

PFD

PFD-P250VM-E
PFD-P500VM-E
PUHY-P250YHM-A(-BS)
PUHY-P500YSHM-A(-BS)
PQHY-P250YHM-A



CLOSE CONTROL SYSTEM

Energy Saving Technology

Low Running Cost

The inverter driven compressors can maximize the energy efficiency of PFD series, leading to reduction of power consumption.

PFD series coefficient of performance (COP) are over 3.00 in cooling mode.

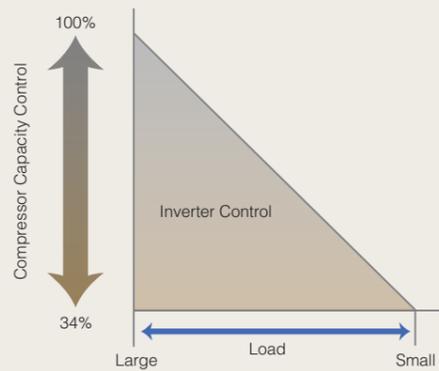
[Sensible heat factor (SHF) : 0.93]

Low Power Consumption

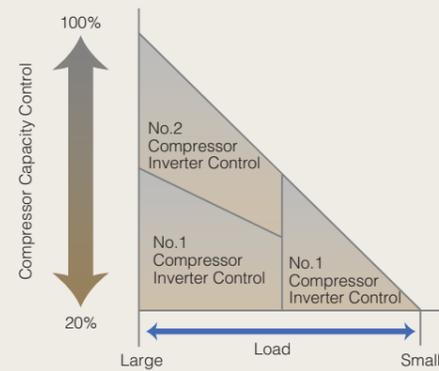
Plus, new PFD series adopt advanced R410A refrigeration and control technology to offer lower power consumption.

Inverter-driven capacity control

□ 10HP Outdoor Unit



□ 20HP Outdoor Unit

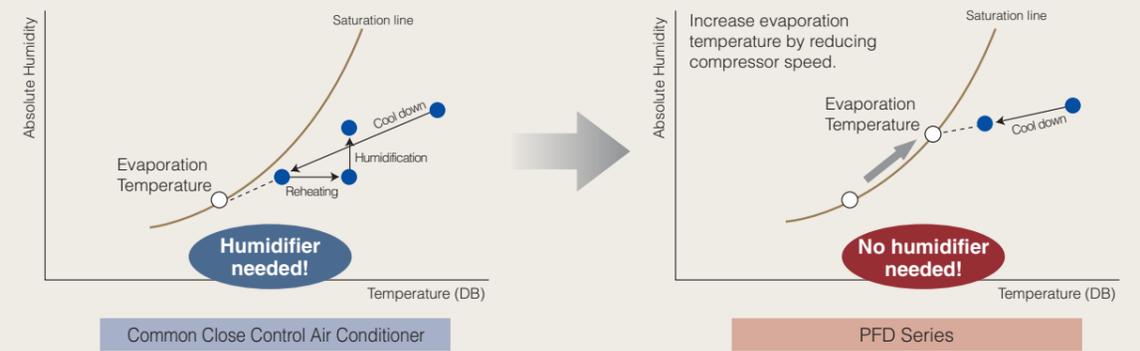


PFD series operates highly efficiently with using newly developed inverter compressor

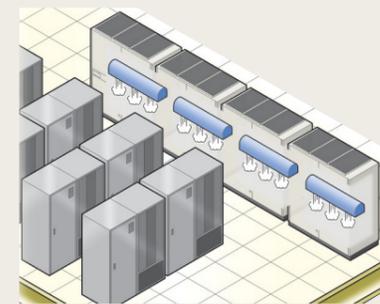
Energy Saving Technology

Minimum Humidifiers

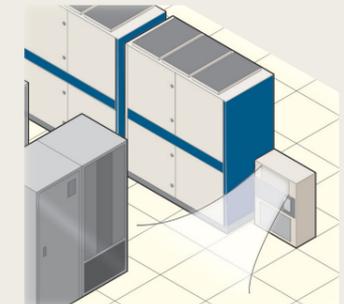
PFD series work without a humidifier in most specifications. Due to the use of an optimized inverter driven compressor, PFD series minimize the excessive dehumidification whereas other systems need a separate humidifier for each indoor unit.



This system will also help to minimize maintenance costs by removing the need for a humidifier and doing away with the need to install water pipes for individual units.



Common Close Control Air Conditioner



PFD Series

* A humidifier can be incorporated inside of the units. Consult our sales office in your area for more detailed information.

PFD series will not have excessive dehumidification

CLOSE CONTROL SYSTEM



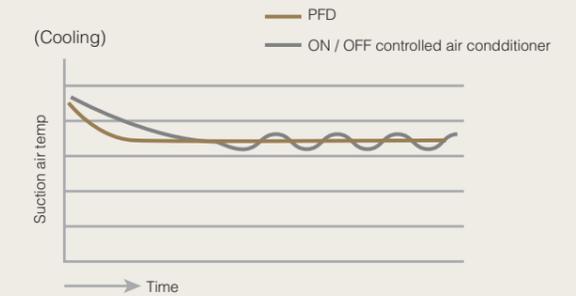
MITSUBISHI ELECTRIC's Close Control System (PFD series) is specifically designed for computer rooms, laboratories etc, where strict control of humidity and temperature is a must. It possesses "High Reliability", "Energy Saving Technology", and "Easy Installation / Maintenance". It can be connected to a computer network using our AG-150A controller, in order to monitor from a distance and provide remote email alarms.



High Reliability

Precise Room Temperature Control

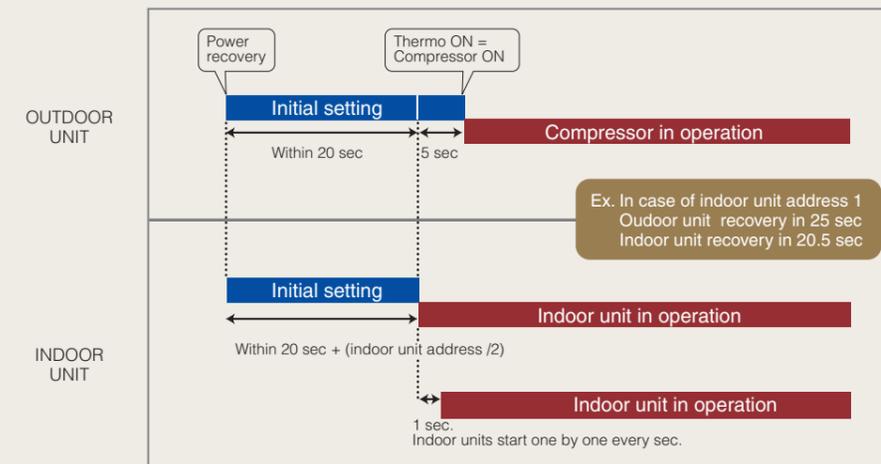
PFD series maintain a nearly constant room temperature (within $\pm 1.0^{\circ}\text{C}$) without the typical temperature changes that occur with conventional ON/OFF control systems with inverter driven compressor.



Quick Recovery from Power Failure

After an initial setting of outdoor unit is completed within 20 seconds of power recovery, thermo ON signal will turn on and it will take 5 seconds for an outdoor unit fan and compressor operation to start. PFD unit will restart within 20 seconds+(indoor unit address/2). To prevent the inrush current when recovering from power failure, the indoor unit system will restart one by one.

(example)



Protection of Confidential Information

As a compressor has been incorporated into the outdoor unit, the compressor can be serviced without entering a computer room. Our close control system can protect confidential information.

NEW PFD System Rotation

One unit in a system will alternatively be in stand-by position as a back-up unit in case of malfunction.

PFD series provide you with highly reliable computer room cooling system

CLOSE CONTROL SYSTEM

Energy Saving Technology

Low Running Cost

The inverter driven compressors can maximize the energy efficiency of PFD series, leading to reduction of power consumption.

PFD series coefficient of performance (COP) are over 3.00 in cooling mode.

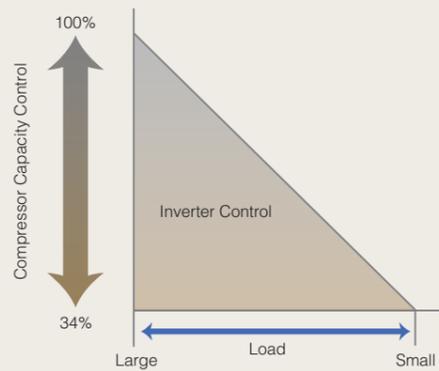
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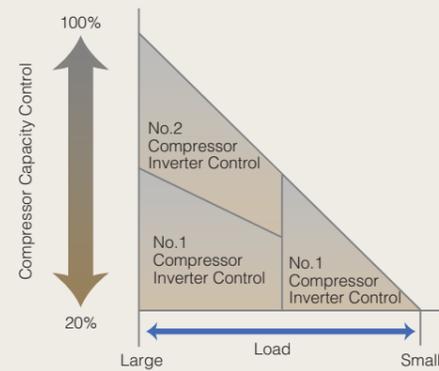
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Inverter-driven capacity control

□ 10HP Outdoor Unit



□ 20HP Outdoor Unit

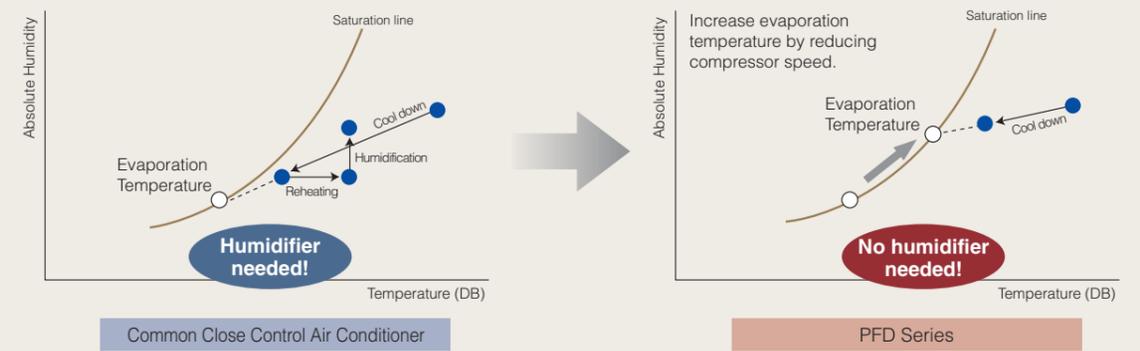


PFD series operates highly efficiently with using newly developed inverter compressor

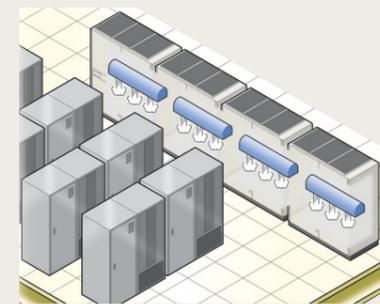
Energy Saving Technology

Minimum Humidifiers

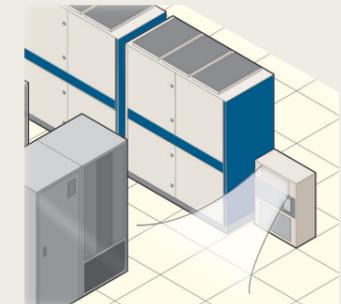
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Common Close Control Air Conditioner



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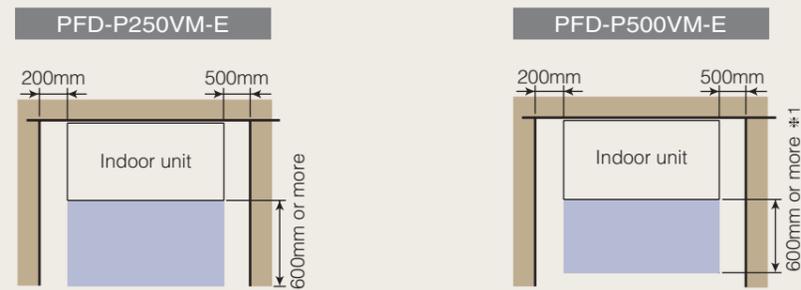
PFD series will not have excessive dehumidification

Easy Installation/Maintenance

Small Installation Space

PFD series are specifically designed to minimize the size of the indoor units and save on valuable computer room space.

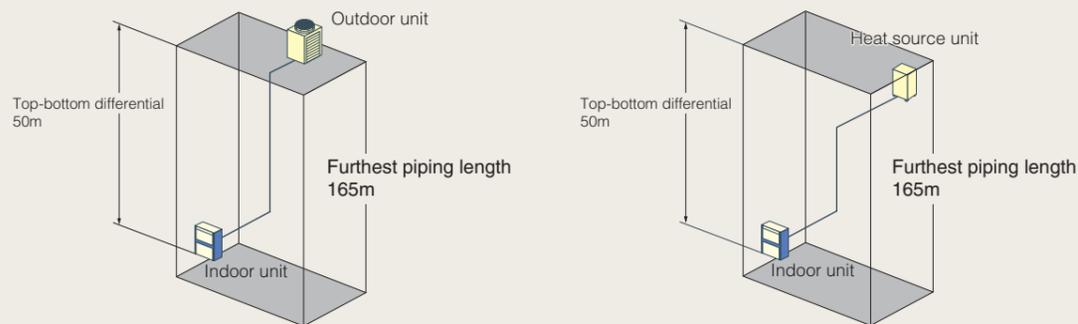
Service Space (Indoor)



#1. To open the gate fold maintenance panel fully, space of 1000mm or more required.

Piping length

With long pipe-runs of up to 165m, top-bottom differentials of 50m (40m if the outdoor unit is installed below indoor unit, 15m if the outdoor temperature is under 10°C), flexible design is available with both air and water cooled outdoor unit.



Same length with two refrigerant circuit connection

Unit Combination

PFD + Air cooled outdoor unit

When connecting PFD-P500VM-E and P500 outdoor unit, either 1 or 2 refrigerant circuit connection is available depending on system size and usage. With 2 refrigerant circuit connection, one circuit can back up the other.

If installation and large number of units are to be installed, single refrigerant circuit can be selected.



At factory shipment, this model of indoor unit is designed and set to accommodate a single refrigerant circuit. Connection of two refrigerant circuits to the indoor unit requires setting change and pipe work.

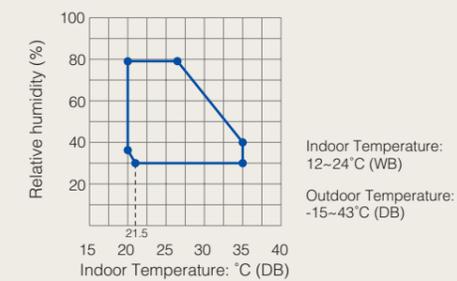
PFD + Water cooled outdoor unit

When connecting PFD-P500VM-E unit and water cooled outdoor unit, only 2 refrigerant circuit connection is available and single refrigerant connection is not available.



Single refrigerant circuit connection is not available with water-cooled unit.

Operation Zone



PFD series will be able to satisfy various installation conditions

OUTDOOR UNIT

AIR COOLED OUTDOOR UNIT



Outdoor Unit

High-capacity reluctance DC motor driven compressor

Motor efficiency greatly improved

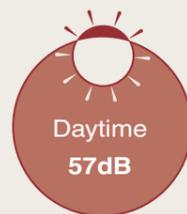
+

Reduced suction refrigerant heating loss



First in Industry
Japan Machinery Federation
Executive Award-winning

Low Noise in All Directions



(10HP)

Night mode can reduce sound level by sensing ambient temperature condition.
(This function is available in setting at site.)

PFD series are made in Japan under a stringent quality control system of Mitsubishi Electric.

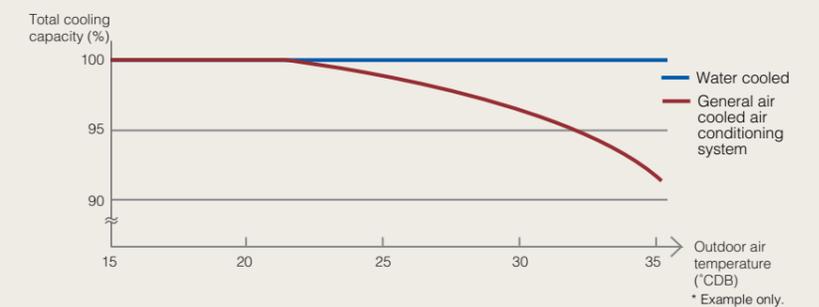
WATER COOLED HEAT SOURCE UNIT



Heat source Unit

Cold climate capability

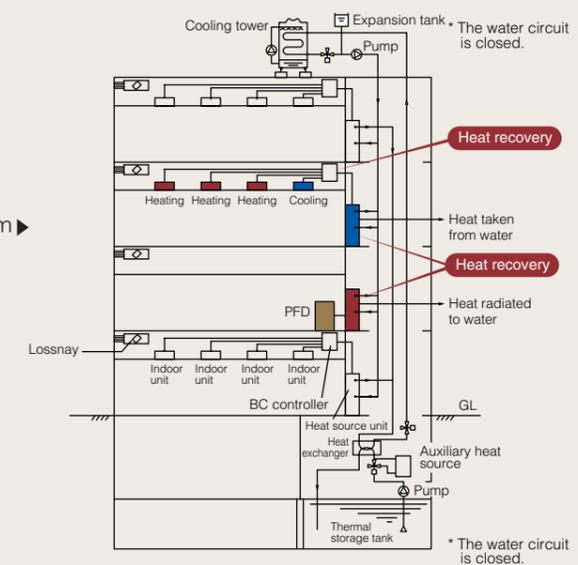
Because the system is water cooled, the outdoor air temperature does not affect capacity. Furthermore, water cooling means no defrost operation is required, so rapid starting assures quick and continuous cooling in the hottest conditions.



Heat recovery

When used in combination with the City Multi WR2 series, Heat recovery between Heat Source Units is possible.

Example of water cooled system diagram

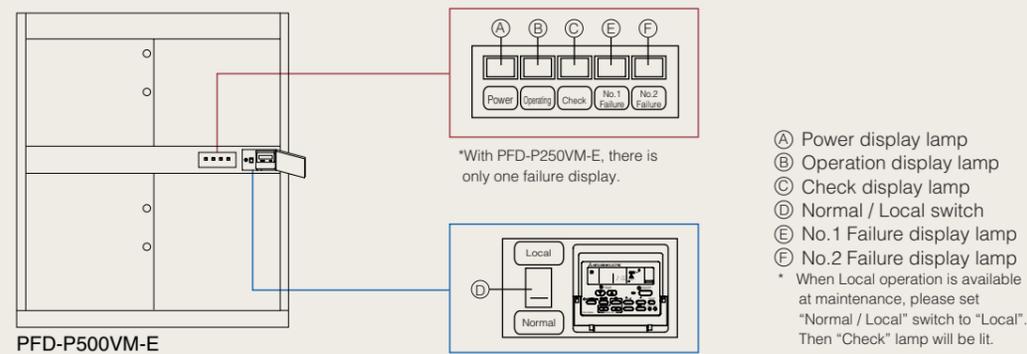


Water cooled PFD series offers reliability and energy-saving that computer rooms require.

CONTROL

Remote Controller

Embedded MA remote controller and display lamps on the PFD unit enables easy control and operation.



Centralized Controller

With a new colored touch panel, and continuation of all the conventional G-50A functions, AG-150A visualizes its functions from basic control to advanced operations and bringing an ultimate controller to reality.



Centralized controller AG-150A



Expansion Controller PAC-YG50ECA
 Dimensions: 250(W) x 217(H) x 97.2(D) mm
 : 9-7/8(W) x 8-9/16(H) x 3-7/8(D) in.

With a connection of a Expansion Controller, maximum of 150 units/groups can be connected to AG-150A.



Option : Black surface cover
 PAC-YG71CBL

New Design

Backlight Color liquid crystal display

Backlight makes it easy to see and control units. One can identify whether a unit is ON or OFF from a distance. Control in the night with no lights is possible.

Touch panel

9 inch wide, high-resolution Touch panel enables operation of units by touching with index finger. When object unit is touched, orange box appears around the unit icon indicating the unit selected.

USB memory compatible

All measurement/initial setting CSV data extractable with USB memory. Can save and overwrite setting data.

New Functions

Controllable units/groups

Controls up to 50 units/groups (including indoor units, LOSSNAY, DIDO/AI/PI controller) Up to 150 units can be controlled via expansion controller;PAC-YG50ECA (AG-150A software needs to be upgraded)

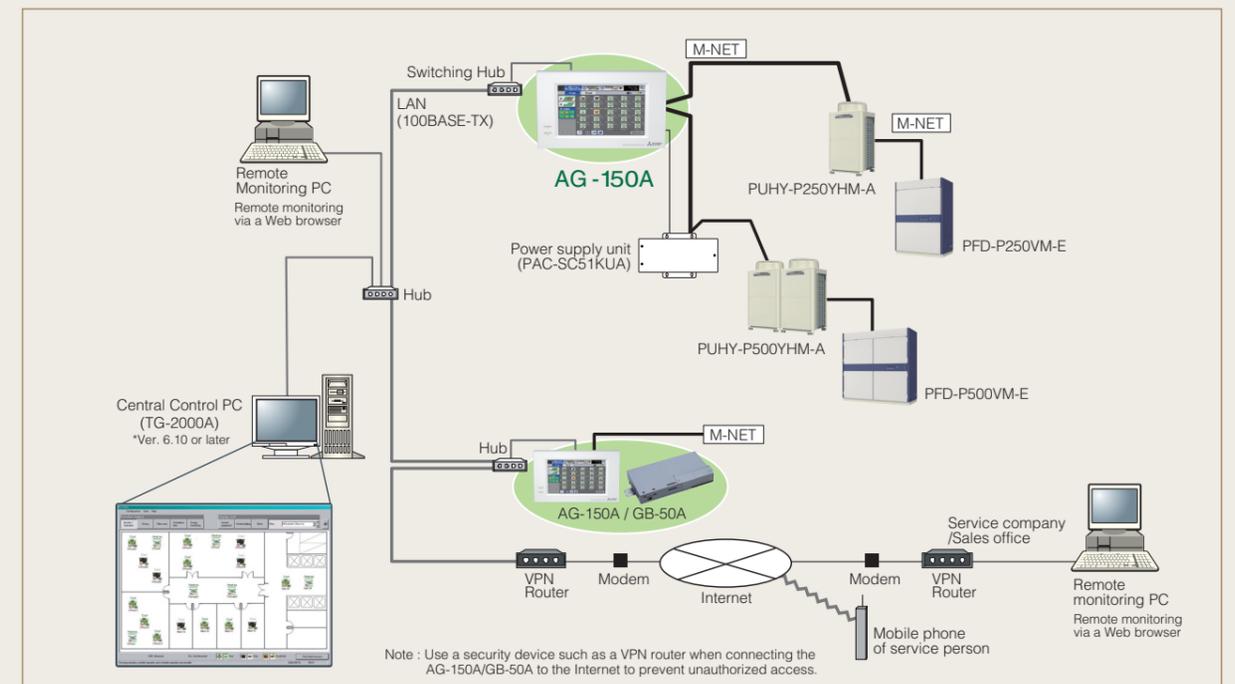
Monitoring functions

Temperature/Humidity (using AI controller with WEB browser) *1
 General equipment such as lights on LCD (using DIDO controller)
 Interlock function from AI controller, DIDO controller to indoor units and between DIDO units are available. AG-150A interlock with DIDO controller or free contact on an indoor unit available. *Ver. 2.30 or later

Energy saving functions

Seasonal scheduling and automatic switch over *1
 Yearly scheduling on LCD *1
 *1 License required.

System structure



Indoor Unit

PFD-P250VM-E (down flow)

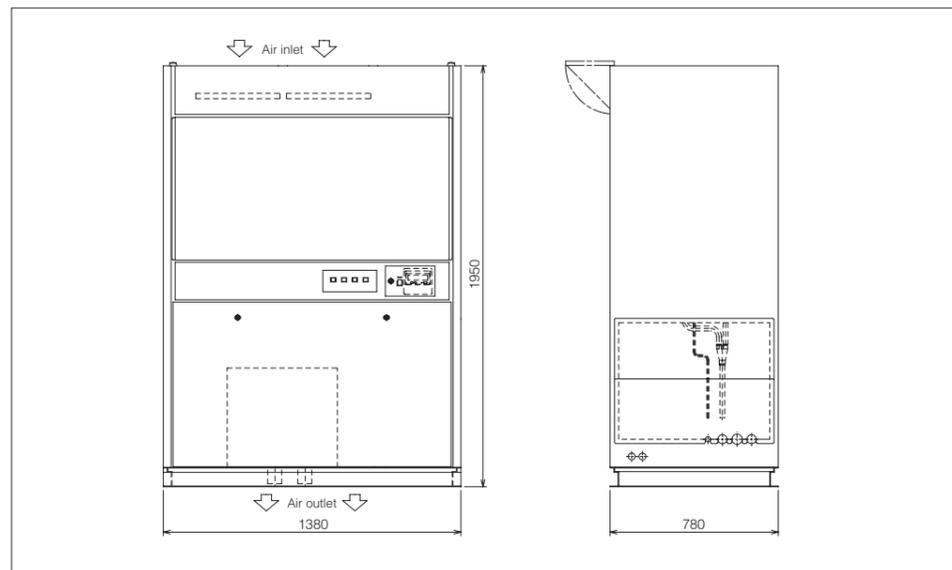


Specification

Model name		PFD-P250VM-E	
		Cooling	Heating
Capacity	kW	28.0	31.5
	BTU/h	95,500	107,500
Sensible Heat Capacity	kW	26.0	—
	BTU/h	88,700	—
Power source		3N~380 / 400 / 415V (50Hz) , 400 / 415V (60Hz)	
Power input	kW	2.5	
Current	A	5.3 / 5.0 / 4.9	
Fan	Type X Quantity	Sirocco fan x 1	
	Airflow rate	m ³ /min	160
	Motor output	kW	2.2
Refrigerant		R410A	
External finish		Galvanized steel plate (with polyester coating) <MUNSEL 2.9GY 8.6 / 0.3 (White) or similar> <MUNSEL 7.2PB 3.2 / 5.3 (Blue) or similar>	
External dimension	mm	1950(H) x 1380(W) x 780(D)	
Protection device	Fan	Thermal switch	
Refrigerant piping diameter	Liquid / Gas	ø 9.52 Brazed / ø 22.2 Brazed	
Sound pressure level	dB (A)	59	
Net weight	kg	380	
Operating temperature range	Indoor	12 ~ 24°C (54 ~ 75°F) W.B.	15 ~ 28°C (59 ~ 82°F) D.B.
	(Outdoor)	(-15 ~ 43°C (5 ~ 109°F) D.B.)	(-15 ~ 15.5°C (5 ~ 60°F) W.B.)
	(Water)	(10 ~ 45°C (50 ~ 113°F))	(10 ~ 45°C (50 ~ 113°F))

- Note: 1. Cooling / Heating capacity indicates the maximum value at operation under the following condition.
 <Cooling> Indoor : 27°C (80.6°F) DB / 19°C (66°F) WB Outdoor : 35°C (95°F) DB (Air cooled) / Water temperature 30°C (86°F) (Water cooled)
 <Heating> Indoor : 20°C (68°F) DB Outdoor : 7°C (45°F) DB / 6°C (43°F) WB (Air cooled) / Water temperature 20°C (68°F) (Water cooled)
 Pipe length : 7.5m Height difference: 0m
2. The sound pressure level is measured in an anechoic room.
 3. Heating can be used only by the indoor warming-up.
 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.
 5. It is necessary to change pulley and v-belt when using it by the power supply frequency 60Hz.

External Dimensions



Indoor Unit

PFD-P500VM-E (down flow)

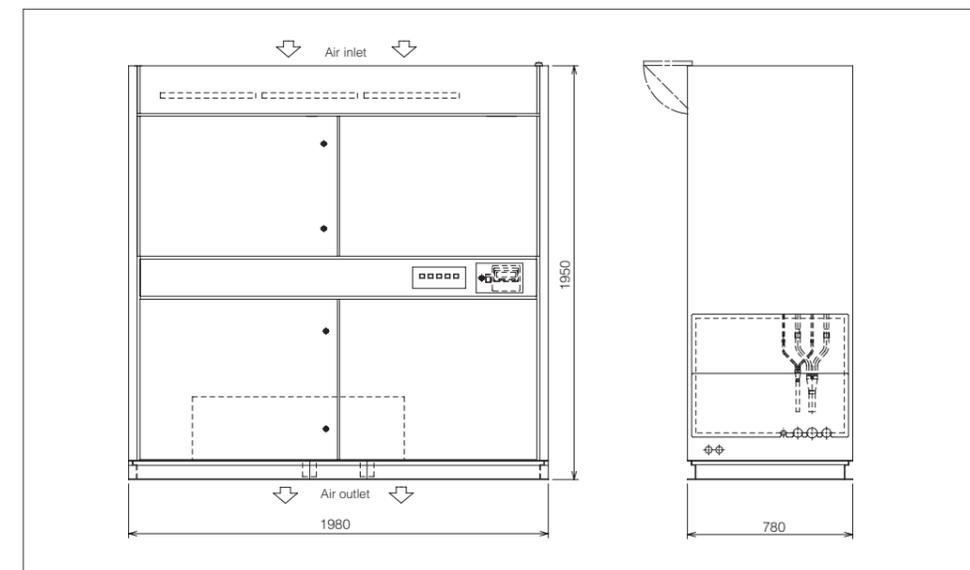


Specification

Model name		PFD-P500VM-E	
		Cooling	Heating
Capacity	kW	56.0	63.0
	BTU/h	191,100	215,000
Sensible Heat Capacity	kW	52.0	—
	BTU/h	177,400	—
Power source		3N~380 / 400 / 415V (50Hz) , 400 / 415V (60Hz)	
Power input	kW	5.0	
Current	A	9.5 / 9.0 / 8.7	
Fan	Type X Quantity	Sirocco fan x 2	
	Airflow rate	m ³ /min	320
	Motor output	kW	4.4
Refrigerant		R410A	
External finish		Galvanized steel plate (with polyester coating) <MUNSEL 2.9GY 8.6 / 0.3 (White) or similar> <MUNSEL 7.2PB 3.2 / 5.3 (Blue) or similar>	
External dimension	mm	1950(H) x 1980(W) x 780(D)	
Protection device	Fan	Thermal switch	
Refrigerant piping diameter	Liquid / Gas	Single refrigerant circuit : ø 15.88 Brazed / ø 28.58 Brazed Two refrigerant circuits : ø 9.52 x 2 Brazed / ø 22.2 x 2 Brazed	
Sound pressure level	dB (A)	63	
Net weight	kg	520	
Operating temperature range	Indoor	12 ~ 24°C (54 ~ 75°F) W.B.	15 ~ 28°C (59 ~ 82°F) D.B.
	(Outdoor)	(-15 ~ 43°C (5 ~ 109°F) D.B.)	(-15 ~ 15.5°C (5 ~ 60°F) W.B.)
	(Water)	(10 ~ 45°C (50 ~ 113°F))	(10 ~ 45°C (50 ~ 113°F))

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 Pipe length : 7.5m Height difference: 0m
2. The sound pressure level is measured in an anechoic room.
 3. Heating can be used only by the indoor warming-up.
 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.
 5. It is necessary to change pulley and v-belt when using it by the power supply frequency 60Hz.

External Dimensions



Outdoor Unit

PUHY-P250, P500Y(S)HM-A (-BS)
(connected with PFD series.)

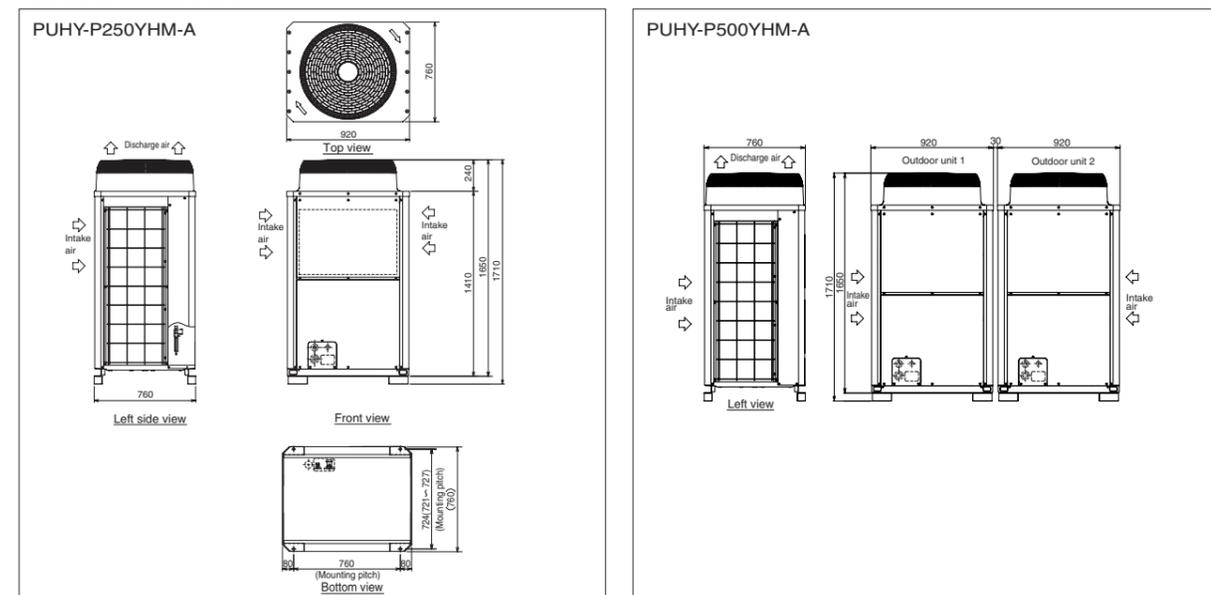


Specification

Model name		PUHY-P250YHM-A (-BS)		PUHY-P500YHM-A (-BS)	
		Cooling	Heating	Cooling	Heating
Capacity	kW	28.0	31.5	56.0	63.0
	BTU/h	95,500	107,500	191,100	215,000
Power source		3N~380 / 400 / 415V (50Hz / 60Hz)			
Power input	kW	6.8	6.6	13.6	13.2
Current	A	11.4 / 10.9 / 10.5	11.1 / 10.5 / 10.2	22.8 / 21.8 / 21.0	22.2 / 21.0 / 20.4
Fan	Type X Quantity	Propeller fan x 1		Propeller fan x 2	
	Airflow rate	m ³ /min		185 x 2	
	Motor output	kW		0.46 x 1	
Refrigerant		R410A			
External finish		Pre-coated galvanized steel sheets (+ powder coating for-BS type) <MUNSEL 5Y8 / 1 or similar>			
External dimension	Height(H) x Width(W) x Depth(D)	mm 1710 (without legs 1650) x 920 x 760		1710 (without legs 1650) x 920 x 760	
Protection device	High pressure protection	High pres. Sensor & High pres. Switch at 4.15 MPa (601psi)			
	Inverter circuit (COMP. / FAN)	Over-heat protection, Over-current protection			
	Compressor	Over-heat protection			
	Fan motor	Thermal switch			
Refrigerant piping diameter	Liquid / Gas	ø 9.52 Brazed (ø 12.7, total length >=90m) / ø 22.2 Brazed		ø 15.88 Brazed / ø 28.58 Brazed	
Sound pressure level	dB (A)	57		60	
Net weight	kg	200		200 x 2	
Operating temperature range	Outdoor	-15 ~ 43°C (5 ~ 109°F) D.B.	-15 ~ 15.5°C (5 ~ 60°F) W.B.	-15 ~ 43°C (5 ~ 109°F) D.B.	-15 ~ 15.5°C (5 ~ 60°F) W.B.
	(Indoor)	(12 ~ 24°C (54 ~ 75°F) W.B.)	(15 ~ 28°C (59 ~ 82°F) D.B.)	(12 ~ 24°C (54 ~ 75°F) W.B.)	(15 ~ 28°C (59 ~ 82°F) D.B.)

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 Pipe length : 7.5m Height difference: 0m
2. The sound pressure level is measured in an anechoic room.
 3. Heating can be used only by the indoor warming-up.
 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.

External Dimensions



Heat Source Unit

PQHY-P250YHM-A
(connected with PFD series.)

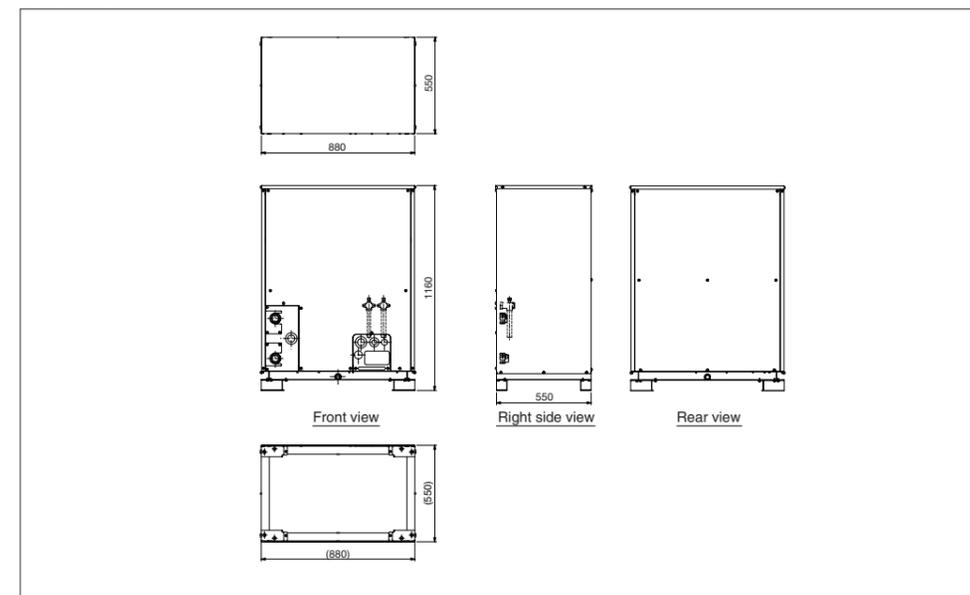


Specification

Model name		PQHY-P250YHM-A	
		Cooling	Heating
Capacity	kW	28.0	31.5
	BTU/h	95,500	107,500
Power source		3N~380 / 400 / 415V (50Hz / 60Hz)	
Power input	kW	5.45	5.51
Current	A	9.2 / 8.7 / 8.4	9.3 / 8.8 / 8.5
Compressor	Type	Inverter scroll hermetic compressor	
Heat exchanger	Motor output	kW 6.3	
	Type	plate	
Circulating water	Water volume in the plate	ℓ 5.0	
	Volume	m ³ /h 5.76	
	Pressure drop	cfm 3.4	
		kPa 17	
Refrigerant		R410A	
External finish		Acrylic painted steel plate	
External dimension	Height(H) x Width(W) x Depth(D)	mm 1160 (1100 without legs) x 880 x 550	
Protection device	High pressure protection	High pressure sensor, High pressure switch 4.15 MPa (601psi)	
	Compressor	Over-heat protection	
	Inverter	Over-heat protection, Over-current protection	
Refrigerant piping diameter	Liquid / Gas	ø 9.52 Brazed (ø 12.7, total length >=90m) / ø 22.2 Brazed	
Sound pressure level	dB (A)	49	
Net weight	kg	195	
Operating temperature range	Water	10 ~ 45°C (50 ~ 113°F)	10 ~ 45°C (50 ~ 113°F)
	(Indoor)	(12 ~ 24°C (54 ~ 75°F) W.B.)	(15 ~ 28°C (59 ~ 82°F) D.B.)

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 <Heating> Indoor : 20°C (68°F) DB Water temperature : 20°C (68°F)
 Pipe length : 7.5m Level difference : 0m
2. The ambient temperature of the heat source unit needs to be kept below 40°C (104°F) DB.
 3. The ambient relative humidity of the heat source unit needs to be kept below 80%.
 4. The heat source Unit should not be installed at outdoor.
 5. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.
 6. Be sure to provide interlocking for the unit operation and water circuit.
 7. It is measured in anechoic room.

External Dimensions





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.



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).

 **MITSUBISHI ELECTRIC CORPORATION**
<http://Global.MitsubishiElectric.com>