EVEREST 290

# PAE Kp

## AIR COOLED MULTIFUNCTION MODULAR UNITS FOR 2-PIPE SYSTEMS FOR OUTDOOR INSTALLATION

WITH SCROLL COMPRESSORS AND AXIAL FANS

Cooling capacity from 66 kW / Heating capacity from 88 kW

R290

AIR

EC

ERP 2021

CONTO TERMICO 2.0


## VERSIONS

**PAE Kp -** standard version

EVEREST R290 - PAE Kp series air/water heat pump is a modular monoblock unit for outdoor installation. It is particularly suitable for residential, commercial, and industrial applications that require the production of hot water at high temperatures, at the highest efficiency levels possible.
This unit is specifically designed to reach optimal efficiency levels in heating mode, being able to operate down to outdoor air temperatures of -20°C and ensuring hot water production up to 70°C.

The unit design minimizes overall dimensions while ensuring high cooling performance. This is achieved through the use of innovative and high-quality components.
Scroll compressors are optimized for high compression ratios. They are used in tandem configuration in conjunction with electronic control of the airflow rate on the source side.

This enables the achievement of high seasonal efficiency ratings.

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.

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
The structure, strong and compact, is made of a base and frame in high-thickness galvanized steel elements assembled with galvanized steel rivets. All galvanized steel parts placed externally are protected on the surface level with an oven powder coating system in RAL 7035 colour. The basement is designed in order to allow the unit to be forked and handled by standard lifting devices. The refrigerant circuit (except for the source side exchanger) is hermetically sealed from the rest of the unit. Internally, it also contains a refrigerant leakage sensor. In case of severe sensor alarm, the power supplied to all equipment is interrupted, except for the ATEX extraction fans, which activate in order to remove the potentially explosive atmosphere from the cabinet.

### COMPRESSOR
The compressors, specially designed to operate with R290, are Scroll type with orbiting spirals, optimized for heat pump operating mode and high compression ratios. They are installed in tandem configuration, mounted on rubber isolation dampers, and equipped with direct-start engines cooled by the suctioned refrigerant gas. They are also fitted with built-in thermistor protection with manual reset, which safeguards them from overloads. The compressors are charged with PAG oil and fitted with crankcase heaters. Their terminal block has an IP54 protection rating. The on-board microprocessor controls the activation and deactivation of the compressors, which therefore regulates the thermo-cooling power delivered.

### HEAT EXCHANGER
The heat exchanger is stainless steel "single-circuit" plate type, thermally insulated by a flexible closed-cell insulating mat of high thickness and UV-resistant. The evaporator is also equipped with a safety flow switch on the water flow side that does not allow the unit to operate in case of lack of water flow rate in the heat exchanger.

### COILS
The coils are made with micro-finned copper pipes arranged in staggered rows and mechanically expanded inside an aluminium-finned pack with hydrophilic treatment. The fin shape ensures maximum heat exchange efficiency. The innovative mini-channel technology, besides guaranteeing maximum performance in terms of heat exchange, allows the refrigerant charge to be at the minimum necessary values for the correct operation of the unit. The maximum operating pressure on the refrigerant side of the heat exchange coils corresponds to 31 bar relative.

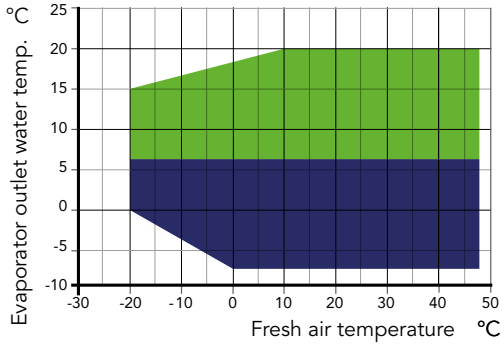
### FANS
Axial fans, with external rotor directly coupled to a three-phase electronically commutated motor (EC) they have the possibility of a continuous regulation of the speed by means of a 0-10V signal completely managed by the microprocessor. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. Thanks to a more accurate adjustment of air flow, they allow operation of the unit with external temperature down to -20 °C.

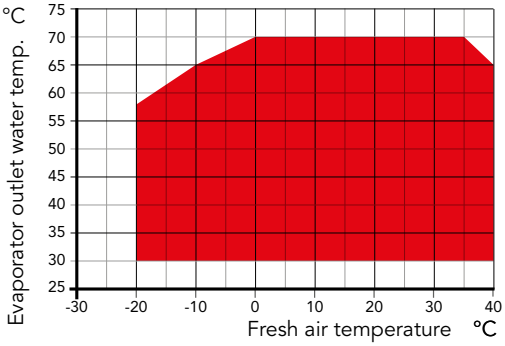
### COOLING CIRCUIT
The cooling circuit includes a 4-way cycle reversing valve, liquid receiver, liquid/gas separator, and electronic thermostatic expansion valves operating in parallel (to allow the unit to function constantly along the entire working range). It also includes a liquid passage and humidity indicator, filter drier, safety valve, high-pressure switches with manual and automatic reset, service valve for the addition of the refrigerant, and anti-freeze probe.

### HYDRAULIC CIRCUIT
The hydraulic circuit consists of a 2-pole centrifugal electric pump. It allows water to circulate inside the unit, while a check valve prevents the recirculation in case of a switched-off pump and unit combined with others running on the same water circuit. The water pipes inside the unit and the Victaulic joints are factory insulated with thermally insulating material of proper thickness.

### ELECTRICAL BOARD
The electrical board is designed in accordance with the European standards 61439-1 EN 60204. Its structure is watertight and it contains all the components of the control system, those required for starting the unit, and the thermal protection of the electric motors, connected and factory-tested.
It houses all the power and control components: the microprocessor electronic board, with keyboard and display for the visualization of the various functions, main disconnecting switch for the door lock, and isolation transformer for the auxiliary circuit supply.
It also contains circuit breakers, fuses, and contactors for the compressor and fan motors, the terminals for the cumulative alarms and remote ON/OFF, the terminal board of the spring-type control circuits, and the possibility of connection to BMS management systems.
In case of a lack of ventilation in the compressor compartment, the unit blocks all the electrical drives.

# OPERATING RANGE




Cooling mode

Cooling mode withglycol

Heating mode



EMICON
INNOVATION AS ENERGY

# ACCESSORIES

| Everest 290 - PAE Kp | | |
|---|---|---|
| Amperometer + Voltmeter | A+V | o |
| Soundproofing jacket on compressors | CI | o |
| Compressors inrush counter | CS | o |
| Refrigerant leak detector | DR | • |
| Axial fans with electronically commutated motor | EC | • |
| Anti-corrosive electro coating protection of condensing coils | ECP | o |
| High pressure double safety valve | HRV2 | o |
| Victaulic insulation on pump side | I1 | • |
| RS 485 Serial interface | IH | o |
| TCP/IP Protocol serial interface | IWG | o |
| Water collector kit without insulation | KCA | ◊ |
| Water collector insulation kit | KCC | ◊ |
| Gateway board kit up to 5 modules | KG5 | ◊* |
| Gateway board kit from 6 to 10 modules | KG10 | ◊* |
| Gateway board kit up to 5 modules provided with hiweb | KGH5 | ◊ |
| Gateway board kit from 6 to 10 modules provided with hiweb | KGH10 | ◊ |
| Gateway kit up to 5 units complete with Wi-Fi router | KGR5 | ◊ |
| Gateway kit up to 5 units complete with Wi-Fi router | KGR10 | ◊ |
| Power/junction board kit up to 5 modules | KP5 | ◊ |
| Power/ junction board kit from 6 to 10 modules | KP10 | ◊ |
| Kit tablet interface | KTA | ◊ |
| Victaulic cap + socket kit/weld | KTT | ◊ |
| Phase monitor | MF | • |
| Handling with lifting hooks | MG | o |
| Handling brackets for forklift | MM | • |
| Pressure gauges | MT | o |
| Single pump | P1 | • |
| Single pump warm user side | P1C | -- |
| Single pump cold user side | P1F | -- |
| Rubber-type vibration dampers | PA | ◊ |
| Spring-type vibration dampers | PM | ◊ |
| Remote display - Single-module | PQS | ◊ |
| Remote display - Multiple modules | PQM | ◊ |
| Anti-freeze heater on evaporator | RA | o |
| Compressor overload relays | RL | • |
| Copper/Copper coil | RR | o |
| Electronic thermostatic valve | TE | • |
| Brine Version | VB | o |
| Heating cable on internal water pipes | VH | o |

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

* Compulsory for modular system

# TECHNICAL DATA

| Everest 290 - PAE Kp | | |
|---|---|---|
| **Cooling** [1] | | |
| Cooling capacity (EN14511) | kW | 66,3 |
| Total input power (EN14511) | kW | 26,4 |
| Total nominal current | A | 50,8 |
| EER (EN14511) | - | 2,51 |
| Water flow | $m^3/h$ | 11,3 |
| Pressure drop | kPa | 27,4 |
| Circuit | n° | 1 |
| Compressors | n° | 2 |
| **Heating** [2] | | |
| Heating capacity (EN14511) | kW | 88,9 |
| Total input power (EN14511) | kW | 22,2 |
| Total nominal current | A | 45,9 |
| COP (EN14511) | - | 4,00 |
| SCOP [5] | - | 3,87 |
| Water flow | $m^3/h$ | 15,4 |
| Pressure drop | kPa | 43,6 |
| **Refrigerant data R290** | | |
| Refrigerant charge | kg | 6,1 |
| Global warming potential (GWP) | | 3 |
| Equivalent $CO_2$ charge | kg | 18,3 |
| **Axial fans** [2] | | |
| Number | n° | 2 |
| Total air flow | $m^3/h$ | 32480 |
| Total fan power input | kW | 1,6 |
| Total fan current | A | 3,0 |
| **Weights** | | |
| Transport weight | kg | 835 |
| Operating weight | kg | 840 |
| **Dimensions** | | |
| Length | mm | 2560 |
| Depth | mm | 1100 |
| Height | mm | 2450 |
| **Sound data** | | |
| Sound pressure level [3] | dB(A) | 87 |
| Sound power level [4] | dB(A) | 55 |
| **Power supply** | | |
| Voltage/Phase/Frequency | V/ph/Hz | 400/3/50 |
| **General electrical data** | | |
| Maximum input power | kW | 44,0 |
| Maximum input current | A | 79,2 |
| Inrush current | A | 231,2 |

(1) Fluid: water - in/out temperature: 12/7°C - air 35°C.
(2) Fluid: water - in/out temperature: 30/35°C - air 7°C - UR.87%
(3) Sound power level in accordance with ISO 3744. (In heating mode at conditions specified in point 2).
(4) Sound pressure level at 10 mt from the unit in free field conditions in accordance with ISO 3744.
(5) Average conditions, low temperature, fixed - REG. EU 813/2013.