MITSUBISHI ELECTRIC

LIVING ENVIRONMENTAL SYSTEMS

Changes for the Better

e-series

Modular chiller

The e-series chiller allows for up to six individual units to be connected together. Available as a cooling only or heat pump version, the e-series is suitable for both comfort and process cooling applications.

for a greener tomorrow eco Changes

A NEW GENERATION OF CHILLER TECHNOLOGY

Mitsubishi Electric is the first name for comfort and efficiency.

Founded in 1921, Mitsubishi Electric is now a global, market leading environmental technologies manufacturer. In the worldwide market, the Living Environment Systems Division provides pioneering solutions that heat, cool, ventilate and control our buildings in some of the most energy efficient ways possible.

Through our technical expertise, long experience and innovative product range, we enable building operators everywhere to significantly improve energy efficiency, reduce running costs and adhere to increasingly tough legislation. We believe that global climate challenges need local solutions.

There are number of challenges facing building owners and managers today, they must tackle ongoing requirements to reduce energy used in their buildings and their running costs, and our aim is to help them in achieving these goals.

At Mitsubishi Electric, we have evolved and today we offer advanced technology that really can make a world of difference.

WHY CHILLERS?

Today's building owners and managers face the challenge of providing a comfortable, productive space that is also energy efficient.

As the drive to reduce energy waste continues with further legislation, building services are being scrutinised to find more ways to optimise performance.

Air conditioning is acknowledged as a significant energy user in buildings, therefore chillers can make a significant impact on the energy performance and running cost for many buildings. As manufacturers, we are being tasked with producing more efficient equipment and with enabling specifiers to compare products easily with regard to efficiency and performance.

In Commercial buildings HVAC accounts for 45% of total energy consumption

In commercial buildings, HVAC is by far the most energy intensive system, accounting for close to half of the total energy consumption. For this reason every efficiency improvement in HVAC performance can significantly reduce the energy profile of the building, turning HVAC optimisation into a value generating opportunity.

ErP Directive - Lot 21

The main impact of the ErP (Energy Related Products) Lot 21 will be on the way that chiller efficiency is measured. Ratings will be based on higher requirements for seasonal efficiency, and many older existing chillers will not comply.

The ErP uses different performance parameters for different types of product to set the Minimum Energy Performance Standards (MEPS).

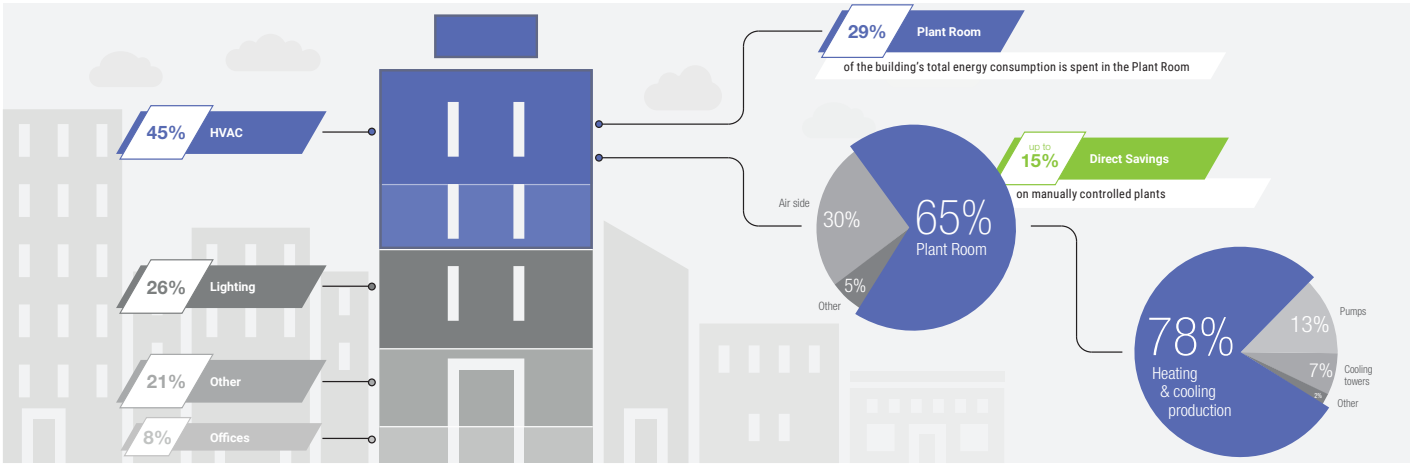
Source	Cooling Capacity	Minimum Efficency	
		Jan 2018	Jan 2021
Air Cooled	<400kW	149%	**161%**
Air Cooled	≥400kW	161%	**179%**
Water Cooled	<400kW	196%	**200%**
Water Cooled	≥400kW ≤1500kW	227%	**252%**
Water Cooled	≥1500kW	245%	**272%**

The latest chiller technologies help to address the ERP Directive by ensuring that they operate to meet the precise cooling demand of the building, conserving energy usage within the building. The main components of water and air cooled chillers are very similar.

The way we use buildings today is changing, and the energy demands are changing with them. So now is a good time to consider the benefits of upgrading chiller plant.

With legislation pushing buildings towards greater energy efficiency and reducing carbon, and new regulations bringing even more efficient chiller options, such as heat recovery, to the market, specifiers have every reason to take a look at the benefits of a modern chiller for both new construction and retrofit scenarios.

The impact of a chiller on the comfort of occupants should also be considered. With a modern, robust technology in place, building owners can be assured that they are providing a comfortable and healthy environment, as well as saving themselves energy costs in the long-term.



e-series

Modular Chillers

Mitsubishi Electric's modular chiller line-up contributes to realizing high functionality, reliability and energy saving with its own control.

Three capacity modules with the side flow type of 30 HP, the top flow type of 50, 60 HP

BEST IN CLASS EFFICIENCY FOR ENERGY SAVING PERFORMANCE BY THE USE OF INVERTER COMPRESSORS

- Inverter compressor is automatically controlled according the load.
- Optimal control of fans by using inverters contributes to save energy.

HIGH FUNCTIONALITY OF MODULAR CHILLER

- Up to 6 modules can be connected.
- The combination control of modules helps to continue operation even when one module has stopped due to maintenance.

SAVING SPACE AND INSTALLATION WORK

- Small footprint installation helps to save space.
- Built-in header type is optional, external piping space can be reduced.

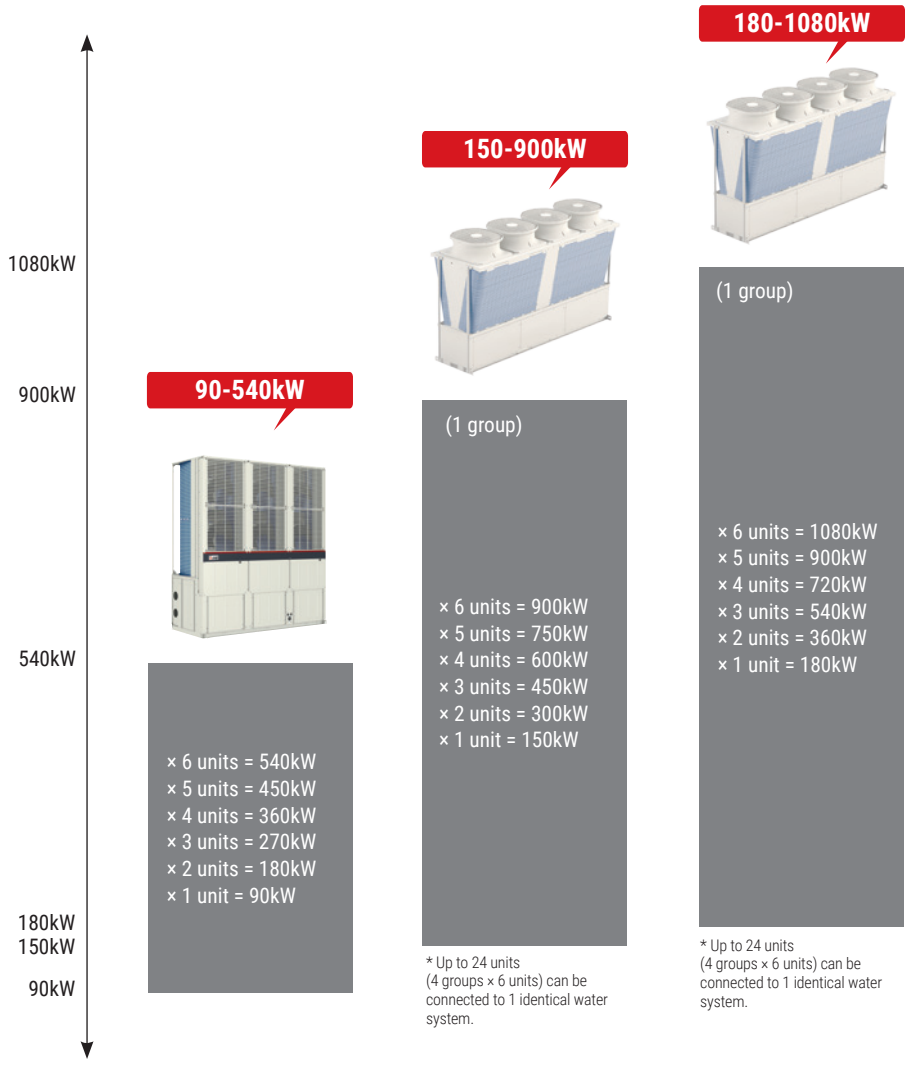
EASY SYSTEM CONTROL

- Water temperature can be controlled remotely by using local remote controllers.
- By installing an AE-200E/A, it is possible to centrally control e-series and CITY MULTI at the same time.

Module line-up

	90kW module*[1]	150kW module	180kW module
			
Heat Pump	EAHV-P900YAL(-N)(-BS)	EAHV-P1500YBL(-N)(-BS)	EAHV-P1800YBL(-N)(-BS)
	EAHV-P900YAF(-N)(-BS)		
Heating Only	EAHV-P900YAL-H(-N)(-BS)	EAHV-P1500YBL-H(-N)(-BS)	EAHV-P1800YBL-H(-N)(-BS)
	EAHV-P900YAF-H(-N)(-BS)		
Cooling Only	EACV-P900YAL(-N)(-BS)	EACV-P1500YBL(-N)(-BS)	EACV-P1800YBL(-N)(-BS)
	EACV-P900YAF(-N)(-BS)		

* (-N) indicates model with built-in header.
*[1] The amount of pre-charged refrigerant differs among models. YAF indicates full refrigerant charging model.



e-series

P900

MODULAR CHILLER

High energy saving performance by the use of inverter compressors.

Each module is provided with two high-efficiency inverter scroll compressors developed by Mitsubishi Electric and can operate optimally according to the load. This improves the high energy saving performance.

BEST IN CLASS EFFICIENCY FOR ENERGY SAVING PERFORMANCE

High EER, High COP

- The air suction area is expanded to maximize the performance of the air heat exchanger.
- Two independent refrigerant circuits are provided in the module to cool and heat water in two stages in series to improve EER and COP.

EER 3.30	COP 3.50

* EER shows the value at an outdoor air temperature of 35°C and cool waterinlet/outlet temperatures of 12°C/7°C, respectively. COP shows the value at an outdoor air temperature of 7°C and hot water inlet/outlet temperatures of 40°C/45°C, respectively. Pump input is not included.

High SEER

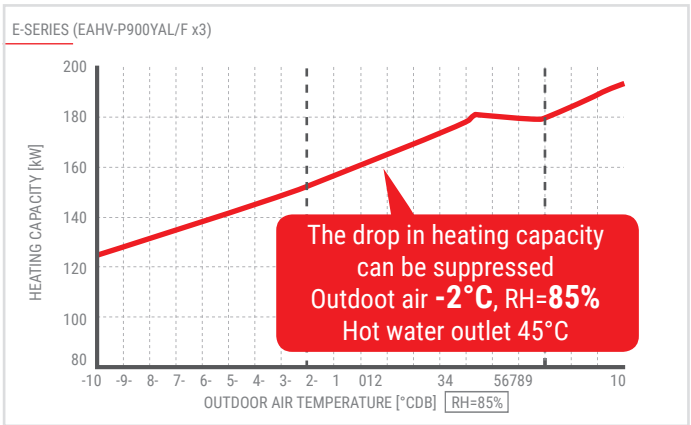
- Achieved the same SEER from 30 to 180 HP.

SEER 4.48

* SEER shows the value at an outdoor air temperature of 35°C and cool water inlet/outlet temperatures of 12°C/7°C, respectively. Pump input is included based on EN14511.

Suppression of heating capacity drop at low outside temperatures

- A heat pump technology captures heat from the outdoor air. The heating performance decrease which occurs with a decrease in outdoor air temperature has been made up for by installing a larger number of units. This disadvantage has been eliminated with the e-series by increasing the heating performance in the low outdoor air temperature range. This allows the user to reduce the required number of units.



P-900 KEY TECHNOLOGIES

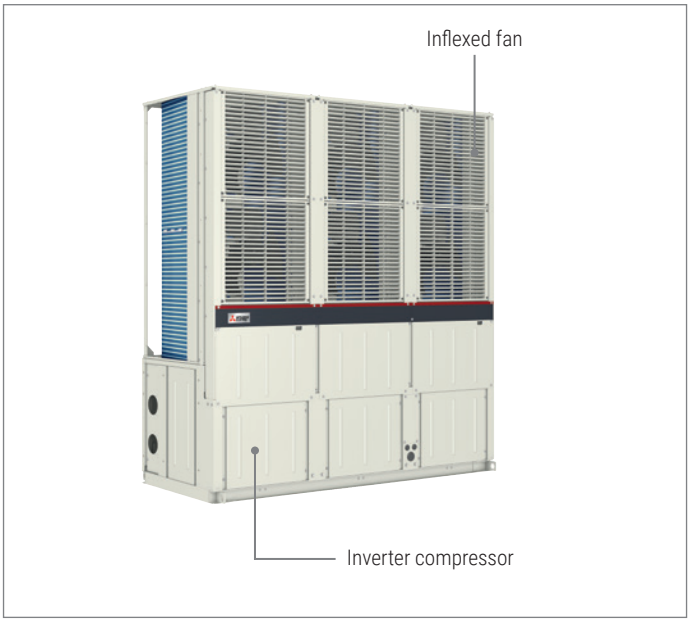
ENERGY-SAVING TECHNOLOGY

High Efficiency Inverter Compressor

DC inverter scroll compressor is incorporated. Two compressors each are incorporated to increase efficiency.

Two refrigerating cycles

A configuration of two independent refrigerant circuits and the series connection of water-side heat exchangers increase the performance (two-stage cooling).



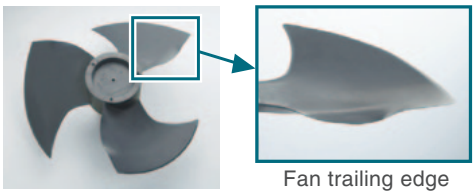
U-shaped High Performance Compact Air Heat Exchanger

U-shaped air heat exchangers are used. Installing them in a row makes the system thinner.

Weather resistant coating is provided for the heat transfer plate fin as standard.

Inflexed Fan

Adoption of a fan with improved ventilation characteristics and a newly designed trailing edge that suppresses wind turbulence raises fan operation efficiency.

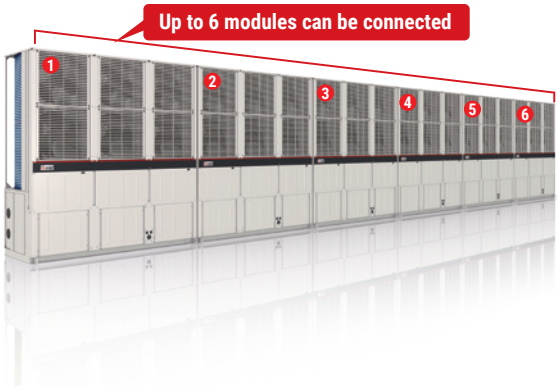


Fan Inverter Control

Air blower fans are also equipped with an inverter to save energy.

UP TO 6 MODULES CAN BE CONNECTED

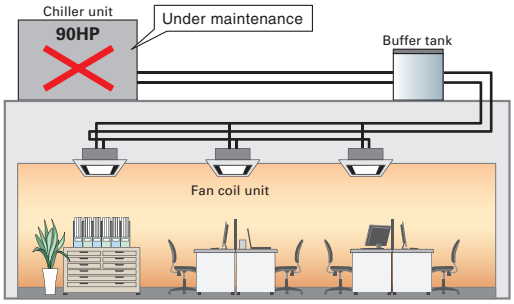
The total capacity can be increased to up to 30HP × 6 modules = 180HP. Because modules can be installed horizontally in a row. Installation in narrow places such as along building walls is possible.



COMBINATION CONTROL FUNCTION

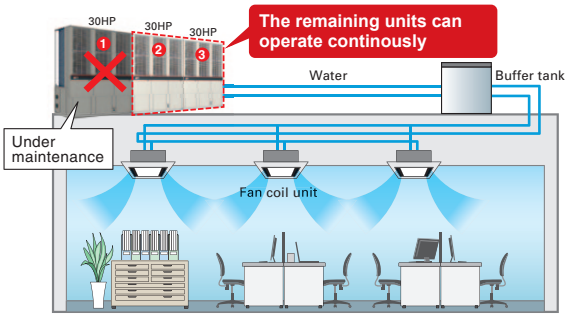
The flexible backup operation among the combined modules enables the continuous operation, even when one module is stopped due to maintenance.

Non-modular chiller



Since the chiller unit can not operate during maintenance, the timing of maintenance is limited.

Mitsubishi Electric modular chiller

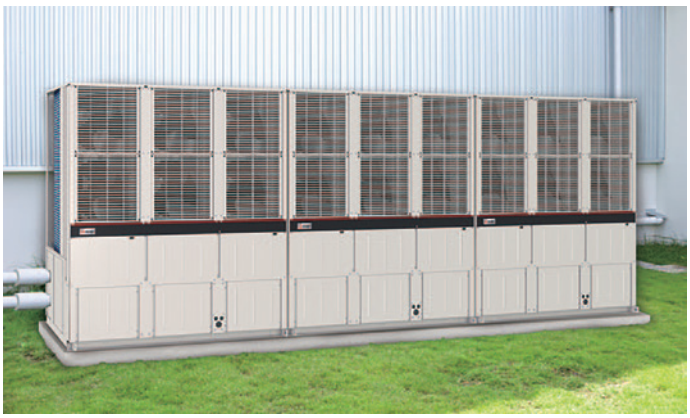


With our modular chiller system, even if one module is stopped, the remaining modules back the continuous operation up.

* When performing maintenance, please confirm that the remaining modules meet the required capacity for the indoor side.

SMALL FOOTPRINT INSTALLATION

Since this module has a compact and thin body, it is suitable for installation along the exterior walls of buildings or in narrow spaces, and it is possible to install the modules on each floor.



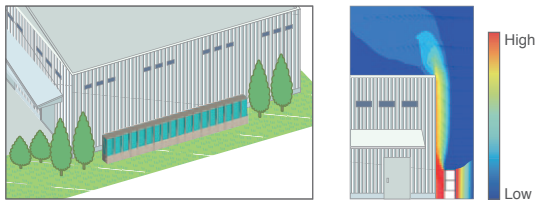
Installation example

Installable in limited space, such as along the outer wall or in the corner of a factory, or in a narrow space of a building. The compact and thin design allows for the consideration of installation on each floor of a building, as is the case with industrial air conditioners. (If the inside header specification is selected)

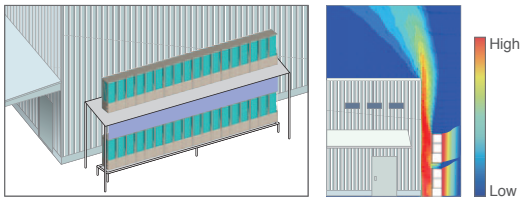
The figure shows the air blowing surface directed toward the wall (a diagonal blowing air guide is equipped as standard). Directing the air blowing surface toward the wall is effective in preventing short cycling.

The modules can be installed in two rows or in one row on each of two stages using a frame. They can be installed flexibly according to the installation space.

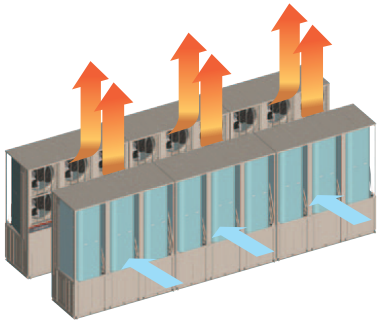
EXAMPLE OF INSTALLATION ALONG THE OUTER WALL OF A FACTORY



FRONT SURFACE-FACING DOUBLE-ROW INSTALLATION EXAMPLE



SINGLE-ROW DOUBLE-STACK INSTALLATION EXAMPLE



P900 PIPING TECHNOLOGY

INSIDE HEADER

Mitsubishi Electric's Unique Inside Header Incorporates Field Water Pipe Header into Module

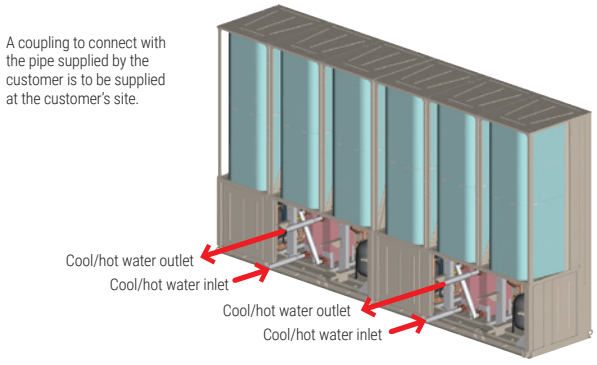
The field water pipe header section that is usually required to connect the module to the field water pipe is now available as a manufacturer option (hereinafter referred to as the "inside header") which can be incorporated into the module at the factory before shipment (a supplied connection kit is used for the connection work at the customer's site).

This allows for incorporating the field water pipe header section into the module.

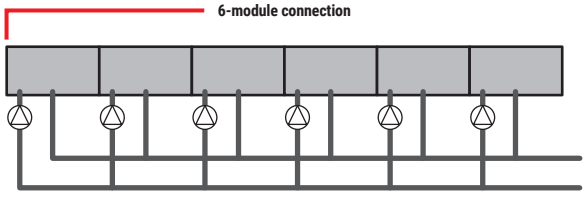
In addition, the field connection work of the inside header is very simple. Significant simplification of the water pipe connection compared to the previous one has reduced the installation time.

Standard Pipe Specification

THE FIGURE SHOWS A 60 HP UNIT IN WHICH TWO 30 HP MODULES ARE CONNECTED



FIELD WATER PIPE HEADER CONNECTION IMAGE *1
(in the case of installing one pump for each module)

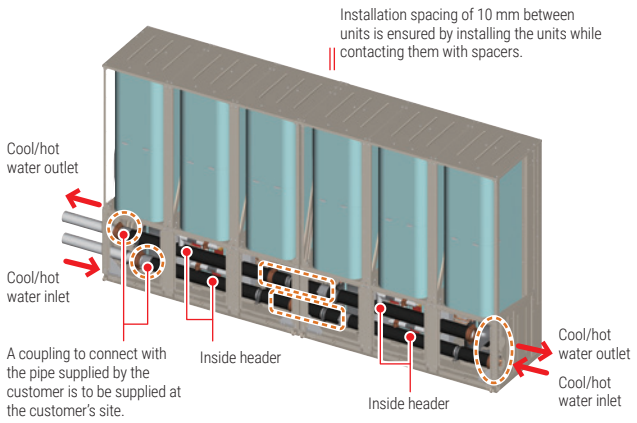


- Number of pumps: 6
- Pipes connected at the site: 12 points

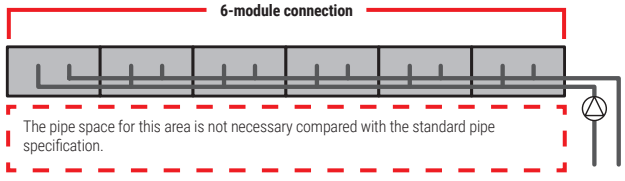
*1 Be sure to install a strainer (optional parts: YS-50A) near the chiller on the inlet side of the cool/hot water pipe to prevent the entry of foreign substances such as dirt and sand particles to the plate heat exchanger

Inside Header Specification (Left or right connection can be selected for the water pipes)

THE FIGURE SHOWS A 60 HP UNIT IN WHICH TWO 30 HP MODULES ARE CONNECTED



FIELD WATER PIPE HEADER CONNECTION IMAGE *1
(in the case of installing one pump for the system)



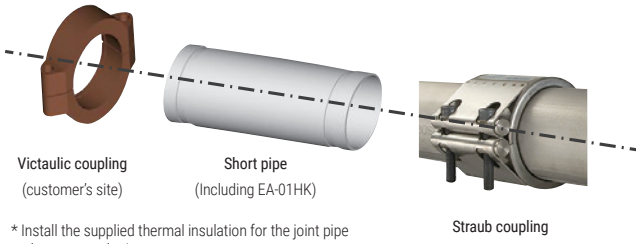
- Number of pumps: 1
- Pipes connected at the site: 2 points (10 internal connection points)

*1 Be sure to install a strainer near the chiller on the inlet side of the cool/hot water pipe to prevent the entry of foreign substances such as dirt and sand particles to the plate heat exchanger.

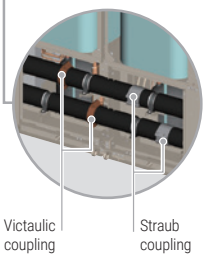
About Pipe Connection Kit

THIS FIGURE SHOWS 540 HP (EAHV-P900YAL/F-N×6) AS AN EXAMPLE.

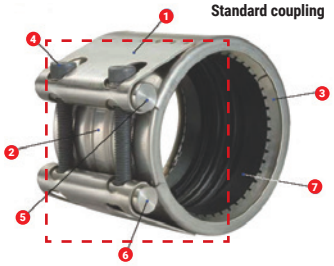
A Victaulic coupling is used to connect with the pipe at the customer's site (to be supplied in the field).
*Straub couplings and short pipes are included for the inside header specification



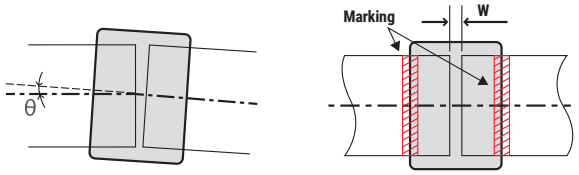
* Install the supplied thermal insulation for the joint pipe at the customer's site.



STRUCTURE



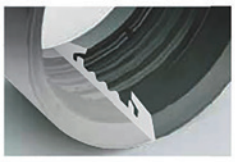
No.	Part name	Material
1	Casing	SUS 304
2	Sliding plate	SUS 301 or 304
3	Grip ring	SUS 301
4	Tightening bolt	SUS XM7
5	Rod washer	SUS 304
6	Rod nut	SUS 304
7	Rubber sleeve	EPDM



Allowable clearance and tilt range

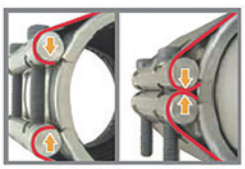
Allowable pipe clearance value [W]=0 to 25 mm

Allowable pipe tilt angle [θ]=±2°



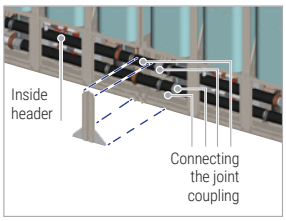
The sealed rubber has a lip structure to improve the water-stopping performance. Adjust the position of the Straub

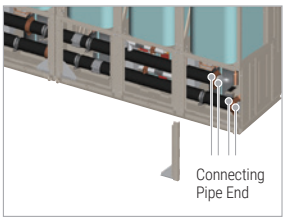
coupling so the marking on both sides can be seen.



Just tighten the bolt until the casing fits against (comes into contact with) the metal. Anyone can connect the pipes evenly and securely, regardless of their skills and the type of the pipe used.

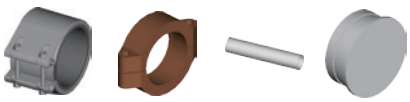
CONNECTING PIPE END (Connection at Customer's Site)





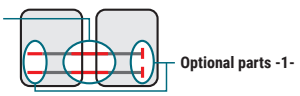
Capacity	Module (Inside header)	Optional parts -1- EA-01HK (model)	Optional parts -2- EA-02HK (model)
30 HP	1	1	0
60 HP (30 HP×2)	2	1	1
90 HP (30 HP×3)	3	1	2
120 HP (30 HP×4)	4	1	3
150 HP (30 HP×5)	5	1	4
180 HP (30 HP×6)	6	1	5

Optional parts -1- (Piping Kit) EA-01HK



Optional parts -2- (Connection Piping Kit) EA-02HK

Optional parts -2-



The Victaulic coupling and Straub coupling mentioned in the explanation are product names.

CONTROL TECHNOLOGY

- Up to 6 modules and one unit can be connected for each remote control.
- Simultaneous control

Unit Remote Control

	 PAR-W31MAA
Control	Simultaneous control
Number of modules that can be connected	6
Number of units that can be connected	1
Number of supported water lines	1
ON/OFF	•
Cooling/heating switch	•
FAN operation switch for snowfall	•
Target outlet temperature setting	•
Scheduled operation	•
Individual error display	•
Outlet water temperature setting of 5°C or below (Brine)	•

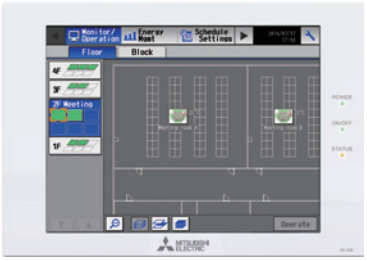
CENTRALIZED CONTROLLER*

When connected to the AE-200E/A centralized controller or the EW-50A/E expansion controller, up to 6 e-series modules can be connected to 1 group for centralized monitoring and management.

Combined management of CITY MULTI is also possible.

* Centralized monitoring and management are possible only for M-NET-connected e-series units.

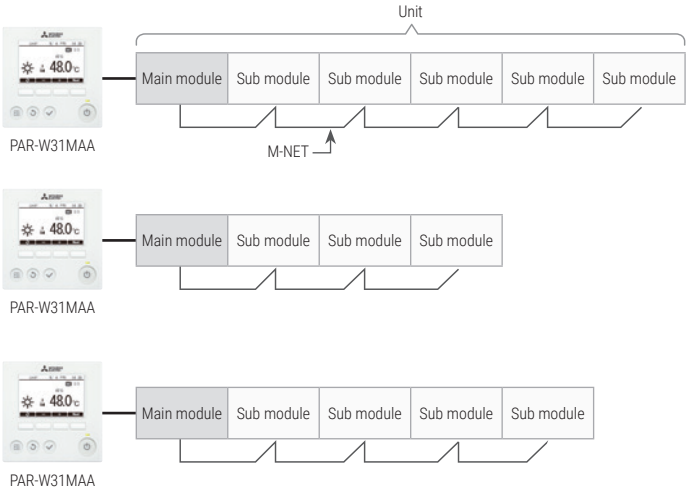
AE-200E/A



MONITORING ON LCD TOUCH PANEL AND WEB BROWSER

Monitoring of the operating condition—including the water temperature—of e-series units are possible from the LCD screen of the AE-200E/A or from a Web browser. Combined management of CITY MULTI is also possible.

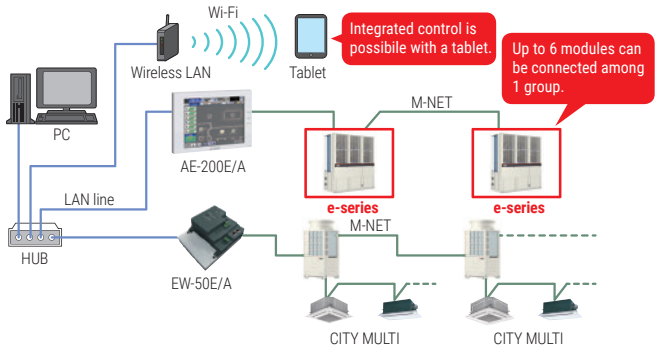
SYSTEM CONFIGURATION



DEMAND CONTROL

Forced capacity control up to the demand upper limit by an external input to the unit (non-voltage normal open). Heating demand is possible in addition to the cooling demand.

SYSTEM CONFIGURATION AE-200E/A



Technical specifications COOLING ONLY MODEL

MODEL			SET	EACV-P900YAL(-N)(-BS) EACV-P900YAF(-N)(-BS)	
Power source				3-phase 4-wire 380-400-415V 50/60Hz	
Capacity change mode				Capacity priority	COP priority
Cooling capacity *1 Water			kW	90.00	63.00
			kcal/h	77,400	54,180
			BTU/h	307,080	214,956
	Power input *2		kW	27.27	16.27
	Current input 380-400-415V		A	46.0 - 43.7 - 42.2	27.5 - 26.1 - 25.2
	Pump input is not included	EER		3.30	3.87
		ESEER		5.66	-
	Certified value by EUROVENT	EER *3		3.08	3.76
		ESEER *3 *4		4.71	-
	ESEER (Includes pump input based on EN14511) *3 *5			5.46	-
	SEER (Includes pump input based on EN14511) *3			4.88	-
	IPLV *6		kW/kW	6.34	-
	Water flow rate		m^3/h	15.5	10.8
Cooling capacity *7 *8 Brine(ethylene glycol 35wt%)			kW	56.73	39.34
			kcal/h	48,788	33,832
			BTU/h	193,563	134,228
	Power input *2		kW	25.98	15.78
	Current input 380-400-415V		A	43.9 - 41.7 - 40.2	26.7 - 25.4 - 24.4
	EER(Pump input is not included)			2.18	2.49
	EER(Includes pump input based on EN14511) *3			2.10	2.42
	Brine flow rate		m^3/h	11.5	8.0
Maximum current input			A	61	
Water pressure drop	Water *9		kPa	135	65
	Brine(ethylene glycol 35wt%) *8 *10		kPa	106	50
Temp range	Cooling		°C	Outlet water 5~25 *11	
	Water		°F	Outlet water 41~77 *11	
	Cooling		°C	Outlet brine -10~25 *8 *12	
	Brine(ethylene glycol 35wt%)		°F	Outlet brine 14~77 *8 *12	
	Outdoor		°C	-15~43 *11 *12	
			°F	5~109.4 *11 *12	
Circulating water volume range			m^3/h	7.7~25.8	
Sound pressure level (measured in anechoic room) at 1m *1			dB (A)	65	63
Sound power level (measured in anechoic room) *1			dB (A)	77	75
Diameter of water pipe (Standard piping)	Inlet		mm (in)	50A (2B) housing type joint	
	Outlet		mm (in)	50A (2B) housing type joint	
Diameter of water pipe (Inside header piping)	Inlet		mm (in)	100A (4B) housing type joint	
	Outlet		mm (in)	100A (4B) housing type joint	
External finish				Polyester powder coating steel plate	
External dimension HxWxD			mm	2450 x 2250 x 900	
Net weight	Standard piping		kg (lbs)	957 (2110)	
	Inside header piping		kg (lbs)	992 (2187)	
Design pressure	R410A		MPa	4.15	
	Water		MPa	1.0	
Heat exchanger	Water side			Stainless steel plate and copper brazing	
	Air side			Plate fin and copper tube	
Compressor	Type			Inverter scroll hermetic compressor	
	Maker			MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Quantity			2	
	Motor output		kW	11.7 x 2	
	Case heater		kW	0.045 x 2	
	Lubricant			MEL32	
Fan	Air flow rate		m^3/min	77 x 6	
			L/s	1283 x 6	
			cfm	2719 x 6	
	Type, Quantity			Propeller fan x 6	
	Starting method			Inverter	
	Motor output		kW	0.19 x 6	
Protection	High pressure protection			High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
	Inverter circuit			Over-heat protection, Over current protection	
	Compressor			Over-heat protection	

*1 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB (95°FDB/75.2°FWB) outlet water temp 7°C (44.6°F) inlet water temp 12°C (53.6°F).
*2 Pump input is not included.
*3 Pump is not included in e-series.
*4 EN14511 standard (2013) formula is applied to figure out this value in case of fixed flow rate operation (flow rate is fixed at any heat load)
Pump input is included in cooling capacity for EER calculation. Condition of water inlet and outlet is fixed at inlet 12°C and outlet 7°C.
*5 EN14511 standard (2013) formula is applied to figure out this value in case of variable flow rate operation (flow rate varies per heat load).
Pump input is included in cooling capacity for EER calculation. Condition of water temperature : inlet water temperature varies due to fixed water flow rate and outlet is fixed at outlet 7°C.
*6 Calculations according to standard performances (in accordance with AHRI 550-590).
*7 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB (95°FDB/75.2°FWB) outlet brine temp -5°C (23.0°F) inlet brine temp 0°C (32.0°F).
*8 Set the dipswitch SW3-6 on both main and sub modules to ON.
*9 Under normal cooling conditions capacity 90kW, water flow rate 15.5m3/h
*10 Under normal cooling conditions capacity 56.73kW, brine flow rate 11.5m3/h
*Please don't use the steel material for the water piping.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.

Technical specifications HEATPUMP MODEL

MODEL			SET	EAHV-P900YAL(-N)(-BS) EAHV-P900YAF(-N)(-BS)	
Power source				3-phase 4-wire 380-400-415V 50/60Hz	
Capacity change mode				Capacity priority	COP priority
Cooling capacity *1			kW	90.00	63.00
			kcal/h	77,400	54,180
			BTU/h	307,080	214,956
	Power input *3		kW	27.27	16.27
	Current input 380-400-415V		A	46.0 - 43.7 - 42.2	27.5 - 26.1 - 25.2
	Pump input is not included	EER		3.30	3.87
		ESEER		5.66	-
	Certified value by EUROVENT	EER *4		2.94	3.76
		ESEER *4 *6		4.71	-
	ESEER (Includes pump input based on EN14511) *4 *7			5.46	-
	SEER (Includes pump input based on EN14511) *4			4.88	-
	IPLV *8		kW/kW	6.34	-
	Water flow rate		m^3/h	15.5	10.8
Heating capacity *2			kW	90.00	63.00
			kcal/h	77,400	54,180
			BTU/h	307,080	214,956
	Power input *3		kW	25.71	16.96
	Current input 380-400-415V		A	43.4 - 41.2 - 39.7	28.6 - 27.2 - 26.2
	COP (Pump input is not included)			3.50	3.71
	COP (Includes pump input based on EN14511) *4			3.25	3.61
	SCOP (Reversible) Low/Medium (Includes pump input based on EN14511) *4			3.66/2.89	-
	Seasonal space heating energy efficiency class for medium-temperature application			A+	-
	Seasonal space heating energy efficiency class for low-temperature application			A+	-
	Water flow rate		m^3/h	15.5	10.8
Maximum current input			A	61	
Water pressure drop *5			kPa	135	65
Temp range	Cooling		°C	Outlet water 5~25 *9	
			°F	Outlet water 41~77 *9	
	Heating		°C	Outlet water 30~55 *9	
			°F	Outlet water 86~131 *9	
	Outdoor		°C	-15~43 *9	
			°F	5~109.4 *9	
Circulating water volume range			m^3/h	7.7~25.8	
Sound pressure level (measured in anechoic room) at 1m *1			dB (A)	65	63
Sound power level (measured in anechoic room) *1			dB (A)	77	75
Diameter of water pipe (Standard piping)	Inlet		mm (in)	50A (2B) housing type joint	
	Outlet		mm (in)	50A (2B) housing type joint	
Diameter of water pipe (Inside header piping)	Inlet		mm (in)	100A (4B) housing type joint	
	Outlet		mm (in)	100A (4B) housing type joint	
External finish				Polyester powder coating steel plate	
External dimension HxWxD			mm	2450 x 2250 x 900	
Net weight	Standard piping		kg (lbs)	987 (2176)	
	Inside header piping		kg (lbs)	1022 (2253)	
Design pressure	R410A		MPa	4.15	
	Water		MPa	1.0	
Heat exchanger	Water side			Stainless steel plate and copper brazing	
	Air side			Plate fin and copper tube	
Compressor	Type			Inverter scroll hermetic compressor	
	Maker			MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Quantity			2	
	Motor output		kW	11.7 x 2	
	Case heater		kW	0.045 x 2	
	Lubricant			MEL32	
Fan	Air flow rate		m^3/min	77 x 6	
			L/s	1283 x 6	
			cfm	2719 x 6	
	Type, Quantity			Propeller fan x 6	
	Starting method			Inverter	
	Motor output		kW	0.19 x 6	
Protection	High pressure protection			High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
	Inverter circuit			Over-heat protection, Over current protection	
	Compressor			Over-heat protection	

*1 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB (95°FDB/75.2°FWB) outlet water temp 7°C (44.6°F) inlet water temp 12°C (53.6°F).
*2 Under normal heating conditions at outdoor temp 7°CDB/6°CWB (44.6°FDB/42.8°FWB) outlet water temp 45°C (113°F) inlet water temp 40°C (104°F).
*3 Pump input is not included.
*4 Pump is not included in e-series.
*5 Under normal cooling or heating conditions capacity 90kW, water flow rate 15.5m3/h
*6 EN14511 standard (2013) formula is applied to figure out this value in case of fixed flow rate operation (flow rate is fixed at any heat load)
Pump input is included in cooling capacity for EER calculation. Condition of water inlet and outlet is fixed at inlet 12°C and outlet 7°C.
*7 EN14511 standard (2013) formula is applied to figure out this value in case of variable flow rate operation (flow rate varies per heat load). Pump input is included in cooling capacity for EER calculation.
Condition of water temperature : inlet water temperature varies due to fixed water flow rate and outlet is fixed at outlet 7°C.
*8 Calculations according to standard performances (in accordance with AHRI 550-590).
*Please don't use the steel material for the water piping.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.

Technical specifications HEATING ONLY MODEL

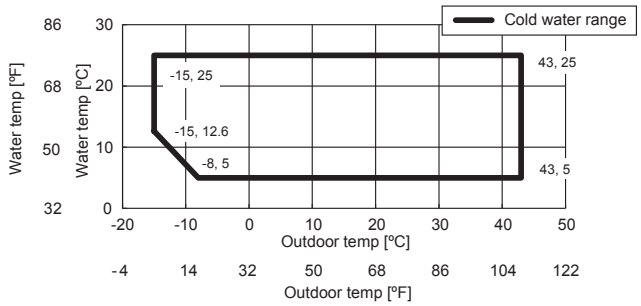
MODEL		SET	EAHV-P900YAL-H(-N)(-BS) EAHV-P900YAF-H(-N)(-BS)	
Power source			3-phase 4-wire 380-400-415V 50/60Hz	
Capacity change mode			Capacity priority	COP priority
Heating capacity *1		kW	90.00	63.00
		kcal/h	77,400	54,180
		BTU/h	307,080	214,956
	Power input *2	kW	25.71	16.96
	Current input 380-400-415V	A	43.4 - 41.2 - 39.7	28.6 - 27.2 - 26.2
	COP (Pump input is not included)		3.50	3.71
	COP (Includes pump input based on EN14511) *3		3.25	3.61
	SCOP (Reversible) Low/Medium (Includes pump input based on EN14511) *4		3.56/2.83	-
	Seasonal space heating energy efficiency class for medium-temperature application		A+	-
	Seasonal space heating energy efficiency class for low-temperature application		A+	-
	Water flow rate	m^3/h	15.5	10.8
Maximum current input		A	61	
Water pressure drop *5		kPa	135	65
Temp range	Heating	°C	Outlet water 30~55 *6	
		°F	Outlet water 86~131 *6	
	Outdoor	°C	-15~43 *6	
		°F	5~109.4 *6	
Circulating water volume range		m^3/h	7.7~25.8	
Sound pressure level (measured in anechoic room) at 1m *4		dB (A)	65	63
Sound power level (measured in anechoic room) *4		dB (A)	77	75
Diameter of water pipe (Standard piping)	Inlet	mm (in)	50A (2B) housing type joint	
	Outlet	mm (in)	50A (2B) housing type joint	
Diameter of water pipe (Inside header piping)	Inlet	mm (in)	100A (4B) housing type joint	
	Outlet	mm (in)	100A (4B) housing type joint	
External finish			Polyester powder coating steel plate	
External dimension HxWxD		mm	2450 x 2250 x 900	
Net weight	Standard piping	kg (lbs)	987 (2176)	
	Inside header piping	kg (lbs)	1022 (2253)	
Design pressure	R410A	MPa	4.15	
	Water	MPa	1.0	
Heat exchanger	Water side		Stainless steel plate and copper brazing	
	Air side		Plate fin and copper tube	
Compressor	Type		Inverter scroll hermetic compressor	
	Maker		MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	
	Quantity		2	
	Motor output	kW	11.7 x 2	
	Case heater	kW	0.045 x 2	
	Lubricant		MEL32	
Fan	Air flow rate	m^3/min	77 x 6	
		L/s	1283 x 6	
		cfm	2719 x 6	
	Type, Quantity		Propeller fan x 6	
	Starting method		Inverter	
	Motor output	kW	0.19 x 6	
Protection	High pressure protection		High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
	Inverter circuit		Over-heat protection, Over current protection	
	Compressor		Over-heat protection	

*1 Under normal heating conditions at outdoor temp 7°CDB/6°CWB (44.6°FDB/42.8°FWB) outlet water temp 45°C (113°F) inlet water temp 40°C (104°F).
*2 Pump input is not included.
*3 Pump is not included in e-series.
*4 Under normal heating conditions at outdoor temp 7°CDB/6°CWB (44.6°FDB/42.8°FWB) outlet water temp 45°C (113°F) inlet water temp 40°C (104°F).
*5 Under normal heating conditions capacity 90kW, water flow rate 15.5m3/h
*Please don't use the steel material for the water piping material.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.

OPERATING LIMITS

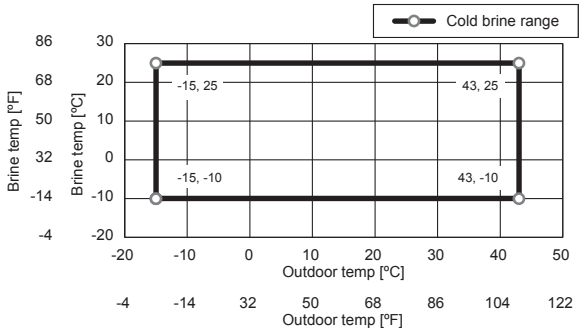
COOLING ONLY

*11

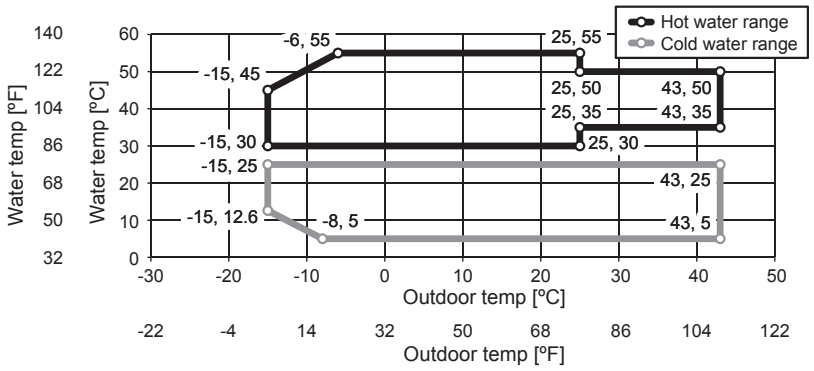


COOLING ONLY - BRINE MODE

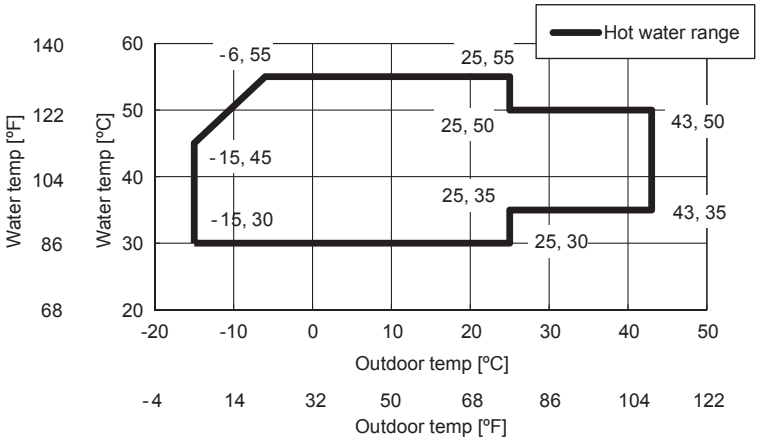
*12



REVERSIBLE HEAT PUMP



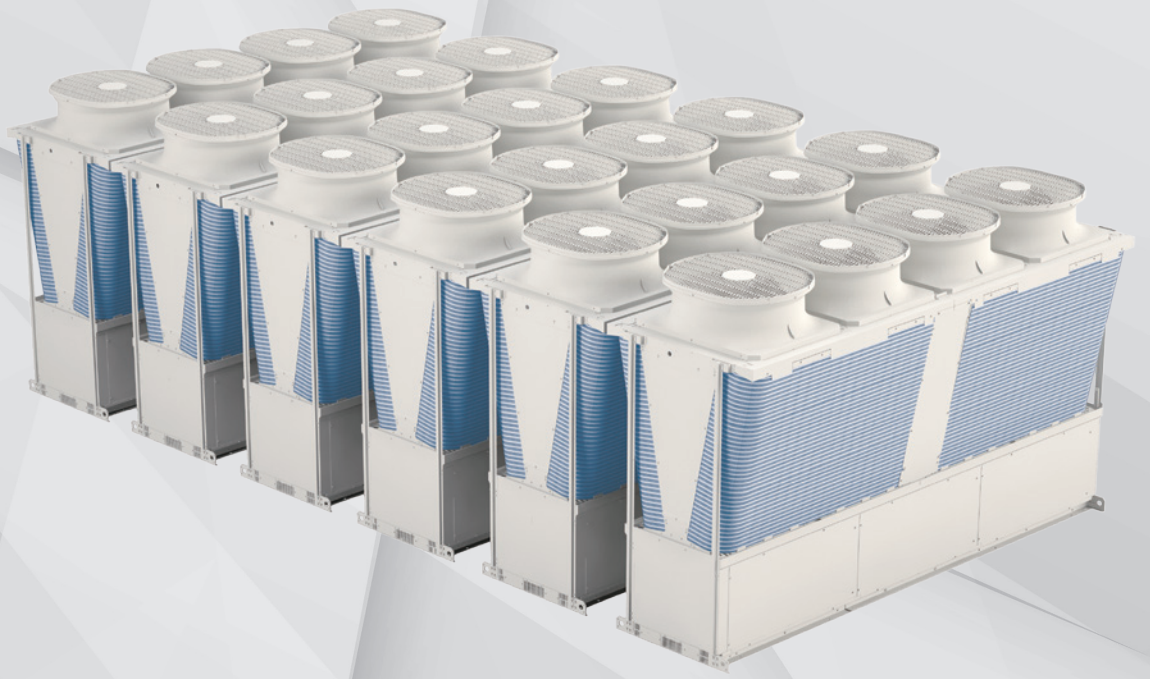
HEATING ONLY



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

e-series

P1500/P1800



High energy-saving performance thanks to high-performance inverter compressor and proprietary Y-shaped construction.

BEST IN CLASS EFFICIENCY FOR ENERGY SAVING PERFORMANCE

The rated and seasonal energy efficiency ratios have been increased to achieve high energy saving performance.

Rated efficiency

The use of the high-efficiency inverter compressors achieves high energy saving performance. The 50 HP model has cooling EER and heating COP rating corresponding to energy saving class A.

Model **P1500**	Model **P1500**
EER 3.19[*1]	**COP 3.29**[*2]

[*1] Under normal cooling conditions at outdoor temp 35°DB/24°WB(95°FDB/75.2°FWB) outlet water temp 7°C(44.6°F) inlet water temp 12°C(53.6°F). Pump input is included in cooling capacity and power input based on EN14511.

[*2] Under normal heating conditions at outdoor temp 7°DB/6°WB(44.6°FDB/42.8°FWB) outlet water temp 45°C(113°F) inlet water temp 40°C(104°F). Pump input is included in heating capacity and power input based on EN14511.

Seasonal efficiency

The use of the high-efficiency inverter compressors ensures optimum operation according to the operation load. The compressors can operate efficiently even during nighttime and intermediate seasons with low load, thereby saving energy throughout the year.

Model **P1500**	Model **P1800**
SEER 4.62[*1]	**SEER 4.58**[*1]

[*1] Compliant with EN14511

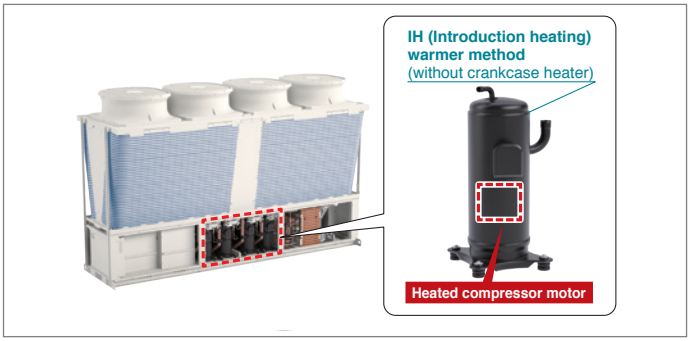
P-1500/P-1800 KEY TECHNOLOGIES

KEY COMPONENTS SAVE ENERGY

By controlling the frequency of the inverter compressors, the rated efficiency and the seasonal efficiency are higher. This achieves optimum energy saving according to the operation load.

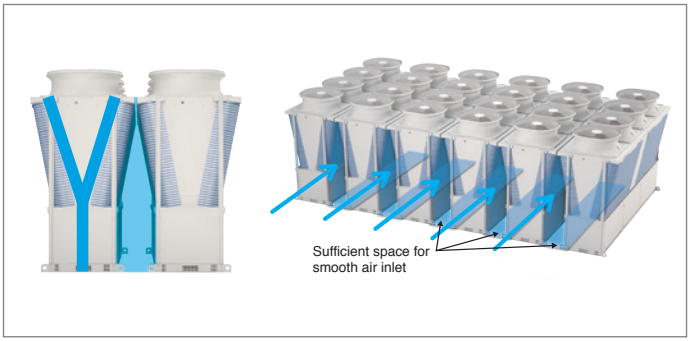
Equipped with high-efficiency inverter compressors

Each unit is equipped with four high-efficiency inverter compressors, developed by Mitsubishi Electric. The four compressors operate as two pairs. The inverters observe the load and control the compressors so that they can optimally operate in one unit. The compressors use the IH warmer method. Heat is generated by the magnetic material characteristics of the motor core unit to prevent liquid refrigerant from remaining in the compressor when the unit stops. This reduces standby power compared to the crankcase heater method when the unit is stopped.



Use of Y-shape structure for effective operation

When the modules are connected, the intake air passages can be ensured on the floor and sides. This structure contributes to effective operation.



HIGH FUNCTIONALITY OF MODULAR CHILLER

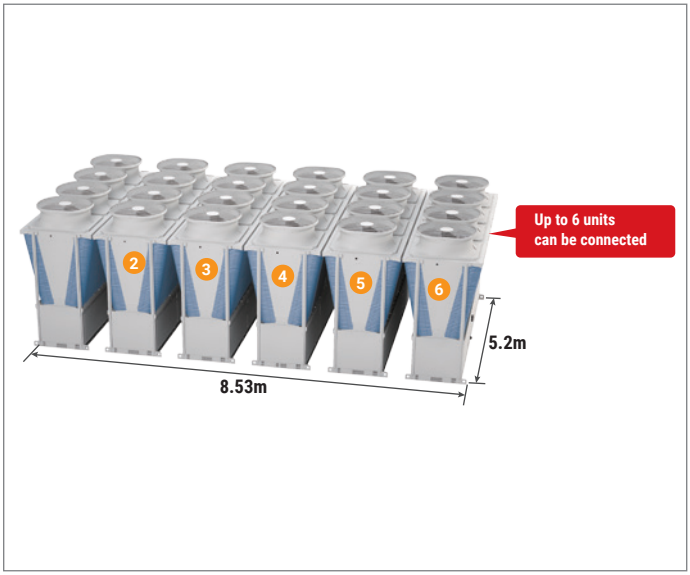
The capacity among 1 group can be increased to up to 360 HP by combining units.

Large-capacity 50 HP and 60 HP units are available. Even a 360 HP system using six 60 HP units can be installed in a floor area of 8.53 m × 5.2 m including the service space

* Only modules with the same capacity can be combined.

Heat Pump	EAHV-P1500YBL(-N)
Heating Only	EAHV-P1500YBL-H(-N)
Cooling Only	EACV-P1500YBL(-N)

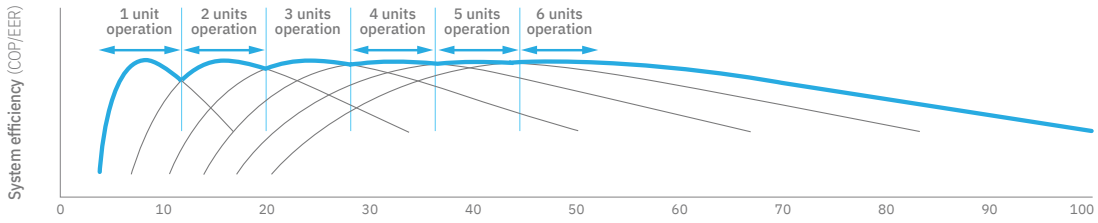
Heat Pump	EAHV-P1800YBL(-N)
Heating Only	EAHV-P1800YBL-H(-N)
Cooling Only	EACV-P1800YBL(-N)



OPTIMUM FREQUENCY CONTROL

When multiple modules are connected, the frequency of each inverter compressor is controlled during operation to increase the efficiency of each module, achieving a high energy saving performance. This control can be implemented by simply using our unique M-NET control, without the need for any other on-site design.

HIGH EFFICIENCY IS MAINTAINED

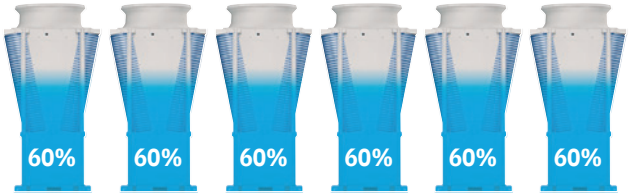


WHEN THE OVERALL SYSTEM LOAD IS 60%

Without optimum frequency control

With non-inverter compressors, it is only possible to turn the unit on or off, and the compressor frequency cannot be adjusted according to the required capacity.

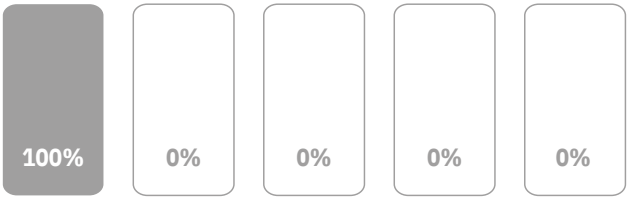
With optimum frequency control



Our modules are equipped with inverter compressors, so the system can be operated in frequency ranges in which the efficiency of each module is at its peak. Optimum frequency control of each unit increases the efficiency of the whole system.

WHEN THE OVERALL SYSTEM LOAD IS 20%

Without optimum frequency control



Since the compressors are running at inefficient frequencies, the efficiency of the whole system is lower.

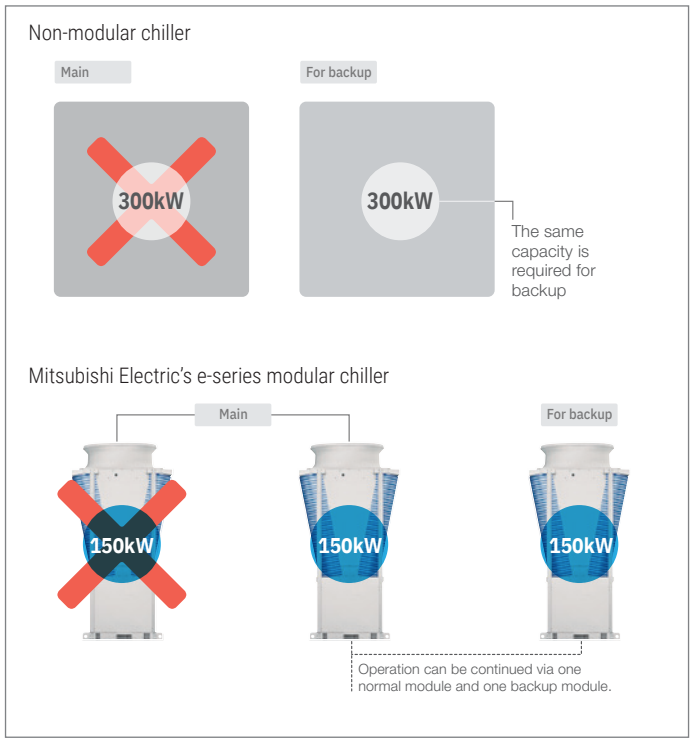
With optimum frequency control

Peak efficiency is between 40 and 60%. In low load conditions, modules can be switched off to **keep remaining modules at optimum efficiency.**

The output of the pumps connected to the remaining group can be decreased, and the efficiency of the whole system is then increased. This control is achieved by connecting to M-NET. There is no need to prepare sensors, and the instrumentation is simple.

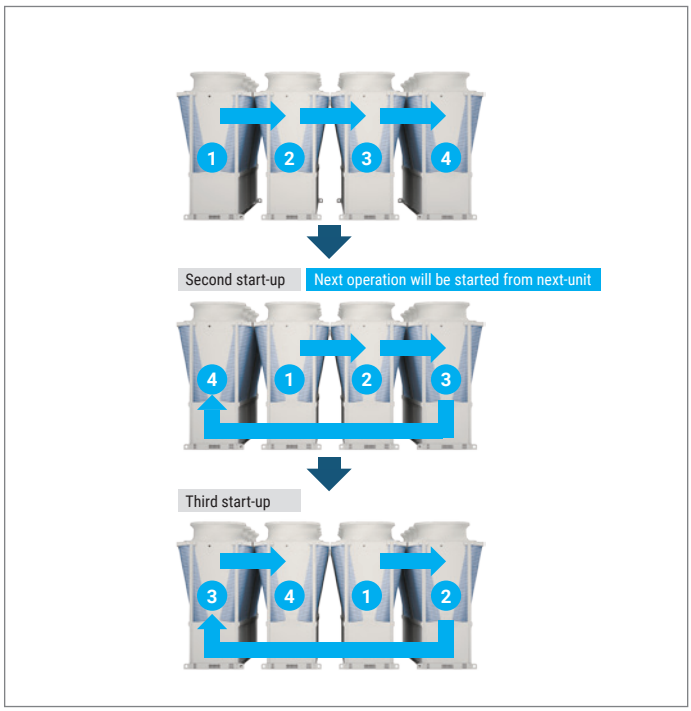
IMPROVED REDUNDANCY & RESILIENCE

When a non-modular chiller is used as the main 300kW unit, as in this example, the same capacity would also be required as a backup. However, when a Mitsubishi Electric e-series modular chiller is used, two modules can still operate even if one module goes down, continuing normal operation. This reduces the backup capacity requirement.



ROTATION OPERATION

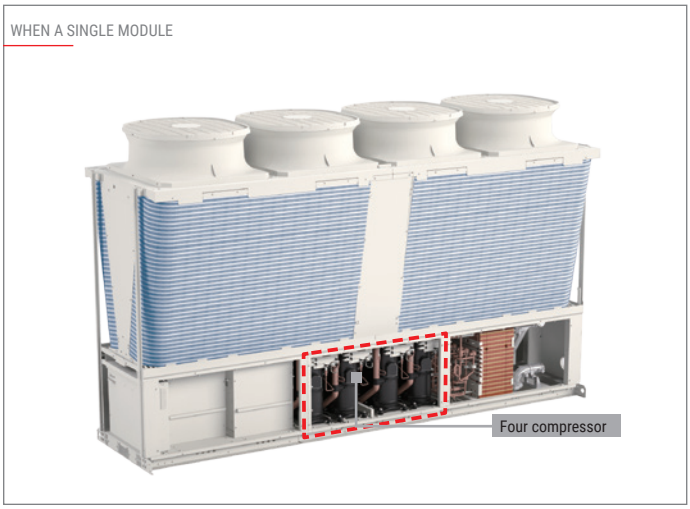
When multiple modules are installed, the operating time of each module in the same system can be equalized according to the load of the whole system.



EMERGENCY OPERATION MODE

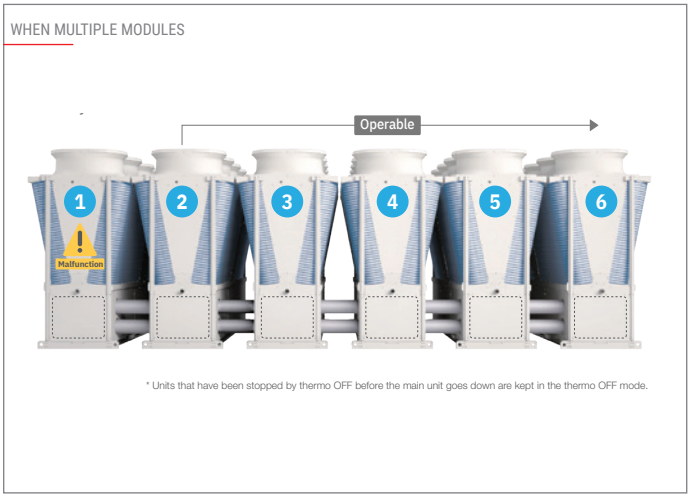
When a single module

The e-series module contains four compressors (two for the 90kW module) developed by Mitsubishi Electric. The four compressors operate as two pairs. If something is wrong with one of the two pairs, the other pair can temporarily continue to operate. The 90kW module achieves this by operating its two compressors independently.



When multiple modules

If one of the e-series modules goes down, the remaining modules can continue to operate. Each module can independently control the outlet water temperature. Even if the main module goes down, operation can be continued.



P1500 / P1800 PIPING TECHNOLOGY

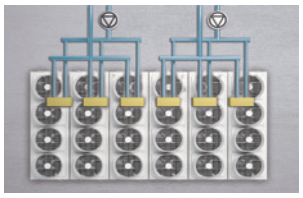
PROCEDURE FOR INSTALLING THE CONNECTION KIT

SELECTABLE PIPING SYSTEM

Standard piping and built-in header types are available. The optimum type can be selected according to the design and construction needs of the building.

STANDARD PIPING TYPE

Type without built-in pump or header



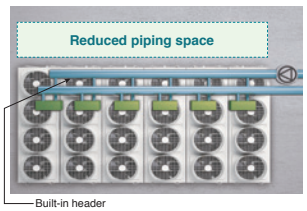
Advantages

The flexibility of design is high, and it is possible to select the most suitable number of pumps and water circuit for the on-site system.

BUILT-IN HEADER TYPE

(models with "-N" in the name only)

Type of built-in header piping for connection between modules



Advantages

The piping space and number of connections are reduced, allowing simple construction and short construction times. Advantages

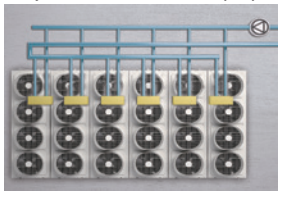
* It is not possible to build both the pump and the header in each unit.

STANDARD PIPING TYPE

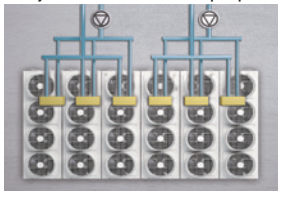
The flexibility of design is high, and the system can be designed according to the on-site system and load pattern. Up to 24 units (4 groups × 6 units) can be connected to one system. The number of pumps and the piping structure can be designed according to the on-site.

STANDARD PIPING TYPE

<System with 6 chillers and one pump>



<System with 6 chillers and 2 pumps>



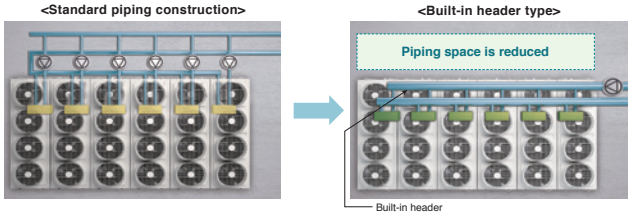
BUILT-IN HEADER TYPE

The piping to connect to other units is built into each unit. The number of piping connections is reduced (saving construction work and reducing the construction time), and the installation space can be also reduced.

BUILT-IN HEADER TYPE

<Standard piping construction>

<Built-in header type>

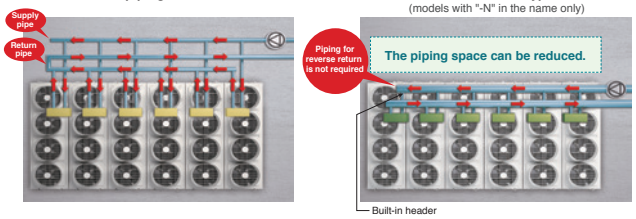


SPACE FOR RETURN PIPING IS NOT REQUIRED

<Standard piping construction>

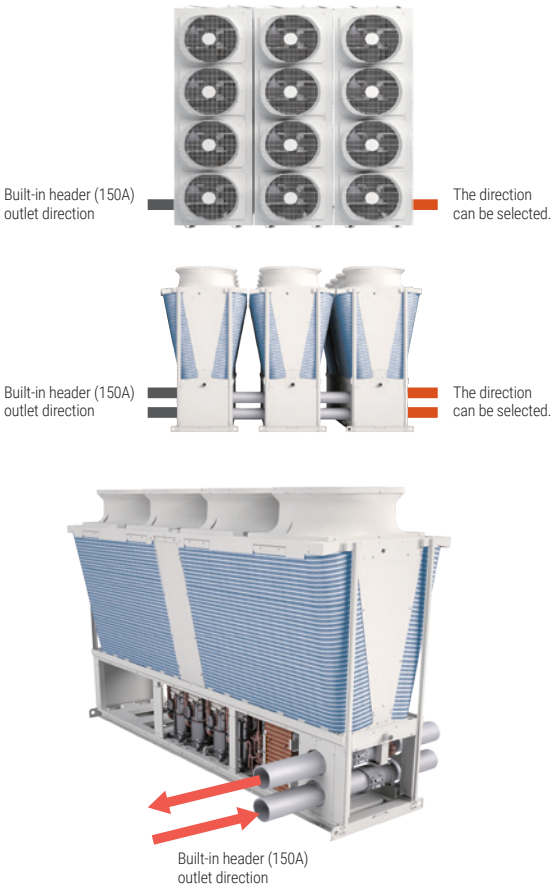
<Built-in header type>

(models with "-N" in the name only)



DETAILS OF BUILT-IN HEADER TYPE MODULES

Up to six units with built-in headers can be connected. (Piping size: 150A)
When 6 units or a less are connected, flow adjustment and reverse return piping for each unit are unnecessary.

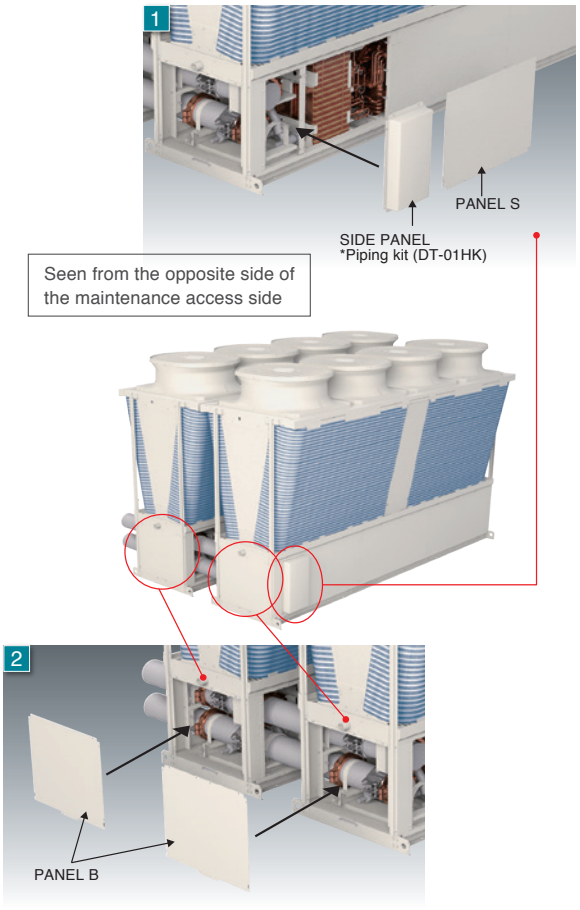


INSTALLATION OF PANELS

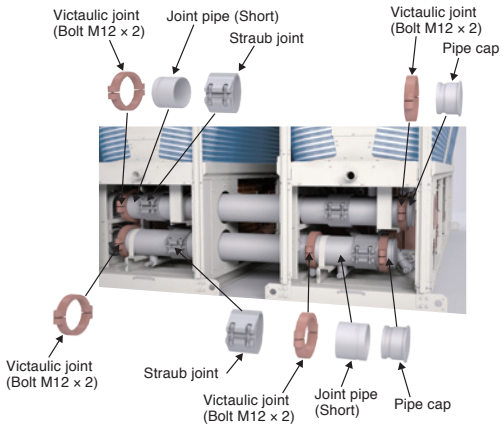
1 Install the panels on the end unit.

*Note: install panel S and then the closing panel.

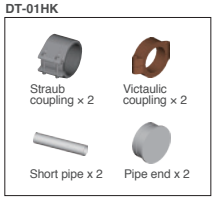
2 Install panel B.



INSTALLATION OF END CONNECTION KIT (DT-01HK, EXCLUDING PANELS)

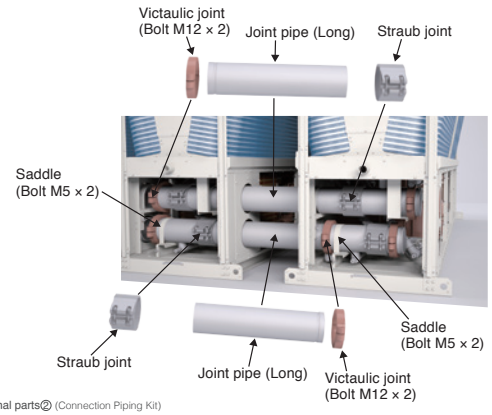


Optional parts① (Piping Kit)
DT-01HK

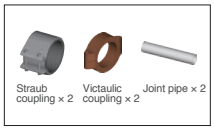


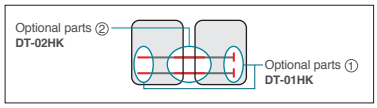
INSTALLATION OF CONNECTION KIT (DT-02HK, EXCLUDING PANELS)

* Please remove the panels before installing the connection kit.



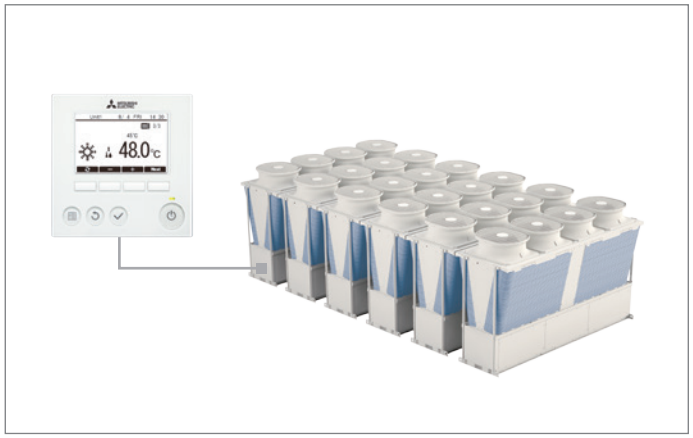
Optional parts② (Connection Piping Kit)
DT-02HK





CONTROL TECHNOLOGY

You can perform basic operations, such as starting, stopping, mode switching, water temperature setting and schedule setting, by connecting a remote controller.

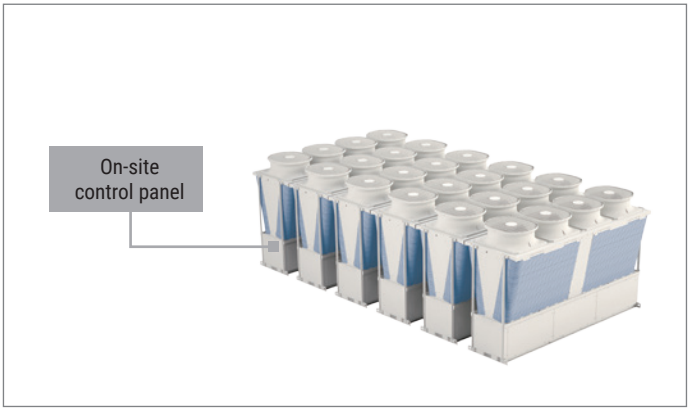


Operation/setting	ON/OFF
	Cooling/Heating/HeatingECO/Anti-freeze
	Snow/regular
	Demand
	Scheduled operation (daily/weekly)
Display	Operation mode
	Current water temperature
	Error code
Control function (function of chiller body)	Control of number of units Control to prevent simultaneous defrosting

EXTERNAL SIGNAL INPUT

Basic operations, such as starting, stopping, mode switching and water temperature setting, can be performed by inputting external signals directly to the unit.

* Optional products, such as remote controllers, are not always required.



Input	ON/OFF
	Cooling/Heating
	Snow/regular
	Demand
	Target water temperature
Output	Operation mode
	Under operation
	Under defrosting
	Error
Control function (function of chiller)	Control of number of units Control to prevent simultaneous defrosting

Technical specifications COOLING ONLY MODEL

MODEL			SET	EACV-P1500YBL(-N)(-BS)	EACV-P1800YBL(-N)(-BS)
Power source				3-phase 4-wire 380-400-415V 50/60Hz	
Cooling capacity *1			kW	150.00	180.00
			kcal/h	129,000	154,800
			BTU/h	511,800	614,160
		Power input	kW	45.10	59.01
		EER		3.33	3.05
		IPLV *5		6.55	6.33
		Water flow rate	m^3/h	25.8	31.0
Cooling capacity(EN14511) *2			kW	148.58	177.76
			kcal/h	127,779	152,874
			BTU/h	506,955	606,517
		Power input	kW	46.52	61.25
		EER		3.19	2.90
		Eurovent efficiency class		A	B
		ESEER *6		4.74	4.45
		SEER		4.62	4.58
		Water flow rate	m^3/h	25.8	31.0
Current input		Cooling current 380-400-415V *1	A	77 - 73 - 70	
		Maximum current	A	111	
Water pressure drop *1			kPa	114	164
Temp range		Cooling	°C	Outlet water 5~30 *7	
			°F	Outlet water 41~86 *7	
		Outdoor	°C	-15~43 *6	
			°F	5~109.4 *6	
Circulating water volume range			m^3/h	12.9~34.0	
Sound pressure level (measured in anechoic room) at 1m *1			dB (A)	66	68
Sound power level (measured in anechoic room) *1			dB (A)	84	86
Diameter of water pipe (Standard piping)		Inlet	mm (in)	65A (2 1/2B) housing type joint	
		Outlet	mm (in)	65A (2 1/2B) housing type joint	
Diameter of water pipe (Inside header piping)		Inlet	mm (in)	150A (6B) housing type joint	
		Outlet	mm (in)	150A (6B) housing type joint	
External finish				Polyester powder coating steel plate	
External dimension HxWxD			mm	2350 x 3400 x 1080	
Net weight		Standard piping	kg (lbs)	1240 (2734)	
		Inside header piping	kg (lbs)	1256 (2769)	
Design pressure		R410A	MPa	4.15	
		Water	MPa	1.0	
Heat exchanger		Water side		Stainless steel plate and copper brazing	
		Air side		Plate fin and copper tube	
Compressor		Type		Inverter scroll hermetic compressor	
		Maker		MITSUBISHI ELECTRIC CORPORATION	
		Starting method		Inverter	
		Quantity		4	
		Motor output	kW	11.7 x 4	
		Lubricant		MEL32	
Fan		Air flow rate	m^3/min	265 x 4	
			L/s	4417 x 4	
			cfm	9357 x 4	
		Type, Quantity		Propeller fan x 4	
		Starting method		Inverter	
		Motor output	kW	0.94 x 4	
Protection		High pressure protection		High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
		Inverter circuit		Over-heat protection, Over current protection	
		Compressor		Over-heat protection	
Refrigerant *3	Type / GWP *4			R410A / 2088	
	Factory charged	Weight	kg	12.0	
		CO2 equivalent *4	t	25.06	
	Maximum additional charge	Weight	kg	48.0	
		CO2 equivalent *4	t	100.23	
	Total charge	Weight	kg	60.0	
		CO2 equivalent *4	t	125.29	
		Control		LEV	

*1 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB(95°FDB/75.2°FWB) outlet water temp 7°C(44.6°F) inlet water temp 12°C(53.6°F). Pump input is not included in cooling capacity and power input.
*2 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB(95°FDB/75.2°FWB) outlet water temp 7°C(44.6°F) inlet water temp 12°C(53.6°F). Pump input is included in cooling capacity and power input based on EN14511.
*3 Amount of factory-charged refrigerant is 3(kg) x 4. Please add the refrigerant at the field.
*4 These values are based on Regulation(EU) No.517 / 2014.
*5 IPLV is calculated in accordance with AHRI 550-590.
*6 ESEER is calculated in accordance with EUROVENT conditions.
*Please don't use the steel material for the water piping.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.
*This model doesn't equip with a pump.

Technical specifications HEATPUMP MODEL

MODEL			SET	EAHV-P1500YBL(-N)(-BS)	EAHV-P1800YBL(-N)(-BS)
Power source				3-phase 4-wire 380-400-415V 50/60Hz	
Cooling capacity *1			kW	150.00	180.00
			kcal/h	129,000	154,800
			BTU/h	511,800	614,160
		Power input	kW	45.10	59.01
		EER		3.33	3.05
		IPLV *7		6.55	6.33
		Water flow rate	m^3/h	25.8	31.0
Cooling capacity(EN14511) *2			kW	148.58	177.76
			kcal/h	127,779	152,874
			BTU/h	506,955	606,517
		Power input	kW	46.52	61.25
		EER		3.19	2.90
		Eurovent efficiency class		A	B
		ESEER *8		4.74	4.45
		SEER		4.62	4.58
		Water flow rate	m^3/h	25.8	31.0
Heating capacity *3			kW	150.00	180.00
			kcal/h	129,000	154,800
			BTU/h	511,800	614,160
		Power input	kW	44.59	55.68
		COP		3.36	3.23
		Water flow rate	m^3/h	25.8	31.0
Heating capacity(EN14511) *4			kW	151.42	182.24
			kcal/h	130,221	156,726
			BTU/h	516,645	621,803
		Power input	kW	46.01	57.92
		COP		3.29	3.15
		Eurovent efficiency class		A	B
		SCOP (Reversible) Low/Medium		3.24 / 2.85	
		Water flow rate	m^3/h	25.8	31.0
Current input		Cooling current 380-400-415V *1	A	77 - 73 - 70	
		Heating current 380-400-415V *3	A	76 - 72 - 69	
		Maximum current	A	111	
Water pressure drop *1			kPa	114	164
Temp range		Cooling	°C	Outlet water 5~30 *9	
			°F	Outlet water 41~86 *9	
		Heating	°C	Outlet water 30~55 *9	
			°F	Outlet water 86~131 *9	
		Outdoor	°C	-15~43 *9	
			°F	5~109.4 *9	
Circulating water volume range			m^3/h	12.9~34.0	
Sound pressure level (measured in anechoic room) at 1m *1			dB (A)	66	68
Sound power level (measured in anechoic room) *1			dB (A)	64	86
Diameter of water pipe (Standard piping)		Inlet	mm (in)	65A (2 1/2B) housing type joint	
		Outlet	mm (in)	65A (2 1/2B) housing type joint	
Diameter of water pipe (Inside header piping)		Inlet	mm (in)	150A (6B) housing type joint	
		Outlet	mm (in)	150A (6B) housing type joint	
External finish				Polyester powder coating steel plate	
External dimension HxWxD			mm	2350 x 3400 x 1080	
Net weight		Standard piping	kg (lbs)	1310 (2888)	
		Inside header piping	kg (lbs)	1326 (2923)	
Design pressure		R410A	MPa	4.15	
		Water	MPa	1.0	
Heat exchanger		Water side		Stainless steel plate and copper brazing	
		Air side		Plate fin and copper tube	
Compressor		Type		Inverter scroll hermetic compressor	
		Maker		MITSUBISHI ELECTRIC CORPORATION	
		Starting method		Inverter	
		Quantity		4	
		Motor output	kW	11.7 x 4	
		Lubricant		MEL32	
Fan		Air flow rate	m^3/min	265 x 4	
			L/s	4417 x 4	
			cfm	9357 x 4	
		Type, Quantity		Propeller fan x 4	
		Starting method		Inverter	
		Motor output	kW	0.92 x 4	
Protection		High pressure protection		High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
		Inverter circuit		Over-heat protection, Over current protection	
		Compressor		Over-heat protection	
Refrigerant *5	Type / GWP *6			R410A / 2088	
	Factory charged	Weight	kg	12.0	
		CO2 equivalent *6	t	25.06	
	Maximum additional charge	Weight	kg	48.0	
		CO2 equivalent *6	t	100.23	
	Total charge	Weight	kg	60.0	
		CO2 equivalent *6	t	125.29	
		Control		LEV	

*1 Under normal cooling conditions at outdoor temp 35°DB/24°WB(95°FDB/75.2°FWB) outlet water temp 7°C(44.6°F) inlet water temp 12°C(53.6°F). Pump input is not included in cooling capacity and power input.
*2 Under normal cooling conditions at outdoor temp 35°DB/24°WB(95°FDB/75.2°FWB) outlet water temp 7°C(44.6°F) inlet water temp 12°C(53.6°F). Pump input is included in cooling capacity and power input based on EN14511.
*3 Under normal heating conditions at outdoor temp 7°DB/6°WB(44.6°FDB/42.8°FWB) outlet water temp 45°C(113°F) inlet water temp 40°C(104°F). Pump input is not included in heating capacity and power input.
*4 Under normal heating conditions at outdoor temp 7°DB/6°WB(44.6°FDB/42.8°FWB) outlet water temp 45°C(113°F) inlet water temp 40°C(104°F). Pump input is included in heating capacity and power input based on EN14511.
*5 Amount of factory-charged refrigerant is 3(kg) x 4. Please add the refrigerant at the field.
*6 These values are based on Regulation(EU) No.517 / 2014.
*7 IPLV is calculated in accordance with AHRI 550-590.
*8 ESEER is calculated in accordance with EUROVENT conditions.
*Please don't use the steel material for the water piping.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.
*This model doesn't equip with a pump.

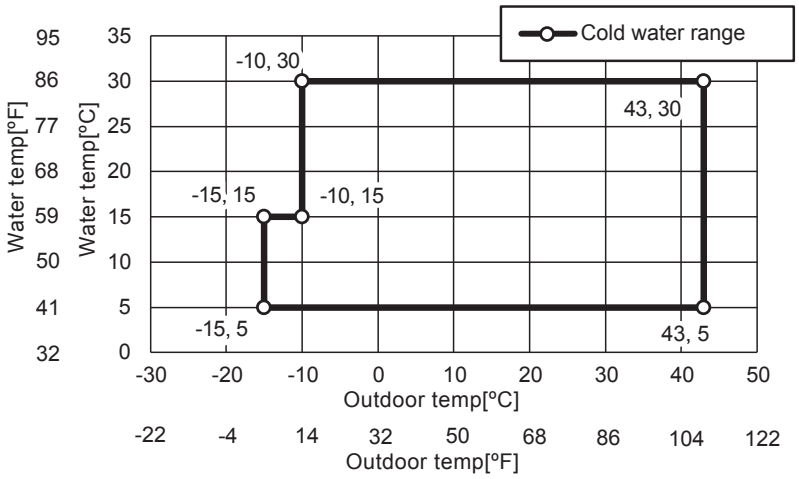
Technical specifications HEATYNG ONLY MODEL

MODEL			SET	EAHV-P1500YBL-H(-N) (-BS)	EAHV-P1800YBL-H(-N) (-BS)
Power source				3-phase 4-wire 380-400-415V 50/60Hz	
Heating capacity *1			kW	150.00	180.00
			kcal/h	129,000	154,800
			BTU/h	511,800	614,160
		Power input	kW	44.59	55.68
		COP		3.36	3.23
		Water flow rate	m^3/h	25.8	31.0
Heating capacity (EN14511) *2			kW	151.42	182.24
			kcal/h	130,221	156,726
			BTU/h	516,645	621,803
		Power input	kW	46.01	57.92
		COP		3.29	3.15
		Eurovent efficiency class		A	B
		SCOP (Heating only) Low/Medium		3.20 / 2.83	
		Water flow rate	m^3/h	25.8	31.0
		Heating current 380-400-415V *3	A	76 - 72 - 69	
		Maximum current	A	111	
Water pressure drop *1			kPa	114	164
Temp range		Cooling	°C	Outlet water 30~55 *5	
			°F	Outlet water 86~131 *5	
		Outdoor	°C	-15~43 *4	
			°F	5~109.4 *4	
Circulating water volume range			m^3/h	12.9~34.0	
Sound pressure level (measured in anechoic room) at 1m *1			dB (A)	66	67
Sound power level (measured in anechoic room) *1			dB (A)	84	86
Diameter of water pipe (Standard piping)		Inlet	mm (in)	65A (2 1/2B) housing type joint	
		Outlet	mm (in)	65A (2 1/2B) housing type joint	
Diameter of water pipe (Inside header piping)		Inlet	mm (in)	150A (6B) housing type joint	
		Outlet	mm (in)	150A (6B) housing type joint	
External finish				Polyester powder coating steel plate	
External dimension HxWxD			mm	2350 x 3400 x 1080	
Net weight		Standard piping	kg (lbs)	1310 (2888)	
		Inside header piping	kg (lbs)	1326 (2923)	
Design pressure		R410A	MPa	4.15	
		Water	MPa	1.0	
Heat exchanger		Water side		Stainless steel plate and copper brazing	
		Air side		Plate fin and copper tube	
Compressor		Type		Inverter scroll hermetic compressor	
		Maker		MITSUBISHI ELECTRIC CORPORATION	
		Starting method		Inverter	
		Quantity		4	
		Motor output	kW	11.7 x 4	
		Lubricant		MEL32	
Fan		Air flow rate	m^3/min	265 x 4	
			L/s	4417 x 4	
			cfm	9357 x 4	
		Type, Quantity		Propeller fan x 4	
		Starting method		Inverter	
		Motor output	kW	0.94 x 4	
Protection		High pressure protection		High pres.Sensor & High pres.Switch at 4.15MPa (601psi)	
		Inverter circuit		Over-heat protection, Over current protection	
		Compressor		Over-heat protection	
Refrigerant *3	Type / GWP *4			R410A / 2088	
	Factory charged	Weight	kg	12.0	
		CO2 equivalent *4	t	25.06	
	Maximum additional charge	Weight	kg	48.0	
		CO2 equivalent *4	t	100.23	
	Total charge	Weight	kg	60.0	
		CO2 equivalent *4	t	125.29	
		Control		LEV	

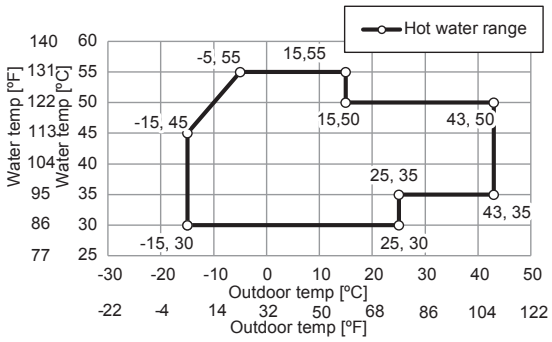
*1 Under normal heating conditions at outdoor temp 7°CDB/6°CWB(44.6°FDB/42.8°FWB) outlet water temp 45°C(113°F) inlet water temp 40°C(104°F). Pump input is not included in heating capacity and power input.
*2 Under normal heating conditions at outdoor temp 7°CDB/6°CWB(44.6°FDB/42.8°FWB) outlet water temp 45°C(113°F) inlet water temp 40°C(104°F). Pump input is included in heating capacity and power input based on EN14511.
*3 Amount of factory-charged refrigerant is 3(kg) x 4. Please add the refrigerant at the field.
*4 These values are based on Regulation(EU) No.517 / 2014.
*Please don't use the steel material for the water piping.
*Please always make water circulate, or pull the circulation water out completely when not in use.
*Please do not use groundwater or well water in direct.
*The water circuit must be closed circuit.
*Due to continuous improvement, the above specifications may be subject to change without notice.
*This model doesn't equip with a pump.

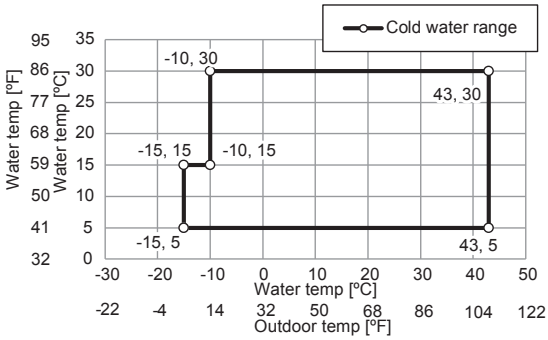
OPERATING LIMITS

COOLING ONLY

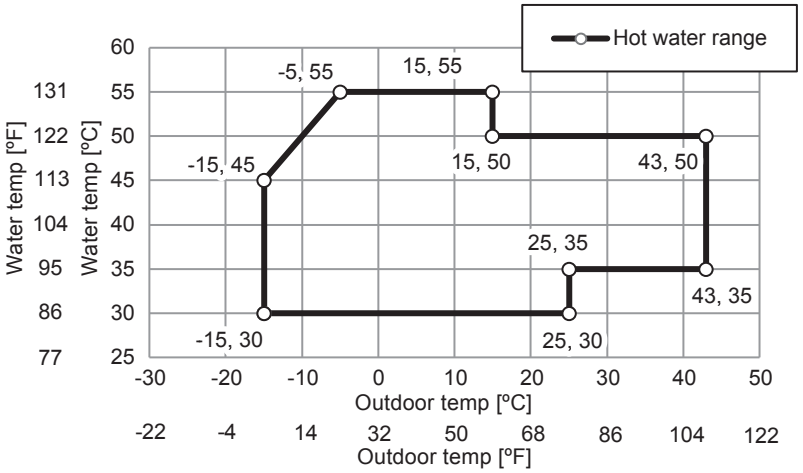


REVERSIBLE HEAT PUMP

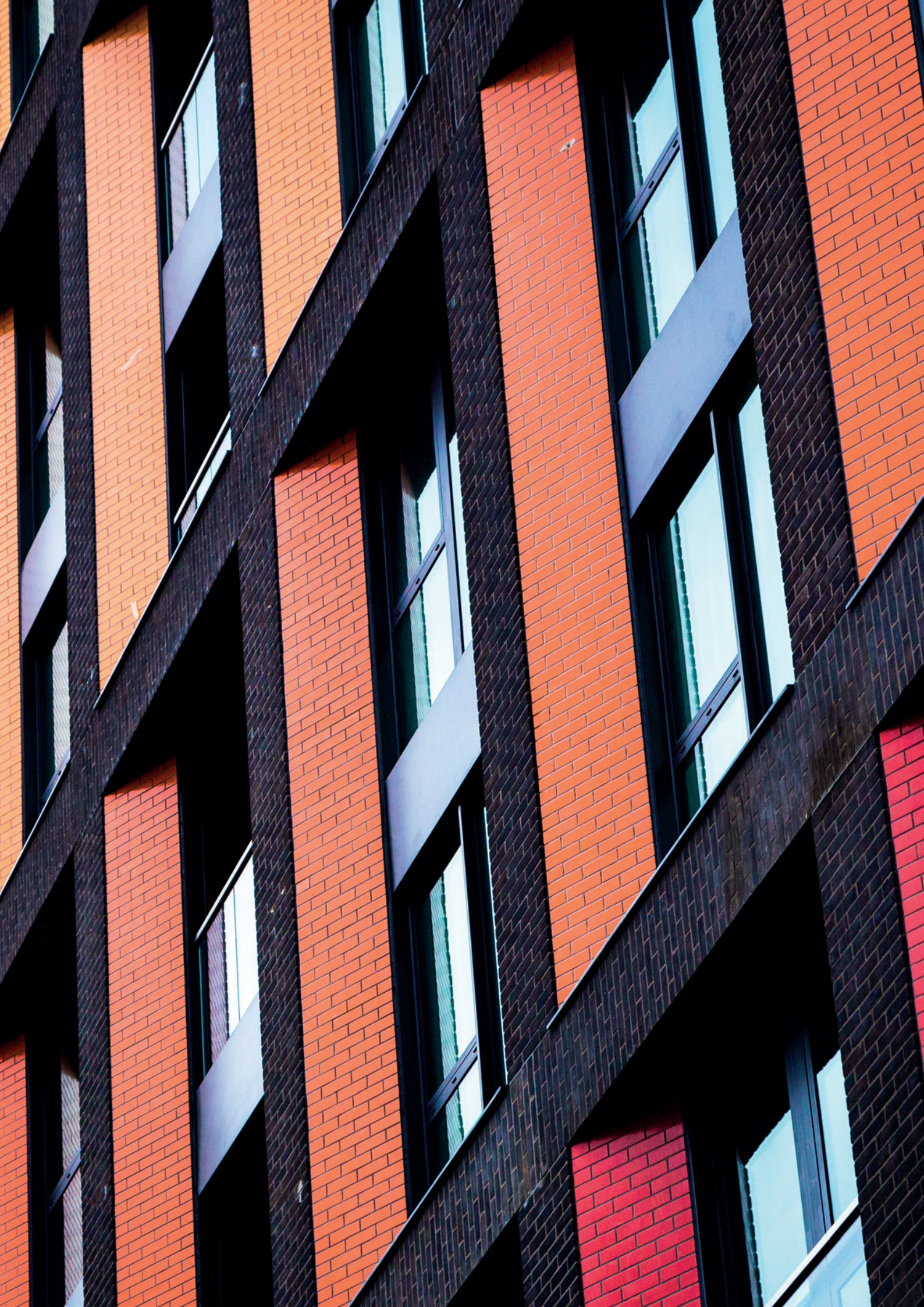




HEATING ONLY



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



MITSUBISHI ELECTRIC

LIVING ENVIRONMENTAL SYSTEMS

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les.mitsubishielectric.it/en/products/

eco Changes **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.

The equipment described in this catalogue contain fluorinated gasses such as HFC-410A (GWP 2088), HFC-134A (GWP 1430) e HFC-407C (GWP 1774). Installation of those equipment must be executed by professional installer based on EU reg. 303/2008 and 517/2014

Brochure e-Series
E-2003242 (16430)

Specifications are subject to change without notice

E-2003242