



Hot Water Heat Pump

CAHV-P500YB-HPB

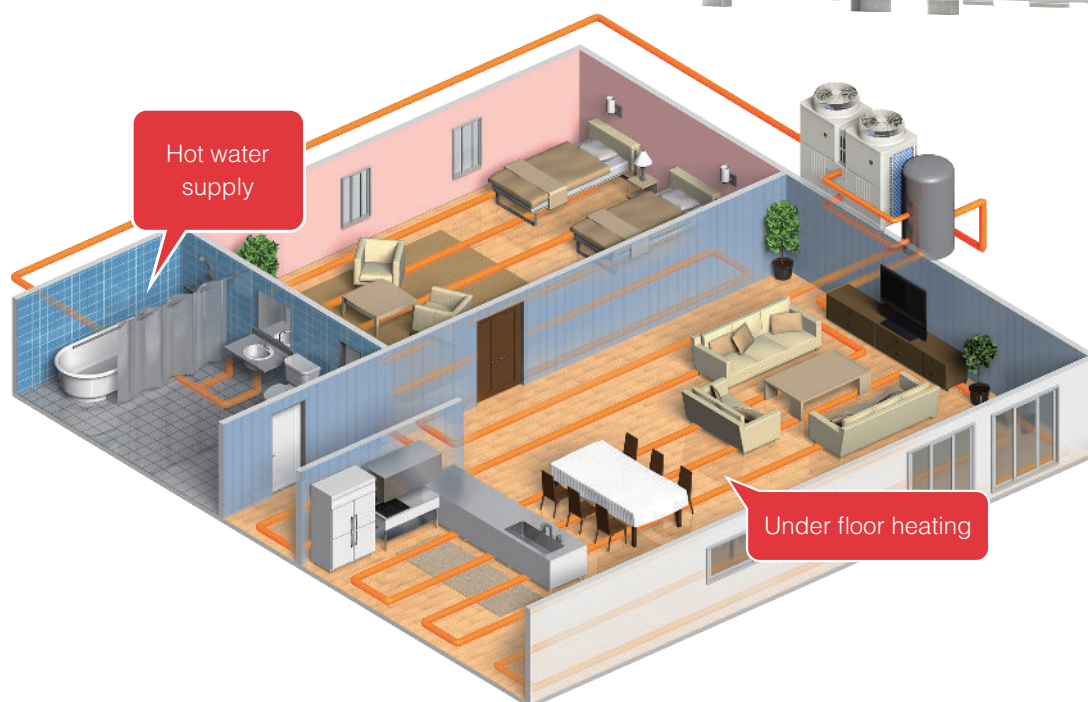


Mitsubishi Electric's CAHV Hot Water Heat Pump

An unprecedented system that provides a simple, packaged solution perfect for use on retro-fit and new builds alike. CAHV system provides hot water from 25°C to 70°C without any booster heater.

The CAHV air source heat pump system can operate singularly, or form part of a multiple unit system. The CAHV also comes equipped with a wide range of controller features as standard.

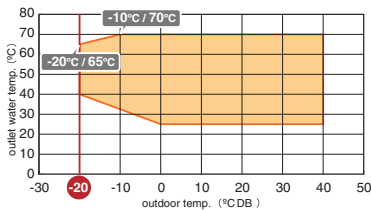
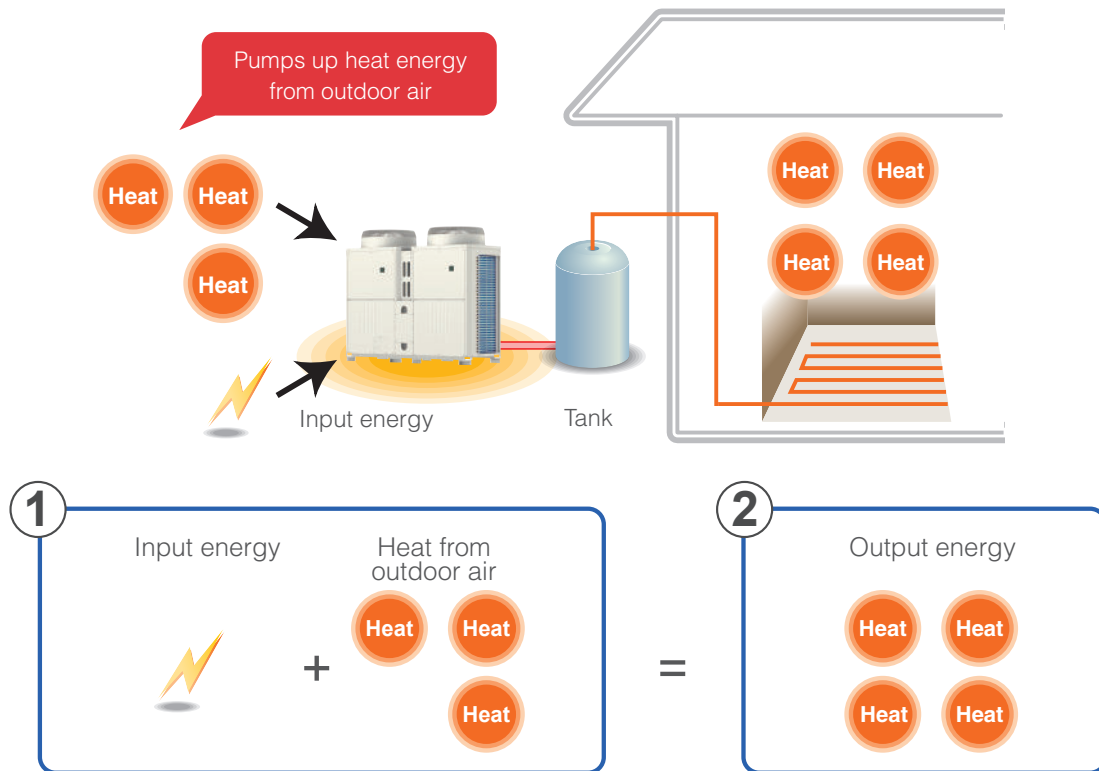
This multiple unit system has the ability to cascade available units on and off to meet the load from a building. As an example of this modulation, a 16 unit system allows 0.5kW increments of capacity, from 18kW all the way up to 688kW. This level of modulation is unprecedented within the heating industry and with cascade and rotation built in as standard, the CAHV system is perfectly suited to a wide range of commercial applications.



Optional Parts

Description	Model Name	Remarks
1 Representative-water temperature sensor	TW-TH16-E	The water temperature sensor for CAHV
2 IT Terminal Box	AM-01A	The IT Terminal Box for CAHV
3 Remote Controller	PAR-W21MAA	The remote controller for CAHV that can control up to 16 units

HEAT PUMP SYSTEM



Operable even at -20°C

The hot water heat pump can be operated at outdoor temperatures between -20°C and 40°C. It delivers precise comfort even on the coldest days of the year.

During defrosting, two compressors, which are equipped within one unit, run alternately resulting in less drop in outlet water temperature.

Low Sound Pressure Level

Lower sound pressure levels have been achieved thanks to the development of a new fan, allowing the unit to operate at 51dB(A)*.

*Based on theoretical calculations for a distance of 10m.

Capacity Priority Mode

The system is equipped with Efficiency Priority Mode and Capacity Priority Mode. Capacity Priority Mode is more effective when used with a boiler because the boiler's fuel cost and CO₂ emissions can be reduced.

CAHV Features

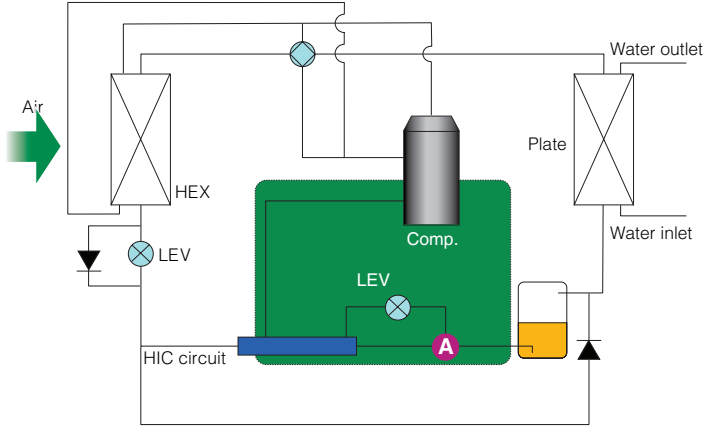
- » High Performance at Low Outdoor Temperature
- » Built-In Inverter-Driven Scroll Compressor
- » Rotation Function
- » Operable at -20°C
- » Hermetically-sealed monobloc design
- » Optimisation of cascading units
- » Efficiency Priority Mode
- » Capacity Priority Mode
- » Low maintenance
- » Use of R407C
- » Flash Injection Circuit
- » Backup Function
- » External Static Pressure

70°C HIGH TEMPERATURE AND COP OVER 4*

Flash Injection Circuit and Built-In Inverter-Driven Scroll Compressor

A "Flash Injection Circuit", which is designed for our ZUBADAN CITY MULTI air conditioning system for cold regions, is incorporated in our new hot water heat pump. Through utilising this advanced "Flash Injection Circuit" and the latest high-efficiency compressor, the hot water heat pump is able to provide hot water of 70°C with the use of R407C and with better retention of capacity at low outdoor temperatures.

*COP 4.13, outdoor temp.: 7°C DB/6°C WB, outlet water temp.: 35°C.



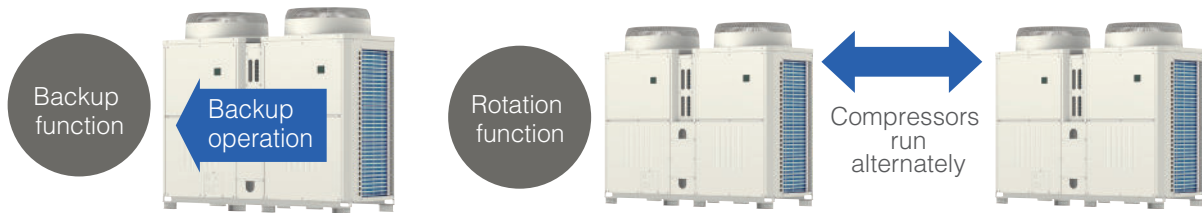
Two-phase refrigerant is separated into liquid refrigerant and gas refrigerant at point A.

The liquid refrigerant's pressure is reduced by the linear expansion valve (LEV), it then exchanges heat in the HIC Circuit and becomes gas-liquid two-phase refrigerant. This two-phase refrigerant flows into the injection port in the compressor to control the increase in the discharge temperature. Therefore, the optimal amount of refrigerant can be provided to the system via the compressor, hence making it possible to provide hot water of 70°C.

BACKUP AND ROTATION FUNCTION

The hot water pump ensures an exceptionally high level of reliability through a backup function.*¹ If either one of the compressors malfunctions, the other compressor maintains operation to avoid a complete stop of the system.

The rotation function is also available. When two or more units are in the system, the unit runs alternately, ensuring an optimum product lifecycle for both component units.



*¹ If the main circuit board malfunctions, the backup function and rotation function are not available.

*¹ Capacity drops by 50%.

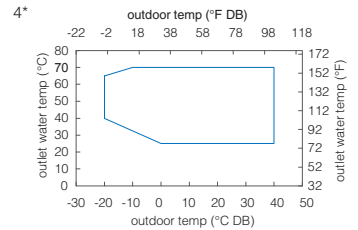
PAR-W21MAA SPECIFICATIONS

Item	Description	Operations	Display
ON/OFF	Runs and stops the operation of a group of units.	●	●
Operation mode switching	Switches between Hot Water / Heating / Heating ECO / Anti-Freeze / Cooling. * Available operation modes vary depending on the unit to be connected. * Switching limit setting can be made via a remote controller.	●	●
Water temperature setting	Temperature can be set within the ranges below (in increments of 1°C). Hot Water 25°C ~ 70°C Heating 25°C ~ 55°C Heating ECO 30°C ~ 45°C Anti-freeze 25°C *The settable range varies depending on the unit to be connected.	●	●
Water temperature display	10°C ~ 90°C (in increments of 1°C). *The settable range varies depending on the unit to be connected.		●
Permit / prohibit local operation	Individually prohibits operations of each local remote control function: ON/OFF, operation modes, water temperature setting, circulating water replacement warning reset. *Upper level controller may not be connected depending on the unit to be connected.		●
Weekly scheduler	ON/OFF water temperature setting can be done up to six times one day in the week. (in increments of a minute)	●	●
Error	When an error is currently occurring on a unit, the afflicted unit and the error code are displayed.		●
Self check (error history)	Searches the latest error history by pressing the CHECK button twice.	●	●
Test run	Enables the Test run mode by pressing the TEST button twice. *Test run mode is not available depending on the unit to be connected.	●	●
Language setting	The language on the dot matrix LCD can be changed. (Seven languages) English/German/Spanish/Russian/Italian/French/Swedish	●	●
Operation locking function	Remote controller operation can be locked or unlocked. • All-switch locking • Locking except ON/OFF switch	●	●

SPECIFICATIONS

CAHV-P500YB-HPB			
Power Source		3-phase 4 wire 380-400-415V 50/60Hz	
Capacity *1		kW	45
	Power input	kW	12.9
	Current input	A	21.78 - 20.69 - 19.94
	COP (kW / kW)		3.49
Capacity *2		kW	45
	Power input	kW	25.6
	Current input	A	43.17 - 41.01 - 39.53
	COP (kW / kW)		1.76
Seasonal space heating energy efficiency class for medium-temperature application			A++
Seasonal space heating energy efficiency class for low-temperature application			A+
Maximum current input *3		A	57.77 - 54.88 - 52.90
Water pressure drop *1			12.9kPa
Temp. range	Outlet water temp. *4		25 ~ 70 °C
	Outdoor temp. *4	D.B	-20 ~ 40 °C
Circulating water volume range			7.5 m³/h-15.0m³/h
Sound pressure level (measured in anechoic room) *1		dB (A)	59
Sound pressure level (measured in anechoic room) *3		dB (A)	63
Diameter of water pipe	Inlet	mm	38.1 screw
	Outlet	mm	38.1 screw
External finish			Acrylic painted steel plate <MUNSELL 5Y 8/1 or similar>
External dimension H x W x D		mm	1,710 (without legs 1,650) x 1,978 x 759
Net weight		kg	511
Accessories			Y strainer Rc 1 1/2
Design pressure	R407C	MPa	3.85
	Water	MPa	1.0
Drawing	Wiring		KC94R746
	External		KC94R745
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
	Motor output	kW	7.5 x 2
	Case heater	kW	0.045 x 2
	Lubricant		MEL32
Fan	Air flow rate	L/s	3,083 x 2
	External static pressure *5		0Pa, 60Pa
	Type x quantity		Propeller fan x 2
	Control, driving mechanism		Inverter-control, direct-driven by motor
	Motor output	kW	0.46 x 2
HIC circuit (HIC:Heat inter-changer)			Copper pipe
Protection	High pressure protection		High pres. Sensor & High pres. Switch at 3.85MPa (643psi)
	Inverter circuit		Over-heat protection, over current protection
	Compressor		Over-heat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (reversed refrigerant circle)
Control			LEV and HIC Circuit
Type			R407C
GWP *6			1,774
Original charged	Weight		11.0
	CO ₂ equivalent		161.3

- 1* Under normal heating conditions at outdoor temp., 7°C DB/6°C WB outlet water temp. 45°C, inlet water temp. 40°C.
- 2* Under heating conditions at outdoor temp., 7°C DB/6°C WB, outlet water temp. 70°C.
- 3* Under heating conditions at outdoor temp., 7°C DB/6°C WB when this unit is set to capacity priority mode by non-voltage B contact.



Outdoor temp. -20°C DB/outlet water temp. 40-65°C.
 Outdoor temp. -10°C DB/outlet water temp. 33°C-70°C
 Outdoor temp. 0°C/outlet water temp. 25°C-70°C.

- *5 Dip SW on the unit control board must be changed to activate 60Pa setting.
- *6 This table is based on Regulation (EU) No. 517/2014.
- * Due to continuing improvement, the above specifications may be subject to change without notice.
- * Do not use steel material for water piping.
- * Always circulate water or pull out the circulation water completely when not using it.
- * Do not use groundwater and well water.
- * Install the unit in an environment where the wet bulb temp. will not exceed 32°C.

<External input/output from the unit>

*The unit can be operated and the operation status can be monitored with external input/output terminals.



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