Appendix 5 ASHP data sheet

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MITSUBISHI ELECTRIC

CAHV-R450YA-HPB

Ecodan Air Source Heat Pump

The Mitsubishi Electric Ecodan **CAHV air source heat pump** uses low GWP R454C refrigerant, offering a robust, low carbon system for the provision of sanitary hot water and space heating. This innovative heat pump solution can operate as a single system or form part of a multiple unit system, making it suitable for most commercial applications.

The multiple unit system has the ability to cascade available units to both on and off mode to meet the load from a building. As an example of this unique modulation, a 16 unit system allows 0.5kW increments of capacity, from 7.8kW all the way up to 640kW*. With cascade and rotation built in as standard, the Ecodan CAHV system is perfectly suited to commercial applications including schools and hospitals.

R454C

*At nominal conditions A7W35

Key Features & Benefits:

- Low GWP R454C refrigerant and reduced embodied carbon helps achieve CSR targets
- Achieves 70°C outlet temperature down to -20°C ambient temperature for continuous heating provision
- Multiple unit cascade control from 7.8kW to 640kW capacity provides design flexibility for a wide range of commercial applications
- Water flow temperatures from 24°C to 70°C without boost heaters results in cost and energy savings
- Advanced heat exchange design combined with the properties of R454C refrigerant enables a shorter defrost time
- Low frequency compressor control improves energy efficiency and product operation
- Ability to rotate units based on accumulated run hours offers extended product life
- Requires only water and electrical connections, for ease of installation
- Hermetically-sealed monobloc design, requiring low maintenance

CAHV-R450YA-HPB
Ecodan Air Source Heat Pump

MODEL			CAHV-R450YA-HPB
Power source			3-phase 4-wire 380-400-415V 50/60 Hz
Capacity(EN14511) *1		kW	40
	Power input	kW	14.03
	Current input	A	23.7-22.5-21.7
	COP (kW/kW)		2.85
	SCOP Low/Medium		3.57/3.24
Capacity *2		kW	33.4
	Power input	kW	16.6
	Current input	A	28.0-26.6-25.7
	COP (kW/kW)		2.01
Maximum current input		A	44.0-41.8-40.3
Water pressure drop *1			10.2 kPa (1.47 psi)
Temperature range *5	Outlet water temperature		24-70°C
	Outdoor temperature	D.B.	-25-43°C
Circulating water volume range *5			25 l/min-250 l/min
Sound pressure level (measured 1m below the unit in an anechoic room) *1*4		dB (A)	64
Sound pressure level (measured 1m below the unit in an anechoic room) *3*4		dB (A)	72
Water pipe diameter and type	Inlet	mm (in)	38.1 (1 1/2"), housing type joint
	Outlet	mm (in)	38.1 (1 1/2"), housing type joint
External finish			Acrylic painted steel sheet <Munsell 5Y 8/1 or similar>
External dimensions H × W × D		mm	1710 × 1750 × 740
Net weight		kg (lbs)	359 (791)
Design pressure	R454C	MPa	3.85
	Water	MPa	1.0
Heat exchanger	Water-side		Copper brazed stainless steel sheet
	Air-side		Plate fins and copper tubes
Compressor	Type		Inverter scroll hermetic compressor
	Manufacturer		MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter
	Motor output	kW	12.1
	Lubricant		FVC32EA
Fan	Air flow rate	L/s	2500 × 2
	External static pressure		10 Pa (1mm H2O)
	Type and quantity		Propeller fan × 2
	Control and driving mechanism		Inverter control, direct driven by motor
	Motor output	kW	0.92 × 2
HIC (Heat inter-changer) circuit			Copper pipe
Protection devices	High pressure		High-pressure sensor and switch set at 3.85 MPa (643 psi)
	Inverter circuit		Overheat and overcurrent protection
	Compressor		Overheat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (Reversed refrigerant cycle)
Refrigerant	Type and factory charge	kg	R454C, 9.0 kg
	Flow and temperature control		LEV and HIC circuit

Notes:

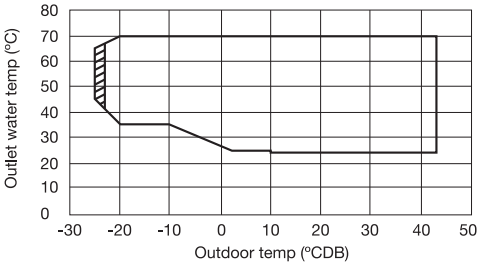
*1 Under normal heating conditions at the outdoor temperature of 7°CDB/6°CWB, the outlet water temperature of 45°C, and the inlet water temperature of 40°C.

*2 Under normal heating conditions at the outdoor temperature of -5°CDB/-6°CWB and the outlet water temperature of 55°C.

*3 Under normal heating conditions at the outdoor temperature of 7°CDB/6°CWB when the unit is set to the "Capacity Priority" mode through the dry NC-contact.

*4 The sound pressure level is a value measured in an anechoic room in accordance with the conventional method in JRA4060.

*5



Outdoor temp. -25°CDB/Outlet water temp. 45~65°C
Outdoor temp. -20°CDB/Outlet water temp. 35~70°C
Outdoor temp. 43°CDB/Outlet water temp. 24~70°C

*6 4.0 - 15.0 m^3/h under the following conditions:

a. When the outdoor temperature is below 0°C,

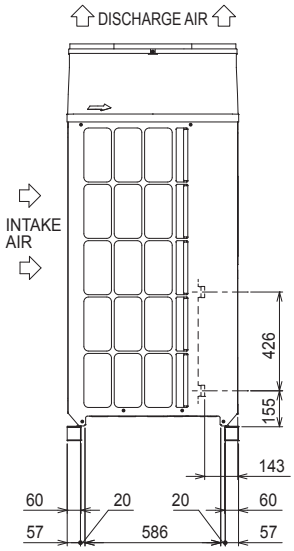
b. When the outlet water temperature is 30°C or below AND the outdoor temperature is 6°C or below.

Commercial Heating | **Product Information**

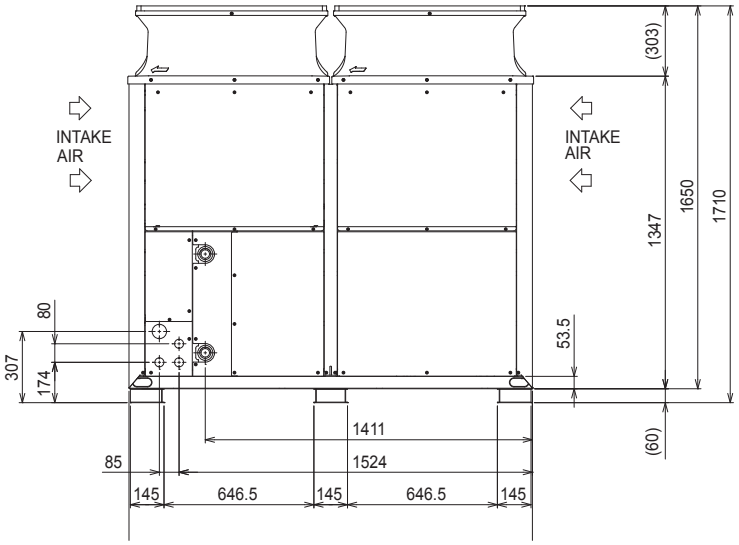
CAHV-R450YA-HPB
Ecodan Air Source Heat Pump

CAHV-R450YA-HPB DIMENSIONS

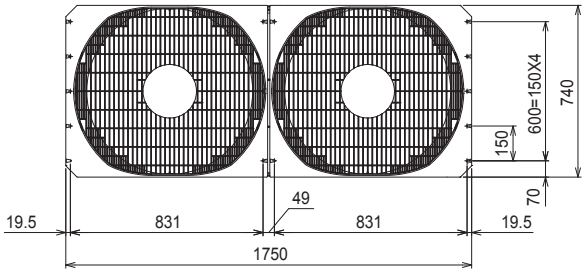
SIDE VIEW



FRONT VIEW



UPPER VIEW



MITSUBISHI ELECTRIC
Changes for the Better

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Note: Refer to 'Installation Manual' and 'Instruction Book' for further 'Technical Information'. The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of November 2022

Green Gateway greengateway.mitsubishielectric.co.uk