for use with R410A

⚠ CAUTION

Do not use the existing refrigerant piping.
A large amount of chlorine that may be contained in the residual refrigerant and refrigerator oil in the existing piping may cause the refrigerator oil in the new unit to deteriorate.

Use refrigerant piping materials made of phosphorus deoxidized copper. Keep the inner and outer surfaces of the pipes clean and free of such contaminants as sulfur, oxides, dust, dirt, shaving particles, oil, and moisture.
Contaminants in the refrigerant piping may cause the refrigerator oil to deteriorate.

Store the piping materials indoors, and keep both ends of the pipes sealed until immediately before brazing. (Keep elbows and other joints wrapped in plastic.)
Infiltration of dust, dirt, or water into the refrigerant system may cause the refrigerator oil to deteriorate or cause the compressor to malfunction.

Use a small amount of ester oil, ether oil, or alkyl benzene to coat flares and flanges.
Infiltration of a large amount of mineral oil may cause the refrigerator oil to deteriorate.

Charge the system with refrigerant in the liquid phase.
If gaseous refrigerant is drawn out of the cylinder first, the composition of the remaining refrigerant in the cylinder will change and become unsuitable for use.

Only use R410A.
The use of other types of refrigerant that contain chloride may cause the refrigerator oil to deteriorate.

Use a vacuum pump with a check valve.
If a vacuum pump that is not equipped with a check valve is used, the vacuum pump oil may flow into the refrigerant cycle and cause the refrigerator oil to deteriorate.

Prepare tools for exclusive use with R 410A. Do not use the following tools if they have been used with the conventional refrigerant: gauge manifold, charging hose, gas leak detector, check valve, refrigerant charge base, vacuum gauge, and refrigerant recovery equipment.
If the refrigerant or the refrigerator oil that may be left on these tools are mixed in with R410A, it may cause the refrigerator oil in the new system to deteriorate. Infiltration of water may cause the refrigerator oil to deteriorate. Leak detectors for conventional refrigerants will not detect an R410A leak because R410A is free of chlorine.

Do not use a charging cylinder.
If a charging cylinder is used, the composition of the refrigerant in the cylinder will change and become unsuitable for use.

Exercise special care when handling tools for use with R410A.
Infiltration of dust, dirt, or water into the refrigerant system may cause the refrigerator oil to deteriorate.

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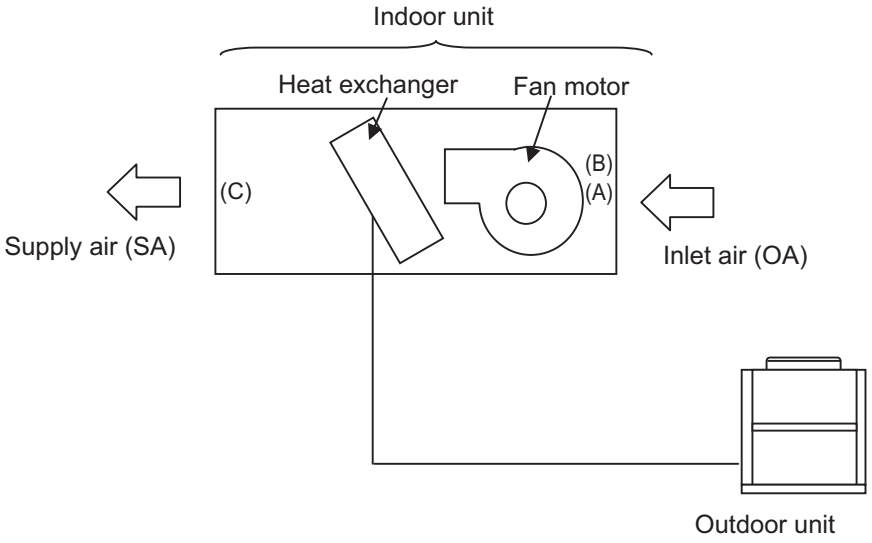
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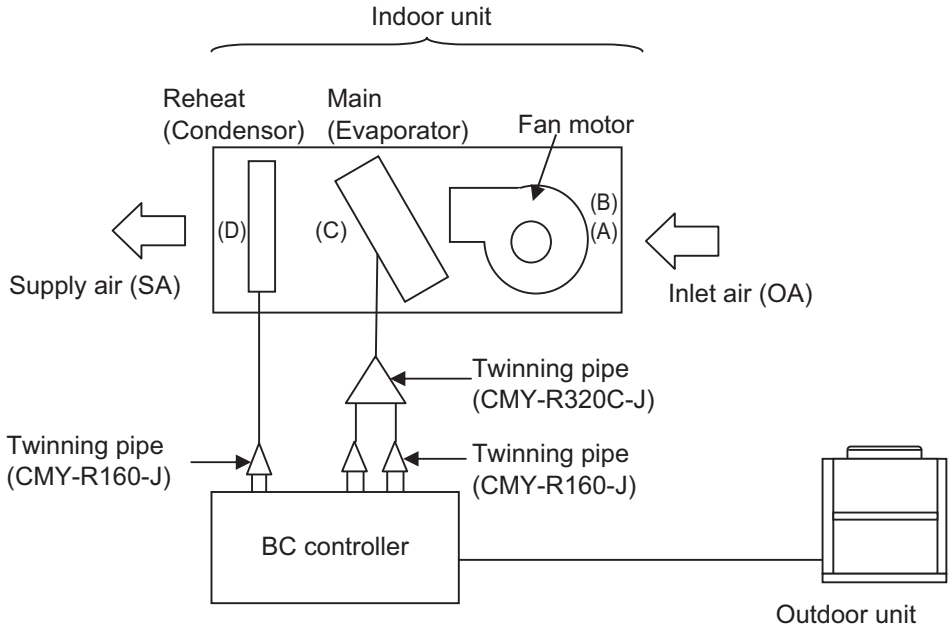
[1] Features

1. PEFY-AF1200CFM-E



(A) TH24 Thermistor (Inlet air temperature)
(B) HU Humidity sensor (Inlet air humidity)
(C) TH21 Thermistor (Outlet air temperature)

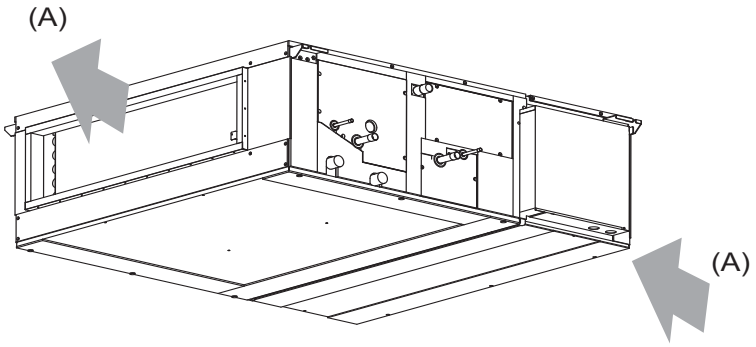
2. PEFY-AF1200CFMR-E



(A)TH24 Thermistor (Inlet air temperature)
(B)HU Humidity sensor (Inlet air humidity)
(C)TH21-1 Thermistor (Outlet air temperature)
(D)TH21-2 Thermistor (Supply air temperature)

[1] Components and Functions

1. Indoor (Main) Unit

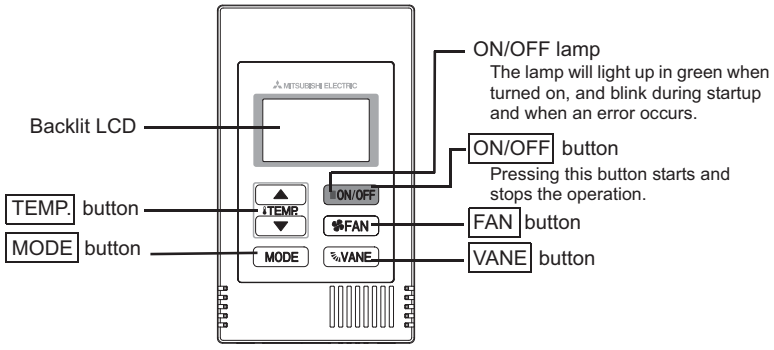


(A) Air

2. Remote Controller
   Simple MA Remote Controller PAC-YT53CRAU
   Once the operation mode is selected, the unit will remain in the selected mode until changed.

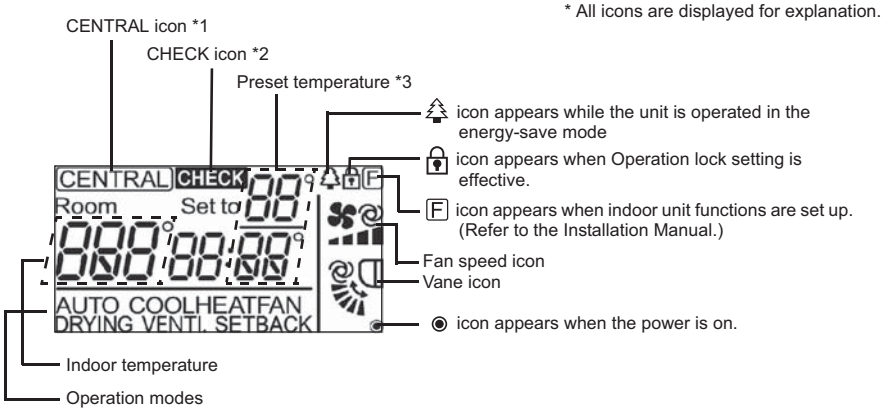
(1) Remote Controller Buttons

Controller interface



* To set the functions that are not available on this controller (PAC-YT53CRAU) such as Louver, use MA remote controller or the centralized controller.

(2) Remote Controller Display



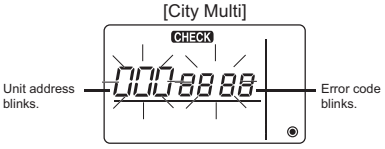
*1 CENTRAL icon

Appears when one of the following local operations is prohibited: ON/OFF; operation mode; preset temperature; fan speed; vane.

*2 **CHECK** icon

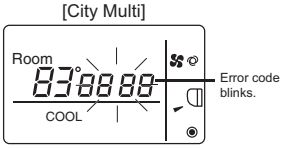
When an error occurs, power indicator will blink, and unit address (three digits) and error code (four digits) will blink.
Check the error status, stop the operation, and consult your dealer.

[City Multi]



When only error code blinks, air conditioning units stay in operation, but an error may have occurred.
Check the error code, and consult your dealer.

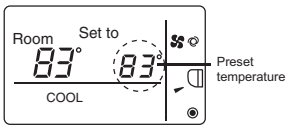
[City Multi]



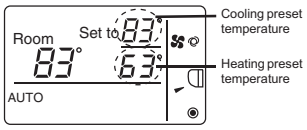
*3 Preset temperature

* Centigrade or Fahrenheit is selectable. Refer to the Installation Manual for details.

In COOL, DRYING, HEAT, or AUTO (single set point) modes



In AUTO (dual set point) or SETBACK modes



[1] Specifications

1. Specifications

Model			PEFY-AF1200CFM-E
Power source			1-phase 208/230V 60Hz
Cooling capacity (Nominal)		BTU / h	112,000
		kW	32.8
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
Heating capacity (Nominal)		BTU / h	61,400
		kW	18
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
External finish			Galvanized
External dimension H x W x D		in.	18-9/16 x 49-1/4 x 55-1/8
		mm	470 x 1,250 x 1,400
Net weight		lbs (kg)	283 (128)
Heat exchanger			Cross fin (Aluminium fin and copper tube)
FAN	Type x Quantity		Sirocco fan x 2
	External*5 static press	in.WG	(0.40)-(0.60)-0.88 (208V)
		Pa	(100)-(150)-220
		in.WG	(0.64)-(0.80)-1.04 (230V)
		Pa	(160)-(200)-260
	Motor type		Single phase induction motor
	Motor output	kW	0.62/0.74
	Driving mechanism		Direct-driven
	Airflow rate	cfm	1,200
		m3 / min	34
		L / s	566
Sound pressure level*5 (Static pressure : Low-Mid-High) (measured in anechoic room)		dB <A> dB <A>	(36)-(40)-43 (208V) (39)-(42)-45 (230V)
Insulation material			Polyethylene foam, Polyurethane foam, Polystyrene foam
Air filter			Field supply
Protection device			Fuse
Refrigerant control device			LEV
Diameter of refrigerant pipe (O.D.)	Liquid *7	in. (mm)	3/8 (9.52) Brazed
	Gas	in. (mm)	7/8 (22.2) Brazed
Diameter of drain pipe		in. (mm)	O.D. 1-1/4 (32) x 2

Note : 1.Standard capacities are the maximum capacities that are obtained in the following conditions;

	cooling conditions	heating conditions
Indoor	87°FDB/80°FWB(30.5°CDB/26.7°CWB)	32°FDB(0°CDB)
Outdoor	87°FDB(30.5°CDB)	32°FDB/28°FWB(0°CDB/-2°CWB)
Pipe length	24.6ft.(7.5m)	24.6ft.(7.5m)
Height difference	0ft.(0m)	0ft.(0m)

2.This value shows the data per unit.

3.Sound pressure level is the data that was obtained in anechoic room by the following conditions;
The measuring point is 4.9feet (1.5m) from the bottom of the unit that has 6.6feet (2m) outlet duct and 3.3feet (1m) intake duct.

4.When combining the drain pipes, ensure that collected pipes are 3-15/16inch (10cm) lower than the unit body's drain port.

5.Figures in parentheses indicate factory settings.

6.The choice of indoor unit operation mode is limited to auto mode.

7.Refer to following table for connecting the indoor unit to the outdoor unit. (for P120 outdoor model)

Outdoor model	Liquid pipe	Gas pipe
P120	1/2 [ø12.7]	7/8 [ø22.2]

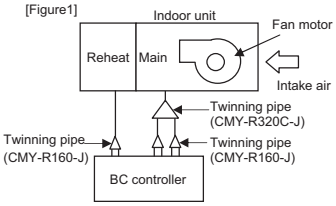
Model			PEFY-AF1200CFMR-E
Power source			1-phase 208/230V 60Hz
Cooling capacity (Nominal)		BTU / h	112,000
		kW	32.8
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
Heating capacity (Nominal)		BTU / h	61,400
		kW	18
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
Reheat capacity (Nominal)		BTU / h	24,200
		kW	7.1
External finish			Galvanized
External dimension H x W x D		in.	18-9/16 x 49-1/4 x 55-1/8
		mm	470 x 1,250 x 1,400
Net weight		lbs (kg)	305 (138)
Heat exchanger			Cross fin (Aluminium fin and copper tube)
FAN	Type x Quantity		Sirocco fan x 2
	External*8 static press	in.WG	(0.28)-(0.48)-0.80 (208V)
		Pa	(70)-(120)-200
		in.WG	(0.52)-(0.72)-0.96 (230V)
		Pa	(130)-(180)-240
	Motor type		Single phase induction motor
	Motor output	kW	0.62/0.74
	Driving mechanism		Direct-driven
	Airflow rate	cfm	1,200
		m3 / min	34
		L / s	566
Sound pressure level*8 (Static pressure : Low-Mid-High) (measured in anechoic room)		dB <A> dB <A>	(36)-(40)-43 (208V) (39)-(42)-45 (230V)
Insulation material			Polyethylene foam, Polyurethane foam, Polystyrene foam
Air filter			Field supply
Protection device			Fuse
Refrigerant control device			LEV
Diameter of refrigerant pipe (O.D.)	Liquid (Main)	in. (mm)	3/8 (9.52) Brazed
	Gas (Main)	in. (mm)	7/8 (22.2) Brazed
	Liquid (Reheat)	in. (mm)	3/8 (9.52) Brazed
	Gas (Reheat)	in. (mm)	7/8 (22.2) Brazed
Diameter of drain pipe		in. (mm)	O.D. 1-1/4(32) x 2

Note : 1.Standard capacities are the maximum capacities that are obtained in the following conditions;

	cooling conditions	heating conditions
Indoor	87°FDB/80°FWB(30.5°CDB/26.7°CWB)	32°FDB(0°CDB)
Outdoor	87°FDB(30.5°CDB)	32°FDB/28°FWB(0°CDB/-2°CWB)
Pipe length	24.6ft.(7.5m)	24.6ft.(7.5m)
Height difference	0ft.(0m)	0ft.(0m)

2.This value shows the data per unit.
3.Sound pressure level is the data that was obtained in anechoic room by the following conditions;
The measuring point is 4.9feet (1.5m) from the bottom of the unit that has 6.6feet (2m) outlet duct and 3.3feet (1m) intake duct.
4.When combining the drain pipes, ensure that collected pipes are 3-15/16inch(10cm) lower than the unit body's drain port.
5.Install BC controller in a location where noise (refrigerant noise etc.) emitted by the unit will not disturb the neighbors.
(For use in quiet environments with low background noise, position the BC controller at least 16.4feet(5m) away from any indoor units.)
6.When connecting the indoor unit to the BC controller, the optional twinning pipe shall be installed.
(Refer to Figure1 and Table1)
7.The choice of indoor unit operation mode is limited to auto mode.
8.Figures in parentheses indicate factory settings.

[Figure1]



[Table1]

Number of connection pipe of BC

Outdoor model	Main	Reheat
P120	4	2

2. Electrical component specifications

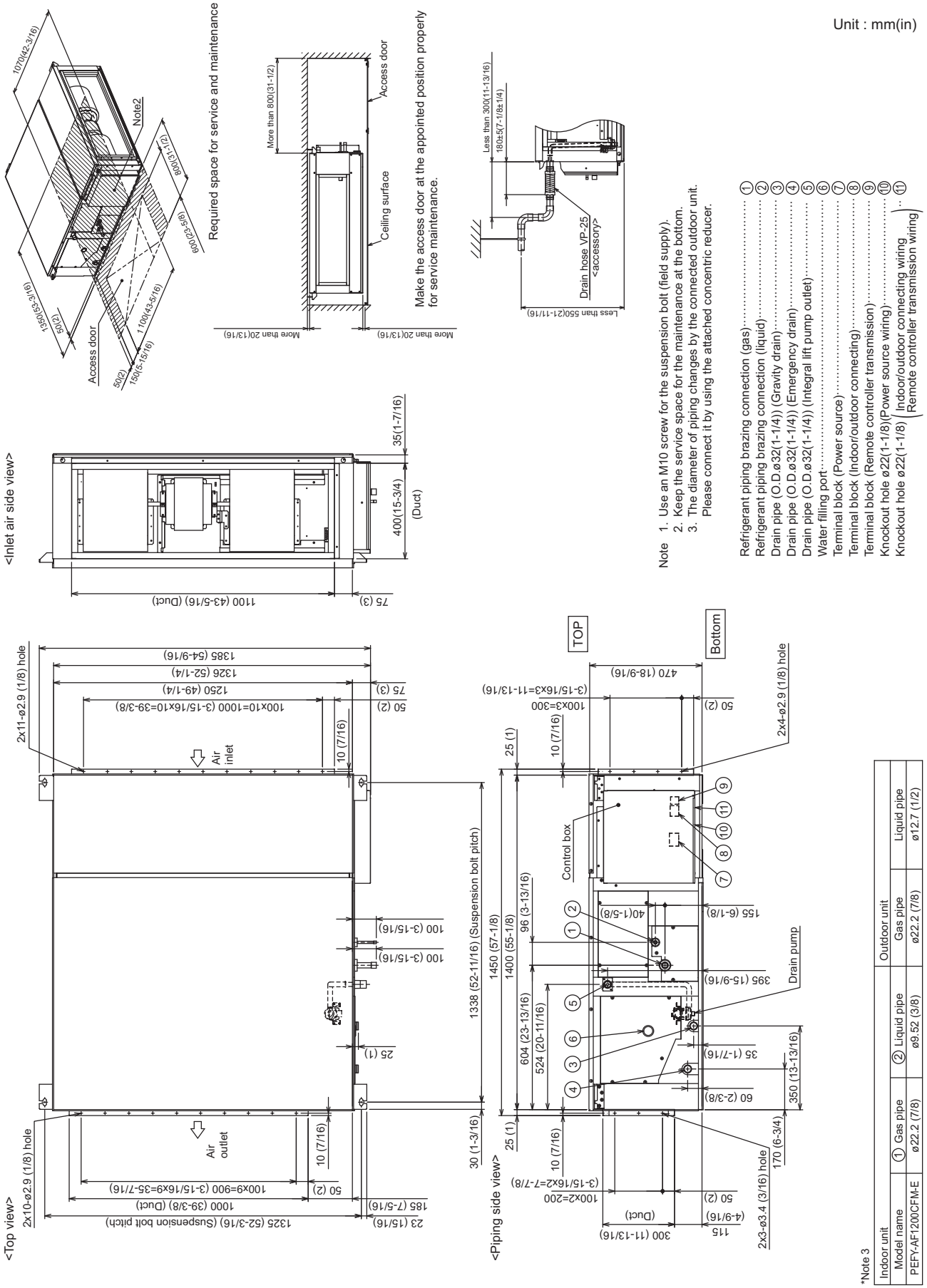
Component	Sym-bol	PEFY-AF1200CFM-E
Supply air temperature thermistor	TH21	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Liquid pipe thermistor	TH22	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Gas pipe thermistor	TH23	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Inlet air temperature thermistor	TH24	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Humidity sensor	HU	Voltage 30%/1.25V, 40%/1.52V, 50%/1.88V, 60%/2.19V, 70%/2.48V, 80%/2.79V
Fuse	FUSE	250V 6.3A
Fan motor		4-pole, Output 620/740W (208/230V)
Fan motor capacity	C	10μF 440V
Linear expansion valve	LEV	12VDC Stepping motor drive port diameter ø3.2 (0~2000 pulse)
Power supply terminal block	TB2	(L1, L2, G) 330V 30A
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A
Drain float switch	DS	Open/short detection Initial contact resistance 500 mΩ or less

Component	Sym-bol	PEFY-AF1200CFMR-E
Supply air temperature thermistor	TH21-1 TH21-2	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Liquid pipe thermistor	TH22-1 TH22-2	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Gas pipe thermistor	TH23-1 TH23-2	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Inlet air temperature thermistor	TH24	Resistance 0°C[32°F]/15kΩ, 10°C[50°F]/9.6kΩ, 20°C[68°F]/6.3kΩ, 25°C[77°F]/5.4kΩ, 30°C[86°F]/4.3kΩ, 40°C[104°F]/3.0kΩ
Humidity sensor	HU	Voltage 30%/1.25V, 40%/1.52V, 50%/1.88V, 60%/2.19V, 70%/2.48V, 80%/2.79V
Fuse	FUSE	250V 6.3A
Fan motor		4-pole, Output 620/740W (208/230V)
Fan motor capacity	C	10μF 440V
Linear expansion valve	LEV	12VDC Stepping motor drive port diameter ø3.2 (0~2000 pulse)
Power supply terminal block	TB2	(L1, L2, G) 330V 30A
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A
Drain float switch	DS	Open/short detection Initial contact resistance 500 mΩ or less

[1] Outlines and Dimensions

1. PEFY-AF1200CFM-E

Unit : mm(in)



Note 1. Use an M10 screw for the suspension bolt (field supply).
2. Keep the service space for the maintenance at the bottom.
3. The diameter of piping changes by the connected outdoor unit. Please connect it by using the attached concentric reducer.

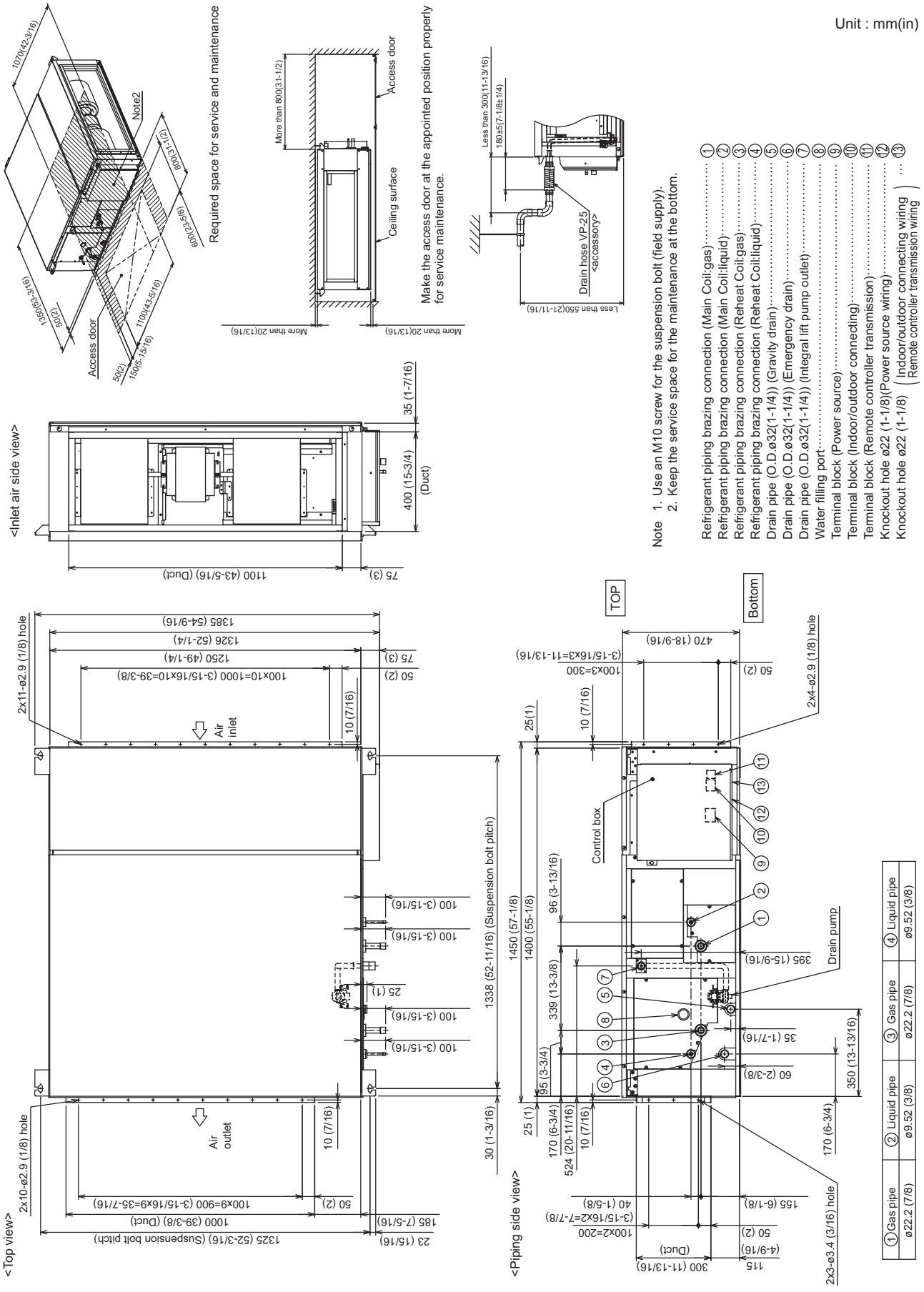
①	Refrigerant piping brazing connection (gas)
②	Refrigerant piping brazing connection (liquid)
③	Drain pipe (O.D.ø32(1-1/4)) (Gravity drain)
④	Drain pipe (O.D.ø32(1-1/4)) (Emergency drain)
⑤	Drain pipe (O.D.ø32(1-1/4)) (Integral lift pump outlet)
⑥	Water filling port
⑦	Terminal block (Power source)
⑧	Terminal block (Indoor/outdoor connecting)
⑨	Terminal block (Remote controller transmission)
⑩	Knockout hole ø22(1-1/8)(Power source wiring)
⑪	Knockout hole ø22(1-1/8) (Indoor/outdoor connecting wiring / Remote controller transmission wiring)

*Note 3

Indoor unit	Outdoor unit			
Model name	① Gas pipe	② Liquid pipe	Gas pipe	Liquid pipe
PEFY-AF1200CFM-E	ø22.2 (7/8)	ø9.52 (3/8)	ø22.2 (7/8)	ø12.7 (1/2)

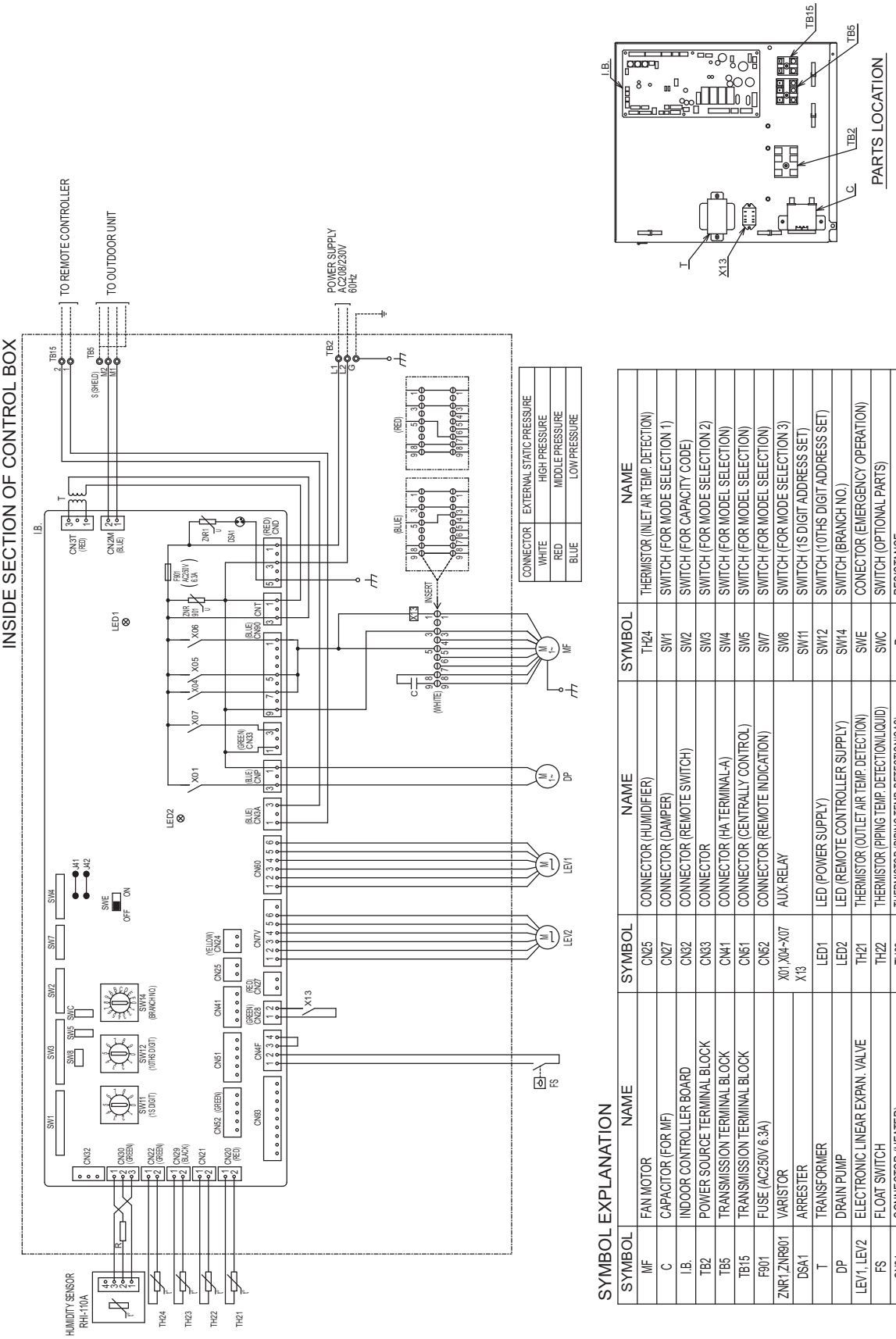
2. PEFY-AF1200CFMR-E

Unit : mm(in)



[1] Wiring Diagram

1. PEFY-AF1200CFM-E



SYMBOL EXPLANATION

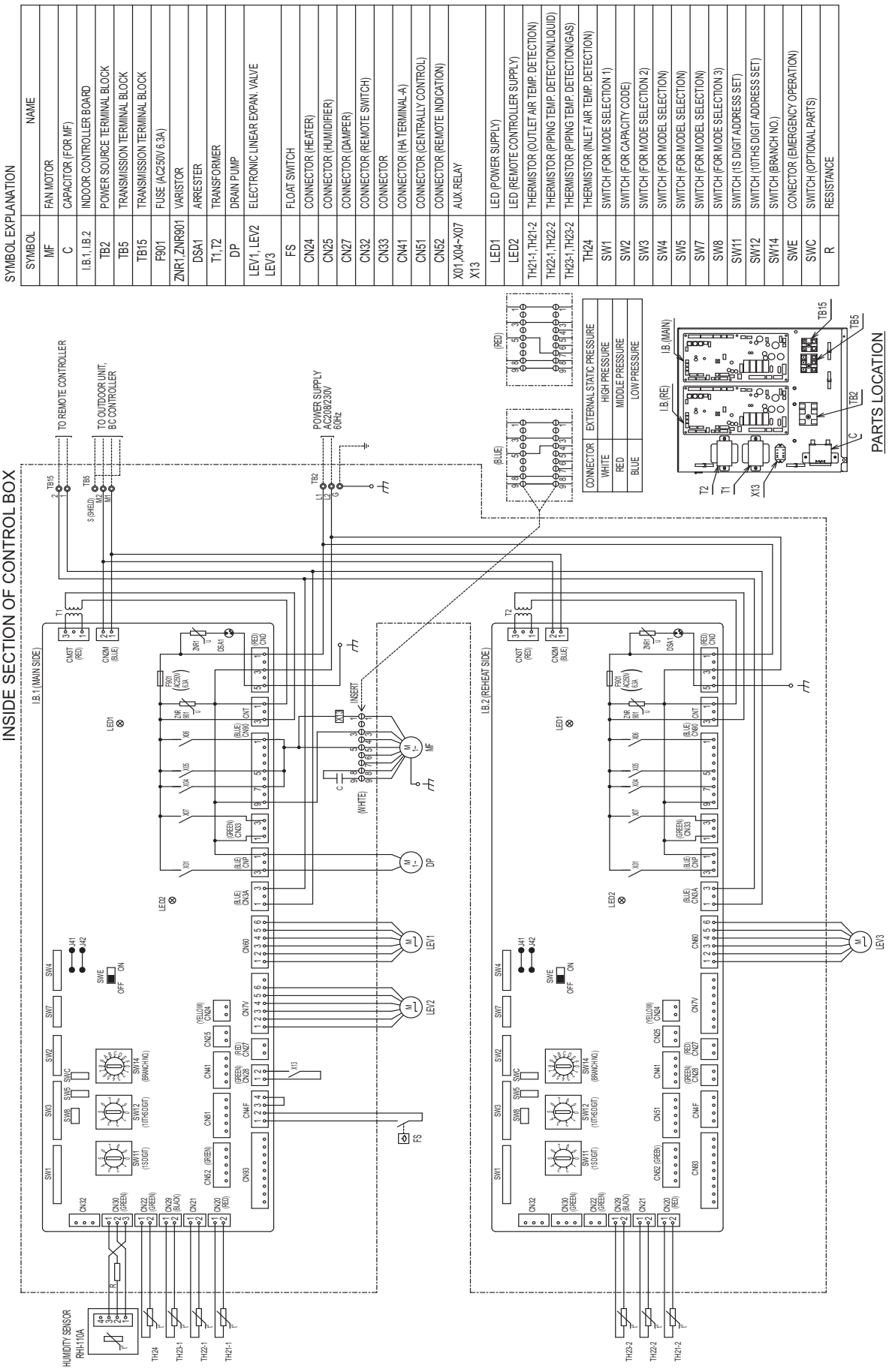
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
MF	FAN MOTOR	CN25	CONNECTOR (HUMIDIFIER)	TH24	THERMISTOR (INLET AIR TEMP. DETECTION)
C	CAPACITOR (FOR MF)	CN27	CONNECTOR (DAMPER)	SW1	SWITCH (FOR MODE SELECTION 1)
I.B.	INDOOR CONTROLLER BOARD	CN32	CONNECTOR (REMOTE SWITCH)	SW2	SWITCH (FOR CAPACITY CODE)
TB2	POWER SOURCE TERMINAL BLOCK	CN33	CONNECTOR	SW3	SWITCH (FOR MODE SELECTION 2)
TB5	TRANSMISSION TERMINAL BLOCK	CN41	CONNECTOR (HA TERMINAL-A)	SW4	SWITCH (FOR MODEL SELECTION)
TB15	TRANSMISSION TERMINAL BLOCK	CN51	CONNECTOR (CENTRALLY CONTROL)	SW5	SWITCH (FOR MODEL SELECTION)
F901	FUSE (AC250V 6.3A)	CN52	CONNECTOR (REMOTE INDICATION)	SW7	SWITCH (FOR MODEL SELECTION)
ZNR1,ZNR901	VARISTOR	X01,X04~X07	AUX.RELAY	SW8	SWITCH (FOR MODE SELECTION 3)
DSA1	ARRESTER	X13		SW11	SWITCH (1S DIGIT ADDRESS SET)
T	TRANSFORMER	LED1	LED (POWER SUPPLY)	SW12	SWITCH (10THS DIGIT ADDRESS SET)
DP	DRAIN PUMP	LED2	LED (REMOTE CONTROLLER SUPPLY)	SW14	SWITCH (BRANCH NO.)
LEV1, LEV2	ELECTRONIC LINEAR EXPAN. VALVE	TH21	THERMISTOR (OUTLET AIR TEMP. DETECTION)	SWE	CONECTOR (EMERGENCY OPERATION)
FS	FLOAT SWITCH	TH22	THERMISTOR (PIPING TEMP. DETECTION/LIQUID)	SWC	SWITCH (OPTIONAL PARTS)
CN24	CONNECTOR (HEATER)	TH23	THERMISTOR (PIPING TEMP. DETECTION/GAS)	R	RESISTANCE

NOTE:1. The wirings to TB2, TB5, TB15 shown in dotted line are field work.
2. Mark ◎ indicates terminal bed, ⊖ connector.
3. Use copper supply wire.

2. PEFY-AF1200CFMR-E

SYMBOL EXPLANATION

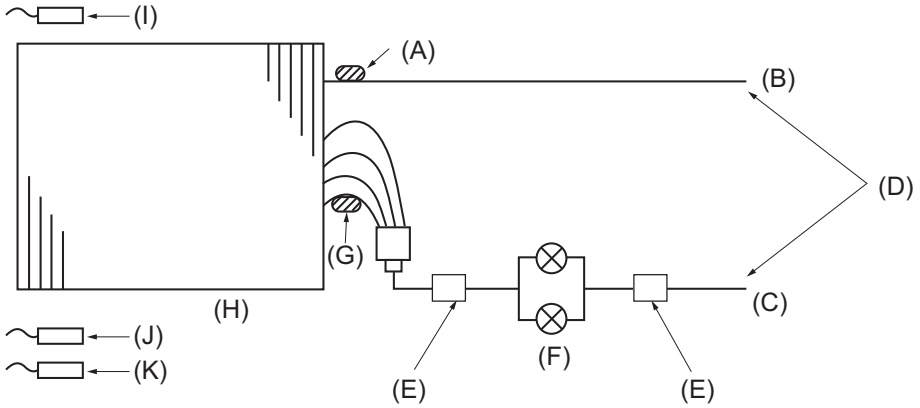
SYMBOL	NAME
MF	FAN MOTOR
C	CAPACITOR (FOR MF)
I.B.1, I.B.2	INDOOR CONTROLLER BOARD
TB2	POWER SOURCE TERMINAL BLOCK
TB5	TRANSMISSION TERMINAL BLOCK
TB15	TRANSMISSION TERMINAL BLOCK
F901	FUSE (AC250V 6.3A)
ZNR1,ZNR901	VARISTOR
DSA1	ARRESTER
T1, T2	TRANSFORMER
DP	DRAIN PUMP
LEV1, LEV2 LEV3	ELECTRONIC LINEAR EXPAN. VALVE
FS	FLOAT SWITCH
CN24	CONNECTOR (HEATER)
CN25	CONNECTOR (HUMIDIFIER)
CN27	CONNECTOR (DAMPER)
CN32	CONNECTOR (REMOTE SWITCH)
CN33	CONNECTOR
CN41	CONNECTOR (HA TERMINAL-A)
CN51	CONNECTOR (CENTRALLY CONTROL)
CN52	CONNECTOR (REMOTE INDICATION)
X01,X04~X07 X13	AUX.RELAY
LED1	LED (POWER SUPPLY)
LED2	LED (REMOTE CONTROLLER SUPPLY)
TH21-1, TH21-2	THERMISTOR (OUTLET AIR TEMP. DETECTION)
TH22-1, TH22-2	THERMISTOR (PIPING TEMP. DETECTION/LIQUID)
TH23-1, TH23-2	THERMISTOR (PIPING TEMP. DETECTION/GAS)
TH24	THERMISTOR (INLET AIR TEMP. DETECTION)
SW1	SWITCH (FOR MODE SELECTION 1)
SW2	SWITCH (FOR CAPACITY CODE)
SW3	SWITCH (FOR MODE SELECTION 2)
SW4	SWITCH (FOR MODE SELECTION)
SW5	SWITCH (FOR MODE SELECTION)
SW7	SWITCH (FOR MODE SELECTION)
SW8	SWITCH (FOR MODE SELECTION 3)
SW11	SWITCH (1S DIGIT ADDRESS SET)
SW12	SWITCH (10THS DIGIT ADDRESS SET)
SW14	SWITCH (BRANCH NO.)
SW/E	CONECTOR (EMERGENCY OPERATION)
SW/C	SWITCH (OPTIONAL PARTS)
R	RESISTANCE



NOTE: 1.The wirings to TB2, TB5, TB15 shown in dotted line are field work.
2.Mark ◎ indicates terminal bed, ⊖ connector.
3.Use copper supply wire.

[1] Refrigerant system diagram

1. PEFY-AF1200CFM-E



(A) Gas pipe thermistor TH23

(B) Gas pipe

(C) Liquid pipe

(D) Brazed connections

(E) Strainer (#100 mesh)

(F) Linear expansion valve

(G) Liquid pipe thermistor TH22

(H) Heat exchanger

(I) Supply air temperature thermistor TH21

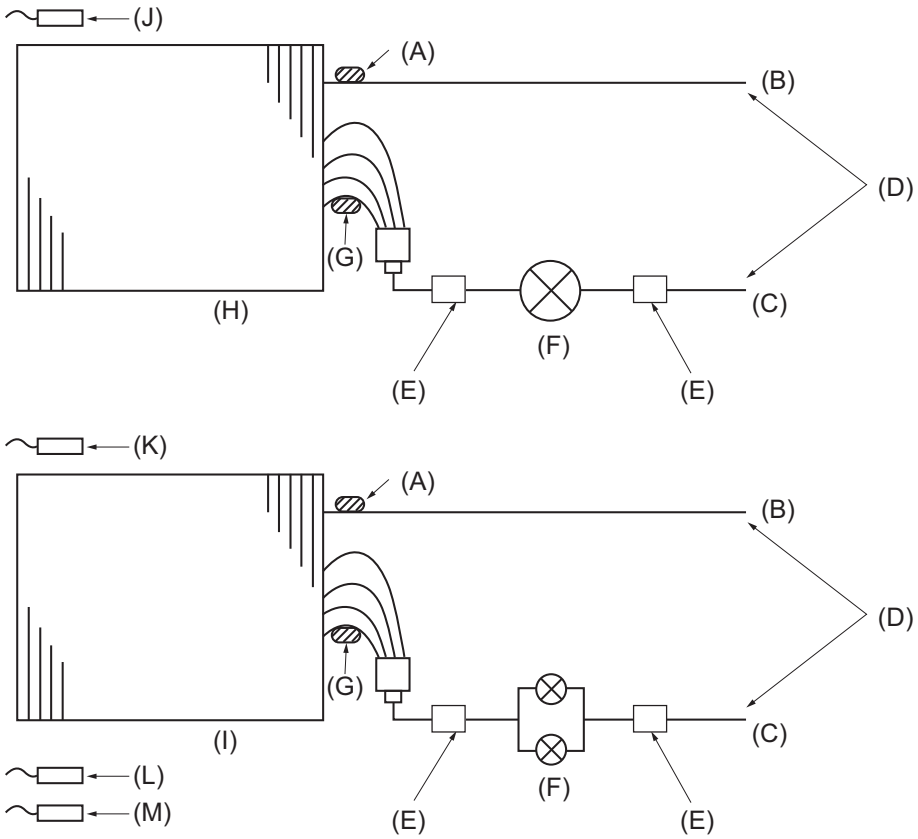
(J) Inlet air temperature thermistor TH24

(K) Humidity sensor HU

	PEFY-AF1200CFM-E
Gas pipe	ø7/8 (ø22.2)*1
Liquid pipe	ø3/8 (ø9.52)*1

*1. When connecting the above-mentioned model of indoor units to the P120 model of outdoor units, use pipes that fit the outdoor units.

2. PEFY-AF1200CFMR-E



(A) Gas pipe thermistor TH23-1, TH23-2
(B) Gas pipe
(C) Liquid pipe
(D) Brazed connections
(E) Strainer (#100 mesh)
(F) Linear expansion valve
(G) Liquid pipe thermistor TH22-1, TH22-2
(H) Heat exchanger (Reheat)
(I) Heat exchanger (Main)
(J) Supply air temperature thermistor TH21-2
(K) Evaporator outlet temperature thermistor TH21-1
(L) Inlet air temperature thermistor TH24
(M) Humidity sensor HU

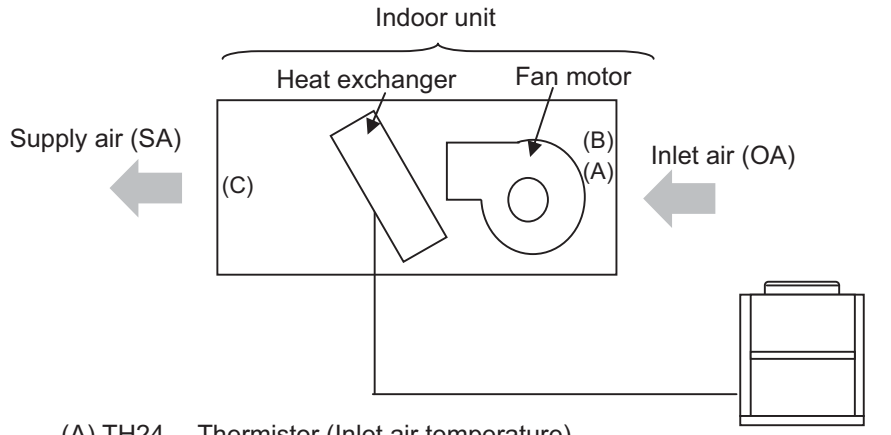
	PEFY-AF1200CFMR-E
Gas pipe (Main)	ø7/8 (ø22.2)
Liquid pipe (Main)	ø3/8 (ø9.52)
Gas pipe (Reheat)	ø7/8 (ø22.2)
Liquid pipe (Reheat)	ø3/8 (ø9.52)

[1] Microprocessor Control

1. Auto operation

PEFY-AF1200CFM-E

The operating mode is only "AUTO" in this system.
If operating mode is set to other than “Auto” , the display on RC is changed to “Auto” in a little time automatically. The system keeps “Auto” mode constantly.



(A) TH24 Thermistor (Inlet air temperature)
(B) HU Humidity sensor (Inlet air humidity)
(C) TH21 Thermistor (Outlet air temperature)

1.Thermoregulation function
Supply air temperature (C) is controlled to reach the target supply air temperature TDm.
Inlet air temperature (A) and humidity (B) are used for the thermorequlating.

(1) Thermoregulating function

Mode	Condition	State
Cooling	TH24 < 70°F[21°C] and TDin<TDm and 3mins. has passed.	Thermo OFF
	TH24 ≥ 72°F[22°C] and TDin ≥ TDm+2F and 3mins. has passed.	Thermo ON
Heating	TH24 ≥ TDm+2F and 3mins. has passed.	Thermo OFF
	TH24 < TDm and 3mins. has passed.	Thermo ON

TDin	Dew point temperature of inlet air
TDm	Target temperature by dip switch setting

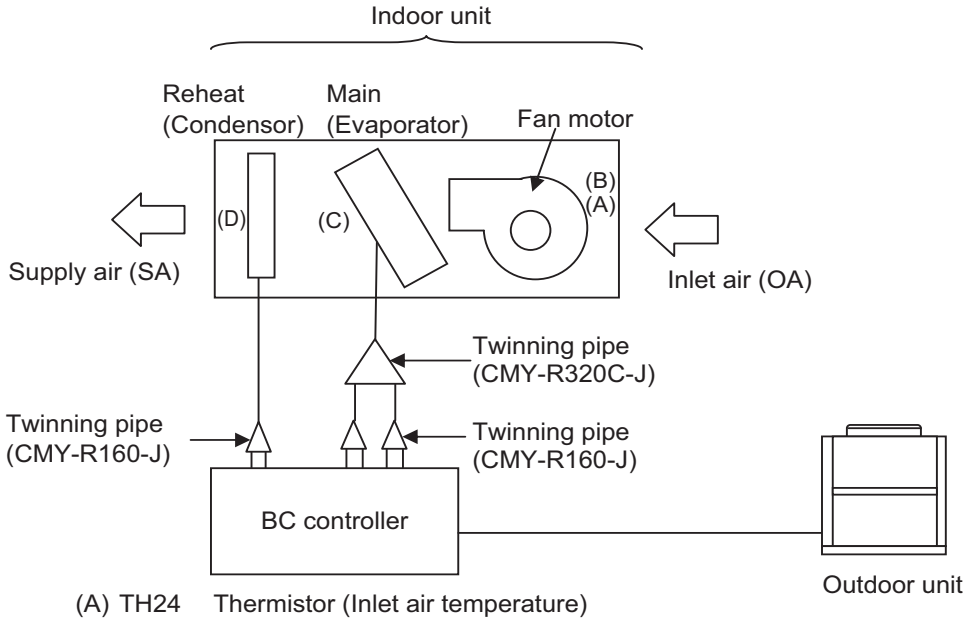
SW3-6	SW3-8	TDm
OFF	OFF	50°F [10°C]
OFF	ON	55°F [12.8°C]
ON	OFF	60°F [15.6°C]
ON	ON	Preset temperature by remote controller*1

The factory setting is 55°F[12.8°C]
*1 Temperature set range of remote controller is from 50°F to 70°F [10°C to 21°C].
If set temp. is set beyond or below RC range(50-70°F[10-21°C]), the display on RC is changed to lowest (50°F[10°C]) or highest (70°F[21°C]) possible temp. in a little time automatically.

2.Mode change
(1)HEAT mode → COOL mode
TH24 ≥ TDm + 2F and 3mins. has passed.
(2)COOL mode → HEAT mode
TH24 < TDm and 3mins. has passed.

PEFY-AF1200CFMR-E

The operating mode is only "AUTO" in this system.
If operating mode is set to other than “Auto” , the display on RC is changed to “Auto” in a little time automatically. The system keeps “Auto” mode constantly.



(A) TH24 Thermistor (Inlet air temperature)
(B) HU Humidity sensor (Inlet air humidity)
(C) TH21-1 Thermistor (Outlet air temperature)
(D) TH21-2 Thermistor (Supply air temperature)

1.Thermoregulation function
Outlet air temperature (C) is controlled to reach the target air temperature TDm.
Inlet air temperature (A) and humidity (B) are used for the thermoregulating.
Supply air temperature (D) is controlled to reach the preset temperature by remote controller.
(1)Thermoregulating function

Mode	Type	Condition	State
Cooling/ Heating	Main (Cooling)	TH24 < 43°F[6°C] and 5mins. has passed.	Thermo OFF
		TH24 ≥ 50°F[10°C] and 5mins. has passed.	Thermo ON
	Reheat (Heating)	TH21-1 ≥ Tset and 3mins. has passed.	Thermo OFF
		TH21-1 < Tset - 7°F[-21.5°C] and 3mins. has passed.	Thermo ON

Tset	Preset temperature by remote controller
TDm	Target temperature by dip switch setting

SW3-6	SW3-8	TDm
OFF	OFF	50°F [10°C]
OFF	ON	55°F [12.8°C]
ON	OFF	60°F [15.6°C]
ON	ON	Converted temperature from the preset temperature by remote controller and relative humidity of 45%.

The factory setting is 55°F [12.8°C]
*1 Temperature set range of remote controller is from 63°F to 83°F [17°C to 28°C].

2.Mode change
"Main" heat-exchanger is operated in cooling only.
"Reheat" heat-exchanger is operated in heating only.

[1] Responding to Error Display on the Remote Controller

1. Error Code

2502

Drain pump fault (Models with a float switch)

2. Error definition and error detection method

1) The immersion of sensor tip in water is detected by the ON/OFF signal from the float switch.
   ∗Submergence of the sensor
   When it is detected that the float switch has been ON for 15 seconds, it is interpreted that the sensor tip is immersed in water.
   ∗Sensor in the air
   When it is detected that the float switch has been OFF for 15 seconds, it is interpreted that the sensor tip is not immersed in water.
2) If it is detected that the float switch has been ON for 3 minutes after the immersion of the sensor tip was detected, this is considered a drain pump failure, and "2502" appears on the monitor.
   ∗The total time it takes for this error to be detected is 3 minutes and 15 seconds, including the time it takes for the first immersion of the sensor tip to be detected.
3) Detection of drain pump failure is performed while the unit is stopped.
4) The following criteria are met when the criteria for the forced stoppage of outdoor unit (system stoppage) are met.
   ∗"Liquid pipe temperature - inlet temperature ≦ - 10°C [-18°F] " has been detected for 30 minutes.
   ∗It is detected by the float switch that the sensor tip has been immersed in water for 15 minutes or more.
   ∗The conditions that are listed under items 1) through 3) above are always met before the criteria for the forced stoppage of the outdoor unit.
5) The indoor unit that detected the conditions that are listed in item 4) above brings the outdoor unit in the same refrigerant circuit to an error stop (compressor operation prohibited), and the outdoor unit brings all the indoor units in the same refrigerant circuit that are in any mode other than Fan or Stop to an error stop.
6) Forced stoppage of the outdoor unit
   Detection timing: The error is detected whether the unit is in operation or stopped.
   This error is detected whether the unit is in operation or stopped.
7) Ending criteria for the forced stoppage of outdoor unit
   Power reset the indoor unit that was identified as the error source and the outdoor unit that is connected to the same refrigerant circuit.
   Forced stoppage of the outdoor unit cannot be cancelled by stopping the unit via the remote controller.
   (Note) Items 1) - 3) and 4) - 7) are detected independently from each other.

Note

The address and attribute that appear on the remote controller are those of the indoor unit (or OA processing unit) that caused the error.

3. Cause, check method and remedy

Cause		Check method and remedy
(1)	Drain pump failure	Check for proper functioning of the drain pump mechanism
(2)	Drain water drainage problem ♦Clogged drain pump ♦Clogged drain piping	Check for proper drainage.
(3)	Stuck float switch Check for slime in the moving parts of the float switch.	Check for normal operation of the float switch.
(4)	Float switch failure	Check the resistance with the float switch turned on and turned off.
(5)	Indoor unit control board failure ♦Drain pump drive circuit failure ♦Float switch input circuit failure	Replace indoor unit control board.
(6)	Items (1) through (5) above and an indoor unit electronic valve closure failure (leaky valve) occurred simultaneously.	Check the solenoid valves on the indoor unit for leaks.

1. Error code

4109

Fan fault (indoor unit)

2. Error definition and error detection method

If the auxiliary relay X13 (fan fault detection) remains unexcited for a certain amount of time during operation, the unit will come to an abnormal stop.

3. Cause, check method and remedy

Cause	Check method and remedy
(1) Thermistor trip (built-in thermistor on the motor)	Thermistor trip (built-in thermistor on the motor) ♦Check to see if the fan is not locked. Check if the air comes out of the unit when operated in the fan mode. ♦Check for filter clogging. Clean the filter if it is clogged.
(2) Auxiliary relay (X13) fault	Loose lead wire, broken wire, miswiring Coil fault, contact failure
(3) Broken wire	Check for broken wires. (Check the section on simple checking for how to check for broken fan motor wire.)
(4) Loose connector	Check the connectors for proper contact.
(5) Indoor unit control board (I.B.) fault	If the above items are all normal and the problem persists, circuit board failure is suspected.

1. Error Code

5101

Outlet air temperature sensor (TH21) fault (Indoor unit)

5102

Pipe temperature sensor (TH22) fault (Indoor unit)

5103

Gas-side pipe temperature sensor (TH23) fault (Indoor unit)

5104

Intake air temperature sensor (TH24) fault

2. Error definition and error detection method

♦If a short or an open is detected during thermostat ON, the outdoor unit turns to anti-restart mode for 3 minutes. When the error is not restored after 3 minutes (if restored, the outdoor unit runs normally), the outdoor unit makes an error stop.
Short: detectable at 90°C [194°F] or higher
Open: detectable at -40°C [-40°F] or lower

♦Sensor error at gas-side cannot be detected under the following conditions.
∗During heating operation
∗During cooling operation for 3 minutes after the compressor turns on.

3. Cause, check method and remedy

Cause	Check method and remedy
(1) Thermistor failure (2) Connector contact failure (3) Disconnected wire or partial disconnected thermistor wire (4) Unattached thermistor or contact failure	Check the thermistor resistor. 0°C [32°F]: 15 kΩ 10°C [50°F]: 9.7 kΩ 20°C [68°F] : 6.4 kΩ 30°C [86°F] : 4.3 kΩ 40°C [104°F] : 3.1 kΩ
(5) Indoor board (detection circuit) failure	Check the connector contact. When no fault is found, the indoor board is a failure.

1. Error Code

5401

Humidity sensor fault

2. Error definition and error detection method

♦A short-circuit or an open-circuit of the humidity sensor is detected during operation.

3. Cause, check method and remedy

Cause		Check method and remedy	
(1)	Connector contact failure (CN30) (Loose connector)	1)	Check the connector for proper contact. Reconnect the connector, and operate the unit to check for proper operation.
(2)	Broken or partially broken humidity sensor wire	2)	Check for broken humidity sensor wire.
(3)	Humidity sensor fault	3)	Check the output voltage across No. 1 and No. 3 pins of connector CN30 with the connector being connected to the indoor unit control board. 30% : 1.25V 40% : 1.52V 50% : 1.88V 60% : 2.19V 70% : 2.48V 80% : 2.79V
(4)	Indoor unit control board (detection circuit) fault	4)	If the above items check out okay, replace the indoor unit control board.

1. Error Code

5701

Loose float switch connector

2. Error definition and error detection method

Detection of the disconnected float switch (open-phase condition) during operation

3. Cause, check method and remedy

(1) CN4F disconnection or contact failure

Check for disconnection of the connector (CN4F) on the indoor unit control board.

Refer to the outdoor unit Service Handbook for other error codes.

[2] Troubleshooting

1. Check methods

1. Component and check points

(1) Thermistor

- Supply air temperature thermistor (TH21-1, TH21-2)
- Liquid pipe thermistor (TH22-1, TH22-2)
- Gas pipe thermistor (TH23-1, TH23-2)
- Inlet air temperature thermistor (TH24)

Disconnect the connector and measure the resistance between terminals with a tester.
(Ambient temperature 10°C - 30°C[50°F-86°F])

Normal	Abnormal
4.3kΩ - 9.6kΩ	Open or short

(Refer to the thermistor characteristic graph below.)

1) Thermistor characteristic graph

Low-temperature thermistor

- Room temperature thermistor (TH21)
- Liquid pipe thermistor (TH22)
- Gas pipe thermistor (TH23)
- Drain sensor (DS)

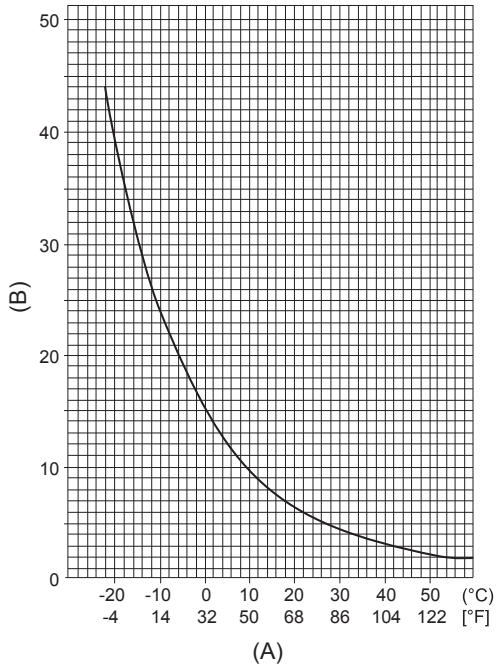
- Thermistor R_0 = 15 kΩ±3%
- Multiplier of B = 3480±2%

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

0°C	32°F	15kΩ
10°C	50°F	9.6kΩ
20°C	68°F	6.3kΩ
25°C	77°F	5.2kΩ
30°C	86°F	4.3kΩ
40°C	104°F	3.0kΩ

(A) Temperature (°C)[°F]

(B) Resistance (kΩ)



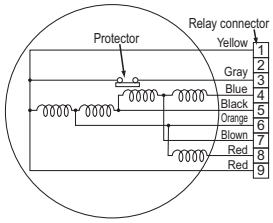
(2) Humidity sensor

Check the voltage across pins No.1 and No.2 on the humidity sensor connector (CN30).

30% 1.25V
40% 1.52V
50% 1.88V
60% 2.19V
70% 2.48V
80% 2.79V

(3) Fan motor

Fan motor

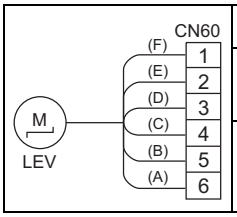


Measure the resistance between the terminals using a tester. (at 20°C[68°F])

Motor terminal or Relay connector	Normal	Abnormal
Brown - Black	1.98Ω	Open or short
Brown - Blue	1.72Ω	
Black - Orange	1.10Ω	
Orange - Red 1	25.0Ω	
Orange - Red 2	7.92Ω	

(4) Linear expansion valve

Disconnect the connector, and measure the resistance between terminals with a tester.
Refer to the next page for details.



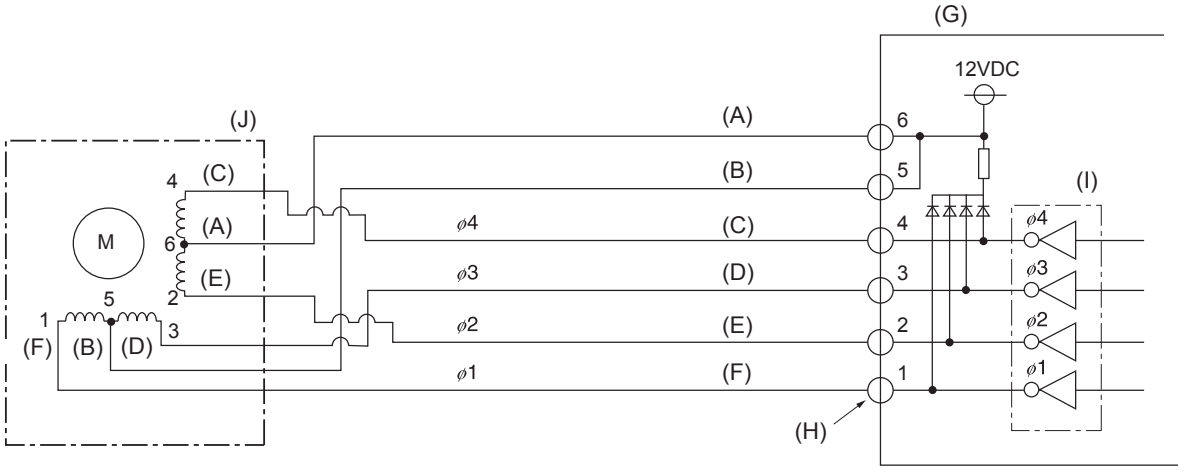
Normal				Abnormal
1-5 White-Red	2-6 Yellow-Brown	3-5 Orange-Red	4-6 Blue-Brown	Open or short
200 Ω±10%				

(A) Brown
(B) Red
(C) Blue
(D) Orange
(E) Yellow
(F) White

1) Summary of linear expansion valve (LEV) operation

- The LEV is operated by a stepping motor, which operates by receiving a pulse signal from the indoor control board.
- The LEV position changes in response to the pulse signal.

Indoor control board and LEV connection



(A) Brown
(B) Red
(C) Blue
(D) Orange
(E) Yellow
(F) White
(G) Control board
(H) Connection (CN60,CN7V)
(I) Drive circuit
(J) Linear expansion valve

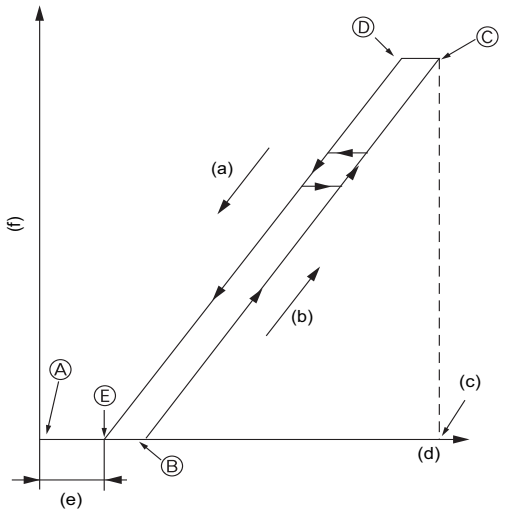
Pulse signal output and valve operation

Phase number	Output pulse			
	1	2	3	4
ø1	ON	OFF	OFF	ON
ø2	ON	ON	OFF	OFF
ø3	OFF	ON	ON	OFF
ø4	OFF	OFF	ON	ON

The output pulse changes in the following order:
When the valve closes 1 -> 2 -> 3 -> 4 -> 1
When the valve opens 4 -> 3 -> 2 -> 1 -> 4

- When the valve position remains the same, all output signals will be OFF.
- If any output signal is missing or if the signal remains ON, the motor vibrates and makes clicking noise.

2) LEV operation



(a) Close

(b) Open

(c) Fully open valve (2000 pulses)

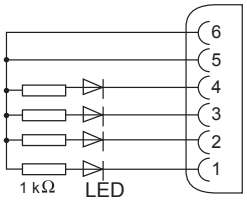
(d) No. of pulses

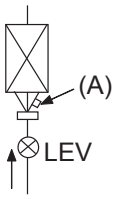
(e) Extra tightning (80 - 100 pulse)

(f) Valve opening degree

- When the power is turned on, a pulse signal of 2200 pulses is output (valve closure signal), to bring the valve to position A.
- When the valve is operating normally, it is free of vibration noise. If the valve locks or when it goes from point E to A in the figure, it makes louder noise than would be heard when there is an open phase.
- Check for abnormal sound/vibration by placing the metal tip of a screwdriver against the valve and the handle side against your ear.

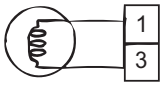
3) Troubleshooting

Symptom	Checking Criteria	Remedy
Circuit failure on the microcomputer	Disconnect the connectors on the control board, and connect LEDs to test the circuit as shown below.  Pulse signals are output for 10 seconds when the main power is turned on. If there are LEDs that do not light up at all or remain lit after the pulses are turned off, there is a problem with the driving circuit.	Replace the indoor control board if driving circuit failure is detected.
Locked LEV	The motor will idle and make small clicking noise if it is run while the LEV is locked. If this clicking noise is heard both when the valve is fully closed and while it is being opened, it indicates a problem.	Replace the LEV.
Disconnected or shorted LEV motor coils	easure the resistance between the coils with a tester (red-white, red-orange, brown-yellow, brown-blue). The normal range of resistance is 200 Ω±10%	Replace the LEV.

Symptom	Checking Criteria	Remedy
Valve closure failure (leaky valve)	To check the LEV on the indoor unit, check the indoor unit liquid pipe temperature that appears on the operation monitor on the outdoor unit's multi control board while operating the indoor unit in question in the FAN mode and the other indoor units in the cooling mode. (A) Termistor (TH22) 	Replace the LEV if the amount of leakage is great.
	Normally, the LEV is fully closed while the unit is in the FAN mode. If the valve is leaky, liquid pipe thermistor reading will be lower than normal. If it is significantly lower than the inlet temperature on the remote controller, valve closure failure is suspected. If the amount of leakage is insignificant, replacement of LEV is unnecessary unless it is causing a problem.	
Misconnections of connectors or contact failure	Perform a visual check for disconnected connectors. Perform a visual check of lead wire color.	Disconnect the connectors on the control board and perform a continuity test.

(5) Drain-up mechanism

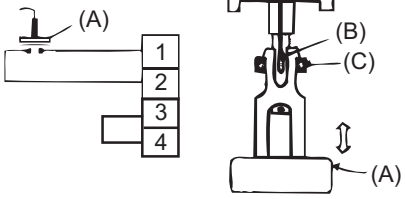
Measure the resistance between the terminals with a tester.
(coil temperature 20°C[68°F])



Normal	Abnormal
340 Ω	Open or short

(6) Drain float switch (CN4F)

Disconnect the connector, and measure the resistance between terminals with a tester.

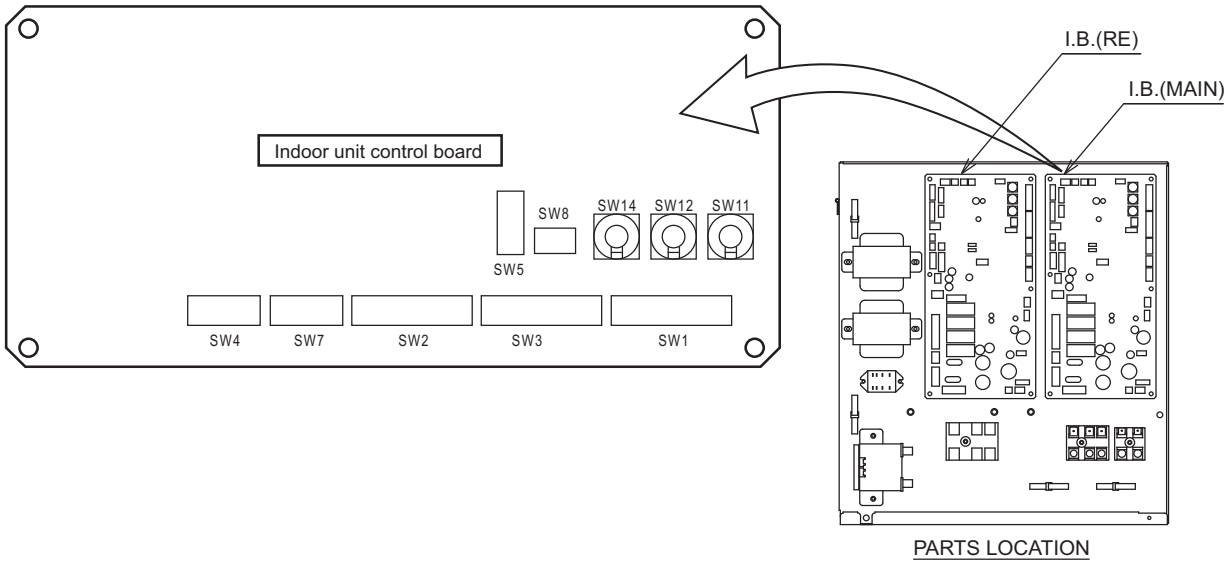


(A) Moving part
(B) Switch
(C) Magnet

Position of the moving part	Normal	Abnormal
Up	Short	(any position but short)
Down	Open	(any position but open)

2. Address switch setting

Make sure that power to the unit is turned off.

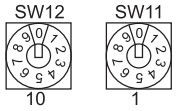


PARTS LOCATION

There are two types of rotary switch setting available: setting addresses 1 to 9 and over 10, and setting branch numbers.

1. How to set addresses
   Example: If Address is "3", remain SW12 (for over 10) at "0", and match SW11(for 1 to 9) with "3".

   Factory setting



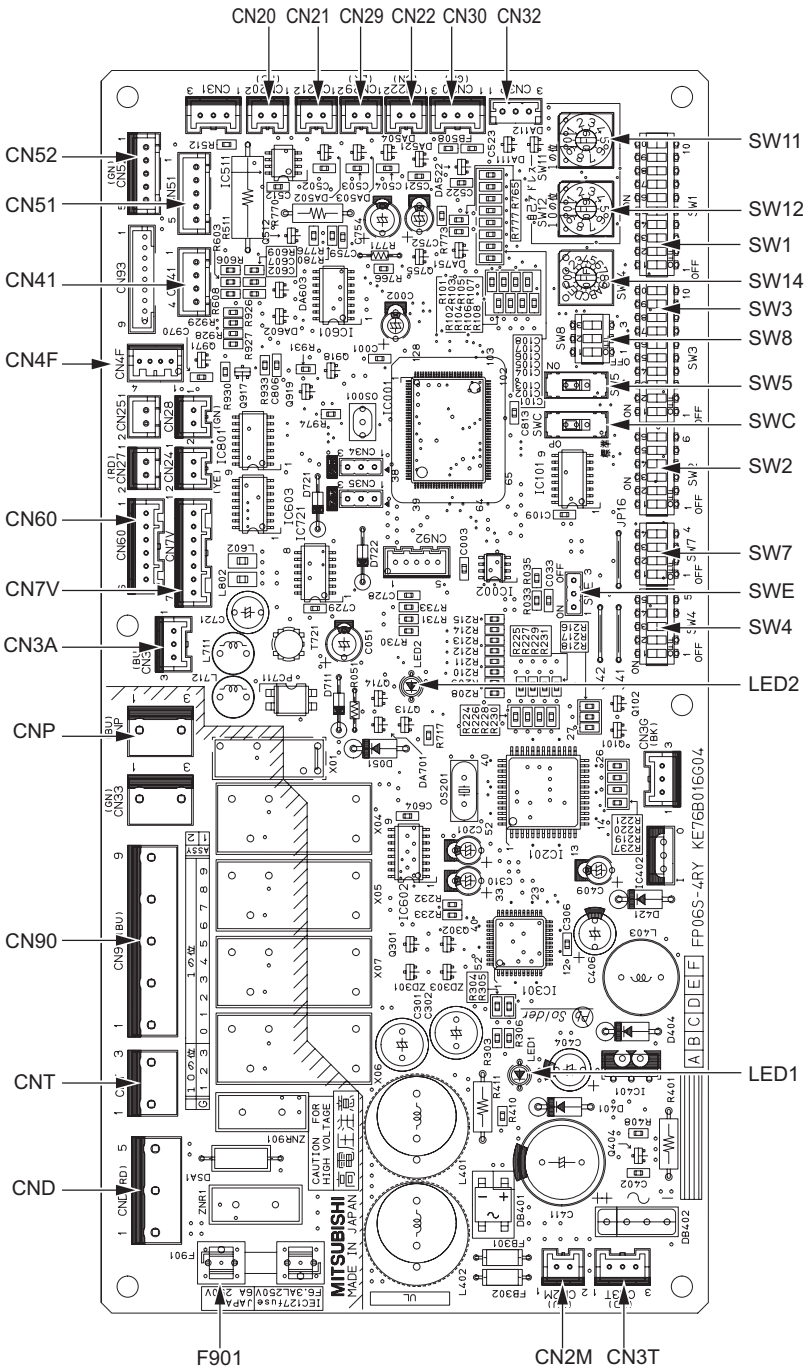
2. How to set branch numbers SW14 (PEFY-AF1200CFMR-E, R2 Series only)
   The branch number assigned to each indoor unit is the port number of the BC controller to which the indoor unit is connected. Leave it to "0" on the non-R2 series of units.

   Factory setting



When using PEFY-AF1200CFMR-E, assign an address to the left control board (reheat unit) that equals the address of the right control board (main unit) plus 1.

3. Voltage test points on the control board



CN52	Remote display
CN51	Centralized control
CN41	JAMA standard HA terminal A
CN60	Linear expansion valve 12VDC pulse output
CN7V	Linear expansion valve 12VDC pulse output
CN4F	Float switch
CN3A	For MA remote controller cable connection (10 - 13 VDC (Between 1 and 3.))
CNP	Drain-up mechanism output (208-230 VAC)
CN90	Fan motor output (208-230 VAC)
CNT	Transformer (208-230 VAC)
CND	Power supply voltage (208-230 VAC)
F901	Fuse 6.3A 250V
CN2M	For M-NET transmission cable connection (24 - 30VDC)
CN3T	Transformer
LED1	Main power supply
LED2	Power supply for MA remote controller
SW4	Model setting
SWE	Emergency operation
SW7	Model setting
SW2	Capacity code setting
SW5	Voltage setting
SWC	Option setting
SW8	Mode setting
SW3	Mode setting
SW14	Connection No. setting
SW1	Function setting
SW12	10's digit address setting
SW11	1's digit address setting
CN32	Remote switch
CN30	Humidity sensor
CN22	Thermistor (inlet temp. detection)
CN29	Thermistor (piping temp. detection/gas)
CN21	Thermistor (piping temp. detection/liquid)
CN20	Thermistor (outlet temp. detection)

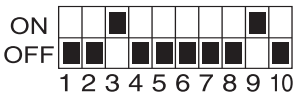
4. Dipswitch setting (Factory setting)

1. Function setting

(1) SW1

Switch position	Function	Switch setting	
		ON	OFF
1	Active Thermistor (Intake air thermistor)	Built-in thermistor on the remote controller	Indoor unit
2	Filter clogging detection	Available	Unavailable
3	Filter life	2500 hr	100 hr
4	-	-	-
5	Remote display	Thermo-ON signal	Fan output
6	-	-	-
7	-	-	-
8	-	-	-
9	Auto restart after power failure	Enabled	Disabled
10	Power start/stop	Enabled	Disabled

Factory setting
(All models)



(2) SW3

Switch position	Function	Switch setting	
		ON	OFF
1	Unit type	Main (Evaporator)	Reheat (Condensor)
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	Target temperature setting	*1	*1
7	-	-	-
8	Target temprature setting	*1	*1
9	-	-	-
10	-	-	-

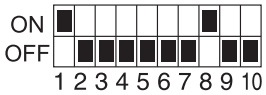
∗1 Setting a dew point temperature
The table below shows the dip switch settings and their corresponding dew point temperatures.
The dew point temperatue can be adjusted by setting dip switches in the control box on the main indoor unit. (only PEFY-AF1200CFMR-E)
The factory setting is 12.8°C [55°F].

SW3-6	SW3-8	Dew point temperature
OFF	OFF	10°C [50°F]
OFF	ON	12.8°C [55°F] (standard factory setting)
ON	OFF	15.6°C [60°F]
ON	ON	[PEFY-AF1200CFM-E] Preset temperature by RC. [PEFY-AF1200CFMR-E] Converted temperature from the preset temperature by RC and relative humidity of 45%.

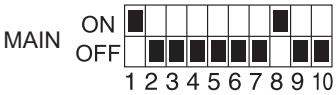
Dipswitch settings must be made while the unit is stopped.

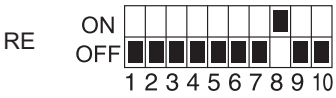
Factory setting

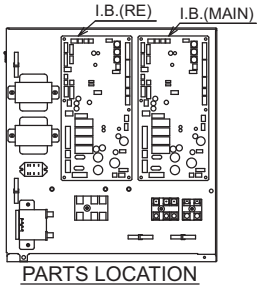
PEFY-AF1200CFM-E



PEFY-AF1200CFMR-E







PARTS LOCATION

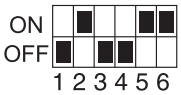
2. Capacity code setting

(1) SW2

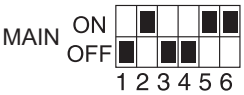
1) Indoor control board

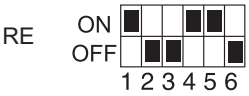
Dipswitch settings must be made while the unit is stopped.
Factory setting
The switches are set to correspond to the unit capacity.

PEFY-AF1200CFM-E



PEFY-AF1200CFMR-E





3. Model setting

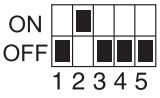
(1) SW4,SW5,SW8,SWC

1) Indoor control board

Dipswitch settings must be made while the unit is stopped.

Factory setting

SW4
(All models)

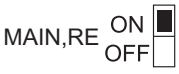


SW5

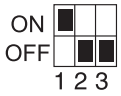
PEFY-AF1200CFM-E



PEFY-AF1200CFMR-E



SW8
(All models)



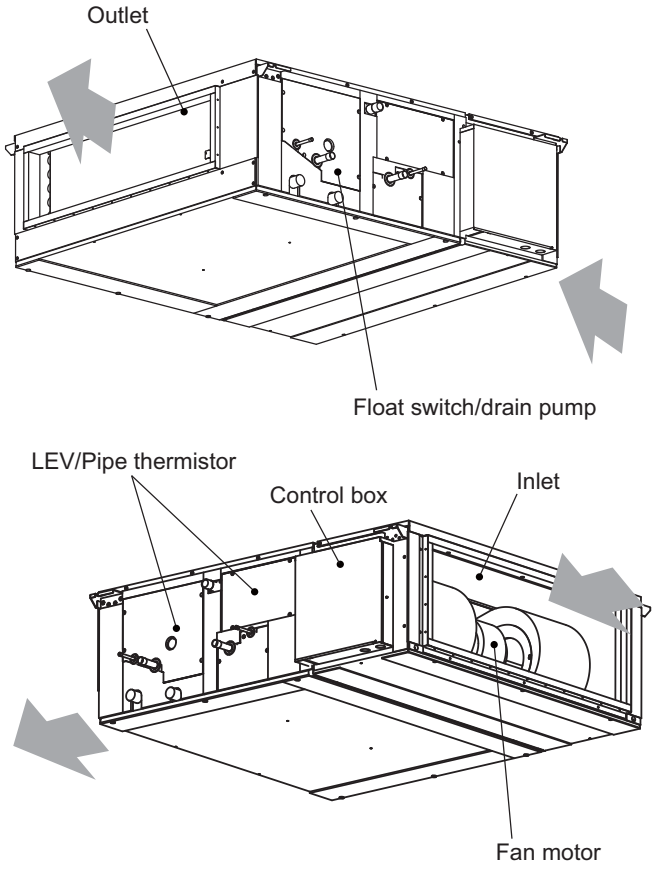
SWC
(All models)



Note:
Changes made to the dipswitches SW1, SW2, and SW3 will become effective when the unit comes to a stop (remote controller off). There is no need to power cycle the unit.

[1] Disassembly Procedure

1. Positions of major components



2. Removing the service panel

1. To remove service panel A (Fig.1)

(1) Remove the four service panel A fixing screws.

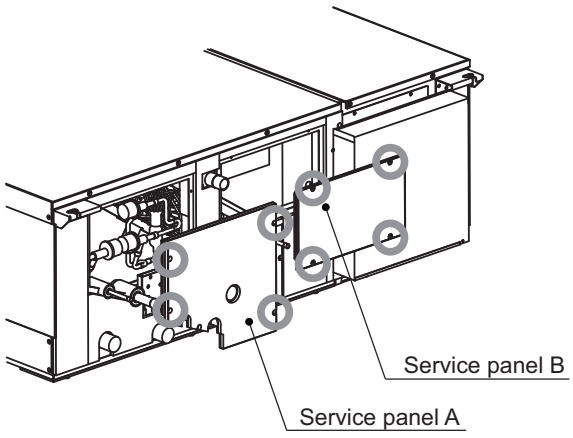


Fig.1

2. To remove service panel B (Fig.1)

(1) Remove the four Service Panel B fixing screws.

3. Control box

1. To remove the control box cover (Fig.2)

(1) Remove the two control box cover fixing screws.

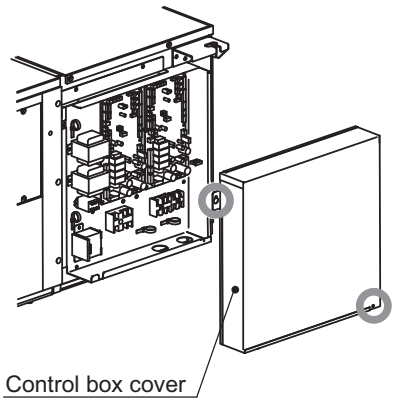


Fig.2

(2) Removing the control box cover allows the following services to be performed.

1) Operating and checking the switches (See below) on the control box

- Rotary switch SW11,12 : ADDRESS SET
- Rotary switch SW14 : BRANCH NO.
- Dip switch SW1 : MODE SELECTION 1
- Dip switch SW2 : CAPACITY CODE
- Dip switch SW3 : MODE SELECTION 2
- Dip switch SW4 : MODEL SELECTION
- Dip switch SW5 : MODEL SELECTION
- Dip switch SW7 : MODEL SELECTION
- Dip switch SW8 : MODE SELECTION 3
- Jumper pin SWE : EMERGENCY OPERATION
- Dip switch SWC : OPTIONAL PARTS

2) Checking and connecting field-supplied wiring (See below) to the control box

- Power wire : Field-wiring
- Indoor-outdoor transmission line : Field-wiring
- Remote controller wiring : Field-wiring
- LEV wiring : Factory-connected wiring
- Float switch wiring : Factory-connected wiring
- Fan motor wiring : Factory-connected wiring
- Humidity sensor wiring : Factory-connected wiring
- Inlet air temperature thermistor wiring : Factory-connected wiring
- Supply air temperature thermistor wiring : Factory-connected wiring
- Liquid pipe temperature thermistor wiring : Factory-connected wiring
- Gas pipe temperature thermistor wiring : Factory-connected wiring
- Drain pump wiring : Factory-connected wiring

3) Replacing the control board

4) Replacing the condenser

5) Replacing the power transformer

6) Replacing the auxiliary relay

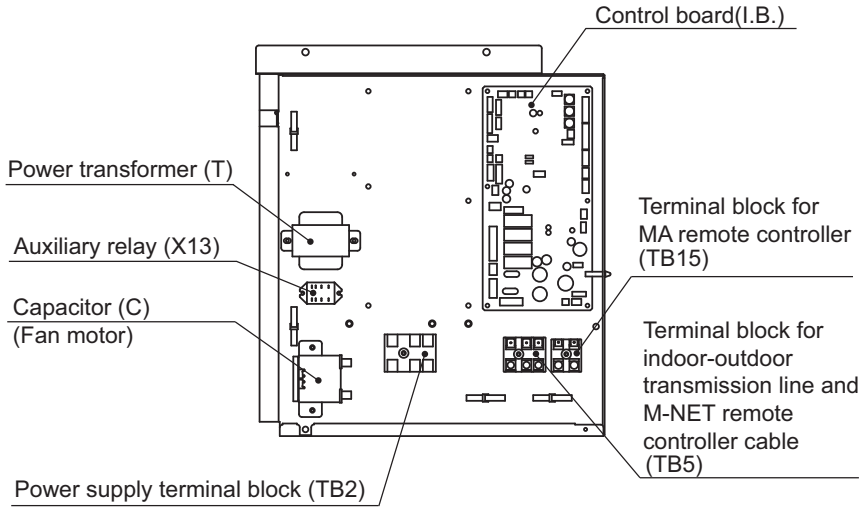


Fig.3 Inside the control box (PEFY-AF1200CFM-E)

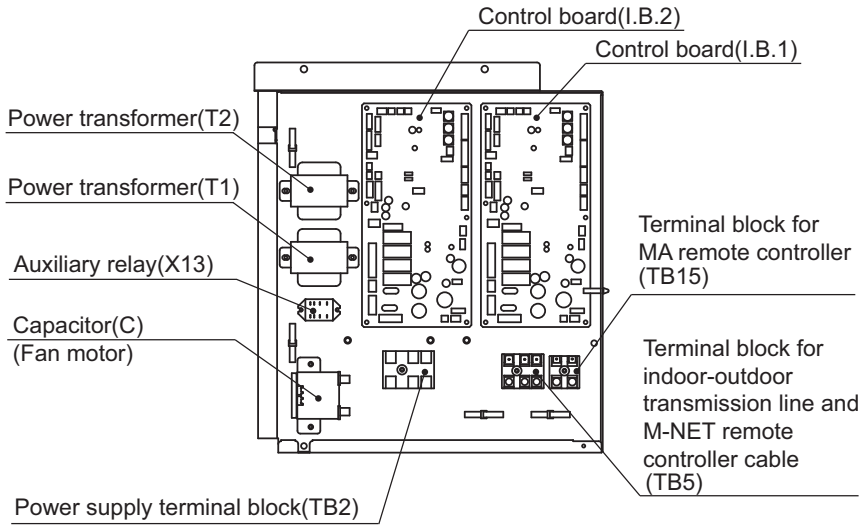


Fig.4 Inside the control box (PEFY-AF1200CFMR-E)

2. Removing the control box (Fig.5)

(1) Remove the wires connected to the control board and the relay connector.

- LEV1 wiring : I.B.1/CN60/6P/White
- LEV2 wiring : I.B.1/CN7V/7P/White
- LEV3 wiring (CFMR model only) : I.B.2/CN60/6P/White
- Drain pump wiring : I.B.1/CNP/3P/Blue
- Float switch wiring : I.B.1/CN4F/4P/White
- Fan motor wiring : Relay connector/9P/White
- Humidity sensor wiring : I.B.1/CN30/3P/Green
- Inlet air temperature thermistor wiring : I.B.1/CN22/2P/Green
- Supply air temperature thermistor wiring : I.B.1/CN20/2P/Red
- Supply air temperature thermistor wiring (CFMR model only) : I.B.2/CN20/2P/Red
- Liquid pipe temperature thermistor wiring : I.B.1/CN21/2P/White
- Liquid pipe temperature thermistor wiring (CFMR model only) : I.B.2/CN21/2P/White
- Gas pipe temperature thermistor wiring : I.B.1/CN29/2P/Black
- Gas pipe temperature thermistor wiring (CFMR model only) : I.B.2/CN29/2P/Black

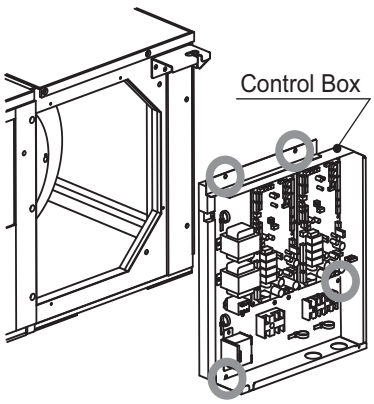


Fig.5

(2) Remove the four control box fixing screws.

4. Humidity sensor/LEV/Pipe thermistor

1. According to the instructions provided in section 2-2, remove service panel B.
2. According to the instructions provided in section 3-1, remove the control box cover.
3. According to the instructions provided in section 3-2, remove the control box.
4. To remove the humidity sensor (Fig.6)

(1) Loosen the two humidifier sensor fixing screws to remove the sensor.

5. To remove the wire cover (Fig.6)

(1) Loosen the two wire cover fixing screws to remove the cover.

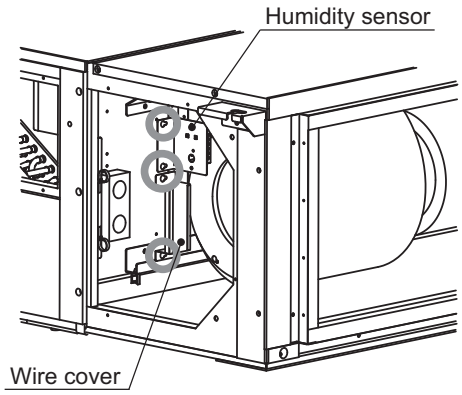


Fig.6

6. To remove the LEV (Fig.7)

(1) Remove the driving motor, using two spanners to avoid twisting.

(2) Before replacing the valve, protect the surrounding parts (e.g., insulation, wiring) from heat.

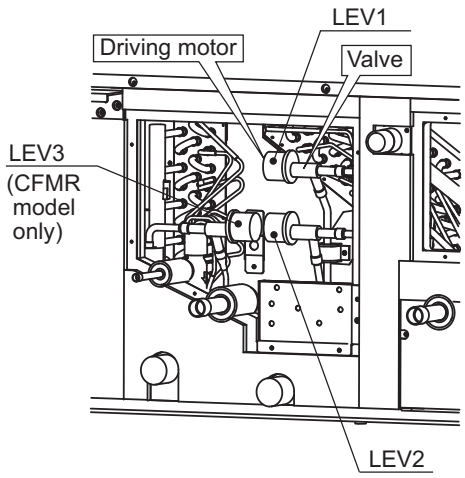


Fig.7

7. To remove the pipe thermistor (Fig.8)

(1) Remove the pipe thermistor from the holder.

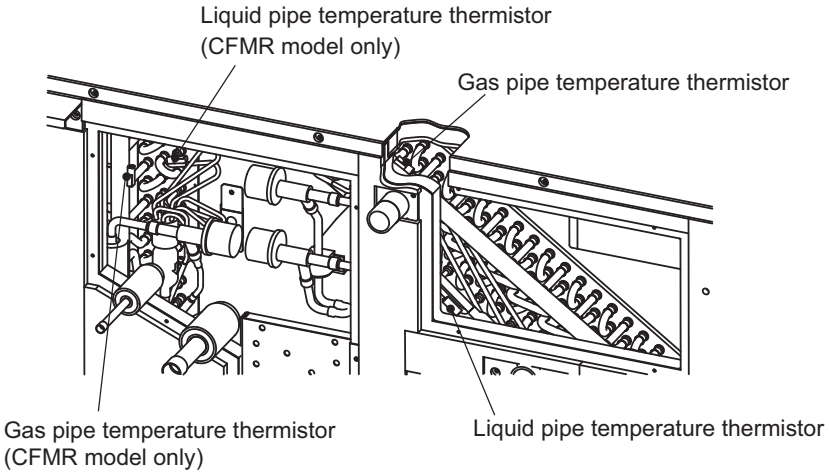


Fig.8

5. Drainpan

1. According to the instructions provided in section 2-1, remove service panel A, and check for water inside.
   If the drain pan has water inside, drain the water through the drainage port.
   Protect the surrounding with a plastic sheet in case water spills out.
2. To remove the drain pan (Fig.9)

(1) Remove the 13 screws holding bottom plate A.

(2) Loosen the two fixing screws holding the drain pan fixing plate to remove the plate.

(3) Pull down the drain pan.
Pull on all sides evenly and slowly to avoid damage.
Drain pan is made of styrofoam.
Handle the drain pan carefully not to break it.

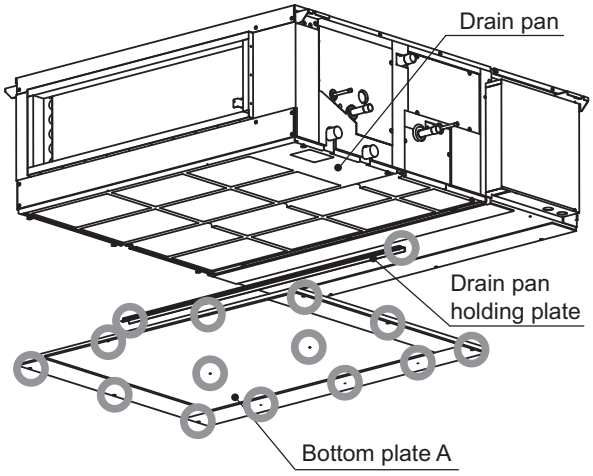


Fig.9

6. Pump/float switch/supply air temperature thermistor

1. According to the instructions provided in section 2-1, remove service panel A.
2. According to the instructions provided in section 3-1, remove the control box cover.
3. According to the instructions provided in section 3-2, remove the control box.
4. According to the instructions provided in section 4-5, remove the wire cover.
5. To remove the pump and float switch (Fig.10, 11)

(1) Remove the three screws holding the float switch fixing plate.

(2) Cut the tie band holding the drain hose to the drain pump outlet.

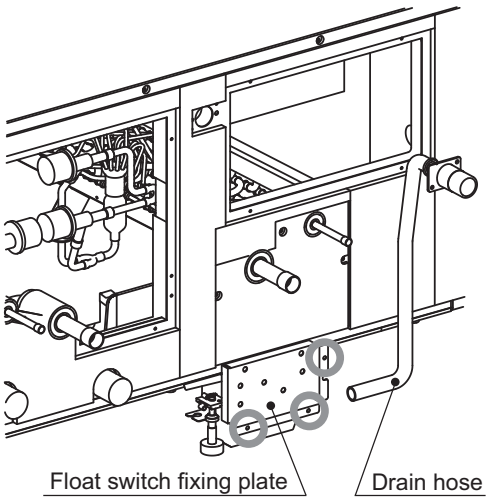


Fig.10

(3) Remove the three cover fixing screws to remove the pump and the float switch.

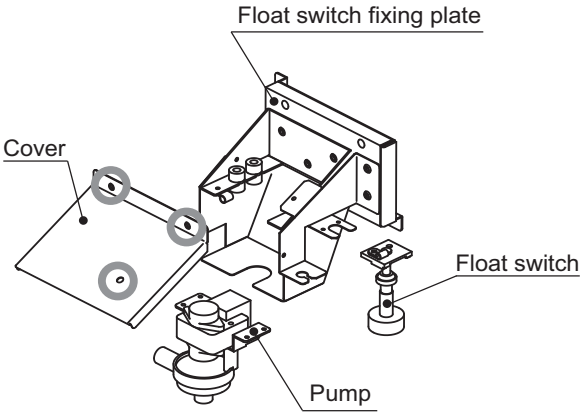


Fig.11

6. To remove the supply air temperature thermistor (Fig.12)

(1) Remove the supply air temperature thermistor fixing screws (two on the CFM model and three on the CFMR model) to remove the supply air temperature thermistor.

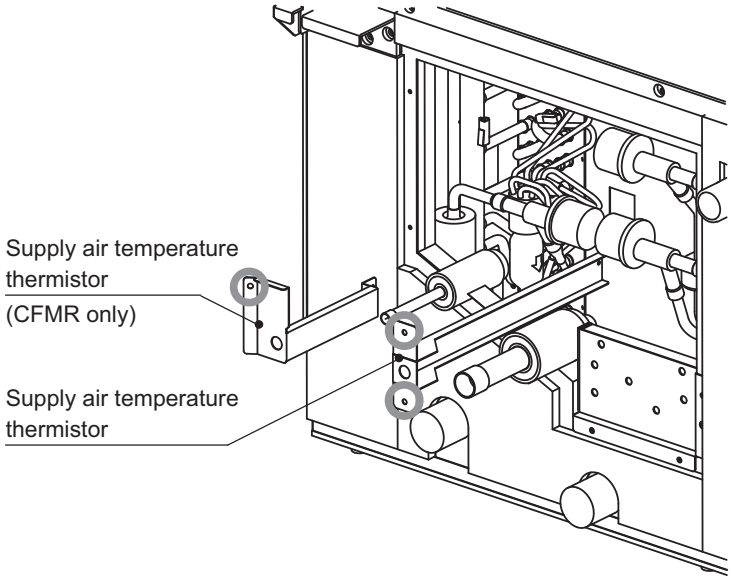


Fig.12

7. Fan and fan motor

Use caution not to pinch any wires.
Use caution; the motor is heavy.

1. According to the instructions provided in section 3-1, remove the control box cover.
2. According to the instructions provided in section 3-2, remove the control box.
3. According to the instructions provided in section 4-4, remove the humidity sensor.
4. To remove the fan (Fig.13, 14, 15)

(1) Loosen the three screws holding the front bell mouth and remove the bell mouth.

(2) Loosen the Sirocco fan set screw and remove the fan.

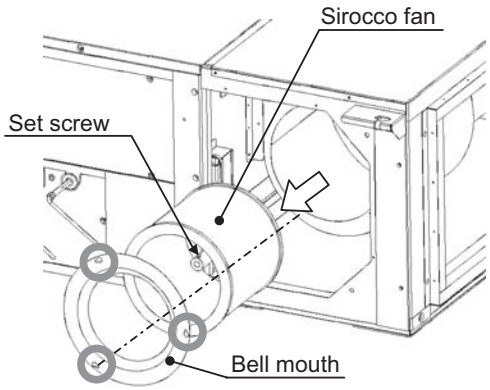


Fig.13

(3) Remove the three front fan case fixing screws.

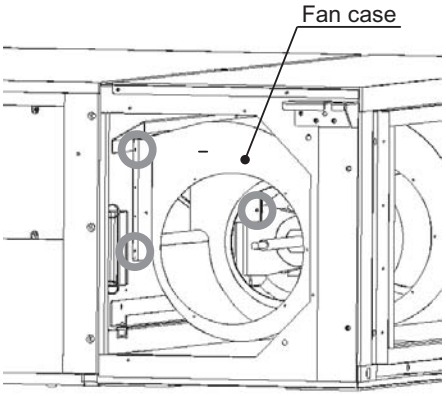


Fig.14

(4) Remove the two motor holder fixing screws.

(5) Loosen the three screws holding the rear bell mouth and remove the bell mouth.

(6) Slide the fan forward along the railing

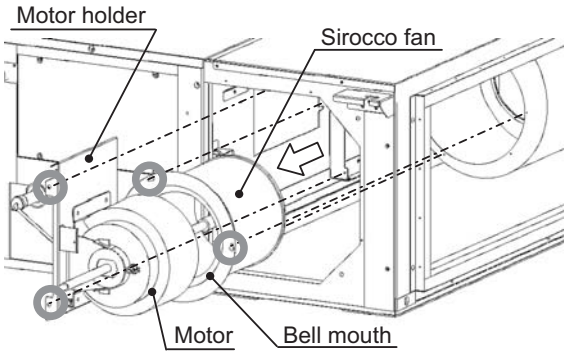


Fig.15

8. Heat exchanger

This heat exchanger does not have a safety feature that prevents the internal parts from falling once removed. When removing parts, it is recommended that one person hold the parts to be removed while the another person unscrews the fixing screws to keep the parts from falling.

1. According to the instructions in section 5, remove the drain pan.
2. According to the instructions in section 4, remove the LEV and pipe temperature sensor wiring.
3. According to the instructions in section 4, remove the pump, float switch, and discharge temperature sensor.
4. To remove the heat exchanger (Fig.16, 17, 18)

(1) Remove the five divider fixing screws from inside the unit.

(2) Remove the three pipe cover fixing screws.

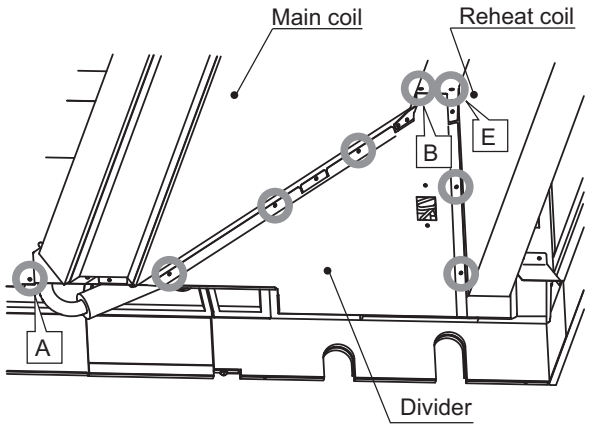


Fig.16

(3) Remove the four main coil fixing screws (A, B, C, and D) and remove the main coil.

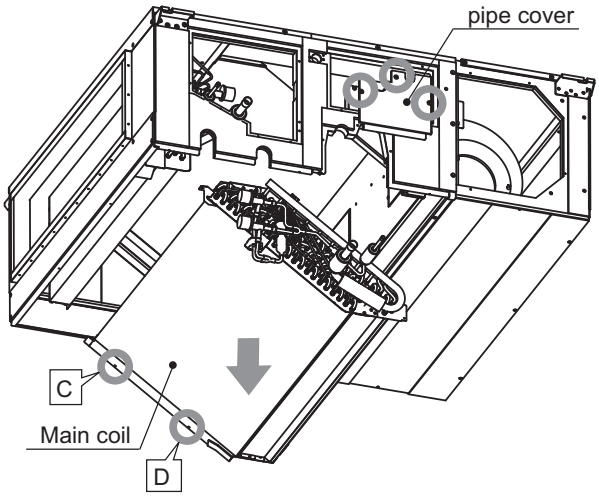


Fig.17

(4) Remove the three reheat coil fixing screws (E, F, and G) and remove the reheat coil.

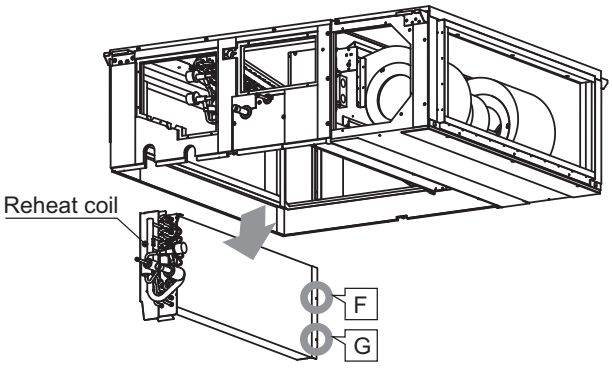


Fig.18

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HWE13100

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Specifications subject to change without notice