

HWHP - CRHV

PACKAGED - WATER/WATER SYSTEM - Heating/Domestic Hot Water



WATER HEATING



DOMESTIC HOT WATER

The Ecodan® - Packaged HWHP (Hot Water Heat Pump) system consists of an outdoor monoblock air condensing unit which produces very high volumes of high-temperature hot water.

Packaged WtW heat pumps for hot water

With the latest Hot Water Heat Pump Packaged Water to Water CRHV system, Mitsubishi Electric has added to its range of heat pumps for hot water production and established the company as a leader in the manufacture of these systems. The CRHV packaged system is equipped with two compressors using R410A refrigerant, delivering a nominal capacity up to 60kW and drawing energy from the ground. It is the ideal solution for geothermal applications and applications using groundwater, river or lake water as a heat source to produce hot water for heating or domestic use up to 65°C. The Hot Water Heat Pump CRHV system offers class-beating innovation and efficiency.

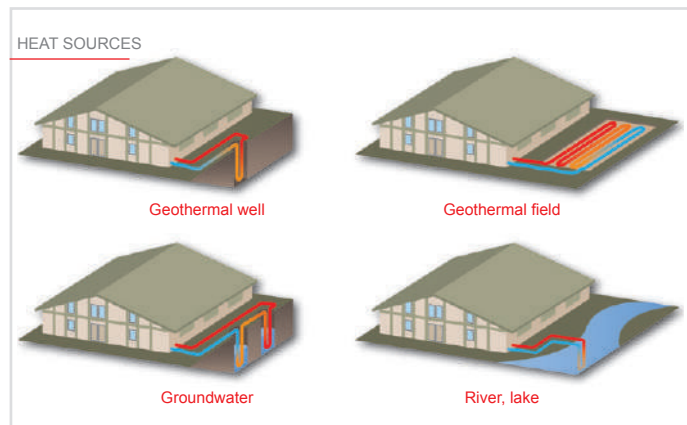
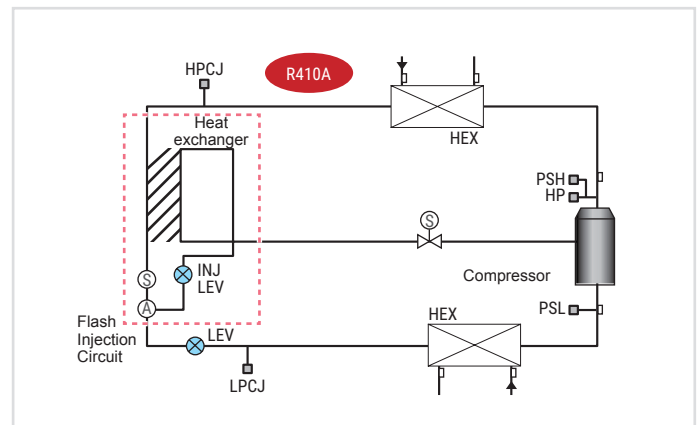
Technology

SCOP
Over 4*

The new CRHV packaged system is also equipped with a flash-injection circuit designed for the VRF CITY MULTI ZUBADAN Y system (heat pump system for very cold climates). By using this advanced injection system and a highly efficient compressor, the CRHV packaged system can deliver

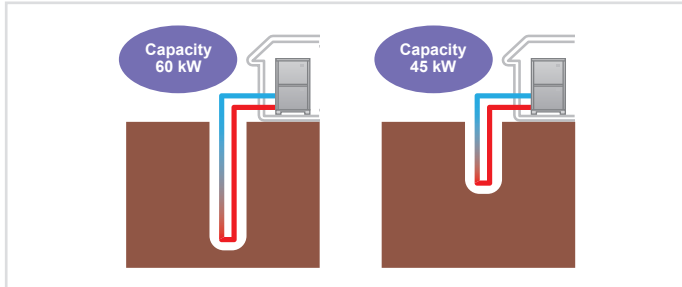
high-temperature hot water up to 65°C, and ensures fewer losses in terms of performance and capacity at very low outdoor temperatures.

* SCOP 4.33 - Outlet water/glycol temperature -3°C. Outlet water temperature 35°C.



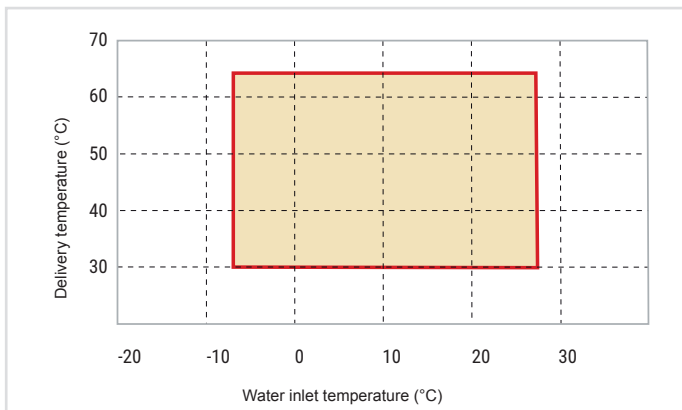
Upgrading existing systems

The latest CRHV packaged system can reuse existing geothermal probes or wells, adapting to their actual thermal capacity. The inverter-driven CRHV packaged system is capable of adjusting its thermal capacity to between 45kW and 60kW in relation to the actual amount of heat deliverable by the existing geothermal well.



Operating temperatures

The new CRHV packaged system is capable of operating at incoming source water temperatures of between -8°C and 27°C with a counterflow configuration (the incoming source water temperature range can be extended up to 45°C using a parallel flow configuration). The water delivery temperature range is from 30°C to 65°C (in parallel flow configuration, the maximum water delivery temperature is 60°C at incoming water temperatures above 27°C). The CRHV packaged system is suited to indoor installation.



Finishing treatment

The module can also be ordered with a special protective finish on request, for installation in particularly harsh or corrosive environments.



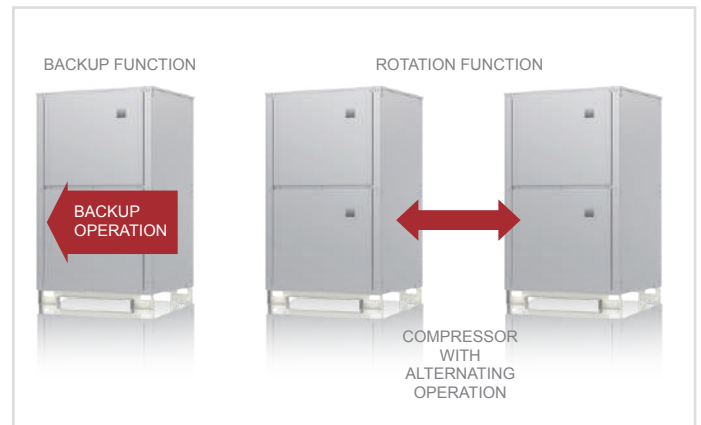
Backup and rotation functions

Backup Function

Rotation Function

The CRHV packaged system is highly reliable thanks to its Backup function, which ensures that if one of the compressors in an individual system fails, the other will continue operating to avoid the inconvenience of the system shutting down completely. Obviously heat capacity is halved under these conditions.

Another key function for ensuring uniform operation and optimal compressor lifetime in compressors in CRHV packaged systems in multiple configurations is the Rotation function. This ensures that when an installation has two or more systems, the individual systems will operate in turn if thermal demand does not require simultaneous operation.



Cascade systems

When the demand for large volumes of hot water production is high, a flexible, modular thermal power installation can be created with up to 16 CRHV packaged systems, for a maximum output of up to 960 kW, with integrated cascade control.

This solution offers a high level of modularity thanks to the 2 DC scroll inverter compressors installed in an individual system, ensuring that thermal power is adjusted progressively and with extreme precision in relation to actual hot water demands. This optimises the operation of the entire installation, with only part of the CRHV packaged system operating under medium-load conditions during typical spring and autumn temperatures.

A malfunction in one or several CRHV packaged systems will not compromise the operation of the other systems in the installation, ensuring safety and continuous operation.



External remote control

Wide variety of external input/output

A wide choice of analogue and digital inputs and digital outputs available with the system's electronics enables remote control operation (via a BMS, timer or external contacts). The following are just some of the available input signals:

- Option of selecting operating mode and hot water production temperature setpoint, choosing Heating Mode or ECO Heating Mode. The latter mode is particularly advanced, as it uses the outdoor air compensation curve to automatically determine the water delivery setpoint.
- Option of selecting operating mode and hot water production temperature setpoint, choosing Domestic Hot Water Mode or Heating Mode. This makes it possible to configure two different water temperature setpoints, a higher value for domestic hot water production and a lower value for heating. This improves performance at partial loads, as DHW is only produced when required.
- Selecting Efficiency Mode (COP) or Capacity Mode for unit operation. This means system operation can be optimised in relation to demand, increasing power or performance depending on requirements.
- Selecting ON/OFF on the basis of the signals received from the flow regulator switch and the circulation pump, for increased protection of the hydronic circuit and satisfactory system operation.

The following are just some of the available output signals:

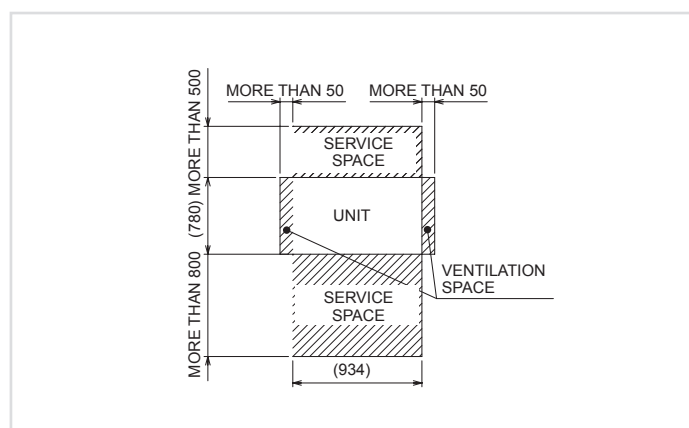
- A digital output can be enabled at a selectable minimum water temperature to start an alternative heat generator (boiler, solar panel etc.) to substitute the system if it is OFF.
- 3-way valve control in relation to hot water or heating demands.
- Pump control on circuit hot water side and heat source side (ON/OFF).

The result is maximum control flexibility, either locally using the dedicated PAR-W21MAA remote controller, or remotely using external contacts.

Compact dimensions

The unit has a compact footprint thanks to the latest, highly-efficient heat exchanger with low pressure losses. Installation footprint 0.73 m²*

*Dimensions of a unit excluding service space.

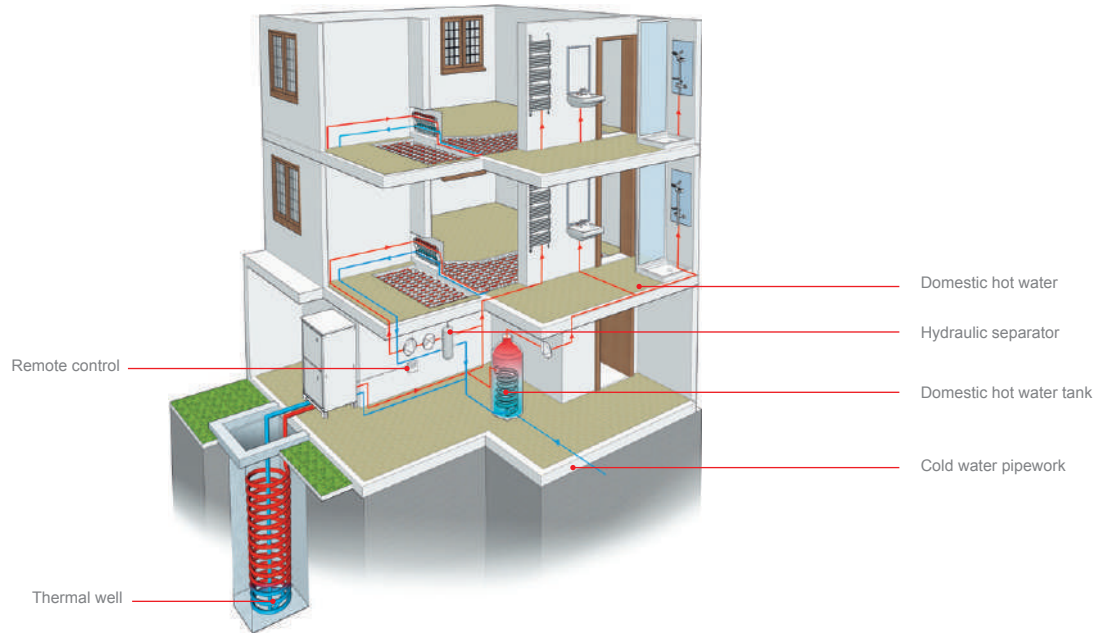


Control and monitoring functionality with centralized WEB Server controllers

With the M-Net data transmission bus, the CRHV packaged system can interface with the centralised **WEB Server 3D Touch** and **3D Blind Controllers** of the VRF CITY MULTI control system range. Depending on the application, the CRHV packaged system can therefore interface with a VRF CITY MULTI system to optimise operation when catering for hot water, heating and air conditioning demands, or to manage, monitor and supervise the system in a standalone configuration for applications solely requiring the production of large volumes of hot water. In both cases, the system can be controlled via a 10.4" backlit, colour touchscreen display on the 3DT controller, or via the Internet using the web pages for either centralised controller.



LAYOUT: ECODAN® PACKAGED HWHP CRHV (LOW AND HIGH TEMPERATURE HEATING + DHW)



Technical specifications HEATING/COOLING/DOMESTIC HOT WATER

MODEL				CRHV-P600YA-HPB
Spring/Autumn heating	Power Supply	Voltage/Freq./Phases	V/Hz/no.	3 phases 380-400-415V; 50/60 Hz
	SCOP (power 60 kW) EN14825 Avg. clim. cond.	Heat source water/glycol 0°C/-3°C, Hot water 30°C/35°C		4,33
		Heat source water/glycol 0°C/-3°C, Hot water 47°C/55°C		2,89
	Nominal heating capacity ¹	Absorbed power	kW	60
		Absorbed current	A	14,2
		COP		24,0 - 22,8 - 22,0
		Flow rate of water in circuit	m³/h	4,23
		Flow rate of heat source water/glycol	m³/h	10,3
	Nominal heating capacity ²	Absorbed power	kW	14,7
		Absorbed current	A	14,7
		COP		45
		Flow rate of hot water in circuit	m³/h	10,2
		Flow rate of heat source water/glycol	m³/h	17,2 / 16,4 / 15,8
	Heat source liquid			Ethylene Glycol 35 WT
	Temperature range ⁴	Hot water side	°C	30 - 65
		Heat source water/glycol side	°C	-8 - 27
	Low water temperature 35°	Rank		A++
		η _S	%	153
	Medium water temperature 55°	Rank		A++
		η _S	%	127
	Water pressure drop	Hot water side ³	kPa	14
		Heat source water/glycol side ³		38
	Water pipe diameters	Return	mm	50,8 (Rc 2") threaded
		Delivery	mm	50,8 (Rc 2") threaded
	Flow rate of water in circuit	Hot water side	m³/h	3,2 - 15,0
		Heat source water/glycol side	m³/h	4,5 - 16,0
	Sound level at 1 m		dBA	50
	External dimensions HxWxD	HxWxD	mm	1561 x 934 x 780
	Net weight		kg	395
	Ref. refill R410A/CO ₂ Eq		kg/Tons	9/18.79

Note:

¹ Nominal heating conditions: hot water delivery temperature 35°C; water/glycol outlet temperature -3°C; hot water return temperature 30°C; water/glycol inlet temperature 0°C.

² Includes the power absorbed by the pump in accordance with EN14511

³ Nominal heating conditions: hot water delivery temperature 35°C; water/glycol outlet temperature -3°C; hot water return temperature 30°C; water/glycol inlet temperature 0°C. Power 60 kW, hot water flow rate 10.3 m³; water/glycol flow rate 14.7 m³

⁴ GWP of HFC R410A equivalent to 2088 in line with regulation 517 / 2014.