MITSUBISHI ELECTRIC
HYDRONICS & IT COOLING SYSTEMS S.p.A.

HYDRA B

Packaged water/water heat pumps for plants with geothermal probes.
Indoor installation.
Only heating - Heating Capacity: 21 ÷ 80 kW

Hot water production up to 65°C
Scroll compressors
Plate type heat exchangers

HYDRA B: Water/water reversible heat pump for hot water production up to 65°C for indoor installation equipped with fully hermetic scroll compressors and plate type heat exchangers.
Only heating for plants with geothermal probes.

Heating Capacity: **21÷ 80 kW**

GOGREEN innovative solutions

HYDRA B

R410A PLATE

MAIN FEATURES

- High temperature heat pump. Only heating for plants with geothermal probes.
- 12 available models for a wide selection opportunity;
- Average step of 5kW.
- COP up to 3,39.
- Scroll compressors.
- R410A Refrigerant charge.
- Single refrigerant circuit.
- Plate type heat exchangers.
- Suitable for indoor installation.

MAIN BENEFITS

- Can substitute the boiler in an old plant without modifying the heat distribution system.
- High COP.
- Built in pumping group (option) with single or double on/off pump with low or high discharge head, to transform the unit in a real thermal/cooling plant
- Extremely easily of maintenance.
- Complete set of components dedicated to the safety of the unity.
- Eurovent Certification.
- Up to A++ Class. ErP 2015.

HIGH TEMPERATURE HEAT PUMP

For hot water production up to 65°C.
Can substitute the boiler in an old plant without modifying the heat distribution system.

WORKING LIMIT IN HEATING MODE (HEAT PUMP)

Hot water outlet temperature from the condenser: 30÷65°C
Water outlet temperature from the evaporator: -5÷10°C

MAIN COMPONENTS

FRAMEWORK

- Base, self-supporting frame in hot galvanized steel plate and painted with polyester powders. Colour: RAL 9006;
- Panelling in hot galvanized steel plate and painted with epoxy powders. Colour: RAL 7035;
- Internal coating with thermal and acoustic insulating material.

COMPRESSORS

- Orbiting spiral (SCROLL) hermetic compressors with spiral profile optimized for R407C refrigerant;
- ON / OFF capacity control (0 / 100% each compressor);
- 2-pole 3-phase electric motor with direct on line starting;
- Crankcase heater;
- Electric motor thermal protection with manual reset;
- Liquid injection system.

PLANT SIDE HEAT EXCHANGER

- AISI 316 stainless steel plates type, vacuum brazed using copper as brazing material. Hydraulic and refrigerant connections in AISI 316 stainless steel:
  - With single refrigerant circuit, single hydraulic circuit for all machines;
- Insulation with closed cell neoprene foam;
- Temperature sensors on water inlet and outlet;
- Factory assembled differential water pressure switch for water flow control;
- Hydraulic connection on the machine top cover.

SOURCE SIDE HEAT EXCHANGER

- AISI 316 stainless steel plates type, vacuum brazed using copper as brazing material. Hydraulic and refrigerant connections in AISI 316 stainless steel:
- Insulation with closed cell neoprene foam;
- Hydraulic connection on the machine top cover.

REFRIGERANT CIRCUIT

Components for each refrigerant circuit:

- 4-way reversing valve for refrigeration cycle inversion.
- Electronic expansion valve;
- Sight glass;
- Solenoid valve on subcooling liquid line.
- Filter dryer on liquid line;
- Safety valves on high and low pressure side;
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure;
- High pressure safety switch with manual reset;
- Refrigerant circuit with copper tubing.
- Liquid receiver;
- Liquid separator on suction line;
- Liquid injection system to extend the compressor envelope:
  - Solenoid valve;
  - Expansion device;
  - Temperature sensor.
- R410A refrigerant charge.

ELECTRICAL PANEL

In accordance with EN60204-1 / IEC 204/1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety on frontal panel;
- Magnetothermic switches for each compressor and fan motor;
- Contactors for each compressor motor;
- Transformer for auxiliary circuit and microprocessor supply;
- Terminals:

OUTLETS

  - Voltage free deviating contact for 3 way valve control;

INLETS

  - External enabling (from timer, ecc. At Customer care);
  - Emergency unit stop with signalling on display (external alarm. At Customer care);
- Panel with machine controls;
- Power supply: 400V / 3Ph / 50Hz

CONTROL SYSTEM

Microprocessor control system with graphic display for control and monitor of operating and alarms status. The system includes:

- Built-in clock for alarms date and time displaying and storing;
- Built-in memory for the storing of the intervened events;
- Predisposition for connectivity board housing (RCcom MBUS/JBUS, LON, BACnet for Ethernet (SNMP- TCP/IP), BACnet for MS/TP). The electronic cards are optional accessories;
- Menu with protection password.

OPTIONAL ACCESSORIES

HYDRA B SIZE	028 P1	033 P1	037 P1	043 P1	048 P1	054 P1	055 P2	066 P2	074 P2	086 P2	096 P2	110 P2
Low discharge head single pump - plant side	●	●	●	●	●	●	●	●	●	●	●	●
Pumping group, 1 pump high pressure - plant side	●	●	●	●	●	●	●	●	●	●	●	●
Low discharge head single pump - source side	●	●	●	●	●	●	●	●	●	●	●	●
Pumping group, 1 pump high pressure - source side	●	●	●	●	●	●	●	●	●	●	●	●
780 - Noise absorption box	●	●	●	●	●	●	●	●	●	●	●	●
1029 - 3-way valve, outside the unit, for domestic heat water production.	●	●	●	●	●	●	●	●	●	●	●	●
172 - Rubber antivibration holders (kit)	●	●	●	●	●	●	●	●	●	●	●	●
83 - Compressor operation indicator	●	●	●	●	●	●	●	●	●	●	●	●
1002 - Soft Starter	●	●	●	●	●	●	●	●	●	●	●	●
81 - Controllo sequenza fasi	●	●	●	●	●	●	●	●	●	●	●	●
1032 - Air temperature probe	●	●	●	●	●	●	●	●	●	●	●	●
923 - RC-Com MBUS/JBUS Serial board	●	●	●	●	●	●	●	●	●	●	●	●
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	●	●	●	●	●	●	●	●	●	●	●	●
932 - BACnet MS/TP Serial board	●	●	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●	●	●
RC CLOUD PLATFORM	●	●	●	●	●	●	●	●	●	●	●	●
171 - Rubber antivibration holders (kit)	●	●	●	●	●	●	●	●	●	●	●	●
170 - Spring anti vibrating support (kit)	●	●	●	●	●	●	●	●	●	●	●	●
118 - Kit brine A (for glycol solution production up to -6°C)	●	●	●	●	●	●	●	●	●	●	●	●
119 - Kit brine B (for glycol solution production up to -12°C)	●	●	●	●	●	●	●	●	●	●	●	●

● available accessory; - not available accessory

TECHNICAL DATA HYDRA B

	HYDRA B		020 P1	024 P1	028 P1	031 P1	035 P1	040 P1
STANDARD	**Seasonal energy efficiency class (*)**	ErP	**A+**	**A+**	**A+**	**A+**	**A+**	**A+**
	Winter working mode - Heating capacity (1)	**kW**	**20,7**	**24,4**	**28,1**	**31,7**	**35,8**	**40,1**
	Unit power input	kW	6,6	7,5	8,5	9,4	10,6	11,9
	Plant exchanger water flow rate	m³/h	4,0	4,7	5,4	6,1	6,9	7,7
	Plant exchanger pressure drop	kPa	8	7	9	9	9	9
	Exhaust exchanger water flow rate	m³/h	4,1	4,8	5,6	6,4	7,2	8,0
	Exhaust exchanger pressure drop	kPa	18	22	20	24	25	21
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	1	1	1	1	1	1
	Capacity steps	n.	1	1	1	1	1	1
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	3	3	4	4	5	6
	Gas circuits	n.	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	18	21	23	26	28	34
	Unit starting current (LRA)	A	98	142	142	147	158	197
	COP (1)	kW/kW	3,16	3,26	3,31	3,38	3,39	3,38
	Sound power level [Lw] (2)	dB(A)	66	67	68	69	70	70
	Average sound pressure level [Lpm] (3)	dB(A)	51	52	53	54	55	55
	Net weight	kg	230	240	245	250	260	270
	Hydraulic connections							
	Evaporator / Condenser IN/OUT - ISO7/1-G M	Ø	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"

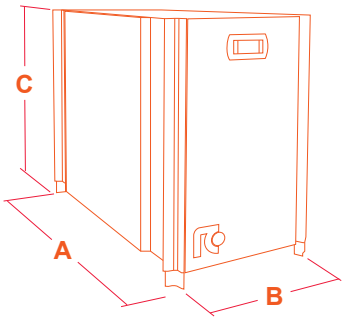
	HYDRA B		041 P2	048 P2	055 P2	063 P2	070 P2	079 P2
STANDARD	**Seasonal energy efficiency class (*)**	ErP	**A++**	**A++**	**A++**	**A++**	**A++**	**A++**
	Winter working mode - Heating capacity (1)	**kW**	**41,4**	**48,5**	**56,1**	**63,5**	**71,4**	**80,4**
	Unit power input	kW	13,1	15,1	17,1	19,0	21,3	23,8
	Plant exchanger water flow rate	m³/h	8,0	9,3	10,8	12,2	13,7	15,5
	Plant exchanger pressure drop	kPa	10	11	19	17	18	17
	Exhaust exchanger water flow rate	m³/h	8,1	9,5	11,1	12,7	14,3	16,1
	Exhaust exchanger pressure drop	kPa	22	19	19	20	19	19
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	2	2	2
	Capacity steps	n.	2	2	2	2	2	2
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	6	6	7	8	9	10
	Gas circuits	n.	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	36	42	47	53	58	67
	Unit starting current (LRA)	A	115	162	164	172	185	229
	COP (1)	kW/kW	3,17	3,21	3,29	3,35	3,36	3,38
	Sound power level [Lw] (2)	dB(A)	71	71	72	72	73	73
	Average sound pressure level [Lpm] (3)	dB(A)	56	56	57	57	58	58
	Net weight	kg	400	430	440	465	470	490
	Hydraulic connections							
	Evaporator / Condenser IN/OUT - ISO7/1-G M	Ø	2"	2"	2"	2"	2"	2"

1. Referred to hot water outlet temperature at 40°/45°C and chilled water temperature 0°/-3°C - 0% glycol solution. Fouling factor of the exchangers 0,043 m²°K/kW.
2. Sound power level [Lw] according to ISO EN 9614 - 2
3. Average sound pressure level [Lpm] 1m far according to ISO EN 3744.

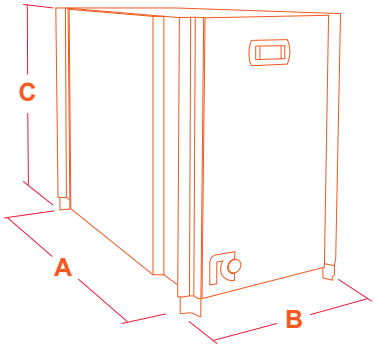
(*) ErP Seasonal energy efficiency class according to energy label directive 2010/30/EU and EU regulations 811/2013.

DIMENSIONS (mm)

	a	b	c
020 P1	1200	600	855
024 P1	1200	600	855
028 P1	1200	600	855
031 P1	1200	600	855
035 P1	1200	600	855
040 P1	1200	600	855
041 P2	1470	885	900
048 P2	1470	885	900
055 P2	1470	885	900
063 P2	1470	885	900
070 P2	1470	885	900
079 P2	1470	885	900



Up to model 040 P1 included



Starting from model 041 P2 included

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