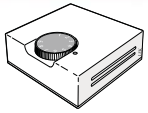
Accessories

Drain Pan heater

Drain pan heater to a outdoor unit for operation in colder climates
Part no. PCZ006A033

MH-RG 10

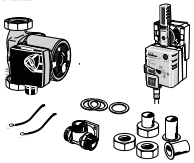


Room sensor
Part no. MCD291A001

VCC22

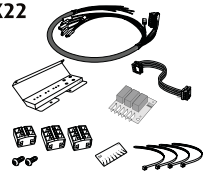
Reversing valve for changing operation of cooling and heating
Part no. MCD291A002

ESV22



Extra mixing valve group for adjusting temperature in heating operation
Part no. MCD291A003

ACK22



Cable kit for ESV 22 or VCC 22
Part no. MCD291A004

Before starting use

Before use
In order to get the greatest benefit from Our Air to Water Heat Pump, read thoroughly the User's manual.

Places
Do not install in places where combustible gas could leak or where there are sparks.
Keep away from places where combustible gas could be generated, flow or accumulate, or locations containing carbon fibers otherwise there is a danger of fire.

Installation
Installation must be carried out in accordance with current norms and directives.
Current regulations require the inspection of installation before commissioning and the inspection must be carried out by suitable qualified personnel and should be documented.
Improper installation will lead to water leakage, electric shocks, fires and other serious problems.
Make sure that the indoor unit and the outdoor unit are stable in installation and fixed on stable base.

MITSUBISHI HEAVY INDUSTRIES, LTD.

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16-5 2-Chome Kounan Minato-ku Tokyo
108-8215, Japan
www.mhi.co.jp

ISO9001
Our Air Conditioning & Refrigeration Systems Headquarters is an ISO9001 approved factory for residential air conditioners and commercial-use air conditioners (including heat pumps).

ISO14001
Our Air Conditioning & Refrigeration Systems Headquarters has been assessed and found to comply with the requirements of ISO14001.

HB91-10HM01E-A-0 July 2010(160)R

MITSUBISHI HEAVY INDUSTRIES, LTD.
Our Technologies, Your Tomorrow

R410A

Eco·lution

High Performance Air to Water Heat Pump

Hydrolution HM

Air to Water Heat Pump

50Hz

10HM01E-A-0

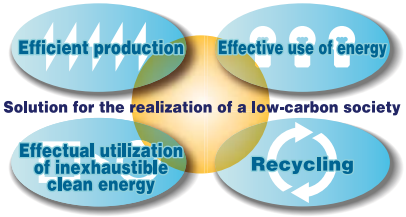
Air to Water Heat Pump

Mitsubishi Heavy Industries has integration of high technology in a variety of areas and provides comprehensive solutions for realization of a low-carbon society.
Air to water heat pump is one of our products supported by our unrivaled technology to realize utmost energy savings, safety and assurance.

Our realized contributions to global environment

Our contributions to a low-carbon society encompass the entire product life cycle from efficient production, effective use of energy, effectual utilization of inexhaustible clean energy and recycling. This is a part of our accomplishments through unique technological features.

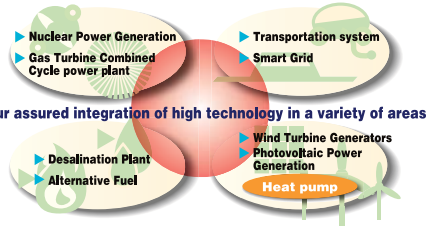
Mitsubishi Heavy Industries provides total solutions to reduce environmental load in entire social infrastructure.



Assured integration of high technology in a variety of areas

Our product portfolio covering entire social infrastructure is supported by our proven high technology. We integrate proprietary technologies which have already demonstrated its significant capabilities in their own fields to augment its effects in our total solutions. Our air to water heat pump is an innovative system developed by such integration of high technology.

Our assured integration of high technology is the mainstay of low-carbon society.

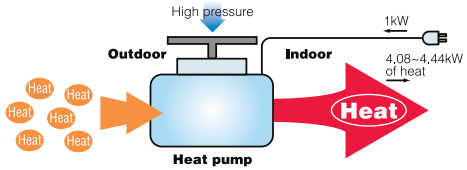


Heat pump technology for low-carbon society

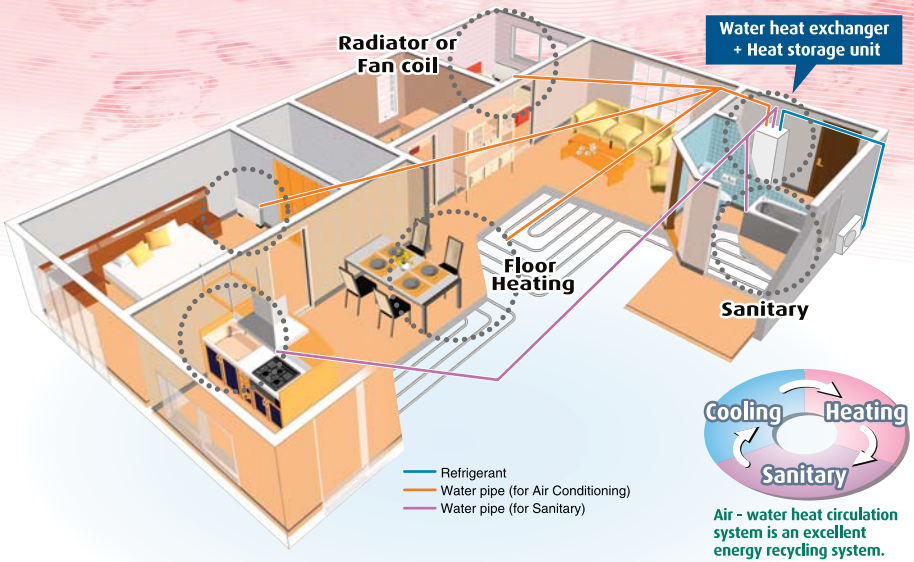
Air to water heat pump is a revolutionary energy recycling system which reduces environmental load by reusing heat energy produced in daily life.
This first-rate energy saving system has been developed by our exceptional technology.

Saving running cost with use of heat pump technology

Typically less than 1kw of output heat energy can be produced by conventional oil or gas boilers. Heat pump technology is capable of producing up to 4.44kW of heat energy from 1kW of energy input making the system 4.44 times more efficient than traditional means.



Product Information

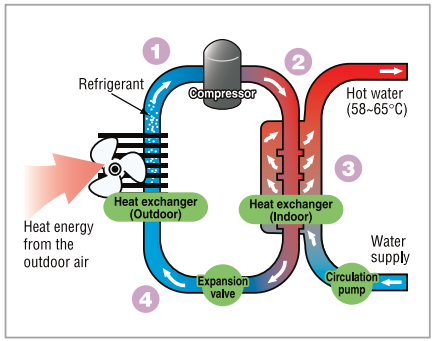


Air - water heat circulation system is an excellent energy recycling system.

Our Air to Water Heat Pump is a complete modern system for heating, cooling and producing hot sanitary water for houses, offering effective energy saving and reducing carbon dioxide emission. Our product is safe and economical with integrated hot water heater, immersion heater, circulating pump and climate system within the indoor unit.

The heat energy is retrieved from the outdoor air through the outdoor unit, and is transferred to the indoor unit by the medium of refrigerant circulated in closed piping system.
This eliminates the needs of bore holes and coils in the ground for conventional systems.

Heat pump technology system



Our Air to Water Heat Pump is a system that can offer heating, hot sanitary water and cooling. The mechanism of heat pump during heating can be simplified as follows.

1. The outdoor unit retrieves the heat energy from the outdoor air (heat source) and increases its temperature through compressing process by compressor.
2. The hot refrigerant (now in gas state) is routed to Indoor unit.
3. The refrigerant releases the heating energy to water for further distribution in the climate system.
4. The refrigerant (now in liquid state) is routed back to the outdoor unit and this process is repeated.

By reversing the entire process for cooling, the refrigerant in this system retrieves the heat energy from water and releases it to outdoor air in accordance with heat pump theory.
the indoor unit determines when the outdoor unit is to run or not to run by using the collated data from the temperature sensor. In the event of extra heat demands, the indoor unit can utilize additional heat in the form of the immersion heater, or any connected external addition.

3HP, 3.5HP

FDCW71VNX

FDCW100VNX

HMA100V
HMA100VM

6HP

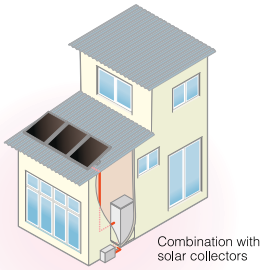
FDCW140VNX

HMS140V

MT300

Features

- Optimum annual operation costs thanks to the inverter driven compressor.
  The speed of the compressor is controlled according to the demand, and the industries highest COP level of 4.08~4.44* in heating operation has been achieved.
  (*: condition 2 on page 5)
- The compact size (600x650mm footprint) has been achieved by integrating the hot water tank for sanitary water together with the water heat exchanger in indoor unit. Electric wiring and piping works are simpler due to integrated indoor unit design.
- Max temperature flow line is 65°C with use of a large-capacity auxiliary electric heater as standard equipment for back-up so that the system will be able to cope with irregular and excessive use of hot water.
  (58°C with only use of compressor)
- Various sterilization temperature settings according to the requirements of each country.
- Water supply pressure at showers and faucets to second and third floors will not drop.
  By utilizing the direct incoming water supply and not using water from a storage tank water pressure and quality is maintained as well as the reduction in risk of legionella bacteria generation.
  (If a third party water storage tank is used there will be a reduction of water pressure at showers and faucets when they are used at the same time.)



Combination with solar collectors

- Possible to connect external heating sources including solar collectors. Refer to our installation manual for details.

Specifications

3HP, 3.5HP, 6HP

			3HP		3,5HP		6HP
Indoor Model			HMA100V	HMA100VM	HMA100V	HMA100VM	HMS140V
Outdoor Model			FDCW71VNX		FDCW100VNX		FDCW140VNX
Power source			1 phase 230V 50Hz 3 phase 400V 50Hz	3 phase 230V 50Hz	1 phase 230V 50Hz 3 phase 400V 50Hz	3 phase 230V 50Hz	1 phase 230V 50Hz 3 phase 400V 50Hz
Heating Nominal capacity	condition 1	kW	8.0 (3.0-8.0)		9.0 (3.5-12.0)		16.5 (5.8-16.5)
	condition 2	kW	8.3 (2.0-8.3)		9.2 (3.5-10.5)		16.5 (4.2-17.2)
COP	condition 1		3.33		3.60		3.31
	condition 2		4.08		4.44		4.20
Cooling Nominal capacity	condition 1	kW	7.1 (2.0-7.1)		8.0 (3.0-9.0)		–
	condition 2	kW	10.7 (2.7-10.7)		11.0 (3.3-12.0)		16.5 (5.2-16.5)
EER	condition 1		2.68		2.81		–
	condition 2		3.35		3.62		3.59
Tapping capacity	12liter/min	liter	270		270		–
	16liter/min	liter	200		200		–
Operation range (Ambient temperature)		heating	-20-43*1				
		cooling	15-43				
Operation range (Water temperature)		heating	25-58 (65 with immersion heater)				
		cooling	7-25				18-25
Max refrigerant pipe length		m	30		12		30
Max height difference between IU and OU		m	7				
Indoor Unit: Height		mm	1760 (+20-50mm, adjustable feet)				1004
Indoor Unit: Width		mm	600				513
Indoor Unit: Depth		mm	650				360
Indoor Unit: Weight (without water in the system)		kg	140				60
Indoor Unit: Immersion heater			9kW 4steps				–
Indoor Unit: Volume total		liter	270 ±5%				–
Indoor Unit: Volume hot water coil		liter	14				–
Indoor Unit: Volume expansion vessel		liter	–				18
Indoor Unit: Dimensions, climate system pipe		mm	22				28
Indoor Unit: Dimensions, hot water pipe		mm	22				–
Indoor Unit: Water pipe connections			Compression fittings				
Outdoor Unit: Height		mm	595		845		1300
Outdoor Unit: Width		mm	780 (+67 with valve cover)		970		970
Outdoor Unit: Depth		mm	340		370 (+80 with foot rail)		370 (+80 with foot rail)
Outdoor Unit: Weight		kg	60		74		105
Outdoor Unit: Sound Power level*2		dB(A)	64		64.5		71
Outdoor Unit: Sound Pressure level*2		dB(A)	48		50		54
Outdoor Unit: Airflow		m^3/min	50		73		100
Outdoor Unit: Type of compressor			Rotary				
Outdoor Unit: Ref control			EEV				
Outdoor Unit: Refrigerant volume (pipe length without additional charge)		kg (m)	2.55 (15)		2.9 (12)		4.0 (15)
Outdoor Unit: Dimensions, refrigerant pipe		mm(inches)	Gas pipe : OD 15.88 (5/8"), Liquid pipe : OD 9.52 (3/8")				
Outdoor Unit: Ref pipe connections			Flare				

Tank Unit (for HMS140V only)

Model			HT30	MT300	MT500
Power source			1 phase 230V / 3 phase 400V 50Hz		
Volume		liter	30	300	500
Volume hot water coil		liter	–	14	21
Tapping capacity	12liter/min	liter	–	320	To be determined
	16liter/min	liter	–	230	To be determined
Immersion heater		kW	9kW 4steps		
Height		mm	358	1880	1695
Width		mm	593	597	759
Depth		mm	360	598	879
Weight		kg	23	110	131
Dimensions, climate system pipe		mm(inch)	28	25.4 (1")	28
Dimensions, hot water pipe		mm(inch)	-	25.4 (1")	

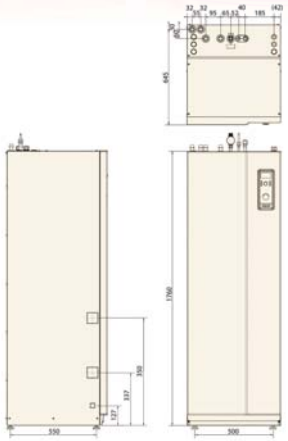
Test conditions

		Water Temperature	Ambient Temperature
Heating	condition 1	45°C out / 40°C in	7°C DB / 6°C WB
	condition 2	35°C out / 30°C in	
Cooling	condition 1	7°C out / 12°C in	35°C DB
	condition 2	18°C out / 23°C in	
Tapping		40°C out / 15°C in	7°C DB / 6°C WB

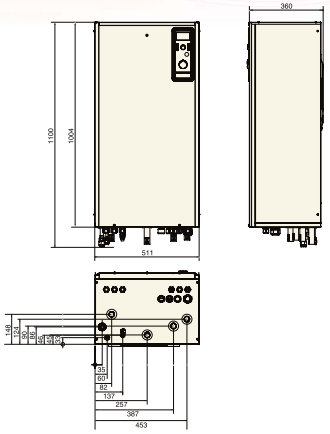
*1 : According to the outdoor air temperature and installation condition, it is required to use wind guard for outdoor unit. Refer to Technical manual for details.
*2 : Test condition for sound pressure level
Temperature condition : Heating condition 1
MIC position : 1m away in front of outdoor unit at the height of 1m

Dimensions

Indoor unit (3HP, 3.5HP)

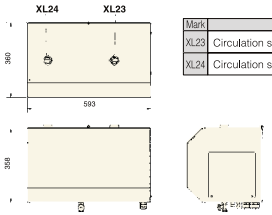


Indoor unit (6HP)



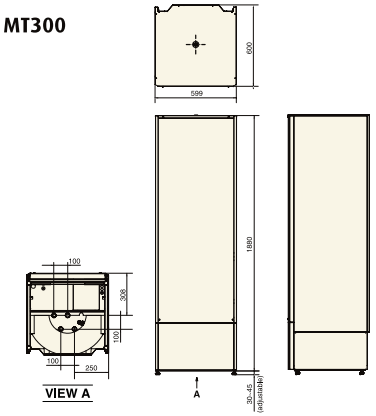
Tank for indoor unit (6HP)

HT30

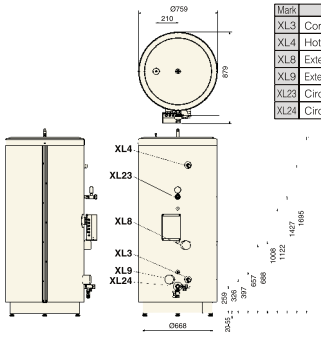


Mark	Item	
XL23	Circulation supply	28mm
XL24	Circulation supply	28mm

MT300

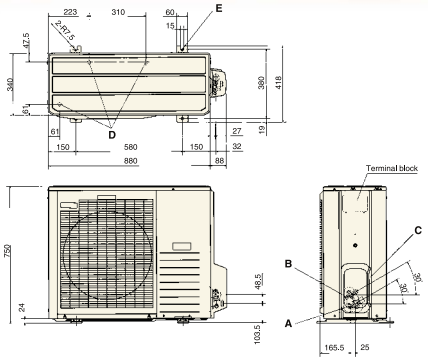


MT500

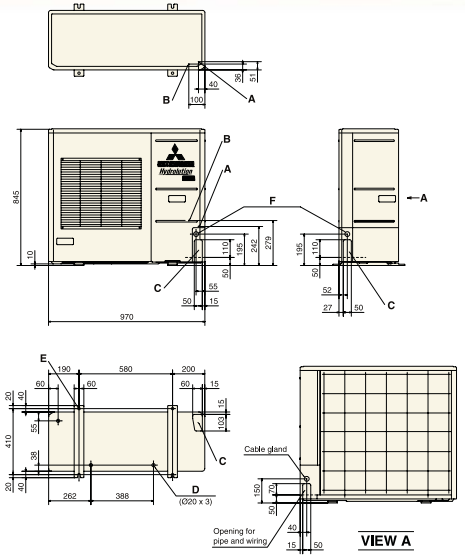


Mark	Item	
XL3	Cord water	G1 ext.(1")
XL4	Hot water	G1 ext.(1")
XL8	External heat source in	G1 int
XL9	External heat source out	G1 int
XL23	Circulation supply	28mm
XL24	Circulation return	28mm

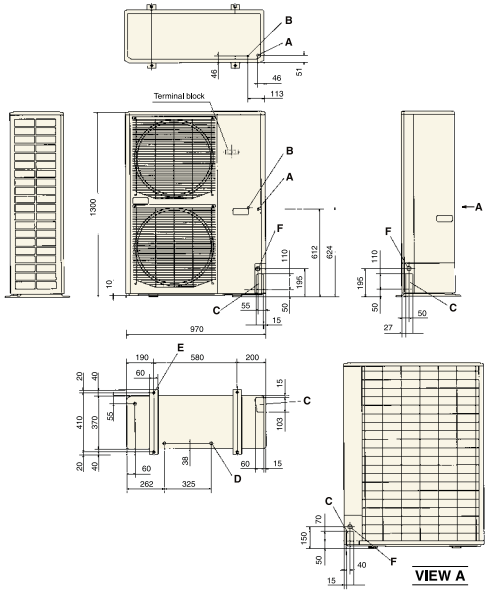
Outdoor unit (3HP)



Outdoor unit (3.5HP)



Outdoor unit (6HP)



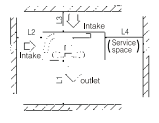
Mark	Item	3HP / 3.5HP	6HP
A	Service valve connection (gas side)	ø15.88(5/8") (Flare)	
B	Service valve connection (liquid side)	ø9.52(3/8") (Flare)	
C	Pipe/cable draw-out hole		
D	Drain discharge hole	ø20x3places	
E	Anchor bolt hole	M10x4places	
F	Cable draw-out port	ø30.3x3places	ø30(front) ø45(side) ø50(back)

Notes:
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
(4) Leave 1m or more space above the unit.
(5) A wall in front of the blower outlet must not exceed the units height.
(6) The model name label is attached on the lower right corner of the front panel.

Minimum installation space

3HP

Dimensions \ Examples of installation	1	2	3
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250



3.5HP/6HP

Dimensions \ Examples of installation	1	2	3
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5