MITSUBISHI ELECTRIC

Changes for the Better

Air-cooled Chilling Units

e-Series

EG5

Mitsubishi Electric offers the variation in 30 HP, 50 HP, and 60 HP of module which have teams up to meet customer's requirement.

Due to advancing global warming, there is a strong demand for central heat sources with higher performance. Mitsubishi Electric's modular chiller line-up contributes to realizing high functionality, reliability and energy saving with its own control.

Main Features

3 kinds of capacity module are available among 30 - 60 HP

- There are three capacity modules with the side flow type of 30 HP, the top flow type of 50, 60 HP.
- Up to 6 units of each module can be connected among 1 group, so capacity can be increased to up to 360 HP (60 HP × 6 units).

High energy saving performance

- Both EER and COP exceed 3.0, and energy saving operation is realized in both cooling and heating modes.
- A high efficiency scroll compressor is equipped with inverter, so optimum operation can be realized according to the load.

modular chiller line-up.
various installation options

Up to 6 units can be connected among 1 group. The total capacity can be increased to up to 60 HP × 6 units = 360 HP

Use of Y-shaped structure for sufficient intake air volume (50/60 HP model)

**This picture is 50, 60 HP model.*

Selectable piping system to save installation space and installation work

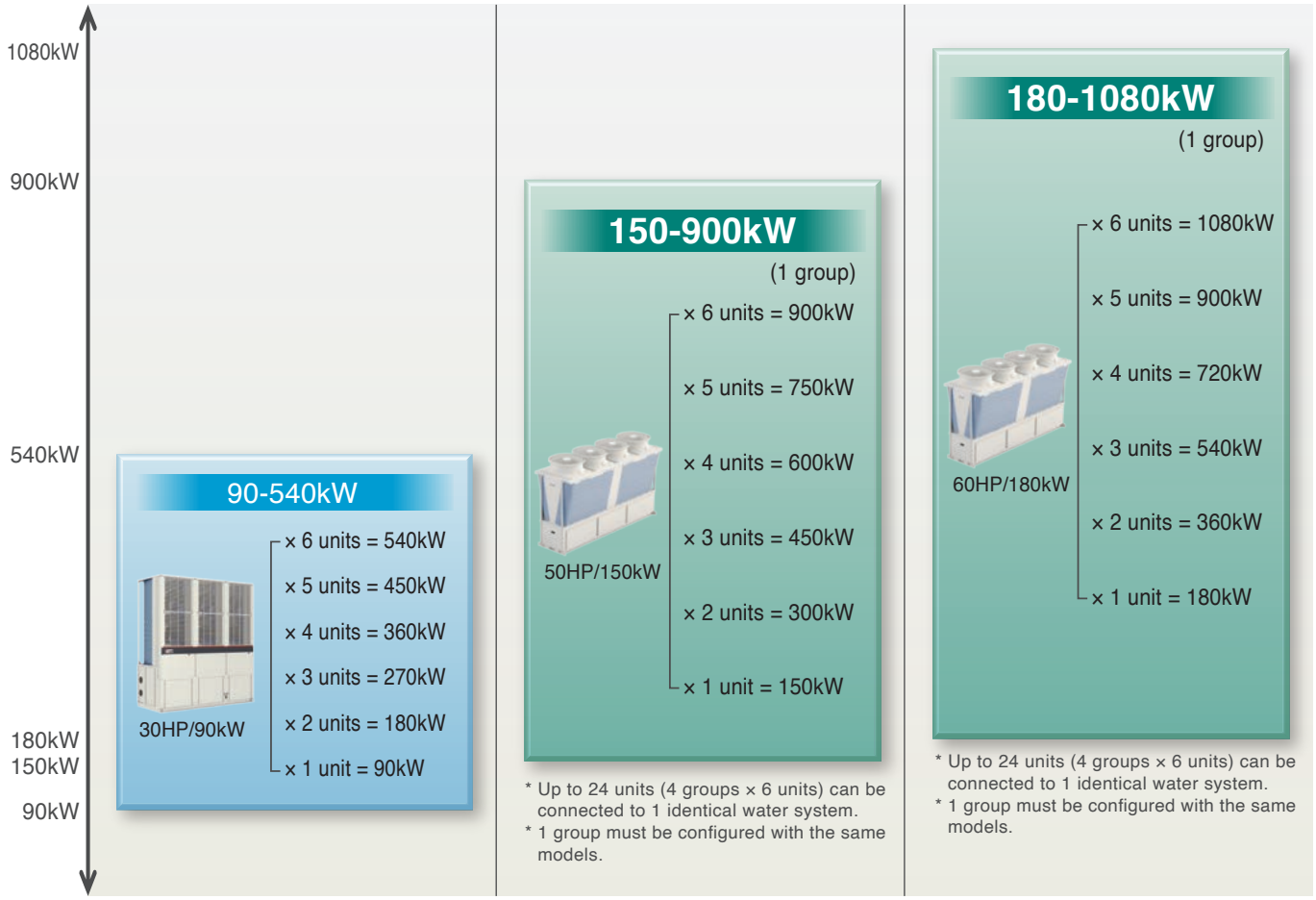
- Standard and built-in header types are available. The optimum piping system can be selected according to the design and construction needs.

Module line-up

	30HP 90kW module*1	50HP 150kW module	60HP 180kW module
			
Heat Pump	EAHV-P900YAL(-N)(-BS) EAHV-P900YAF(-N)(-BS)	EAHV-P1500YBL(-N)(-BS)	EAHV-P1800YBL(-N)(-BS)
Heating Only	EAHV-P900YAL-H(-N)(-BS) EAHV-P900YAF-H(-N)(-BS)	EAHV-P1500YBL-H(-N)(-BS)	EAHV-P1800YBL-H(-N)(-BS)
Cooling Only	EACV-P900YAL(-N)(-BS) EACV-P900YAF(-N)(-BS)	EACV-P1500YBL(-N)(-BS)	EACV-P1800YBL(-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.

Capacity



* Up to 24 units (4 groups × 6 units) can be connected to 1 identical water system.
* 1 group must be configured with the same models.

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* 1 group must be configured with the same models.

Remote controller

Individual Remote Controller

PAR-W31MAA

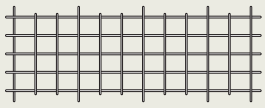
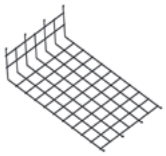
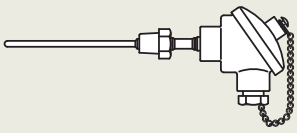
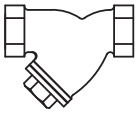
Centralized Remote Controller*

AE-200E/A

EW-50E/A

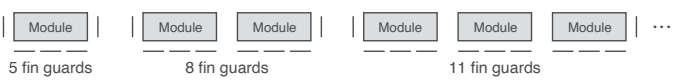
* P900 (30HP) can be connected to AE-200E/A with software version of 7.53 or later, and P1500 (50HP) / P1800 (60HP) can be connected to AE-200E/A with software version 7.80 or later.

Option parts

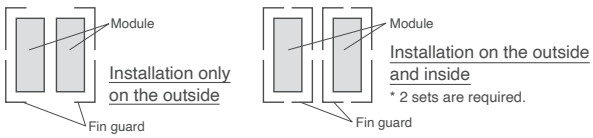
Description	Image	P900	P1500/1800	Remarks
Piping Kit		EA-01HK	DT-01HK *1	for Inside Header type
Connection Piping Kit		EA-02HK	DT-02HK *1	for Inside Header type
Fin Guard		EA-130FG	–	for Standard Pipe type, Inside Header type *2
		–	DT-150FG	for Standard Pipe type, Inside Header type *3
Representative-water temperature sensor		TW-TH16-E		for Standard Pipe type, Inside Header type
Y type STRAINER 50A		YS-50A	–	for Standard Pipe type

*1 DT-01HK and DT-02HK contain panels, saddles and bolts together with the items shown. (Please refer to page 27,28 for details.)

*2 Only one piece of fin guard is included.
The necessary quantity is as follows.



*3 One set contains 4 fin guards.
Please refer to the following installation examples.



Modular Chiller

P900

EAHV-P900YAL(-N)(-BS) EAHV-P900YAF(-N)(-BS)
EAHV-P900YAL-H(-N)(-BS) EAHV-P900YAF-H(-N)(-BS)
EACV-P900YAL(-N)(-BS) EACV-P900YAF(-N)(-BS)

1 High 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.

2 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.

3 Saving space and installation work

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

4 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.

5 Other feature

Brine usable

Ability to use brine allows for water supplies of as low as -10°C, suitable for use with process application cooling.

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.

Excellent Energy Saving Performance

High EER, High COP

EER 3.30

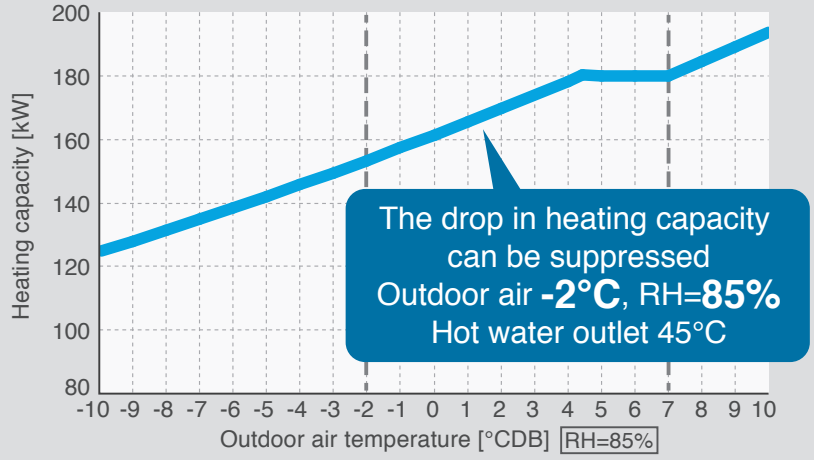
COP 3.50

- 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 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.

Suppression of heating capacity drop at low outside temperatures

● e-series (EAHV-P900YAL/F×3)

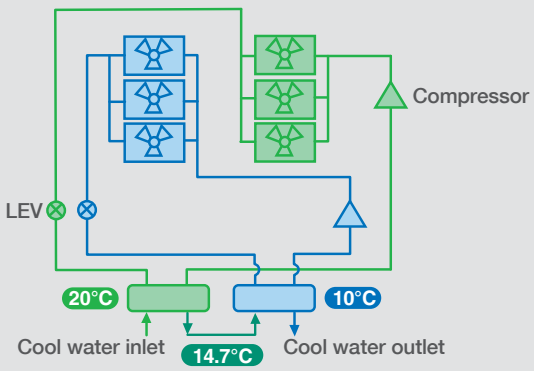


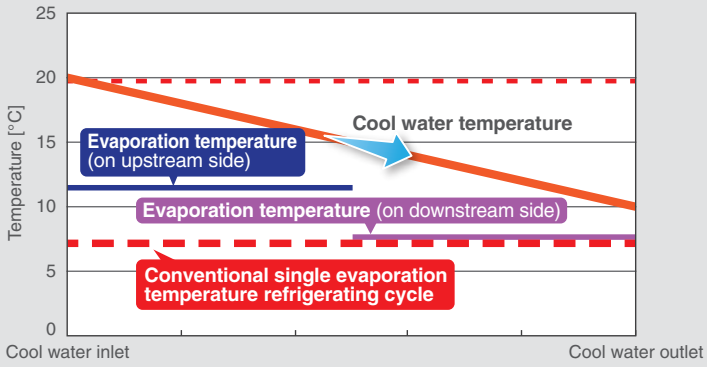
- A heat pump technology captures heat from the outdoor air. The heating performance decrease which occurs with a decrease in outdoor air temperature has been made up for by installing a larger number of units.
This disadvantage has been eliminated with the e-series by increasing the heating performance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

Large Temperature Difference Operation Significantly Increases Efficiency

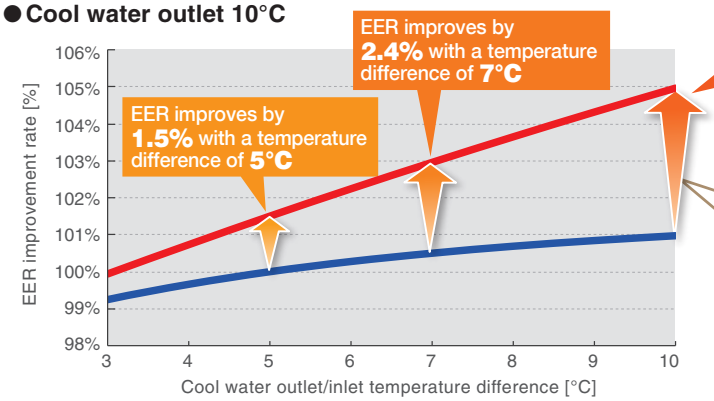
Two Evaporation Temperature Refrigerating Cycles.

Two evaporators are connected to keep the evaporation temperature on the upstream side of cool water high.





● **Cool water outlet 10°C**



Compared to the conventional single evaporation temperature refrigerating cycle, **EER improves by an additional 3.9%** with a cool water outlet/inlet temperature difference of 10°C in cool water outlet temperature 10°C operation mode.

Energy-saving technology

High Efficiency Inverter Compressor

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

Two refrigerating cycles

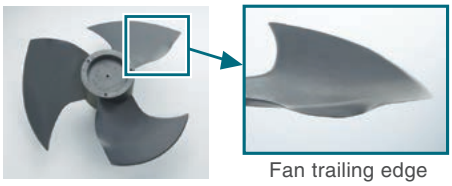
A configuration of two independent refrigerant circuits and the series connection of water-side heat exchangers increase the performance (two-stage cooling).

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.

High functionality of modular chiller

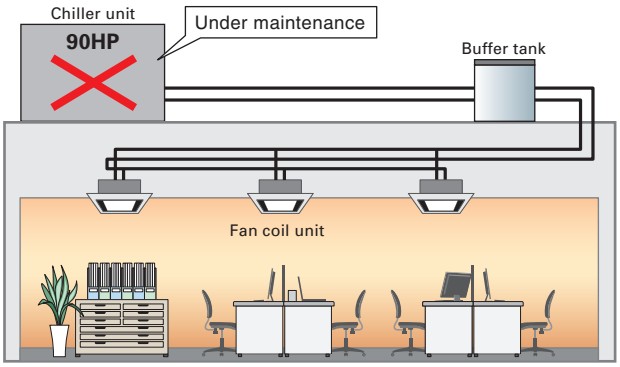
Up to 6 modules can be connected

- 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

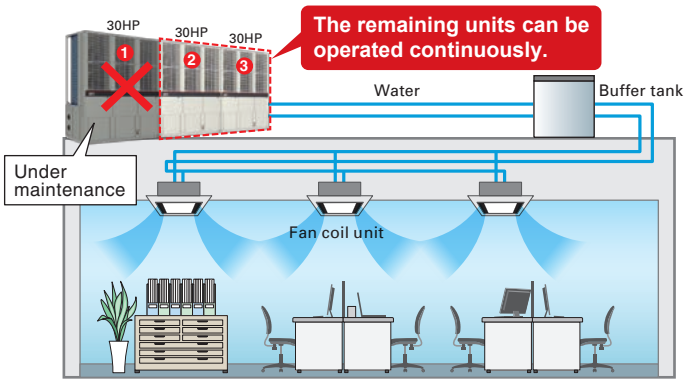
- The flexible backup operation among the combined modules enables the continuous operation, even one module is stopped due to maintenance.

Non-modular chiller



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

Mitsubishi Electric modular chiller



With our module 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.

Saving space and installation work

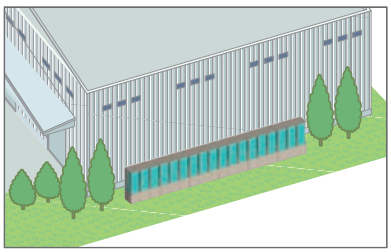
Small Footprint Installation

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.

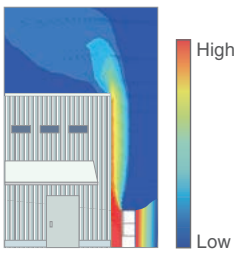
The depth of 900 mm helps save space.

Installation example (single-row installation)

● **Example of installation along the outer wall of a factory**



* For details on installation, refer to the installation manual.



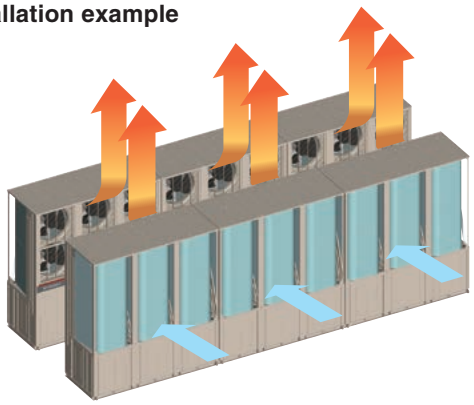
Airflow analysis
(Temperature distribution)

- 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.

Installation example (others)

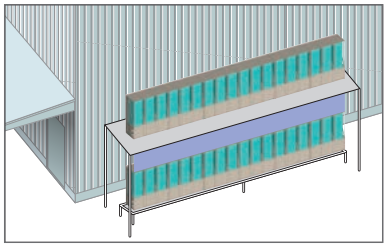
The modules can be installed in two rows or in one row on each of two stages using a frame. They can be installed flexibly according to the installation space.

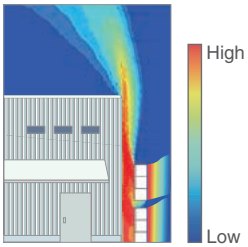
● **Front surface-facing double-row installation example**



* For details on installation, please refer to the installation manual.

● **Single-row double-stack installation example**





Airflow analysis
(Temperature distribution)

- The side-flow feature allows for a single-row double-stack installation by using a frame for the units installed in a row. Additional units can be installed above the units. If you plan to add units in the future, it is recommended to make a plan with consideration given to double-stack installation after the second phase of installation.

• The frame is to be supplied at the customer's site.
• The figure shows an example of using the inside header specification.

Inside Header

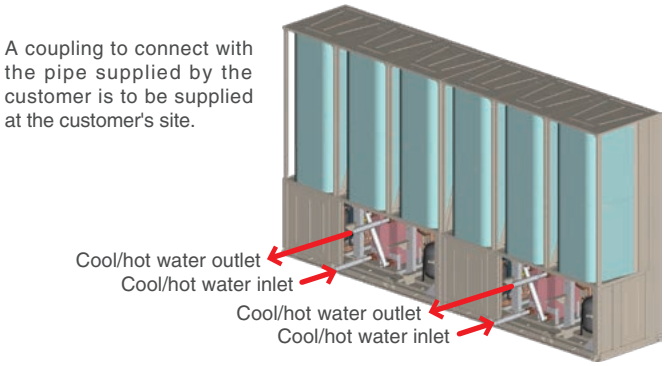
"-N" model only

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

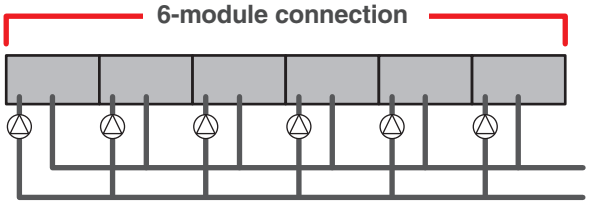
- The field water pipe header section that is usually required to connect the module to the field water pipe is now available as a manufacturer option (hereinafter referred to as the "inside header") which can be incorporated into the module at the factory before shipment (a supplied connection kit is 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 one module)



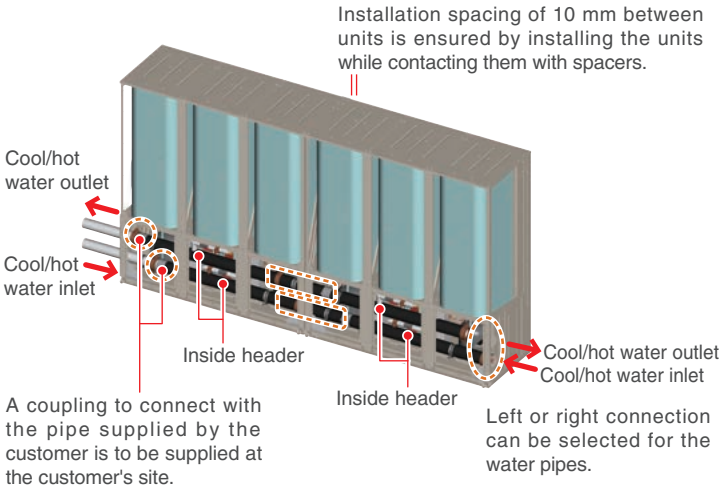
- Number of pumps: 6
- Pipes connected at the site: 12 points

*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.

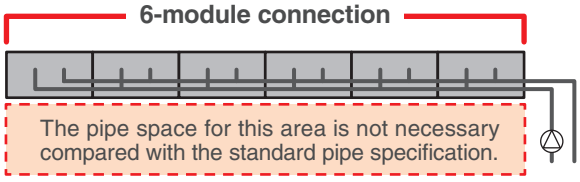
It is necessary to install connecting piping for installing a pump for each module.

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 one unit)



- 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.

● Since the module contains a header, the external piping space can be reduced, and the on-site water piping work is simpler.*
● It is only necessary to install one pump, and the number of piping connections on site is reduced.

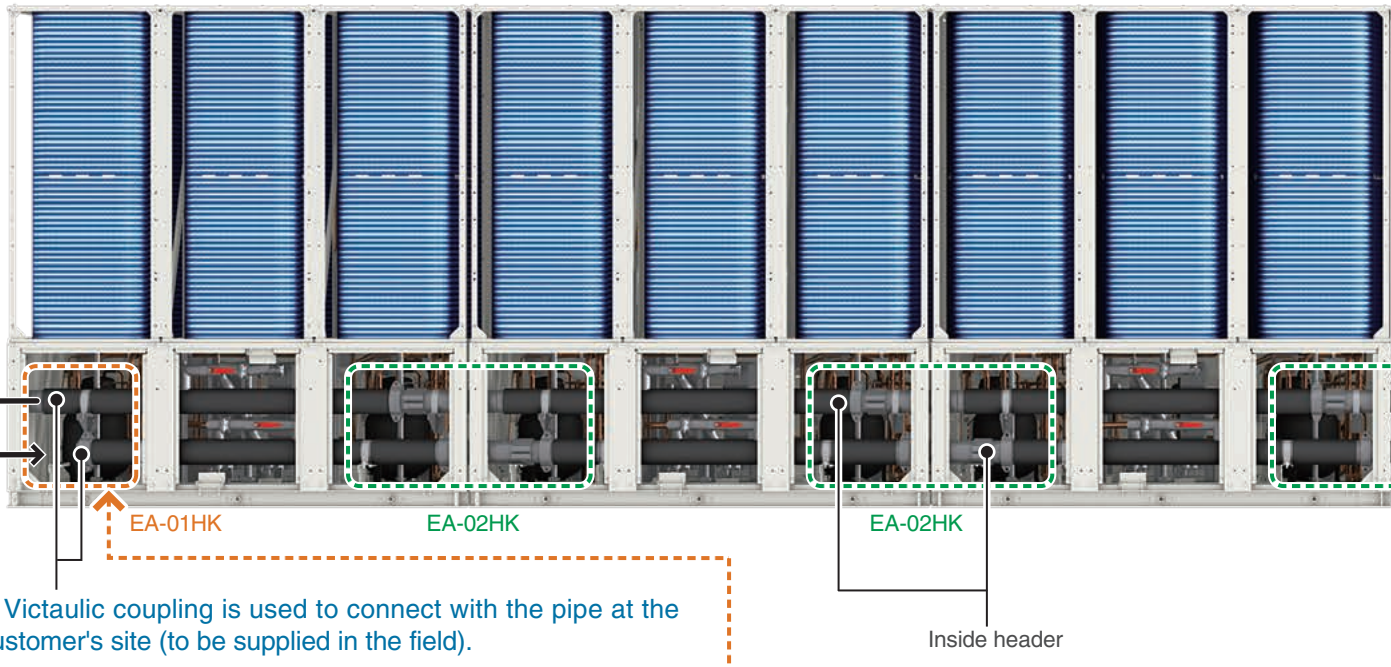
* On-site piping work using the connection piping kit (optional parts) is required. For more information, please refer to the following page.

Inside Header

"-N" model only

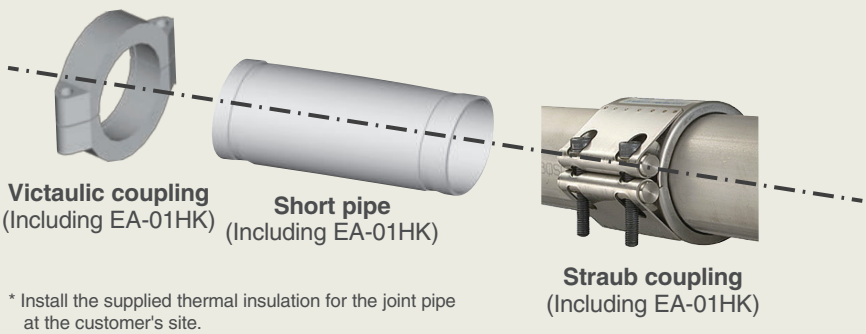
About Pipe Connection Kit

● **This figure shows 540 HP (EAHV-P900YAL/F-N×6) as an example.**

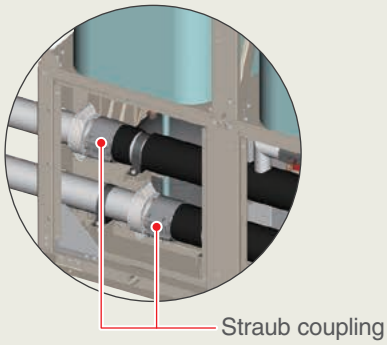


A Victaulic coupling is used to connect with the pipe at the customer's site (to be supplied in the field).

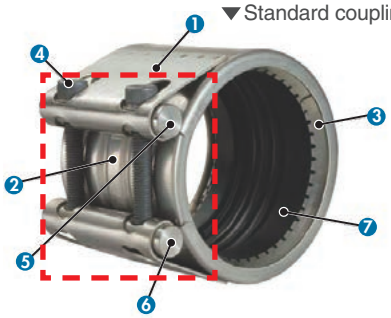
*Straub couplings and short pipes are included for the inside header specification.



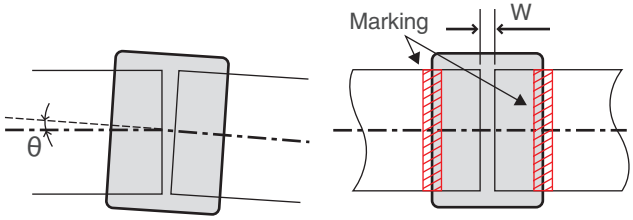
* Install the supplied thermal insulation for the joint pipe at the customer's site.



Structure

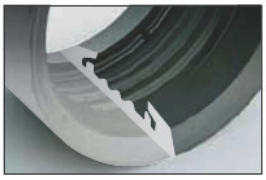


No.	Part name	Material
1	Casing	SUS 304
2	Sliding plate	SUS 301 or 304
3	Grip ring	SUS 301
4	Tightening bolt	SUS XM7
5	Rod washer	SUS 304
6	Rod nut	SUS 304
7	Rubber sleeve	EPDM

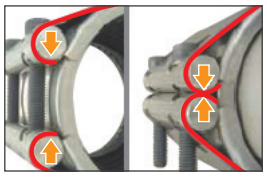


● **Allowable clearance and tilt range**

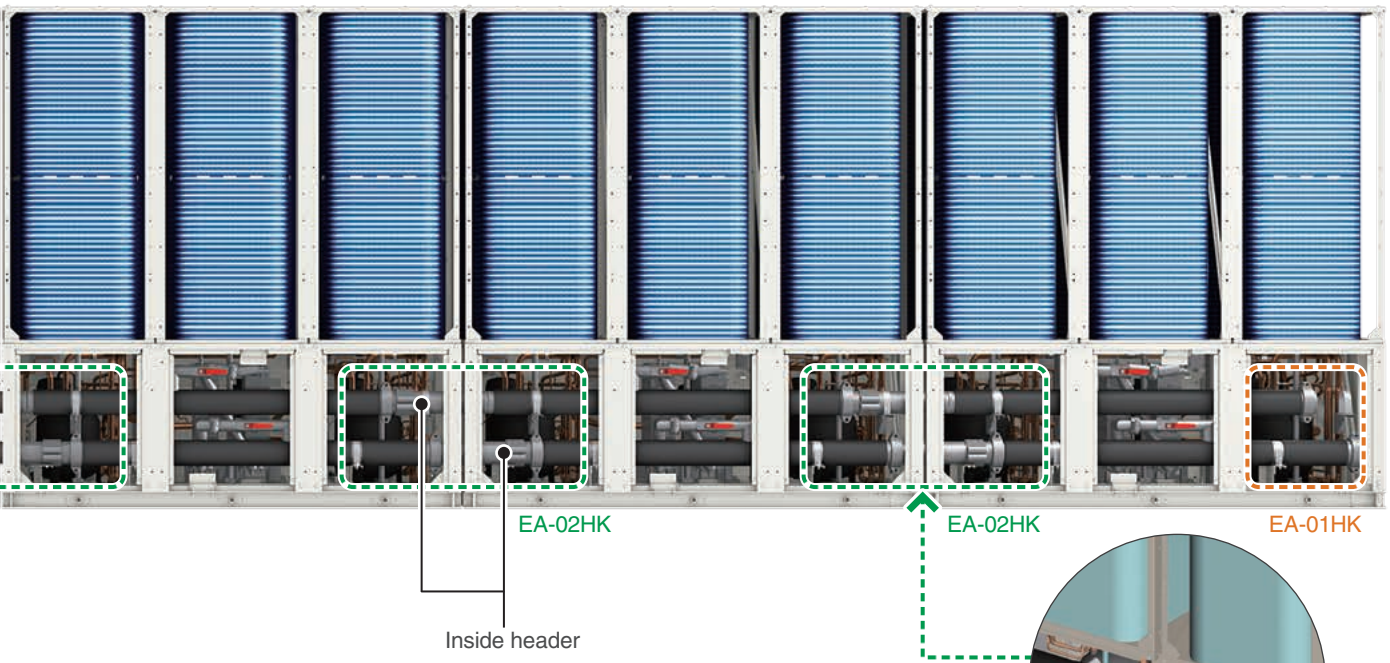
Allowable pipe clearance value [W]=0 to 25 mm
Allowable pipe tilt angle [θ]=±2°

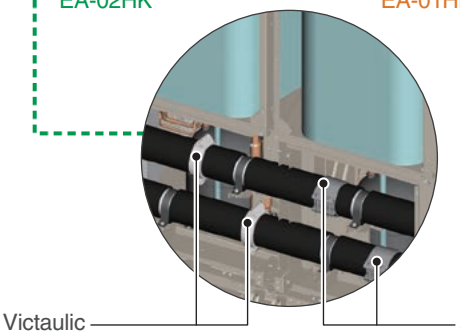


The sealed rubber has a lip structure to improve the water-stopping performance.
Adjust the position of the Straub coupling so the marking on both sides can be seen.

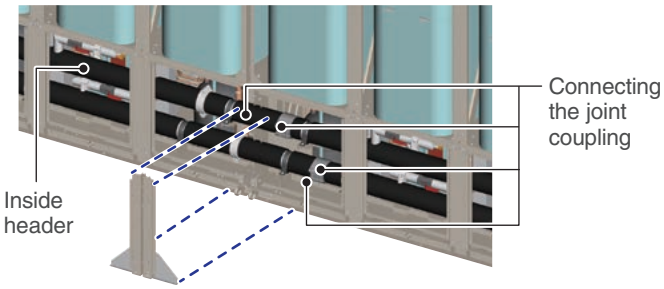


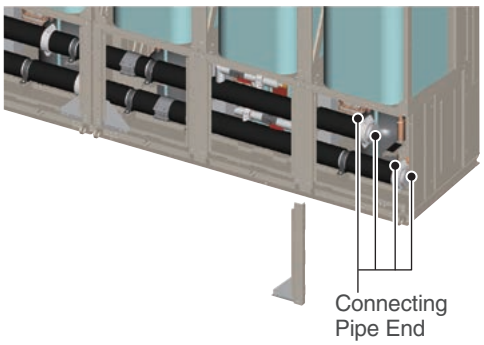
Just tighten the bolt until the casing fits against (comes into contact with) the metal. Anyone can connect the pipes evenly and securely, regardless of their skills and the type of the pipe used.





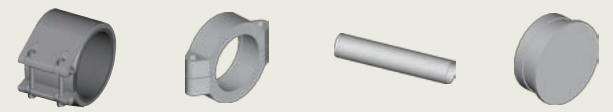
Connecting Pipe End (Connection at Customer's Site)



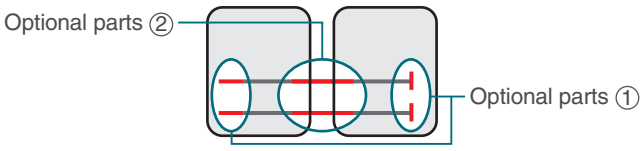


Capacity	Module (Inside header)	Optional parts ① **EA-01HK** (model)	Optional parts ② **EA-02HK** (model)
30 HP	1	1	0
60 HP (30 HP×2)	2	1	1
90 HP (30 HP×3)	3	1	2
120 HP (30 HP×4)	4	1	3
150 HP (30 HP×5)	5	1	4
180 HP (30 HP×6)	6	1	5

■Optional parts① (Piping Kit) **EA-01HK**



■Optional parts② (Connection Piping Kit) **EA-02HK**



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

Easy system control

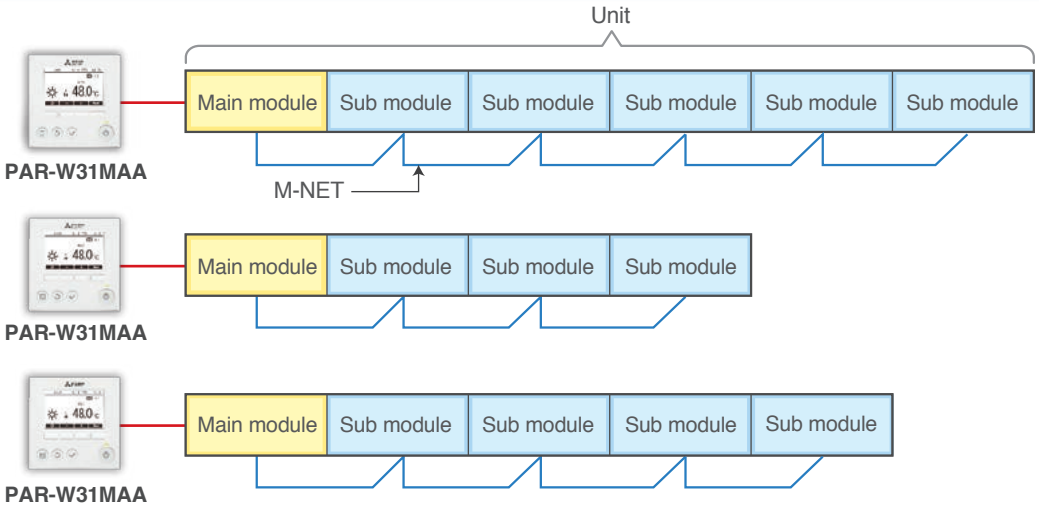
The water temperature in each module can be controlled by using local remote controllers or by using centralized controller "AE-200E/A". The control method can be selected at the request of customer.

Remote control connection

- 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)	○

System configuration



Demand control

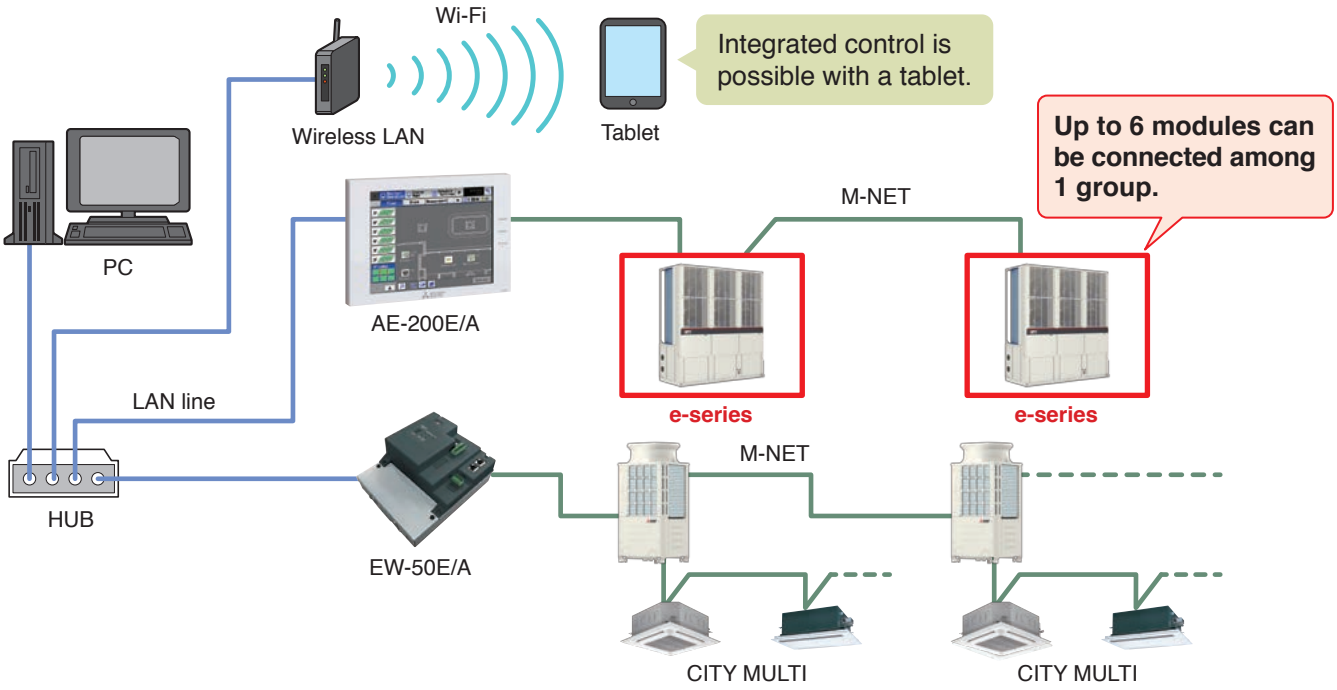
Forced capacity control up to the demand upper limit by an external input to the unit (non-voltage normal open). Heating demand is possible in addition to the cooling demand.

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.
* P900 (30HP) is connectable to a system with a software version of 7.53 or later.

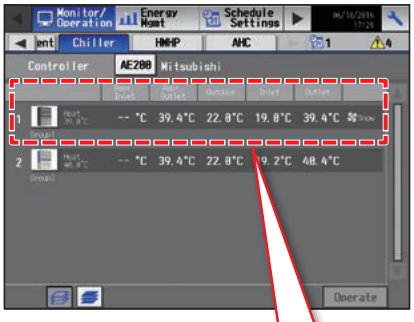
System configuration



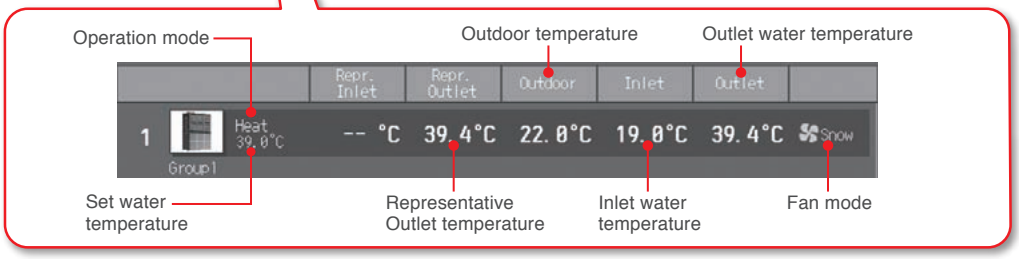
Monitoring on LCD touch panel and web browser

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.

● **LCD**



● **Integrated Centralized Control web**

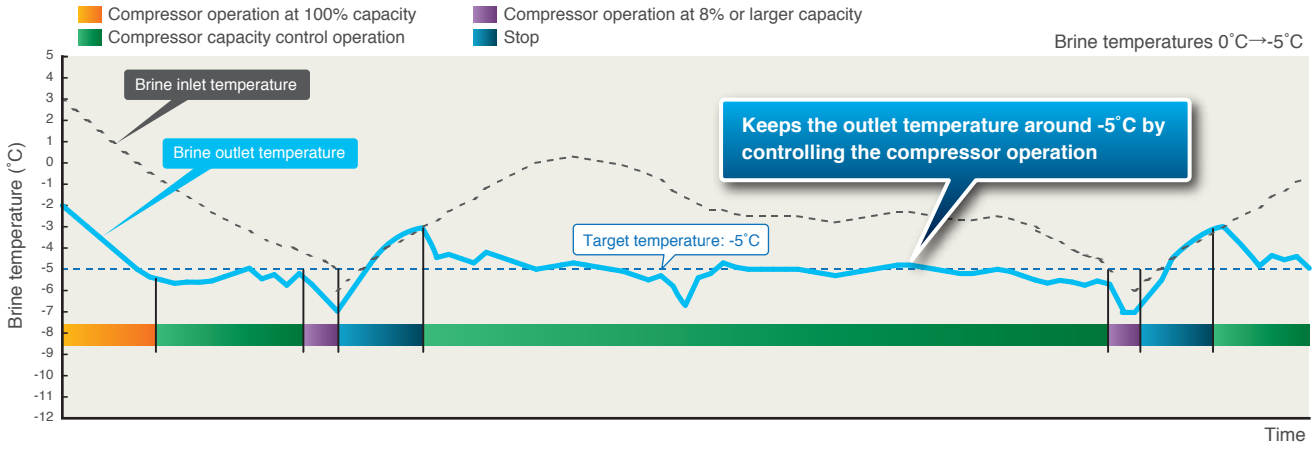


The EACV-P900YAL/F(-N) model is suitable for versatile use, including process cooling.

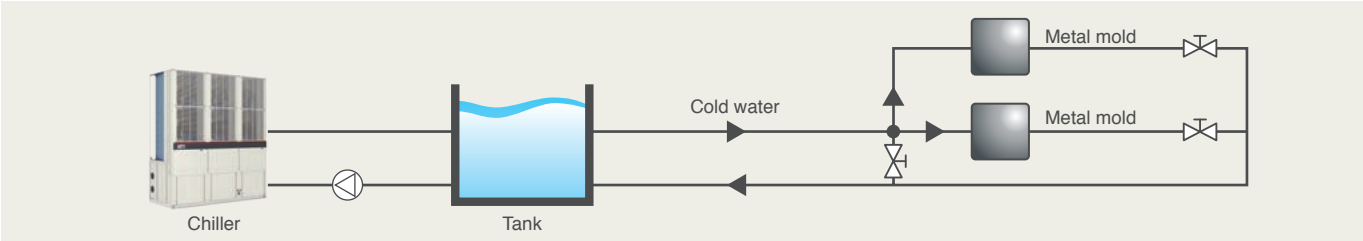
*P1500/P1800 is not usable

- The EACV-P900YAL/F(-N) model supports a wider outlet water temperature setting range (between 5˚C and -10˚C) and is suitable for use for a variety of applications. The use of inverter controlled fan and compressor enables precise control of outlet water temperature, which is essential in process cooling. This model is also suitable for use at metal and food factories and for use to cool testing equipment at hospitals.

Inverter controlled fan and compressor enables precise control of outlet temperatures on air-cooled unit.



Application examples



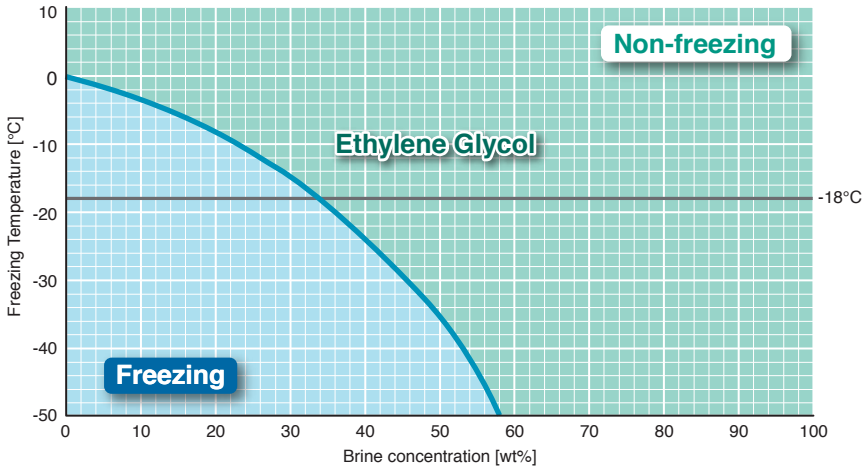
Manufacturing industries

Temperatures of metal for molding plastic products such as housings of electric products going out of range even in a single circuit shuts down the entire system, and its recovery takes time. This model helps boost productivity by ensuring stable temperature control.

Food industries

Bread factories, beer brewery factories, and wholesale fish markets

What is brine?



Brine is a mixture of water and antifreeze solution that brings the freezing point down to prevent freezing at subzero temperatures. The freezing point depends on the percentage of antifreeze, whose main component is ethylene glycol. This model is available with the outlet water temperature setting range down to -10˚C.

Note;
The graph was referred from chemical company data. But Freezing Temperature condition will be slightly different based on each company.
Please confirm detail data to the chemical company directly.
The brine concentration should be set a percentage that keeps the freezing temperature at -18°C or less to prevent the freezing.

Specification (Cooling only)

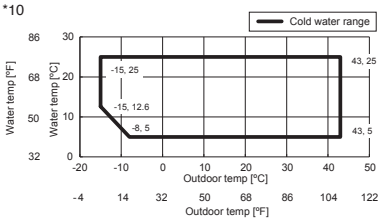
Standard	Pre refrigerant charging	EACV-P900YAL	Full refrigerant charging	EACV-P900YAF
Anti-corrosion	Pre refrigerant charging	EACV-P900YAL-BS	Full refrigerant charging	EACV-P900YAF-BS
Built-in header	Pre refrigerant charging	EACV-P900YAL-N	Full refrigerant charging	EACV-P900YAF-N
Anti-corrosion / Built-in header	Pre refrigerant charging	EACV-P900YAL-N-BS	Full refrigerant charging	EACV-P900YAF-N-BS

Model				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	—
		ESEER (Includes pump input based on EN14511) *3 *4		5.46	—
		SEER (Includes pump input based on EN14511) *3		4.88	—
		IPLV *5	kW/kW	6.34	—
		Water flow rate	m³/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	m³/h	11.5	8.0
Maximum current input			A	61	
Water pressure drop		Water *8	kPa	135	65
		Brine(ethylene glycol 35wt%) *7 *9	kPa	106	50
Temp range		Cooling Water	°C	Outlet water 5~25 *10	
			°F	Outlet water 41~77 *10	
		Cooling Brine(ethylene glycol 35wt%)	°C	Outlet brine -10~25 *7 *11	
			°F	Outlet brine 14~77 *7 *11	
		Outdoor	°C	-15~43 *10 *11	
			°F	5~109.4 *10 *11	
Circulating water volume range			m³/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	m³/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	

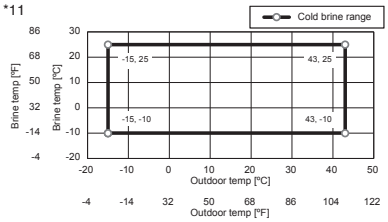
Note.
*1 Under normal cooling conditions at outdoor temp 35°CDB/24°CWB (95°FDB/75.2°FWB) outlet water temp 7°C (44.6°F) inlet water temp 12°C (53.6°F).
*2 Pump input is not included.
*3 Pump is not included in e-series.
*4 EN14511 standard (2013) formula is applied to figure out this value in case of 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.
*5 Calculations according to standard performances (in accordance with AHRI 550-590).
*6 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).
*7 Set the dipswitch SW3-6 on both main and sub modules to ON.
*8 Under normal cooling conditions capacity 90kW, water flow rate 15.5m³/h
*9 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.

Unit converter		
	kcal/h = kW x 860	lbs = kg/0.4536
	BTU/h = kW x 3,412	cfm = m³/min x 35.31

*10



*11



Refrigerant			EACV-P900YAL(-N)(-BS)	EACV-P900YAF(-N)(-BS)
Type/GWP *1			R410A/2088	
Factory charged	Weight	kg	12	38
	CO_2 equivalent *1	t	25.08	79.37
Maximum additional charge	Weight	kg	26	—
	CO_2 equivalent *1	t	54.29	—
Total charge	Weight	kg	38	38
	CO_2 equivalent *1	t	79.37	79.37

*1 These values are based on Regulation (EU) No.517/2014.

Specification (Heat pump)

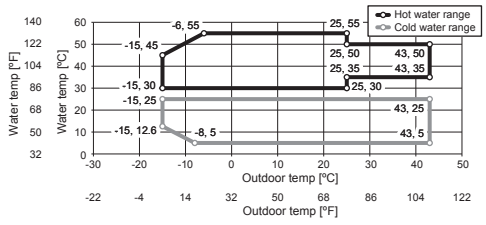
Standard	Pre refrigerant charging	EAHV-P900YAL	Full refrigerant charging	EAHV-P900YAF
Anti-corrosion	Pre refrigerant charging	EAHV-P900YAL-BS	Full refrigerant charging	EAHV-P900YAF-BS
Built-in header	Pre refrigerant charging	EAHV-P900YAL-N	Full refrigerant charging	EAHV-P900YAF-N
Anti-corrosion / Built-in header	Pre refrigerant charging	EAHV-P900YAL-N-BS	Full refrigerant charging	EAHV-P900YAF-N-BS

Model			**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	—
ESEER (Includes pump input based on EN14511) *4 *6			5.46	—
SEER (Includes pump input based on EN14511) *4			4.88	—
IPLV *7		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 *8	
		°F	Outlet water 41~77 *8	
	Heating	°C	Outlet water 30~55 *8	
		°F	Outlet water 86~131 *8	
	Outdoor	°C	-15~43 *8	
		°F	5~109.4 *8	
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	

Note.
*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 15.5m^3/h
*6 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.
*7 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.

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

*8



Refrigerant			EAHV-P900YAL(-N)(-BS)	EAHV-P900YAF(-N)(-BS)
Type/GWP *1			R410A/2088	
Factory charged	Weight	kg	12	38
	CO_2 equivalent *1	t	25.08	79.37
Maximum additional charge	Weight	kg	26	—
	CO_2 equivalent *1	t	54.29	—
Total charge	Weight	kg	38	38
	CO_2 equivalent *1	t	79.37	79.37

*1 These values are based on Regulation (EU) No.517/2014.

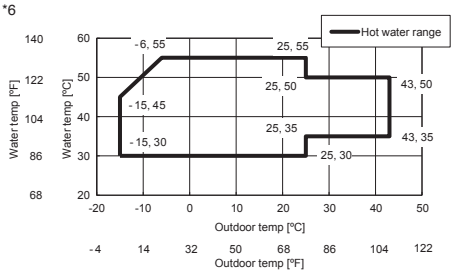
Specification (Heating only)

Standard	Pre refrigerant charging	EAHV-P900YAL-H	Full refrigerant charging	EAHV-P900YAF-H
Anti-corrosion	Pre refrigerant charging	EAHV-P900YAL-H-BS	Full refrigerant charging	EAHV-P900YAF-H-BS
Built-in header	Pre refrigerant charging	EAHV-P900YAL-H-N	Full refrigerant charging	EAHV-P900YAF-H-N
Anti-corrosion / Built-in header	Pre refrigerant charging	EACV-P900YAL-H-N-BS	Full refrigerant charging	EACV-P900YAF-H-N-BS

Model				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 (Heating only) Low/Medium (Includes pump input based on EN14511) *3			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	

Note.
*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 15.5m^3/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.

*6



Refrigerant			EAHV-P900YAL-H(-N)(-BS)	EAHV-P900YAF-H(-N)(-BS)
Type/GWP *1			R410A/2088	
Factory charged	Weight	kg	12	38
	CO_2 equivalent *1	t	25.08	79.37
Maximum additional charge	Weight	kg	26	—
	CO_2 equivalent *1	t	54.29	—
Total charge	Weight	kg	38	38
	CO_2 equivalent *1	t	79.37	79.37

*1 These values are based on Regulation (EU) No.517/2014.

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

Modular Chiller

P1500/P1800

EAHV-P1500YBL(-N)(-BS) EAHV-P1800YBL(-N)(-BS)
EAHV-P1500YBL-H(-N)(-BS) EAHV-P1800YBL-H(-N)(-BS)
EACV-P1500YBL(-N)(-BS) EACV-P1800YBL(-N)(-BS)

1 High energy saving performance by the use of inverter compressors

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

2 High functionality of modular chiller

- Up to 6 units of each module can be connected among 1 group, so capacity can be increased up to 360HP(60HP × 6 units).
- Optimum frequency control when connecting multiple units ensures energy savings.
- Emergency operation mode and rotation operation are available.

3 Less space and installation work

- Inside header series available for space savings and construction savings of piping components.

4 Easy system control

- Outlet 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.

High energy saving performance

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

Rated efficiency

Model		
P1500	EER	3.33
	COP	3.36

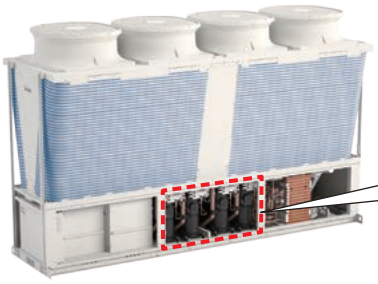
The use of the high-efficiency inverter compressors achieves high energy saving performance.

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.

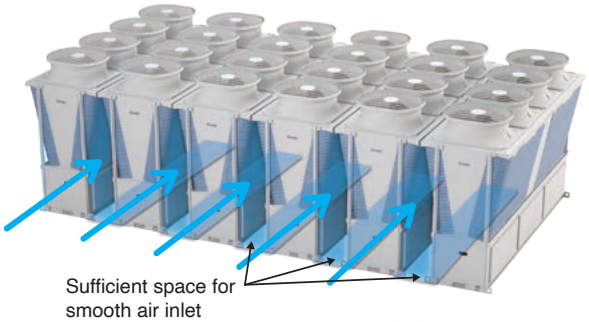
Equipped with high-efficiency inverter compressors

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.

50HP 150kW

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

60HP 180kW

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

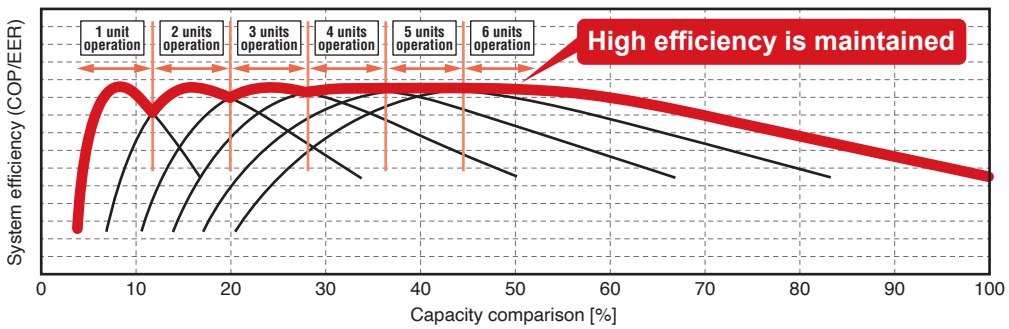
* (-N) indicates an inside header model.

* The values include the service space.

Optimum frequency control for further energy saving

When multiple units are connected, the frequency of each compressor is controlled during operation to increase the efficiency of each unit, achieving high energy saving performance. This control can be implemented by simply connecting to our unique M-NET without needing any other on-site design.

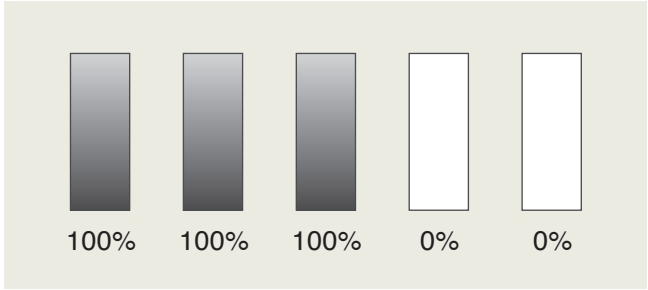
* The following is an example of operation.



When the overall system load is 60%

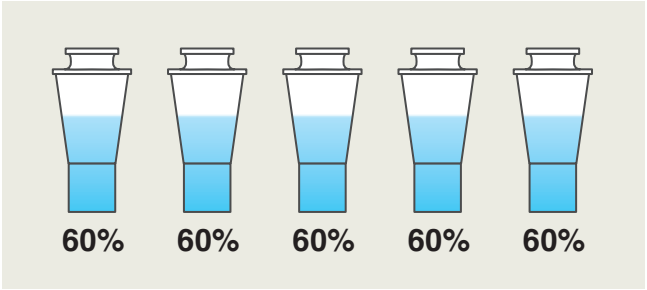
* The following is an example of operation.

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.

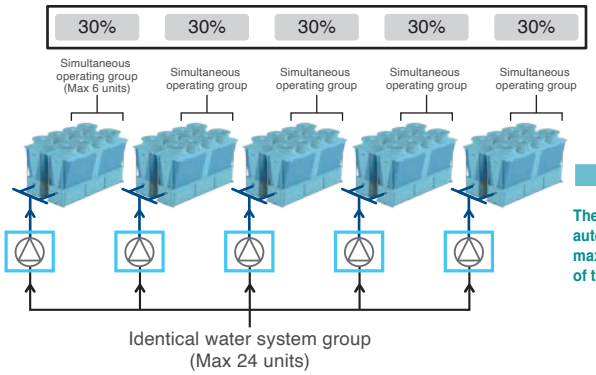
With optimum frequency control



Our units are equipped with inverter compressors, so the system can be operated in frequency ranges in which the efficiency of each unit is high. Optimum frequency control of each unit increases the efficiency of the whole system.

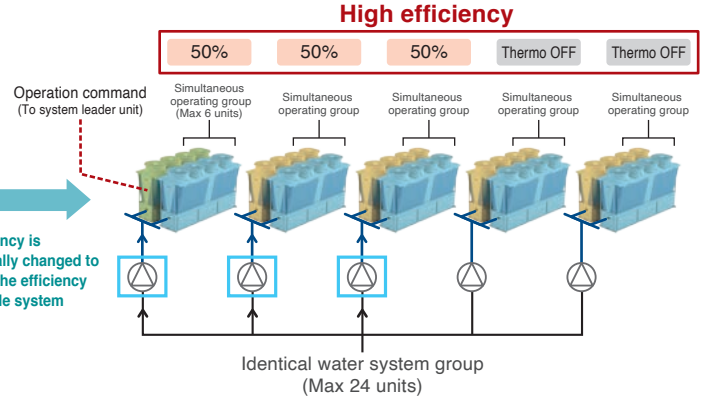
When the overall system load is 30%

Without optimum frequency control



Since the compressors of all groups are running at inefficient frequencies, the efficiency of the whole system lower.
In addition, all the pumps are operating becomes with the units, lowering the system efficiency further.

With optimum frequency control



The load of identical water system groups is observed, and the frequency of each group can be controlled to increase the efficiency. As shown in the above image, when the overall system load is 30%, three groups are operated at 50% at which the efficiency of each group is high, and the remaining groups are set to the thermo OFF state. Then, the output of the pumps connected to the remaining group can be decreased, and the efficiency of the whole system can be increased.
This control is completed by connecting to M-NET. There is no need to prepare sensors, and the instrumentation is simple.

System leader unit Group leader unit Sub unit

Operation of optimum frequency control

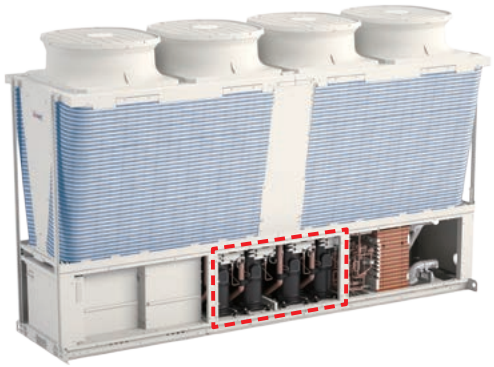
a) One system leader unit is specified to control the modules in the system.
b) The board of the system leader unit collects the operating frequency of each unit.
c) The board of the system leader unit calculates the number of running units with which the system can be operated at high efficiency.
d) The system leader unit transmits the start or stop command to each group leader unit.
e) Each sub unit starts or stops according to the operation of the group leader unit.

* Dip switch setting is required to use this function.

Combination control function

When a single unit

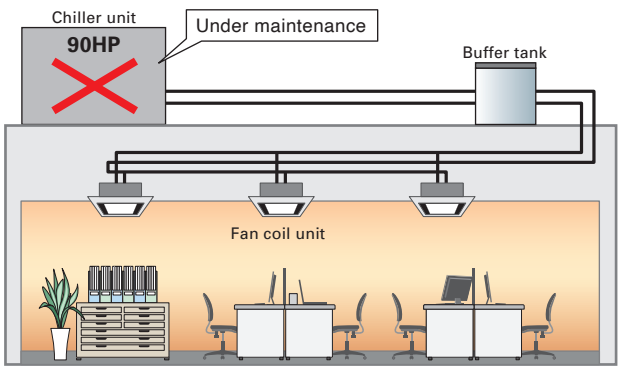
- The unit contains four compressors developed by Mitsubishi Electric.
- The four compressors operate as two pairs. If something is wrong with one of the two pairs, the other pair (2 compressors) can temporarily continue to operate.



When multiple units

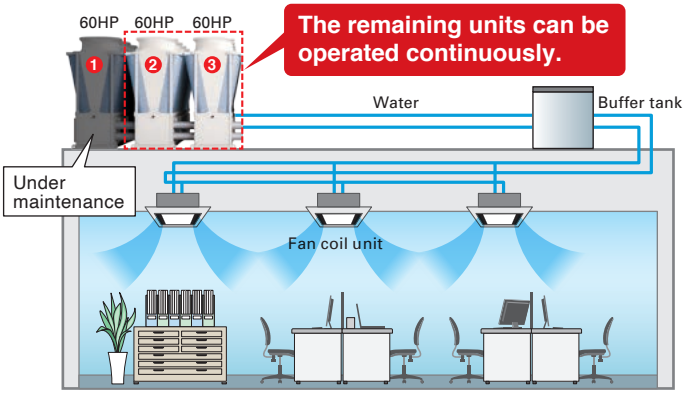
- The flexible backup operation among the combined units enables the continuous operation, even one unit is stopped due to maintenance.

Non-modular chiller



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

Mitsubishi Electric modular chiller



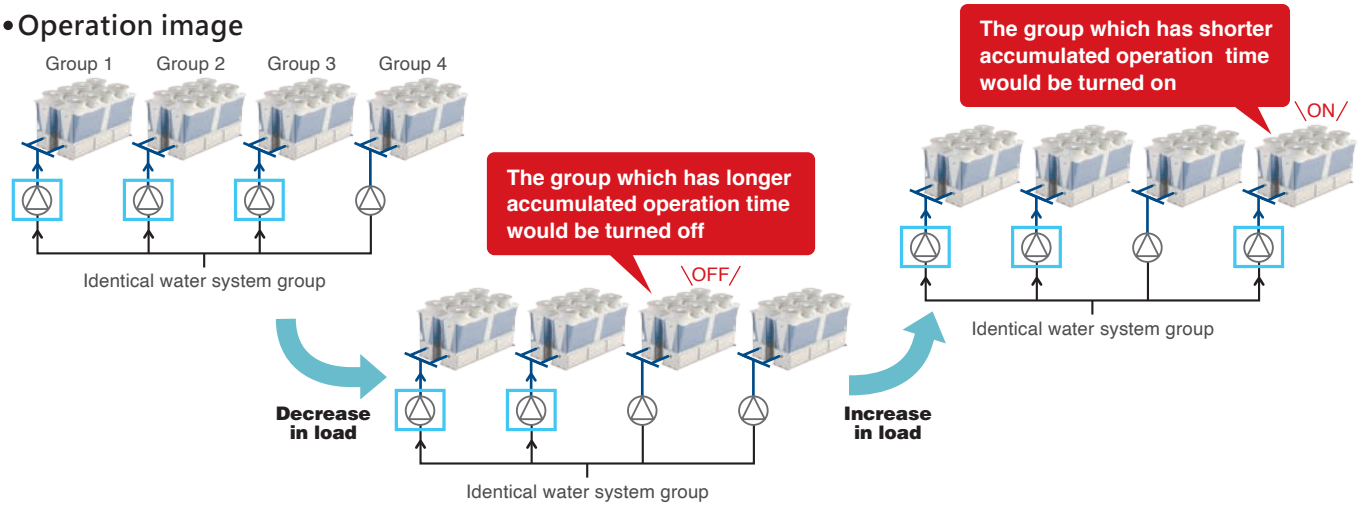
With our module chiller system, even if one unit is stopped, the remaining units back the continuous operation up.

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

Rotation operation

The operating state of each group is controlled to match an air conditioning load. The selection of operation group is carried out according to the accumulated operation time of each group, thus contributing to the equalized operation time of all groups.

•Operation image



*The actual rotation operation varies depending on the operating environment.

Less space and installation work

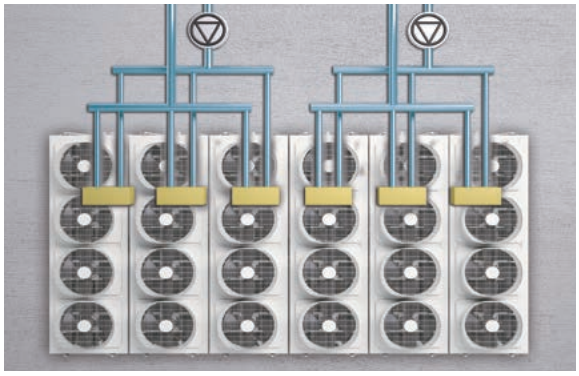
Selectable piping system

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.

Lineup

Standard piping type

Type without built-in pump or header

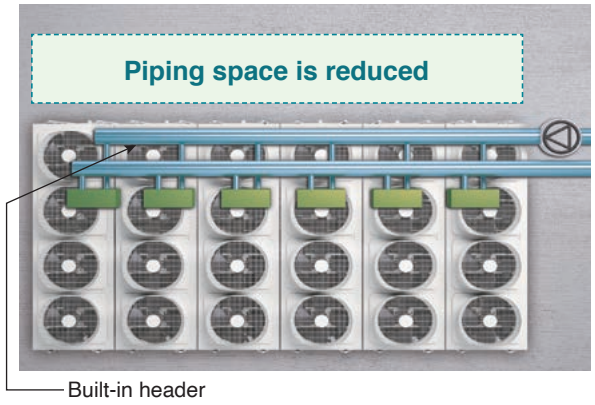


Advantages

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

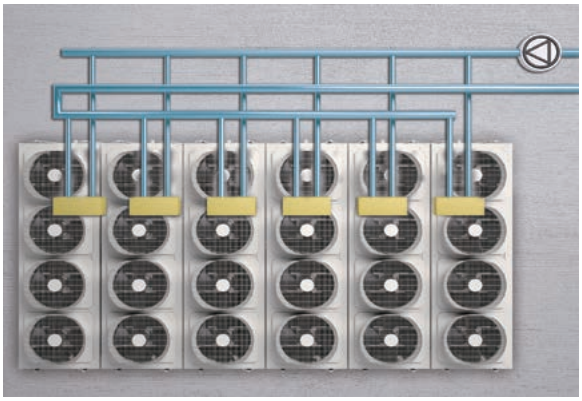
The piping space and number of connections are reduced, allowing simple construction and short construction times.

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

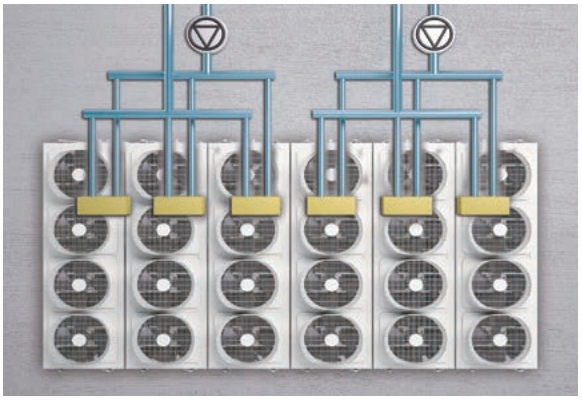
Standard piping type

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.

<System with 6 chillers and one pump>



<System with 6 chillers and 2 pumps>

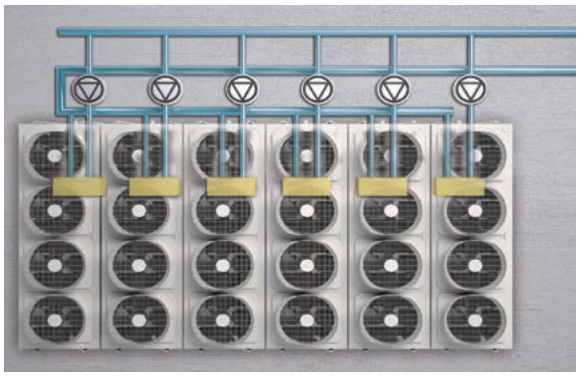


■ Built-in header type (models with "-N" in the name only)

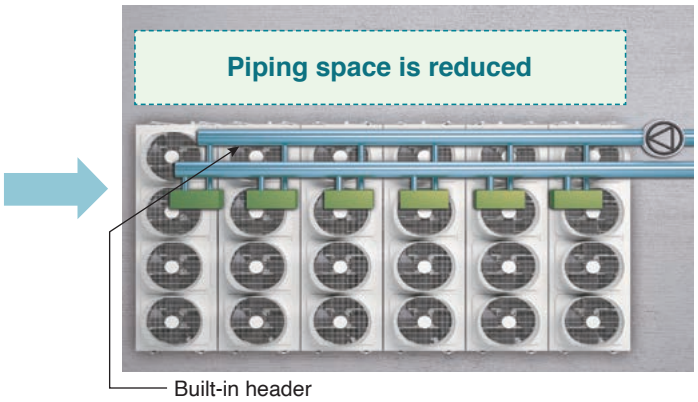
The piping to connect to other units is built into each unit. The number of piping connections is reduced (saving construction work and reducing the construction time), and the installation space can be also reduced.

Space saving **Construction saving**

<Standard piping construction>

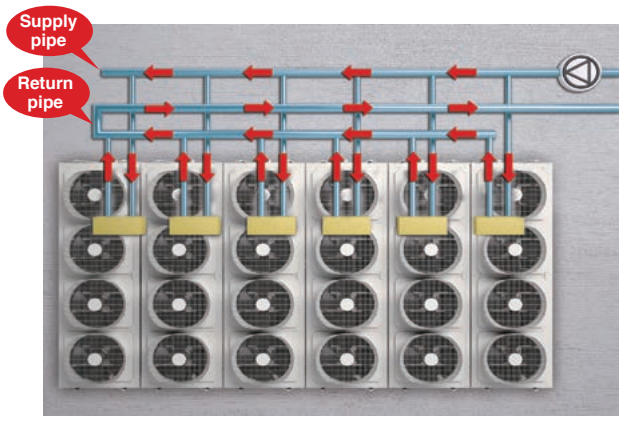


<Built-in header type>



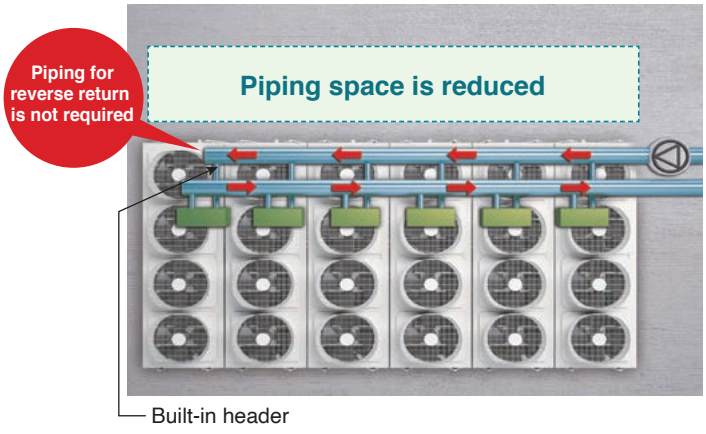
Space for return piping is not required

<Standard piping construction>



With standard piping construction, the customer must determine and design the return piping.
The supply pipe and return pipe of each unit should have the same overall length and piping resistance to keep a balance among the flow rates to the units. Therefore, piping space and equipment costs are required.

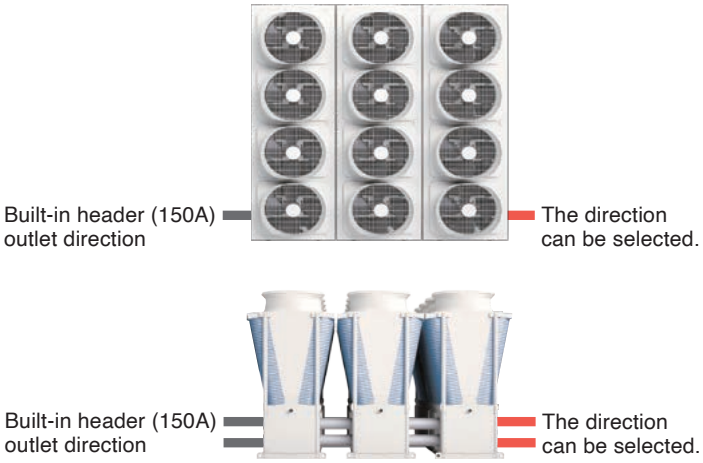
<Built-in header type>
(models with "-N" in the name only)

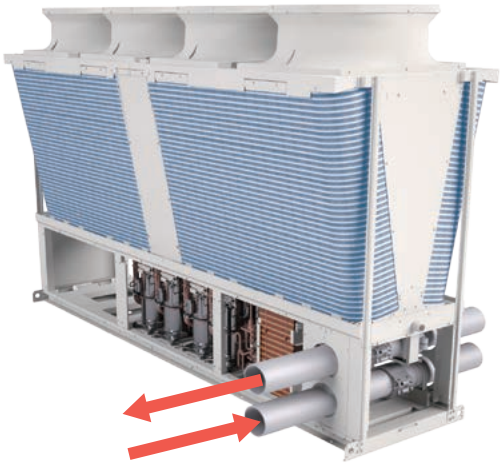


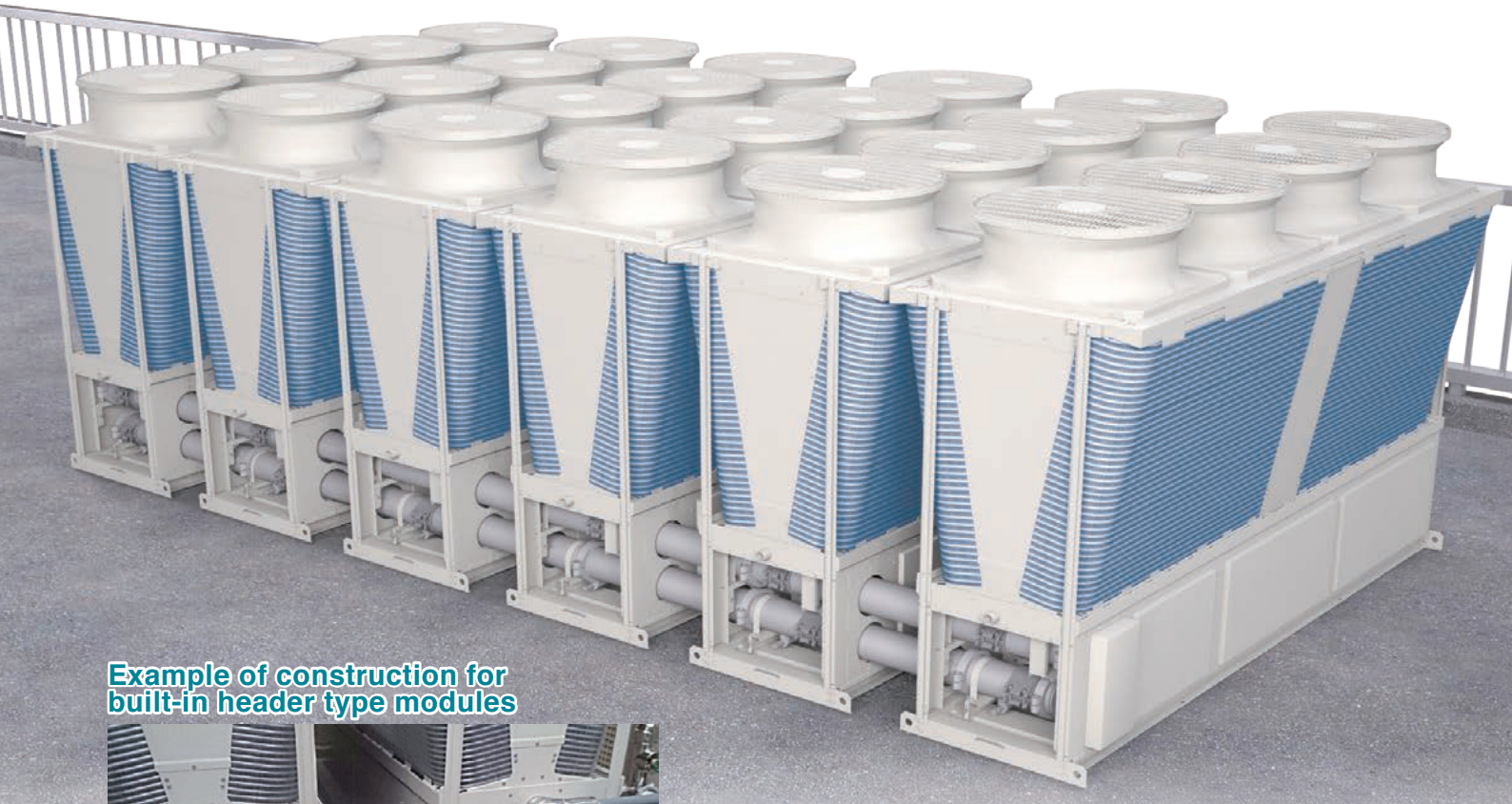
The size of the piping for the built-in header type is large to reduce pressure loss in the piping. It is unnecessary to prepare the piping for reverse return.
This helps to reduce piping space and equipment cost.

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.

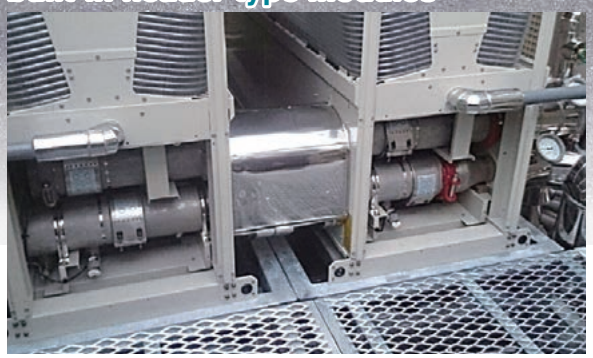






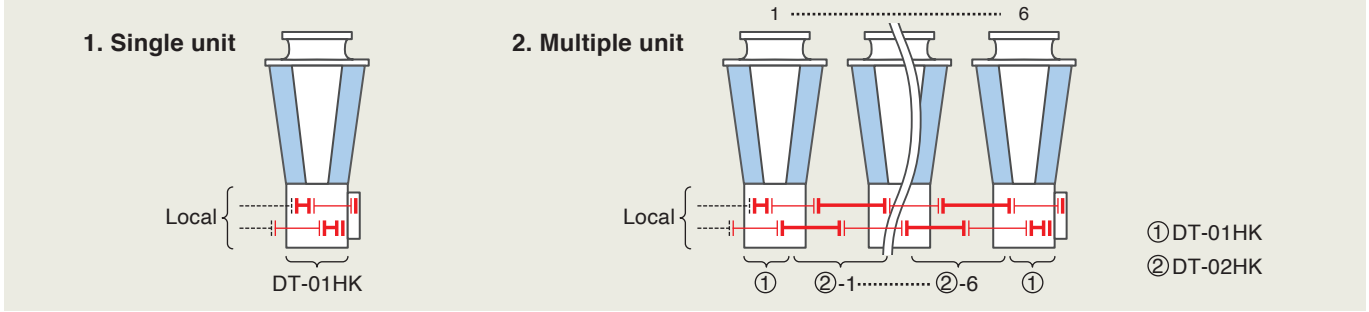
* This photo shows the angle frorm the piping side.

Example of construction for built-in header type modules



* Heat insulation of the connection piping between units must be applied on site.

Details of piping kit

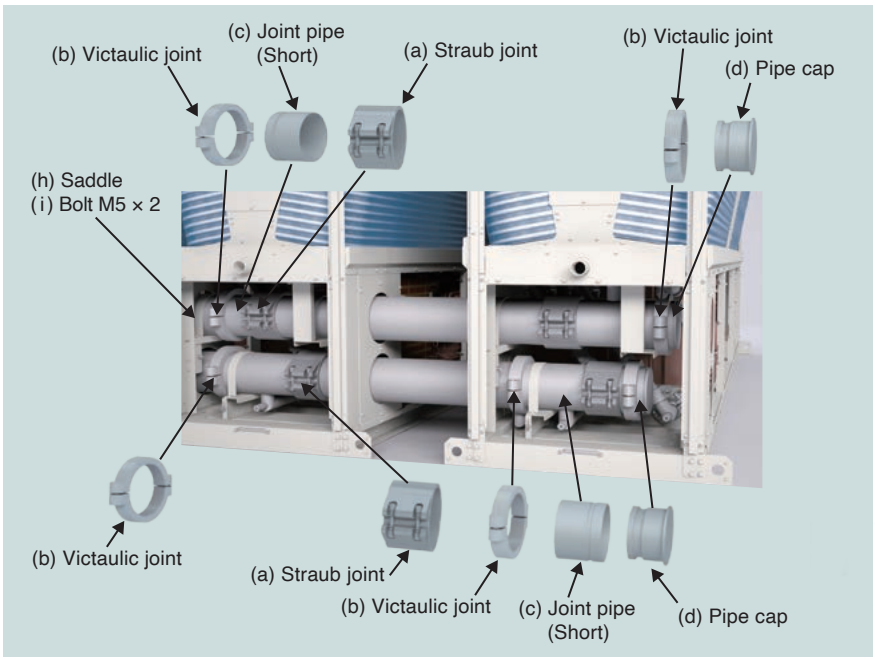


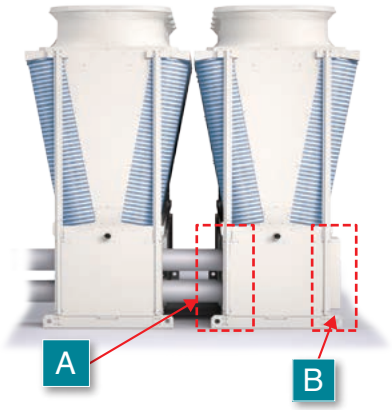
Parts list

Optional parts① (Piping Kit)
DT-01HK

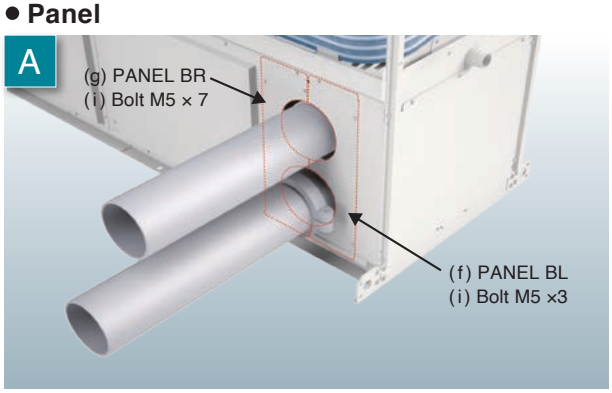
● Installing the piping kit (DT-01HK)

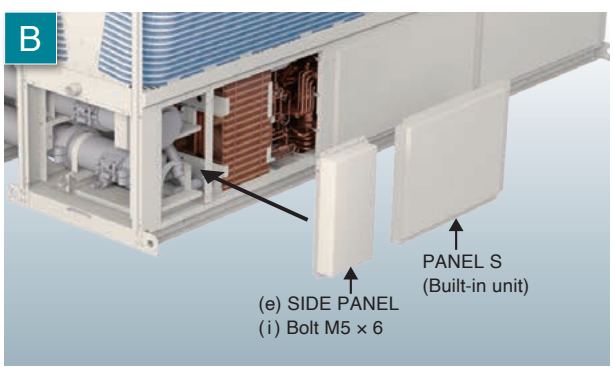
● Header piping





● Panel





Optional parts② (Piping Kit)
DT-02HK


(a) Straub coupling × 2


(b) Victaulic coupling × 2


(c) Joint pipe (Long) × 2

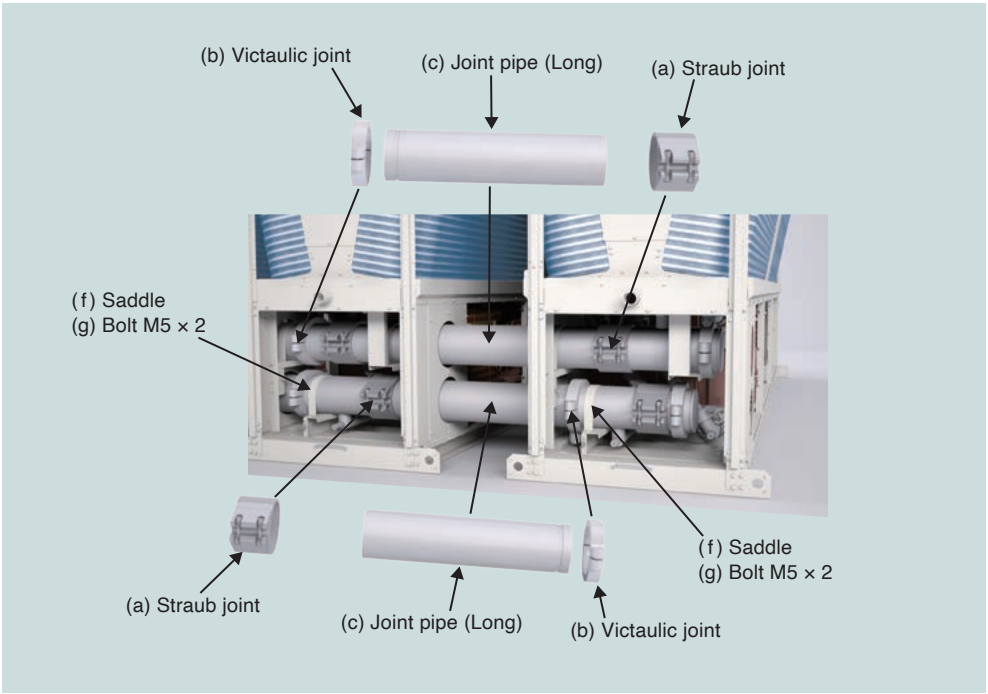

(d) PANEL BL × 1

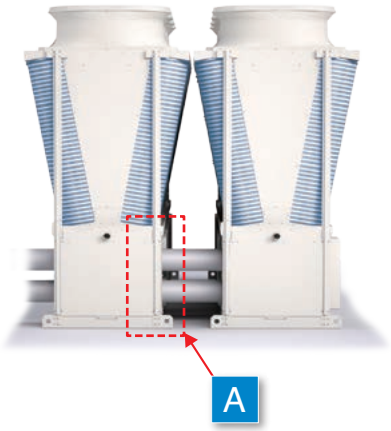

(e) PANEL BR × 1

(f) Saddle × 2
(g) Bolt M5

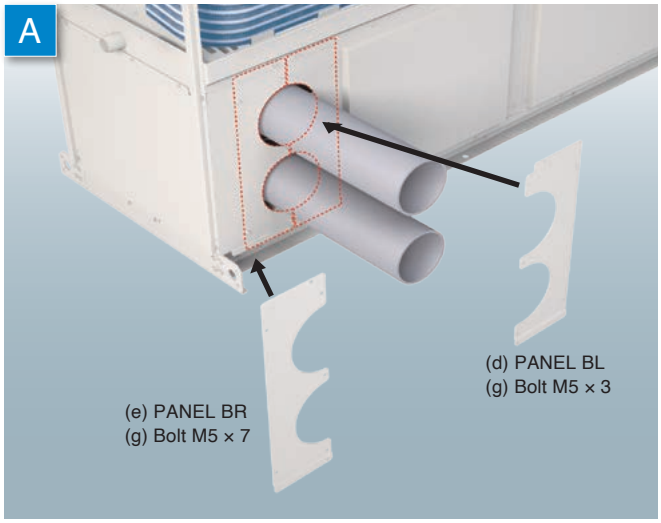
● Installing the Connection piping kit (DT-02HK)

● Header piping





● Panel



*Please refer to the installation manual for details on the installation procedure.

Easy system control

Remote controller

Basic operations, such as ON/OFF, mode switching, water temperature setting and schedule setting, can be performed by connecting a remote controller.

PAR-W31MAA

● **Major functions**

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 operation command, 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.

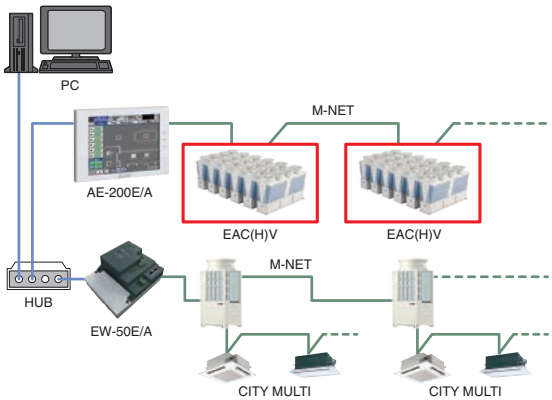
● **Major functions**

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

Centralized controller

The e-series are connectable to the AE-200E/A that centrally controls up to 24 units or 24 systems connected via M-NET.

System configuration



● **Major functions**

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

*P1500 (50HP) / P1800 (60HP) can be connected to AE-200E/A with software version 7.80 or later.

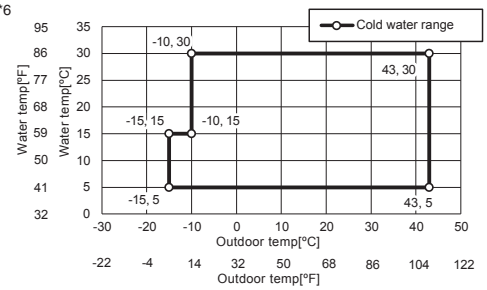
Specification (Cooling only)

Standard	50HP EACV-P1500YBL	60HP EACV-P1800YBL
Anti-corrosion	50HP EACV-P1500YBL-BS	60HP EACV-P1800YBL-BS
Built-in header	50HP EACV-P1500YBL-N	60HP EACV-P1800YBL-N
Anti-corrosion / Built-in header	50HP EACV-P1500YBL-N-BS	60HP EACV-P1800YBL-N-BS

Model				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
	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 *6	
			°F	Outlet water 41~86 *6	
	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	
		CO_2 equivalent *4	t	25.06	
	Maximum additional charge	Weight	kg	48.0	
		CO_2 equivalent *4	t	100.23	
	Total charge	Weight	kg	60.0	
		CO_2 equivalent *4	t	125.29	
	Control			LEV	

Note.
*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.
*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.

*6



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

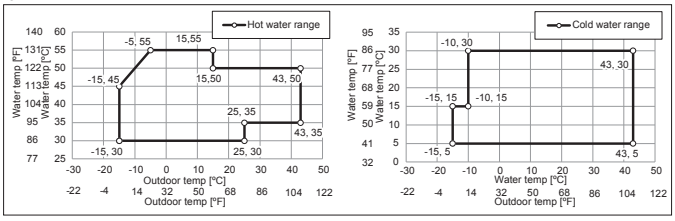
Specification (Heat pump)

Standard	50HP EAHV-P1500YBL	60HP EAHV-P1800YBL
Anti-corrosion	50HP EAHV-P1500YBL-BS	60HP EAHV-P1800YBL-BS
Built-in header	50HP EAHV-P1500YBL-N	60HP EAHV-P1800YBL-N
Anti-corrosion / Built-in header	50HP EAHV-P1500YBL-N-BS	60HP EAHV-P1800YBL-N-BS

Model				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
	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
	SCOP(Reversible) Low temp. application/Medium temp. application			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 *8	
			°F	Outlet water 41~86 *8	
	Heating		°C	Outlet water 30~55 *8	
			°F	Outlet water 86~131 *8	
	Outdoor		°C	-15~43 *8	
			°F	5~109.4 *8	
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)	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	
		CO_2 equivalent *6	t	25.06	
	Maximum additional	Weight	kg	48.0	
		CO_2 equivalent *6	t	100.23	
	Total charge	Weight	kg	60.0	
		CO_2 equivalent *6	t	125.29	
	Control			LEV	

Note.
*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.
*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.

*8



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

Specification (Heating only)

Standard	50HP EAHV-P1500YBL-H	60HP EAHV-P1800YBL-H
Anti-corrosion	50HP EAHV-P1500YBL-H-BS	60HP EAHV-P1800YBL-H-BS
Built-in header	50HP EAHV-P1500YBL-H-N	60HP EAHV-P1800YBL-H-N
Anti-corrosion / Built-in header	50HP EAHV-P1500YBL-H-N-BS	60HP EAHV-P1800YBL-H-N-BS

Model				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	m³/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
		SCOP(Heating only) Low temp. application/Medium temp. application		3.20 / 2.83	
		Water flow rate	m³/h	25.8	31.0
Current input		Heating current 380-400-415V *1	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			m³/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)	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	m³/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	
		CO_2 equivalent *4	t	25.06	
	Maximum additional	Weight	kg	48.0	
		CO_2 equivalent *4	t	100.23	
	Total charge	Weight	kg	60.0	
		CO_2 equivalent *4	t	125.29	
		Control		LEV	

Note.
*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.
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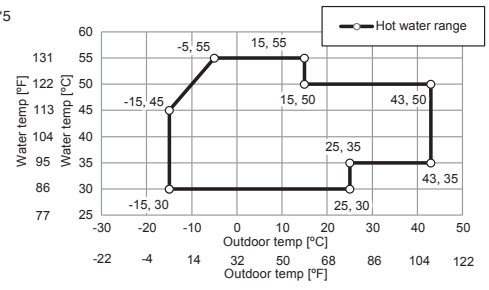
*This model doesn't equip with a pump.

Unit converter	kcal/h = kW x 860	lbs = kg/0.4536
	BTU/h = kW x 3,412	cfm = m³/min x 35.31

*5

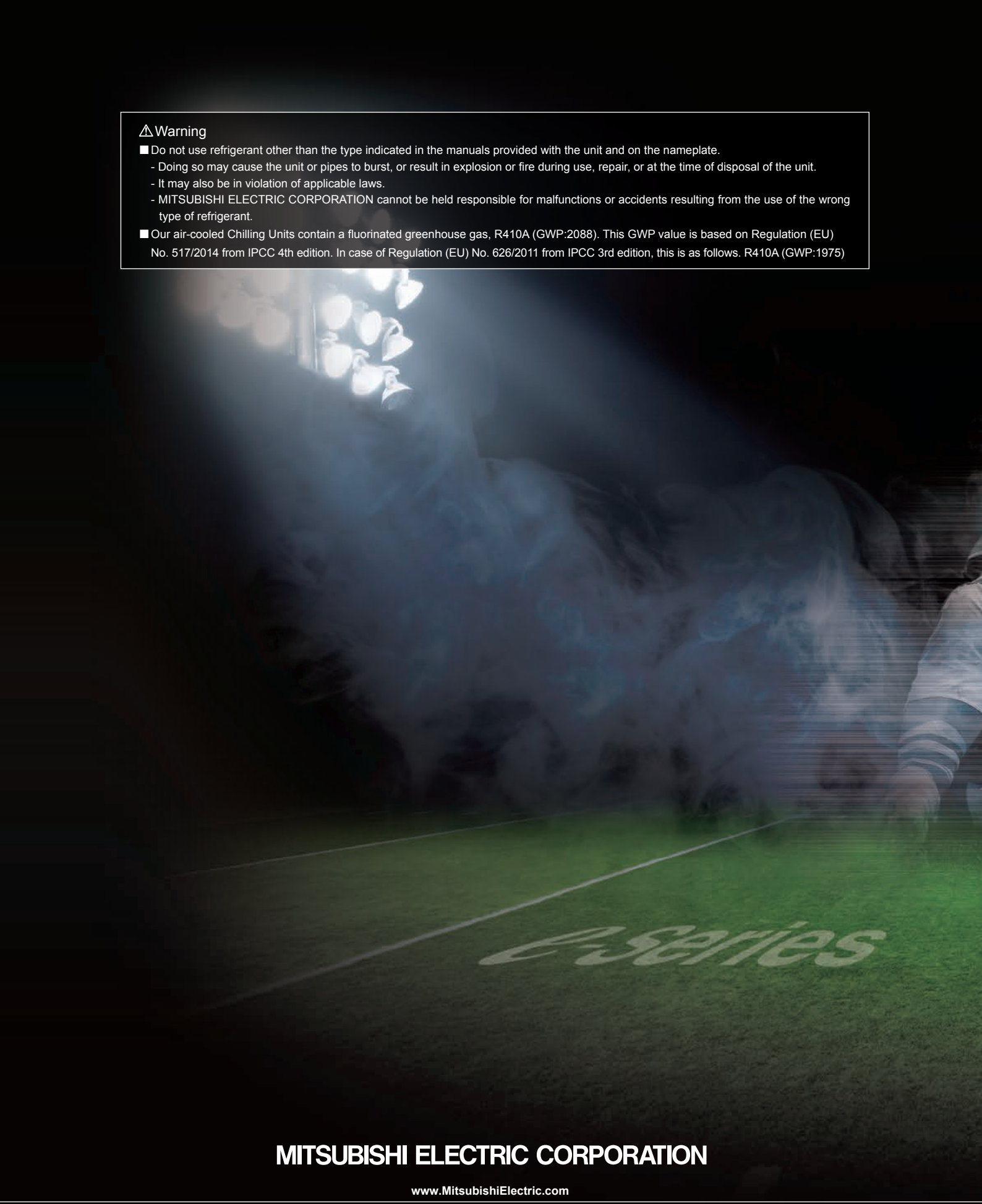


Memo

⚠Warning

■ Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

■ Our air-cooled Chilling Units contain a fluorinated greenhouse gas, R410A (GWP:2088). This GWP value is based on Regulation (EU) No. 517/2014 from IPCC 4th edition. In case of Regulation (EU) No. 626/2011 from IPCC 3rd edition, this is as follows. R410A (GWP:1975)



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