

POLYVALENT UNITS R407C – R22

HEAT PUMP WITH 4 PIPES

WITH SCROLL COMPRESSORS



GPE 1402

GPE... Series

One or two refrigerant circuits - cooling capacity from 34 to 170 kW

The units can be installed in all the applications where there is the need to produce at the same time cold and warm water. The peculiarity of this "Polyvalent Groups" is to suit all the needs of the moment, independently from weather conditions.

These units are 4-pipes heat pumps with separate and not interchangeable circuits, supplied with an additional water/refrigerant condenser/recovery on each cooling circuit, able to entirely replace the air/refrigerant condensing coil and to produce "free" warm water, when needed.

RUNNING MODES

MODE 1: Only Cooling Mode

When the warm water production is not required, the unit runs as a water chiller and produces only cold water. With such a running mode and in order to complete the cooling process, the evaporator and the condensing coil with air-cooled fins are the exchangers in use.

MODE 2: Cooling Mode with heat recovery

When warm water is required as well, the unit can operate as water chiller with heat recovery and produce warm water at the same time, without additional costs and exploiting the heating power of the condensing process. With such a running mode and in order to complete the cooling process the evaporator and the condenser/recovery (which is water-cooled and where the condensing process takes place) are the exchangers in use.

MODE 3: Heat Pump Mode

The unit runs as an heat pump and therefore produces warm water. With such a running mode and in order to complete the cooling process, the finned condensing coil (as evaporator) and the condenser/recovery (which is water-cooled and where the condensing process takes place) are the exchangers in use.

On units with 2 circuits, it is possible to have all the above mentioned running modes at the same time on different circuits (i.e. the circuit 1 can be on Mode 1 and the circuit 2 can be on Mode 2 or 3).

Available versions:

GPE... standard version

GPE...K with ecological gas R407C charge

Made up of:

Galvanized steel frame and panels, painted with colour RAL 7032 and base frame with insulation panel (sandwich type).

High efficiency hermetic Scroll compressors (COP3,37 with ARI conditions), with low sound level (on average 6 dB(A) less than the corresponding hermetic compressors), internal heat protection, rubber-type vibration dampers and oil sump heater, where needed.

On the units with higher capacity, it is foreseen the installation of four compressors in tandem.

External heat-exchange coils, with high efficiency aluminium fins and copper pipe designed for refrigerating fluids; independent circuits.

Evaporator: for the models with one circuit, it is weld-brazed plate. For the other models, it is shell & tube one with 2 gas circuits, with copper lined pipes for a high efficiency thermal exchange.

Recovery/condenser: the models with one circuit, it is weld-brazed plate. For the other models, it is shell & tube one.

Axial fans with low fan speed, directly coupled, completed with thermal protection and low sound level blades with wing profile and safety protection grid.

Cooling circuit: manufactured with copper or steel pipes and consisting of: thermostatic valves, solenoid valves for automatic change of the different running modes, dehydrating filters, sight glass, check valves on the liquid line, safety valves, shut off valves, high and low pressure switches and gauges.

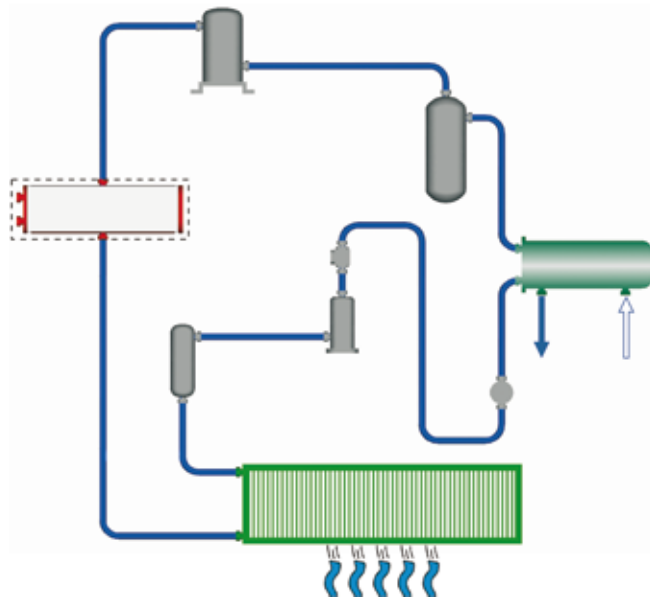
Electrical board in compliance with CE norms, complete with protection fuses, main switch and EMIPPLUS microprocessor.

Compressors hour counter.

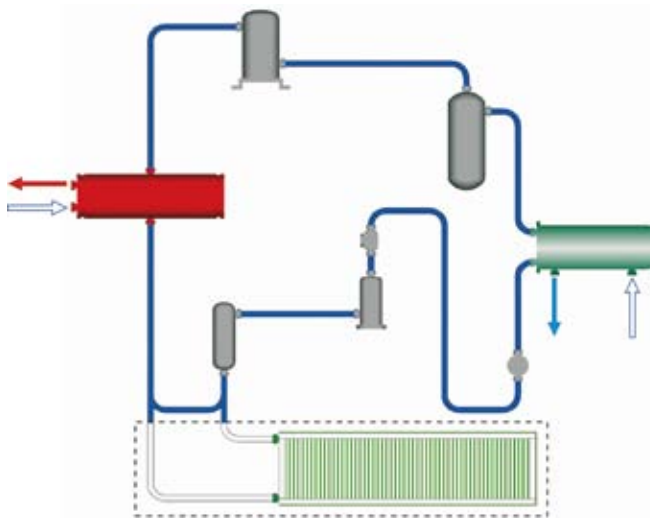
Accessories

AE	Electrical power supply different from standard
CS	Compressors inrush counter
G2	Cooling capacity control with 2 steps
G4	Cooling capacity control with 4 steps
GP	Condensing coil protection grid
IG	Watch card
IH	Serial interface RS 485
IM	Seawood packing
MF	Phase monitor
MV	Buffer tank
P1	Single pump group
P1H	Single pump group with higher head available pressure
PA	Rubber-type vibration dampers
PM	Spring-type vibration dampers
PT	Twin pump group
QR	Electrical board on opposite side
RL	Compressors overload relays
RM	Epoxy coating of condensing coil for sea environment
RR	Condensing coil with copper/copper fins
SC	Soundproofed compressors housing with standard material
VB	Brine version (water temperatures < 0 °C)

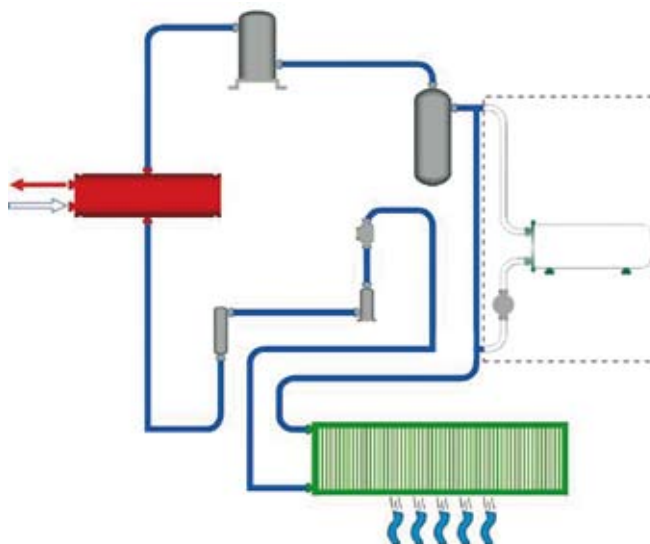
Modo 1
Mode 1



Modo 2
Mode 2



Modo 3
Mode 3



POLYVALENT UNITS R407C – R22

HEAT PUMP WITH 4 PIPES

WITH SCROLL COMPRESSORS

GPE... Technical data with refrigerant R407C

MODEL	GPE...	361 K	421 K	481 K	561 K	701 K	821 K
Only cooling operation 1)							
Cooling capacity	kW	34,3	40,3	47,7	54,8	66,2	78,0
Compressor absorbed power	kW	10,5	10,5	14,8	17,5	22,2	29,3
Compressor absorbed current	A	16,2	23,3	27,4	32,1	33,9	48,4
Only cooling operation with recovery 2)							
Cooling capacity	kW	33,8	41,1	47,1	54,9	67,3	81,8
Desuperheater capacity	kW	44,5	54,6	62,3	72,4	89,0	108,9
Compressor absorbed power	kW	10,7	13,5	15,2	17,5	21,6	27,1
Compressor absorbed current	A	16,5	22,6	27,9	32,0	33,2	45,4
Heat pump operation 3)							
Heating capacity	kW	43,0	50,6	57,2	64,3	82,4	97,2
Compressor absorbed power	kW	10,7	13,5	15,2	17,3	21,5	26,9
Compressor absorbed current	A	16,5	22,6	27,8	31,8	33,1	45,0
Scroll compressors							
Quantity	n	1	1	2	2	2	2
Circuits	n	1	1	1	1	1	1
Standard steps capacity	%	0/100		0/50/100			
Optional steps capacity	n	G2	G2	–	–	–	–
Inrush current	A	148	167	140	148	184	217
Maximum total absorbed power	kW	15,6	16,8	21,8	23,5	30,6	17,5
Maximum total absorbed current	A	29	31	41	43,6	55,1	34
Axial fans							
Quantity	n	2	2	3	3	3	3
Rotation speed	rpm	860	860	860	860	860	860
Motors power	kW	1,26	1,26	1,9	1,9	1,9	1,9
Total air flow	l/s	4720	4720	6750	6750	6460	6460
Total air flow	m ³ /h	16992	16992	24300	24300	23256	23256
Sound pressure level 4)	dB(A)	67	67	68,5	68,5	68,5	68,5
Pumps							
Available pressure with P1	kPa	144	134	137	130	122	108
Motor power with P1	kW	0,55	0,55	0,75	0,75	0,75	0,75
Available pressure with P1H	kPa	184	169	187	185	172	158
Motor power with P1H	kW	0,75	0,75	1,1	1,1	1,1	1,1
Available pressure with PT	kPa	–	–	137	140	137	166
Motor power with PT	kW	–	–	1,5	1,5	1,5	1,5
Buffer tank water volume	l	180	180	180	180	180	180
Brazed plate evaporator 1)							
Quantity	n	1	1	1	1	1	1
Water flow rate	l/s	1,64	1,92	2,28	2,62	3,16	3,73
Water flow rate	m ³ /h	5,89	6,92	8,21	9,42	11,38	13,42
Pressure drop	kPa	42,4	39,9	17	15,3	15,3	17
Brazed plate recuperator - condenser 2)							
Quantity	n	1	1	1	1	1	1
Water flow rate	l/s	2,13	2,61	2,98	3,46	4,25	5,20
Water flow rate	m ³ /h	7,66	9,40	10,71	12,45	15,30	18,73
Pressure drop	kPa	45	15	18	17	20	20
Dimensions							
Length	mm	2000	2000	2130	2130	2130	2130
Length with MV included	mm	2000	2000	2130	2130	2130	2130
Width	mm	850	850	1100	1100	1100	1100
Width with MV included	mm	850	850	1100	1100	1100	1100
Height	mm	1650	1650	1770	1770	1770	1770
Height with MV included	mm	1650	1650	1770	1770	1770	1770
Weight	Kg	520	555	745	782	834	885
Weight with empty MV included	Kg	585	620	810	847	899	950
Refrigerant charge for each circuit	Kg	13	16	20	22	24	25
Power supply				400V / 50Hz / 3 Ph + T + N			

-- = not available

1) Chilled water 7/12 °C - Glycol 0% - External air temperature 35 °C

2) Chilled water 7/12 °C - Glycol 0% - Condensing water 40/45 °C

3) Condensing water 40/45 °C - External air temperature 10 °C - 80 % HR

4) Measured at 1 m in open field (ISO 3746)

GPE... Technical data with refrigerant R407C

MODEL	GPE...	842 K	962 K	1102 K	1402 K	1602 K
Only cooling operation 1)						
Cooling capacity	kW	83,5	92,9	105,1	133,2	157,1
Compressors absorbed power	kW	27,1	31,5	37,6	44,0	58,1
Compressors absorbed current	A	45,4	57,0	67,2	78,0	96,0
Only cooling operation with recovery 2)						
Cooling capacity	kW	83,9	94,6	109,9	135,9	164,4
Desuperheater capacity	kW	110,8	125,1	144,8	178,5	218,5
Compressors absorbed power	kW	26,9	30,6	34,9	42,6	54,1
Compressors absorbed current	A	45,1	55,9	64,0	75,5	90,5
Heat pump operation 3)						
Heating capacity	kW	101,4	114,3	121,7	163,1	189,1
Compressors absorbed power	kW	26,8	30,4	34,5	42,1	53,6
Compressors absorbed current	A	44,9	55,7	63,4	74,7	89,6
Scroll compressors						
Quantity	n	4	4	4	4	4
Circuits	n	2	2	2	2	2
Standard steps capacity	n	2	2	2	2	2
Optional steps capacity	n	–	4	4	4	4
Inrush current	A	188	150	162	197	237
Maximum total absorbed power	kW	34,1	42,8	46,0	61,4	66,3
Maximum total absorbed current	A	55,3	69,3	74,4	99,2	107,0
Axial fans						
Quantity	n	3	3	3	4	4
Rotation speed	rpm	900	900	900	900	900
Motors power	kW	2,94	2,94	2,94	3,92	3,92
Total air flow	l/s	9835	9835	9835	12670	12670
Total air flow	m ³ /h	35406	35406	35406	45612	45612
Nominal absorbed current	A	5,3	5,3	5,3	7	7
Sound pressure level 4)	dB(A)	71	71	71	72	72
Pumps						
Available pressure with P1	kPa	124	118	110	116	76
Motor power with P1	kW	1,1	1,1	1,1	1,5	1,5
Available pressure with P1H	kPa	159	153	145	161	121
Motor power with P1H	kW	1,5	1,5	1,5	2,2	2,2
Available pressure with PT	kPa	149	138	130	131	86
Motor power with PT	kW	1,5	1,5	1,5	2,2	2,2
Buffer tank water volume	l	720	720	720	720	720
Shell and tube evaporator 1)						
Quantity	n	1	1	1	1	1
Water flow rate	l/s	3,99	4,44	5,02	6,36	7,50
Water flow rate	m ³ /h	14,36	15,97	18,07	22,91	27,01
Water volume	l	18,5	19	21	47	47
Recuperator - condenser 2)						
Type 5)		P	P	P	F	F
Quantity	n	2	2	2	2	2
Water flow rate	l/s	5,29	5,98	6,92	8,53	10,44
Pressure drop	kPa	60	63	59	37	43
Water volume	l	–	–	–	15,6	15,6
Dimensions						
Length	mm	2610	2610	2610	3460	3460
Length with MV included	mm	3460	3460	3460	4305	4305
Width	mm	1245	1245	1245	1245	1245
Width with MV included	mm	1245	1245	1245	1245	1245
Height	mm	2085	2085	2085	2085	2085
Height with MV included	mm	2085	2085	2085	2085	2085
Weight	Kg	1185	1325	1410	1780	1850
Weight with empty MV included	Kg	1415	1555	1640	2010	2080
Refrigerant charge for each circuit	Kg	38	42	46	49	53
Power supply				400V / 50Hz / 3 Ph + T + N		

– = not available

1) Chilled water 7/12 °C - Glycol 0% - External air temperature 35 °C

2) Chilled water 7/12 °C - Glycol 0% - Condensing water 40/45 °C

3) Condensing water 40/45 °C - External air temperature 10 °C - 80 % HR

4) Measured at 1 m in open field (ISO 3746)

5) P = Brazed plate / F = Shell and tube

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HEAT PUMP WITH 4 PIPES

WITH SCROLL COMPRESSORS

GPE... Technical data with refrigerant R22

MODEL	GPE...	361	421	481	561	701	821
Only cooling operation 1)							
Cooling capacity	kW	37,2	43,7	51,8	59,4	71,8	84,7
Compressor absorbed power	kW	9,9	9,9	14,1	16,7	21,1	27,9
Compressor absorbed current	A	15,7	22,5	26,5	31,0	32,8	46,8
Only cooling operation with recovery 2)							
Cooling capacity	kW	36,6	44,5	50,9	59,4	72,9	88,5
Desuperheater capacity	kW	46,8	57,4	65,4	76,1	93,5	114,3
Compressor absorbed power	kW	10,2	12,9	14,5	16,7	20,6	25,8
Compressor absorbed current	A	16,0	21,9	27,0	31,0	32,2	44,0
Heat pump operation 3)							
Heating capacity	kW	45,5	53,4	60,4	67,9	87,1	102,5
Compressor absorbed power	kW	10,2	12,9	14,5	16,5	20,5	25,6
Compressor absorbed current	A	16,1	21,9	27,0	30,9	32,1	43,6
Scroll compressors							
Quantity	n	1	1	2	2	2	2
Circuits	n	1	1	1	1	1	1
Standard steps capacity	%	0/100		0/50/100			
Optional steps capacity	n	G2	G2	–	–	–	–
Inrush current	A	148	167	140	148	184	217
Maximum total absorbed power	kW	15,6	16,8	21,8	23,5	30,6	17,5
Maximum total absorbed current	A	29,0	31,0	41,0	43,6	55,1	34,0
Axial fans							
Quantity	n	2	2	3	3	3	3
Rotation speed	rpm	860	860	860	860	860	860
Motors power	kW	1,26	1,26	1,9	1,9	1,9	1,9
Total air flow	l/s	4720	4720	6750	6750	6460	6460
Total air flow	m ³ /h	16992	16992	24300	24300	23256	23256
Sound pressure level 4)	dB(A)	67	67	68,5	68,5	68,5	68,5
Pumps							
Available pressure with P1	kPa	144	134	137	130	122	108
Motor power with P1	kW	0,55	0,55	0,75	0,75	0,75	0,75
Available pressure with P1H	kPa	184	169	187	185	172	158
Motor power with P1H	kW	0,75	0,75	1,1	1,1	1,1	1,1
Available pressure with PT	kPa	–	–	137	140	137	166
Motor power with PT	kW	–	–	1,5	1,5	1,5	1,5
Buffer tank water volume	l	180	180	180	180	180	180
Brazed plate evaporator 1)							
Quantity	n	1	1	1	1	1	1
Water flow rate	l/s	1,78	2,09	2,47	2,84	3,43	4,05
Water flow rate	m ³ /h	6,4	7,5	8,9	10,2	12,4	14,6
Pressure drop	kPa	50	47	20	18	18	20
Brazed plate recuperator - condenser 2)							
Quantity	n	1	1	1	1	1	1
Water flow rate	l/s	2,24	2,74	3,13	3,63	4,47	5,46
Water flow rate	m ³ /h	8,1	9,9	11,3	13,1	16,1	19,7
Pressure drop	kPa	50	16	20	19	22	22
Dimensions							
Length	mm	2000	2000	2130	2130	2130	2130
Length with MV included	mm	2000	2000	2130	2130	2130	2130
Width	mm	850	850	1100	1100	1100	1100
Width with MV included	mm	850	850	1100	1100	1100	1100
Height	mm	1650	1650	1770	1770	1770	1770
Height with MV included	mm	1650	1650	1770	1770	1770	1770
Weight	Kg	520	555	745	782	834	885
Weight with empty MV included	Kg	585	620	810	847	899	950
Refrigerant charge for each circuit	Kg	13	16	20	22	24	25
Power supply				400V / 50Hz / 3 Ph + T + N			

– = not available

1) Chilled water 7/12 °C - Glycol 0% - External air temperature 35 °C

2) Chilled water 7/12 °C - Glycol 0% - Condensing water 40/45 °C

3) Condensing water 40/45 °C - External air temperature 10 °C - 80 % HR

4) Measured at 1 m in open field (ISO 3746)

GPE... Technical data with refrigerant R22

MODEL	GPE...	842	962	1102	1402	1602
Only cooling operation 1)						
Cooling capacity	kW	90,6	100,8	114,1	144,6	170,5
Compressors absorbed power	kW	25,8	29,9	35,8	41,8	55,3
Compressors absorbed current	A	43,9	55,1	65,0	75,4	92,8
Only cooling operation with recovery 2)						
Cooling capacity	kW	90,8	102,4	118,9	147,1	177,9
Desuperheater capacity	kW	116,4	131,5	152,2	187,7	229,4
Compressors absorbed power	kW	25,6	29,1	33,3	40,6	51,5
Compressors absorbed current	A	43,7	54,1	62,0	73,2	87,8
Heat pump operation 3)						
Heating capacity	kW	107,1	120,7	128,2	172,4	199,2
Compressors absorbed power	kW	25,5	29,0	32,9	40,1	51,1
Compressors absorbed current	A	43,5	54,0	61,5	72,4	86,9
Scroll compressors						
Quantity	n	4	4	4	4	4
Circuits	n	2	2	2	2	2
Standard steps capacity	n	2	2	2	2	2
Optional steps capacity	n	–	64	64	64	64
Inrush current	A	188	150	162	197	237
Maximum total absorbed power	kW	34,1	42,8	46,0	61,4	66,3
Maximum total absorbed current	A	55,3	69,3	74,4	99,2	107,0
Axial fans						
Quantity	n	3	3	3	4	4
Rotation speed	rpm	900	900	900	900	900
Motors power	kW	2,94	2,94	2,94	3,92	3,92
Total air flow	l/s	9835	9835	9835	12670	12670
Total air flow	m ³ /h	35406	35406	35406	45612	45612
Nominal absorbed current	A	5,3	5,3	5,3	7	7
Sound pressure level 4)	dB(A)	71	71	71	72	72
Pumps						
Available pressure with P1	kPa	124	118	110	116	76
Motor power with P1	kW	1,1	1,1	1,1	1,5	1,5
Available pressure with P1H	kPa	159	153	145	161	121
Motor power with P1H	kW	1,5	1,5	1,5	2,2	2,2
Available pressure with PT	kPa	149	138	130	131	86
Motor power with PT	kW	1,5	1,5	1,5	2,2	2,2
Buffer tank water volume	l	720	720	720	720	720
Shell and tube evaporator 1)						
Quantity	n	1	1	1	1	1
Water flow rate	l/s	4,33	4,82	5,45	6,91	8,14
Water flow rate	m ³ /h	15,6	17,3	19,6	24,9	29,3
Pressure drop	kPa	32	28	42	43	32
Water volume	l	18,5	19	21	47	47
Recuperator - condenser 2)						
Type 5)		P	P	P	F	F
Quantity	n	2	2	2	2	2
Water flow rate	l/s	5,56	6,28	7,27	8,97	10,96
Water flow rate	m ³ /h	20,0	22,6	26,2	32,3	39,5
Pressure drop	kPa	66	70	65	41	47
Water volume	l	–	–	–	15,6	15,6
Dimensions						
Length	mm	2610	2610	2610	3460	3460
Length with MV included	mm	3460	3460	3460	4305	4305
Width	mm	1245	1245	1245	1245	1245
Width with MV included	mm	1245	1245	1245	1245	1245
Height	mm	2085	2085	2085	2085	2085
Height with MV included	mm	2085	2085	2085	2085	2085
Weight	Kg	1185	1325	1410	1780	1850
Weight with empty MV included	Kg	1415	1555	1640	2010	2080
Refrigerant charge for each circuit	Kg	38	42	46	49	53
Power supply		400V / 50Hz / 3 Ph + T + N				

– = not available
 1) Chilled water 7/12 °C - Glycol 0% - External air temperature 35 °C
 2) Chilled water 7/12 °C - Glycol 0% - Condensing water 40/45 °C
 3) Condensing water 40/45 °C - External air temperature 10 °C - 80 % HR
 4) Measured at 1 m in open field (ISO 3746)
 5) P = Brazed plate / F = Shell and tube