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Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

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MPA

# HiRef

Innovators above  
the standards

SERVICES

DATA CENTER

INDUSTRY



**Multipurpose class A air condensed heat pumps**

# MPA

with scroll compressors

Range: 59.1–324.7 kW



The new MPA class A multipurpose units are air/water units in energy class A for both cooling and heating, available for use with R410A refrigerant or, in the “A2L” version, with low environmental impact R454B refrigerant. The MPA range is designed to manage the conditioning of industrial plants and thermal loads in technological applications, where 24/7 reliability in all working conditions, one of the assets of these units, is a critically important requirement. The MPA range uses latest generation scroll compressors, braze-welded plate exchanger optimised for use with high pressure refrigerants (R410A/R454B) and axial fans suitable for outdoor installation.

## Main advantages

### Plate heat exchangers

The MPA range uses braze-welded plate exchangers with asymmetrical channels, suitable for the use of high and medium pressure refrigerant gases. The configuration with asymmetrical channels allows high heat exchange efficiencies to be reached while maintaining low pressure drops on the water side - which results in reduced pumping costs at both full and partial load.



### Maximised energy efficiency

The units of the MPA range fall within the energy efficiency class A, both in cooling and in heating mode. This is thanks to a careful selection of internal components, which also includes the adoption of innovative high efficiency scroll compressors with direct start, permanent magnet motor technology. The high modulation range guaranteed by the multi-scroll technology allows cooling/heating requirements to be met at any time, minimising energy waste and increasing seasonal efficiency. The high degree of partial load operation (up to 11% of the rated power), combined with water flow rate modulation (up to 20% of the nominal flow) allows operating costs and system maintenance costs to be reduced.

### Smart defrosting

A factor that heavily weighs on the costs of managing the entire plant is finned coil defrosting during wintertime operation. The special management of the defrosting cycle of MPA units minimises the time to completion and ensures that defrosting is only performed when strictly necessary, guaranteeing greater heating efficiency. The presence of two completely independent thermodynamic circuits ensures uninterrupted operation also during the defrosting phase, with practically no thermal discomfort for the user.



## Technological components



### Multi-protocol communication interface

HiRef units can be integrated with the customer's external supervision Building Management System (BMS), using the most popular communication protocols, including Modbus RTU, Modbus/IP, BacNet, LonWorks, SNMP.



### Axial fans

In axial fans air moves in a parallel direction to the rotation axis and allows large air flows to be processed. Thanks to their low head compared to radial fans, they are used on remote condensers and on components with free outlet into the atmosphere, where there are no high pressure drops due, for example, to ducting.



### Corrosion resistant material

The HiRef outdoor units are protected by a metal structure resistant to corrosion and weathering. They are also made of galvanised steel sheet, with epoxy-polyester powder coating, oven-polymerised at 180°C, to offer a C3 degree of protection. On request, it is possible to order specific paint finishing treatments or a metalwork structure built entirely in stainless steel, to obtain a higher degree of protection from high impact adverse weather events.



### Class A

Internal high-tech components suitably chosen and sized allow the units to operate with outstanding levels of efficiency.



### Fast restart

The fast restart function (on request) allows the unit to restart quickly after a mains power outage. This optional feature is available with dual power to minimise restart times.



### A2L Ready

Some ranges of liquid chillers, in addition to safety class A1 refrigerants R410A and R134a, can also be supplied with class A2L slightly flammable refrigerants with low environmental impact R454B and R1234ze. HiRef makes these product sub-ranges available also in the "A2L Ready" version, filled with a safety class A1 refrigerant, factory-ready and equipped with all the necessary safety sensors to allow, if the customer requests it, fast refrigerant switching at a later stage.



### Low GWP refrigerant

The Global Warming Potential (GWP) index is a numerical indicator that identifies the environmental impact of a substance. It measures the extent to which a gas contributes to the greenhouse effect, in relation to carbon dioxide (CO<sub>2</sub>) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO<sub>2</sub> corresponding to the environmental impact of the release of a refrigerant gas into the atmosphere. The use of low GWP refrigerants, such as R513A, R454B, R1234ze, CO<sub>2</sub>, allows the environmental impact of air conditioning systems to be significantly reduced.



### Scroll compressors

Scroll compressors include a mobile scroll, driven by the motor, which completes orbital revolutions and a fixed scroll that is coupled to it. The orbital motion creates a series of gas pockets that move from one scroll to the other. When moving closer to the centre of the scroll, where exhaust takes place, the gas is compressed to smaller and smaller volumes until the desired delivery pressure is reached. Scroll technology improves volumetric efficiency and flow continuity, reduces noise and leakage and eliminates harmful volumes and downtime.



### Plate heat exchanger

Brazed plate heat exchangers ensure efficient heat transfer with minimised footprint, eliminate the need for thick frame plates and seals, and ensure high thermal power density. They have a long life cycle, are maintenance-free and withstand both high temperatures and extremely high pressures. This type of exchanger is used in a wide range of applications including cooling, heating, evaporation and condensation.

## Available versions



POLYVALENT FOR  
2-PIPE SYSTEM



POLYVALENT FOR  
4-PIPE SYSTEM

## Types of system



AIR/WATER



## Vantaggi aggiuntivi

- 3 different soundproofing setups available: Standard, Low Noise and Super Low Noise
- Available versions: multi-purpose for 2-pipe system (M) and multi-purpose for 4-pipe system (P)
- Class A units in both chiller and heat pump modes
- Radial EC motor fans (optional)
- Electronic expansion valve
- Easy accessibility thanks to the optimisation of the internal space
- Programmable microprocessor control with proprietary software
- Compliance with ERP regulations

## Technical table

MPA		061PS	071PS	081PS	101PS	114PS	124PS	144PS	164PS	194PS	214PS	244PS	
<b>USER WATER VALUES 12/7°C, 35°C OUTSIDE AIR, 40% U.R.</b>													
<b>COOLING CAPACITY</b>	<b>kW</b>	61.2	75.3	88.3	102.4	118.2	127	149.6	162.5	187.7	222.6	250.4	
<b>TOTAL POWER INPUT</b>	<b>kW</b>	16.9	21.4	25.6	29.7	33.8	35.9	43.3	47.2	55.9	71	80	
<b>EER</b>	-	3.62	3.53	3.44	3.45	3.5	3.54	3.46	3.44	3.36	3.14	3.13	
<b>SEPR</b>	-	5.99	5.93	5.99	5.83	6.03	6.07	6.01	6.1	6.18	5.92	6.09	
<b>SEER</b>	-	4.7	4.55	4.52	4.66	5.14	5.06	5.05	5.15	5.15	5	4.96	
<b>ESEER</b>	-	4.5	4.37	4.34	4.47	4.88	4.79	4.78	4.86	4.88	4.72	4.67	
<b>UTILITY WATER TEMPERATURE 12/7°C, RECOVERY WATER TEMPERATURE 40/45°C</b>													
<b>COOLING CAPACITY</b>	<b>kW</b>	59.1	74.5	89.2	101.2	116.9	124.2	150	162.5	191	227.2	258	
<b>THERMAL POWER</b>	<b>kW</b>	73.9	93	111	126.9	146.5	155.2	186.8	203.1	238.5	286.3	324.7	
<b>TOTAL POWER INPUT</b>	<b>kW</b>	15.6	19.5	23.1	27.2	31.5	32.8	39	43	50.6	62.9	71.1	
<b>COP TOTALE</b>	-	8.54	8.58	8.68	8.38	8.37	8.51	8.64	8.5	8.49	8.16	8.2	
<b>USER WATER VALUES 40/45°C, 7°C OUTSIDE AIR, 89% U.R.</b>													
<b>THERMAL POWER</b>	<b>kW</b>	61.5	75.5	87.2	102.5	123.9	130.4	149.9	163	186.9	227.6	265.1	
<b>TOTAL POWER INPUT</b>	<b>kW</b>	17.5	21.1	24.8	29.2	33.8	36.7	42.1	46.3	53.2	64.8	75.3	
<b>COP</b>	-	3.51	3.57	3.51	3.51	3.67	3.55	3.56	3.52	3.51	3.51	3.52	
<b>SEER</b>	-	4	4.27	4.19	4.33	4.26	4.16	4.19	4.22	4.37	4.41	4.51	
<b>SOUND POWER LEVEL</b>	<b>dB</b>	81	83	86	83	84	86	87	88	89			
<b>SOUND POWER LEVEL LOW NOISE</b>	<b>dB</b>	76	78	81	78	80	82	84	85				
<b>DIMENSIONS [LxHxD]</b>	<b>mm</b>	2792x1735x1183			3540x1735x1183			3540x1846x1653			3540x2330x1653		4206 x2330 x1653

Also available with 60 Hz power supply | Cold user In water temperature 12°C | Cold user Out water temperature 7°C | Hot user In water temperature 40°C | Hot user Out water temperature 45°C

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