MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow

AIR CONDITIONING SYSTEMS

MODEL

PURY-WP-YJM-A
CMB-WP-V-G
PEFY-WP-VMS1-E
PEFY-WP-VMA-E
PFFY-WP-VLRMM-E

DATA BOOK

3rd edition

HYBRID CITY MULTI
Databook

HYBRID CITY MULTI
1. INDOOR UNITS

PEFY-WP-VMS1-E

1. SPECIFICATIONS

Model				PEFY-WP15VMS1-E	PEFY-WP20VMS1-E	PEFY-WP25VMS1-E	PEFY-WP32VMS1-E
Power source				1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz
Cooling capacity		*1	kW	1.7	2.2	2.8	3.6
(Nominal)		*1	kcal/h	1,500	1,900	2,400	3,100
		*1	BTU/h	5,800	7,500	9,600	12,300
	*2	Power input	kW	0.050	0.051	0.060	0.071
	*2	Current input	A	0.44	0.49	0.51	0.61
Heating capacity		*3	kW	1.9	2.5	3.2	4.0
(Nominal)		*3	kcal/h	1,600	2,200	2,800	3,400
		*3	BTU/h	6,500	8,500	10,900	13,600
	*2	Power input	kW	0.030	0.031	0.040	0.051
	*2	Current input	A	0.33	0.38	0.40	0.50
External finish				Galvanized steel plate	Galvanized steel plate	Galvanized steel plate	Galvanized steel plate
External dimension H x W x D			mm	200 x 790 x 700	200 x 790 x 700	200 x 790 x 700	200 x 990 x 700
			in.	7-7/8 x 31-1/8 x 27-9/16	7-7/8 x 31-1/8 x 27-9/16	7-7/8 x 31-1/8 x 27-9/16	7-7/8 x 39 x 27-9/16
Net weight			kg (lbs)	19 (42)	20 (45)	20 (45)	25 (56)
Heat exchanger				Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)
	Water Volume		L	0.7	0.9	0.9	1.0
FAN	Type x Quantity			Sirocco fan x 2	Sirocco fan x 2	Sirocco fan x 2	Sirocco fan x 3
*4	External static press.		Pa	<5> - 15 - <35> - <50>	<5> - 15 - <35> - <50>	<5> - 15 - <35> - <50>	<5> - 15 - <35> - <50>
			mmH_2O	<0.5> - 1.5 - <3.6> - <5.1>	<0.5> - 1.5 - <3.6> - <5.1>	<0.5> - 1.5 - <3.6> - <5.1>	<0.5> - 1.5 - <3.6> - <5.1>
	Motor Type			DC motor	DC motor	DC motor	DC motor
	Motor output		kW	0.096	0.096	0.096	0.096
	Driving mechanism			Direct-driven by motor	Direct-driven by motor	Direct-driven by motor	Direct-driven by motor
	Air flow rate			(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
			m^3/min	5.0 - 6.0 - 7.0	5.5 - 6.5 - 8.0	5.5 - 7.0 - 9.0	8.0 - 9.0 - 11.0
			L/s	83 - 100 - 117	92 - 108 - 133	92 - 117 - 150	133 - 150 - 183
			cfm	177 - 212 - 247	194 - 230 - 282	194 - 247 - 318	282 - 318 - 388
Sound pressure level (measured in anechoic room)				(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
		*2	dB <A>	22-24-28	23-25-29	23-26-30	28-30-33
Insulation material				EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam
Air filter				PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.
Protection device				Fuse	Fuse	Fuse	Fuse
Refrigerant control device				-	-	-	-
Connectable outdoor unit/HBC controller				HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G
Water piping diameter	Inlet		in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
*5 *6	Outlet		in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
Field drain pipe size			mm (in.)	O.D.32 (1-1/4)	O.D.32 (1-1/4)	O.D.32 (1-1/4)	O.D.32 (1-1/4)
Drawing	External			KD94T794X01	KD94T794X01	KD94T794X01	KD94T794X01
	Wiring			KD94T793X01	KD94T793X01	KD94T793X01	KD94T793X01
	Refrigerant cycle			-	-	-	-
Standard attachment	Document			Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book
	Accessory			Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band
Optional parts	Control box replace kit			PAC-KE70HS-E	PAC-KE70HS-E	PAC-KE70HS-E	PAC-KE70HS-E
Remarks				Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27°CD.B./19°CW.B. (81°FD.B./66°FW.B.), Outdoor: 35°CD.B. (95°FD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20°CD.B. (68°FD.B.), Outdoor: 7°CD.B./6°CW.B. (45°FD.B./43°FW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Please group units that operate on 1 branch.

Unit converter

kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Model			PEFY-WP40VMS1-E	PEFY-WP50VMS1-E		
Power source			1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz		
Cooling capacity	*1	kW	4.5	5.6		
(Nominal)	*1	kcal/h	3,900	4,800		
	*1	BTU/h	15,400	19,100		
*2	Power input	kW	0.090	0.090		
*2	Current input	A	0.73	0.77		
Heating capacity	*3	kW	5.0	6.3		
(Nominal)	*3	kcal/h	4,300	5,400		
	*3	BTU/h	17,100	21,500		
*2	Power input	kW	0.070	0.070		
*2	Current input	A	0.62	0.66		
External finish			Galvanized steel plate	Galvanized steel plate		
External dimension H x W x D		mm	200 x 990 x 700	200 x 1,190 x 700		
		in.	7-7/8 x 39 x 27-9/16	7-7/8 x 46-7/8 x 27-9/16		
Net weight		kg (lbs)	25 (56)	27 (60)		
Heat exchanger			Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)		
	Water Volume	L	1.0	1.7		
FAN	Type x Quantity		Sirocco fan x 3	Sirocco fan x 4		
*4	External static press.	Pa	<5> - 15 - <35> - <50>	<5> - 15 - <35> - <50>		
		mmH_2O	<0.5> - 1.5 - <3.6> - <5.1>	<0.5> - 1.5 - <3.6> - <5.1>		
	Motor Type		DC motor	DC motor		
	Motor output	kW	0.096	0.096		
	Driving mechanism		Direct-driven by motor	Direct-driven by motor		
	Air flow rate		(Low-Mid-High)	(Low-Mid-High)		
		m^3/min	9.5 - 11.0 - 13.0	12.0 - 14.0 - 16.5		
		L/s	158 - 183 - 217	200 - 233 - 275		
		cfm	335 - 388 - 459	424 - 494 - 583		
Sound pressure level (measured in anechoic room)			(Low-Mid-High)	(Low-Mid-High)		
	*2	dB <A>	30-32-35	30-33-36		
Insulation material			EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam		
Air filter			PP honeycomb fabric.	PP honeycomb fabric.		
Protection device			Fuse	Fuse		
Refrigerant control device			-	-		
Connectable outdoor unit/HBC controller			HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G		
Water piping diameter	Inlet	in.	Rc 3/4 screw	Rc 3/4 screw		
*5 *6	Outlet	in.	Rc 3/4 screw	Rc 3/4 screw		
Field drain pipe size		mm (in.)	O.D.32 (1-1/4)	O.D.32 (1-1/4)		
Drawing	External		KD94T794X01	KD94T794X01		
	Wiring		KD94T793X01	KD94T793X01		
	Refrigerant cycle		-	-		
Standard attachment	Document		Installation Manual, Instruction Book	Installation Manual, Instruction Book		
	Accessory		Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band		
Optional parts	Control box replace kit		PAC-KE70HS-E	PAC-KE70HS-E		
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27°CD.B./19°CW.B. (81°FD.B./66°FW.B.), Outdoor: 35°CD.B. (95°FD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20°CD.B. (68°FD.B.), Outdoor: 7°CD.B./6°CW.B. (45°FD.B./43°FW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Please group units that operate on 1 branch.

Unit converter

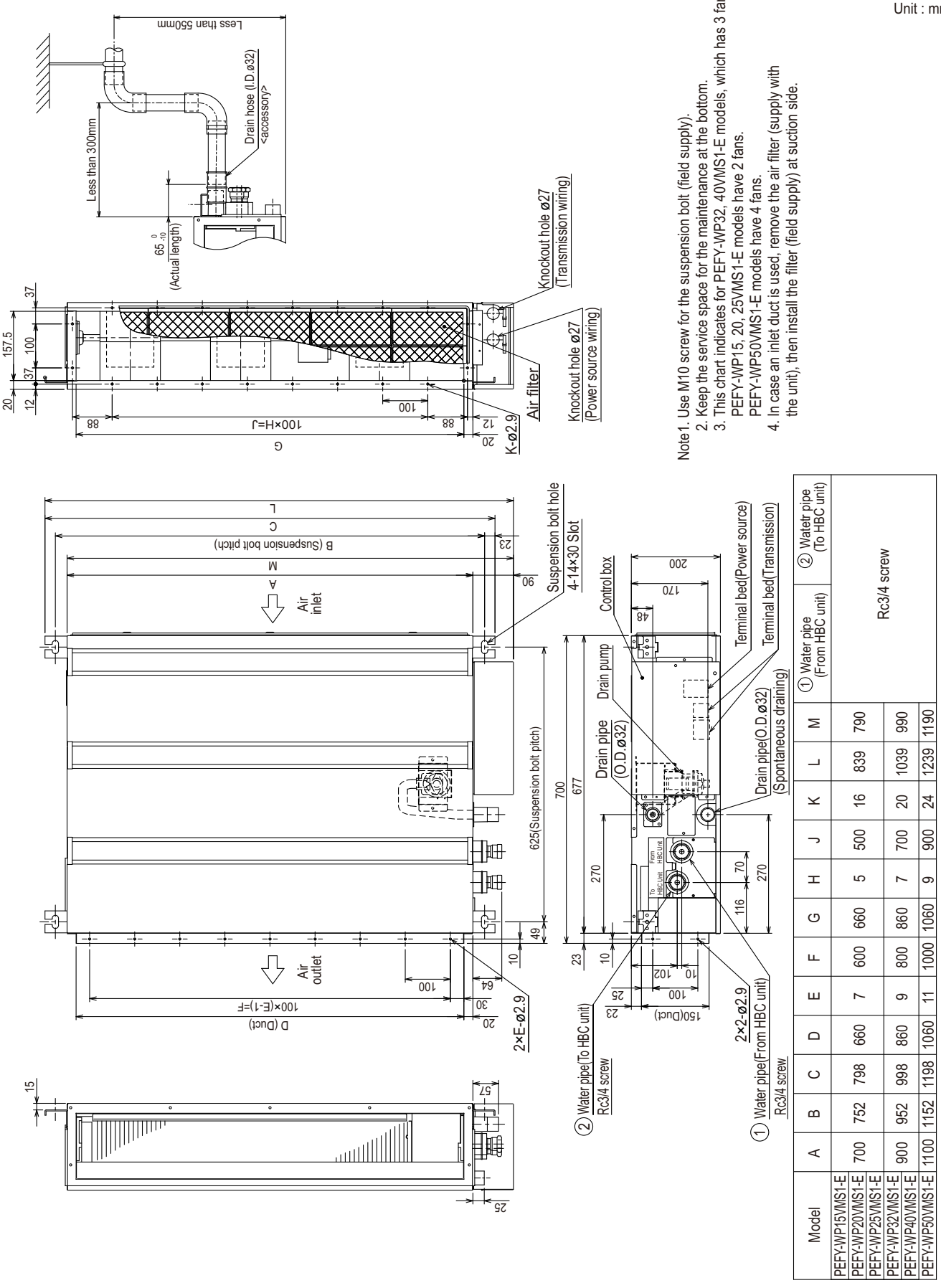
kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

2. EXTERNAL DIMENSIONS

PEFY-WP15, 20, 25, 32, 40, 50VMS1-E

Unit : mm



Note 1. Use M10 screw for the suspension bolt (field supply).
2. Keep the service space for the maintenance at the bottom.
3. This chart indicates for PEFY-WP32, 40VMS1-E models, which has 3 fans.
PEFY-WP15, 20, 25VMS1-E models have 2 fans.
PEFY-WP50VMS1-E models have 4 fans.
4. In case an inlet duct is used, remove the air filter (supply with the unit), then install the filter (field supply) at suction side.

Model	A	B	C	D	E	F	G	H	J	K	L	M	① Water pipe (From HBC unit)	② Wateir pipe (To HBC unit)
PEFY-WP15VMS1-E	700	752	798	660	7	600	660	5	500	16	839	790	Rc3/4 screw	
PEFY-WP20VMS1-E														
PEFY-WP25VMS1-E														
PEFY-WP32VMS1-E	900	952	998	860	9	800	860	7	700	20	1039	990		
PEFY-WP40VMS1-E														
PEFY-WP50VMS1-E	1100	1152	1198	1060	11	1000	1060	9	900	24	1239	1190		

[Maintenance access space]
Secure enough access space to allow for the maintenance, inspection, and replacement of the motor, fan, drain pump, heat exchanger, and electric box in one of the following ways.
Select an installation site for the indoor unit so that its maintenance access space will not be obstructed by beams or other objects.

(1) When a space of 300mm or more is available below the unit between the unit and the ceiling. (Fig.1)
·Create access door 1 and 2 (450x450mm each) as shown in Fig.2.
(Access door 2 is not required if enough space is available below the unit for a maintenance worker to work in.)

(2) When a space of less than 300mm is available below the unit between the unit and the ceiling.
(At least 20mm of space should be left below the unit as shown in Fig.3.)
·Create access door 1 diagonally below the electric box and access door 3 below the unit as shown in Fig.4.
or
·Create access door 4 below the electric box and the unit as shown in Fig.5.

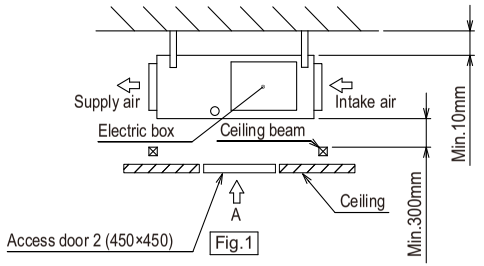


Fig.1

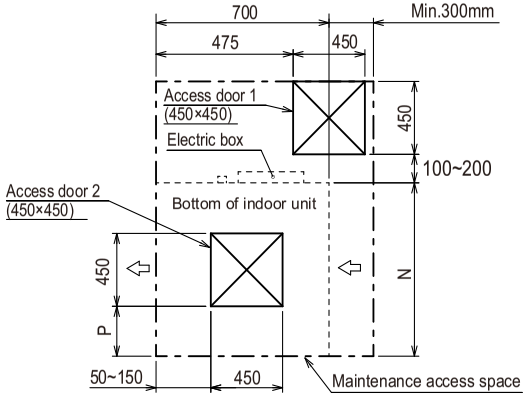


Fig.2 (Viewed from the direction of the arrow A)

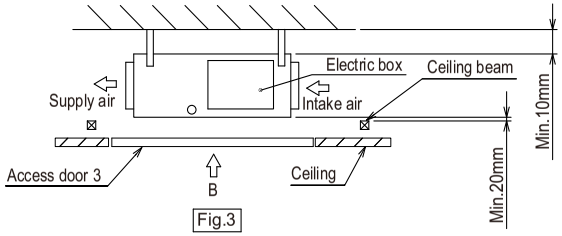


Fig.3

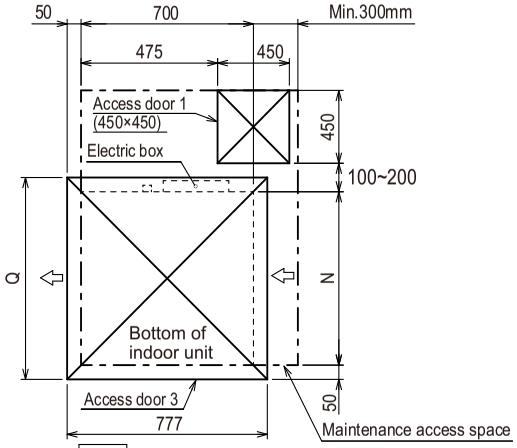


Fig.4 (Viewed from the direction of the arrow B)

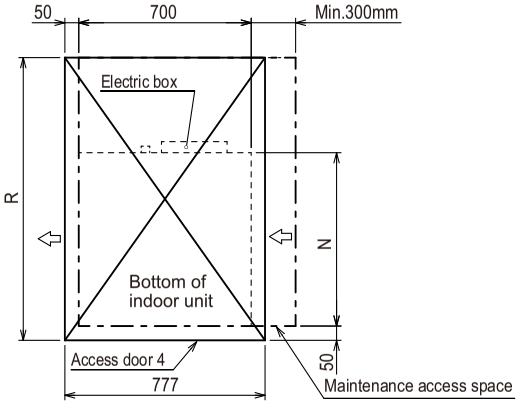


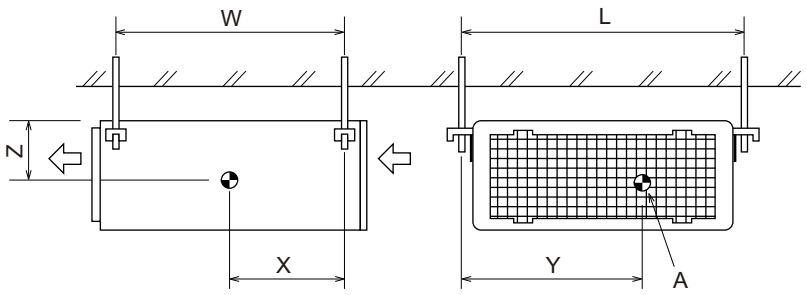
Fig.5 (Viewed from the direction of the arrow B)

Model	N	P	Q	R
PEFY-WP15VMS1-E	700	50~150	800	1300
PEFY-WP20VMS1-E				
PEFY-WP25VMS1-E				
PEFY-WP32VMS1-E	900	150~250	1000	1500
PEFY-WP40VMS1-E				
PEFY-WP50VMS1-E	1100	250~350	1200	1700

Unit : mm

3. CENTER OF GRAVITY

PEFY-WP15, 20, 25, 32, 40, 50VMS1-E

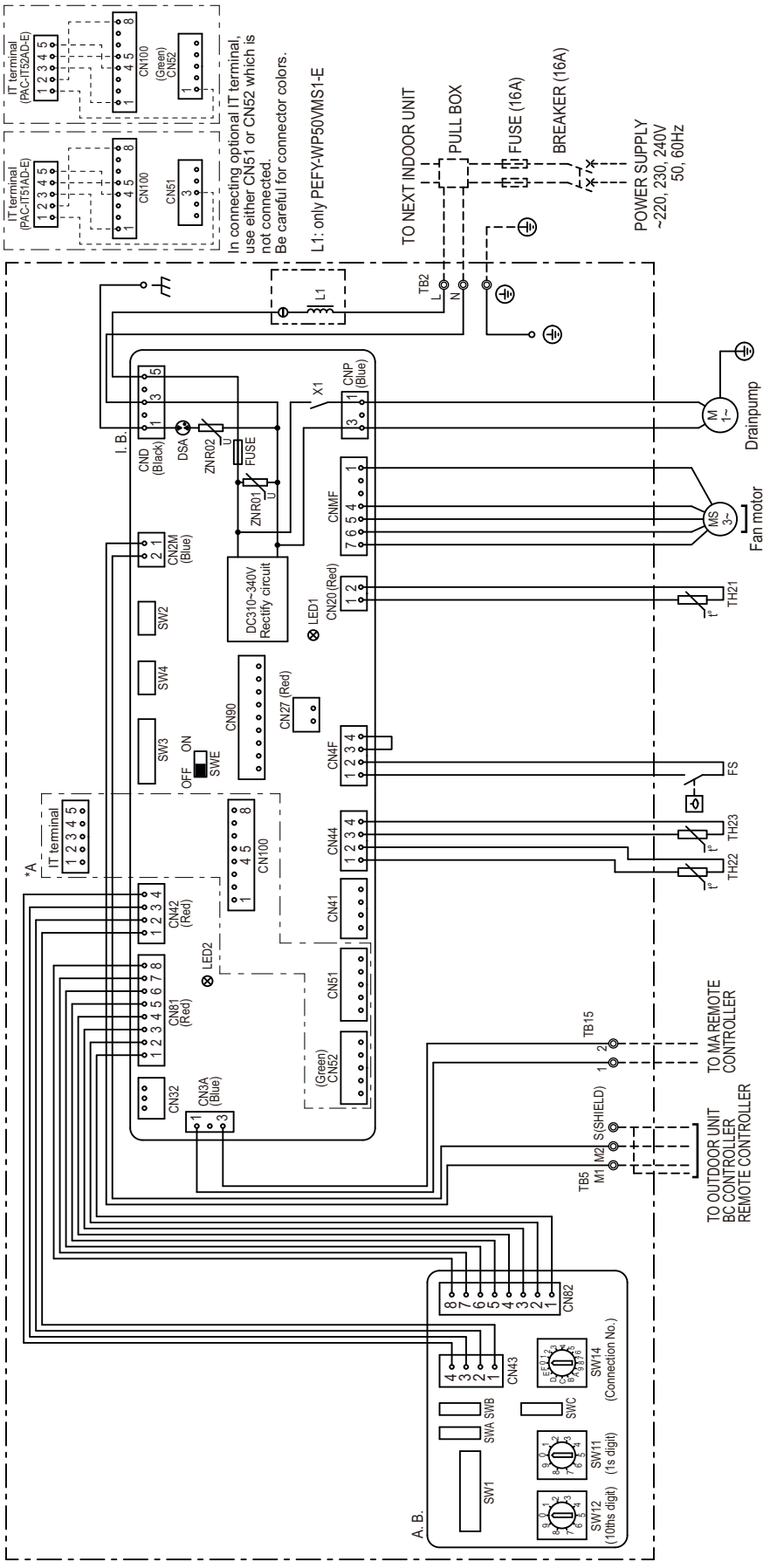


A: Center of gravity

(mm)[in]

Model name	W	L	X	Y	Z
PEFY-WP15VMS1-E	625 [24-5/8]	752 [29-5/8]	263 [10-3/8]	338 [13-5/16]	105 [4-5/32]
PEFY-WP20VMS1-E	625 [24-5/8]	752 [29-5/8]	263 [10-3/8]	338 [13-5/16]	105 [4-5/32]
PEFY-WP25VMS1-E	625 [24-5/8]	752 [29-5/8]	263 [10-3/8]	338 [13-5/16]	105 [4-5/32]
PEFY-WP32VMS1-E	625 [24-5/8]	952 [37-1/2]	280 [11-1/32]	422 [16-5/8]	104 [4-1/8]
PEFY-WP40VMS1-E	625 [24-5/8]	952 [37-1/2]	280 [11-1/32]	422 [16-5/8]	104 [4-1/8]
PEFY-WP50VMS1-E	625 [24-5/8]	1152 [45-3/8]	285 [11-1/4]	511 [20-1/8]	104 [4-1/8]

PEFY-WP15, 20, 25, 32, 40, 50VMS1-E



NOTE: Symbols used in wiring diagram above are,
----- (HEAVY DOTTED LINE):FIELD WIRING
----- (THIN DOTTED LINE) :OPTIONAL PARTS
⊖ : CONNECTOR
◎ : TERMINAL

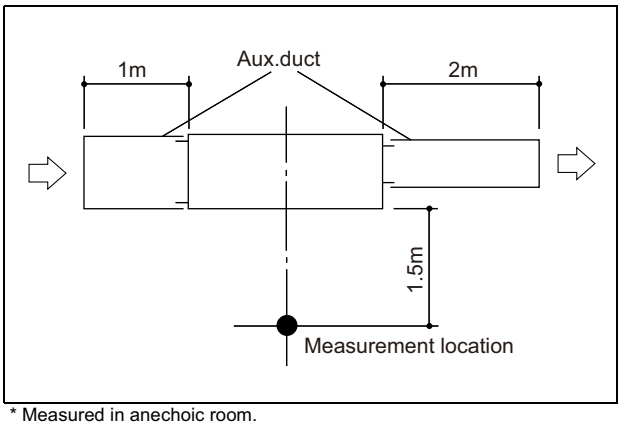
SYMBOL EXPLANATION

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
I.B.	Indoor controller board	CN32	Connector (Remote switch)	SW3(I.B.)	Switch (for mode selection)
A.B.	Address board	CN41	Connector (HA terminal-A)	SW4(I.B.)	Switch (for model selection)
TB2	Power source terminal block	CN51	Connector (Centrally control)	SWE(I.B.)	Connector (emergency operation)
TB5	Transmission terminal block	CN52	Connector (Remote indication)	SW11(A.B.)	Switch (for mode selection)
TB15	Transmission terminal block	CN90	Connector (Wireless)	SW11(A.B.)	Switch (1s digit address set)
FUSE	Fuse AC250V 6.3A	CN100	Connector (IT terminal)	SW12(A.B.)	Switch (10ths digit address set)
ZNR01, 02	Varistor	FS	Float switch	SW14(A.B.)	Switch (connection No.set)
DSA	Arrester	TH21	Thermistor (inlet air temp.detection)	SWA(A.B.)	Switch (for static pressure selection)
X1	Aux. relay	TH22	Thermistor (piping temp.detection/water in)	SWB(A.B.)	Switch (for model selection)
L1	AC reactor (Power factor improvement)	TH23	Thermistor (piping temp.detection/water out)	SWC(A.B.)	Switch (for static pressure selection)
CN27	Connector (Damper)	SW2(I.B.)	Switch (for capacity code)		

5. SOUND LEVELS

5-1. Sound levels

PEFY-WP-VMS1-E



* Measured in anechoic room.

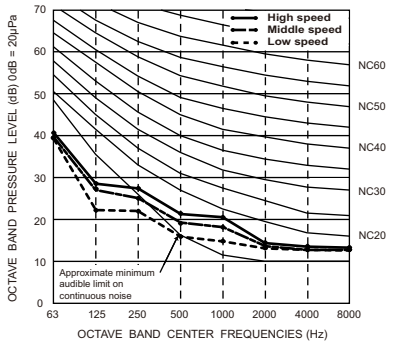
Sound level at anechoic room : Low-Mid-High

		Sound level dB (A)			
		5Pa	15Pa	35Pa	50Pa
PEFY-WP15VMS1-E	220-240V	22 - 24 - 26	22 - 24 - 28	23 - 26 - 29	23 - 27 - 30
PEFY-WP20VMS1-E	220-240V	22 - 25 - 28	23 - 25 - 29	24 - 27 - 30	25 - 28 - 32
PEFY-WP25VMS1-E	220-240V	22 - 25 - 29	23 - 26 - 30	24 - 28 - 31	25 - 29 - 33
PEFY-WP32VMS1-E	220-240V	26 - 28 - 30	28 - 30 - 33	30 - 32- 35	31 - 33 - 36
PEFY-WP40VMS1-E	220-240V	29 - 31 - 34	30 - 32 - 35	31 - 34 - 37	32 - 34 - 38
PEFY-WP50VMS1-E	220-240V	29 - 32 - 35	30 - 33 - 36	31 - 35 - 39	32 - 36 - 40

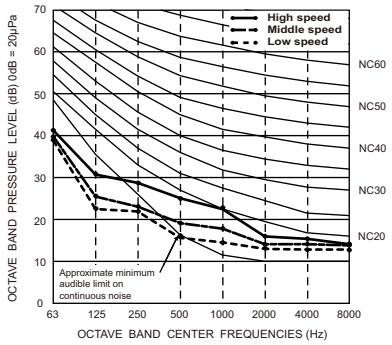
5. SOUND LEVELS

5-2. NC curves

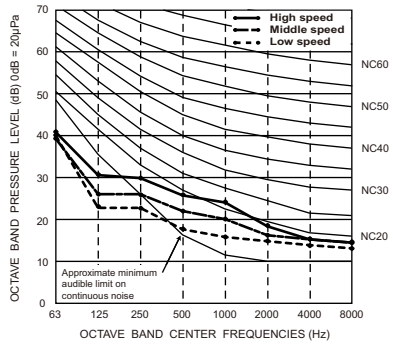
PEFY-WP15VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



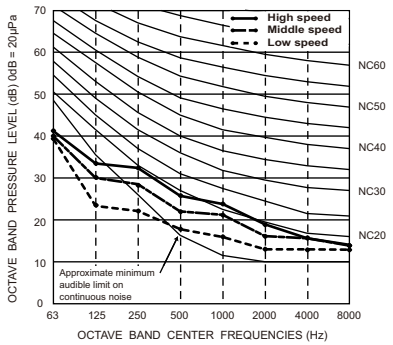
PEFY-WP15VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



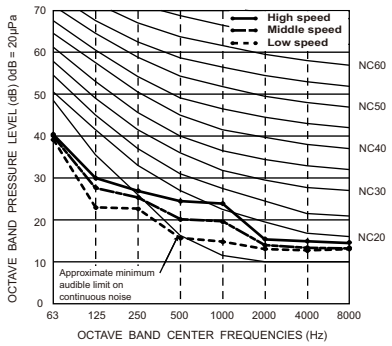
PEFY-WP15VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60HzHz



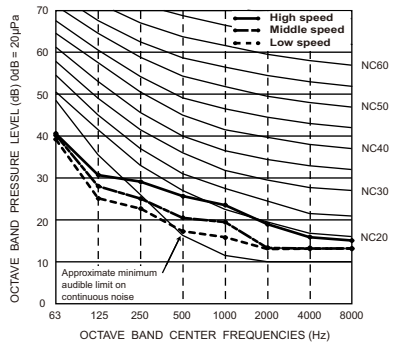
PEFY-WP15VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz



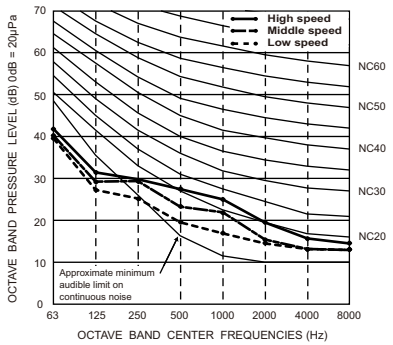
PEFY-WP20VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



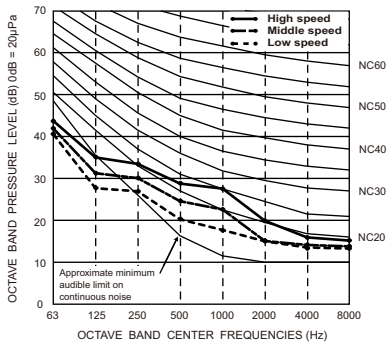
PEFY-WP20VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



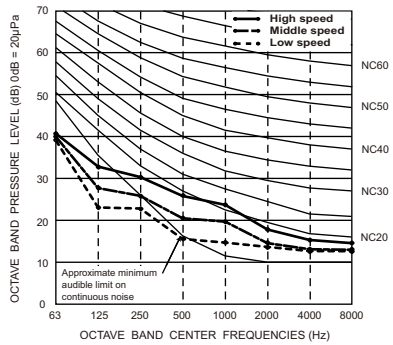
PEFY-WP20VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz



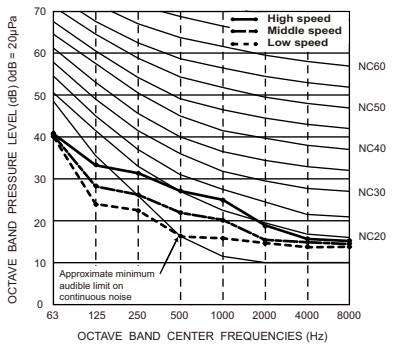
PEFY-WP20VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz



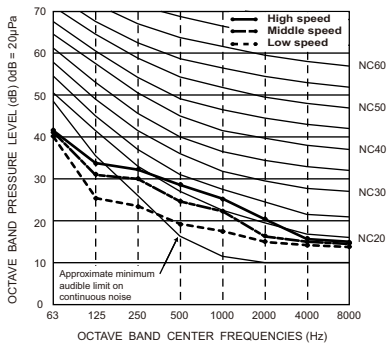
PEFY-WP25VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



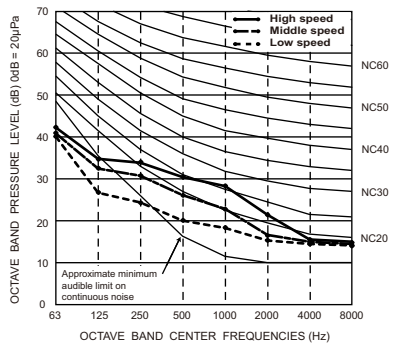
PEFY-WP25VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



PEFY-WP25VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz

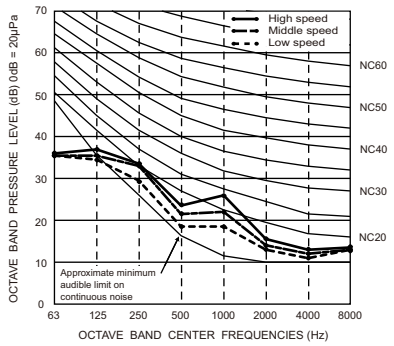


PEFY-WP25VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz

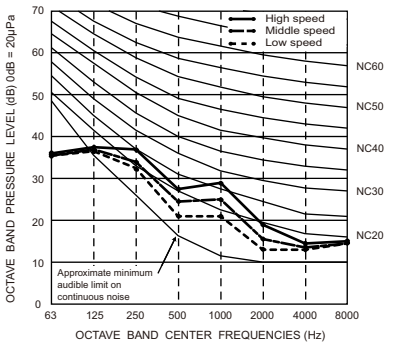


5. SOUND LEVELS

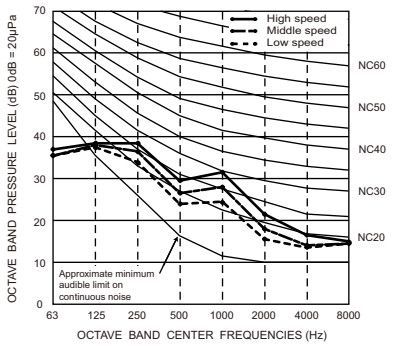
PEFY-WP32VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



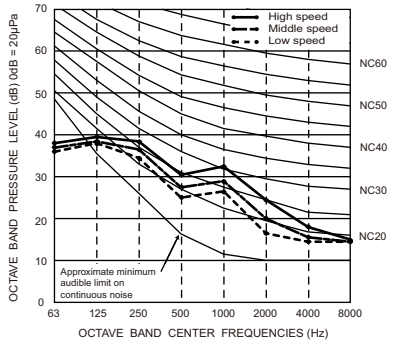
PEFY-WP32VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



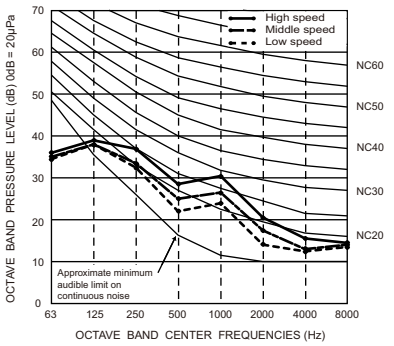
PEFY-WP32VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz



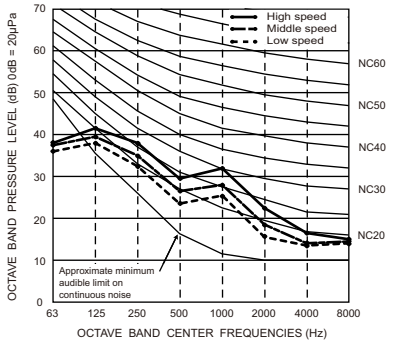
PEFY-WP32VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz



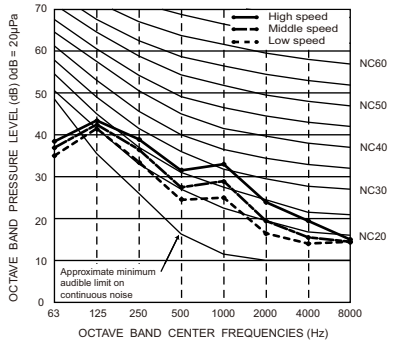
PEFY-WP40VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



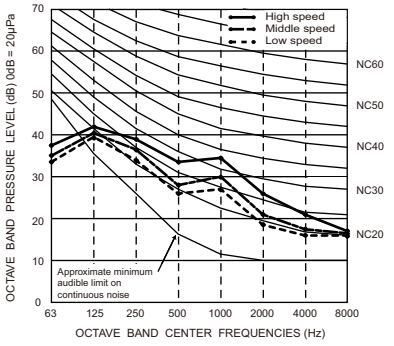
PEFY-WP40VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



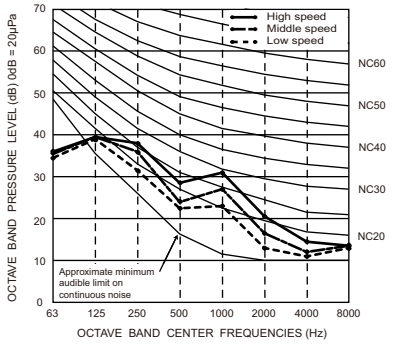
PEFY-WP40VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz



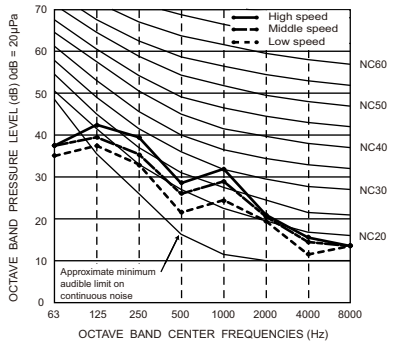
PEFY-WP40VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz



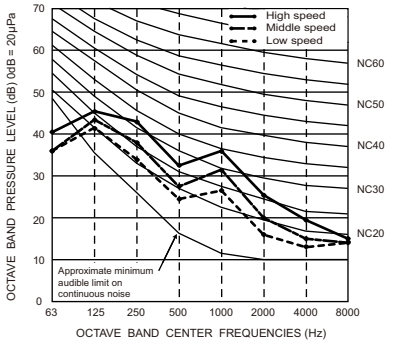
PEFY-WP50VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz



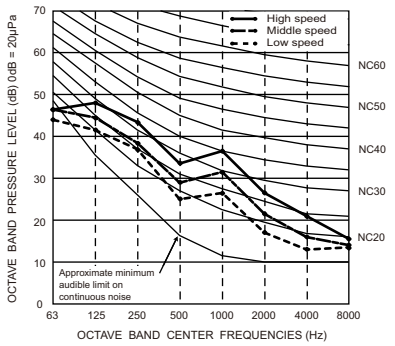
PEFY-WP50VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz



PEFY-WP50VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz

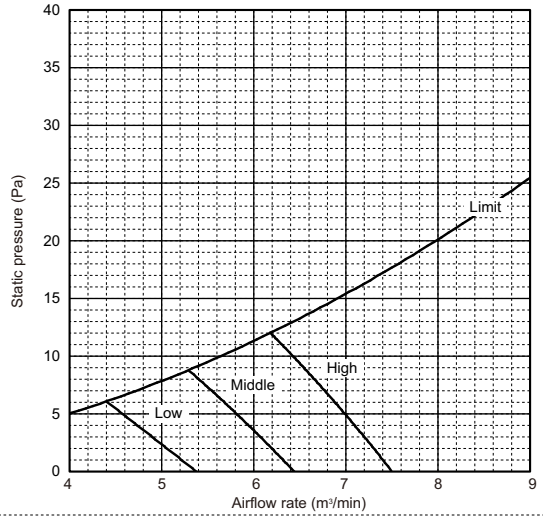


PEFY-WP50VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz

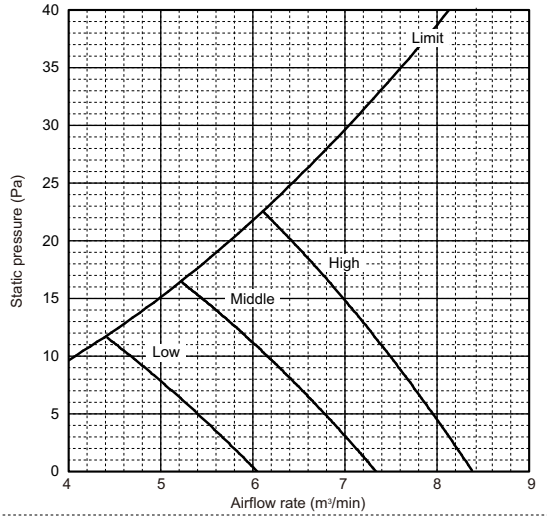


6. FAN CHARACTERISTICS CURVES

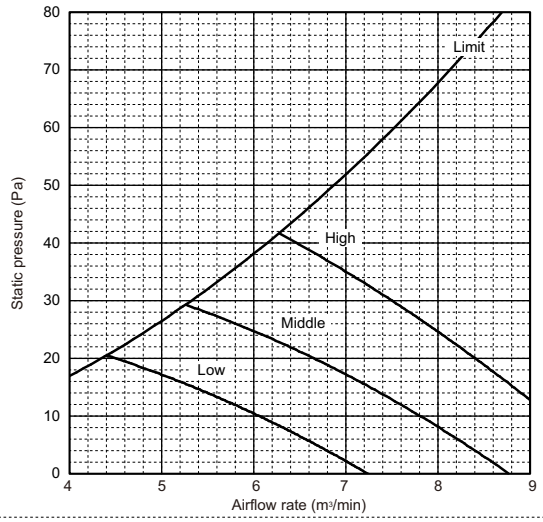
PEFY-WP15VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



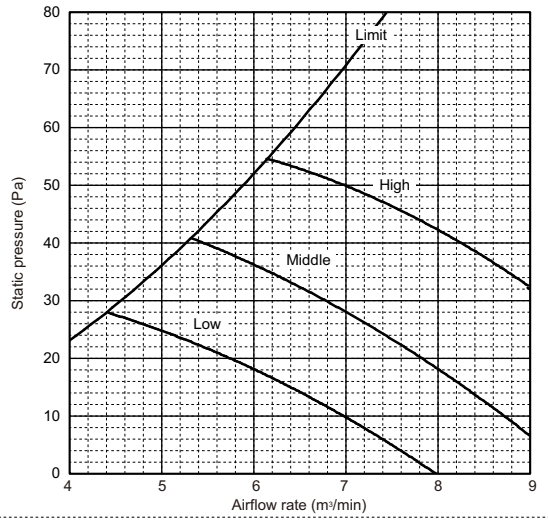
PEFY-WP15VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



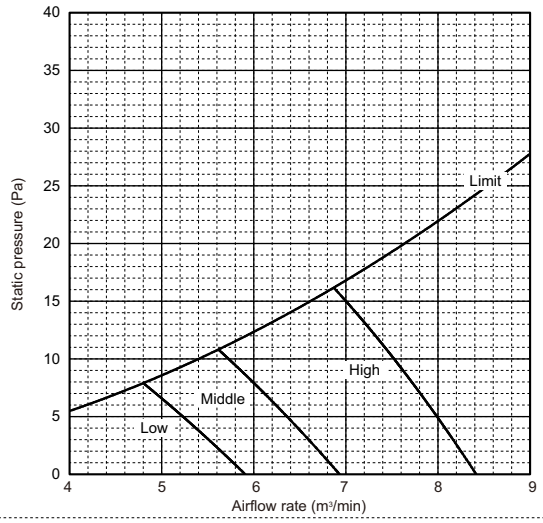
PEFY-WP15VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



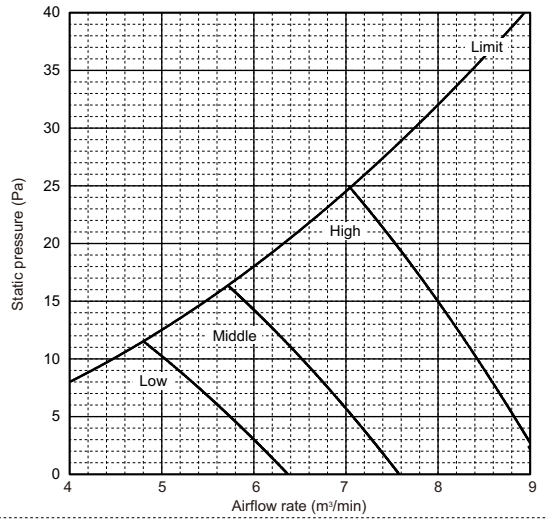
PEFY-WP15VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



PEFY-WP20VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

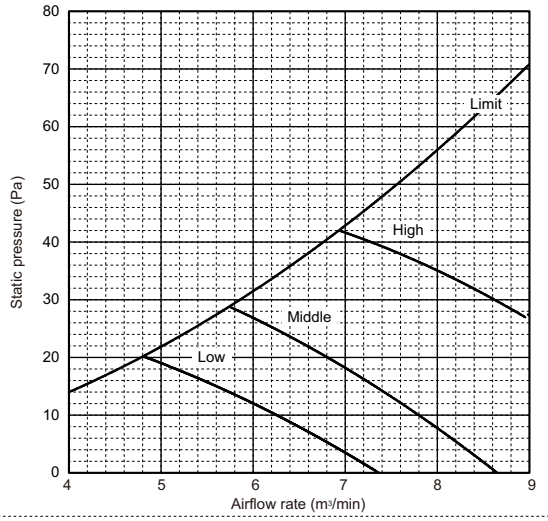


PEFY-WP20VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

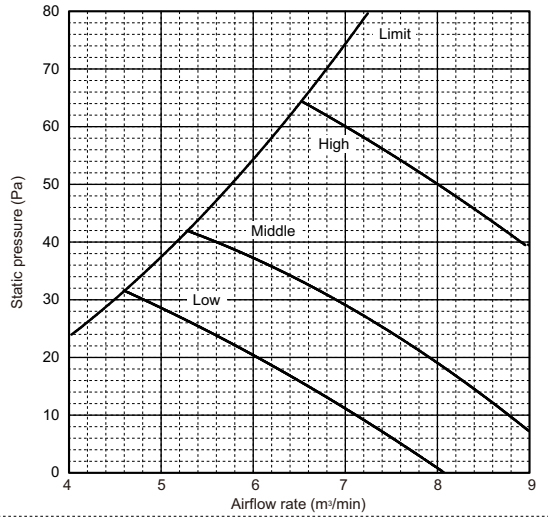


6. FAN CHARACTERISTICS CURVES

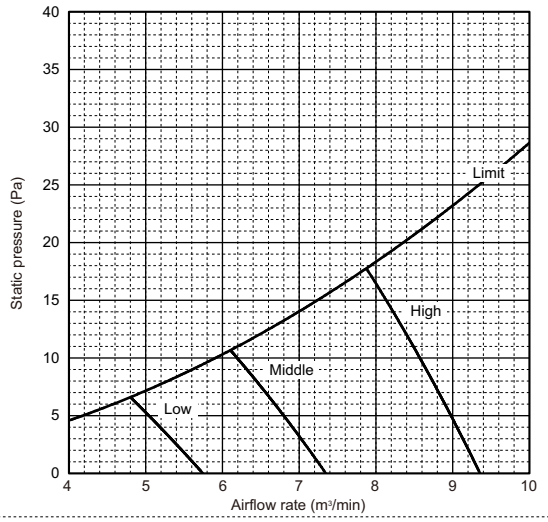
PEFY-WP20VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



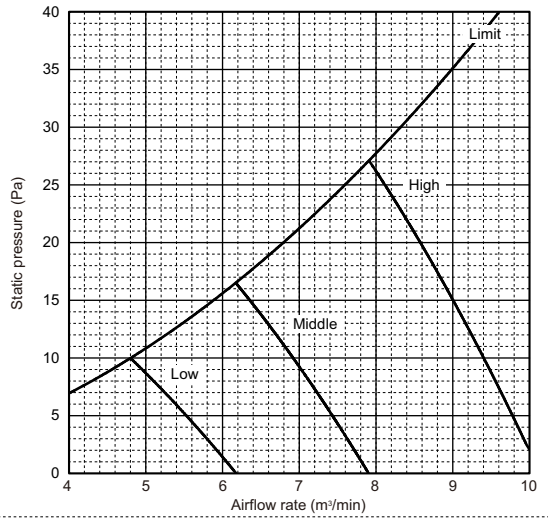
PEFY-WP20VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



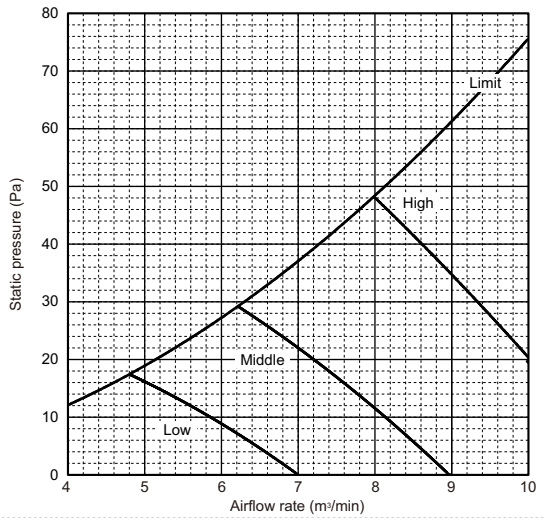
PEFY-WP25VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



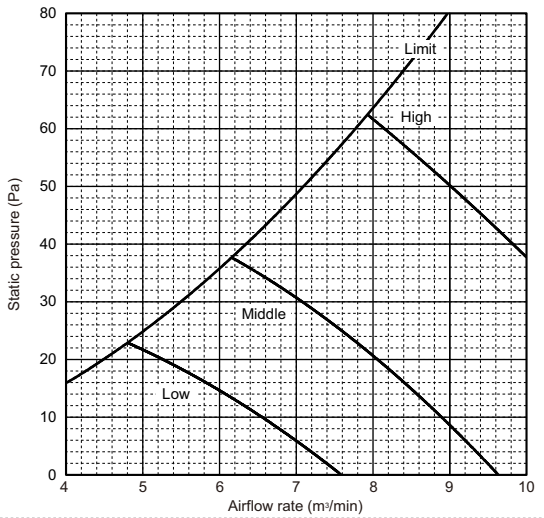
PEFY-WP25VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



PEFY-WP25VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

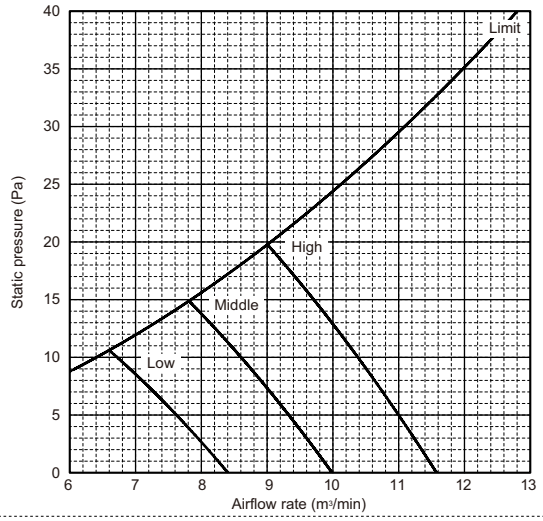


PEFY-WP25VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

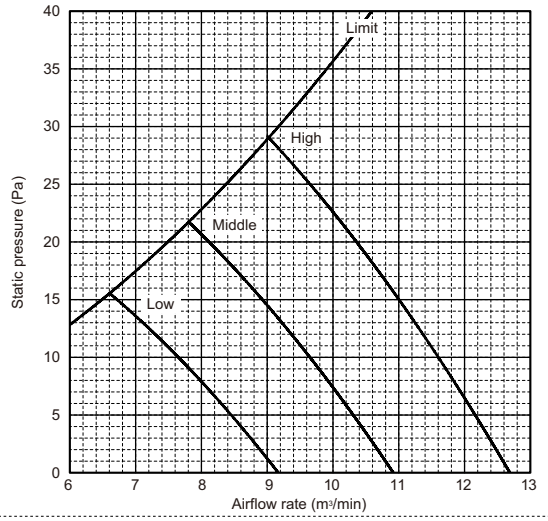


6. FAN CHARACTERISTICS CURVES

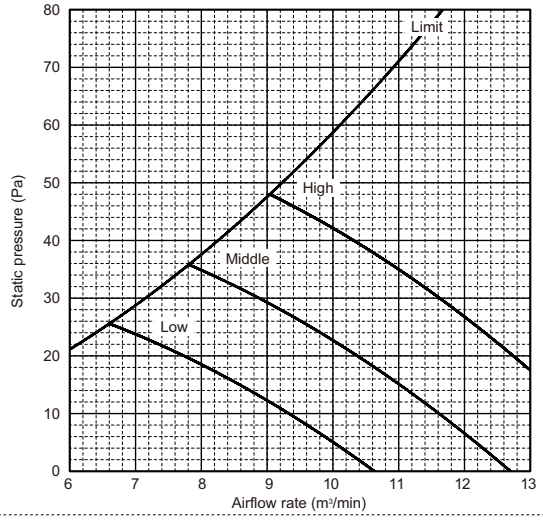
PEFY-WP32VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



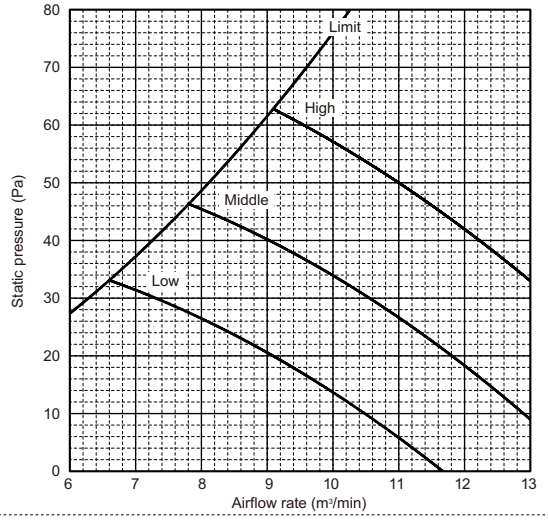
PEFY-WP32VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



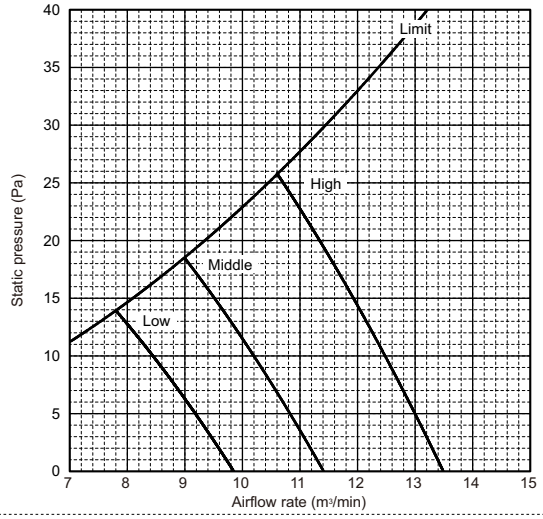
PEFY-WP32VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



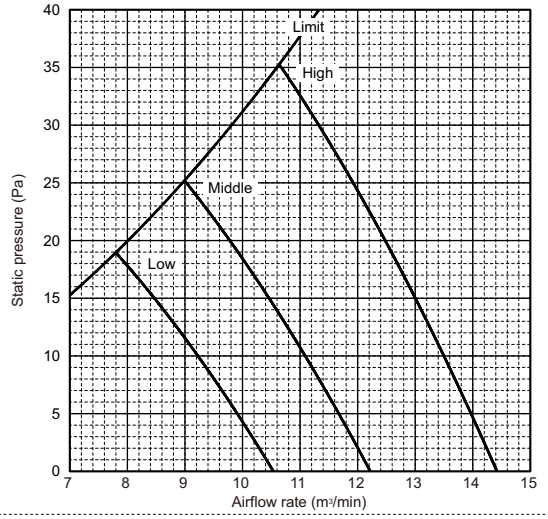
PEFY-WP32VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



PEFY-WP40VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

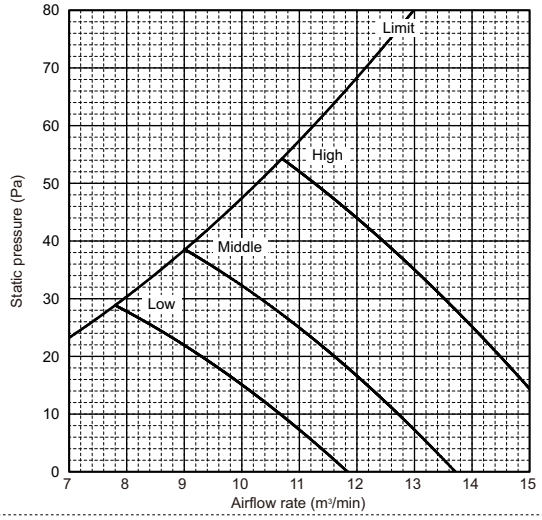


PEFY-WP40VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

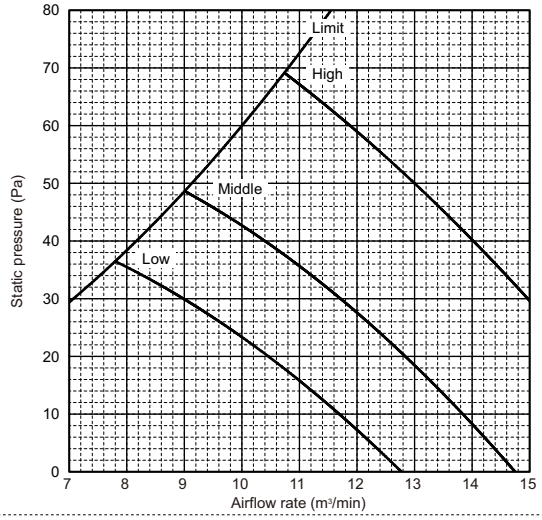


6. FAN CHARACTERISTICS CURVES

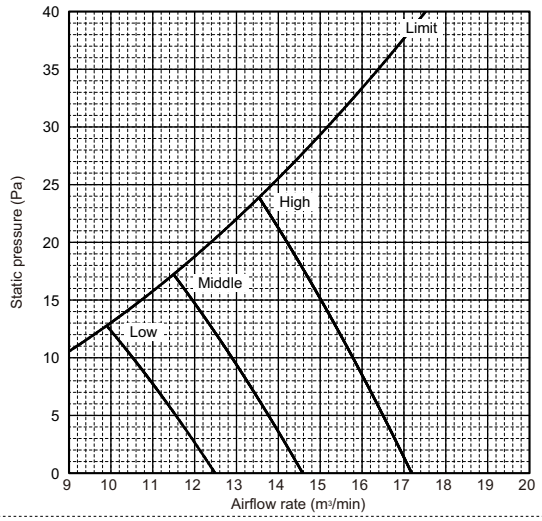
PEFY-WP40VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



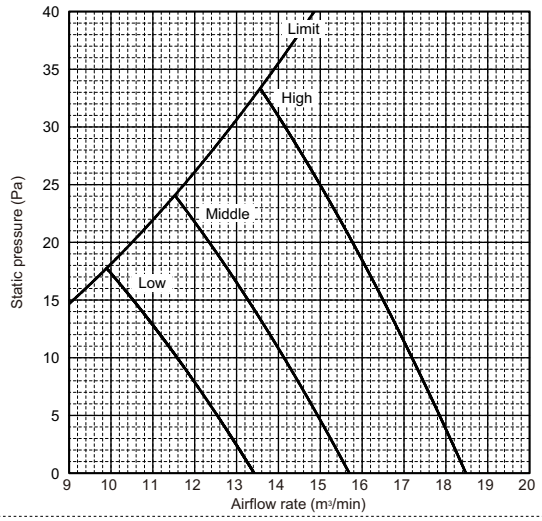
PEFY-WP40VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



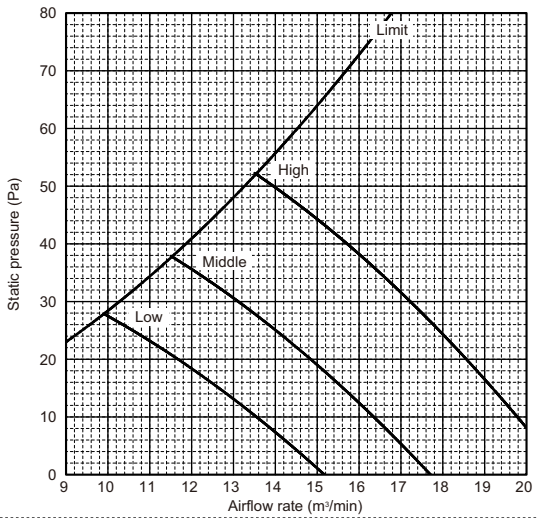
PEFY-WP50VMS1-E
External static pressure : 5Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



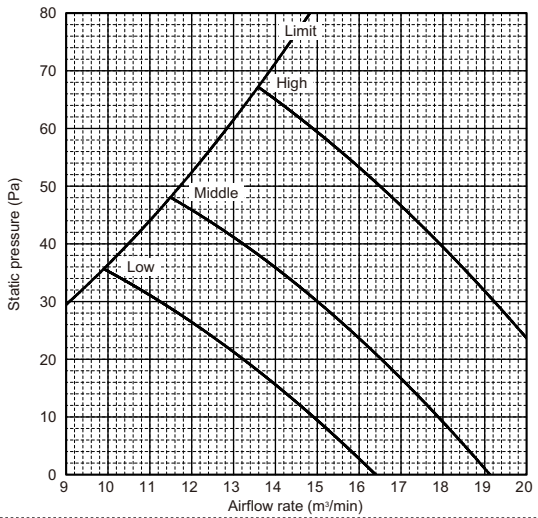
PEFY-WP50VMS1-E
External static pressure : 15Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



PEFY-WP50VMS1-E
External static pressure : 35Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet



PEFY-WP50VMS1-E
External static pressure : 50Pa
Power source : 220,230,240V, 50/60Hz
Suction : Back inlet

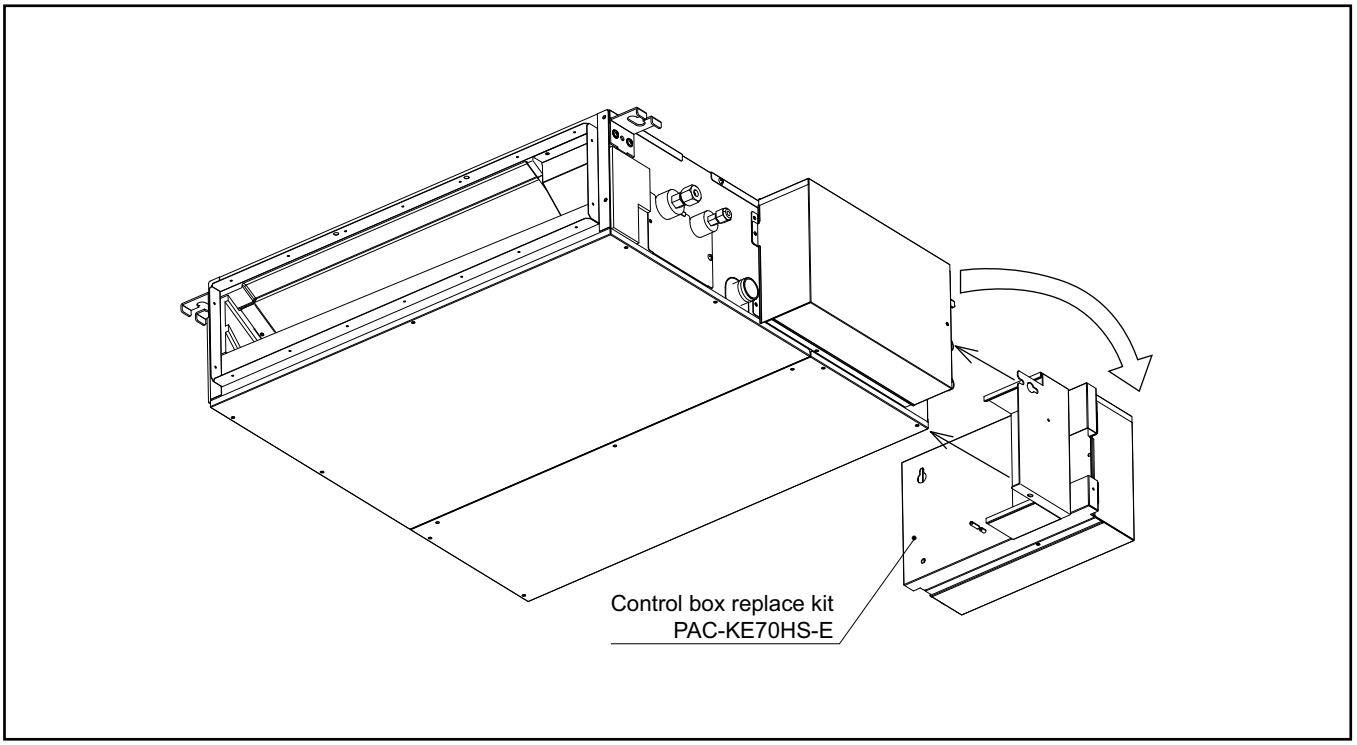


7. OPTIONAL PARTS

7-1. Optional parts line up for the Indoor unit

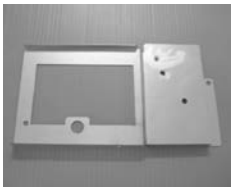
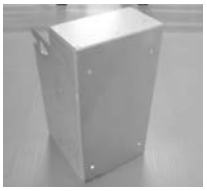
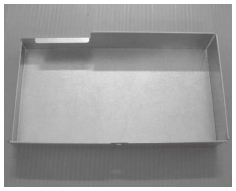
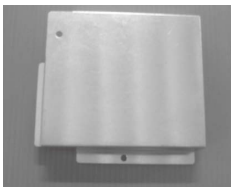
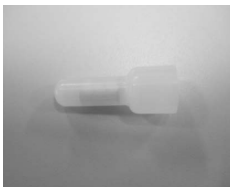
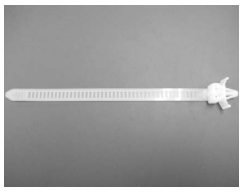
	Control box replace kit
PEFY-WP15, 20, 25, 32, 40, 50VMS1-E	PAC-KE70HS-E

PEFY-WP-VMS1-E



7-2. Control box replace kit

PAC-KE70HS-E

Parts	①PLATE A	② PLATE B	③ PLATE C	④ COVER A
Q'ty	1	1	1	1
Shape				
Parts	⑤COVER B	⑥ LEAD WIRE MOTOR	⑦ LEAD WIRE LEV	⑧ LEAD WIRE THM A
Q'ty	1	1	1	1
Shape		 White 7-pin connector	 White 6-pin connector	 White 4-pin connector
Parts	⑨ LEAD WIRE THM B	⑩ LEAD WIRE EARTH	⑪ LEAD WIRE PUMP	⑫ LEAD WIRE FS
Q'ty	1	1	1	1
Shape	 Red 2-pin connector	 Ring terminal on both ends	 Blue 3-pin connector	 White 4-pin connector
Parts	⑬ INSULATOR	⑭ Connecting terminals	⑮ BAND	⑯ CLAMP
Q'ty	3	4	6	4
Shape				
Parts	⑰ SCREW 1	⑱ SCREW 2	⑲ SCREW 3	⑳ FERRITE CORE
Q'ty	2	4	5	1
Shape	 4X10	 4X10 with a washer	 5X10 with a washer	

When installing the control box replace kit on the air inlet on the unit, ⑫LEAD WIRE FS is not used.

PEFY-WP-VMA-E

1. SPECIFICATIONS

Model				PEFY-WP20VMA-E	PEFY-WP25VMA-E	PEFY-WP32VMA-E	PEFY-WP40VMA-E
Power source				1-phase 220-230-240 V 50/ 60 Hz	1-phase 220-230-240 V 50/ 60 Hz	1-phase 220-230-240 V 50/ 60 Hz	1-phase 220-230-240 V 50/ 60 Hz
Cooling capacity		*1	kW	2.2	2.8	3.6	4.5
(Nominal)		*1	kcal/h	1,900	2,400	3,100	3,900
		*1	BTU/h	7,500	9,600	12,300	15,400
	*2	Power input	kW	0.07	0.09	0.11	0.14
	*2	Current input	A	0.55	0.64	0.74	1.15
Heating capacity		*3	kW	2.5	3.2	4.0	5.0
(Nominal)		*3	kcal/h	2,200	2,800	3,400	4,300
		*3	BTU/h	8,500	10,900	13,600	17,100
	*2	Power input	kW	0.05	0.07	0.09	0.12
	*2	Current input	A	0.44	0.53	0.63	1.04
External finish				Galvanized steel plate	Galvanized steel plate	Galvanized steel plate	Galvanized steel plate
External dimension HxWxD			mm	250 x 700 x 732	250 x 900 x 732	250 x 900 x 732	250 x 1,100 x 732
			in.	9-7/8 x 27-9/16 x 28-7/8	9-7/8 x 35-7/16 x 28-7/8	9-7/8 x 35-7/16 x 28-7/8	9-7/8 x 43-5/16 x 28-7/8
Net weight			kg (lbs)	21 (47)	26 (58)	26 (58)	31 (69)
Heat exchanger				Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)
	Water Volume		L	0.7	1.0	1.0	1.8
FAN	Type x Quantity			Sirocco fan x 1	Sirocco fan x 1	Sirocco fan x 1	Sirocco fan x 2
*4	External static press.		Pa	<35> - 50 - <70> - <100> - <150>	<35> - 50 - <70> - <100> - <150>	<35> - 50 - <70> - <100> - <150>	<35> - 50 - <70> - <100> - <150>
			mmH_2O	<3.6> - 5.1 - <7.1> - <10.2> - <15.3>	<3.6> - 5.1 - <7.1> - <10.2> - <15.3>	<3.6> - 5.1 - <7.1> - <10.2> - <15.3>	<3.6> - 5.1 - <7.1> - <10.2> - <15.3>
	Motor Type			DC motor	DC motor	DC motor	DC motor
	Motor output		kW	0.085	0.085	0.085	0.121
	Driving mechanism			Direct-driven by motor	Direct-driven by motor	Direct-driven by motor	Direct-driven by motor
	Air flow rate			(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
			m^3/min	7.5 - 9.0 - 10.5	10.0 - 12.0 - 14.0	12.0 - 14.5 - 17.0	14.5 - 18.0 - 21.0
			L/s	125 - 150 - 175	167 - 200 - 233	200 - 242 - 283	242 - 300 - 350
			cfm	265 - 318 - 371	353 - 424 - 494	424 - 512 - 600	512 - 636 - 742
Sound pressure level (measured in anechoic room)				(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
		*2	dB <A>	23-26-29	23-27-30	25-29-32	26-29-34
Insulation material				EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam	EPS, Polyethylene foam, Urethane foam
Air filter				PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.
Protection device				Fuse	Fuse	Fuse	Fuse
Refrigerant control device				-	-	-	-
Connectable outdoor unit/HBC controller				HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G	HYBRID CITY MULTI/CMB-WP-V-G
Diameter of water pipe	Inlet		in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
*5 *6	Outlet		in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
Field drain pipe size			mm (in.)	O.D.32 (1-1/4)	O.D.32 (1-1/4)	O.D.32 (1-1/4)	O.D.32 (1-1/4)
Drawing	External			KD94L918X01	KD94L918X01	KD94L918X01	KD94L918X01
	Wiring			KD94L919X01	KD94L919X01	KD94L919X01	KD94L919X01
	Refrigerant cycle			-	-	-	-
Standard attachment	Document			Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book
	Accessory			Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band	Insulation pipe for water pipe, Washer, Drain hose, Tie band
Optional parts	Filter box			PAC-KE91TB-E	PAC-KE92TB-E	PAC-KE92TB-E	PAC-KE93TB-E
Remarks				* Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27°CD.B./19°CW.B. (81°CD.B./66°CW.B.), Outdoor: 35°CD.B. (95°CD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20°CD.B. (68°CD.B.), Outdoor: 7°CD.B./6°CW.B. (45°CD.B./43°CW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Group units that operate on 1 branch.

Unit converter

kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg / 0.4536

*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Model				PEFY-WP50VMA-E			
Power source				1-phase 220-230-240 V 50/ 60 Hz			
Cooling capacity		*1	kW	5.6			
(Nominal)		*1	kcal/h	4,800			
		*1	BTU/h	19,100			
	*2	Power input	kW	0.14			
	*2	Current input	A	1.15			
Heating capacity		*3	kW	6.3			
(Nominal)		*3	kcal/h	5,400			
		*3	BTU/h	21,500			
	*2	Power input	kW	0.12			
	*2	Current input	A	1.04			
External finish				Galvanized steel plate			
External dimension HxWxD			mm	250 x 1,100 x 732			
			in.	9-7/8 x 43-5/16 x 28-7/8			
Net weight			kg (lbs)	31 (69)			
Heat exchanger				Cross fin (Aluminum fin and copper tube)			
	Water Volume		L	1.8			
FAN	Type x Quantity			Sirocco fan x 2			
*4	External static press.		Pa	<35> - 50 - <70> - <100> - <150>			
			mmH_2O	<3.6> - 5.1 - <7.1> - <10.2> - <15.3>			
	Motor Type			DC motor			
	Motor output		kW	0.121			
	Driving mechanism			Direct-driven by motor			
	Air flow rate			(Low-Mid-High)			
			m^3/min	14.5 - 18.0 - 21.0			
			L/s	242 - 300 - 350			
			cfm	512 - 636 - 742			
Sound pressure level (measured in anechoic room)				(Low-Mid-High)			
		*2	dB <A>	26-29-34			
Insulation material				EPS, Polyethylene foam, Urethane foam			
Air filter				PP honeycomb fabric.			
Protection device				Fuse			
Refrigerant control device				-			
Connectable outdoor unit/HBC controller				HYBRID CITY MULTI/CMB-WP-V-G			
Diameter of water pipe	Inlet		in.	Rc 3/4 screw			
*5 *6	Outlet		in.	Rc 3/4 screw			
Field drain pipe size			mm (in.)	O.D.32 (1-1/4)			
Drawing	External			KD94L918X01			
	Wiring			KD94L919X01			
	Refrigerant cycle			-			
Standard attachment	Document			Installation Manual, Instruction Book			
	Accessory			Insulation pipe for water pipe, Washer, Drain hose, Tie band			
Optional parts	Filter box			PAC-KE93TB-E			
Remarks				* Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27°CD.B./19°CW.B. (81°CD.B./66°CW.B.), Outdoor: 35°CD.B. (95°CD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20°CD.B. (68°CD.B.), Outdoor: 7°CD.B./6°CW.B. (45°CD.B./43°CW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Group units that operate on 1 branch.

Unit converter

kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg / 0.4536

*Above specification data is subject to rounding variation.

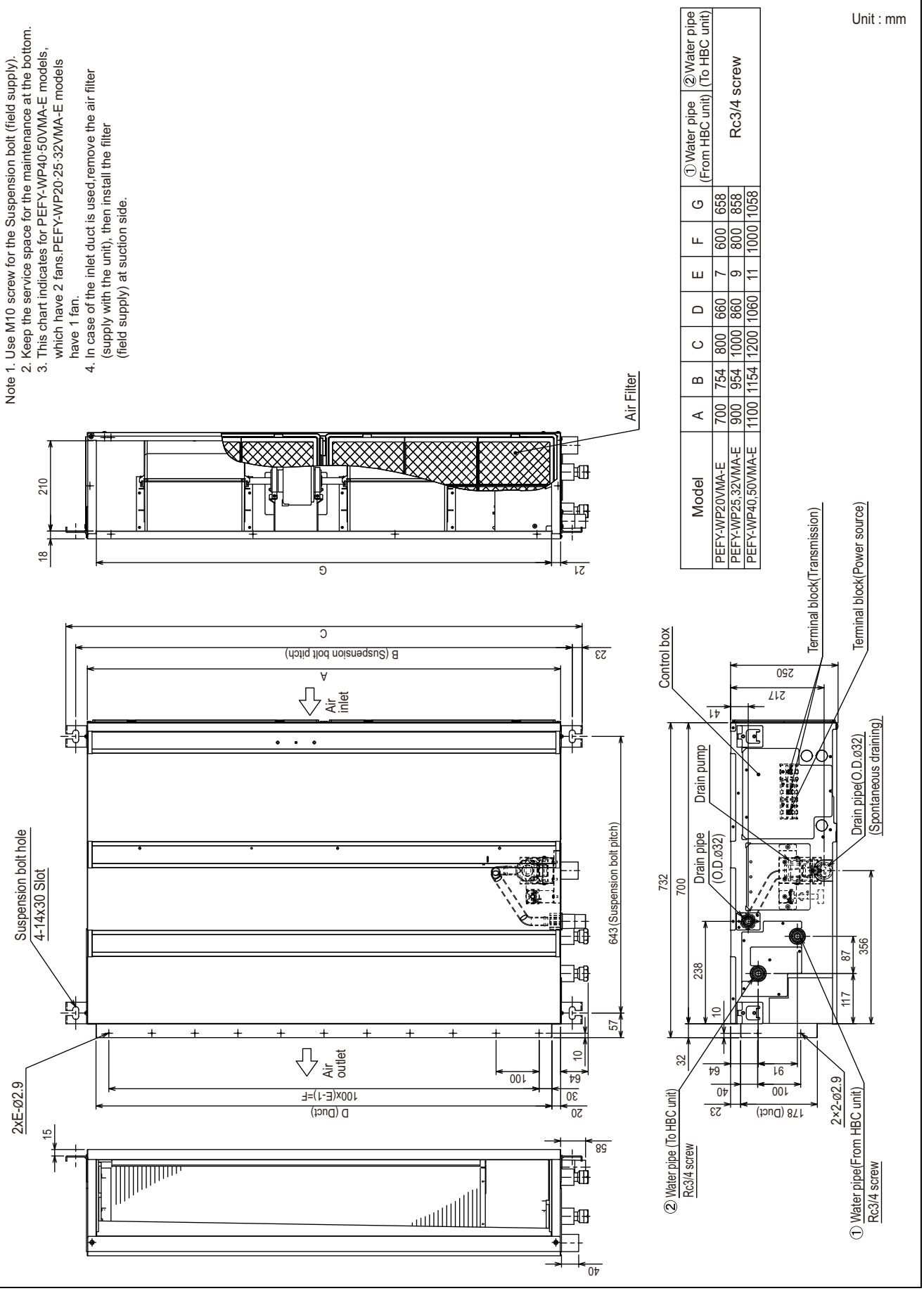
2. EXTERNAL DIMENSIONS

PEFY-WP20, 25, 32, 40, 50VMA-E

Unit : mm

Note 1. Use M10 screw for the Suspension bolt (field supply).
2. Keep the service space for the maintenance at the bottom.
3. This chart indicates for PEFY-WP40·50VMA-E models, which have 2 fans.PEFY-WP20·25·32VMA-E models have 1 fan.
4. In case of the inlet duct is used,remove the air filter (supply with the unit), then install the filter (field supply) at suction side.

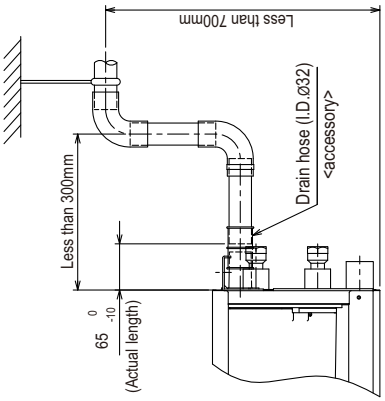
Model	A	B	C	D	E	F	G	①Water pipe (From HBC unit)	②Water pipe (To HBC unit)
PEFY-WP20VMA-E	700	754	800	660	7	600	658	Rc3/4 screw	
PEFY-WP25,32VMA-E	900	954	1000	860	9	800	858		
PEFY-WP40,50VMA-E	1100	1154	1200	1060	11	1000	1058		

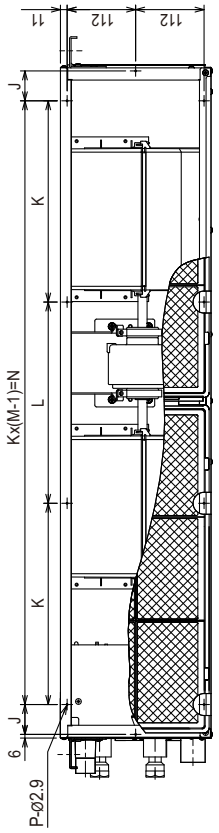


2. EXTERNAL DIMENSIONS

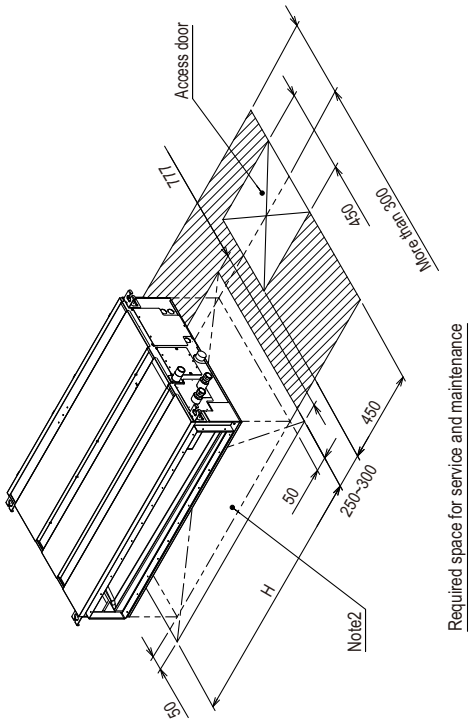
PEFY-WP20, 25, 32, 40, 50VMA-E

Unit : mm

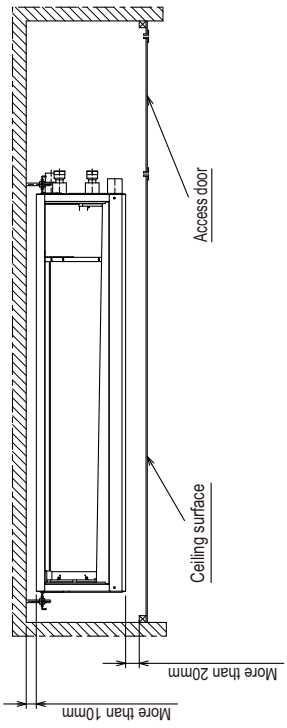




Model	H	J	K	L	M	N	P
PEFY-WP20VMA-E	800	44	150	300			10
PEFY-WP25,32VMA-E	1000	54	260		4	780	10
PEFY-WP40,50VMA-E	1200	49	330		4	990	10



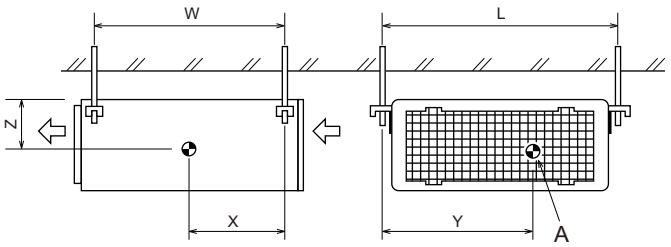
Required space for service and maintenance



Make the access door at the appointed position for service maintenance.

3. CENTER OF GRAVITY

PEFY-WP20, 25, 32, 40, 50VMA-E

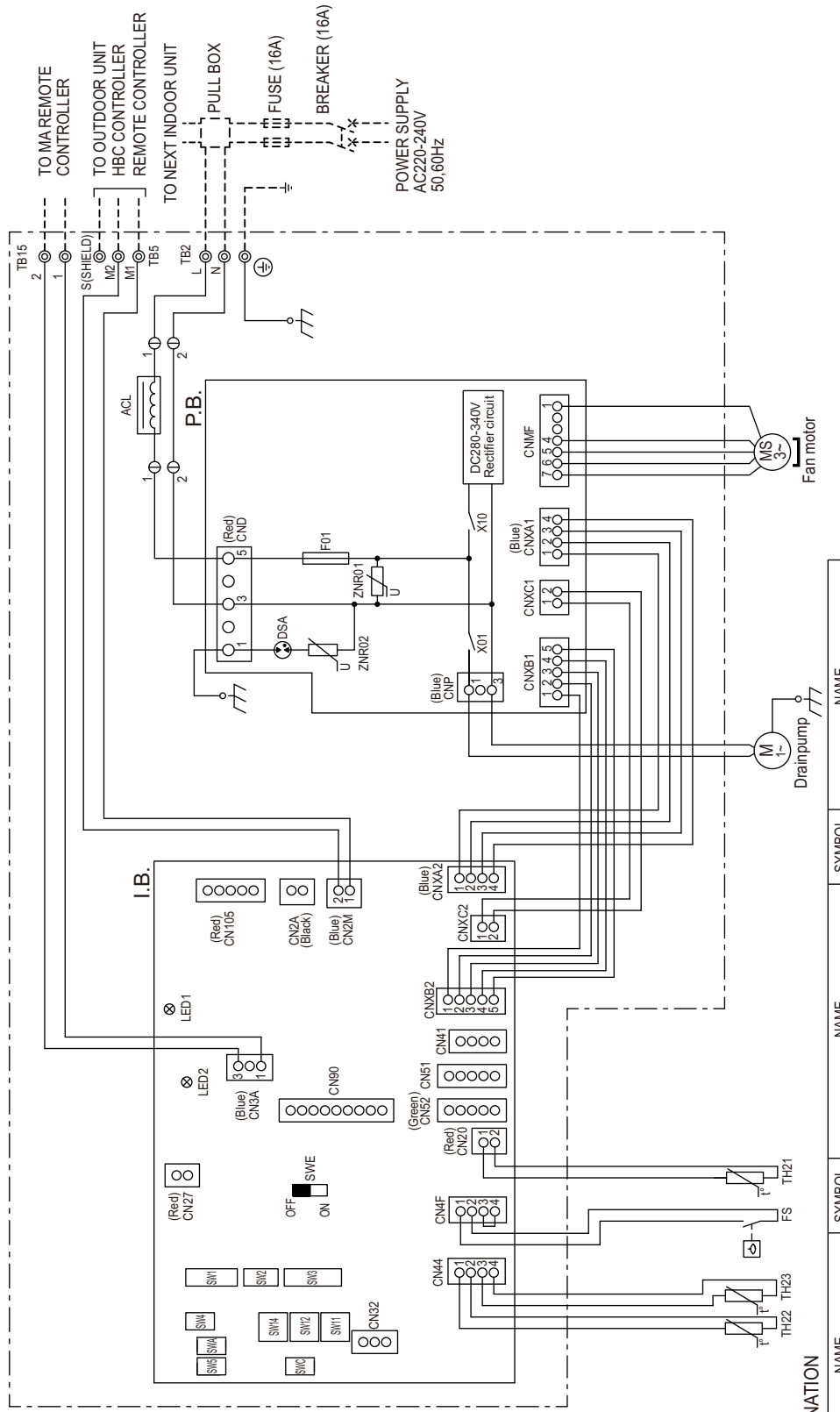


A : Center of gravity

(mm)[in]

Model name	W	L	X	Y	Z
PEFY-WP20VMA-E	643 [25 - 6/16]	754 [29 - 11/16]	330 [13]	300 [11 -13/16]	130 [5 -2/16]
PEFY-WP25VMA-E	643 [25 - 6/16]	954 [37 - 9/16]	340 [13 - 7/16]	375 [14 -13/16]	130 [5 -2/16]
PEFY-WP32VMA-E	643 [25 - 6/16]	954 [37 - 9/16]	340 [13 - 7/16]	375 [14 -13/16]	130 [5 -2/16]
PEFY-WP40VMA-E	643 [25 - 6/16]	1154 [45 - 7/16]	325 [12 - 13/16]	525 [20 -11/16]	130 [5 -2/16]
PEFY-WP50VMA-E	643 [25 - 6/16]	1154 [45 - 7/16]	325 [12 - 13/16]	525 [20 -11/16]	130 [5 -2/16]

PEFY-WP20, 25, 32, 40, 50VMA-E



NOTE:Symbols used in wiring diagram above are,
⏀ :Connector
◎ :Terminal
------ (Heavy dotted line):Field wiring

SYMBOL EXPLANATION

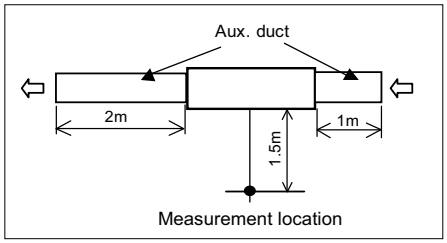
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
I.B.	Indoor controller board	CN41	Connector (HA terminal-A)	SW4(I.B.)	Switch (for model selection)
P.B.	Power supply board	CN51	Connector (Centrally control)	SW5(I.B.)	Switch (for mode selection)
TB2	Power source terminal block	CN52	Connector (Remote indication)	SW11(I.B.)	Switch (1s digit address set)
TB5	Transmission terminal block	CN90	Connector (Wireless)	SW12(I.B.)	Switch (10ths digit address set)
TB15	Transmission terminal block	CN105	Connector (IT terminal)	SW14(I.B.)	Switch (BRANCH No.)
F01	Fuse AC250V 6.3A	CN2A	Connector (0-10V Analog input)	SWA(I.B.)	Switch (for static pressure selection)
ZNR01,02	Varistor	FS	Float switch	SWC(I.B.)	Switch (for static pressure selection)
DSA	Arrester	TH21	Thermistor (inlet air temp.detection)	SWE(I.B.)	Connector (emergency operation)
X01	Aux. relay	TH22	Thermistor (piping temp.detection/water in)	LED1	LED(Power supply)
X10	Aux. relay	TH23	Thermistor (piping temp.detection/water out)	LED2	LED(Remote controller supply)
ACL	AC reactor(Power factor improvement)	SW1(I.B.)	Switch (for mode selection)		
CN27	Connector (Damper)	SW2(I.B.)	Switch (for capacity code)		
CN32	Connector (Remote switch)	SW3(I.B.)	Switch (for mode selection)		

5. SOUND LEVELS

5-1. Sound levels

5-1-1. Sound levels (Measured condition : With 1m air inlet duct and 2m air outlet duct)

PEFY-WP-VMA-E



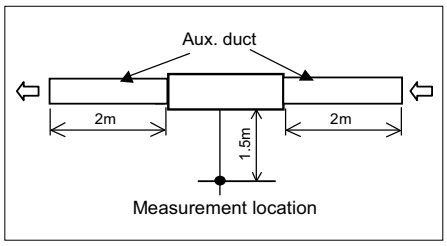
* Measured in anechoic room.

Sound level at anechoic room : Low-Mid-High

Model	Sound level dB(A)				
	35Pa	50Pa	70Pa	100Pa	150Pa
PEFY-WP20VMA-E	28-30-34	28-30-34	29-32-36	29-33-37	31-35-40
PEFY-WP25VMA-E	28-30-34	28-30-34	29-32-36	29-33-37	32-36-40
PEFY-WP32VMA-E	28-31-35	28-32-35	29-33-37	30-34-38	32-37-41
PEFY-WP40VMA-E	30-33-37	30-34-38	31-36-39	33-37-41	36-41-44
PEFY-WP50VMA-E	30-33-37	30-34-38	31-36-39	33-37-41	36-41-44

5-1-2. Sound levels (Measured condition : With 2m air inlet duct and 2m air outlet duct)

PEFY-WP-VMA-E



* Measured in anechoic room.

Sound level at anechoic room : Low-Mid-High

Model	Sound level dB(A)				
	35Pa	50Pa	70Pa	100Pa	150Pa
PEFY-WP20VMA-E	23-25-28	23-26-29	24-27-30	25-28-32	28-32-36
PEFY-WP25VMA-E	23-26-29	23-27-30	24-28-31	26-29-33	29-33-37
PEFY-WP32VMA-E	24-28-31	25-29-32	26-30-33	27-31-34	29-34-38
PEFY-WP40VMA-E	26-29-33	26-29-34	26-30-35	29-33-37	32-37-41
PEFY-WP50VMA-E	26-29-33	26-29-34	26-30-35	29-33-37	32-37-41

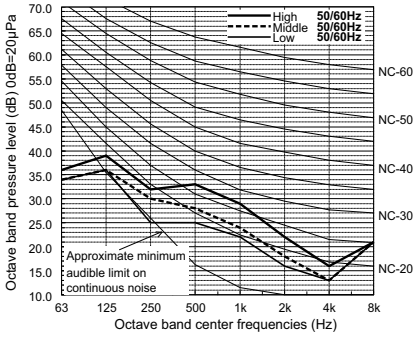
5. SOUND LEVELS

5-2. NC curves

5-2-1. NC curves (Sound level measured condition : With 1m air inlet duct and 2m air outlet duct)

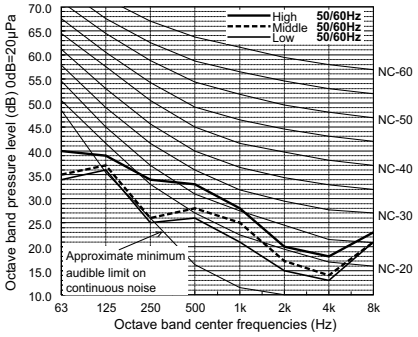
PEFY-WP20VMA-E

External Static Pressure: 35Pa
Power Source: 220-240V(50/60Hz)



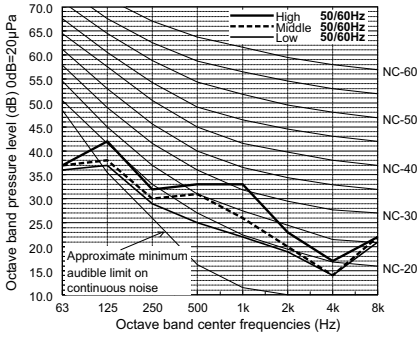
PEFY-WP20VMA-E

External Static Pressure: 50Pa
Power Source: 220-240V(50/60Hz)



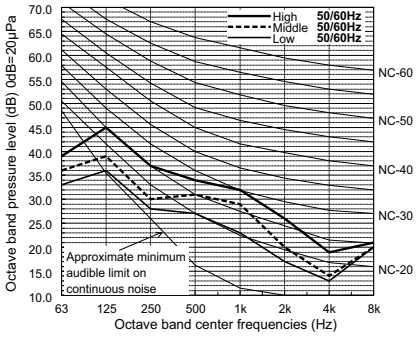
PEFY-WP20VMA-E

External Static Pressure: 70Pa
Power Source: 220-240V(50/60Hz)



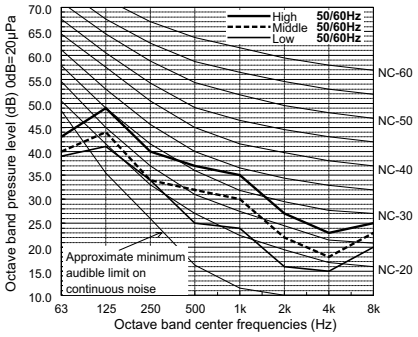
PEFY-WP20VMA-E

External Static Pressure: 100Pa
Power Source: 220-240V(50/60Hz)



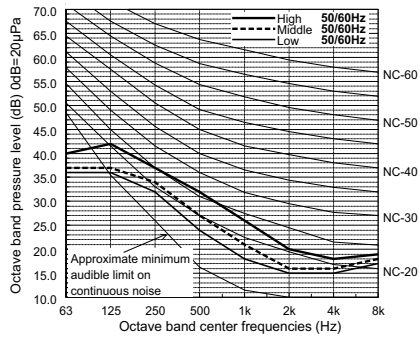
PEFY-WP20VMA-E

External Static Pressure: 150Pa
Power Source: 220-240V(50/60Hz)



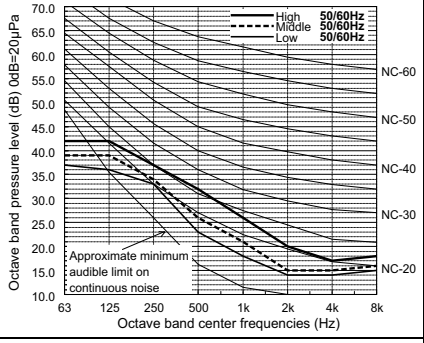
PEFY-WP25VMA-E

External Static Pressure: 35Pa
Power Source: 220-240V(50/60Hz)



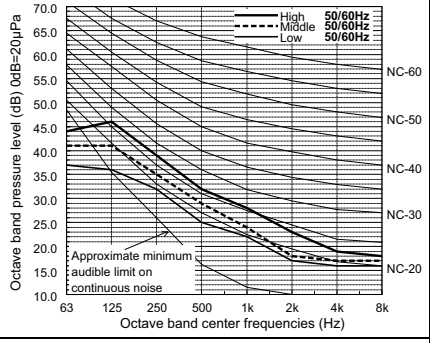
PEFY-WP25VMA-E

External Static Pressure: 50Pa
Power Source: 220-240V(50/60Hz)



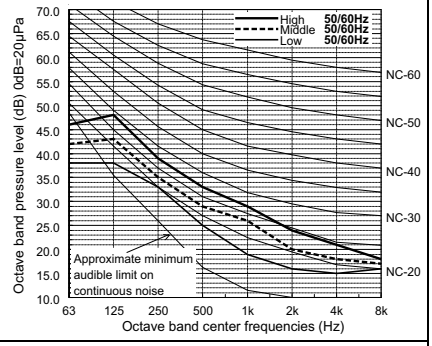
PEFY-WP25VMA-E

External Static Pressure: 70Pa
Power Source: 220-240V(50/60Hz)



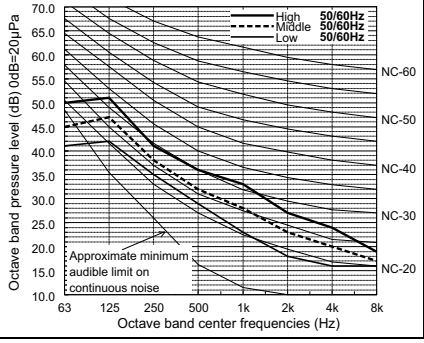
PEFY-WP25VMA-E

External Static Pressure: 100Pa
Power Source: 220-240V(50/60Hz)



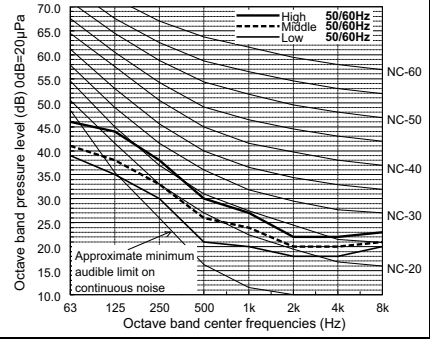
PEFY-WP25VMA-E

External Static Pressure: 150Pa
Power Source: 220-240V(50/60Hz)



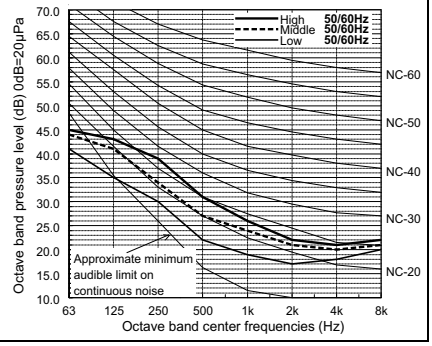
PEFY-WP32VMA-E

External Static Pressure: 35Pa
Power Source: 220-240V(50/60Hz)



PEFY-WP32VMA-E

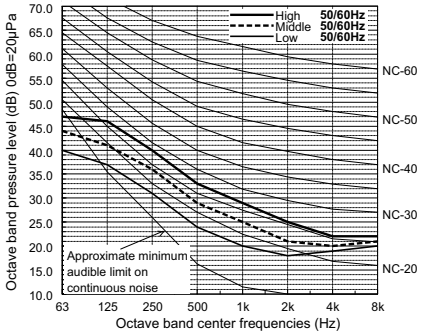
External Static Pressure: 50Pa
Power Source: 220-240V(50/60Hz)



5. SOUND LEVELS

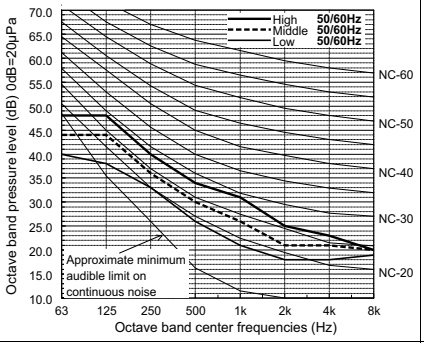
PEFY-WP32VMA-E

External Static Pressure: 70Pa
Power Source: 220-240V(50/60Hz)



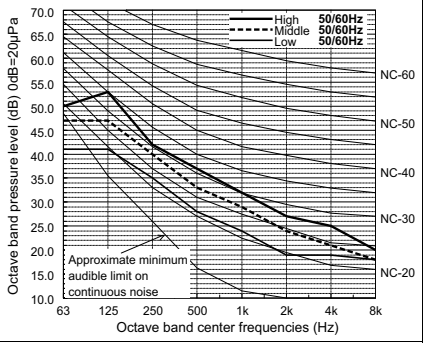
PEFY-WP32VMA-E

External Static Pressure: 100Pa
Power Source: 220-240V(50/60Hz)



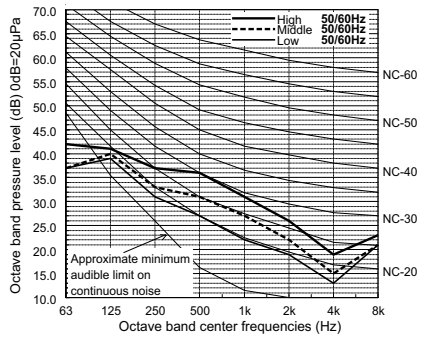
PEFY-WP32VMA-E

External Static Pressure: 150Pa
Power Source: 220-240V(50/60Hz)



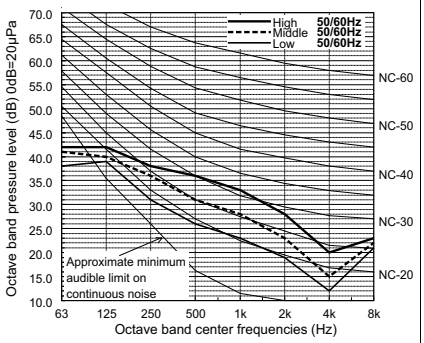
PEFY-WP40,50VMA-E

External Static Pressure: 35Pa
Power Source: 220-240V(50/60Hz)



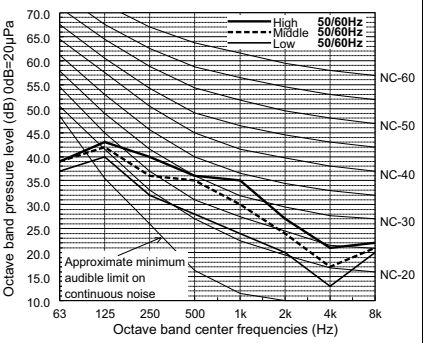
PEFY-WP40,50VMA-E

External Static Pressure: 50Pa
Power Source: 220-240V(50/60Hz)



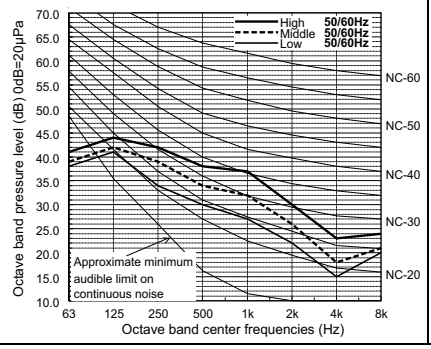
PEFY-WP40,50VMA-E

External Static Pressure: 70Pa
Power Source: 220-240V(50/60Hz)



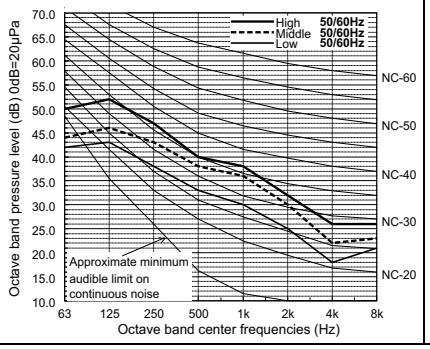
PEFY-WP40,50VMA-E

External Static Pressure: 100Pa
Power Source: 220-240V(50/60Hz)



PEFY-WP40,50VMA-E

External Static Pressure: 150Pa
Power Source: 220-240V(50/60Hz)

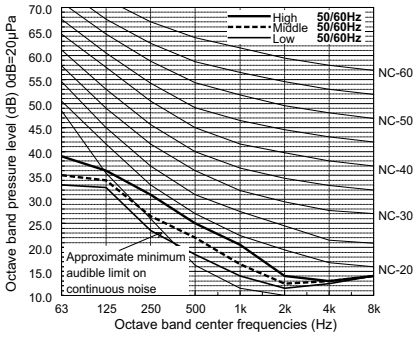


5. SOUND LEVELS

5-2-2. NC curves (Sound level measured condition : With 2m air inlet duct and 2m air outlet duct)

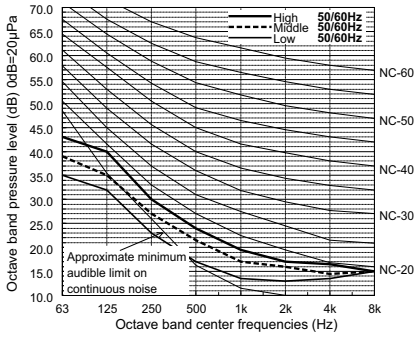
PEFY-WP20VMA-E

External Static Pressure: 35Pa
Power Source: 220-230-240V(50/60Hz)



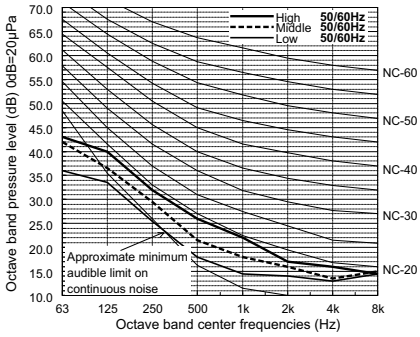
PEFY-WP20VMA-E

External Static Pressure: 50Pa
Power Source: 220-230-240V(50/60Hz)



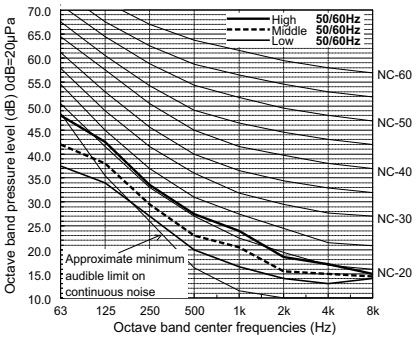
PEFY-WP20VMA-E

External Static Pressure: 70Pa
Power Source: 220-230-240V(50/60Hz)



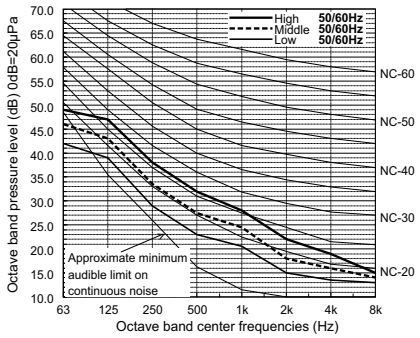
PEFY-WP20VMA-E

External Static Pressure: 100Pa
Power Source: 220-230-240V(50/60Hz)



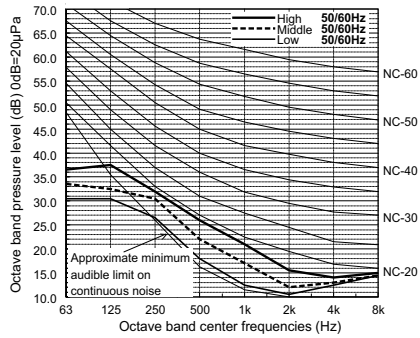
PEFY-WP20VMA-E

External Static Pressure: 150Pa
Power Source: 220-230-240V(50/60Hz)



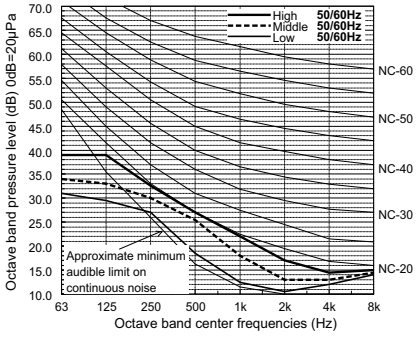
PEFY-WP25VMA-E

External Static Pressure: 35Pa
Power Source: 220-230-240V(50/60Hz)



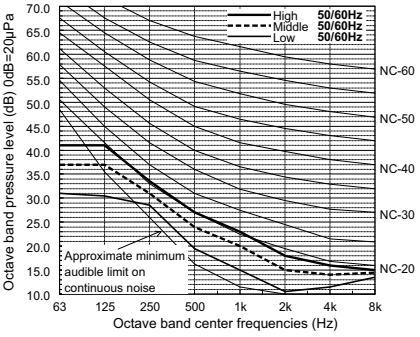
PEFY-WP25VMA-E

External Static Pressure: 50Pa
Power Source: 220-230-240V(50/60Hz)



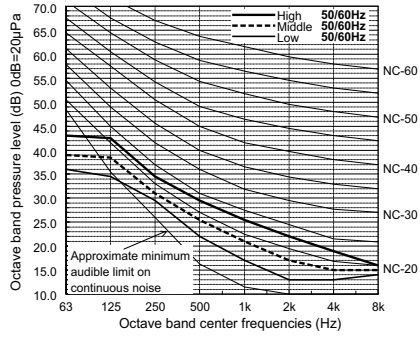
PEFY-WP25VMA-E

External Static Pressure: 70Pa
Power Source: 220-230-240V(50/60Hz)



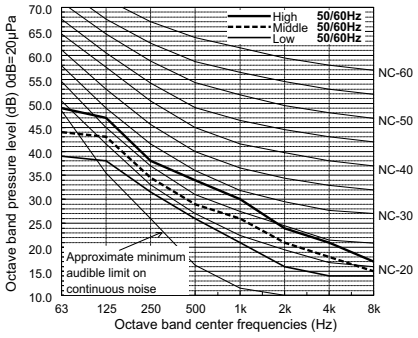
PEFY-WP25VMA-E

External Static Pressure: 100Pa
Power Source: 220-230-240V(50/60Hz)



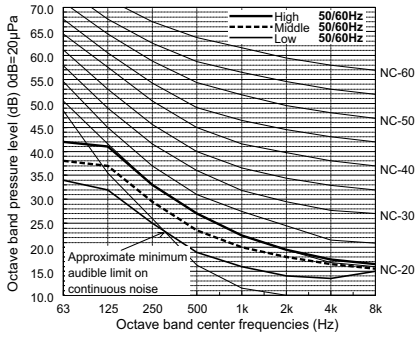
PEFY-WP25VMA-E

External Static Pressure: 150Pa
Power Source: 220-230-240V(50/60Hz)



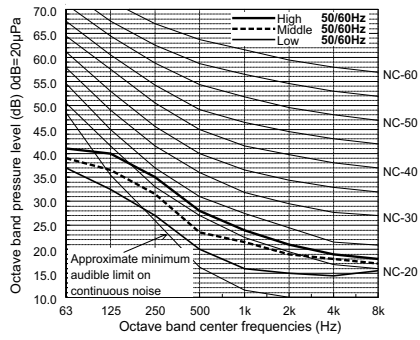
PEFY-WP32VMA-E

External Static Pressure: 35Pa
Power Source: 220-230-240V(50/60Hz)



PEFY-WP32VMA-E

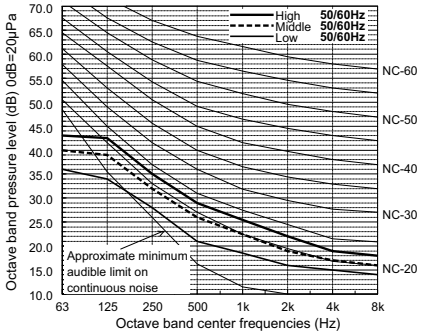
External Static Pressure: 50Pa
Power Source: 220-230-240V(50/60Hz)



5. SOUND LEVELS

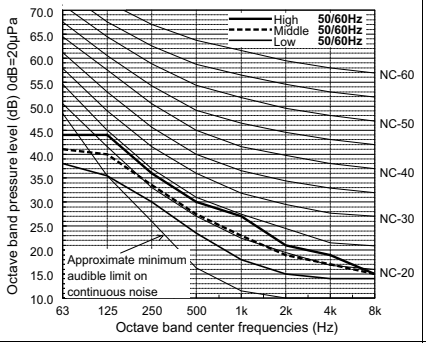
PEFY-WP32VMA-E

External Static Pressure: 70Pa
Power Source: 220-230-240V(50/60Hz)



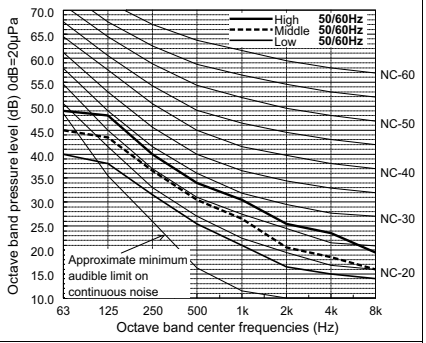
PEFY-WP32VMA-E

External Static Pressure: 100Pa
Power Source: 220-230-240V(50/60Hz)



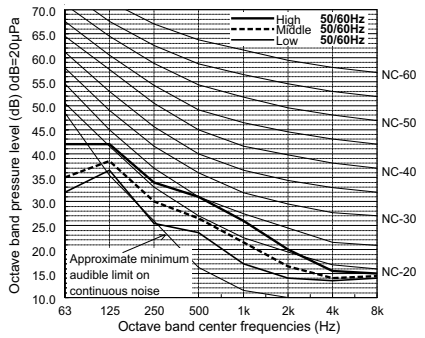
PEFY-WP32VMA-E

External Static Pressure: 150Pa
Power Source: 220-230-240V(50/60Hz)



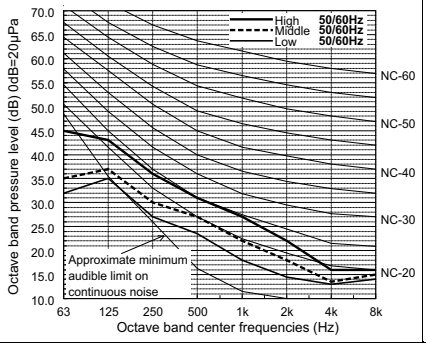
PEFY-WP40, 50VMA-E

External Static Pressure: 35Pa
Power Source: 220-230-240V(50/60Hz)



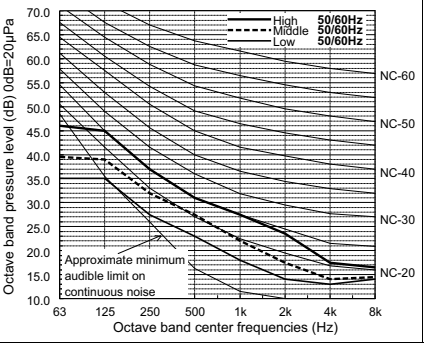
PEFY-WP40, 50VMA-E

External Static Pressure: 50Pa
Power Source: 220-230-240V(50/60Hz)



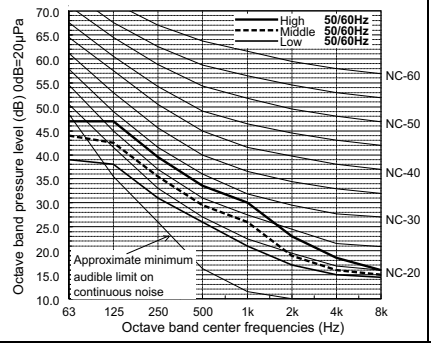
PEFY-WP40, 50VMA-E

External Static Pressure: 70Pa
Power Source: 220-230-240V(50/60Hz)



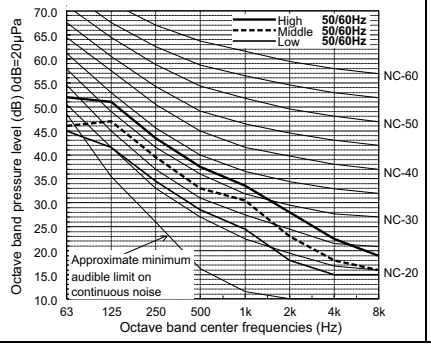
PEFY-WP40, 50VMA-E

External Static Pressure: 100Pa
Power Source: 220-230-240V(50/60Hz)



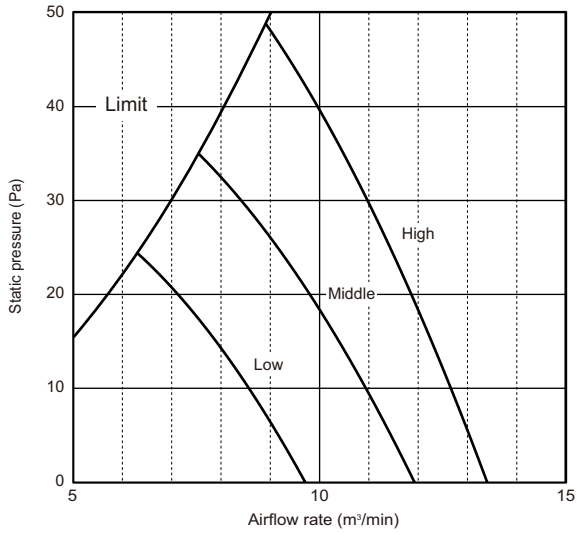
PEFY-WP40, 50VMA-E

External Static Pressure: 150Pa
Power Source: 220-230-240V(50/60Hz)

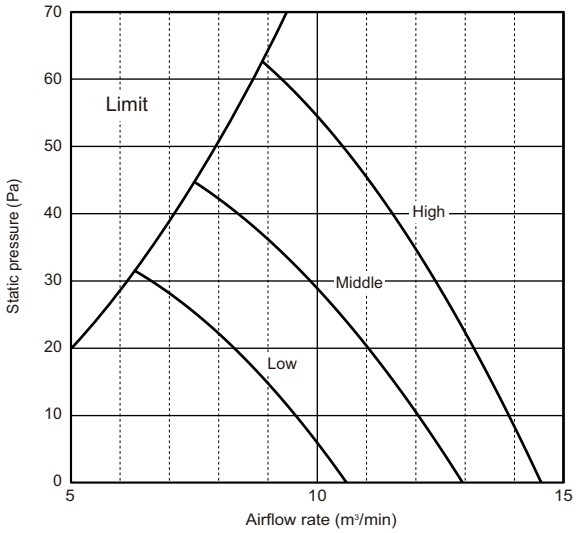


6. FAN CHARACTERISTICS CURVES

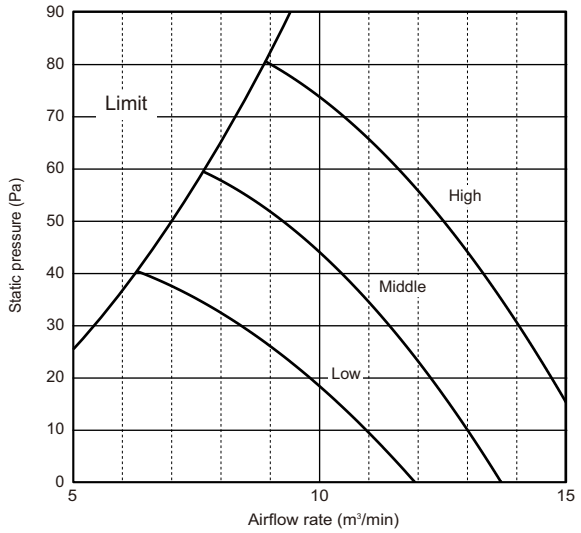
PEFY-WP20VMA-E
External static pressure : 35Pa
Power source : 220-240V



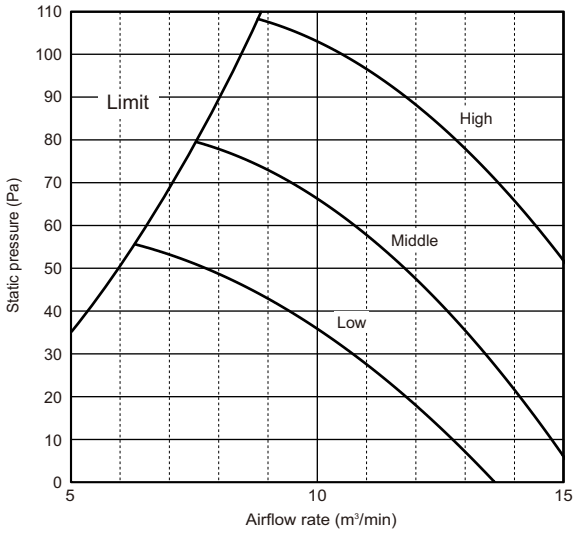
PEFY-WP20VMA-E
External static pressure : 50Pa
Power source : 220-240V



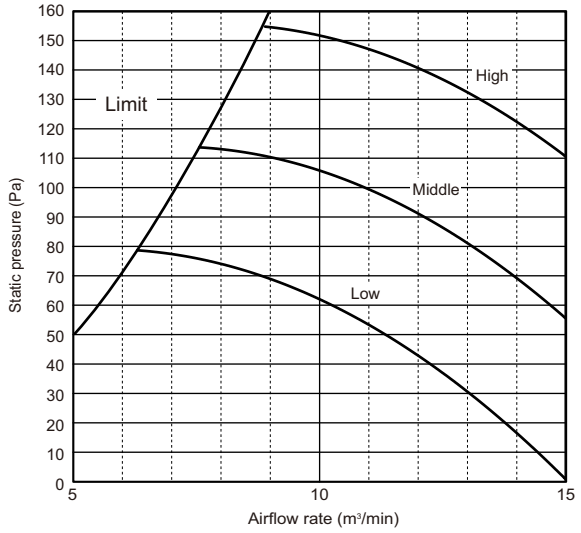
PEFY-WP20VMA-E
External static pressure : 70Pa
Power source : 220-240V



PEFY-WP20VMA-E
External static pressure : 100Pa
Power source : 220-240V

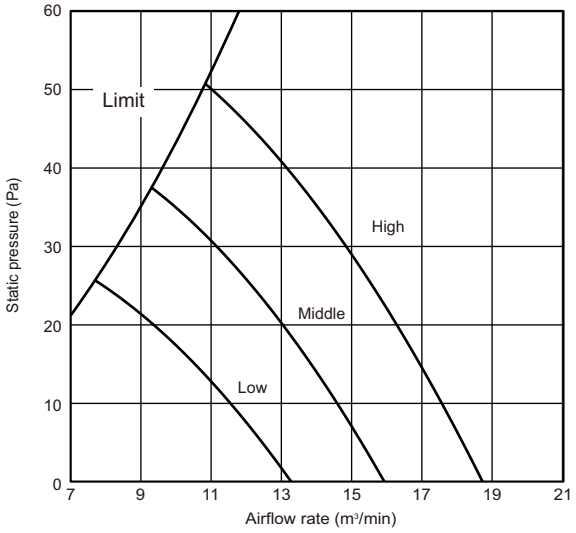


PEFY-WP20VMA-E
External static pressure : 150Pa
Power source : 220-240V

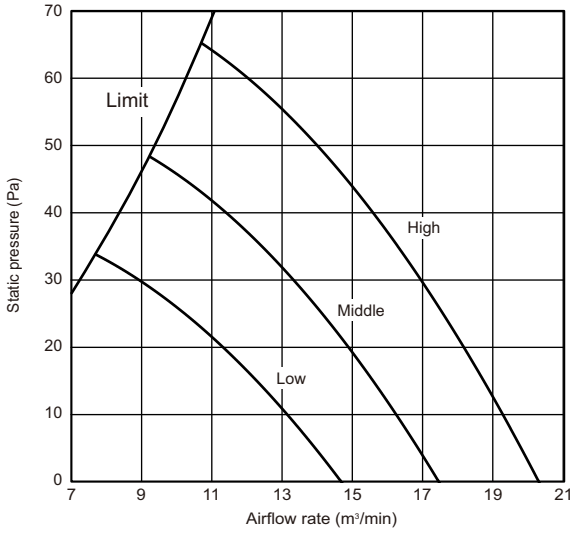


6. FAN CHARACTERISTICS CURVES

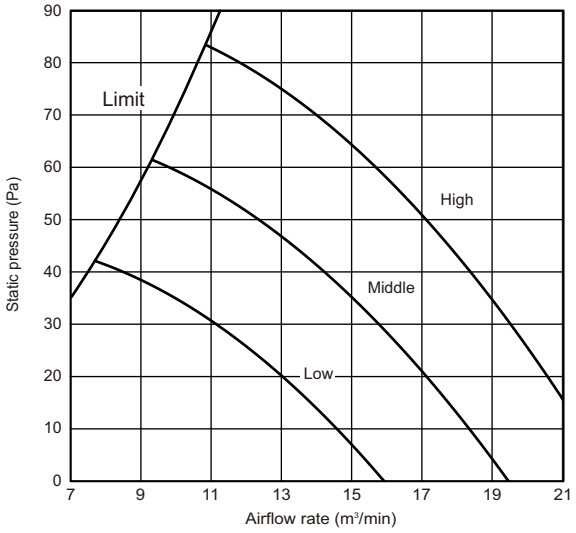
PEFY-WP25VMA-E
External static pressure : 35Pa
Power source : 220-240V



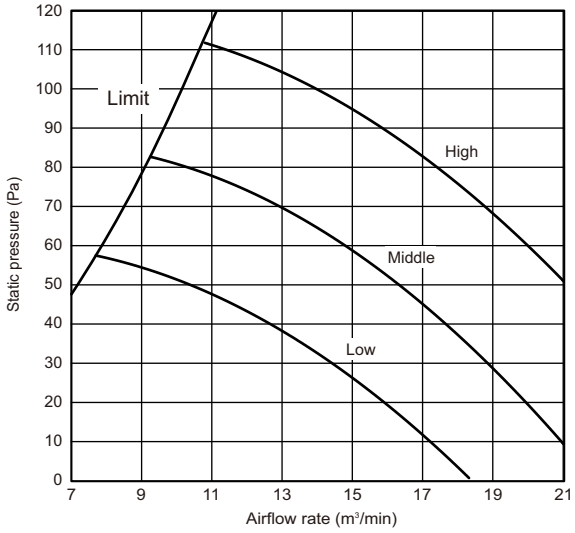
PEFY-WP25VMA-E
External static pressure : 50Pa
Power source : 220-240V



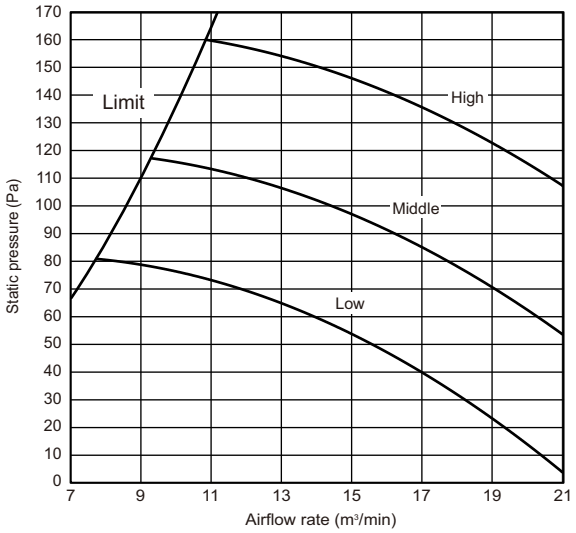
PEFY-WP25VMA-E
External static pressure : 70Pa
Power source : 220-240V



PEFY-WP25VMA-E
External static pressure : 100Pa
Power source : 220-240V

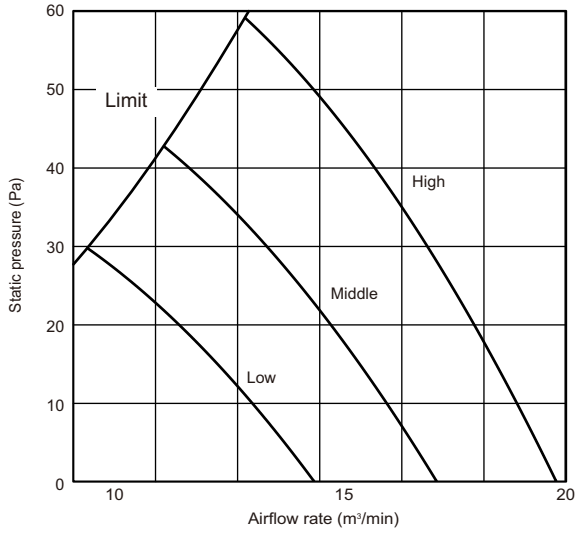


PEFY-WP25VMA-E
External static pressure : 150Pa
Power source : 220-240V

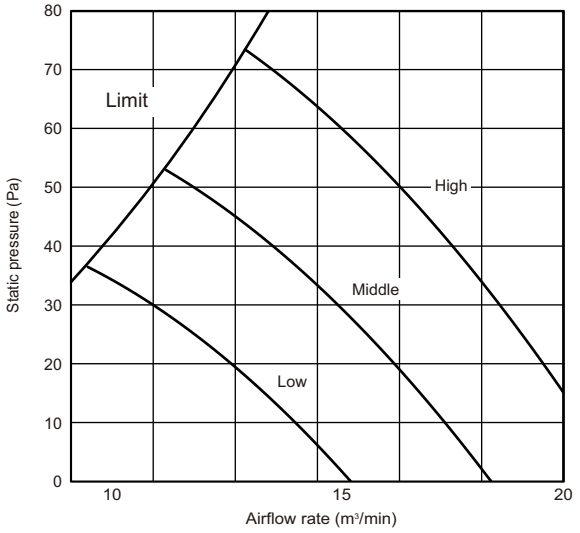


6. FAN CHARACTERISTICS CURVES

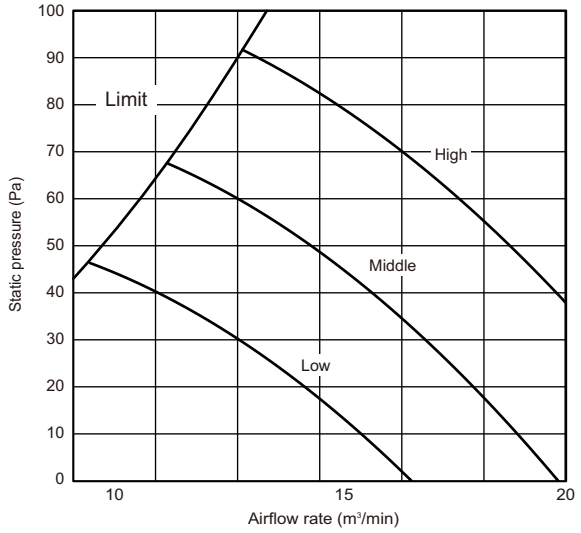
PEFY-WP32VMA-E
External static pressure : 35Pa
Power source : 220-240V



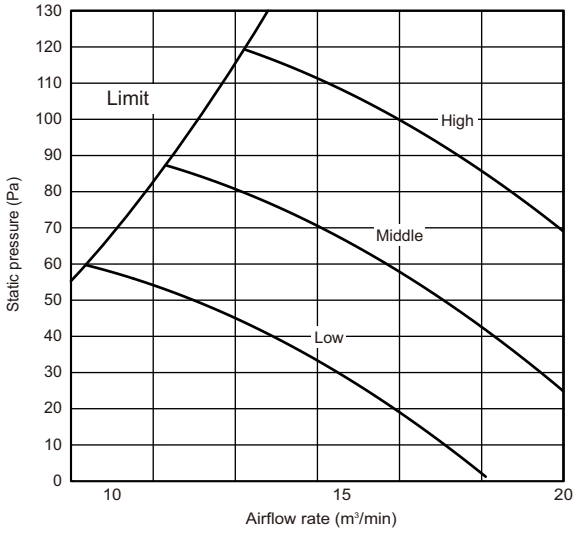
PEFY-WP32VMA-E
External static pressure : 50Pa
Power source : 220-240V



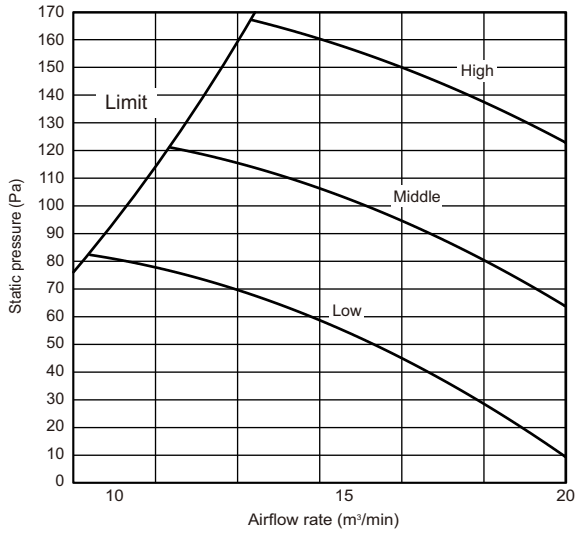
PEFY-WP32VMA-E
External static pressure : 70Pa
Power source : 220-240V



PEFY-WP32VMA-E
External static pressure : 100Pa
Power source : 220-240V

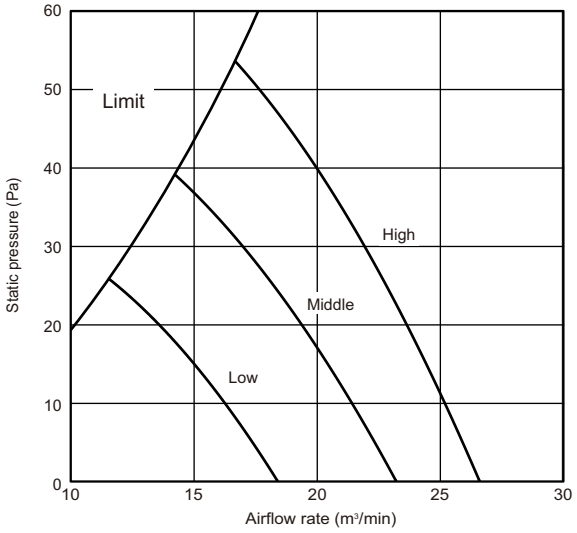


PEFY-WP32VMA-E
External static pressure : 150Pa
Power source : 220-240V

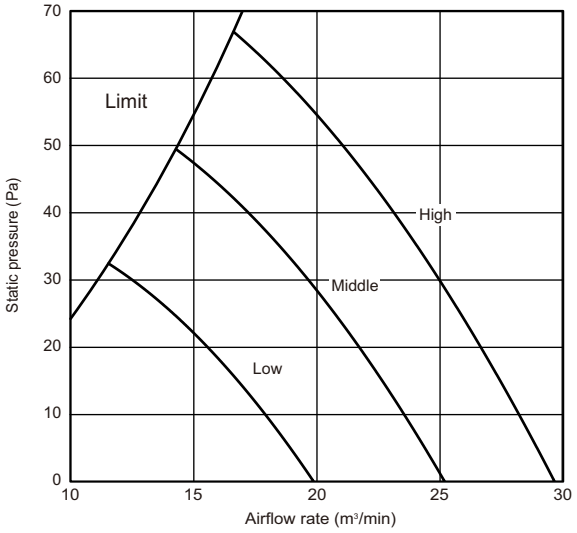


6. FAN CHARACTERISTICS CURVES

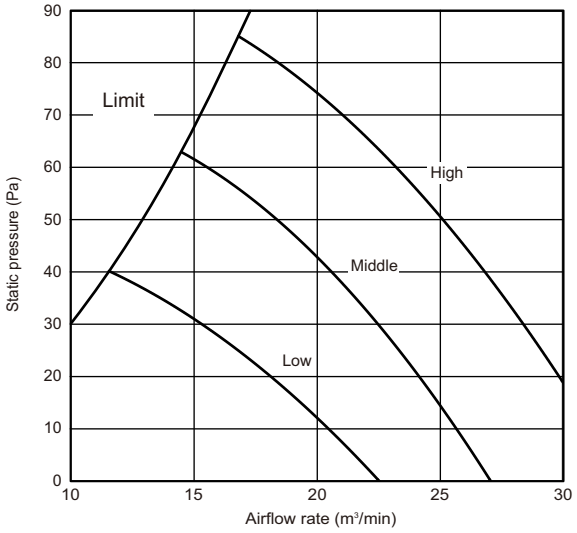
PEFY-WP40,50VMA-E
External static pressure : 35Pa
Power source : 220-240V



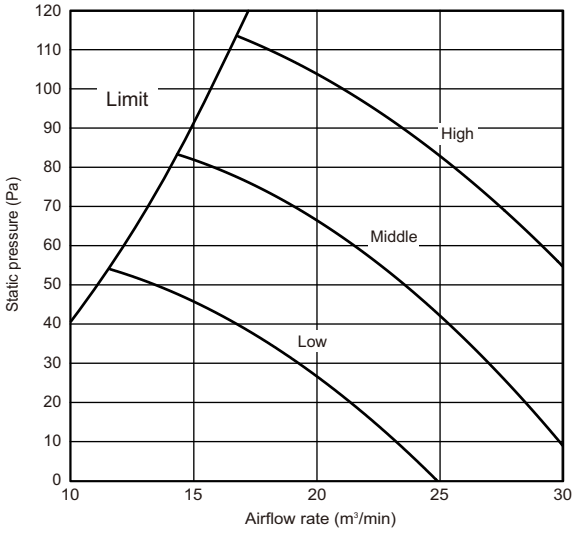
PEFY-WP40,50VMA-E
External static pressure : 50Pa
Power source : 220-240V



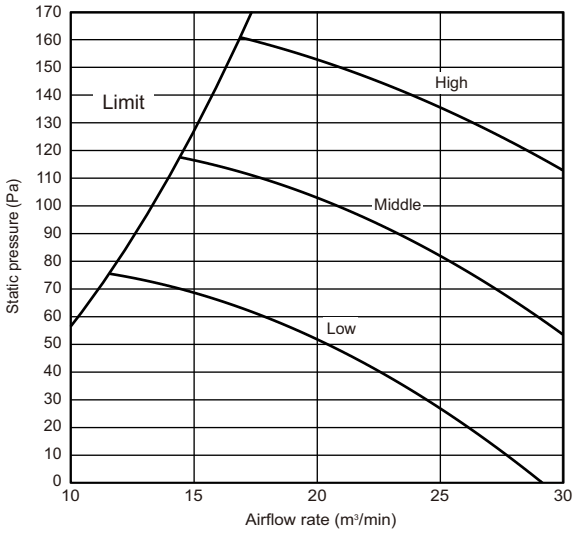
PEFY-WP40,50VMA-E
External static pressure : 70Pa
Power source : 220-240V



PEFY-WP40,50VMA-E
External static pressure : 100Pa
Power source : 220-240V



PEFY-WP40,50VMA-E
External static pressure : 150Pa
Power source : 220-240V

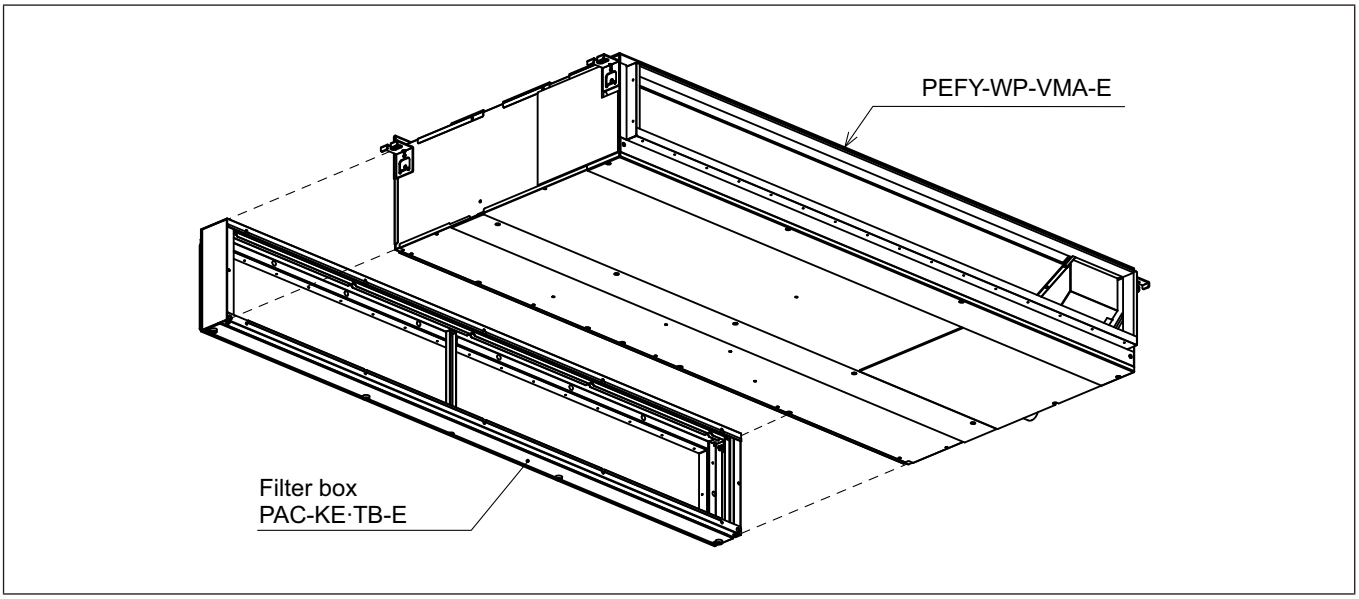


7. OPTIONAL PARTS

7-1. Optional parts line up for the Indoor unit

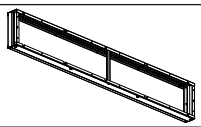
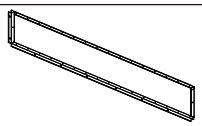
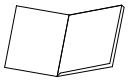
	Filter box
PEFY-WP20VMA-E	PAC-KE91TB-E
PEFY-WP25, 32VMA-E	PAC-KE92TB-E
PEFY-WP40, 50VMA-E	PAC-KE93TB-E

● **PEFY-WP-VMA-E**



7-2. Filter box

PAC-KE-TB-E

Item	1 Screw	2 Filter box	3 FLANGE	4 Installation manual	
Quantity	30	1	1	1	
Shape					

Detailed installation information should be referred to its Installation Manual (WT05704X01)

PFFY-WP-VLRMM-E

1. SPECIFICATIONS

Model			PFFY-WP20VLRMM-E	PFFY-WP25VLRMM-E	PFFY-WP32VLRMM-E	PFFY-WP40VLRMM-E
Power source			1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz	1-phase 220-230-240 V 50/60 Hz
Cooling capacity	*1	kW	2.2	2.8	3.6	4.5
(Nominal)	*1	kcal/h	1,900	2,400	3,100	3,900
	*1	BTU/h	7,500	9,600	12,300	15,400
*2	Power input	kW	0.040	0.040	0.050	0.050
*2	Current input	A	0.35	0.35	0.47	0.47
Heating capacity	*3	kW	2.5	3.2	4.0	5.0
(Nominal)	*3	kcal/h	2,200	2,800	3,400	4,300
	*3	BTU/h	8,500	10,900	13,600	17,100
*2	Power input	kW	0.040	0.040	0.050	0.050
*2	Current input	A	0.35	0.35	0.47	0.47
External finish			Galvanized steel plate	Galvanized steel plate	Galvanized steel plate	Galvanized steel plate
External dimension H x W x D		mm	639 x 886 x 220	639 x 1,006 x 220	639 x 1,006 x 220	639 x 1,246 x 220
		in.	25-3/16 x 34-15/16 x 8-11/16	25-3/16 x 39-5/8 x 8-11/16	25-3/16 x 39-5/8 x 8-11/16	25-3/16 x 49-1/16 x 8-11/16
Net weight		kg (lbs)	22 (49)	25 (56)	25 (56)	29 (64)
Heat exchanger			Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)	Cross fin (Aluminum fin and copper tube)
	Water Volume	L	0.9	1.3	1.3	1.5
FAN	Type x Quantity		Sirocco fan x 1	Sirocco fan x 2	Sirocco fan x 2	Sirocco fan x 2
*4	External static press.	Pa	20 - <40> - <60>	20 - <40> - <60>	20 - <40> - <60>	20 - <40> - <60>
		mmH_2O	2.0 - <4.1> - <6.1>	2.0 - <4.1> - <6.1>	2.0 - <4.1> - <6.1>	2.0 - <4.1> - <6.1>
	Motor Type		DC motor	DC motor	DC motor	DC motor
	Motor output	kW	0.096	0.096	0.096	0.096
	Driving mechanism		Direct-driven by motor	Direct-driven by motor	Direct-driven by motor	Direct-driven by motor
	Air flow rate		(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
		m^3/min	4.5 - 5.0 - 6.0	6.0 - 7.0 - 8.0	7.5 - 9.0 - 10.5	8.0 - 10.0 - 11.5
		L/s	75 - 83 - 100	100 - 117 - 133	125 - 150 - 175	133 - 167 - 192
		cfm	159 - 177 - 212	212 - 247 - 282	265 - 318 - 371	282 - 353 - 406
Sound pressure level (measured in anechoic room)			(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)	(Low-Mid-High)
	*2	dB <A>	31-33-38	31-33-38	31-35-38	34-37-40
Insulation material			Polyethylene foam, Urethane foam	Polyethylene foam, Urethane foam	Polyethylene foam, Urethane foam	Polyethylene foam, Urethane foam
Air filter			PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.	PP honeycomb fabric.
Protection device			Fuse	Fuse	Fuse	Fuse
Refrigerant control device			-	-	-	-
Connectable outdoor unit			HYBRID CITY MULTI /CMB-WP-V-G	HYBRID CITY MULTI /CMB-WP-V-G	HYBRID CITY MULTI /CMB-WP-V-G	HYBRID CITY MULTI /CMB-WP-V-G
Water piping diameter	Inlet	in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
*5 *6	Outlet	in.	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw	Rc 3/4 screw
Field drain pipe size		mm (in.)	I.D.26 (1) <Accessory hose O.D.27 (1-3/32) (top end: O.D.20 (13/16))>	I.D.26 (1) <Accessory hose O.D.27 (1-3/32) (top end: O.D.20 (13/16))>	I.D.26 (1) <Accessory hose O.D.27 (1-3/32) (top end: O.D.20 (13/16))>	I.D.26 (1) <Accessory hose O.D.27 (1-3/32) (top end: O.D.20 (13/16))>
Drawing	External		KD94T792X01	KD94T792X01	KD94T792X01	KD94T792X01
	Wiring		KD94T791X01	KD94T791X01	KD94T791X01	KD94T791X01
	Refrigerant cycle		-	-	-	-
Standard attachment	Document		Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book	Installation Manual, Instruction Book
	Accessory		Insulation pipe for water pipe, Drain hose (flexible joint), Screw plate, Level adjusting screw, Hose band	Insulation pipe for water pipe, Drain hose (flexible joint), Screw plate, Level adjusting screw, Hose band	Insulation pipe for water pipe, Drain hose (flexible joint), Screw plate, Level adjusting screw, Hose band	Insulation pipe for water pipe, Drain hose (flexible joint), Screw plate, Level adjusting screw, Hose band
Optional parts						
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27 °CD.B./19 °CW.B. (81 °FD.B./66 °FW.B.), Outdoor: 35 °CD.B. (95 °FD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20 °CD.B. (68 °FD.B.), Outdoor: 7 °CD.B./6 °CW.B. (45 °FD.B./43 °FW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Please group units that operate on 1 branch.

Unit converter

kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Model			PFFY-WP50VLRMM-E			
Power source			1-phase 220-230-240 V 50/60 Hz			
Cooling capacity (Nominal)	*1	kW	5.6			
	*1	kcal/h	4,800			
	*1	BTU/h	19,100			
*2	Power input	kW	0.070			
*2	Current input	A	0.65			
Heating capacity (Nominal)	*3	kW	6.3			
	*3	kcal/h	5,400			
	*3	BTU/h	21,500			
*2	Power input	kW	0.070			
*2	Current input	A	0.65			
External finish			Galvanized steel plate			
External dimension H x W x D		mm	639 x 1,246 x 220			
		in.	25-3/16 x 49-1/16 x 8-11/16			
Net weight		kg (lbs)	29 (64)			
Heat exchanger			Cross fin (Aluminum fin and copper tube)			
	Water Volume	L	1.5			
FAN	Type x Quantity		Sirocco fan x 2			
*4	External static press.	Pa	20 - <40> - <60>			
		mmH_2O	2.0 - <4.1> - <6.1>			
	Motor Type		DC motor			
	Motor output	kW	0.096			
	Driving mechanism		Direct-driven by motor			
	Air flow rate		(Low-Mid-High)			
		m^3/min	10.5 - 13.0 - 15.0			
		L/s	175 - 217 - 250			
		cfm	371 - 459 - 530			
Sound pressure level (measured in anechoic room)			(Low-Mid-High)			
	*2	dB <A>	37-42-45			
Insulation material			Polyethylene foam, Urethane foam			
Air filter			PP honeycomb fabric.			
Protection device			Fuse			
Refrigerant control device			-			
Connectable outdoor unit			HYBRID CITY MULTI /CMB-WP-V-G			
Water piping diameter	Inlet	in.	Rc 3/4 screw			
*5 *6	Outlet	in.	Rc 3/4 screw			
Field drain pipe size		mm (in.)	I.D.26 (1) <Accessory hose O.D.27 (1-3/32) (top end: O.D.20 (13/16))>			
Drawing	External		KD94T792X01			
	Wiring		KD94T791X01			
	Refrigerant cycle		-			
Standard attachment	Document		Installation Manual, Instruction Book			
	Accessory		Insulation pipe for water pipe, Drain hose (flexible joint), Screw plate, Level adjusting screw, Hose band			
Optional parts						
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.			

Notes :

1.Nominal cooling conditions
Indoor: 27 °CD.B./19 °CW.B. (81 °FD.B./66 °FW.B.), Outdoor: 35 °CD.B. (95 °FD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
2.The values are measured at the factory setting of external static pressure.
3.Nominal heating conditions
Indoor: 20 °CD.B. (68 °FD.B.), Outdoor: 7 °CD.B./6 °CW.B. (45 °FD.B./43 °FW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)
4.The factory setting of external static pressure is shown without < >.
Refer to "Fan characteristics curves", according to the external static pressure, in DATA BOOK for the usable range of air flow rate.
5.Be sure to install a valve on the water outlet.
6.Install a strainer (40 mesh or more) on the pipe next to the valve to remove the foreign matters.
7.Please group units that operate on 1 branch.

Unit converter

kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

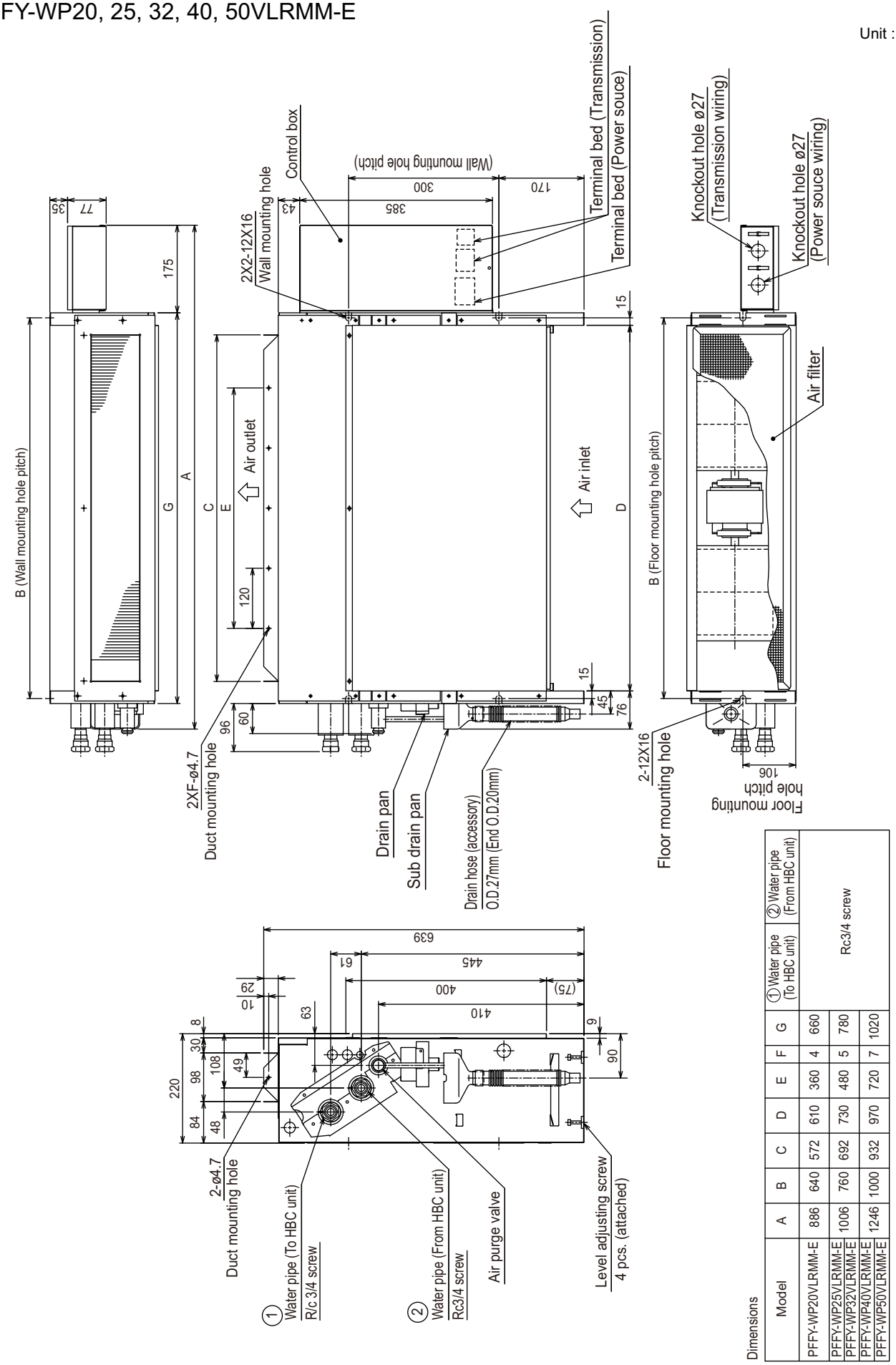
*Above specification data is subject to rounding variation.

PFFY

2. EXTERNAL DIMENSIONS

PFFY-WP20, 25, 32, 40, 50VLRMM-E

Unit : mm

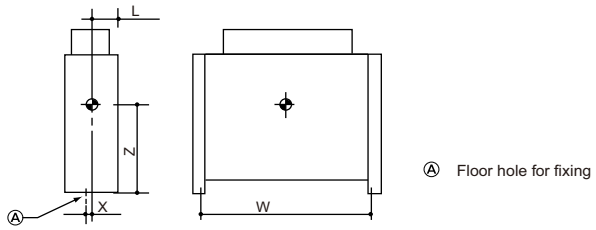


Dimensions

Model	A	B	C	D	E	F	G	① Water pipe (To HBC unit)	② Water pipe (From HBC unit)
PFFY-WP20VLRMM-E	886	640	572	610	360	4	660	Rc3/4 screw	
PFFY-WP25VLRMM-E PFFY-WP32VLRMM-E	1006	760	692	730	480	5	780		
PFFY-WP40VLRMM-E PFFY-WP50VLRMM-E	1246	1000	932	970	720	7	1020		

3. CENTER OF GRAVITY

PFFY-WP20, 25, 32, 40, 50VLRMM-E

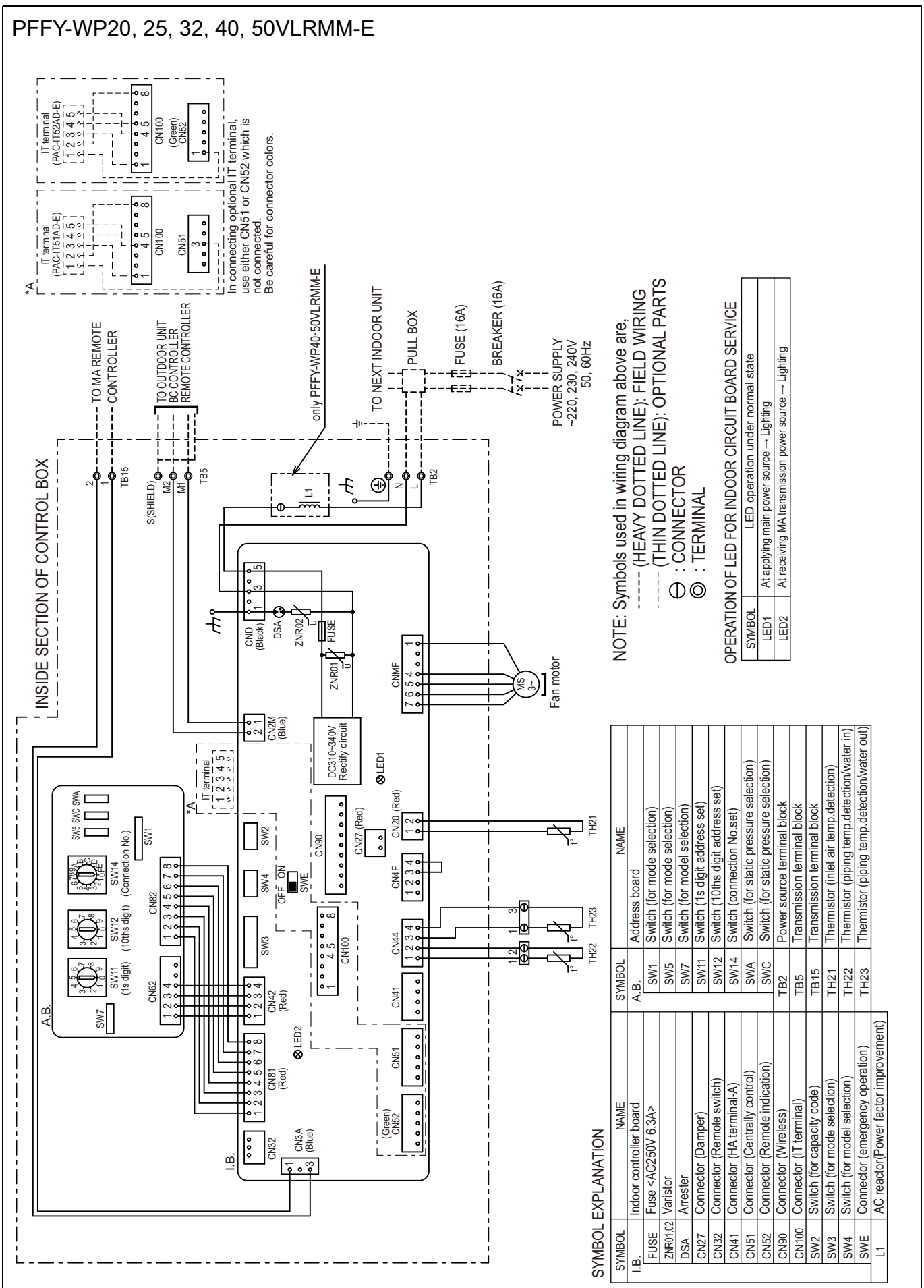


Ⓐ Floor hole for fixing

(mm)[in]

Model name	W	L	X	Z
PFFY-WP20VLRMM-E	640 [25-1/4]	100 [3-15/16]	17 [11/16]	335 [13-1/4]
PFFY-WP25VLRMM-E	760 [29-15/16]	100 [3-15/16]	17 [11/16]	335 [13-1/4]
PFFY-WP32VLRMM-E	760 [29-15/16]	100 [3-15/16]	17 [11/16]	335 [13-1/4]
PFFY-WP40VLRMM-E	1000 [39-3/8]	100 [3-15/16]	17 [11/16]	335 [13-1/4]
PFFY-WP50VLRMM-E	1000 [39-3/8]	100 [3-15/16]	17 [11/16]	335 [13-1/4]

PFFY-WP20, 25, 32, 40, 50VLRMM-E



OPERATION OF LED FOR INDOOR CIRCUIT BOARD SERVICE

SYMBOL	LED operation under normal state
LED1	At applying main power source → Lighting
LED2	At receiving MA transmission power source → Lighting

SYMBOL EXPLANATION

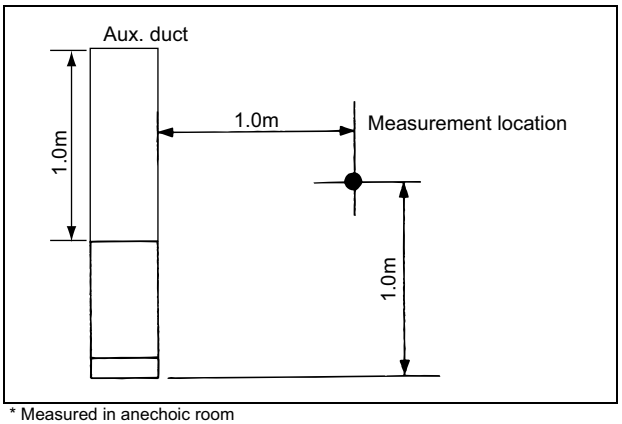
SYMBOL	NAME
I.B.	Indoor controller board
FUSE	Fuse <AC250V 6.3A>
ZNR01,02	Varistor
DSA	Arrester
CN27	Connector (Damper)
CN32	Connector (Remote switch)
CN41	Connector (HA terminal-A)
CN51	Connector (Centrally control)
CN52	Connector (Remote indication)
CN90	Connector (Wireless)
CN100	Connector (IT terminal)
SW2	Switch (for capacity code)
SW3	Switch (for mode selection)
SW4	Switch (for model selection)
SWE	Connector (emergency operation)
L1	AC reactor(Power factor improvement)

SYMBOL	NAME
A.B.	Address board
SW1	Switch (for mode selection)
SW5	Switch (for mode selection)
SW7	Switch (for model selection)
SW11	Switch (1s digit address set)
SW12	Switch (10ths digit address set)
SW14	Switch (connection No.set)
SWA	Switch (for static pressure selection)
SWC	Switch (for static pressure selection)
TB2	Power source terminal block
TB5	Transmission terminal block
TB15	Transmission terminal block
TH21	Thermistor (inlet air temp.detection)
TH22	Thermistor (piping temp.detection/water in)
TH23	Thermistor (piping temp.detection/water out)

5. SOUND LEVELS

5-1. Sound levels

PFFY-WP-VLRMM-E



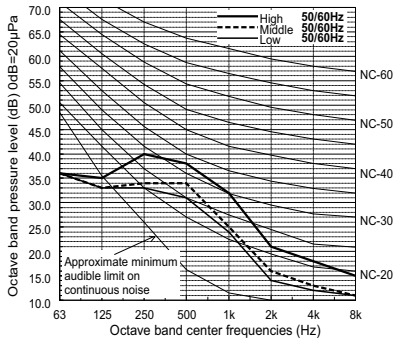
* Measured in anechoic room

Sound level at anechoic room : Low-Middle-High

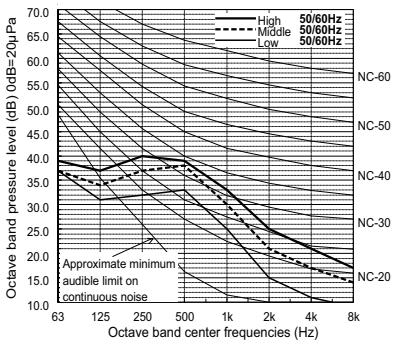
	Sound level dB (A)		
	20Pa	40Pa	60Pa
PFFY-WP20VLRMM-E	31-33-38	32-37-39	36-38-42
PFFY-WP25VLRMM-E	31-33-38	32-37-39	36-38-42
PFFY-WP32VLRMM-E	31-35-38	34-37-40	36-40-42
PFFY-WP40VLRMM-E	34-37-40	37-39-43	37-41-44
PFFY-WP50VLRMM-E	37-42-45	38-44-47	39-45-48

5-2. NC curves

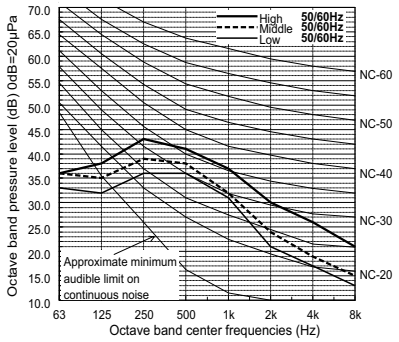
PFFY-WP20VLRMM-E
External Static Pressure: 20Pa
Power Source: 220-230-240V, 50/60Hz



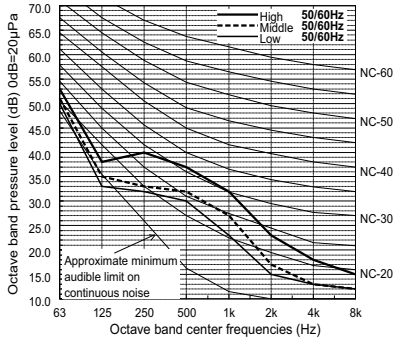
PFFY-WP20VLRMM-E
External Static Pressure: 40Pa
Power Source: 220-230-240V, 50/60Hz



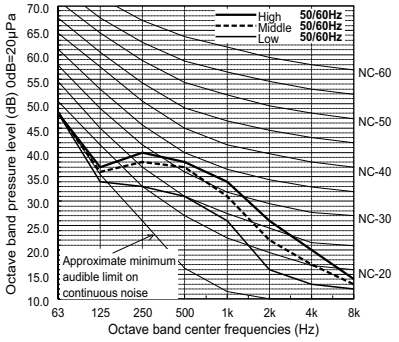
PFFY-WP20VLRMM-E
External Static Pressure: 60Pa
Power Source: 220-230-240V, 50/60Hz



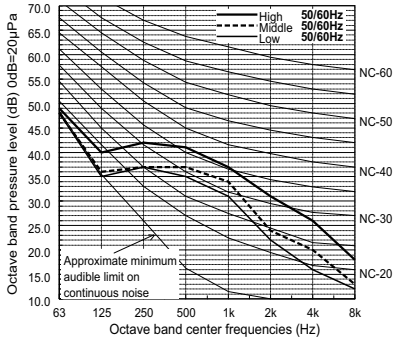
PFFY-WP25VLRMM-E
External Static Pressure: 20Pa
Power Source: 220-230-240V, 50/60Hz



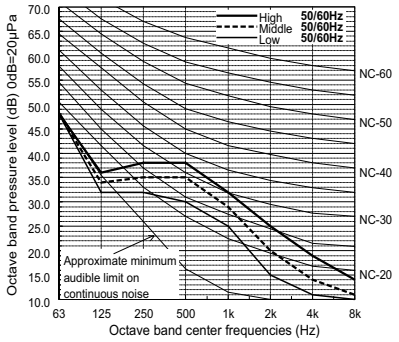
PFFY-WP25VLRMM-E
External Static Pressure: 40Pa
Power Source: 220-230-240V, 50/60Hz



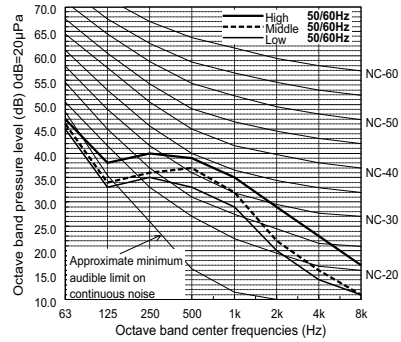
PFFY-WP25VLRMM-E
External Static Pressure: 60Pa
Power Source: 220-230-240V, 50/60Hz



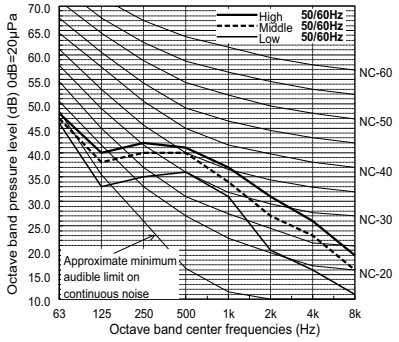
PFFY-WP32VLRMM-E
External Static Pressure: 20Pa
Power Source: 220-230-240V, 50/60Hz



PFFY-WP32VLRMM-E
External Static Pressure: 40Pa
Power Source: 220-230-240V, 50/60Hz

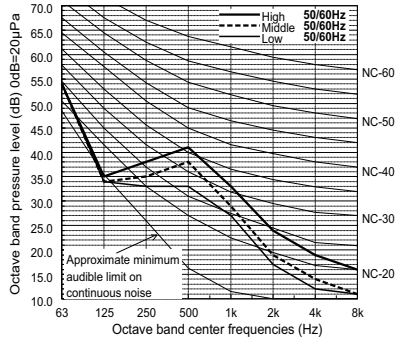


PFFY-WP32VLRMM-E
External Static Pressure: 60Pa
Power Source: 220-230-240V, 50/60Hz

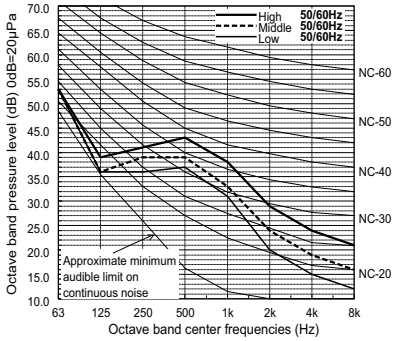


5. SOUND LEVELS

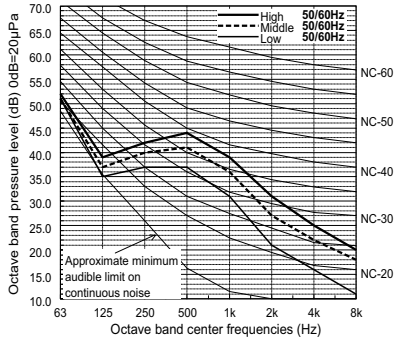
PFFY-WP40VLRMM-E
External Static Pressure: 20Pa
Power Source: 220-230-240V, 50/60Hz



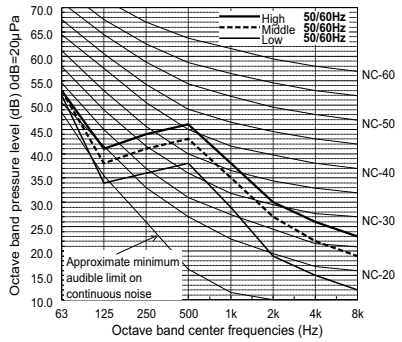
PFFY-WP40VLRMM-E
External Static Pressure: 40Pa
Power Source: 220-230-240V, 50/60Hz



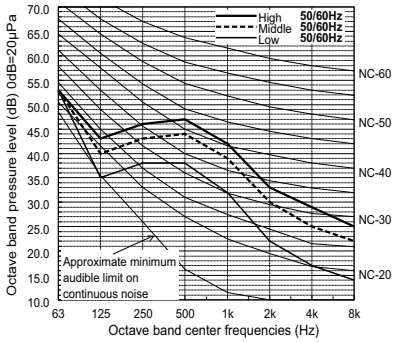
PFFY-WP40VLRMM-E
External Static Pressure: 60Pa
Power Source: 220-230-240V, 50/60Hz



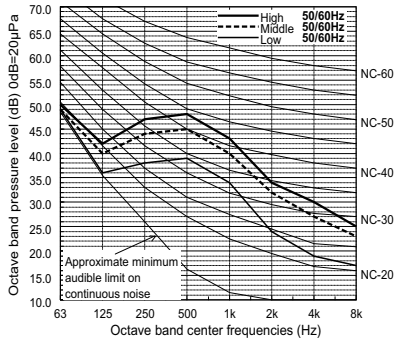
PFFY-WP50VLRMM-E
External Static Pressure: 20Pa
Power Source: 220-230-240V, 50/60Hz



PFFY-WP50VLRMM-E
External Static Pressure: 40Pa
Power Source: 220-230-240V, 50/60Hz

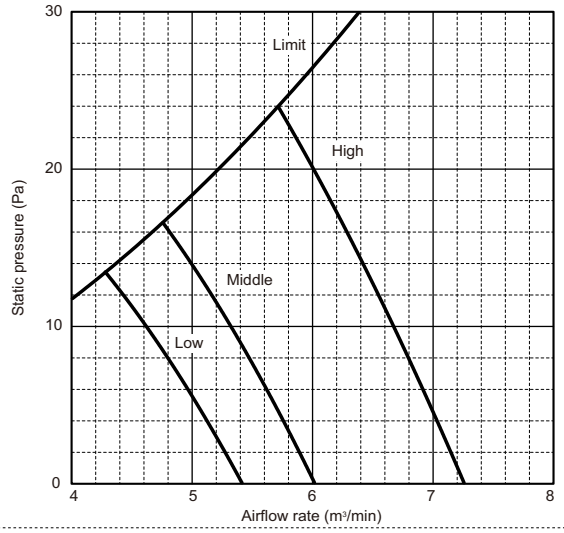


PFFY-WP50VLRMM-E
External Static Pressure: 60Pa
Power Source: 220-230-240V, 50/60Hz

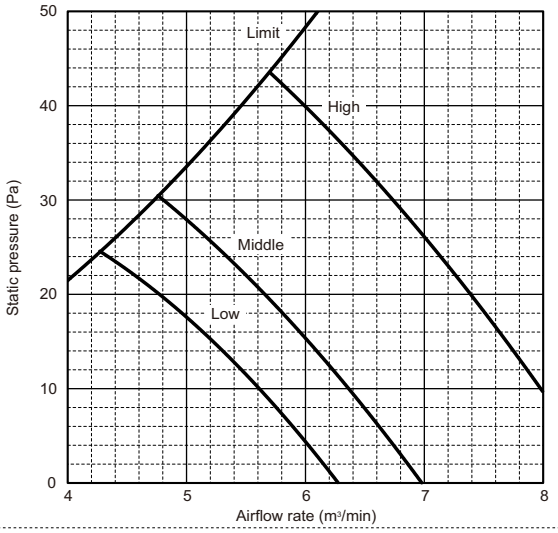


6. FAN CHARACTERISTICS CURVES

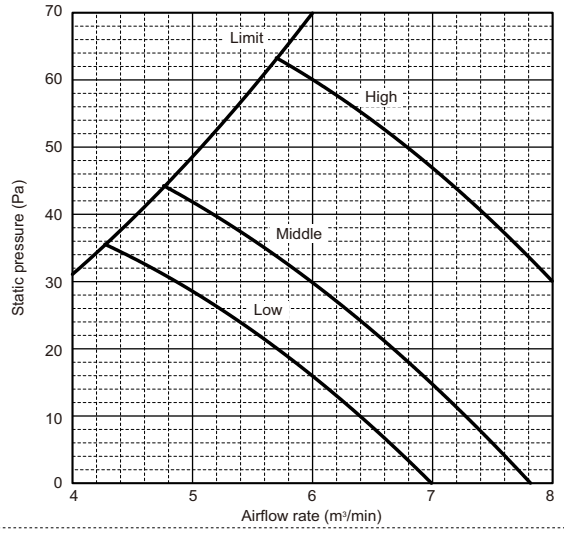
PFFY-WP20VLRMM-E
External static pressure : 20Pa
Power source : 220-230-240V, 50/60Hz



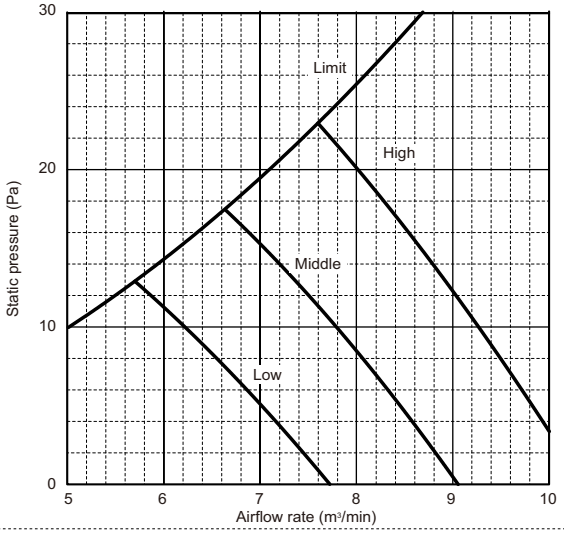
PFFY-WP20VLRMM-E
External static pressure : 40Pa
Power source : 220-230-240V, 50/60Hz



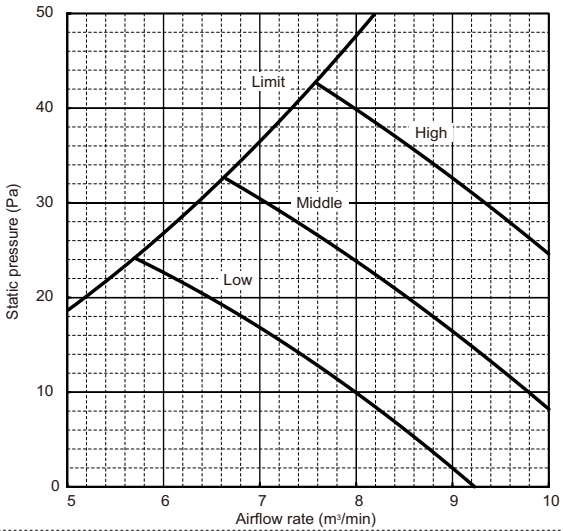
PFFY-WP20VLRMM-E
External static pressure : 60Pa
Power source : 220-230-240V, 50/60Hz



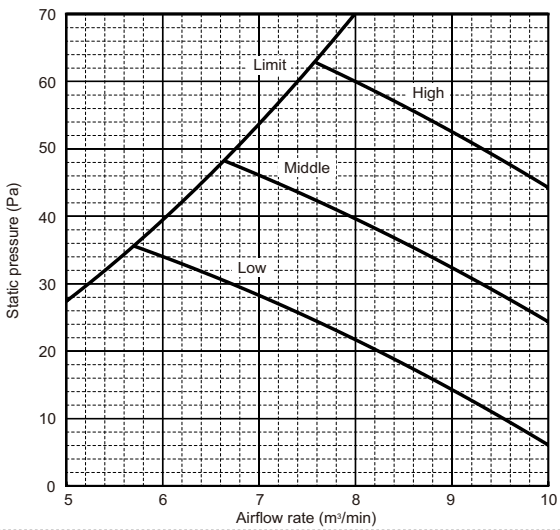
PFFY-WP25VLRMM-E
External static pressure : 20Pa
Power source : 220-230-240V, 50/60Hz



PFFY-WP25VLRMM-E
External static pressure : 40Pa
Power source : 220-230-240V, 50/60Hz

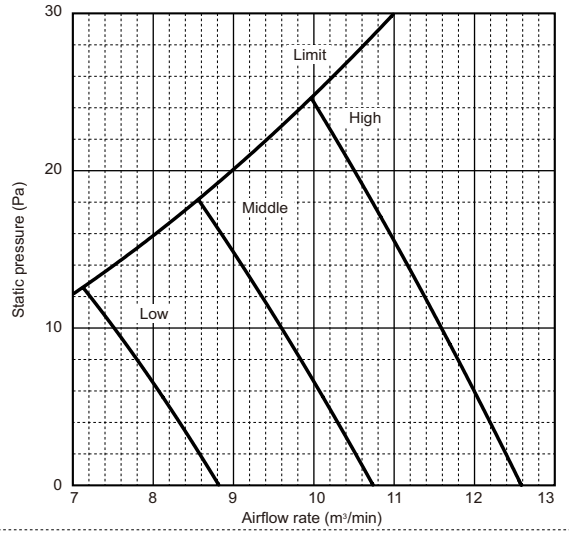


PFFY-WP25VLRMM-E
External static pressure : 60Pa
Power source : 220-230-240V, 50/60Hz

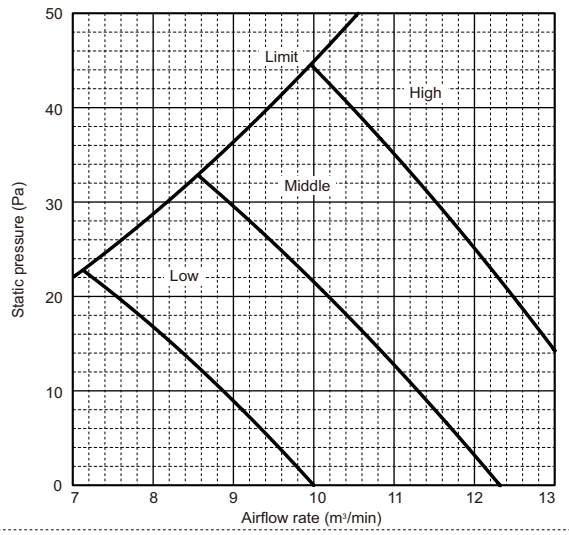


6. FAN CHARACTERISTICS CURVES

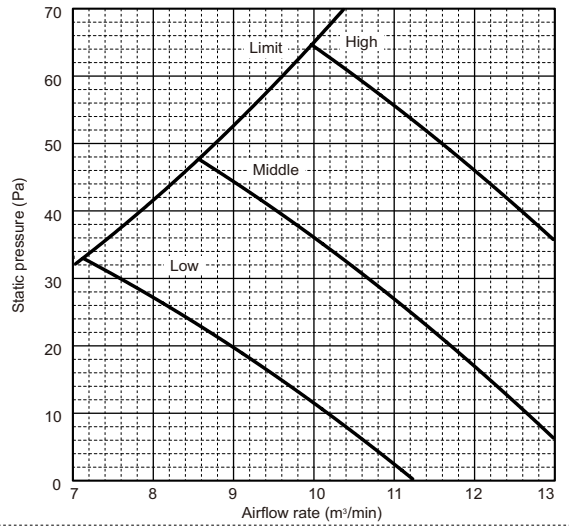
PFFY-WP32VLRMM-E
External static pressure : 20Pa
Power source : 220-230-240V, 50/60Hz



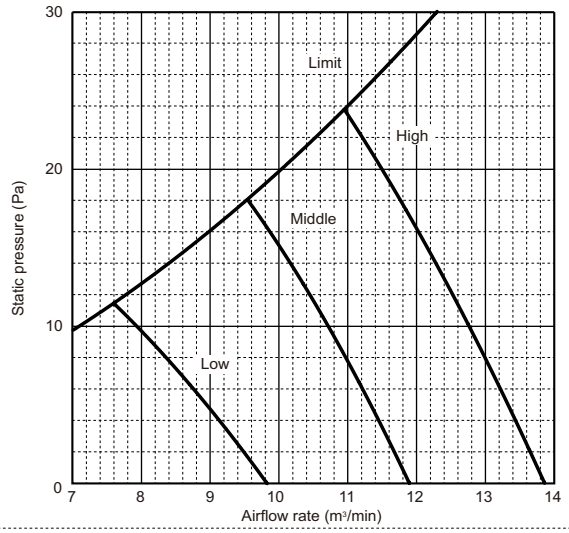
PFFY-WP32VLRMM-E
External static pressure : 40Pa
Power source : 220-230-240V, 50/60Hz



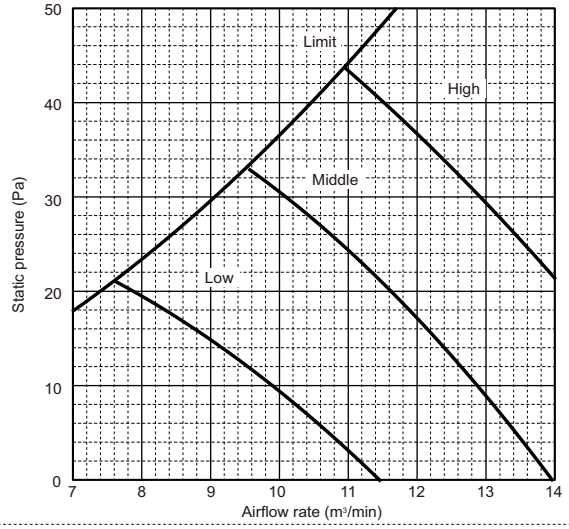
PFFY-WP32VLRMM-E
External static pressure : 60Pa
Power source : 220-230-240V, 50/60Hz



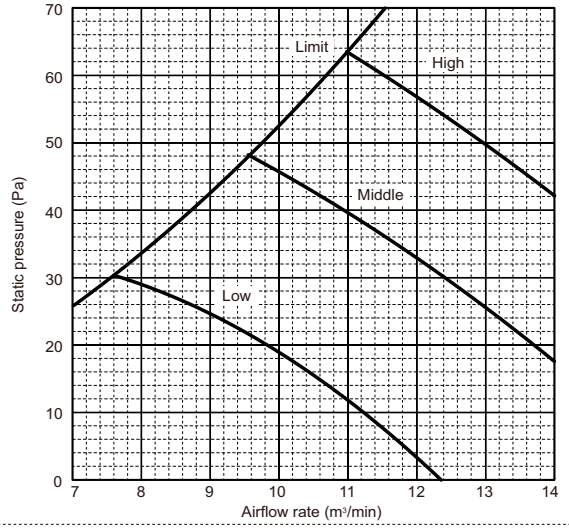
PFFY-WP40VLRMM-E
External static pressure : 20Pa
Power source : 220-230-240V, 50/60Hz



PFFY-WP40VLRMM-E
External static pressure : 40Pa
Power source : 220-230-240V, 50/60Hz

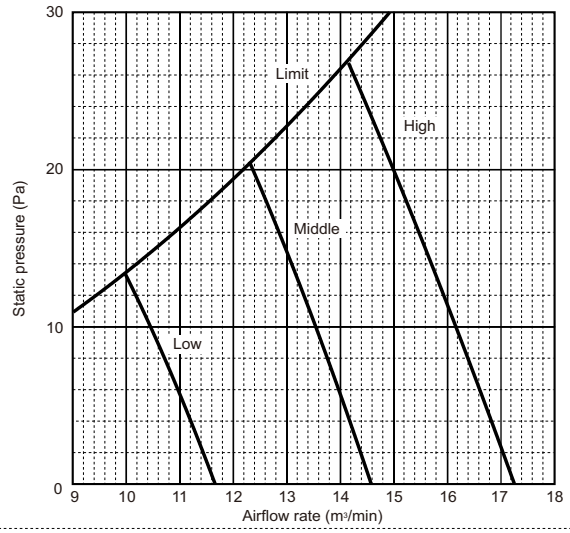


PFFY-WP40VLRMM-E
External static pressure : 60Pa
Power source : 220-230-240V, 50/60Hz

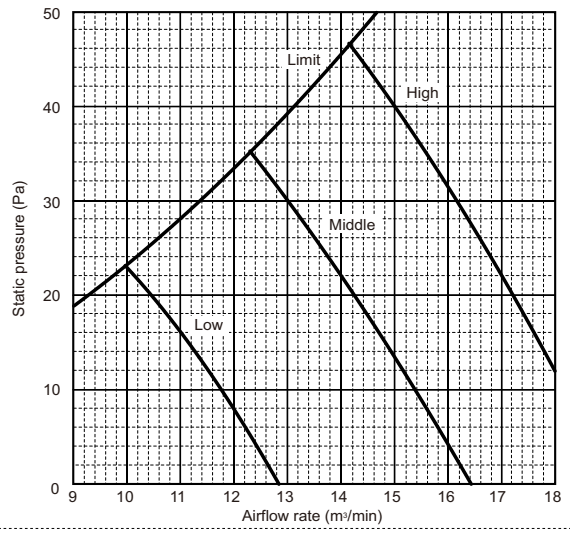


6. FAN CHARACTERISTICS CURVES

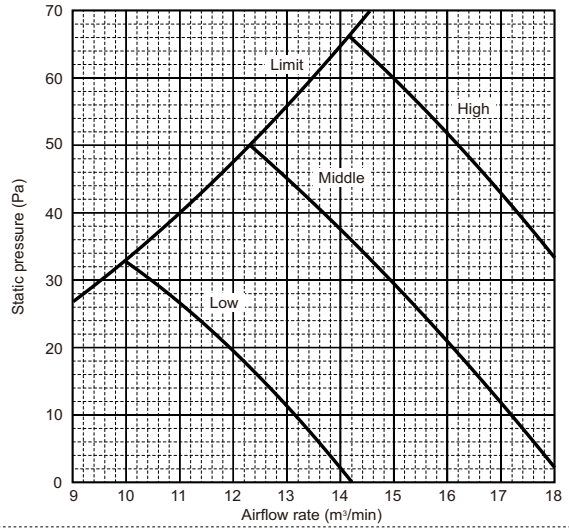
PFFY-WP50VLRMM-E
External static pressure : 20Pa
Power source : 220-230-240V, 50/60Hz



PFFY-WP50VLRMM-E
External static pressure : 40Pa
Power source : 220-230-240V, 50/60Hz



PFFY-WP50VLRMM-E
External static pressure : 60Pa
Power source : 220-230-240V, 50/60Hz



CMB-WP-V-G

1. SPECIFICATIONS

Model name			CMB-WP108V-G				
Number of branch			8				
Power source			220-230-240 V				
			50 Hz		60 Hz		
Power input	Cooling	kW	0.450/0.460/0.470		0.450/0.460/0.470		
(220/230/240)	Heating	kW	0.450/0.460/0.470		0.450/0.460/0.470		
Current input	Cooling	A	2.89/2.83/2.79		2.89/2.83/2.79		
(220/230/240)	Heating	A	2.89/2.83/2.79		2.89/2.83/2.79		
Sound pressure level (measured in anechoice room)		dB <A>	41				
Applicable temperature range of installation site		°C (D.B.)	0~32				
External finish			Galvanized steel plate (Lower part drain pan: Pre-coated galvanized sheets + powder coating)				
Connectable outdoor unit			PURY-WP200/250YJM-A(-BS)				
Indoor unit capacity connectable to 1 branch			Model P80 or smaller (Use a joint pipe (field supply) combining 2 branches when the total unit capacity exceeds P80)				
External dimension H x W x D		mm	300 x 1,600 x 541				
		in.	11-13/16 x 63 x 21-5/16				
Refrigerant piping diameter (To outdoor unit)	Connectable outdoor unit capacity		To WP200	To WP250			
	High press. Pipe	mm (in.) O.D.	15.88 (5/8) Brazed	19.05 (3/4) Brazed			
	Low press. Pipe	mm (in.) O.D.	19.05 (3/4) Brazed	22.2 (7/8) Brazed			
Water piping diameter (To Indoor unit)	Inlet Pipe	mm (in.) I.D.	20 (Rc3/4) screw				
	Outlet Pipe	mm (in.) I.D.	20 (Rc3/4) screw				
Field drain pipe size		mm (in.)	O.D. 32 (1-1/4)				
Net weight		kg (lbs)	92 (203) [102 (225) with water]				
Standard attachment	Document		–				
	Accessory		1.Reducer 2.Drain Connection pipe (with flexible hose and insulation)				
Optional parts			Sub drainpan: PAC-HBC01DP-E				

Note;

1.Works not included:
Installation / foundation work, electrical connection work, duct work, insulation work, power source switch, and other items are not specified in this specification.

2.The equipment is for R410A refrigerant.

3.Install this product in a location where noise (refrigerant and water noise) emitted by the unit will not disturb the neighbours. For use in quiet environments with low background noise, position the HBC CONTROLLER at least 5 m away from any indoor units.

4.Install the HBC controller in a place where noise will not be an issue.

5.Attach an expansion tank (field supply).

6.Use copper or plastic pipes for the water circuit. Do not use steel or stainless steel pipework. Furthermore, when using copper pipe-work use a non-oxidative brazing method. Oxidation of the pipe-work will reduce the pump life.

7.Install an air purge valve where air will gather in the water circuit.

8.Install a pressure reducing valve and a strainer on the water supply to the HBC controller. Also consider installing a non-return valve (check local regulations).

9.Refer to the databook or the installation manual for the specified water quality.

10.This unit is not designed for outside installation.

11.Always leave the power on or remove the circulation water completely when the power is off for an extended period. *Do not use the circuit water as drinking water.

12.Do not use ground water or well water.

13.When installing the HBC unit in an environment which may drop below 0 °C, please add antifreeze to the circulating water. (Refer to the data-book and the installation manual).

14.Use cover caps (field supply, dezincification resistant brass (DZR) or bronze only) on unused branches.

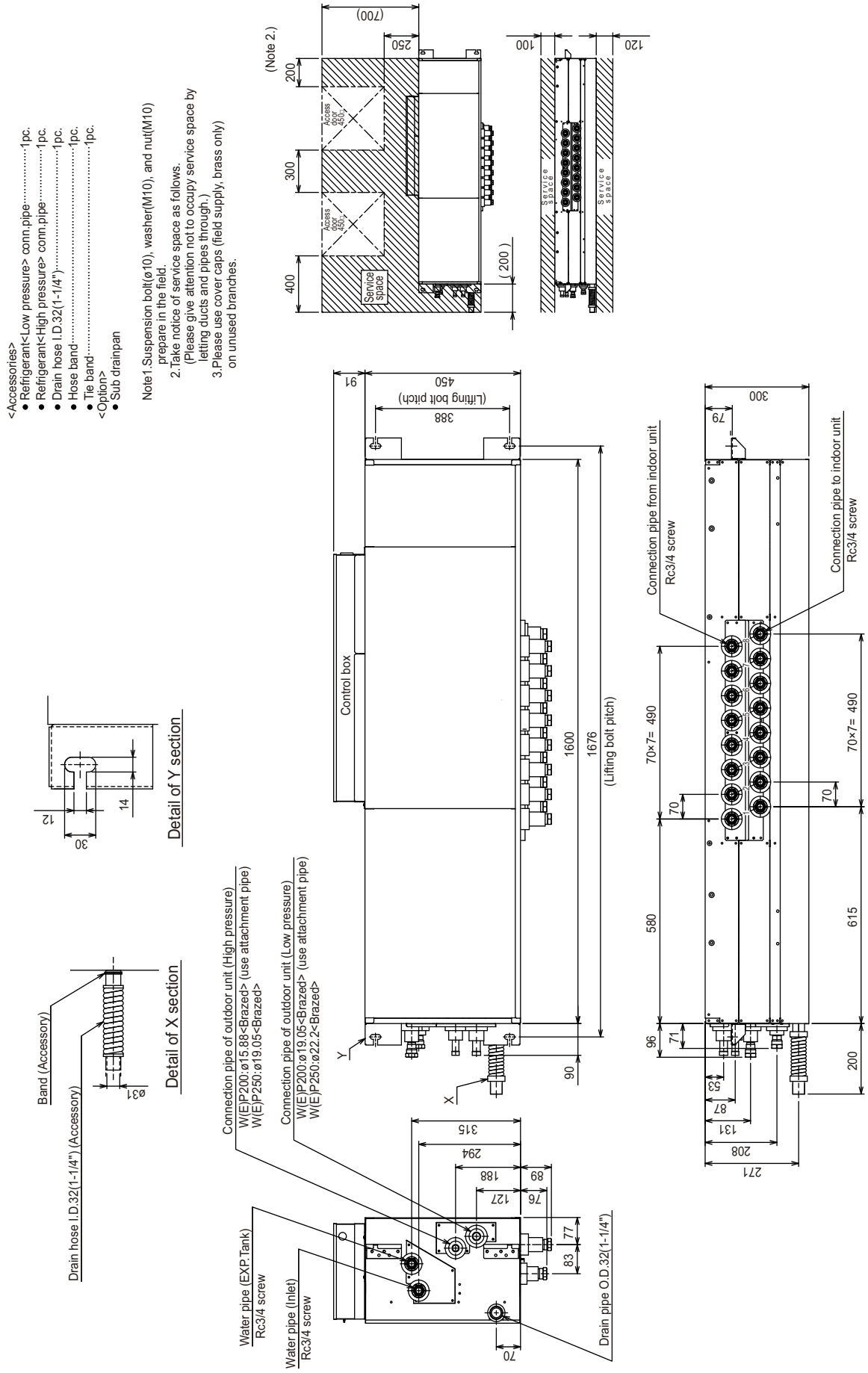
15.Install a sub drain pan (sold separately, PAC-HBC01DP-E). If leakage from underneath the HBC would cause no problem in the installed location, installation of the sub drain pan is not necessary.

16.The system must be serviced at least once a year.

2. EXTERNAL DIMENSIONS

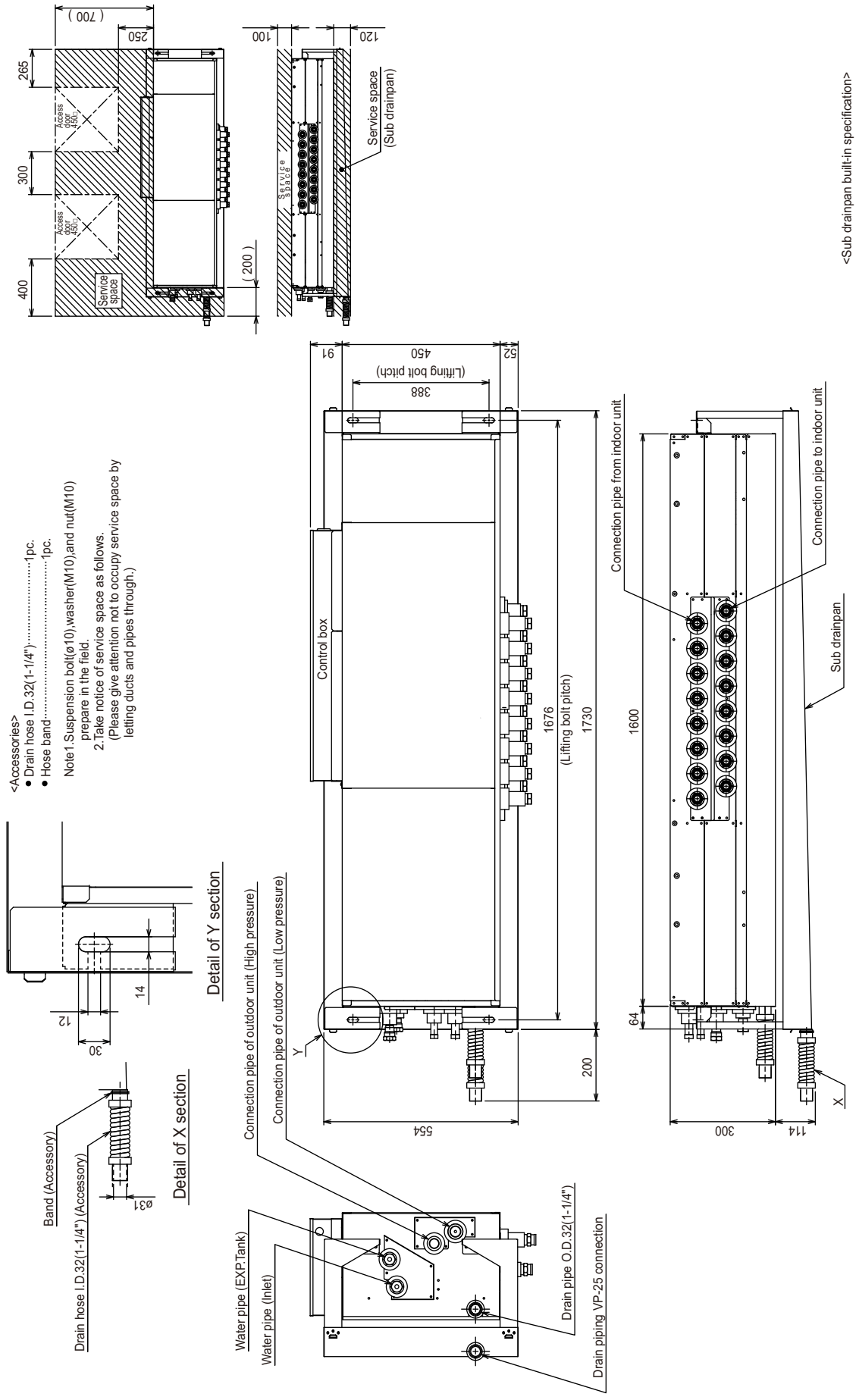
CMB-WP108V-G

Unit : mm



CMB-WP108V-G with sub drainpan

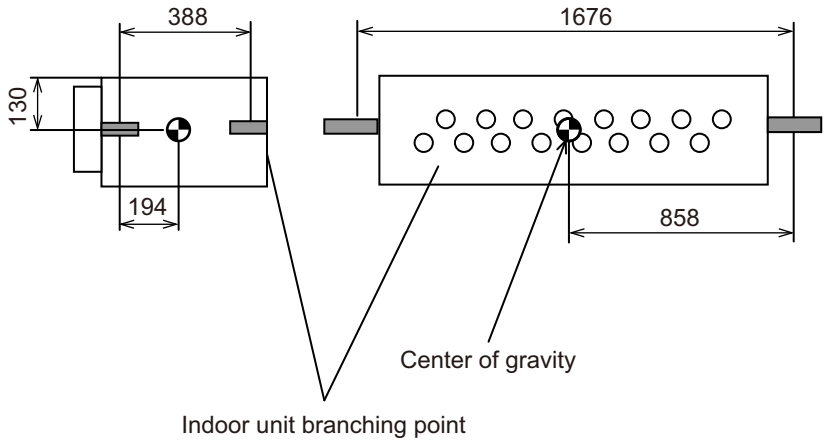
Unit : mm



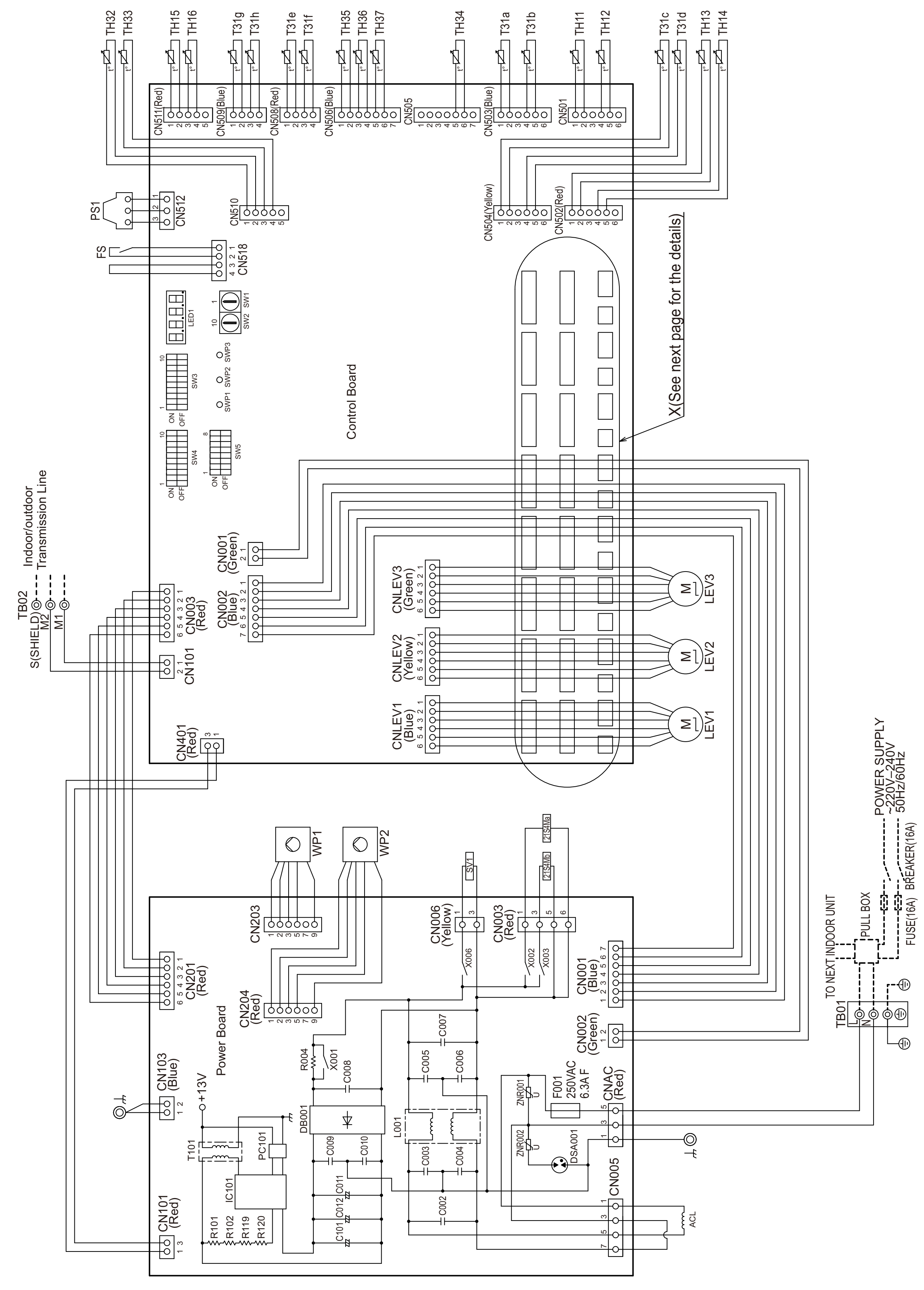
3. CENTER OF GRAVITY

CMB-WP108V-G

mm

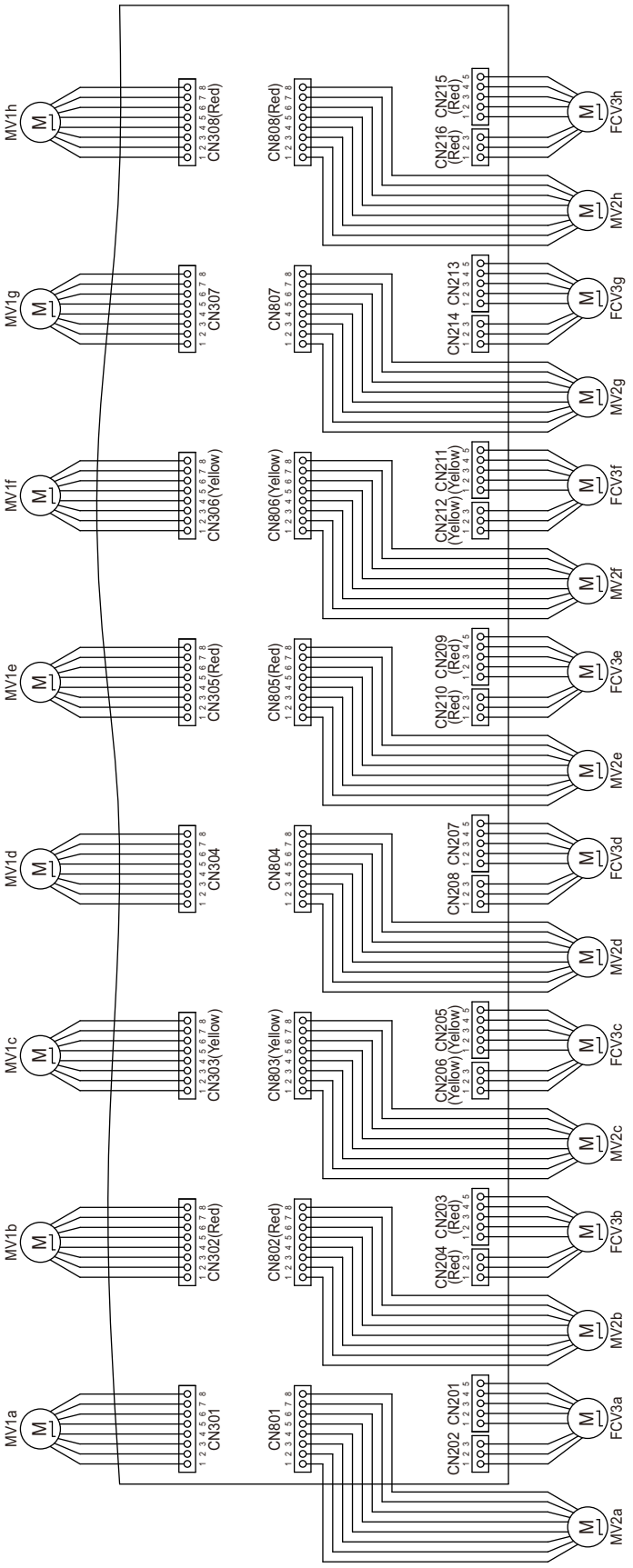


CMB-WP108V-G



TH32
TH33
TH15
TH16
T31g
T31h
T31e
T31f
TH35
TH36
TH37
TH34
T31a
T31b
TH11
TH12
T31c
T31d
TH13
TH14
CN511(Red)
CN509(Blue)
CN508(Red)
CN506(Blue)
CN505
CN503(Blue)
CN501
CN510
CN504(Yellow)
CN502(Red)
PS1
CN512
FS
CN518
LED1
SW1
SW2
SW3
SW4
SW5
SWP1
SWP2
SWP3
Control Board
X(See next page for the details)
Indoor/outdoor Transmission Line
TB02
S(SHIELD)
M2
M1
CN101
CN003 (Red)
CN002 (Blue)
CN001 (Green)
CNLEV3 (Green)
CNLEV2 (Yellow)
CNLEV1 (Blue)
LEV3
LEV2
LEV1
CN401 (Red)
WP1
WP2
SV1
21S4Ma
21S4Mb
CN203
CN204 (Red)
CN006 (Yellow)
CN003 (Red)
X006
X002
X003
CN201 (Red)
CN001 (Blue)
CN002 (Green)
Power Board
CN103 (Blue)
+13V
R004
X001
C008
C007
C005
C006
DB001
L001
T101
PC101
IC101
C009
C010
C003
C004
C002
C011
C012
C101
R101
R102
R119
R120
CN101 (Red)
ZNR001
ZNR002
F001 250VAC 6.3A F
CNAC (Red)
DSA001
CN005
ACL
POWER SUPPLY ~220V-240V 50Hz/60Hz
TO NEXT INDOOR UNIT
PULL BOX
FUSE(16A)
BREAKER(16A)
TB01
L
N

CMB-WP108V-G (Detail of X section)



NOTE:1.TB02 is transmission terminal block.
Never connect power line to it.
2.The initial set values of switch on
Control Board are as follows.
SW1:0
SW2:0

(Symbol explanation)

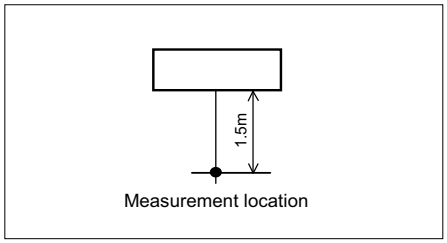
Symbol	Name	Symbol	Name
ACL	AC reactor	SVM1	Solenoid valve
TH11~16,TH32~37, T31a~h	Thermister sensor	F001	Fuse AC250V 6.3A F
		21S4Ma,21S4Mb	4 way valve
LEV1~3	Expansion valve	WP1,WP2	Pump
PS1	Pressure sensor	MV1a~h,MV2a~h	3 way valve
TB01	Terminal block (for power source)	FCV3a~h	2 way valve
		FS	Float switch
TB02	Terminal block (for Transmission)		

5. SOUND LEVELS

5-1. Sound levels

(Measured point)

CMB-WP108V-G



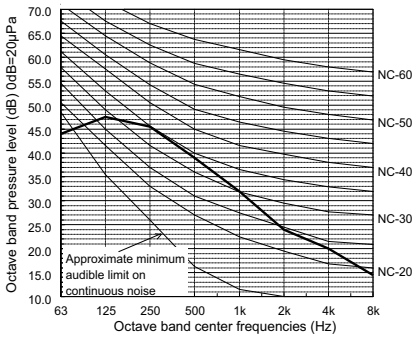
* Measured in anechoic room.

HBC

5-2. NC curves

CMB-WP108V-G

External Static Pressure: 50Pa
Power Source: 220-240V(50/60Hz)



6. OPTIONAL PARTS

6-1. Optional parts line up for the HBC controller

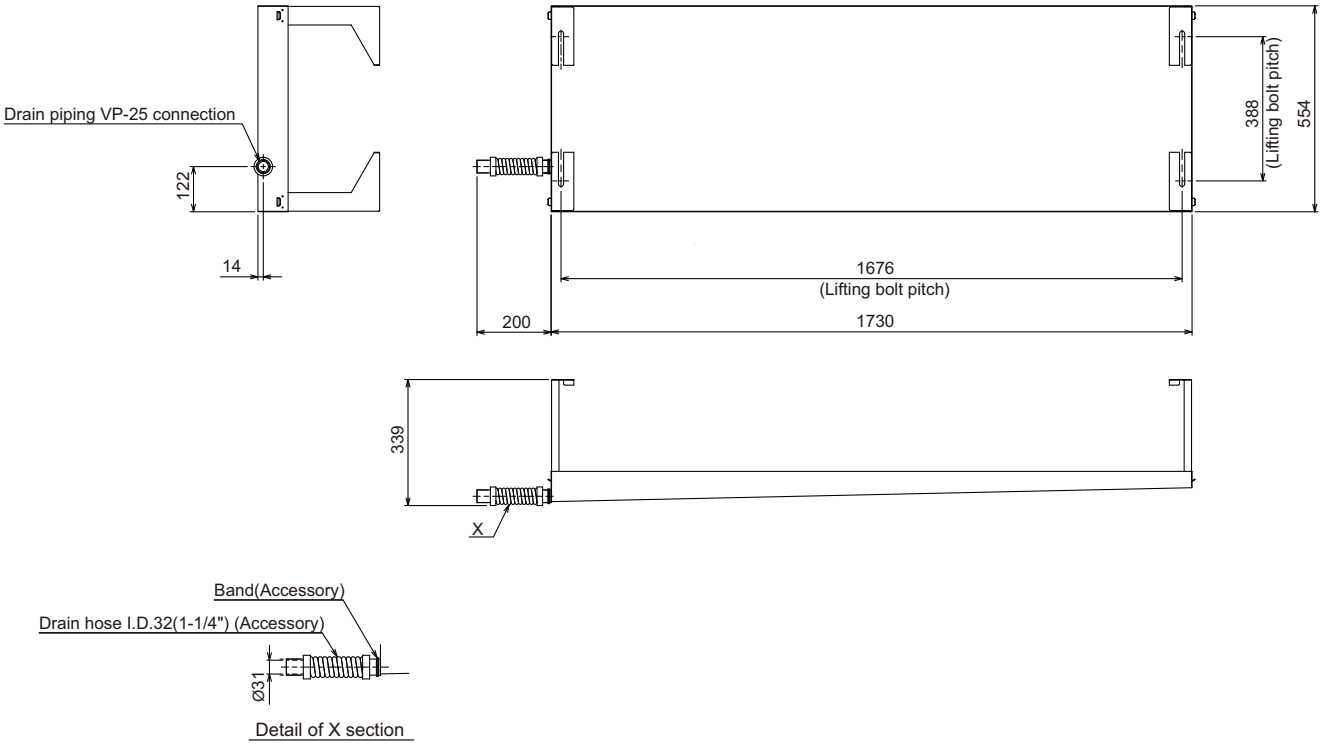
	Filter box
CMB-WP108V-G	PAC-HBC01DP-E

6-2. Sub drainpan

PAC-HBC01DP-E

<Accessories>
- Drain hose I.D.32(1-1/4") ····· 1pc.
- Hose band ····· 1pc.

Note1.This sub drainpan is an option only for HBC CONTROLLER.
Any other use is not permitted.



Capacity Table

1. Cooling [Ceiling concealed (Slim type)]

1-1. Cooling capacity with PURY-WP200-250YJM-A

PEFY-WP-VMS1-E

CA:Capacity(kW) , SHC:Sensible Heat Capacity(kW)

Model size (Rated kW)	Outdoor air temp.	Indoor air temp.													
		21.5°C D.B. 15°C W.B.		23°C D.B. 16°C W.B.		25°C D.B. 18°C W.B.		27°C D.B. 19°C W.B.		28°C D.B. 20°C W.B.		30°C D.B. 22°C W.B.		32°C D.B. 24°C W.B.	
	°C D.B.	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (1.7)	20.0	1.6	1.5	1.7	1.6	1.8	1.6	1.8	1.7	1.9	1.7	2.0	1.7	2.1	1.6
	22.5	1.6	1.5	1.7	1.6	1.8	1.6	1.8	1.7	1.9	1.7	2.0	1.7	2.1	1.6
	25.0	1.6	1.5	1.7	1.6	1.8	1.6	1.8	1.7	1.9	1.7	2.0	1.6	2.1	1.6
	27.5	1.6	1.5	1.7	1.6	1.8	1.5	1.8	1.7	1.8	1.7	2.0	1.6	2.1	1.6
	30.0	1.6	1.5	1.6	1.6	1.7	1.5	1.8	1.7	1.8	1.6	1.9	1.6	2.0	1.6
	32.5	1.6	1.5	1.6	1.5	1.7	1.5	1.7	1.6	1.8	1.6	1.9	1.6	2.0	1.6
	35.0	1.5	1.5	1.6	1.5	1.7	1.5	1.7	1.6	1.7	1.6	1.8	1.6	1.9	1.6
	37.5	1.5	1.5	1.5	1.5	1.6	1.5	1.7	1.6	1.7	1.6	1.8	1.6	1.9	1.6
	40.0	1.5	1.4	1.5	1.5	1.6	1.5	1.6	1.6	1.7	1.6	1.8	1.6	1.9	1.5
	43.0	1.4	1.4	1.5	1.5	1.6	1.5	1.6	1.6	1.6	1.6	1.7	1.6	1.8	1.5
	46.0	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.4
20 (2.2)	20.0	2.1	1.8	2.2	1.9	2.3	1.8	2.4	2.0	2.5	2.0	2.6	1.9	2.8	1.9
	22.5	2.1	1.8	2.2	1.9	2.3	1.8	2.4	2.0	2.5	2.0	2.6	1.9	2.8	1.9
	25.0	2.1	1.8	2.2	1.9	2.3	1.8	2.4	2.0	2.4	1.9	2.6	1.9	2.7	1.9
	27.5	2.1	1.8	2.1	1.8	2.3	1.8	2.3	1.9	2.4	1.9	2.5	1.9	2.7	1.9
	30.0	2.0	1.8	2.1	1.8	2.2	1.8	2.3	1.9	2.3	1.9	2.5	1.9	2.6	1.9
	32.5	2.0	1.7	2.1	1.8	2.2	1.8	2.2	1.9	2.3	1.9	2.4	1.9	2.6	1.8
	35.0	2.0	1.7	2.0	1.8	2.1	1.8	2.2	1.9	2.3	1.9	2.4	1.9	2.5	1.8
	37.5	1.9	1.7	2.0	1.8	2.1	1.8	2.2	1.9	2.2	1.9	2.3	1.8	2.5	1.8
	40.0	1.9	1.7	2.0	1.8	2.1	1.7	2.1	1.9	2.2	1.9	2.3	1.8	2.4	1.8
	43.0	1.8	1.7	1.9	1.7	2.0	1.7	2.1	1.8	2.1	1.8	2.2	1.8	2.3	1.8
	46.0	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	1.9	1.6
25 (2.8)	20.0	2.7	2.1	2.8	2.2	2.9	2.1	3.0	2.3	3.1	2.3	3.3	2.2	3.5	2.2
	22.5	2.7	2.1	2.8	2.2	2.9	2.1	3.0	2.3	3.1	2.3	3.3	2.2	3.5	2.2
	25.0	2.7	2.1	2.8	2.2	2.9	2.1	3.0	2.3	3.1	2.3	3.3	2.2	3.5	2.2
	27.5	2.7	2.1	2.7	2.1	2.9	2.1	3.0	2.3	3.0	2.2	3.2	2.2	3.4	2.2
	30.0	2.6	2.1	2.7	2.1	2.8	2.1	2.9	2.2	3.0	2.2	3.2	2.2	3.3	2.1
	32.5	2.6	2.0	2.6	2.1	2.8	2.1	2.9	2.2	2.9	2.2	3.1	2.2	3.3	2.1
	35.0	2.5	2.0	2.6	2.1	2.7	2.1	2.8	2.2	2.9	2.2	3.0	2.1	3.2	2.1
	37.5	2.5	2.0	2.5	2.1	2.7	2.0	2.8	2.2	2.8	2.1	3.0	2.1	3.1	2.1
	40.0	2.4	2.0	2.5	2.0	2.6	2.0	2.7	2.1	2.8	2.1	2.9	2.1	3.1	2.1
	43.0	2.4	1.9	2.4	2.0	2.6	2.0	2.6	2.1	2.7	2.1	2.8	2.1	3.0	2.0
	46.0	1.8	1.7	1.9	1.8	2.0	1.8	2.1	1.9	2.2	1.9	2.3	1.9	2.5	1.9
32 (3.6)	20.0	3.4	2.7	3.5	2.8	3.8	2.8	3.9	3.0	4.0	3.0	4.3	3.0	4.6	2.9
	22.5	3.4	2.7	3.5	2.8	3.8	2.8	3.9	3.0	4.0	3.0	4.3	3.0	4.6	2.9
	25.0	3.4	2.7	3.5	2.8	3.8	2.8	3.9	3.0	4.0	3.0	4.2	2.9	4.5	2.9
	27.5	3.4	2.7	3.5	2.8	3.7	2.8	3.8	3.0	3.9	3.0	4.1	2.9	4.4	2.9
	30.0	3.3	2.7	3.4	2.8	3.6	2.8	3.7	2.9	3.8	2.9	4.1	2.9	4.3	2.8
	32.5	3.3	2.7	3.4	2.8	3.6	2.7	3.7	2.9	3.8	2.9	4.0	2.8	4.2	2.8
	35.0	3.2	2.7	3.3	2.7	3.5	2.7	3.6	2.9	3.7	2.9	3.9	2.8	4.1	2.8
	37.5	3.2	2.6	3.3	2.7	3.4	2.7	3.5	2.9	3.6	2.8	3.8	2.8	4.0	2.8
	40.0	3.1	2.6	3.2	2.7	3.4	2.7	3.5	2.8	3.6	2.8	3.7	2.8	3.9	2.7
	43.0	3.0	2.6	3.1	2.6	3.3	2.6	3.4	2.8	3.5	2.8	3.6	2.7	3.8	2.7
	46.0	2.3	2.3	2.4	2.4	2.6	2.3	2.7	2.5	2.8	2.5	2.9	2.5	3.2	2.5
40 (4.5)	20.0	4.3	3.3	4.4	3.5	4.7	3.4	4.9	3.6	5.0	3.6	5.3	3.6	5.7	3.5
	22.5	4.3	3.3	4.4	3.5	4.7	3.4	4.9	3.6	5.0	3.6	5.3	3.6	5.7	3.5
	25.0	4.3	3.3	4.4	3.5	4.7	3.4	4.9	3.6	5.0	3.6	5.3	3.6	5.6	3.5
	27.5	4.3	3.3	4.4	3.4	4.6	3.4	4.8	3.6	4.9	3.6	5.2	3.5	5.5	3.5
	30.0	4.2	3.3	4.3	3.4	4.6	3.4	4.7	3.6	4.8	3.5	5.1	3.5	5.4	3.4
	32.5	4.1	3.3	4.2	3.4	4.5	3.3	4.6	3.5	4.7	3.5	5.0	3.4	5.3	3.4
	35.0	4.0	3.2	4.1	3.3	4.4	3.3	4.5	3.5	4.6	3.5	4.9	3.4	5.2	3.4
	37.5	4.0	3.2	4.1	3.3	4.3	3.2	4.4	3.5	4.5	3.4	4.8	3.4	5.0	3.3
	40.0	3.9	3.1	4.0	3.3	4.2	3.2	4.3	3.4	4.4	3.4	4.7	3.3	4.9	3.3
	43.0	3.8	3.1	3.9	3.2	4.1	3.2	4.2	3.4	4.3	3.4	4.5	3.3	4.8	3.2
	46.0	2.9	2.7	3.0	2.8	3.3	2.8	3.4	3.0	3.5	3.0	3.7	3.0	4.0	3.0
50 (5.6)	20.0	5.3	4.2	5.5	4.3	5.9	4.3	6.1	4.6	6.2	4.6	6.6	4.5	7.1	4.4
	22.5	5.3	4.2	5.5	4.3	5.9	4.3	6.1	4.6	6.2	4.6	6.6	4.5	7.1	4.4
	25.0	5.3	4.2	5.5	4.3	5.9	4.3	6.0	4.6	6.2	4.5	6.6	4.5	7.0	4.4
	27.5	5.3	4.2	5.5	4.3	5.8	4.3	5.9	4.5	6.1	4.5	6.4	4.4	6.8	4.4
	30.0	5.2	4.1	5.4	4.3	5.7	4.2	5.8	4.5	6.0	4.4	6.3	4.4	6.7	4.3
	32.5	5.1	4.1	5.3	4.2	5.6	4.2	5.7	4.4	5.9	4.4	6.2	4.3	6.6	4.3
	35.0	5.0	4.0	5.2	4.2	5.5	4.1	5.6	4.4	5.8	4.4	6.1	4.3	6.4	4.2
	37.5	4.9	4.0	5.1	4.1	5.4	4.1	5.5	4.3	5.6	4.3	5.9	4.2	6.3	4.2
	40.0	4.8	4.0	5.0	4.1	5.3	4.0	5.4	4.3	5.5	4.3	5.8	4.2	6.1	4.1
	43.0	4.7	3.9	4.8	4.0	5.1	4.0	5.3	4.3	5.4	4.2	5.6	4.1	6.0	4.1
	46.0	3.6	3.4	3.8	3.6	4.1	3.5	4.2	3.8	4.3	3.8	4.6	3.8	4.9	3.7

kcal/h=kW x 860 , BTU/h = kW x 3,412

CT

2. Cooling [Ceiling concealed (Middle static pressure type)]

2-1. Cooling capacity with PURY-WP200-250YJM-A

PEFY-WP-VMA-E

CA:Capacity(kW) , SHC:Sensible Heat Capacity(kW)

Model size (Rated kW)	Outdoor air temp.	Indoor air temp.													
		21.5°C D.B. 15°C W.B.		23°C D.B. 16°C W.B.		25°C D.B. 18°C W.B.		27°C D.B. 19°C W.B.		28°C D.B. 20°C W.B.		30°C D.B. 22°C W.B.		32°C D.B. 24°C W.B.	
	°C D.B.	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
20 (2.2)	20.0	2.1	1.8	2.2	1.9	2.3	1.9	2.4	2.0	2.5	2.0	2.6	2.0	2.8	2.0
	22.5	2.1	1.8	2.2	1.9	2.3	1.9	2.4	2.0	2.5	2.0	2.6	2.0	2.8	2.0
	25.0	2.1	1.8	2.2	1.9	2.3	1.9	2.4	2.0	2.4	2.0	2.6	2.0	2.7	2.0
	27.5	2.1	1.8	2.1	1.9	2.3	1.9	2.3	2.0	2.4	2.0	2.5	2.0	2.7	2.0
	30.0	2.0	1.8	2.1	1.9	2.2	1.9	2.3	2.0	2.3	2.0	2.5	2.0	2.6	1.9
	32.5	2.0	1.8	2.1	1.9	2.2	1.9	2.2	2.0	2.3	2.0	2.4	1.9	2.6	1.9
	35.0	2.0	1.8	2.0	1.9	2.1	1.8	2.2	2.0	2.3	2.0	2.4	1.9	2.5	1.9
	37.5	1.9	1.8	2.0	1.8	2.1	1.8	2.2	2.0	2.2	1.9	2.3	1.9	2.5	1.9
	40.0	1.9	1.8	2.0	1.8	2.1	1.8	2.1	1.9	2.2	1.9	2.3	1.9	2.4	1.9
	43.0	1.8	1.7	1.9	1.8	2.0	1.8	2.1	1.9	2.1	1.9	2.2	1.9	2.3	1.9
	46.0	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	1.9	1.7
25 (2.8)	20.0	2.7	2.5	2.8	2.7	2.9	2.6	3.0	2.8	3.1	2.8	3.3	2.8	3.5	2.8
	22.5	2.7	2.5	2.8	2.7	2.9	2.6	3.0	2.8	3.1	2.8	3.3	2.8	3.5	2.8
	25.0	2.7	2.5	2.8	2.7	2.9	2.6	3.0	2.8	3.1	2.8	3.3	2.8	3.5	2.8
	27.5	2.7	2.5	2.7	2.6	2.9	2.6	3.0	2.8	3.0	2.8	3.2	2.8	3.4	2.7
	30.0	2.6	2.5	2.7	2.6	2.8	2.6	2.9	2.8	3.0	2.8	3.2	2.7	3.3	2.7
	32.5	2.6	2.5	2.6	2.6	2.8	2.6	2.9	2.8	2.9	2.8	3.1	2.7	3.3	2.7
	35.0	2.5	2.5	2.6	2.6	2.7	2.6	2.8	2.8	2.9	2.7	3.0	2.7	3.2	2.7
	37.5	2.5	2.5	2.5	2.5	2.7	2.5	2.8	2.7	2.8	2.7	3.0	2.7	3.1	2.6
	40.0	2.4	2.4	2.5	2.5	2.6	2.5	2.7	2.7	2.8	2.7	2.9	2.7	3.1	2.6
	43.0	2.4	2.4	2.4	2.4	2.6	2.5	2.6	2.6	2.7	2.7	2.8	2.6	3.0	2.6
	46.0	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.5	2.4
32 (3.6)	20.0	3.4	3.1	3.5	3.2	3.8	3.2	3.9	3.5	4.0	3.4	4.3	3.4	4.6	3.4
	22.5	3.4	3.1	3.5	3.2	3.8	3.2	3.9	3.5	4.0	3.4	4.3	3.4	4.6	3.4
	25.0	3.4	3.1	3.5	3.2	3.8	3.2	3.9	3.5	4.0	3.4	4.2	3.4	4.5	3.3
	27.5	3.4	3.1	3.5	3.2	3.7	3.2	3.8	3.4	3.9	3.4	4.1	3.4	4.4	3.3
	30.0	3.3	3.1	3.4	3.2	3.6	3.2	3.7	3.4	3.8	3.4	4.1	3.3	4.3	3.3
	32.5	3.3	3.1	3.4	3.2	3.6	3.1	3.7	3.4	3.8	3.4	4.0	3.3	4.2	3.3
	35.0	3.2	3.0	3.3	3.1	3.5	3.1	3.6	3.3	3.7	3.3	3.9	3.3	4.1	3.2
	37.5	3.2	3.0	3.3	3.1	3.4	3.1	3.5	3.3	3.6	3.3	3.8	3.2	4.0	3.2
	40.0	3.1	3.0	3.2	3.1	3.4	3.1	3.5	3.3	3.6	3.3	3.7	3.2	3.9	3.2
	43.0	3.0	2.9	3.1	3.1	3.3	3.0	3.4	3.3	3.5	3.2	3.6	3.2	3.8	3.1
	46.0	2.3	2.3	2.4	2.4	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.2	2.9
40 (4.5)	20.0	4.3	3.9	4.4	4.0	4.7	4.0	4.9	4.3	5.0	4.3	5.3	4.2	5.7	4.2
	22.5	4.3	3.9	4.4	4.0	4.7	4.0	4.9	4.3	5.0	4.3	5.3	4.2	5.7	4.2
	25.0	4.3	3.9	4.4	4.0	4.7	4.0	4.9	4.3	5.0	4.3	5.3	4.2	5.6	4.2
	27.5	4.3	3.9	4.4	4.0	4.6	4.0	4.8	4.3	4.9	4.2	5.2	4.2	5.5	4.1
	30.0	4.2	3.8	4.3	4.0	4.6	3.9	4.7	4.2	4.8	4.2	5.1	4.1	5.4	4.1
	32.5	4.1	3.8	4.2	3.9	4.5	3.9	4.6	4.2	4.7	4.2	5.0	4.1	5.3	4.0
	35.0	4.0	3.8	4.1	3.9	4.4	3.9	4.5	4.2	4.6	4.1	4.9	4.1	5.2	4.0
	37.5	4.0	3.7	4.1	3.9	4.3	3.8	4.4	4.1	4.5	4.1	4.8	4.0	5.0	4.0
	40.0	3.9	3.7	4.0	3.8	4.2	3.8	4.3	4.1	4.4	4.1	4.7	4.0	4.9	3.9
	43.0	3.8	3.6	3.9	3.8	4.1	3.8	4.2	4.1	4.3	4.0	4.5	4.0	4.8	3.9
	46.0	2.9	2.9	3.0	3.0	3.3	3.3	3.4	3.4	3.5	3.5	3.7	3.7	4.0	3.6
50 (5.6)	20.0	5.3	4.3	5.5	4.5	5.9	4.5	6.1	4.8	6.2	4.7	6.6	4.7	7.1	4.6
	22.5	5.3	4.3	5.5	4.5	5.9	4.5	6.1	4.8	6.2	4.7	6.6	4.7	7.1	4.6
	25.0	5.3	4.3	5.5	4.5	5.9	4.5	6.0	4.8	6.2	4.7	6.6	4.7	7.0	4.6
	27.5	5.3	4.3	5.5	4.5	5.8	4.4	5.9	4.7	6.1	4.7	6.4	4.6	6.8	4.6
	30.0	5.2	4.3	5.4	4.4	5.7	4.4	5.8	4.7	6.0	4.6	6.3	4.6	6.7	4.5
	32.5	5.1	4.2	5.3	4.4	5.6	4.3	5.7	4.6	5.9	4.6	6.2	4.5	6.6	4.5
	35.0	5.0	4.2	5.2	4.3	5.5	4.3	5.6	4.6	5.8	4.6	6.1	4.5	6.4	4.4
	37.5	4.9	4.2	5.1	4.3	5.4	4.3	5.5	4.5	5.6	4.5	5.9	4.4	6.3	4.4
	40.0	4.8	4.1	5.0	4.3	5.3	4.2	5.4	4.5	5.5	4.5	5.8	4.4	6.1	4.3
	43.0	4.7	4.1	4.8	4.2	5.1	4.2	5.3	4.5	5.4	4.4	5.6	4.3	6.0	4.3
	46.0	3.6	3.6	3.8	3.7	4.1	3.7	4.2	4.0	4.3	4.0	4.6	4.0	4.9	3.9

kcal/h=kW x 860 , BTU/h = kW x 3,412

CT

3. Cooling [Floor standing (Concealed type)]

3-1. Cooling capacity with PURY-WP200-250YJM-A

PFFY-WP-VLRMM-E

CA:Capacity(kW) , SHC:Sensible Heat Capacity(kW)

Model size (Rated kW)	Outdoor air temp.	Indoor air temp.													
		21.5°C D.B. 15°C W.B.		23°C D.B. 16°C W.B.		25°C D.B. 18°C W.B.		27°C D.B. 19°C W.B.		28°C D.B. 20°C W.B.		30°C D.B. 22°C W.B.		32°C D.B. 24°C W.B.	
	°C D.B.	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
20 (2.2)	20.0	2.1	1.6	2.2	1.7	2.3	1.6	2.4	1.7	2.5	1.7	2.6	1.7	2.8	1.7
	22.5	2.1	1.6	2.2	1.7	2.3	1.6	2.4	1.7	2.5	1.7	2.6	1.7	2.8	1.7
	25.0	2.1	1.6	2.2	1.7	2.3	1.6	2.4	1.7	2.4	1.7	2.6	1.7	2.7	1.7
	27.5	2.1	1.6	2.1	1.6	2.3	1.6	2.3	1.7	2.4	1.7	2.5	1.7	2.7	1.7
	30.0	2.0	1.6	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.7	2.5	1.7	2.6	1.6
	32.5	2.0	1.6	2.1	1.6	2.2	1.6	2.2	1.7	2.3	1.7	2.4	1.6	2.6	1.6
	35.0	2.0	1.5	2.0	1.6	2.1	1.6	2.2	1.7	2.3	1.7	2.4	1.6	2.5	1.6
	37.5	1.9	1.5	2.0	1.6	2.1	1.6	2.2	1.6	2.2	1.6	2.3	1.6	2.5	1.6
	40.0	1.9	1.5	2.0	1.6	2.1	1.5	2.1	1.6	2.2	1.6	2.3	1.6	2.4	1.6
	43.0	1.8	1.5	1.9	1.5	2.0	1.5	2.1	1.6	2.1	1.6	2.2	1.6	2.3	1.5
	46.0	1.4	1.3	1.5	1.3	1.6	1.3	1.7	1.4	1.7	1.4	1.8	1.4	1.9	1.4
25 (2.8)	20.0	2.7	2.1	2.8	2.2	2.9	2.2	3.0	2.3	3.1	2.3	3.3	2.3	3.5	2.2
	22.5	2.7	2.1	2.8	2.2	2.9	2.2	3.0	2.3	3.1	2.3	3.3	2.3	3.5	2.2
	25.0	2.7	2.1	2.8	2.2	2.9	2.2	3.0	2.3	3.1	2.3	3.3	2.2	3.5	2.2
	27.5	2.7	2.1	2.7	2.2	2.9	2.1	3.0	2.3	3.0	2.3	3.2	2.2	3.4	2.2
	30.0	2.6	2.1	2.7	2.1	2.8	2.1	2.9	2.3	3.0	2.2	3.2	2.2	3.3	2.2
	32.5	2.6	2.1	2.6	2.1	2.8	2.1	2.9	2.2	2.9	2.2	3.1	2.2	3.3	2.1
	35.0	2.5	2.0	2.6	2.1	2.7	2.1	2.8	2.2	2.9	2.2	3.0	2.2	3.2	2.1
	37.5	2.5	2.0	2.5	2.1	2.7	2.1	2.8	2.2	2.8	2.2	3.0	2.1	3.1	2.1
	40.0	2.4	2.0	2.5	2.1	2.6	2.0	2.7	2.2	2.8	2.2	2.9	2.1	3.1	2.1
	43.0	2.4	2.0	2.4	2.0	2.6	2.0	2.6	2.1	2.7	2.1	2.8	2.1	3.0	2.1
	46.0	1.8	1.7	1.9	1.8	2.0	1.8	2.1	1.9	2.2	1.9	2.3	1.9	2.5	1.9
32 (3.6)	20.0	3.4	2.6	3.5	2.7	3.8	2.7	3.9	2.9	4.0	2.9	4.3	2.8	4.6	2.8
	22.5	3.4	2.6	3.5	2.7	3.8	2.7	3.9	2.9	4.0	2.9	4.3	2.8	4.6	2.8
	25.0	3.4	2.6	3.5	2.7	3.8	2.7	3.9	2.9	4.0	2.8	4.2	2.8	4.5	2.8
	27.5	3.4	2.6	3.5	2.7	3.7	2.7	3.8	2.8	3.9	2.8	4.1	2.8	4.4	2.7
	30.0	3.3	2.6	3.4	2.7	3.6	2.6	3.7	2.8	3.8	2.8	4.1	2.7	4.3	2.7
	32.5	3.3	2.6	3.4	2.6	3.6	2.6	3.7	2.8	3.8	2.8	4.0	2.7	4.2	2.7
	35.0	3.2	2.5	3.3	2.6	3.5	2.6	3.6	2.7	3.7	2.7	3.9	2.7	4.1	2.6
	37.5	3.2	2.5	3.3	2.6	3.4	2.6	3.5	2.7	3.6	2.7	3.8	2.6	4.0	2.6
	40.0	3.1	2.5	3.2	2.6	3.4	2.5	3.5	2.7	3.6	2.7	3.7	2.6	3.9	2.6
	43.0	3.0	2.4	3.1	2.5	3.3	2.5	3.4	2.7	3.5	2.6	3.6	2.6	3.8	2.5
	46.0	2.3	2.1	2.4	2.2	2.6	2.2	2.7	2.4	2.8	2.4	2.9	2.3	3.2	2.3
40 (4.5)	20.0	4.3	3.2	4.4	3.4	4.7	3.3	4.9	3.5	5.0	3.5	5.3	3.5	5.7	3.4
	22.5	4.3	3.2	4.4	3.4	4.7	3.3	4.9	3.5	5.0	3.5	5.3	3.5	5.7	3.4
	25.0	4.3	3.2	4.4	3.4	4.7	3.3	4.9	3.5	5.0	3.5	5.3	3.4	5.6	3.4
	27.5	4.3	3.2	4.4	3.3	4.6	3.3	4.8	3.5	4.9	3.5	5.2	3.4	5.5	3.4
	30.0	4.2	3.2	4.3	3.3	4.6	3.3	4.7	3.5	4.8	3.4	5.1	3.4	5.4	3.3
	32.5	4.1	3.2	4.2	3.3	4.5	3.2	4.6	3.4	4.7	3.4	5.0	3.3	5.3	3.3
	35.0	4.0	3.1	4.1	3.2	4.4	3.2	4.5	3.4	4.6	3.4	4.9	3.3	5.2	3.2
	37.5	4.0	3.1	4.1	3.2	4.3	3.1	4.4	3.3	4.5	3.3	4.8	3.3	5.0	3.2
	40.0	3.9	3.1	4.0	3.1	4.2	3.1	4.3	3.3	4.4	3.3	4.7	3.2	4.9	3.2
	43.0	3.8	3.0	3.9	3.1	4.1	3.1	4.2	3.3	4.3	3.2	4.5	3.2	4.8	3.1
	46.0	2.9	2.6	3.0	2.7	3.3	2.7	3.4	2.9	3.5	2.9	3.7	2.9	4.0	2.8
50 (5.6)	20.0	5.3	4.0	5.5	4.2	5.9	4.1	6.1	4.4	6.2	4.4	6.6	4.3	7.1	4.3
	22.5	5.3	4.0	5.5	4.2	5.9	4.1	6.1	4.4	6.2	4.4	6.6	4.3	7.1	4.3
	25.0	5.3	4.0	5.5	4.2	5.9	4.1	6.0	4.4	6.2	4.4	6.6	4.3	7.0	4.2
	27.5	5.3	4.0	5.5	4.1	5.8	4.1	5.9	4.3	6.1	4.3	6.4	4.2	6.8	4.2
	30.0	5.2	4.0	5.4	4.1	5.7	4.1	5.8	4.3	6.0	4.3	6.3	4.2	6.7	4.1
	32.5	5.1	3.9	5.3	4.1	5.6	4.0	5.7	4.2	5.9	4.2	6.2	4.1	6.6	4.1
	35.0	5.0	3.9	5.2	4.0	5.5	4.0	5.6	4.2	5.8	4.2	6.1	4.1	6.4	4.0
	37.5	4.9	3.8	5.1	4.0	5.4	3.9	5.5	4.2	5.6	4.1	5.9	4.0	6.3	4.0
	40.0	4.8	3.8	5.0	3.9	5.3	3.9	5.4	4.1	5.5	4.1	5.8	4.0	6.1	3.9
	43.0	4.7	3.7	4.8	3.9	5.1	3.8	5.3	4.1	5.4	4.0	5.6	3.9	6.0	3.9
	46.0	3.6	3.3	3.8	3.4	4.1	3.4	4.2	3.6	4.3	3.6	4.6	3.6	4.9	3.5

kcal/h=kW x 860 , BTU/h = kW x 3,412

CT

4. Heating [All indoor units]

4-1. Heating capacity with PURY-WP200-250YJM-A

All Indoor units SHC:Sensible Heat Capacity(kW)

Model size (Rated kW)	Outdoor air temp. °C W.B.	Indoor air temp. 15°C D.B. SHC	20°C D.B. SHC	25°C D.B. SHC	27°C D.B. SHC
15 (1.9)	-20.0	1.3	1.3	1.3	1.3
	-15.0	1.4	1.4	1.4	1.3
	-10.0	1.6	1.6	1.5	1.3
	-5.0	1.8	1.8	1.5	1.3
	0.0	1.9	1.9	1.5	1.3
	2.5	1.9	1.9	1.5	1.3
	6.0	1.9	1.9	1.5	1.3
	7.5	2.0	1.9	1.5	1.3
	10.0	2.1	1.9	1.5	1.3
	12.5	2.2	1.9	1.5	1.3
	15.5	2.4	1.9	1.5	1.3
20 (2.5)	-20.0	1.7	1.7	1.7	1.7
	-15.0	1.9	1.9	1.8	1.7
	-10.0	2.1	2.0	2.0	1.8
	-5.0	2.3	2.3	2.0	1.8
	0.0	2.5	2.5	2.0	1.8
	2.5	2.5	2.5	2.0	1.8
	6.0	2.5	2.5	2.0	1.8
	7.5	2.6	2.5	2.0	1.8
	10.0	2.7	2.5	2.0	1.8
	12.5	2.9	2.5	2.0	1.8
	15.5	3.1	2.5	2.0	1.8
25 (3.2)	-20.0	2.2	2.2	2.2	2.1
	-15.0	2.4	2.4	2.3	2.2
	-10.0	2.6	2.6	2.5	2.2
	-5.0	3.0	3.0	2.6	2.2
	0.0	3.2	3.2	2.6	2.2
	2.5	3.2	3.2	2.6	2.2
	6.0	3.2	3.2	2.6	2.2
	7.5	3.3	3.2	2.6	2.2
	10.0	3.5	3.2	2.6	2.2
	12.5	3.7	3.2	2.6	2.2
	15.5	4.0	3.2	2.6	2.2
32 (4.0)	-20.0	2.8	2.7	2.7	2.7
	-15.0	3.0	3.0	2.9	2.8
	-10.0	3.3	3.3	3.2	2.8
	-5.0	3.7	3.7	3.2	2.8
	0.0	4.0	4.0	3.2	2.8
	2.5	4.0	4.0	3.2	2.8
	6.0	4.0	4.0	3.2	2.8
	7.5	4.1	4.0	3.2	2.8
	10.0	4.4	4.0	3.2	2.8
	12.5	4.6	4.0	3.2	2.8
	15.5	5.0	4.0	3.2	2.8
40 (5.0)	-20.0	3.5	3.4	3.4	3.3
	-15.0	3.7	3.7	3.6	3.5
	-10.0	4.1	4.1	3.9	3.5
	-5.0	4.7	4.6	4.0	3.5
	0.0	5.1	5.0	4.0	3.5
	2.5	5.1	5.0	4.0	3.5
	6.0	5.1	5.0	4.0	3.5
	7.5	5.2	5.0	4.0	3.5
	10.0	5.5	5.0	4.0	3.5
	12.5	5.8	5.0	4.0	3.5
	15.5	6.3	5.0	4.0	3.5
50 (6.3)	-20.0	4.4	4.3	4.3	4.2
	-15.0	4.7	4.7	4.5	4.4
	-10.0	5.2	5.2	5.0	4.4
	-5.0	5.9	5.8	5.0	4.4
	0.0	6.4	6.3	5.0	4.4
	2.5	6.4	6.3	5.0	4.4
	6.0	6.4	6.3	5.0	4.4
	7.5	6.5	6.3	5.0	4.4
	10.0	6.9	6.3	5.0	4.4
	12.5	7.3	6.3	5.0	4.4
	15.5	7.9	6.3	5.0	4.4

kcal/h=kW x 860 , BTU/h = kW x 3,412

CT

4. Heating [All indoor units]

4-2. Heating capacity with PURY-WP200-250YJM-A "COP priority mode"

All Indoor units SHC:Sensible Heat Capacity(kW)

Model size (Rated kW)	Outdoor air temp. °C W.B.	Indoor air temp. 15°C D.B. SHC	20°C D.B. SHC	25°C D.B. SHC	27°C D.B. SHC
15 (1.9)	-20.0	1.0	1.0	1.0	0.9
	-15.0	1.2	1.2	1.1	1.1
	-10.0	1.4	1.4	1.3	1.3
	-5.0	1.6	1.6	1.5	1.3
	0.0	1.8	1.8	1.5	1.3
	2.5	1.9	1.9	1.5	1.3
	6.0	2.0	1.9	1.5	1.3
	7.5	2.0	1.9	1.5	1.3
	10.0	2.2	1.9	1.5	1.3
	12.5	2.3	1.9	1.5	1.3
	15.5	2.4	1.9	1.5	1.3
20 (2.5)	-20.0	1.3	1.3	1.3	1.2
	-15.0	1.6	1.5	1.5	1.5
	-10.0	1.8	1.8	1.7	1.7
	-5.0	2.1	2.1	2.0	1.8
	0.0	2.4	2.3	2.0	1.8
	2.5	2.5	2.5	2.0	1.8
	6.0	2.6	2.5	2.0	1.8
	7.5	2.7	2.5	2.0	1.8
	10.0	2.8	2.5	2.0	1.8
	12.5	3.0	2.5	2.0	1.8
	15.5	3.2	2.5	2.0	1.8
25 (3.2)	-20.0	1.6	1.6	1.6	1.6
	-15.0	2.0	2.0	1.9	1.9
	-10.0	2.3	2.3	2.2	2.2
	-5.0	2.7	2.6	2.6	2.2
	0.0	3.0	3.0	2.6	2.2
	2.5	3.2	3.2	2.6	2.2
	6.0	3.3	3.2	2.6	2.2
	7.5	3.4	3.2	2.6	2.2
	10.0	3.6	3.2	2.6	2.2
	12.5	3.9	3.2	2.6	2.2
	15.5	4.1	3.2	2.6	2.2
32 (4.0)	-20.0	2.0	2.0	2.0	2.0
	-15.0	2.5	2.4	2.4	2.4
	-10.0	2.9	2.9	2.8	2.7
	-5.0	3.3	3.3	3.2	2.8
	0.0	3.8	3.7	3.2	2.8
	2.5	4.0	4.0	3.2	2.8
	6.0	4.1	4.0	3.2	2.8
	7.5	4.3	4.0	3.2	2.8
	10.0	4.6	4.0	3.2	2.8
	12.5	4.8	4.0	3.2	2.8
	15.5	5.1	4.0	3.2	2.8
40 (5.0)	-20.0	2.6	2.5	2.5	2.5
	-15.0	3.1	3.1	3.0	3.0
	-10.0	3.6	3.6	3.5	3.4
	-5.0	4.2	4.1	4.0	3.5
	0.0	4.7	4.7	4.0	3.5
	2.5	5.0	4.9	4.0	3.5
	6.0	5.2	5.0	4.0	3.5
	7.5	5.4	5.0	4.0	3.5
	10.0	5.7	5.0	4.0	3.5
	12.5	6.0	5.0	4.0	3.5
	15.5	6.4	5.0	4.0	3.5
50 (6.3)	-20.0	3.2	3.2	3.2	3.1
	-15.0	3.9	3.8	3.8	3.7
	-10.0	4.6	4.5	4.4	4.3
	-5.0	5.3	5.2	5.0	4.4
	0.0	6.0	5.9	5.0	4.4
	2.5	6.3	6.2	5.0	4.4
	6.0	6.5	6.3	5.0	4.4
	7.5	6.8	6.3	5.0	4.4
	10.0	7.2	6.3	5.0	4.4
	12.5	7.6	6.3	5.0	4.4
	15.5	8.1	6.3	5.0	4.4

kcal/h=kW x 860 , BTU/h = kW x 3,412

CT

HYBRID CITY MULTI
2. OUTDOOR UNITS

OUTDOOR UNITS

1. SPECIFICATIONS

OUTDOOR

Model			PURY-WP200YJM-A	PURY-WP250YJM-A
Power source			3-phase 4-wire 380-400-415 V 50/60 Hz	3-phase 4-wire 380-400-415 V 50/60 Hz
Cooling capacity			Cooling 100%	Cooling 100%
(Nominal)	*1	kW	22.4	28.0
	*1	kcal/h	19,300	24,100
	*1	BTU/h	76,400	95,500
	Power input	kW	4.79	6.99
	Current input	A	8.0-7.6-7.4	11.8-11.2-10.8
	COP	kW/kW	4.67	4.00
Temp. range of	Indoor	W.B.	15.0~24.0 °C (59~75 °F)	15.0~24.0 °C (59~75 °F)
cooling	Outdoor	D.B.	-5.0~46.0 °C (23~115 °F)	-5.0~46.0 °C (23~115 °F)
Heating capacity			Heating 100%	Heating 100%
(Nominal)	*2	kW	25.0	31.5
	*2	kcal/h	21,500	27,100
	*2	BTU/h	85,300	107,500
	Power input	kW	5.28	6.98
	Current input	A	8.9-8.4-8.1	11.7-11.1-10.7
	COP	kW/kW	4.73	4.51
Temp. range of	Indoor	D.B.	15.0~27.0 °C (59~81 °F)	15.0~27.0 °C (59~81 °F)
heating	Outdoor	W.B.	-20.0~15.5 °C (-4~60 °F)	-20.0~15.5 °C (-4~60 °F)
Indoor unit	Total capacity		50~150%	50~150%
connectable	Model / Quantity		WP15~WP50/1~20	WP15~WP50/1~24
Sound pressure level (measured in anechoic room)		dB <A>	60	60
Power pressure level (measured in anechoic room)		dB <A>	80	80
Refrigerant	High pressure	mm (in.)	15.88 (5/8) Brazed	19.05 (3/4) Brazed
piping diameter	Low pressure	mm (in.)	19.05 (3/4) Brazed	22.2 (7/8) Brazed
FAN	Type x Quantity		Propeller fan x 1	Propeller fan x 1
	Air flow rate	m^3/min	225	225
		L/s	3,750	3,750
		cfm	7,945	7,945
	Control, Driving mechanism		Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor
	Motor output	kW	0.92 x 1	0.92 x 1
*3	External static press.		0 Pa (0 mmH_2O)	0 Pa (0 mmH_2O)
Compressor	Type x Quantity		Inverter scroll hermetic compressor	Inverter scroll hermetic compressor
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	5.4	6.8
	Case heater	kW	0.045 (240 V)	0.045 (240 V)
	Lubricant		MEL32	MEL32
External finish			Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 5Y 8/1 or similar>	Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 5Y 8/1 or similar>
External dimension HxWxD		mm	1,710 (1,650 without legs) x 1,220 x 760	1,710 (1,650 without legs) x 1,220 x 760
		in.	67-3/8 (65 without legs) x 48-1/16 x 29-15/16	67-3/8 (65 without legs) x 48-1/16 x 29-15/16
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Fan motor		Thermal switch	Thermal switch
Refrigerant	Type x original charge		R410A x 11.8 kg (27 lbs)	R410A x 11.8 kg (27 lbs)
	Control		LEV and HIC circuit	LEV and HIC circuit
Net weight		kg (lbs)	270 (596)	270 (596)
Heat exchanger			Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube
HIC circuit (HIC: Heat Inter-Changer)			-	-
Defrosting method			Auto-defrost mode (Reversed refrigerant cycle)	Auto-defrost mode (Reversed refrigerant cycle)
Drawing	External		-	-
	Wiring		-	-
Standard attachment	Document		Installation Manual	Installation Manual
	Accessory		Refrigerant conn. pipe	Refrigerant conn. pipe
Optional parts				
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.	Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.

Notes :

1.Nominal HVRF cooling conditions
Indoor: 27 °CD.B./19 °CW.B. (81 °FD.B./66 °FW.B.), Outside: 35 °CD.B. (95 °FD.B.)
Water pipe length: 5 m (16-3/8 ft.), Refrigerant pipe length: 2.5 m (8-3/16 ft.), Level deference: 0 m (0 ft.)
2.Nominal HVRF heating conditions
Indoor: 20 °CD.B. (68 °FD.B.), Outside: 7 °CD.B./6 °CW.B. (45 °FD.B./43 °FW.B.)
Water pipe length: 5 m (16-3/8 ft.), Refrigerant pipe length: 2.5 m (8-3/16 ft.), Level deference: 0 m (0 ft.)
3.External static pressure option is available (30 Pa, 60 Pa/3.1 mmH_2O, 6.1 mmH_2O).

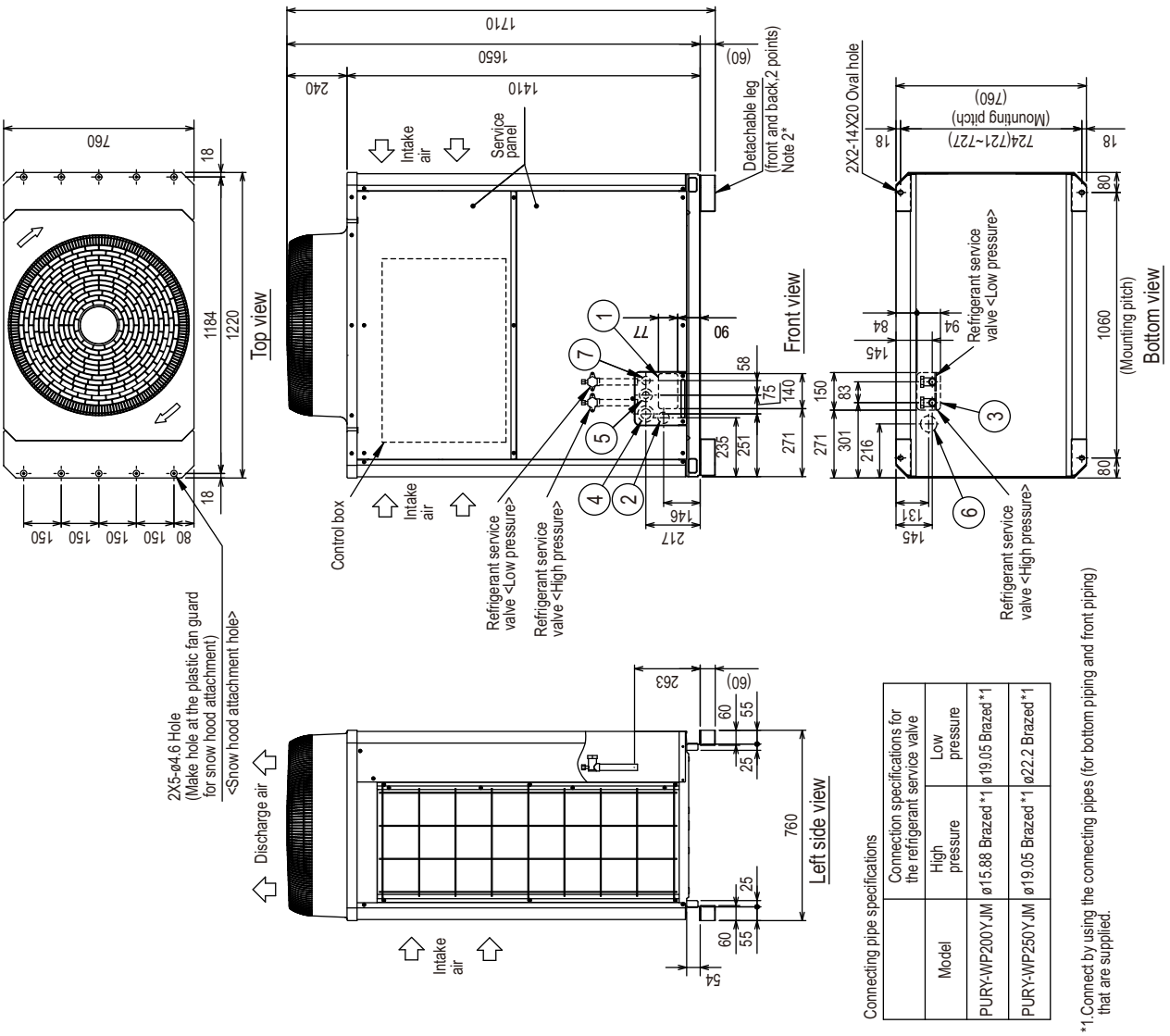
Unit converter	
kcal	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg / 0.4536

*Above specification data is subject to rounding variation.

2. EXTERNAL DIMENSIONS

PURY-WP200,250YJM-A

Unit : mm



<Accessories>
● Connecting pipe
<Low pressure> · Elbow(ID⌀19.05XOD⌀19.05) · · ·WP200 1 pc.
· Pipe(ID⌀25.4XOD⌀19.05) · · · · ·WP200 1 pc.
· Pipe(ID⌀25.4XID⌀22.2) · · · · · ·WP250 1 pc.
<High pressure> · Elbow(ID⌀15.88XID⌀15.88) · · ·WP200 1 pc.
· Elbow(ID⌀19.05XOD⌀19.05) · · ·WP250 1 pc.
· Pipe(ID⌀25.4XOD⌀15.88) · · · · ·WP200 1 pc.
· Pipe(ID⌀25.4XOD⌀19.05) · · · · ·WP250 1 pc.

Note 1.Please refer to the next page for information regarding necessary spacing around the unit and foundation work.
2.The detachable leg can be removed at site.
3.At brazing of pipes,wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C.

NO.	Usage		Specifications
①	For pipes	Front through hole	140X77 Knockout hole
②		Front through hole (Uses when twinning kit (optional parts) is mounted.)	ø45 Knockout hole
③		Bottom through hole	150X94 Knockout hole
④	For wires	Front through hole	ø65 or ø40 Knockout hole
⑤		Front through hole	ø52 or ø27 Knockout hole
⑥		Bottom through hole	ø65 Knockout hole
⑦	For transmission cables	Front through hole	ø34 Knockout hole

Connecting pipe specifications

Model	Connection specifications for the refrigerant service valve	
	High pressure	Low pressure
PURY-WP200YJM	ø15.88 Brazed *1	ø19.05 Brazed *1
PURY-WP250YJM	ø19.05 Brazed *1	ø22.2 Brazed *1

*1.Connect by using the connecting pipes (for bottom piping and front piping) that are supplied.

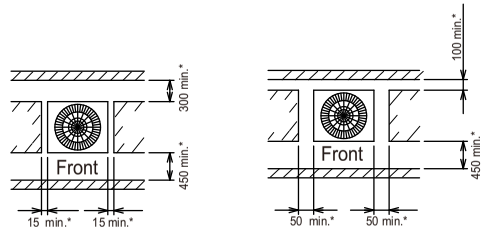
1.Required space around the unit

● In case of single installation

① Secure enough space around the unit as shown in the figure below.

· With a space of at least 300mm to the wall on the back of the unit

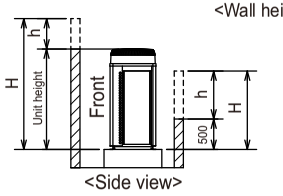
· With a space of at least 100mm to the wall on the back of the unit



<Unit:mm>

② When the height of the walls on the front,back or on the sides<H> exceeds the wall height limit as defined below add the height that exceeds the height limit <h> to the figures that are marked with an asterisk.

<Wall height limit> Front :Up to the unit height
Back :Up to 500mm from the unit bottom
Side :Up to the unit height

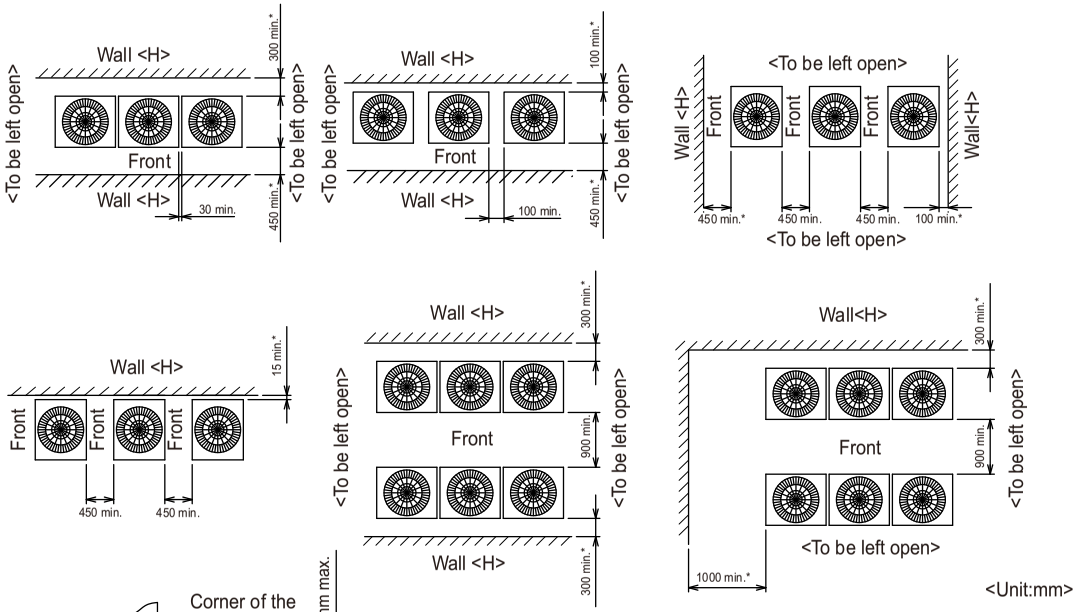


2.Foundation work

① Take into consideration the surface strength,water drainage route, piping route,and wiring route when preparing the installation site. <Note that the drain water comes out of the unit during operation.>
② Build the foundation in such way that the corner of the installation leg is securely supported as shown in the right figure.(Fig.A,B) When using a rubber isolating cushion, please ensure it is large enough to cover the entire width of each of the unit's legs.
③ The protrusion length of the anchor bolt must not exceed 30mm.(Fig.A,B)
④ Use four fixing plates as shown in the right figure <field supply required> when using post-installed anchor bolts.(Fig.C,D)
⑤ To prevent small animals and water and snow from entering the unit and damaging its parts,close the gap around the edges of through holes for pipes and wires with filler plates <field supply required>.
⑥ When the pipes or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.
⑦ Refer to the Installation Manual when installing units on an installation base.

● In case of collective installation

① When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and walkway between groups of units as shown in the figures below.
② At least two sides must be left open.
③ As with the single installation, add the height that exceeds the height limit <h> to the figures that are marked with an asterisk.
④ If there is a wall at both the front and the rear of the unit, install up to six units consecutively in the side direction and provide a space of 1000mm or more as inlet space/ passage space for each six units.



<Unit:mm>

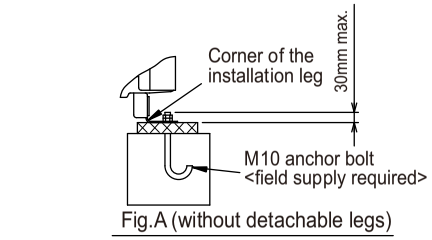


Fig.A (without detachable legs)

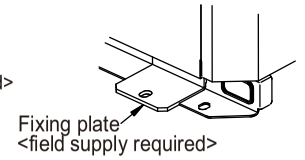


Fig.C (without detachable legs)

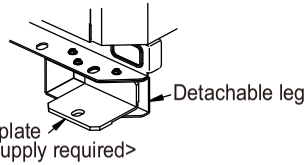


Fig.D (with detachable legs)

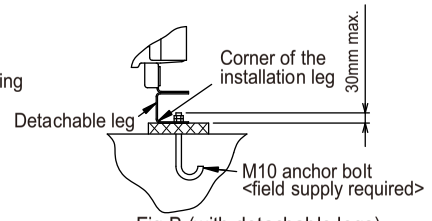
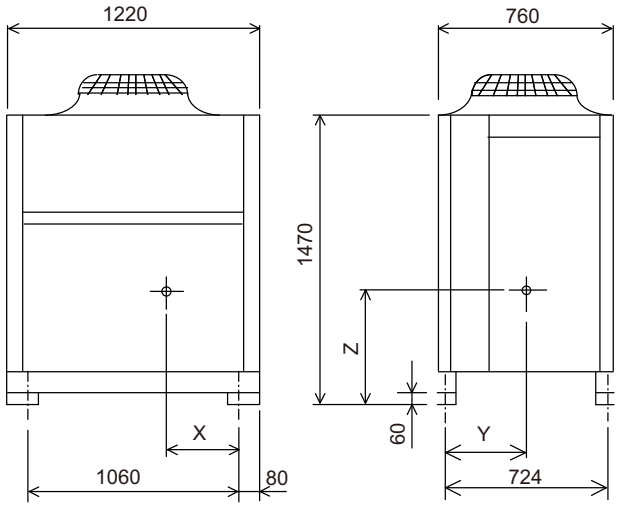


Fig.B (with detachable legs)

Unit : mm

3. CENTER OF GRAVITY

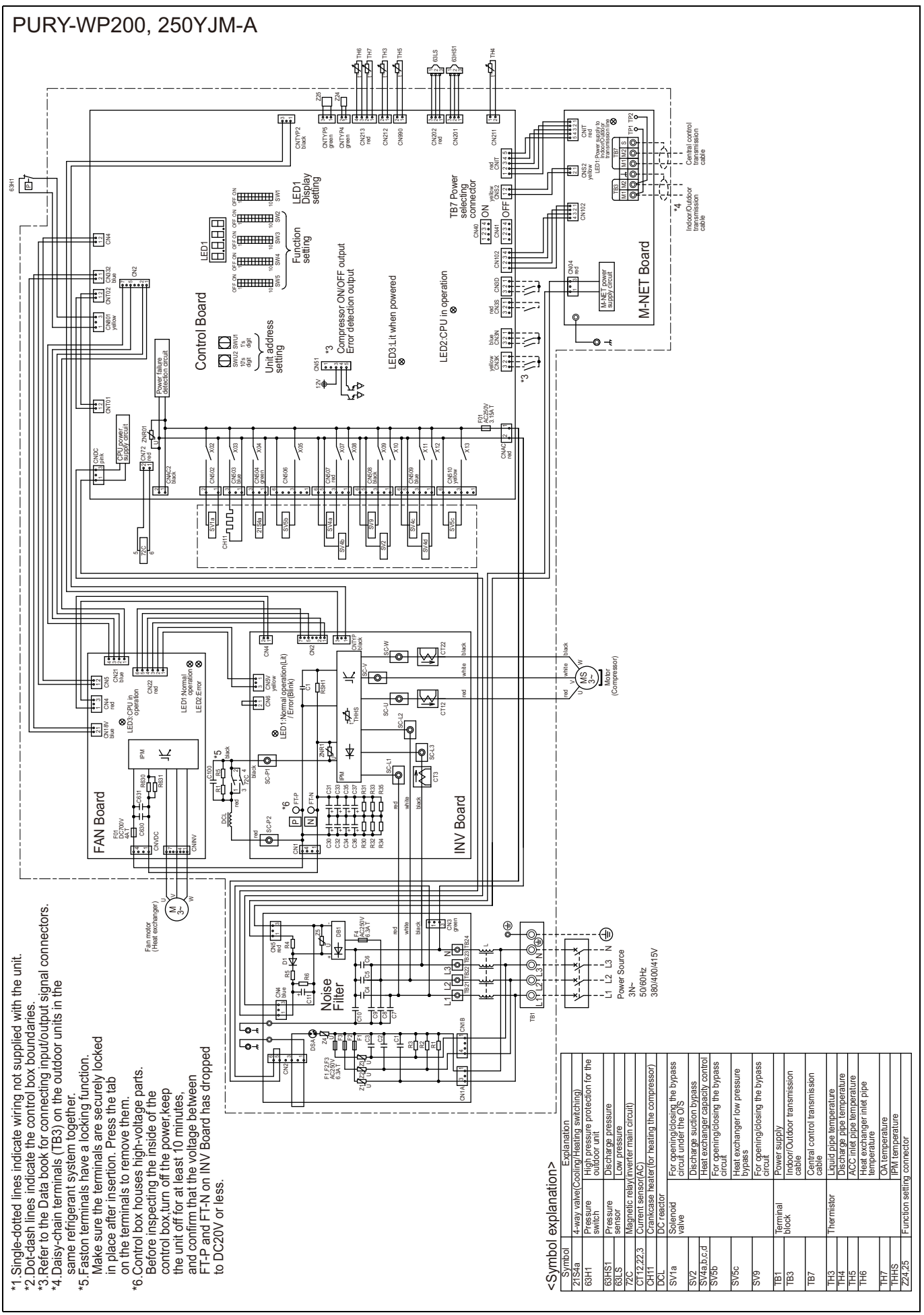
PURY-WP200, 250YJM-A



Unit:mm

Model	X	Y	Z
PURY-WP200YJM-A	450	322	630
PURY-WP250YJM-A	450	322	630

PURY-WP200, 250YJM-A



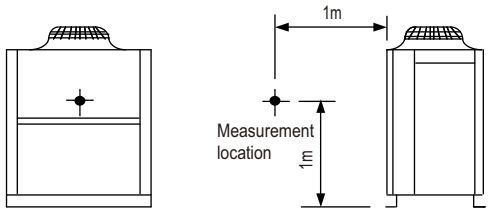
*1. Single-dotted lines indicate wiring not supplied with the unit.
*2. Dot-dash lines indicate the control box boundaries.
*3. Refer to the Data book for connecting input/output signal connectors.
*4. Daisy-chain terminals (TB3) on the outdoor units in the same refrigerant system together.
*5. Faston 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 between FT-P and FT-N on INV Board has dropped to DC20V or less.

<Symbol explanation>

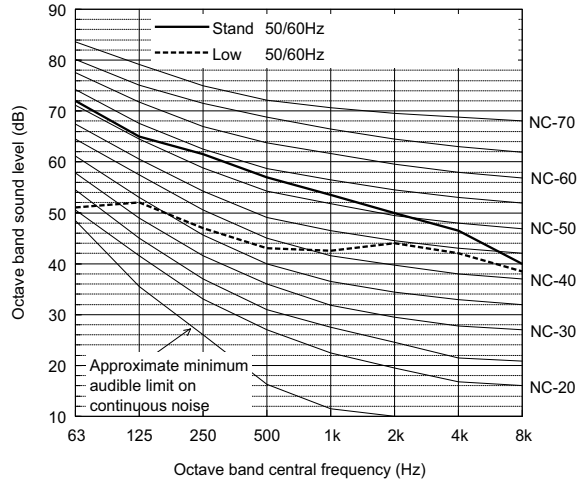
Symbol		Explanation
21S4a		4-way valve(Cooling/Heating switching)
63H1	Pressure switch	High pressure protection for the outdoor unit
63HS1	Pressure sensor	Discharge pressure
63LS		Low pressure
72C		Magnetic relay(Inverter main circuit)
CH11		Current sensor(AC)
DCL		Crankcase heater(for heating the compressor)
SV1a	Solenoid valve	DC reactor
SV2		For opening/closing the bypass circuit under the O/S
SV4a,b,c,d		Discharge suction bypass
SV5b		Heat exchanger capacity control
SV5c		For opening/closing the bypass circuit
SV9		Heat exchanger low pressure bypass
TB1	Terminal block	For opening/closing the bypass circuit
TB3		Power supply
TB7		Indoor/Outdoor transmission cable
TH3	Thermistor	Central control transmission cable
TH4		Liquid pipe temperature
TH5		Discharge pipe temperature
TH6		ACC inlet pipe temperature
TH7		Heat exchanger inlet pipe temperature
THHS		OA temperature
Z24,25		IPM temperature
		Function setting connector

5. SOUND LEVELS

Measurement condition
PURY-WP200,250YJM-A



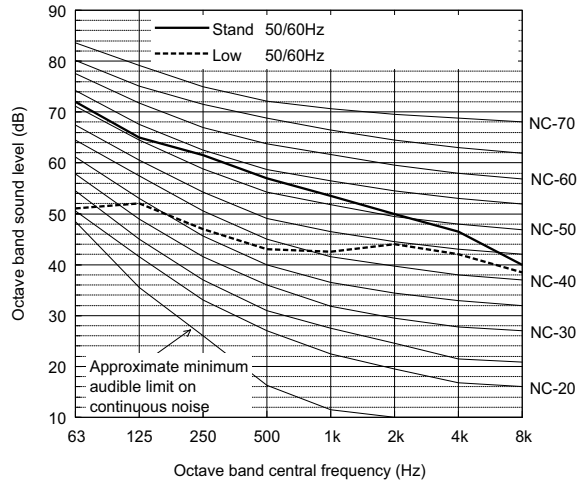
Sound level of PURY-WP200YJM-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	72.0	65.0	61.5	57.0	53.5	50.0	46.5	40.0	60.0
Low noise mode	50/60Hz	51.0	52.0	47.0	43.0	42.5	44.0	42.0	38.5	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.

Sound level of PURY-WP250YJM-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	72.0	65.0	61.5	57.0	53.5	50.0	46.5	40.0	60.0
Low noise mode	50/60Hz	51.0	52.0	47.0	43.0	42.5	44.0	42.0	38.5	50.0

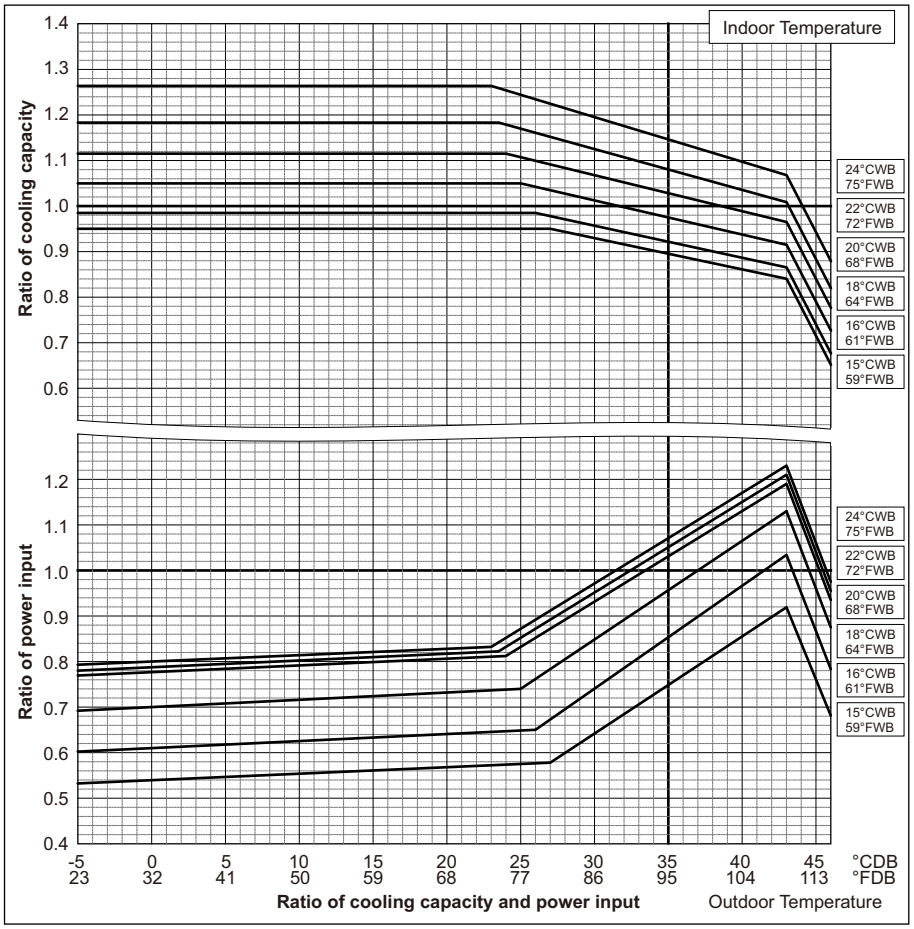
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

6. CAPACITY TABLES

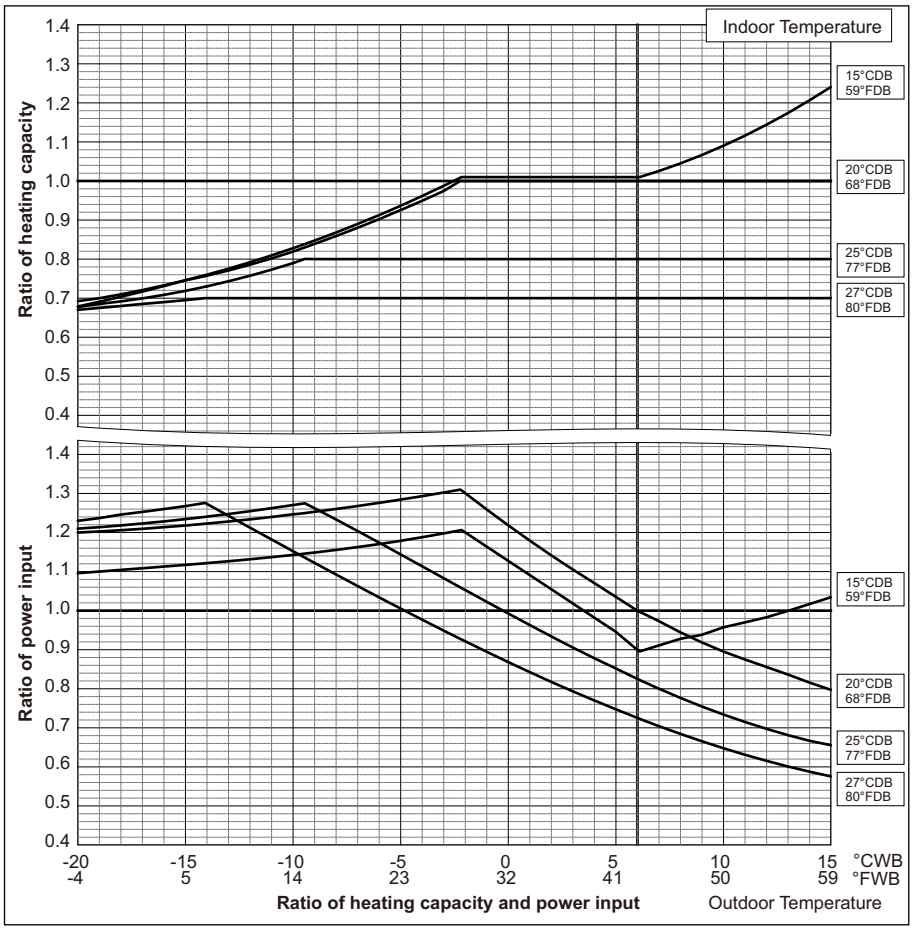
6-1. Correction by temperature

CITY MULTI could have various capacities at different designing temperatures. Using the nominal cooling/heating capacity values and the ratios below, the capacity can be found for various temperatures.

PURY-		WP200YJM-A	WP250YJM-A
Nominal Cooling Capacity	kW	22.4	28.0
	BTU/h	76,400	95,500
Input	kW	4.79	6.99



PURY-		WP200YJM-A	WP250YJM-A
Nominal Heating Capacity	kW	25.0	31.5
	BTU/h	85,300	107,500
Input	kW	5.28	6.98



6. CAPACITY TABLES

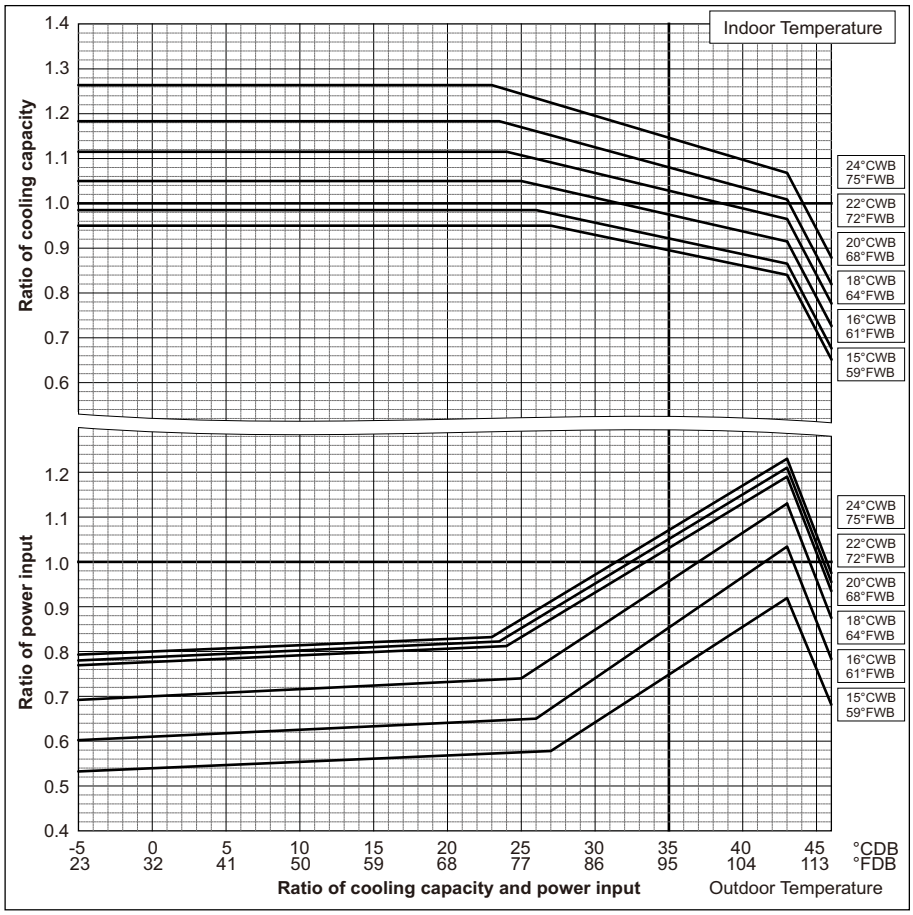
Correction by temperature (COP Priority Mode)

CITY MULTI could have various capacities at different designing temperatures. Using the nominal cooling/heating capacity values and the ratios below, the capacity can be found for various temperatures.

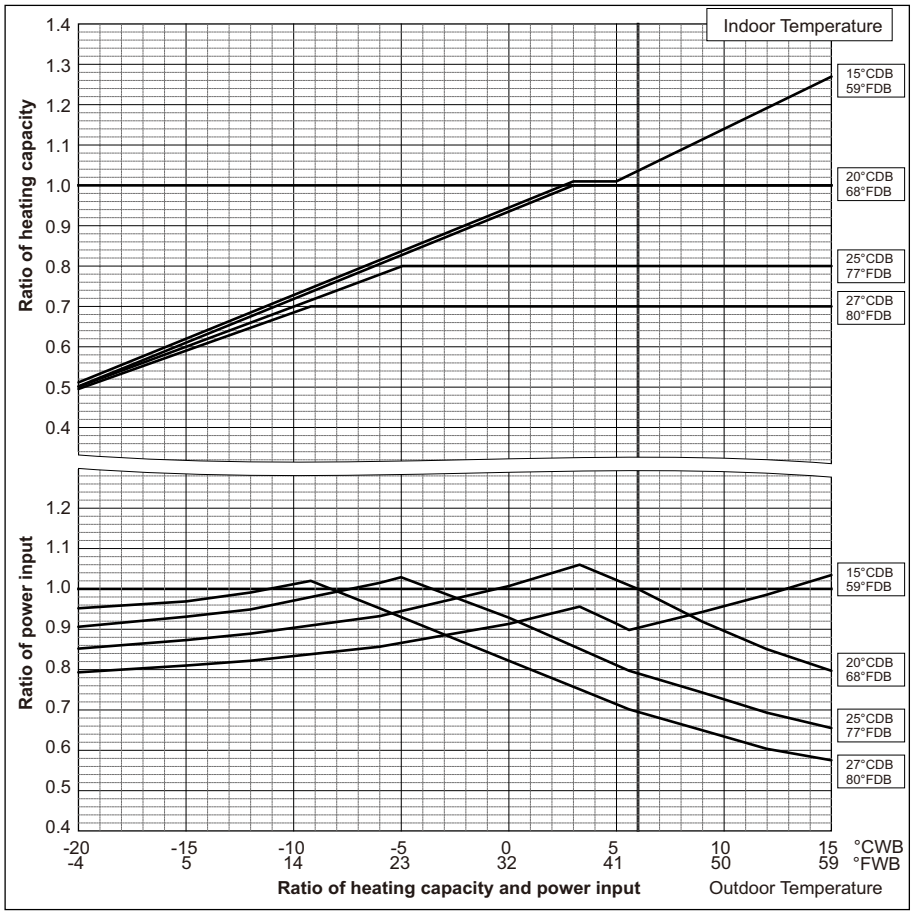
To select COP priority mode, DipSW 3-7 must be set to ON.

PURY-		WP200YJM-A	WP250YJM-A
Nominal Cooling Capacity	kW	22.4	28.0
	BTU/h	76,400	95,500
Input	kW	4.79	6.99

(There is no difference in cooling performance between Standard Mode and COP Priority Mode.)



PURY-		WP200YJM-A	WP250YJM-A
Nominal Heating Capacity	kW	25.0	31.5
	BTU/h	85,300	107,500
Input	kW	5.28	6.98



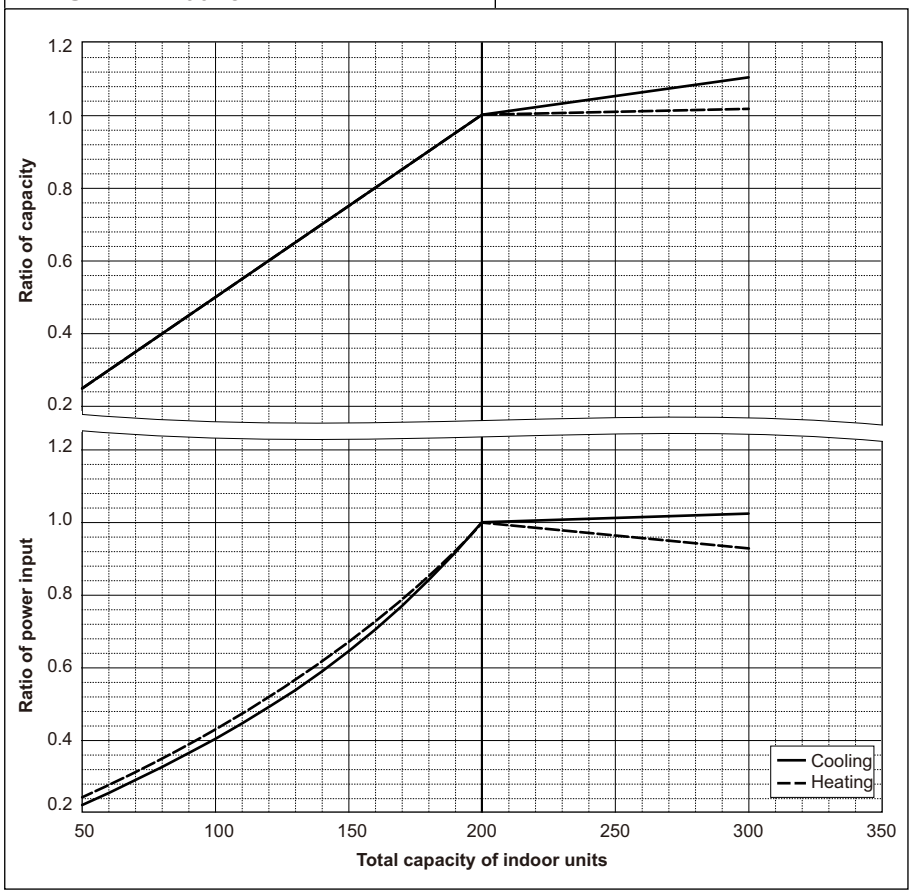
6-2. Correction by total indoor

CITY MULTI system have different capacities and inputs when many combinations of indoor units with different total capacities are connected. Using following tables, the maximum capacity can be found to ensure the system is installed with enough capacity for a particular application.

PURY-WP200YJM-A		
Nominal Cooling Capacity	kW	22.4
	BTU/h	76,400
Input	kW	4.79

PURY-WP200YJM-A		
Nominal Heating Capacity	kW	25.0
	BTU/h	85,300
Input	kW	5.28

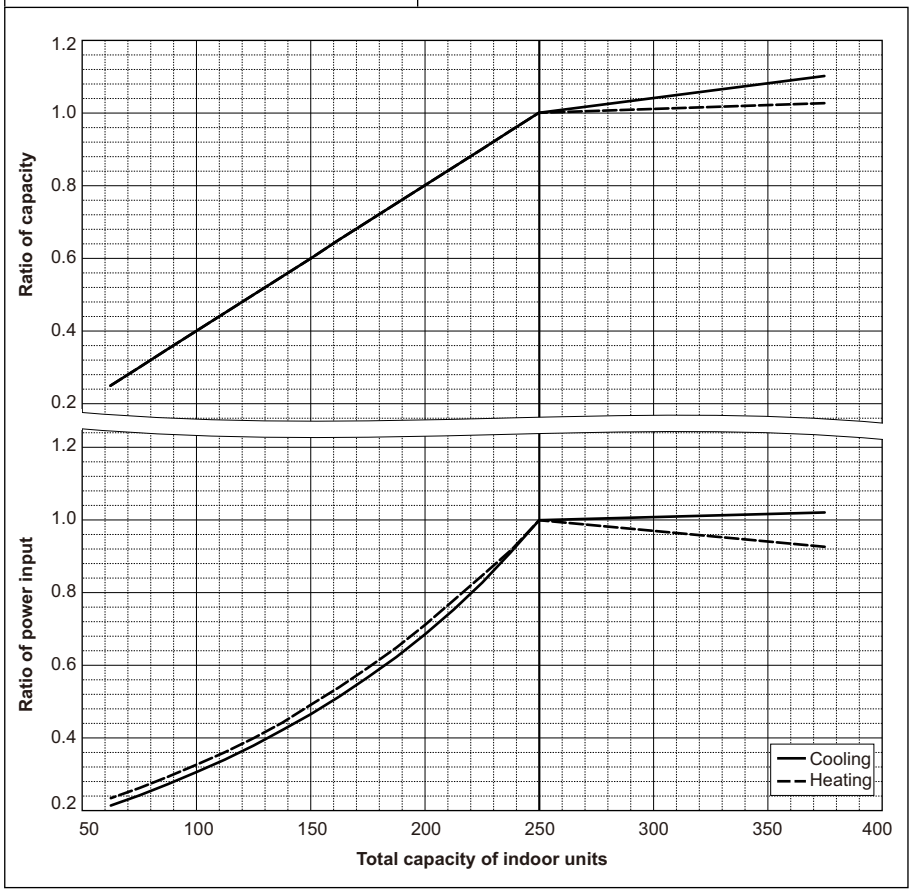
PURY-WP200YJM-A



PURY-WP250YJM-A		
Nominal Cooling Capacity	kW	28.0
	BTU/h	95,500
Input	kW	6.99

PURY-WP250YJM-A		
Nominal Heating Capacity	kW	31.5
	BTU/h	107,500
Input	kW	6.98

PURY-WP250YJM-A



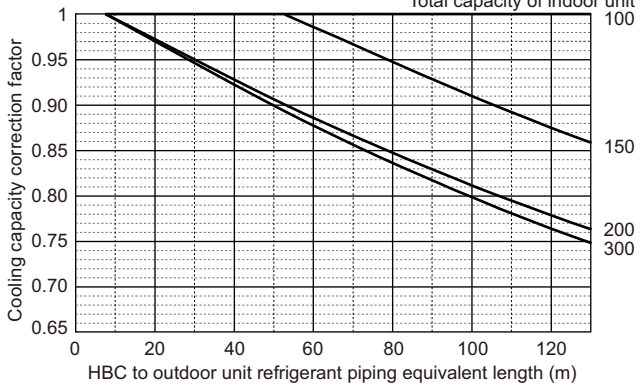
6. CAPACITY TABLES

6-3. Correction by piping length

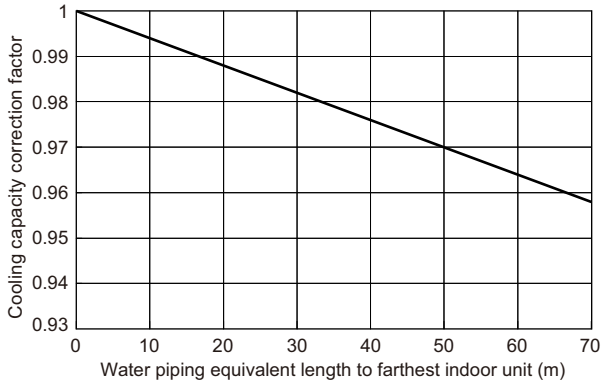
A decrease in cooling/heating capacity will occur due to piping length increase. Using the following correction factors according to the equivalent length of the piping shown at 6-3-1 and 6-3-2 the capacity can be calculated. 6-3-3 shows how to obtain the equivalent length of piping. Refrigerant piping and water piping have separate correction factors.

6-3-1. Cooling capacity correction

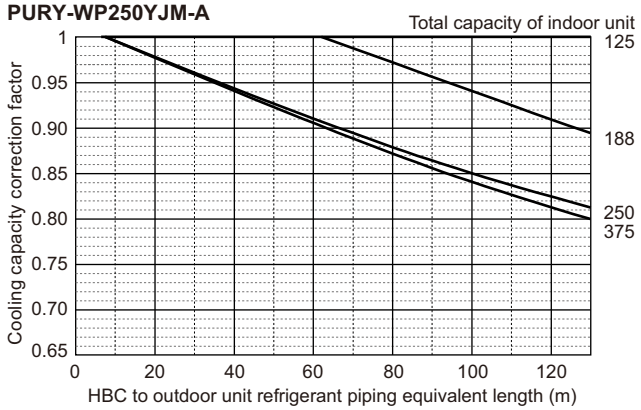
PURY-WP200YJM-A



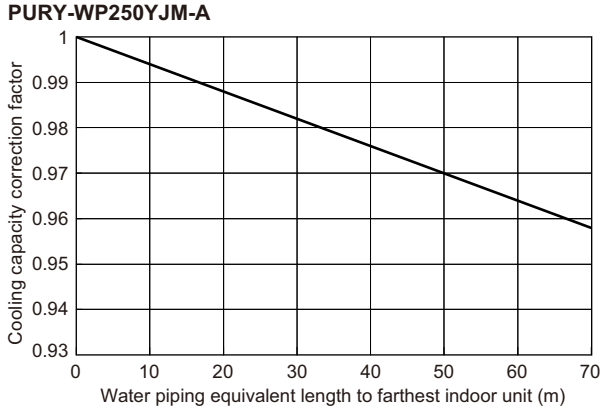
PURY-WP200YJM-A



PURY-WP250YJM-A

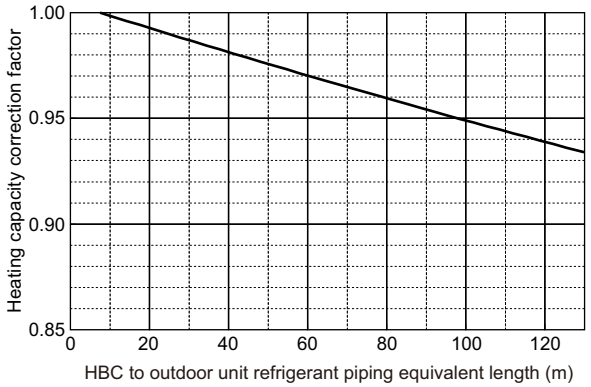


PURY-WP250YJM-A

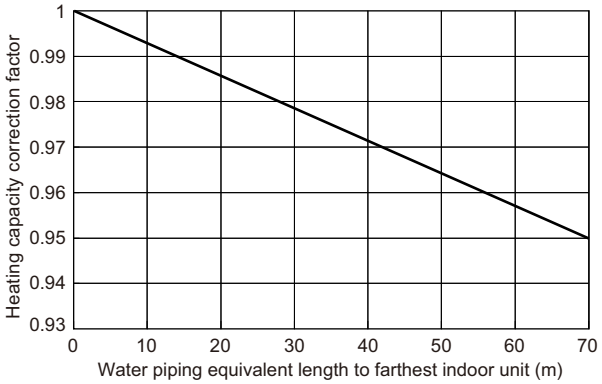


6-3-2. Heating capacity correction

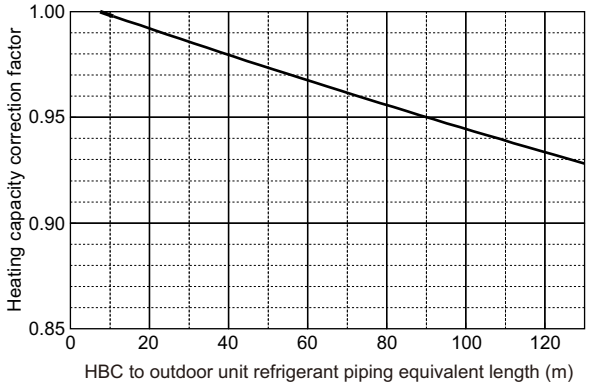
PURY-WP200YJM-A



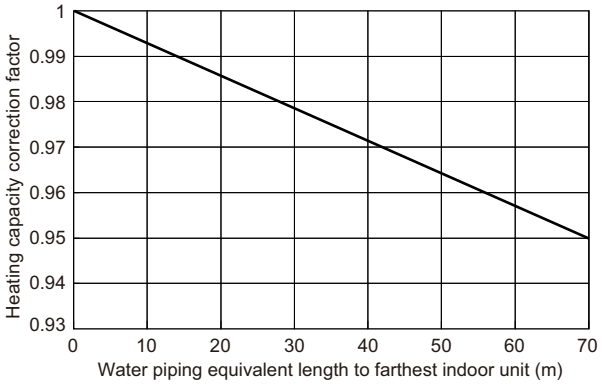
PURY-WP200YJM-A



PURY-WP250YJM-A



PURY-WP250YJM-A



6-3-3. How to obtain the equivalent piping length

Refrigerant pipe

1. PURY-WP200YJM-A

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 × number of bends in the piping) [m]

2. PURY-WP250YJM-A

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 × number of bends in the piping) [m]

Water pipe

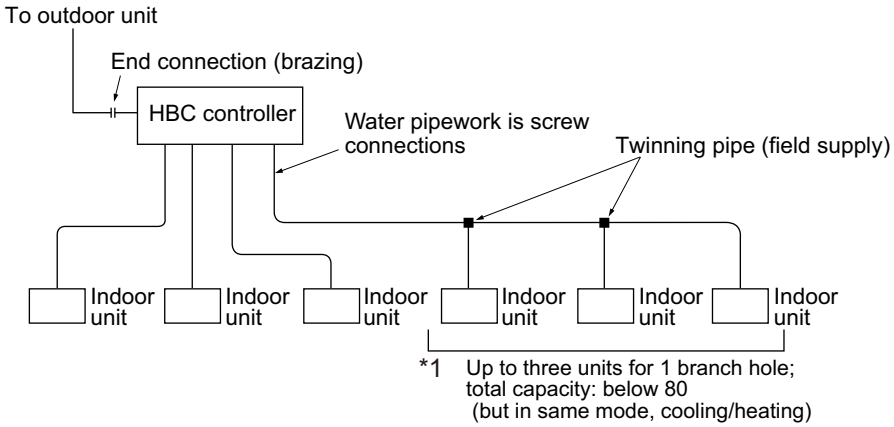
3. PURY-WP200, 250YJM-A

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.55 × number of bends in the piping) [m]

Water piping design

HBC water pipe connection sizes and pipe sizes.

Indoor unit	Connection size		Pipe size	
	Water inlet	Water outlet	Water out	Water return
PEFY-WP-VMA	Rc 3/4 screw	Rc 3/4 screw	I.D.20mm	I.D.20mm



Note:

***1. Connection of multiple indoor units with one connection (or joint pipe)**

- Total capacity of connectable indoor units: Less than 80
- Number of connectable indoor units: Maximum 3 Sets
- Selection of water piping
  Select the size according to the total capacity of indoor units to be installed downstream.
- Please group units that operate on 1 branch.

6-4. Correction at frost and defrost

Due to frost at the outdoor heat exchanger and the automatic defrost operation, the heating capacity of the outdoor unit can be calculated by multiplying the correction factor shown in the table below.

Table of 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-WP200YJM-A	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PURY-WP250YJM-A	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95

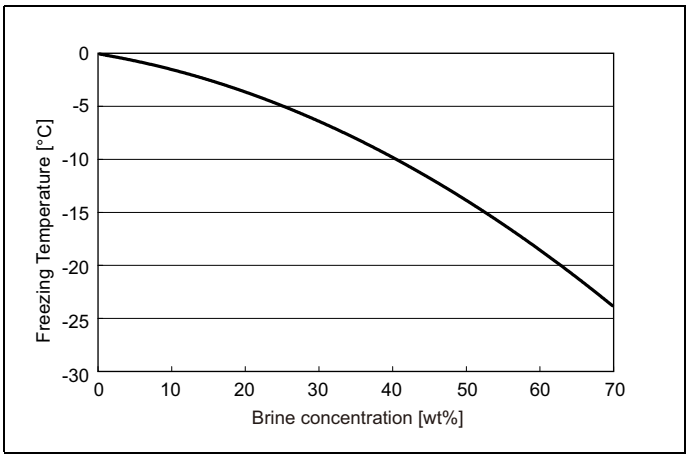
6. CAPACITY TABLES

6-5. Correction by brine concentration

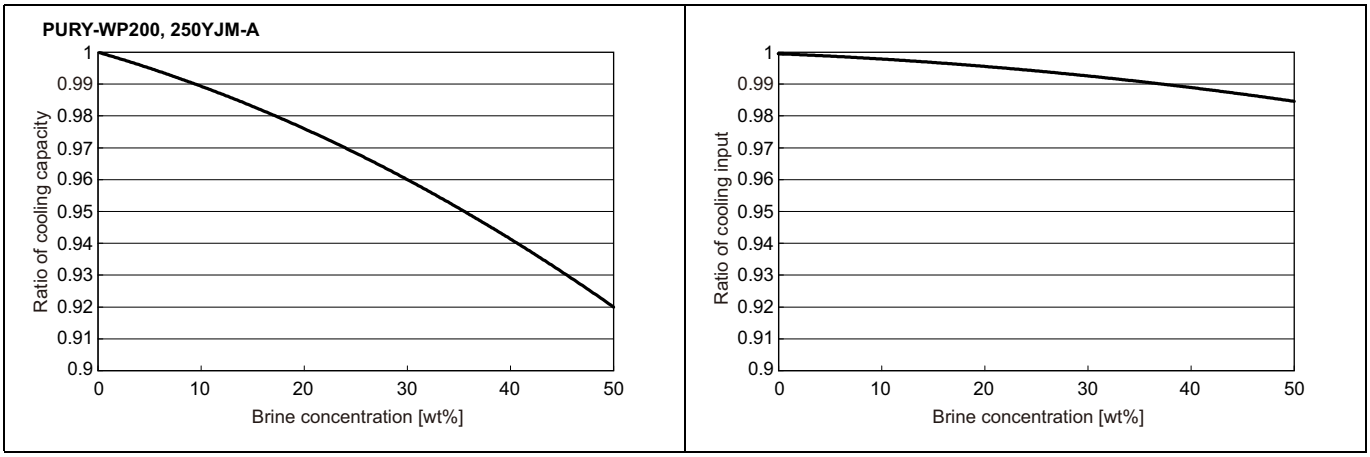
In HYBRID CITY MULTI system, brine should be used to prevent the system from freezing. Refer to the following graphs for the capacity correction by brine.Refer to 6-5-1 for brine concentration, 6-5-2 and 6-5-3 for capacity correction by brine concentration.

6-5-1. Brine concentration

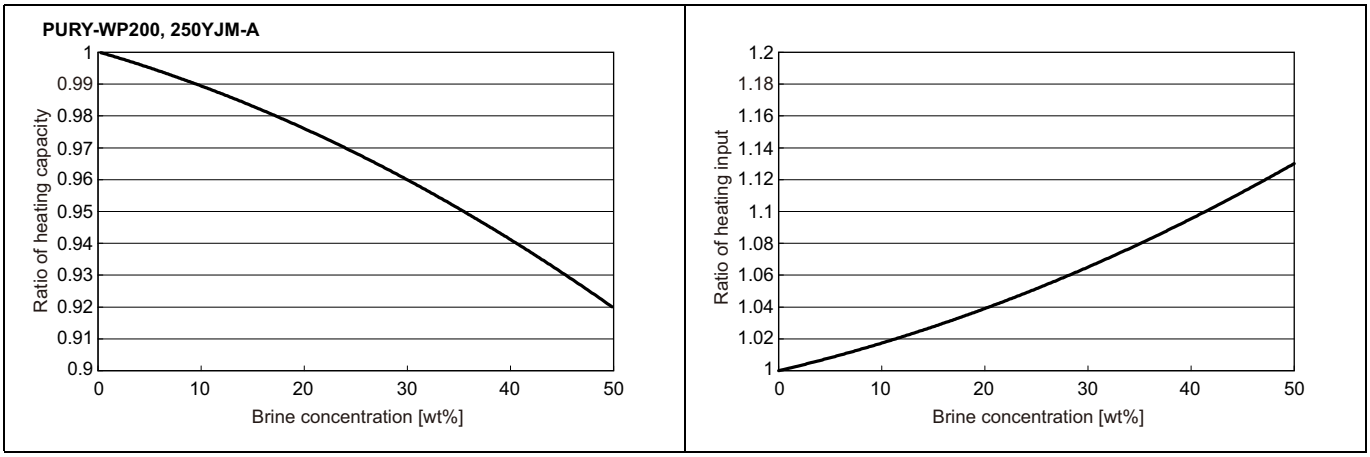
Use propylene glycol solution for antifreeze.
Refer to the following graph to estimate the brine concentration required for freeze protection.



6-5-2. Capacity correction by brine concentration (cooling)

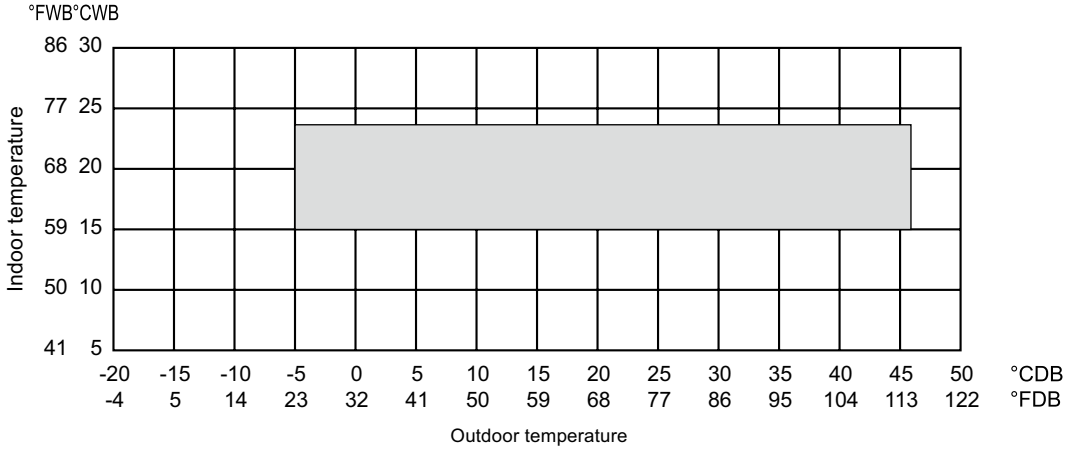


6-5-3. Capacity correction by brine concentration (heating)

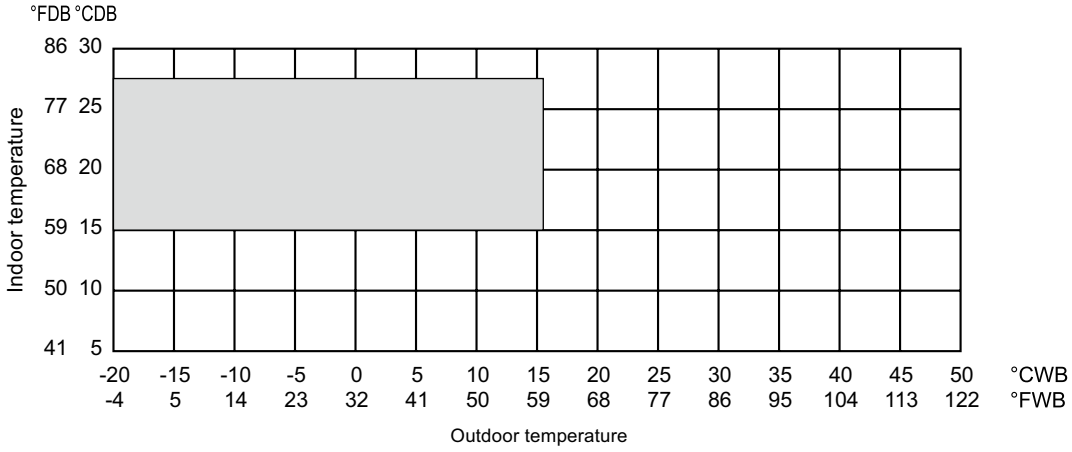


6-6. Operation temperature range

• Cooling



• Heating



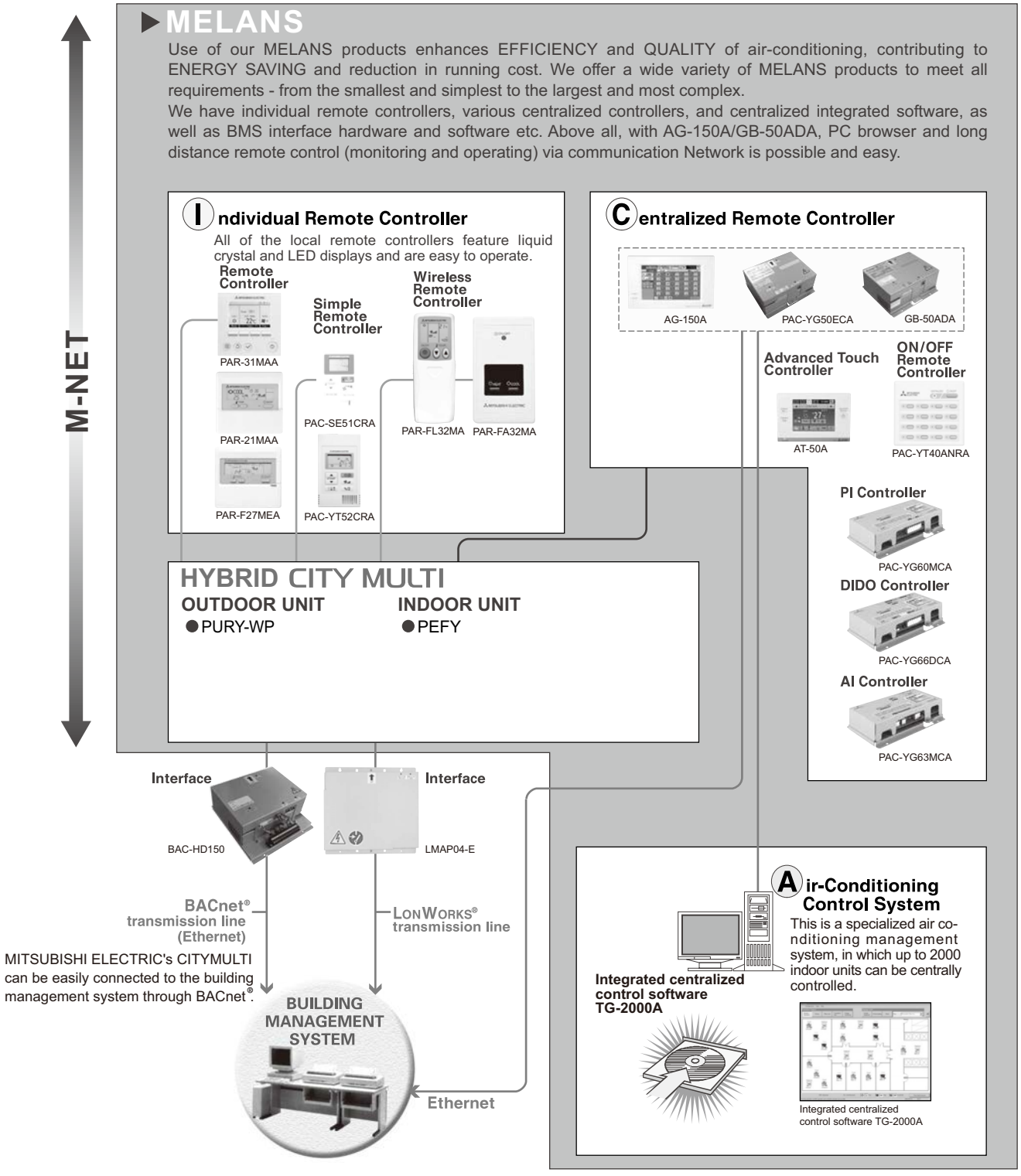
• Combination of cooling/heating operation (Cooling main or Heating main)

Outdoor temperature	Indoor temperature	
	Cooling	Heating
-5 to 21℃DB (23 to 70˚FDB)	——	15 to 27˚CDB (59 to 81˚FDB)
-6 to 15.5˚CWB (21 to 60˚FWB)	15 to 24˚CWB (59 to 75˚FWB)	——

HYBRID CITY MULTI
3. CONTROLLER

System Controller

MITSUBISHI ELECTRIC's Air-conditioner Network System (MELANS) leads air conditioner management a PC browser and Network era.



*Some controllers cannot be used in combination with certain models of devices.

1-1. Function table of controllers

Model	Local remote controller *10						System controller *10								
	PAR-31MAA	PAR-21MAA	PAR-F27MEA	PAC-YT52CRA	PAC-SE51CRA	PAR-FL32MA	PAC-YT40ANRA	AT-50A	AG-150A		AG-150A + PAC-YG50ECA		GB-50ADA		TG-2000A *4 *5
Controllable Groups / Indoors (Group / Indoor) *9	1 / 16	1 / 16	1 / 16	1 / 16	1 / 16	1 / 16	16 / 50	50 / 50	50 / 50		150 / 150		50 / 50		2000 / 2000
									AG-150A	Browser *4	AG-150A	Browser *4	GB-50ADA	Browser *4	
■Operating															
ON / OFF	○	○	○	○	○	○	◎	◎	◎ ■	◎ ■	◎ ■	◎ ■	▲	◎ ■	◎ ■
Mode (cool / heat / dry / fan)	○	○	○	○	N	○	N	◎	◎ ■	◎ ■	◎ ■	◎ ■	N	◎ ■	◎ ■
Temperature-set	○	○	○	○	○	○	N	◎	◎ ■	◎ ■	◎ ■	◎ ■	N	◎ ■	◎ ■
Local Permit / Prohibit	N	N	N	N	N	N	N	◎	◎ ■	◎ ■	◎ ■	◎ ■	N	◎ ■	◎ ■
Fan speed	○	○	○	○	○	○	N	◎	◎ ■	◎ ■	◎ ■	◎ ■	N	◎ ■	◎ ■
Air-flow direction	○	○	○	○	N	○	N	◎	◎ ■	◎ ■	◎ ■	◎ ■	N	◎ ■	◎ ■
■Status monitoring															
ON / OFF	○	○	○	○	○	○	◎	◎	◎	○	◎	○	▲	○	○ ■
Mode (cool / heat / dry / fan)	○	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Temperature-set	○	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Local Permit / Prohibit	○	○	○	○	○	○	○	○	○	○	○	○	N	○	○
Fan speed	○	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Air-flow direction	○	○	○	○	N	○	N	○	○	○	○	○	N	○	○
Indoor temperature	○	○	○	○	N	N	N	○	○	○	○	○	N	○	○
Filter sign	○	○	○	N	N	N	N	◎	○	○	○	○	N	○	○
Error flashing	○	○	○	○	○	○	○	◎	○	○	○	○	▲	○	○ ■
Error code	○	○	○	○	○	N	○	○	○	○	○	○	N	○	○
Operation hour	N	N	N	N	N	N	N	N	N	N	N	N	N	N	●
■Scheduling															
One-day	○	○	○	N	N	N	N	○	●	●	●	●	N	●	●
Times of ON / OFF per day	1	8	1 / 1	N	N	1 / 1	N	16	24	24	24	24	N	24	24
Weekly	○	○	N	N	N	N	N	○	○(●)	○(●)	○(●)	○(●)	N	○(●)	○(●)
Times of ON / OFF per week	8 x 7	8 x 7	N	N	N	N	N	16 x 7	24 x 7	24 x 7	24 x 7	24 x 7	N	24 x 7	24 x 7
Annual	N	N	N	N	N	N	N	N	●	●	●	●	N	●	●
Optimized start-up	N	N	N	N	N	N	N	N	○	○	○	○	N	○	○
Auto-off timer	○	○	○	N	N	N	N	N	N	N	N	N	N	N	N
Min. timer setting unit (minute)	5	1	10	N	N	10	N	5	1	1	1	1	N	1	1
■Recording															
Error record	○	N	N	N	N	N	N	○	○	○	○	○	N	○	○
Daily / monthly report	N	N	N	N	N	N	N	N	N	N	N	N	N	N	◎
Electricity charge	N	N	N	N	N	N	N	N	N	N	N	N	N	N	●
■Other															
Temp-set limitation by Local R / C	○	○	○	○	N	N	N	N	N	N	N	N	N	N	N
Temp-set limitation by System controller *4	○ *6	○ *6	○	○ *6	○ *7	N	N	○ *6	N	○ *2 *6	N	○ *2 *6	N	○ *2 *6	◎ *6
Operation-lock	○	○	○	○	N	N	N	◎	N	N	N	N	N	N	N
Night setback	○	N	N	N	N	N	N	◎	○	○ *2	○	○ *2	N	○ *2	○
Sliding temperature control	N	N	N	N	N	N	N	N	○	○ *2	○	○ *2	N	○ *2	○
■Management (Group / Interlocked)															
Ventilation interlock	N /○	N /○	N /○	N /○	N /○	N	○	○	○	○/○ *2	○	○/○ *2	N	○/○ *2	○/○
Group setting	○ *1	○ *1	○	○ *1	○	N	○	○	○	○ *2	○	○ *2	N	○ *2	○
Block setting	N	N	N	N	N	N	N	N	○	○ *2	○	○ *2	N	○ *2	○
Revision of electricity charge	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
■Operating on LOSSNAY interlocked (Group / Interlocked)															
ON / OFF	N /○	N /○	N /○	N /○	N /○ *8	N /○	◎/◎ *3	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎
Fan speed	N /○	N /○	N	N	N	N	N	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	N / N	◎/◎	◎/◎
Ventilation mode	N / N	N / N	N	N	N	N	N	◎/ N	◎/ N	◎/ N	◎/ N	◎/ N	N / N	◎/ N	○/ N
■Status monitoring on LOSSNAY interlocked (Group / Interlocked)															
ON / OFF	N /○	N /○	N	N /○	N	N	N	○/○	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎
Fan speed	N /○	N /○	N	N	N	N	N	○/○	○/○	○/○	○/○	○/○	N / N	○/○	○/○
Ventilation mode	N	N	N	N	N	N	N	○/ N	○/ N	○/ N	○/ N	○/ N	N / N	○/ N	○/ N

◎: Each group / Batched ; ○: Each group ; ●: AG-150A / GB-50ADA license registration possible.
(●) : License registration for the optional functions required N : Not Available (Not Used.) △: Batched only ; ▲: Batched handling (for maintenance) ■: Block

*1. Group setting via wiring between Indoor units with cross-over cable;
*2. Installation possible at Initial setting web browser;
*3. Inter-lock is set at Local remote controller.
*4. AG-150A/GB-50ADA license registration to AG-150A/GB-50ADA is required to monitor and operate the units by browser and TG-2000A.
5. AG-150A connected with PAC-YG50ECA is compatible with TG-2000A Ver.6.1 or later. GB-50ADA is compatible with TG-2000A Ver. 6.3* or later.
*6. This function can be set only on the ME/Simple ME remote controller. This function cannot be used with the MA/Simple MA remote controller.
(But, the validity of this function with the MA/Simple MA remote controller depends on the indoor unit model, and there are possibilities that this function can be used with them.)
*7. This function is available only when applying together with TG-2000A, AG-150A and GB-50ADA.
*8. Inter-lock is set from system controller. (Except PAC-YT40ANRA)
*9. The maximum number of controllable units decreases depending on the indoor unit model.
*10. For indoor use only.

LOSSNAY remote controller PZ-52SF	
■Controllable LOSSNAY Groups	1
■Controllable LOSSNAY unit	16
■Operating	
ON/OFF	○
Mode (automatic ventilation/vent-heat interchange/normal ventilation)	○
Local Permit-Prohibit	N
Fan speed	○
Air flow direction	N
■Scheduling	N
■Recording	N

■Management Group setting	○
Block setting	N
■Status monitoring	
ON/OFF	○
Mode (automatic ventilation/vent-heat interchange/normal ventilation)	○
Local Permit-Prohibit	○
Fan speed	○
Air flow direction	N
Filter sign	○
Error flashing	○
Error code	○

Air conditioner control system interface

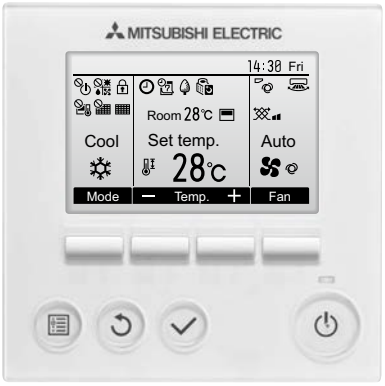
LMAP04-E : LonWorks® Interface
Controls up to 50 Groups/ 50 units, for details, refer to its description.

BAC-HD150: BACnet® Interface
Controls up to 50 Groups/ 50 units, up to 150 Groups/ 150 units with three expansion controllers for details, refer to its description.

○ : Each group, N: Not Available

2. Local remote controller

2-1. MA remote controller [PAR-31MAA]



■ Functions

1. Operation/Display

○:Each group ×:Not available

Item	Description	Setting	Display
ON/OFF	Switches between ON and OFF.	○	○
Operation mode switching	Switches among Cool/Dry/Fan/Auto/Heat.	○	○
Room temp. setting *3	The temperature can be set within the following range. Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F (57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C) / 63°F - 83°F (63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C) / 67°F - 83°F (63°F - 83°F) ( ) For PEFY/PFFY by setting DipSW 7-1 to ON and limits to NI6H fan speed only.	○	○
Fan speed setting	Changes fan speed. * Available fan speeds vary depending on the model.	○	○
Air flow direction setting	Changes airflow direction. * Available airflow directions vary depending on the model.	○	○
Louver setting	Switches between louver ON/OFF.	○	○
Ventilation equipment control	Interlocked setting and interlocked operation setting with the City Multi LOSSNAY units can be made. The Stop/Low/High settings of the ventilation equipment can be controlled.	○	○
Auto descending panel *1	Raises and lowers the automatic elevating panel.	○	○
backlight	Pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.	×	○
Main display mode setting	The Main display can be displayed in two different modes: "Full" and "Basic."	○	○
Clock *2	Date (year/month/day) and time (hour/minute) can be set. The set time as well as the day of the week will be displayed on the Main display. It is also possible to set not to display the time on the Main display.	○	○
Clock display	The clock can be displayed in 12-hour format (AM/PM before or after the time) and 24-hour format.	○	○
Room temp. display *3	Displays the room temperature on the Main display in the "Full" mode during operation.	—	○
Error information	When an error occurs, an error code and the unit address appear. Air conditioning unit model, serial number, and contact number can be set to appear when an error occurs. (The information above needs to be entered in advance.) * An error code may not appear depending on the error.	—	○
Filter information	A filter sign will appear when it is time to clean the filter.	—	○

● Backlit LCD
● Can be set and shown by 0.5°C degree.

2. Schedule and timer setting

○:Each group ×:Not available

Item	Description	Setting	Display
Timer	ON/OFF timer Turns ON and OFF daily at a set time. • Time can be set in 5-minute increments. • It is also possible to set the ON time only or the OFF time only. Auto-OFF timer Turns off the unit after a certain period of operation. • Operation time can be set to a value from 30 to 240 minutes in 10-minute increments.	○	○
Weekly timer	Weekly ON/OFF times and set temperatures can be set. • Time can be set in 5-minute increments. Up to 8 schedule patterns can be set per day of the week. * Not valid when the ON/OFF timer is set.	○	○
Night setback	The temperature range and the start/stop times can be set.	○	○

3. Restriction settings

○:Each group ×:Not available

Item	Description	Setting	Display
Allows/disallows local operation	The following operation can be prohibited by making certain settings on the centralized controller: ON/OFF, operation mode setting, temperature setting, and filter sign reset. * While an operation is prohibited, the operation icon lights up (only on the Main display in the "Full" mode).	×	○
Operation lock	The following operation can be prohibited respectively: ON/OFF, operation mode setting, temperature setting, and airflow direction setting.	○	○
Temperature range restriction	The room temperature range for each operation mode can be restricted.	○	○
Auto return	The units operate at the preset temperature after a designated period. (Time can be set to a value from 30 to 120 in 10-minute increments.) * Not valid when the temperature setting range is restricted.	○	×
password	Administrator password (required for schedule setting etc.) and Maintenance password (required for test run and function setting etc.) can be set.	○	×

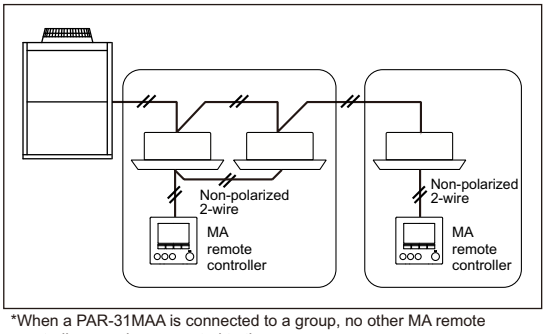
4. Miscellaneous items

○:Each group ×:Not available

Item	Description	Setting	Display
Language Selection	Select the display language from the following 8 languages. English, French, German, Spanish, Italian,Portuguese, Swedish, and Russian	○	○
Contrast	Adjusts LCD contrast.	○	○
Manual vane Angle *1	Fixes the vane position for each air outlet.	○	×
Service *1	Contains Test run, Function setting, Refrigerant volume check, Refrigerant leak check, Smooth maintenance, Request code, and Error history.	○	○

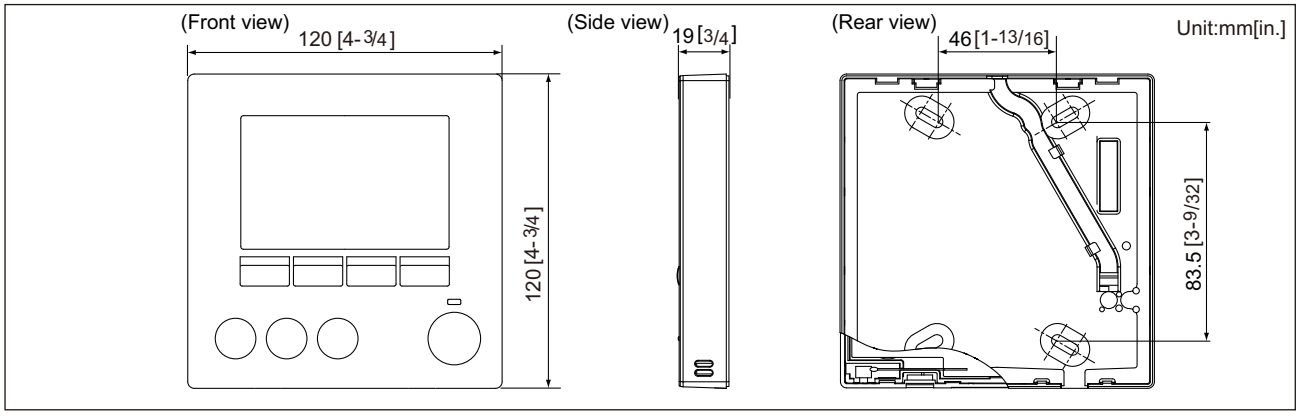
*1 This function is active only for the units that support the function.
*2 The clock is accurate within 50 seconds per month (at the temperature of 25ºC [77°F]). The clock is backed up for 7 days.
*3 Temperature will be displayed either in Centigrade in 0.5- or 1-degree increments, or in Fahrenheit, depending on the indoor unit model and the display mode setting on the remote controller.

■ System example



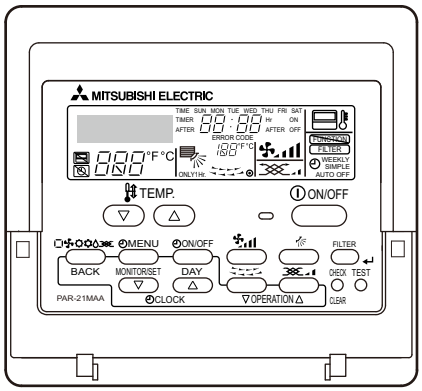
*When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

■ External dimension



2. Local remote controller

2-2. MA remote controller [PAR-21MAA]



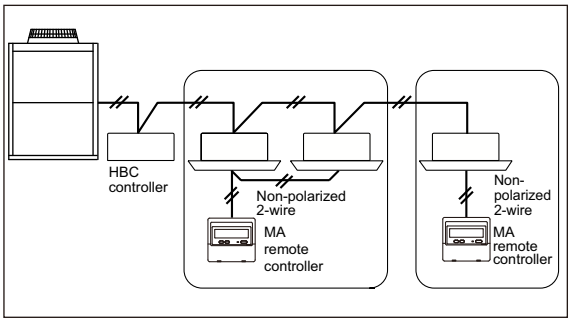
- High-quality white color body and light-green display.
- Dot LCD is applied.
  Choose from Japanese, Chinese, English, German, Spanish, Russian, Italian, French displays.
- Connectable to all HYBRID CITY MULTI indoor units, and automatically adjust its function with the connected indoor unit.
- Limiting the temperature setting range is possible.
  Helps to avoid over-cooling or over-heating. Saves energy.
- Auto-stop timer is available.
  Helps to avoid forgetting to turn off the air conditioner.
- Weekly scheduler is available.
  ON/OFF/Temperature setting 8 times per day, 1 week scheduling.
- Grouping via cross-over wire directly.
- Usable as the local remote controller for system controller (MELANS)
  * Combining ME remote controller and/or LOSSNAY remote controller in a group is not possible.

■ Functions

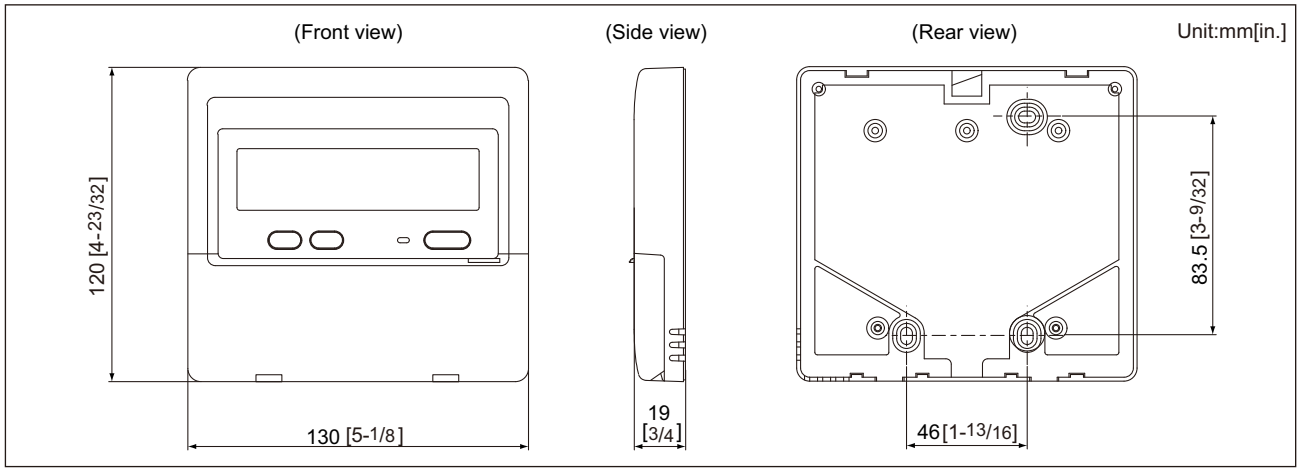
□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for a single group	○	○
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat. Operation modes vary depending on the air conditioner unit.	○	○
Temperature setting	Sets the temperature for a single group Range of temperature setting Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F (57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C) / 63°F - 83°F (63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C) / 67°F - 83°F (63°F - 83°F) ( ) For PEFY/PFFY by setting DipSW 7-1 to ON and limits to NI6H fan speed only.	○	○
Fan speed setting	Models with 4 air flow speed settings: Hi/Mid-1/Mid-2/Low Models with 3 air flow speed settings: Hi/Mid/Low Models with 2 air flow speed settings: Hi/Low Fan speed setting (including Auto) varies depending on the model.	○	○
Air flow direction setting	Air flow direction angles (4-angle, or 5-angle Swing) Auto Louver ON/OFF Air flow direction settings vary depending on the model.	○	○
Weekly scheduler	ON/OFF/Temperature setting can be done up to 8 times one day in the week. The time can be set by the minute.	○	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Change operation mode, Set temperature, Reset filter). ※1: When the local remote controller inactivation command is received from the main system controller, " " is displayed.	×	※1 ○
Prohibition/permission of specified mode (Cooling prohibited /heating prohibited /cooling-heating prohibited)	By the setting from System Controller, the operation for the following modes is prohibited. At cooling prohibited : Cool, Dry, Auto, At heating prohibited : Heat, Auto, At cooling-heating prohibited : Cool, Heat, Dry, Auto	×	○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit when the indoor unit is operating.	×	○
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed.	×	□
Test run	This operates air conditioner units in test run mode.	○	○
Ventilation equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY. LOSSNAY items that can be set are "Hi" "Low" "Stop". Ventilation mode switching is not available.	○	○
Function to limit the setting range of room temperature (Set temperature range limit)	Set temperature range limit to cooling, heating, or auto mode.	○	○
Easy-to-operate simplified locking function (Auto lock function)	Setting/releasing of simplified locking for remote control switch can be performed. · Locking of all switches · Locking of all switches except ON/OFF switch	○	○

■ System example

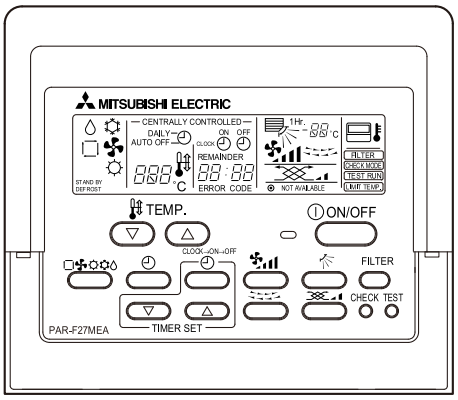


■ External dimension



2. Local remote controller

2-3. ME remote controller [PAR-F27MEA]



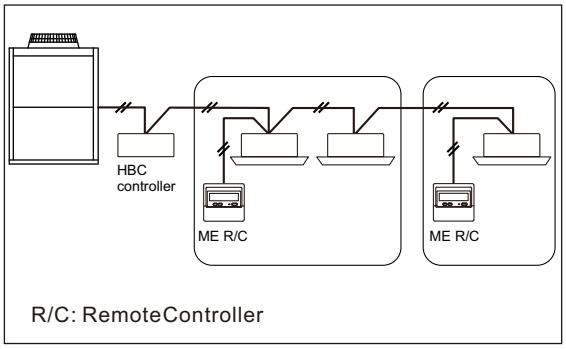
- This remote control requires non-polar wiring to only one indoor unit.
- Group operation over multiple outdoor units is possible. Grouping can be changed without re-wiring, which makes dividing rooms for tenant easier
- Timer operation
  ※: Daily timer operation of one ON/OFF setting everyday
  ※: Auto-off timer : 0:30, 1:00, 1:30, 2:00...4:00
  ※: The setting is kept in nonvolatile memory.
- Function lock
  All functions or all functions except ON / OFF can be selected.
- Ability to limit the set temperature by oneself for system controller (upper and lower temperature can be set)
- Interlock setting and operation of LOSSNAY

■ Functions

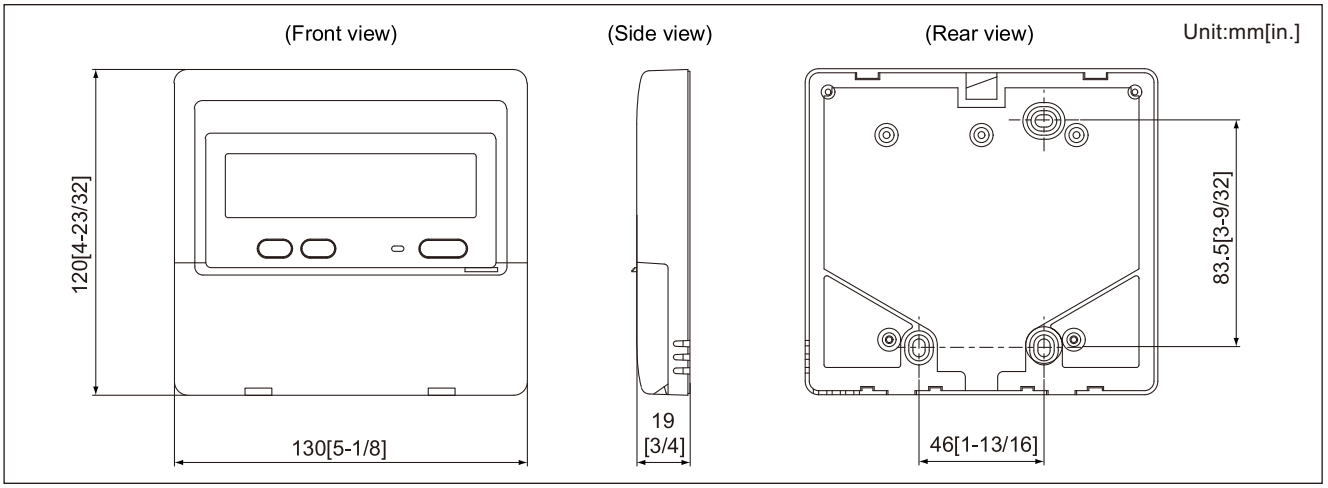
□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for a single group	○	○
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat. Operation modes vary depending on the air conditioner unit.	○	○
Temperature setting	Sets the temperature for a single group Range of temperature setting Cool/Dry : 19˚C - 30˚C (14˚C - 30˚C) Heat : 17˚C - 28˚C (17˚C - 28˚C) Auto : 19˚C - 28˚C (17˚C - 28˚C)	○	○
Fan speed setting	Models with 4 air flow speed settings: Hi/Mid-1/Mid-2/Low Models with 3 air flow speed settings: Hi/Mid/Low Models with 2 air flow speed settings: Hi/Low Fan speed setting varies depending on the model.	○	○
Air flow direction setting	Air flow direction angles (4-angle, Swing) Louver ON/OFF Air flow direction settings vary depending on the model.	○	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Change operation mode, Set temperature, Reset filter). ※1: When the local remote controller inactivation command is received from the master system controller, "-CENTRALLY CONTROLLED-" is displayed.	×	※1 ○
Prohibition/permission of specified mode (Cooling prohibited /heating prohibited /cooling-heating prohibited)	By the setting from System Controller, the operation for the following modes is prohibited. At cooling prohibited : Cool, Dry, Auto, At heating prohibited : Heat, Auto, At cooling-heating prohibited : Cool, Heat, Dry, Auto	×	○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit when the indoor unit is operating.	×	○
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed.	×	□
Timer operation	Thanks to the three timer modes equipped, a proper mode can be selected to meet the usage. One day timer : ON/OFF setting of one time on one day can be applied. Daily timer : ON/OFF setting by the One day timer can be repeated for everyday. Auto OFF timer : OFF timer can be set in a range from 30 minutes to 4 hours. ※Setting of Auto OFF timer automatically activates OFF timer at the next operation. This function can be utilized to prevent the negligence of OFF setting.	○	○
Test run	This operates air conditioner units in test run mode.	○	○
Ventilation equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY. LOSSNAY items that can be set are "Hi" "Low" "Stop". Ventilation mode switching is not available.	○	○
Function to limit the setting range of room temperature (Set temperature range limit)	Set temperature range limit to cooling, heating, or auto mode.	○	○
Easy-to-operate simplified locking function (Auto lock function)	Setting/releasing of simplified locking for remote control switch can be performed. · Locking of all switches · Locking of all switches except ON/OFF switch	○	○

■ System example

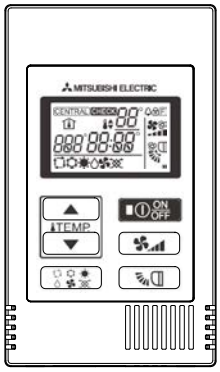


■ External dimension



2. Local remote controller

2-4. Simple MA remote controller [PAC-YT52CRA]



- Control: ON/OFF, room temperature, vane, fan speed, and operation mode
- The only wiring required is cross-over wiring based on two-wire signal lines.
- Room temperature sensors are built-in.
- Set temperature range limit
- Can operate all types of indoor units

  ∗: Since this controller has limited functions, it should always be used in conjunction with standard controller or centralized controller.

- Backlit LCD
- Flat back

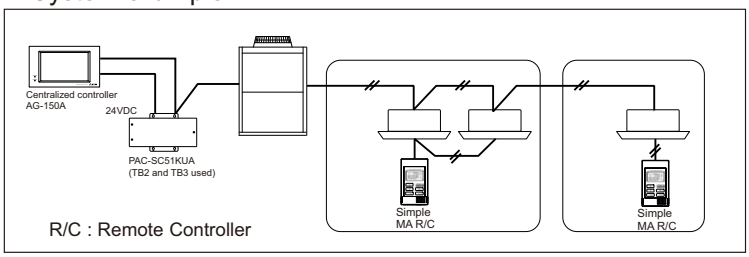
■ Functions

□:Each unit ○:Each group ■:Each block
△:Each floor ◎:Collective ×:Not available

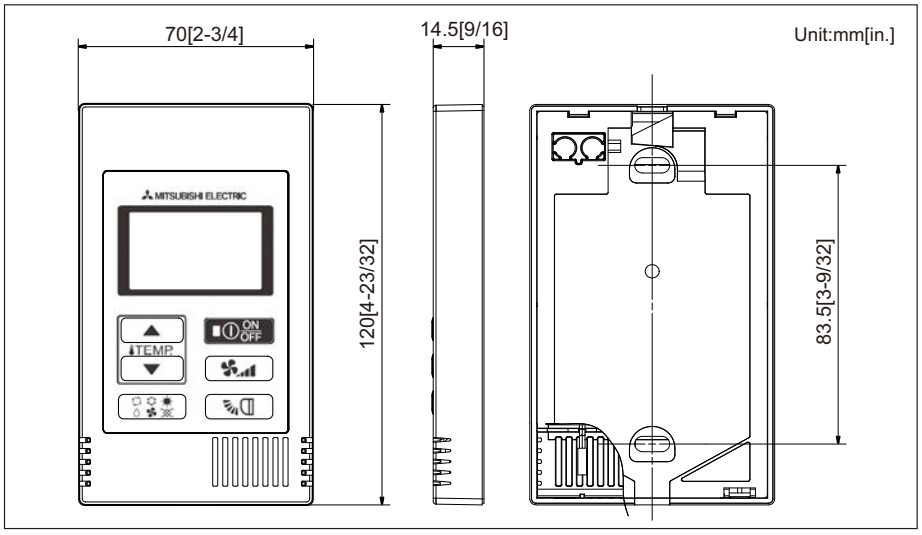
Item	Description	Operations	Display
ON/OFF	Changes between ON and OFF.	○	○
Operation mode switching *1	Select from COOL, DRYING, FAN, AUTO, and HEAT.	○	○
Room temp. Setting *1	Sets a room temperature. *The preset temperature range varies depending on the indoor unit model to be connected. (The ranges for a standard model are as follows.) Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F (57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C) / 63°F - 83°F (63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C) / 67°F - 83°F (63°F - 83°F) ( ) For PEFY/PFFY by setting DipSW 7-1 to ON and limits to NI6H fan speed only.	○	○
Fan speed setting	Changes the fan speed. *The settable fan speed varies depending on the indoor unit model to be connected.	○	○
Vane setting	Switches the vane directions. *The settable vane direction varies depending on the indoor unit model to be connected.	○	○
Ventilation equipment control	When the CITY MULTI indoor unit is connected, interlocked setting of the CITY MULTI LOSSNAY unit is possible. When the Mr. SLIM indoor unit (A-control) is connected, interlocked operation of the microcomputer-type LOSSNAY unit is possible.	○	○
Backlight	Pressing the button lights up a backlight. The light automatically turns off after a certain period of time. (The brightness settings can be selected from Bright, Dark, and Light off.)	○	○
Error information	Displays the current error status with the address. *The address may not be displayed depending on the error status.	–	○
Allows/disallows local operation	By setting a centralized controller, the following local operations are prohibited: ON/OFF; operation mode; preset temperature; *The CENTRAL icon appears while the local operations are prohibited.	×	○
Operation lock	Locks all buttons.	○	○
Temperature range restriction	The preset temperature range can be restricted for each operation mode (COOL/HEAT/AUTO).	○	○
Room temperature detection	The temperature sensor is built-in on the remote controller.	–	–
Various settings	The following settings can be made by setting the dip switches. • Remote controller Main/Sub setting • Temperature display unit setting (Celsius/Fahrenheit) • Cooling/heating display in AUTO mode • Indoor temperature display	–	–

*1 AUTO mode is settable only when those functions are available on the indoor unit.

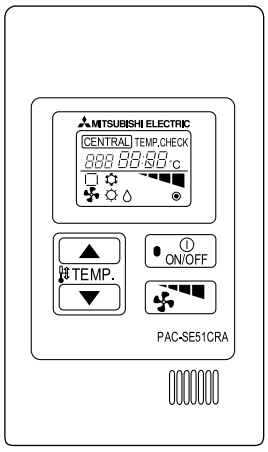
■ System example



■ External dimension



2-5. Simple ME remote controller [PAC-SE51CRA]



- Control: ON/OFF, room temperature, fan speed.
- The only wiring required is cross-over wiring based on two-wire signal lines.
- Room temperature sensors are built-in.
- Ability to limit the set temperature by AG-150A/ GB-50A
  (upper and lower temperature can be set)
- Can operate all types of indoor units

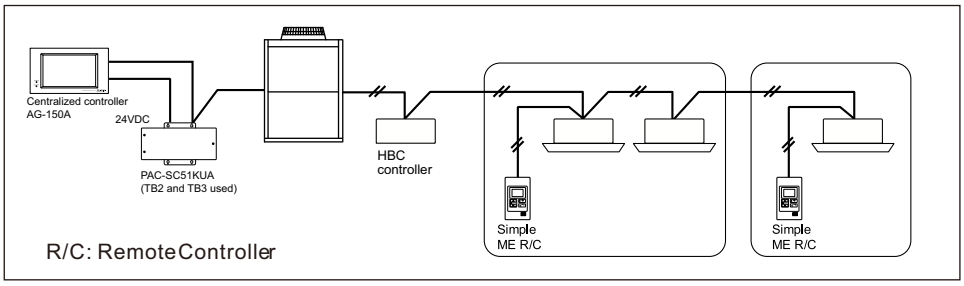
  ※: Since this controller has limited functions, it should always be used in conjunction with standard controller or centralized controller

■ Functions

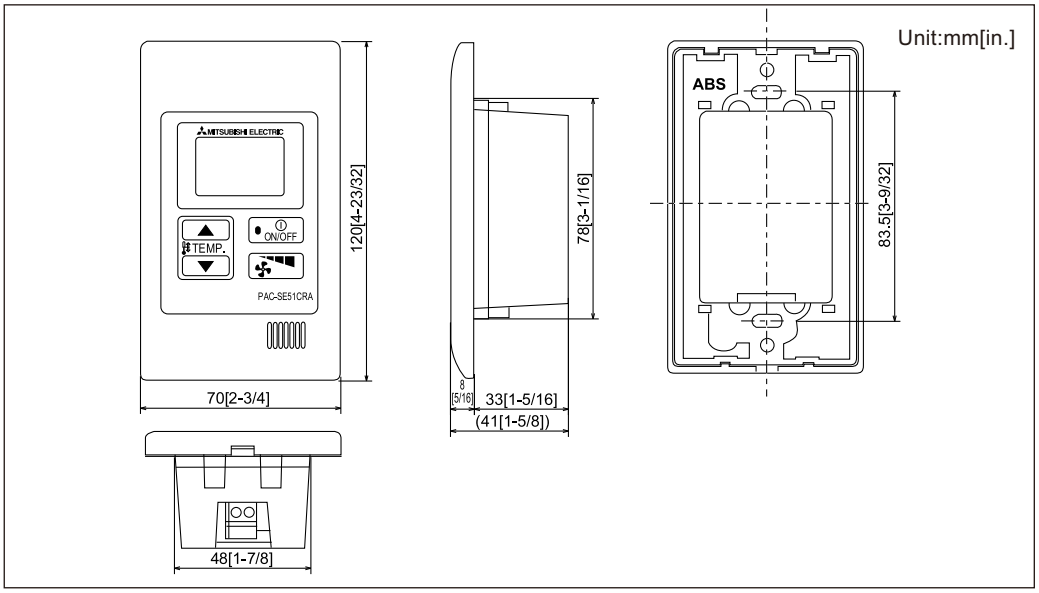
□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for a single group	○	○
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat. Operation modes vary depending on the air conditioner unit.	×	○
Temperature setting	Sets the temperature for a single group Range of temperature setting Cool/Dry : 19˚C - 30˚C (14˚C - 30˚C) Heat : 17˚C - 28˚C (17˚C - 28˚C) Auto : 19˚C - 28˚C (17˚C - 28˚C)	○	○
Fan speed setting	Models with 4 air flow speed settings: Hi/Mid-1/Mid-2/Low Models with 3 air flow speed setting: Hi/Mid/Low Models with 2 air flow speed settings: Hi/Low Fan speed setting varies depending on the model.	○	○
Air flow direction setting	Air flow direction angles (4-angle, Swing) Louver ON/OFF Air flow direction settings vary depending on the model.	×	×
Timer operation	Not available	×	×
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Set temperature). ※1: When the local remote controller inactivation command is received from the master system controller, "CENTRAL" is displayed.	×	※1 ○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit only when the indoor unit is operating.	×	×
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed.	×	□
Test run	This operates air conditioner units in test run mode. ※2: The display for test run mode will be the same as for normal start/stop (no display "test run").	×	※2 ○
Ventilation equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY.	○	×
Function to limit the setting range of room temperature (Set temperature range limit)	The range of room temperature setting can be limited by the initial setting. The lowest limit temperature can be made higher than the usual (19˚C) at cooling/drying, while the upper limit temperature lower than the usual (28˚C) at heating. ※ This function is available only when applying together with TG-2000A and AG-150A.	×	○

■ System example

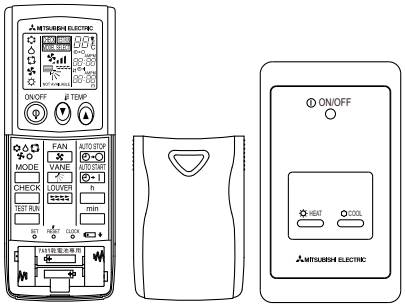


■ External dimension



2. Local remote controller

2-6. Wireless remote controller [PAR-FL32MA / PAR-FA32MA]



PAR-FL32MA　　PAR-FA32MA
(Signal receiving unit)

■ Functions

□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for a single group	○	○
Operation mode switching	Switches between Cool / Dry / Fan / Heat / Auto. Operation modes vary depending on the air conditioner unit.	○	○
Temperature setting	Sets the temperature for a single group Range of temperature setting Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F (57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C) / 63°F - 83°F (63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C) / 67°F - 83°F (63°F - 83°F) ( ) For PEFY/PFFY by setting DipSW 7-1 to ON and limits to NI6H fan speed only. ※ Set to PAR-FL32MA according to its Installation Manual 4 "Model setting".	○	○
Fan speed setting	Models with 4 air flow speed settings: Hi/Mid-1/Mid-2/Low Models with 3 air flow speed settings: Hi/Mid/Low Models with 2 air flow speed settings: Hi/Low Auto setting varies depending on the model.	※	※
Air flow direction setting	Air flow direction angles (4-angle, Swing) Auto Louver ON/OFF. Air flow direction settings vary depending on the model.	※	※
Timer operation	One ON/OFF setting can be set for one day.	○	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Change operation mode, Set temperature, Reset filter). ※1: If operation is performed when the local remote controller inactivation command is received from the main system controller, a buzzer will ring and an LED will flash.	×	※1 ○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit when the indoor unit is operating.	×	×
Error	When an error occurs on the air conditioner unit, the operation lamp on the signal receiving unit will flash.	×	○
Test run	This operates air conditioner units in test run mode.	○	○
Ventilation equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY.	×	×

※ Some models will have different display for the air flowdirection and fan speed. Set the air flow direction and fan speed when performing initial setting.

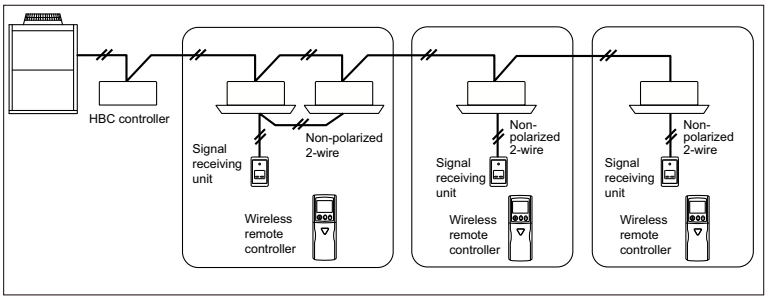
- It can operate in a group system without requiring address settings.
- When operating, it displays LED lamps. When errors occur, the error code can be shown by the LED flash count.

※: If an indoor unit with different functionality is operating inside the same group, please note there may be cases when functionality is partially disabled for batch control.

※: Wireless remote controllers can only be used for a single refrigerant system.

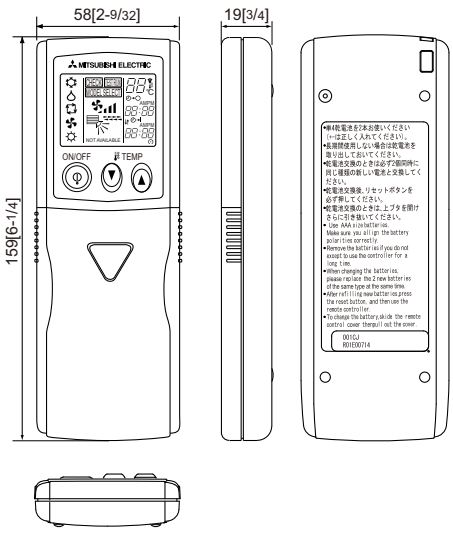
※: If you use a system controller to centrally control a group, you will need cross-wiring between indoor units when using a wireless remote controller.
Also ensure there is no difference between the group setting of the main system controller and the cross wiring across indoor units when wiring and setting cross wires.

■ System example

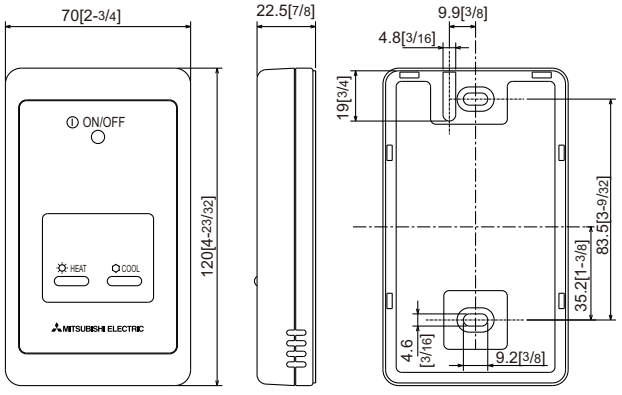


■ External dimension

PAR-FL32MA



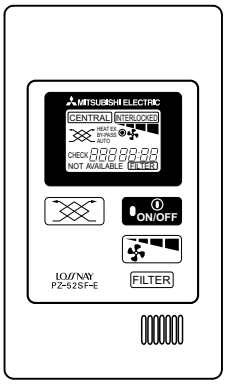
PAR-FA32MA



Unit:mm[in.]

2. Local remote controller

2-7. LOSSNAY remote controller [PZ-52SF]



- Stand-alone LOSSNAY operation is possible by commands from a centralized controller or LOSSNAY remote controller. (AG-150A/GB-50A are centralized controllers that support LOSSNAY operation.)
- The LOSSNAY remote controller is capable of changing the air flow and vent modes.
- All the wiring is cross-wiring that uses non-polar two wire system signal cables.

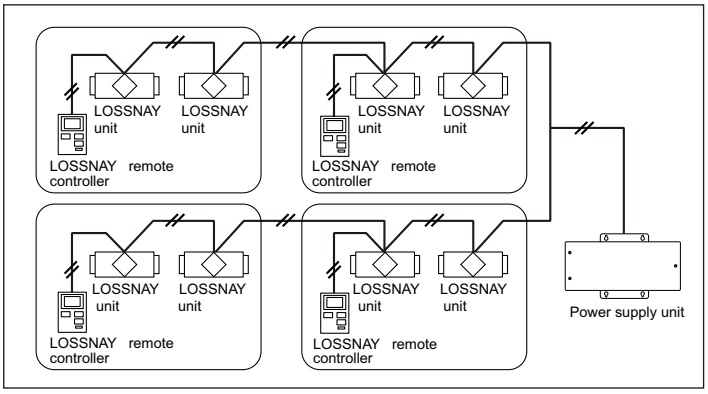
※ : When setting up a LOSSNAY stand-alone system or when setting up a LOSSNAY and centralized controller system, connect a power supply unit for the signal cables.
※ : It is impossible to use a LOSSNAY remote controller for LOSSNAY unit that is interlocked with other indoor units (except for some models).
※ :This product is in short supply.

■ Functions

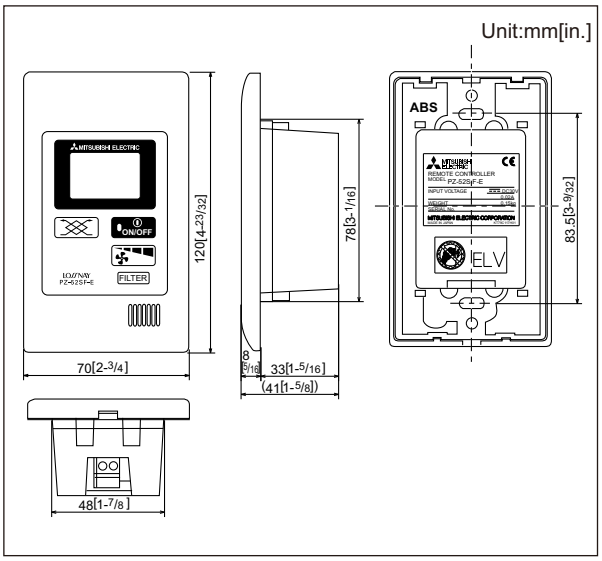
□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for a LOSSNAY unit	○	○
Operation mode switching	Switches between automatic ventilation/ vent - heat interchange/ normal ventilation Note: Operation modes vary depending on the model. When connecting to only models without a damper, these models cannot be used.("NOT AVAILABLE" will appear in the display.)	○	○
Temperature setting	Not available	×	×
Fan speed setting	Models with 2 air flow speed settings: Hi/Low When only connected to single notch models, this function is disabled.	○	○
Air flow direction setting	Not available	×	×
Timer operation	Not available	×	×
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Reset filter). ※1: When the local remote controller inactivation command is received from a main system controller, " CENTRAL " is displayed.	×	※1 ○
Indoor unit intake temperature	Not available	×	×
Error	When an error occurs on the air conditioner unit, the operation lamp on the signal receiving unit will flash.	×	□
Test run	There is no test run switch for LOSSNAY remote controllers. Set test run on a LOSSNAY by using the test run switch on the LOSSNAY unit. ※2: Cancel by operating the ON/OFF switch after switching off the LOSSNAY unit test run switch.	※2 ×	○
Ventilation equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY.	○	○
Interlocked operation	Indicates it is being operated by an operation control unit's external control terminal for an interlocked system that contains LOSSNAY units and indoor units.	×	○

■ System example

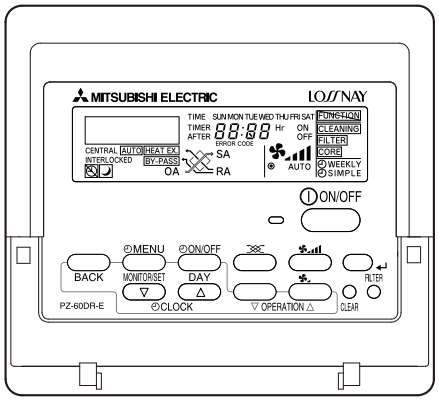


■ External dimension



2. Local remote controller

2-8. LOSSNAY remote controller for LGH-RX5-E [PZ-60DR-E]



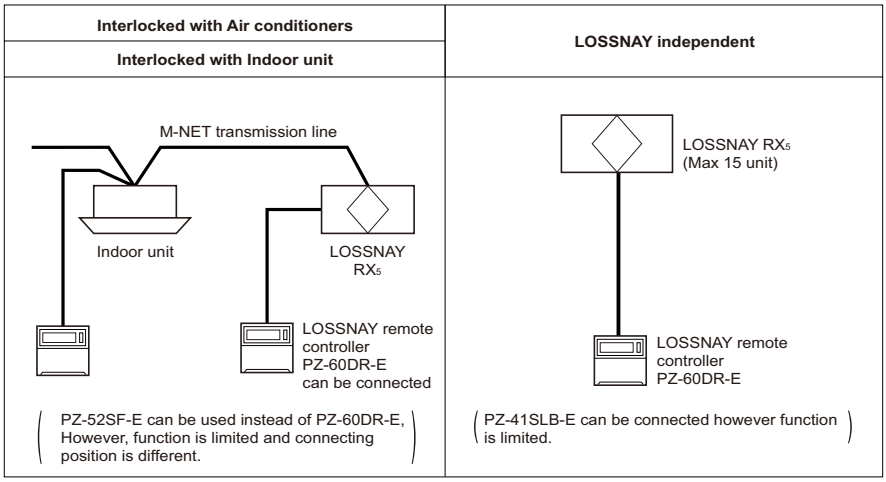
- Stand-alone LOSSNAY operation is possible by commands from a centralized controller or LOSSNAY remote controller. (AG-150A/GB-50A are centralized controllers that support LOSSNAY operation.)
- The LOSSNAY remote controller is capable of changing the air flow and vent modes.
- All the wiring is cross-wiring that uses non-polar two wire system signal cables.

※ : When setting up a LOSSNAY stand-alone system or when setting up a LOSSNAY and centralized controller system, connect a power supply unit for the signal cables.
※ : It is possible to use a LOSSNAY remote controller for LOSSNAY unit that is interlocked with other indoor units.
※ : It is not possible to connect to LGH-RX4-E.

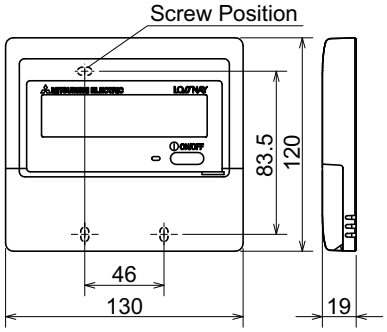
■ Functions (in case of LGH-RX5-E)

Function(Communicating mode)
New Function
Extra low fan speed (Except LGH-150RX5 and 200RX5)
Weekly timer
Simple timer
Night Purge mode
Multi languages display
24-hours ventilation (Except LGH-150RX5 and 200RX5)
Operation function limit
Clock display
Contact number setting for error situation
LOSSNAY core cleaning sign
Air volume display by external signal
Bypass display by external signal
Possible setting from the controller in addition to unit Dip-SW setting
Extra High / High switch setting
Multi Ventilation mode
Power supply / exhaust when operation starts
Pulse input
Inter locking mode
Automatic recovery following power supply interruption
Delay operation at heating or cooling start-up
Operation output monitor
Exhaust fan stop at outdoor air lower than -15°C
Exhaust fan stop during defrosting,exhaust fan Low speed operation at outdoor air lower than -15°C
Bypass automatic ventilation priority setting
Filter cleaning sign
Maintenance display
Total operated hours
Total LOSSNAY mode operated hours
Error history
Carry on function
In the use of MELANS M-NET
2 controllers display
"Central" indication(use prohibition)

■ System example

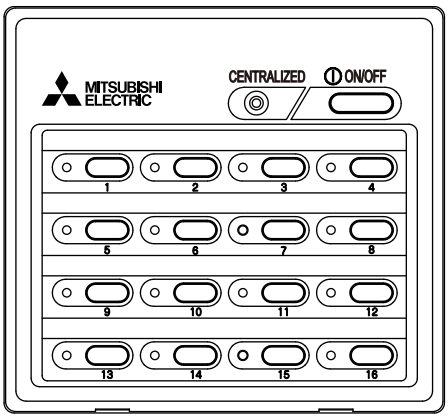


■ External dimension



3. System remote controller

3-1. ON/OFF remote controller [PAC-YT40ANRA]



- 16 groups/50 units can be controlled.
  - Up to 16 groups/50 units can be operated with one ON/OFF remote controller.
  - A general-purpose interface is available for control, so general devices can also be turned ON and OFF.
- Just press a switch to start.
  - All of the units can be started and stopped by pressing the main switch, and each unit in the group can be started and stopped with individual switches.
- LED flashing during failure.
  - If any error should occur in the air conditioner, its details can be confirmed easily with the flashing LED. The LED also indicates whether each group is running or stopped.
- Interlock operation with external system possible.
  - It can be flexibly interlocked with a card reader, fire alarm system or building management system, etc., using the incorporated external input/output function.
- Flexible group setting.
  - The groups can be easily configured, so the group pattern can be freely set according to the layout.
  - The ON/OFF remote controller can be connected at the indoor/outdoor transmission line without the power supply unit.

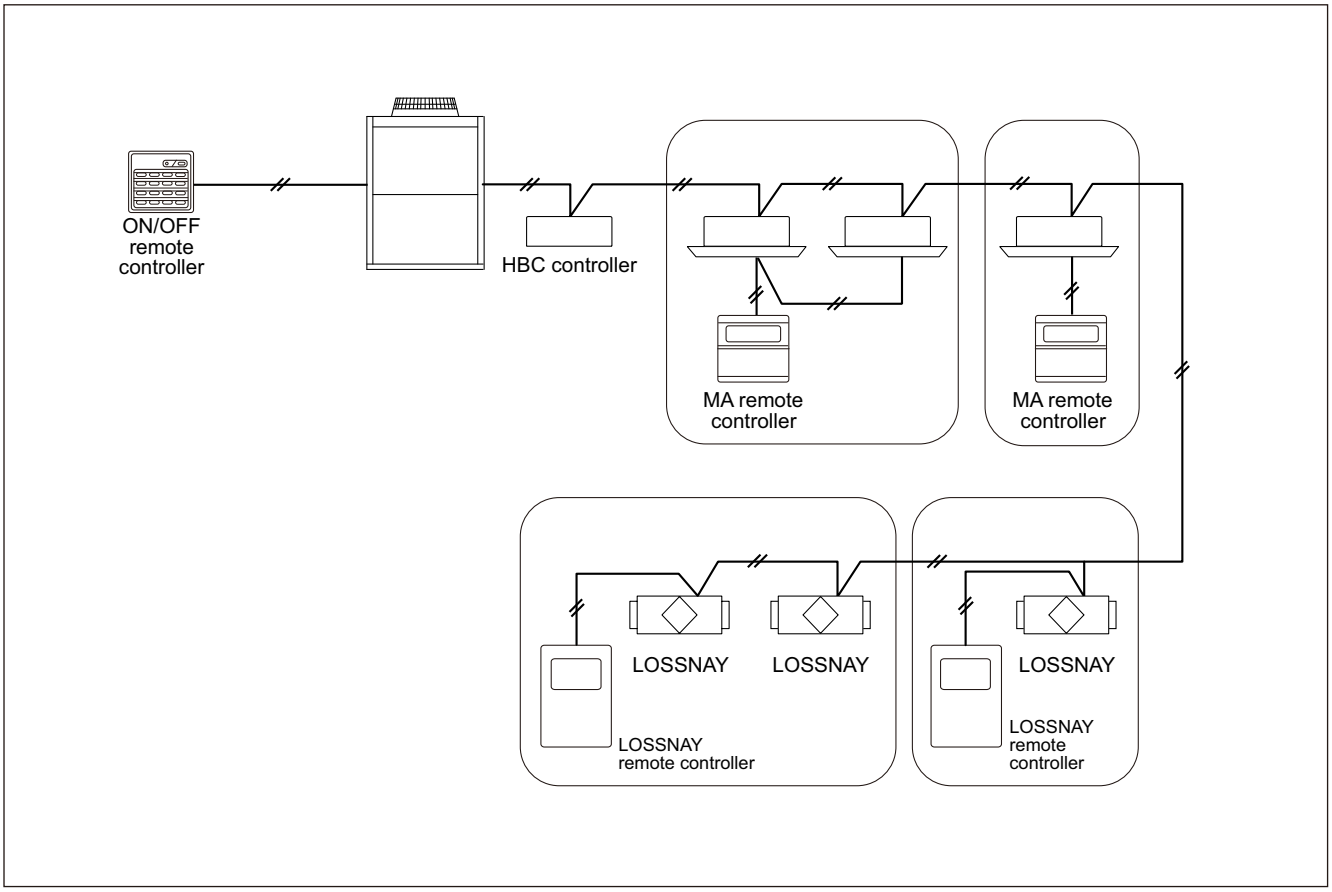
■ Functions

□: Each unit ○: Each group ●: Each block
△: Each floor ◎: Group or collective ×: Not available

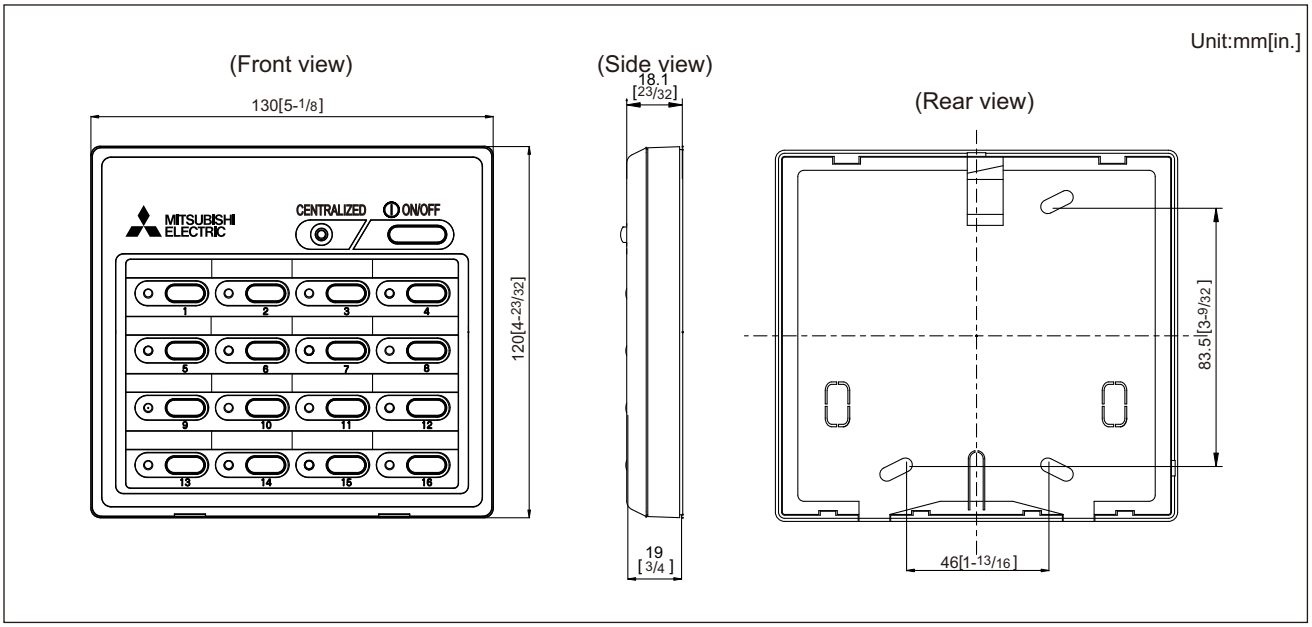
Item	Description	Operations	Display
ON/OFF	ON and OFF operation for the air conditioner units	◎	◎
Operation mode switching	Not available	×	×
Temperature setting	Not available	×	×
Fan speed setting	Not available	×	×
Air flow direction setting	Not available	×	×
Manual operation prohibit/permit (ON/OFF, operation mode, setting temperature, filter reset)	Compatible only with external input.	×	×
Specific mode operation prohibit (Cooling prohibit, heating prohibit, cooling/heating prohibit)	Not available	×	×
Room temperature display	Not available	—	×
Error display	LED flashes during failure. (The error code can be confirmed by removing the cover.)	—	△
Schedule operation	Not available	×	×
Ventilation operation (independent)	Group operation of only LOSSNAY units possible. ※ Only ON/OFF of group.	○	○
Ventilation operation (interlocked)	The LOSSNAY will run in interlock with the operation of indoor unit. ※ The fan rate and mode cannot be changed. The LED will turn ON only during operation after interlocking.	△	△
External input (Timer connection, emergency stop input, etc.)	The following can be input with the level signals or pulse signals. Level signal: "Emergency stop input" or "Collective ON/OFF" Pulse signal: "Collective ON/OFF" or "Local remote controller prohibit/permit" One input can be selected from those above.	◎	—
External output (Error output, operation output)	"ON/OFF" and "error/normal" are output with the level signal. ※ The optional output cable is required.	—	◎

3. System remote controller

■ System example



■ External dimension



3. System remote controller

3-2. Advanced touch controller [AT-50A]

- AT-50A features a 5 inch color LCD touch panel. The settings for air conditioning units can be changed by touching the corresponding icons on the display.
  On the panel of AT-50A are 3 buttons; ON/OFF, F1 and F2 enabling simple and quick operation.
- One AT-50A can control up to 50 groups/units of air conditioners.

Item	Description	Operations	Display
External input (Emergency stop input, etc.)	The following input with level signals or pulse signals are available. Level signal: "Emergency stop input" or "Collective ON/OFF" Pulse signal: "Collective ON/OFF" or "Local remote controller prohibit/permit" One input can be selected from those above. * An external input/output adapter (PAC-YT41HAA (sold separately)) is required. Relays and DC power supply or other devices must be prepared at the site.	◎	◎
External output (Error output, operation output)	"ON/OFF" and "error/normal" are output with the level signal. * An external input/output adapter (PAC-YT41HAA (sold separately)) is required. Relays and DC power supply or other devices must be prepared at the site.	◎	◎
Main system controller /Sub system controller	AT-50A can be set to Sub System controller. When connecting multiple system controllers, designate the system controller with many functions as the "Main", and set the system controllers with few functions as the "Sub".	✓	–
Function Buttons (F1 Button, F2 Button)	The F1 button and the F2 button can be set as a run button of the following collective operation. (Setback/Schedule/Operation Mode/Temperture Correction/Remote Controller Prohibition)	◎	◎

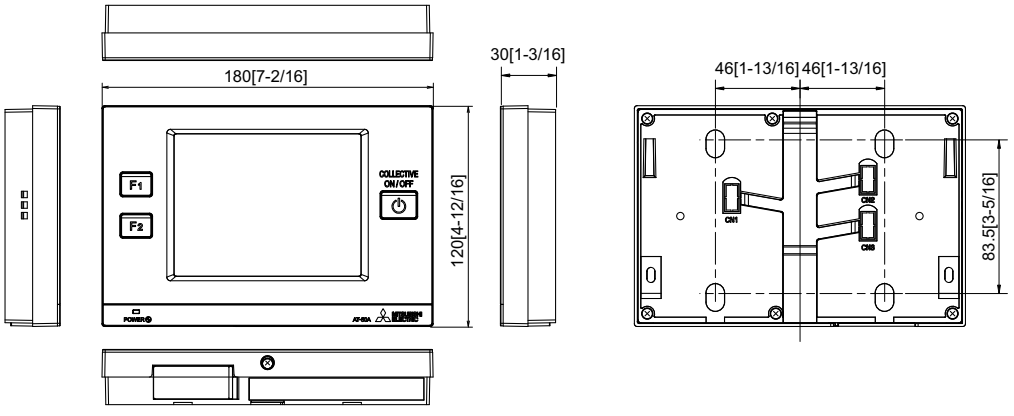
■ Functions

□:Each unit ○:Each group ●:Each block ✓:Available
△:Each floor ◎:Group or collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for the air conditioner units. The Batch Operation ON/OFF button will light up when one or more air conditioning units are operated.	◎	◎
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat Operation modes vary depending on the air conditioner unit.	◎	◎
Temperature setting	The temperature can be set within the following range. Cool/Dry : 19°C - 30°C / 67°F - 87°F Heat : 17°C - 28°C / 63°F - 83°F Auto : 19°C - 28°C / 67°F - 83°F Setback : [Upper limit] 19°C-30°C / 67°F-87°F [Lower limit] 12°C-28°C / 53°F-83°F * Set temperature range varies depending on the model.	◎	◎
Fan speed setting	Models with 5 air flow speed settings: Hi/Mid-1/Mid-2/Low, Auto Models with 4 air flow speed settings: Hi/Mid-1/Mid-2/Low Models with 3 air flow speed settings: Hi/Mid/Low Models with 2 air flow speed settings: Hi/Low * Fan speed setting (including Auto) varies depending on the model.	◎	○
Air flow direction setting	Air flow direction angles 4-angle or 5-angle, Swing, Auto Louver ON/OFF * Air flow direction settings vary depending on the model.	◎	○
Permit / Prohibit	The ON/OFF, operation mode, setting temperature and filter sign reset operations using the local remote controllers can be prohibited. Only ON/OFF and filter reset can be prohibited for the LOSSNAY group.	◎	◎
Operation lock	The operation lock can be set to the input operation of AT-50A. Each button can be set. (Function Button 1, Function Button2, Collective ON/OFF,Touch Panel) Each function can be set. (Operation mode, Setting temperature, Fan speed, Menu button) The password for the lock release can be set.	◎	◎
Error display	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. * When an error occurs, the "ON/OFF" LED flashes. The operation monitor screen show abnormal icon over the unit. The error monitor screen shows the abnormal unit address and error code. The error log monitor screen shows the time and date, the abnormal unit address, error code and source of detection.	×	□◎
Schedule operation	Weekly schedule setting up to 12 pattern is available. In one pattern, up to 16 setting of "ON/OFF", "Operation mode", "Set Temperature", "Fan speed", "Air flow direction" and "Permit / Prohibit local operation" can be scheduled. Two types of weekly schedule(Summer/Winter) can be set. Today's schedule setting up to 5 pattern in available. * Time setting unit: 5 minute /unit	○	○
Night setback setting	This function helps keep the indoor temperature in the temperature range while the units are stopped and during the time this function is effective.	◎	◎
Ventilation (independent)	Switches the mode "Bypass/Heat recovery/Auto" for LOSSNAY groups.	◎	◎
Ventilation (interlocked)	The LOSSNAY will run in interlock with the operation of indoor unit. The mode cannot be changed. The LED will turn ON during operation after interlocking.	◎	◎
Temperature-set limitation	Batch-setting to temperature range limit at cooling, heating, and auto mode. This function cannot be used with the MA remote controller. (Depends on the indoor unit model.)	◎	◎
Specific mode operation prohibit (Cooling prohibit, heating prohibit, cooling/heating prohibit)	When set as the main controller, operation of the following modes with the local remote controllers can be prohibited. When cooling is prohibited: Cooling, dry, automatic can not be chosen. When heating is prohibited: Heating, automatic can not be chosen. When cooling/heating is prohibited: Cooling, dry, heating, automatic can not be chosen.	◎	◎
System changeover	Operation mode can be switched to an optimal mode depending on indoor temperature setting and target temperature of each group or a representative indoor unit. * When this function is used, the system changeover function of the outdoor unit cannot be used.	●	–

■ External dimension

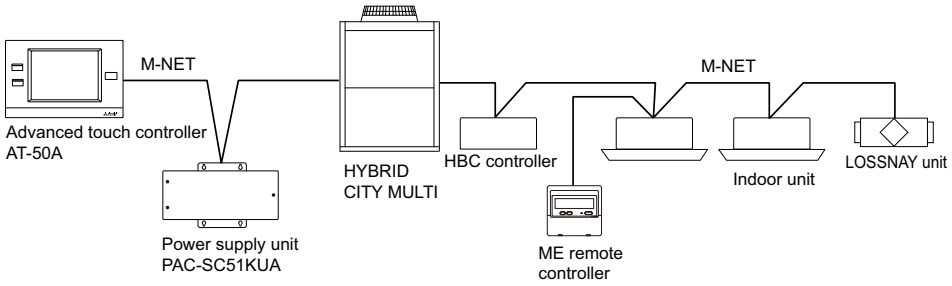
Unit:mm[in.]



3. System remote controller

■ System example

(1) Connection with HYBRID CITY MULTI units



1. Power supply to AT-50A

AT-50A needs DC power supply of M-NET (24~32VDC) for centralized control transmission use, operation.

(1). Power supply of M-NET from power supply unit PAC-SC51KUA.
Power supply unit PAC-SC51KUA is recommended for AT-50A. See the diagram below ; for details, please refer to the installation manual of Power supply unit PAC-SC51KUA

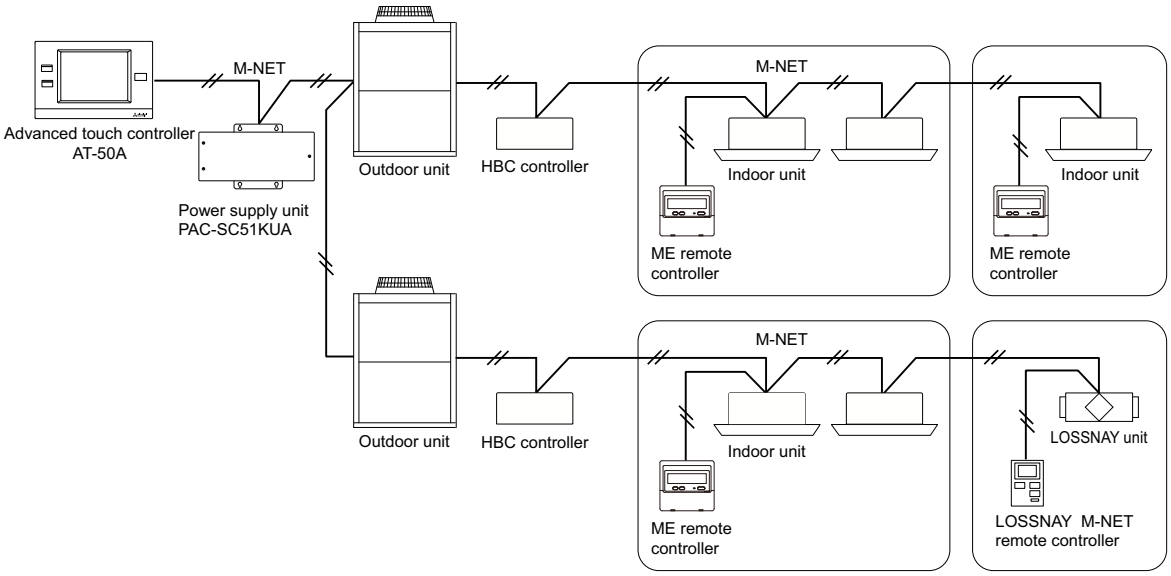


Fig. 1 Basic structure of AT-50A and PAC-SC51KUA

(2). Power supply of M-NET from outdoor unit connector TB7.
As shown on Fig. 2, AT-50A receives power supply of M-NET from R410A outdoor unit connector TB7.
In case one of the outdoor units should change its power supply, switch CN41 to CN40.

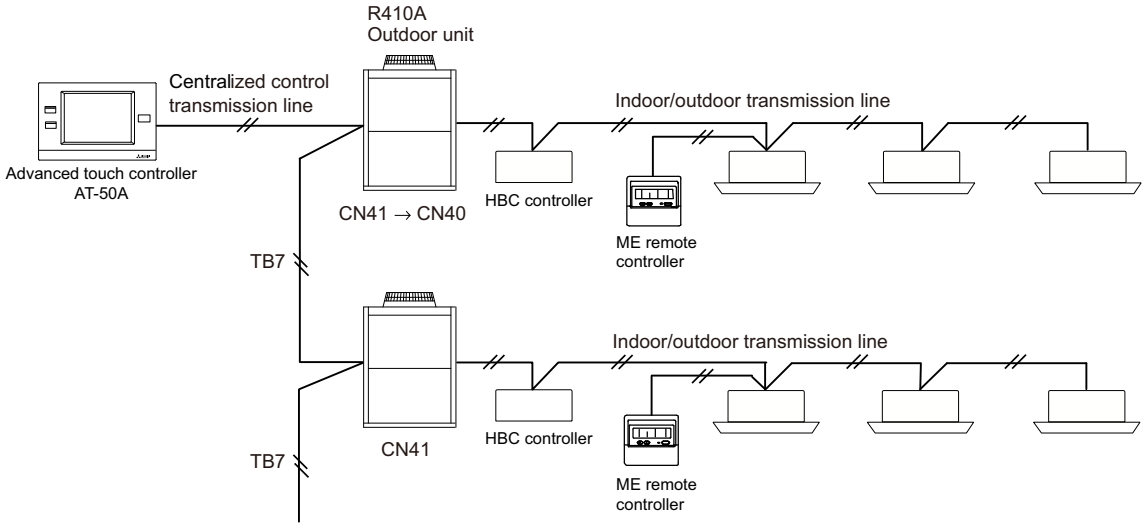


Fig. 2 AT-50A, TB7 scheme

(3) Power supply of M-NET from outdoor unit connector TB3.
AT-50A can also receive power supply from R410A/R407C/ R22 outdoor unit connector TB3. However, if the outdoor unit shuts down, AT-50A will also automatically shut down. Therefore, this scheme is not recommended for air conditioning system consisting of multiple outdoor units.

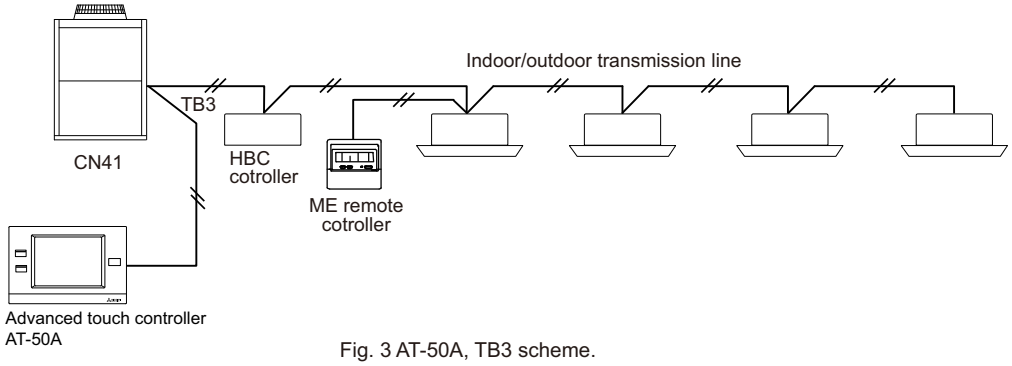
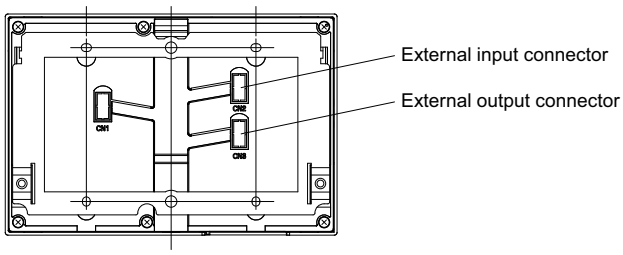


Fig. 3 AT-50A, TB3 scheme.

2. External input/output usage



(1). External signal input function

✻ External signal input requires the external I/O adapter (Model: PAC-YT41HAA) sold separately.

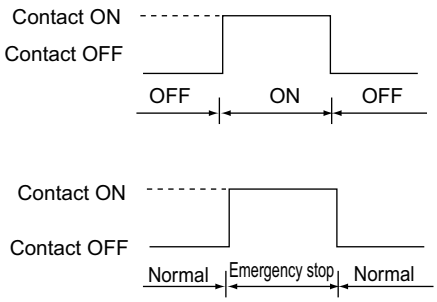
1). External input

External no-voltage contact signal can be used to send signals indicating the following status of all air conditioning units that are controlled : Emergency stop/Normal, ON/OFF, and local remote controller operation Prohibit/Permit.
The above settings can be made using the external input setting on the Initial Setting screen accessed from the Service Menu screen.

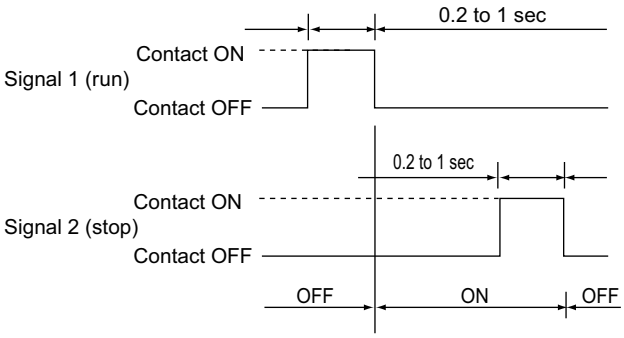
No	External signal input function	Remarks
1	Do not use external input signal (factory setting)	———
2	Execute emergency stop/normal with level signal	The local remote controller ON/OFF operations, and the controller ON/OFF operation and prohibit/enable change operations will be prohibited during emergency stop.
3	Perform ON/OFF with level signal	The local remote controller ON/OFF operations, and the controller ON/OFF operations and prohibit/enable change operations will be prohibited.
4	Perform ON/OFF, prohibit/enable with pulse signals.	Set the pulse width while the contact is ON to 0.2 to 1 sec.

2). Level signal and pulse signal

(A) Level signal



(B) Pulse signal
(Example) for ON/OFF



✻ The prohibit/enable input is the same.

3). External input specifications

CN2	Lead wire	Emergency stop/normal level signal	ON/OFF, level signal	ON/OFF, prohibit/enable pulse signal
No.1	Green	Built-in power supply for external input (DC5V)		
No.2	Yellow	Emergency stop/normal input	ON/OFF input	ON input
No.3	Orange	Not used	Not used	OFF input
No.4	Red	Not used	Not used	Local remote controller operation prohibit input
No.5	Brown	Not used	Not used	Local remote controller operation enable input

(A) For level signal

① When the emergency stop/normal signal is selected, the status will change from normal to emergency stop when the external input signal contact changes from OFF to ON, and will change from emergency stop to normal when the contact changes from ON to OFF. Emergency stop signal will bring the air conditioners to stop, and canceling the emergency stop will not automatically reset these units. To go back to the previous operation status, they must be manually turned back on.

② When the ON/OFF signal is selected, the status will change from OFF to ON when the external input signal contact changes from OFF to ON, and will change from ON to OFF when the contact changes from ON to OFF.

(B) For pulse signal

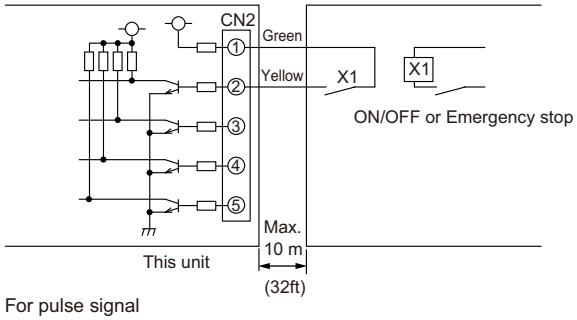
① Even if the ON signal is input during ON, the status will remain ON.

② If the local remote controller is prohibited, the ON/OFF operation mode and temperature setting operations by the local remote controller will be prohibited.

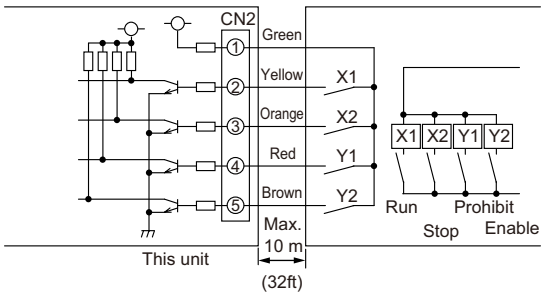
③ Set the pulse width (contact ON time) to 0.2 to 1 sec.

4). Recommended circuit example

(A) For level signal



(B) For pulse signal



① The relays and extension cables, etc. must be prepared separately at the site.
② Use a no-voltage contact and minute load relay (minimum application load 5VDC-1mA).
③ The length of the connection cable extension should not exceed 10 m (32 ft). (Use a cable of 0.3 mm^2 (22 AWG) or thicker.)
④ Cut of the cable not being used close the connector and properly insulate the cut off ends with tape or the like.

(2). External signal output function

※ External signal output requires the external I/o adapter (Model: PAC-YT41HAA) sold separately.

1). External output

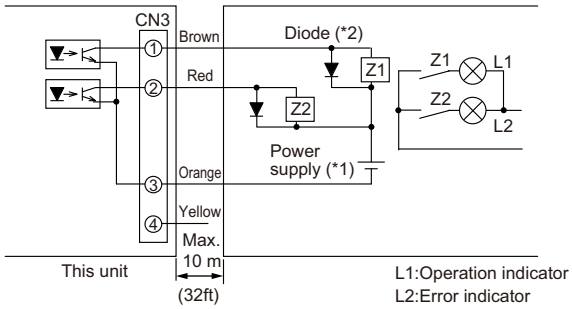
When one or more air conditioners are running, the “ON” signal will be output and if a malfunction occurs in one or more air conditioners, the “Malfunction” signal will be shown.

2). External output specifications

CN 3	Lead wire	Details of each terminal
No.1	Brown	ON/OFF
No.2	Red	Malfunction/normal
No.3	Orange	Common (External ground)
No.4	Yellow	

① " ON" signal and " Malfunction" signal will both be output.

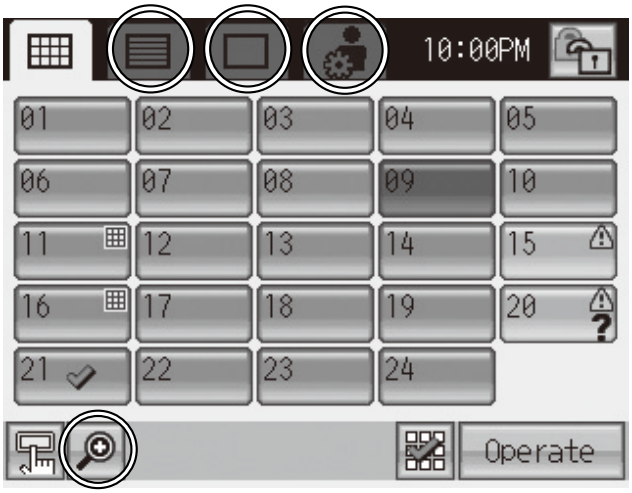
3). Recommended circuit example



Use Z1 and Z2 relays having the following specifications.
Operation coil
Rated voltage :12VDC,24VDC
Power Consumption : 0.9W or less
(*1)Prepare a power supply separately according to the relay being used. (12VDC or 24VDC)
(*2)Always insert a diode on both ends of the relay coil.

① Each element will turn on while ON operation or a malfunction occurs.
② The connection cable can be extended up to 10m (32ft).
③ The relays, lamps, diodes and extension cables, etc, must be prepared separately at the site.

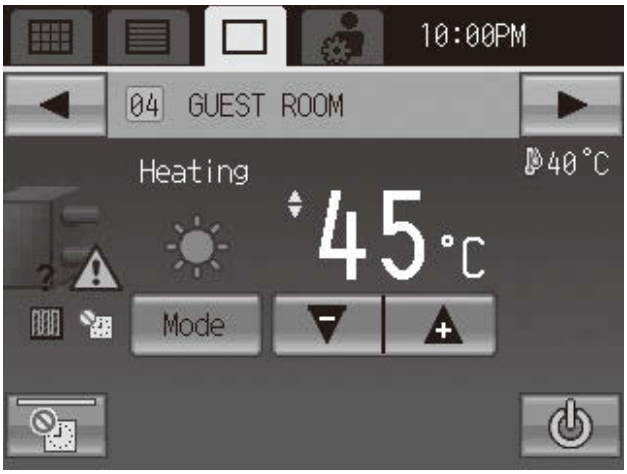
3. Screens of AT-50A



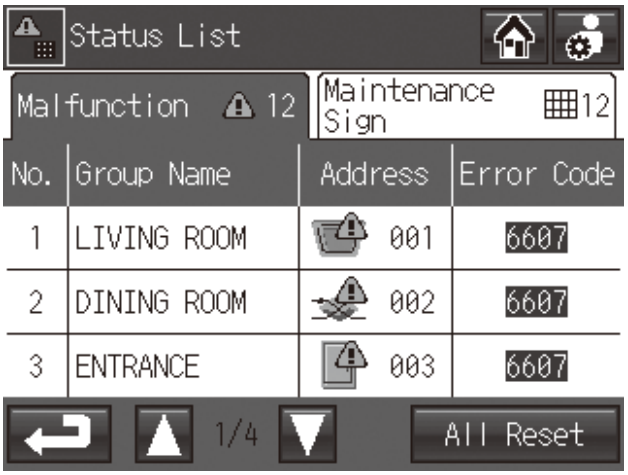
GRID (S)

GRID (L)

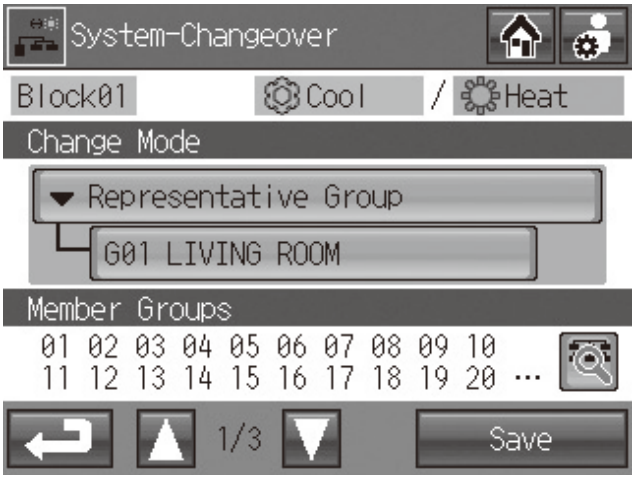
LIST



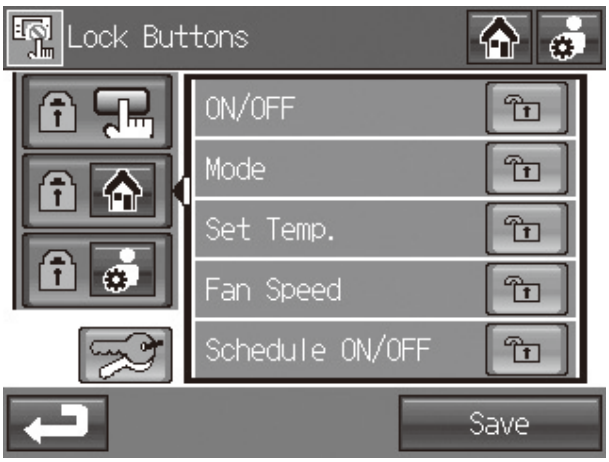
GROUP



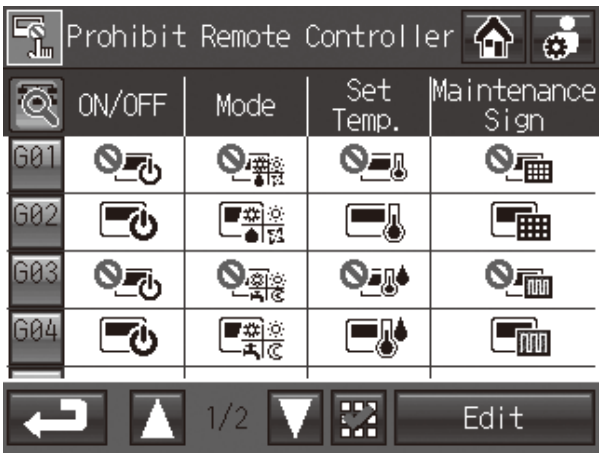
Status List



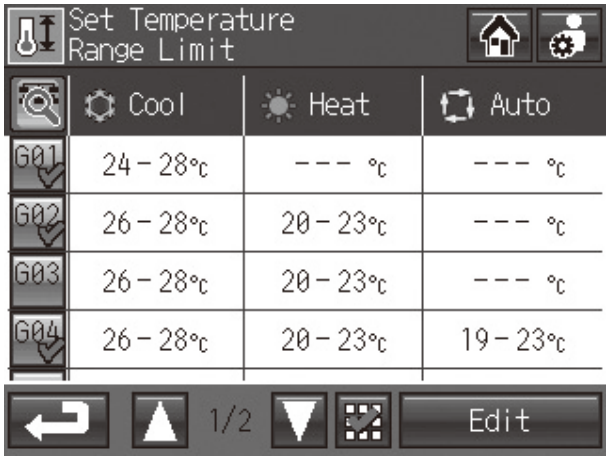
System-Changeover



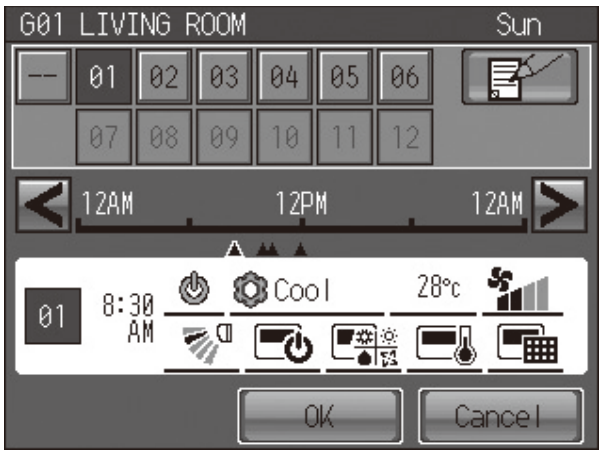
Operation Lock



Prohibit Remote Controller



Set Temperature Range Limit



Set Schedule

Display Format

3-3. Centralized controller [AG-150A]

A. The centralized controller of AG-150A combines Web function (optional), which enable the air conditioner system management on a PC browser screen. *1
The management even carried out at a long distance place via public telephone line or internet.

*1 Microsoft® Internet Explorer® Ver. 6 or later by Microsoft Corporation is needed. (As of December 2012, operation with Internet Explorer® Ver.6~9 are tested) (Note: You must have operating system which complies with "Oracle® Java™ Plug-in". When using Internet Explorer® (64 bit), use Java™ Plug-in (64bit).)
Microsoft®, Internet Explorer® is a registered trade mark of Microsoft Corporation US in the USA and other countries.
Oracle® and Java™ are trademarks or registered trademarks of Oracle corporation. in the United States and/or other countries.

Note: Connect AG-150A to a private network.
Use a security device such as a VPN router when connecting the AG-150A to the Internet to prevent unauthorized access.

B. Together with integrated centralized control software TG-2000A, and/or PI, DIDO controller, many optional functions like "Charging", "Peak-cut", "Energy saving", "General equipment management", "Scheduling" etc, can be carried out. Details, please refer to sections of TG-2000A and/or PI, DIDO controller, PLC software.
*AG-150A connected with PAC-YG50ECA cannot be connected to the PLC (PAC-YG21CDA).

C. One AG-150A can control maximum 50 units (including LOSSNAY). Up to 150 units (including LOSSNAY) can be controlled from one AG-150A connected with three expansion controllers.
The integrated centralized control software TG-2000A can manage maximum 2000 units (including LOSSNAY). For details, refer to TG-2000A page.

D. Taking advantage of AG-150A's Web functions, alarming E-mail containing address and error code can be sent to appointed E-mail address upon any fault happen at the air conditioner system.
This could release standby personnel and save operation cost.

E. AG-150A features a 9"-wide color LCD touch panel.
The settings for air conditioning units can be changed by touching the corresponding icons on the display.

F. The interlock-control option enables interlocked operations of air conditioning unit groups and the general equipment groups, based on the changes of status in the ON/OFF, Mode, or Error signals.(Can be set from the Web browser only)

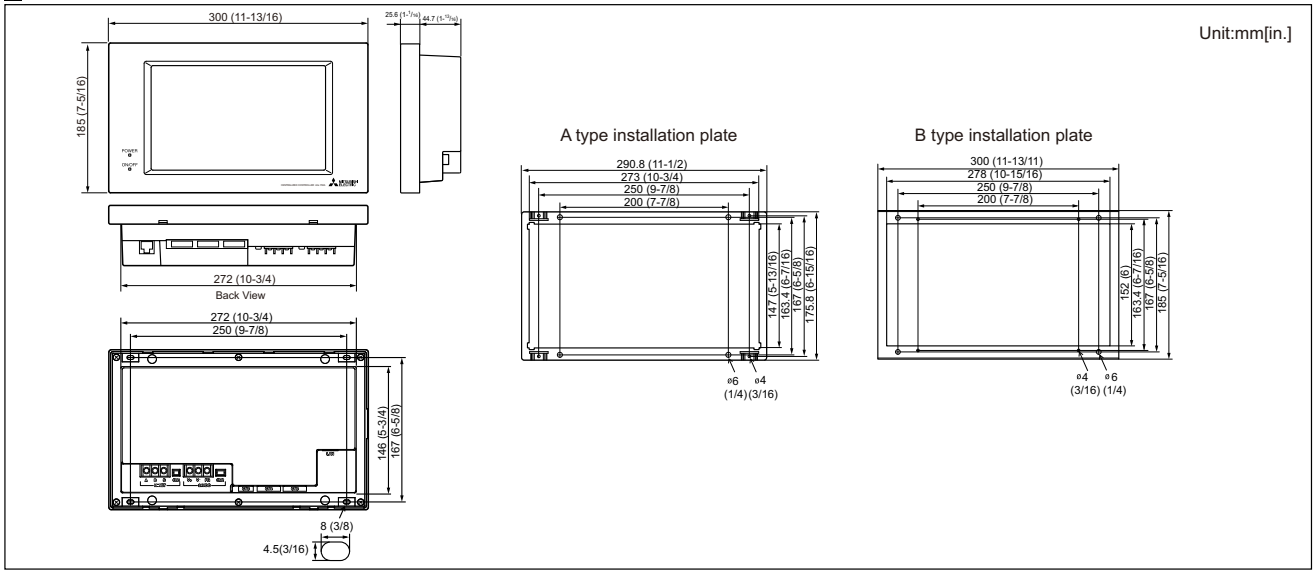
■ Functions

□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	ON and OFF operation for the air conditioner units	○◎△●	○◎
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat. (Group of LOSSNAY unit : automatic ventilation/ vent - heat interchange/ normal ventilation) Operation modes vary depending on the air conditioner unit.	○◎△●	○
Temperature setting	Range of temperature setting Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F (57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C) / 63°F - 83°F (63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C) / 67°F - 83°F (63°F - 83°F) ※ Range of temperature settings vary depending on model.	○◎△●	○
Sliding Temperature setting	This function shifts the preset temperature by the preset increment to reduce the temperature difference between the indoor and outdoor air temperatures during cooling operation. The maximum shifting temperature (+1˚C, +2˚C, +3˚C, +4˚C) can be set for each group.	○	○
Night setback setting	This function helps keep the indoor temperature in the temperature range while the units are stopped and during the time this function is effective.	○	○
Fan speed setting	Models with 5 air flow speed settings: Hi/Mid-1/Mid-2/Low, Auto Models with 4 air flow speed settings: Hi/Mid/Low, Auto Models with 2 air flow speed settings: Hi/Low Fan speed setting (including Auto) varies depending on the model.	○◎△●	○
Air flow direction setting	Air flow direction angles, 4-angle or 5-angle Swing, Auto ※1: Louver cannot be set. ※Air flow direction settings vary depending on the model.	*1 ○◎△●	○
Schedule operation	Weekly schedule can be set for each group of air conditioning units. Optimal startup setting is also available. ※2 By registering a license for AG-150A, weekly (5 types), annual, and current day scheduling function become available. The system follows either the current day, annual schedule, or weekly, which are in the descending order of overriding priority. Twenty-four events can be scheduled per day, including ON/OFF, Mode, Temperature Setting, Operation Prohibition, Vane Direction, and Fan Speed. Five types of weekly schedule (Summer/Winter) can be set. Settable items depend on the functions that a given air conditioning unit supports.	*2 ○◎△●	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (ON/OFF, Change operation mode, Set temperature, Reset filter). ※3: When the local remote controller inactivation command is received from the master system controller, "Disabled"appears in inverted display on the operation setting screen.	○◎△●	*3 ○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit only when the indoor unit is operating.	×	○
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. ※4: When an error occurs, the "ON/OFF" LED flashes. The operation monitor screen shows the abnormal unit by flashing it. The error monitor screen shows the abnormal unit address, error code and source of detection. The error log monitor screen shows the time and date, the abnormal unit address, error code and source of detection.	×	*4 □◎
Test run	This operates air conditioner units in test run mode.	○◎△●	○
Ventilation equipment	The interlocked system settings can be performed by the master system controller. When setting the interlocked system, you can use the ventilation switch to switch the free plan LOSSNAY settings between "Hi", "Low" and "Stop". When setting a group of only free plan LOSSNAY units, you can switch between "Normal ventilation", "Interchange ventilation" and "Automatic ventilation". *5 When setting ventilation interlock with Mr.Slim units, the air conditioning and interlocked ventilation icon will display ON even when the interlocked LOSSNAY is operating by itself. (This will occur when used with the following M-NET adapter: PAC-SF48/50/60/70/80/81MA-E)	○◎△●	*5 ○
External input/output	By using accessory cables you can set and monitor the following. Input: By level signal: "Batch ON/OFF", "Batch emergency stop" By pulse signal: "Batch ON/OFF", "Enable/disable local remote controller" Output: "ON/OFF", "Error/Normal" ※6: Requires an external I/O cable (PAC-YG10HA; sold separately) and a commercially available external power supply.	*6 ◎	*6 ◎

NOTE: Depending on the versions of AG-150A, some of the functions may not be available. The external input/output terminal on AG-150A becomes unavailable when AG-150A is connected to PAC-YG50ECA. Use the terminals on PAC-YG50ECA in that case.

■ External dimension



1. Power supply to AG-150A

AG-150A needs DC power supply of 24V and M-NET (24~32V); the former is for centralized control transmission use and the latter is for AG-150A's operating and LAN function use.

(1). Power supply unit PAC-SC51KUA is the recommended power supplier for AG-150A. The basic scheme is as follows. For details, please refer to Power supply unit PAC-SC51KUA.

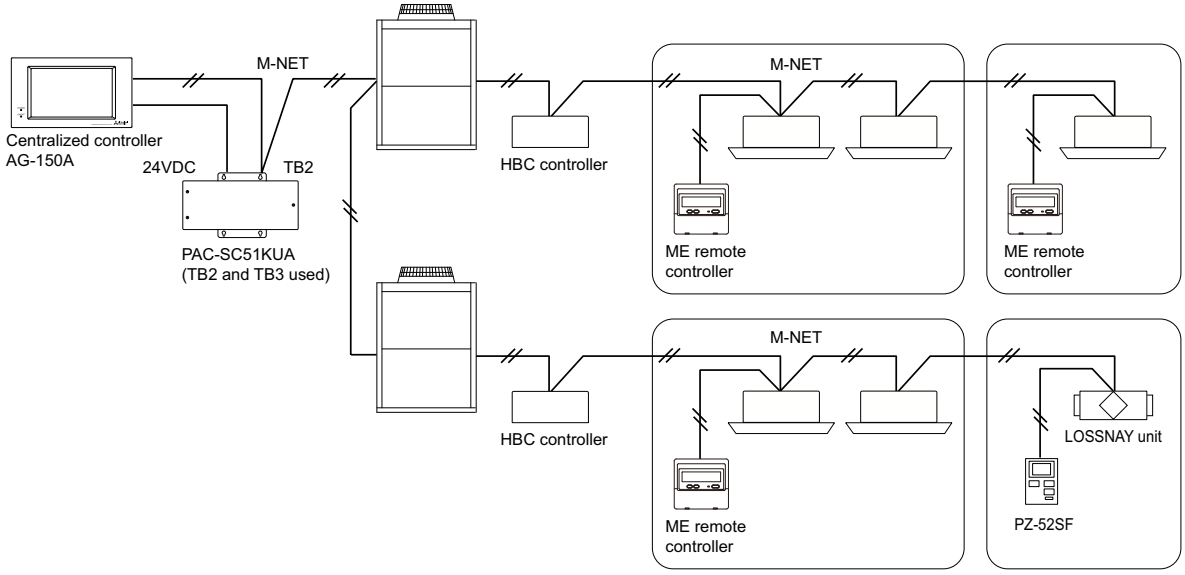


Fig. 1 AG-150A and PAC-SC51KUA basic scheme.

NOTE: For information about AG-150A connected with the expansion controller, refer to the following section(s):
3-6. Expansion Controller [PAC-YG50ECA]

2. External input/output usage

NOTE : When using the AG-150A connected with the expansion controller, use external input/output function of the expansion controller.

(1). External signal input function

✻To use the external signal input, an external I/O adapter (PAC-YG10HA; sold separately) and an external power supply are required.

1). External input

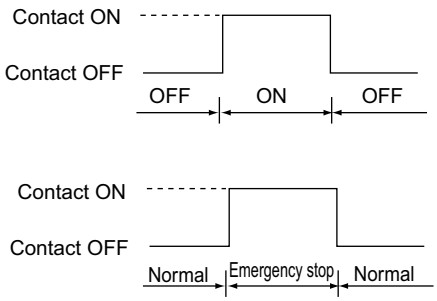
Emergency stop/normal, ON/OFF and prohibit/permit of local remote controller operation can be controlled for all air conditioners being controlled by using a voltage (12VDC or 24VDC) contact signal from an external source.
(Select with the function select setting.)

No	Function name	External signal input function	Remarks
1	Not in use	Do not use external input signal (factory setting)	———
2	Emergency stop (Level signal)	Execute emergency stop/normal with level signal	The local remote controller ON/OFF operations, and the controller ON/OFF operation and prohibit/permit change operations will be prohibited during emergency stop. Timer operation will also be prohibited.
3	ON/OFF (Level signal)	Perform ON/OFF with level signal	The local remote controller ON/OFF operations, and the controller ON/OFF operations and prohibit/permit change operations will be prohibited. Timer operation will also be prohibited.
4	ON/OFF prohibit/permit (Pulse signal)	Perform ON/OFF, prohibit/permit with pulse signals.	Set the pulse width while the contact is ON to 0.5 to 1 sec.

* DIDO controller (PAC-YG66DCA) cannot be collectively run or stopped by using the external input function. But when [Emergency stop (Level signal)] is selected, DIDO controller (PAC-YG66DCA) can be collectively stopped by setting the appropriate switches on the DIDO controller.

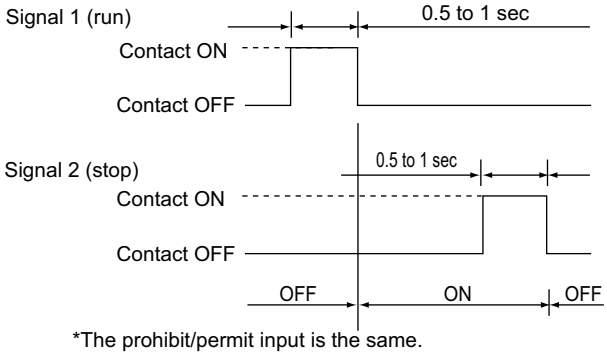
2). Level signal and pulse signal (12VDC or 24VDC)

(A) Level signal



(B) Pulse signal

(Example) for ON/OFF



*The prohibit/permit input is the same.

3). External input specifications

CN5	Lead wire	Emergency stop/normal level signal	ON/OFF, level signal	ON/OFF, prohibit/enable pulse signal
No.5	Orange	Emergency stop/normal input	ON/OFF input	ON input
No.6	Yellow	Not used	Not used	OFF input
No.7	Blue	Not used	Not used	Local remote controller operation prohibit input
No.8	Gray	Not used	Not used	Local remote controller operation enable input
No.9	Red	External DC source “+ 12VDC” or “+ 24VDC”		

(A) For level signal

① When the emergency stop/normal signal is selected, the status will change from normal to emergency stop when the external input signal contact changes from OFF to ON, and will change from emergency stop to normal when the contact changes from ON to OFF. Air conditioning units that came to an emergency stop will remain stopped after the emergency stop is cancelled. Manually start up each unit to restore the previous operation.

② When the ON/OFF signal is selected, the status will change from OFF to ON when the external input signal contact changes from OFF to ON, and will change from ON to OFF when the contact changes from ON to OFF.

(B) For pulse signal

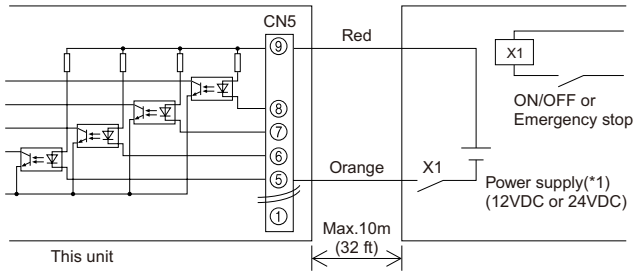
① Even if the ON signal is input during ON, the status will remain ON.

② If the local remote controller is prohibited, the ON/OFF operation mode and temperature setting operations by the local remote controller will be prohibited.

③ Set the pulse width (contact ON time) to 0.5 to 1 sec.

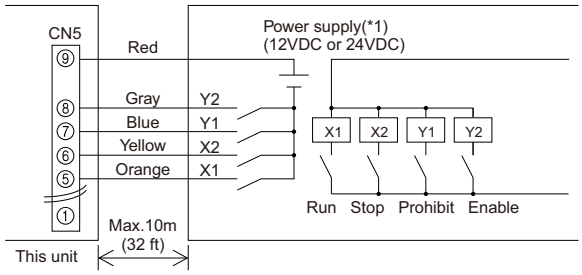
4). Recommended circuit example

(A) For level signal



Use relays X1, X2, Y1, and Y2 that meet the following specifications.
Contact rating
Rated voltage >= 12VDC
Rated current >= 0.1A
Minimum applicable load =< 1mA at DC

(B) For pulse signal



① The contact relay, DC power source, extension cable, etc., must be prepared separately at the site.
② The connection cable can be extended up to 10m (32 ft). (Use a 0.3mm^2 (AWG 22) or larger wire.)
③ Strip the extra cable near the connector, and securely insulate the exposed section with tape, etc.

(2). External signal output function

* To use the external signal input, an external I/O adapter (PAC-YG10HA; sold separately) and an external power supply are required.

1). External output

When one or more air conditioners are running, the " ON " signal will be output and if a malfunction occurs in one or more air conditioners, the " Malfunction " signal will be output.

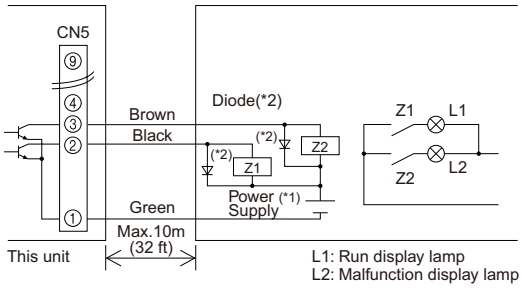
2). External output specifications

CN5	Lead wire	Details of each terminal
No.1	Green	Common (External ground)
No.2	Black	ON/OFF*
No.3	Brown	Malfunction/normal

①The " ON" signal is output even while the " Malfunction" signal is being output.

* The operation status of DIDO controller is not output.
* Operation signal is output during an error.

3). Recommended circuit example

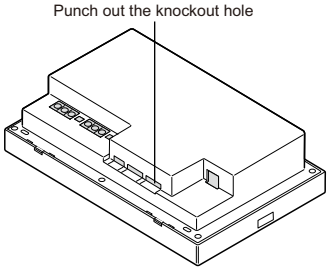


Use Z1 and Z2 relays that meet the following specifications.
Operation coil
Rated voltage : 12VDC, 24VDC
Power Consumption: 0.9W or less
(*1) Prepare a power supply separately according to the relay being used. (12VDC or 24VDC)
(*2) Always insert a diode on both ends of the relay coil.

① Each element will turn on while ON operation or a malfunction occurs.
② The connection cable can be extended up to 10m (32 ft).
③ The relays, lamps, diodes and extension cables, etc, must be prepared separately at the site.

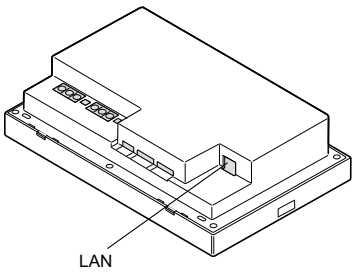
NOTE

* When connecting the external input/output cables to connector CN5 on the controller, punch out the knockout hole.



3. LAN connection function

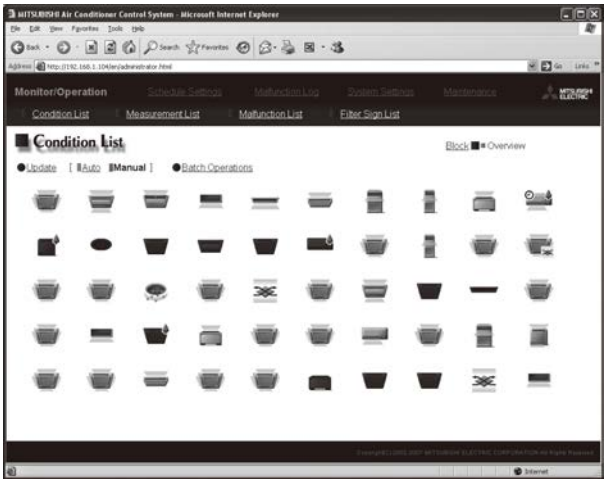
When using the LAN connection function, connect the LAN cable to the LAN connector of this device.
※Procure the LAN cable at the site, and use 100 BASE-TX Straight cable.
※For a description of the IP address setting method, refer to Instruction Book.
※LAN is 100 BASE-TX Specification.



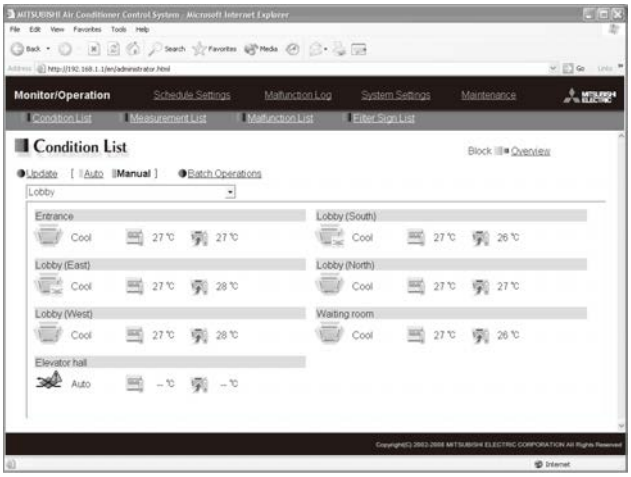
NOTE

※ Perform the LAN wiring before installation, and wire up to the body by the same method as wiring the M-NET transmission line.
※ When a LAN is already connected, decide the IP address by consultation with the system administrator and connect to the LAN body after changing the IP address.
※ Connect AG-150A to a private network.
Use a security device such as a VPN router when connecting the AG-150A to the Internet to prevent unauthorized access.
(If no security devices are installed, the operation settings may be changed by an unauthorized person without the knowledge of the user.)

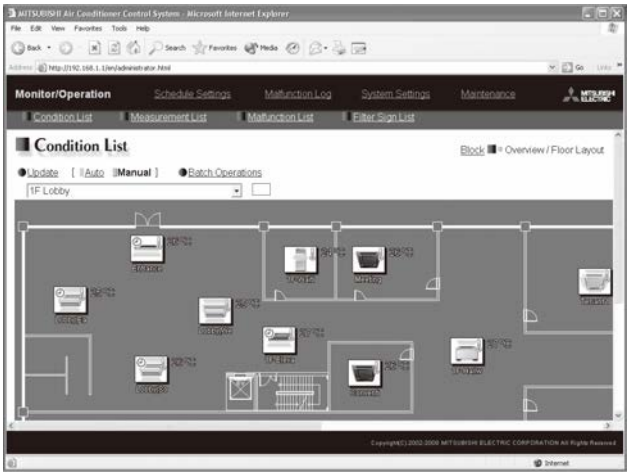
4. Browser screens of AG-150A



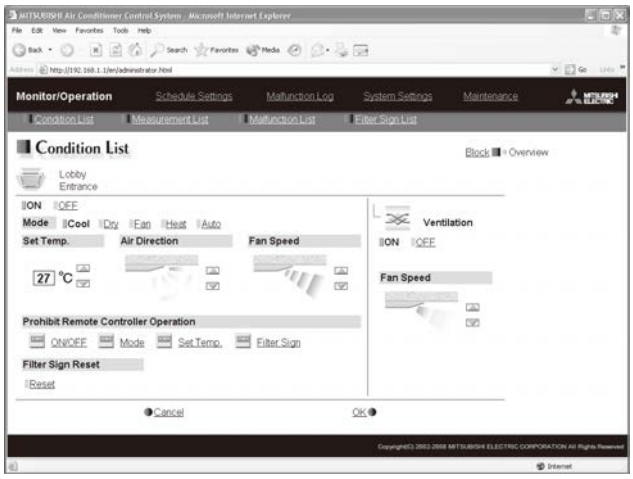
Condition List (Overview)



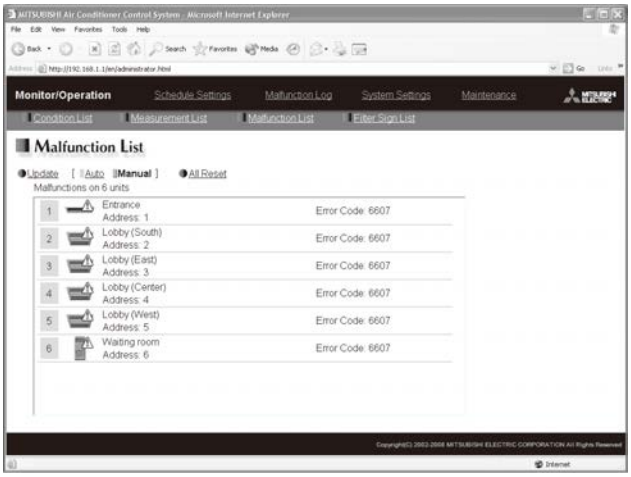
Condition List (Block)



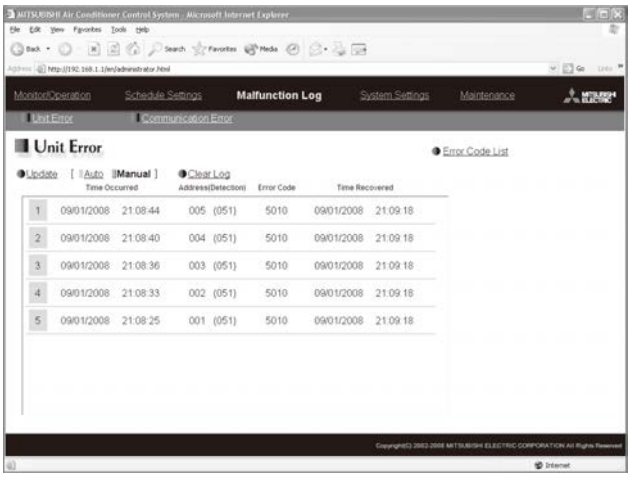
Condition List (Overview/Floor Layout)



Operation

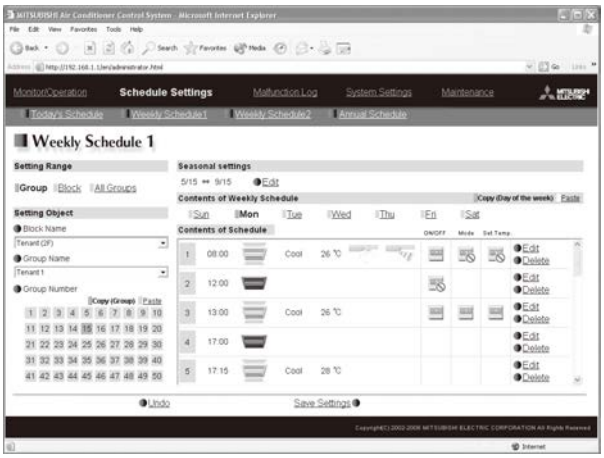


Malfunction List

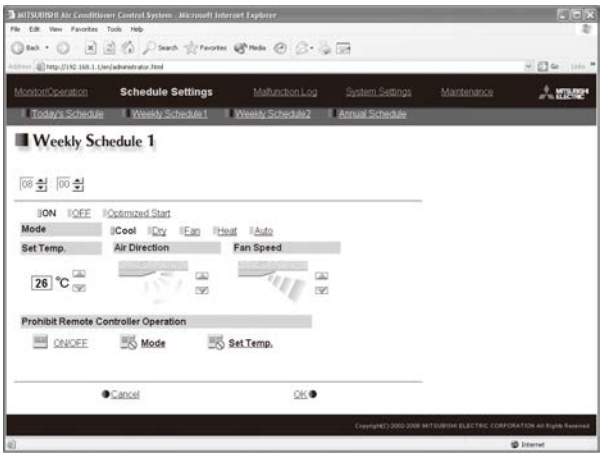


Malfunction Log

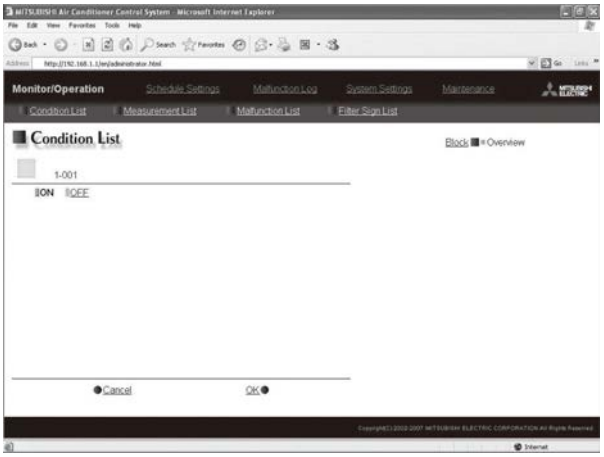
3. System remote controller



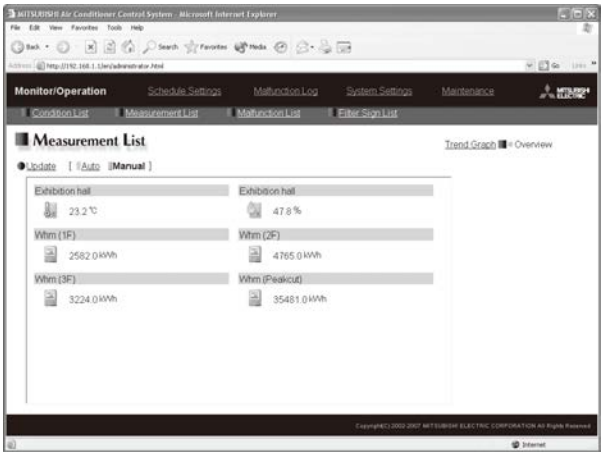
Weekly 1 Schedule



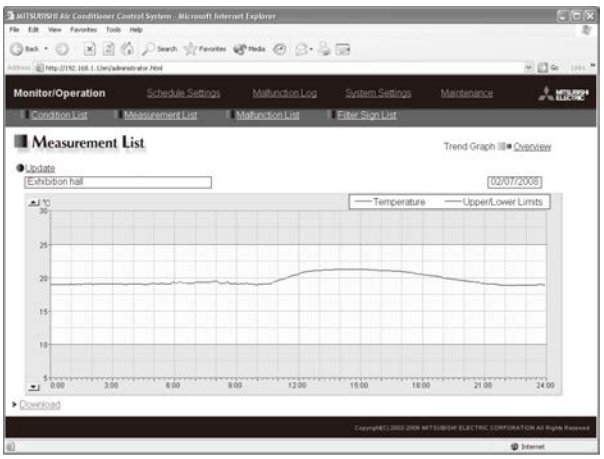
Weekly 1 Schedule (Setting screen)



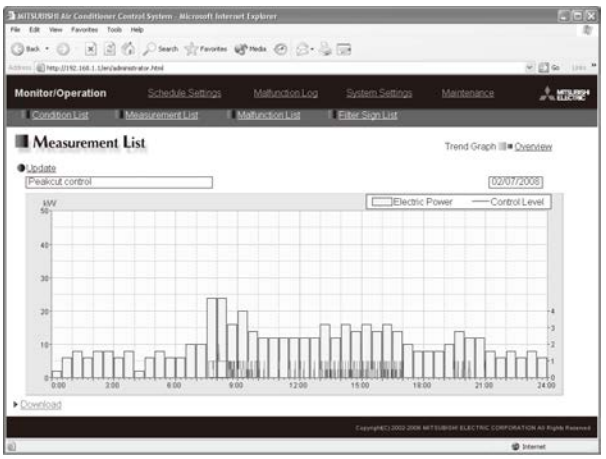
Operation (DIDO Controller)



Measurement status monitor (temperature sensor/humidity sensor /measurement meter)

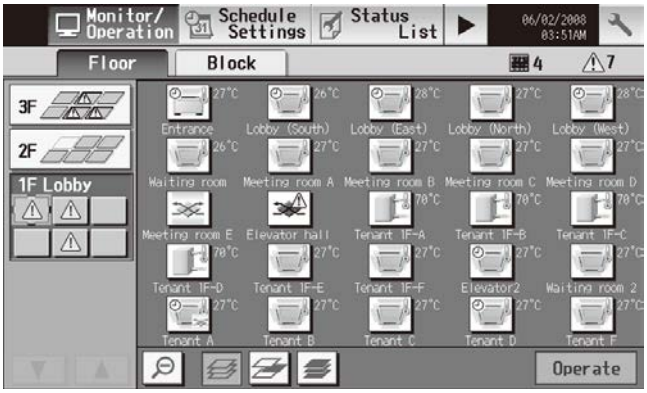


Trend Graph (temperature/humidity)

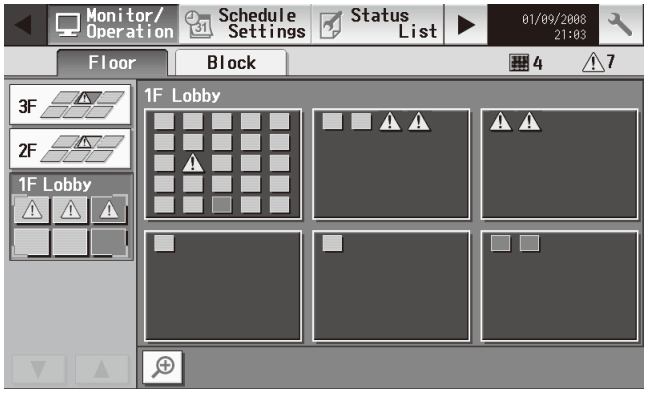


Trend Graph (Peak cut control)

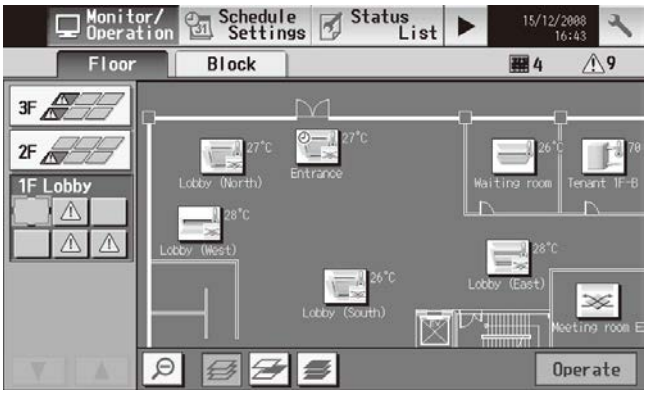
5. Liquid crystal displays of AG-150A



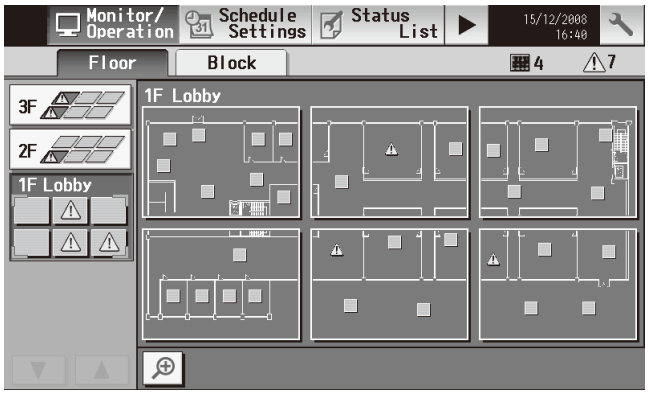
Floor screen



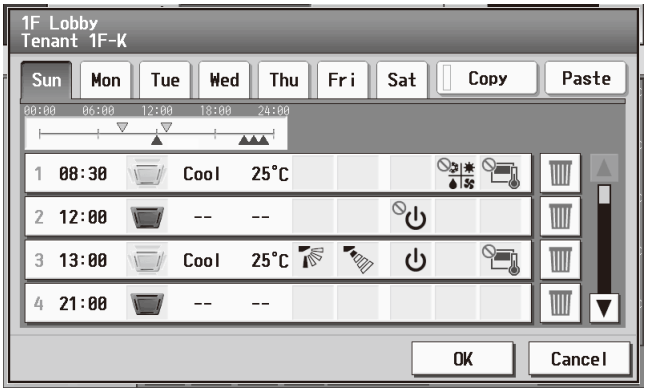
Floor screen (Zoom-out display)



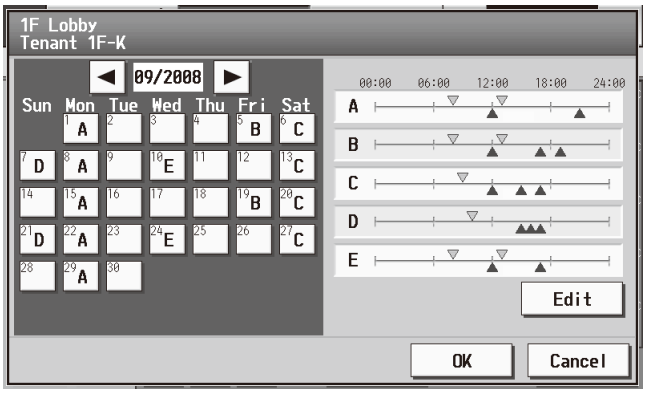
Floor layout screen



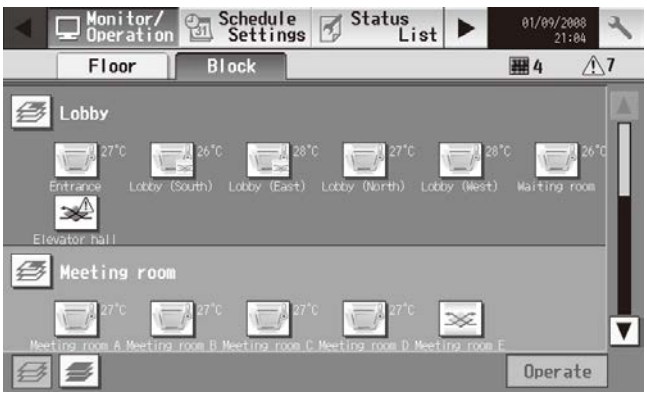
Floor layout screen (Zoom-out display)



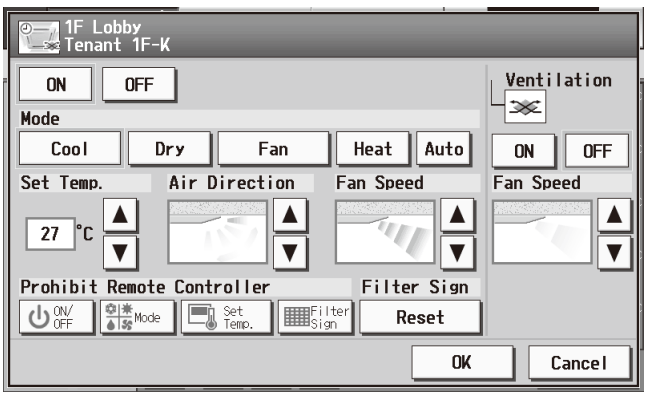
Weekly schedule setting screen



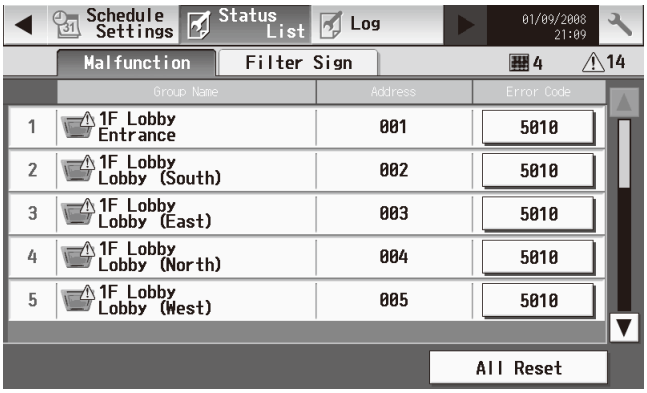
Annual schedule setting screen



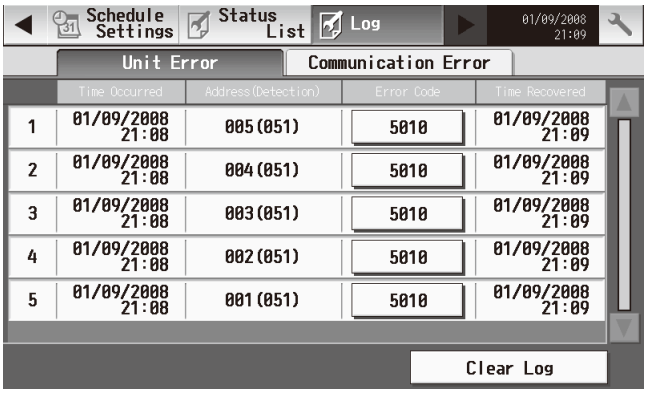
Block display screen



Operation screen



Error status screen



Error history display screen

6. Option

Model	Description
PAC-YG81TB	Mounting attachment B type for AG-150A wall-mount installations
PAC-YG83UTB	Electric box for AG-150A wall-embed installations
PAC-YG85KTB	Mounting attachment A type for AG-150A/PAC-SC51KUA wall-mount installations
PAC-YG71CBL	Black surface cover for AG-150A
PAC-YG10HA	External input/output adapter for AG-150A/GB-50ADA/PAC-YG50ECA

3-4. Centralized controller [GB-50ADA-J]

*GB-50ADA-J is indicated as GB-50ADA.

A. The central controller of GB-50ADA combines Web function, which enable the air conditioner system management on a PC browser screen. *1.
The management can even be carried out at a long distance place via public telephone line or internet.

*1 Microsoft® Internet Explorer® Ver. 6 or later by Microsoft Corporation is recommended.
(As of December 2012, operation with Internet Explorer® Ver.6~9 are tested)
(Note: You must have operating system which complies with "Oracle® Java™ Plug-in". When using Internet Explorer® (64 bit), use Java™ Plug-in (64bit).)
Microsoft®, Internet Explorer® is a registered trade mark of Microsoft Corporation US in the USA and other countries.
Oracle® and Java™ are trademarks or registered trademarks of Oracle corporation in the United States and/or other countries.

Note: Connect GB-50ADA to a private network. Use a security device such as a VPN router when connecting the GB-50ADA to Internet to prevent unauthorized access.

B. One GB-50ADA can control maximum 50 Indoor units(including LOSSNAY). The integrated centralized control software TG-2000A (*2) can manage maximum 40 GB-50ADAs and maximum of 2000 units (including LOSSNAY).

*2 TG-2000A Ver.6.30 or later is required to control GB-50ADA.

C. GB-50ADA has a built-in function to supply power to the M-NET transmission line. (power supply coefficient: 6)

D. Taking advantage of GB-50ADA's Web functions, alarming E-mail containing address and error code can be sent to appointed E-mail address upon any fault happen at the air conditioner system. This could release standby personnel and save operation cost.

E. Together with integrated centralized control software TG-2000A, and/or other controller (DIDO, AI, PI controller), many optional functions like "Charging", "Peak-cut", "Energy saving" etc, can be carried out.

F. The interlock-control option enables interlocked operations of air conditioning unit groups and the general equipment groups, based on the changes of status in the ON/OFF, Mode, or Error signals.

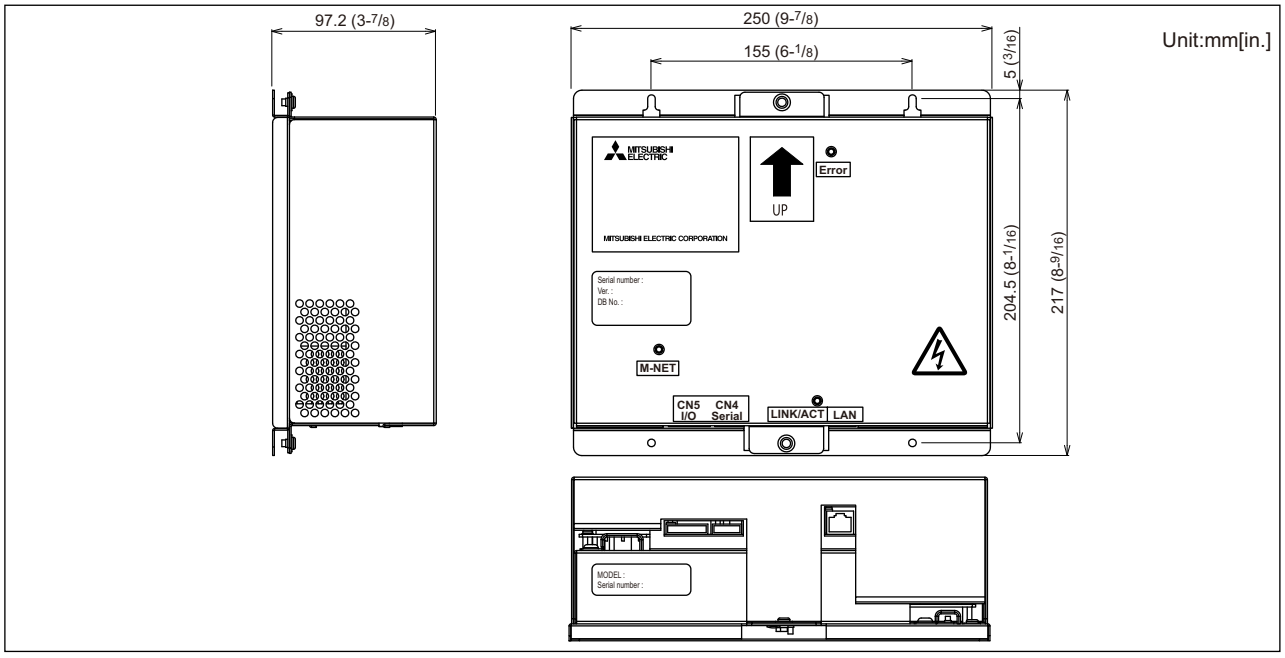
■ Functions

□:Each unit ○:Each group ●:Each block
△:Each floor ◎:Collective ×:Not available

Item	Description	Operations	Display
ON/OFF	Run and stop operation for the air conditioner units	○ ● ◎	○ ◎
Operation mode switching	Switches between Cool / Dry / Auto / Fan / Heat. (Group of LOSSNAY unit: automatic ventilation/ vent - heat interchange/ normal ventilation) Operation modes vary depending on the air conditioner unit.	○ ● ◎	○
Fan speed setting	Models with 5 air flow speed settings: Hi/Mid-1/Mid-2/Low, Auto Models with 4 air flow speed settings: Hi/Mid/Low, Auto Models with 2 air flow speed settings: Hi/Low *Fan speed settings vary depending on the model.	○ ● ◎	○
Air flow direction setting	Air flow direction angles, 4-angle or 5-angle Swing, Auto *1: Louver cannot be set. *Air flow direction settings vary depending on the model.	*1 ○ ● ◎	○
Ventilation equipment	The interlocked system settings can be performed by the master system controller. When setting the interlocked system, you can use the ventilation switch to switch the free plan LOSSNAY settings between "Hi", "Low" and "Stop". When setting a group of only free plan LOSSNAY units, you can switch between "Normal ventilation", "Interchange ventilation" and "Automatic ventilation".	○	○
Temperature setting	Range of temperature setting Cool/Dry : 19°C - 30°C (14°C - 30°C) / 67°F - 87°F(57°F - 87°F) Heat : 17°C - 28°C (17°C - 28°C)/ 63°F - 83°F(63°F - 83°F) Auto : 19°C - 28°C (17°C - 28°C)/ 67°F - 83°F(63°F - 83°F) ( ) in case of using middle-temperature on PEFY, PEFY-VML/VMR/VMS /VMH-by setting DipSW7-1 to ON. Yet, PEFY-P-VMH-E-F is excluded. * Range of temperature settings vary depending on model.	○ ● ◎	○
Sliding Temperature setting	This function shifts the preset temperature by the preset increment to reduce the temperature difference between the indoor and outdoor air temperatures during cooling operation. The maximum shifting temperature(+1°C,+2°C,+3°C,+4°C) can be set for each group.	○	○
Schedule operation	Annual/Weekly (5 types)/today schedule can be set for each group of air conditioning units. Optimized startup setting is also available. *2: The system follows either the current day, annual schedule, or weekly, which are in the descending order of overriding priority. Twenty-four events can scheduled per day, including ON/OFF, Mode, Temperature Setting, Operation Prohibition. Vane Direction, and Fan Speed. Five types of weekly schedule(Summer/Winter) can be set. Settable items depend on the functions that a given air conditioning unit supports.	*2 ○ ● ◎	○
Night setback setting	The function keeps the indoor temperature in a set temperature range once the unit stops and during the time this function is effective.	○	○
Permit / Prohibit local operation	Individually prohibit operation of each local remote control function (Start/Stop, Change operation mode, Set temperature, Reset filter). *3: When the local remote controller inactivation command is received from the master system controller, "Disabled" appears in inverted display on the operation setting screen.	○ ● ◎	*3 ○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit only when the indoor unit is operating.	×	○
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. *4: The operation monitor screen shows the abnormal unit by flashing it. The error monitor screen shows the abnormal unit address, error code and source of detection. The error log monitor screen shows the time and date, the abnormal unit address, error code and source of detection.	×	*4 □
Interlock setting	Operation of indoor groups or general equipment can be interlocked by the change of state (ON/OFF, mode, error of indoor groups and general equipment). (GB-50ADA will execute interlocking control depending on the interlocked setting.)	○	○
Test run	This operates air conditioner units in test run mode.	○◎△●	○
External input/output	By using accessory cables you can set the following. Input: By level signal: "Batch start/stop", "Batch emergency stop" By pulse signal: "Batch start/stop", "Enable/disable local remote controller" *5: Requires the external I/O cable (PAC-YG10HA) sold separately and external power supply.	*5 ◎	×
	By using accessory cables you can monitor the following. Output: "Start/stop", "Error/Normal" *5: Requires the external I/O cable (PAC-YG10HA) sold separately and external power supply.	×	*5 ◎
M-NET	The "M-NET" LED lights, when M-NET power supply is turned ON. The LED blinks during M-NET communication.	×	◎ (LED)
Collective ON/OFF	All units can operate / stop with a DIP switch.	◎	◎ (7 SEG)
Data back-up (USB memory)	The initial setting data, operation data (charge parameter, power consumption data (*6)) can be stored to a USB memory. Initial setting data can be read from USB memory. *6: GB-50ADA Ver.2.45 or later	◎	—

Note: GB-50ADA can control up to 50 units. GB-50ADA is not connectable with PAC-YG50ECA. License registration is necessary to perform each function on GB-50ADA.

■ External dimension



3. System remote controller

1. M-NET power supply

GB-50ADA has a built-in function to supply power to the M-NET transmission line. (power supply coefficient: 6)
When power is supplied from GB-50ADA, the types of system controllers listed in the table below are connectable.

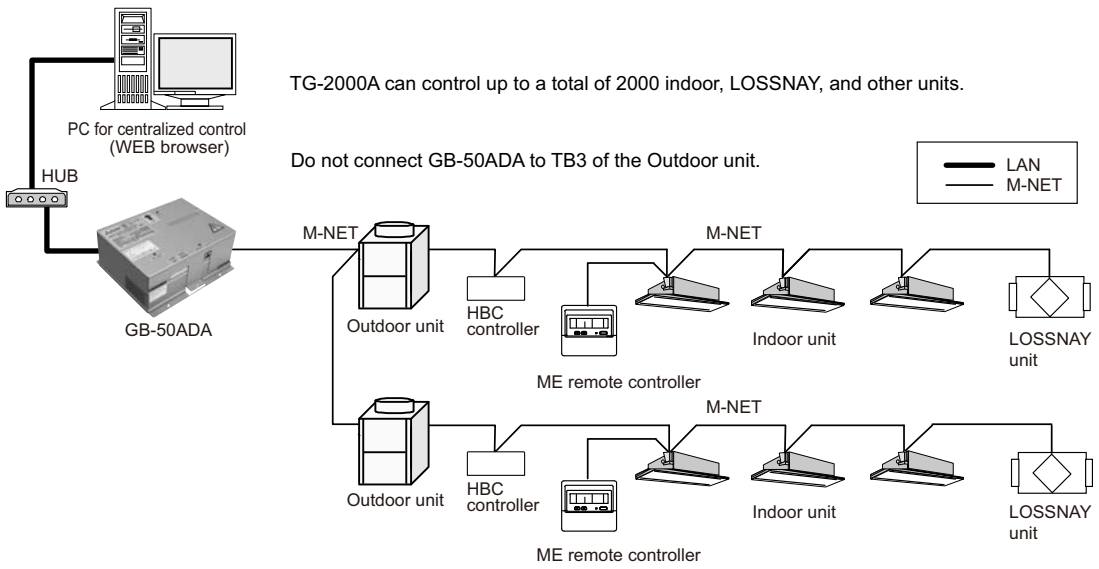
	System controller			M-NET remote controller
	Advanced touch controller	ON/OFF remote controller	System remote controller Schedule timer Group remote controller	ME remote controller LOSSNAY remote controller
Power consumption coefficient	4	1	0.5	0.25
Connectable units	1 unit	6 units	12 units	24 units

V:connectable

		Total number of ON/OFF remote controllers						
		0	1	2	3	4	5	6
Total number of system remote controllers, schedule timers, and group remote controllers combined.	0	V	V	V	V	V	V	V
	1	V	V	V	V	V	V	
	2	V	V	V	V	V	V	
	3	V	V	V	V	V		
	4	V	V	V	V	V		
	5	V	V	V	V			
	6	V	V	V	V			
	7	V	V	V				
	8	V	V	V				
	9	V	V					
	10	V	V					
	11	V						
	12	V						

Note
- AG-150A and GB-50ADA cannot be used in the same M-NET system.
- Supplying power from the Outdoor unit or the power supply unit, it is necessary to replace power supply switch connector CN40 with CN41.(Factory default is CN40.)
- **When connecting both GB-50ADA and BAC-HD150 (BM ADAPTER) to the same M-NET system, certain restrictions apply. Consult your dealer for details.**

2. System configuration

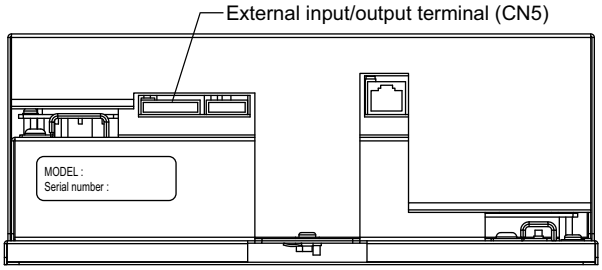


Note:
- Connect the GB-50ADA and PC via a HUB.
- The maximum distance between the HUB and GB-50ADA is 100 m (328 ft).
- The LAN cable is field-supplied. Use a 100BASE-TX straight cable (category 5 or above).
- Use the switching HUB.

3. External input/output usage

(1). External signal input function

* To use the external signal input, a separately-sold external input/output adapter (PAC-YG10HA) and external power supply are required.



1). External input signal function setting (to be set from the web browser for Initial settings)

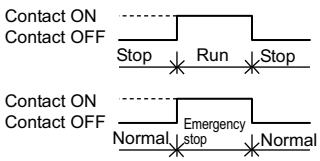
External contact signal (12VDC or 24VDC) can be used to send signals indicating the following status of all air conditioning units that are controlled by the controller: Emergency stop/Normal, Run/Stop, and local remote controller operation Prohibit/Permit.

No.	External input signal function	Notes
1	External input signal will not be used. (factory setting)	—
2	Emergency stop/Normal (level signal)	During the emergency stop, the Run/Stop mode cannot be changed from the local remote controller, and the Run/Stop mode and Prohibit/Permit settings cannot be changed from the GB-50ADA. Timer setting will be ignored.
3	Run/Stop (level signal)	The Run/Stop mode cannot be changed from the local remote controller, and the Run/Stop mode and Prohibit/Permit settings cannot be changed from the GB-50ADA. Timer setting will be ignored.
4	Run/Stop, Prohibit/Permit (pulse signal)	The pulse width (contact ON) should be between 0.5 and 1 second.

* DIDO controller (PAC-YG66DCA) cannot be collectively run or stopped by using the external input function. But when [Emergency stop (Level signal)] is selected, DIDO controller (PAC-YG66DCA) can be collectively stopped by setting the appropriate switches on the DIDO controller.

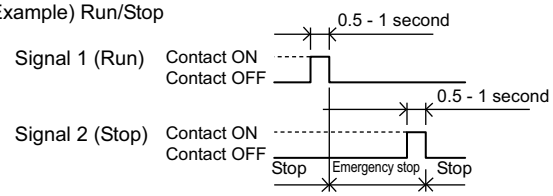
2). Level signals and pulse signals

(A) Level signals



(B) Pulse signal

(Example) Run/Stop



* Same with the Prohibit/Permit signal input.

3) . External input specifications

CN5	Lead wire (PAC-YG10HA)	Emergency stop/Normal (level signal)	Run/Stop (level signal)	Run/Stop, Prohibit/Permit (pulse signal)
No. 5	Orange	Emergency stop/Normal signal input	Run/Stop signal input	Operation signal input
No. 6	Yellow	Not used	Not used	Stop signal input
No. 7	Blue	Not used	Not used	Local remote controller operation prohibit signal input
No. 8	Gray	Not used	Not used	Local remote controller operation permit signal input
No. 9	Red	External power supply 12VDC or 24VDC		

(A) Level signals

① If “Emergency stop/Normal operation signal” is selected, the unit will come to an emergency stop when the contact turns on, and the unit will resume normal operation when the contact turns off. When emergency stop is reset, all units will remain stopped, including the ones that were operating before the emergency stop signal input was received. To return to the previous operation status, these units need to be manually restarted.

② If “Run/Stop signal input” is selected, the unit will go into operation when external input signal contact turns ON, and the unit will stop when the contact signal turns OFF.

(B) Pulse signals

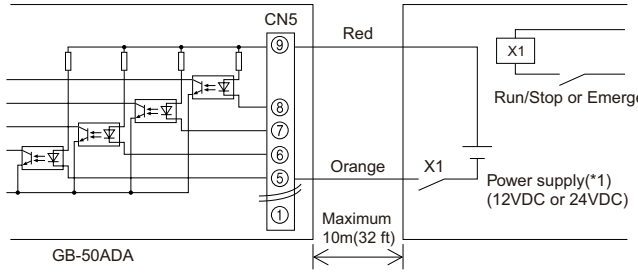
① If pulse signals to operate the units are received while the units are in operation, the units will continue their operation (same with the Stop, Prohibit, and Permit signals).

② When operation from the local remote controllers is prohibited, Run/Stop mode, operation mode, temperature setting, and filter reset settings cannot be changed from the local remote controller.

③ The pulse width (contact ON) should be between 0.5 and 1 second.

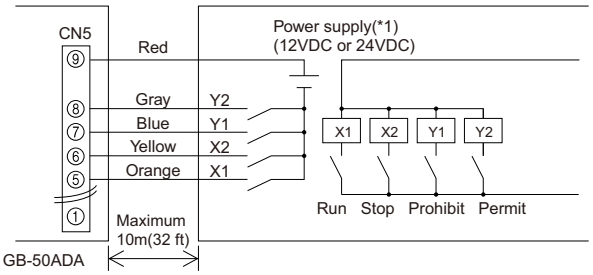
4). Recommended circuit

(A) Level signals



Use relays that meet the following specifications for X1, X2, Y1, and Y2.
Contact rating
Rated voltage: 12VDC or above
Rated current: 0.1 A or above
Minimum applied load: DC 1 mA or below
(*1) Use a power supply suitable for the type of relays used. (12VDC or 24VDC)

(B) Pulse signals



① Relays, DC power supplies, and extension cables are field supplied.

② The maximum length of extension cable is 10 m (32 ft). (Use a cable with a diameter of at least 0.3 mm^2.)

③ Cut the excess cable near the connector, and insulate the exposed cable end with tape.

(2). External signal output function

* A separately sold external input/output adapter (PAC-YG10HA) and external power supply are required to use the external signal output.

1). External output

Operation signal is output when one or more units are in operation, and error signal is output when one or more units are in error.

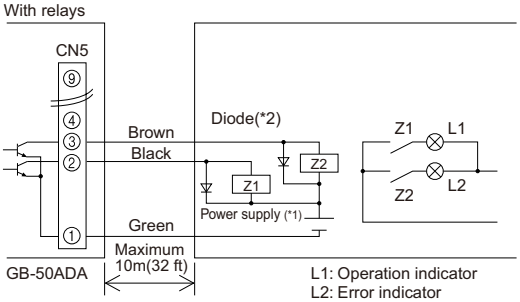
2). External output specification

CN5	Lead wire (PAC-YG10HA)	Terminal type
No. 1	Green	Common GND for external output (external DC, power supply GND)
No. 2	Black	Run/Stop*
No. 3	Brown	Error/Normal

* The operation status of DIDO controller is not output.

* Operation signal is output during an error.

3). Recommended circuit



Use relays that meet the following specifications for Z1 and Z2.
Operation coil
Rated voltage: 12VDC or 24VDC
Power consumption: 0.9 W or less
(*1) Use a power supply suitable for the type of relays used. (12VDC or 24VDC)
(*2) Use a diode at both ends of the relay coils.

① Each element turns on during operation and error.

② The maximum length of extension cable is 10 m (32 ft).

③ Relays, lamps, diodes, and extension cables are field supplied.

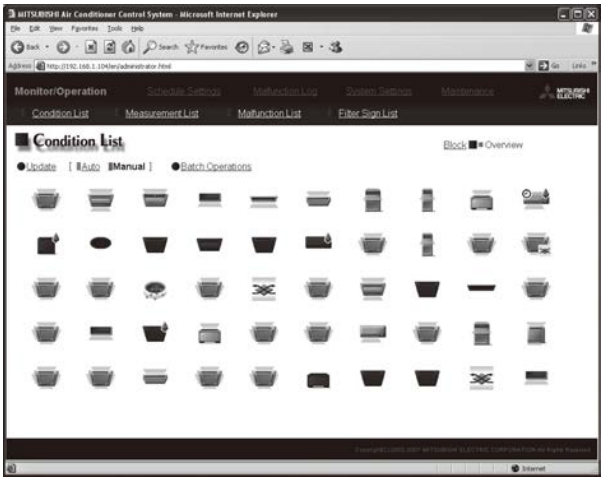
4. LAN connection function

Connect the LAN cable to the LAN connector of this device.
※ Procure the LAN cable at the site, and use an enhanced category 5 UTP cable.
※ For a description of the IP address setting method, refer to Installation Manual.
※ LAN is 100 BASE-TX Specification.
※ The maximum wiring length from HUB to GB-50ADA is 100m [328ft].
※ GB-50ADA is connected to the monitoring PC via HUB.

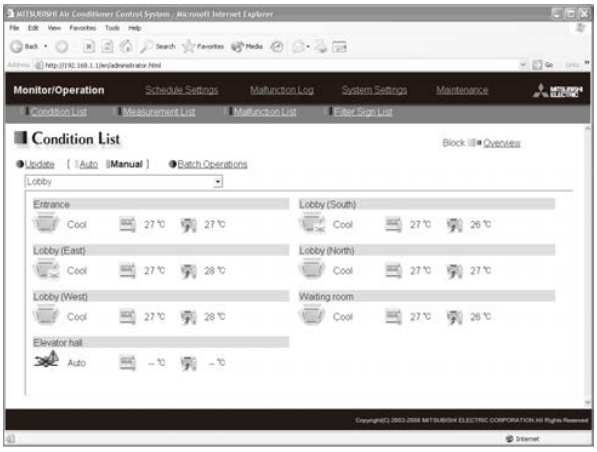
NOTE

※ Perform the LAN wiring before installation, and wire up to the body by the same method as wiring the M-NET transmission line.
※ When a LAN is already connected, decide the IP address by consultation with the system administrator and connect to the LAN body after changing the IP address.
※ Space for the connector and wiring is required. Refer to Installation Manual.
※ Connect GB-50ADA to a private network.
Use a security device such as a VPN router when connecting the GB-50ADA to the Internet to prevent unauthorized access.
(If no security devices are installed, the operation settings may be changed by an unauthorized person without the knowledge of the user.)

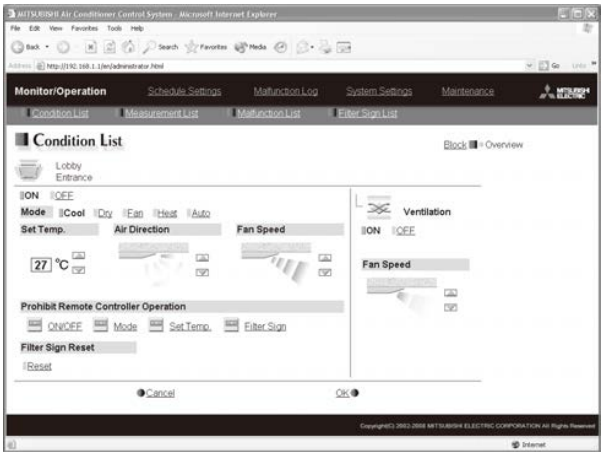
5. Browser screens of GB-50ADA



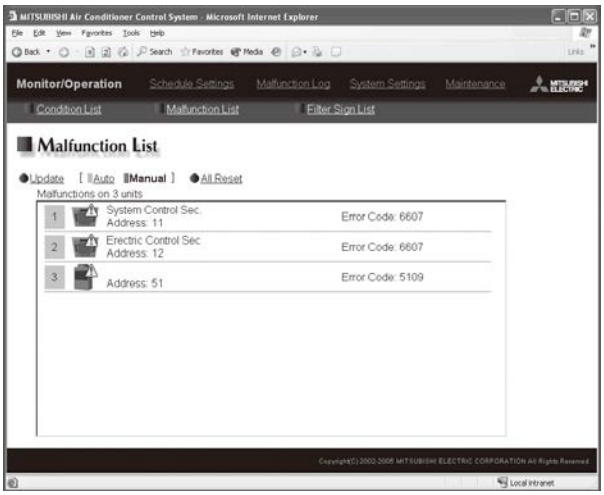
Condition List (Overview)



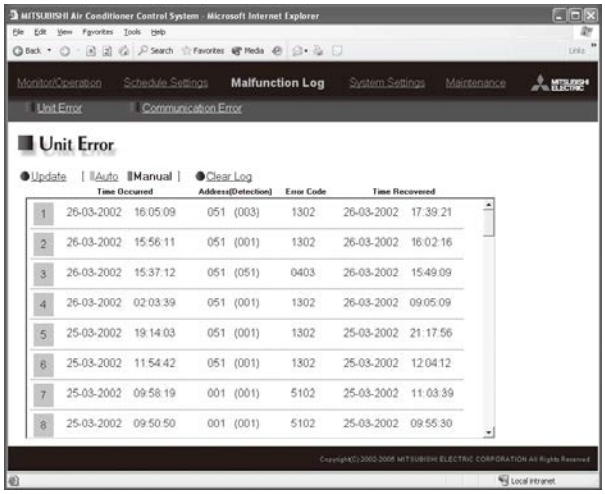
Condition List (Block)



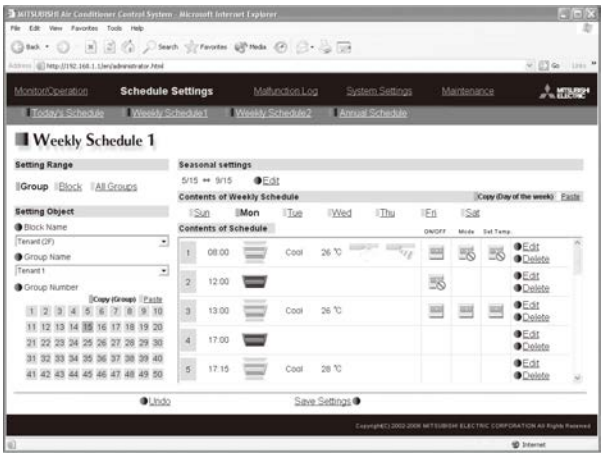
Operation



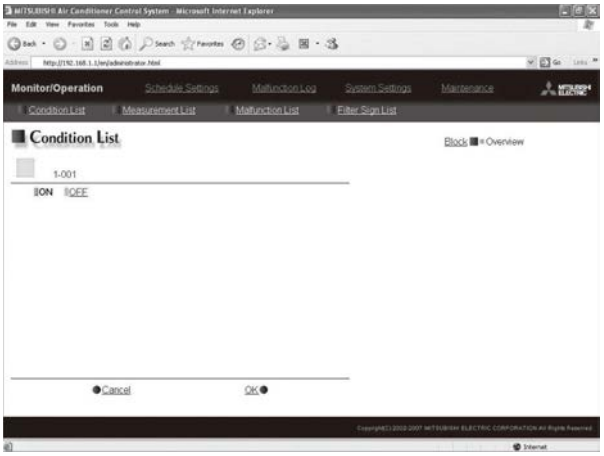
Malfunction List



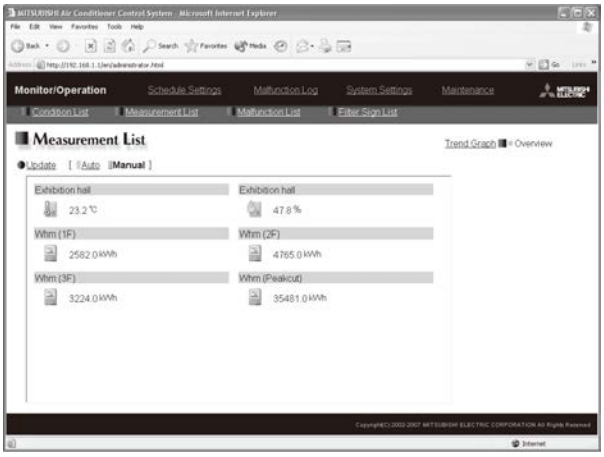
Malfunction Log



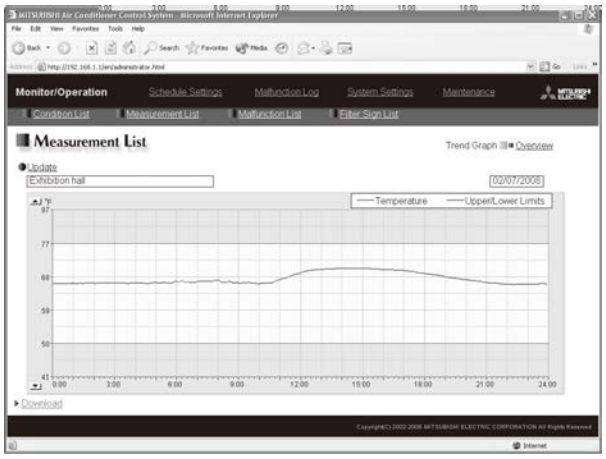
Weekly Schedule



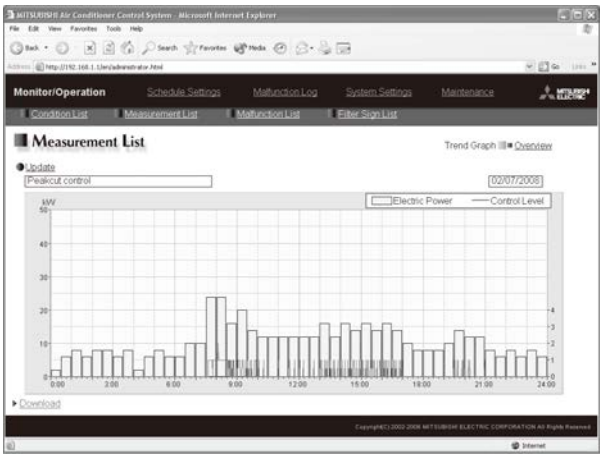
Operation (DIDO Controller)



Measurement status monitor (temperature sensor/humidity sensor /measurement meter)



Trend Graph (temperature/humidity)



Trend Graph (Peak cut control)

3-5. Power supply unit [PAC-SC51KUA]

PAC-SC51KUA supplies DC power of M-NET (22-30V) and 24V at TB2 and TB3 respectively; the former is for centralized transmission use and the latter is for AG-150A operation and LAN function use.

1. When using PAC-SC51KUA as the power supplier for system controller, the capacity for system controller is considered as follows.

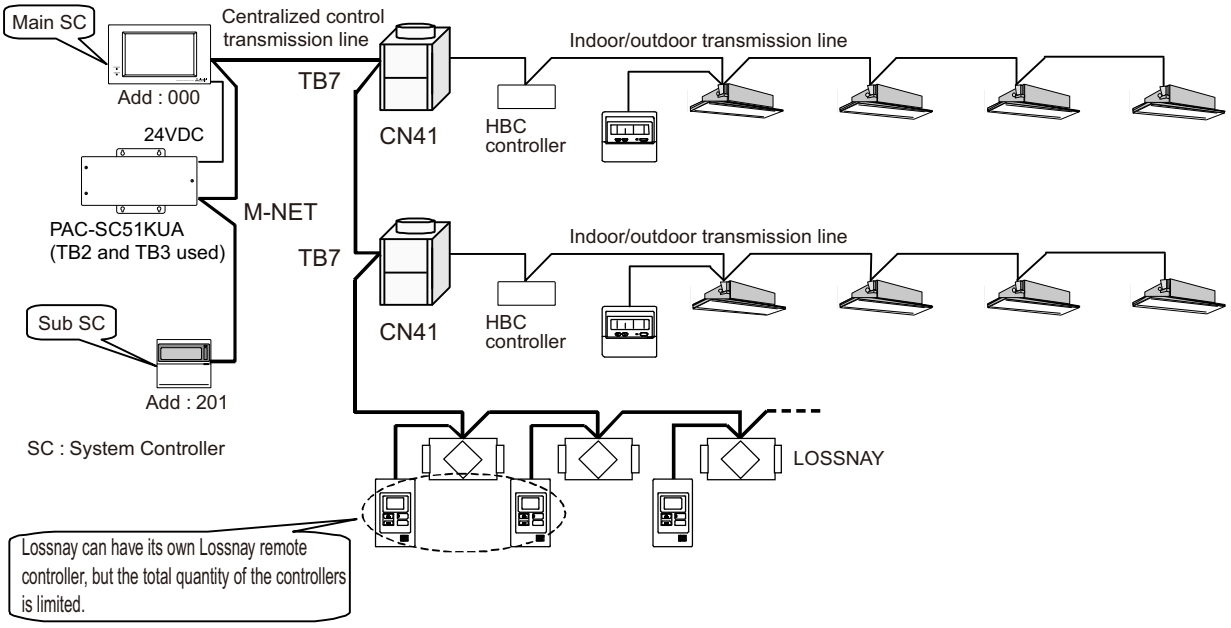


Fig. 1 Equivalent power consumption of controllers

In this case, pay attention to leave the power supply switch connector on CN41 of the Outdoor unit as the factory setting before shipment.

Taking the power consumption of the control board of Indoor unit as 1, the power consumption of various controllers is rated at Table 1.

Table 1 Equivalent power consumption of controllers

Centralized controller	Other system controllers		Remote controllers
AG-150A	Advanced touch controller (AT-50A)	ON/OFF remote controller (PAC-YT40ANRA)	ME remote controller (PAR-F27MEA) LOSSNAY remote controller (PZ-52SF)
0.5	4	1	0.25

PAC-SC51KUA is capable to supply equivalent power up to 5, therefore the maximum connectable number of system controller is as follows.

Table 2 Max. connectable quianity of controller when using PAC-SC51KUA

Centralized controller*1	Other system controllers		Remote controllers
AG-150A	Advanced touch controller (AT-50A)	ON/OFF remote controller (PAC-YT40ANRA)	ME remote controller (PAR-F27MEA) LOSSNAY remote controller (PZ-52SF)
1unit	1unit	5 units	20 units

*1: According to the system restrictions, PAC-SC51KUA can be connected to only one centralized controller.

As the air conditioner control system may combine all kinds of system controllers, the total power consumption of system controllers need to count with Table 2.
For example, the controller system contain 1 AG-150A, 2 ON/OFF remote controllers (PAC-YT40ANRA), and 6 Lossnay remote controllers connected at centralized control communication line.
Then the total power consumption is
1 x 0.5 + 2 x 1 + 6 x 0.25 = 4.0 < 5.
One PAC-SC51KUA is therefore enough. The total power consumption should not exceed 5.

2. When supply power to 1 AG-150A, the PAC-SC51KUA can supply power to other system controllers as follows.

Table3 Connectable number of system controller when 1 AG-150A is used.

V : Connectable

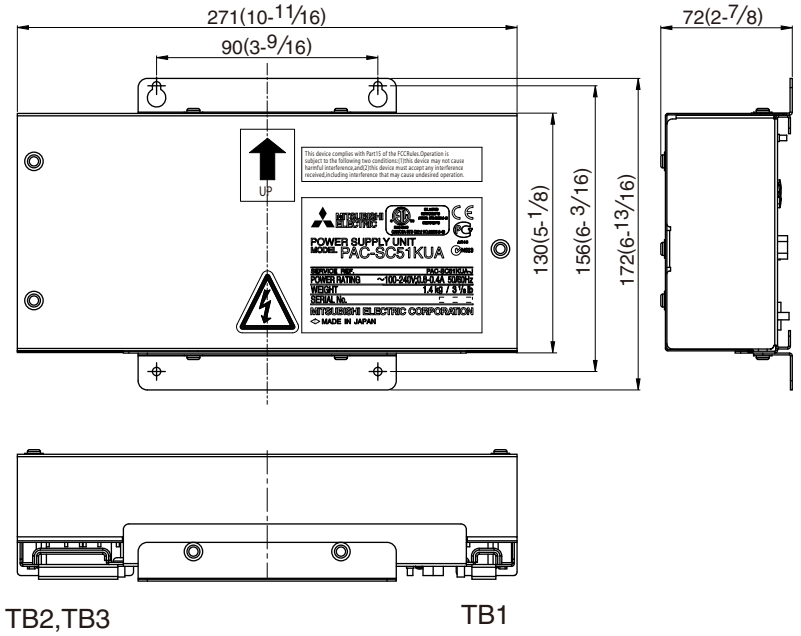
When connected to one AG-150A		Total number of ON/OFF remote controller(AN)					
		0	1	2	3	4	5
Total number of System remote controller(SR) Schedule timer(ST)	0	V	V	V	V	V	
	1	V	V	V	V	V	
	2	V	V	V	V		
	3	V	V	V	V		
	4	V	V	V			
	5	V	V	V			
	6	V	V				
	7	V	V				
	8	V					
	9	V					
	10						

⚠ CAUTION

- When applying Charge and/or Peak-cut function on AG-150A, Power Supply Unit (PAC-SC51KUA) is recommended to use. AG-150A is possible to receive power from one of the Outdoor units, but there is a risk that the failure of power supply from the Outdoor unit will cause AG-150A's functiondown on the whole system.

■ External dimension

Unit:mm[in.]



TB2,TB3

TB1

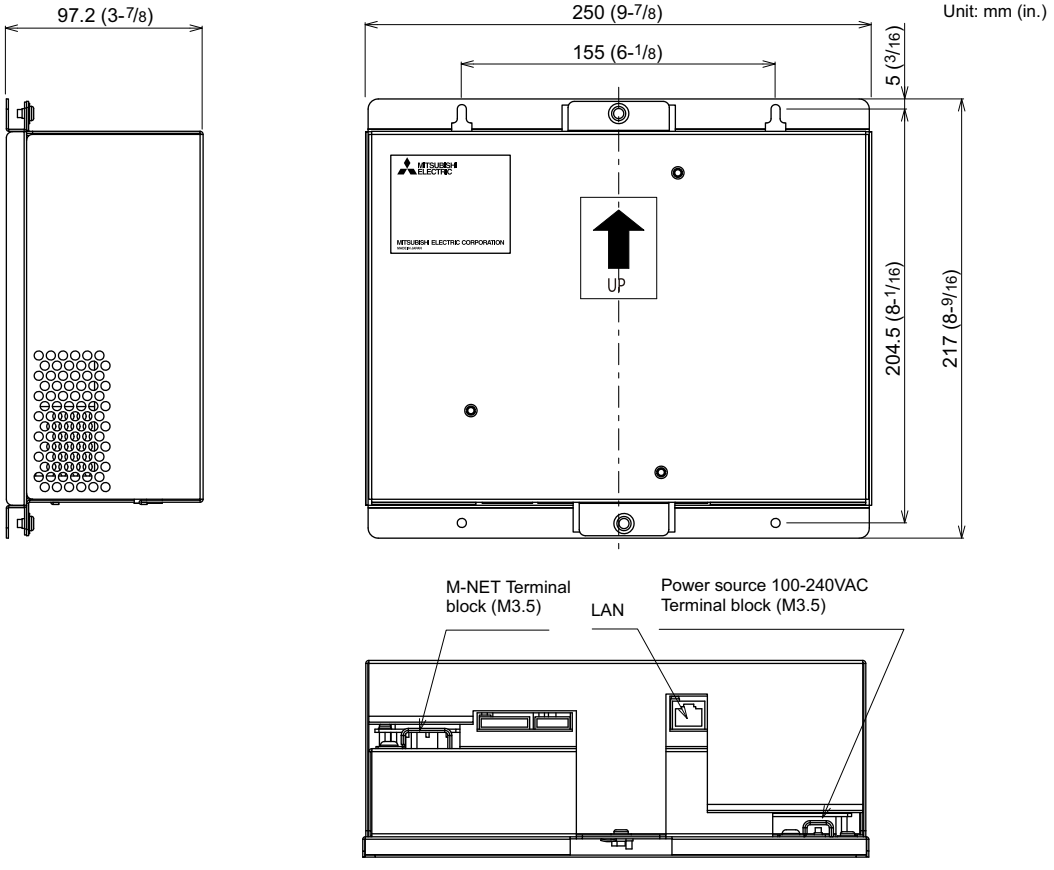
3-6. Expansion Controller [PAC-YG50ECA]

・PAC-YG50ECA can enhance units that AG-150A can control up to 150 by connecting 3 Expansion Controller (PAC-YG50ECA).
・PAC-YG50ECA has a built-in function to supply power to the M-NET transmission line. (power supply coefficient:6)

1.Specifisations

Items			Specifications
Power source	Rated input		100-240VAC ±10%0.4-0.3A50/60Hz
	Fuse		250VAC 3.15A Time-delay Type(IEC127-2.S.S.5)
Interface	Rated output of the power supply to M-NET transmission lines		22-30VDC
	External input/output		12VDC or 24VDC (requires an external power supply)
	LAN		100BASE-TX/10BASE-T
Ambient conditions	Temperature	Operating temperature range	-10~55°C [14~131°F]
		Storage temperature range	-20~60°C [-4~140°F]
	Humidity		30~90%RH (Non-condensing)
Dimensions			217 (H) × 250 (W) × 97.2 (D) mm [8-9/16(H) × 9-7/8(W) × 3-7/8(D)in.]
Weight			2.6kg [5-3/4lbs.]
Installation conditions			Inside the metal control board (indoor)

2.External dimensions



3. System remote controller

3.M-NET power supply

PAC-YG50ECA has a built-in function to supply power to the M-NET transmission line. (power supply coefficient:6)
When power is supplied from PAC-YG50ECA , the types of system controllers listed in the table below are connectable.

	System controller			M-NET remote controller
	Advanced touch controller	ON/OFF remote controller	System remote controller Schedule timer Group remote controller	ME remote controller LOSSNAY remote controller
Power consumption coefficient	4	1	0.5	0.25
Connectable units	1 unit	6 units	12 units	24 units

V:connectable

		Total number of ON/OFF remote controllers						
		0	1	2	3	4	5	6
Total number of system remote controllers, schedule timers, and group remote controllers combined.	0	V	V	V	V	V	V	V
	1	V	V	V	V	V	V	
	2	V	V	V	V	V	V	
	3	V	V	V	V	V		
	4	V	V	V	V	V		
	5	V	V	V	V			
	6	V	V	V	V			
	7	V	V	V				
	8	V	V	V				
	9	V	V					
	10	V	V					
	11	V						
	12	V						

Note:
- When connecting both PAC-YG50ECA and BAC-HD150 (BM ADAPTER) to the same M-NET system, certain restrictions apply. Consult your dealer for details.
- Supplying power from the Outdoor unit or the power supply unit, it is necessary to replace power supply switch connector CN40 with CN41. (Factory default is CN40.)

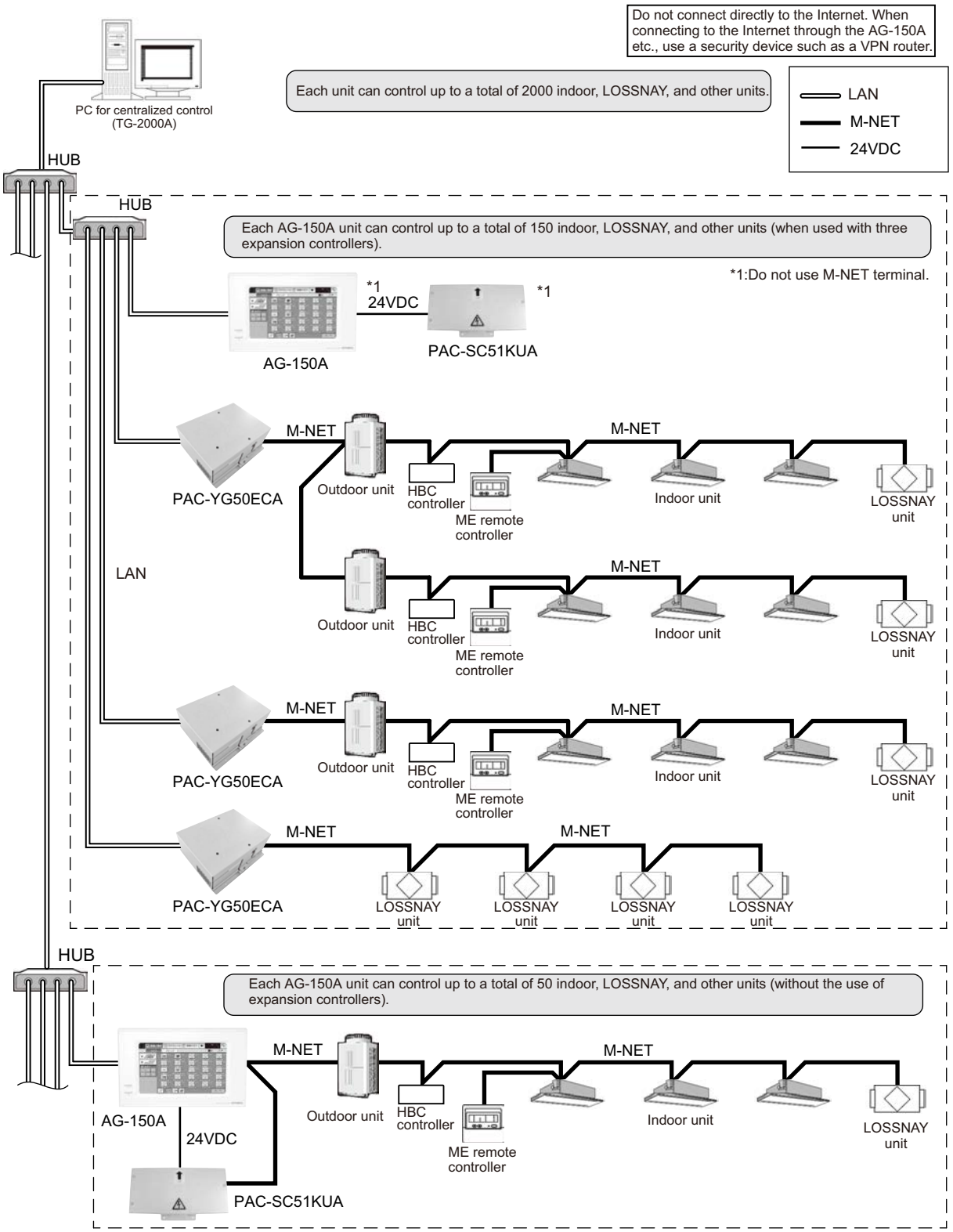
4.Functions

Item	Description	Operations	Display
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. When an error occurs, the "Error" LED turns ON.	×	○
External input/output	By using accessory cables you can set the following. Input: By level signal: "Batch start/stop", "Batch emergency stop" By pulse signal: "Batch start/stop", "Enable/disable local remote controller"	○*1*2	×
	By using accessory cables you can monitor the following. Output: "Start/stop"*3, "Error/Normal"	×	○*1
M-NET	The "M-NET" LED lights, when M-NET power supply is turned ON. The LED blinks while M-NET communicating.	×	○

[Symbol ○:enable ×:disable]

*1: Requires an external I/O cable (Model: PAC-YG10HA; sold separately) and an external power supply.
*2: DIDO controller (PAC-YG66DCA) cannot be "Batch start/stop" and "Batch emergency stop" by using the external input function. But when "Batch emergency stop" is selected, DIDO controller (PAC-YG66DCA) can be collectively stopped by setting the appropriate switch on the DIDO controller.
*3: The operation status of DIDO controller is not output. Operation signal is output during an error.

5.System configuration



Note

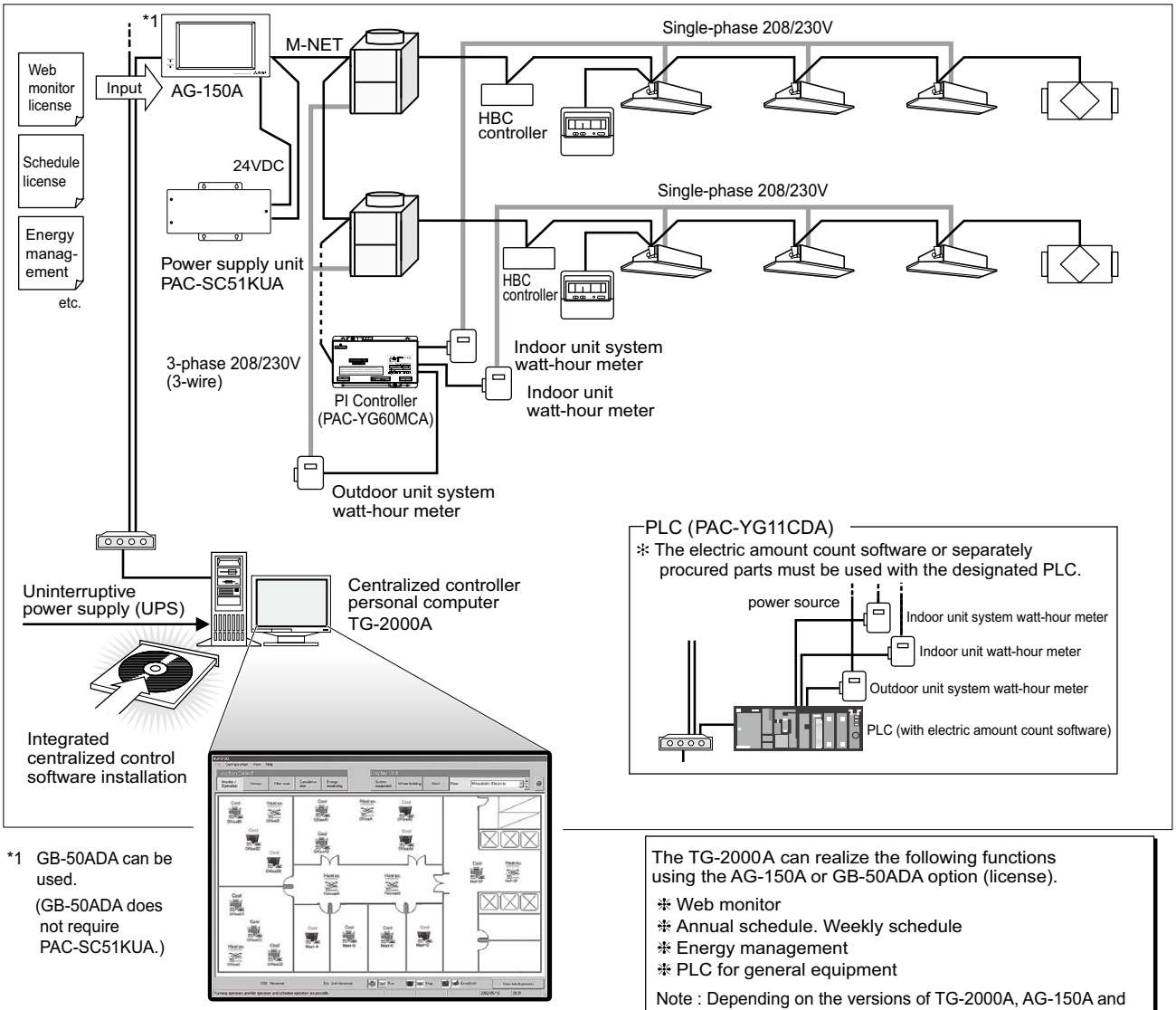
Connect the LAN cable to the LAN connector on the PAC-YG50ECA.

- Connect the PAC-YG50ECA and AG-150A via a HUB.
- The maximum distance between the HUB and PAC-YG50ECA is 100 m (328 ft).
- The LAN cable is field-supplied. Use a category 5 or better straight cable.
- Use a switching HUB.
- It is recommended that the number of devices to be connected between AG-150A and PAC-YG50ECA does not exceed four. (Round-trip transmission delay time must not exceed four seconds. If the transmission delay time is set too long, a communication error may occur.)

3. System remote controller

3-7. Integrated centralized control software [TG-2000A]

1. Example of Basic System Configuration.



*1 GB-50ADA can be used.
(GB-50ADA does not require PAC-SC51KUA.)

The TG-2000A can realize the following functions using the AG-150A or GB-50ADA option (license).

- ✻ Web monitor
- ✻ Annual schedule. Weekly schedule
- ✻ Energy management
- ✻ PLC for general equipment

Note : Depending on the versions of TG-2000A, AG-150A and GB-50ADA, some of the functions may not be available for use.

■ Main features of TG-2000A

① Up to 2000 units (40 AG-150A*3 or GB-50ADA units) can be operated and monitored simultaneously.
② The air-conditioner layout can be displayed on the screen, making control and operation easier.
③ The annual and weekly schedules can be set. 5 schedules, such as the summer master and winter master, can be saved in the weekly schedule.
④ Air-conditioning charges can be calculated based on the multiple air-conditioner usage results. The power apportionment percentage data and apportioned power rate can be calculated for each indoor unit using the power apportionment function, and can be output as a CSV format file. ✻ Power apportionment charging is not possible with HYBRID CITY MULTI and the old model.

Charging without WHM*1 : The user manually inputs the power rate to calculate the air-conditioning charges. (Using a tool)
PI controller + pulse WHM charging*1 : The pulse output WHM value is automatically tabulated by the PI controller (PAC-YG60MCA) to calculate the air conditioning charges.
PLC + pulse WHM charging*1 : The pulse output WHM value is automatically tabulated by the PLC to calculate the air-conditioning charges.

⑤ Energy saving operation is possible using the "ON/OFF", "set temperature change", "fan operation changeover" and "performance save operation (60% to 90%)" functions.
Energy saving operation matching the amount of power in use is possible by PI controller or using the PLC's electric amount count software.
⑥ Night Set-Back function operation is possible with schedule settings.*2
⑦ General equipment can be operated and monitored.
⑧ General equipment can be schedule-controlled when using PAC-YG21CDA with PLC or DIDO Controller (PAC-YG66DCA). (For details of PLC refer to Installation Manual of PAC-YG21CDA.)

✻1: Only one of these functions can be used.
✻2: With Night Set-Back function, the HYBRID CITY MULTI system can run at heating mode with target temperature set to 12°C / 54°F under schedule control. (It depends on the outdoor unit model. Not applicable on PUMY.) This function can protect the room from dropping down to extremely low temperature at mid-night.
✻3: AG-150A controls 50 units. When AG-150A is connected with PAC-YG50ECA, units are counted based on the number of connected PAC-YG50ECA.

Note: AG-150A is compatible with TG-2000A Ver.5.5* or later. GB-50ADA is compatible with TG-2000A Ver. 6.3* or later.
AG-150A connected with PAC-YG50ECA is compatible with TG-2000A Ver.6.1* or later.
HYBRID CITY MULTI is compatible with TG-2000A Ver. 6.38 or later.
Depending on the versions of TG-2000A and AG-150A/GB-50ADA, some of the functions may not be available for use.
Each system allows the connection of only one TG-2000A.

2. List of TG-2000A functions

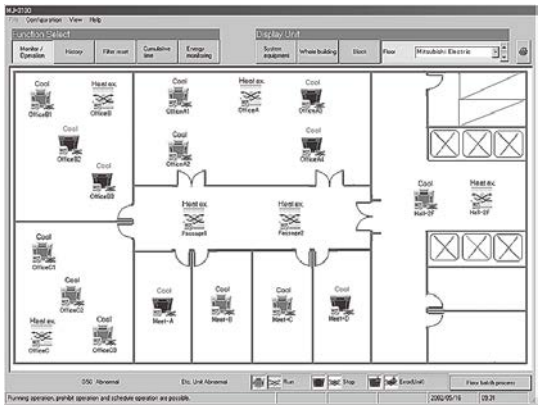
(1). The data for each AG-150A/GB-50ADA can be grouped and used to control the operation of up to 2000 units in floor or block units,etc., from the personal computer screen. By using a PI Controller/PLC or a watt-hour meter, the power rate can be apportioned, energy saving control can be executed, and other general equipment can be controlled.

List of integral software functions

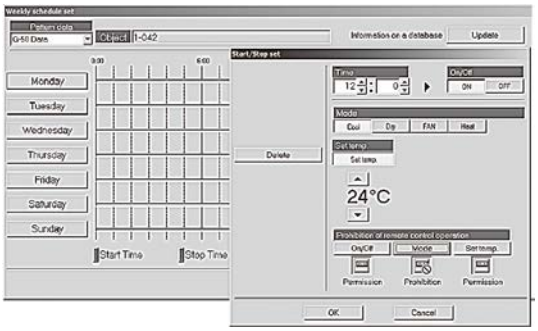
Item	Details	AG-150A/GB-50ADA license			
		Web monitor	Schedule	Energy management	PLC for general equipment
ON/OFF	The units can be turned ON and OFF for all floors or in block, floor or group units.	V			
	The general equipment can be turned ON and OFF. (※ A PLC and the general equipment control PLC software required.)	V			
Operation modes	The operation mode can be switched between COOL, DRY, FAN, AUTO and HEAT for all floors or in block, floor or group units.	V			
Temperature setting	The room temperature can be set for all floors or in block, floor or group units. Set temperature range COOL / DRY : 19℃ to 30℃ / 66°F to 86°F HEAT : 17℃ to 28℃ / 63°F to 82°F AUTO : 19℃ to 28℃ / 66°F to 82°F ※ Depend on the model	V			
Fan speed	The fan speed can be set to four stages for all floors or in block, floor or group units.	V			
Air direction	The air direction can be set in four vertical directions or to swing for all floors or in block, floor or group units.(The selectable air direction differs according to the model.)	V			
Interlocked unit ON/OFF (LOSSNAY)	If there is an interlocked unit (LOSSNAY, the unit can be turned ON (strong/weak) or OFF for all floors or in block, floor or group units. (Note that the ventilation mode cannot be selected for interlocked units.)	V			
Local operation prohibit	The items for which operation with the local remote controller are to be prohibited can be selected for all floors or in block, floor or group units. (The items that can be prohibited are ON/OFF, operation mode, set temperature and filter sign reset.)	V			
Annual / weekly schedule	The annual/weekly (season:weekly x 5) schedule function can be used by registering the license. Five settings, such as seasonal settings for summer and winter, can be saved.	V	V		
Power rate apportionment charging ※1 (power rate manual input)	By registering the AG-150ADA/GB-50A unit license number, the power rate apportionment percentage data for each indoor unit can be output in CSV format. The power rate for each tenant can be easily calculated by having each user input the power rate manually.	V		V	
Power rate apportionment charging ※1	By using the PI controller (PAC-YG60MCA) and a pulse output watt-hour meter, the air-conditioning charges can be calculated based on the amount each tenant's air-conditioner has operated. Up to five charging rates can be applied per day.	V		V	
	By using a PLC (with electric amount count software) and a watt-hour meter with pulse transmitter, the air-conditioning charges can be calculated based on the amount each tenant's air-conditioner has operated.Up to five charging rates can be applied per day.				
History	The error history and up to 10000 items for operation history can be saved. Each history file can be output as a daily report or monthly report in CSV format. The maximum number of error history data that can be saved depends on the type of errors and the number of connected AG-150A units. The operation history consists only of the operations carried out with the TG-2000A, and is limited to some limited operation items.	V			
Operation time monitor	The cumulative operation time of each indoor unit can be viewed or output as a CSV format file. (This function is valid only when the charging function license is registered.)	V		V	
Filter sign display mask	Automatic display of the filter sign can be disabled. (System batch.) In this case, the filter sign state is confirmed with manual operations .	V			
Energy saving control	Energy saving operation is possible using the "ON/OFF", "set temperature change", "fan operation changeover" and "performance save operation" functions.	V		V	
Energy saving (peak cut)	Energy saving operation matching the amount of power in use is possible. (PLC (with electric amount count software) and watt-hour meter with pulse transmitter are required.)	V		V	
Night Set-Back function ※2	Heating from 12°C / 54°F and higher can be set using the schedule function.	V			
	This function helps keep the indoor temperature in the temperature range while the units are stopped and during the time this function is effective.	V			
Set temperature limit ※3	The set temperature lower limit can be set for cooling and the upper limit for heating. (Valid only when PAR-F27MEA is used.)	V			
Control other general equipment	The ON/OFF status of the connected general equipment and the error status can be changed or monitored from the DIDO(PAC-YG66DCA).	V			
	It is possible to control other general equipment on ON/OFF operation / monitoring / Alarm / scheduling, if TG-2000A combines PLC installed with PLC software PAC-YG21CDA.	V			
	Setting inter-lock with HYBRID CITY MULTI indoor units is possible using PLC(PAC-YG21CDA). (Table setting tool for input/output definition is needed.)	V			V

※1 : HYBRID CITY MULTI does not support the charge function.
※2 : With Night Set-Back function, the HYBRID CITY MULTI system can run at heating mode with target temperature set to 12°C /54°F under schedule control. (It depends on the outdoor unit model.)
This function can protect the room from dropping down to extremely low temperature at midnight.
※3 : This function cannot be used with the MA remote controller. (It depends on the indoor unit model.)
Note : Depending on the versions of TG-2000A and AG-150A, some of the functions may not be available for use.

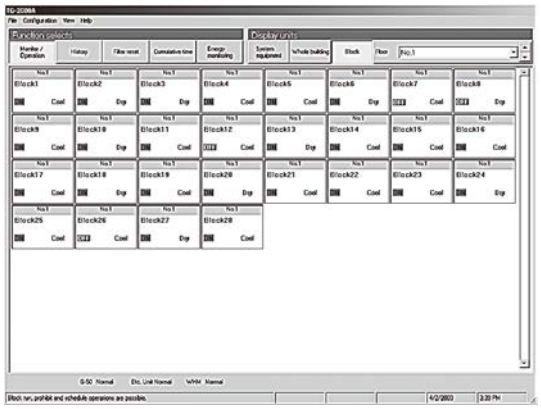
3. Screens of TG-2000A



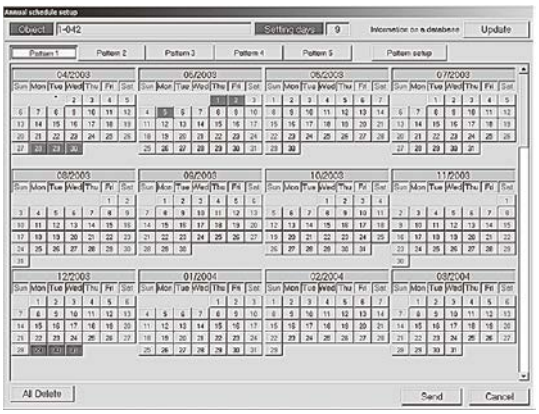
Floor screen



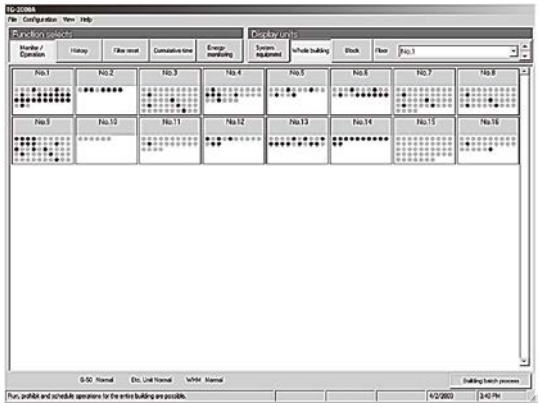
Weekly schedule screen



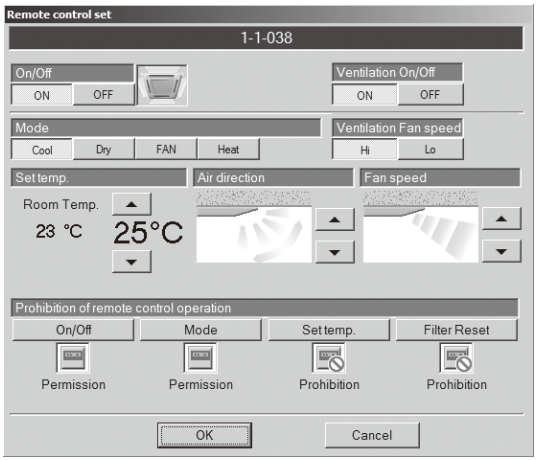
Block screen



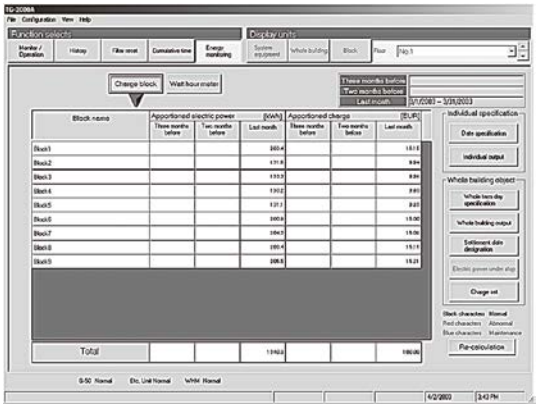
Annual schedule screen



All floor screen



Operation setting screen



Air-conditioning charge screen

4. Requirements (system recommendations)

We recommend the following software and hardware when using this application (TG-2000A).

	TG-2000A version	System Requirements
When AG-150A(GB-50ADA)/G-50A-compatible TG-2000A is used	TG-2000A Ver.5.50 or later *1 *2 *3	OS : Windows7 *4/Vista/XP Refer to the table below for details.
When G-50A-compatible TG-2000A is used with the range of conventional functions	TG-2000A Ver.5.30 or later	OS : Windows XP/2000 Refer to the table below for details.

*1 : TG-2000A Ver.5.20 is upgraded to Ver.5.50 or later.
*2 : Use ver. 6.10 or later for the AG-150A systems with connection to expansion controllers (PAC-YG50ECA).
*3 : Use ver. 6.34 or later for the GB-50ADA systems.
*4 : Use Ver. 6.34 or later on Windows 7.

Item	Requirement		Recommended
PC	PC/AT interchangeable machine (Business model is recommended)		Operation check completed, using HP and DELL
CPU	Core™ 2 Duo 1.66GHz or faster (Windows7 / Vista for Core™ 2 Duo)		Core™ 2 Duo 2.4GHz or faster
	Pentium® M 1.7GHz or faster		Pentium® M 2.0GHz or faster
	Pentium® 4 2.4GHz or faster		Pentium® 4 2.8GHz or faster
Memory	In Windows 7 / Vista : 1GB or more		2GB or more
	In Windows XP / 2000 : 512MB or more		1GB or more
HDD	Standard	6GB or more (2GB or more of C drive free space necessary)	40GB or more of C drive free space necessary When using the trend function, the drive used for automatic output must have the following free space according to the number of groups. 200 groups = 2GB, 500 Groups = 5GB, 1000 groups = 10GB, 2000 groups = 20GB
	Wide area	20GB or more (Free space)	Standard : max. 200MB/site
Storage device	CD-ROM drive, USB drive		Devices other than those shown at the left may also be installed.
Resolution	1024 x 768 or higher, 65536 colors or more		
Serial port	1 port or more		Required when using RS-485 communication WHM (Not necessary when using PLC or PI Controller)
LAN	1 port (100BASE-TX/10BASE-T)		* 1
Modem	56K modem or TA		Required when using a modem in wide area mode.
USB	2 port or more		It uses it for the data backup.
OS	Windows® 7 Professional (64bit / 32bit) Service Pack 1		English version only *Computer must support each OS. Operation check completed, using Windows 7 Professional (64bit) Cannot be used with G-50A-compatible TG-2000A.
	Windows Vista® Business (32bit) Service Pack 2		English version only *Computer must support each OS. Cannot be used with G-50A-compatible TG-2000A.
	Windows® XP Professional (32bit) Service Pack 3 *2		English version only *Computer must support each OS.
	Windows® 2000 Professional Service Pack 4 *2		English version only *Computer must support each OS. Cannot be used with AG-150A (GB-50ADA)/ G-50A-compatile TG-2000A.
Other	Computer must be dedicated for this use (TG-2000A).		**Must be used for 24-hour constant operation** **(Only some functions. Refer to the TG-2000A manual for details.)**

*1 Purchase the option, or use the equipment recommended for the computer when purchasing the computer.
*2 Make sure that the correct version of Service Pack is installed. If the wrong version of Service Pack is installed, TG-2000A will not be set up properly.
The above contents are subject to change along with TG-2000A version upgrade.

5. Compatible Units

The TG-2000A has two main functions: centralized control of air conditioners and cost accounting. However, not all functions are available with all air conditioners.

Table: Compatible units and function list (○: supported, △: Certain restrictions apply, ×: Not supported)

Function / Model	Control/ Maintenance	Charging (Billing) without WHM	Charging (Billing) with WHM	Energy Saving /Peak Cut
Outdoor unit	○	○ ✻1		○
Indoor unit	○	○ ✻2		○
LOSSNAY	○	○ ✻3		△✻6
Air To Water Booster unit	○	×	△✻10	△✻11
Air To Water HEX unit	○	×	△✻10	△✻11
"A" control type ✻4	○ (Adapter required)	○ ✻1,5		△✻7
"K" control type ✻4	○ (Converter required)	○ ✻1,5		△✻8
Room Air Conditioner	○ (Adapter required)	×	△ (Requires separate watt hour meters. Bills calculated based on the reading of each watt hour meter)	△✻9
HYBRID CITY MULTI	○	×		○

✻1 : Can be calculated for each charging block. May not be available with some older models.

✻2 : Indoor unit models before Free Plan models do not support a charge apportioning billing method based on the “capacity save”. The existence of even a single unit of those types in the system requires that the method of charge apportioning billing be set to either “Thermo on time” or “Fan operation time”.

✻3 : LOSSNAY groups to which the remote controller is connected support the charging system.

✻4 : Not all of the A-control and K-control units support these functions. The calculation of the charge for the auxiliary heater may not be handled by these units.

✻5 : For A-control and K-control units, use the apportioned charging methods either "Thermo on time" or "Fan operation time". Otherwise, install an watt-hour meter for each unit.

✻6 : Only the function to stop the units is available.

✻7 : Inverter models support the outdoor unit capacity save control function.

✻8 : Outdoor unit Thermo-OFF control function is not supported. Only the fan speeds control function is available.

✻9 : Only the temperature control function or the function to stop the units is available.

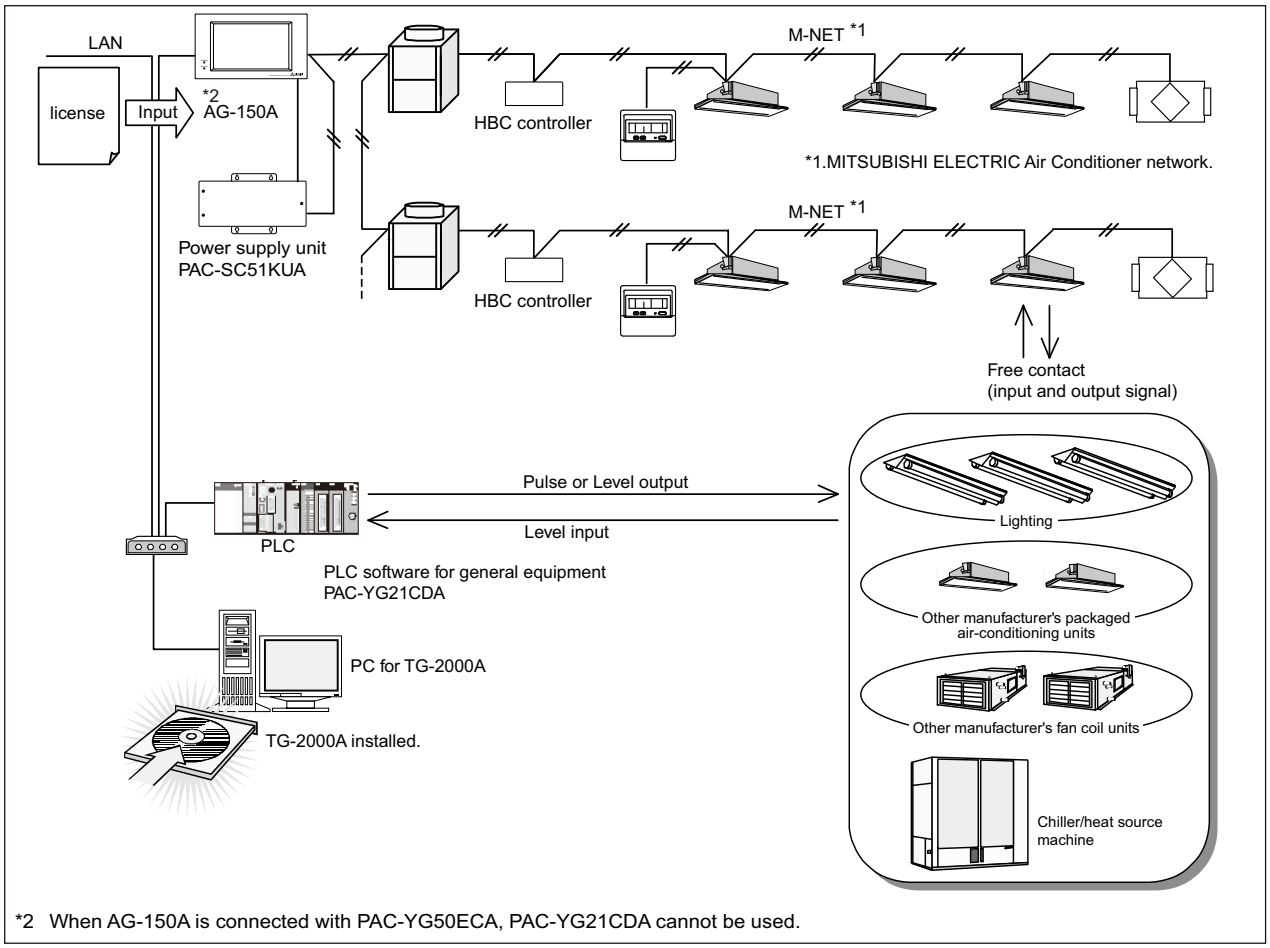
✻10 : For the charge apportioning of Air To Water Booster unit and Air To Water HEX unit, connect the unit to individual watt-hour meter.
Although only the heating capacity is listed in the specification of Air To Water Booster unit, the "cooling" value is used for the Capacity and Power input of indoor unit parameter for Energy-Monitoring Set Up.
The setting is already made with the cooling value for the models registered in Set-up of model name.
For Air To Water Booster unit and Air To Water HEX unit, the charging function supports only the primary refrigerant system of those units.
(Each unit obtains the reading of its watt-hour meter.)

✻11 : Capable of Thermo-OFF control (fan operation control) and bringing the units to stop only.

3-8. PLC software for general equipment [PAC-YG21CDA]

MITSUBISHI ELECTRIC's Air Conditioner control system can combine control of general equipment like lighting, air conditioners from other manufacturers, etc.
Functions on general equipment : On/Off operation, alarm, monitoring, scheduling.

■ System example



*2 When AG-150A is connected with PAC-YG50ECA, PAC-YG21CDA cannot be used.

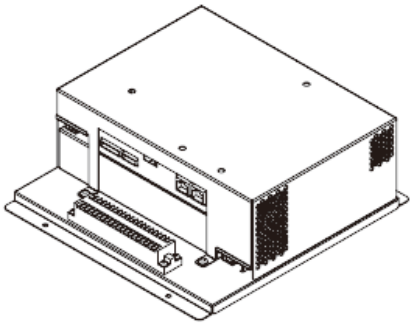
■ Necessary parts for the system

Materials (model names)	Manufacturer	Remarks
PC for central control	PC/AT compatible	Confirmed operation of DELL, HP. For details, refer to AG-150A Technical Manual.
TG-2000A	MITSUBISHI ELECTRIC	The use of the latest version of TG-2000A and AG-150A /GB-50ADA is recommended.
Web monitor license	MITSUBISHI ELECTRIC	Requires for each AG-150A/GB-50ADA.
PLC for general equipments license	MITSUBISHI ELECTRIC	Table-setting of input/output is necessary.
PLC	MITSUBISHI ELECTRIC	Make sure DI board and DO board are mounted.
PAC-YG21CDA	MITSUBISHI ELECTRIC	For details, refer to AG-150A Technical Manual.

3-9. BACnet® interface [BAC-HD150]

HYBRID CITY MULTI can easily combine into a Building Management System (BMS) via the BACnet® and M-NET adapter BAC-HD150. BACnet® is an opened transmission protocol widely used at BMS, and related equipment control.
HYBRID CITY MULTI is therefore compatible with large-scaled BMS management via BACnet®.
BAC-HD150 can control up to 50 units/groups (including LOSSNAY). Up to 150 units/groups(including LOSSNAY) can be controlled from one BAC-HD150 with three expansion controllers PAC-YG50ECA. (50 units/PAC-YG50ECA)
When the dual set point function is used, no expansion controllers can be connected, and only up to 50 units/groups can be controlled from each BAC-HD150.

■Specifications



Items			Specifications
Power source	Rated input		100-240 VAC ±10 % 0.4-0.3 A 50/60 Hz
	Fuse		250 VAC 3.15 A Time-delay type (IEC127-2 S.S.5)
Interface	Rated output of the power supply to M-NET transmission lines		22-30 VDC
	LAN 1 (for BACnet) LAN 2 (for Expansion Controller)		10Base-T or 100Base-TX
Ambient conditions	Temperature	Operating temperature range	-10 ~ 55°C (14 ~ 131°F)
		Storage temperature range	-20 ~ 60°C (-4 ~ 140°F)
	Humidity		30 ~ 90 %RH (Non-condensing)
Dimensions			266 (H) × 250 (W) × 97.2 (D) mm (10-1/2 (H) × 9-7/8 (W) × 3-7/8 (D) in.)
Weight			2.8 kg (6-3/16 lbs.)
Installation conditions			Inside the metal control panel (indoor)

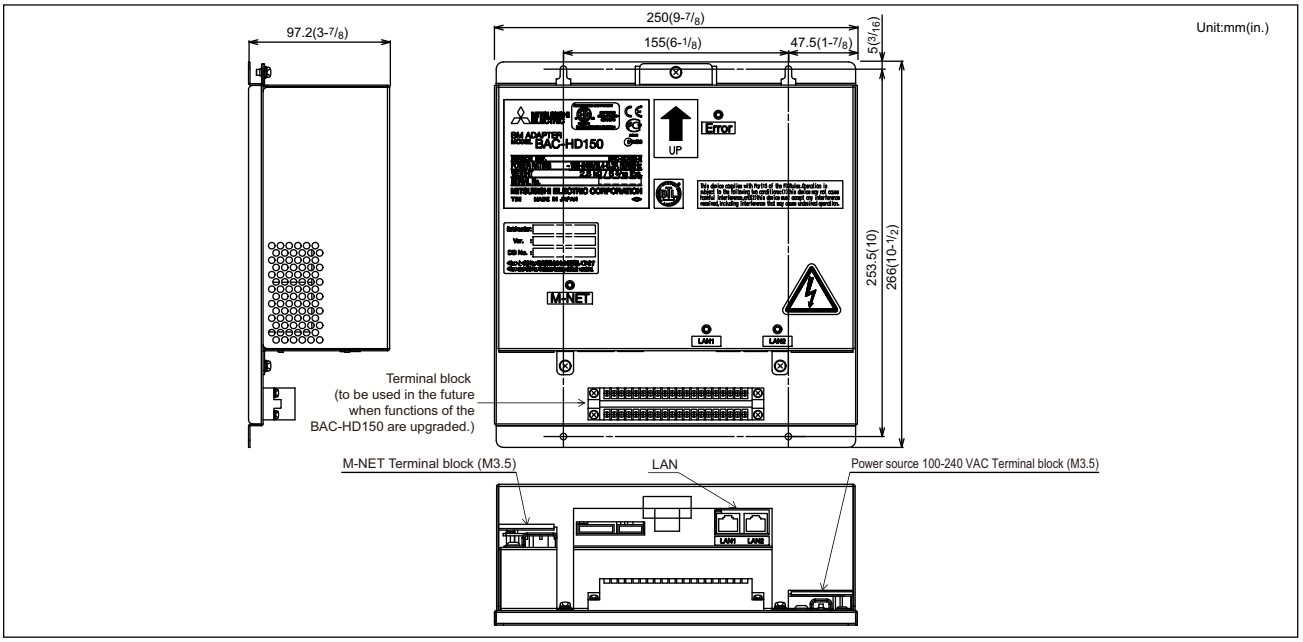
■ Functions

Communication items at BM Adapter

Operation	State Monitoring
On/Off Mode Fan Speed Air Direction Set Temp. Set Temp. (Cool)* Set Temp. (Heat)* Set Temp. (Auto)* Set Setback Temp. (Higher)* Set Setback Temp. (Lower)* Filter Sign reset Prohibit local On/Off Prohibit local Mode Prohibit local Filter sign reset Prohibit local Set Temp. Forced Off	On/Off Mode Fan Speed Air Direction Set Temp. Set Temp. (Cool)* Set Temp. (Heat)* Set Temp. (Auto)* Set Setback Temp. (Higher)* Set Setback Temp. (Lower)* Filter sign Indoor temperature Prohibit local On/Off Prohibit local Mode Prohibit local Filter sign reset Prohibit local Set Temp. Alarm signal Error code Communication state

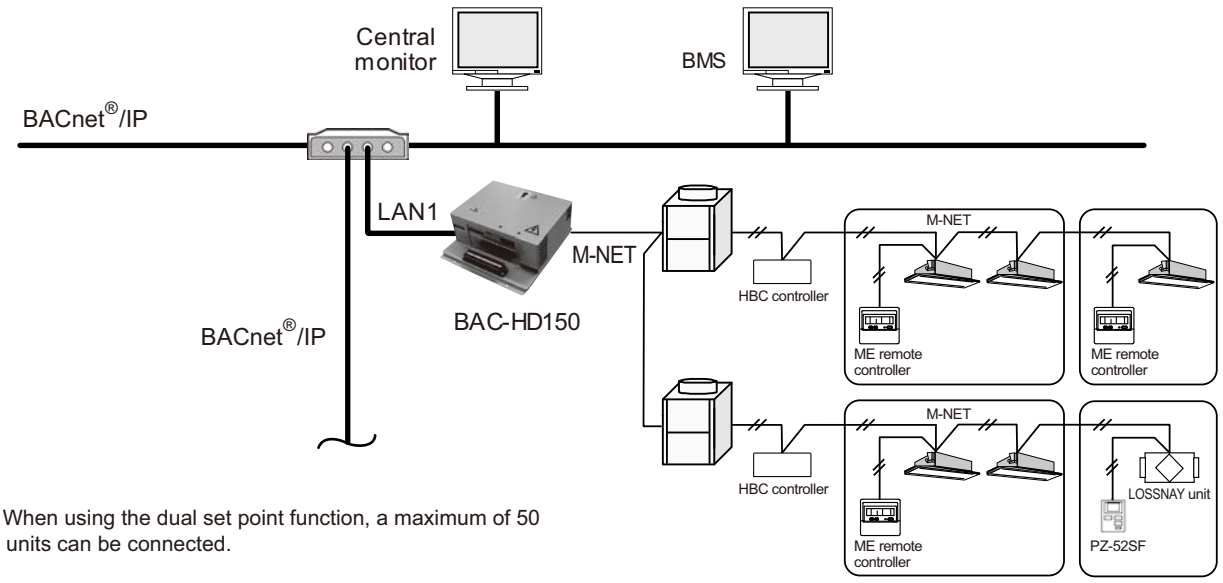
* When the dual set point is used.

■ External Dimensions



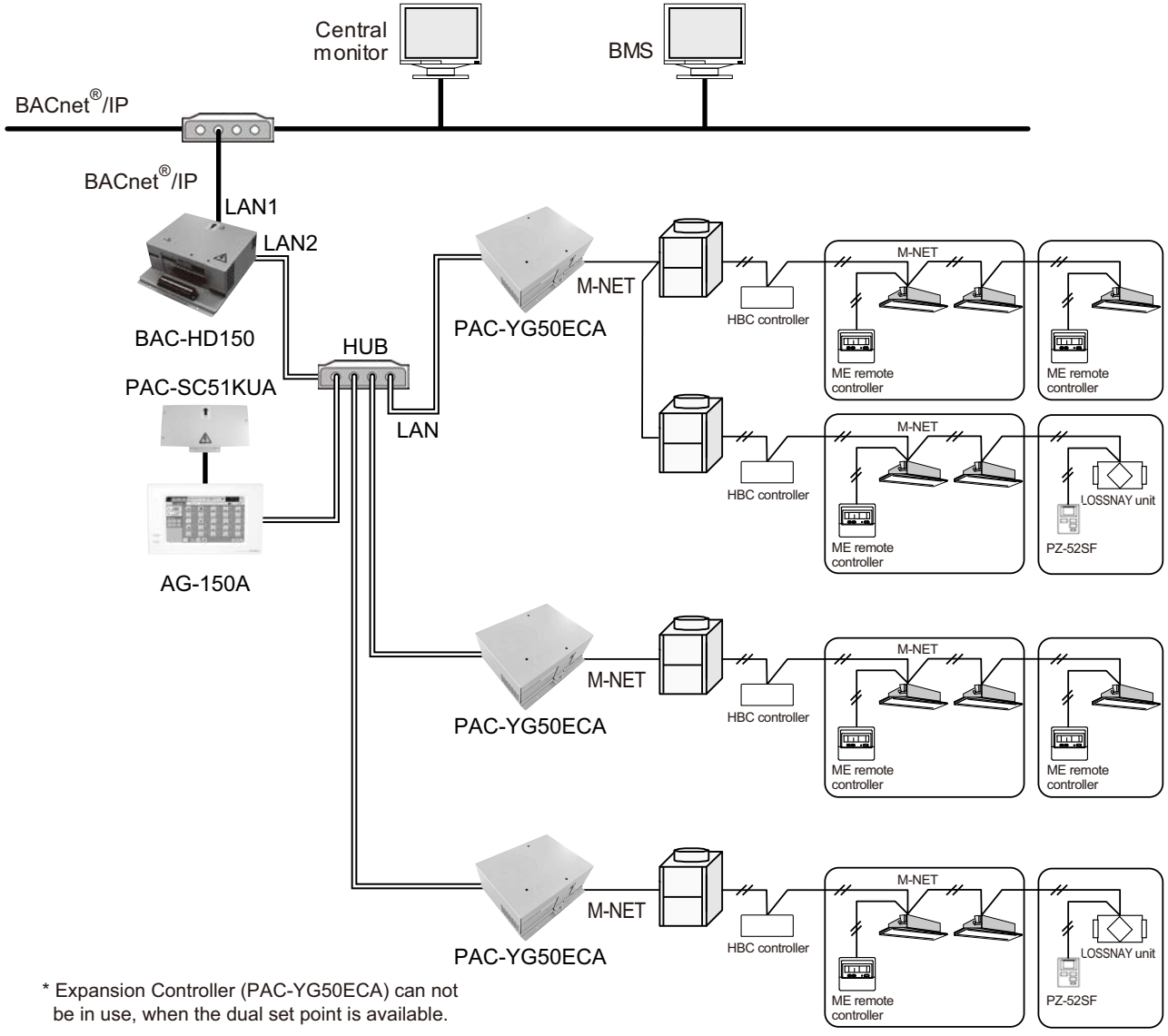
3. System remote controller

■ System example (Connection of 50 units / groups)



* When using the dual set point function, a maximum of 50 units can be connected.

■ System example (Connection of 150 units / groups with PAC-YG50ECA)

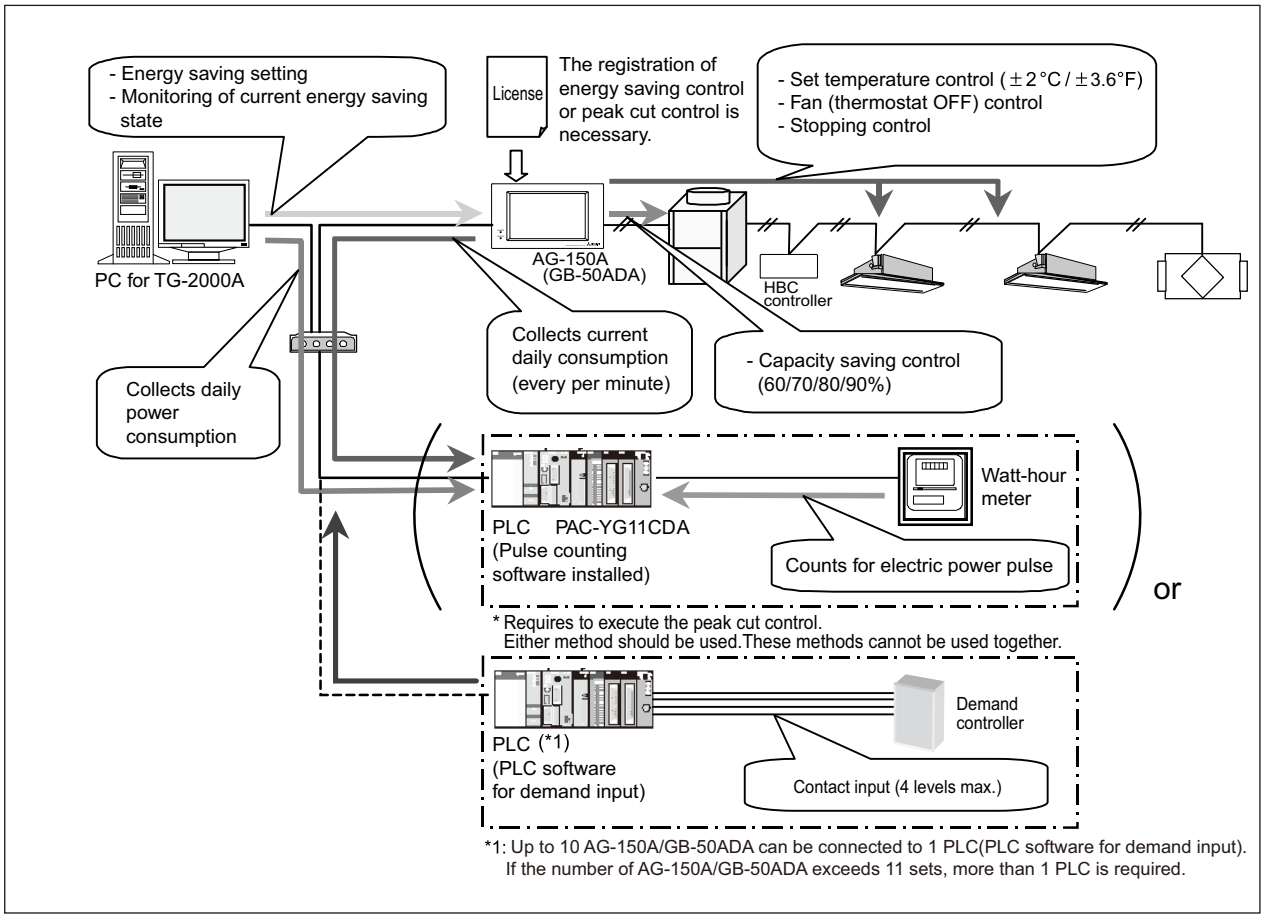


* Expansion Controller (PAC-YG50ECA) can not be in use, when the dual set point is available.

3-10. PLC software for demand input [PAC-YG41CDA]

MITSUBISHI ELECTRIC's HYBRID CITY MULTI has its intelligent way to carry out peak-cut control while maximizing the air conditioning effect.

■ System example



■ Necessary parts for the system

Name (Model name)	Manufacturer	Remarks
PC for central control	PC/AT convertible unit	Confirmed operation of DELL, HP. For details, refer to AG-150A Technical Manual.
TG-2000A	MITSUBISHI ELECTRIC	The latest version is recommended.
AG-150A/GB-50ADA	MITSUBISHI ELECTRIC	The latest version is recommended.
Energy management license pack	MITSUBISHI ELECTRIC	Requires for each AG-150A/GB-50ADA.
Web monitor license	MITSUBISHI ELECTRIC	Requires for each AG-150A/GB-50ADA.

Applying the energy saving setting from the integrated centralized control software TG-2000A or Initial setting Web allows conducting the energy saving control by the indoor/outdoor units or peak-cut control by using PLC.

Item		Content
Energy saving control	Indoor unit control	The TG-2000A or Initial setting Web sets the following energy saving items and energy saving time to AG-150A/GB-50ADA per operation block. AG-150A/GB-50ADA conducts energy saving operation to the indoor units with the set detail. ① Temperature control (±2°C/±36°F) ② Fan control (Thermostat ON) ③ Stopping control For the block with temperature difference between set and inlet temperature exceeding the set, the energy saving control set at level 0 is not applied.
	Outdoor unit control	The TG-2000A or Initial setting Web sets the following energy saving items and energy saving time to AG-150A/GB-50ADA per outdoor unit and the set AG-150A/GB-50ADA conducts the energy saving operation for the outdoor unit.
Peak cut control	Power consumption monitoring method [2]	Connecting the watt-hour meter (PLC(PAC-YG11CDA)) or PAC-YG60MCA allows conducting energy saving operation meeting the power consumption. The control object and detail are same as that of the energy saving rotated control. One set of the watt-hour meter can be set for each AG-150A/GB-50ADA.
	Demand controller method [2] (PAC-YG41CDA)	Energy-saving control that is appropriate to the current demand level is performed by receiving the demand level contact signal from the demand controller using the PLC. An installation of demand input PLC software is necessary to use the PLC. Control targets and control content of this method are the same as those of the energy-saving control. Each PLC unit can control up to ten AG-150A/GB-50ADA units to be on the energy-saving control.
Monitoring of energy saving control status/history[1]	Control status	During the energy saving control, the energy saving mark is displayed on the air conditioner group icon of Web, TG-2000A.
	Daily report	Daily power consumption and control level can be monitored by the web, TG-2000A. AG-150A/GB-50ADA can hold the data for 3 days max. including that of today, yesterday and the day before yesterday.
	Monthly report	Monthly power consumption can be monitored by the TG-2000A (for 62 days max.). The TG-2000A monitors from PLC for display and storing.

1; Daily Report and Monthly Report are functions that are enabled only when registering the "Energy-saving peak cut control license."TG-2000A must always be kept in operation to gather data on energy-saving control status and the operation history. The auto-output CSV files in the Daily Report and Monthly Report can be saved for two years in the appropriate folders.
"Power consumption and control level" report is available only when "Power consumption monitoring method" is used.
When other methods are used, only reports on the control level will be available.

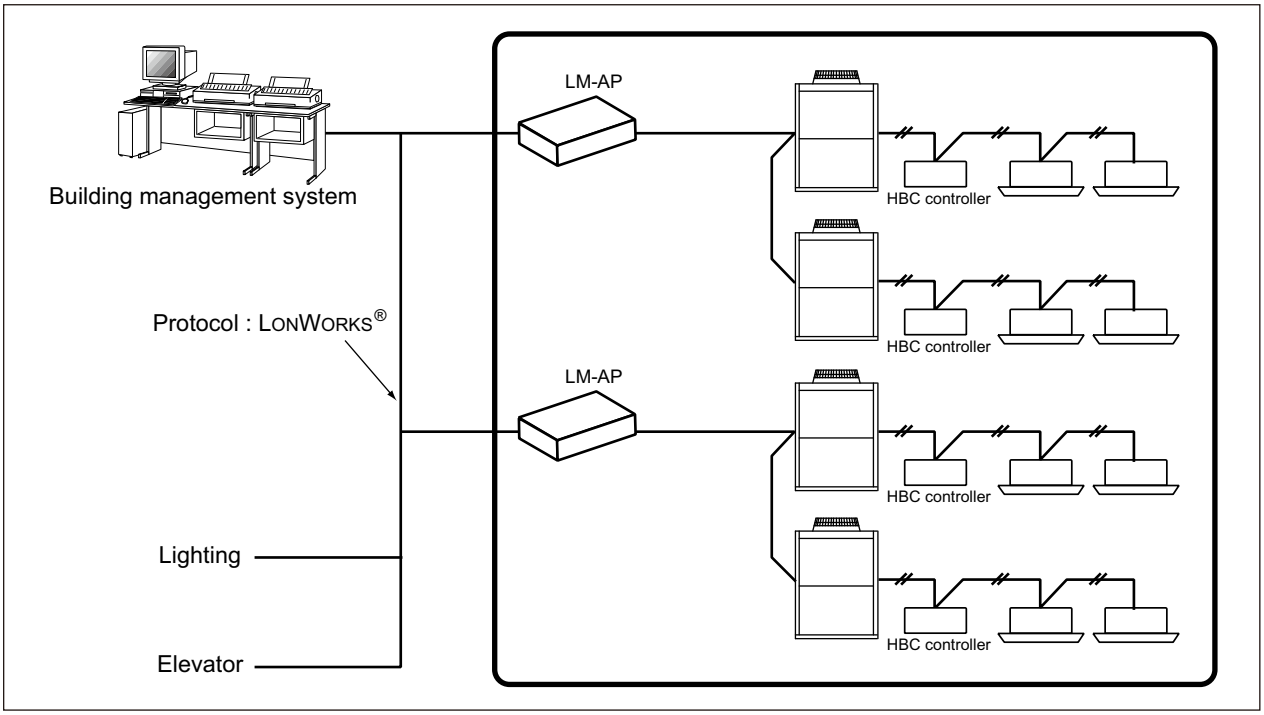
2; For further detail, please refer to Technical Manual of AG-150A/GB-50ADA and TG-2000A.

3-11. LONWORKS® interface [LMAP04-E]

HYBRID CITY MULTI can easily combine into a Building Management System (BMS) via the LONWORKS® and M-NET adapter LMAP04-E. LONWORKS® is an opened transmission protocol widely used at BMS, and related equipment control.
HYBRID CITY MULTI is therefore compatible with large-scaled BMS management via LONWORKS®.

One LMAP04-E serves up to 50 indoor units. (HYBRID CITY MULTI and LOSSNAY.)

■ System example



Communication items at LONWORKS® and M-NET Adapter LMAP04-E

Operation	On/Off	State Monitoring	Emergency
			On/Off
			Collective On/Off
	Mode		Mode
	Set point from network (Set temp.)		Set point from network (Set temp.)
	Fan speed		Fan speed
	Prohibit local On/Off		Prohibit local On/Off
	Prohibit local Mode		Prohibit local Mode
	Prohibit local Set temp.		Prohibit local Set temp.
	Collective Local Prohibit		Collective Local Prohibit
	Forced Thermostat OFF		Forced Thermostat OFF
	Filter Sign Reset		Run Time for Filter
	Time Stamp		
	Limit Temperature Setting Range		
	Simplified Locking		
	Batch Off		
			Indoor temperature
			Defrost
			Group Number
			Alarm signal
			Collective Alarm for Indoor Unit
			Collective Alarm for LM ADAPTER
			Error Code
			Error Address
			Thermo On/Off state_1 (*1)
			Thermo On/Off state_2 (*1)
			Model Code (*1)
	Set point from network (cool)		Set point from network (cool)
	Set point from network (heat)		Set point from network (heat)
	Set point from network (auto)		Set point from network (auto)

Note
*1: This product does not have a charge function.
The charge (apportioning) function must be prepared separately in the master system.

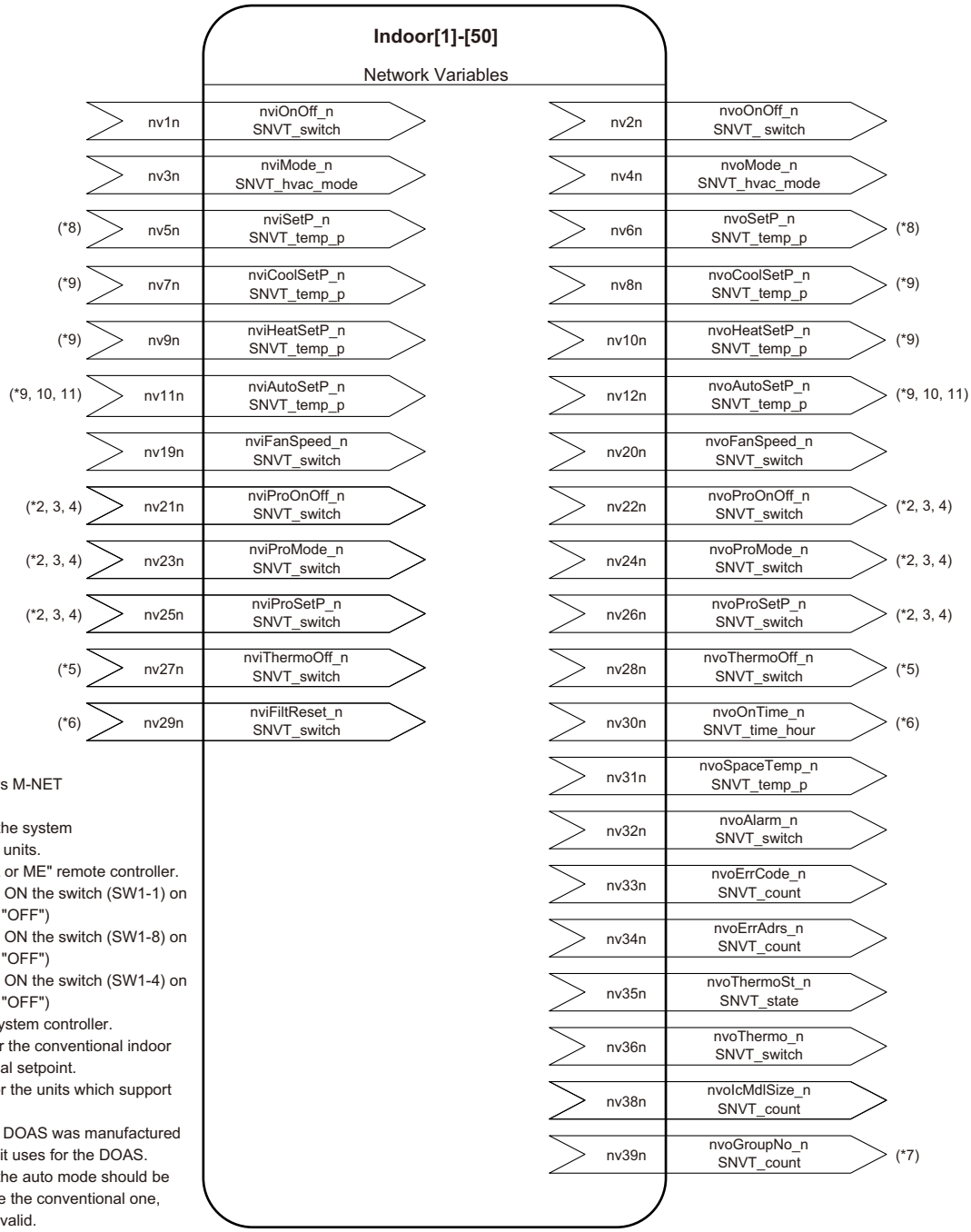
■ Environment specification

Item		Description
Connected Equipment		MITSUBISHI ELECTRIC Multiple split-type air conditioners HYBRID CITY MULTI Heat recovery ventilators LOSSNAY (※For details of the connectable models,please contact the dealer.)
Number of Units		LM-AP can control 50 indoor units (including LOSSNAY)
Neuron CHIP		TMPN3150/FT3150-P20 (10MHz)
Network Transceiver		FTT-10A/FT-X1 (Free Topology 78kbps)
Performance	Average communication capacity	2.5 inputs/second
	Peak communication capacity	50 inputs/second (for one second)

※ The proper communication is not obtainable when communication intervals exceed its performance, assure sufficient intervals.
※ ACK Service is recommended for the network service.
※ Detailed specifications for the LONWORKS® network can be found in "FTT-10A Free Topology Transceiver User's Guide" or " FT3120/FT3150 Smart Transceiver Data Book" by Echelon Corporation.

<LMAP04-E Network Variables>

Please obtain the Network Variables Specification for details from your dealer.



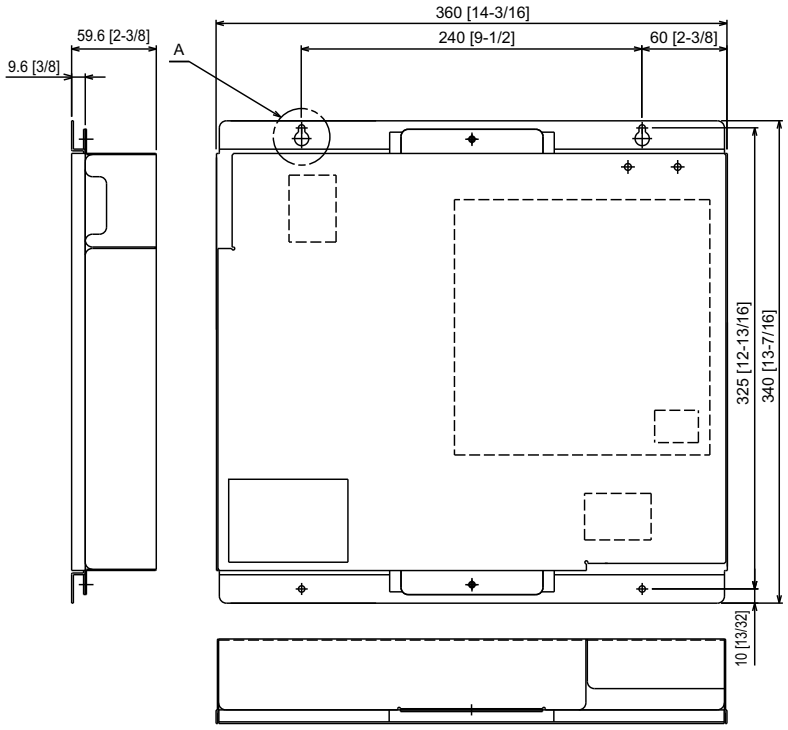
Notes

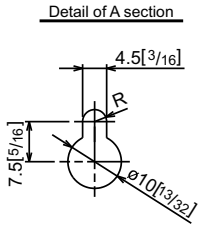
*1: "n" of the network variable shows M-NET address of indoor units.
*2: It may be unable to be used by the system configuration of air-conditioners units.
*3: It is possible to use with an "MA or ME" remote controller.
*4: For the use of this function, turn ON the switch (SW1-1) on LM ADAPTER. (Factory setting "OFF")
*5: For the use of this function, turn ON the switch (SW1-8) on LM ADAPTER. (Factory setting "OFF")
*6: For the use of this function, turn ON the switch (SW1-4) on LM ADAPTER. (Factory setting "OFF")
*7: It is possible to use with other system controller.
*8: This function is available only for the conventional indoor units which don't support the dual setpoint.
*9: These functions are available for the units which support the dual setpoint.
*10: This function is available for the DOAS was manufactured in October, 2012 or later, when it uses for the DOAS.
*11: This function is available when the auto mode should be controlled by single set point like the conventional one, even when the dual set point is valid.

3. System remote controller

■ External dimension

Unit: mm [in.]





Item			Description
Dimensions			340 (H) x 360 (W) x 59.6 (D) [13-7/16(H) x 14-3/16 (W) x 2-3/8(D)]
Net Weight			3.3 kg (7-1/2 lbs)
Power Source			~ 220 - 240V (50/60 Hz)
Current Consumption			50 mA (Maximum)
Operation Environment	Temperature	Operating Range	-15 to 43°C / 5 to 109°F
		Storage Range	-20 to 60°C / -4 to 140°F
	Humidity		30 to 95 RH (No condensation)
Installation Environment			In the control box

3-12. Transmission booster [PAC-SF46EPA]

The Outdoor unit supplies transmission power 30VDC for the indoor-outdoor transmission line at its connector TB3 and TB7. The power is consumed by the Indoor unit, ME remote controller, Timers and System controllers.When the total quantity of Indoor units, ME remote controller, Timers, and System controllers is over 40, or when transmission power supply is not enough, the transmission booster PAC-SF46EPA should be designed into the air-conditioner system to ensure the system communication. Indoor units sized P200 and 250 are counted as 2 units.

1. Designing PAC-SF46EPA into an air-conditioner system.

Taking the power consumption of Indoor unit sized P15-P140 as 1, the equivalent power consumption or supply of others are listed at Table 1 and Table 2.

Table 1 The equivalent power consumption

Indoor	Indoor unit	HBC controller	PWFY			MA RC. LOSSNAY	ME Remote Contr.	System Contr.		ON/OFF Contr.	MN Converter		Outdoor unit
Sized P15-P140	Sized P200, P250	CMB	P100VM -E-BU	P100VM -E1-AU	P200VM -E1-AU	PAR-31MAA PAR-21MAA PAC-YT52CRA PAR-FA32MA LGH-RX-E PZ-60DR-E	PAR-F27MEA PAC-SE51CRA PZ-52SF-E PAC-YG60MCA PAC-YG66DCA PAC-YG63MCA	AG-150A	AT-50A	PAC-YT40ANRA	CMS -MNF-B	CMS -MNG-E	TB7 power consumption
1	7	2	6	1	5	0	1/4	1/2	4	1	1/2	2	0

*RC : Remote Controller

Table 2 The equivalent power supply

Transmission Booster	Power supply unit	Expansion controller	BM ADAPTER	System Controller	Outdoor unit	Outdoor unit
PAC-SF46EPA	PAC-SC51KUA	PAC-YG50ECA	BAC-HD150	GB-50ADA	Connector TB3 and TB7 total *	Connector TB7 only
25	5	6	6	6	32	6

*If PAC-SC51KUA is used to supply power at TB7 side, no power supply need from Outdoor unit at TB7, Connector TB3 itself will therefore have 32.

Transmission booster PAC-SF46EPA has equivalent transmission power 25.

With the equivalent power consumption values in Table 1 and Table 2, PAC-SF46EPA can be designed into the airconditioner system to ensure proper system communication according to A, B, C.

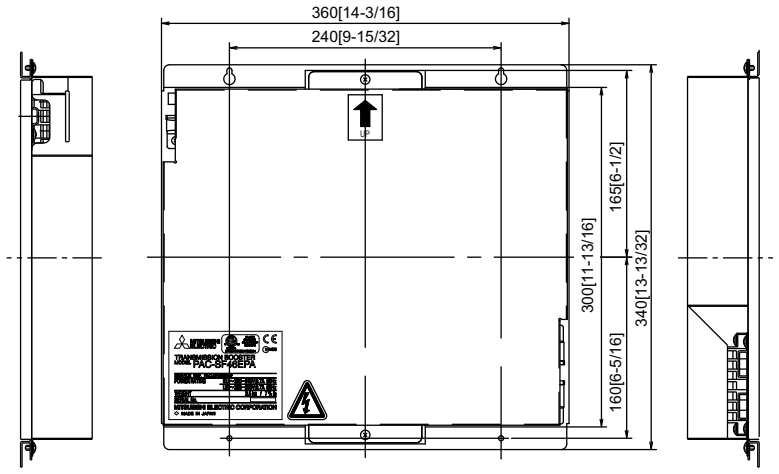
(A) Firstly, count from TB3 at TB3 side the total quantity of Indoor units, ME remote controller, and System controllers. If the total quantity reaches 40, a PAC-SF46EPA should be set. In this case, Indoor units sized P200 and 250 are counted as 2 indoor units, but MA remote controller(s) and PZ-60DR-E are NOT counted.

(B) Secondly, count from TB7 side to TB3 side the total transmission power consumption. If the total power consumption reaches 32, a PAC-SF46EPA should be set. Yet, if a PAC-SC51KUA or another controller with a built-in power supply, such as PAC-YG50ECA, is used to supply power at TB7 side, count from TB3 side only.

(C) Thirdly, count from TB7 at TB7 side the total transmission power consumption, If the total power consumption reaches 6, a PAC-SF46EPA should be set.

■ External dimension

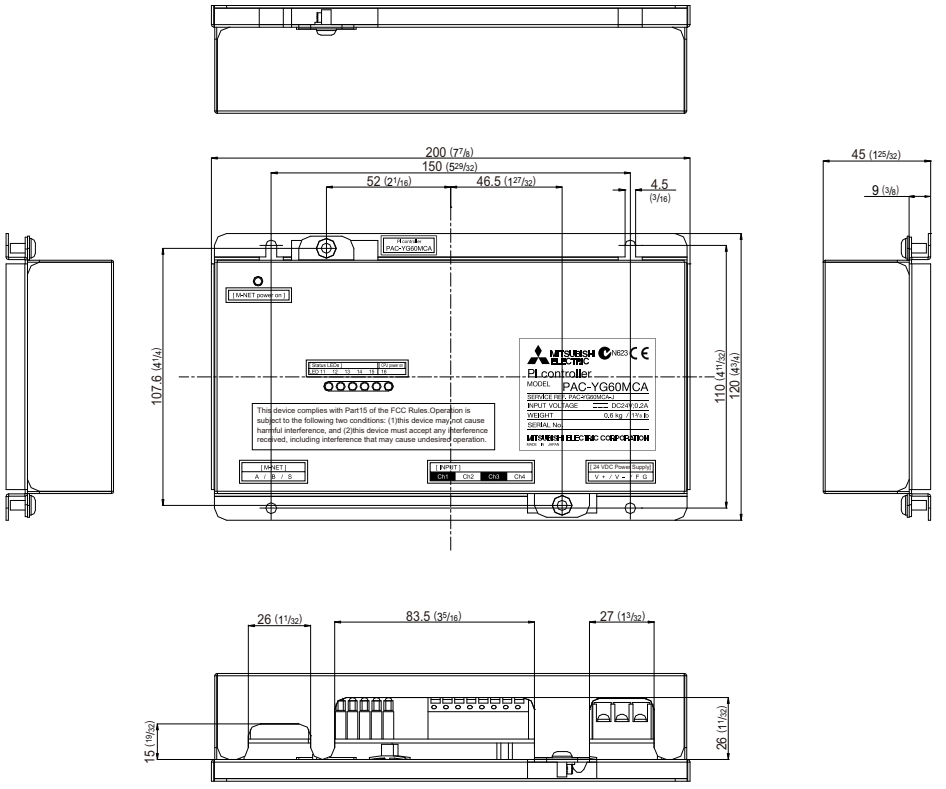
Unit:mm [in.]



3-13. PI controller [PAC-YG60MCA]

The PI controller counts pulses from a power meter, gas meter, water meter, and calorimeter.
Combining the use of the AG-150A/GB-50ADA and TG-2000A allows for calculating the charges for each unit and performing peak-cut (e.g., demand control) operation.
The meters can be monitored from AG-150A/GB-50ADA web browser. They cannot be monitored on AG-150A LCD.

■External Dimensions



Unit: mm (in)

⚠CAUTION

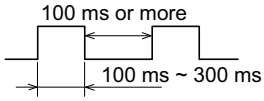
Usage Restrictions

- Mitsubishi Electric does not take financial responsibility for damages caused by issues beyond our control or special circumstances (predicable or unpredictable); and secondary or accidental damages, and damages to other objects. We also do not take financial responsibility for opportunities lost as a result of device failure, or electrical power failure at the end-user site.
  Mitsubishi Electric does not take financial responsibility caused by end-users' requests including, but not limited to, device testing, startup, readjustment, and replacement.
- Because the PI controller only counts pulses, accuracy and performance of pulse conversion depend on the meter.
  Mitsubishi Electric does not take financial responsibility for damages caused by issues beyond our control or special circumstances (predicable or unpredictable); and secondary or accidental damages and damages to other object.
- Depending on each country's laws and regulations, etc., there may be cases these measured charges cannot be used for certificate of transaction.

3. System remote controller

1. Specifications

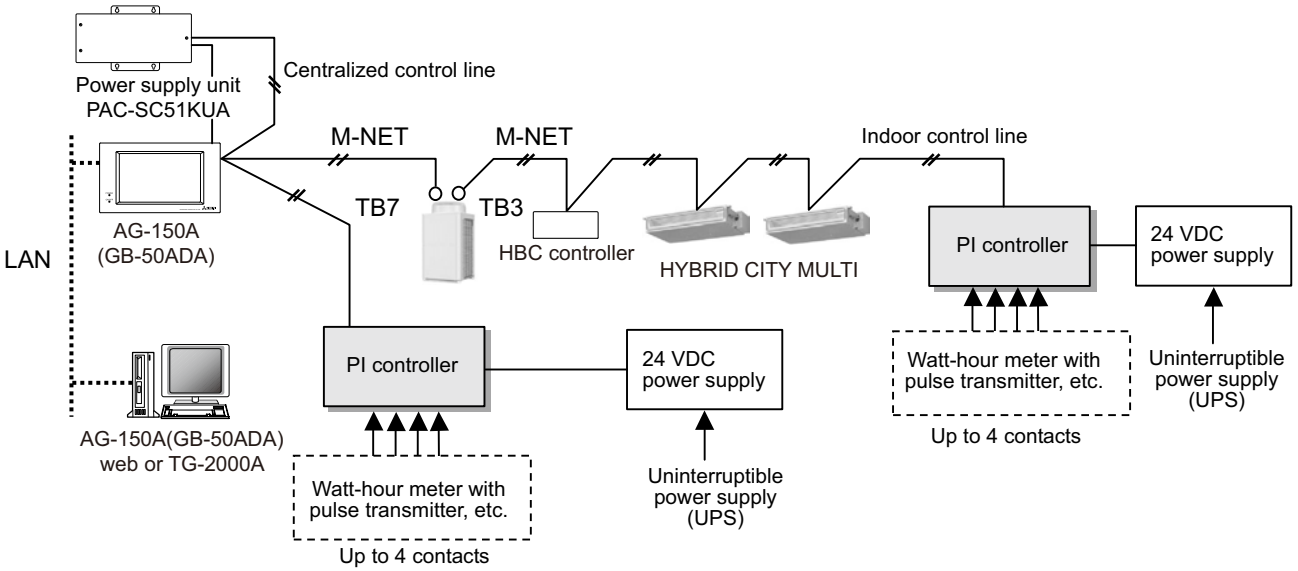
(1). Device Specifications

Item	Rating and Specification		
Power Supply	24 VDC ±10%: 5 W		Screw terminal block (M3) (*3)
Interface	M-NET communication	17 to 30 VDC (*1)	Screw terminal block (M3) (*3)
	Non-voltage a-contact input	Number of contacts: 4 Pulse signal: a-contact Pulse width: 100 ms to 300 ms (Idle period until next pulse: 100 ms or more)  Rated voltage: 24 VDC Rated current: 1 mA or less (*2)	Screwless terminal block
Environment Conditions	Temperature	Operating temperature range: 0 to 40°C [32°F to 104°F]	
		Storage temperature range: -20 to 60°C [-4°F to 140°F]	
	Humidity	30 to 90%RH (no condensation)	
Dimensions	200 (W) × 120 (H) × 45 (D) mm / 7 7/8 (W) × 4 3/4 (H) × 1 25/32 (D) in		
Weight	0.6 kg / 1 3/8 lb		
Time Backup During Power Failure	In the event of power failure or shut-off, the internal capacitor will continue to track time for approximately one week. (The internal capacitor takes about 24 hours to fully charge; a replacement battery is not necessary.)		
Installation Environment	Inside the metal control board (indoors) * Use this product in a hotel, a business office environment or similar environment.		

*1: Supply electric power from a power unit for the transmission line or an outdoor unit. Furthermore, the power consumption factor of the M-NET circuitry of this device is "1/4" (equivalent to one ME Remote Controller).

*2: Supply electric power from the main unit to the contacts of the meters.

*3: M3 is the size of the screw on the terminal block (ISO metric screw thread). The number indicates the screw diameter (mm).



*This figure omits the power supply line and only shows the transmission line.

The HYBRID CITY MULTI units do not support the Charging function.
The electric power consumption cannot be apportioned.

<Restrictions>
Maximum of 15 units (total of 60 channels) per AG-150A/GB-50ADA Ver. 2.45 or later
Maximum of 5 units (total of 20 channels) per AG-150A (Expansion controller)/GB-50ADA Ver. 2.45 or earlier
However, the number of units that can be connected to a AG-150A/GB-50ADA is up to 50 including this device, indoor units, LOSSNAY units, etc.

NOTE	• For the shield ground of the M-NET centralized control line for central control, use single-point grounding at the power unit for the transmission line. However, when supplying electric power to the M-NET centralized control line from the R410A series outdoor unit*1 without using a power supply unit for the transmission line, use single-point grounding at the TB7 of that outdoor unit. *1 : Except PUMY model. Furthermore, when connecting this device to the M-NET indoor control line, use grounding at the TB3 for each outdoor unit system. • Connecting an Uninterruptible power supply (UPS) to the 24 VDC power supply is recommended in order to prevent the loss of pulse data in the event of a power failure. If a UPS cannot be connected, try to make the AC power supply to the 24 VDC power supply as much same as the AC power supply line to the meters. • This device does not support level meters. To use a level meter, incorporate a Converter circuit externally and convert to pulse input. • If the M-NET transmission line of this device is connected to an M-NET indoor control line and the outdoor unit is down because, for example, the power supply is interrupted for servicing or there is a failure, the PI controller cannot be controlled from the system controller.

(2). Parts Purchased Separately

Prepare the following parts to install this device.

Required Part	Specification
Unit fixing screws	M4 screw × 4 (* M4: ISO metric screw thread)
Power supply for this device	Power source: 24 VDC 0.2 A (Minimum loading), SELV circuit, power line with grounding terminal Ripple noise: Lower than 200 mVp-p Compatible specification Authorized or CE marked products Subject to regulations: - IEC60950 (or EN60950) - CISPR22/24 (or EN55022/24) - IEC61000-3-2/3-3 (or EN61000-3-2/3-3)
Power line	Use a sheathed vinyl cord or cable. At least 0.75 mm^2 (AWG18)
M-NET transmission line	Type of the cable: Sheathed vinyl cords or cable which comply with the following specifications or equivalent. • CPEV ø1.2 mm to ø1.6 mm • CVVS 1.25 mm^2 to 2 mm^2 (AWG16 to 14) * CPEV: PE insulated PVC jacketed shielded communication cable * CVVS: PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl choloride Power needs to be supplied to the M-NET circuitry of this device. Use an outdoor unit or a separately purchased power supply unit for the transmission line.
Signal lines	Shows the size of the electric wire (copper wire) that is adapted to the terminal block of this device. Electric wire size..... (1) Solid wire: ø0.65 mm (AWG21) - ø1.2 mm (AWG16) (2) Stranded wire: 0.75 mm^2 (AWG18) - 1.25 mm^2 (AWG16) Single strand: At least ø0.18 mm

[Parts to be Purchased Separately]

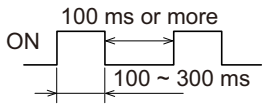
Name	Model	Application	Remark
Power supply unit	PAC-SC51KUA	Power supply to the M-NET transmission line	This is not required when power is to be supplied from an outdoor unit.

[Commercially available parts]

Part	Use	Remark
External 24 VDC power source	Supplies power to the PI controller.	Refer to "Power supply for this device" in "Required Part" above for the capacity of the power supply.

[Recommended Pulse Specifications]

Prepare a measuring instrument that measures the type of pulse signals indicated in table below.

Type	Specification
Output pulse relay method	Semiconductor relay method
Output pulse width	100 ~ 300 ms (100 ms and above) Choose an instrument that outputs non-voltage a-contact point pulse per each pulse output. 
Pulse unit	Watt-hour meter: 0.1 kWh/pulse, 1 kWh/pulse recommended Water meter: m^3/pulse Gas meter: m^3/pulse Calorimeter: MJ/pulse * Except for the watt-hour meter, select instruments that take measurements in the appropriate pulse unit.

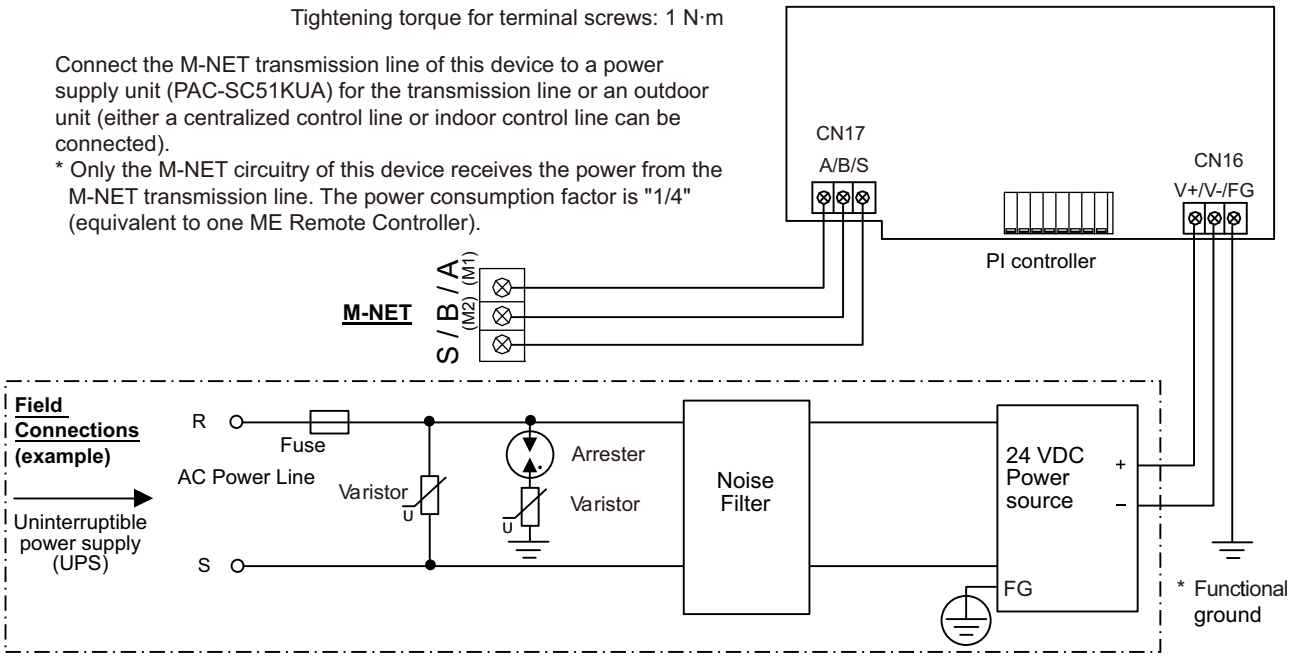
2. Wiring Instructions

(1). Connecting the Power and M-NET Transmission Lines

Tightening torque for terminal screws: 1 N·m

Connect the M-NET transmission line of this device to a power supply unit (PAC-SC51KUA) for the transmission line or an outdoor unit (either a centralized control line or indoor control line can be connected).

* Only the M-NET circuitry of this device receives the power from the M-NET transmission line. The power consumption factor is "1/4" (equivalent to one ME Remote Controller).



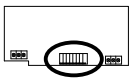
⚠CAUTION

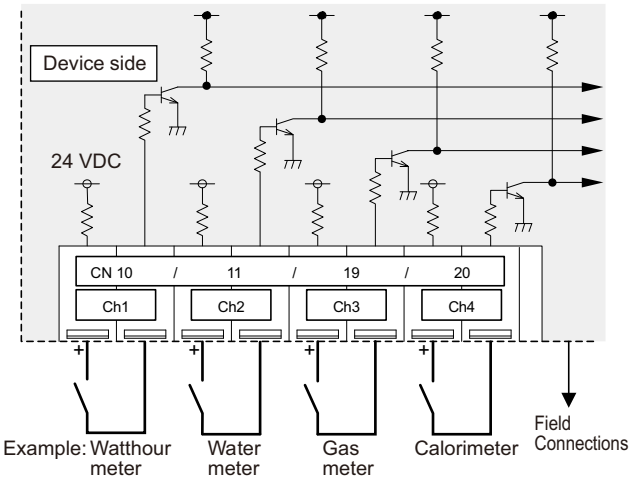
- Use a power line and M-NET transmission line that satisfy the specifications described in "1-(2). Parts Purchased Separately".
- Attach a circuit comprising the following components to the supply primary side of the 24 VDC power supply.
  (1) Varistor, (2) Arrester, (3) Noise filter, (4) Fuse
- It is important to pay attention to the polarity when connecting to the 24 VDC power supply terminal block. Connecting the positive and negative in the reverse order will cause a failure.
- Fix the power line and M-NET transmission line in place on the outside to ensure that the terminal block is not affected by any external force.
  Not securely connecting and fixing the wires in place may cause heat generation and fire.
- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. Cover the shielded line of the M-NET transmission line with materials such as vinyl tape and prevent short-circuiting with the plates.

(2). Connecting the Signal Lines

• Separately procure items such as terminal blocks and cables locally.
• The maximum wire length is 100 m (328 ft).
However, since the use of long wires makes the device susceptible to noise, using wires shorter than 10 m (32.8 ft) is recommended.

1) Pulse input (non-voltage a-contact)





NOTE	• The pulse unit (weight) can be added to each of the inputs of channels 1 to 4. • Be sure to set the pulse unit (weight) settings from a system controller (AG-150A/GB-50ADA or TG-2000A). If the pulse unit (weight) value has not been set as required, the charge function and peak cut control will not work normally because correct measurement of usage amounts will not be made. • This device does not support level meters. To use a level meter, incorporate a Converter circuit externally and convert to pulse input.

⚠CAUTION	• The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity. • Select a contact with a minimum applicable load of 1 mA or less. • Supply 24 VDC 1 mA from the positive terminal to the contacts of the meters. • The pulse unit of the watt-hour meter being used should be 1 kWh/pulse or less. Note that the apportioning error will increase if a watt-hour meter with large pulse unit is used. • The input signal line should not come into contact with or be installed alongside the M-NET transmission line and power supply line. Care must also be taken to avoid wiring loops. • Strip 12±1 mm (15/32 ± 1/32 in) of the wire coating and insert firmly into the terminal. • Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. • Perform wiring so that the terminal block is not strained. If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.

3. System Operation Test

Various settings related to the charge operation need to be configured from the TG-2000A prior to starting the charge function operation. Furthermore, in such a case, be sure to perform a charge test run according to the instruction manual for TG-2000A.

Do not turn the power OFF after starting operation. The power rate will not be counted while the power interruption.
Forcible pulse input must never be carried out after startup.

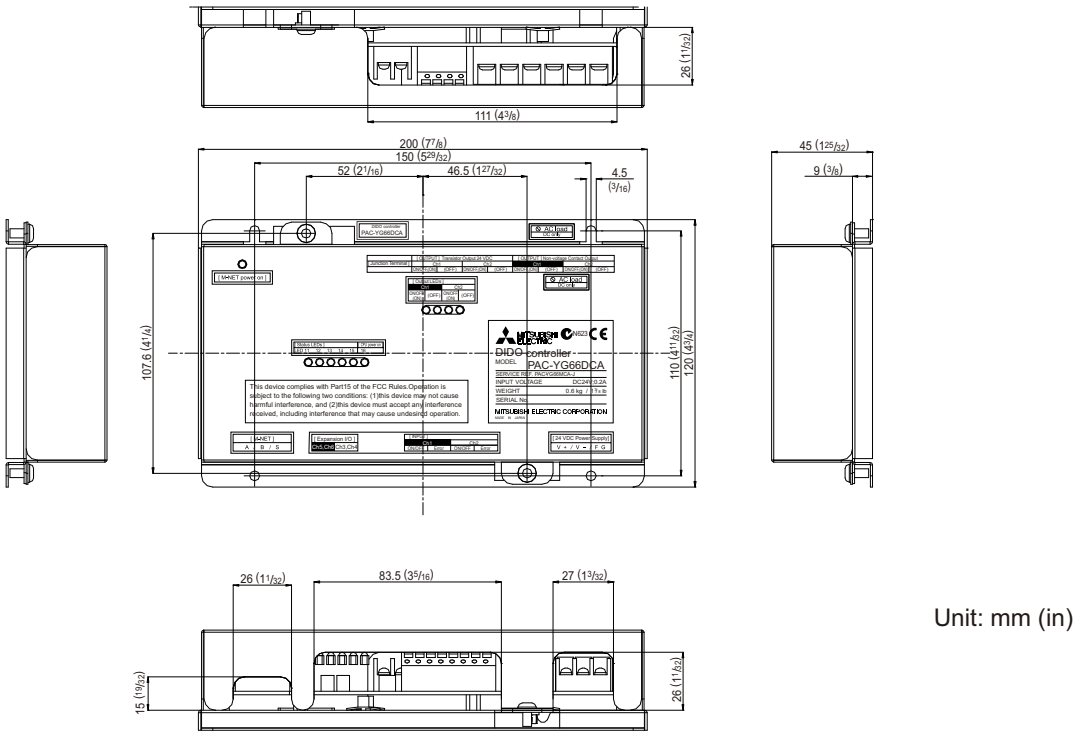
3-14. DIDO controller [PAC-YG66DCA]

The DIDO controller is used in combination with a AG-150A/GB-50ADA to operate general-purpose equipment, as well as to monitor operating and error status. It is equipped with two sets of standard terminals (Channels 1 and 2), and four sets of expansion connectors for the input/output terminals. Expansion cable is optional.

Other devices can only be controlled from AG-150A/GB-50ADA Web browser and TG-2000A. Operation can be monitored or performed from the AG-150A LCD.

In addition, this device includes a function that interlocks M-NET devices such as indoor units, general equipment, etc.

■External Dimensions



Unit: mm (in)

⚠CAUTION

Usage Restrictions

- Mitsubishi Electric does not take financial responsibility for damages caused by issues beyond our control or special circumstances (predicable or unpredictable); and secondary or accidental damages, and damages to other objects. We also do not take financial responsibility for opportunities lost as a result of device failure, or electrical power failure at the end-user site.
  Mitsubishi Electric does not take financial responsibility caused by end-users' requests including, but not limited to, device testing, startup, readjustment, and replacement.
- Do not use this device in disaster prevention, security, or "critical to life" applications.
- It is recommended to provide an external switch for general-purpose equipment in case of a failure of the DIDO controller or a peripheral part.

3. System remote controller

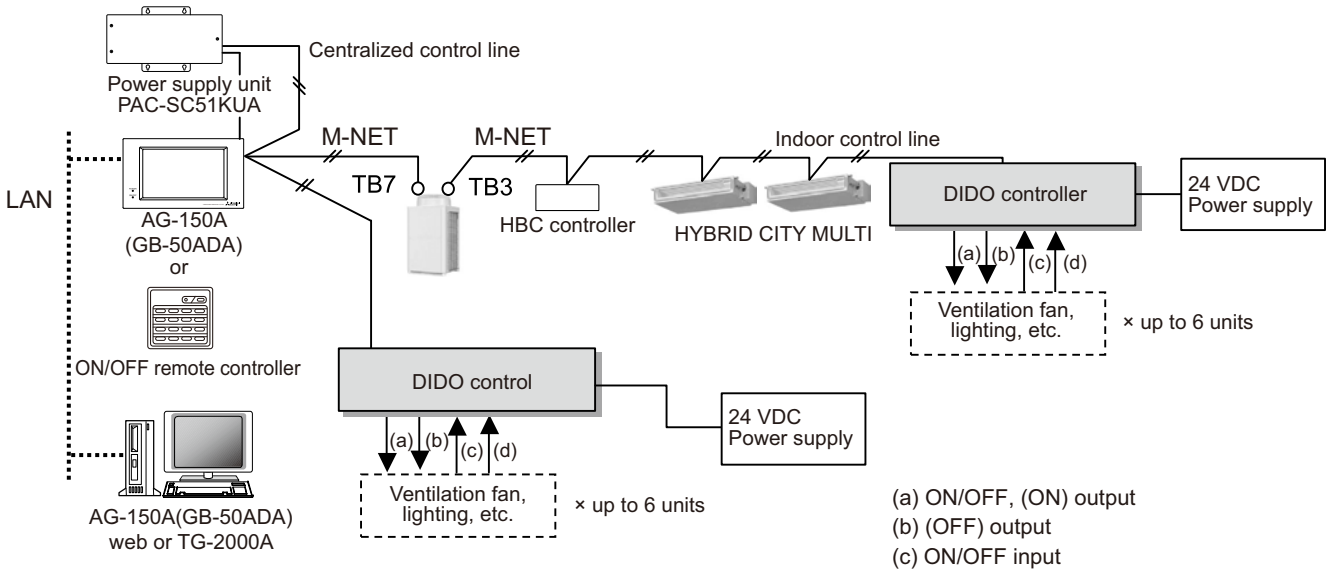
1. Specifications

(1). Device Specifications

<table>
<tr><th>Item</th><th colspan="6">Rating and Specification</th></tr>
<tr><td>Power Supply</td><td colspan="5">24 VDC ±10%: 5 W (*1)</td><td>Screw terminal block (M3) (*8)</td></tr>
<tr><td rowspan="9">Interface</td><td colspan="3">M-NET communication</td><td colspan="2">17 to 30 VDC (*2)</td><td>Screw terminal block (M3) (*8)</td></tr>
<tr><td rowspan="4">Standard</td><td rowspan="3">Output (*3)</td><td rowspan="2">ON/OFF, (ON) (*4)</td><td>Non-voltage Relay contact (2)</td><td>Applied load
MAX: 24 VDC, 5 W
MIN: 5 VDC, 2 mW
* AC loads cannot be connected.</td><td>Screw terminal block (M3.5) (*8)</td></tr>
<tr><td>Transistor (2)</td><td>24 VDC 40 mA or less (*5)</td><td>Screwless terminal block</td></tr>
<tr><td rowspan="2">(OFF) (*4)</td><td>Non-voltage Relay contact (2)</td><td>Applied load
MAX: 24 VDC, 5 W
MIN: 5 VDC, 2 mW
* AC loads cannot be connected.</td><td>Screw terminal block (M3.5) (*8)</td></tr>
<tr><td>Transistor (2)</td><td>24 VDC 40 mA or less (*5)</td><td>Screwless terminal block</td></tr>
<tr><td>Input</td><td>ON/OFF
Error/Normal</td><td>Non-voltage a contact (2 each)</td><td>24 VDC 1 mA or less (*6)</td><td>Screwless terminal block</td></tr>
<tr><td rowspan="3">Expansion</td><td rowspan="2">Output</td><td>ON/OFF, (ON) (*4)
(OFF) (*4)</td><td>Transistor (4 each)</td><td>24 VDC 40 mA or less (*5)</td><td>9 pin connector</td></tr>
<tr><td rowspan="2">Input</td><td>ON/OFF
Error/Normal</td><td>24 VDC input (4 each)</td><td>24 VDC 1 mA or less (*7)</td><td>9 pin connector</td></tr>
<tr><td colspan="3">Output Pulse Width</td><td>1s ± 30 ms</td><td colspan="2">1s ±30 ms</td></tr>
<tr><td>Interlock Function</td><td colspan="6">Interlock M-NET devices and output contacts according to status of input contacts. (*8)</td></tr>
<tr><td rowspan="3">Environment Conditions</td><td colspan="2" rowspan="2">Temperature</td><td>Operating temperature range</td><td colspan="2">0 to 40°C[32°F to 104°F]</td></tr>
<tr><td>Storage temperature range</td><td colspan="2">-20 to 60°C[-4°F to 140°F]</td></tr>
<tr><td colspan="2">Humidity</td><td colspan="3">30 to 90%RH (no condensation)</td></tr>
<tr><td>Dimensions</td><td colspan="6">200 (W) × 120 (H) × 45 (D) mm / 7 7/8 (W) × 4 3/4 (H) × 1 25/32 (D) in</td></tr>
<tr><td>Weight</td><td colspan="6">0.6 kg / 1 3/8 lbs</td></tr>
<tr><td>Time Backup During Power Failure</td><td colspan="6">In the event of power failure or shut-off, the internal capacitor will continue to track time for approximately one week. (The internal capacitor takes about 24 hours to fully charge; a replacement battery is not necessary.)</td></tr>
<tr><td>Installation Environment</td><td colspan="6">Inside the metal control board (indoors)
* Use this product in a hotel, a business office environment or similar environment.</td></tr>
</table>

*1: For details, refer to "1-(2). Parts Purchased Separately".
*2: Supply electric power from a power unit for the transmission line or an outdoor unit.
Furthermore, the power consumption factor of the M-NET circuitry of this device is "1/4" (equivalent to one ME Remote Controller).
*3: Non-voltage Relay contact or transistor is available for output. Only one can be used at a time.
*4: ( ) is in the case of a pulse.
*5: The output is open collector type. Power must be supplied from an external power source to the output circuit of this device.
*6: Power is supplied from this device to the external contacts.
*7: Power must be supplied from an external power source.
*8: M3 and M3.5 are sizes of the screw on the terminal block (ISO metric screw thread).
The number indicates the screw diameter (mm).

3. System remote controller



* This figure omits the power supply line and only shows the transmission line.

(a) ON/OFF, (ON) output
(b) (OFF) output
(c) ON/OFF input
(d) Error/Normal input
Standard: Terminal block (for 2 units)
Expansion: Connectors (for 4 units)
Total: 6 units

<Restrictions>
Maximum of 50 units (50 channels) per AG-150A/GB-50ADA
However, the number of units that can be connected to a AG-150A/GB-50ADA is up to 50 including the number of contacts used on this device, an indoor unit, LOSSNAY unit, etc.
Up to 6 contacts can be connected to the DIDO controller (1 M-NET address). One contact connected to this device is calculated as the equivalent of one indoor unit connected to AG-150A/GB-50ADA.
For example, 5 contacts connected to the DIDO controller are calculated as the equivalent of 5 indoor units connected to AG-150A/GB-50ADA.

NOTE

- For the shield ground of the M-NET centralized control line, use single-point grounding at the power unit for the transmission line.
  However, when supplying electric power to the M-NET centralized control line from the R410A series outdoor unit*1 without using a power supply unit for the transmission line, use single-point grounding at the TB7 of that outdoor unit. *1 : Except PUMY model.
  Furthermore, when connecting this device to the M-NET indoor control line, use grounding at the TB3 for each outdoor unit system.
- If the M-NET transmission line of this device is connected to the M-NET indoor control line and the outdoor unit is down because, for example, the power supply is interrupted for servicing or there is a failure, the DIDO controller cannot be controlled from the system controller.
- Controlling the ON/OFF remote controller is only possible with channel 1 of a standard terminal block.
- DIDO controller can only be monitored or performed from AG-150A LCD, AG-150A/GB-50ADA Web browser and TG-2000A.
- When AG-150A/GB-50ADA is connected, monitoring control can only be performed from AG-150A,GB-50ADA Web or TG-2000A. Monitoring control cannot be performed from the ON/OFF remote controller.

(2). Parts Purchased Separately

Prepare the following parts to install this device.

Required Part	Specification
Unit fixing screws	M4 screw × 4 (*M4: ISO metric screw thread)
Power supply for this device	Commercially available power source: 24 VDC±10% 0.2 A (Minimum loading), SELV circuit, power line with grounding terminal Ripple noise: Lower than 200 mVp-p Compatible specification Authorized or CE marked products Subject to regulations: - IEC60950 (or EN60950) - CISPR22/24 (or EN55022/24) - IEC61000-3-2/3-3 (or EN61000-3-2/3-3) When using transistor output (including extension output) for the 24 VDC output of this device, increase the capacity to match the number used. • 1 set used: 0.3 ADC (Minimum) • 2 sets used: 0.4 ADC (Minimum) • 3 sets used: 0.5 ADC (Minimum) • 4 sets used: 0.6 ADC (Minimum) • 5 sets used: 0.7 ADC (Minimum) • 6 sets used: 0.8 ADC (Minimum) * The increase of the power supply capacity is 0.1 ADC for every set.
Power line	Use a sheathed vinyl cord or cable. At least 0.75 mm^2 (AWG18)
M-NET transmission line	Type of the cable: Sheathed vinyl cords or cable which comply with the following specifications or equivalent. • CPEV ø1.2 mm to ø1.6 mm • CVVS 1.25 mm^2 to 2 mm^2 (AWG 16 to 14) * CPEV: PE insulated PVC jacketed shielded communication cable * CVVS: PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl choloride Power needs to be supplied to the M-NET circuitry of this device. Use an outdoor unit or a separately purchased power supply unit for the transmission line.
Signal lines	Use electric wire of an appropriate size for the terminal block of this device. Electric wire size ···· (1) Solid wire: ø0.65 mm (AWG21) - ø1.2 mm (AWG16) (2) Stranded wire: 0.75 mm^2 (AWG18) - 1.25 mm^2 (AWG16) Single strand: At least ø0.18 mm To use an expansion input/output, use a separa tely purchased external input/output adapter.

[Parts to be Purchased Separately]

Name	Model	Application	Remark
Power supply unit	PAC-SC51KUA	Power supply to the M-NET transmission line	This is not required when power is to be supplied from an outdoor unit.
External I/O adapter	PAC-YG10HA	Connection adapter for using an expansion input/output	This is required when an expansion input/ output is used.

[Commercially available parts]

Name	Application	Remark
External 24 VDC power source	Supplies power when to use the DIDO controller or transistor output.	Refer to "Power supply for this device" in "Required Part" above for the power supply capacity.
Relay device	Requires commercially available relay device depending on the electric specifications with an external device.	

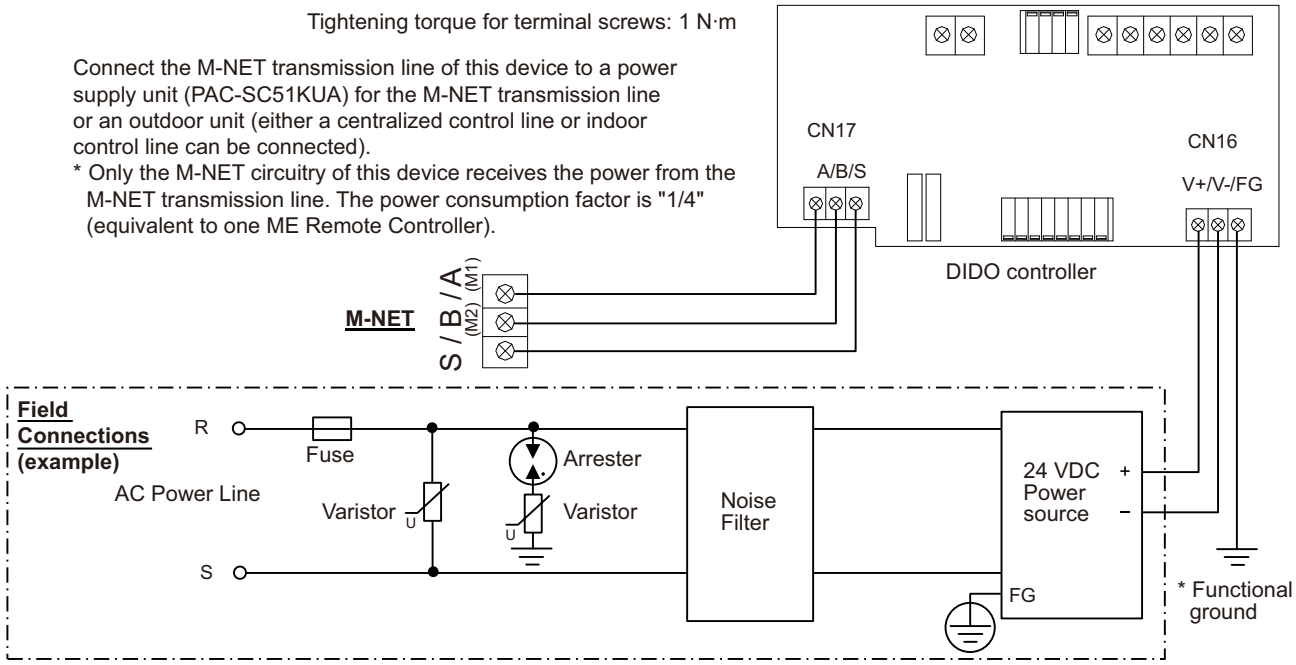
2. Wiring Instructions

(1). Connecting the Power and M-NET Transmission Lines

Tightening torque for terminal screws: 1 N·m

Connect the M-NET transmission line of this device to a power supply unit (PAC-SC51KUA) for the M-NET transmission line or an outdoor unit (either a centralized control line or indoor control line can be connected).

* Only the M-NET circuitry of this device receives the power from the M-NET transmission line. The power consumption factor is "1/4" (equivalent to one ME Remote Controller).



⚠CAUTION

- Use a power line and M-NET transmission line that satisfy the specifications described in "1-(2). Parts Purchased Separately".
- Attach a circuit comprising the following components to the supply primary side of the 24 VDC power supply.
  (1) Varistor, (2) Arrester, (3) Noise filter, (4) Fuse
- It is important to pay attention to the polarity when connecting to the 24 VDC power supply terminal block. Connecting the positive and negative in the reverse order will cause a failure.
- Fix the power line and M-NET transmission line in place on the outside to ensure that the terminal block is not affected by any external force.
  Not securely connecting and fixing the wires in place may cause heat generation and fire.
- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. Cover the shielded line of the M-NET transmission line with materials such as vinyl tape and prevent short-circuiting with the plates.

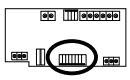
(2). Connecting the Signal Lines

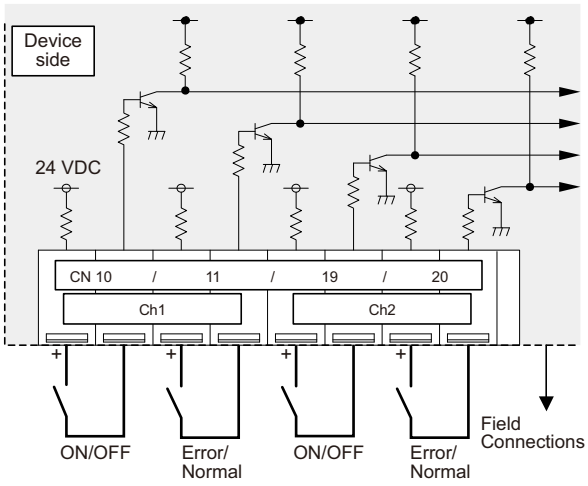
- Separately procure the relay, power supply for the relay, terminal block, and cable locally.
- The maximum wire length is 100 m (328 ft). However, since the use of long wires makes the device susceptible to noise, using wires shorter than 10 m (32.8 ft) is recommended.
- Connect another relay within 10 m (32.8 ft) from DIDO controller to extend the input line.

1) Standard Terminals (Channels 1 and 2)

(1-1) Input

(a) Non-voltage a-contact Inputs





Contacts closed :
Operating (ON); detected an error
Contacts closed :
Operating (ON); detected an error
*Error/normal detection becomes inverted from contact open/closed logic for a b-contact setting.

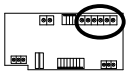
NOTE	• Connect the operate/stop (ON/OFF) inputs so that closing the contact operates (ON) the device and opening the contact stops (OFF) the device. • The error/normal inputs of channels 1 and 2 can be switched between a-contact and b-contact.

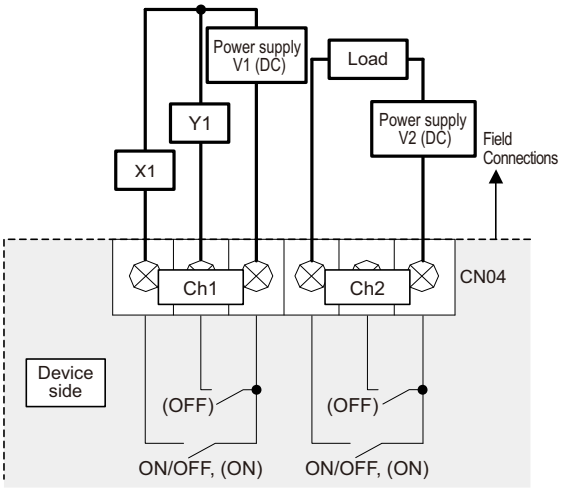
⚠CAUTION	• The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity. • Select a contact with a minimum applicable load of 1 mADC or less. • Supply 24 VDC 1 mA from the positive terminal to the external contacts. • Do not install alongside or in contact with other wires. • Strip 12 ±1 mm (15/32 ± 1/32 in) of the wire coating and insert firmly into the terminal. • Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. • Perform wiring so that the terminal block is not strained. If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.

(1-2) Output

Non-voltage Relay contact or transistor is available for output. Only one can be used at a time.

(a) Non-voltage Relay Contact Outputs





Operate (ON) output :
Contacts closed
Stop (OFF) output :
Contacts open
*Upon pulse output, the (ON), (OFF) contacts close according to the output content. ((ON) and (OFF) refer to the junctions in the diagram.)

( ) is in the case of a pulse.

Tightening torque for terminal screws: 1 N·m

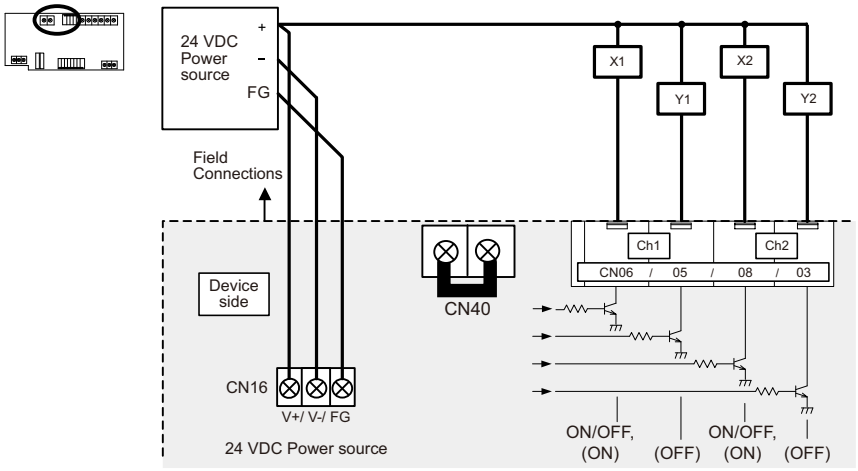
⚠CAUTION

- To use X1 and Y1 relay, obtain one that satisfies the following specifications.
  Operating coil
  [Applied load]
  MAX: 24 VDC, 5 W (Built-in diode)
  MIN: 5 VDC, 2 mW (Built-in diode)
  *1 AC loads cannot be connected.
  *2 Provide a power supply (V1, V2) that matches the load and relay to be used.
- To drive a direct load, use ones within the following.
  [Applied load]
  MAX: 24 VDC, 5 W
  MIN: 5 VDC, 2 mW

* AC loads cannot be connected.

- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires.
- Perform wiring so that the terminal block is not strained.
  If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.
- Do not connect the wires directly from the top of the control panel to the terminal block.
  Moisture may enter this device along the wiring and cause electric shock or fire.

(b) Transistor Outputs (Open Collector)



Operate (ON) output :
Transistor ON (sink)
Stop (OFF) output :
Transistor OFF (open)
*Upon pulse output, the (ON),(OFF) transistors turn ON (sink) according to the output content. ((ON) and (OFF) refer to the junctions in the diagram.)

( ) is in the case of a pulse.

Tightening torque for terminal screws: 1 N·m

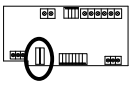
NOTE	The junction terminal block CN40 (for 24 VDC) is provided. Use them as relay terminals if necessary.

⚠CAUTION	• When X1, X2, Y1 and Y2 relays are used, select ones that satisfy the following specifications. Operating coil Rated voltage: 24 VDC (Built-in diode) Power consumption: 0.9 W or less (*1) Be sure to use the ones with the voltages rated above. Exceeding the rated voltage may affect the ON/OFF of other outputs. (*2) When using a separate power supply for this device, connect GND of the power supply to V- of CN16 of the terminal block of this device. (*3) Use a relay with a withstanding voltage of at least 2000 VAC between the coil and contact. Otherwise, there is the likelihood of an electric shock or fire. • Strip 12 ±1 mm (15/32 ±1/32 in) of the wire coating and insert firmly into the terminal. • Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. • Perform wiring so that the terminal block is not strained. If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block. • Do not connect the wires directly from the top of the control panel to the terminal block. Moisture may enter this device along the wiring and cause electric shock or fire.

2) Expansion Connectors (Channels 3 to 6)

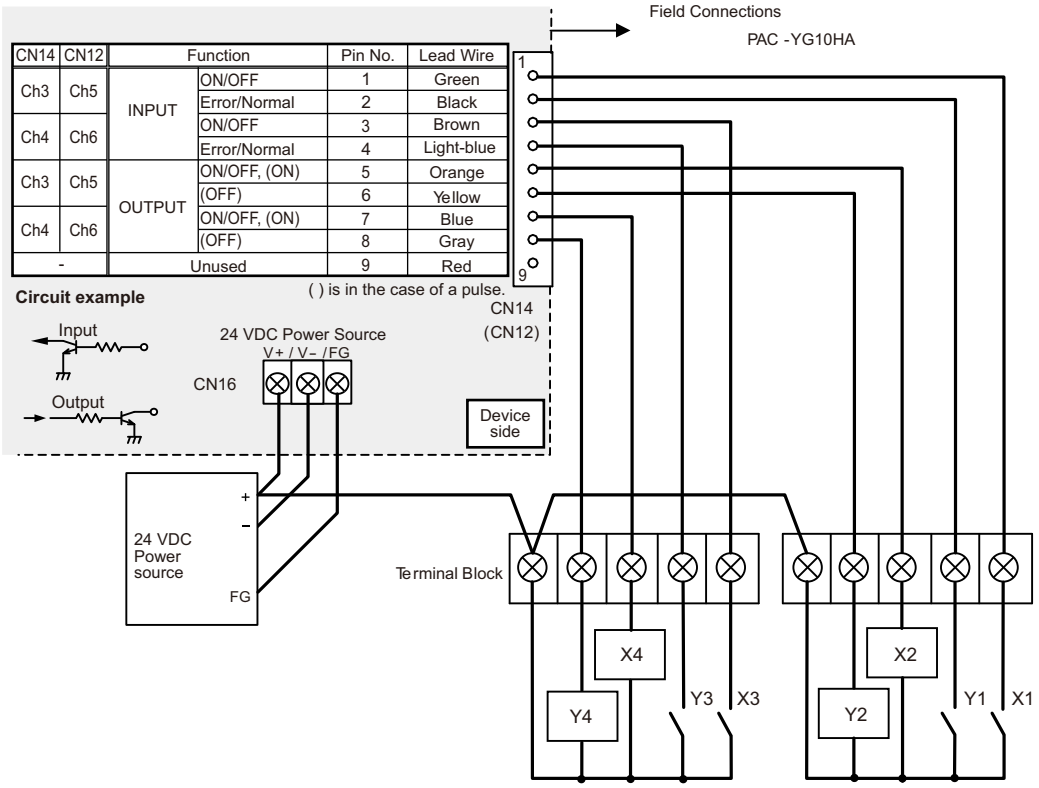
(2-1) Expansion Inputs/Outputs

Purchase an optional external input/output adapter (model: PAC-YG10HA) when using expansion inputs/outputs.
PAC-YG66DCA has two expansion connectors, and up to two external input/output devices can be connected to each connector.
An optional external input/output adapter is required for each connector used.



CN14	CN12	Function		Pin No.	Lead Wire
Ch3	Ch5	INPUT	ON/OFF	1	Green
			Error/Normal	2	Black
Ch4	Ch6		ON/OFF	3	Brown
			Error/Normal	4	Light-blue
Ch3	Ch5	OUTPUT	ON/OFF, (ON)	5	Orange
			(OFF)	6	Yellow
Ch4	Ch6		ON/OFF, (ON)	7	Blue
			(OFF)	8	Gray
-		Unused		9	Red

( ) is in the case of a pulse.



[Input]
Contacts closed (24 VDC applied): Operating (ON); detected an error
Contacts open : Stopped (OFF); detected as normal
* Error/normal detection becomes inverted from contact open/closed logic for a b-contact setting.
[Output]
Operate (ON) output : Transistor ON (sink)
Stop (OFF) output : Transistor OFF(open)
* Upon pulse output, the (ON), (OFF) transistors turn ON (sink) according to the output content. ((ON) and (OFF) refer to the junctions in the diagram.)

⚠CAUTION

- When using X1, X2, X3, X4, Y1, Y2, Y3 and Y4 relays, select ones that satisfy the following specifications.
  Operating coil Rated voltage: 24 VDC (Built-in diode)
  Power consumption: 0.9 W or less
  (*1) Be sure to use the ones with the voltages rated above. Exceeding the rated voltage may affect the ON/OFF of other outputs.
  (*2) When using a separate power supply for this device, connect GND of the power supply to V– of CN16 of the terminal block of this device.
  (*3) Use a relay with a withstanding voltage of at least 2000 VAC between the coil and contact. Otherwise, there is the likelihood of an electric shock or fire.
- Select a contact with a minimum applicable load of 1 mADC or less for the input contact.
- Do not install alongside or in contact with other wires.

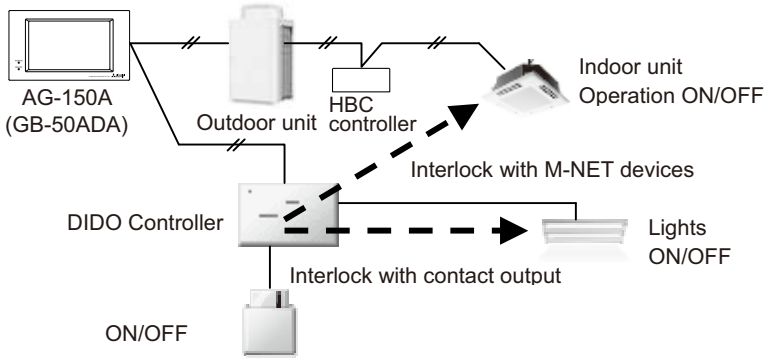
3. Interlock control

The DIDO controller (PAC-YG66DCA) has an interlock control function, which enables operation or set temperature change on the M-NET devices such as indoor units and also enables signal output to the contacts on the DIDO controller.
Interlock control covers the units connected to the DIDO controller with M-NET system.
AG-150A/GB-50ADA must be connected to use the function.
Ask your dealer for interlock control setting. The setting requires special tool support.

⚠CAUTION

Before using the interlock control, you must agree to the following.
1. This feature must not be used for disaster prevention or security purpose.
   (Not designed to be used in situations that are life-threatening)
2. No functions must be added that allow the malfunctioning unit to run by defeating the safety features, such as an external ON/OFF switch or a short-circuit.
3. Those settings for the function that are not supported by the interlocked units must not be made. All the settings must be made within the specified range.
   (Failure to observe these precautions may result in malfunctions and failures.)
4. Perform a test run for interlock control, and confirm the correct settings and normal operation.
5. The system must be configured in the way that integrates the operation of the interlocked fire and emergency control systems.

Item	Content	Remarks
Number of events	24 events	1 event interlock with 1 unit
Determinant condition for interlock control	At input contact change	• Operation input ON/OFF • Error input Error/Normal
Interlock control contents (to be output)	1 action for 1 condition • ON/OFF operation of indoor units • Operation mode change of indoor units • Temperature setting of indoor units (*1) • Contact output to DIDO controller (*2)	Interlock control covers the units connected to DIDO controllers with M-NET system. (*1) Temperature setting range: 19-28ºC (Standard setting) (*2) DIDO controller itself or other DIDO controllers in the same M-NET system.
Other	Interlock control prohibition function is enabled at emergency stop from AG-150A/GB-50ADA	



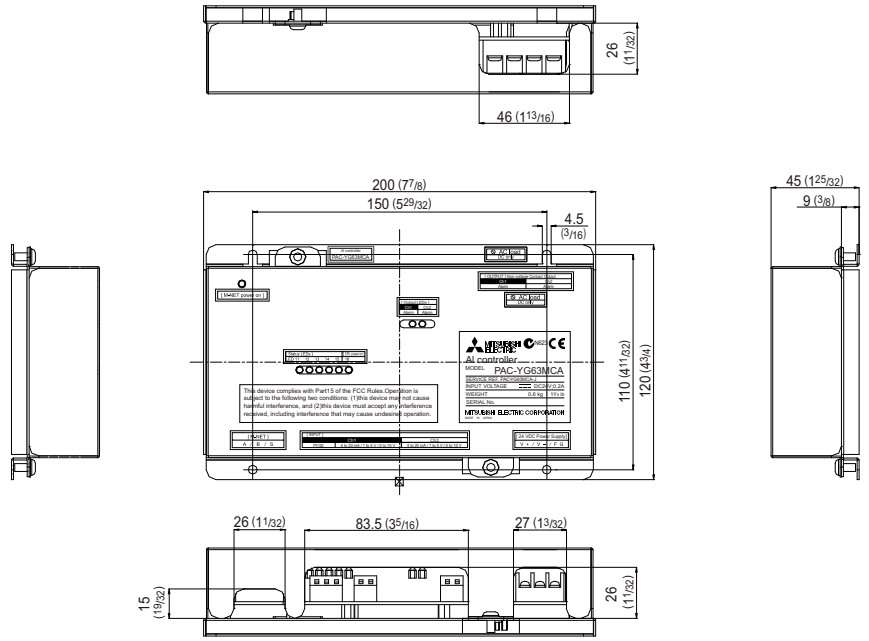
Interlock control of DIDO controller (example)

Note: Do not use Interlock control function on both AG-150A/GB-50ADA and DIDO controller at the same time.

3-15. AI controller [PAC-YG63MCA]

The AI controller measures temperature and humidity; it also has an alarm capability if the measurement data exceeds defined setpoints.
Historical measurement data can be displayed via only the AG-150A/GB-50ADA Web browser and TG-2000A.
Temperature and humidity cannot be displayed on the AG-150A LCD.
Furthermore, an alarm can be output if measurement data exceeds a preset upper or lower limit.
The AI controller also features a function that interlocks M-NET devices for indoor units, etc.

■External Dimensions



Unit: mm (in)

⚠CAUTION

Usage Restrictions

- Mitsubishi Electric does not take financial responsibility for damages caused by issues beyond our control or special circumstances (predicable or unpredictable); and secondary or accidental damages, and damages to other objects. We also do not take financial responsibility for opportunities lost as a result of device failure, or electrical power failure at the end-user site.
  Mitsubishi Electric does not take financial responsibility caused by end-users' requests including, but not limited to, device testing, startup, readjustment and replacement.
- Do not use this device in disaster prevention security or "critical to life" applications.

3. System remote controller

1. Specifications

(1). Device Specifications

<table>
<tr><th>Item</th><th colspan="8">Description</th></tr>
<tr><td>Power Supply</td><td colspan="7">24 VDC ± 10%: 5 W</td><td>Screw terminal block (M3) (*5)</td></tr>
<tr><td rowspan="6">Interface</td><td colspan="3">M-NET communication</td><td colspan="4">17 to 30 VDC (*1)</td><td>Screw terminal block (M3) (*5)</td></tr>
<tr><td rowspan="5">Input (*2)</td><td>Ch</td><td colspan="2">Sensor</td><td>Measurement target</td><td>Measurement range</td><td>Measurement error</td><td>External connection method</td></tr>
<tr><td>Ch1</td><td colspan="2">Pt100 (3-wire system)</td><td>Temperature</td><td>-30 to 60°C [-22 to 140°F]</td><td>± 0.3%FS ± 0.1°C (0.18°F) (*3) [at 25°C (77°F)]</td><td>Screwless terminal block (3 poles)</td></tr>
<tr><td rowspan="3">Ch1</td><td rowspan="3">Analog</td><td>4 to 20 mADC</td><td rowspan="3">Temperature/ humidity</td><td rowspan="3">(Set by system controller)</td><td rowspan="3">± 0.5%FS ± 0.1°C (0.18°F) (*3)
± 0.5%FS ± 0.1%RH [at 25°C (77°F)]</td><td rowspan="3">Screwless terminal block (2 poles)</td></tr>
<tr><td>1 to 5 VDC</td></tr>
<tr><td>0 to 10 VDC</td></tr>
<tr><td rowspan="3">Ch2</td><td rowspan="3">Analog</td><td>4 to 20 mADC</td><td rowspan="3">Temperature/ humidity</td><td rowspan="3">(Set by system controller)</td><td rowspan="3">± 0.5%FS ± 0.1°C (0.18°F) (*3)
± 0.5%FS ± 0.1%RH [at 25°C (77°F)]</td><td rowspan="3">Screwless terminal block (2 poles)</td></tr>
<tr><td>1 to 5 VDC</td></tr>
<tr><td>0 to 10 VDC</td></tr>
<tr><td>Output</td><td colspan="2">Upper/lower limit alarm interlock output (non-voltage contact)</td><td colspan="3">Applied load
MAX: 24 VDC, 5 W
MIN: 5 VDC, 2 mW
* AC loads cannot be connected.</td><td>Screw terminal block (M3.5) (*5)</td></tr>
<tr><td>Interlock Function</td><td colspan="8">Interlock M-NET devices according to measurement data values. (*4)</td></tr>
<tr><td rowspan="3">Environment Conditions</td><td colspan="2" rowspan="2">Temperature</td><td colspan="2">Operating temperature range</td><td colspan="3">0 to 40°C [32°F to 104°F]</td></tr>
<tr><td colspan="2">Storage temperature range</td><td colspan="3">-20 to 60°C [-4°F to 140°F]</td></tr>
<tr><td colspan="2">Humidity</td><td colspan="5">30 to 90%RH (no condensation)</td></tr>
<tr><td>Dimensions</td><td colspan="8">200 (W) × 120 (H) × 45 (D) mm / 7 7/8 (W) × 4 3/4 (H) × 1 25/32 (D) in</td></tr>
<tr><td>Weight</td><td colspan="8">0.6 kg / 1 3/8 lb</td></tr>
<tr><td>Time Backup During Power Failure</td><td colspan="8">In the event of power failure or shut-off, the internal capacitor will continue to track time for approximately one week. (The internal capacitor takes about 24 hours to fully charge; a replacement battery is not necessary.)</td></tr>
<tr><td>Installation Environment</td><td colspan="8">Inside the metal control board (indoors)
* Use this product in a hotel, a business office environment or similar environment.</td></tr>
</table>

*1: Supply electric power from a power supply unit for the transmission line or an outdoor unit. Furthermore, the power consumption factor of the MNET circuitry of this unit is "1/4" (equivalent to one ME Remote Controller).

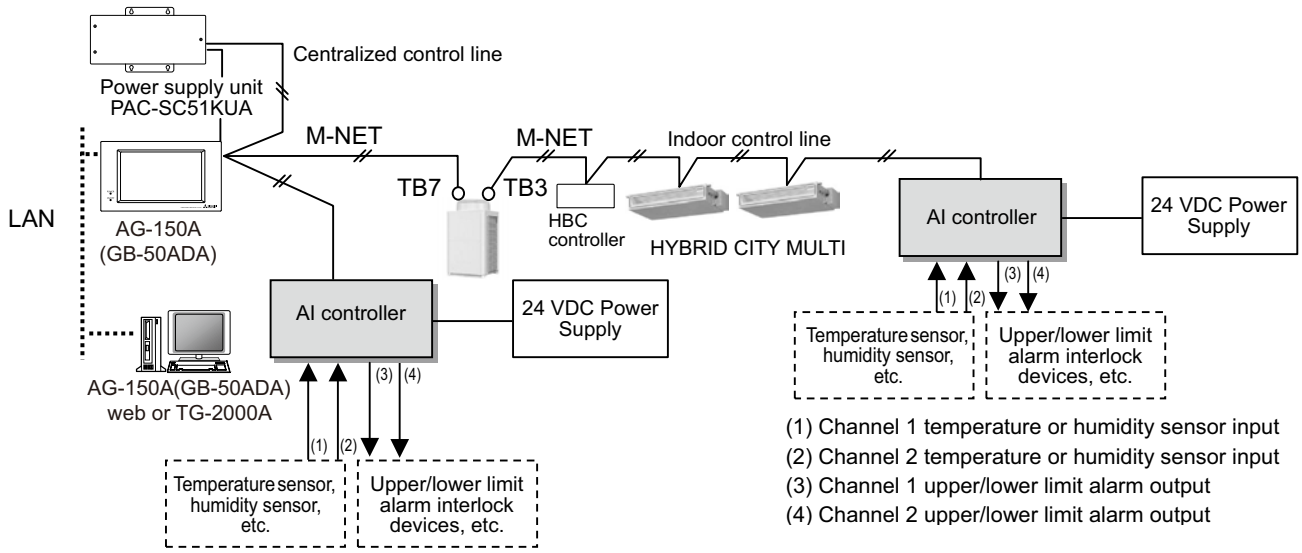
*2: Configure the dip switch settings for the analog input method to use.

*3: The measurement error for the system includes the measurement error for this unit, sensor, and wiring.
a%FS (full scale) = a% × ([measurement range's upper limit value] - [lower limit value])

*4: Settings for the interlock function are performed from the Maintenance Tool. For details, refer to the operation manual for the Maintenance Tool.

*5: M3 and M3.5 are sizes of the screw on the terminal block (ISO metric screw thread). The number indicates the screw diameter (mm).

3. System remote controller



* This figure omits the power supply line and only shows the transmission line.

<Restrictions>
Maximum of 50 units per AG-150A/GB-50ADA
However, the number of units that can be connected to a AG-150A/GB-50ADA is up to 50 including this device, an indoor unit, LOSSNAY unit, etc.

NOTE

- For the shield ground of the M-NET centralized control line, use single-point grounding at the power unit for the transmission line.
  However, when supplying electric power to the M-NET centralized control line from the R410A series outdoor unit*1 without using a power supply unit for the transmission line, use single-point grounding at the TB7 of that outdoor unit. *1 : Except PUMY model.
  Furthermore, when connecting the M-NET transmission line of this device to the M-NET indoor control line, use grounding at the TB3 for each outdoor unit system.
- If the M-NET transmission line of this device is connected to an M-NET indoor control line and the outdoor unit is down because, for example, the power supply is interrupted for servicing or there is a failure, the AI controller cannot be set and monitored from the system controller.
- The sensor connected to the AI controller can only be monitored from AG-150A/GB-50ADA Web browser and TG-2000A.
  The sensor cannot be monitored from the AG-150A LCD.

(2). Parts Purchased Separately

Prepare the following parts to install this device.

Required Part	Specification
Unit fixing screws	M4 screw × 4 (* M4: ISO metric screw thread)
Power supply for this device	Commercially available power source: 24 VDC ±10% 0.2 A (Minimum loading), SELV circuit, power line with grounding terminal Ripple noise: Lower than 200 mVp-p Compatible specification Authorized or CE marked products. Subject to regulations: - IEC60950 (or EN60950) - CISPR22/24 (or EN55022/24) - IEC61000-3-2/3-3 (or EN61000-3-2/3-3)
Power supply for sensors	A separate power supply for sensors may be required. In the case of 24 VDC voltage, the capacity of the power supply for this unit can be increased so that the power supply can be shared.
Power line	Use a sheathed vinyl cord or cable. At least 0.75 mm^2 (AWG18)
M-NET transmission line	Type of the cable: Sheathed vinyl cords or cable which comply with the following specifications or equivalent. • CPEV ø1.2 mm to ø1.6 mm • CVVS 1.25 mm^2 to 2 mm^2 (AWG 16 to 14) * CPEV: PE insulated PVC jacketed shielded communication cable * CVVS: PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl chloride Power needs to be supplied to the M-NET circuitry of this device. Use an outdoor unit or a separately purchased power supply unit for the transmission line.
Signal lines (Sensor input lines)	Shows the size of the electric wire (copper wire) that is adapted to the terminal block of this device. Refer to the usage and cautionary items of the sensor when performing settings. However, use a line with shielded line. Electric wire size ···· (1)Solid wire: ø0.65 mm (AWG21) - ø1.2 mm (AWG16) (2)Stranded wire: 0.75 mm^2 (AWG18) - 1.25 mm^2 (AWG16) Single strand: At least ø0.18 mm

[Parts to be Purchased Separately]

Name	Model	Application	Remark
Power supply unit	PAC-SC51KUA	Power supply to the M-NET transmission line	This is not required when power is to be supplied from an outdoor unit.

[Commercially available parts]

Part	Use	Remark
External 24 VDC power source	Supplies power to the AI controller.	Refer to "Power supply for this device" and "Power supply for sensors" in "Required Part" above for the capacity of the power supply.
Sensor	Measures temperature and humidity.	Temperature sensor (PAC-SE40TSA) cannot be connected.

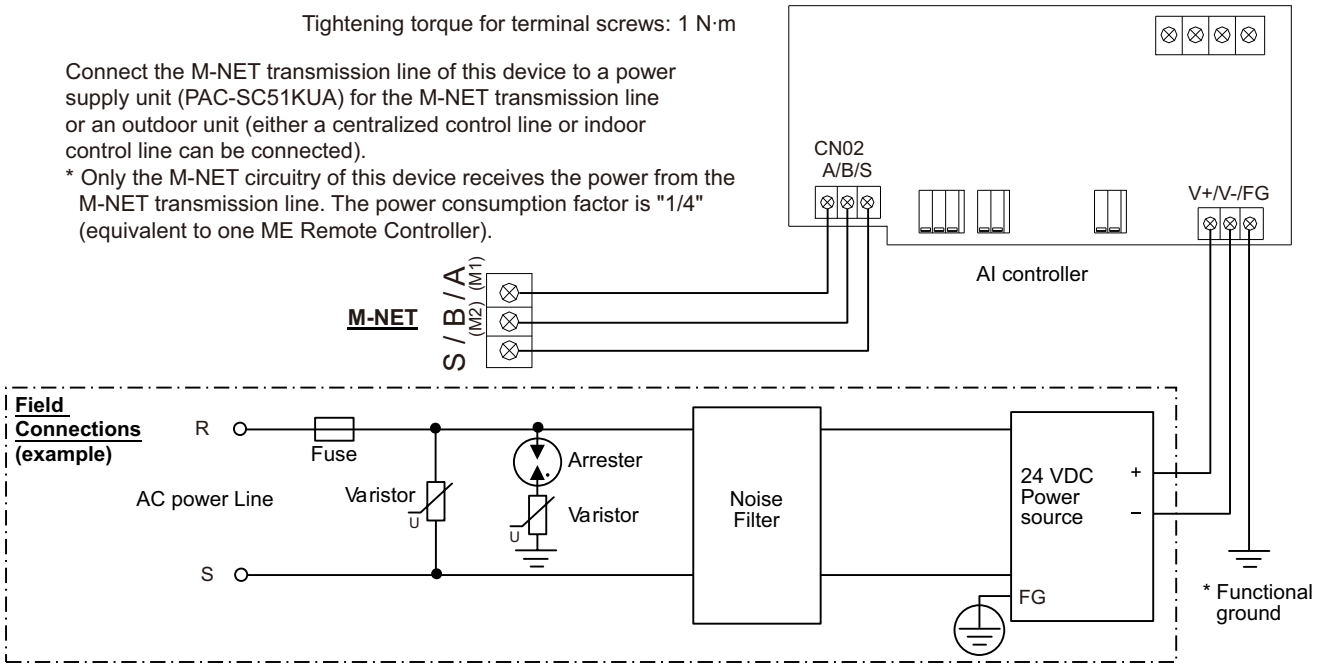
2. Wiring Instructions

(1). Connecting the Power and M-NET Transmission Lines

Tightening torque for terminal screws: 1 N·m

Connect the M-NET transmission line of this device to a power supply unit (PAC-SC51KUA) for the M-NET transmission line or an outdoor unit (either a centralized control line or indoor control line can be connected).

* Only the M-NET circuitry of this device receives the power from the M-NET transmission line. The power consumption factor is "1/4" (equivalent to one ME Remote Controller).



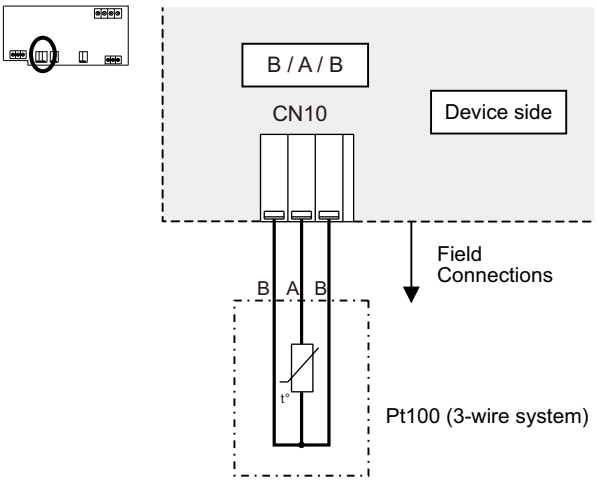
⚠CAUTION	• Use a power line and M-NET transmission line that satisfy the specifications described in "1-(2). Parts Purchased Separately". • Attach a circuit comprising the following components to the supply primary side of the 24 VDC power supply. (1) Varistor, (2) Arrester, (3) Noise filter, (4) Fuse • It is important to pay attention to the polarity when connecting to the 24 VDC power supply terminal block. Connecting the positive and negative in the reverse order will cause a failure. • Fix the power line and M-NET transmission line in place on the outside to ensure that the terminal block is not affected by any external force. Not securely connecting and fixing the wires in place may cause heat generation and fire. • Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires. Cover the shielded line of the M-NET transmission line with materials such as vinyl tape and prevent short-circuiting with the plates.

NOTE	• If the M-NET transmission line of this device is connected to an M-NET indoor control line and the outdoor unit is down because, for example, the power supply is interrupted for servicing or there is a failure, the AI controller cannot be set and monitored from the system controller. • Be sure to ground this device, PAC-SC51KUA and 24 VDC Power source. Measurement accuracy may be affected if devices are not grounded.

(2). Connecting the Sensors

- For channel 1, select one of the following four types: Pt100 detection, 4 to 20 mADC, 1 to 5 VDC, or 0 to 10 VDC analog input.
- For channel 2, select one of the following three types: 4 to 20 mADC, 1 to 5 VDC, or 0 to 10 VDC analog input.
- The wire length depends on the specifications of the sensor. However, since the use of long wires makes the device susceptible to noise, using wires shorter than 12 m (39.4 ft) is recommended. Use a shielded line for the sensor line and connect to the FG terminal on this unit or the FG terminal on the control panel.

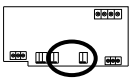
1) Channel 1 Pt100 Input



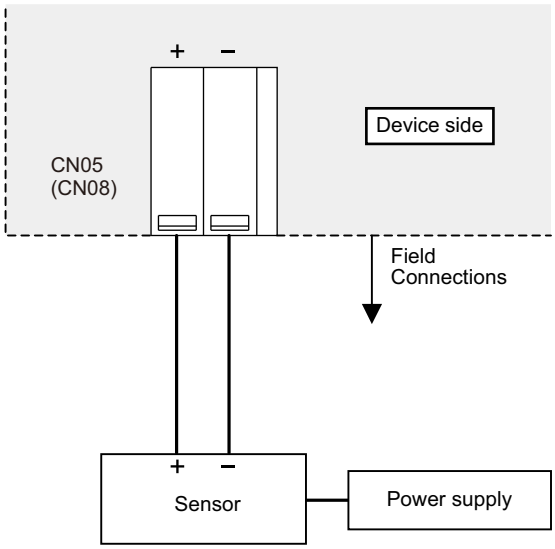
⚠CAUTION

- Use a 3-wire system for Pt100.
- A/B polarity is important for Pt100.
  Be sure to match the polarity when using Pt100.
- Do not install the sensor input line parallel to or near the M-NET transmission line or power line.
  Also avoid loop wiring.
  Furthermore, confirm the precautions for the sensor.
- Strip 12 ± 1 mm (15/32 ± 1/32 in) of the wire coating and insert firmly into the terminal.
- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires.
- Perform wiring so that the terminal block is not strained.
  If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.

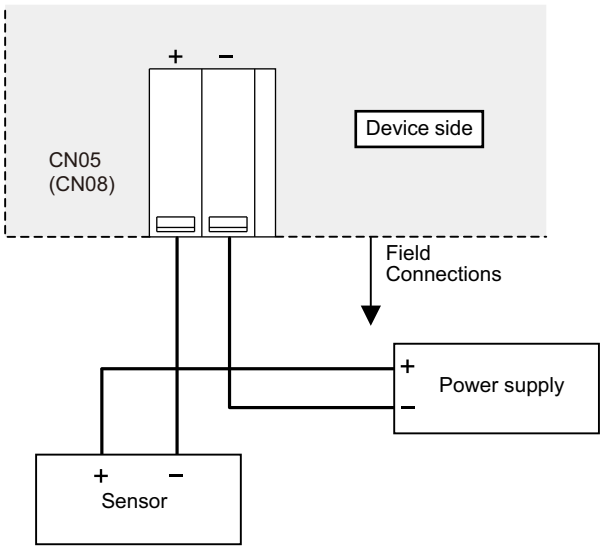
2) Channel 1 (Channel 2) Analog Input (4 to 20 mADC, 1 to 5 VDC, 0 to 10 VDC)



(a) When 1 to 5 VDC, 0 to 10 VDC, or 4 to 20 mADC (type for which power is supplied to the sensor) is connected



(b) When 4 to 20 mADC (type for which power is supplied to the signal line) is connected

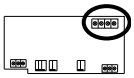


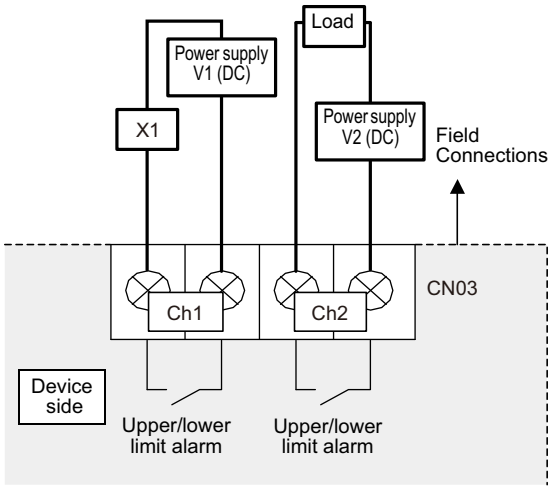
⚠CAUTION

- Select a power supply that is suitable for the sensor to be used.
- Do not install the sensor input line parallel to or near the M-NET transmission line or power line. Also avoid loop wiring.
  Furthermore, confirm the precautions for the sensor.
- Strip 12±1 mm (15/32 ±1/32 in) of the wire coating and insert firmly into the terminal.
- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires.
- Perform wiring so that the terminal block is not strained.
  If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.

(3). Connecting Alarm Setpoint Outputs (Non-valtage Contacts)

The maximum wire length is 100 m. However, since the use of long wires makes the device susceptible to noise, using wires no more than 10 m long is recommended.





* The contact of the internal relay is always ON during detection of an upper/lower limit alarm. (Level output)

Tightening torque for terminal screws: 1 N·m.

⚠CAUTION

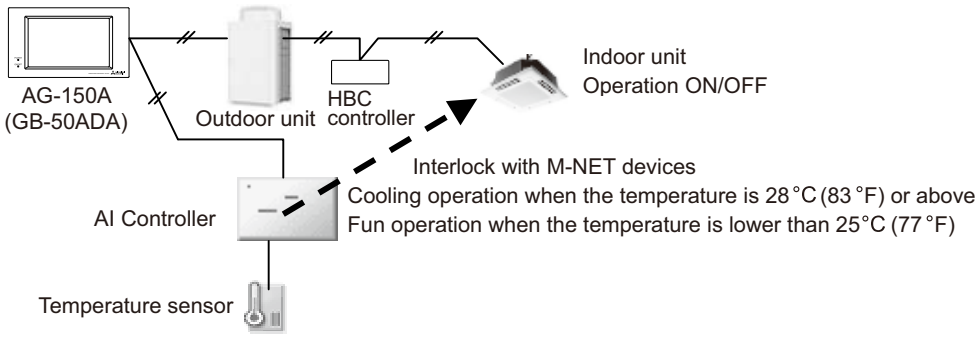
- To use X1 relay, obtain one that satisfies the following specifications.
  Operating coil
  [Applied load]
  MAX: 24 VDC, 5 W (Built-in diode)
  MIN: 5 VDC, 2 mW (Built-in diode)
  *1 AC loads cannot be connected.
  *2 Provide a power supply (V1, V2) that matches the load and relay to be used.
- To drive a direct load, use ones within the following.
  [Applied load]
  MAX: 24 VDC, 5 W
  MIN: 5 VDC, 2 mW
  * AC loads cannot be connected.
- Make sure that the copper wiring is not short-circuiting the plates (cover, lower case) or neighboring wires.
- Perform wiring so that the terminal block is not strained.
  If strained, use a wire guide or junction terminal to alleviate the stress on the terminal block.
- Do not connect the wires directly from the top of the control panel to the terminal block.
  Moisture may enter this device along the wiring and cause electric shock or fire.

3. Interlock control

AI controller (PAC-YG63MCA) has an interlock control function, which enables operation or set temperature change on the M-NET devices such as indoor units.
Interlock control covers the units connected to the AI controller with M-NET system. AG-150A/GB-50ADA must be connected to use the function.
Ask your dealer for interlock control setting. The setting requires special tool support.

⚠CAUTION	Before using the interlock control, you must agree to the following. 1.This feature must not be used for disaster prevention or security purpose. (Not designed to be used in situations that are life-threatening) 2.No functions must be added that allow the malfunctioning unit to run by defeating the safety features, such as an external ON/OFF switch or a short-circuit. 3.Those settings for the function that are not supported by the interlocked units must not be made. All the settings must be made within the specified range. (Failure to observe these precautions may result in malfunctions and failures.) 4.Perform a test run for interlock control, and confirm the correct settings and normal operation. 5.The system must be configured in the way that integrates the operation of the interlocked fire and emergency control systems.

Item	Content	Remarks
Number of events	24 events	1 event interlock with 1 unit
Determinant condition for interlock control	Measurement value Measurement interval is 1 to 7200 seconds.	• Exceeding measurement value in setting range • Exceeding upper/lower limit alarm detection value and cancellation value
Interlock control contents (to be output)	1 action for 1 condition • ON/OFF operation of indoor units • Operation mode change of indoor units • Temperature setting of indoor units (*1) • Contact output to DIDO controller	Interlock control covers the units connected to AI controllers with M-NET system. (*1) Temperature setting range: 19-28ºC (Standard setting)
Other	Interlock control prohibition function is enabled at emergency stop from AG-150A /GB-50ADA	



Interlock control of AI controller (example)

4. System component

4-1. HYBRID CITY MULTI

HYBRID CITY MULTI system can be monitored or controlled with signal to/from the outside as every control board of Indoor unit or Outdoor unit has input/output signal connectors. Independent control to the individual Indoor or Outdoor can be carried out by using these connectors. Yet, for large-scale control, MELANS would be much easier. When using input/output connectors, a dedicated adapter (optional part) and a relay circuit needed to be prepared by the site.
Following are some typical example.

Table 4-1-1. Control can be achieved by using Outdoor input/output connectors.

Function	Usage	Using connector	Signal	Option
Demand	Prohibiting cooling/heating operation (thermo OFF) by an external input to the outdoor unit. * It can be used as the demand control for each refrigerant system.	CN3D	Input (level-signal)	Adapter for external input (PAC-SC36NA-E)
Low noise mode	Performs a low noise operation of the outdoor unit by an external input to the outdoor unit. * It can be used as the low noise operation device for each refrigerant system.			
Snow sensor signal input	Forces the outdoor unit to perform a fan operation by receiving signals from the snow sensor. *4	CN3S		
Auto-changeover	Cooling/heating operation can be changed by an external input to the outdoor unit.	-		
Operation status of the compressor	How to extract signals from the outdoor unit. * It can be used as an operation status display device.	CN51	Output (level-signal)	Adapter for external output (PAC-SC37SA-E)
Error status	* It can be used for an interlock operation with external devices.			

*1 For details, refer to 1) through 4) shown below.
*2 Low noise mode is valid when Dip SW4-4 on the outdoor unit is set to OFF. When DIP SW4-4 is set to ON, 4 levels of on-DEMAND are possible, using different configurations of low noise mode input and DEMAND input settings.
When 2 or more outdoor units exist in one refrigerant circuit system, 8 levels of on-DEMAND are possible. When 3 outdoor units exist in one refrigerant circuit system, 12 levels of on-DEMAND are possible.
*3 Low noise mode can be switched from ability main to low noise main with Dip SW5-5 on the outdoor unit. Dip SW5-5 OFF: ability main (ability main mode : The sound pressure level is reduced by limiting the maximum fan frequency under the following condition. Cooling mode : outdoor temp. (TH6)< 30°C Heating mode : outdoor temp. (TH6) > 3°C), ON: low noise main.
*4 When multiple outdoor units exist in one refrigerant circuit system, settings on every outdoor unit (signal input) are required.
*5 For detailed drawing, refer to "4-2. Outdoor unit input/output connector".

1) Table 4-1-2. SW4-4: OFF (Compressor ON/OFF, Low noise mode)

CN3D 1-3P	2-level of on-Demand *6
Open	100%(No Demand)
Short-circuit	0%

CN3D 1-2P	Low noise mode *7
Open	OFF
Short-circuit	ON

*6 When SW4-4 on the outdoor unit in one refrigerant circuit system is set to ON (4 levels or 8 levels or 12 levels of on- DEMAND), this function cannot be used.
*7 This function and the 4 levels or 8 levels on-DEMAND function can be used together. Input the order to CN3D 1-2P on the outdoor unit whose SW4-4 is set to OFF.

2) When SW4-4 on one outdoor unit in one refrigerant circuit system is set to ON (4 levels of on-DEMAND) (*8)

	CN3D 1-2P	
CN3D 1-3P	Open	Short-circuit
Open	100% (No DEMAND)	75%
Short-circuit	0%	50%

Note the following steps to be taken when using STEP DEMAND.
Example: When switching from 100% to 50%

Steps in DEMAND level setting						
	<WRONG>	100%	→	0%	→	50%
	<CORRECT>	100%	→	75%	→	50%

If the demand settings are switched in the wrong order listed as the wrong example above, the unit may go into thermo OFF mode.
The percentage of the DEMAND listed in the table above is an approximate value based on the compressor volume and does not necessarily correspond with the capacity.
This function and the Low noise mode function cannot be used together.

3) When SW4-4 on the two outdoor units in one refrigerant circuit system is set to ON (8 levels of on-DEMAND) (*8,*9)

8 levels of on-DEMAND		No.2 CN3D				
		1-2P	Open		Short-circuit	
No.1 CN3D	1-2P	1-3P	Open	Short-circuit	Open	Short-circuit
	Open	Open	100% (No DEMAND)	50%	88%	75%
		Short-circuit	50%	0%	38%	25%
	Short-circuit	Open	88%	38%	75%	63%
		Short-circuit	75%	25%	63%	50%

4) When SW4-4 on the all outdoor units in one refrigerant circuit system is set to ON (12 levels of on-DEMAND) (*9)

12 levels of on-DEMAND	No.2 CN3D	1-2P	Open							
		1-3P	Open				Short-circuit			
	No.3 CN3D	1-2P	Open		Short-circuit		Open		Short-circuit	
No.1 CN3D	1-2P	1-3P	Open	Short-circuit	Open	Short-circuit	Open	Short-circuit	Open	Short-circuit
	Open	Open	100%	67%	92%	84%	67%	34%	59%	50%
		Short-circuit	67%	34%	59%	50%	34%	0%	25%	17%
	Short-circuit	Open	92%	59%	84%	75%	59%	25%	50%	42%
		Short-circuit	84%	50%	75%	67%	50%	17%	42%	34%

12 levels of on-DEMAND	No.2 CN3D	1-2P	Short-circuit							
		1-3P	Open				Short-circuit			
	No.3 CN3D	1-2P	Open		Short-circuit		Open		Short-circuit	
No.1 CN3D	1-2P	1-3P	Open	Short-circuit	Open	Short-circuit	Open	Short-circuit	Open	Short-circuit
	Open	Open	92%	59%	84%	75%	84%	50%	75%	67%
		Short-circuit	59%	25%	50%	42%	50%	17%	42%	34%
	Short-circuit	Open	84%	50%	75%	67%	75%	42%	67%	59%
		Short-circuit	75%	42%	67%	59%	67%	34%	59%	50%

*8 Input the order to CN3D on the outdoor unit whose SW4-4 is set to ON.
*9 CN3D of No. 1, 2, 3 can be selected arbitrary with the outdoor unit whose SW4-4 is set to ON.

4. System component

Table 4-1-3. Control can be achieved by using Indoor input/output connectors.

Function	Usage	Using connector	Signal
Remote/Local switching *1 ON/OFF *2*3	Indoor group can be controlled ON/OFF by an ON/OFF switching or contact input to the connector of the head Indoor in an Indoor group. It can be interlocked with timer, door, window, or other equipment to "Force stopping"	CN32	Input (level-signal)
ON/OFF *2*3	Indoor group can be controlled ON/OFF by an external pulse signal input to the connector of the head Indoor in an Indoor group.	CN51	Input (pulse-signal)
Demand	Indoor group can be controlled ON/OFF by an ON/OFF switching or contact input to the connector of every Indoor in an Indoor group.	CN52	Input (pulse-signal)
Monitoring ON/OFF state	Signal output from a head Indoor unit, presenting its Indoor group.	CN51	Output
Monitoring heating state	It can be used for monitoring or interlock with other equipment purpose and so on.	CN52	
Monitoring cooling/drying state		CN52	
Monitoring Error state Monitoring Thermo-OFF(fan) state	Signal output from every Indoor unit, for monitoring Error or Thermo-off (fan) state. It can be used for monitoring or interlock with other equipment purpose and so on.	CN51 CN52	Output

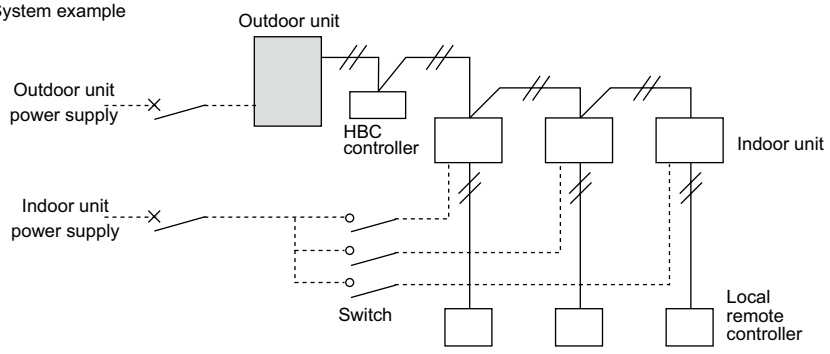
*1. When switching to Remote, control at Local remote controller will NOT be effective, but the "CENTRALLY CONTROLLED" is displayed.
*2. MA or ME remote controller is needed for this function.
*3. If using ON/OFF input function, Automatic-address-start-up can not be performed to start-up the system at commissioning.
*4. If HYBRID CITY MULTI use GB-50ADA/AG-150A and PLC software to control the Indoor unit via its external input/output connectors, Dip Switch 1-9 and Dip Switch 1-10 should be set to ON.
In this case, the input/output connectors act as normal connectors, functions mentioned at Table 4-1-3. are no more available.
Details are available at the PLC software Instruction Manual.

Table 4-1-4. ON/OFF control to each Indoor unit (group) by using Dip Switch 9 and 10 (SW1-9, SW1-10) of the Indoor unit.

Function	Operation on Indoor units	Setting Dip Switch *1*4	
		1-9	1-10
Auto ON	All indoor units will turn ON and automatically resume to its previous mode after 5 minutes from power recovery.	OFF	ON
Auto recovery	Indoor unit recovers to its previous state (ON/OFF, mode) after 5 minutes from power recovery.	ON	OFF
All OFF	Forced stopping regardless of Indoor units' state.	OFF	OFF

*1. The Dip Switch setting should be carried out on every Indoor unit in the group.
*2. Outdoor unit's power supply should NOT be cut. Otherwise, power supply to case heater of the compressor would be cut too, which may cause damage to the compressor.
*3. Above method can not be applied to the power ON/OFF of the drain pump and humidifier equipment.
*4. If HYBRID CITY MULTI use GB-50ADA/AG-150A and PLC software to control the Indoor unit via its external input/output connectors, Dip Switch 1-9 and Dip Switch 1-10 should be set to ON.
In this case, the input/output connectors act as normal connectors, functions mentioned at Table 4-1-4. are no more available.

■ System example



Restart of the HYBRID CITY MULTI needs to be careful. When no power supply to the outdoor unit, no power supply to the compressor case heater too. The compressor needed to be warmed up before running. When using above functions, power supply to the outdoor unit should be ensured.

Table 4-1-5. How to use Remote/Local switching connector CN32

State	Local remote controller display and operation	CN32-SW-1 for Local/Remote control switching	CN32-SW-2 for Remote "ON/OFF" operation
Local remote controller control	Operation is permitted	OFF	OFF
Remote STOP	"CENTRALLY CONTROLLED" flashing, "ON/OFF" at local remote controller is not possible.	ON	OFF
Remote START	"CENTRALLY CONTROLLED" flashing, "ON/OFF" at local remote controller is not possible.	ON	ON

* For details refer to CN32 in section “4-3. Indoor unit “-E” type input/output connector”.

Table 4-1-6. Limitations to combining system controls

	Description		Control combining distant/local	Pulse ON/OFF	Power ON/OFF	Automatic recover
1	Control combining distant/local	CN32	-	×*1	×*1	×*1
2	Pulse ON/OFF	CN51		-	O	O
3	HA ON/OFF(JEMA)	CN51			O	O
4	Power ON/OFF	-			-	×
5	Automatic recover	-				-

*1. Pulse ON/OFF, power ON/OFF and automatic recover can only be used when the remote/local setting CN32 is set to local. Therefore, always avoid this function when combining control.

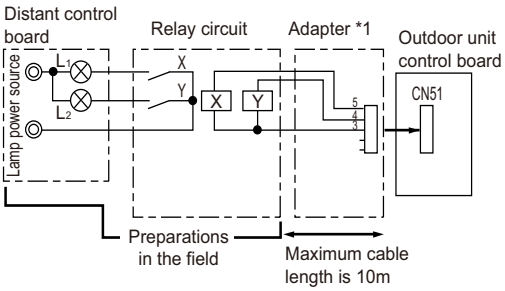
4. System component

4-2. Outdoor unit input/output connector

⚠ Caution:	1.Wiring should be covered by insulation tube with supplementary insulation. 2.Use relays or switches with IEC or equivalent standard. 3.The electric strength between accessible parts and control circuit should have 2750V or more.

4-2-1. Output

• State (CN51)

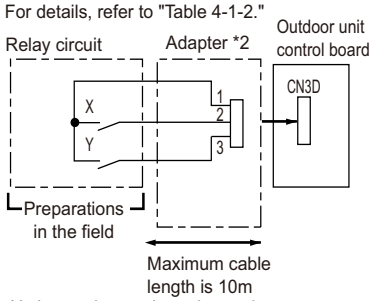


L1 : Outdoor unit error display lamp
L2 : Compressor operation lamp (compressor running state)
X, Y : Relay (coil =<0.9W : 12VDC)

*1. Optional part : PAC-SC37SA-E or field supply.

4-2-2. Input

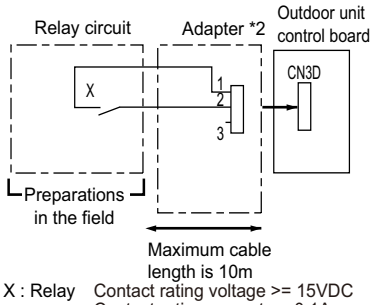
(1) Step demand and Low noise mode (CN3D)



X : Low noise mode or demand
Y : Demand
X,Y : Relay Contact rating voltage >= 15VDC
Contact rating current >= 0.1A
Minimum appicable load =< 1mA at DC

*2. Optional part : PAC-SC36NA-E or field supply.

(2) Low noise mode (CN3D + DipSW4-4 OFF)



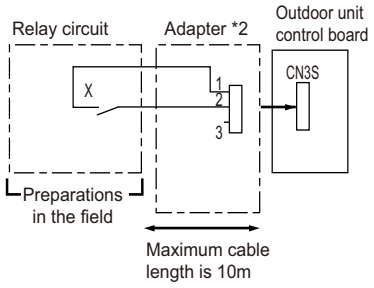
X : Relay Contact rating voltage >= 15VDC
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC

*2. Optional part : PAC-SC36NA-E or field supply.

Low noise mode : The sound pressure level is reduced by controlling the maximum fan frequency and compressor frequency.

-Note-
The sound pressure level can not be reduced, when neither the fan frequency nor the compressor frequency are maximum.

(3) Snow sensor (CN3S)



X : Relay Contact rating voltage >= 15VDC
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC

*2. Optional part : PAC-SC36NA-E or field supply.
Snow sensor : The outdoor fan runs when X is closed in stop mode or thermostat mode.

4-3. Indoor unit "-E" type input/output connector

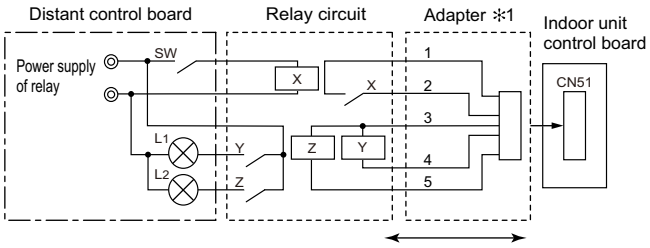
⚠ Caution:	1.Wiring should be covered by insulation tube with supplementary insulation. 2.Use relays or switches with IEC or equivalent standard. 3.The electric strength between accessible parts and control circuit should have 2750V or more.

● ON/OFF (Pulse) input specification

Item	Description
Input signal	Pulse sign (a connect)
Standard of pulse	

● Input

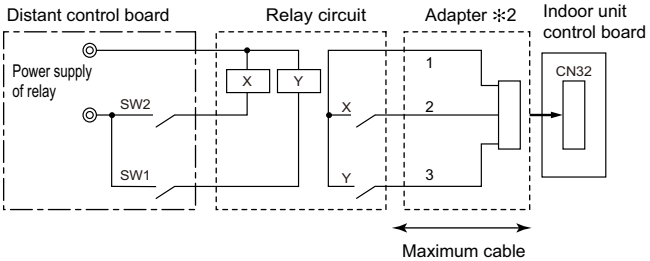
CN51



SW : Distant ON/OFF switch
L1 : Status lamp
L2 : Error lamp
X : Relay (a point of contact, fixed DC1mA)
Y, Z : Relay Contact rating voltage >= 15VDC
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC

※ Every time the SW is pushed (the pulse is inputted), it reacts against ON/OFF.

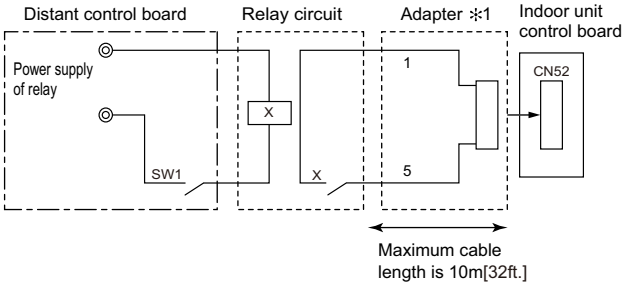
CN32



SW1 : Distant/Local switching
SW2 : ON/OFF switch
X, Y : Relay Contact rating voltage >= 15VDC
Contact rating current >= 0.1A
Minimum applicable load =< 1mA at DC

※ SW2 is available when SW1 is ON.

CN52

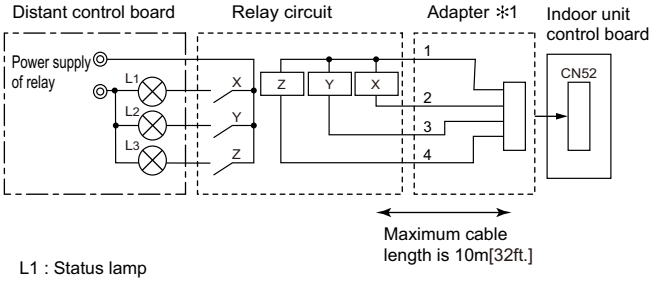


SW1 : Demand switch
X : Relay (coil <=0.9W,12VDC)

SW1	Indoor unit
ON	Forced thermo-OFF
OFF	Normal running

● Output

CN52



L1 : Status lamp
Fan motor output (SW1-5 OFF)
Thermostat ON (SW1-5 ON)
L2 : Cooling/Dry status lamp
L3 : Heating status lamp
X, Y, Z : Relay (Coil with fixed 12VDC, a power consumption of 0.9W or less)

※ 1. Optional part : PAC-SA88HA-E or field supply
※ 2. Optional part : PAC-SE55RA-E or field supply

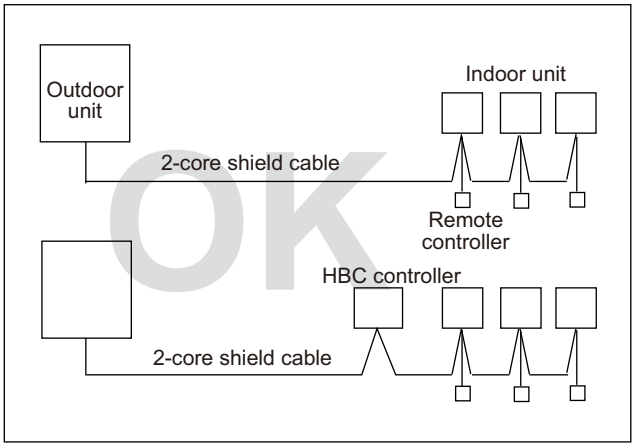
HYBRID CITY MULTI
4. SYSTEM DESIGN

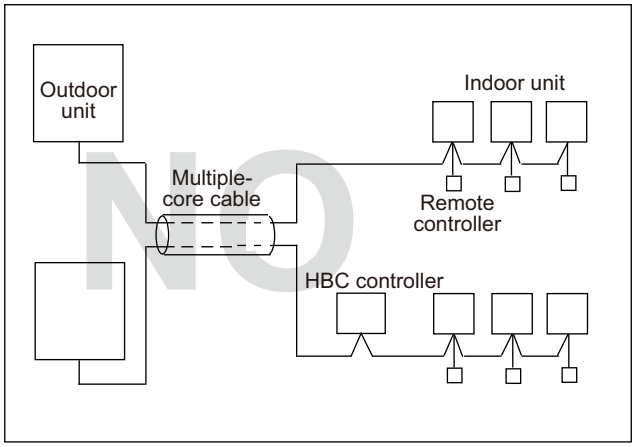
HYBRID CITY MULTI
SYSTEM DESIGN

1. Electrical work

1-1. General cautions

① Follow ordinance of your governmental organization for technical standards relating 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[1-5/8in.] 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 damaged.
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.
⑦ When extending the transmission line, make sure to extend the shield cable as well.





1. Electrical work

1-2. Power supply for Indoor unit and Outdoor unit

1-2-1. Electrical characteristics of the indoor unit

Symbols: MCA : Max.Circuit Amps (=1.25xFLA) FLA : Full Load Amps
IFM :Indoor Fan Motor Output : Fan motor rated output

PEFY-WP-VMA-E	Power supply			IFM	
	Volts / Hz	Range +-10%	MCA(A)	Output(kW)	FLA(A)
PEFY-WP20VMA-E	220-240V / 50Hz 220-240V / 60Hz	Max.: 264V Min.: 198V	1.18	0.085	0.95
PEFY-WP25VMA-E			1.43	0.085	1.14
PEFY-WP32VMA-E			1.54	0.085	1.23
PEFY-WP40VMA-E			2.47	0.121	1.98
PEFY-WP50VMA-E			2.47	0.121	1.98

PEFY-WP-VMS1-E	Power supply			IFM	
	Volts / Hz	Range +-10%	MCA(A)	Output(kW)	FLA(A)
PEFY-WP15VMS1-E	220-240V / 50Hz 220-240V / 60Hz	Max.: 264V Min.: 198V	0.63 / 0.63	0.096	0.50 / 0.50
PEFY-WP20VMS1-E			0.70 / 0.70	0.096	0.56 / 0.56
PEFY-WP25VMS1-E			0.75 / 0.75	0.096	0.60 / 0.60
PEFY-WP32VMS1-E			0.83 / 0.82	0.096	0.66 / 0.65
PEFY-WP40VMS1-E			1.02 / 1.00	0.096	0.81 / 0.80
PEFY-WP50VMS1-E			1.08 / 1.07	0.096	0.86 / 0.85

PFFY-WP-VLRMM-E	Power supply			IFM	
	Volts / Hz	Range +-10%	MCA(A)	Output(kW)	FLA(A)
PFFY-WP20VLRMM-E	220-240V / 50Hz 220-240V / 60Hz	Max.: 264V Min.: 198V	0.61	0.096	0.49
PFFY-WP25VLRMM-E			0.69	0.096	0.55
PFFY-WP32VLRMM-E			0.93	0.096	0.74
PFFY-WP40VLRMM-E			0.93	0.096	0.74
PFFY-WP50VLRMM-E			1.28	0.096	1.02

1-2-2. Electrical characteristics of the outdoor unit in cooling mode

Symbols: MCA : Max Circuit Amps
RLA : Rated Load Amps SC : Starting Current

PURY-WP-YJM	Units			Power supply	Compressor		FAN	RLA(A)(50/60Hz)	
	Hz	Volts	Voltage range	MCA(A)	Output (kW)	SC(A)	Output (kW)	Cooling	Heating
PURY-WP200YJM-A(-BS)	50/60	380 400 415	Max:456V Min:342V	16.01	5.4	8	0.92	8.0/7.6/7.4	8.9/8.4/8.1
PURY-WP250YJM-A(-BS)				16.45	6.8	8	0.92	11.8/11.2/10.8	11.7/11.1/10.7

1-2-3. Electrical characteristics of the HBC controller

Symbols: MCA : Max. Circuit Amps, MFA : Max. Fuse Amps, RLA : Rated Load Amps

HBC controller	Power supply					RLA(A)
	Hz	Volts	Range+-10%	MCA(A)	MFA(A)	
CMB-WP108V-G	50/60	220	Max.: 264V Min.: 198V	3.49	15	2.89
		230				2.83
		240				2.79

1-3. Power cable specifications

Thickness of wire for main power supply, capacities of the switch and system impedance

	Model	Minimum wire thickness(mm^2)			Ground-fault interrupter *1	Local swtich (A)		Breaker for wiring (A) (Non-fuse breaker)	Max. Permissive System Impedance
		Main cable	Branch	Ground		Capacity	Fuse		
Outdoor unit	WP200YJM	6.0	-	6.0	40A 100mA 0.1sec. or less	40	40	40	0.24Ω
	WP250YJM	10.0	-	10.0	60A 100mA 0.1sec. or less	63	63	60	0.21Ω
Total operating current of the indoor unit	F0 = 16A or less *2	1.5	1.5	1.5	20A current sensitivity *3	16	16	20	(apply to IEC61000-3-3)
	F0 = 25A or less *2	2.5	2.5	2.5	30A current sensitivity *3	25	25	30	(apply to IEC61000-3-3)
	F0 = 32A or less *2	4.0	4.0	4.0	40A current sensitivity *3	32	32	40	(apply to IEC61000-3-3)

*1 The ground-fault interrupter should support inverter circuit. The ground-fault interrupter should combine using of local switch or wiring breaker.

*2 Please take the larger of F1 or F2 as the value for F0.

F1 = Total operating maximum current of the indoor units × 1.2

F2 = {V1 × (Quantity of Type1)/C} + {V1 × (Quantity of Type2)/C}

Indoor unit		V1	V2
Type1	PEFY-WP-VMS1-E, PFFY-WP-VLRMM-E	18.6	2.4
Type2	PEFY-WP-VMA	38	1.6

C : Multiple of tripping current at tripping time 0.01s

Please pick up "C" from the tripping characteristic of the breaker.

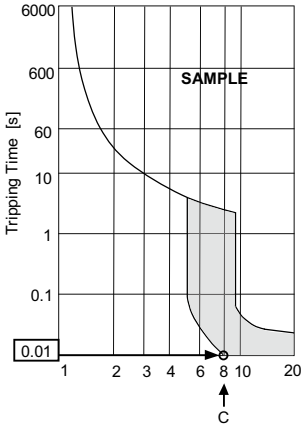
<Example of "F2" calculation>

*Condition PEFY-WP-VMS1-E × 4 + PEFY-WP-VMA × 1, C = 8 (refer to right sample chart)

F2 = 18.6 × 4/8 + 38 × 1/8

= 14.05

→ 16 A breaker (Tripping current = 8 × 16 A at 0.01s)



Sample chart

*3 Current sensitivity is calculated using the following formula.

G1 = (V2 × Quantity of Type1) + (V3 × Wire length [km])

G1	Current sensitivity
30 or less	30 mA 0.1sec or less
100 or less	100 mA 0.1sec or less

Wire thickness	V3
1.5 mm^2	48
2.5 mm^2	56
4.0 mm^2	66

1. Use dedicated power supplies for the outdoor unit and indoor unit. Ensure OC and OS are wired individually.
2. Bear in mind 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%. Make sure that the voltage imbalance between the phases is 2% or less.
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 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

- The breakers for current leakage should support Inverter circuit. (e.g. Mitsubishi Electric's NV-S series or equivalent). If no earth leakage breaker is installed, it may cause an electric shock.
- Breakers for current leakage should combine using of switch.
- Do not use anything other than a breaker with the correct capacity. Using a breaker of too large capacity may cause malfunction or fire.
- If a large electric current flows due to malfunction or faulty wiring, earth-leakage breakers on the unit side and on the upstream side of the power supply system may both operate. Depending on the importance of the system, separate the power supply system or take protective coordination of breakers.

Note

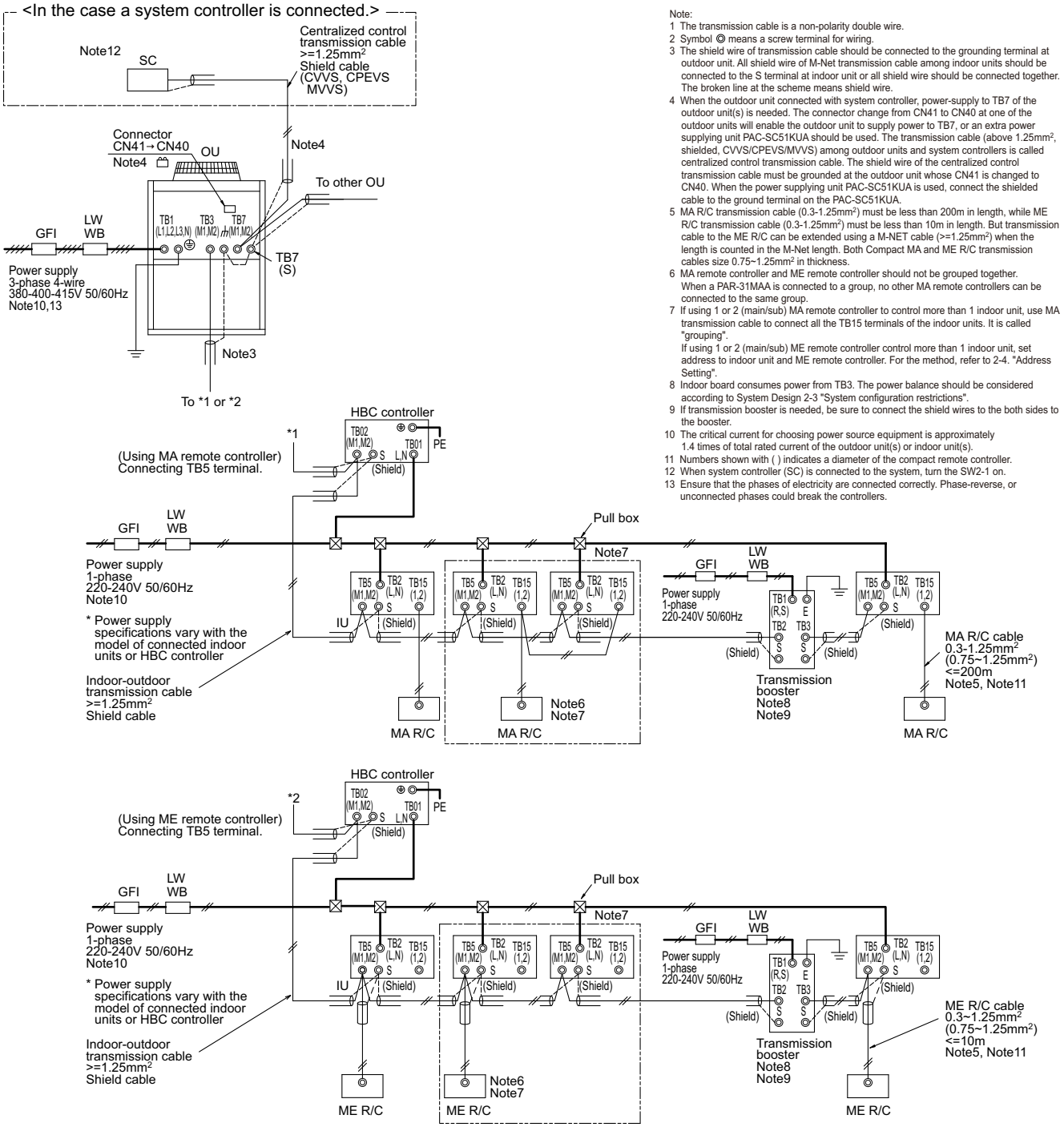
- This device is intended for the connection to a power supply system with a maximum permissible system impedance shown in the above table at the interface point (power service box) of the user's supply.
- The user must ensure that this device is connected only to a power supply system which fulfils the requirement above. If necessary, the user can ask the public power supply company for the system impedance at the interface point.
- This equipment complies with IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equal to Ssc(*2) at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to Ssc(*2).

Ssc(*2)

Model	Ssc(MVA)
PURY-WP200YJM-A	2.27
PURY-WP250YJM-A	2.56

1-4. Power supply examples

1-4-1.PURY-WP200-250YJM-A



Note:
1 The transmission cable is a non-polarity double wire.
2 Symbol ◎ means a screw terminal for wiring.
3 The shield wire of transmission cable should be connected to the grounding terminal at outdoor unit. All shield wire of M-Net transmission cable among indoor units should be connected to the S terminal at indoor unit or all shield wire should be connected together. The broken line at the scheme means shield wire.
4 When the outdoor unit connected with system controller, power-supply to TB7 of the outdoor unit(s) is needed. The connector change from CN41 to CN40 at one of the outdoor units will enable the outdoor unit to supply power to TB7, or an extra power supplying unit PAC-SC51KUA should be used. The transmission cable (above 1.25mm², shielded, CVVS/CPEVS/MVVS) among outdoor units and system controllers is called centralized control transmission cable. The shield wire of the centralized control transmission cable must be grounded at the outdoor unit whose CN41 is changed to CN40. When the power supplying unit PAC-SC51KUA is used, connect the shielded cable to the ground terminal on the PAC-SC51KUA.
5 MA R/C transmission cable (0.3-1.25mm²) must be less than 200m in length, while ME R/C transmission cable (0.3-1.25mm²) must be less than 10m in length. But transmission cable to the ME R/C can be extended using a M-NET cable (>=1.25mm²) when the length is counted in the M-Net length. Both Compact MA and ME R/C transmission cables size 0.75~1.25mm² in thickness.
6 MA remote controller and ME remote controller should not be grouped together. When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.
7 If using 1 or 2 (main/sub) MA remote controller to control more than 1 indoor unit, use MA transmission cable to connect all the TB15 terminals of the indoor units. It is called "grouping".
If using 1 or 2 (main/sub) ME remote controller control more than 1 indoor unit, set address to indoor unit and ME remote controller. For the method, refer to 2-4. "Address Setting".
8 Indoor board consumes power from TB3. The power balance should be considered according to System Design 2-3 "System configuration restrictions".
9 If transmission booster is needed, be sure to connect the shield wires to the both sides to the booster.
10 The critical current for choosing power source equipment is approximately 1.4 times of total rated current of the outdoor unit(s) or indoor unit(s).
11 Numbers shown with ( ) indicates a diameter of the compact remote controller.
12 When system controller (SC) is connected to the system, turn the SW2-1 on.
13 Ensure that the phases of electricity are connected correctly. Phase-reverse, or unconnected phases could break the controllers.

Symbol	
GFI	Ground-fault interrupter
LW	Local switch
BKC	Breaker capacity
OCP	Over-current protector
WB	Wiring breaker
NFB	Non-fuse breaker
OU	Outdoor unit
IU	Indoor unit
SC	System controller
MA R/C	MA remote controller
ME R/C	ME remote controller

Model	Ground-fault interrupter *1, *2, *4	Local switch		Wiring breaker*4	Minimum Wire thickness	
		BKC <A>	OCP*3, *4 <A>	(NFB) <A>	Power wire <mm²>	Earth wire <mm²>
PURY-WP200YJM	30A 100mA 0.1sec. or less	25	25	30	4	4
PURY-WP250YJM	30A 100mA 0.1sec. or less	32	32	30	4	4

*1 The ground-fault interrupter should support an inverter circuit. (e.g. Mitsubishi Electric's NV-S series or equivalent).
*2 The ground-fault interrupter should combine using of local switch or wiring breaker.
*3 Data for B-type fuse of the breaker for current leakage is shown.
*4 If a large electric current flows due to malfunction or faulty wiring, earth-leakage breakers on the unit side and on the centralized controller side may both operate.
Depending on the importance of the system, separate the power supply system or take protective coordination of breakers.

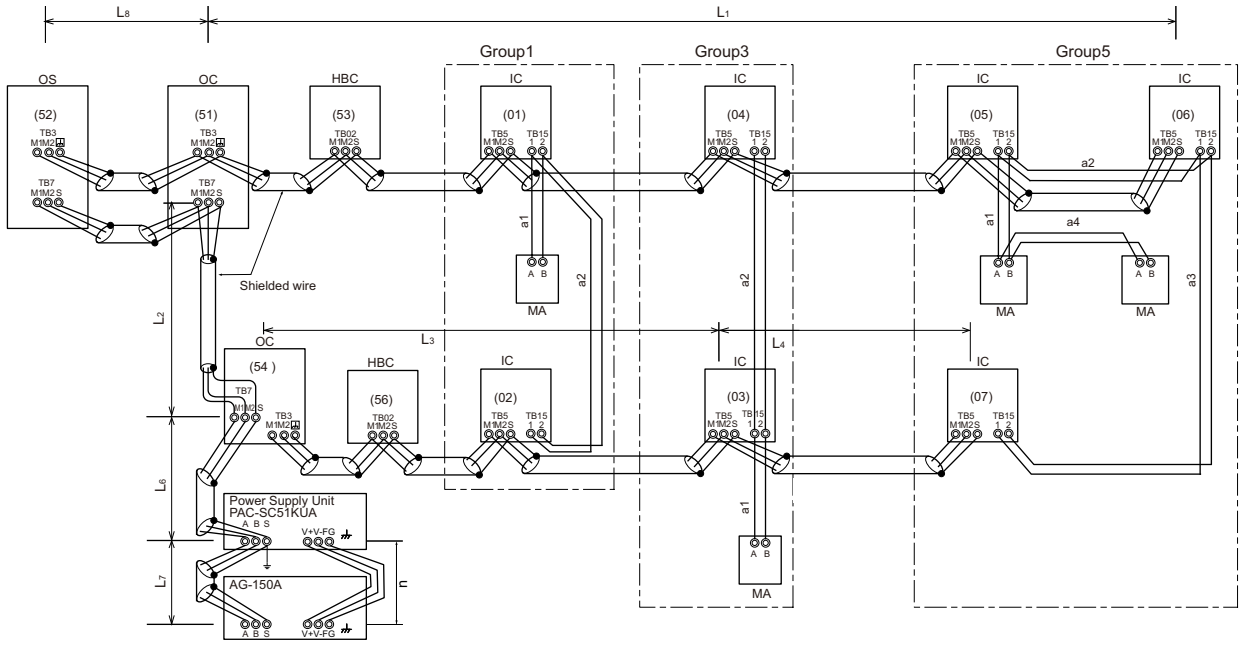
2. M-NET control

2-1. Transmission cable length limitation

2-1-1. Using MA Remote controller

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

Max. length via outdoor (M-NET cable)	L1+L2+L3+L4, L1+L2+L6+L7, L3+L4+L6+L7	<=500m[1640ft.]	1.25mm^2 [AWG16] or thicker
Max. length to outdoor (M-NET cable)	L1+L8, L3+L4, L6, L2+L6+L8, L7	<=200m[656ft.]	1.25mm^2 [AWG16] or thicker
Max. length from MA to Indoor	a1+a2, a1+a2+a3+a4	<=200m[656ft.]	0.3-1.25 mm^2 [AWG22-16]
24VDC to AG-150A	n	<=50m[164ft.]	0.75-2.0 mm^2 [AWG18-14]



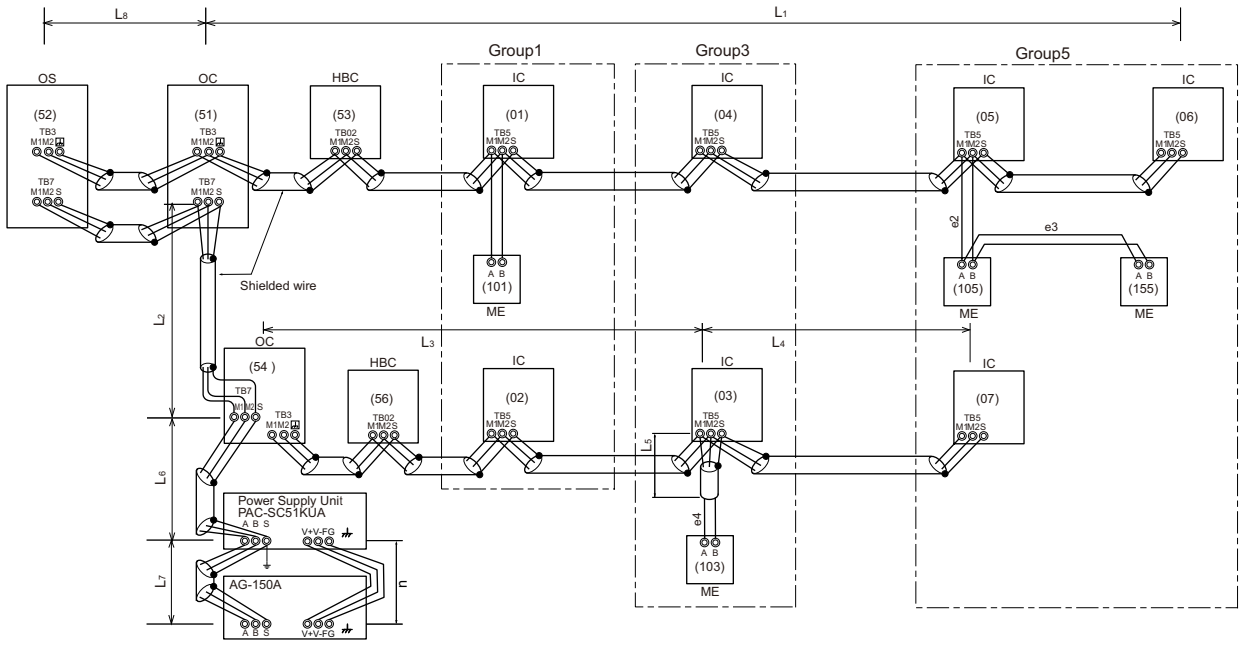
OC, OS : Outdoor unit controller; IC: Indoor unit controller; MA: MA remote controller

2-1-2. Using ME Remote controller

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

Max. length via outdoor (M-NET cable)	L1+L2+L3+L4, L1+L2+L6+L7,L1+L2+L3+L5, L3+L4+L6+L7	<=500m[1640ft.]	1.25mm^2 [AWG16] or thicker
Max. length to outdoor (M-NET cable)	L1+L8, L3+L4, L6, L2+L6+L8, L7, L3+L5	<=200m[656ft.]	1.25mm^2 [AWG16] or thicker
Max. length from ME to indoor	e1, e2+e3, e4	<=10m[32ft.]*1	0.3-1.25 mm^2 [AWG22-16] *1
24VDC to AG-150A	n	<=50m[164ft.]	0.75-2.0 mm^2 [AWG18-14]

*1. If the length from ME to indoor exceed 10m, use 1.25 mm^2 [AWG16] shielded cable, but the total length should be counted into Max. length via outdoor.



OC, OS: Outdoor unit controller; IC: Indoor unit controller; ME: ME remote controller

2-2. Transmission cable specifications

	Transmission cables (Li)	ME Remote controller cables	MA Remote controller cables
Type of cable	Shielding wire (2-core) CVVS, CPEVS or MVVS	Sheathed 2-core cable (unshielded) CVV	
Cable size	More than 1.25mm^2 [AWG16]	0.3～1.25mm^2 [AWG22～16] (0.75～1.25mm^2 [AWG18～16])*1	0.3～1.25mm^2 [AWG22～16]*2 (0.75～1.25mm^2 [AWG18～16])*1
Remarks	—	When 10m [32ft] is exceeded, use cables with the same specification as transmission cables.	Max length : 200m [656ft] *3

*1 Connected with simple remote controller.
*2 To wire PAR-31MAA, simple MA remote controller use a wire with a diameter of 0.3 mm^2 [AWG22]
*3 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

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

2-3. System configuration restrictions

2-3-1. Common restrictions for the HYBRID CITY MULTI system

For each outdoor unit, the maximum connectable quantity of indoor unit is specified at its specifications table.

A) 1 Group of indoor units can have 1-16 indoor units;

B) Maximum 2 remote controllers for 1 Group;

*MA/ME remote controllers cannot be present together in 1group.

*When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

C) 1 LOSSNAY unit can interlock maximum 16 indoor units; 1 indoor unit can interlock with only 1 LOSSNAY unit.

D) Maximum 3 System controllers are connectable when connecting to TB3 of the outdoor unit.

E) Maximum 6 System controllers are connectable when connecting to TB7 of the outdoor unit, if the transmission power is supplied by the outdoor unit.

F) 4 System controllers or more are connectable when connecting to TB7 of the outdoor unit, if the transmission power is supplied by the power supply unit PAC-SC51KUA. Details refer to 2-3-3-C.

*System controller connected as described in D) and E) would have a risk that the failure of connected outdoor unit would stop power supply to the system controller.

2-3-2. Ensuring proper communication power for M-NET

In order to ensure proper communication among outdoor unit, indoor unit, LOSSNAY, and controllers, the transmission power situation for the M-NET should be observed. In some cases, a transmission booster should be used. Taking the power consumption of indoor unit sized P15-P140 as 1, the equivalent power consumption or supply of others are listed at Table 2-3-1 and Table 2-3-2.

Table 2-3-1 The equivalent power consumption

Indoor unit		HBC controller	PWFY			MA RC. LOSSNAY	ME Remote Contr.	System Contr.		ON/OFF Contr.	MN Converter		Outdoor unit
Sized P15-P140	Sized P200, P250	CMB	P100VM -E-BU	P100VM -E1-AU	P200VM -E1-AU	PAR-31MAA PAR-21MAA PAC-YT52CRA PAR-FA32MA LGH-RX-E PZ-60DR-E	PAR-F27MEA PAC-SE51CRA PZ-52SF-E PAC-YG60MCA PAC-YG66DCA PAC-YG63MCA	AG-150A	AT-50A	PAC-YT40ANRA	CMS -MNF-B	CMS -MNG-E	TB7 power consumption
1	7	2	6	1	5	0	1/4	1/2	4	1	1/2	2	0

*RC : Remote Controller

Table 2-3-2 The equivalent power supply

Transmission Booster	Power supply unit	Expansion controller	BM ADAPTER	System Controller	Outdoor unit	Outdoor unit
PAC-SF46EPA	PAC-SC51KUA	PAC-YG50ECA	BAC-HD150	GB-50ADA	Connector TB3 and TB7 total *	Connector TB7 only
25	5	6	6	6	32	6

*If PAC-SC51KUA is used to supply power at TB7 side, no power supply need from outdoor unit at TB7, Connector TB3 itself will therefore have 32. Not applicable to the PUMY model.

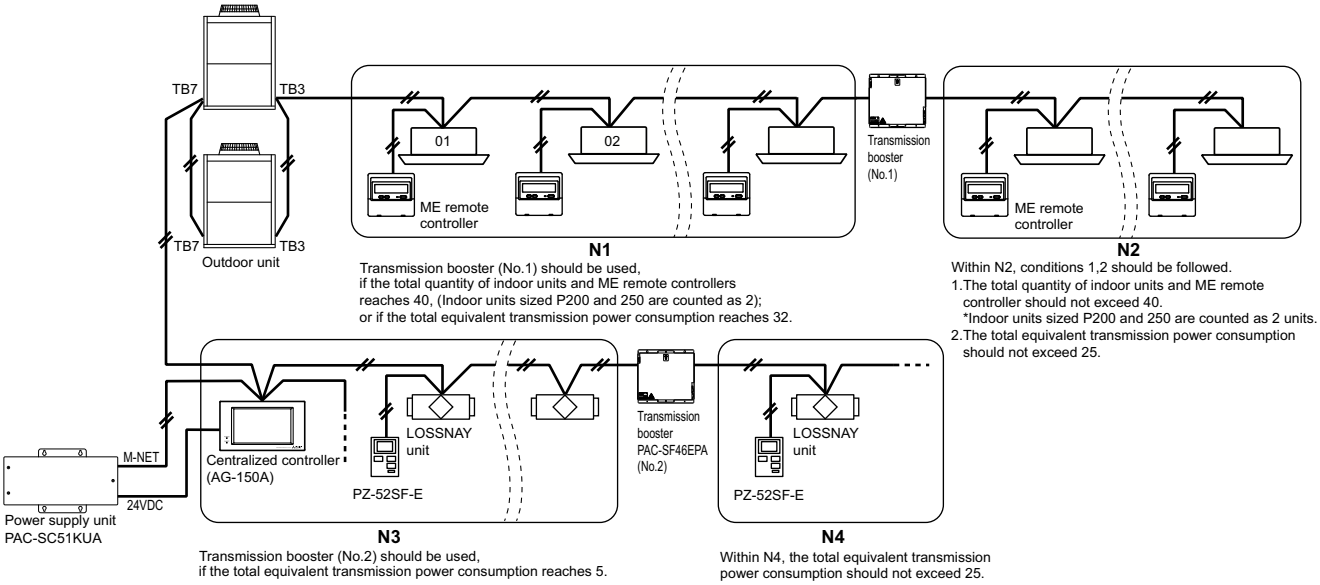
With the equivalent power consumption values in Table 2-3-1 and Table 2-3-2, PAC-SF46EPA can be designed into the air-conditioner system to ensure proper system communication according to 2-3-2-A, B, C.

2-3-2-A) Firstly, count from TB3 at TB3 side the total quantity of indoor units, ME remote controller, and system controllers. If the total quantity reaches 40, a PAC-SF46EPA should be installed. In this case, indoor units sized P200 and 250 are counted as 2 indoor units, but MA remote controller(s) and PZ-60DR-E are NOT counted.

2-3-2-B) Secondly, count from TB7 side to TB3 side the total transmission power consumption. If the total power consumption reaches 32, a PAC-SF46EPA should be installed. Yet, if a PAC-SC51KUA is used to supply power at TB7 side, count from TB3 side only.

2-3-2-C) Thirdly, count from TB7 at TB7 side the total transmission power consumption, If the total power consumption reaches 6, a PAC-SF46EPA should be installed.

■ System example



*The figure above shows a system to which two outdoor units are connected, but only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

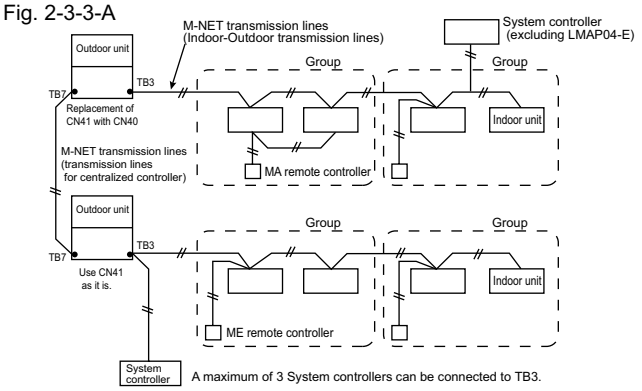
2-3-3. Ensuring proper power supply to the system controller

The power to system controller (excluding LMAP04-E) is supplied via the M-NET transmission line. The M-NET transmission line at TB7 side is called the centralized control transmission line while one at TB3 side is called indoor-outdoor transmission line. There are 3 ways to supply power to the system controller .
A) Connecting to TB3 of the outdoor unit and receiving power from the outdoor unit.
B) Connecting to TB7 of the outdoor unit and receiving power from the outdoor unit.
C) Connecting to TB7 of the outdoor unit but receiving power from power supply unit PAC-SC51KUA.

2-3-3-A. When connecting to TB3 of the outdoor unit and receiving power from the outdoor unit.

A maximum of 3 system controllers can be connected to TB3. If there is more than 1 outdoor unit, it is necessary to replace power supply switch connector CN41 with CN40 on one outdoor unit.

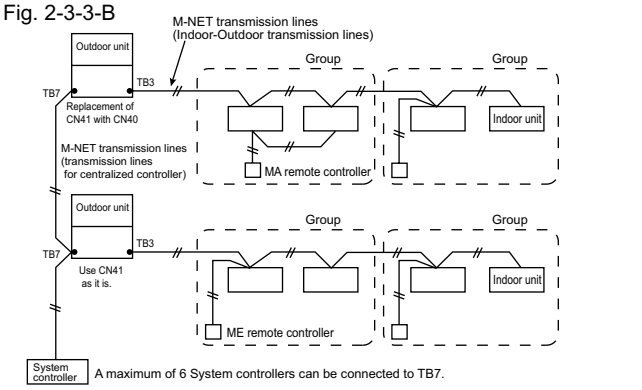
Fig. 2-3-3-A



2-3-3-B. When connecting to TB7 of the outdoor unit and receiving power from the outdoor unit.

A maximum of 6 System controllers can be connected to TB7 and receive power from the outdoor unit.
It is necessary to replace the power supply switch connector CN41 with CN40 on one outdoor unit.

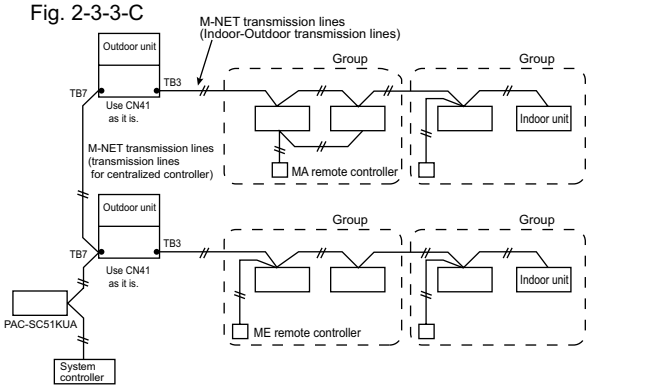
Fig. 2-3-3-B



2-3-3-C. When connecting to TB7 of the outdoor unit but receiving power from PAC-SC51KUA.

When using PAC-SC51KUA to supply transmission power, the power supply connector CN41 on the outdoor units should be kept as it is. It is also a factory setting.
1 PAC-SC51KUA supports a maximum 1 AG-150A unit due to the limited power 24VDC at its TB3.
However, 1 PAC-SC51KUA supplies transmission power at its TB2 equal to 5 indoor units, which is referable at Table 2-3-2.
If PZ-52SF-E, system controller, ON/OFF controller connected to TB7 consume transmission power of more than 5 (indoor units), transmission booster PAC-SF46EPA is needed. PAC-SF46EPA supplies transmission power equal to 25 indoor units.

Fig. 2-3-3-C



⚠ CAUTION

AG-150A*1 is recommended to connect to TB7 because it performs back-up to a number of data points.

In an air conditioner system which has more than 1 outdoor unit, with AG-150A receiving transmission power through TB7 on one of the outdoor units, there is a risk that the connected outdoor unit failure would stop power supply to AG-150A, and disrupt the whole system.

When applying apportioned electric power function, AG-150A must be connected to TB7 and have its own power supply unit PAC-SC51KUA.*2

*1: AG-150A is an example model of system controllers.

*2: Power supply unit PAC-SC51KUA is for AG-150A.

2-3-4. Power supply to LM-AP

1-phase 220-240VAC power supply is needed.
The power supply unit PAC-SC51KUA is not necessary when connecting only the LM-AP. Yet, make sure to change the power supply changeover connector CN41 to CN40 on the LM-AP.

2-3-5. Power supply to expansion controller

1-phase 100-240VAC power supply is needed.
The power supply unit PAC-SC51KUA is not necessary.
The expansion controller supplies power through TB3, which equals 6 indoor units. (refer to Table 2-3-2)

2-3-6. Power supply to BM ADAPTER

1-phase 100-240VAC power supply is needed.
The power supply unit PAC-SC51KUA is not necessary when only BM ADAPTER is connected.
Make sure to move the power jumper from CN41 to CN40 on the BM ADAPTER.

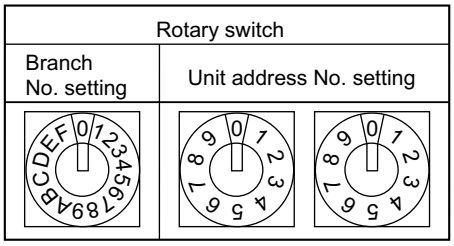
2-3-7. Power supply to GB-50ADA

1-phase 100-240VAC power supply is needed.
The power supply unit PAC-SC51KUA is not necessary.
GB-50ADA supplies power through TB3, which equals 6 indoor units. (refer to Table 2-3-2)

2-4. Address setting

2-4-1. Switch operation

In order to constitute CITY MULTI in a complete system, switch operation for setting the unit address No. and connection No. is required.



① Address No. of outdoor unit, indoor unit and remote controller.
The address No. is set at the address setting board.
In the case of a HYBRID CITY MULTI system, it is necessary to set the same No. at the branch No. switch of indoor unit as that of the HBC controller. (When connecting two or more branches, use the lowest branch No.)

② Caution for switch operations

- Be sure to shut off power source before setting switches. If operated with the power source on, the switch may not operate properly.
- No unit with an identical unit address can exist in the same air conditioner system. If set erroneously, the system will not operate.

③ MA remote controller

- When connecting only one remote controller to one group, it becomes 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".

PAR-21MAA
The MA remote controller does not have the switches listed above.
Refer to the installation manual for the function setting.

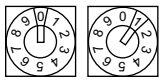
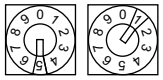
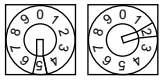
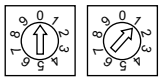
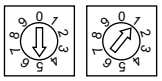
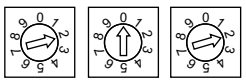
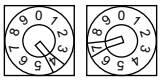
PAC-YT52CRA

Setting the dip switches

There are switches on the back of the top case. Remote controller Main/Sub and other function settings are performed using these switches. Ordinarily, only change the Main/Sub setting of SW1.
(The factory settings are ON for SW1, 2, and 3 and OFF for SW4.)

SW No.	SW contents Main	ON	OFF	Comment
1	Remote controller Main/Sub setting	Main	Sub	Set one of the two remote controllers at one group to "ON".
2	Temperature display units setting	Celsius	Fahrenheit	When the temperature is displayed in [Fahrenheit], set to "OFF".
3	Cooling/heating display in AUTO mode	Yes	No	When you do not want to display "Cooling" and "Heating" in the AUTO mode, set to "OFF".
4	Indoor temperature display	Yes	No	When you want to display the indoor temperature, set to "ON".

2-4-2. Rule of setting address

Unit		Address setting	Example	Note
Indoor unit		01 ~ 50		Use the most recent address within the same group of indoor units.
Outdoor unit		51 ~ 99, 100 (Note1)		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, OS1 and OS2 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"
HBC controller		52 ~ 99, 100		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 	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 	The address of main remote controller + 50 ∗ The address automatically becomes "200" if it is set as "00"
System controller	ON/OFF remote controller	000, 201 ~ 250		The smallest group No. to be managed + 200 ∗ The smallest group No. to be managed is changeable.
	AG-150A GB-50ADA AT-50A	000, 201 ~ 250	0,2 0~5 0~9 100 10 1	
	PAC-YG50ECA	000, 201 ~ 250	0,2 0~5 0~9 100 10 1	∗ Settings are made on the initial screen of AG-150A.
	BAC-HD150	000, 201 ~ 250	0,2 0~5 0~9 100 10 1	∗ Settings are made with setting tool of BM ADAPTER.
	LMAP04-E	201 ~ 250	2 Fixed 	

Note1: To set the address to "100", set it to "50"
Note2: Outdoor units OC, OS1 and OS2 in one refrigerant circuit system are automatically detected.
OC, OS1 and OS2 are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.

2-4-3. System examples

Factory setting

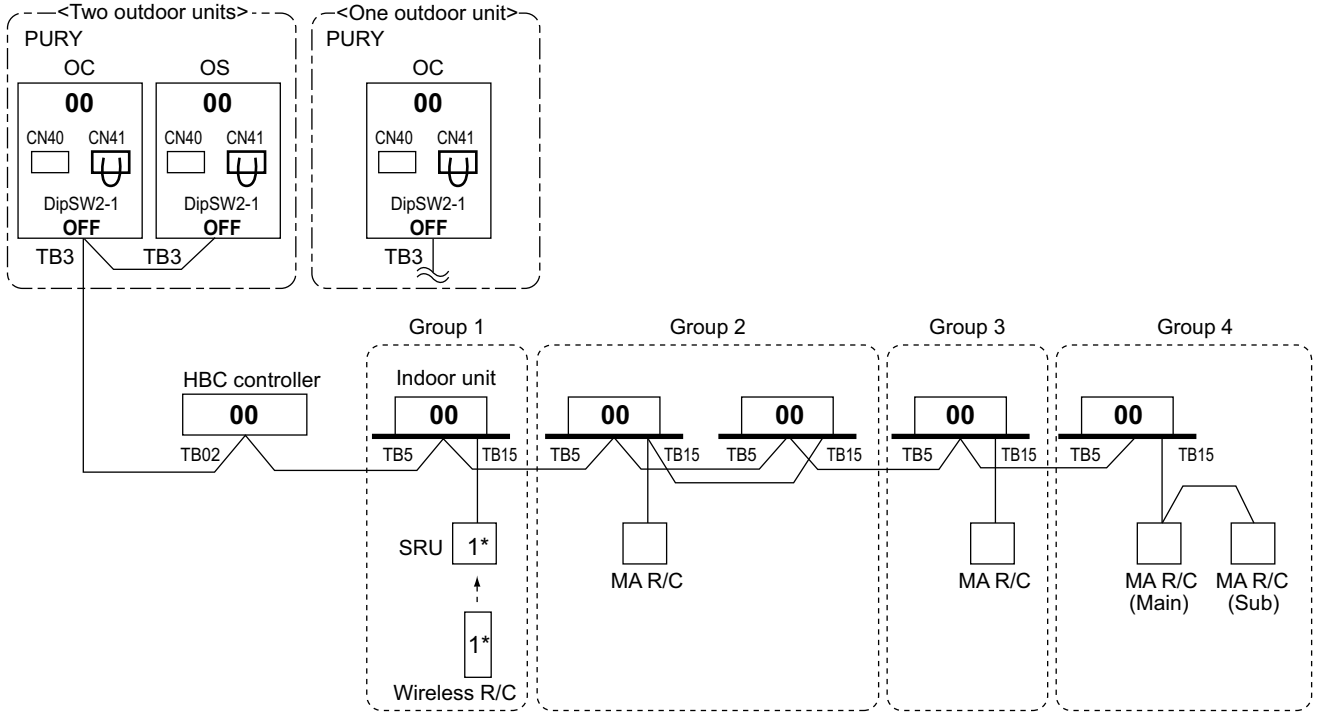
Original switch setting of the outdoors, indoors, controllers, LM-AP and BM ADAPTER at shipment is as follows.

- Outdoor unit : Address: 00, CN41: ON (Jumper), DipSW2-1: OFF
- Indoor unit : Address: 00
- HBC controller : Address: 00
- ME remote controller : Address: 101
- LM-AP : Address: 247, CN41: ON (Jumper), DipSW1-2: OFF
- BM ADAPTER : Address: 000, CN41: ON (Jumper)

Setting at the site

- DipSW2-1(Outdoor) : When the system controller is used, all the Dip SW2-1 at the outdoor units should be set to "ON". * Dip SW2-1 remains OFF when only LM-AP is used.
- DipSW1-2(LM-AP) : When the LM-AP is used together with the system controller, DipSW1-2 at the LM-AP should be set to "ON".
- CN40/CN41 : Change jumper from CN41 to CN 40 at outdoor control board will activate central transmission power supply to TB7;
  (Change jumper at only one outdoor unit when activating the transmission power supply without using a power supply unit.)
  Changing jumper from CN41 to CN 40 at LM-AP will activate transmission power supply to LM-AP itself;
  A power supply unit is recommended for use in a system having more than 1 outdoor unit, because the central transmission power supply is from TB7 of one of the outdoor units, risking that the outdoor unit failure may let down the whole system controller system.

2-4-3-1. MA remote controller, single-refrigerant-system, no system controller

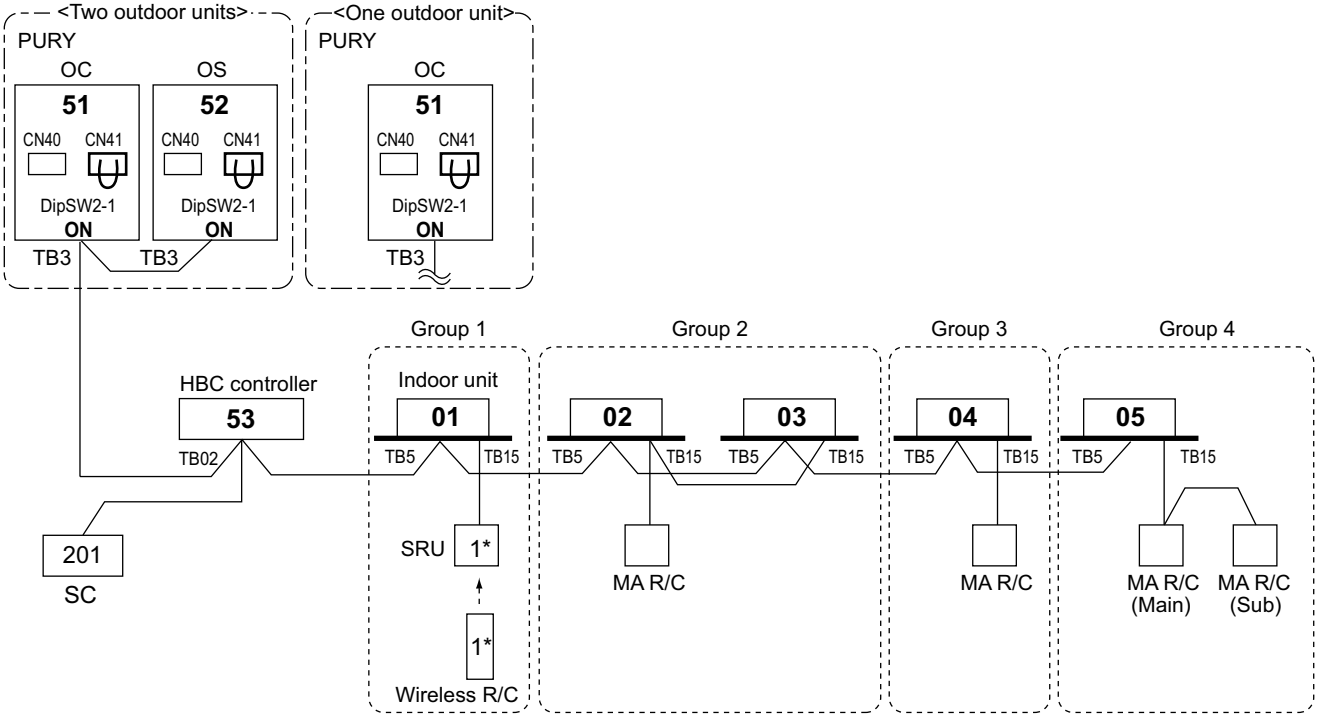


*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

NOTE:

1. 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. (Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. No address setting is needed.
3. For a system having more than 32 indoor units (P15-P140), check the need of a booster at **2-3 "System configuration restrictions".**
4. Indoor units should be set with a branch number.
5. When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

2-4-3-2. MA remote controller, single-refrigerant-system, system controller



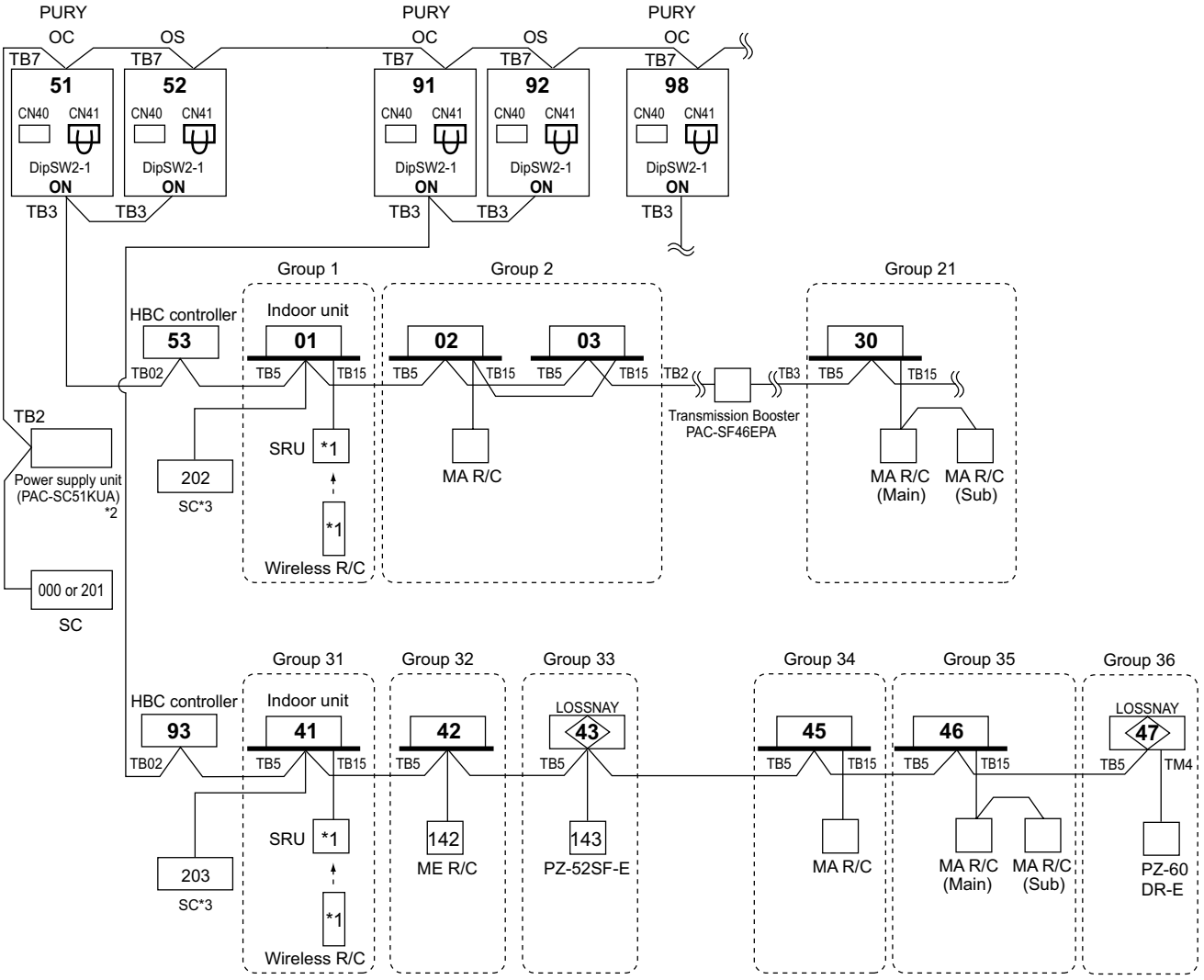
*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

*SC can be connected to TB3 side or TB7 side;
Should SC connected to TB7 side, change Jumper from CN41 to CN40 at the outdoor unit module so as to supply power to the SC.

NOTE:

1. 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. (Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. Address should be set to Indoor units and centralized controller.
3. For a system having more than 32 indoor units (P15-P140), check the need of a booster at **2-3 "System configuration restrictions".**
4. Indoor units should be set with a branch number.
5. When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

2-4-3-3. MA remote controller, multi-refrigerant-system, system controller at TB7/ TB3 side, booster for long M-NET wiring



*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

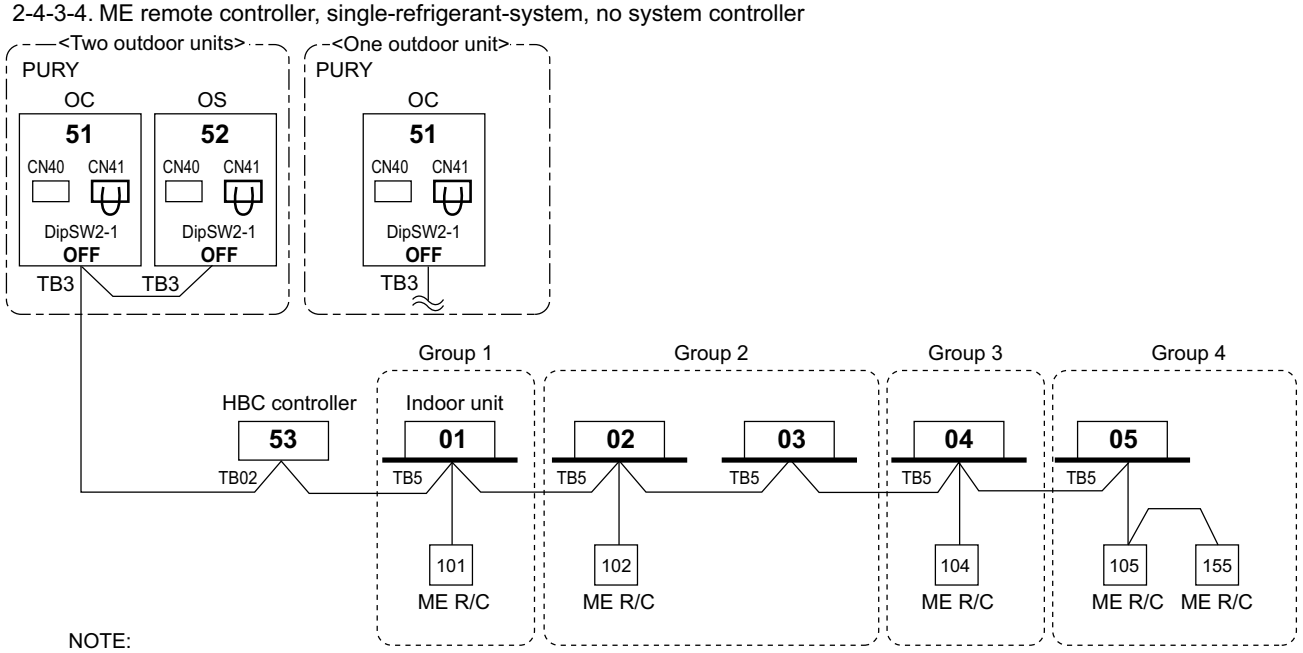
*2 System controller should connect to TB7 at outdoor and use power supply unit together in multi-refrigerant-system.
For AG-150A, 24VDC should be used with the PAC-SC51KUA.

*3 When multiple system controllers are connected in the system, set the controller with more functions than others as a "main" controller and others as "sub".
AG-150A and GB-50ADA are for exclusive use as a "main" system controller and cannot be used as a "sub" system controller.
Make the setting to only one of the system controllers for "prohibition of operation from local remote controller".

NOTE:

1. 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. (Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. Address should be set to indoor units, LOSSNAY and system controller.
3. M-NET power is supplied by the outdoor unit at TB3, while indoor unit and ME remote controller consume the M-NET power for transmission use. The power balance is needed to consider for long M-NET wiring. For details refer to **2-3 "System configuration restrictions".**
4. Indoor units should be set with a branch number.
5. When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.

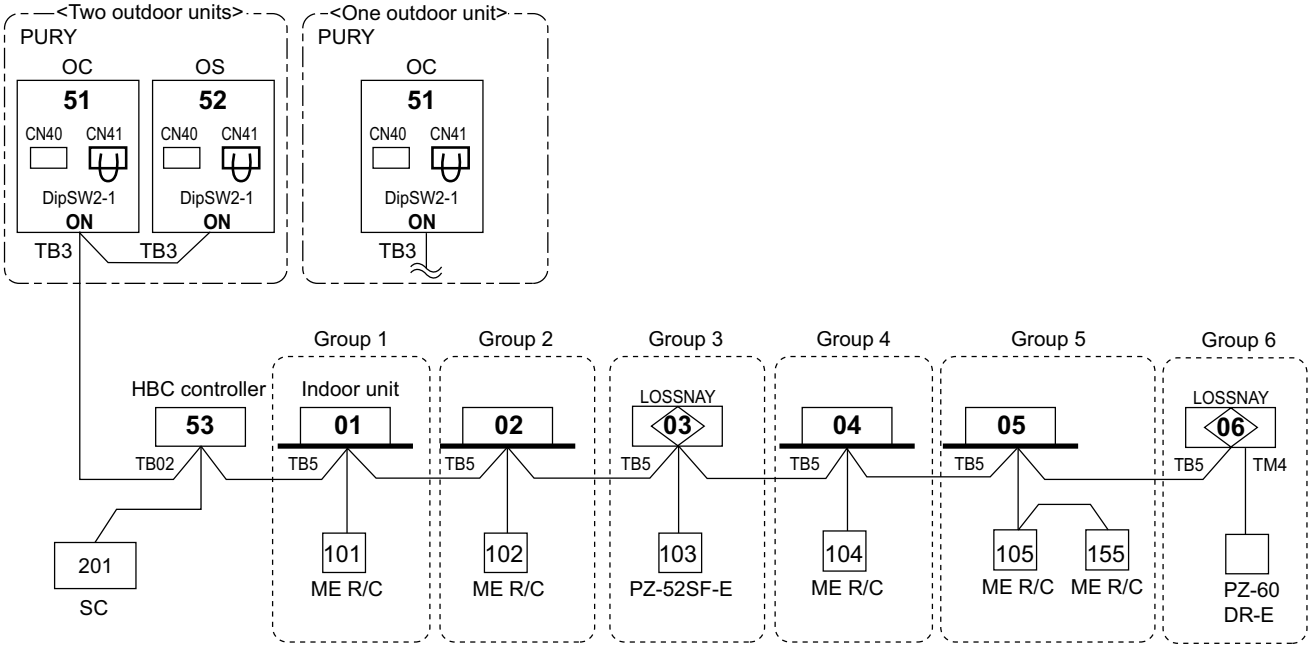
2-4-3-4. ME remote controller, single-refrigerant-system, no system controller



NOTE:

1. 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. (Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. Address should be set to indoor units, system controller and ME remote controllers.
3. M-NET power is supplied by the outdoor unit at TB3, while indoor unit and ME RC consume the M-NET power for transmission use. The power balance is needed to consider for long M-NET wiring. Details refer to **2-3 "System configuration restrictions".**
4. Indoor units should be set with a branch number.

2-4-3-5. ME remote controller, single-refrigerant-system, system controller, LOSSNAY

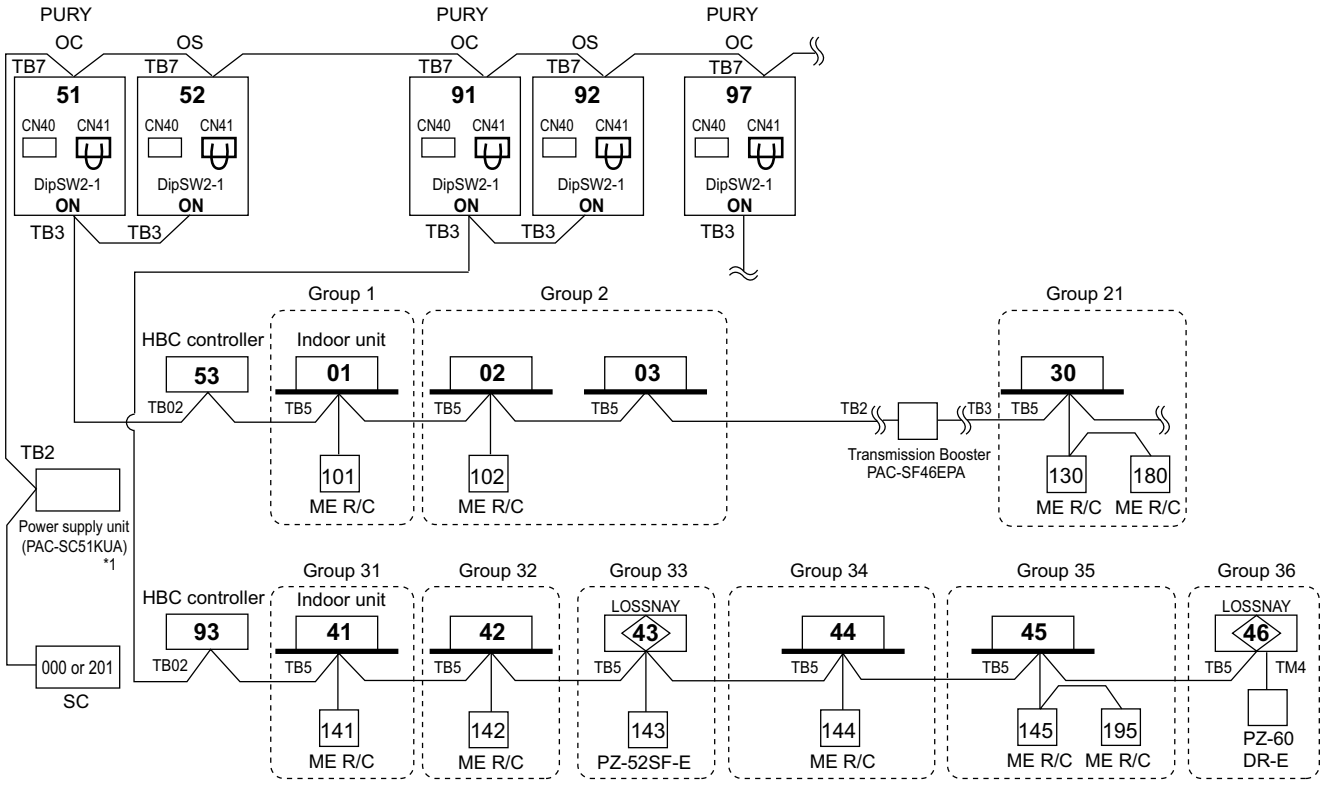


*SC can be connected to TB3 side or TB7 side;
Should SC connected to TB7 side, change Jumper from CN41 to CN40 at the outdoor unit module so as to supply power to the SC.

NOTE:

1. 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. (Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. Address should be set to indoor units, LOSSNAY centralized controller, ME remote controllers.
3. For a system having more than 32 indoor units (P15-P140), check the need of a booster at **2-3 "System configuration restrictions".**
4. Indoor units should be set with a branch number.

2-4-3-6. ME remote controller, multi-refrigerant-system, system controller at TB 7side, LOSSNAY, booster for long M-NET wiring



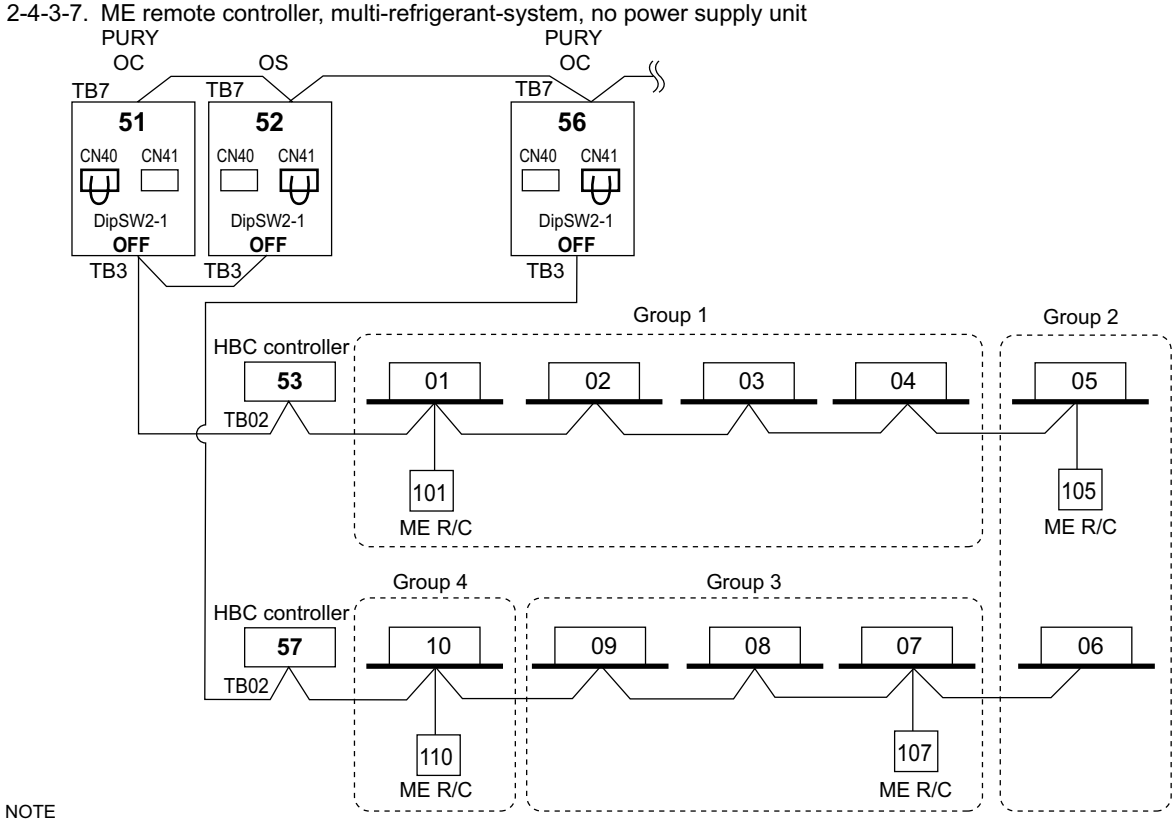
*1 System controller should connect to TB7 at the outdoor and use a power supply unit together in multi-refrigerant-system.
For AG-150A, 24VDC should be used with the PAC-SC51KUA.

*2 When multiple system controllers are connected in the system, set the controller with more functions than others as a "main" controller and others as "sub".
AG-150A and GB-50ADA are for exclusive use as a "main" system controller and cannot be used as a "sub" system controller.
Make the setting to only one of the system controllers for "prohibition of operation from local remote controller".

NOTE:

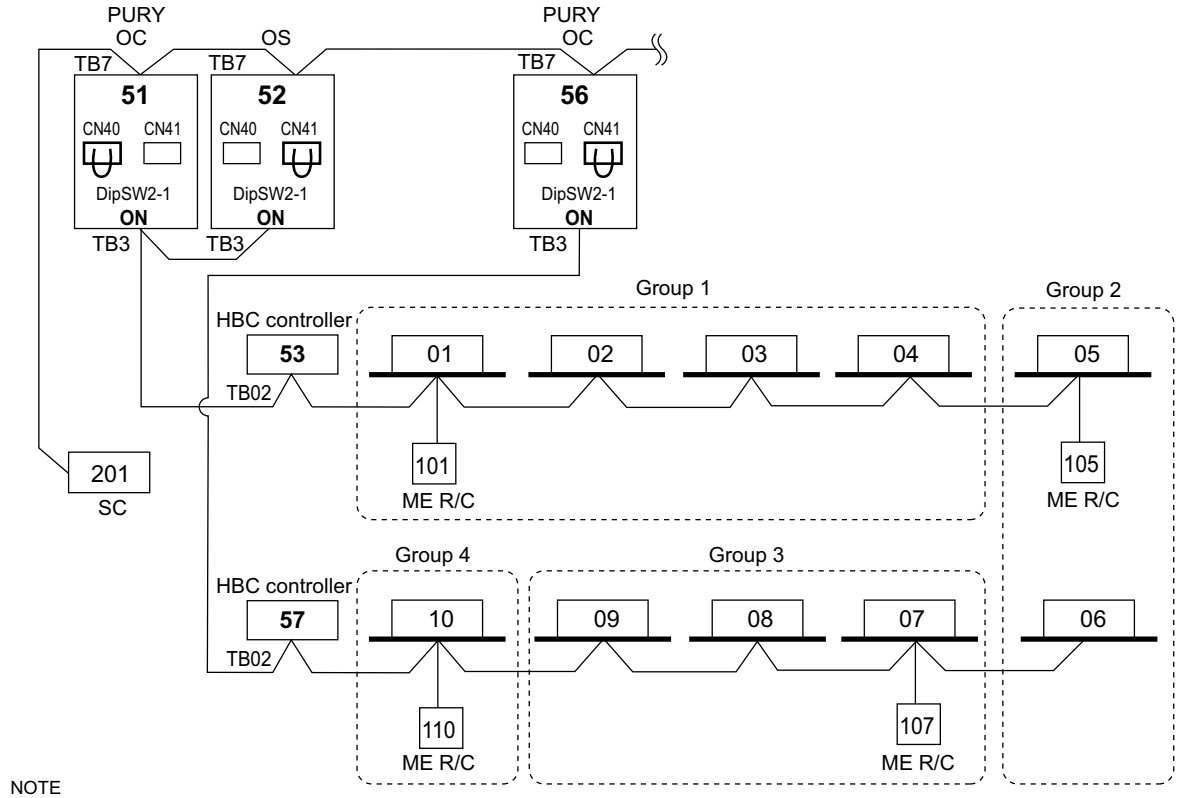
1. Outdoor units OC and OS in one refrigerant circuit system are automatically detected.
OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.
(Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.)
2. M-NET power is supplied by the outdoor unit at TB3, while indoor unit and ME RC consume the M-NET power for transmission.
Consider power requirements with respect to the number of connected units for long M-NET wiring.
For details refer to **2-3 "System configuration restrictions".**
3. Indoor units should be set with a branch number.

2-4-3-7. ME remote controller, multi-refrigerant-system, no power supply unit



NOTE
- It is necessary to change the connecter to CN40 on the outdoor unit control board (only one outdoor unit) when the group is set between other refrigerant systems.
- It is necessary to set on the remote controller by hand when setting groups on the different refrigerant system. Please refer to remote controller installation manual.
- Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

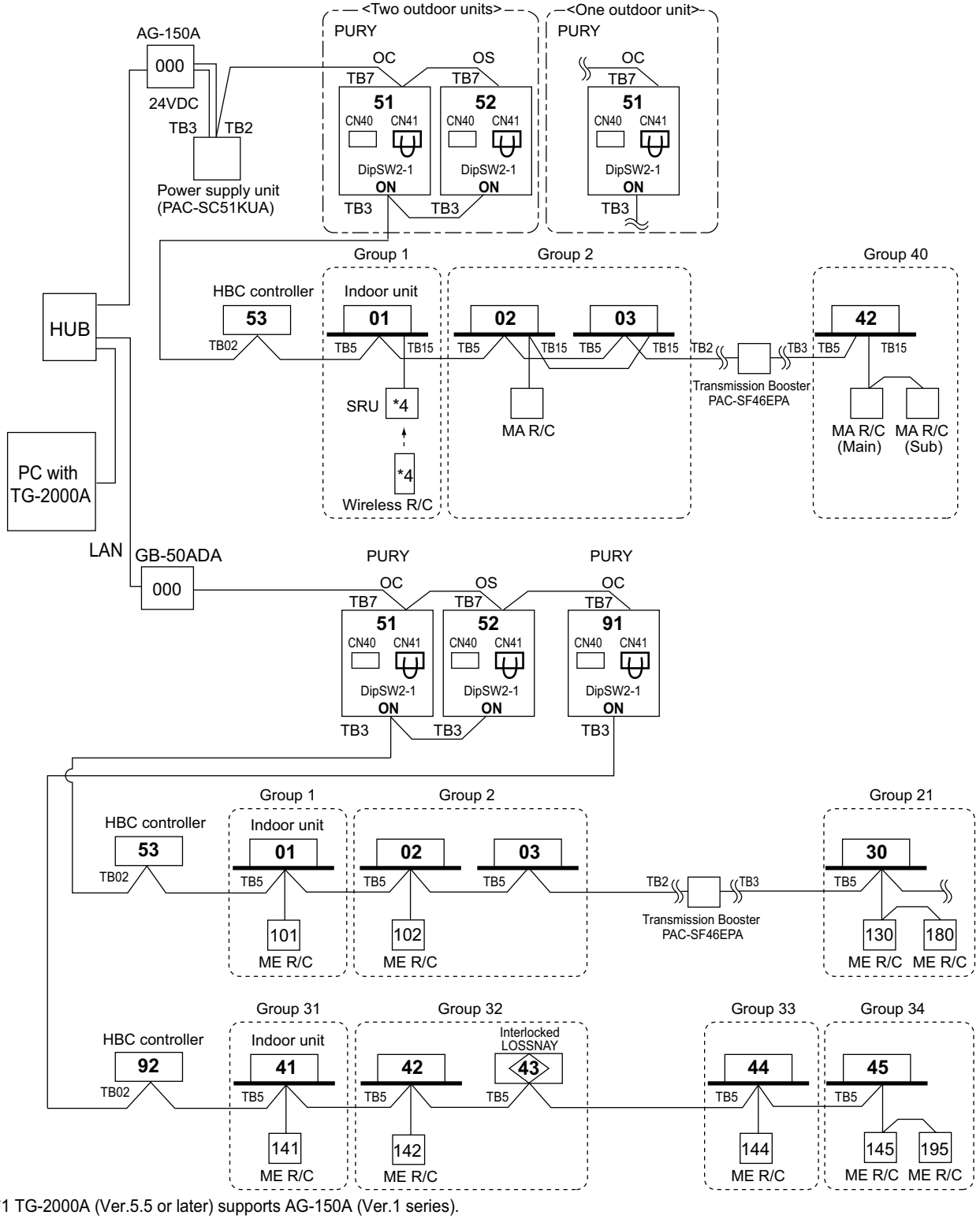
2-4-3-8. ME remote controller, multi-refrigerant-system, system controller at TB7 side, no power supply unit



NOTE
- It is necessary to change the connecter to CN40 on the outdoor unit control board (only one outdoor unit) when the group is set between other refrigerant systems.
- It is necessary to set on the remote controller by hand when setting groups on the different refrigerant system. Please refer to remote controller installation manual.
- Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

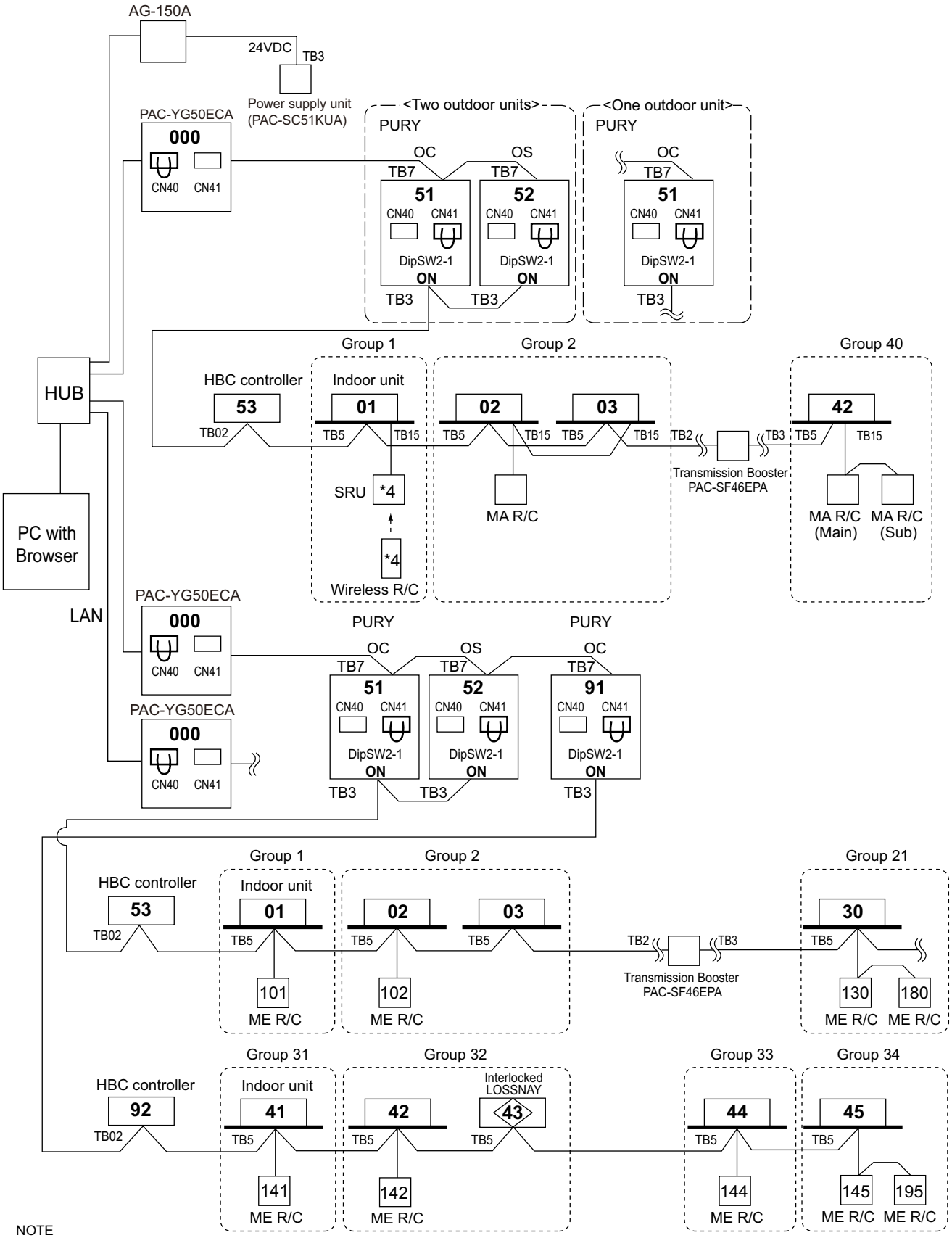
2-4-3-9. TG-2000A(*1)+AG-150A(*2),GB-50ADA

AG-150A can control max. 50 indoor units;
GB-50ADA can control max. 50 indoor units;
TG-2000A can control max. 40 AG-150A and GB-50ADA;*3
TG-2000A can control max. 2000 indoor units.



*1 TG-2000A (Ver.5.5 or later) supports AG-150A (Ver.1 series).
TG-2000A (Ver. 6.1 or later) supports AG-150A (Ver. 2.1 or later) connected with the expansion controller (EC).
TG-2000A (Ver. 6.3 or later) supports GB-50ADA.
*2 AG-150A (Ver.1series) does not support the expansion controller (EC).
*3 When AG-150A with the expansion controller (EC) is connected, the number of EC will be the maximum controllable number.
TG-2000A can control up to 40 EC's or AG-150A's without EC connection.
*4 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
*5 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group
*6 Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

2-4-3-10. AG-150A+PAC-YG50ECA (Expansion controller)
AG-150A can control max. 150 indoor units/ via expansion controllers.

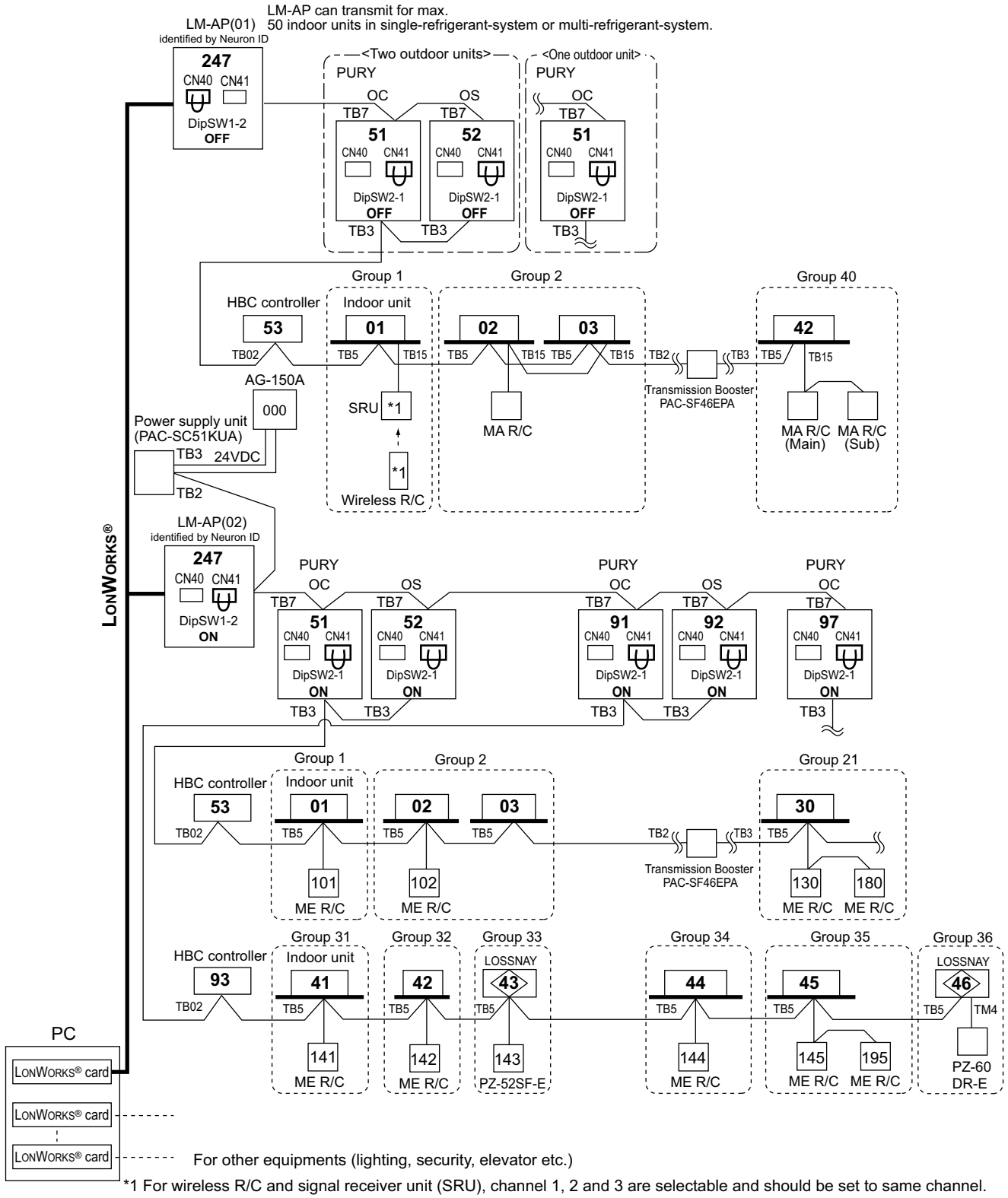


NOTE
- When connecting AG-150A to PAC-YG50ECA, TB2 for power supply unit does not need to be connected to AG-150A.

*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
*2 AG-150A (Ver.1series) does not support the expansion controller (EC).
*3 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.
*4 Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

2-4-3-11. LM-AP

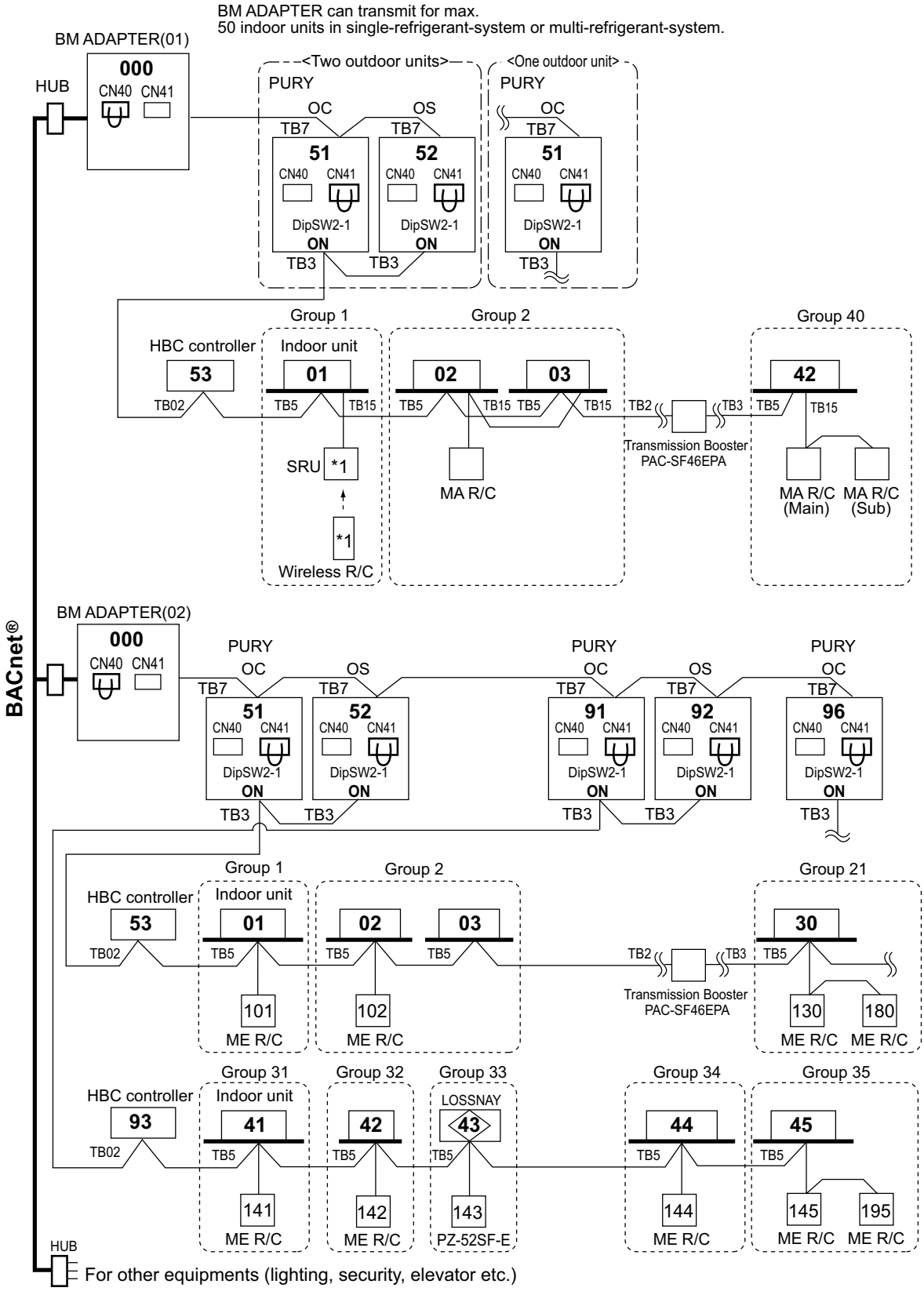
LM-AP can transmit for max. 50 indoor units;
If system controller (SC) is used, DipSW1-2 at LM-AP and DipSW2-1 at outdoor unit should set to "ON".
Change jumper from CN41 to CN40 to activate power supply to LM-AP itself for those LM-AP connected without system controller (SC).



*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
*2 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.
*3 Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

2-4-3-12. BM ADAPTER

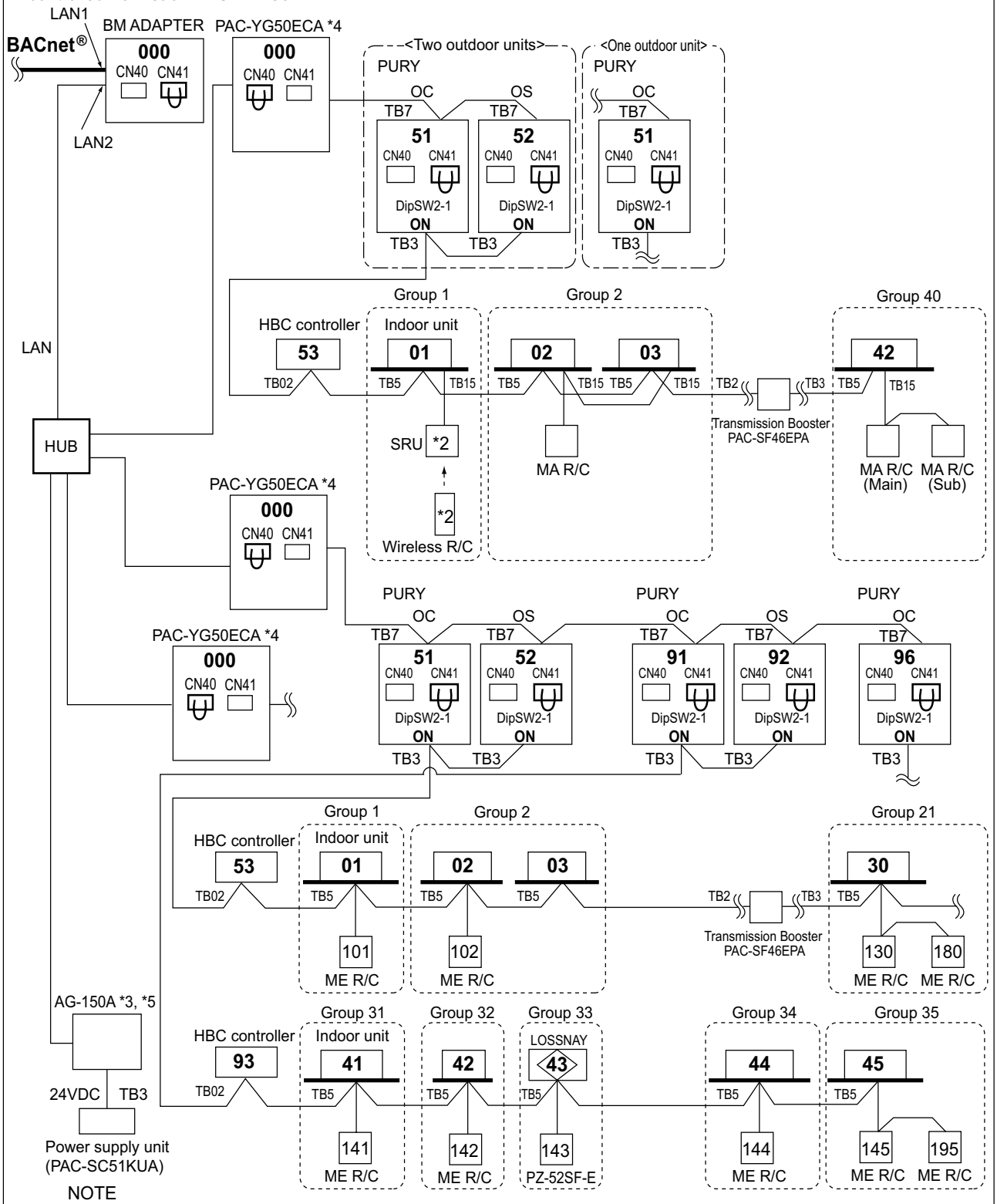
BM ADAPTER can transmit for max. 50 indoor units;
Change jumper from CN41 to CN40 to activate power supply to the BM ADAPTER itself for those BM ADAPTER's connected without a power supply unit.



*1 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
*2 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.
*3 Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

2-4-3-13. BM ADAPTER+PAC-YG50ECA (Expansion controller)

BM ADAPTER(*1) can transmit for max. 150 indoor units/via expansion controllers (PAC-YG50ECA).
When the dual-set-point function is used, no expansion controllers can be connected, and only up to 50 units can be controlled from each BAC-HD150.



NOTE

•It is not necessary to connect the M-NET transmission line to the TB3 on BM ADAPTER. Leave the power jumper of BM ADAPTER connected to CN41.

*1 BM ADAPTER (Ver.2.00 or later) supports the expansion controller.
*2 For wireless R/C and signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
*3 AG-150A (Ver.2.30 or later) supports the BM ADAPTER.
*4 PAC-YG50ECA (Ver.1.30 or later) supports the BM ADAPTER.
*5 Consult your dealer for restrictions when connecting both AG-150A and BM ADAPTER to PAC-YG50ECA.
*6 When a PAR-31MAA is connected to a group, no other MA remote controllers can be connected to the same group.
*7 Only a single outdoor unit can be connected to a HYBRID CITY MULTI system.

3. Piping Design

3-1. R410A Piping material

Refrigerant pipe for CITY MULTI shall be made of phosphorus deoxidized copper, and has two types.
A. Type-O : Soft copper pipe (annealed copper pipe), can be easily bent with human's hand.
B. Type-1/2H pipe : Hard copper pipe (Straight pipe), is stronger than Type-O pipe of the same radial thickness.

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

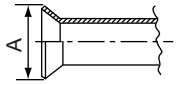
Table 3-1. Copper pipe size and radial thickness for R410A CITY MULTI.

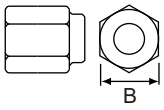
Size (mm)	Size (inch)	Radial thickness (mm)	Radial thickness (mil)	Pipe type
ø6.35	ø1/4"	0.8	[32]	Type-O
ø9.52	ø3/8"	0.8	[32]	Type-O
ø12.7	ø1/2"	0.8	[32]	Type-O
ø15.88	ø5/8"	1.0	[40]	Type-O
ø19.05	ø3/4"	1.2	[48]	Type-O
ø19.05	ø3/4"	1.0	[40]	Type-1/2H or H
ø22.2	ø7/8"	1.0	[40]	Type-1/2H or H
ø25.4	ø1"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

* For pipe sized ø19.05 (3/4") for R410A air conditioner, choice of pipe type is up to you.
* 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 air-tightness.

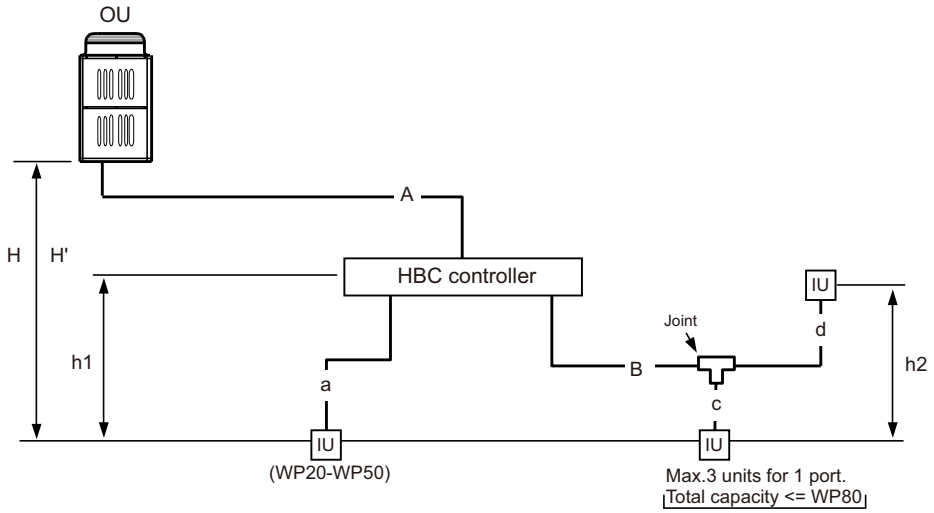
Flare pipe	Pipe size	A (For R410A) (mm[in.])
	ø6.35 [1/4"]	9.1
	ø9.52 [3/8"]	13.2
	ø12.70 [1/2"]	16.6
	ø15.88 [5/8"]	19.7
	ø19.05 [3/4"]	24.0

Flare nut	Pipe size	B (For R410A) (mm[in.])
	ø6.35 [1/4"]	17.0
	ø9.52 [3/8"]	22.0
	ø12.70 [1/2"]	26.0
	ø15.88 [5/8"]	29.0
	ø19.05 [3/4"]	36.0

3-2. Piping Design

3-2-1. Restrictions on pipe length

Note1. Group the indoor units that are connected to the same port.



Piping length limitation **(m [ft.])**

Item	Piping in the figure	Max. length	Max. equivalent
Distance between OU and HBC	A	110 [360']	130 [426']
Farthest IU from HBC controller	B+d	60 [196']	70 [229']
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 HBC	h1	15 [49']	-
Height between IU and IU	h2	15 [49']	-

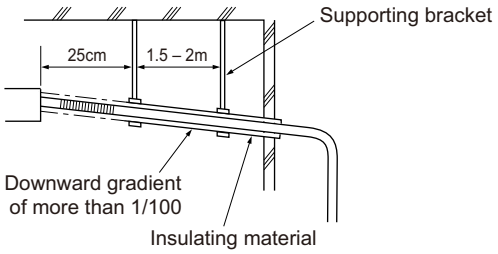
OU : Outdoor Unit ; IU : Indoor Unit ; HBC : HBC controller

3-2-2. Drain piping work

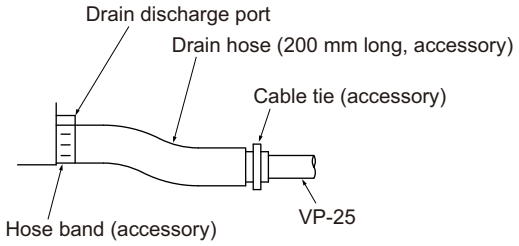
1. Drain piping work

- Ensure that the drain piping is sloped downward (sloped gradient of more than 1/100) toward the discharge side. If it is impossible to take any downward pitch, use an optionally available drain pump to obtain a downward pitch of more than 1/100.
- Ensure that any horizontal drain piping sections that are longer than 20 m are supported with metal brackets to prevent it from bending, warping, or vibrating.
- Connect the supplied drain hose to the discharge port on the unit. Use hardvinyl chloride pipes VP-25 (ø32) for drain piping (2). Tighten the supplied drain hose onto the discharge port using the supplied hose band. (For this, do not use any adhesive because the drain hose will need to be removed for servicing at a later date.)
- Do not use any odor trap around the discharge port.

1

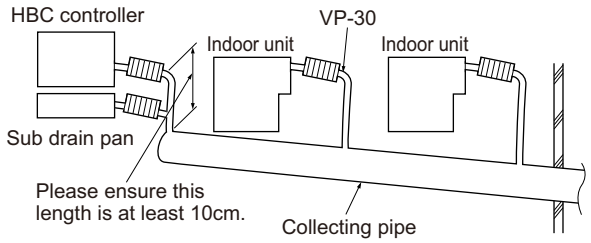


2



- As shown in 3, install a collecting pipe about 10 cm below the drain ports and give it a downward pitch of more than 1/100. This collecting pipe should be of VP-30.
- Set the end of drain piping in a place without any risk of odor generation.
- Do not put the end of the drain piping into any drain where ionic gases are generated.
- Drain piping may be installed in any direction. However, please be sure to observe the above instructions.

3



2. Discharge test

After completing drain piping work, open the HBC controller panel, and test drain discharge using a small amount of water. Also, check to see that there is no water leakage from the connections.

3. Insulating drain pipes

Provide sufficient insulation to the drain pipes just as for refrigerant pipes.

⚠CAUTION

Be sure to provide drain piping with heat insulation in order to prevent excess condensation. Without drain piping, water may leak from the unit causing damage to your property.

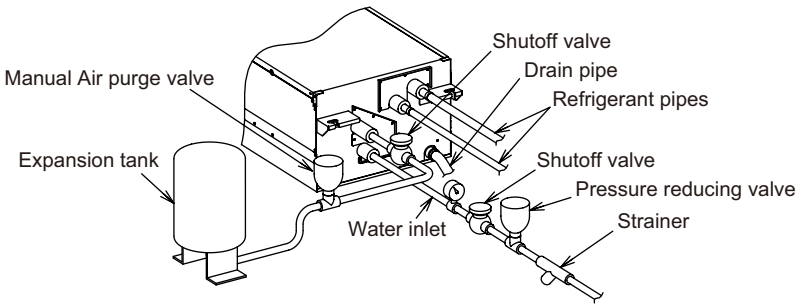
3-2-3. Connecting water pipework

Please observe the following precautions during installation.

3-2-3-1 Important notes on water pipework installation

- The design pressure of the HBC water system is 0.6MPa.
- Use water pipe-work with a design pressure of at least 1.0MPa.
- When performing a water leak check, please do not allow the water pressure to go above 0.3MPa.
- Please connect the water pipework of each indoor unit to the correct port on the HBC. Failure to do so will result in incorrect running.
- Please list the indoor units on the naming plate in the HBC unit with addresses and end connection numbers.
- If the number of indoor units are less than the number of ports on the HBC, the unused ports must be capped. Without a cap, water will leak.
- Use the reverse-return method to insure proper pipe resistance to each unit.
- Provide some joints and bulbs around inlet/outlet of each unit for easy maintenance, checkup, and replacement.
- Install a suitable air vent on the water pipe. After flowing water through the pipe, vent any excess air.
- Secure the pipes with metal fittings, positioning them in locations to protect pipes against breakage and bending.
- Do not confuse the water intake and outlet piping. (Error code 5102 will appear on the remote controller if a test run is performed with the pipe-work installed incorrectly (inlet connected to outlet and vice versa).)
- This unit doesn't include a heater to prevent freezing within the pipe work. If the system is stopped for an extended period during low ambient conditions, drain the water out.
- The unused knockout holes should be closed and the refrigerant pipes, water pipes, power source and transmission wires access holes should be filled with putty.
- Install water pipe so that the water flow rate will be maintained.
- Wrap sealing tape as follows.
  1. Wrap the joint with sealing tape following the direction of the threads (clockwise), do not wrap the tape over the edge.
  2. Overlap the sealing tape by two-thirds to three-fourths of its width on each turn. Press the tape with your fingers so that it is tight against each thread.
  3. Do not wrap the 1.5th through 2nd farthest threads away from the pipe end.
- Hold the pipe on the unit side in place with a spanner when installing the pipes or strainer. Tighten screws to a torque of 40 N·m.
- If there is a risk of freezing, take precautions to prevent this happening.
- When connecting the HBC unit water piping and on site water piping, apply liquid sealing material for water piping over the sealing tape before connection.
- Please use copper or plastic pipes for the water circuit. Do not use steel or stainless steel pipework. Furthermore, when using copper pipe-work, use a non-oxidative brazing method. Oxidation of the pipe-work will reduce the pump life.

Example of heat source unit installation (using left piping)

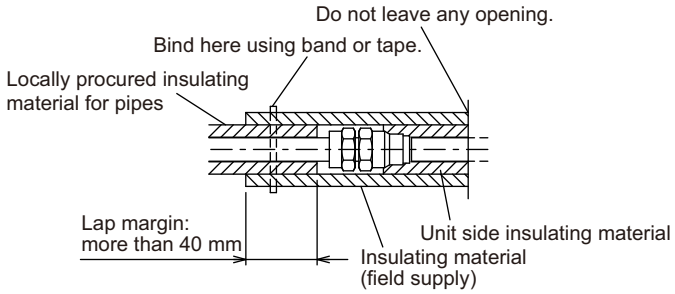


HBC controller sample installation

- **The HBC system must be serviced at least once a year.**

3-2-3-2 Water pipe insulation

1. Connect the water pipes of each indoor unit to the same (correct) end connection numbers as indicated on the indoor unit connection section of each HBC controller. If connected to wrong end connection numbers, there will be no normal operation.
2. List indoor unit model names in the name plate on the HBC controller control box (for identification purposes), and HBC controller end connection numbers and address numbers in the name plate on the indoor unit side.
   Seal unused end connections using cover caps (field supply, dezincification resistant brass (DZR) or bronze only). Not replacing the rubber end caps will lead to water leakage.
3. Be sure to add insulation work to water piping by covering water pipework separately with enough thickness heat-resistant polyethylene, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation, etc. Pay special attention to insulation work in the ceiling plenum.



- Insulation materials for the pipes to be added on site must meet the following specifications:

HBC controller -indoor unit	20 mm or more

- This specification is based on copper for water piping. When using plastic pipework, choose a thickness based on the plastic pipe performance.
- Installation of pipes in a high-temperature high-humidity environment, such as the top floor of a building, may require the use of insulation materials thicker than the ones specified in the chart above.
- When certain specifications presented by the client must be met, ensure that they also meet the specifications on the chart above.

4. Expansion tank
   - Install an expansion tank to accommodate expanded water.

   Expansion tank selection criteria:
   - The water containment volume of the HBC, the indoor units, and pipe work.

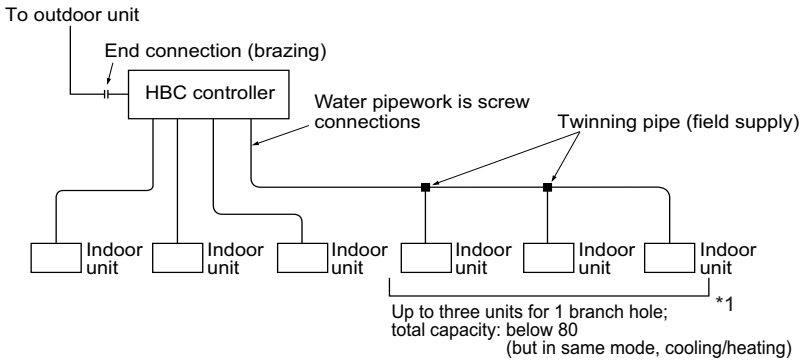
(Unit: L)

Unit model	Water volume
HBC Controller	10
PEFY-WP15VMS1	0.7
PEFY-WP20VMS1	0.9
PEFY-WP25VMS1	
PEFY-WP32VMS1	1.0
PEFY-WP40VMS1	
PEFY-WP50VMS1	1.7
PEFY-WP20VMA	0.7
PEFY-WP25VMA	1
PEFY-WP32VMA	
PEFY-WP40VMA	1.8
PEFY-WP50VMA	
PFFY-WP20VLRMM-E	0.9
PFFY-WP25VLRMM-E	1.3
PFFY-WP32VLRMM-E	
PFFY-WP40VLRMM-E	1.5
PFFY-WP50VLRMM-E	

   - The maximum water temperature is 60°C.
   - The minimum water temperature is 5°C.
   - The circuit protection valve set pressure is 370-490kPa.
   - The circulation pump head pressure is 0.24MPa.

5. Leakproof the water pipework, valves and drain pipework. Leakproof all the way to, and include pipe ends so that condensation cannot enter the insulated pipework.
6. Apply caulking around the ends of the insulation to prevent condensation getting between the pipework and insulation.
7. Add a drain valve so that the unit and pipework can be drained.
8. Ensure there are no gaps in the pipework insulation. Insulate the pipework right up to the unit.
9. Ensure that the gradient of the drain pan pipework is such that discharge can only flow out.
10. HBC water pipe connection sizes and pipe sizes.

	Connection size		Pipe size	
	Water inlet	Water outlet	Water out	Water return
Indoor unit	Rc 3/4 screw	Rc 3/4 screw	I.D. 20 mm	I.D. 20 mm

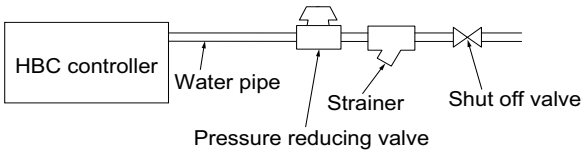


Note:

***1. Connection of multiple indoor units with one connection (or joint pipe)**

- Total capacity of connectable indoor units: Less than 80
- Number of connectable indoor units: Maximum 3 units
- Selection of water piping
  Select the size according to the total capacity of indoor units to be installed downstream.
- Please group units that operate on 1 branch.

11. Please refer to the figure below when connecting the water supply.



12. Use formula $0.1 \leq 0.01 + 0.01 \times A \leq 0.16$ for the supply pressure range to be used.
    (A: Head pressure (m) between the HBC and the highest indoor unit)
    If the supply pressure is greater than 0.16 MPa, use a pressure reducing valve to keep the pressure within the range.
    If the head pressure is unknown, set it to 0.16 MPa.
13. Install a shut off valve and strainer in a place that is easy to operate and makes maintenance work easy.
14. Apply insulation to the indoor unit pipework, strainer, shut off valve, and pressure reducing valve.
15. Please do not use a corrosion inhibitor in the water system.
16. When installing the HBC unit in an environment which may drop below 0°C, please add antifreeze (Propylene Glycol only) to the circulating water. For the brine selection, refer to 6-5. "Correction by brine concentration" in chapter "Outdoor Unit".

3-2-3-3 Water treatment and quality control

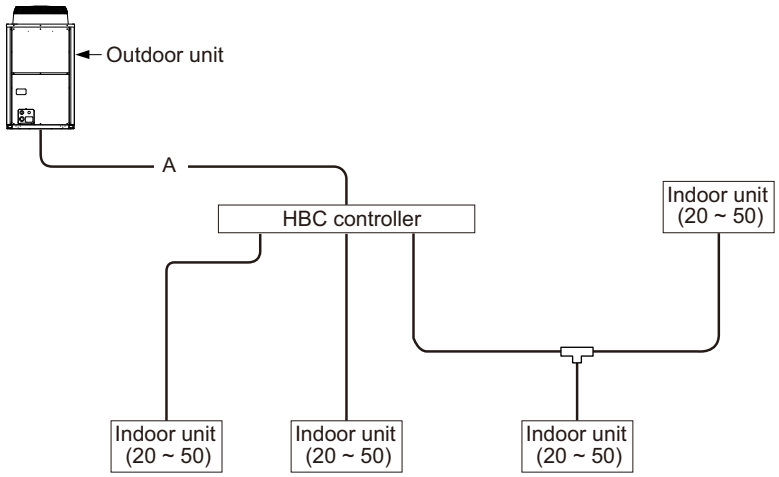
To preserve water quality, use the closed type of water circuit. When the circulating water quality is poor, the water heat exchanger can develop scale, leading to a reduction in heat-exchange power and possible corrosion. Pay careful attention to water processing and water quality control when installing the water circulation system.

- Removing of foreign objects or impurities within the pipes.
  During installation, make sure that foreign objects, such as welding fragments, sealant particles, or rust, do not enter the pipes.
- Water Quality Processing
  Depending on the quality of the cold-temperature water used in the airconditioner, the copper piping of the heat exchanger may corrode. Regular water quality processing is recommended. If a water supply tank is installed, keep air contact to a minimum, and keep the level of dissolved oxygen in the water no higher than 1mg/ℓ.

3-3. Refrigerant charging calculation

Sample connection

[WP200, WP250YJM]



■Amount of additional refrigerant to be charged

Refrigerant for extended pipes (field piping) is not factory-charged to the outdoor unit. Add an appropriate amount of refrigerant for each pipe on site.

Record the size of each high pressure pipe and liquid pipe, and the amout of refrigerant that was charged on the outdoor unit for future reference.

■Calculating the amount of additional refrigerant to be charged

- Calculate the amount of additional charge based on the length of the piping extension and the size of the refrigerant line.
- Use the table below as a guide for calculating the amount of additional charging and then charge the system accordingly.
- Always round up the calculation to the next 0.1 kg. For example, if the result of the calculation was 6.72 kg, round the result up to 6.8 kg.

<Amount of additional refrigerant to be charged>

■Calculating the amount of additional refrigerant to be charged

Additional refrigerant charge		High-pressure pipe size Total length of ø19.05 ×0.16		High-pressure pipe size Total length of ø15.88 ×0.11
(kg)	=	(m)×0.16 (kg/m)	+	(m)×0.11 (kg/m)

	Total Outdoor Unit Model Name	HBC controller
+	WP200, 250	3.0 kg

■Amount of factory charged refrigerant

Outdoor unit Model	Charged amount
WP200	11.8 kg
WP250	

■Sample calculation

Indoor 1: 50 A: ø19.05 42 m
2: 50
3: 50
4: 40
Outdoor WP250

At the conditions on the right:

The total length of each liquid line is as follows:
ø19.05: A = 42 m
Therefore,
<Calculation example>
Additional refrigerant charge
= 42 × 0.16 + 3.0
= 9.72 kg
* All pipe work except A is water pipe work.

3-4. Water piping

3-4-1. Precautions for water piping

Consider the following when installing a water piping system.

1. Design pressure of the water piping
   Use a water pipe that is strong enough to withstand the design pressure (1.0 MPa).
2. Water pipe type
   Use of plastic pipe is recommended.
   When using copper pipes, be sure to braze the pipes under a nitrogen purge. (Oxidation during may shorten the life of the pump.)
3. Expansion tank
   Install an expansion tank to accommodate expanded water.
4. Drain piping
   Install the drain pipe with a downward inclination of between 1/100 and 1/200. To prevent drain water from freezing in winter, install the drain pipe as steep an angle as practically possible and minimize the straight line. For cold climate installation, take an appropriate measure (e.g., drain heater) to prevent the drain water from freezing.
5. Insulation
   Cover the water pipe with insulating materials with the specified thickness or more to prevent thermal loss or condensation from collecting.
6. Air vent valve
   Install air vent valves to the highest places where air can accumulate.
7. Maintenance valve
   It is recommended to install valves on the inlet/outlet for each HBC controller branch for maintenance.
8. Water pressure gauge
   Install a water pressure gauge to check the charged pressure.

3-4-2. Notes on corrosion

1. Water quality

It is important to check the water quality beforehand. See table below (Circulating water/Makeup Water Quality Standards).

Items			Lower mid-range temperature water system		Tendency	
			Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
Standard items	pH (25°C[77°F])		7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Electric conductivity	(mS/m) (25°C[77°F])	30 or less	30 or less	○	○
		(μS/cm) (25°C[77°F])	[300 or less]	[300 or less]		
	Chloride ion	(mg Cl^-/ ℓ)	50 or less	50 or less	○	
	Sulfate ion	(mg SO_4^{2-}/ ℓ)	50 or less	50 or less	○	
	Acid consumption (pH4.8)	(mg $CaCO_3$/ ℓ)	50 or less	50 or less		○
	Total hardness	(mg $CaCO_3$/ ℓ)	70 or less	70 or less		○
	Calcium hardness	(mg $CaCO_3$/ ℓ)	50 or less	50 or less		○
	Ionic silica	(mg SiO_2/ ℓ)	30 or less	30 or less		○
Reference items	Iron	(mg Fe/ ℓ)	1.0 or less	0.3 or less	○	○
	Copper	(mg Cu/ ℓ)	1.0 or less	0.1 or less	○	
	Sulfide ion	(mg S^{2-}/ ℓ)	not to be detected	not to be detected	○	
	Ammonium ion	(mg NH_4^+/ ℓ)	0.3 or less	0.1 or less	○	
	Residual chlorine	(mg Cl/ ℓ)	0.25 or less	0.3 or less	○	
	Free carbon dioxide	(mg CO_2/ ℓ)	0.4 or less	4.0 or less	○	
	Ryzner stability index		–	–	○	○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

2. Debris in the water

Sand, pebbles, suspended solids, and corrosion products in water can damage the metal pipe and heat exchanger on the HBC controller and may cause corrosion. When installing, prevent debris from entering the water. If there is debris in the water, perform debris removal operation after test run by cleaning the strainers inside the HBC controller. (Refer to other sections for how to perform a test run.)

3. Connecting pipes made of different materials

Connecting pipes used for HBC controller and indoor unit are copper alloy pipes. If steel pipes are connected to the pipes, the contact surface will corrode. Do not use steel pipes to avoid corrosion.

4. Residual air

Residual air in the pipe results in water pump malfunction, noise, or water pipe corrosion in the water circuit. Ensure air is purged before use. (Refer to other sections for how to perform air vent operation.)

4. Outdoor Installation

4-1. Requirement on installation site

1. No direct thermal radiation to the unit.
2. No possibility of disruption due to the sound of the unit.
   Valves and refrigerant flow on the outdoor unit may generate noise.
3. Avoid sites where strong winds blow.
4. With strength to bear the weight of the unit.
5. Drain flow from the unit is cared at heating mode.
6. Enough space for installation and service as shown at 4-2.
7. Avoid the sites where acidic solutions or chemical sprays (sulfur series) are used frequently.
8. The unit should be secure from combustible gas, oil, steam, chemical gas like acidic solution, sulfur gas etc.

4. Outdoor Installation

4-2. Spacing

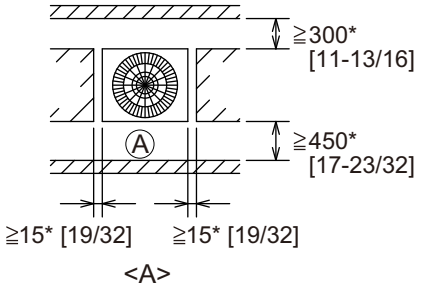
In case of single installation

• Secure enough space around the unit as shown in the figure.

<A> : Top view
<B> : Side view
<C> : When there is little space up to an obstruction

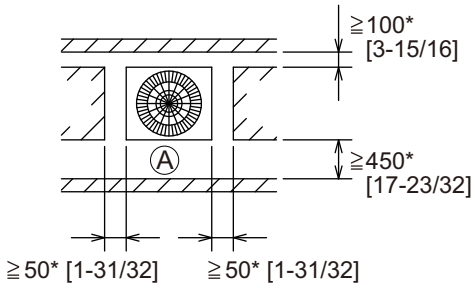
Ⓐ : Front
Ⓑ : Unit height
Ⓒ : Back
Ⓓ : Air outlet guide (Procured at the site)

(1) If the distance is 300 mm [11-13/16 in.] or more between the rear side and the wall



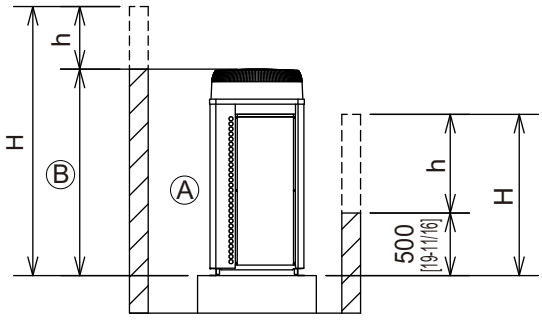
<A>

(2) If the distance is 100 mm [3-15/16 in.] or more between the rear side and the wall



<A>

(3) If the wall height (H) of the front, rear or side exceeds the wall height restriction



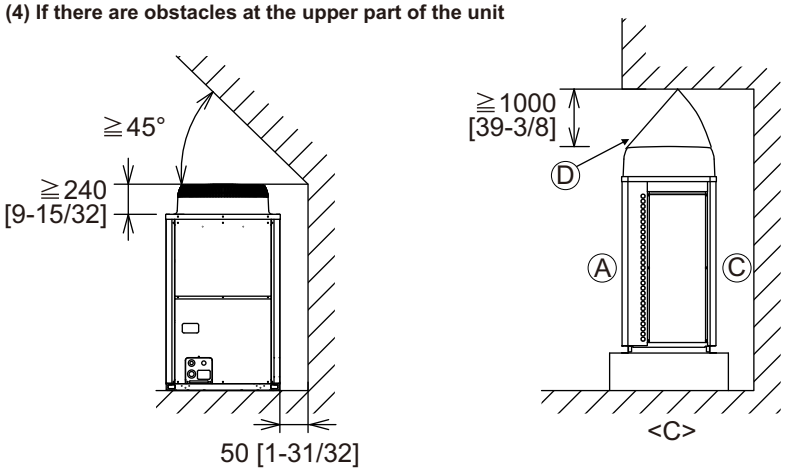
<B>

• When the height of the walls on the front, back or on the sides <H> exceeds the wall height limit as defined below, add the height that exceeds the height limit <h> to the figures that are marked with an asterisk.

<Wall height limit> Front: Up to the unit height
Back: Up to 500mm [19-11/16 in.] from the unit bottom
Side: Up to the unit height

If the unit cannot be kept clear of the wall, please change the direction of the air outlet of the unit to blow against the wall to avoid air short cycle.

(4) If there are obstacles at the upper part of the unit



<C>

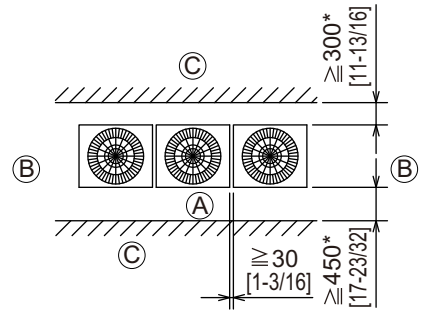
(Unit : mm [in.])

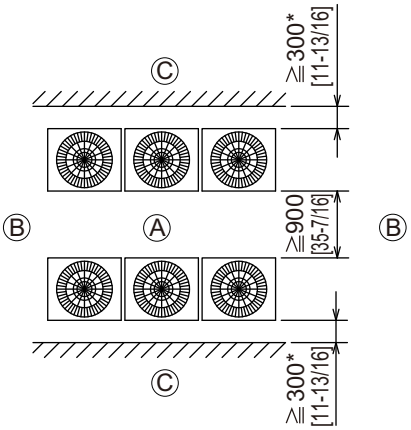
In case of collective installation and continuous installation

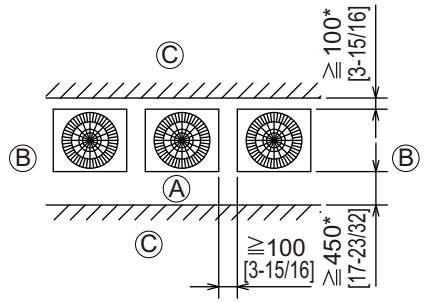
Ⓐ : Front Ⓒ : Wall height (H)

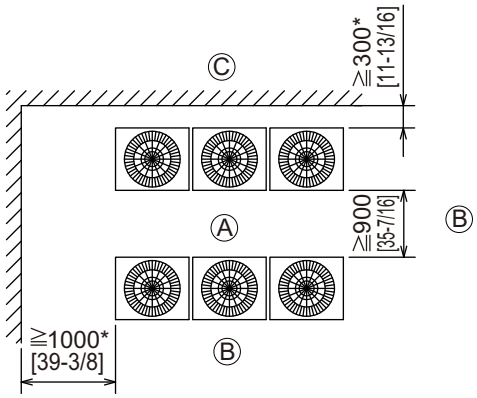
Ⓑ : Must be open

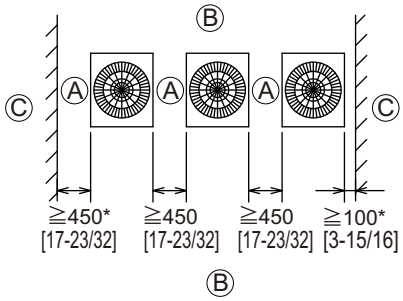
- When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and passageways between groups of units as shown in the figures.
- At least two sides must be left open.
- As with the single installation, add the height that exceeds the height limit <h> to the figures that are marked with an asterisk.
- If there is a wall at both the front and the rear of the unit, install up to six units consecutively in the side direction and provide a space of 1000mm or more as inlet space/passage space for each six units.

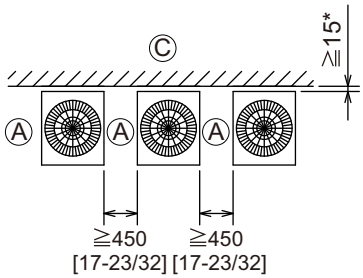










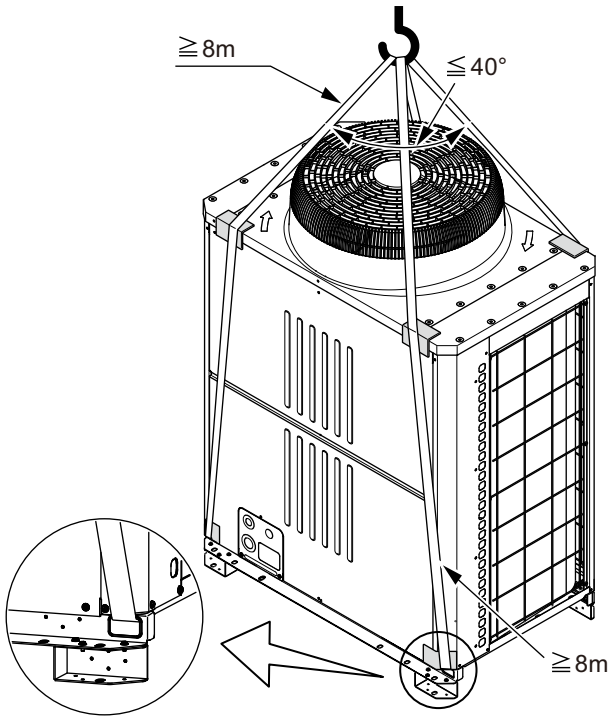


(Unit : mm [in.])

4-3. Piping direction

4-3-1. Lifting method

· When lifting the unit with ropes, run the ropes under the unit and use the lifting hole.
· Support the unit at four points with two ropes, and avoid giving mechanical shock.
· Suspension rope angle must be 40˚ or less, so as to avoid compressing fan guard.
· Use two ropes, each at least 8m [26 ft.] in length
· Use ropes strong enough to support the weight of the unit.
· Always suspend the unit from four corners. (It is dangerous to suspend a unit from two corners and must not be attempted.)
· Use protective pads to keep the ropes from scratching the panels on the unit.



⚠ CAUTION

Exercise caution when transporting products.

· Products weighing more than 20 kg [45 LBS] should not be carried alone.
· Do not carry the product by the PP bands.
· To avoid the risk of injury, do not touch the heat exchanger fins.
· Plastic bags may pose a risk of choking hazard to children. Tear plastic bags into pieces before disposing of them.
· When lifting and transporting outdoor units with ropes, run the ropes through lifting hole at the unit base. Securely fix the unit so that the ropes will not slide off, and always lift the unit at four points to prevent the unit from falling.

4-3-2. Installation

- Secure the unit with anchor bolts as shown in the figure below so that the unit will not topple over with strong wind or during an earthquake.
- Install the unit on a durable base made of such materials as concrete or angle steel.
- Take appropriate anti-vibration measures (e.g., vibration damper pad, vibration isolation base) to keep vibrations and noise from being transmitted from the unit through walls and floors.
- When using a rubber cushion, install it so that the cushion covers the entire width of the unit leg.
- Install the unit in such a way that the corner of the angle bracket at the base of the unit shown in the figure below is securely supported.
- Install the anchor bolt in such a way that the top end of the anchor bolt do not stick out more than 30 mm [1-3/16 in.].
- This unit is not designed to be anchored with post-installation-type anchor bolts, although by adding fixing brackets anchoring with such type of anchor bolts becomes possible.

⚠WARNING

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

⚠WARNING

Take appropriate safety measures against strong winds and earthquakes to prevent the unit from falling.

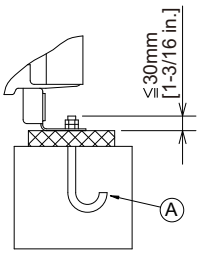
Ⓐ : M10 anchor bolt procured at the site.

Ⓑ : Corner is not seated.

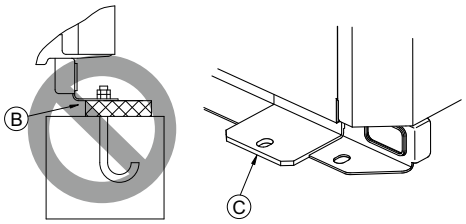
Ⓒ : Fixing bracket for hole-in anchor bolt (3 locations to fix with screws).

Ⓓ : Detachable leg

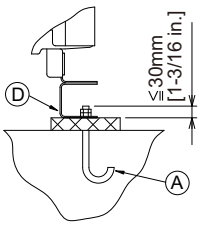
<Without detachable leg>



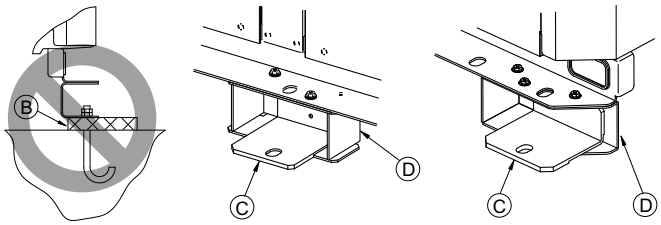
Install the unit in such a way that the corner of the angle bracket at the base of the unit shown in the figure is securely supported. The brackets may bend if they are not securely supported.



<With detachable leg>



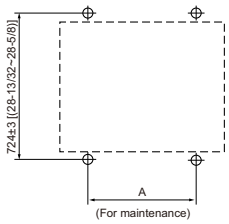
Install the unit in such a way that the corner of the angle bracket at the base of the unit shown in the figure is securely supported. The brackets may bend if they are not securely supported.



Take into consideration the durability of the base, water drainage route (Drain water is discharged from outdoor units during operation.), piping route, and wiring route when performing foundation work.

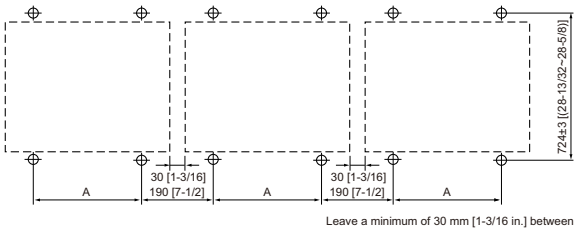
4-3-3. Anchor bolt positions

• Individual installation



• Collective installation

(Unit : mm [in.])

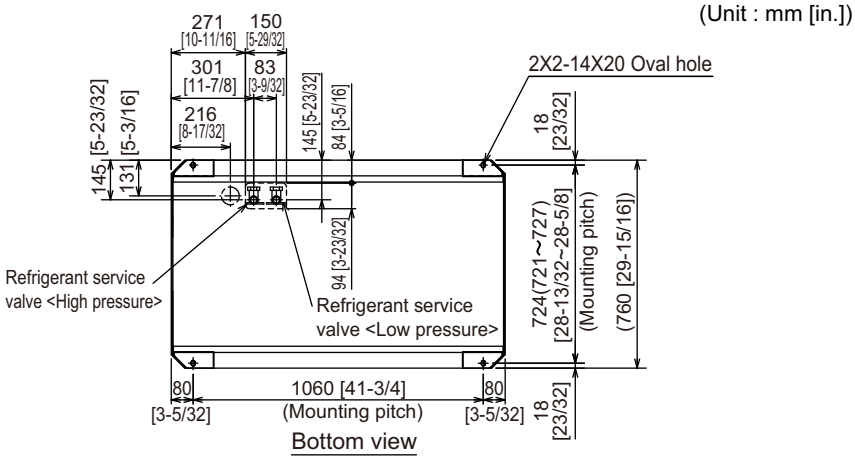


A	1060±2 [41-3/4(41-21/32~41-13/16)]

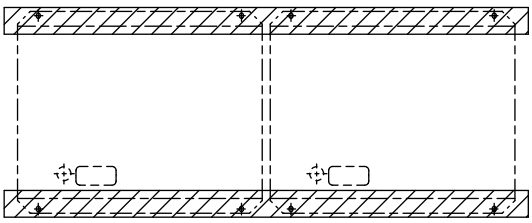
4-3-4. Installation

When the pipes and/or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.
When the pipes are routed at the bottom of the unit, the base should be at least 100 mm [3-15/16 in.] in height.

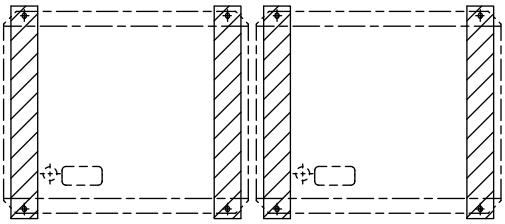
(Unit : mm [in.])



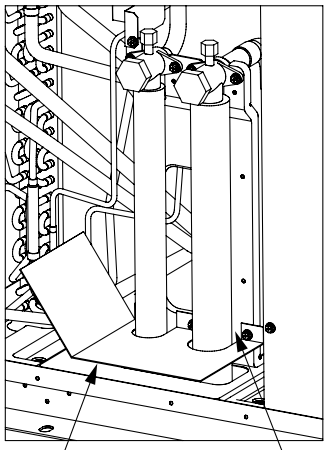
Installation base parallel to the unit's front panel



Installation base perpendicular to the unit's front panel



4-3-5. Refrigerant pipe routing



The gaps around the edges of through holes for pipes and wires on the unit allow water or mice to enter the unit and damage its parts. Close these gaps with filler plates.

This unit allows two types of pipe routing:
- Bottom piping
- Front piping

⚠ CAUTION

To prevent small animals, water, and snow from entering the unit and damage its parts, close the gap around the edges of through holes for pipes and wires with filler plates.

※ The figure above shows a unit on which a low-pressure twinning pipe kit is not installed.

4-4. Weather countermeasure

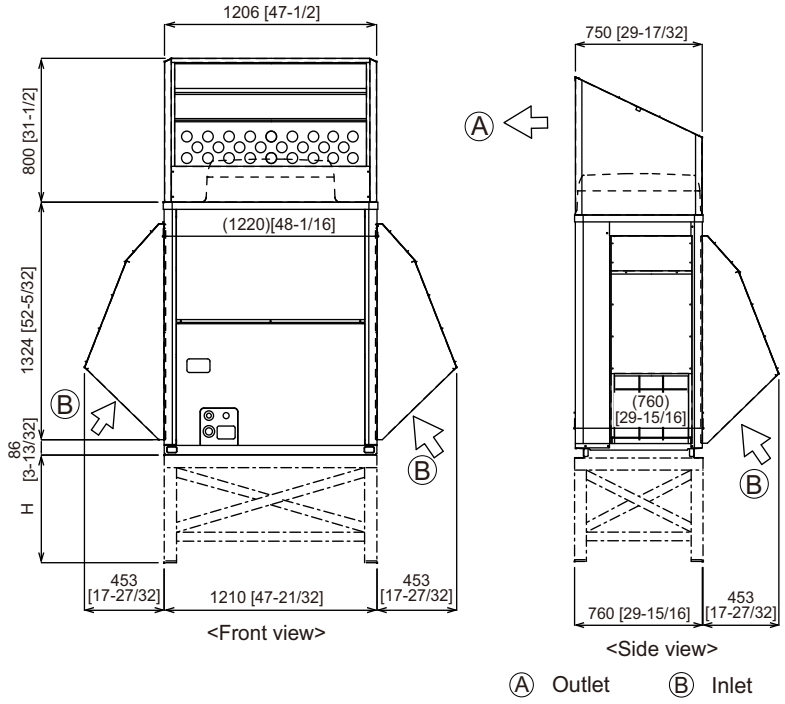
In cold and/or snowy areas, sufficient countermeasures to wind and snow damages should be taken for operating unit in normal and good condition in winter time. Surround the units with snow nets or fences to protect them from snow. Even in the other areas, full consideration is required for installation of unit in order to prevent abnormal operations caused by wind or snow. **When rain and snow directly fall on unit in the case of air-conditioning operations in 10 or less degrees centigrade outdoor air (50 or less degrees fahrenheit outdoor air) , mount inlet and outlet ducts on unit for assuring stable operations.**

Countermeasure to snow and wind

Prevention the Outdoor unit from wind and snow damages in cold or snowy areas, snow hood shown below is recommended and helpful.

*Do not use a snow hood made of stainless steel, which may cause the unit to rust. If the use of a stainless snow hood is the only option, contact the sales office before installing it.

• Snow hood



Note:

1. Height of frame base for snow damage prevention (H) shall be twice as high as expected snowfall. Width of frame base shall not exceed that of the unit. The frame base shall be made of angle steel, etc., and designed so that snow and wind slip through the structure. (If frame base is too wide, snow will be accumulated on it.)
2. Install unit so that wind will not directly lash against openings of inlet and outlet ducts.
3. Build frame base at customer referring to this figure.
   Material : Galvanized steel plate 1.2T [1/16 in. T]
   Painting : Overall painting with polyester powder
   Color : Munsell 5Y8/1 (same as that of unit)
4. To install units side by side, install a filler plate between the fan guard and the outlet-side snow hood as shown in Figure A. (The filler plate provided accommodates the installation pitch of between 30-80 mm [1-3/16~3-5/32 in.].)
5. When the unit is used in a cold region and the heating operation is continuously performed for a long time when the outside air temperature is below freezing, install a heater to the unit base or take other appropriate measures to prevent water from freezing on the base.

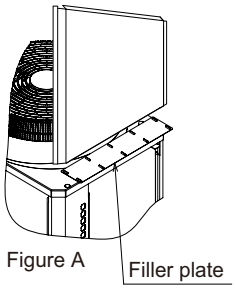
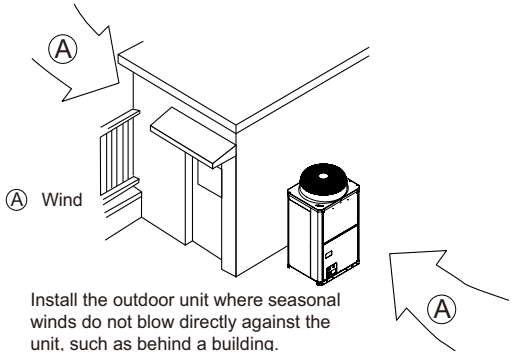


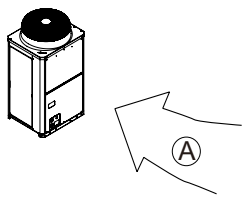
Figure A

Countermeasure to wind

Referring to the figure shown below, take appropriate measures which will suit the actual situation of the place for installation. A unit installed alone is vulnerable to strong winds. Select the installation site carefully to minimize the effect of winds. To install a unit in a place where the wind always blows from the same direction, install the unit so that the outlet faces away from the direction of the wind.



Install the outdoor unit where seasonal winds do not blow directly against the unit, such as behind a building.



Install the outdoor unit to avoid having seasonal winds against the front of air outlet/inlet on the unit.

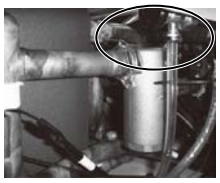
5. Test run

5-1. Instructions for debris removal operation

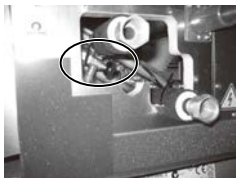
In this operation, debris that is generated during installation is removed from the water circuit.
Perform this operation **after water and refrigerant piping work, air tightness test, evacuation, and refrigerant charging have been completed and electrical work is done.**

5-1-1.Preparation for debris removal operation

1.Open the air vent valves on the HBC controller and indoor units.
Refer the Installation Manual for the location of air vent valves.
(If there are air vent valves on the field-installed pipes, open the valves as well.)



HBC controller



Indoor unit (Example: PEFY-WP-VMA-E)

2.Set DIP SW 5-1 (valve opening when stopped), DIP SW 5-2 (nullification of drain over-flow error for 9 hours) from off to on.

3.Supply water from the suction pipe on the HBC controller.

Install a non-return valve to prevent water in the water circuit flowing back to the water supply pipe, or remove the water supply hose after the air vent operation.

4.**Check that water comes from each air vent valve, and perform the debris removal operation.**

5-1-2.Debris removal operation

1.If there are a large amount of debris in the water in the field-installed pipes, set DIPSW4-1 from OFF to ON.
(Refer to the flowchart for debris removal operation for details.)
Perform the debris removal operation. (Each air vent valve should stay open.)

LED and DIPSW positions

2.When 30 minutes have passed after the operation startup, water pump will stop, and the LED display on the HBC controller changes from “Air0” to “Air1”, then from “Air1” to “Air2”.

3.Stop the water supply, and check that no water comes from the air vent valves.

4.Set DIP SW 4-6 to ON and 4-7 to OFF. Turn the power to the HBC off. Remove, clean and then refit the water supply strainer and the strainer nearest the water supply in the HBC.

5.After the power to the HBC controller is turned on and the system starts up, set DIPSW4-6 and DIPSW4-7 to ON.
Turn off the power to the HBC controller again, and clean the other strainer furthest from the water supply.
(After the cleaning, set DIPSW4-6 and DIPSW4-7 to OFF.)

6.Make sure the strainers are re-installed.

Flowchart for debris removal operation (DIPSW4-1 is ON.)

Step 1 Intermittent operation of water pump (20 min) — The operation is performed while air is discharged from the water pipe. [Air0 to Air1]

↓

Step 2 Operation of all indoor units (20 min) — Debris in the pipe will accumulate into the strainer by operating all indoor units. [Air2 to AirE]

(1)Each step can be skipped by setting DIPSW4-2 from OFF to ON.
(2)The operation can be forced to stop by setting DIPSW4-4 from OFF to ON.
(3)If insufficient air vent is detected at each step, go back to step 1.

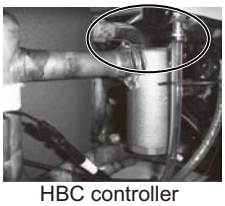
<General cautions>
(1)To avoid malfunction, do not connect or disconnect the power connector of the water pump being powered on.
(2)Check for water leaks from the field-installed pipe joint during operation.
(3)Do not pull the clip on the connection of the water pipe with pliers so that undue force is applied.
(4)After completing the air purge, set DIP SW 5-1 and 5-2 to off.

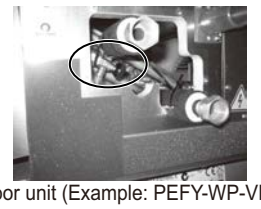
5-2. Instructions for the air vent operation

During operation, air that remains after water is supplied to the water circuit is removed from the water circuit.
Perform this operation **after water and refrigerant piping work, air tightness test, evacuation, and refrigerant charging have been completed and electrical work is done.** (And after the debris removal operation if it is performed)

5-2-1.Preparation for the air vent operation

1.Open the air vent valves on the HBC controller and indoor unit.
Refer the Installation Manual for the location of air vent valves.
(If there are air vent valves on the field-installed pipes, open the valves as well.)


HBC controller


Indoor unit (Example: PEFY-WP-VMA-E)

2.Set DIP SW 5-1 (valve opening when stopped), DIP SW 5-2 (nullification of drain over-flow error for 9 hours) from off to on.

3.Supply water from the suction pipe on the HBC controller.

Install a non-return valve to prevent water in the water circuit flooding back to the water supply pipe, or remove the water supply hose after the air vent operation.

4.**Check that water comes from each air vent valve, and perform the air vent operation.**

5-2-2.Air vent operation

1.Set DIPSW4-3 from OFF to ON.

2.When 130 minutes have passed after the operation startup, water pump will stop, and the LED display on the HBC controller changes from “Air0” to “Air1”, then from “Air1” to “Air2”, then from “Air2” to “Air3”, then from “Air3” to “Air4”, then from “Air4” to “AirE”. (Refer to the flowchart for air vent operation for details.)

LED and DIPSW positions

3.Close the all air vent valves.

4.Stop the water supply.

5.Set DIP SW 5-1 and 5-2 to off.

5-2-3.Checking for the presence of residual air

1.Set DIPSW4-5 from OFF to ON, and operate the water pump.

2.If there is residual air in the circuit, it will be noisy. Check for water leaks from the pipe, and then, perform the air vent operation again.

Flowchart for air vent operation (DIPSW4-3 is ON.)

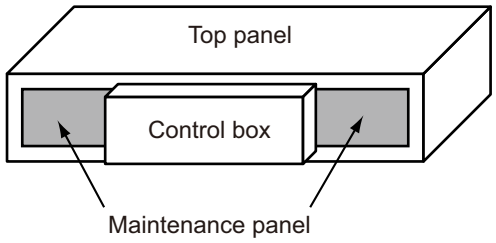
Step 1	Intermittent operation of water pump (20 min)	The operation is performed while air is discharged from the water pipe. [Air0 to Air1]
Step 2	Operation of all indoor units (20 min)	The residual air will be roughly removed by operating all indoor units. [Air2]
Step 3	Operation of individual indoor unit (10 min per one branch)	The residual air will be removed by operating indoor units for each branch. [Air3]
Step 4	Heating operation of all indoor units (20 min)	The saturated air in the circulating water will be removed by performing heating operation for all indoor units and raising the temperature of the circulating water. [Air4 to AirE]

(1)Each step can be skipped by setting DIPSW4-2 from OFF to ON.
(2)The operation can be forced to stop by setting DIPSW4-4 from OFF to ON.
(3)If insufficient air vent is detected at each step, go back to step 1.

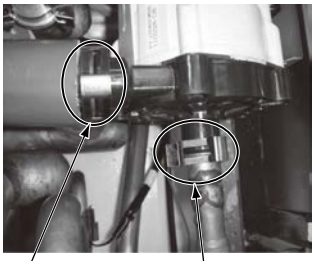
5-3. Instructions for the water pump replacement

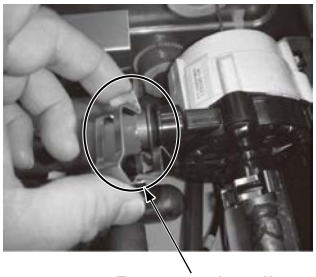
1.After turning off the power to the HBC controller, replace the water pump. To stop the water flow from the indoor unit, perform the following DIPSW operations.
When replacing the water pump near the water supply port, set DIPSW4-6 to ON (DIPSW4-7 to OFF).
When replacing the other water pump, set DIPSW4-6 and DIPSW4-7 to ON.

2.Open the top panel and maintenance panel of the water pump to be replaced.

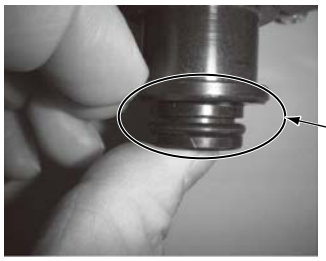


3.Remove the clips on the inlet/outlet of the water pump.

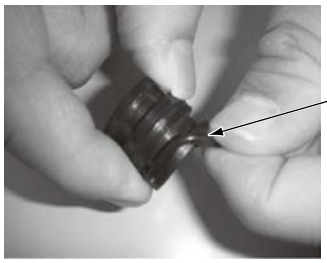




4.Remove the water pump by pulling out the inlet/outlet of the water pump.



5.After removing the water pump, check the O-ring on the sleeve for damage. If O-ring is damaged, replace the O-ring with a new one.



6.Insert the water pump again so that debris is not trapped in the O-ring, and install the clip.
When inserting the water pump, lubricate the O-ring with soapy water.

7.After closing the panels, turn on the power to the HBC controller, and perform the air vent operation.

6. Installation information

6-1. General precautions

6-1-1. Usage

- The air-conditioning system described in this Data Book is designed for human comfort.
- This product is not designed for preservation of food, animals, plants, precision equipment, or art objects. To prevent quality loss, do not use the product for purposes other than what it is designed for.
- To reduce the risk of water leakage and electric shock, do not use the product for air-conditioning vehicles or vessels.

6-1-2. Installation environment

- Do not install any unit other than the dedicated unit in a place where the voltage changes a lot, large amounts of mineral oil (e.g., cutting oil) are present, cooking oil may splash, or a large quantity of steam can be generated such as a kitchen.
- Do not install the unit in acidic or alkaline environment.
- Installation should not be performed in the locations exposed to chlorine or other corrosive gases. Avoid near a sewer.
- To reduce the risk of fire, do not install the unit in a place where flammable gas may be leaked or inflammable material is present.
- This air conditioning unit has a built-in microcomputer. Take the noise effects into consideration when deciding the installation position. Especially in a place where antenna or electronic device are installed, it is recommended that the air conditioning unit be installed away from them.
- Install the unit on a solid foundation according to the local safety measures against typhoons, wind gusts, and earthquakes to prevent the unit from being damaged, toppling over, and falling.

6-1-3. Backup system

- In a place where air conditioner's malfunctions may exert crucial influence, it is recommended to have two or more systems of single outdoor units with multiple indoor units.

6-1-4. Unit characteristics

- Heat pump efficiency depends on outdoor temperature. In the heating mode, performance drops as the outside air temperature drops. In cold climates, performance can be poor. Warm air would continue to be trapped near the ceiling and the floor level would continue to stay cold. In this case, heat pumps require a supplemental heating system or air circulator. Before purchasing them, consult your local distributor for selecting the unit and system.
- When the outdoor temperature is low and the humidity is high, the heat exchanger on the outdoor unit side tends to collect frost, which reduces its heating performance. To remove the frost, Auto-defrost function will be activated and the heating mode will temporarily stop for 3-10 minutes. Heating mode will automatically resume upon completion of defrost process.
- Air conditioner with a heat pump requires time to warm up the whole room after the heating operation begins, because the system circulates warm air in order to warm up the whole room.
- The sound levels were obtained in an anechoic room. The sound levels during actual operation are usually higher than the simulated values due to ambient noise and echoes. Refer to the section on "SOUND LEVELS" for the measurement location.
- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes even when operating normally. Please consider to avoid location where quietness is required.
  For BC controller, it is recommended to unit to be installed in places such as ceilings of corridor, restrooms and plant rooms.
- The total capacity of the connected indoor units can be greater than the capacity of the outdoor unit. However, when the connected indoor units operate simultaneously, each unit's capacity may become smaller than the rated capacity.
- When the unit is started up for the first time within 12 hours after power on or after power failure, it performs initial startup operation (capacity control operation) to prevent damage to the compressor. The initial startup operation requires 90 minutes maximum to complete, depending on the operation load.

6-1-5. Relevant equipment

- Use an earth leakage breaker (ELB) with medium sensitivity, and an activation speed of 0.1 second or less.
- Consult your local distributor or a qualified technician when installing an earth leakage breaker.
- If the unit is inverter type, select an earth leakage breaker for handling high harmonic waves and surges.
- Leakage current is generated not only through the air conditioning unit but also through the power wires. Therefore, the leakage current of the main power supply is greater than the total leakage current of each unit. Take into consideration the capacity of the earth leakage breaker or leakage alarm when installing one at the main power supply. To measure the leakage current simply on site, use a measurement tool equipped with a filter, and clamp all the four power wires together. The leakage current measured on the ground wire may not accurate because the leakage current from other systems may be included to the measurement value.
- Do not install a phase advancing capacitor on the unit connected to the same power system with an inverter type unit and its equipment.
- If a large current flows due to the product malfunctions or faulty wiring, both the earth leakage breaker on the product side and the upstream overcurrent breaker may trip almost at the same time. Separate the power system or coordinate all the breakers depending on the system's priority level.

6. Installation information

6-1-6. Unit installation

- Your local distributor or a qualified technician must read the Installation Manual that is provided with each unit carefully before performing installation work.
- Consult your local distributor or a qualified technician when installing the unit. Improper installation by an unqualified person may result in water leakage, electric shock, or fire.
- Ensure there is enough space around each unit.

6-1-7. Optional accessories

- Only use accessories recommended by Mitsubishi Electric. Consult your local distributor or a qualified technician when installing them. Improper installation by an unqualified person may result in water leakage, electric leakage, system breakdown, or fire.
- Some optional accessories may not be compatible with the air conditioning unit to be used or may not suitable for the installation conditions. Check the compatibility when considering any accessories.
- Note that some optional accessories may affect the air conditioner's external form, appearance, weight, operating sound, and other characteristics.

6-1-8. Operation/Maintenance

- Read the Instruction Book that is provided with each unit carefully prior to use.
- Maintenance or cleaning of each unit may be risky and require expertise. Read the Instruction Book to ensure safety. Consult your local distributor or a qualified technician when special expertise is required such as when the indoor unit needs to be cleaned.

6-2. Precautions for Indoor unit

6-2-1. Operating environment

- The refrigerant (R410A) used for air conditioner is non-toxic and nonflammable. However, if the refrigerant leaks, the oxygen level may drop to harmful levels. If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.
- If the units operate in the cooling mode at the humidity above 80%, condensation may collect and drip from the indoor units.

6-2-2. Unit characteristics

- The return air temperature display on the remote controller may differ from the ones on the other thermometers.
- The clock on the remote controller may be displayed with a time lag of approximately one minute every month.
- The temperature using a built-in temperature sensor on the remote controller may differ from the actual room temperature due to the effect of the wall temperature.
- Use a built-in thermostat on the remote controller or a separately-sold thermostat when indoor units installed on or in the ceiling operate the automatic cooling/heating switchover.
- The room temperature may rise drastically due to Thermo OFF in the places where the air conditioning load is large such as computer rooms.
- Be sure to use a regular filter. If an irregular filter is installed, the unit may not operate properly, and the operation noise may increase.
- The room temperature may rise over the preset temperature in the environment where the heating air conditioning load is small.

6-2-3. Unit installation

- For simultaneous cooling/heating operation type air conditioners (R2, WR2 series), the G-type BC controller cannot be connected to the 16HP outdoor unit model or above, and the G- and GA-type BC controllers cannot be connected to the 28HP model or above. The GB- and HB-type BC controllers (sub) cannot be connected to the outdoor unit directly, and be sure to use them with GA- and HA-type BC controllers (main).
- The insulation for low pressure pipe between the BC controller and outdoor unit shall be at least 20 mm thick. If the unit is installed on the top floor or in a high-temperature, high-humidity environment, thicker insulation may be necessary.
- Do not have any branching points on the downstream of the refrigerant pipe header.
- When a field-supplied external thermistor is installed or when a device for the demand control is used, abnormal stop of the unit or damage of the electromagnetic contactor may occur. Consult your local distributor for details.
- When indoor units operate a fresh air intake, install a filter in the duct (field-supplied) to remove the dust from the air.
- The 4-way or 2-way Airflow Ceiling Cassette Type units that have an outside air inlet can be connected to the duct, but need a booster fan to be installed at site. Refer to the chapter "Indoor Unit" for the available range for fresh air intake volume.
- Operating fresh air intake on the indoor unit may increase the sound pressure level.

6. Installation information

6-3. Precautions for Fresh air intake type indoor unit

6-3-1. Usage

- This unit mainly handles the outside air load, and is not designed to maintain the room temperature. Install other air conditioners for handling the air conditioning load in the room.

6-3-2. Unit characteristics

- This unit cannot perform the drying operation. The unit will continue the fan operation and blow fresh air (air that is not air-conditioned) when the Heating Thermo-OFF or Cooling Thermo-OFF mode is selected.
- The fan may stop tentatively when the unit is connected to the simultaneous cooling/heating operation type outdoor unit (R2, WR2 series) or during the defrost cycle.
- This unit switches the Thermo ON or OFF depending on the room temperature. The outside air is directly supplied into the room during Thermo OFF. Take caution of the cold supply air due to low outside air temperature and of condensation in the room due to high humidity of the outside air.
- Outside air temperature ranges for the operation must be as follows:
  Cooling: 21ºCD.B./15.5ºCW.B. ~ 43ºCD.B./35ºCW.B.
  Heating: -10ºCD.B.~ 20ºCD.B
  The unit is forced to operate Thermo OFF (fan operation) when the outside air temperature is as follows.
  Cooling: 21ºCD.B or below; Heating: 20ºCD.B or above
- Either a remote controller (sold separately) or a remote sensor (sold separately) must be installed to monitor the room temperature.
- If only this unit is used as an indoor unit, condensation may form at the supply air grill while the unit is operated in the cooling mode. This unit cannot operate dehumidifying.
- Use the unit in the way that the airflow rate will not exceed the 110% of the rated airflow.

6-4. Precautions for Outdoor unit/Heat source unit

6-4-1. Installation environment

- Outdoor unit with salt-resistant specification is recommended to use in a place where it is subject to salt air.
- Even when the unit with salt-resistant specification is used, it is not completely protected against corrosion. Be sure to follow the directions or precautions described in Instructions Book and Installation Manual for installation and maintenance. The salt-resistant specification is referred to the guidelines published by JRAIA (JRA9002).
- Install the unit in a place where the flow of discharge air is not obstructed. If not, the short-cycling of discharge air may occur.
- Provide proper drainage around the unit base, because the condensation may collect and drip from the outdoor units. Provide water-proof protection to the floor when installing the units on the rooftop.
- In a region where snowfall is expected, install the unit so that the outlet faces away from the direction of the wind, and install a snow guard to protect the unit from snow. Install the unit on a base approximately 50 cm higher than the expected snowfall. Close the openings for pipes and wiring, because the ingress of water and small animals may cause equipment damage. If SUS snow guard is used, refer to the Installation Manual that comes with the snow guard and take caution for the installation to avoid the risk of corrosion.
- When the unit is expected to operate continuously for a long period of time at outside air temperatures of below 0ºC, take appropriate measures, such as the use of a unit base heater, to prevent icing on the unit base. (Not applicable to the PUMY series)
- Install the snow guard so that the outlet/inlet faces away from the direction of the wind.
- When the snow accumulates approximately 50 cm or more on the snow guard, remove the snow from the guard. Install a roof that is strong enough to withstand snow loads in a place where snow accumulates.
- Provide proper protection around the outdoor units in places such as schools to avoid the risk of injury.
- A cooling tower and heat source water circuit should be a closed circuit that water is not exposed to the atmosphere. When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air so that the oxygen from being dissolved in the water should be 1 mg/L or less.
- Install a strainer (50 mesh or more recommended) on the water pipe inlet on the heat source unit.
- Interlock the heat source unit and water circuit pump.
- Note the followings to prevent the freeze bursting of pipe when the heat source unit is installed in a place where the ambient temperature can be 0ºC or below.
  - Keep the water circulating to prevent it from freezing when the ambient temperature is 0ºC or below.
  - Before a long period of non use, be sure to purge the water out of the unit.

6-4-2. Circulating water

- Follow the guidelines published by JRAIA (JRA-GL02-1994) to check the water quality of the water in the heat source unit regularly.
- A cooling tower and heat source water circuit should be a closed circuit that water is not exposed to the atmosphere. When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air so that the oxygen from being dissolved in the water should be 1 mg/L or less.

6-4-3. Unit characteristics

- When the Thermo ON and OFF is frequently repeated on the indoor unit, the operation status of outdoor units may become unstable.

6-4-4. Relevant equipment

- Provide grounding in accordance with the local regulations.

6-5. Precautions for Control-related items

6-5-1. Product specification

- To introduce the MELANS system, a consultation with us is required in advance. Especially to introduce the electricity charge apportioning function or energy-save function, further detailed consultation is required. Consult your local distributor for details.
- Billing calculation for AG-150A, GB-50ADA, TG-2000A, or the billing calculation unit is unique and based on our original method. (Backup operation is included.) It is not based on the metering method, and do not use it for official business purposes. It is not the method that the amount of electric power consumption (input) by air conditioner is calculated. Note that the electric power consumption by air conditioner is apportioned by using the ratio corresponding to the operation status (output) for each air conditioner (indoor unit) in this method.
- In the apportioned billing function for AG-150A and GB-50ADA, use separate watthour meters for A-control units, K-control units, and packaged air conditioner for City Multi air conditioners. It is recommended to use an individual watthour meter for the large-capacity indoor unit (with two or more addresses).
- When using the peak cut function on the AG-150A or GB-50ADA, note that the control is performed once every minute and it takes time to obtain the effect of the control. Take appropriate measures such as lowering the criterion value. Power consumption may exceed the limits if AG-150A or GB-50ADA malfunctions or stops. Provide a back-up remedy as necessary.
- The controllers cannot operate while the indoor unit is OFF. (No error)
  Turn ON the power to the indoor unit when operating the controllers.
- When using the interlocked control function on the AG-150A, GB-50ADA, PAC-YG66DCA, or PAC-YG63MCA, do not use it for the control for the fire prevention or security. (This function should never be used in the way that would put people's lives at risk.) Provide any methods or circuit that allow ON/OFF operation using an external switch in case of failure.

6-5-2. Installation environment

- The surge protection for the transmission line may be required in areas where lightning strikes frequently occur.
- A receiver for a wireless remote controller may not work properly due to the effect of general lighting. Leave a space of at least 1 m between the general lighting and receiver.
- When the Auto-elevating panel is used and the operation is made by using a wired remote controller, install the wired remote controller to the place where all air conditioners controlled (at least the bottom part of them) can be seen from the wired remote controller. If not, the descending panel may cause damage or injury, and be sure to use a wireless remote controller designed for use with elevating panel (sold separately).
- Install the wired remote controller (switch box) to the place where the following conditions are met.
  - Where installation surface is flat
  - Where the remote controller can detect an accurate room temperature
    The temperature sensors that detect a room temperature are installed both on the remote controller and indoor unit. When a room temperature is detected using the sensor on the remote controller, the main remote controller is used to detect a room temperature. In this case, follow the instructions below.
    - Install the controller in a place where it is not subject to the heat source.
      (If the remote controller faces direct sunlight or supply air flow direction, the remote controller cannot detect an accurate room temperature.)
    - Install the controller in a place where an average room temperature can be detected.
    - Install the controller in a place where no other wires are present around the temperature sensor.
      (If other wires are present, the remote controller cannot detect an accurate room temperature.)
- To prevent unauthorized access, always use a security device such as a VPN router when connecting AG-150A, GB-50ADA, or TG-2000A to the Internet.

DATA BOOK PURY-WP-YJM-A
CMB-WP-V-G
PEFY-WP-VMS1-E
PEFY-WP-VMA-E
PFFY-WP-VLRMM-E

for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

⚠Warning

■Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

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