

PEFY-AF1200CFMR

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1. GENERAL DESCRIPTION

Unit Configuration

Model	PEFY-AF1200CFMR
Outdoor unit	PURY-P120TKMU-A(-BS)
	PURY-P120YKMU-A(-BS)
BC Controller	CMB-P106NU-G
	CMB-P108NU-G

Operating Temperature Range

	Cooling	Heating
Indoor unit inlet air temperature	50 to 95° F W.B. (109° F D.B.)	-4 to 60° F W.B.
	10 to 35° C W.B. (43° C D.B.)	-20 to 15.5° C W.B.
Outdoor unit inlet air temperature	50 to 109° F D.B.	-4 to 60° F D.B.
	10 to 43° C D.B.	-20 to 15.5° C D.B.

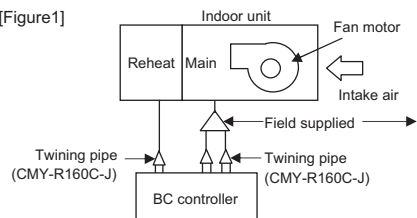
2. SPECIFICATIONS

Model			PEFY-AF1200CFMR
Power source			1-phase 208/230V 60Hz
Cooling capacity *1 (Nominal)		Btu/h	112,000
		kW	32.8
	Power input	kW	0.66/0.78
	Current input	A	3.19/3.45
Heating capacity *1 (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)	309 (140)
Heat exchanger			Cross fin (Aluminium fin and copper tube)
FAN	Type x Quantity		Sirocco fan x 2
	External static pressure	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
	Driving mechanism		Direct-driven
	Airflow rate	CFM	1,200
L / s		566	
Sound pressure level (Low-Mid-High) (measured in an anechoic room)		dB <A>	36-38-41 (208V)
		dB <A>	39-41-43 (230V)
Insulation material			Polyethylene foam, Polyurethane foam, Polystyrene foam
Air filter			Field supplied
Protection device			Fuse
Refrigerant control device			LEV
Connectable outdoor unit			PURY-P120TKMU-A(-BS), PURY-P120YKMU-A(-BS)
Diameter of refrigerant pipe (O.D.)	Liquid (R410A)	in. (mm)	3/8 (9.52) Brazed
	Gas (R410A)	in. (mm)	7/8 (22.2) Brazed
Diameter of drain pipe		in. (mm)	O.D. 1-1/4(32) x 2

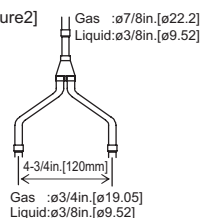
Notes:	1. Standard capacities are the maximum capacities that are obtained in the following conditions: Air conditions : Cooling Indoor 87° F D.B./80° F W.B. (30.5° C D.B./26.7° C W.B.) Outdoor 87° F D.B. (30.5° C D.B.) Heating Indoor 32° F D.B. (0° C D.B.) Outdoor 32° F D.B. (0° C D.B.)/28° F D.B. (-2° C W.B.) Connected outdoor unit is PURY-P120TKMU/YKMU-A(-BS) Piping length: 24.6 feet (7.5m) Height difference : 0 feet (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 4.9 feet (1.5m) from the bottom of the unit that has 6.6 feet (2m) outlet duct and 6.6 feet (2m) intake duct.
	4. When combining the drain pipes, ensure that collected pipes are 3-15/16 Inches (10cm) lower than the unit body's drain port.
	5. Install BC controller in a location where refrigerant flow sound emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background sound, position the BC controller at least 16.4 feet(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, Figure2, and Table1)
	7. The choice of indoor unit operation mode is limited to auto mode.

Piping Connection

[Figure1]



[Figure2]



[Table1]

Number of connection pipe of BC

Outdoor model	Main	Reheat
PURY-P120TKMU/YKMU-A(-BS)	4	2

2. SPECIFICATIONS

Model			PURY-P120TKMU-A(-BS) for use with PEFY-AF1200CFMR	
Power source			3-phase 3-wire 208 / 230V ±10% 60Hz	
Cooling capacity (Nominal) *1 (208/230V)		Btu/h	120,000	
		kW	35.2	
	Power input	kW	9.44 *3	
	Current input	A	29.1 / 26.3 *3	
Heating capacity (Nominal) *2 (208/230V)		Btu/h	135,000	
		kW	39.6	
	Power input	kW	10.86 *3	
	Current input	A	33.4 / 30.2 *3	
Indoor unit	Total capacity		50~150% of outdoor unit capacity	
	Model / Quantity		P06~P96/1~30	
Sound pressure level (measured in anechoic room)		dB <A>	60.0	
Refrigerant piping diameter	Liquid pipe	In. (mm)	3/4"(19.05) Brazed	
	Gas pipe	In. (mm)	1-1/8"(28.58) Brazed	
Fan	Type x Quantity		Propeller fan x 2	
	Airflow rate	CFM	11,300	
		m³ / min	320	
		L/s	5,330	
	Control, Driving mechanism		Inverter-control, Brushless DC motor	
	External static pressure *4		0 in.WG (0 Pa) *4	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Manufacturer		AC&R Works,MITSUBISHI ELECTRIC CORPORATION	
	Operating Range		15% to 100%	
	Starting method		Inverter	
	Lubricant		MEL32	
External finish			Pre-coated galvanized steel sheet (+powder coating for -BS type) *5 <MUNSELL 5Y 8/1>	
External dimension H x W x D		In.	64-31/32 x 68-29/32 x 29-5/32	
		mm	1,650 x 1,750 x 740	
Protection devices	High pressure protection		High pressure sensor,High pressure switch at 4.15MPa(601 psi)	
	Inverter circuit (COMP. / FAN)		Over-current protection	
	Fan motor		Thermal switch	
Minimum Circuit Ampacity		A	45 / 42	
Recommended Fuse/Breaker Size		A	50	
Maximum Fuse Size		A	50	
Refrigerant	Type x original charge		R410A x 26lbs + 1 oz (11.8kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	715 (324)	
Heat exchanger			Salt-resistant cross fin & copper tube	
Defrost method			Auto-defrost mode (Reversed refrigerant cycle)	
Drawing	External		KD94R360	
	Wiring		KE94C650	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
System Components			PEFY-AF1200CFMR Indoor Unit	
			PURY-P120TKMU-A(-BS) Outdoor Unit	
			Joint: CMY-R160C-J	
			BC controller: CMB-P106,108NU-G	
Remark			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. *3 For details on the electrical data needed for installing these units, see the R2-Series System Design section. *4 External static pressure is adjustable via dipswitch setting (0.12 in.WG, 0.24 in.WG / 30Pa, 60Pa). *5 For information on standard anti-corrosion protection and -BS treatment, see the R2-Series System Design section.	

Note:	*1 Nominal cooling conditions	*2 Nominal heating conditions	Unit converter
Indoor:	80degF D.B./ 67degF W.B.	70degF D.B.	kcal =kW x 860
	(26.7degC D.B./ 19.4degC W.B.)	(21.1degC D.B.)	BTU/h =kW x 3,412
Outdoor:	95degF D.B. (35degC D.B.)	47degF D.B./ 43degF W.B. (8.3degC D.B./ 6.1degC W.B.)	cfm =m³/min x 35.31
			lb =kg / 0.4536
Pipe length:	25ft.(7.6m)	25ft.(7.6m)	* Above specification data is subject to rounding variation.
Level difference:	0ft.(0m)	0ft.(0m)	
* Due to continuing improvement, above specifications may be subject to change without notice.			

2. SPECIFICATIONS

Model			PURY-P120YKMU-A(-BS)
Power source			3-phase 3-wire 460V ±10% 60Hz
Cooling capacity (Nominal) *1 (460V)		Btu/h	120,000
		kW	35.2
	Power input	kW	9.44 *3
	Current input	A	13.1 *3
Heating capacity (Nominal) *2 (460V)		Btu/h	135,000
		kW	39.6
	Power input	kW	10.86 *3
	Current input	A	15.1 *3
Indoor unit	Total capacity		50~150% of outdoor unit capacity
	Model / Quantity		P06~P96/1~30
Sound pressure level (measured in anechoic room)		dB <A>	60.0
Refrigerant piping diameter	High pressure	In. (mm)	3/4" (19.05) Brazed
	Low pressure	In. (mm)	1-1/8" (28.58) Brazed
Fan *3	Type x Quantity		Propeller fan x 2
	Air flow rate	CFM	11,300
		m³ / min	320
		L/s	5,330
	Control , Driving mechanism		Inverter-control, Brushless DC motor
	External static pressure		0 in.WG (0 Pa) *4
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1
	Manufacturer		AC&R Works,MITSUBISHI ELECTRIC CORP.
	Operating Range		15% to 100%
	Starting method		Inverter
	Lubricant		MEL32
External finish			Pre-coated galvanized steel sheet (+powder coating for -BS type) *5 <MUNSELL 5Y 8/1>
External dimension H x W x D		In.	64-31/32 x 68-29/32 x 29-5/32
		mm	1,650 x 1,750 x 740
Protection devices	High pressure protection		High pressure sensor,High pressure switch at 4.15MPa(601 psi)
	Inverter circuit (COMP. / FAN)		Over-current protection
	Fan motor		Thermal switch
Minimum Circuit Ampacity (MCA)		A	21
Recommended Fuse/Breaker Size		A	25
Maximum Fuse Size		A	25
Refrigerant	Type x original charge		R410A x 26 lbs + 1 oz (11.8 kg)
	Control		Indoor LEV and BC controller
Net weight	lbs (kg)		743 (337)
Heat exchanger			Salt-resistant cross fin & copper tube
Defrost method			Auto-defrost mode (Reversed refrigerant cycle)
Drawing	External		KD94R362
	Wiring		KE94C644
Standard attachment	Document		Installation Manual
	Accessory		Details refer to External Drw
System Components			PEFY-AF1200CFMR Indoor Unit
			PURY-P120YKMU-A(-BS) Outdoor Unit
			Joint: CMY-R160C-J
			BC controller: CMB-P106,108NU-G
Remark			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. *3 For details on the electrical data needed for installing these units, see the R2-Series System Design section. *4 External static pressure is adjustable via dipswitch setting (0.12 in.WG, 0.24 in.WG / 30Pa, 60Pa). *5 For information on standard anti-corrosion protection and -BS treatment, see the R2-Series System Design section.

Note:	*1 Nominal cooling conditions	*2 Nominal heating conditions	Unit converter
Indoor:	80degF D.B./ 67degF W.B.	70degF D.B.	kcal =kW x 860
	(26.7degC D.B./ 19.4degC W.B.)	(21.1degC D.B.)	BTU/h =kW x 3,412
Outdoor:	95degF D.B. (35degC D.B.)	47degF D.B./ 43degF W.B.	cfm =m³/min x 35.31
		(8.3degC D.B./ 6.1degC W.B.)	lb =kg / 0.4536
Pipe length:	25ft.(7.6m)	25ft.(7.6m)	* Above specification data is subject to rounding variation.
Level difference:	0ft.(0m)	0ft.(0m)	

* Due to continuing improvement, above specifications may be subject to change without notice.

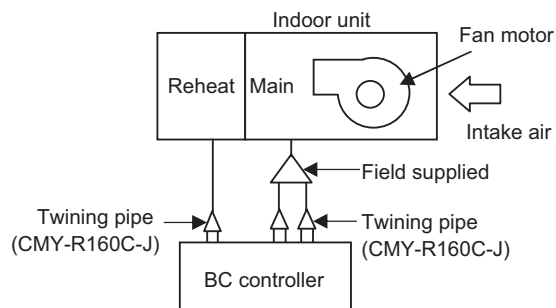
Notes:	1. Standard capacities are the maximum capacities that are obtained in the following conditions: Air conditions : cooling : indoor 87°FDB/80°FWB (30.5°CDB/26.7°CWB) outdoor 87°FDB(30.5°CDB) heating: indoor 32°FDB (0°CDB) outdoor 32°FDB (0°CDB)/28°FDB(-2°CWB), Connected outdoor unit is PURY-P120TKMU/YKMU-A(-BS) Piping length: 25 feet (7.6m) Height difference : 0 feet (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 6.6feet (2m) 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 refrigerant flow sound emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background sound, 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, Figure2, and Table1)		
	7. The choice of indoor unit operation mode is limited to auto mode.		

2. SPECIFICATIONS

Model			CMB-P106NU-G	CMB-P108NU-G	
Number of branches			6	8	
Power source			1-phase 208/230V 60Hz		
Power input (208/230)	Cooling	kW	0.086	0.112	
	Heating		0.040	0.053	
Current (208/230)	Cooling	A	0.41/0.37	0.54/0.49	
	Heating		0.19/0.17	0.25/0.23	
External finish			Galvanized steel plate (Lower part drain pan :Pre-coated galvanized sheets + powder coating)		
Connectable outdoor unit			PURY-P120TKMU-A(-BS), PURY-P120YKMU-A(-BS)		
Capacity connectable to 1 branch	kW	54,000 Btu/h per branch Use optional joint pipe to combine 2 branch when capacity required exceeds 54,000 Btu/h			
External dimension H x W x D	in. (mm)	11-3/16 x 25-17/32 x 17-1/32 (284 x 648 x 432)			
Refrigerant piping diameter	Connectable outdoor unit capacity	To outdoor unit			
		High press. pipe		Low press. pipe	
		to P120		1-1/8 (28.58)	
	in. (mm) O.D.		Brazed		
	in. (mm) O.D.	From BC Controller to PEFY-AF-CFMR Indoor Unit			
		Liquid pipe		Gas pipe	
		3/8 (9.52) Flare		5/8 (15.88) Flare	
(1/4 (6.35) with attached reducer used.)		(1/2 (12.7) with attached reducer used, 3/4 (19.05) and 7/8 (22.2) with optional joint pipe used.)			
Field drain pipe size	in. (mm) O.D.	1-1/4 (32)		1-1/4 (32)	
Net weight	lbs (kg)	76 (34)		84 (38)	
Accessories			Drain Connection pipe (with flexible hose and insulation)		Drain Connection pipe (with flexible hose and insulation)
			Reducer		Reducer
Note:			1. Installation/foundation work, electrical connection work, duct work, insulation work, power source switch, and other items are not specified in this specifications. 2. The equipment is for R410A refrigerant. 3. Install this product in a location where noise (refrigerant noise) emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background noise,position the BC CONTROLLER at least 5m away from any indoor units.) 4. The data presented is based on a specific combination.		

BC Controller to PEFY-AF1200CFMR

	Main Coil Refrigerant Piping Dimensions	Reheat Coil Refrigerant Piping Dimensions
Liquid (High Pressure)	3/8" / 9.52 mm	3/8" / 9.52 mm
Gas (Low Pressure)	7/8" / 22.2 mm	7/8" / 22.2 mm



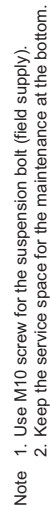
Number of Connection Pipes

Outdoor model	Main	Reheat
PURY-P120TKMU/YKMU (-BS)	4	2

PEFY-AF1200CFMR

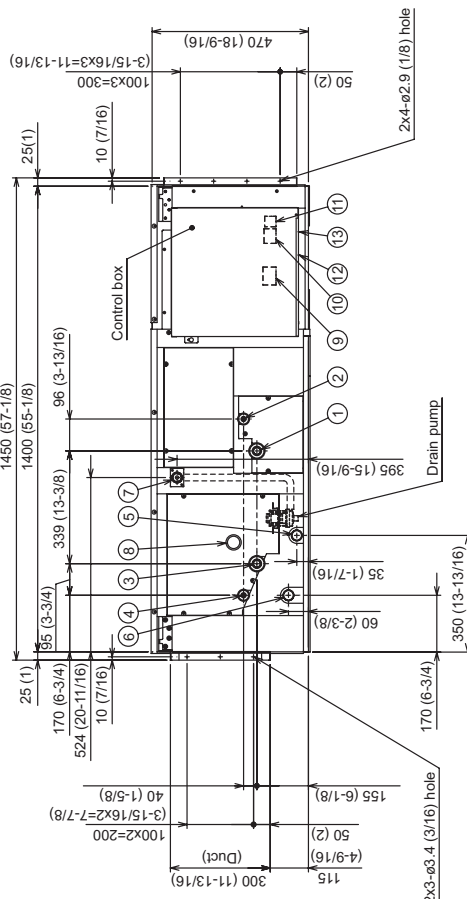


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1	Refrigerant piping brazing connection (Main Coil: gas)	1
2	Refrigerant piping brazing connection (Main Coil: liquid)	2
3	Refrigerant piping brazing connection (Reheat Coil: gas)	3
4	Refrigerant piping brazing connection (Reheat Coil: liquid)	4
5	Drain pipe (O.D. ø32(1-1/4)) (Spontaneous draining)	5
6	Drain pipe (O.D. ø32(1-1/4)) (Emergency draining)	6
7	Drain pipe (O.D. ø32(1-1/4))	7
8	Water filling port	8
9	Terminal block (Power source)	9
10	Terminal block (Indoor/outdoor connecting)	10
11	Terminal block (Remote controller transmission)	11
12	Knockout hole ø22 (1-1/8)(Power source wiring)	12
13	Knockout hole ø22 (1-1/8) (Indoor/outdoor connecting wiring Remote controller transmission)	13

Unit : mm(in)



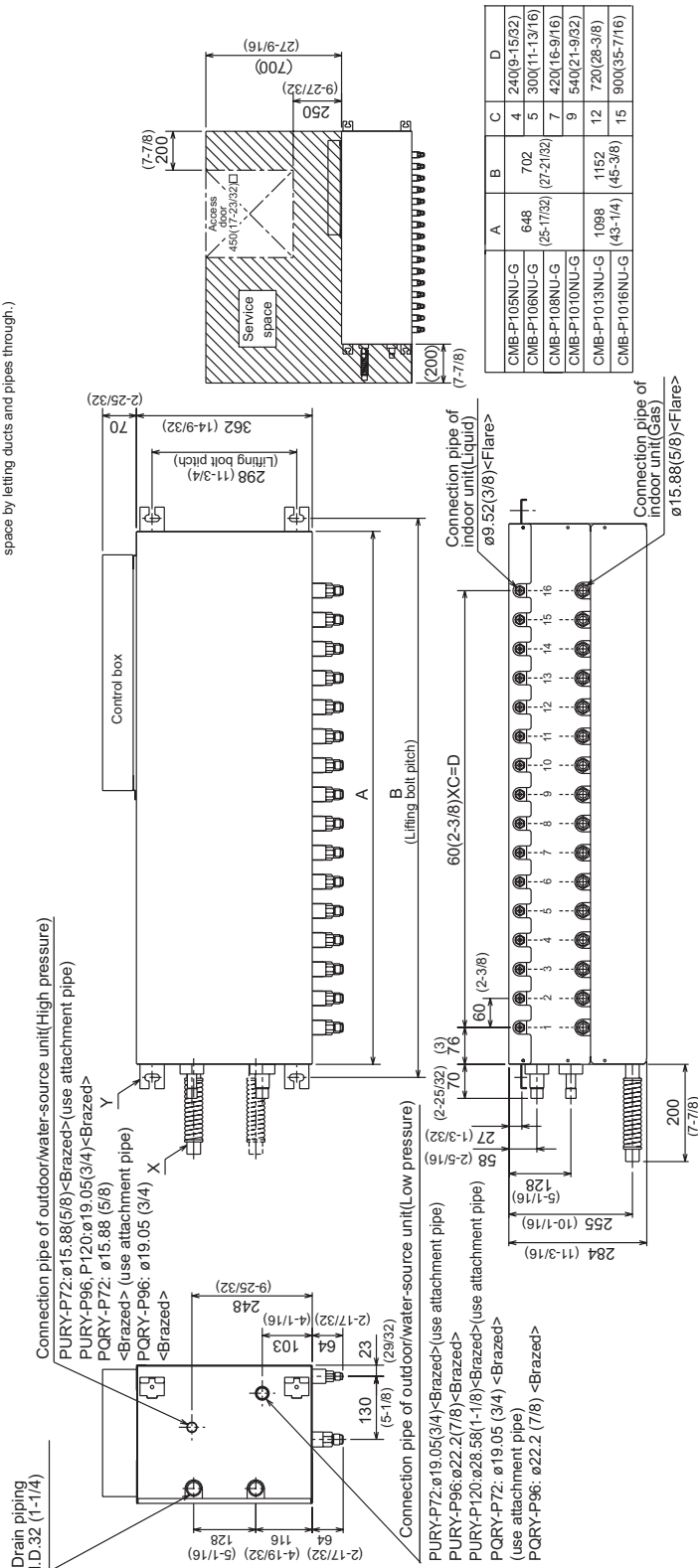
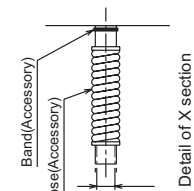
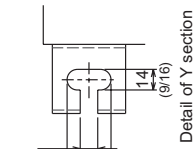
① Gas pipe	② Liquid pipe	③ Gas pipe	④ Liquid pipe
0222 (7/8)	0952 (3/8)	0222 (7/8)	0952 (3/8)

3. EXTERNAL DIMENSIONS

BC Controllers CMB-P106NU-G CMB-P108NU-G

Unit : mm

- <Accessories>
- Refrigerant<Low pressure> conn. pipe..... 2pcs.
 - Refrigerant<High pressure> conn. pipe..... 1pc.
 - Reducer<Large.Small>..... Quantity for all connections
 - Drain hose..... 1pc.
 - Hose band..... 1pc.
 - Tie band..... 1pc.
- Note1. Suspension bolt(φ10), washer(M10), and nut(M10) prepare in the field.
2. Take notice of service space as follows.
(Please give attention not to occupy service space by letting ducts and pipes through.)



PURY-P120TKMU-A(-BS)

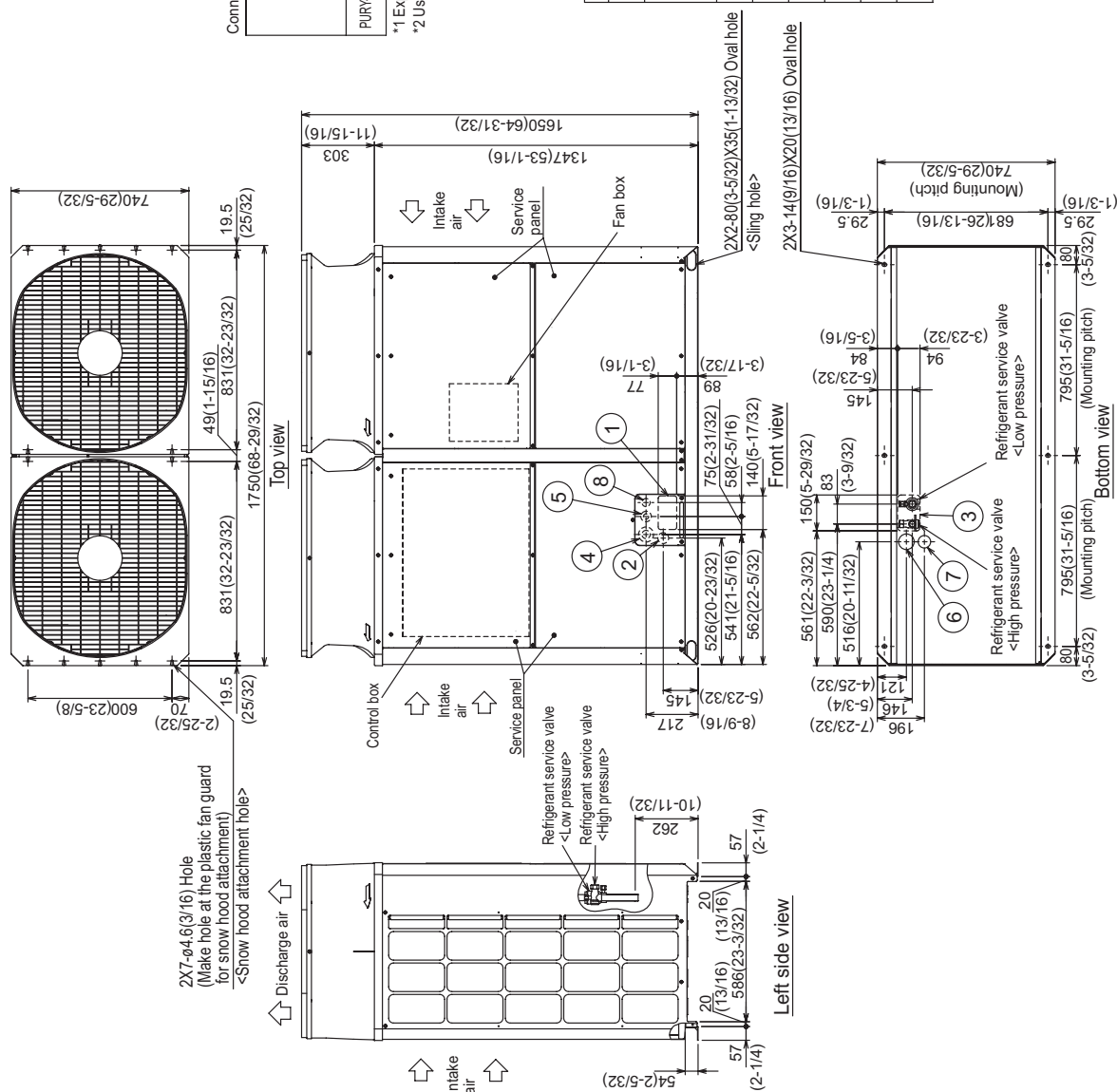
Connecting pipe specifications

Model	Diameter			
	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PUR-P120TKMU	ø19.05 Brazed (3/4) *2	ø28.58 Brazed (1-1/8) *1	ø25.4 (1)	ø28.58 (1-1/8)

11 Expand the on-site piping and connect to the refrigerant service valve piping.
12 Use the pipe joint(field supply) and connect to the refrigerant service valve piping.

Unit : mm(in.)

NO.	Usage	Specifications
①	Front through hole	140 × 77 Knockout hole (5-17/32) (3-1/16)
②	For pipes	Front through hole (Uses when winning kit (optional parts) is mounted.) ø45 Knockout hole (1-25/32)
③	Bottom through hole	150 × 94 Knockout hole (5-29/32) (3-23/32)
④	Front through hole	ø62.7 or ø34.5 Knockout hole (2-15/32) (1-3/8)
⑤	Front through hole	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑥	For wires	Bottom through hole ø65 Knockout hole (2-9/16)
⑦	Bottom through hole	ø52 Knockout hole (2-1/16)
⑧	For transmission cables	ø34 Knockout hole



PURY-P120YKMU-A(-BS)

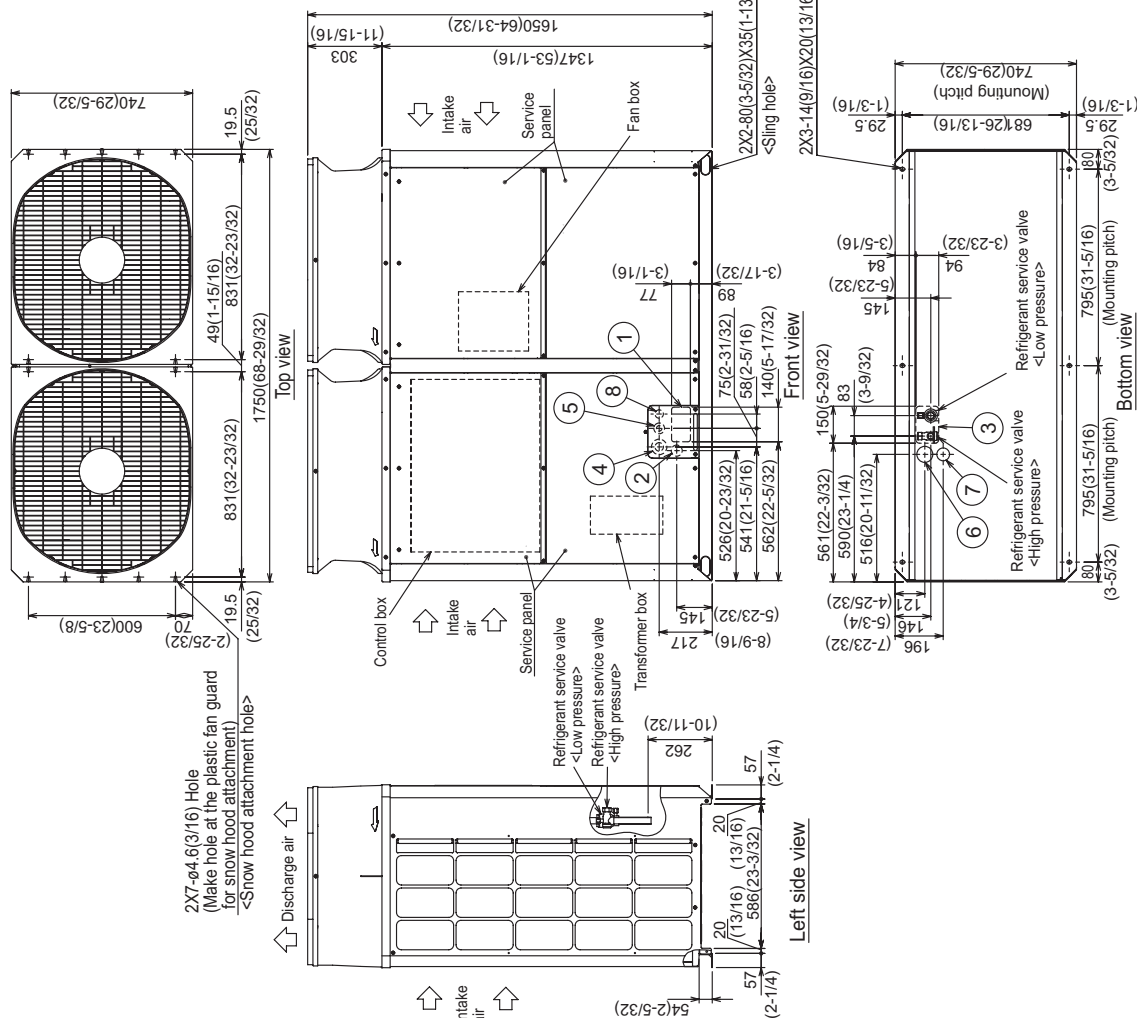
Connecting pipe specifications

Model	Diameter			
	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PUR-PP20YKMU	ø19,05 Braze (3/4) *2	ø28,58 Braze (1-1/8) *1	ø25,4 (1)	ø28,58 (1-1/8)

- 11 Expand the on-site piping and connect to the refrigerant service valve piping.
- 12 Use the pipe joint(field supply) and connect to the refrigerant service valve piping.

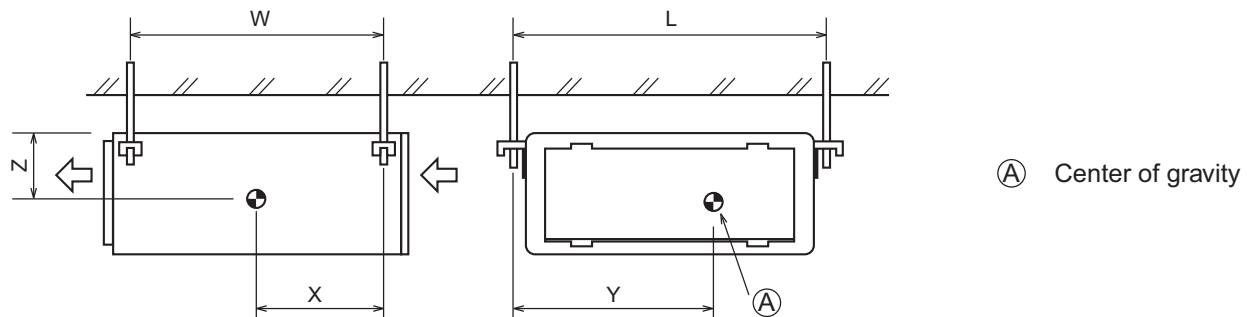
Unit : mm(in.)

NO.	Usage	Specifications
①	Front through hole	140 × 77 Knockout hole (5-17/32) (3-1/16)
②	For pipes Front through hole (Use when winning kit (optional parts) is mounted.)	ø45 Knockout hole (1-25/32)
③	Bottom through hole	150 × 94 Knockout hole (5-29/32) (3-23/32)
④	Front through hole	ø62.7 or ø34.5 Knockout hole (2-15/32) (1-3/8)
⑤	Front through hole	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑥	Bottom through hole	ø65 Knockout hole (2-9/16)
⑦	Bottom through hole	ø52 Knockout hole (2-1/16)
⑧	For transmission cables	ø34 Knockout hole (1-1/2)



4. CENTER OF GRAVITY

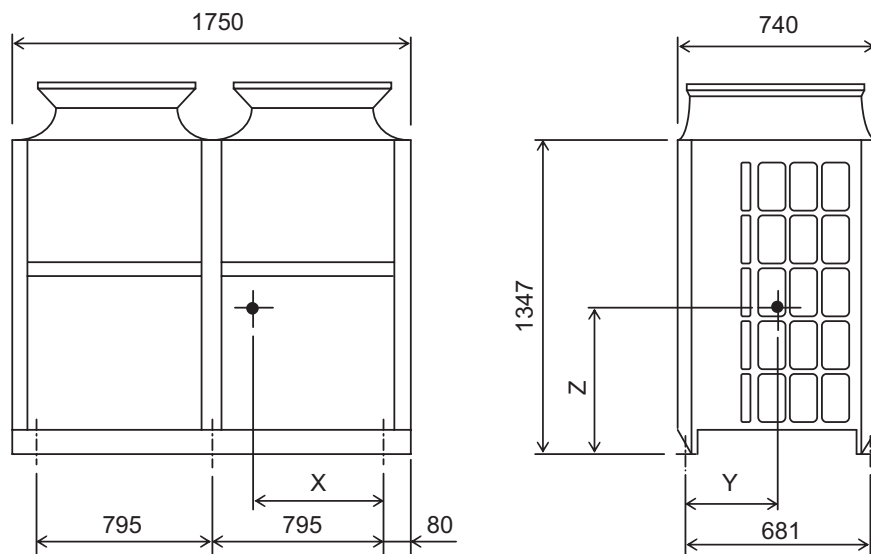
PEFY-AF1200CFMR



Model Name	W (in. [mm])	L (in. [mm])	X (in. [mm])	Y in. (mm)	Z in. (mm)	Product Weight (lbs. [kg])
PEFY-AF1200CFMR	52-11/16 (1,338)	52-3/16 (1,325)	28-3/4 (730)	26-5/8 (675)	9-1/2 (240)	309 (140)

PURY-P120TKMU-A(-BS)

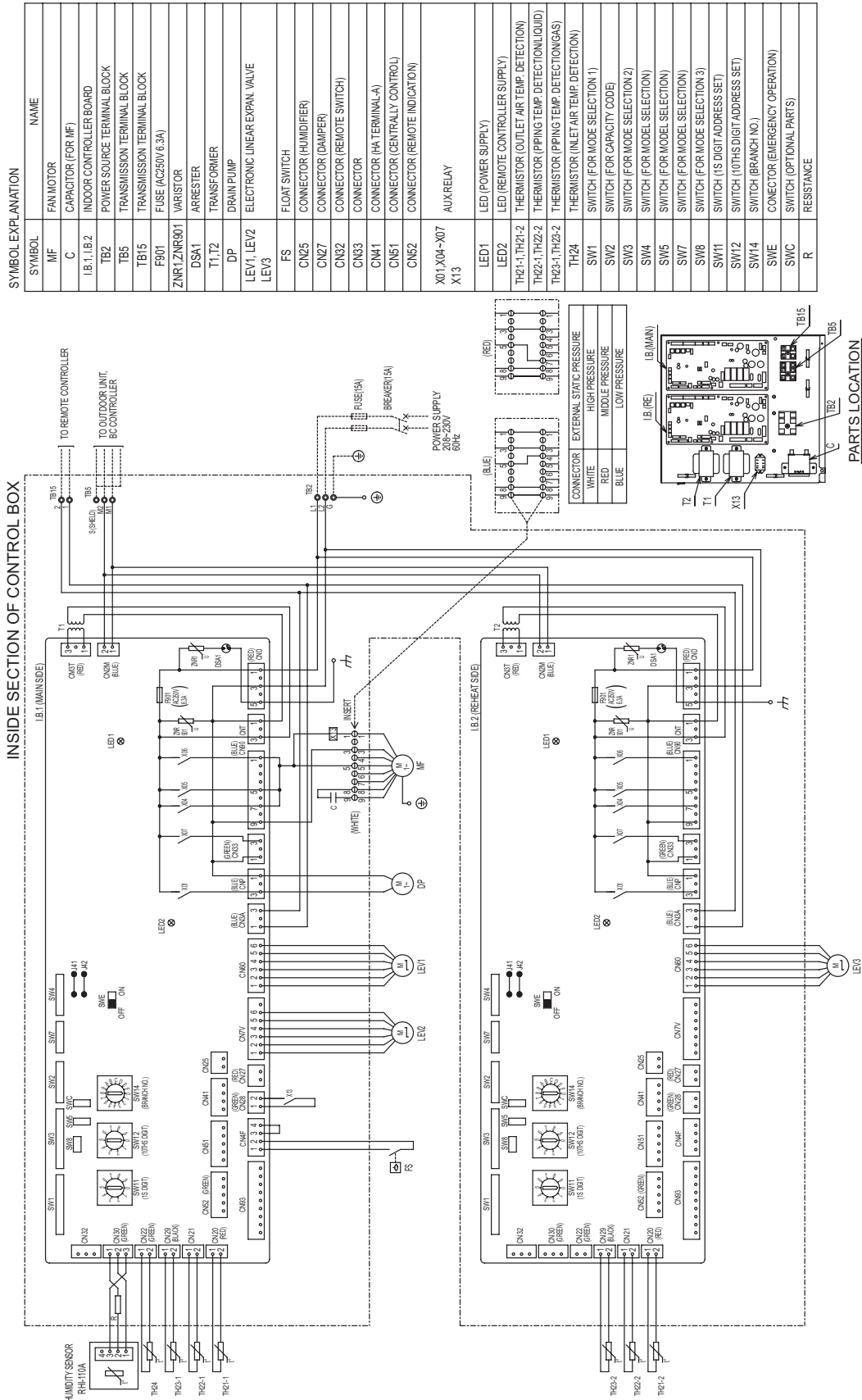
PURY-P120YKMU-A(-BS)



Model name	X	Y	Z
PURY-P120TKMU-A(-BS)	27-31/32 (702)	12-7/8 (327)	25-7/8 (657)
PURY-P120YKMU-A(-BS)	28-15/16 (735)	12-17/32 (318)	25-11/32 (643)

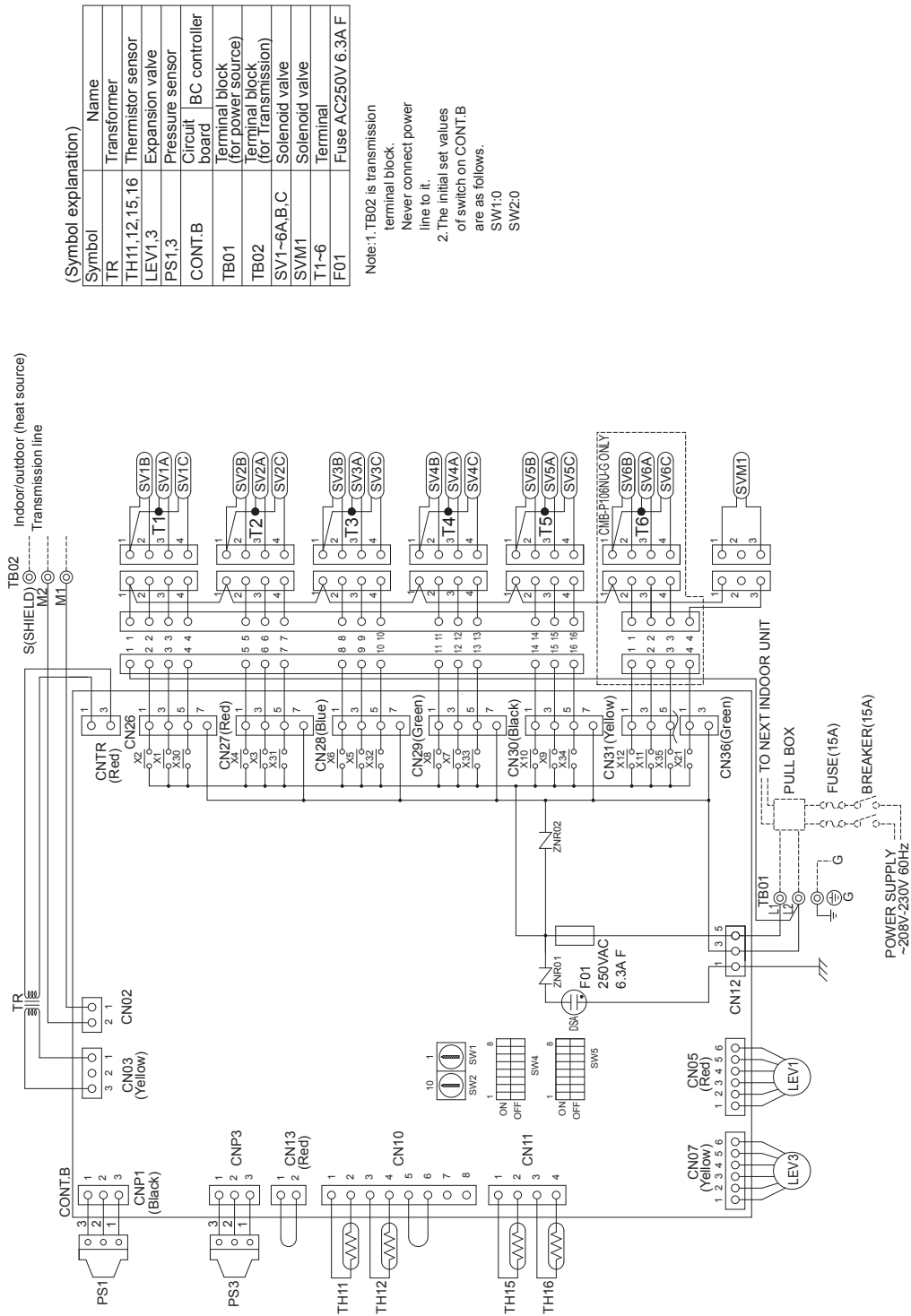
5. ELECTRICAL WIRING DIAGRAMS

PEFY-AF1200CFMR



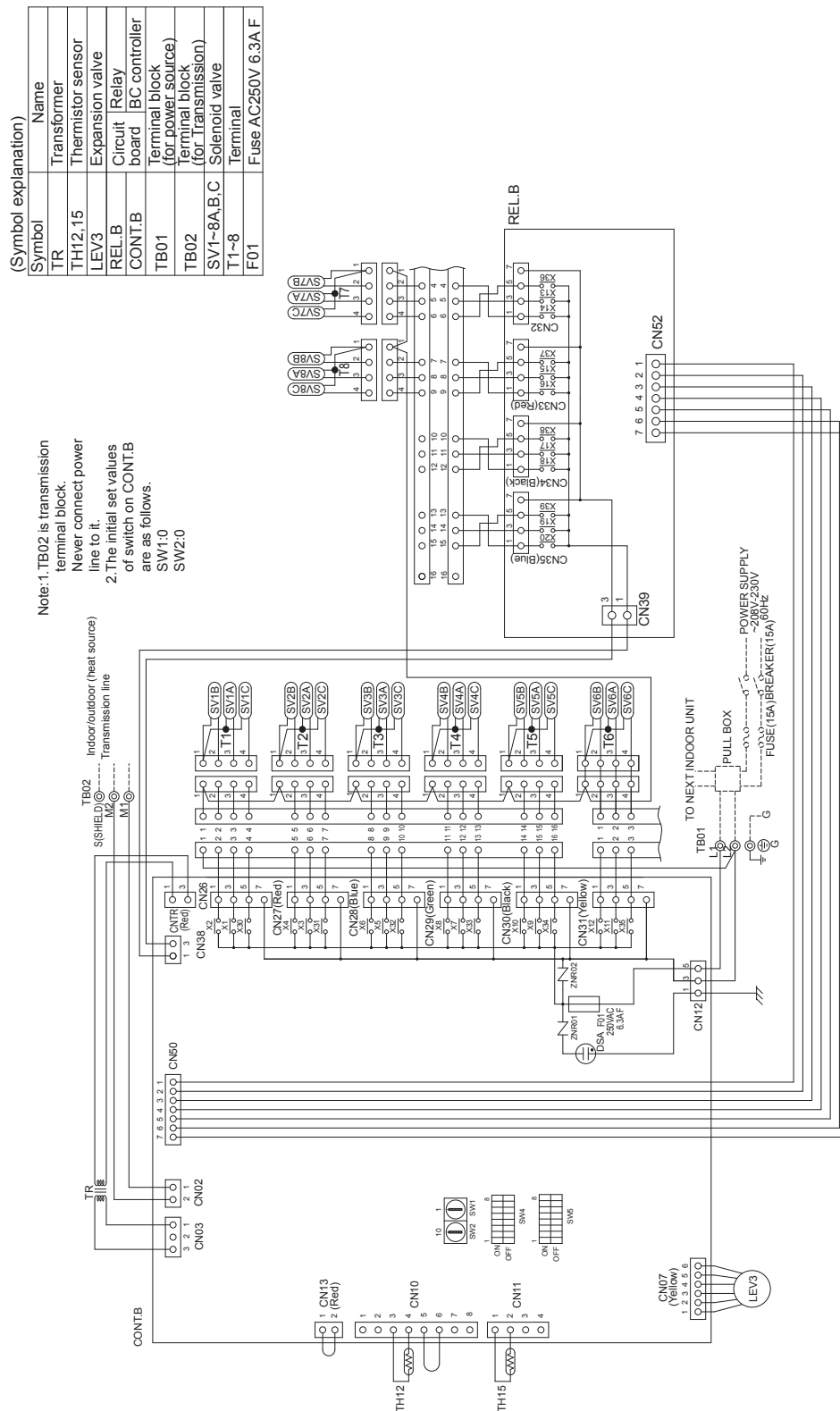
5. ELECTRICAL WIRING DIAGRAMS

BC Controller CMB-P106NU-G

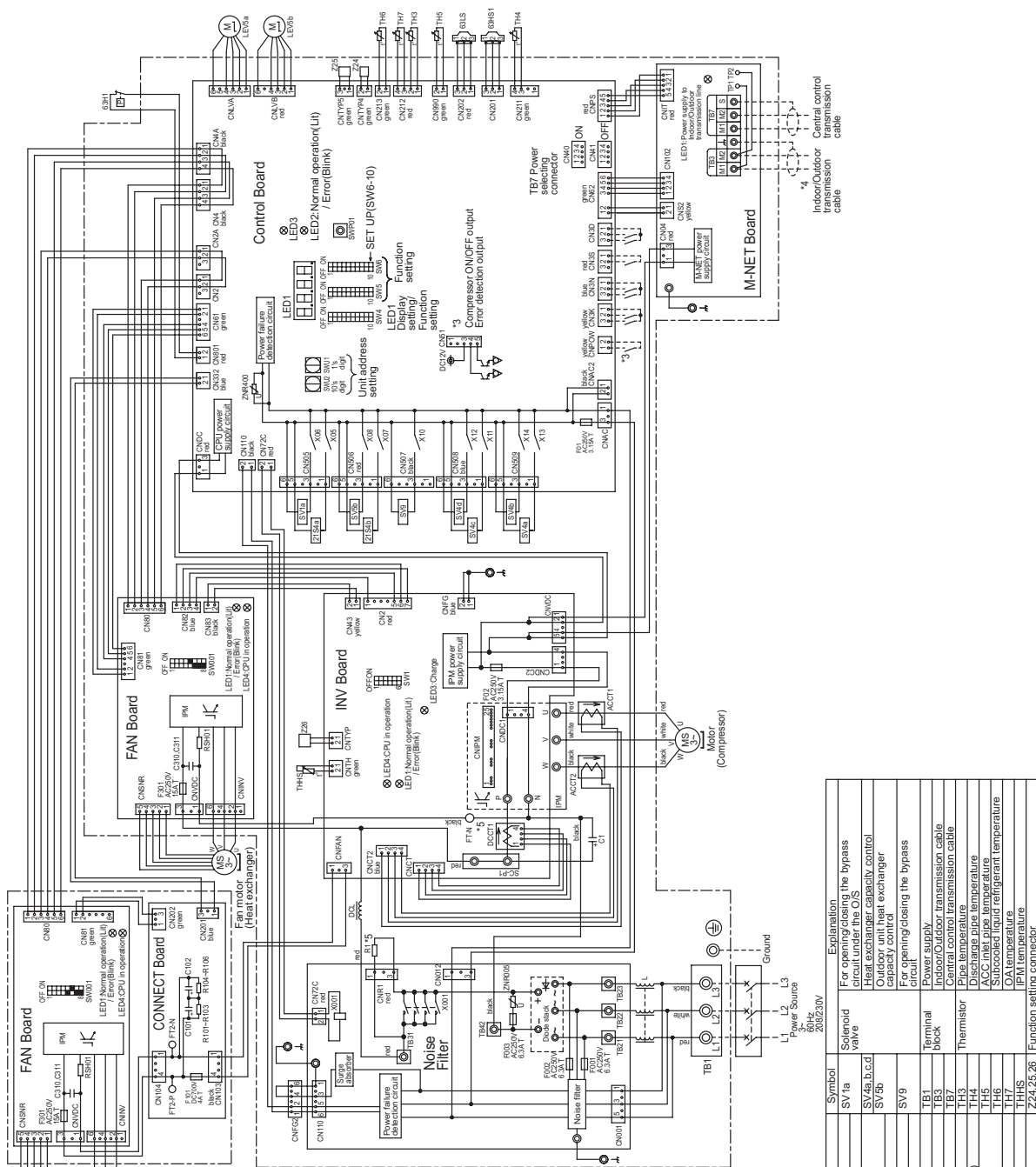


5. ELECTRICAL WIRING DIAGRAMS

BC Controller CMB-P108NU-G



PURY-P120YKMU-A(-BS)



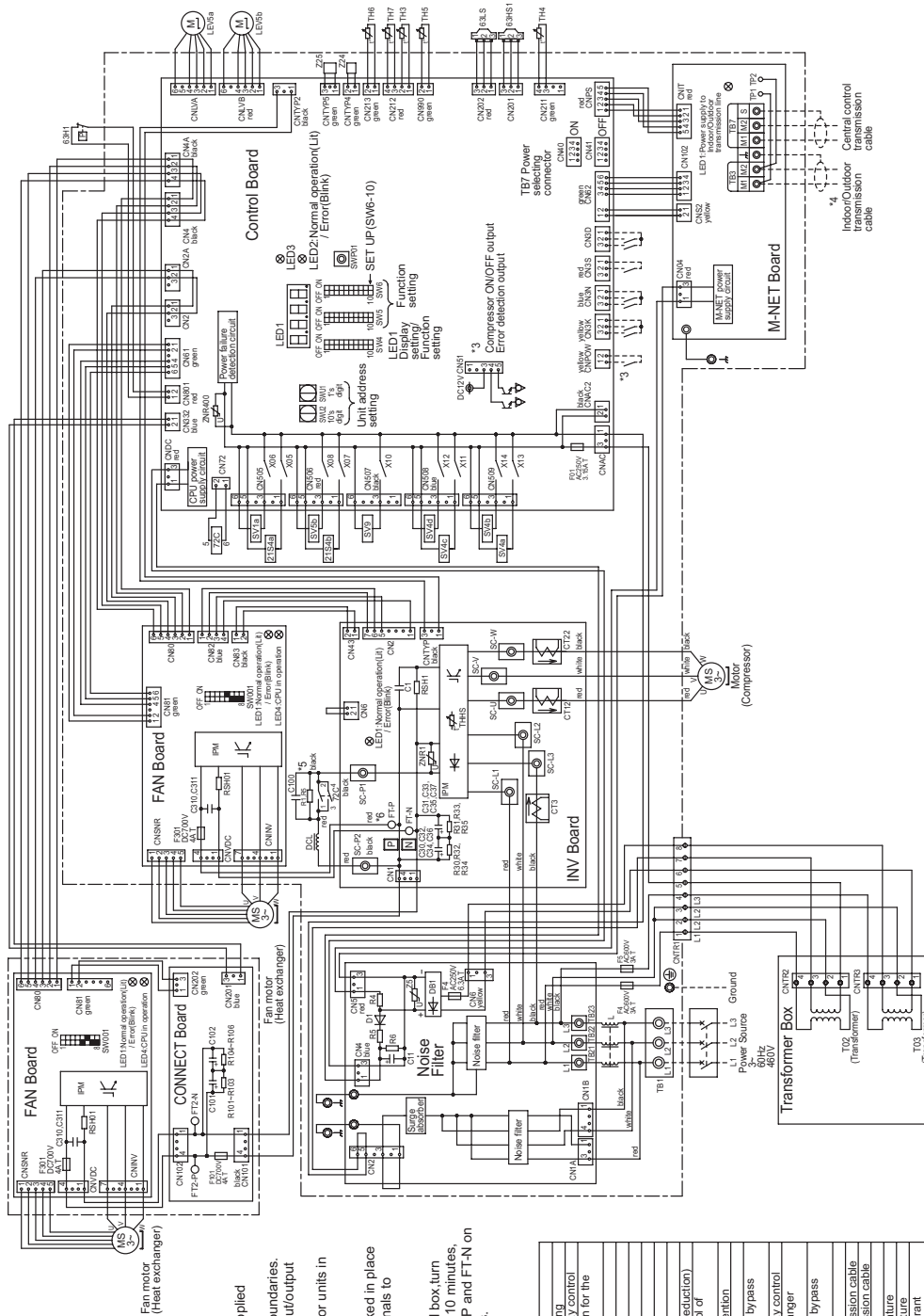
1. Single-dotted lines indicate wiring not supplied with the unit.
2. Dot-dash lines indicate the control box boundaries.
3. Refer to the Data book for connecting input/output signal connectors.
4. Daisy-chain terminals (TB3) on the outdoor units in the same refrigerant system together.
5. Faston terminals have a locking function. Make sure the terminals are securely locked in place after insertion. Press the tab on the terminals to remove them.
6. Control box houses high-voltage parts. Before inspecting the inside of the control box, turn off the power/keep the unit off for at least 10 minutes, and confirm that the voltage at both ends of the main capacitor (C1) has dropped to DC20V or less.

<Symbol explanation>

Symbol	Explanation	Symbol	Explanation
4-way valve	Cooling/heating switching	SV7a	For opening/closing the bypass circuit under the O/S
21S4a	Heat exchanger capacity control	SV4a,b,c,d	Heat exchanger capacity control
21S4b	High pressure protection for the outdoor unit	SV5b	Outdoor unit heat exchanger capacity control
63H1	Pressure switch	SV9	For opening/closing the bypass
69HS1	Pressure sensor		
60LS	Magnetic reed switch (main circuit)		
60LT1-2	Temperature sensor (OC)	TB1	Terminal block
C1	Capacitor (inverter main circuit)	TB3	
DCCr1	Current sensor(OC)	TB7	
L	DC reactor	TH3	Thermistor
Choke coil	(for high frequency noise reduction)	TH4	
LEV9a b	Linear expansion valve (for the control of evaporating temperature)	TH5	
R1	Resistor	TH6	
RSR01	For current current prevention	TH8	
	For current detection	Z24,Z5,Z6	Function setting connector

5. ELECTRICAL WIRING DIAGRAMS

PURY-P120YKMU-A(-BS)



- *1. Single-dotted lines indicate wiring not supplied with the unit.
- *2. Dot-dash lines indicate the control box boundaries.
- *3. Refer to the Data book for connecting input/output signal connectors.
- *4. Daisy-chain terminals (TB3) on the outdoor units in the same refrigerant system together.
- *5. Fasten terminals have a locking function. Make sure the terminals are securely locked in place after insertion. Press the tab on the terminals to removed them.
- *6. Control box houses high-voltage parts. Before inspecting the inside of the control box, turn off the power, keep the unit for at least 10 minutes, and confirm that the voltage between FT-P and FT-N on INV Board has dropped to DC20V or less.

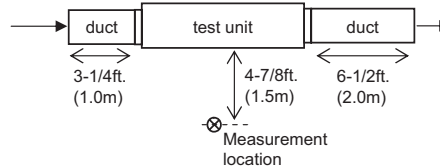
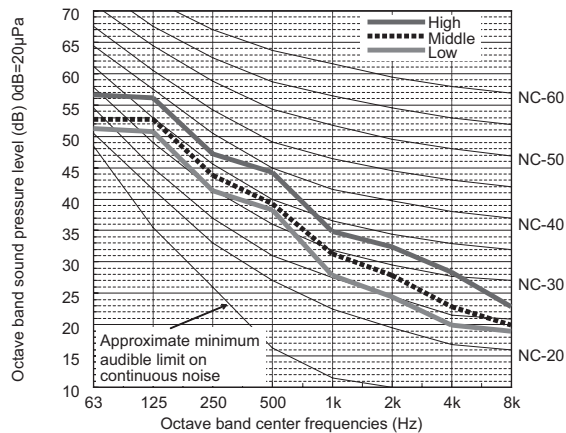
<Symbol explanation>

Symbol	Explanation
21S4a	4-way valve
21S4b	Cooling/Heating switching
G3H1	Heat exchanger capacity control
G3H2	Heat exchanger protection for the outdoor unit
G3H3	Pressure switch
G3H4	Pressure sensor
G3H5	Discharge pressure
G3H6	Low pressure
G3H7	Pressure
G3H8	Pressure
G3H9	Pressure
G3H10	Pressure
G3H11	Pressure
G3H12	Pressure
G3H13	Pressure
G3H14	Pressure
G3H15	Pressure
G3H16	Pressure
G3H17	Pressure
G3H18	Pressure
G3H19	Pressure
G3H20	Pressure
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G3H91	Pressure
G3H92	Pressure
G3H93	Pressure
G3H94	Pressure
G3H95	Pressure
G3H96	Pressure
G3H97	Pressure
G3H98	Pressure
G3H99	Pressure
G3H100	Pressure

6. SOUND PRESSURE LEVELS AND NC CURVES

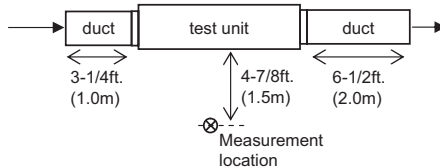
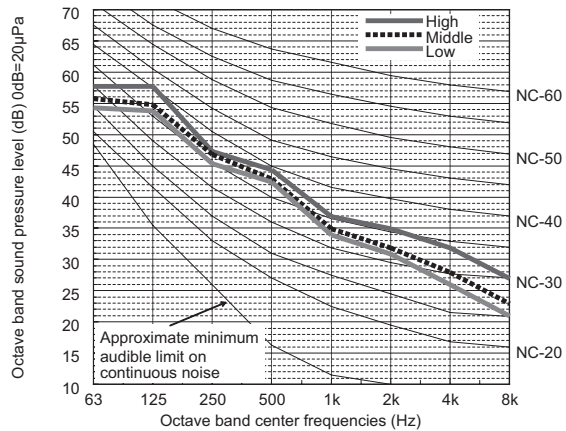
PEFY-AF1200CFMR

Power source : Single phase 208V 60Hz
 External static pressure[in.WG](Pa)
 High : 0.80(200)
 Middle : 0.48(120)
 Low : 0.28(70)



Condition (External static pressure)	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
High	57.0	56.5	47.5	44.5	35.0	32.5	28.5	23.0	46.0
Middle	53.0	53.0	44.0	39.5	31.5	28.0	23.0	20.0	42.0
Low	51.5	51.0	41.5	38.5	28.0	24.5	20.0	19.0	40.0

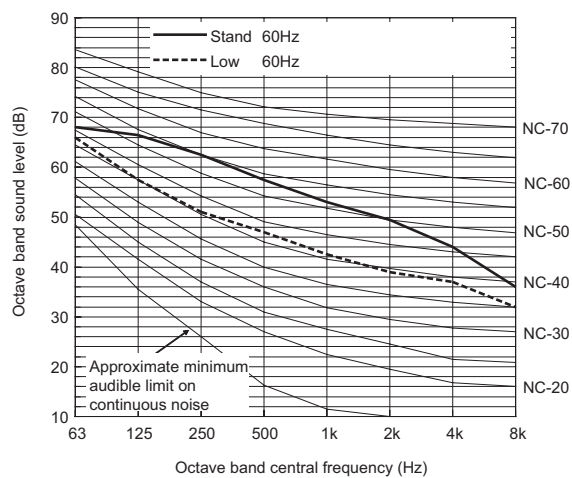
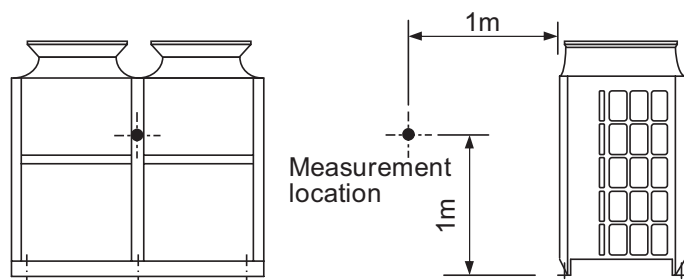
Power source : Single phase 230V 60Hz
 External static pressure[in.WG](Pa)
 High : 0.96(240)
 Middle : 0.72(180)
 Low : 0.52(130)



Condition (External static pressure)	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
High	58.0	58.0	47.5	44.5	37.0	35.0	32.0	27.0	47.0
Middle	56.0	55.0	47.0	43.0	35.0	32.0	28.0	23.0	45.0
Low	54.5	54.0	45.5	42.5	34.0	31.0	26.0	21.0	44.0

6. SOUND PRESSURE LEVELS AND NC CURVES

PURY-P120TKMU/YKMU-A(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	68.0	66.5	62.5	57.5	53.0	49.5	44.0	36.0	60.0
Low noise mode	60Hz	66.0	57.5	51.0	47.0	42.5	39.0	37.0	32.0	50.0

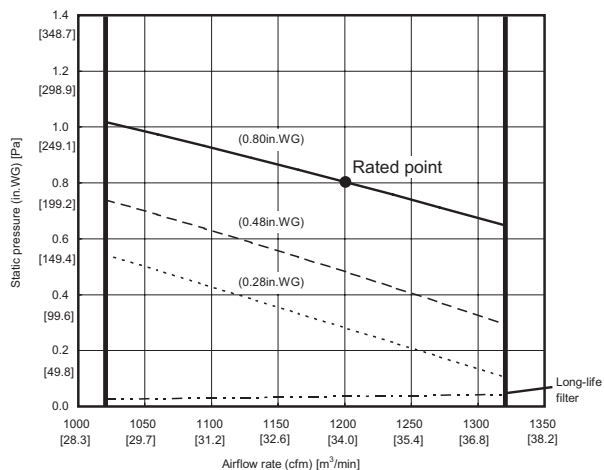
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

7. FAN CHARACTERISTIC CURVES

PEFY-AF1200CFMR

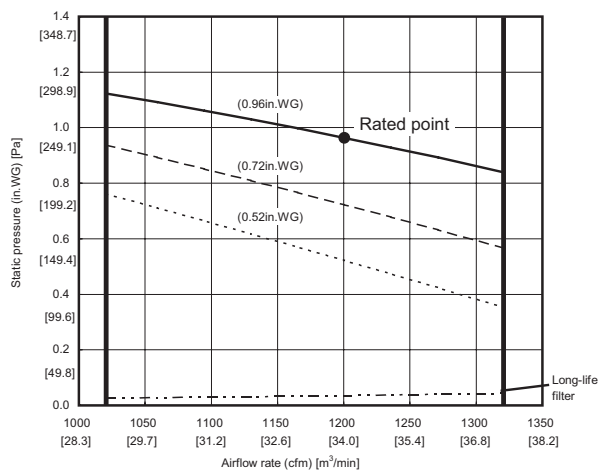
PEFY-AF1200CFMR

External static pressure : 0.80,0.48,0.28(in.WG),200,120,70[Pa]
Power source : 208V / 60Hz



PEFY-AF1200CFMR

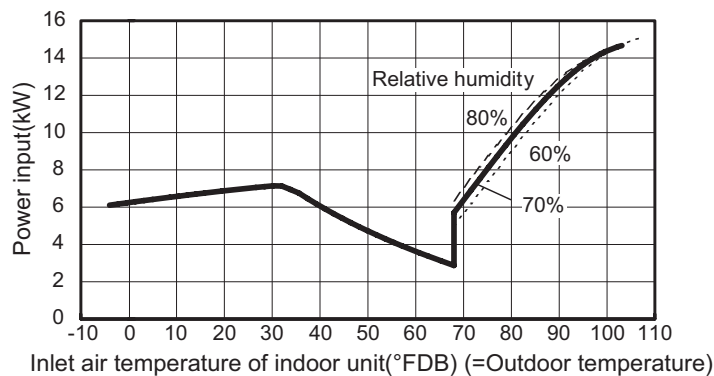
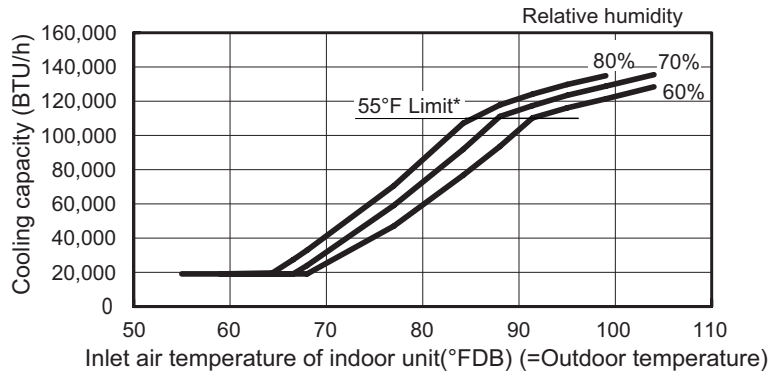
External static pressure : 0.96,0.72,0.52(in.WG),240,180,130[Pa]
Power source : 230V / 60Hz



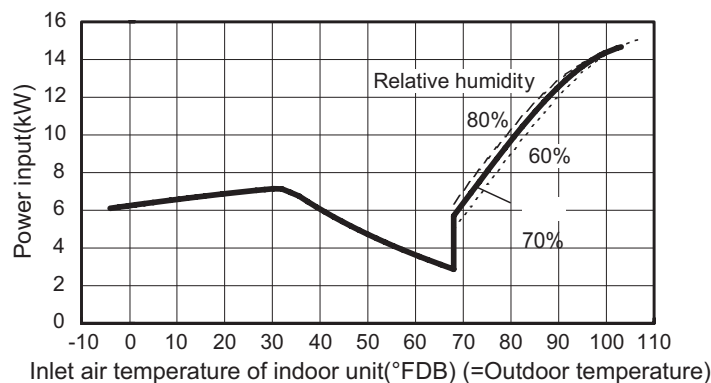
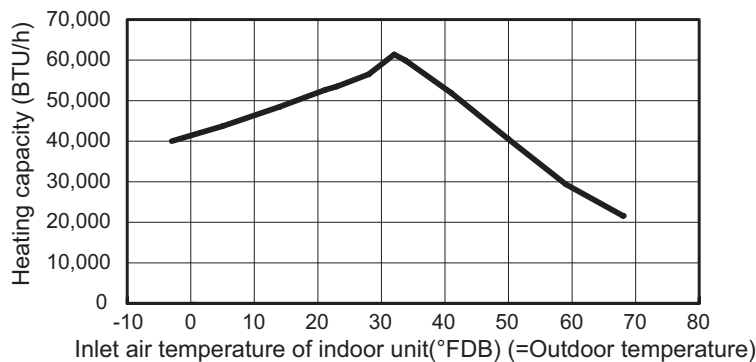
8. CAPACITY TABLES

8-1. Correction by Temperature

CITY MULTI could have various capacities at different design temperatures. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperatures.



* The temperature of evaporator is not adjusted to 55°F or less.



8. CAPACITY TABLES

8-2. Cooling Capacity with PEFY-AF1200CFMR and PURY-P120TKMU/YKMU

CA : Capacity SHC : Sensible Heat Capacity

Outdoor air temperature		Humidity											
		60%				70%				80%			
°FDB	°CDB	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)	CA(kW)	SHC(kW)	CA(BTU/h)	SHC(BTU/h)
104	40	37.6	13.0	128,400	44,300	39.7	11.1	135,500	37,800	-	-	-	-
99	37	35.6	13.6	121,400	46,400	37.8	11.9	128,800	40,500	39.5	10.4	134,900	35,300
95	35	34.0	13.9	116,100	47,300	36.2	12.4	123,400	42,100	38.1	10.9	129,800	37,200
88	31	27.4	12.8	93,500	43,700	32.6	12.8	111,100	43,700	34.5	11.7	117,800	39,800
77	25	13.8	8.6	47,000	29,300	17.3	8.6	59,100	29,300	20.7	8.6	70,500	29,200
68	20	5.6	5.5	19,100	18,700	7.1	5.1	24,000	17,200	9.7	5.1	32,900	17,300
59	15	5.6	5.5	19,100	18,600	5.6	4.5	19,100	15,500	5.6	3.7	19,100	12,700
55	13	5.6	5.5	19,100	18,600	5.6	4.6	19,100	15,600	5.6	3.8	19,100	13,100

This table shows the capacity in case that the target outlet air temperature of the evaporator is 55°F.
Outdoor air temperature means Inlet air temperature of indoor unit in the table above.

8-3. Heating Capacity with PEFY-AF1200CFMR and PURY-P120TKMU/YKMU

SHC : Sensible Heat Capacity

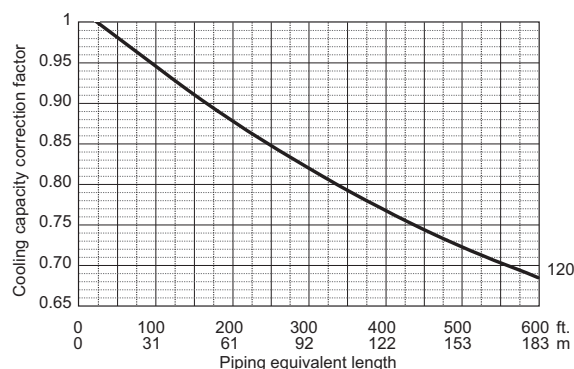
Outdoor air temperature				SHC (Set=63°F*)		SHC (Set=73°F*)		SHC (Set=83°F*)	
°FDB	°CDB	°FWB	°CWB	BTU/h	kW	BTU/h	kW	BTU/h	kW
-3	-19.5	-4	-20	40,000	11.7	40,000	11.7	40,000	11.7
5	-15	4	-16	43,700	12.8	43,700	12.8	43,700	12.8
14	-10	12	-11	48,500	14.2	48,500	14.2	48,500	14.2
23	-5	21	-6	50,200	14.7	53,500	15.7	53,500	15.7
32	0	29	-2	38,800	11.4	51,400	15.1	61,400	18.0
41	5	37	3	27,600	8.1	40,100	11.8	51,900	15.2
50	10	45	7	21,600	6.3	28,800	8.5	40,500	11.9
59	15	54	12	21,600	6.3	21,600	6.3	29,400	8.6
68	20	62	17	0	0.0	21,600	6.3	21,600	6.3

*There are times when the temperature of supply air does not reach the setting temperature in the low outdoor air temperature.
Outdoor air temperature means Inlet air temperature of indoor unit in the table above.

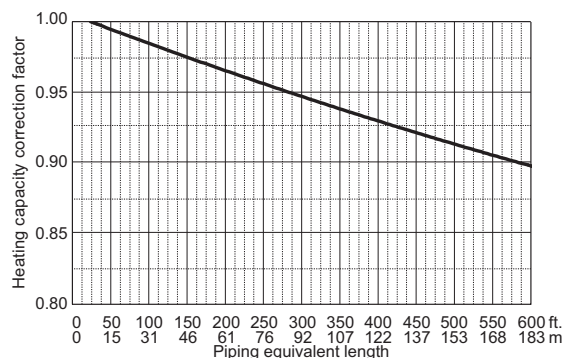
8-4. Correction by Refrigerant Piping Length

CITY MULTI systems can have extended piping lengths if certain limitations are followed, but cooling/heating capacity could be reduced. Using the following correction factor by equivalent piping length shown at 8-4-1 and 8-4-2, capacity can be found. 8-4-3 shows how to obtain the equivalent piping length.

8-4-1. Cooling Capacity Correction (PURY-P120TKMU/YKMU-A(-BS))



8-4-2. Heating Capacity Correction (PURY-P120TKMU/YKMU-A(-BS))



8-4-3. How to obtain the equivalent piping length

PURY-P120TKMU/YKMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.64 x number of bends in the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bends in the piping) [m]

8. CAPACITY TABLES

8-5. Correction at Frost and Defrost

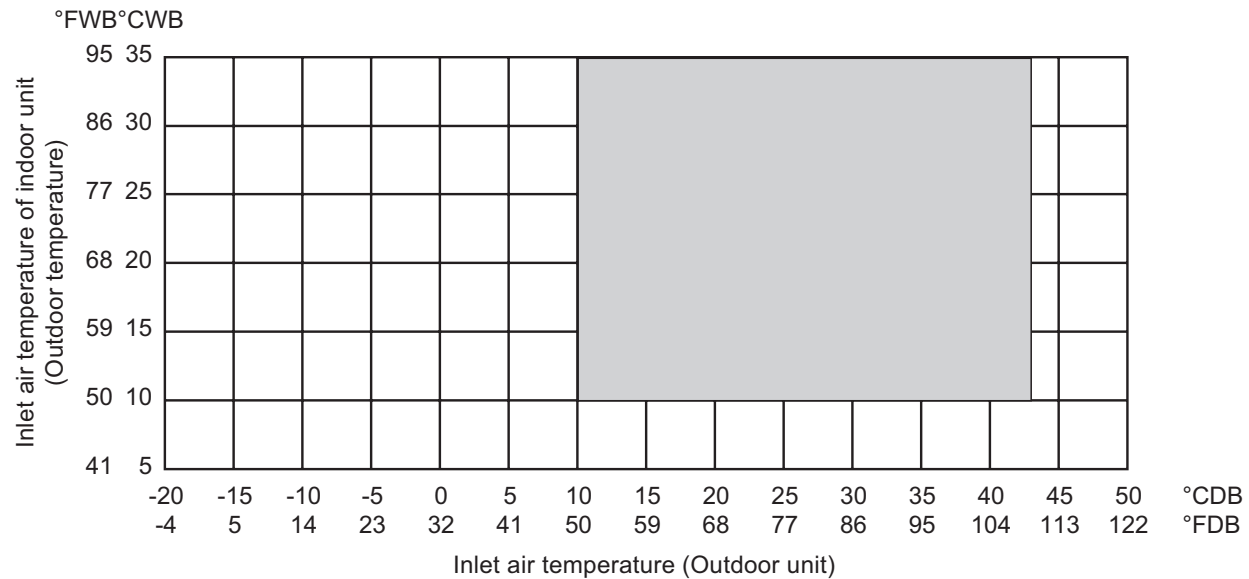
Under certain conditions the outdoor heat exchanger will accumulate frost, initiating the unit's automatic defrost operation. To calculate the heating capacity of the outdoor unit (when correcting for frost and defrost), multiply by the correction factor shown in the table below.

Correction Factor at Frost and Defrost

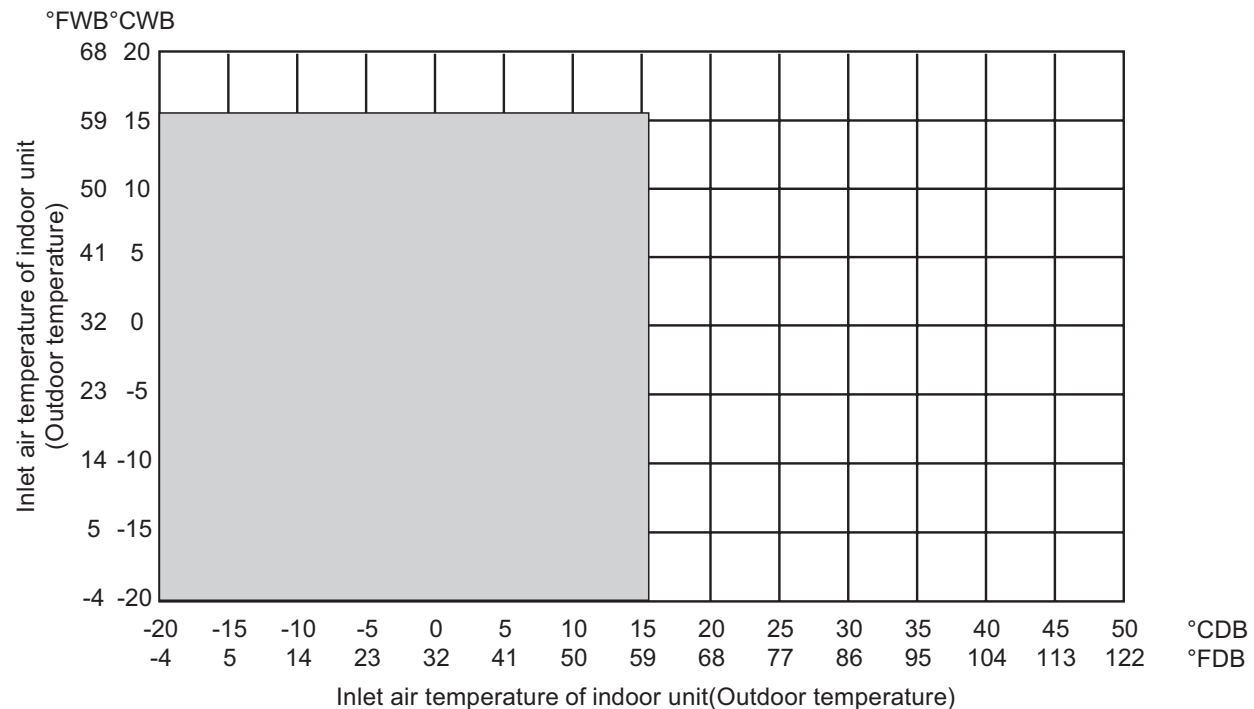
Outdoor inlet air temp. °C	6	4	2	1	0	-2	-4	-6	-8	-10	-20
Outdoor inlet air temp. °F	43	39	36	34	32	28	25	21	18	14	-4
PURY-P120TKMU/YKMU	1.00	0.93	0.85	0.83	0.84	0.86	0.90	0.90	0.92	0.95	0.95

8-6. Operation Temperature Range

Cooling



Heating

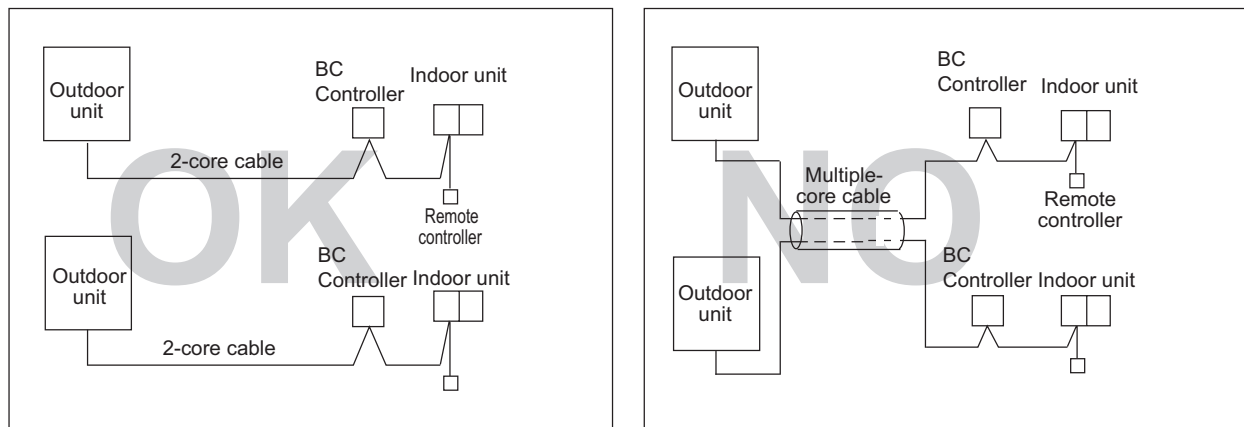


9. SYSTEM DESIGN

9-1. Electrical Work

9-1-1. General Cautions

- 1) Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations, and guidance of each electric power company.
- 2) Wiring for control (hereinafter referred to as transmission cable) shall be (50mm or more) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission cable and power source wire in the same conduit.)
- 3) Be sure to provide designated grounding work to outdoor unit.
- 4) Give some allowance to wiring for electrical part box of indoor and outdoor units, because the box is sometimes removed at the time of service work.
- 5) Never connect 380~415V(220~240V) power source to terminal block of transmission cable. If connected, electrical parts will be burnt out.
- 6) Use 2-core shield cable for transmission cable. If transmission cables of different systems are wired with the same multiple-core cable, the resultant poor transmitting and receiving will cause erroneous operations.



9-1-2. Power Supplies

Electrical characteristics of Indoor Unit

Symbols: MCA: Min. Circuit Amps (=1.25 x FLA); FLA: Full Load Amps
IFM: Indoor Fan Motor

Model	Unit				IFM
	Hz	Volts	Voltage range	MCA(A)	FLA(A)
PEFY-AF1200CFMR	60Hz	208/230V	188 to 253V	3.99 / 4.31	3.19 / 3.45

Electrical characteristics of BC Controller

Symbols: MCA: Min. Circuit Amps (=1.25 x FLA); FLA: Full Load Amps
RLA: Rated Load Amps

Model	Hz	Volts	Voltage range	MCA(A)	FLA(A)	RLA(A)
CMB-P106NU-G	60Hz	208 / 230V	198 to 253V	0.53 / 0.48	15 / 15	0.42 / 0.38
CMB-P108NU-G				0.68 / 0.61	15 / 15	0.54 / 0.49

Electrical characteristics of Outdoor Unit at Cooling Mode

Symbols : MCA : Min. Circuit Amps
SC : Starting Current

Model	Outdoor Units						Compressor
	Hz	Volts	Voltage range	MCA(A)	Maximum Fuse /Breaker Size (A)	MOCP(A)	SC(A)
PURY-P120TKMU-A(-BS)	60Hz	208 / 230V	188 to 253V	45 / 42	50	74 / 68	15
PURY-P120YKMU-A(-BS)		460V	414 to 506V	21	25	34	7

9. SYSTEM DESIGN

9-1-3. Power Cable Specifications

Wire thickness for main power supply, capacities for the switch, and system impedance

3-phase 3-wire, 208/230V, 60Hz	Minimum wire thickness (mm ² /AWG)			Switch(A)		Breaker for wiring (NFB)	Breaker for current leakage
	Main cable	Branch	Ground	Capacity	Fuse		
PURY-P120TKMU-A(-BS)	13.3/6	-	13.3/6	50	50	50	50A 100mA 0.1sec. or less
PEFY-AF1200CFMR	2.1/14	2.1/14	2.1/14	15	15	15	20A 30mA or 100mA 0.1sec. or less

3-phase 3-wire, 460V, 60Hz	Minimum wire thickness (mm ² /AWG)			Switch(A)		Breaker for wiring (NFB)	Breaker for current leakage
	Main cable	Branch	Ground	Capacity	Fuse		
PURY-P120YKMU-A(-BS)	5.3/10	-	5.3/10	25	25	25	25A 30mA or 100mA 0.1sec. or less
PEFY-AF1200CFMR	2.1/14	2.1/14	2.1/14	15	15	15	20A 30mA or 100mA 0.1sec. or less

- 1) Use dedicated power supplies for the outdoor unit and indoor unit. Ensure OC is wired individually.
- 2) Take into consideration ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.
- 3) The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%.
- 4) Specific wiring requirements should adhere to the wiring regulations of the region.
- 5) Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC57). For example, use wiring such as YZW.
- 6) A switch with at least 3 mm [1/8 in.] contact separation in each pole shall be provided by the Air Conditioner installer.



WARNING

Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.

Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.



CAUTION

A breaker for current leakage must be attached to the power supply. If no earth leakage breaker is installed, it may cause an electric shock.

Do not use anything other than a breaker and fuse with the correct capacity. Using a fuse or wire of too large capacity may cause malfunction or fire.

9. SYSTEM DESIGN

9-2. M-NET Control

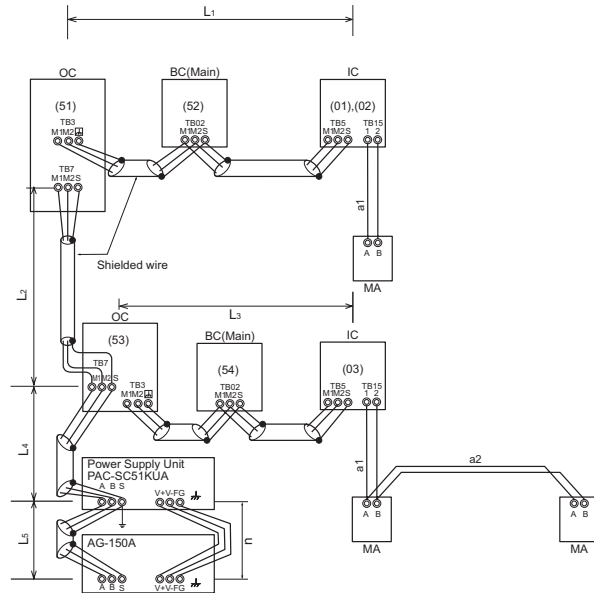
9-2-1. M-NET Control

Transmission cable length limitation

Using MA Remote Controller

Long transmission cable causes voltage down, therefore, the length limitation should be obeyed to secure proper transmission.

Max. length via Outdoor (M-NET cable)	$L1+L2+L3$, $L1+L2+L4+L5$, $L3+L4+L5$	$\leq 500\text{m}[1640\text{ft.}]$	1.25mm^2 [AWG16] or thicker
Max. length to Outdoor (M-NET cable)	$L1$, $L3$, $L4$, $L2+L4$, $L5$	$\leq 200\text{m}[656\text{ft.}]$	1.25mm^2 [AWG16] or thicker
Max. length from MA to Indoor	$a1+a2$	$\leq 200\text{m}[656\text{ft.}]$	$0.3-1.25\text{mm}^2$ [AWG22-16]
24VDC to AG-150A	n	$\leq 50\text{m}[164\text{ft.}]$	$0.75-2.0\text{mm}^2$ [AWG18-14]



OC : Outdoor unit controller; IC: Indoor unit controller; MA: MA remote controller

9. SYSTEM DESIGN

9-2-2. Transmission Cable Specifications

System configuration	For a single-refrigerant system		
Transmission cable length	Less than 120 m [394 ft]		More than 120 m [394 ft]
Facility example (for electrical noise judgment)	Residence or independent store without electrical noise	Building, clinic, hospital or communications station without electrical noise supposedly generated from inverter equipment, private power generator, high-frequency medical equipment, radio-used communications equipment and so on	All facilities
Types of transmission cables	VCTF, VCTFK, CVV, CVS, VVR, VVF, VCT or shielding wire CVVS or CPEVS	Shielding wire CVVS or CPEVS	
Length	Less than 120 m [394 ft]		Less than 200 m [656 ft]

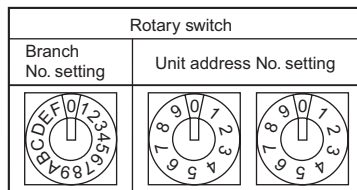
	MA remote controller	M-NET remote controller
Types of cables	Sheathed 2-core cable (unshielded) CVV	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm ² [AWG22 to 16]	0.3 to 1.25 mm ² [AWG22 to 16]
Length	Less than 200 m [656 ft]	Add any portion in excess of 10 m [32 ft] to within the longest allowable transmission cable length 200 m [656 ft] (Shielding portion is more than 1.25 mm ² [AWG16])

CVVS,MVVS : PVC insulated PVC jacketed shielded control cable
CPEVS : PE insulated PVC jacketed shielded communication cable
CVV : PVC insulated PVC sheathed control cable

9-2-3. Address Setting

Switch operation

To include CITY MULTI in a complete system, switch operation for setting the unit address No. and connection No. is required.



- Address No. of outdoor unit, indoor unit and remote controller.
The address No. is set at the address setting board.
In the case of R2 system, it is necessary to set the same No. at the branch No. switch of indoor unit as that of the BC controller connected. (When connecting two or more branches, use the lowest branch No.)
- Caution for switch operations
 - Do not use the same port number for both the main and reheat units. Assign different port numbers to each of them.
 - Be sure to shut off power source before switch setting. If operated with power source on, switch can not operate properly.
 - No units with identical unit address shall exist in one whole air conditioner system. If set incorrectly, the system cannot operate.
- MA remote controller
 - When connecting only one remote controller to one group, it is always the main remote controller.
When connecting two remote controllers to one group, set one remote controller as the main remote controller and the other as the sub remote controller.
 - The factory setting is "Main".
 - Refer to the "Instruction Book" that came with the MA remote controller for how to set the switches.

9. SYSTEM DESIGN

9-2-4. Setting Addresses

Unit		Address setting	Example		Note
Indoor unit		01 ~ 50	Main  10 Reheat  1		Use the most recent address within the same group of indoor units. Different address settings are required for the main and reheat units. Assign an address to the reheat unit that equals the address of the main unit plus 1.
Outdoor unit		51 ~ 99, 100 (Note1)	 10  1		The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the outdoor units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2) * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller		52 ~ 99, 100	 10  1		The address of outdoor unit + 1 * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
Local remote controller	ME, LOSSNAY Remote controller (Main)	101 ~ 150	1 Fixed  10  1		The smallest address of indoor unit in the group + 100 * The place of "100" is fixed to "1"
	ME, LOSSNAY Remote controller (Sub)	151 ~ 199, 200	1 Fixed  10  1		The address of main remote controller + 50 * The address automatically becomes "200" if it is set as "00"
System controller	Group remote controller	201 ~ 250	2 Fixed  10  1		The smallest group No. to be managed + 200
	System remote controller	000, 201 ~ 250	 100  10  1		
	ON/OFF remote controller	000, 201 ~ 250	 100  10  1		The smallest group No. to be managed + 200 * The smallest group No. to be managed is changeable.
	AG-150A G-50A GB-50A	000, 201 ~ 250	0,2 100 0~5 10 0~9 1		
	LMAP03U	201 ~ 250	2 Fixed  10  1		

Note1: To set the address to "100", set it to "50"

Note2: Outdoor units OC and OS in one refrigerant circuit system are automatically detected.

OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.

9. SYSTEM DESIGN

9-2-5. System Examples

Factory setting

Original switch setting of the outdoors, indoors, controllers and LMAP at shipment is as follows.

- Outdoor unit : Address: 00, CN41: U (Jumper), DipSW2-1: OFF
- Indoor unit : Address: 00
- BC controller : Address: 00
- Remote controller : Address: 100

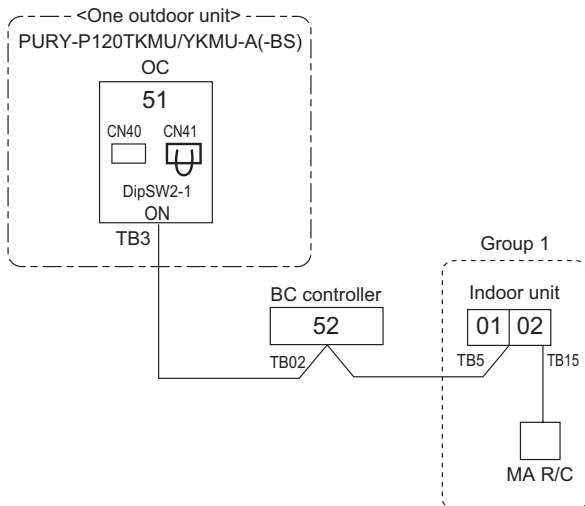
Setting at the site

- DipSW2-1(Outdoor) : When the System Remote Controller is used, all the Dip SW2-1 at the outdoor units should be set to "ON".
- DipSW4-6/6-2 (BC controller) : Set DipSW to the following table setting.

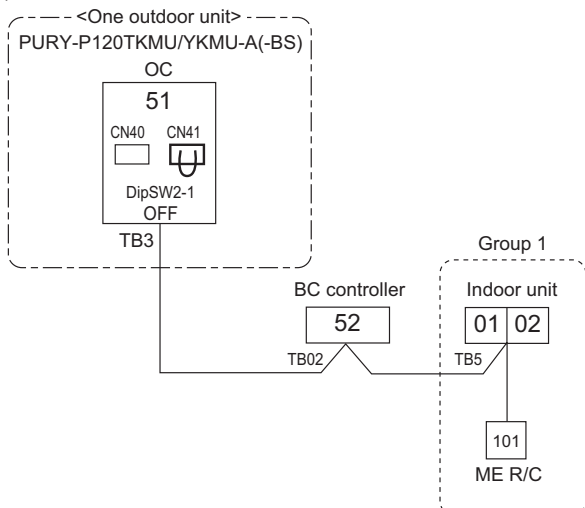
DipSW	Outdoor unit
	PURY-P120TKMU/YKMU-A(-BS)
SW4-6	OFF
SW6-2	ON

- CN40/CN41 : Change jumper from CN41 to CN 40 at outdoor control board will activate central transmission power supply to TB7;
Power supply unit is recommended to use for a system having more than 1 outdoor unit, because the central transmission power supply from TB7 of one of outdoor units is risking that the outdoor unit failure may let down the whole central control system.

(3)-3-1 MA remote controller



(3)-3-2 ME remote controller



9. SYSTEM DESIGN

9-3. Piping Design

9-3-1. R410A piping material

The maximum operation pressure of R410A air conditioner is 4.30 MPa [623psi]. The refrigerant piping should ensure the safety under the maximum operation pressure. MITSUBISHI ELECTRIC recommends pipe size as Table 3-1, or You shall follow the local industrial standard. Pipes of radial thickness 0.7mm or less shall not be used.

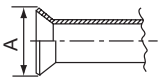
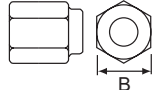
Table 3-1. Copper pipe size and radial thickness for R410A CITY MULTI.

Size (mm)	Size (inch)	Radial thickness (mm)	Radial thickness (mil)	Pipe type
ø6.35	ø1/4"	0.8	[32]	ACR-Annealed or ACR-Drawn Temper
ø9.52	ø3/8"	0.8	[32]	ACR-Annealed or ACR-Drawn Temper
ø12.7	ø1/2"	0.8	[32]	ACR-Annealed or ACR-Drawn Temper
ø15.88	ø5/8"	1.0	[40]	ACR-Annealed or ACR-Drawn Temper
ø19.05	ø3/4"	1.2	[48]	ACR-Annealed or ACR-Drawn Temper
ø22.2	ø7/8"	1.0	[40]	ACR-Drawn Temper
ø25.4	ø1"	1.0	[40]	ACR-Drawn Temper
ø28.58	ø1-1/8"	1.0	[40]	ACR-Drawn Temper
ø31.75	ø1-1/4"	1.1	[44]	ACR-Drawn Temper
ø34.93	ø1-3/8"	1.2	[48]	ACR-Drawn Temper
ø41.28	ø1-5/8"	1.4	[56]	ACR-Drawn Temper

* The figures in the radial thickness column are based on the Japanese standards and provided only as a reference. Use pipes that meet the local standards.

Flare

Due to the relative higher operation pressure of R410A compared to R22, the flare connection should follow dimensions mentioned below so as to achieve enough the air-tightness.

Flare pipe	Pipe size	A (For R410A)	(mm[in.])	Flare nut	Pipe size	B (For R410A)	(mm[in.])
	ø6.35 [1/4"]	9.1 [3/8"]			ø6.35 [1/4"]	17.0 [3/4"]	
	ø9.52 [3/8"]	13.2 [9/16"]			ø9.52 [3/8"]	22.0 [7/8"]	
	ø12.70 [1/2"]	16.6 [11/16"]			ø12.70 [1/2"]	26.0 [1-1/16"]	
	ø15.88 [5/8"]	19.7 [13/16"]			ø15.88 [5/8"]	29.0 [1-1/8"]	
	ø19.05 [3/4"]	24.0 [1"]			ø19.05 [3/4"]	36.0 [1-7/16"]	

9. SYSTEM DESIGN

9-3-2. R410A piping design specifications

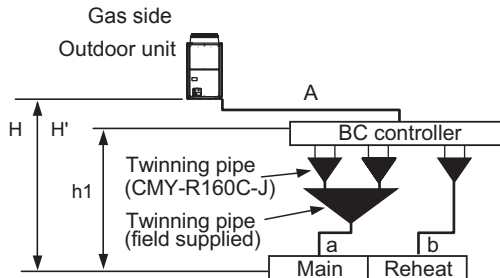
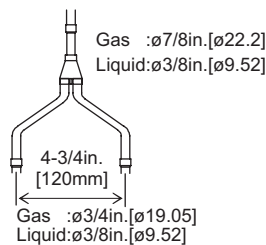
PURY-P120TKMU/YKMU-A(-BS) + PEFY-AF1200CFMR

Notes:

- 1) Use the twinning pipe (CMY-R160C-J) and field-supplied twinning pipe to connect between the BC controller and indoor units.
- 2) Because bends cause pressure loss on transportation of refrigerant, the fewer bends in the design the better;
Piping length needs to consider the actual length and equivalent length which bends are counted.
Equivalent piping length (m) = Actual piping length + "M" x Quantity of bends.
- 3) Set DIP-SW 6-2 to ON of BC controller. (SW4-6=OFF)

[Fig.(1)-1] Twinning pipe (CMY-R160C-J)

Liquid side



[Table (1)-1] Piping length limitation

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length	A+a+b	*1	-
Farthest IU from OU	A+a	165 [541']	190 [623']
Distance between OU and BC	A	110 [360'] *1	110 [360'] *1
Farthest IU from BC controller	a	40 [131'] *2	40 [131'] *2
Height between OU and IU (OU above IU)	H	50 [164']	-
Height between OU and IU (OU under IU)	H'	40 [131']	-
Height between IU and BC	h1	15 [49'] (10 [32']) *3	-

OU : Outdoor Unit ; IU : Indoor Unit ; BC : BC controller

*1. Please refer to [Fig.(1)-5]

*2. Farthest Indoor from BC controller "a" can exceed 40m(131ft.) till 60m(197ft.) if no Indoor sized P72, P96 connected. Details refer to [Fig.(1)-4]

*3. Distance of Indoor from BC must be less than 10m(33ft.), if any.

[Table (1)-2] Bends equivalent length "M"

Outdoor Model	M (m/bends [ft./bends])
PURY-P120TKMU/YKMU-A(-BS)	0.47 [1.54']

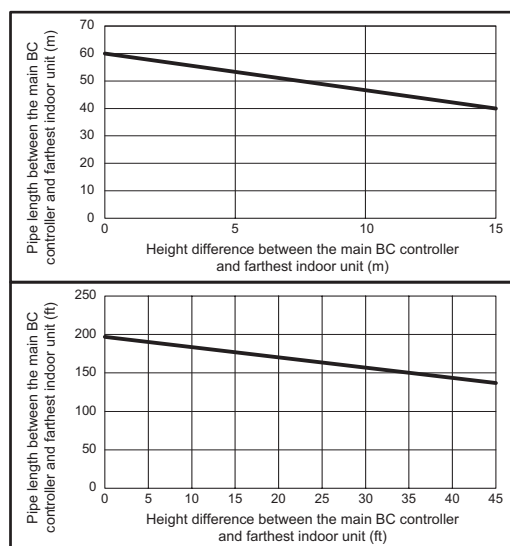
[Table (1)-3] Piping "A" size selection rule

Outdoor Model	Pipe(High pressure)	Pipe(Low pressure)
PURY-P120TKMU/YKMU-A(-BS)	$\phi 19.05$ [3/4"]	$\phi 28.58$ [1-1/8"]

[Table (1)-4] Piping "a", "b", "c", "d" size selection rule

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
Main, Reheat	$\phi 9.52$ [3/8"]	$\phi 22.20$ [7/8"]

[Fig.(1)-4] Piping length and height between IU and BC controller



[Fig.(1)-5] Total piping length restrictions
PURY-P120TKMU/YKMU-A(-BS)

