HYDROLUTION, THE SYSTEM FOR HEATING, COOLING AND DHW PRODUCTION

A+++

MINIMUM ENERGY CLASS 35° C

R32

ALL CAPACITIES

R410A

10 & 16 KW MODELS

HYDROLUTION SYSTEM - ADVANTAGES

Cutting-edge design and technological innovation are the basis of the HYDROLUTION system.

ENERGY SAVING

The HYDROLUTION outdoor units are equipped with Inverter technology and Twin Rotary compressor: it is possible to vary the operating frequency of the compressor based on the actual demand of the system, with consequent optimization of the COP and EER values.

MAXIMUM SILENCE OF THE OUTDOOR UNITS

The sound level emitted by the outdoor unit of an air conditioning system can be a problem, especially at night.
The HYDROLUTION system, thanks to the 'Silent' mode, is able to reduce the speed of the fan and compressor. This results in a significant reduction in the sound level. It is possible to set the operation of the outdoor unit in 'Silent' mode using the RC-HY20/40-W controls.

EXTREME COMPACTNESS

In the case of the indoor units of the All in One version system, the reduced size is due to the high performance of the internal components, in particular the domestic water tank and the plate heat exchanger.

HOT WATER UP TO 65° C

HYDROLUTION is a heat pump particularly suitable for primary heating, tested in numerous projects in Europe: it is capable of producing hot water **up to 60° C**. It is possible to raise the limit up to 65° C via an additional heat source, **and keep them constant even at an outdoor temperature of -20° C**. For this reason, it can be combined with: low temperature heating elements (radiant panels); medium temperature heating elements (high efficiency radiators, warmcoils).

HIGH RELIABILITY

The outdoor unit compressor is designed to be efficient even in very cold climates.

BLUE FIN TREATMENT

Corrosion of the outdoor unit, due to the action of atmospheric agents, can compromise the correct functioning of the system.
The 'Blue Fin' treatment, applied to the exchanger, helps prevent corrosion.

HYDROLUTION SYSTEM - CONFIGURATIONS

ALL IN ONE CONFIGURATION

The wide range of Mitsubishi Heavy Industries products offers the right heat pump to meet every need.
All in One is a complete solution, suitable for renovations and new buildings.

ALL IN ONE COMBINATIONS (OUTDOOR UNIT + INDOOR UNIT)

The All in One combination provides the complete solution for all your heating, cooling and domestic hot water needs.

Each All in One combination includes an outdoor unit and an HMA system, having an integrated DHW tank, an electric resistance and a circulation pump.

Here are the advantages of HYDROLUTION All in One:

- heating, cooling and hot water in one unit;
- easy installation and operation, the indoor and outdoor units are compact and make installation as simple as possible;
- ideal for residential use in apartments and small homes;
- three settable control levels (economy, normal, luxury) for DHW production;
- **CAPACITIES AVAILABLE**
  6 kW - R32/R410A
  8 kW - R32/R410A
  10 kW - R410A

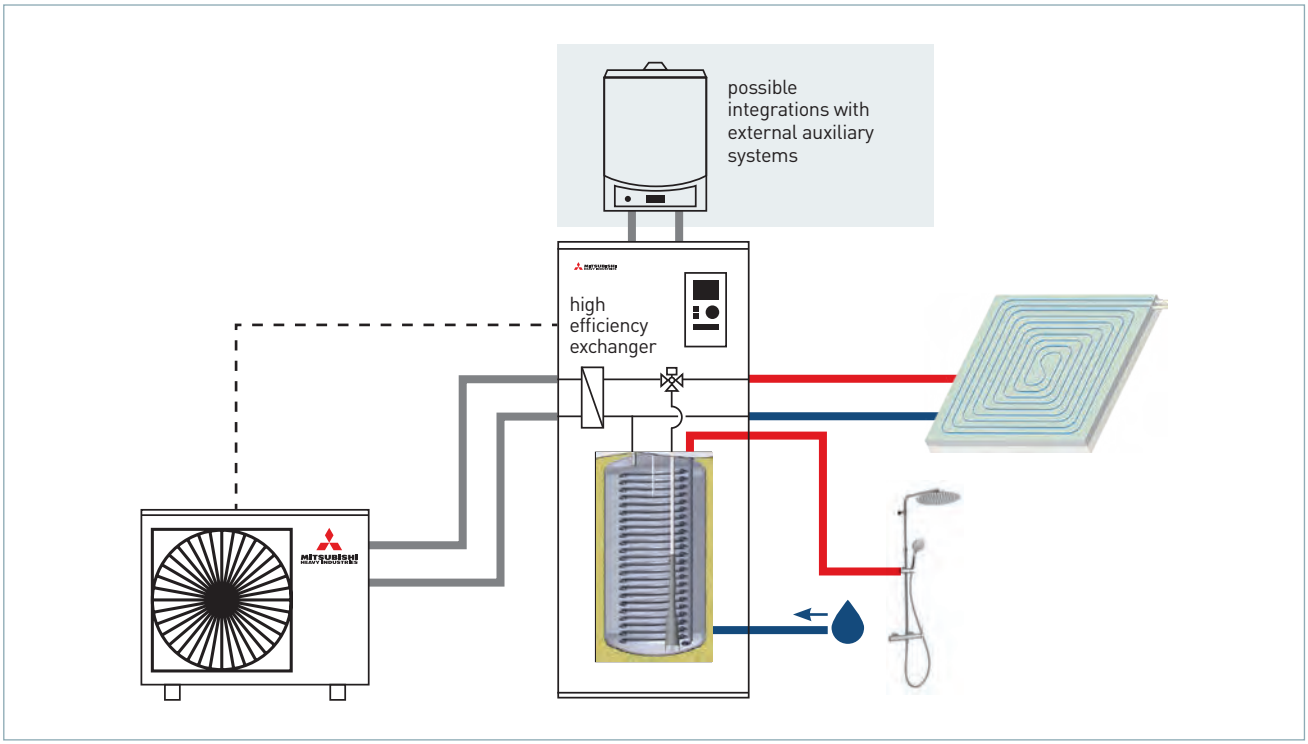
HMA MODULE

HYDROLUTION's All in One solution allows you to satisfy, with a plug-in solution, the main heating, cooling and DHW production needs of a home.

MAIN ADVANTAGES OF HMA MODULE

- integrated control on the machine which facilitates the management and installation of the system;
- compact, high-efficiency heat exchanger that allows you to quickly reach the desired temperatures;
- integrated 180 liter tank for the production of DHW;
- possibility of single-phase or three-phase power supply via special terminal block.

OPERATING DIAGRAM



CONTROL SYSTEMS

To guarantee maximum efficiency of an air-water heat pump system like that of HYDROLUTION, MHI has designed and created a complete line of management and monitoring devices.

A residential heating system must necessarily be subjected to precise control 24 hours a day: **RC-HY20-W and RC-HY40-W** have been designed to simplify this control and reduce management costs and energy consumption.

The functions of these control devices are extremely flexible and as such adapt to the system configuration in which they are applied.

RC-HY20-W

Areas of application

Monobloc Flexible

RC-HY20-W e RC-HY40-W features & functions

The **RC-HY20-W and RC-HY40-W** control devices can be used for the management and regulation of **centralized and autonomous** systems created with HYDROLUTION. **RC-HY20-W** is specific for the Monobloc Flexible configuration, **RC-HY40-W** is integrated into All in One, Hydrobox heating, Hydrobox heating and DHW and can be used with Monobloc Flexible. Specifically, they allow you:

- to manage the operating modes (on/off) and time programming of the system;
- to guarantee efficiency in regulating the system;
- to manage the delivery water temperature automatically;
- to manage the anti-legionella cycles and the activation of the DHW recirculation pump;
- to activate the 'Silent' function.

RC-HY40-W

Areas of application

All in One
Hydrobox heating
Hydrobox heating e ACS
Monobloc Flexible

HYDROLUTION SYSTEM - CONTROL SYSTEMS

ON/OFF and system time programming

Through the **RC-HY20-W** and **RC-HY40-W** control devices it is possible to both manage the operation (switching on and off) of the HYDROLUTION system, the operation of the 'Silent' function and program the cooling supply, heating and DHW throughout the week. During the operation of the heat pump it is possible to:

- to create 3 daily programs in heating mode with the possibility of setting the deviation from the reference climate curve, or the desired temperature in the single period (only if the internal temperature sensor is present);
- to set 2 time schedules in cooling mode;
- to set 2 time schedules for system operation in 'Silent' mode;
- to program the temperature and DHW delivery

a) through 3 different DHW production control parameters: economical – normal – luxury; it is possible to program two daily production cycles with different temperature levels for each day of the week;

b) by activating the 'Temporary luxury' function it is possible to increase it for a certain period of time (up to 12 hours), the DHW production temperature;

c) by activating the 'Holidays' function it is possible to reduce the heating and temporarily suspend the DHW production.

Efficiency in system regulation

It is possible to guarantee system efficiency by monitoring the DM parameter (degrees per minute), which allows for rapid responses and better management of the operating frequencies of the outdoor unit compressor.

Anti-legionella cycles and DHW recirculation

It is possible to set the programming of the anti-legionella cycles via the 'Sterilyze' function: the activation interval of the cycles is between 1 and 90 days.

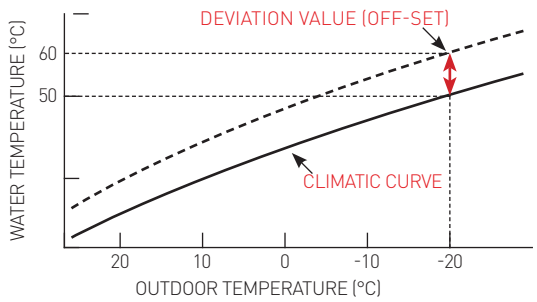
It is also possible to set 3 daily operating periods of the DHW recirculation pump.

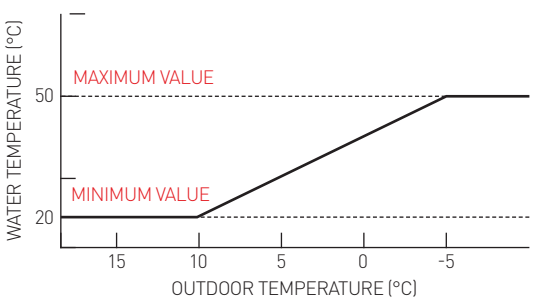
'Silent' function

Activating the 'Silent' function allows you to significantly reduce the noise emitted by the external unit, reducing the speed of the compressor and fan. It is possible to set 2 time schedules in this operating mode.

Automatic management of the system delivery temperature

The management of the delivery temperature to the system occurs by setting the climatic operating curve. From the control device the user can set a personalized climate curve, quickly modify it as needed, indicating a deviation value compared to the reference climate curve ('Off-set' function). It is possible to establish a lower and upper temperature limit for the water supplied to the system.





Climatic curve: to guarantee energy efficiency and indoor comfort, the system regulates the degrees °C of the supply water when the outside temperature changes.

RC-HY40-W
FEATURES & FUNCTIONS

The RC-HY40-W control device, in addition to being equipped with the features listed in the previous paragraphs, offers highly sophisticated continuous monitoring functions and provides valuable information on consumption, performance, as well as a wide range of operational data.

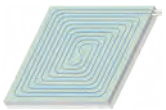
The features are described in more detail below.

- Through **RC-HY40-W**, efficiency in regulation, durability of the system and continuity of service are guaranteed.

- **RC-HY40-W is able to manage up to 8 distribution systems at different temperatures** (radiant panels, high efficiency radiators and warm coils). If inside a condominium there are heating systems that work at different delivery temperatures, by setting a climate curve dedicated to each system, via the RC-HY40-W control, it is possible to manage up to 8 distribution systems at different temperatures . It is necessary to add, for each distribution system, an ECSM40/ECSM41 accessory kit.


warmcoil


high efficiency radiators


radiant panels

- **RC-HY40-W is able to manage the accounting and distribution of energy consumption**: by connecting an energy meter kit to the RC-HY40-W control, it is possible to quantify the system's consumption and view it directly from the control system. The distribution of energy consumption of the various users can be carried out through the installation of heat meters and distribution boxes dedicated to each apartment.

RC-HY40-W
INTEGRATION WITH EXTERNAL HEAT SOURCES

RC-HY40-W is able to manage the integration of the HYDROLUTION system with external heat generators. Using an external generator (e.g. pellet or methane boilers) it is possible to raise the maximum temperature limit of the system water to **65° C**. Integration management is not limited to a simple switching on/off of the heat source integrative (already also present in the 20-W version), but can control a mixing valve adjusted to obtain a specific temperature set by command.

In the event of a heat pump failure, DHW production and heating are guaranteed with the help of the emergency function, which activates the integration system automatically.

Below are the possible operating methods of this management.

AUTOMATIC MODE

Allows you to set the operating range of the outdoor temperature of the heat pump heating and the boiler.

MANUAL MODE

Allows you to activate/deactivate integration from external heat generators.

Allows you to activate/deactivate heat pump heating.

EXTERNAL GENERATOR ONLY MODE

It allows the use of only the external generator for heating and DHW production.

In the event of a heat pump failure, DHW production and heating are guaranteed with the help of the emergency function, which activates the integration system automatically.

HYDROLUTION SYSTEM - TECHNICAL DATA

ALL IN ONE

Outdoor unit model				FDCW 60 VNX-W	FDCW 71 VNX-W	FDCW 100 VNX-A
Heating	Rated power	A7//W35	kW	5.08 (0.90~7.60)	8.30 (2.20~9.50)	9.20 (3.50~10.00)
	Power input			0.99	1.93	2.15
	Performance coefficient		COP	5.16	4.30	4.28
	Rated power	A7/W45	kW	2.70 (2.70~8.00)	8.00 (3.00~10.00)	9.00 (3.50~11.00)
	Power input			0.88	2.35	2.62
	Performance coefficient		COP	3.06	3.40	3.44
Cooling	Rated power	A35//W18	kW	7.54 (1.20~7.80)	9.00 (2.70~10.70)	11.00 (3.30~12.00)
	Power input			2.11	2.48	3.04
	Energy efficiency		EER	3.57	3.62	3.62
	Rated power	A35//W7	kW	5.31 (0.60~6.30)	7.10 (2.00~7.10)	8.00 (3.00~9.00)
	Power input			1.95	2.62	2.85
	Energy efficiency		EER	2.73	2.70	2.81
Seasonal data (Heating)	Design load (Pdesignh) @ -10°C	35/55	kW	4.8/5.3	7.5/7.0	8.5/10.0
	Seasonal energy efficiency (ηs)		%	190/137	180/131	165/126
	Energy efficiency class		-	A+++/A++	A+++/A++	A++/A++
	Annual energy consumption		kWh/y	2089/3193	3450/4421	4181/6391
Seasonal data (DHW)	Test cycle profile			XL	XL	XL
	Energy efficiency (ηwh)		%	100	107	98
	Energy efficiency class			A	A	A
	Annual energy consumption		kWh/y	-	-	1702
Operating range	Outdoor air temperature	Heating & DHW	°C	-20~43		
		Cooling		15~43		
Refrigerant circuit data	Refrigerant type (GWP)			R32 (675)		R410A (2088)
	Q.ty of precharge (tons CO2)		kg (t)	1.3 (0.878)	1.84 (1.242)	2.9 (6.055)
	Piping diameter liquid/gas		mm (inch)	6.35(1/4") / 12.7(1/2")	6.35(1/4") / 15.88(5/8")	9.52(3/8") / 15.88(5/8")
	Max splitting distance		m	30	50	30
	Max splitting level difference O.U.-I.U. / I.U.-O.U.		m	20 / 20	30 / 15	7 / 7
	Splitting distance without additional charge		m	15	15	15
	Additional charge		g/m	20	20	60
	Refrigerant control system			Capillary tube + EEV	Electronic expansion valve	
	Compressor		type	Twin rotary - DC Inverter		Rotary - DC Inverter
Electrical data	Power supply		Ph-V-Hz	1ph-230V-50Hz		
	Maximum current		A	15	18	23
	Power cable (recommended)		type	3x4 mm²	3x4 mm²	3x6 mm²
Product specifications	Fan	Type	q.ty	DC Inverter x 1		
		Air flow (max)	m³/h	2490	3000	4380
	Sound power level (max)		dB(A)	65	69	58
	Sound pressure level (a 1 m)		dB(A)	44	49	50
	Dimensions	LxDxH	mm	800x290x640	880x340x750	970x370x845
	Weight	Net	kg	46	62	81
Indoor unit model				**HMA 60-W**	**HMA 100-W**	**HMA 100-W**
Operating range	Delivery water temperature	Heating & DHW	°C	25~58	25~60	25~58
		Cooling		7~25		
	DHW temperature (tank)	Max		80		
Hydraulic data	DHW tank capacity		L	180		
	Water/freon heat exchanger		type	Braze-welded plates		
	Circulation pump			Included		
	Water connections	Size	mm	22		
	Operating pressure (system)	Max	bar	3		
	Expansion vessel	Volume	L	10		
		Precharge	bar	0.5		
Electrical data	Power supply		Ph-V-Hz	1ph-230V-50Hz / 3ph-400V-50Hz		
	Electrical integration	Power supply 230V /400V	kW	6 / 9		
	Power input (Max)		A	29 / 20	36 / 20	40 / 23
	Power cable (recommended)		type	3x6 mm² / 5x4 mm²	3x10 mm² / 5x4 mm²	3x10 mm² / 5x6 mm²
Product specifications	Sound power level		dB(A)	-	-	-
	Dimensions	LxDxH	mm	600x610x1715		
	Weight	Net	kg	155	165	
	Control (included)			On board machine		
	Remote control via Modbus (optional)			MODBUS40M		

The data reported above refers to the following standards: EN 14511:2018; EN 14825:2019; EN50564:2011; EN12102-1:2018; EN12102-2:2019; (EU)No:811:2013; (EU) No:813:2013; OJ 2014/C 207/02:2014.