

HEAT PUMPS R407C – R22

AIR COOLED WATER HEAT PUMPS

WITH SCROLL COMPRESSORS AND AXIAL FANS



PAE 421 MV + P1

PAE... 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 external installation

Axial 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...K version with R407C ecological gas

PAE...UK ultra-silenced version with R407C ecological gas

PAE... standard version

PAE...U ultra-silenced version

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.

Low rpm axial fans directly coupled provided with heat protection, low sound level blades with wing profile and 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 the unit including electric control device of the pump.

Compressors hour counter.

Accessories

AE	Electrical power supply different from standard
BT	Low temperature operation (-20 °C) with modulating fan speed regulation (for summer working operation only)
CS	Compressor 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
RP	Partial heat recovery
RR	Condensing coil with copper/copper fins
RT	Total heat recovery (it is necessary to order option BT)
RV	Personalized RAL paint
SC	Soundproofed compressor housing (included on ultra-silenced version)
VB	Brine version (water temperature < 0 °C)
VS	Solenoid valve

HEAT PUMPS R407C – R22

AIR COOLED WATER HEAT PUMPS

WITH SCROLL COMPRESSORS AND AXIAL FANS

PAE... Technical data

MODEL	PAE...	201	241	281	361	421
Cooling capacity with R407C	kW	18,1	21,5	25,6	33,1	39,2
Absorbed power with R407C	kW	6,50	8,40	9,30	10,60	13,30
Heating capacity with R407C	kW	22,90	27,90	32,50	40,80	49,00
Absorbed power in heating with R407C	kW	6,80	8,80	9,80	11,10	14,00
Cooling capacity with R22	kW	18,9	22,6	26,6	33,6	40,2
Absorbed power with R22	kW	6,20	7,50	8,40	9,80	12,10
Heating capacity with R22	kW	24,1	29,3	34,1	42,8	51,5
Absorbed power in heating with R22	kW	6,50	12,40	8,80	10,30	12,70

Axial fans

Quantity	n	2	2	2	2	2
Rotation speed	rpm	900	900	900	860	860
Motors power	kW	0,74	0,74	0,74	1,26	1,26
Total air flow	l/s	3.111	3.111	2.833	4.444	4.444
Total air flow	m ³ /h	11.200	11.200	10.200	16.000	16.000
Nominal absorbed current	A	3,4	3,4	3,4	6	6
Sound pressure level 2)	dBA	65	65	65	70	70

Brazed plate evaporator

Quantity	n	1	1	1	1	1
Water flow rate with R407C	l/s	0,86	1,03	1,22	1,58	1,86
Water flow rate with R407C	m ³ /h	3,10	3,70	4,40	5,70	6,70
Pressure drop with R407C	kPa	35	40	41	45	65
Water flow rate with R22	l/s	0,89	1,08	1,28	1,61	1,92
Water flow rate with R22	m ³ /h	3,20	3,90	4,60	5,80	6,90
Pressure drop with R22	kPa	36	39	42	43	61

Pumps

Available pressure with P1	kPa	162	149	127	144	134
Motor power with P1	kW	0,55	0,55	0,55	0,55	0,55
Available pressure with P1H	kPa	207	194	167	184	169
Motor power with P1H	kW	0,55	0,55	0,55	0,75	0,75
Buffer tank water volume	l	80	80	80	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	12,2	14,9	16,7	18,5	23,3
Maximum absorbed current	A	20,4	23,4	32,4	41,0	41,0
Inrush current	A	102	133	133	141	204
Total absorbed power with R407C	kW	7,7	9,7	10,6	12,4	15,1
Total absorbed power with R22	kW	7,5	8,7	9,7	11,7	13,9

Dimensions

Length	mm	1.600	1.600	1.600	2.000	2.000
Width	mm	750	750	750	850	850
Height	mm	1.260	1.260	1.260	1.650	1.650
Weight	kg	250	255	295	400	415
Weight with MV included	kg	300	305	345	465	480
Refrigerant charge	kg	5	6	8	13	14

Power supply

400V/50Hz/3Ph + N + T

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

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

PAE...U Technical data

MODEL	PAE...U	201	241	281	361	421
Cooling capacity with R407C	kW	17,6	21,7	26,6	32,1	38,2
Absorbed power with R407C	kW	6,4	8,3	8,7	11,0	14,0
Heating capacity with R407C	kW	23,00	28,00	33,00	40,00	48,00
Absorbed power in heating with R407C	kW	6,70	8,70	9,10	11,60	14,70
Cooling capacity with R22	kW	19,3	23,4	28,0	34,0	41,0
Absorbed power with R22	kW	6,0	7,3	7,9	10,0	12,0
Heating capacity with R22	kW	24,2	29,4	34,6	42,0	50,4
Absorbed power in heating with R22	kW	6,30	7,70	8,30	10,50	12,60

Axial fans

Quantity	n	2	2	2	2	3
Rotation speed	rpm	680	680	650	650	650
Motors power	kW	0,44	0,44	0,62	0,62	0,93
Total air flow	l/s	2.222	1.944	3.111	31.111	4.833
Total air flow	m ³ /h	8.000	7.000	11.200	11.200	17.400
Nominal absorbed current	A	2,2	2,2	3,1	3,1	4,7
Sound pressure level 2)	dBA	58	58	62	62	64

Brazed plate evaporator

Quantity	n	1	1	1	1	1
Water flow rate with R407C	l/s	0,83	1,03	1,28	1,53	1,83
Water flow rate with R407C	m ³ /h	3,00	3,70	4,60	5,50	6,60
Pressure drop with R407C	kPa	34	41	44	43	62
Water flow rate with R22	l/s	0,92	1,11	1,33	1,61	1,94
Water flow rate with R22	m ³ /h	3,30	4,00	4,80	5,80	7,00
Pressure drop with R22	kPa	38	42	46	44	63

Pumps

Available pressure with P1	kPa	162	149	127	144	134
Motor power with P1	kW	0,55	0,55	0,55	0,55	0,55
Available pressure with P1H	kPa	207	194	167	184	169
Motor power with P1H	kW	0,55	0,55	0,55	0,75	0,75
Buffer tank water volume	l	80	80	180	180	180

Scroll compressors

Quantity	n	1	1	1	1	1
Circuits	n	1	1	1	1	1
Standard steps capacity	n	0/100				
Nominal absorbed current	A	12,5	14,8	16,0	19,0	24,0
Maximum absorbed current	A	20	23	24	29	33
Inrush current	A	101	132	133	178	203
Total absorbed power with R407C	kW	7,4	9,3	9,9	12,2	15,5
Total absorbed power with R22	kW	7,0	8,3	9,1	11,2	13,5

Dimensions

Length	mm	1.600	1.600	2.000	2.000	2.130
Width	mm	750	750	850	850	1.100
Height	mm	1.260	1.260	1.650	1.650	1.760
Weight	kg	256	261	370	400	570
Weight with MV included	kg	305	310	435	465	635
Refrigerant charge	kg	5	8	13	13	12

Power supply

400V/50Hz/3Ph + N + T

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

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