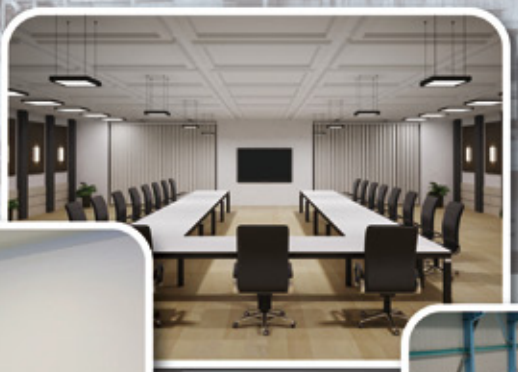
MITSUBISHI ELECTRIC

Changes for the Better

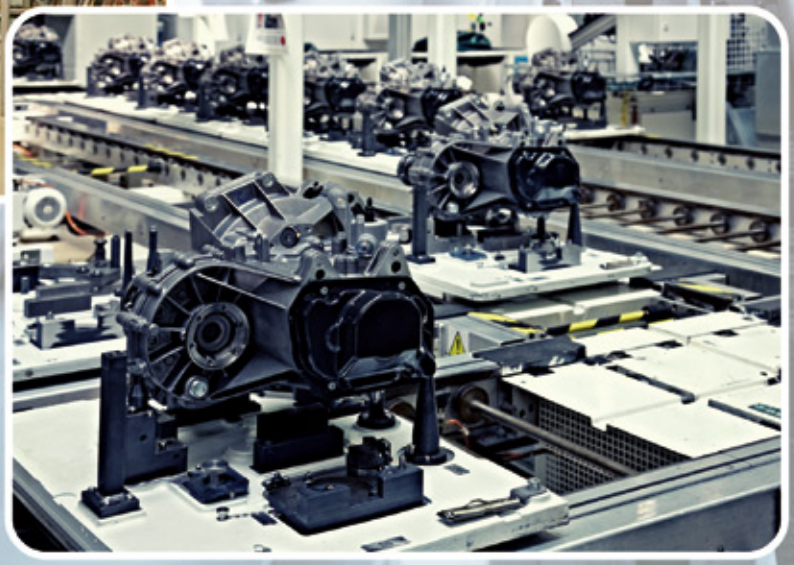
AIR CONDITIONING SYSTEMS



Commercial Packaged Air-conditioner

Cooling only series/Heat pump series

R410A



for a greener tomorrow

eco Changes

Product Line Up

New models made a debut, employing HFC R410A.

Cooling Only series

Type		8HP	10HP	
Floor standing Page8 - Page17	Indoor unit	PFV-P200YM-A 	PFV-P250YM-A 	
	Outdoor unit	 PUV-P200YM-A	 PUV-P250YM-A	
Ceiling concealed Page8 - Page17	Indoor unit	PEV-P200YM-A 	PEV-P250YM-A 	
	Outdoor unit	 PUV-P200YM-A	 PUV-P250YM-A	

Heat Pump

Type		8HP	10HP	
Floor standing Page19 - Page21	Indoor unit (Standard model)		PFAV-P250VM-E 	
	Outdoor unit		 PUHY-P250YHA	
	Indoor unit (Fresh air intake model)		PFAV-P300VM-E-F 	
	Outdoor unit		 PUHY-P250YHA	

With the comprehensive lineup of products, including the floor standing type and ceiling concealed type, it has been made easier for you to use them for offices, stores, factories, hotels and a variety of other applications.

50Hz

	16HP	20HP
	PFV-P400YM-A   PUV-P400YM-A	PFV-P500YM-A   PUV-P500YM-A
	PEV-P400YM-A NEW   PUV-P400YM-A	PEV-P500YM-A NEW   PUCY-P250YKA(-BS) x 2

50Hz (Floor standing 50/60Hz)

	16HP	20HP	30HP
		PFAV-P500VM-E   PUHY-P250YHA x 2	PFAV-P750VM-E   PUHY-P350/400YHA
		PFAV-P600VM-E-F   PUHY-P250YHA x 2	PFAV-P900VM-E-F   PUHY-P350/400YHA

APPLICATION

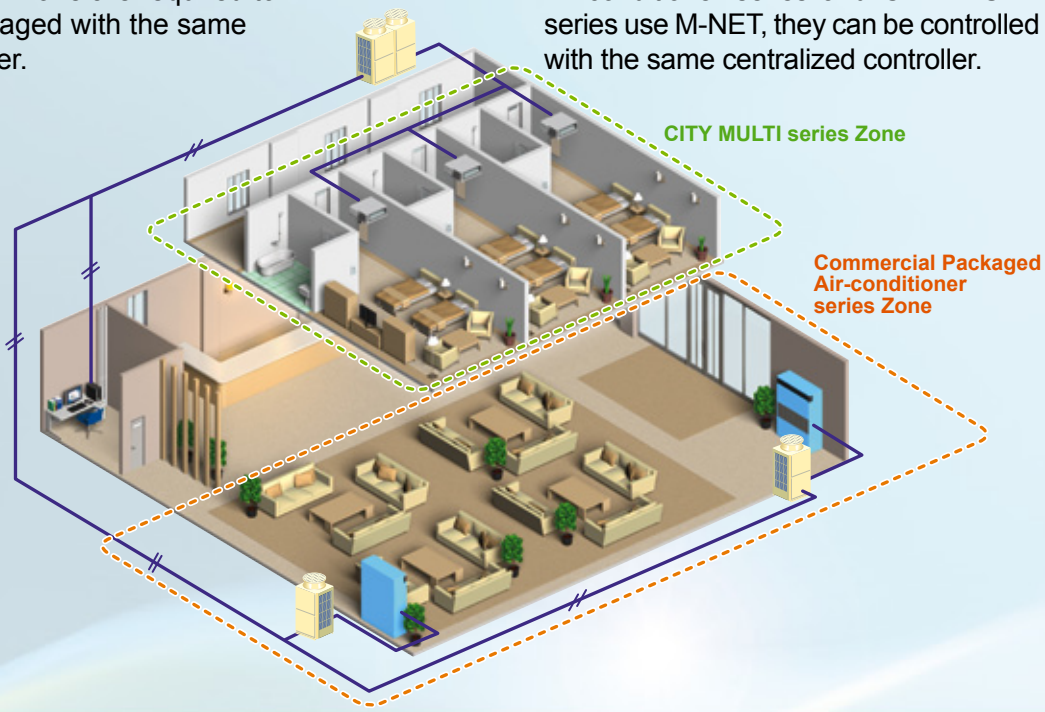
Example 1. Hotel

Requirements

Different series adopted to each optimum zone are required to be managed with the same controller.

Solution

Since both these Commercial Packaged Air-conditioner series and CITY MULTI series use M-NET, they can be controlled with the same centralized controller.



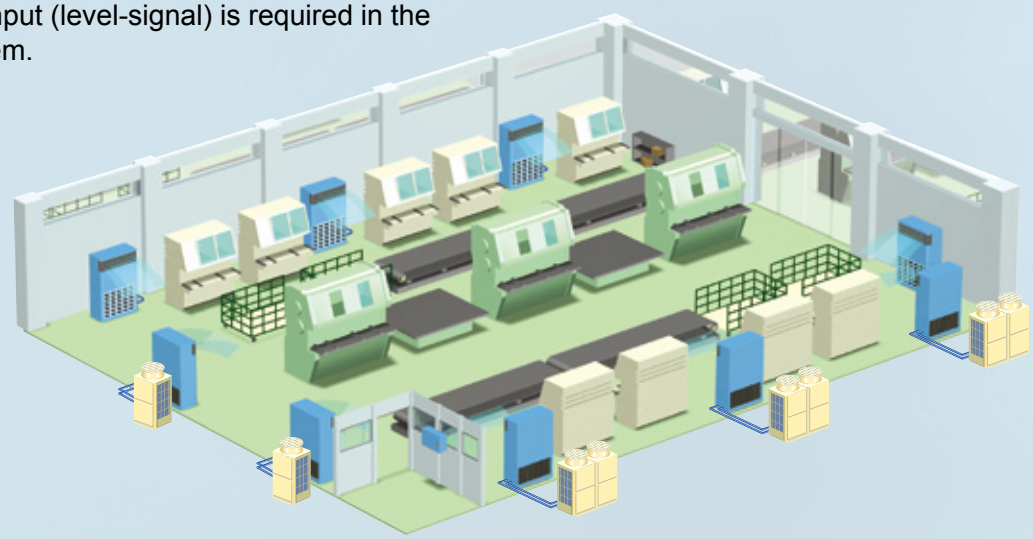
Example 2. Manufacturing plant

Requirements

Ducts cannot be installed in the ceiling with crane rails. High ceiling and heat generation from equipment need to be considered. ON/OFF control by external input (level-signal) is required in the system.

Solution

Cooling only floor standing series with plenum chamber.*1
External signal based start/stop control can be performed.*2



*1 For PFV-P200/250YM-A model, a plenum is embedded as standard accessory.
*2 Requires the remote ON/OFF adapter (PAC-SE55RA-E) and other parts (eg. Power supply of relay) need to be procured locally.

Example 3. Printing factory

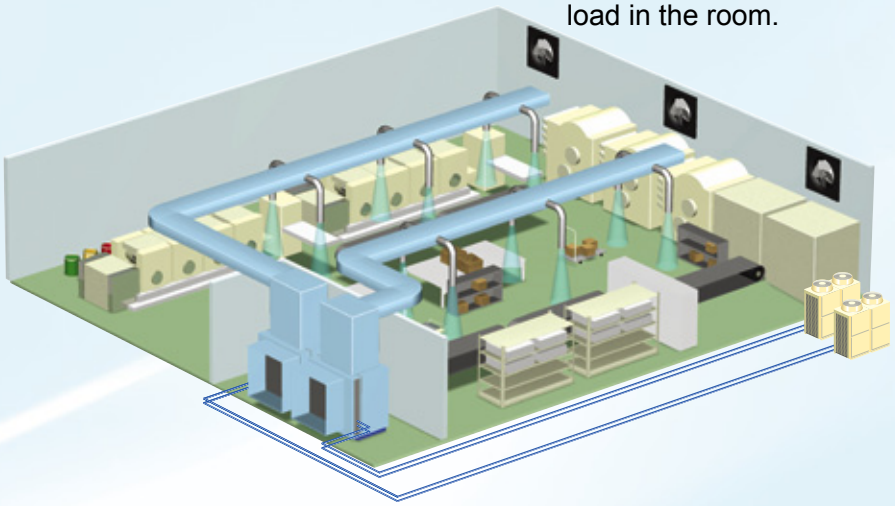
Requirements

There is large heat generation from equipment and intake of outdoor air is favored.

Solution

Heat pump series Fresh air intake models.*1

Fresh air from outdoor supplied to the room reduces the total air-conditioning load in the room.



*1 Fresh air intake type indoor units supply pretreated outside air into the room. This type of units are not designed to handle internal thermal load. Use other types of air conditioning units that are capable of handling internal thermal load in combination with the Fresh Air Intake type units.

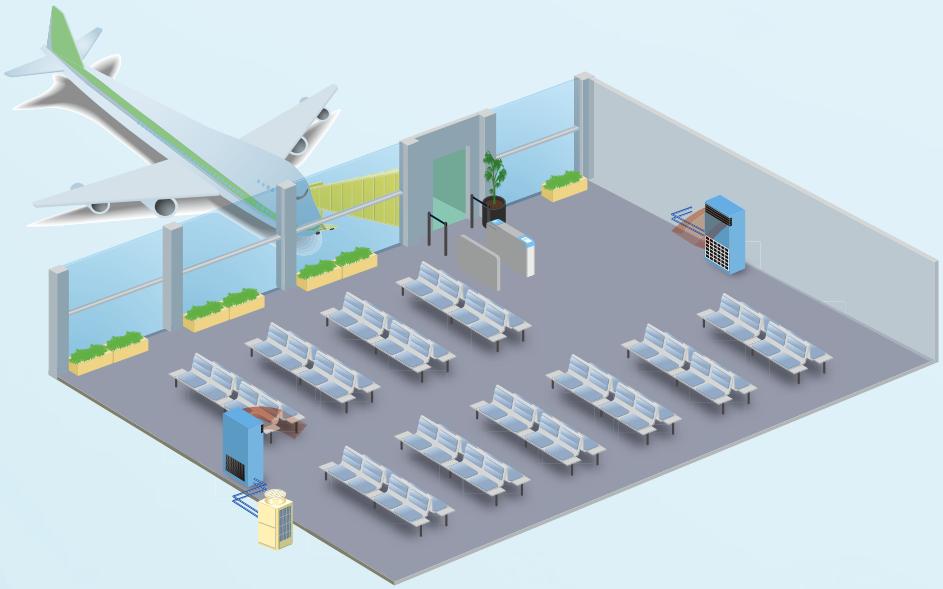
Example 4. Airport

Requirements

Air conditioning for spacious and high ceiling room. Easy maintenance even when people are in the room.

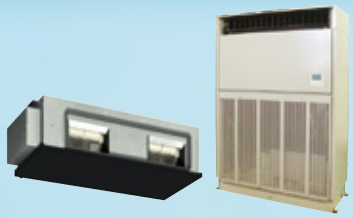
Solution

Floor standing series with plenum chamber.*1



*1 For PFV-P200/250YM-A model, plenum is embedded as standard accessories

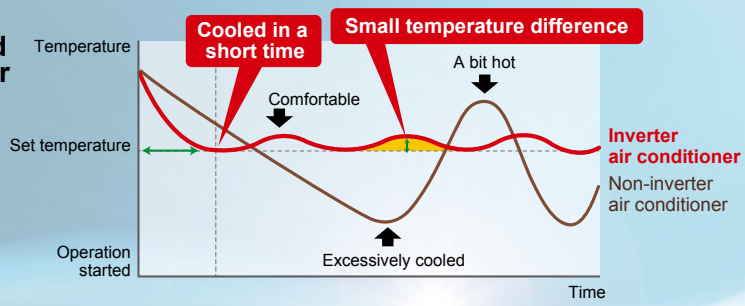
The New Cooling-only Series



High Energy Efficiency <New Compressor>

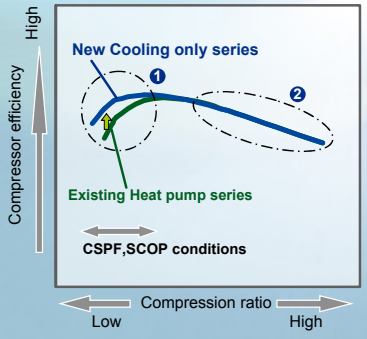
- Use of inverter-based compressor that adopts DC brushless motor for increased energy saving and load-following capability.
- Capable of covering up to 20 HP with a single compressor.
- Improved partial-load characteristics achieved by the optimized scroll shape.
- Reduced standby power consumption by heating the compressor instead of a crankcase heater. (16/20 HP)

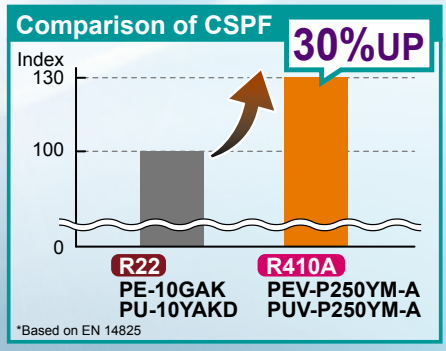
Comparison between inverter air conditioner and non-inverter air conditioner



Improved CSPF, SCOP performance

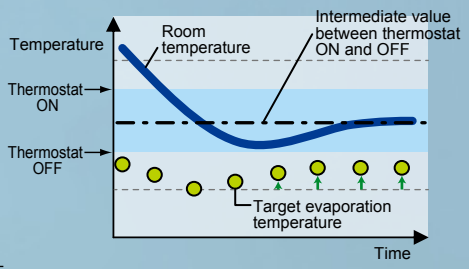
Optimized scroll shape (improved volumetric capacity ratio)





<ET control (Evaporating Temperature control)>

Reduced energy consumption in cooling by controlling the refrigerant temperature according to the operation load and raising evaporating temperature.

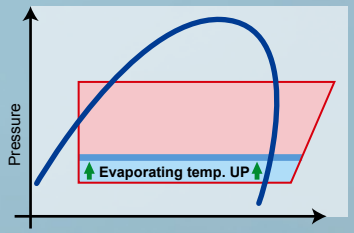


Current control method

Evaporating temperature was kept constant.

New control method

Evaporating temperature is raised according to the operation load, decreasing compressor input power and increasing operation efficiency.



User Friendry Interface <Controller>

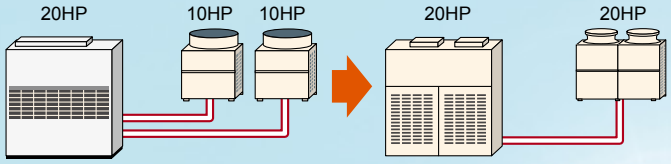
◀PAR-31MAAE

With the usage of MA controller (PAR-31MAAE), which is embedded at the Cooling only series. Use of LCD and back light for improved visibility.
The display of error history and the setting of night setback and demand control are made possible through the remote controller in pursuit of increased user convenience.

Widen installation and application options

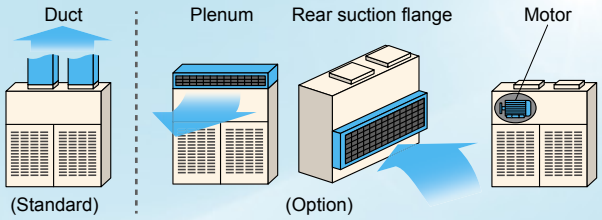
Simple Piping

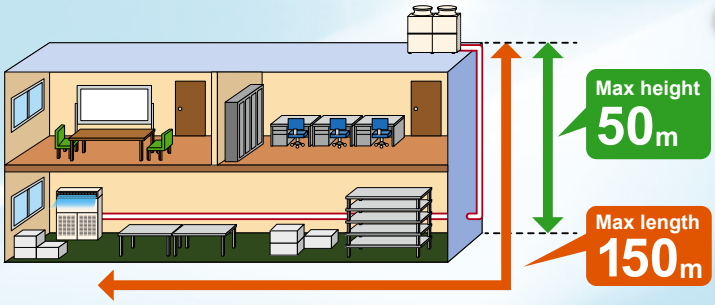
Capable of covering up to 20 HP with a single module and a single compressor.



Increased adaptation to local needs (floor standing type 16/20 HP)

In addition to the standard duct blowing, the plenum blowing and the rear suction are made selectable as optional.
The airflow rate and the static pressure may also be changed to meet the local needs (by the use of optional parts and locally procured parts).



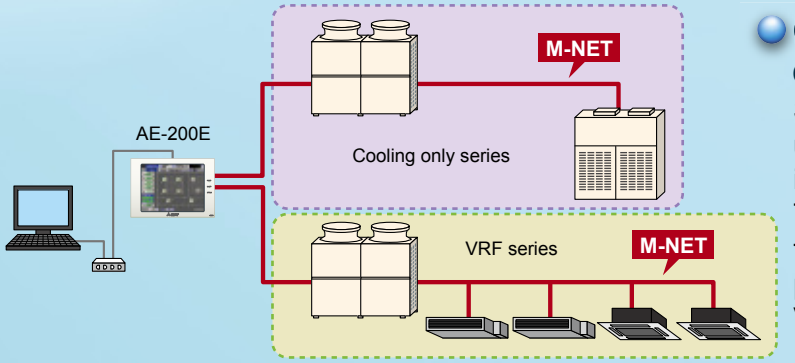


Increase in the limit of piping length

Maximum piping length: 150 m
(70 m for 8/10 HP)
Height difference between indoor and outdoor units is up to 50 m.
(16/20 HP; case with the outdoor unit installed higher)
(30 m for 8/10 HP)

Compatibility to outdoor temperature of up to 52ºC *1

Capable of running cooling operations in the outdoor temperature of up to 52ºC.



Centralized control enabled by M-NET control

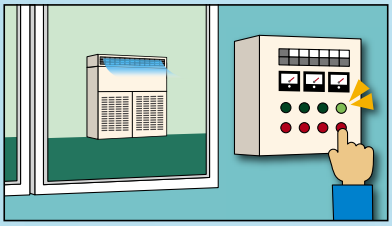
Since the new Cooling only series uses M-NET, the design of control is simple and easy.
Through the centralized controller, the centralized control is made possible under the mixed use with VRF CITY MULTI series.

Meeting the demand control needs

100/75/50/0% fixed capacity operation possible by external signals.
Meets a variety of user needs, such as the demand control for restricting the power demand.

Other new functions

- External signal-based start/stop control function (by the use of optional parts)
- Fan ON/OFF control signals can be taken to the outside.



*1 : Any continuous operation over 46ºC may require an increased frequency of maintenance.

What is the new energy-conservation standards CSPF?

COP (Energy consumption efficiency)

Characteristics of COP

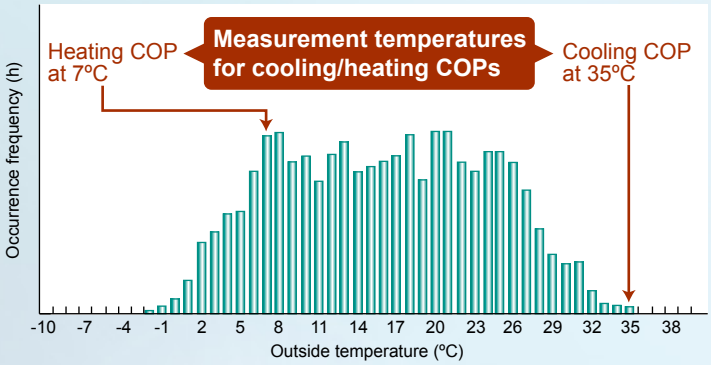
COP is defined as the ratio of cooling/heating capacity to 1 kW of electrical power consumption at the rated cooling/heating operation.

The COP in cooling and heating is calculated based on the measurements taken at the outside temperature of 35ºC and 7ºC respectively.
COP is an energy-conservation index that is calculated under very limited conditions in the year.

COP calculation method

$$\text{COP} = \frac{\text{Rated capacity (kW)}}{\text{Rated power consumption (kW)}}$$

Annual outside temperature occurrence frequency (in Tokyo)



CSPF (Cooling Seasonal Performance Factor)

Characteristics of CSPF

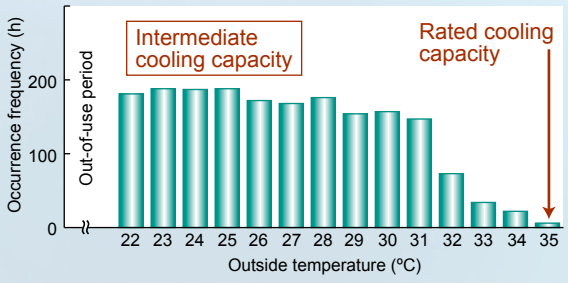
CSPF is calculated based not only on the measurements taken during rated cooling operation, but also on those taken during intermediate cooling operation. The type of building usage and variables that change during different operating seasons are also considered in the calculation of CSPF to reflect actual usage conditions.

CSPF calculation method

$$\text{CSPF} = \frac{\text{Capacity output during cooling season (kWh)}}{\text{Power consumption during cooling season (kWh)}}$$

Outside temperature occurrence frequency used to calculate CSPF (in Kagoshima)

▶Cooling season



Calculation conditions for CSPF

		Air conditioners for stores and office buildings	CITY MULTI and PAC air conditioners
Standard		JRA4048:2006	
Area		Kagoshima (Japan)	
Building usage		Detached store	Office
Operating season	Cooling	May 23-Oct. 10	Apr. 16-Nov. 8
	Heating	Nov. 21-Apr. 11	Dec. 14-Mar. 23
Usage period		8:00-21:00	8:00-20:00

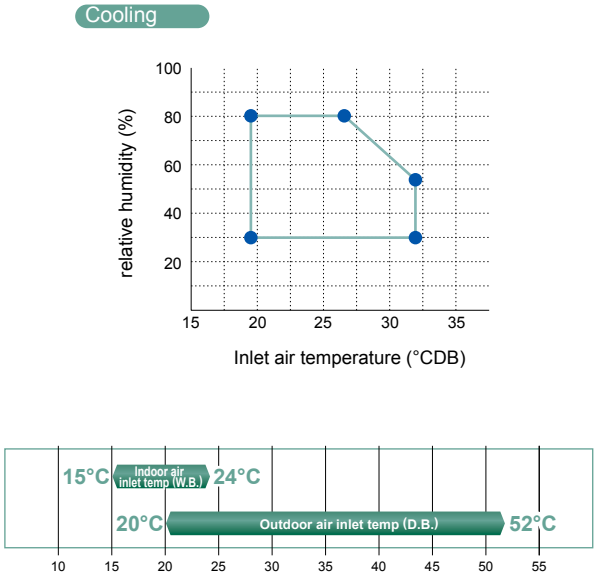
Cooling only series

Floor standing type

Features

- Easy installation and maintenance
- Suitable for use in areas where duct installation is not possible (i.e., high ceiling or ceiling with crane rails)
- Satisfies large capacity air conditioning needs
- Adjustable air flow and static pressure

Wide temperature range



Line up

8,10 HP

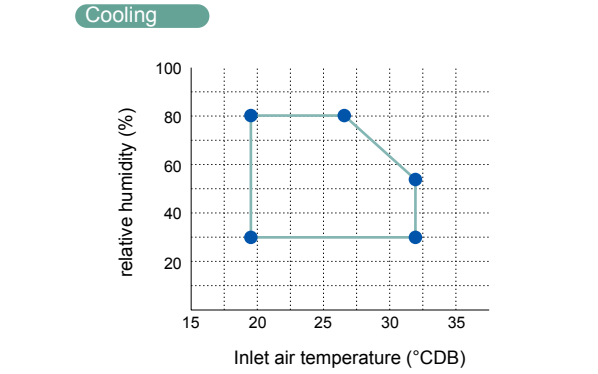
16,20 HP

Ceiling concealed type

Features

- Flexibly accommodates various types of duct designs
- Installable when no floor space is available
- Suitable for use in areas where air flow from floor-standing models would be interrupted by the equipment in the space
- Suitable for use in facilities such as food manufacturing plants where floor-standing models are not suitable because of cleaning requirements

Wide temperature range



Line up

NEW

8,10 HP

16,20 HP

Cooling only series [SPECIFICATIONS]

Model name	Indoor		PFV-P200YM-A	PFV-P250YM-A	PFV-P400YM-A	PFV-P500YM-A
System capacity	Cooling *1	BTU/h	80,000	100,000	160,000	191,000
		kW	23.5	29.3	46.9	56.0
	Cooling *2	BTU/h	79,000	99,000	158,000	188,000
		kW	23.2	28.9	46.3	55.1
System Power input	Cooling	kW	9.03	11.76	18.14	20.53
Syetem current	Cooling	A	15.2/14.5/14.1	19.7/18.8/18.2	31.6/30.0/29.0	35.9/34.1/32.9
Energy efficiency ratio (EER)			2.60	2.49	2.58	2.72
CSPF *5			3.8	3.8	3.7	3.5
Power source			3-phase 4-wire 380-400-415V (50Hz)			
Power input		kW	0.74	0.81	1.64	2.35
Current		A	1.3/1.3/1.3	1.3/1.3/1.3	3.8/3.6/3.5	5.3/5.0/4.8
FAN	Type × Quantity		Sirocco fan×2	Sirocco fan×2	Sirocco fan×2	Sirocco fan×2
	Airflow rate (Lo-Hi)	m^3/min	52-65	58-71	150	200
	External static pressure	Pa	- (Plenum)	- (Plenum)	30	30
	Motor output	kW	0.75	0.75	2.2	3.7
Refrigerant			R410A	R410A	R410A	R410A
External finish			Galvanized steel plate (with polyester coating) MUNSELL 3.0Y 7.8/1.1 or similar			
External dimension H × W × D		mm	1800×1200×500	1800×1200×500	1800×1860×650	1800×1860×650
Protection devices		FAN	Over current protection	Over current protection	Over current protection	Over current protection
Refrigerant piping diameter	Liquid pipe	mm	9.52 Brazed	9.52 Brazed	12.7 Brazed	15.88 Brazed
	Gas pipe	mm	22.2 Brazed	22.2 Brazed	28.58 Brazed	28.58 Brazed
Refrigerant piping allowable length		m	70	70	150	150
Sound pressure level (Lo-Hi) *3		dB(A)	53-59	57-61	63	66
Heat exchanger			Cross fin (aluminum plate fin and copper tube)			
Air filter			PP Honeycomb fabric filter			
Net weight		kg	164	165	297	352
Operating temperature range	Cooling		Indoor : 15 to 24°CWB (Outdoor : 20 to 52°CDB)			
Model name	**Outdoor**		**PUV-P200YM-A (-BS)**	**PUV-P250YM-A (-BS)**	**PUV-P400YM-A (-BS)**	**PUV-P500YM-A (-BS)**
Power source			3-phase 4-wire 380-400-415V 50/60Hz			
Sound pressure level (measured in anechoic room)		dB(A)	56	58	62	65
Refrigerant piping diameter	Liquid pipe	mm (in)	9.52 (3/8) Brazed	9.52 (3/8) Brazed	12.7 (1/2) Brazed	15.88 (5/8) Brazed
	Gas pipe	mm (in)	22.2 (7/8) Brazed	22.2 (7/8) Brazed	28.58 (1-1/8) Brazed	28.58 (1-1/8) Brazed
FAN	Type × Quantity		Propeller fan×1	Propeller fan×1	Propeller fan×1	Propeller fan×2
	Airflow rate	m^3/min	170	170	200	340
		L/s	2,834	2,834	3,334	5,668
		cfm	6,003	6,003	7,062	12,005
	Control, Driving mechanism		Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor
	Motor output	kW	0.92×1	0.92×1	0.92×1	0.92×2
	External static pressure		0Pa (0mmH_2O)	0Pa (0mmH_2O)	0Pa (0mmH_2O)	0Pa (0mmH_2O)
Compressor	Type		MITSUBISHI ELECTRIC Inverter scroll hermetic compressor			
	Starting method		Inverter	Inverter	Inverter	Inverter
	Motor output	kW	5.4	7.0	11.7	12.9
	Case heater	kW	0.045	0.045	-	-
	Lubricant		MEL56	MEL56	MEL32	MEL32
External finish			Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3.0Y 7.8/1 1 or similar>			
External dimension H × W × D		mm	1650×920×740	1650×920×740	1650×1220×740	1650×1750×740
		in	64-31/32×36-1/4×29-5/32	64-31/32×36-1/4×29-5/32	64-31/32×48-1/16×29-5/32	64-31/32×68-29/32×29-5/32
Protection devices	High pressure protection		High pres. Sensor & High pres. Switch at 4.15MPa (601psi)	High pres. Sensor & High pres. Switch at 4.15MPa (601psi)	High pres. Sensor & High pres. Switch at 4.15MPa (601psi)	High pres. Sensor & High pres. Switch at 4.15MPa (601psi)
	Inverter circuit (COMP. / FAN)		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		-	-	-	-
	Fan motor		Thermostat	Thermostat	Thermostat	Thermostat
Refrigerant	Type × original charge		R410A×5.5kg (13lbs)	R410A×6.5kg (15lbs)	R410A×11.5kg (26lbs)	R410A×11.8kg (27lbs)
	Control		LEV and HIC circuit	LEV and HIC circuit	LEV and HIC circuit	LEV and HIC circuit
Net weight		kg	180	193	239	306
Heat exchanger			Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube

Note 1. Cooling capacity indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19.5°CWB, Outdoor : 35°CDB
2. <Reference cooling capacity> Indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19°CWB, Outdoor : 35°CDB
3. The sound pressure level is measured in an anechoic room.
4. Long period operation in a high temperature and humidity atmosphere (dew point of 23°C or more) may cause condensation to form in the indoor unit.
5. Cooling Seasonal Performance Factor

Model name	Indoor		PEV-P200YM-A	PEV-P250YM-A
System capacity	Cooling *1	BTU/h	80,000	100,000
		kW	23.5	29.3
	Cooling *2	BTU/h	79,000	99,000
		kW	23.2	28.9
System Power input	Cooling	kW	9.49	13.74
Syetem current	Cooling	A	16.0/15.2/14.7	23.3/22.1/21.4
Energy efficiency ratio (EER)			2.47	2.13
CSPF *5			3.4	3.4
Power source			3-phase 4-wire 380-400-415V (50Hz)	
Power input		kW	1.02	1.12
Current		A	1.8/1.7/1.7	2.0/1.9/1.9
FAN	Type × Quantity		Sirocco fan×2	
	Airflow rate (Lo-Hi)	m^3/min	52-65	56-71
	External static pressure	Pa	80	100
	Motor output	kW	0.50	0.72
Refrigerant			R410A	
External finish			Galvanized steel	
External dimension H × W × D		mm	400×1600×634	
Protection devices		FAN	Over current protection	
Refrigerant piping diameter	Liquid pipe	mm	9.52 Brazed	
	Gas pipe	mm	22.2 Brazed	
Refrigerant piping allowable length		m	70	
Sound pressure level (Lo-Hi) *3		dB(A)	45-49	46-50
Heat exchanger			Cross fin (aluminum plate fin and copper tube)	
Air filter			Optional	
Net weight		kg	74	
Operating temperature range	Cooling		Indoor : 15 to 24°CWB (Outdoor : 20 to 52°CDB)	
Model name	**Outdoor**		**PUV-P200YM-A (-BS)**	**PUV-P250YM-A (-BS)**
Power source			3-phase 4-wire 380-400-415V 50/60Hz	
Sound pressure level (measured in anechoic room)		dB(A)	56	58
Refrigerant piping diameter	Liquid pipe	mm (in)	9.52 (3/8) Brazed	9.52 (3/8) Brazed
	Gas pipe	mm (in)	22.2 (7/8) Brazed	22.2 (7/8) Brazed
FAN	Type × Quantity		Propeller fan×1	Propeller fan×1
	Airflow rate	m^3/min	170	170
		L/s	2,834	2,834
		cfm	6,003	6,003
	Control, Driving mechanism		Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor
	Motor output	kW	0.92×1	0.92×1
	External static pressure		0Pa (0mmH_2O)	0Pa (0mmH_2O)
Compressor	Type		MITSUBISHI ELECTRIC Inverter scroll hermetic compressor	
	Starting method		Inverter	Inverter
	Motor output	kW	5.4	7.5
	Case heater	kW	0.045	0.045
	Lubricant		MEL56	MEL56
External finish			Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3.0Y 7.8/1 1 or similar>	
External dimension H × W × D		mm	1650×920×740	1650×920×740
		in	64-31/32×36-1/4×29-5/32	64-31/32×36-1/4×29-5/32
Protection devices	High pressure protection		High pres. Sensor & High pres. Switch at 4.15MPa (601psi)	High pres. Sensor & High pres. Switch at 4.15MPa (601psi)
	Inverter circuit (COMP. / FAN)		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		-	-
	Fan motor		Thermostat	Thermostat
Refrigerant	Type × original charge		R410A×5.5kg (13lbs)	R410A×6.5kg (15lbs)
	Control		LEV and HIC circuit	LEV and HIC circuit
Net weight		kg	180	193
Heat exchanger			Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube

Note 1. Cooling capacity indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19.5°CWB, Outdoor : 35°CDB
2. <Reference cooling capacity> Indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19°CWB, Outdoor : 35°CDB
3. The sound pressure level is measured in an anechoic room.
4. Long period operation in a high temperature and humidity atmosphere (dew point of 23°C or more) may cause condensation to form in the indoor unit.
5. Cooling Seasonal Performance Factor

Cooling only series [SPECIFICATIONS]

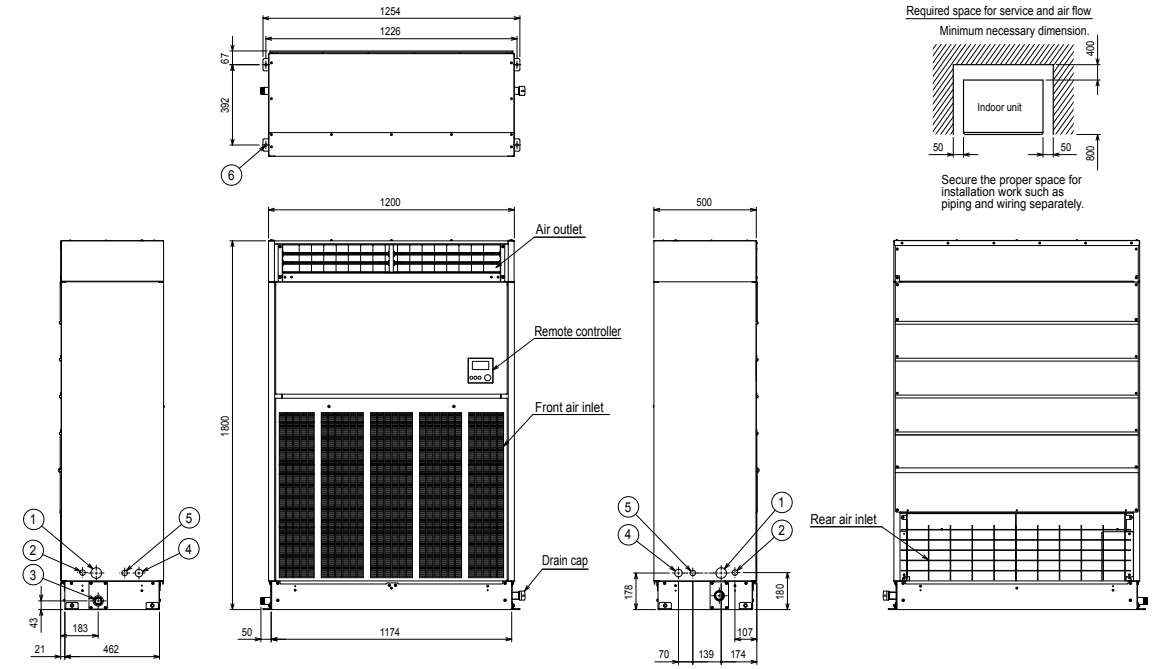
Model name	Indoor		PEV-P400YM-A	PEV-P500YM-A
System capacity	Cooling *1	BTU/h	160,000	200,000
		kW	46.9	58.6
	Cooling *2	BTU/h	157,000	196,000
		kW	46.3	57.7
System Power input	Cooling	kW	19.7	26.5
Syetem current	Cooling	A	31.3/30.3/29.2	44.0/42.5/41.0
Energy efficiency ratio (EER)			2.43	2.21
CSPF *5			3.1	3.3
Power source			3-phase 4-wire 380-400-415V (50Hz)	
Power input		kW	2.86	3.68
Current		A	4.4/4.5/4.6	5.7/5.8/5.9
FAN	Type × Quantity		Sirocco fan×2	
	Airflow rate (Hi)	m^3/min	136	166
	External static pressure	Pa	150	150
	Motor output	kW	0.855×2	1.3×2
Refrigerant			R410A	
External finish			Galvanized steel	
External dimension H × W × D		mm	595×1965×1200	
Protection devices		FAN	Over current protection	
Refrigerant piping diameter	Liquid pipe	mm	12.7 Blazed	15.88 Blazed
	Gas pipe	mm	28.58 Blazed	28.58 Blazed
Refrigerant piping allowable length		m	150	150
Sound pressure level (Hi) *3		dB(A)	52	55
Heat exchanger			Cross fin (aluminum plate fin and copper tube)	
Air filter			Optional	
Net weight		kg	200	200
Operating temperature range	Cooling		Indoor : 15 to 25°CWB (Outdoor : 20 to 52°CDB)	

Model name	Outdoor		PUV-P400YM-A (-BS)	PUCY-P250YKA (-BS)	PUCY-P250YKA (-BS)
Power source			3-phase 4-wire 380-400-415V 50/60Hz		
Sound pressure level (measured in anechoic room)		dB(A)	62	58	58
Refrigerant piping diameter	Liquid pipe	mm (in)	12.7 (1/2) Brazed	9.52 (3/8) Brazed (12.7 (1/2) Brazed, farthest length >= 90 m)	
	Gas pipe	mm (in)	28.58 (1-1/8) Brazed	22.2 (7/8) Brazed	22.2 (7/8) Brazed
FAN	Type × Quantity		Propeller fan×1	Propeller fan x 1	Propeller fan x 1
	Airflow rate	m^3/min	200	175	175
		L/s	3,334	2,917	2,917
		cfm	7,062	6,179	6,179
	Control, Driving mechanism		Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor	
	Motor output	kW	0.92×1	0.92×1	0.92×1
	External static pressure		0Pa (0mmH_2O)	0Pa (0mmH_2O)	0Pa (0mmH_2O)
Compressor	Type		MITSUBISHI ELECTRIC Inverter scroll hermetic compressor		
	Starting method		Inverter	Inverter	Inverter
	Motor output	kW	11.7	6.9	6.9
	Case heater	kW	-	-	-
	Lubricant		MEL32	MEL32	MEL32
External finish			Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3.0Y 7.8/1 1 or similar>	Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 5Y 8/1 or similar>	
External dimension H × W × D		mm	1650×1220×740	1650×920×740	1650×920×740
		in	64-31/32×48-1/16×29-5/32	65 x 36-1/4 x 29-3/16	65 x 36-1/4 x 29-3/16
Protection devices	High pressure protection		High pres. Sensor & High pres. Switch at 4.15MPa (601psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit(COMP. / FAN)		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	
	Compressor		-	-	
	Fan motor		Thermostat	Thermostat	
Refrigerant	Type × original charge		R410A×11.5kg (26lbs)	R410A×6.5 kg (15 lbs)	R410A×6.5 kg (15 lbs)
	Control		LEV and HIC circuit	LEV and HIC circuit	
Net weight		kg	239	183 (404)	183 (404)
Heat exchanger			Salt-resistant cross fin & copper tube	Salt-resistant cross fin & copper tube	

Note 1. Cooling capacity indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19.5°CWB, Outdoor : 35°CDB
2. <Reference cooling capacity> Indicates the value at operation under the following conditions.
Indoor : 27°CDB / 19°CWB, Outdoor : 35°CDB
3. The sound pressure level is measured in an anechoic room.
4. Long period operation in a high temperature and humidity atmosphere (dew point of 23°C or more) may cause condensation to form in the indoor unit.
5. Cooling Seasonal Performance Factor

PFV-P200, 250YM-A

Floor standing type



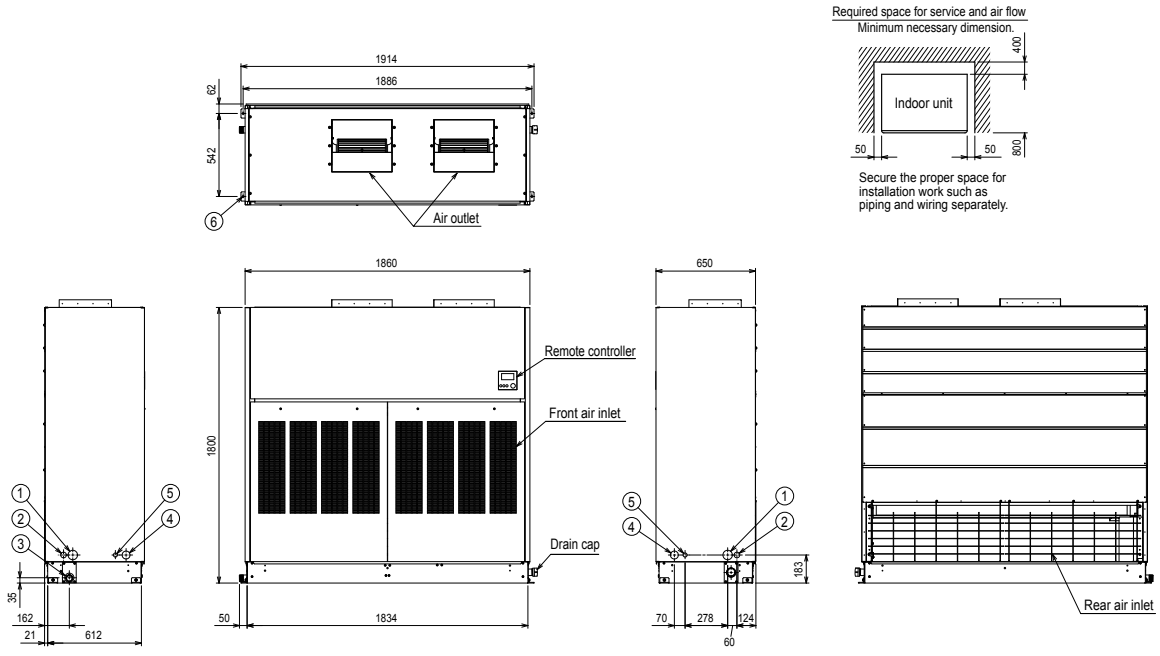
NO.	Designation
①	Refrigerant pipe <Gas>····ø22.2 brazed
②	Refrigerant pipe <Liquid>····ø9.52 brazed
③	Drain connection·····Rc1
④	Power supply wiring hole·····ø37
⑤	Wiring hole(The outdoor unit connection,Transmission line)·····ø27
⑥	For mounting anchor bolt 4-ø12 Holes

Notes 1. Be sure to wire the transmission line and power line separately.
2. No.3 indicate left-sided drainage.The right drainage is also possible by a change getting a cap.

Unit : mm

PFV-P400YM-A

Floor standing type



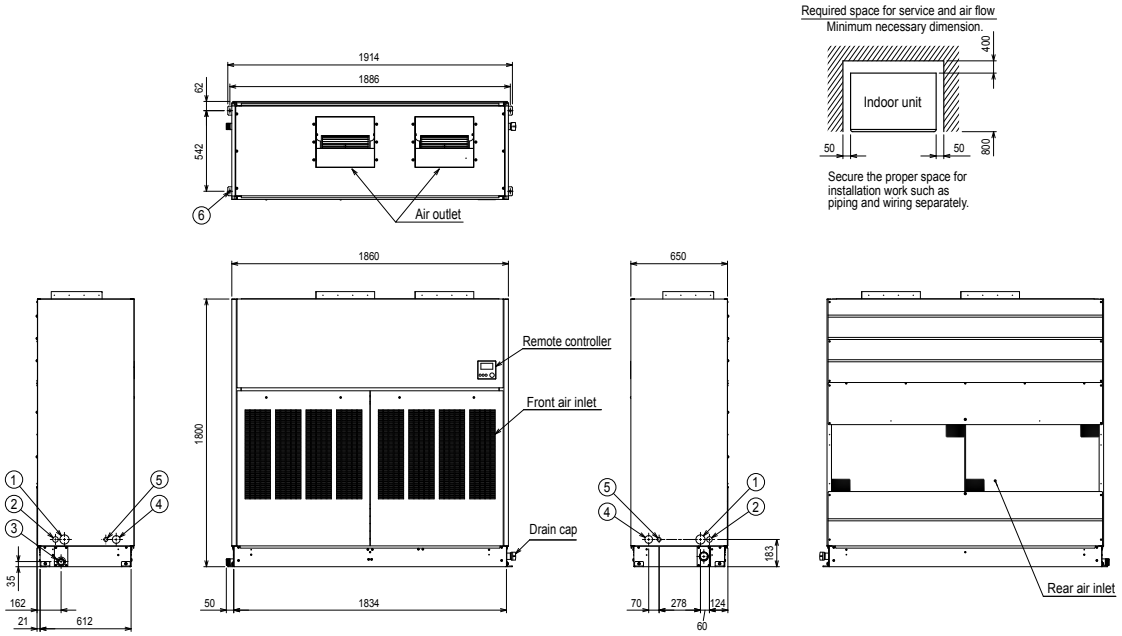
NO.	Designation
①	Refrigerant pipe <Gas> ····ø28.6 brazed
②	Refrigerant pipe <Liquid>···ø12.7 brazed
③	Drain connection·····Rc1-1/4
④	Power supply wiring hole·····ø52
⑤	Wiring hole(The outdoor unit connection,Transmission line)·····ø27
⑥	For mounting anchor bolt 4-ø12 Holes

Notes 1. Be sure to wire the transmission line and power line separately.
2. When the room in which the unit is installed is airtight, the pressure in the room may become negative. This may result in problems such as the door to becoming difficult to open etc. To avoid these kinds of problems please ensure that a small amount of air is able to ventilate the room via some kind of small hole or vent.
3. No.3 indicate left-sided drainage.The right drainage is also possible by a change getting a cap.

Unit : mm

PFV-P500YM-A

Floor standing type



NO.	Designation
①	Refrigerant pipe <Gas> ···ø28.6 brazed
②	Refrigerant pipe <Liquid> ···ø15.88 brazed
③	Drain connection·····Rc1-1/4
④	Power supply wiring hole·····ø52
⑤	Wiring hole(The outdoor unit connection,Transmission line)·····ø27
⑥	For mounting anchor bolt 4-ø12 Holes

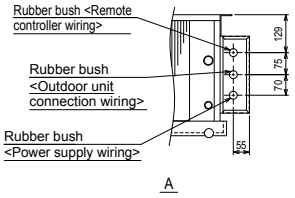
Notes 1. Be sure to wire the transmission line and power line separately.
2. When the room in which the unit is installed is airtight, the pressure in the room may become negative. This may result in problems such as the door to becoming difficult to open etc. To avoid these kinds of problems please ensure that a small amount of air is able to ventilate the room via some kind of small hole or vent.
3. No.3 indicate left-sided drainage.The right drainage is also possible by a change getting a cap.

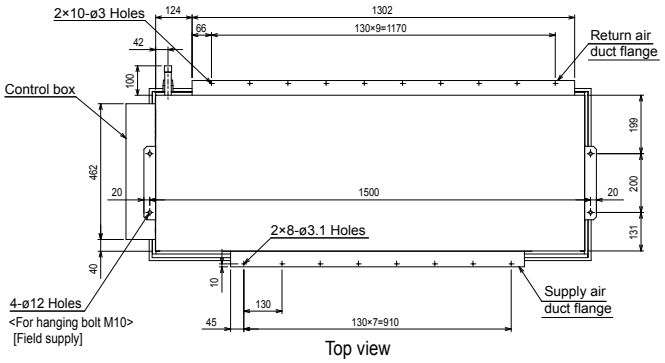
Unit : mm

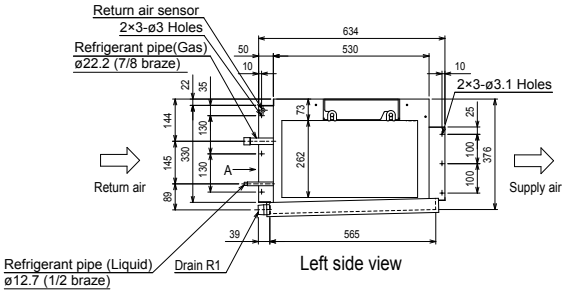
PEV-P200, 250YM-A

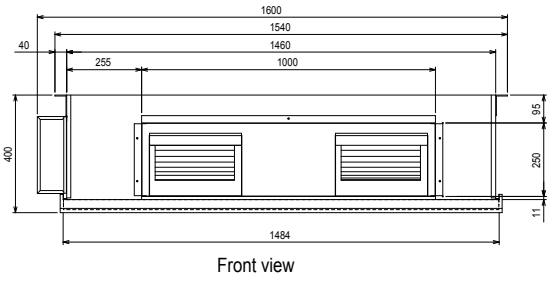
Ceiling concealed type

<Accessory>
·Pipe cover · · · · · · · · · · · · · · · · · · 2pcs.
(For dew condensation prevention of local piping and unit connection.)
·Remote controller · · · · · · · · · · · · · 1pc.







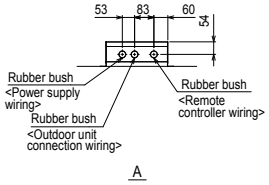


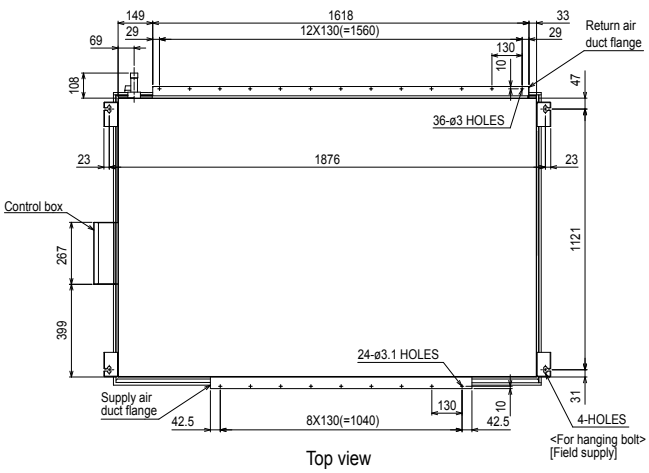
Unit : mm

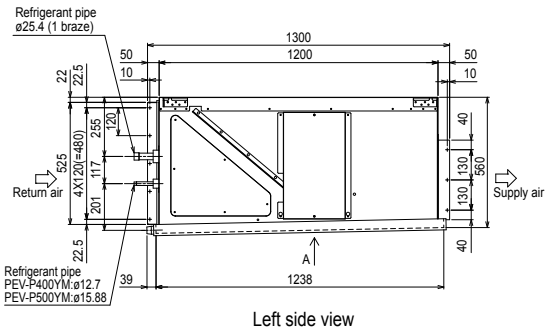
PEV-P400, 500YM-A

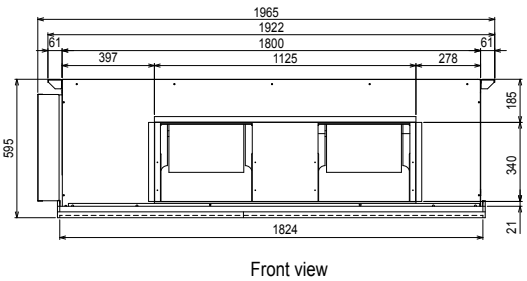
Ceiling concealed type

<Accessory>
·Pipe cover ·····2pcs.
(For dew condensation prevention of local piping and unit connection.)
·Remote controller·····1pcs.



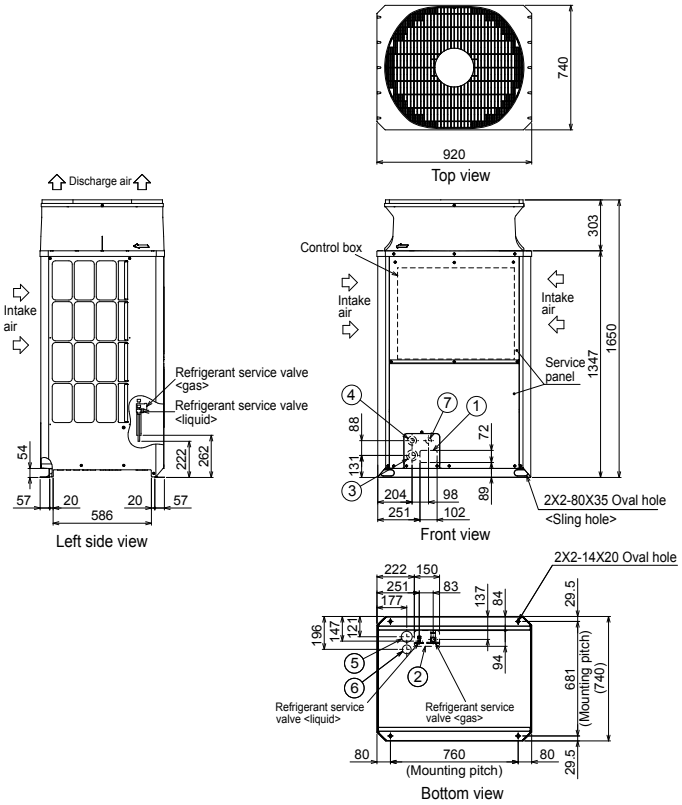






Unit : mm

PUV-P200, 250YM-A



<Accessories>
● Connecting pipe
<Gas> •Pipe (ID25.4XOD22.2)····P200,P250 1pc.
<Liquid> •Pipe (ID9.52XOD9.52)····P200,P250 1pc.

Note1. Please refer to the Installation Manual for information regarding necessary spacing around the unit and foundation work.
2. At brazing of pipes,wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C.

Connecting pipe specifications

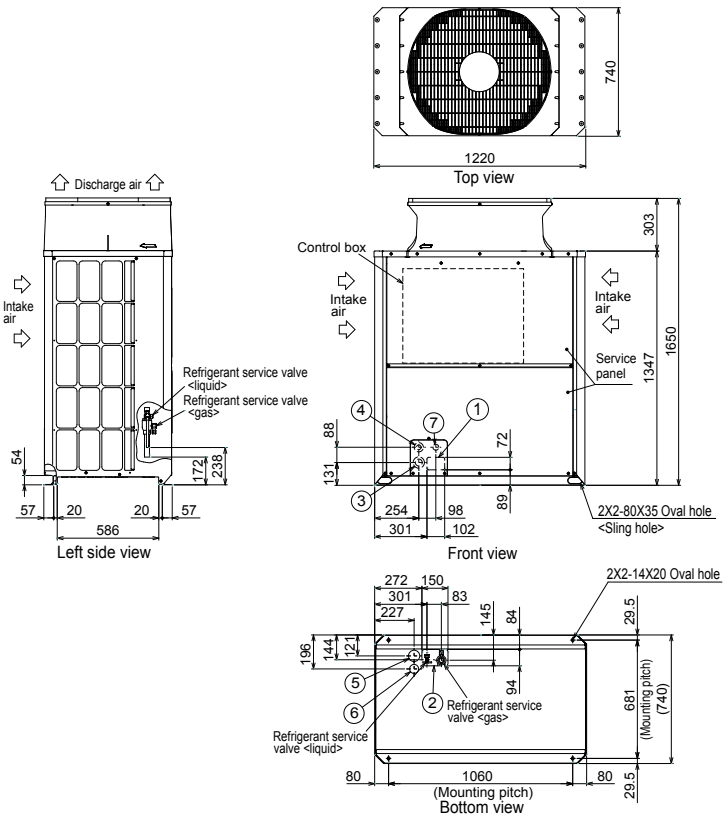
Model	Diameter			
	Refrigerant pipe*1		Service valve	
	Liquid	Gas	Liquid	Gas
PUV-P200YM-A(-BS) PUV-P250YM-A(-BS)	ø9.52 Brazed	ø22.2 Brazed	ø9.52	ø25.4

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

NO.	Usage		Specifications
①	For pipes	Front through hole	102 × 72 Knockout hole
②		Bottom through hole	150 × 94 Knockout hole
③	For wires	Front through hole	ø65 or ø40 Knockout hole
④		Front through hole	ø52 or ø27 Knockout hole
⑤		Bottom through hole	ø65 Knockout hole
⑥		Bottom through hole	ø52 Knockout hole
⑦	For transmission cables	Front through hole	ø34 Knockout hole

Unit : mm

PUV-P400YM-A



<Accessories>
●Connecting pipe
<Gas> •Elbow (ID28.58XOD28.58)····P400 1pc.
<Liquid> •Pipe (ID15.88XOD15.88)····P400 1pc.
•Pipe reducer(ID15.88XOD12.7)····P400 1pc.

Note1. Please refer to the Installation Manual for information regarding necessary spacing around the unit and foundation work.
2. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C.

Connecting pipe specifications

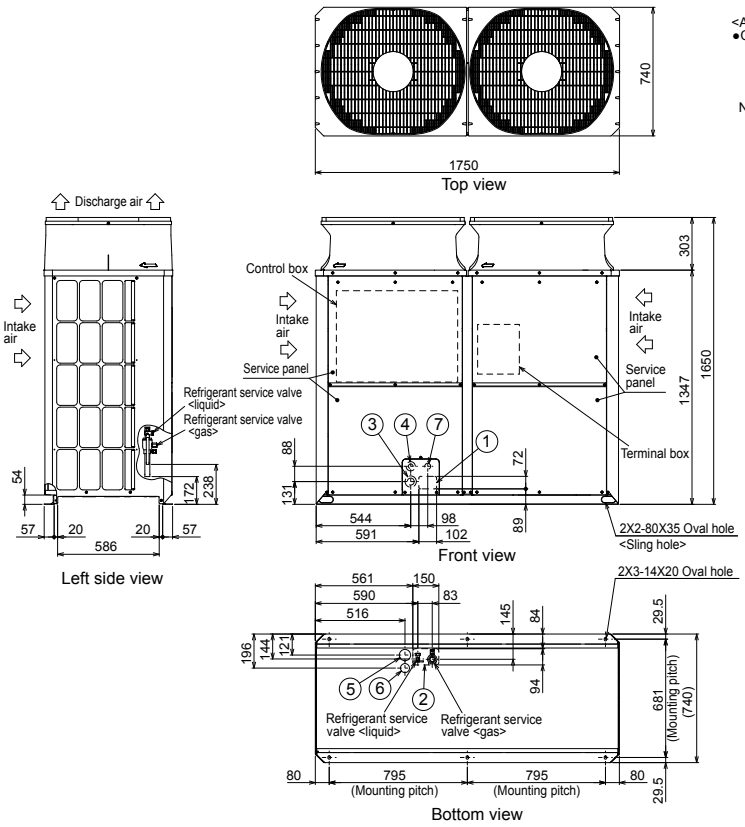
Model	Diameter			
	Refrigerant pipe *1		Service valve	
	Liquid	Gas	Liquid	Gas
PUV-P400YM-A(-BS)	ø12.7 Brazed	ø28.58 Brazed	ø15.88	ø28.58

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

NO.	Usage		Specifications
①	For pipes	Front through hole	102 × 72 Knockout hole
②		Bottom through hole	150 × 94 Knockout hole
③	For wires	Front through hole	ø65 or ø40 Knockout hole
④		Front through hole	ø52 or ø27 Knockout hole
⑤		Bottom through hole	ø65 Knockout hole
⑥		Bottom through hole	ø52 Knockout hole
⑦	For transmission cables	Front through hole	ø34 Knockout hole

Unit : mm

PUV-P500YM-A



<Accessories>
●Connecting pipe
<Gas> •Elbow (ID28.58XOD28.58)···· P500 1pc.
<Liquid> •Pipe (ID15.88XOD15.88)···· P500 1pc.

Note1. Please refer to the Installation Manual for information regarding necessary spacing around the unit and foundation work.
2. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C.

Connecting pipe specifications

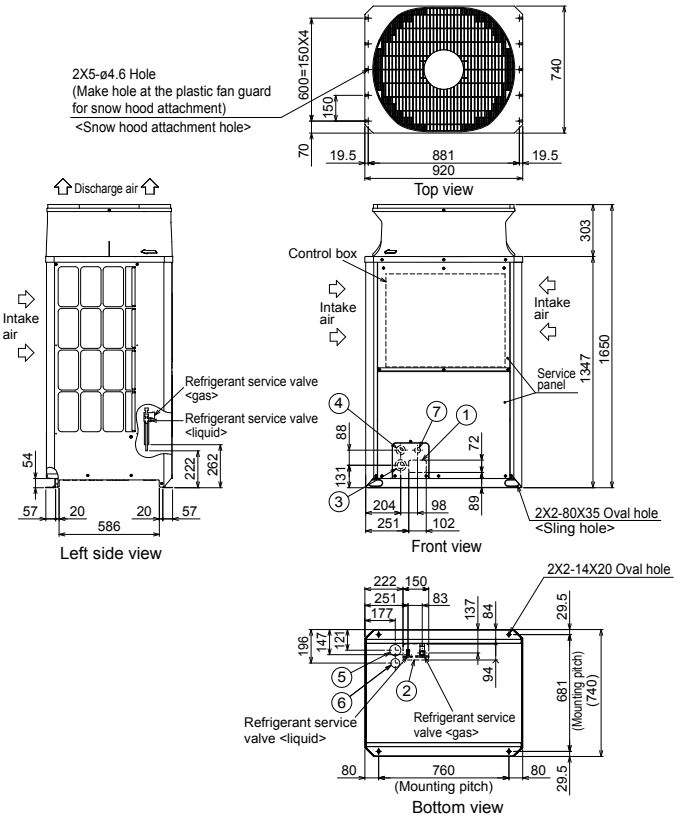
Model	Diameter			
	Refrigerant pipe *1		Service valve	
	Liquid	Gas	Liquid	Gas
PUV-P500YM-A(-BS)	ø15.88 Brazed	ø28.58 Brazed	ø15.88	ø28.58

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

NO.	Usage		Specifications
①	For pipes	Front through hole	102 × 72 Knockout hole
②		Bottom through hole	150 × 94 Knockout hole
③	For wires	Front through hole	ø65 or ø40 Knockout hole
④		Front through hole	ø52 or ø27 Knockout hole
⑤		Bottom through hole	ø65 Knockout hole
⑥		Bottom through hole	ø52 Knockout hole
⑦	For transmission cables	Front through hole	ø34 Knockout hole

Unit : mm

PUCY-P250YKA



<Accessories>
• Connecting pipe
<Gas> · Pipe (ID19.05XOD22.2)····P200 1pc.
· Pipe (ID25.4XOD22.2)···· P250,P300 1pc.
<Liquid> · Pipe (ID9.52XOD9.52)···· P200,P250 1pc.
· Pipe reducer (ID9.52XOD12.7)···· P250 1pc.
· Pipe (ID12.7XOD12.7)···· P300 1pc.
· Pipe reducer (ID12.7XOD9.52)···· P300 1pc.

Note1. Please refer to the next page for information regarding necessary spacing around the unit and foundation work.
2. At brazing of pipes,wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C.

Connecting pipe specifications

Model	Diameter			
	Refrigerant pipe*1		Service valve	
	Liquid	Gas	Liquid	Gas
PUCY-P200YKA(-BS)	ø9.52 Brazed	ø22.2 Brazed	ø9.52	ø19.05
PUCY-P250YKA(-BS)	ø9.52 Brazed (ø12.7 Brazed) *2			ø25.4
PUCY-P300YKA(-BS)	ø9.52 Brazed (ø12.7 Brazed) *3,*4		ø12.7	

*1 Connect by using the connecting pipes (for bottom piping and front piping) that are supplied.
*2 Furthest piping length (OU from IU) ≧ 90m
*3 Furthest piping length (OU from IU) ≧ 40m
*4 Indicates dimensions and connection specifications in the case the unit is used in combination with other outdoor units.

No.	Usage		Specifications
①	For pipes	Front through hole	102 × 72 Knockout hole
②		Bottom through hole	150 × 94 Knockout hole
③	For wires	Front through hole	ø65 or ø40 Knockout hole
④		Front through hole	ø52 or ø27 Knockout hole
⑤		Bottom through hole	ø65 Knockout hole
⑥		Bottom through hole	ø52 Knockout hole
⑦	For transmission cables	Front through hole	ø34 Knockout hole

Unit : mm

♦Optional Parts for indoor units

Description	Model	Applicable capacity
Plenum	PAC-PLE20PL-E	PFV-P400,P500YM-A
OA duct flange	PAC-ODF20DF-E	PFV-P400,P500YM-A
Air filter (8/10HP)	PAC-KE210AF	PEV-P200,P250YM-A
Air filter (16/20HP)	PAC-KE220AF	PEV-P400,P500YM-A
High Static Pressure Motor (3.7kW)	PAC-HPM16SP-E	PFV-P400YM-A
High Static Pressure Motor (5.5kW)	PAC-HPM20SP-E	PFV-P500YM-A
Wireless Remote Controller	PAR-FL32MA-E	PEV-P200,P250,P400,P500YM-A
Signal Receiver Unit	PAR-SA9CA-E	PEV-P200,P250,P400,P500YM-A

♦Optional Parts for control

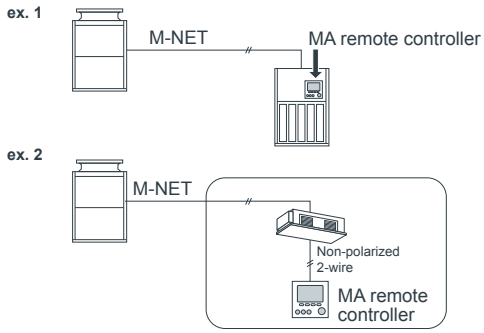
Description	Model
Multiple Remote Controller Adapter	PAC-SA88HA-E
Remote sensor	PAC-SE41TS-E *1
Remote On/Off Adapter	PAC-SE55RA-E

*1 : Only for PEV series

Wired MA remote controller PAR-31MAAE

Dimensions: 120(W) x 120(H) x 19(D) mm
: 4-3/4(W) x 4-3/4(H) x 3/4(D) in.

Example of system configuration



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

- **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.**
- **Backlit LCD (Liquid Crystal Display)**
  Large, easy-to-see display
  Full-dot LCD display with large characters for easy viewing
  Contrast also adjustable
- **Night Setback**
  To prevent indoor dew or excessive temperature rise, this control starts cooling operation when the control object group is stopped and the room temperature rises above the preset upper limit temperature.
- **Simple button arrangement**
- **Large, easy-to-press buttons**
  Buttons are arranged according to usage to allow for intuitive navigation.
  Frequently used buttons are larger than other buttons to prevent unintended pressing of other buttons.

Functions

○: Each group ×: Not available

Item	Description	Operations	Display
ON/OFF	Switches between ON and OFF.	○	○
Operation mode switching	Switches among Cool/Fan.	○	○
Room temp. setting	The temperature can be set within the following range. Cool : 19°C - 30°C / 67°F - 87°F * Set temperature range varies depending on the model.	○	○
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.	○	○
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.	–	○
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.	○	○
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, fan speed, air direction, 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.	○	○
Smooth Maintenance	Using the Stable Operation Control (fixed frequency) of the Smooth Maintenance function, the operating status of the inverter can be checked easily via the screen on the remote controller.	×	×

Heat pump series

Heat pump series is a large capacity floor standing indoor unit with high air flow operation especially designed for various types of large spaced application.
The unit is a one-to-one connection unit meaning one indoor is connected to one outdoor unit. The lineup consists of two models; standard model and fresh air intake model, selectable depending on usage.

Adaptable to various applications

With wide range of airflow and static pressure, and piping length up to 165m, Heat pump series can provide flexibility in design by adapting to various applications from shops, schools, and to factories.

	Air flow rate	External static pressure
	m³/min	Pa
PFAV-P250VM-E	90	30/90
PFAV-P500VM-E	180	30/130
PFAV-P750VM-E	260	100/310
PFAV-P300VM-E-F	45	80
PFAV-P600VM-E-F	90	110/170
PFAV-P900VM-E-F	120	210/330

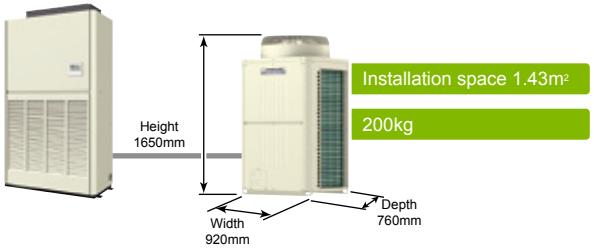
Large capacity indoor unit

Heat pump series is a floor standing large capacity indoor unit, which reduces the piping and installation burdens, moreover makes maintenance easy.

OUTDOOR UNIT

Compact outdoor unit

Heat pump series can only be connected to PUHY-YHA outdoor units. YHA series offers small footprint and lightweight inversely to high heating capacity, which allows easy transportation and saves installation space.



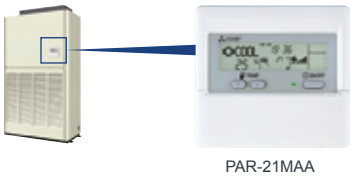
High Reliability

Outdoor heat exchangers have been treated with an anti-corrosion coating ensuring higher resistance against salt damage or air pollution.

*Standard:Anti-corrosion Blue Fin treatment & copper tube.
BS type (optional):salt-resistant cross fin & copper tube.

CONTROL

With the usage of MA controller (PAR-21MAA), which is embedded at the Heat pump series, following energy saving functions can be provided.



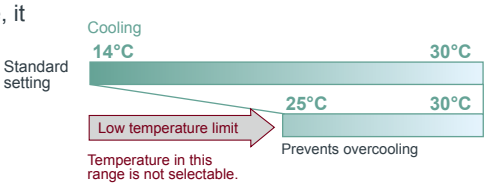
PAR-21MAA

Auto-OFF timer

Automatically switches off based on presetting time. (Preset time can be 30min-4hours, per 30min)

Limiting set temperature range

By limiting lowest / highest temperature, it is possible to save energy when air conditioners are frequently used.



Locking function

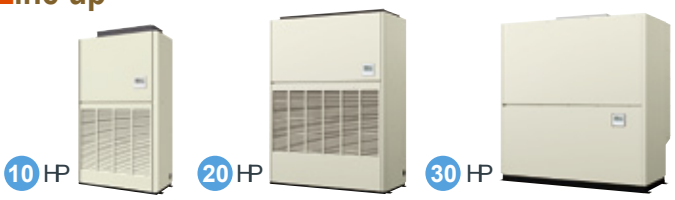
To sustain optimal temperature, and prevent operational errors, buttons can be locked to only ON/OFF control.

STANDARD model

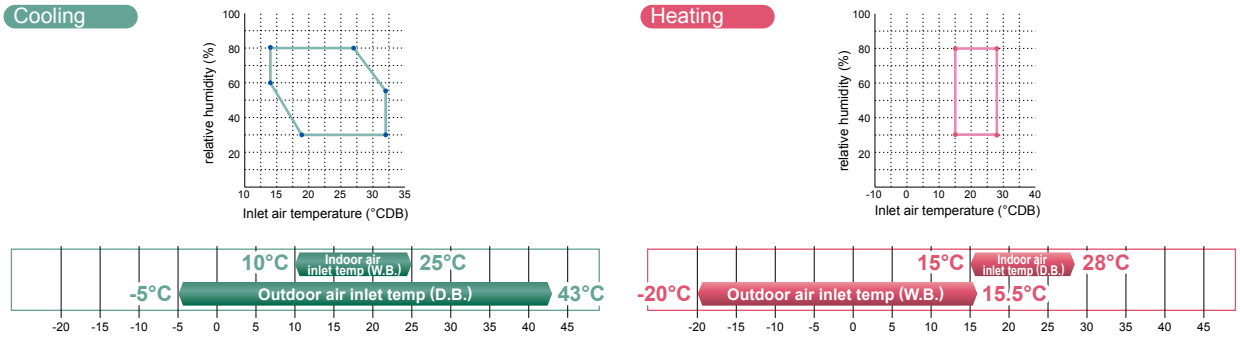
Features

Highly energy efficient with easy installation and maintenance, the standard Heat pump series is suitable for working places where large capacity air conditioning is required.

Line up



Wide temperature range



By controlling the air volume of the outdoor unit fan, operation is available even when the outdoor temperature is -5°C for cooling and -20°C for heating.

*In heating operation, operation capacity may fall below the rated capacity in low outdoor temp. / indoor inlet temp. conditions.

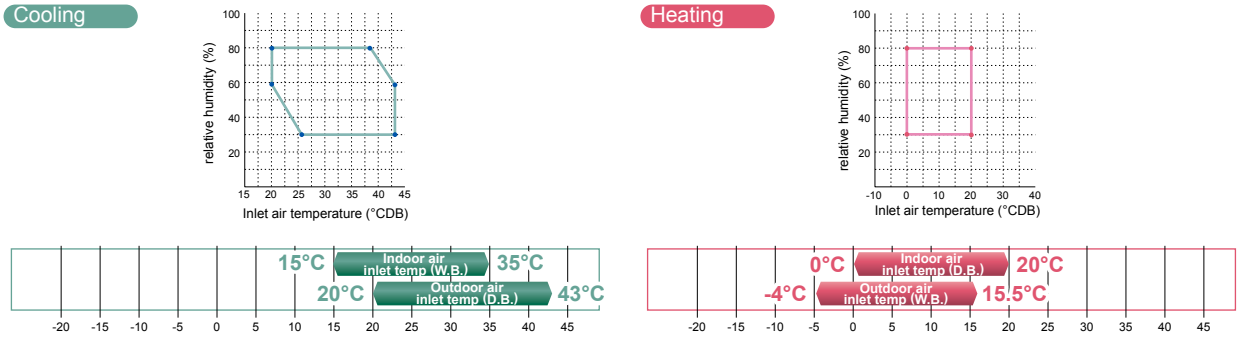
FRESH AIR INTAKE model

Features

Fresh air intake model takes in fresh air from the outdoor suitable for application such as factories and laboratories where intake of indoor air is not favored.

Line up

Wide temperature range



Heating operation is available at -4°C Outdoor temperature making it adaptable for places with frequent heating requirements.

Heat pump series [SPECIFICATIONS]

STANDARD model

Model Name	Indoor		PFAV-P250VM-E		PFAV-P500VM-E		PFAV-P750VM-E	
	Outdoor		PUHY-P250YHA(-BS)		PUHY-P500YSHA(-BS) (PUHY-P250YHA(-BS) × 2,CMY-Y100VBK2)		PUHY-P750YSHA (-BS) (PUHY-P350YHA(-BS)+PUHY-P400YHA(-BS),CMY-Y200VBK2)	
Operation			Cooling	Heating	Cooling	Heating	Cooling	Heating
System capacity		kW	25.0 (Maximum28.0)	28.0 (Maximum 31.5)	50.0 (Maximum56.0)	56.0 (Maximum 63.0)	71.0 (Maximum 80.0)	80.0 (Maximum 90.0)
System Power input		kW	7.46 / 7.53	8.27 / 8.34	17.85 / 18.84	17.00 / 17.99	26.33 / 27.40	23.93 / 25.00
System current		A	14.5-13.8-13.3 / 13.4-12.8-12.3	15.8-15.0-14.4 / 14.7-14.0-13.4	32.3-30.7-29.6 / 32.6-31.0-29.9	30.8-29.3-28.2 / 31.1-29.6-28.5	48.1-45.7-44.1 / 47.5-45.1-43.5	43.4-41.2-39.8 / 42.8-40.6-39.2
Power source			3-phase 4-wire 380-400-415V (50Hz / 60Hz)		3-phase 4-wire 380-400-415V (50Hz / 60Hz)		3-phase 4-wire 380-400-415V (50Hz / 60Hz)	
Power input		kW	0.82 / 0.89		2.37 / 3.36		4.30 / 5.37	
Current		A	3.4-3.2-3.1 / 2.3-2.2-2.1		6.2-5.9-5.7 / 6.5-6.2-6.0		10.9-10.4-10.0 / 10.3-9.8-9.4	
Fan Type × Quantity			Sirocco fan × 2		Sirocco fan × 1		Sirocco fan × 1	
Airflow rate		m^3 / min	90		180		260	
External static pressure		Pa	30 / 90		30 / 130		100 / 310	
Motor output		kW	2.2		5.5		7.5	
Refrigerant			R410A		R410A		R410A	
External finish			Galvanized steel plate (with polyester coating)		Galvanized steel plate (with polyester coating)		Galvanized steel plate (with polyester coating)	
			<MUNSEL 5Y 8/1 or similar>		<MUNSEL 5Y 8 / 1 or similar>		<MUNSEL 5Y 8 / 1 or similar>	
External dimension H × W × D		mm	1748 × 1200 × 485		1899 × 1420 × 635		1860 × 1750 × 1064	
Protection devices		Fan motor	Thermal switch		Thermal switch		Thermal switch	
Refrigerant piping diameter	Liquid pipe		9.52 Brazed (12.7 for over 90m)		15.88 Brazed		19.05 Brazed	
	Gas pipe		22.2 Brazed		28.58 Brazed		34.93 Brazed	
Refrigerant piping allowable length		m	165		165		165	
Sound pressure level		dB(A)	55		59 / 62		65	
Heat exchanger			Cross fin (Aluminum plate fin and copper tube)		Cross fin (Aluminum plate fin and copper tube)		Cross fin (Aluminum plate fin and copper tube)	
Air filter			Synthetic fiber unwoven cloth filter		Synthetic fiber unwoven cloth filter		PP Honeycomb fabric filter	
Net weight		kg	156		265		459	
Operating temperature range			Cooling	Heating	Cooling	Heating	Cooling	Heating
			Indoor:10°CWB~25°CWB	Indoor:15°CDB~28°CDB	Indoor:10°CWB~25°CWB	Indoor:15°CDB~28°CDB	Indoor:10°CWB~25°CWB	Indoor:15°CDB~28°CDB
			(Outdoor:-5°CDB~43°CDB)	(Outdoor:-20°CWB~15.5°CWB)	(Outdoor:-5°CDB~43°CDB)	(Outdoor:-20°CWB~15.5°CWB)	(Outdoor:-5°CDB~43°CDB)	(Outdoor:-20°CWB~15.5°CWB)

1. Cooling/Heating capacity indicates the maximum value at operation under the following conditions.
   <Cooling> Indoor:27˚CDB/19˚CWB Outdoor:35˚CDB
   <Heating> Indoor:20˚CDB Outdoor:7˚CDB/6˚CWB
   Pipe length :7.5m,Level difference:0m
2. The sound pressure level is measured in an anechoic room.
3. Long period operation in a high temperature and humidity atmosphere(dew point of 23˚C or more) may cause condensation.
4. Works not included: Installation / foundation work, electric connection work, duct work, insulation work. The power source switch and other items are not specified in the specifications.

FRESH AIR INTAKE model

Model Name	Indoor		PFAV-P300VM-E-F		PFAV-P600VM-E-F		PFAV-P900VM-E-F	
	Outdoor		PUHY-P250YHA(-BS)		PUHY-P500YSHA(-BS) (PUHY-P250YHA(-BS) × 2,CMY-Y100VBK2)		PUHY-P750YSHA(-BS) (PUHY-P350YHA(-BS)+PUHY-P400YHA(-BS),CMY-Y200VBK2)	
Operation			Cooling	Heating	Cooling	Heating	Cooling	Heating
System capacity		kW	28.0 (Maximum 33.5)	26.5 (Maximum 28.0)	56.0 (Maximum 67.0)	50.0 (Maximum 56.0)	80.0 (Maximum 100.0)	71.0 (Maximum 80.0)
System Power input		kW	6.73 / 6.72	7.57 / 7.56	14.69 / 15.05	15.43 / 15.79	22.54 / 22.74	21.43 / 21.63
System current		A	12.6-11.9-11.5 / 12.2-11.5-11.1	14.0-13.3-12.8 / 13.6-12.9-12.4	26.1-24.9-24.0 / 26.2-25.0-24.0	27.4-26.1-25.1 / 27.5-26.2-25.1	40.5-38.5-37.1 / 39.6-37.6-36.2	38.7-36.8-35.5 / 37.8-35.9-34.6
Power source			3-phase 4-wire 380-400-415V (50Hz / 60Hz)		3-phase 4-wire 380-400-415V (50Hz / 60Hz)		3-phase 4-wire 380-400-415V (50Hz / 60Hz)	
Power input		kW	0.37 / 0.36		0.90 / 1.26		1.77 / 1.97	
Current		A	1.9-1.8-1.7 / 1.5-1.4-1.3		2.9-2.8-2.8 / 3.0-2.9-2.8		5.6-5.3-5.1 / 4.7-4.4-4.2	
Fan Type × Quantity			Sirocco fan × 2		Sirocco fan × 1		Sirocco fan × 1	
Airflow rate		m^3 / min	45		90		120	
External static pressure		Pa	80		110 / 170		210 / 330	
Motor output		kW	1.5		2.2		3.7	
Refrigerant			R410A		R410A		R410A	
External finish			Galvanized steel plate (with polyester coating)		Galvanized steel plate (with polyester coating)		Galvanized steel plate (with polyester coating)	
			<MUNSEL 5Y 8 / 1 or similar>		<MUNSEL 5Y 8 / 1 or similar>		<MUNSEL 5Y 8 / 1 or similar>	
External dimension H × W × D		mm	1748 × 1200 × 485		1899 × 1420 × 635		1860 × 1750 × 1064	
Protection devices		Fan motor	Thermal switch		Thermal switch		Thermal switch	
Refrigerant piping diameter	Liquid pipe		9.52 Brazed (12.7 for over 90m)		15.88 Brazed		19.05 Brazed	
	Gas pipe		22.2 Brazed		28.58 Brazed		34.93 Brazed	
Refrigerant piping allowable length		m	165		165		165	
Sound pressure level		dB(A)	48.5		50 / 53		57	
Heat exchanger			Cross fin (Aluminum plate fin and copper tube)		Cross fin (Aluminum plate fin and copper tube)		Cross fin (Aluminum plate fin and copper tube)	
Air filter			Synthetic fiber unwoven cloth filter		Synthetic fiber unwoven cloth filter		PP Honeycomb fabric filter	
Net weight		kg	151		248		437	
Operating temperature range			Cooling	Heating	Cooling	Heating	Cooling	Heating
			Indoor:15°CWB~35°CWB	Indoor:0°CDB~20°CDB	Indoor:15°CWB~35°CWB	Indoor:0°CDB~20°CDB	Indoor:15°CWB~35°CWB	Indoor:0°CDB~20°CDB
			(Outdoor:20°CDB~43°CDB)	(Outdoor:-4°CWB~15.5°CWB)	(Outdoor:20°CDB~43°CDB)	(Outdoor:-4°CWB~15.5°CWB)	(Outdoor:20°CDB~43°CDB)	(Outdoor:-4°CWB~15.5°CWB)

1. Cooling/Heating capacity indicates the maximum value at operation under the following conditions.
   <Cooling> Indoor,Outdoor:33°CDB/28°CWB
   <Heating> Indoor,Outdoor:7°CDB/3°CWB
   Pipe length:7.5m,Level difference:0m
2. The sound pressure level is measured in an anechoic room.
3. The indoor intake air temperature should be kept more than 0°C.
4. At factory setting, the fan temporary stops in defrosting. Change DIP SW for fan to operate in defrosting.
5. Indoor temperature and humidity cannnot be controlled with Fresh air intake type.
6. Works not included: Installation / foundation work, electric connection work, duct work, insulation work. The power source switch and other items are not specified in the specifications.

Optional parts	Description	Model	Applicable capacity
Indoor unit	Plenum chamber	PAC-CC83PL-E	PFAV-P250VM-E
		PAC-CC85PL-E	PFAV-P500VM-E
		PAC-CC87PL-E	PFAV-P750VM-E
Outdoor unit	Twinning kit	CMY-Y100VBK2	PUHY-P500YSHA
		CMY-Y200VBK2	PUHY-P750YSHA

Installation information

1. General precautions

1-1. Usage

♦The air-conditioning system described in this catalogue 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.

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.

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.

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 defrostprocess.

♦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.

♦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.

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.

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.

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.

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.

2. Precautions for Indoor unit

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.

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.

2-3. Unit installation

♦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.

3. Precautions for Fresh air intake type indoor unit

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.

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.

♦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.

4. Precautions for Outdoor unit/Heat source unit

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.

♦Salt-resistant unit is resistant to salt corrosion, but not salt-proof.

Please note the following when installing and maintaining outdoor units in marine atmosphere.

1. Install the salt-resistant unit out of direct exposure to sea breeze, and minimize the exposure to salt water mist.
2. Avoid installing a sun shade over the outdoor unit, so that rain will wash away salt deposits off the unit.
3. Install the unit horizontally to ensure proper water drainage from the base of the unit. Accumulation of water in the base of the outdoor unit will significantly accelerate corrosion.
4. Periodically wash salt deposits off the unit, especially when the unit is installed in a coastal area.
5. Repair all noticeable scratches after installation and during maintenance.
6. Periodically check the unit, and apply anti-rust agent and replace corroded parts as necessary.

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.

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.

4-4. Relevant equipment

♦Provide grounding in accordance with the local regulations.

5. Precautions for Control-related items

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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, and EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, and EB-50GU-J, 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 AE-200E, AE-50E, EW-50E, AG-150A, or EB-50GU-J 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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, 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.

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 AE-200E, AE-50E, EW-50E, AG-150A, EB-50GU-J, or TG-2000A to the Internet.

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.

FM33568 / ISO 9001;2008

The Air Conditioning & Refrigeration Systems Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO) based on a review of Quality management for the production of refrigeration and air conditioning equipment.

ISO Authorization System
The ISO 9000 series is a plant authorization system relating to quality management as stipulated by the ISO. ISO 9001 certifies quality management based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

EC97J1227 051

The Air Conditioning & Refrigeration Systems Works acquired environmental management system standard ISO 14001 certification.

The ISO 14000 series is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
Registered on March 10, 1998.

⚠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.

■Our air-conditioning equipments and heat pumps contain a fluorinated greenhouse gas, R410A.

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MEE15K019

New publication effective Jun. 2015
Specifications subject to change without notice