

HEAT PUMPS R407C – R22

AIR COOLED HEAT PUMPS

WITH SCROLL COMPRESSORS AND CENTRIFUGAL FANS



PAE 201 C

PAE...C Series

1 refrigerant circuit - cooling capacities from 19 to 42 kW

Heat pumps suitable for small and medium size air conditioning systems and for both water cooling and water heating plants

Designed for internal installation

Centrifugal fans

Coated with pre-painted zinc steel plates

1 cooling circuit

Summer operating conditions from +15 °C to +45 °C for standard models

Winter operation down to -4 °C

The following versions are available:

PAE...C with centrifugal fans at vertical air flow

PAE...C K version with R407C ecological gas

PAE...C U ultra-silenced version

PAE...C U K ultra-silenced version with R407C ecological gas

PAE...C O with centrifugal fans at horizontal air flow

PAE...C O K version with R407C ecological gas

PAE...C O U ultra-silenced version

PAE...C O U K ultra-silenced version with R407C ecological gas

Made up of:

High-efficiency scroll compressor (COP 3.37 under ARI conditions), with low sound level (on average 6dB(A) less than the hermetic compressors), internal heat protection, installed on rubber vibration dampers, supplied with oil sump heater when necessary.

Heat-exchange external coil with high-efficiency aluminium fins and copper pipe designed for cooling fluids.

Centrifugal fans dragged by electrical motors pulleys/belts system coupled, provided with thermal protection (short circuit and overload) and external safety protection grid.

Weld-brazed plate heat exchanger with heat insulation.

Electric panel, in compliance with CE norms, supplied with a main switch and both overload and short circuit protections at each electrical components.

The cooling circuit is composed of: 4 way valve for refrigerant circuit reverse, thermostatic expansion valves, dehydrating filter, sight glass, safety device, antifreeze thermostat, high and low pressure switches.

Unit management microprocessor for all models.

Defrost system completely controlled by microprocessor according to time/temperature logic.

The available water accessories, like pump and buffer tank, are installed inside in an housing under the unit including electric control device of the pump.

Compressors hour counter.

Accessories

1M	Higher available pressure for fan
2M	Higher available pressure for fan
AE	Electrical power supply different from standard
BF	Low temperature operation (-20 °C) with inverter fan speed regulation (for summer working operation only)
BFa	Low temperature operation (-20 °C) with inverter fan speed regulation (with 1M option) (for summer working operation only)
BFb	Low temperature operation (-20 °C) with inverter fan speed regulation (with 2M option) (for summer working operation only)
BT	Low temperature operation (-20 °C) with modulating fan speed regulation (for summer working operation only)
BTa	Low temperature operation (-20 °C) with modulating fan speed regulation (with 1M or 2M option) (for summer working operation only)
CF	Soundproofed compressors cabinet
CI	Soundproofing jackets on compressors (included on ultra-silenced version)
CS	Compressors inrush counter
GP	Condensing coil protection grid
HG	Hot gas by-pass (summer operation)
IH	RS 485 serial interface
IM	Seawood packing
MF	Phase monitor
MT	High and low pressure gauges
MV	Buffer tank/expansion vessel/safety valve/water gauge/water charge and discharge valves/air discharge valves
P1	Pump group/expansion vessel/safety valve/water gauge/water charge and discharge valves/air discharge valve
P1H	High head pump group/expansion vessel/safety valve/water gauge/water charge and discharge valves/air discharge valve
PA	Rubber-type vibration dampers
PF	Safety water flow switch on evaporator
PQ	Remote microprocessor
RA	Anti-freeze heater on evaporator
RL	Compressors overload relays
RM	Epoxy coating of condensing coil for sea environment
RR	Condensing coil with copper/copper fins
RV	Personalized RAL paint
VB	Brine version (water temperature < 0 °C)
VS	Solenoid valve

PAE...C Technical data

MODEL	PAE...C	201	241	281	361	421
Cooling capacity with R407C	kW	19,6	24,1	27,9	33,9	41,8
Absorbed power with R407C	kW	6,6	7,7	8,8	11,0	13,2
Heating capacity with R407C	kW	24,00	29,00	33,40	40,90	50,10
Absorbed power in heating with R407C	kW	6,80	7,90	9,10	11,50	13,80
Cooling capacity with R22	kW	20,7	25,0	29,3	35,6	44,0
Absorbed power with R22	kW	5,9	7,2	8,2	10,1	12,1
Heating capacity with R22	kW	25,0	30,3	33,3	43,0	52,5
Absorbed power in heating with R22	kW	6,20	7,60	8,60	10,60	12,70
Centrifugal fans						
Quantity	n	1	1	1	2*	2*
Total air flow	l/s	2.444	2.402	3.111	3.611	3.611
Total air flow	m³/h	8.800	8.650	9.000	11.200	13.000
STD Version						
Available pressure	Pa	80	80	80	80	80
Rotation speed	rpm	896	915	975	746	858
Motors power	kW	2,2	2,2	3	2,2	3
Nominal absorbed current	A	5,3	5,3	6,7	5,3	6,7
Sound pressure level 2)	dB(A)	69	69	70	67	68
1M Version						
Available pressure	Pa	120	120	120	120	120
Rotation speed	rpm	935	955	1.014	811	914
Motors power	kW	3	3	3	2,2	3
Nominal absorbed current	A	6,7	6,7	6,7	5,3	6,7
Sound pressure level 2)	dB(A)	70	70	71	68	79
2M Version						
Available pressure	Pa	200	200	200	200	200
Rotation speed	rpm	1.014	1.036	1.091	938	1.025
Motors power	kW	3	3	3	3	4
Nominal absorbed current	A	6,7	6,7	6,7	6,7	9,4
Sound pressure level 2)	dB(A)	71	71	72	69	70
Brazed plate evaporator						
Quantity	n	1	1	1	1	1
Water flow rate with R407C	l/s	0,94	1,14	1,33	1,61	2,00
Water flow rate with R407C	m³/h	3,40	4,10	4,80	5,80	7,20
Pressure drop with R407C	kPa	41	50	48	47	72
Water flow rate with R22	l/s	1,00	1,19	1,40	1,69	2,08
Water flow rate with R22	m³/h	3,60	4,30	5,00	6,10	7,50
Pressure drop with R22	kPa	43	47	47	48	71
Pumps						
Available pressure with P1	kPa	179	152	148	155	132
Motor power with P1	kW	0,55	0,55	0,75	0,75	0,75
Available pressure with P1H	kPa	239	207	198	210	262
Motor power with P1H	kW	0,55	0,75	0,75	0,75	1,1
Buffer tank water volume	l	180	180	180	180	180
Scroll compressors						
Quantity	n	1	1	1	1	1
Circuits	n	1	1	1	1	1
Standard steps capacity	%			0/100		
Nominal absorbed current	A	12,9	15,1	16,0	18,7	22,7
Maximum absorbed current	A	22	25	29	32	39
Inrush current	A	104	128	134	172	205
Total absorbed power with R407C	kW	8,8	9,9	11,8	13,2	15,2
Total absorbed power with R22	kW	7,9	9,4	11,2	12,3	15,1
Dimensions						
Length	mm	1.320	1.320	1.320	1.665	1.665
Length with MV included	mm	1.665	1.665	1.665	1.665	1.665
Width	mm	750	750	750	750	750
Width with MV included	mm	750	750	750	750	750
Height	mm	1.250	1.250	1.250	1.460	1.460
Height with MV included	mm	1.675	1.675	1.675	1.885	1.885
Weight	kg	395	406	417	499	522
Weight with empty MV included	kg	575	586	597	679	702
Refrigerant charge	kg	6	8	10	12	16
Power supply						
400V/50Hz/3 Ph+T+N						

Nominal conditions referred to:

Summer work mode: air 35 °C - chilled water 7/12 °C

Winter work mode: air 10 °C - warmed water 40/45 °C

2* = 1 tandem fans driven with 1 motor.

2) Measured at 1 m in open field (ISO 3746) with air suction and air discharge in ducts

In case an even higher available pressure is required, different from what stated above but anyway not higher than 2M, the option 1M &/or 2M must be ordered, stating clearly on the order the pressure value effectively requested on site. The factory will adjust the motor's pulley accordingly.

Notes: Option B1 allows summer operation of units (therefore with chilled water production) with external temperature lower than 15 °C

PAE...CU Technical data

MODEL	PAE...C.U	201	241	281	361	421
Cooling capacity with R407C	kW	19,9	23,6	27,9	34,8	41,2
Absorbed power with R407C	kW	6,5	8,0	8,8	11,1	13,4
Heating capacity with R407C	kW	23,90	28,90	33,50	41,10	79,90
Absorbed power in heating with R407C	kW	6,70	8,30	9,10	11,50	14,00
Cooling capacity with R22	kW	20,7	23,8	27,4	35,6	44,0
Absorbed power with R22	kW	5,9	7,1	8,3	10,1	11,9
Heating capacity with R22	kW	25,2	30,2	35,1	43,1	83,7
Absorbed power in heating with R22	kW	6,20	7,50	8,70	10,60	12,50
Centrifugal fans						
Quantity	n	1	1	2*	2*	2
Total air flow	l/s	1.750	2.000	1.930	2.660	3.861
Total air flow	m³/h	6.300	7.200	6.950	9.600	13.900
STD Version						
Available pressure	Pa	80	80	50	80	80
Rotation speed	rpm	720	818	637	711	696
Motors power	kW	1,5	1,5	1,5	1,5	3,0
Nominal absorbed current	A	3,7	3,7	3,7	3,7	7,4
Sound pressure level 2)	dB(A)	65	67	64	66	66
1M Version						
Available pressure	Pa	120	120	120	120	120
Rotation speed	rpm	776	866	728	785	752
Motors power	kW	1,5	2,2	1,5	1,5	3,0
Nominal absorbed current	A	3,7	5,3	3,7	3,7	7,4
Sound pressure level 2)	dB(A)	65	67	64	67	67
2M Version						
Available pressure	Pa	200	200	200	200	200
Rotation speed	rpm	886	963	891	925	858
Motors power	kW	1,5	2,2	1,5	2,2	4,4
Nominal absorbed current	A	3,7	5,3	3,7	5,3	10,6
Sound pressure level 2)	dB(A)	66	68	65	67	67
Brazed plate evaporator						
Quantity	n	1	1	1	1	1
Water flow rate with R407C	l/s	0,94	1,11	1,33	1,67	1,97
Water flow rate with R407C	m³/h	3,40	4,00	4,80	6,00	7,10
Pressure drop with R407C	kPa	42	48	48	50	71
Water flow rate with R22	l/s	1,00	1,14	1,31	1,69	2,08
Water flow rate with R22	m³/h	3,60	4,10	4,70	6,10	7,50
Pressure drop with R22	kPa	43	43	44	48	71
Pumps						
Available pressure with P1	kPa	178	154	148	155	133
Motor power with P1	kW	0,55	0,55	0,75	0,75	0,75
Available pressure with P1H	kPa	238	209	198	210	263
Motor power with P1H	kW	0,55	0,75	0,75	0,75	1,1
Buffer tank water volume	l	180	180	180	180	240
Scroll compressors						
Quantity	n	1	1	1	1	1
Circuits	n	1	1	1	1	1
Standard steps capacity	%			0/100		
Nominal absorbed current	A	12,7	15,4	16,1	18,9	23,0
Maximum absorbed current	A	21	24	26	31	39
Inrush current	A	103	127	131	171	205
Total absorbed power with R407C	kW	8,0	9,5	10,3	12,6	16,4
Total absorbed power with R22	kW	7,4	8,6	9,8	11,6	14,9
Dimensions						
Length	mm	1.320	1.320	1.665	1.665	2.120
Length with MV included	mm	1.665	1.665	1.665	1.665	2.280
Width	mm	750	750	750	750	778
Width with MV included	mm	750	750	750	750	996
Height	mm	1.250	1.250	1.460	1.460	1.570
Height with MV included	mm	1.675	1.675	1.885	1.885	1.995
Weight	kg	396	407	501	511	642
Weight with empty MV included	kg	576	587	681	691	872
Refrigerant charge	kg	8	9	14	14	16
Power supply						
400V/50Hz/3 Ph+T+N						

Nominal conditions referred to:

Summer work mode: air 35 °C - chilled water 7/12 °C

Winter work mode: air 10 °C - warmed water 40/45 °C

2* = 1 tandem fans driven with 1 motor.

2) Measured at 1 m in open field (ISO 3746) with air suction and air discharge in ducts

In case an even higher available pressure is required, different from what stated above but anyway not higher than 2M, the option 1M &/or 2M must be ordered, stating clearly on the order the pressure value effectively requested on site. The factory will adjust the motor's pulley accordingly.

Notes: Option B1 allows summer operation of units (therefore with chilled water production) with external temperature lower than 15 °C