

INNOVATIVE SOLUTION OF
DOMESTIC HEATING



High Efficiency

HyperInverter

Air-to-water heat pump

The heating and cooling systems of the future!

A step in the right direction of reducing pollution and CO₂ emissions

The increase of CO₂ and other green house gases is a key concern.

Following the European commitment of reducing 20% of the emissions by 2020, energy waste from residential space heating and domestic hot water have been identified as the possible reduction targets.

Air-to-water heat pumps are considered as renewable energy technology compared to heating systems dependent on fossil fuel or non efficient electrical heating.

They are now considered as ideal solutions for space heating and domestic hot water.

Residential heat production by means of gas, oil or electricity contribute to raise the CO₂ emissions level in the atmosphere. In addition these traditional heating systems are less efficient and therefore the energy running costs increase.



ENERGY EFFICIENT OPERATION

Traditionally domestic heating has been provided by fossil fuels (coal, electricity, oil, gas, LPG). These resources are not only finite but the burning of them is also a major contributor to carbon emissions. The EU is launching legislation to rule on the environmental and efficiency performance of heating systems such as the Energy Performance of Building Directive (EPBD), the ECO label or REACH.

The air-to-water heat pump from Mitsubishi Heavy Industries uses a sustainable energy source. In fact, it extracts heat from the outside air. The system consists of a closed circuit containing R-410A refrigerant. A thermodynamic cycle is created through evaporation, condensation, compression and expansion. A heat pump "pumps" heat from a low to a high temperature level. The heat raised is transferred to the water distribution system (under floor heating, low temperature radiators and/or fan coil units) in the home via a heat exchanger.

Connect to solar systems



Efficiency can be increased and carbon emissions reduced even further when is combined with other renewable sources such as solar water heating systems.

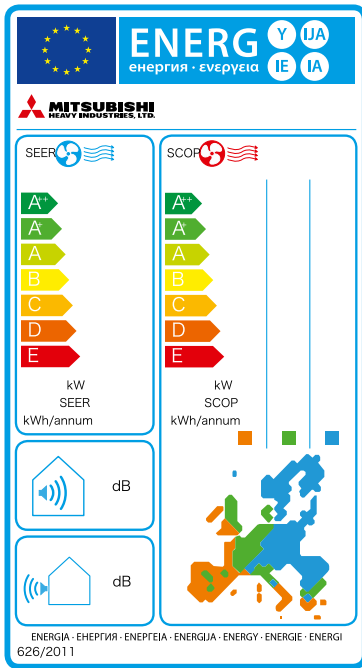
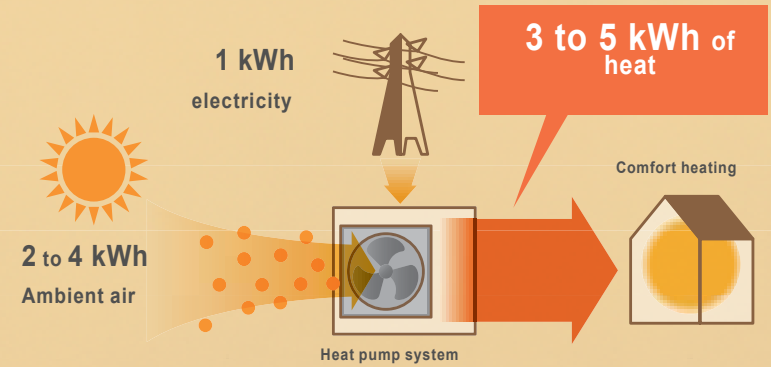
 **MITSUBISHI**
HEAVY INDUSTRIES, LTD.

Our Technologies, Your Tomorrow

We are surrounded by an endless supply of free energy: supplied by the sun and present in all spheres of our environment, the air, the ground, the groundwater...Heat pumps enable us to recover this free, inexhaustible energy and to harness its power to heat our homes. These systems have the huge advantage, apart from reducing your electricity bill, of saving fossil fuels and at the same time limiting greenhouse gas emissions. Mitsubishi Heavy Industries system is an air/water heat pump system that uses energy from the outdoor air and transmits them via a heat exchanger to the water used to heat your home in winter, in addition, some Aquarea models can even be used to cool your house in summer time and produce hot water all year round.

WHAT'S A HEAT PUMP ?

Absorbing the free energy from atmosphere. Heat pump requires only 1kW of electricity to generate 3 to 5 kW thermal energy.



ENERGY LABEL "Class A"

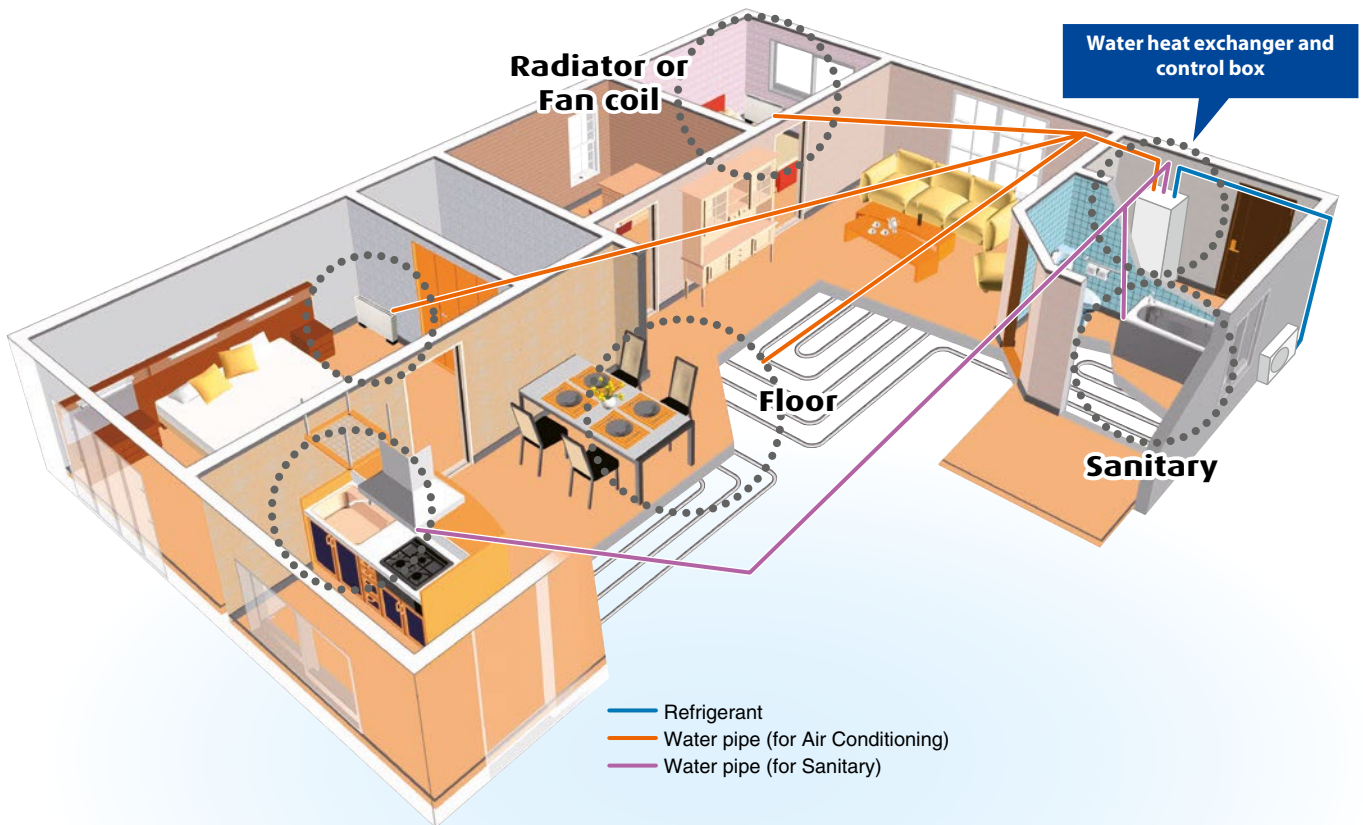
in European

Seasonal efficiency is the new way of rating the true efficiency of heating and cooling products over an entire year. Set by the EU's new regulation implementing Eco-Design Directive for Energy Related Product (ErP) which specifies the minimum efficiency of heating pumps manufacturers must integrate into their products. The new Seasonal Efficiency rating system that must be used for heating and cooling by all manufacturers



OUTDOOR UNIT : AN EFFICIENT USE OF ENERGY FROM THE AIR

The outdoor unit extracts heat from the outside air and transfers it inside through refrigerant piping to supply heating. The compact outdoor unit is easily installed and, as no drilling or excavation work is required, it can also be installed in condos and apartments.



RADIATORS



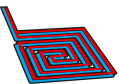
Existing low temperature radiators can be used with a heat pump heating system. The electronic control of the module keeps the temperature constant, avoiding heating peaks and heat waste.

FAN COILS



Fan coils distribute heat or cold air in the ambient. Its fan speed and room temperature can be regulated from the controller to match the user's personal needs.

UNDER FLOOR HEATING



Water circuits run in underfloor pipes. With this system, heat energy (radiant heat and heat conduction) in the floor is an excellent heating element. Floor heating is a low temperature heating system.

SANITARY HOT WATER TANK



The hot water stored in the tank is kept at temperature using the heat generated by the heat pump. Electrical heating is used only whenever there is a peak request for hot water. Periodically, heat over 60°C is used to prevent bacteria formation. Different tank types and sizes are available to adapt to any domestic need.

HEAT PUMP



It is placed outside the building. Its function is to extract heat from the ambient air, increase its temperature, and use the refrigerant pipes to transport it to the internal unit. In the warm season, the process is reversed to lower the temperature in the

water circuit.

If the temperature is low, and the humidity is high, frost will stick to the heat exchanger of the outdoor unit. If use is continued, the "Automatic defrosting device" will function to remove this frost.

CONTROL



The user-friendly interface is placed in the hydronic module. It provides triple function: installation parameters and setpoints, user-selectable programs and scheduled operation, system monitoring, and self-check diagnosis.

HYDRONIC MODULE



Placed indoors, either in the kitchen cabinet or a service room, the indoor unit has a separate heat exchanger to transfer the heat from the refrigerant circuit to the water circuit.

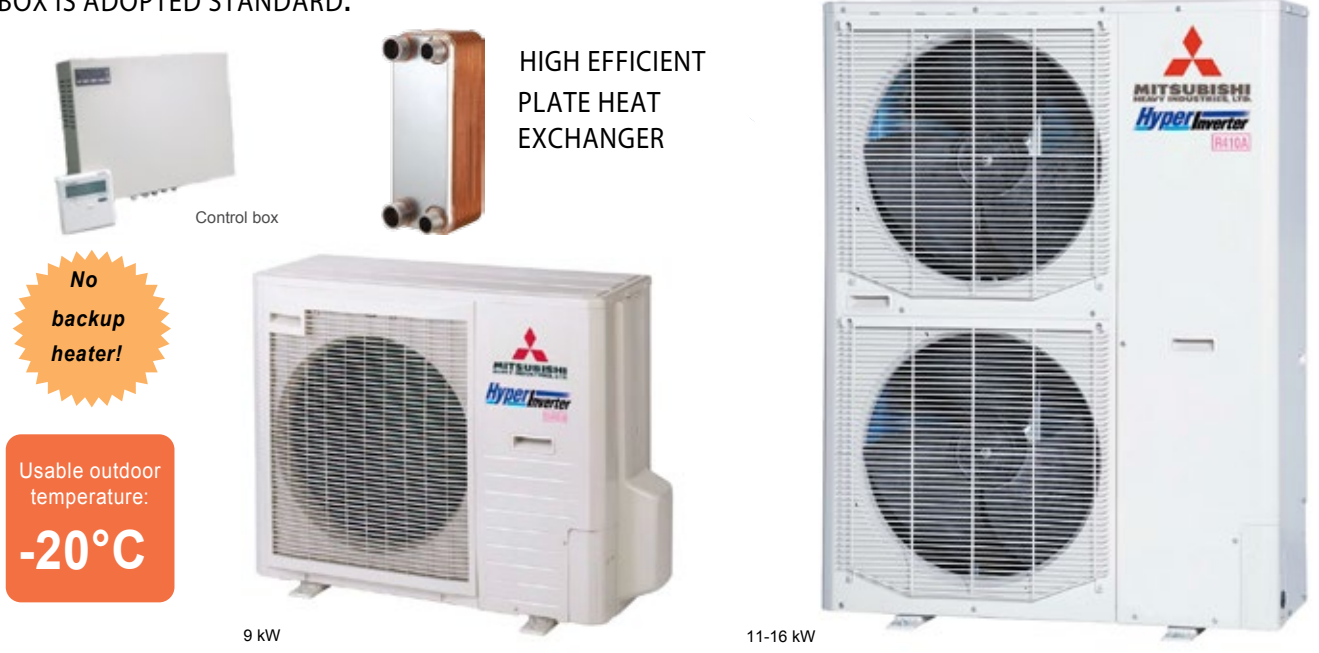
The advanced electronics enable the hydronic module to distribute intelligently the right water temperature according to the data received from the 5 indoor temperature sensors.

High Efficiency Technology



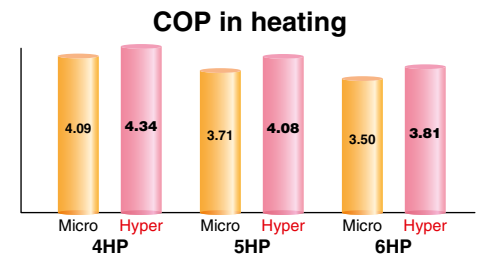
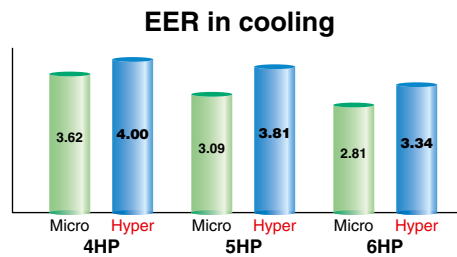
Our new advanced technology has realized high efficiency, strong heating and long piping. This contributes to the environmental protection through energy saving and permits installation of the units (11~16kW) considering a heating operation under temperature conditions down to -20°C and design flexibility has been improved by extension of piping length to 100m.

WIRED REMOTE CONTROLLER AND CONTROL BOX IS ADOPTED STANDARD.

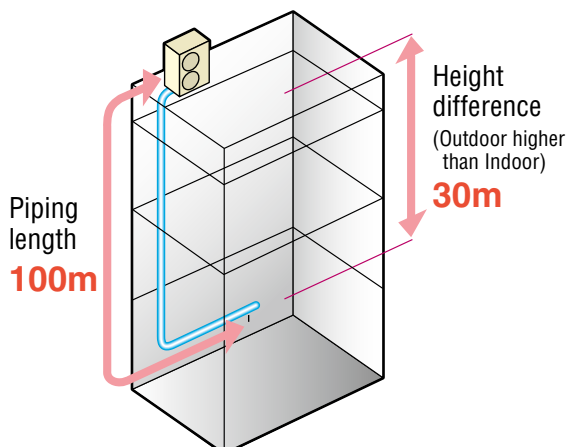


High efficiency

The industry's highest COP levels are achieved by our latest technologies, such as new high efficient twin rotary compressors and the combination with new Hyper inverter outdoor units.

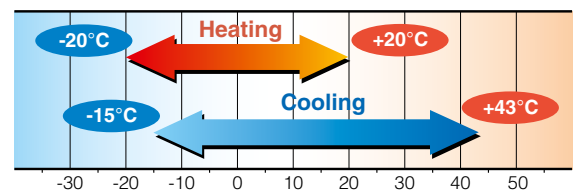


Long piping (in case of 11-16kW)



Strong heating (in case of 11-16kW)

-20°C : Heating operation down to -20°C
 -15°C : Nominal heating capacity maintained at -15°C



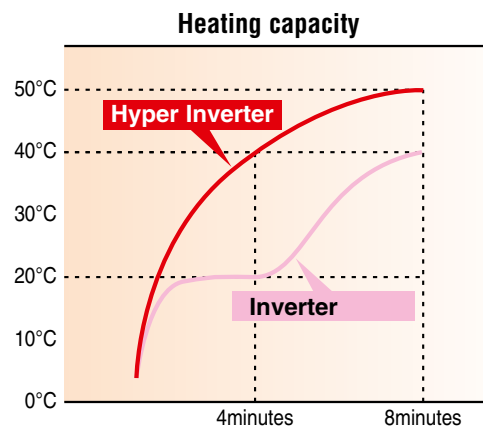
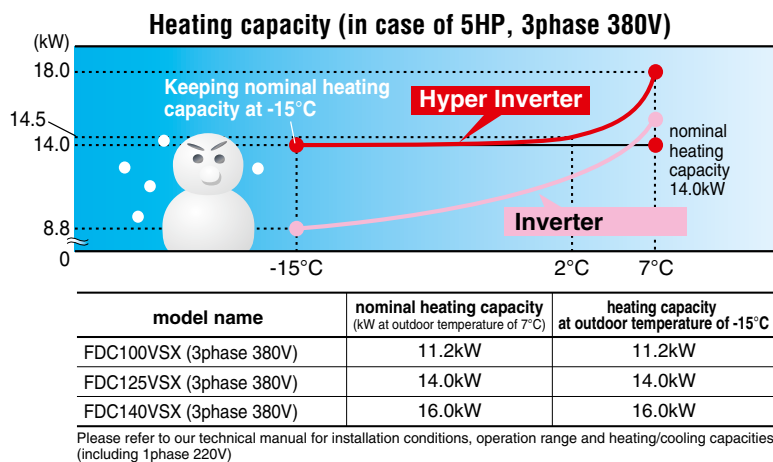
Max. heating capacity (kW)

	Hyper Inverter	Inverter
FDC100VSX(4HP, 3phase 380V)	16.0	12.5
FDC125VSX(5HP, 3phase 380V)	18.0	16.0
FDC140VSX(6HP, 3phase 380V)	20.0	16.5

Leading powerful heating capacity in the industry

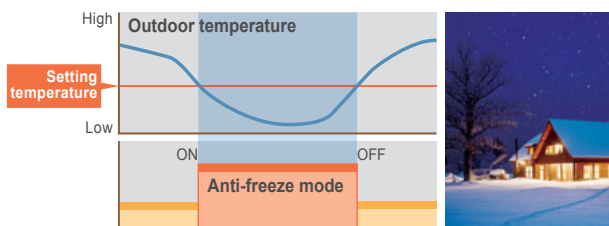
Thanks to optimization of refrigeration control with use of electric expansion valve and development of new twin rotary compressors, max heating capacity has been increased. Hyper Inverter series can reach the set temperature very quickly, keeping nominal heating capacity when outdoor temperature is -15°C. It is effective to be used even in cold area.

Temperature of supply air can reach 40°C in 4 minutes after start up under low temperature operation conditions (at both indoor and outdoor temperature of 2°C) and can reach 50°C in 8 minutes after that.



ANTI-FREEZE FUNCTION & Base heater

Water circulation and compressor can be automatically performed at low outdoor temperature. Freezing of circulated water can be prevented.



Base heater

Automatic activation when temperature drops below 0°C.



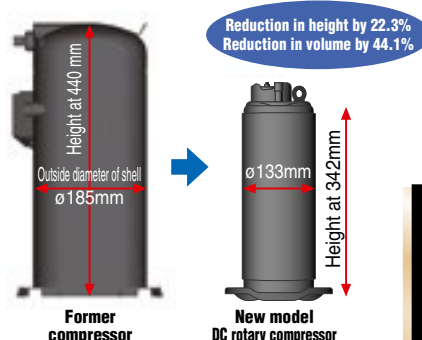
DC FAN MOTOR

High performance, high efficiency small DC fan motor mounted.



Size reduction and high efficiency performance on the DC twin rotary compressors

Employment of DC twin rotary compressor has enabled to utilize a high-speed range of up to 120 rps at the maximum to secure the required capacity. Optimum compressor control has been realized by employing the vector control* and the starting current has been improved significantly compared with former models. Moreover, vibration has been reduced.

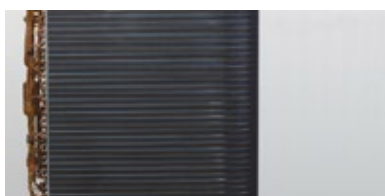


* Vector control means a technique to realize an optimum control by converting the current wave to a smooth sinusoidal waveform



Blue Fin

Due to application of blue coated fins (KS101) for the heat exchanger of new outdoor unit, corrosion resistance has been improved compared to current models.



Wired remote control with weekly timer

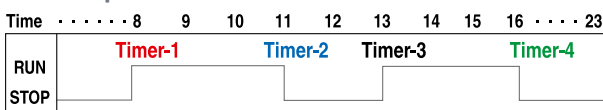


The RC-E5 control enables extensive access to service and maintenance technical data combined with easy to use functions and a clear LCD display.

Weekly timer function as standard

RC-E5 provides (as a standard feature) a weekly timer, which allows one-week operation schedules to be registered. A user can specify up to four times a day to start/stop the air conditioner. (Temperature setting is also possible with the timer).

Timer operation

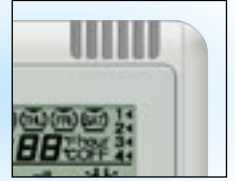


Run hour meters to facilitate maintenance checking

RC-E5 stores operation data when an anomaly occurs and indicates the error on the LCD. It also displays cumulative operation hours of the air conditioner and compressor since commissioning.

Room temperature controlled by the remote control sensor

The temperature sensor is housed in the top section of the remote control unit. This arrangement has improved the sensitivity of the remote control unit's sensor, which permits more finely controlled air conditioning.



Changeable set temperature ranges

RC-E5 allows the upper and lower limits of a set temperature range to be specified separately. By adjusting a set temperature range, you can ensure energy saving air conditioning by avoiding excessive cooling or heating.

Changeable range	
Upper limit	20~30°C (effective for heating operation)
Lower limit	18~26°C (effective for non-heating operation)

eco touch CONTROL (option)

LCD contrast setting
Back light setting
Control sound
Outdoor silent mode
Summer time setting
Home leave mode
Indoor & outdoor temperature display
Heating standby display
Defrosting operation display
Administrator settings
Sleep timer
Peak cut timer
Automatic temperature set back
Weekly timer
Set ON/OFF timer
Next service date display
Contact company display
USB connection (mini-B)
...

NEW

RC-EX1A



Setting temperature screen



Run / Stop

High power operation

The highest capacity operation (Max 15 minutes)

- Increasing compressor speed
- Increasing power

Energy-saving operation

- Changes set temperature. At 28°C in cooling mode and 22°C in heating mode, 25°C in auto mode.
- Operation correction by outdoor temperature



Control box

**Remote control
Wired**

 RC-EX1A(Optional)
RC-E5


Outdoor units



Model		SRC 80ZM-S	FDC 100VSX	FDC 125VSX	FDC 140VSX
Power supply		220 V, 50Hz	3 Phase 380V 50Hz		
Type		Inverter	HyperInverter		
Function		Heating – Cooling – DWH*			
Heating	Capacity (kW)	9.0 [1.7 (Min.)~ 10.5 (Max.)]	11.2 [4.0(Min.)~ 16.0(Max.)]	14.0 [4.0(Min.)~ 18.0(Max.)]	16.0 [4.0(Min.)~ 20.0(Max.)]
	Input (kW)	2.57	2.58	3.77	4.42
	COP	3.50	4.34	3.71	3.62
Cooling	Capacity (kW)	8.0 [2.15 (Min.)~ 9.0 (Max.)]	10.0 [4.0(Min.)~ 11.2(Max.)]	12.5 [5.0(Min.)~ 14.0(Max.)]	14.0 [5.0(Min.)~ 16.0(Max.)]
	Input (kW)	2.35	2.50	3.49	4.28
	EER	3.40	4.00	3.58	3.27
Refrigerant piping size		φ15.88 / φ6.35	φ15.88 / φ9.52		
Sound pressure level	dB(A)	48~57	48~50	48~50	49~52
Minimum pipe length	m	3	5		
Maximum pipe length	m	30 (15m Pre-charged)	100 (30m Pre-charged)		
Maximum height differen	m	20	20		
Operation range(heating mode)	Outdoor ambient °C	-15 ~ 35°C	-20 ~ 35°C		
Leaving water temperature heating	Thermostat control °C	20 ~ 55°C			
Leaving water temperature cooling	Thermostat control °C	10 ~ 25°C			
Leaving water temperature domestic hot water tank*	Thermostat control °C	25 ~ 58°C			
Water inlet/outlet pipe connection	in	3/4"	1"		
Outdoor unit Dimension/weight	HxWxD mm / Kg	845 x 970x 370 / 63kg	1300x970x370 / 105kg		
Control thermostat box Dimension /weight	HxWxD mm / Kg	300 x 400 x 90/0.5kg			

*In case of DWH

Control box is equipment with one more thermostat controller

* The capacities in this catalogue are calculated based on following conditions:

Heating:

Leaving hot water temperature: 35°C (ΔT 5°C).
Outdoor air temperature: 7 °C DB / 6 °C WB.

Cooling:

Leaving cold water temperature: 10°C (ΔT 5°
C). Outdoor air temperature: 35 °C DB.

The sound pressure level is given at 1 m distance from outdoor units.





Control box

**Remote control
Wired**

**RC-EX1A(Option)
RC-E5**


Outdoor units

Model		FDC 200VS	FDC 250VS
Power supply		3 Phase / 380V 50Hz	
Type		<i>Inverter</i>	
Function		Heating – Cooling – DWH*	
Heating	Capacity (kW)	22.4 [7.6(Min.)~ 25.0(Max.)]	28.0 [9.5(Min.)~ 31.5(Max.)]
	Input (kW)	6.08/5.84	8.50/8.22
	COP	3.50	3.37
Cooling	Capacity (kW)	20.0 [7.0(Min.)~22.4(Max.)]	25.0 [10.0(Min.)~28.0(Max.)]
	Input (kW)	6.59/6.58	9.91/10.21
	EER	3.40	2.50
Refrigerant piping	size	φ22.22 / φ9.52	φ22.22 / φ12.7
Sound pressure level	dB(A)	57~57	57~58
Minimum pipe length	m	5	5
Maximum pipe length	m	70 (30m Pre-charged)	70 (30m Pre-charged)
Maximum height differen	m	20	20
Operation range(heating mode)	Outdoor ambient °C	-15 ~ 35°C	-15 ~ 35°C
Leaving water temperature heating	Thermostat control °C	20 ~ 55°C	
Leaving water temperature cooling	Thermostat control °C	10 ~ 25°C	
Leaving water temperature domestic hot water tank*	Thermostat control °C	25 ~ 58°C	
Water inlet/outlet pipe connection	in	1"	
Outdoor unit Dimension/weight	HxWxD mm / Kg	1300×970×370 / 122kg	1505×970×370 / 140kg
Control thermostat box Dimension /weight	HxWxD mm / Kg	300 x 400 x 90/0.5kg	

*In case of DWH

Control box is equipment with one more thermostat controller

* The capacities in this catalogue are calculated based on following conditions:

Heating:

Leaving hot water temperature: 35°C (ΔT 5°C).

Outdoor air temperature: 7 °C DB / 6 °C WB.

Cooling:

Leaving cold water temperature: 7°C (ΔT 5°C).

Outdoor air temperature: 35 °C DB.

The sound pressure level is given at 1 m distance from outdoor units.



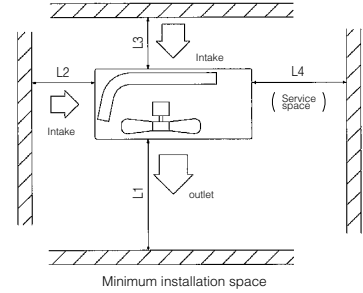
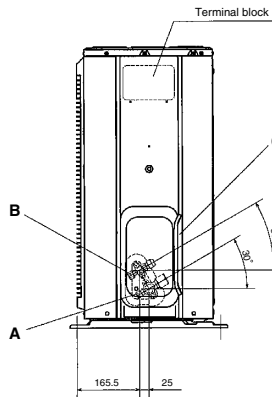
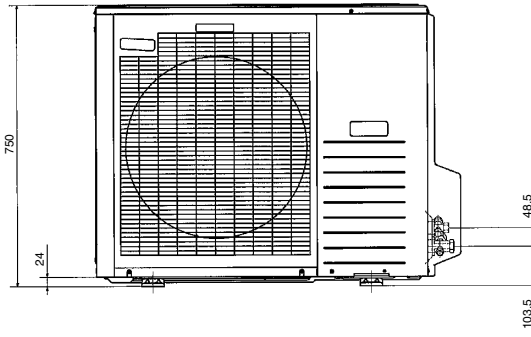
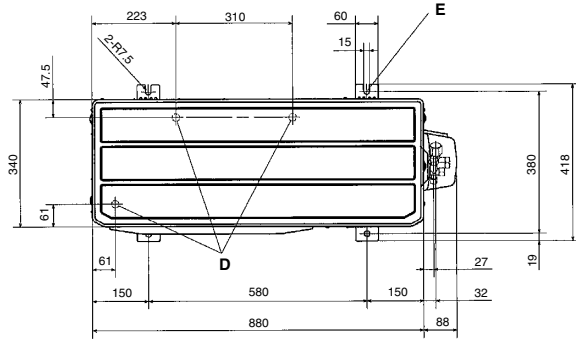
OUTDOOR UNIT DIMENSIONS (unit:mm)

SRC 80ZM-S

Mark	Item	
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

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.



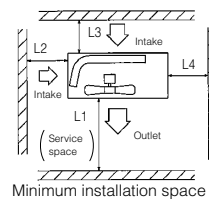
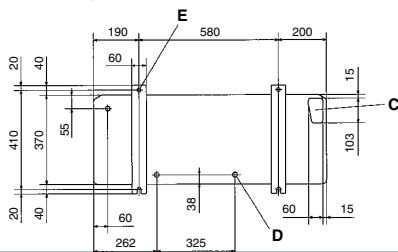
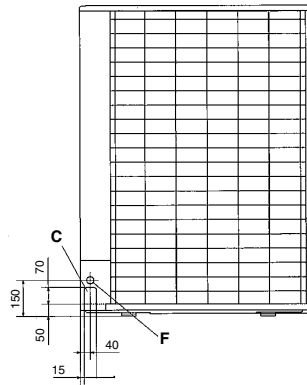
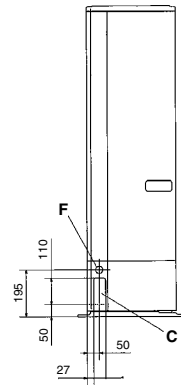
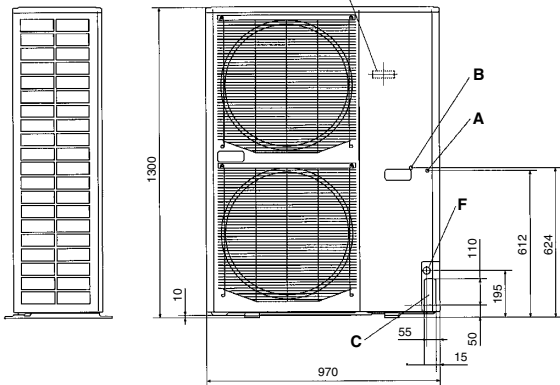
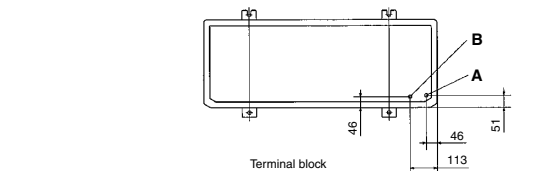
Examples of installation Dimensions	1	2	3
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

FDC100VSX, FDC125VSX, FDC140VXS

Mark	Item	
A	Service valve connection of the attached connecting pipe(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 hole	ø30(front) ø45(side) ø50(back)

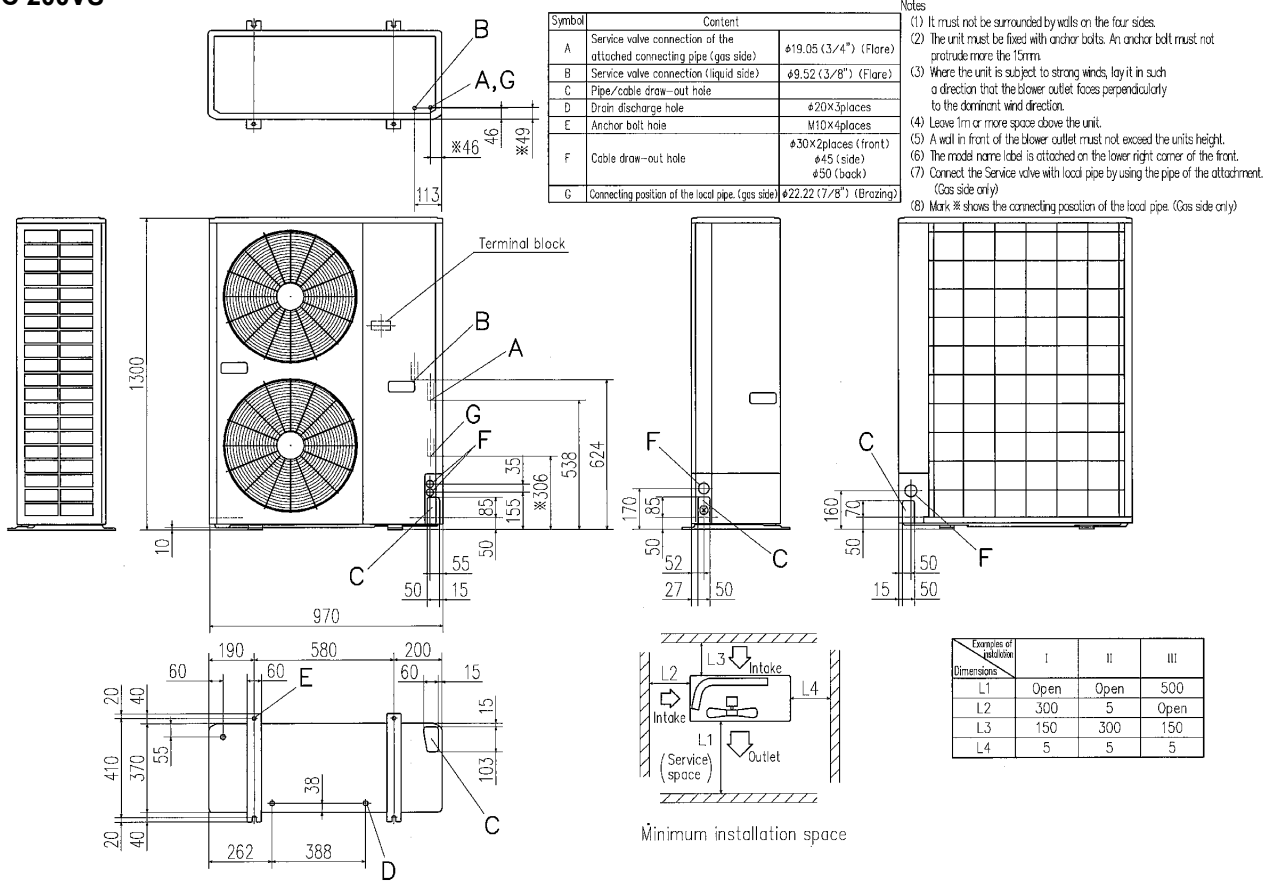
Notes:

- (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.
- (7) Connect the Service valve with local pipe by using the pipe of the attachment. (Gas side only)

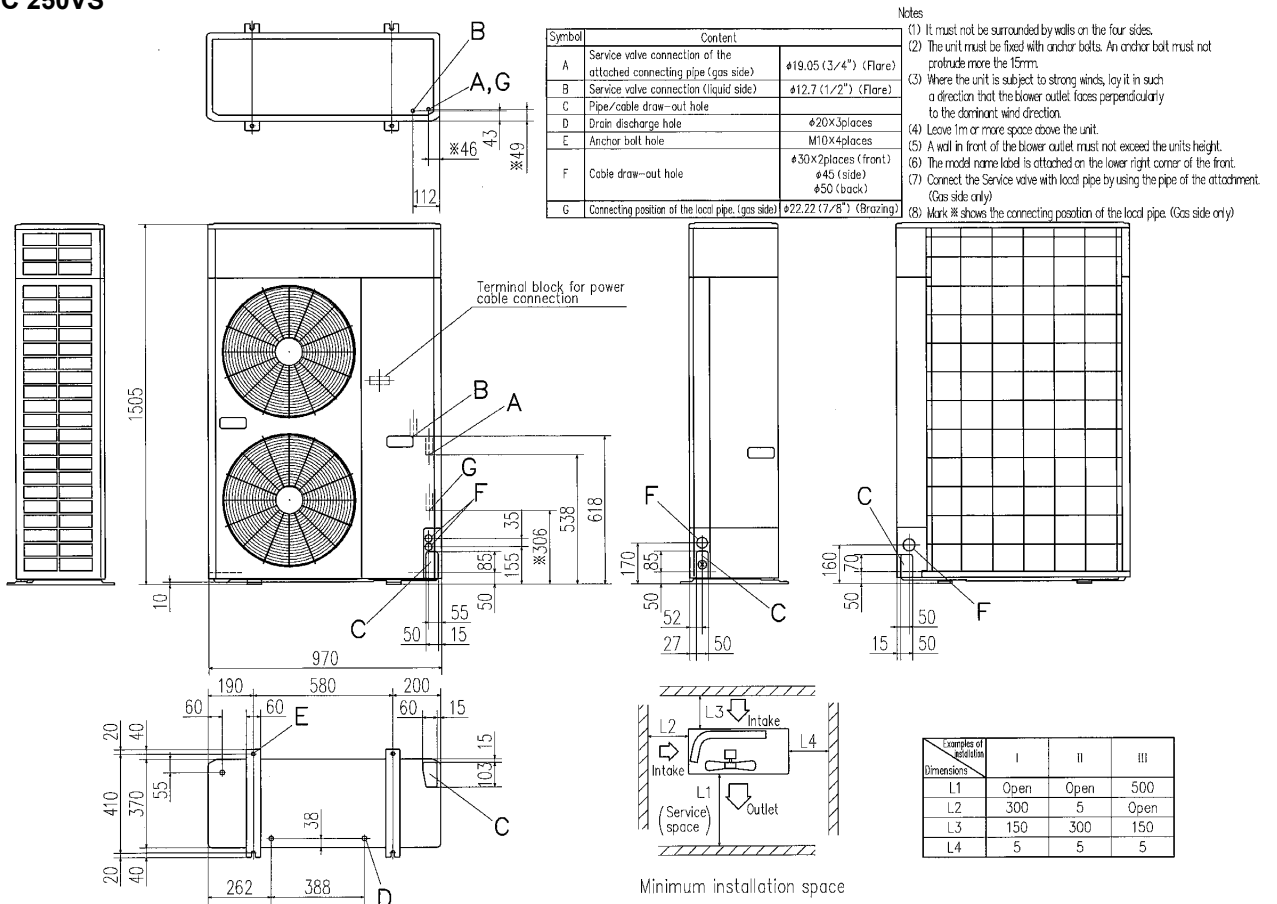


Examples of installation Dimensions	1	2	3
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

FDC 200VS



FDC 250VS





HyperInverter

Air-to-water heat pump



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 Air-Conditioning & Refrigeration Systems
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<http://www.mhi.co.jp>

Our factories are ISO9001 and ISO14001 certified.

Certified ISO 9001



BIWAJIMA PLANT
 Mitsubishi Heavy Industries, Ltd.
 Air-conditioning & Refrigeration Systems Headquarters
 Certified ISO 9001
 Certificate number : JQA-0709



**MITSUBISHI HEAVY INDUSTRIES-
 MAHAJAK AIR CONDITIONERS CO., LTD.**
 Certified ISO 9001
 Certificate Number : 04100 1998 0813

Certified ISO 14001



BIWAJIMA PLANT
 Mitsubishi Heavy Industries, Ltd.
 Air-conditioning & Refrigeration Systems Headquarters



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 MAHAJAK AIR CONDITIONERS CO.,LTD.**
 Certificate Number : 04104 1998 0813 ES



(COMPANY) participates in the ECC programme for (PROGRAMME).
 Check ongoing validity of certificate:
www.eurovent-certification.com or
www.certiflash.com



Not on HGHE models