

# Ecodan CAHV-Z450YA-HPB

## Ultra-Low GWP R290 Air Source Heat Pump

The Mitsubishi Electric **Ecodan CAHV-Z** delivers powerful, low-carbon heating and hot water using ultra-low R290 GWP refrigerant.

Perfect for a wide range of commercial applications such as schools and hospitals, it can operate as a standalone unit or in scalable multi-unit systems. In a multi-unit setup, units cascade and rotate to meet demand, with a 7-unit system delivering up to 280kW\* of efficient, reliable heating and hot water all year round.

**ecodan**<sup>®</sup> **R290**

\* At nominal conditions A7W45

### Key Features & Benefits:

- **Ultra-Low GWP R290 Refrigerant** - Reduces embodied carbon, helping future-proof projects and support ambitious CSR and sustainability targets
- **High-Temperature Heating Performance** - Delivers water temperatures up to 75°C, even at -15°C ambient, ensuring reliable comfort in demanding conditions
- **Scalable Cascade Control** - Multiple units can be combined and managed in cascade, providing maximum design freedom for a wide range of applications
- **Wide Water Temperature Range Without Boost Heaters** - Supplies 24°C -75°C flow temperatures without electric boosters, reducing energy consumption, running costs, and system complexity
- **Rapid Defrost Operation** - Minimises system downtime during defrost, helping maintain consistent heating performance in cold conditions
- **Integrated R290 Safety Features** - Built-in leak detection and an explosion-proof relay support safe, compliant operation alongside peace of mind
- **Quiet, Adaptable Operation** - Low Noise Mode that minimises sound levels, and External Static Pressure Control allows flexible system design
- **Anti-Simultaneous Defrost Control** - Prevents full system shutdown during defrost cycles, ensuring continuous heating delivery



R290



MODEL			CAHV-Z450YA-HPB(-BS)
POWER SOURCE			3-phase 4-wire 380-400-415v, 50/60Hz
CAPACITY(EN14511) <sup>*1</sup>			40
	Power input	kW	12.62
	Current input	A	21.3-20.2-19.5
	COP (kW/kW)		3.17
	SCOP Low/Medium		4.12 / 3.25
	Water Flow Rate	m <sup>3</sup> /h	6.88
CAPACITY <sup>*2</sup>			37.5
	Power input	kW	18.39
	Current input	A	31.1-29.5-28.4
	COP (kW/kW)		2.04
MAXIMUM CURRENT INPUT			45.6
WATER PRESSURE DROP <sup>*3</sup>			10.2 (1.47)
TEMPERATURE RANGE <sup>*4</sup>			24 ~ 75
	Outlet water temperature	°C	-25 ~ 43
	Outdoor temperature	°C	4.0 ~ 7.0
CIRCULATING WATER VOLUME RANGE <sup>*5</sup>			65
SOUND PRESSURE LEVEL (Measured 1m below the unit in an anechoic room) <sup>*1*6</sup>			72
SOUND PRESSURE LEVEL (Measured 1m below the unit in an anechoic room) <sup>*6*7</sup>			40A, Rc 1-1/2B
WATER PIPE DIAMETER AND TYPE			40A, Rc 1-1/2B
	Inlet	mm (in)	40A, Rc 1-1/2B
	Outlet	mm (in)	40A, Rc 1-1/2B
EXTERNAL FINISH			Acrylic painted steel sheet <Munsell 5Y 8/1 or similar>
EXTERNAL DIMENSIONS (Width x Depth x Height)			1750 × 740 x 1710
NET WEIGHT			363
DESIGN PRESSURE			3.85
	R290	MPa	1.0
	Water	MPa	1.0
HEAT EXCHANGER			Copper brazed stainless steel sheet
	Water-side		Plate fins and copper tubes
	Air-side		Inverter scroll hermetic compressor
COMPRESSOR			Mitsubishi Electric Corporation
	Type		Inverter
	Manufacturer		10.8
	Starting method		PZ46M
	Motor output	kW	2500 × 2
	Lubricant		10 Pa (1 mm H2O) / 40 Pa (4 mm H2O)
FAN			Propeller fan × 2
	Air flow rate	L/s	Inverter control, direct driven by motor
	External static pressure / External static pressure mode		0.92 × 2
	Type and quantity		Copper pipe
	Control and driving mechanism		High-pressure sensor and switch set at 3.85 MPa
	Motor output	kW	Overheat and overcurrent protection
HIC (Heat Inter-Change) CIRCUIT			Overheat protection
PROTECTION DEVICES			Thermal switch
	High pressure		Auto-defrost mode (Reversed refrigerant cycle)
	Inverter circuit		R290, 4.8 kg
	Compressor		LEV and HIC circuit
	Fan motor		
DEFROSTING METHOD			
REFRIGERANT			
	Type and factory charge	kg	
	Flow and temperature control		

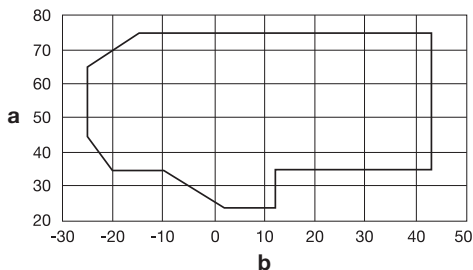
**Notes:**

\*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 through the dry NC-contact.

\*4



a: Outlet water temp. (°C)

b: Outdoor temp. (°C)

Keep inlet water temp. of 19°C or higher during the unit operation.

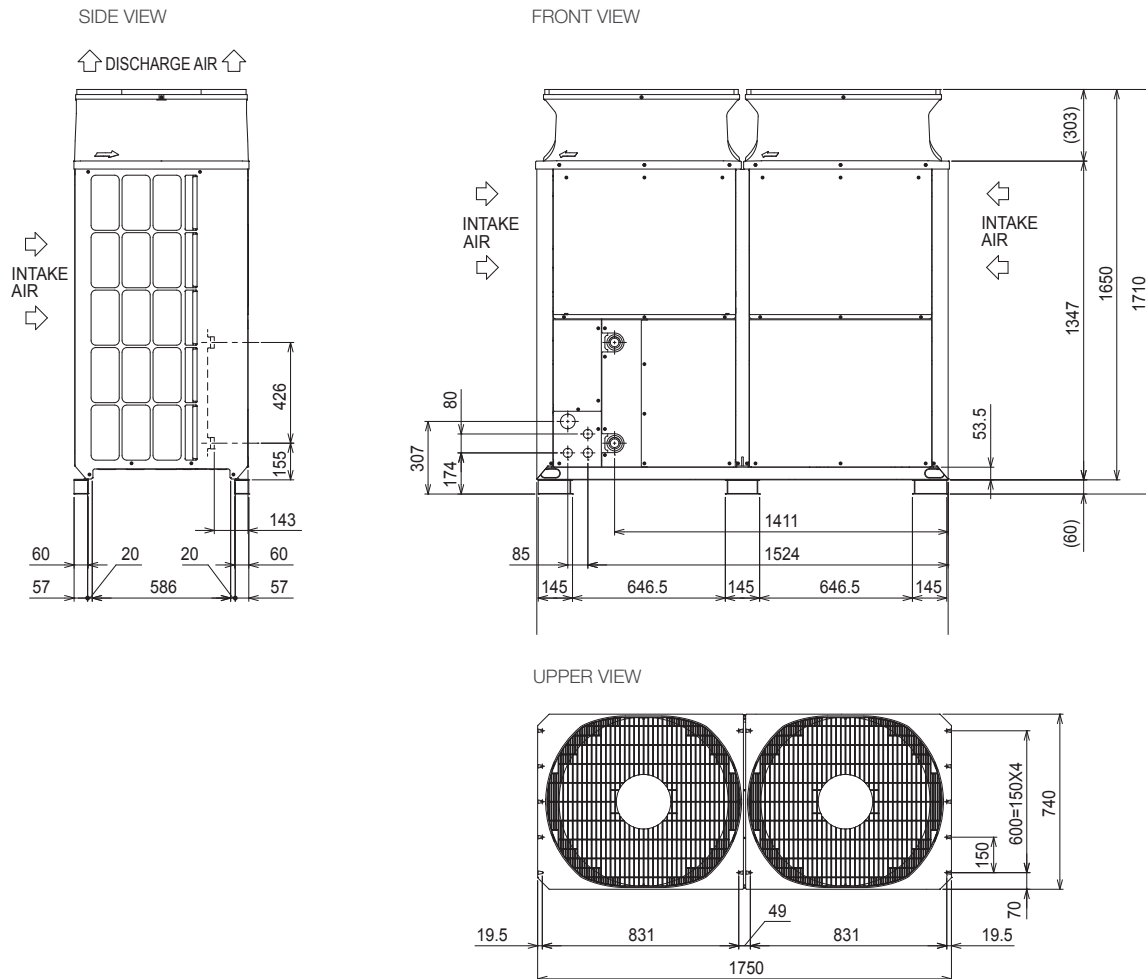
\*5 The unit can operate at the water volume range of 1.5 - 4.0m<sup>3</sup>/h if the water volume exceeds 4.0m<sup>3</sup>/h during defrost cycle. The defrost signal is output from the terminal block of the unit.

\*6 SPL is the value measured in an anechoic room at 1m away from the unit and 1.5m above the floor.

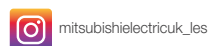
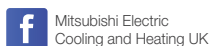
\*7 Under conditions with maximum compressor frequency and fan rotated speed.

**R290**

## CAHV-Z450YA-HPB(-BS) DIMENSIONS



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Note: 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), R515B (GWP:292), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). \*These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a hydrocarbon, R290 (GWP:0.02). \*These GWP values are based on IPCC 6th edition.

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