

GPS Kp

AIR COOLED MULTIFUNCTION UNITS FOR 4-PIPE SYSTEMS FOR OUTDOOR INSTALLATION

WITH SEMIHERMETIC RECIPROCATED COMPRESSORS AND AXIAL FANS

Cooling capacity from 49 kW to 285 kW

R290



AIR



AC

EC



ERP
2021



VERSIONS

GPS Kp - standard version

GPS VS HE Kp - high efficiency version

Multipurpose units, ideal for all installed applications where simultaneous production of hot and cold water is required, through the use of dedicated, independent circuits in 2- or 4-pipe hydronic systems. The polyvalent represents an effective and convenient alternative to traditional solutions (Boiler + Chiller) with a particular energy benefit in the conditions of demand for both fluids, hot and cold, concurrently.

The refrigerant used is Propane, a non-toxic hydrocarbon, even at high concentrations, with almost a null ozone depletion potential, negligible global warming potential and thermodynamic properties which allow to reach high efficiency values.

For this reason the units are designed for external installation, in compliance with the European standard EN 378 and his updates.

Depending on the required heating capacity, the units are available in mono or multi compressor with 1 or 2 independent cooling circuits.

Thanks to the many available options, these heat pumps are particularly versatile and are easily adaptable to the different types of plant, where production of chilled water is required.

All the units are completely factory assembled, tested and supplied with refrigerant non-freezing oil charge; so, once on installation site, they only need to be positioned and connected to the hydraulic and power supply lines.

Units CE certified in compliance with the European regulation 813/2013, average conditions, low temperature, fixed

MAIN COMPONENTS

FRAME

Strong and compact structure, made of base and frame with high-thickness galvanized steel elements assembled with stainless steel rivets. All galvanized steel surfaces externally positioned are superficially coated by an oven powder-painting with colour RAL7035. The technical section which contains compressors and the other cooling circuit elements, except the condensing part, is closed in a cabinet; if a refrigerant leak occurs the technical vane is automatically airy using an external axial fan which is able to clean all the air inside the cabinet 4 time/minute. To reduce the sound level it is possible to insulate the technical section with a sound and fire proof standard thickness material or higher thickness material (CFU option).

COMPRESSORS

Semi hermetic alternative type optimized to operate with the hydrocarbons and realized in compliance with the safety regulation in force. The electrical motor, arranged for starts with low inrush current, is equipped with thermal protection module (installed in the electrical cabinet); the lubricating system, of forced type, is equipped with oil filters and check valves to survey the lubricating pressure and is made through a high pressure pump. Each compressor operating on a single independent circuit is installed on rubber type vibration dampers and is provided with switch-off valve on suction and discharge side, electronic differential pressure switch for the oil level control, crankcase heater and temperature probe on discharge side to control the compressor's discharge temperature. For the high-efficiency (HE) version, a compressor is controlled by external variable frequency drive to achieve higher efficiency performance during operation at reduced load.

HEAT EXCHANGER

Single or dual-circuit type stainless steel brazed plates, with channels and distributor optimized to work with the refrigerant in use and achieve a high heat transfer coefficient. Both exchangers are thermally insulated through flexible closed-cell insulation mat of substantial thickness. They are also equipped with a safety flow switch that does not allow the unit to operate in case of lack of water flow.

COILS

The external heat exchanger coils are made of micro-finned copper pipes placed in asymmetrical rows and mechanically expanded in an aluminium frame. The aluminium fin is supplied with standard hydrophilic treatment and is designed in order to ensure maximum heat exchange efficiency. The defrosting of the hot-gas finned exchangers is pressure-controlled.

FANS

Six-pole axial fans with an external-rotor electric motor directly

coupled to the impeller and equipped with an electronic device of the phase-cut type (standard version) for modulating control of the condensing pressure by varying the rotation speed of the fans. For the high-efficiency (HE) version, the fans are of the EC type, which, in addition to more precise control of air flow, allow the unit to operate in chiller mode down to -20°C outdoor temperature. The blades are made of aluminum, with an airfoil specifically designed not to create turbulence in the air detachment area, thus ensuring maximum efficiency with the lowest noise emission. The fan is complete with galvanized steel accident protection painted after construction. The fan motors are totally enclosed type and have IP54 rating and protection thermostat built into the windings.

REGENERATIVE EXCHANGER

Heat regenerative exchanger gas/fluid of plates type, installed on each circuit to grant a suitable overheating value to the compressor sucked gas and at the same time to increase the cooling circuit efficiency thanks to higher sub-cooling of condensing coil leaving fluid. Insulated thermally using a close cells mattress of great thickness.

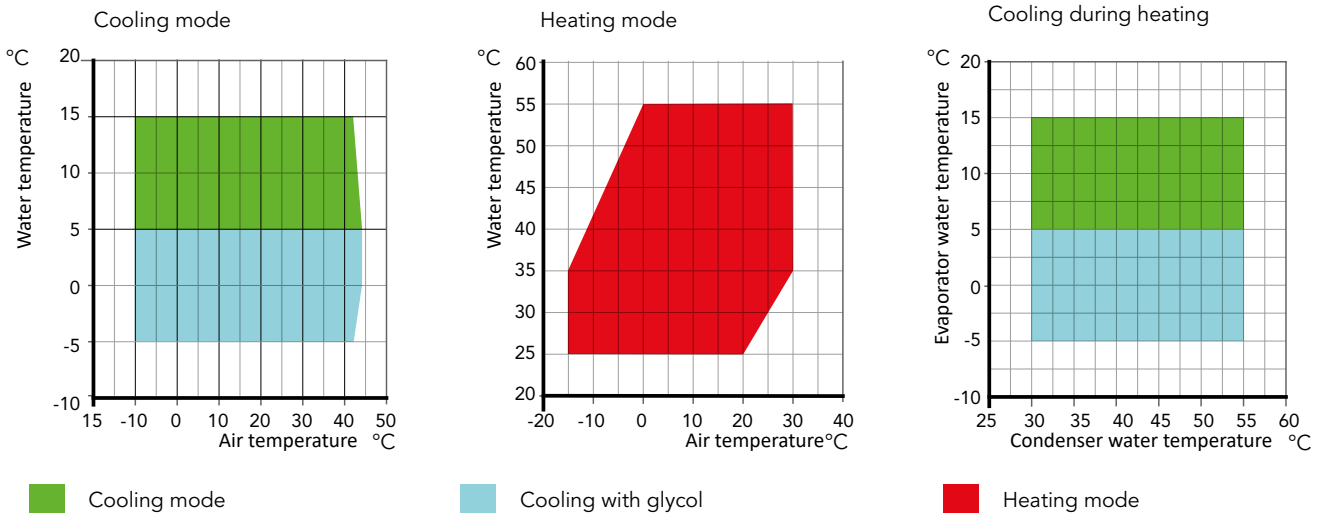
COOLING CIRCUIT

Independent cooling circuits, each provided with a shut-off valve for refrigerant charge, antifreeze probe, sight glass, dehydrating filter for R290 with wide filtering surface, high pressure side safety valve equipped with connector to the discharge refrigerant conveying piping, electronic thermostatic valve, pressure switches and high/low pressure gauges for R290 specifically. All the units are equipped with a leak sensor which is able to turn off the compressors and turn on the extraction fan in case of a refrigerant leak and activating forced ventilation of the technical compartment.

ELECTRICAL BOARD

Built in compliance with 61439-1 standards, inside of which all the control system elements and the ones required for electrical motors starting and protection are located, all the components are factory connected and testes. The electrical cabinet has got a watertight structure, equipped with cable glands with protection factor of IP65/66. Besides the electrical cabinet contains all the power and control devices, microprocessor electronic board complete with keyboard and display for visualizing several function available, main switch of lock-door type, isolation transformer for auxiliary circuits, automatic switches, fuses and protection switches for compressors and fans motors, terminals for general alarm and unit remote ON/OFF, spring type terminal board and the possibility to interface to BMS system.

OPERATING RANGE



ACCESSORIES

GPS Kp

GPS Kp		491	581	751	891	1051	1252
Amperometer + Voltmeter	A+V	o	o	o	o	o	o
Axial fan diffuser	AXT	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o
Refrigerant leakage detector	DR	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o
Web application	HiPro.web	o	o	o	o	o	o
Visograph interface accessory	HMI.Pro	o	o	o	o	o	o
High pressure double safety valve	HRV2	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o
Pressure gauges	MT	•	•	•	•	•	•
Rubber-type vibration dampers	PA	◊	◊	◊	◊	◊	◊
Spring-type vibration dampers	PM	◊	◊	◊	◊	◊	◊
Remote display	PQ	◊	◊	◊	◊	◊	◊
Part-Winding	PW	o	o	o	o	o	o
Nordic option for electric panel (in/out covers for grilles + 15W/m electric heater)	QN	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•
Power factor correction system cosφ ≥ 0,9	RF	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	•	•	•	•	•	•
Compressor overload relays	RL	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o
Double layer treatment of the coil	TDS	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•
Brine Version	VB	o	o	o	o	o	o
Inverter on compressor	VSC	--	--	--	--	--	--

• Standard, o Optional, ◊ Optional (external kit), -- Not available

GPS Kp		1452	1752	2052	2552	2852
Amperometer + Voltmeter	A+V	o	o	o	o	o
Axial fan diffuser	AXT	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	●	●	●	●	●
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o
Refrigerant leakage detector	DR	●	●	●	●	●
Axial fans with electronic commutated motor	EC	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o
Web application	HiPro.web	o	o	o	o	o
Visograph interface accessory	HMI.Pro	o	o	o	o	o
High pressure double safety valve	HRV2	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o
Pressure gauges	MT	●	●	●	●	●
Rubber-type vibration dampers	PA	◇	◇	◇	◇	◇
Spring-type vibration dampers	PM	◇	◇	◇	◇	◇
Remote display	PQ	◇	◇	◇	◇	◇
Part-Winding	PW	o	o	o	o	o
Nordic option for electric panel (in/out covers for grilles + 15W/m electric heater)	QN	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	●	●	●	●	●
Power factor correction system cosφ ≥ 0,9	RF	o	o	o	o	o
Shut-off valve on compressors suction side	RH	●	●	●	●	●
Compressor overload relays	RL	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o
Double layer treatment of the coil	TDS	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●
Brine Version	VB	o	o	o	o	o
Inverter on compressor	VSC	--	--	--	--	--

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GPS VS HE Kp		491	581	751	891	1051	1252
Amperometer + Voltmeter	A+V	o	o	o	o	o	o
Axial fan diffuser	AXT	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o
Refrigerant leakage detector	DR	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•
Condensing coil protection grid	GP	o	o	o	o	o	o
Web application	HiPro.web	o	o	o	o	o	o
Visograph interface accessory	HMI.Pro	o	o	o	o	o	o
High pressure double safety valve	HRV2	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o
Pressure gauges	MT	•	•	•	•	•	•
Rubber-type vibration dampers	PA	◊	◊	◊	◊	◊	◊
Spring-type vibration dampers	PM	◊	◊	◊	◊	◊	◊
Remote display	PQ	◊	◊	◊	◊	◊	◊
Part-Winding	PW	o	o	o	o	o	o
Nordic option for electric panel (in/out covers for grilles + 15W/m electric heater)	QN	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•
Power factor correction system cosφ ≥ 0,9	RF	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	•	•	•	•	•	•
Compressor overload relays	RL	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o
Double layer treatment of the coil	TDS	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•
Brine Version	VB	o	o	o	o	o	o
Inverter on compressor	VSC	•	•	•	•	•	•

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GPS VS HE Kp		1452	1752	2052	2552	2852
Amperometer + Voltmeter	A+V	o	o	o	o	o
Axial fan diffuser	AXT	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	●	●	●	●	●
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o
Refrigerant leakage detector	DR	●	●	●	●	●
Axial fans with electronic commutated motor	EC	●	●	●	●	●
Condensing coil protection grid	GP	o	o	o	o	o
Web application	HiPro.web	o	o	o	o	o
Visograph interface accessory	HMI.Pro	o	o	o	o	o
High pressure double safety valve	HRV2	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o
Pressure gauges	MT	●	●	●	●	●
Rubber-type vibration dampers	PA	◊	◊	◊	◊	◊
Spring-type vibration dampers	PM	◊	◊	◊	◊	◊
Remote display	PQ	◊	◊	◊	◊	◊
Part-Winding	PW	o	o	o	o	o
Nordic option for electric panel (in/out covers for grilles + 15W/m electric heater)	QN	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	●	●	●	●	●
Power factor correction system cosφ ≥0,9	RF	o	o	o	o	o
Shut-off valve on compressors suction side	RH	●	●	●	●	●
Compressor overload relays	RL	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o
Double layer treatment of the coil	TDS	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●
Brine Version	VB	o	o	o	o	o
Inverter on compressor	VSC	●	●	●	●	●

● Standard, o Optional, ◊ Optional (external kit), -- Not available

TECHNICAL DATA

GPS Kp		491	581	751	891	1051	1252
Cooling ⁽¹⁾							
Cooling capacity	kW	48,7	57,3	74,1	88,3	102,0	121,8
Total input power	kW	16,5	19,7	23,7	28,9	34,7	41,1
Total nominal current	A	34,4	38,3	42,7	51,8	62,9	76,7
EER	-	3,0	2,9	3,1	3,1	2,9	3,0
Water flow	m ³ /h	8,4	9,9	12,8	15,2	17,5	20,9
Pressure drop	kPa	36,6	28,1	14,3	19,5	26,5	12,1
Heating ⁽²⁾							
Heating capacity	kW	58,2	67,2	81,4	100,7	116,1	140,0
Total input power	kW	15,8	18,5	22,8	27,9	32,8	39,0
Total nominal current	A	34,2	37,1	41,6	50,6	60,5	74,2
COP	-	3,7	3,6	3,6	3,6	3,5	3,6
Water flow	m ³ /h	10,0	11,6	14,0	17,3	20,0	24,1
Pressure drop	kPa	15,5	20,0	10,5	15,3	19,8	22,4
Cooling during heating ⁽³⁾							
Cooling capacity	kW	49,0	58,4	73,8	88,2	102,5	126,0
Heating capacity	kW	64,5	76,8	94,7	114,1	133,8	161,8
Total input power	kW	15,5	18,4	20,9	25,9	31,3	35,8
TER	-	7,3	7,2	7,9	7,7	7,4	7,9
Water flow	m ³ /h	11,1	13,2	16,3	19,6	23,0	27,8
Pressure drop	kPa	19,2	25,5	13,7	19,2	25,6	29,1
Water flow	mc/h	8,4	10,0	12,7	15,2	17,6	21,7
Pressure drop	kPa	29,4	29,1	14,1	19,5	25,5	12,8
Refrigerant circuits	n°	1	1	1	1	1	2
Compressors	n°	1	1	1	1	1	2
Refrigerant data R290							
Refrigerant charge	kg	9,5	9,5	9,5	12,5	12,5	14,5
Global warming potential (GWP)		3	3	3	3	3	3
Equivalent CO ₂ charge	kg	28,5	28,5	28,5	37,5	37,5	43,5
Axial fans ⁽⁴⁾							
Number	n°	2	2	2	2	2	3
Total air flow	m ³ /h	18960	19660	38800	38220	40440	60450
Total fan power input	kW	0,9	1,0	2,6	2,8	2,9	4,1
Total fan current	A	4,4	4,4	6,3	6,3	6,3	9,4
Weights							
Transport weight	kg	1420	1426	1522	1608	1614	2026
Operating weight	kg	1423	1429	1529	1614	1620	2040
Dimensions							
Length	mm	2660	2660	2660	2660	2660	3700
Depth	mm	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420
Sound data							
Sound pressure level ⁽⁵⁾	dB(A)	85	89	91	93	93	94
Sound power level ⁽⁶⁾	dB(A)	53	57	59	61	61	62
Power supply							
Voltage/Phase/Frequency	V/ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
General electrical data							
Maximum input power	kW	21,3	25,3	29,9	37,9	45,9	53,8
Maximum input current	A	43	50	55	69	82	100
Inrush current	A	209	230	247	281	329	280

(1) Fluid: water - in/out temperature: 12/7°C - air 35°C.

(2) Fluid: water - in/out temperature: 40/45°C - air 7°C - UR.87%

(3) Cold in/out temperature: 12/7°C – Hot in/out temperature: 40/45°C.

(4) Air temperature 35°C.

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.

GPS Kp		1452	1752	2052	2552	2852
Cooling ⁽¹⁾						
Cooling capacity	kW	143,9	173,3	202,7	253,1	284,6
Total input power	kW	46,7	57,3	69,1	87,5	99,0
Total nominal current	A	83,0	102,9	125,5	163,4	189,0
EER	-	3,1	3,0	2,9	2,9	2,9
Water flow	m ³ /h	24,7	29,8	34,9	43,5	48,9
Pressure drop	kPa	16,3	22,8	20,5	17,8	22,0
Heating ⁽²⁾						
Heating capacity	kW	165,0	202,3	230,2	283,0	325,5
Total input power	kW	44,4	55,1	64,5	78,0	91,2
Total nominal current	A	79,7	99,9	118,8	154,3	183,9
COP	-	3,7	3,7	3,6	3,6	3,6
Water flow	m ³ /h	28,4	34,8	39,6	48,7	56,0
Pressure drop	kPa	30,2	28,2	35,8	20,8	27,8
Cooling during heating ⁽³⁾						
Cooling capacity	kW	147,0	175,4	207,9	262,5	290,9
Heating capacity	kW	188,8	226,2	268,6	340,2	377,5
Total input power	kW	41,8	50,8	60,7	77,7	86,7
TER	-	8,0	7,8	7,7	7,7	7,6
Water flow	m ³ /h	32,5	38,9	46,2	58,5	64,9
Pressure drop	kPa	38,3	34,5	47,0	29,7	35,9
Water flow	mc/h	25,3	30,2	35,8	45,2	50,0
Pressure drop	kPa	17,0	23,3	21,4	18,9	22,7
Refrigerant circuits	n°	2	2	2	2	2
Compressors	n°	2	2	2	2	2
Refrigerant data R290						
Refrigerant charge	kg	18,0	24,0	24,5	30,5	36,5
Global warming potential (GWP)		3	3	3	3	3
Equivalent CO ₂ charge	kg	54,0	72,0	73,5	91,5	109,5
Axial fans ⁽⁴⁾						
Number	n°	3	4	4	5	5
Total air flow	m ³ /h	58860	75720	80040	100900	117800
Total fan power input	kW	4,2	5,5	5,7	7,3	9,6
Total fan current	A	9,5	12,7	12,6	15,8	22,6
Weights						
Transport weight	kg	2086	2480	2512	3090	3228
Operating weight	kg	2101	2494	2536	3122	3259
Dimensions						
Length	mm	3700	4850	4850	5890	5890
Depth	mm	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420
Sound data						
Sound pressure level ⁽⁵⁾	dB(A)	94	95	95	98	98
Sound power level ⁽⁶⁾	dB(A)	62	63	63	66	65
Power supply						
Voltage/Phase/Frequency	V/ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
General electrical data						
Maximum input power	kW	57,8	75,8	91,8	122	132
Maximum input current	A	106	138	165	219	232
Inrush current	A	298	350	412	574	677

(1) Fluid: water - in/out temperature: 12/7°C - air 35°C.

(2) Fluid: water - in/out temperature: 40/45°C - air 7°C - UR.87%

(3) Cold in/out temperature: 12/7°C – Hot in/out temperature: 40/45°C.

(4) Air temperature 35°C.

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.