

Technical Catalogue

# HERA



Air to water reversible Heat Pumps for outdoor installations

Nominal heating capacity: 165-666 kW

Nominal cooling capacity: 150-398 kW



**EK**

**EUROKLIMAT**  
Cooling System Solutions

# HERA Advantages

HERA Air to water reversible heat pumps offer you optimized natural solutions combining many advantages in a compact package.

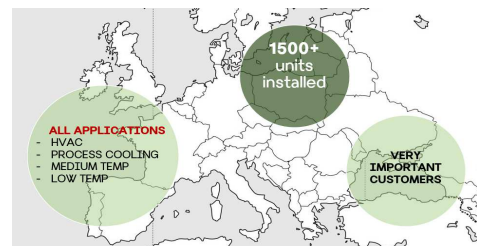
## RELIABILITY

Propane's refrigerating properties has been well known since the early twentieth century.

**Its low density and its thermodynamic characteristics** allow a reduction in charge and relatively low working pressures.

Moreover it offers a very **wide range of applications**, so it can be used in refrigeration as well as in conditioning or heating of buildings.

**Euroklimat has more than 12 years' experience with R290 chillers** and more than 500 units installed throughout Europe for all applications



## EFFICIENCY

Extremely **high-efficiency** inverter compressor technology.

Inverter compressor technology offers new opportunities for air conditioning systems, first of all in terms of energy efficient buildings, reduced energy consumption and lower running costs.

Continuous adaptation to heating or cooling demand provides higher energy savings and accurate temperature control. All Models of the HERA product range are **Eco- Design Ready**.

The EU Ecodesign Directive adopted in 2009 provides rules for improving the environmental performance of products by setting out minimum energy efficiency mandatory requirements for specific product groups.

Air-to-water heat pump				EKO EUROKLIMAT			
According to Commission Regulation (EU) 813/2013 implementing Directive 2009/22/EC "Ecodesign"							
Table 2 - Information requirements for heat pump space heaters							
Modelled:		HERA H 191A/1000/10/10/5-5-C					
Air-to-water heat pump:		Yes					
Water-to-water heat pump:		No					
Duct-to-water heat pump:		No					
Duct-to-air heat pump:		No					
Duct-to-ground heat pump:		No					
Duct-to-air/water heat pump:		No					
Duct-to-air/water/ground heat pump:		No					
Heat pump combination heater:		No					
Parameters shall be declared for average climate conditions							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	52	kW	Seasonal space heating energy efficiency	$\eta_s$	100	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T <sub>o</sub>				Declared coefficient of performance for part load at indoor temperature 20 °C and outdoor temperature T <sub>o</sub>			
T <sub>o</sub> = 7 °C	HPH	45.9	kW	T <sub>o</sub> = 7 °C	COP <sub>pl</sub>	2.25	—
T <sub>o</sub> = 5 °C	HPH	45.8	kW	T <sub>o</sub> = 5 °C	COP <sub>pl</sub>	3.04	—
T <sub>o</sub> = 3 °C	HPH	46.7	kW	T <sub>o</sub> = 3 °C	COP <sub>pl</sub>	3.79	—
T <sub>o</sub> = 12 °C	HPH	50.0	kW	T <sub>o</sub> = 12 °C	COP <sub>pl</sub>	4.90	—
T <sub>o</sub> = biivalent temperature	HPH	51.7	kW	T <sub>o</sub> = biivalent temperature	COP <sub>pl</sub>	2.21	—
T <sub>o</sub> = operation limit temperature	HPH	51.7	kW	T <sub>o</sub> = operation limit temperature	COP <sub>pl</sub>	2.21	—
Biivalent temperature	T <sub>bi</sub>	-10	°C	Operation limit temperature	TOL	-10	°C
Integration coefficient	C <sub>in</sub>	0.9	—	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than "active mode"							
Off mode	P <sub>off</sub>	0.000	kW	Clockwise heater mode	P <sub>ch</sub>	0.140	kW
Thermostat-off mode	P <sub>th</sub>	0.000	kW	Standby mode	P <sub>st</sub>	0.000	kW



# HERA Advantages

## GREEN TECHNOLOGY

Hydrocarbons like propane, and natural refrigerants in general, are particularly suitable for installation in European countries, where the attention to environmental issues and the commitment to reduce CO2 emissions are constantly growing.

**R290 is a long-term solution:** thanks to its very Low GWP (GWP R290 = 3) it's suitable to be used up to 2030 without any restriction connected to F-Gas Regulation.



## HIGH SAFETY

R290 (propane) is a nontoxic flammable refrigerant.

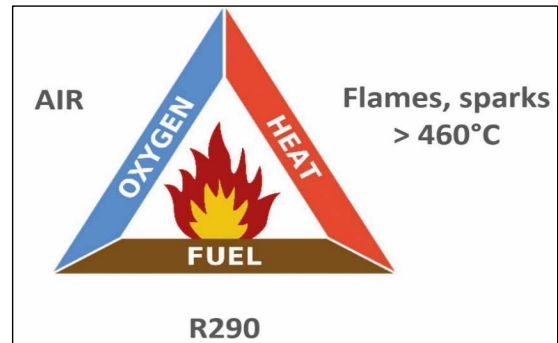
To ensure the **maximum level of safety**, an **Ex-rated Gas detector** is installed as a standard on all units. All AURA models are designed and manufactured with the aim to ensure the containment of propane. In case of **R290 leakage the emergency fan** is activated, allowing the dilution of propane and conveying the air/propane mixture towards the air outlet, which can be obviously conveyed if necessary. Also the safety valve(s), when fitted, is (are) conveyed outside the unit. Additionally, the separate compartment of the electrical panel ensures very high safety levels.



# Natural refrigerant Propane & flammability

Interest and application of hydrocarbon (HC) refrigerants is growing, especially now that the global warming impact of refrigerants is becoming an increasingly important aspect for the refrigeration and air conditioning industry.

It is widely known that HCs are excellent refrigerants in terms of performance and because of their negligible environmental impact aspects. However, it is generally acknowledged that their main hindrance is related to their flammability.



## If you control these components, fire can be avoided

To achieve this, Euroklimat has considered three general guidelines:



### Containment of the substance (propane – R290)

- HERA units have leak-tight refrigerant circuits, sufficiently robust throughout the unit's lifetime.
- Pipework is designed to have as few pipe joints as possible.
- All the materials are fully compatible with the HC refrigerant.



### Avoidance of ignition sources

- All electrically powered components are switched off in case of leakage, exception made for the gas detector and the emergency fan.
- Electrical panel is fitted in a separate compartment.
- Cable glands are at least IP65 and units have a double-barrier.



### Use of leak detector & ventilation system

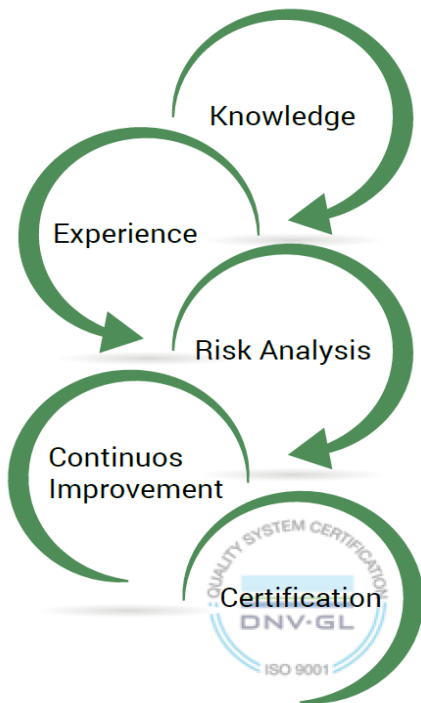
- Every unit is equipped with a stand-alone gas detection system.
- The sensor is ATEX Certified and is pre-calibrated at the factory. The sensor must be calibrated at least once a year.
- The fan is automatically activated in case of unlikely leak of propane.

## Protection of workers that may come into contact with flammable atmospheres in the workplace.

This may be achieved through leak-tight design, ventilation and appropriate protective systems (for example portable leak detectors).

Where a flammable atmosphere can arise, people responsible for the positioning and/or installation of the equipment must ensure that a detailed risk assessment of the installation area has been done.

# Safety



## Euroklimat Approach

- In-depth knowledge of the basic principles for the safe use of flammable HC refrigerants.
- Study of the safe design of refrigeration circuits using flammable refrigerants.
- More than 12 years-experience on R290 applications in several countries.

Constant improvement of the risk analysis to:

- Ensure that a detailed safety evaluation has been carried out.
- Enable the identification of ways and means to improve the level of safety of the systems and equipment, by way of detailed investigations of all of the factors that affect the risk.

ISO 9001 Quality certification in order to:

- Ensure the customer a certification path
- Run the validation process of the project pre-market

## Containment of R290

With the aim of further improving the safety level of the units and ensuring a simpler evaluation of the installation, Euroklimat developed the new AURA range with a basic safety principle based on the containment of the flammable substance.

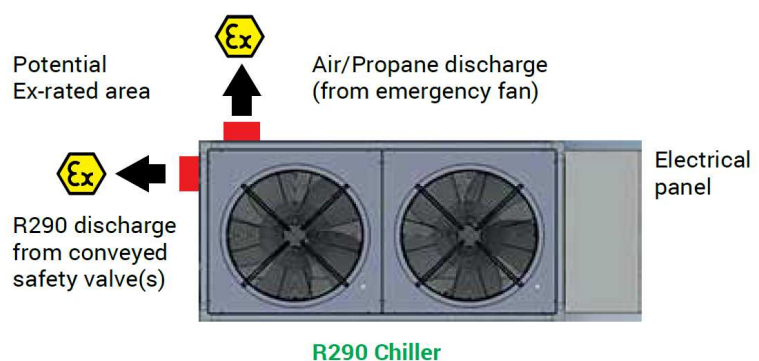
Containment of the substance is obtained by:

- Closed box in which all the refrigerant-containing components (with the obvious exception of the condensing coils) are fitted
- Gas detector – ATEX certified detection system
- Extraction fan – EC type
- Conveyed safety valve(s), made in such a way that in case of valve(s) opening, the extractor fan is activated.

In case of leakage, the above-mentioned components allow the ventilation of the closed box and the dilution of propane below the Lower Flammable Limit.

This system ensures an **easier risk assessment of the unit's installation area.**

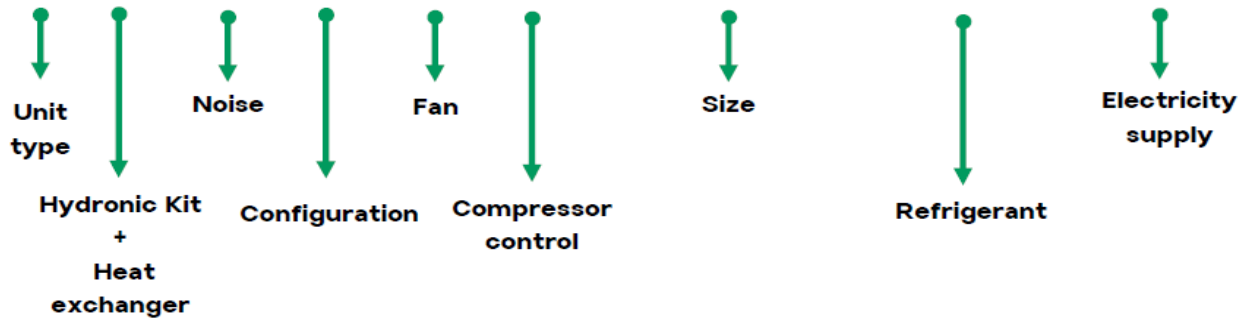
Potential Ex-rated area may be generated at the discharge of safety valve(s) and at the discharge of the emergency fan (see picture below): if necessary, the installer can easily convey these two elements towards a safe area.



# HERA configurations

The below legend allows you to easily select the proper configuration of HERA heat pumps.

**HERA H BP/LN/AS/EC/II 195-2-2 PV R290 400/3/50**



**Unit type:**

**H** = Air/Water Heat Pump

**Configuration:**

**AS** = Allestimento standard  
**DS** = Desuperheater  
**SP** = Special configuration

**Size:**

195-2-2 PV  
 ...  
 710-4-4 PV

**Hydronic Kit + Heat exchanger:**

**B** = Base  
**P** = Base with pump  
  
**P** = Plates

**Fan:**

**EC** = EC Fan

**Refrigerant:**

**R290** = Propane

**Noise:**

**LN** = Low Noise  
**SL** = Super Low Noise  
**XL** = Extra Low Noise

**Compressor control:**

**II** = VFD Compressor

**Electricity supply:**

400/3N/50  
 400/3/50

**BASE-P MP 1-0 OO**

**Hydronic Kit:**

**Base-P** = BASE solution with electrical pump

**Control:**

**OO** = ON-OFF control  
**II** = VFD control

**Pressure Head:**

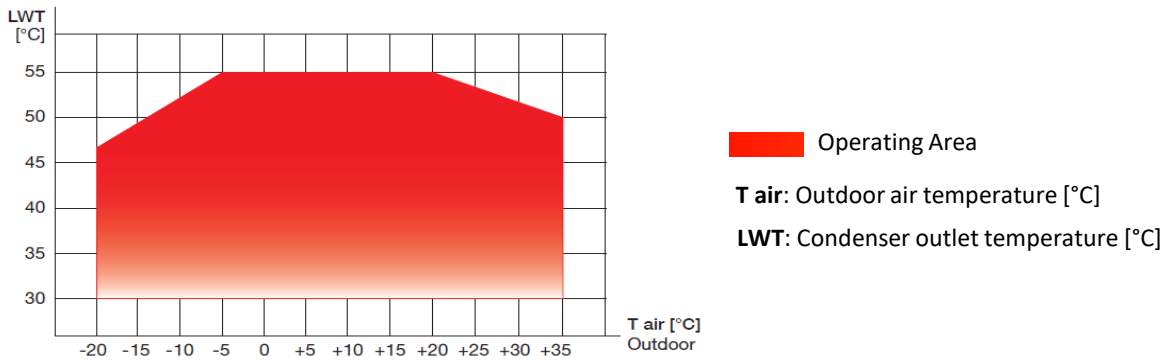
**LP** = Low Pressure head (150 kPa)  
**MP** = Medium Pressure head (300 kPa)

**Number of pumps:**

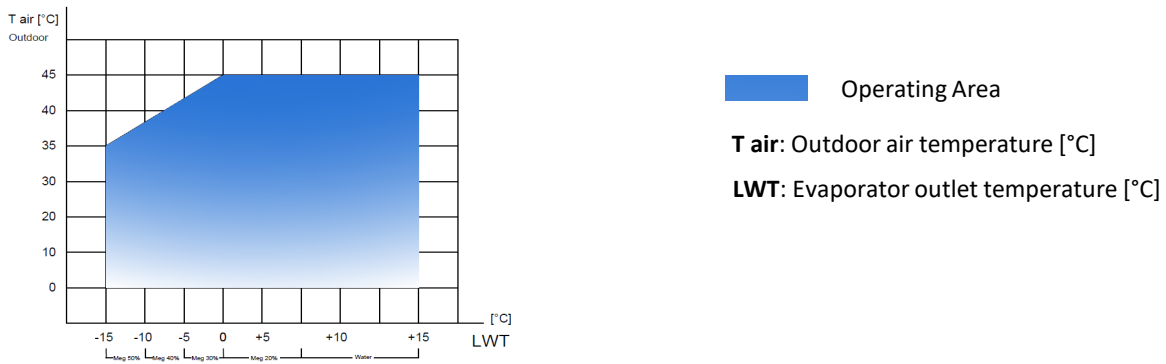
**N1** = Number of operating pumps  
**N2** = Number of stand-by pumps

# HERA operating limits

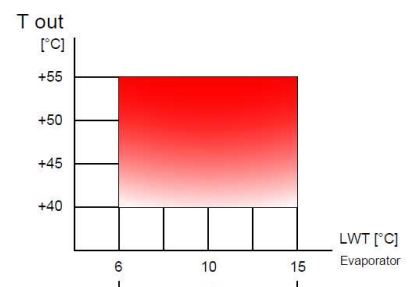
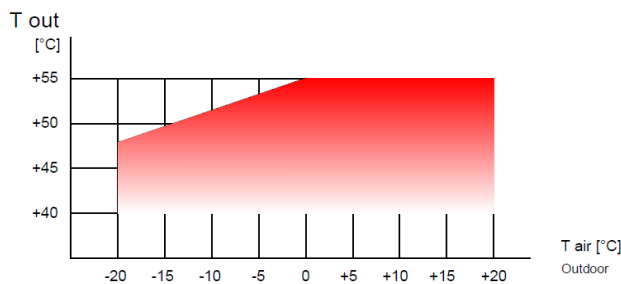
## HERA - Heating mode



## HERA - Cooling mode



## HERA - Desuperheater



**T air:** Outdoor air temperature [°C]  
**T out:** Desuperheater outlet temperature [°C]

**LWT:** Evaporator outlet temperature [°C]  
**T out:** Desuperheater outlet temperature [°C]

# HERA



Refrigerant  
R290 | GWP=3



SCOP



Semi-hermetic  
piston compressor



Inverter



Axial fan



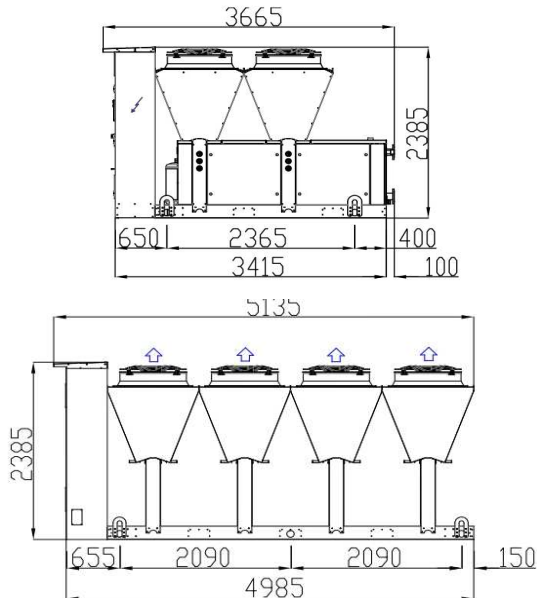
Brazed plate  
heat exchanger



Reversible  
heat pump

195-2-2 PV ↔ 355-2-2 PV

## Air to water heat pumps for comfort applications



### Solution

B - Base  
P - Base with Pump

### Version

LN - Low Noise  
SL - Super Low Noise  
XL - Extra Low Noise

### Equipment

AS - Standard equipment  
DS - Desuperheater

Heating capacity 167 - 300 kW  
Cooling capacity 150 - 267 kW

<b>Safety system</b>	To ensure high-safety-level the unit is equipped with an <b>ATEX certified gas detector</b> and an <b>EC centrifugal extraction fan</b> . The sensor, with external dedicated power supply and Modbus output signal, has an alarm threshold set at 10% of the lower flammable limit (LFL). The Propane alarm causes the immediate shutdown of the machine and the centrifugal extraction fan is switched on, which allows the ventilation of the compressor compartment and the dilution of the R290 concentration to values below the lower flammability limit.
<b>Structure</b>	Structure specifically designed for outdoor installation. Basement and frame in galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7035 standard colour, others on request). LN (Low Noise) version: the panels are internally lined with sound-absorbing material. SL (Super Low Noise) version: the panels are sandwich and insulated with rock wool. XL (Extra Low Noise) version: the panels are sandwich and insulated with rock wool. Fans are ZAPLUS
<b>Compressor with inverter</b>	Reciprocating semi-hermetic type, fixed on anti-vibration system and complete with pressure lubrication system; oil crankcase heater; integral electronic protection and inlet plus outlet valves; flexible joints on suction and discharge. A VFD (Variable Frequency Drive) is provided in order to adapt the cooling capacity of the reciprocating compressor to the heating or cooling demand. The compressor is <b>mechanically optimized for use with Hydrocarbons. Some components are ATEX certified.</b>
<b>EC Fan</b>	Premium-Axial-Fans with bionic shaped blades and high-efficient EC (Electronically Commutated) external rotor motors, sealed in protection IP54 and thermal class THCL 155. The motor efficiency class complies with IE4.
<b>Air heat exchanger</b>	Finned coil made with copper pipes arranged on staggered rows, mechanically expanded inside a pack of aluminium fins offering a <b>high exchange surface area.</b>
<b>Water heat exchanger</b>	Brazed plate-type heat exchanger, stainless steel AISI 316 made, complete with water differential pressure switch, air vent valve and thermally insulated with closed-cell neoprene anti-condensate material. The heat exchanger design provides high thermal exchange and high performance results, furthermore it guarantees small dimensions and easy installation and maintenance.
<b>Electrical board</b>	Each unit is equipped with electric panel, built, wired and fully tested at the factory. Wiring numeration and optimized layout facilitate troubleshooting. The installed components are identified by nameplates to better identify the application and the type of action. Switchboard is made according to standards IEC 204-1/EN60204-1 and it is complete with the following main components: - Main isolator switch - Door interlock safety device - Contactor and protection for compressor and fans - Cabinet minimum protection rating IP54.  To ensure higher level of security, the cabinet is outside the machine and positioned on one side of the unit. The propane sensor is equipped with separate power supply: this power supply must always be guaranteed in order to ensure the monitoring of any leakage.
<b>Control</b>	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
<b>Refrigerant circuit</b>	Filter drier, moisture-liquid sight glass, electronic expansion valve, high & low pressure gauge, high and low pressure transducers, high pressure switch, safety high pressure valve (when required by EN 378-2016 standard).

## MAIN ACCESSORIES

- Anti-vibration rubber/spring mounts
- Low pressure switch
- Low pressure safety valve
- Double safety valve
- Overpressure valve / automatic by-pass
- Double water pump (stand-by) - Standard/ High pressure
- Inverter driven compressor
- Advanced control c.pCo



HERA R290		195-2-2 PV	230-2-2 PV	270-2-2 PV	300-2-2 PV	355-2-2 PV
<b>Heating Capacity<sup>(1)</sup> (LN/SL versions)</b>	[kW]	167	202	250	272	300
Total power input <sup>(1)</sup>	[kW]	52,5	63,8	78,9	85,6	96
COP	[-]	3,18	3,17	3,17	3,18	3,14
<b>Heating Capacity<sup>(1)</sup> (XL versions)</b>	[kW]	165	189	249	270	300
Total power input <sup>(1)</sup>	[kW]	52,0	63,1	78,3	84,9	95
COP	[-]	3,17	3,00	3,18	3,18	3,16
Water flow <sup>(1)</sup>	[m <sup>3</sup> /h]	28,9	35,0	43,4	47,1	52,0
Water pressure drop <sup>(1)</sup> - Base version	[kPa]	35,0	40,0	35,0	30,0	30,0
Min / Max water flow (heat exchanger, user side)	[m <sup>3</sup> /h]	27,5 / 34,7	33,3 / 42	41,2 / 52,1	44,7 / 56,5	49,4 / 62,4
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Low Temperature - Average Climate</b>						
SCOP (LN/SL - XL)	[W/W]	3,729 - 3,523	3,614 - 3,521	3,735 - 3,796	3,777 - 3,834	3,682 - 3,692
$\eta_{s,h}$ (LN/SL - XL)	[%]	146,1 - 137,9	141,5 - 137,8	146,4 - 148,9	148,1 - 150,3	144,3 - 144,7
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Medium Temperature - Average Climate</b>						
SCOP (LN/SL - XL)	[W/W]	3,101 - 3,134	3,118 - 3,141	3,08 - 3,118	3,088 - 3,133	3,08 - 3,078
$\eta_{s,h}$ (LN/SL - XL)	[%]	121 - 122,3	121,7 - 122,6	120,2 - 121,7	120,5 - 122,3	120,2 - 120,1
<b>Cooling Capacity<sup>(2)</sup> (LN/SL versions)</b>	[kW]	150	176	218	237	267
Total power input <sup>(2)</sup>	[kW]	57,9	69,8	85,9	93,4	106
EER	[-]	2,591	2,521	2,538	2,537	2,519
<b>Cooling Capacity<sup>(2)</sup> (XL versions)</b>	[kW]	150	175	216	237	267
Total power input <sup>(2)</sup>	[kW]	56,3	68,5	82,9	89,9	104
EER	[-]	2,664	2,555	2,606	2,636	2,567
Water flow <sup>(2)</sup>	[m <sup>3</sup> /h]	25,80	30,40	37,50	40,80	45,90
Water pressure drop <sup>(2)</sup> - Base version	[kPa]	30,0	35,0	30,0	30,0	30,0
Min / Max water flow (heat exchanger, user side)	[m <sup>3</sup> /h]	20,6 / 31	24,3 / 36,5	30 / 45	32,6 / 49	36,7 / 55,1
<b>Technical data</b>						
Refrigerant / GWP	-	R290 / 3				
Charge of refrigerant	[Kg]	> 12				
Number of refrigerant circuits	N°	2				
Compressor type / quantity	-/N°	Semihhermetic reciprocating with VFD (Variable Frequency Drive) / 2				
Expansion valve type	-	Electronic				
Fans quantity / type	-	4 / Axial EC		8 / Axial EC		
Fans power input <sup>(1)</sup> (total)	[kW]	1,27	1,37	2,00	2,10	2,21
Total air flow <sup>(1)</sup>	[m <sup>3</sup> /h]	45.800	47.100	84.500	85.900	87.500
<b>Electrical data</b>						
Power supply (main - gas detector)	-	400/3+N/50 - 230/1/50				
Maximum absorbed power	[kW]	76,2	85,6	110,0	110,3	138,1
Locked rotor current - LRA	[A]	< 10				
Maximum absorbed current (full load)	[A]	127	141,2	187,6	187,6	238
<b>Solution BASE-P - with Hydronic Kit</b>						
Pump type	-	Centrifugal				
<b>Standard pump (1,5 bar)</b>						
Motor efficiency	-	IE3				
Pump motor nominal power input	[kW]	3	3	4	4	5,5
Pump motor nominal absorbed current	[A]	6,4	6,4	8,7	8,7	10,6
<b>Increased pump (3,0 bar)</b>						
Motor efficiency	-	IE3				
Pump motor nominal power input	[kW]	7,5	7,5	7,5	7,5	11
Pump motor nominal absorbed current	[A]	13,6	13,6	13,6	13,6	21,3
<b>Water connections</b>						
Size (nominal external diameter)	[inch]	3"	3"	3"	4"	4"
<b>Noise levels<sup>(3)</sup></b>						
Total sound power (LN version)	[db(A)]	86	87	91	92	93
Total sound pressure (LN version) - at 1 m distance	[db(A)]	67	68	71	72	73
Total sound pressure (LN version) - at 10 m distance	[db(A)]	54	55	59	60	61
Total sound power (SL version)	[db(A)]	85	86	90	91	92
Total sound pressure (SL version) - at 1 m distance	[db(A)]	66	67	70	71	72
Total sound pressure (SL version) - at 10 m distance	[db(A)]	53	54	58	59	60
Total sound power (XL version)	[db(A)]	83	84	88	89	90
Total sound pressure (XL version) - at 1 m distance	[db(A)]	64	65	68	69	70
Total sound pressure (XL version) - at 10 m distance	[db(A)]	51	52	56	57	58
<b>Dimensions and weights - unit</b>						
Length	[mm]	3.665	3.665	5.135	5.135	5.135
Width	[mm]	2.280	2.280	2.280	2.280	2.280
Height (LN, SL)	[mm]	2.385	2.385	2.385	2.385	2.385
Height (XL)	[mm]	2.560	2.560	2.560	2.560	2.560
Shipment weight - BP/LN/AS/EC/II version	[Kg]	2.800	2.840	3.970	3.990	4.180
Shipment weight - BP/SL/AS/EC/II version	[Kg]	2.900	2.940	4.070	4.090	4.280
Shipment weight - BP/XL/AS/EC/II version	[Kg]	2.930	2.970	4.130	4.150	4.340

**Reference conditions:**

(1) Outdoor ambient air = +7 °C / 87% r.h. - Condenser water temperature IN/OUT = 40/45 °C - Fluid: water - Results according to UNI EN 14511-202.

(2) Condenser air intake temperature = 35 °C - Evaporator water temperature IN/OUT = 12/7 °C - Fluid: water - Results according to UNI EN 14511-202.

(3) The declared cooling capacity are not taking into account the pump motor power input (where provided)

(3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level

**Compliance with "Eco-Design"**

The units comply with the European Directive 2009/125/EU, the Commission Regulation (EU) No 811/2013, No 813/2011 and with the Harmonized Standards

The relevant information related to each model (eg.: SCOP, Seasonal Space Heating Energy Efficiency, Annual electricity consumption, ...) are published on our website

# HERA



Refrigerant  
R290 | GWP=3



SCOP



Reversible  
heat pump



Semi-hermetic  
piston compressor



Inverter



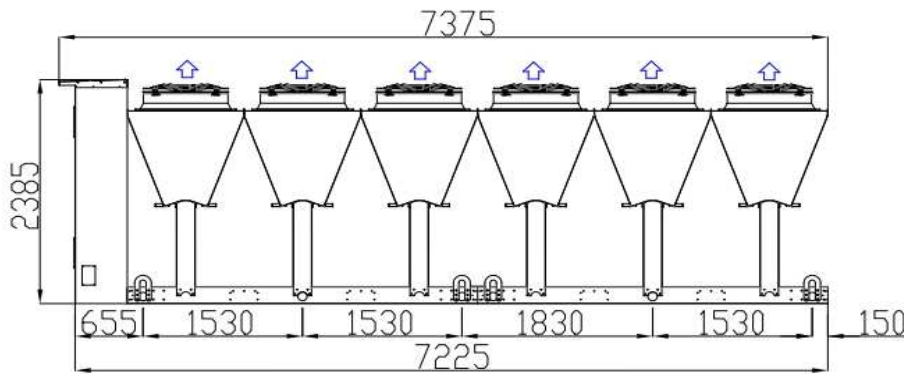
Axial fan



Braze plate  
heat exchanger

405-3-3 PV ↔ 530-3-3 PV

Air to water heat pumps for comfort applications



## Solution

B - Base  
P - Base with Pump

## Version

LN - Low Noise  
SL - Super Low Noise  
XL - Extra Low Noise

## Equipment

AS - Standard equipment  
DS - Desuperheater

Heating capacity 376 - 500 kW  
Cooling capacity 326 - 398 kW

<b>Safety system</b>	To ensure high-safety-level the unit is equipped with an <b>ATEX certified gas detector</b> and an <b>EC centrifugal extraction fan</b> . The sensor, with external dedicated power supply and Modbus output signal, has an alarm threshold set at 10% of the lower flammable limit (LFL). The Propane alarm causes the immediate shutdown of the machine and the centrifugal extraction fan is switched on, which allows the ventilation of the compressor compartment and the dilution of the R290 concentration to values below the lower flammability limit.
<b>Structure</b>	Structure specifically designed for outdoor installation. Basement and frame in galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7035 standard colour, others on request). LN (Low Noise) version: the panels are internally lined with sound-absorbing material. SL (Super Low Noise) version: the panels are sandwich and insulated with rock wool. XL (Extra Low Noise) version: the panels are sandwich and insulated with rock wool. Fans are ZPlus
<b>Compressor with inverter</b>	Reciprocating semi-hermetic type, fixed on anti-vibration system and complete with pressure lubrication system; oil crankcase heater; integral electronic protection and inlet plus outlet valves; flexible joints on suction and discharge. A VFD (Variable Frequency Drive) is provided in order to adapt the cooling capacity of the reciprocating compressor to the heating or cooling demand. The compressor is <b>mechanically optimized for use with Hydrocarbons. Some components are ATEX certified.</b>
<b>EC Fan</b>	Premium-Axial-Fans with bionic shaped blades and high-efficient EC (Electronically Commutated) external rotor motors, sealed in protection IP54 and thermal class THCL 155. The motor efficiency class complies with IE4.
<b>Air heat exchanger</b>	Finned coil made with copper pipes arranged on staggered rows, mechanically expanded inside a pack of aluminium fins offering a <b>high exchange surface area.</b>
<b>Water heat exchanger</b>	Braze plate-type heat exchanger, stainless steel AISI 316 made, complete with water differential pressure switch, air vent valve and thermally insulated with closed-cell neoprene anti-condensate material. The heat exchanger design provides high thermal exchange and high performance results, furthermore it guarantees small dimensions and easy installation and maintenance.
<b>Electrical board</b>	Each unit is equipped with electric panel, built, wired and fully tested at the factory. Wiring numeration and optimized layout facilitate troubleshooting. The installed components are identified by nameplates to better identify the application and the type of action. Switchboard is made according to standards IEC 204-1/EN60204-1 and it is complete with the following main components: - Main isolator switch - Door interlock safety device - Contactor and protection for compressor and fans - Cabinet minimum protection rating IP54. To ensure higher level of security, the cabinet is outside the machine and positioned on one side of the unit. The propane sensor is equipped with separate power supply: this power supply must always be guaranteed in order to ensure the monitoring of any leakage.
<b>Control</b>	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
<b>Refrigerant circuit</b>	Filter drier, moisture-liquid sight glass, electronic expansion valve, high & low pressure gauge, high and low pressure transducers, high pressure switch, safety high pressure valve (when required by EN 378-2016 standard).

## MAIN ACCESSORIES

- Anti-vibration rubber/spring mounts
- Low pressure switch
- Low pressure safety valve
- Double safety valve
- Overpressure valve / automatic by-pass
- Double water pump (stand-by) - Standard/ High pressure
- Inverter driven compressor
- Advanced control c.pCo

HERA R290		405-3-3 PV	450-3-3 PV	505-3-3 PV	530-3-3 PV
<b>Heating Capacity <sup>(1)</sup> (LN/SL versions)</b>	[kW]	376	407	450	500
Total power input <sup>(1)</sup>	[kW]	118	129	143	161
COP	[-]	3,19	3,16	3,15	3,11
<b>Heating Capacity <sup>(1)</sup> (XL versions)</b>	[kW]	374	401	444	496
Total power input <sup>(1)</sup>	[kW]	117	127	141	159
COP	[-]	3,20	3,16	3,15	3,12
Water flow <sup>(1)</sup>	[m <sup>3</sup> /h]	65,1	70,6	78,1	86,7
Water pressure drop <sup>(1)</sup> - Base version	[kPa]	30,0	35,0	30,0	40,0
Min / Max water flow (heat exchanger, user side)	[m <sup>3</sup> /h]	61,8 / 78,1	67,1 / 84,7	74,2 / 93,7	82,4 / 104
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Low Temperature - Average Climate</b>					
SCOP (LN/SL - XL)	[W/W]	3,76 - 3,818	3,763 - 3,8	3,684 - 3,71	3,665 - 3,67
η <sub>s,h</sub> (LN/SL - XL)	[%]	147,4 - 149,7	147,5 - 149	144,4 - 145,4	143,6 - 143,8
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Medium Temperature - Average Climate</b>					
SCOP (LN/SL - XL)	[W/W]	3,082 - 3,117	3,078 - 3,108	3,08 - 3,078	3,075 - 3,078
η <sub>s,h</sub> (LN/SL - XL)	[%]	120,3 - 121,7	120,1 - 121,3	120,2 - 120,1	120 - 120,1
<b>Cooling Capacity <sup>(2)</sup> (LN/SL versions)</b>	[kW]	326	352	398	-
Total power input <sup>(2)</sup>	[kW]	129,0	139	159,0	-
EER	[-]	2,527	2,532	2,50	-
<b>Cooling Capacity <sup>(2)</sup> (XL versions)</b>	[kW]	325	350	396	-
Total power input <sup>(2)</sup>	[kW]	124,0	135	154,0	-
EER	[-]	2,621	2,593	2,57	-
Water flow <sup>(2)</sup>	[m <sup>3</sup> /h]	56,1	60,5	68,4	-
Water pressure drop <sup>(2)</sup> - Base version	[kPa]	25	30	25	-
Min / Max water flow (heat exchanger, user side)	[m <sup>3</sup> /h]	44,9 / 67,3	48,4 / 72,6	54,7 / 82,1	-
<b>Technical data</b>					
Refrigerant / GWP	-	R290 / 3			
Charge of refrigerant	[Kg]	> 12			
Number of refrigerant circuits	N°	3			
Compressor type / quantity	-/N°	Semihermetic reciprocating with VFD (Variable Frequency Drive) / 3			
Expansion valve type	-	Electronic			
Fans quantity / type	-	12 / Axial EC			
Fans power input <sup>(1)</sup> (total)	[kW]	3,01	3,15	3,33	3,70
Total air flow <sup>(1)</sup>	[m <sup>3</sup> /h]	126.800	128.800	131.200	136.300
<b>Electrical data</b>					
Power supply (main - gas detector)	-	400/3+N/50 - 230/1/50			
Maximum absorbed power	[kW]	165,0	165,0	207,2	210,9
Locked rotor current - LRA	[A]	< 10			
Maximum absorbed current (full load)	[A]	281,4	281,4	357,0	367,5
<b>Solution BASE-P - with Hydronic Kit</b>					
Pump type	-	Centrifugal			
<b>Standard pump (1,5 bar)</b>					
Motor efficiency	-	IE3			
Pump motor nominal power input	[kW]	5,5	5,5	7,5	7,5
Pump motor nominal absorbed current	[A]	10,6	10,6	13,6	13,6
<b>Increased pump (3,0 bar)</b>					
Motor efficiency	-	IE3			
Pump motor nominal power input	[kW]	11,0	11,0	11,0	15,0
Pump motor nominal absorbed current	[A]	21,3	21,3	21,3	27,7
<b>Water connections</b>					
Size (nominal external diameter)	[inch]	4"	4"	5"	5"
<b>Noise levels <sup>(3)</sup></b>					
Total sound power (LN version)	[db(A)]	93	93	93	95
Total sound pressure (LN version) - at 1 m distance	[db(A)]	72	72	72	74
Total sound pressure (LN version) - at 10 m distance	[db(A)]	60	60	60	62
Total sound power (SL version)	[db(A)]	92	92	92	94
Total sound pressure (SL version) - at 1 m distance	[db(A)]	71	71	71	73
Total sound pressure (SL version) - at 10 m distance	[db(A)]	59	59	59	61
Total sound power (XL version)	[db(A)]	90	90	90	92
Total sound pressure (XL version) - at 1 m distance	[db(A)]	69	69	69	71
Total sound pressure (XL version) - at 10 m distance	[db(A)]	57	57	57	59
<b>Dimensions and weights - unit</b>					
Length	[mm]	7.375	7.375	7.375	7.375
Width	[mm]	2.280	2.280	2.280	2.280
Height (LN, SL)	[mm]	2.385	2.385	2.385	2.385
Height (XL)	[mm]	2.560	2.560	2.560	2.560
Shipment weight - BP/LN/AS/EC/II version	[Kg]	5.960	5.960	6.250	6.290
Shipment weight - BP/SL/AS/EC/II version	[Kg]	6.060	6.060	6.350	6.390
Shipment weight - BP/XL/AS/EC/II version	[Kg]	6.150	6.150	6.440	6.480

**Reference conditions:**

(1) Outdoor ambient air = +7 °C / 87% r.h. - Condenser water temperature IN/OUT = 40/45 °C - Fluid: water - Results according to UNI EN 14511-202.

(2) Condenser air intake temperature = 35 °C - Evaporator water temperature IN/OUT = 12/7 °C - Fluid: water - Results according to UNI EN 14511-202.

(3) The declared cooling capacity are not taking into account the pump motor power input (where provided)

(3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level

**Compliance with "Eco-Design"**

The units comply with the European Directive 2009/125/EU, the Commission Regulation (EU) No 811/2013, No 813/2011 and with the Harmonized Standards

The relevant information related to each model (eg.: SCOP, Seasonal Space Heating Energy Efficiency, Annual electricity consumption, ...) are published on our website

# HERA



Refrigerant  
R290 | GWP=3



SCOP



Reversible  
heat pump



Semi-hermetic  
piston compressor



Inverter



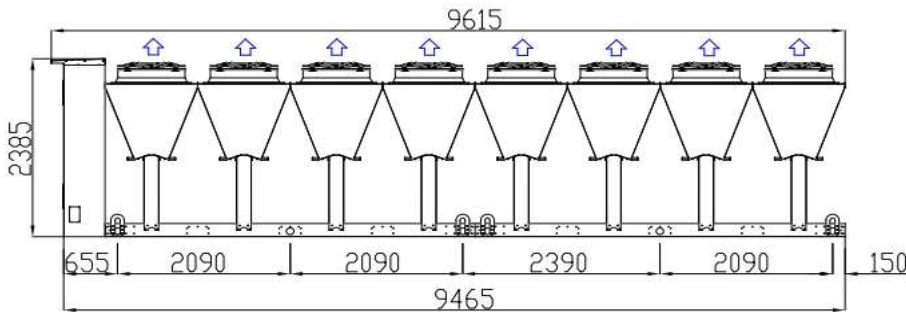
Axial fan



Brazed plate  
heat exchanger

600-4-4 PV ↔ 710-4-4 PV

Air to water heat pumps for comfort applications



## Solution

B - Base  
P - Base with Pump

## Version

LN - Low Noise  
SL - Super Low Noise  
XL - Extra Low Noise

## Equipment

AS - Standard equipment  
DS - Desuperheater

Heating capacity 543 - 666 kW

<b>Safety system</b>	To ensure high-safety-level the unit is equipped with an <b>ATEX certified gas detector</b> and an <b>EC centrifugal extraction fan</b> . The sensor, with external dedicated power supply and Modbus output signal, has an alarm threshold set at 10% of the lower flammable limit (LFL). The Propane alarm causes the immediate shutdown of the machine and the centrifugal extraction fan is switched on, which allows the ventilation of the compressor compartment and the dilution of the R290 concentration to values below the lower flammability limit.
<b>Structure</b>	Structure specifically designed for outdoor installation. Basement and frame in galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7035 standard colour, others on request). LN (Low Noise) version: the panels are internally lined with sound-absorbing material. SL (Super Low Noise) version: the panels are sandwich and insulated with rock wool. XL (Extra Low Noise) version: the panels are sandwich and insulated with rock wool. Fans are ZPlus
<b>Compressor with inverter</b>	Reciprocating semi-hermetic type, fixed on anti-vibration system and complete with pressure lubrication system; oil crankcase heater; integral electronic protection and inlet plus outlet valves; flexible joints on suction and discharge. A VFD (Variable Frequency Drive) is provided in order to adapt the cooling capacity of the reciprocating compressor to the heating or cooling demand. The compressor is <b>mechanically optimized for use with Hydrocarbons. Some components are ATEX certified.</b>
<b>EC Fan</b>	Premium-Axial-Fans with bionic shaped blades and high-efficient EC (Electronically Commutated) external rotor motors, sealed in protection IP54 and thermal class THCL 155. The motor efficiency class complies with IE4.
<b>Air heat exchanger</b>	Finned coil made with copper pipes arranged on staggered rows, mechanically expanded inside a pack of aluminium fins offering a <b>high exchange surface area.</b>
<b>Water heat exchanger</b>	Brazed plate-type heat exchanger, stainless steel AISI 316 made, complete with water differential pressure switch, air vent valve and thermally insulated with closed-cell neoprene anti-condensate material. The heat exchanger design provides high thermal exchange and high performance results, furthermore it guarantees small dimensions and easy installation and maintenance.
<b>Electrical board</b>	Each unit is equipped with electric panel, built, wired and fully tested at the factory. Wiring numeration and optimized layout facilitate troubleshooting. The installed components are identified by nameplates to better identify the application and the type of action. Switchboard is made according to standards IEC 204-1/EN60204-1 and it is complete with the following main components: - Main isolator switch - Door interlock safety device - Contactor and protection for compressor and fans - Cabinet minimum protection rating IP54. To ensure higher level of security, the cabinet is outside the machine and positioned on one side of the unit. The propane sensor is equipped with separate power supply: this power supply must always be guaranteed in order to ensure the monitoring of any leakage.
<b>Control</b>	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
<b>Refrigerant circuit</b>	Filter drier, moisture-liquid sight glass, electronic expansion valve, high & low pressure gauge, high and low pressure transducers, high pressure switch, safety high pressure valve (when required by EN 378-2016 standard).

## MAIN ACCESSORIES

- Anti-vibration rubber/spring mounts
- Low pressure switch
- Low pressure safety valve
- Double safety valve
- Overpressure valve / automatic by-pass
- Double water pump (stand-by) - Standard/ High pressure
- Inverter driven compressor
- Advanced control c.pCo

HERA R290		600-4-4 PV	675-4-4 PV	710-4-4 PV
<b>Heating Capacity <sup>(1)</sup> (LN/SL versions)</b>	[kW]	543	600	666
Total power input <sup>(1)</sup>	[kW]	171	191	213
COP	[-]	3,18	3,14	3,13
<b>Heating Capacity <sup>(1)</sup> (XL versions)</b>	[kW]	540	591	656
Total power input <sup>(1)</sup>	[kW]	170	189	211
COP	[-]	3,18	3,13	3,11
Water flow <sup>(1)</sup>	[m <sup>3</sup> /h]	94	104	115
Water pressure drop <sup>(1)</sup> - Base version	[kPa]	30,0	30,6	35,0
Min / Max water flow (heat exchanger, user side)	[m <sup>3</sup> /h]	89,5 / 113	98,8 / 125	109 / 138
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Low Temperature - Average Climate</b>				
SCOP (LN/SL - XL)	[W/W]	3,81 - 3,869	3,67 - 3,687	3,663 - 3,699
$\eta_{s,h}$ (LN/SL - XL)	[%]	149,4 - 151,8	143,8 - 144,5	143,5 - 145
<b>Applications for seasonal efficiency for heating according to Commission Regulation (EU) No 813/2013 - Medium Temperature - Average Climate</b>				
SCOP (LN/SL - XL)	[W/W]	3,116 - 3,158	3,079 - 3,085	3,081 - 3,095
$\eta_{s,h}$ (LN/SL - XL)	[%]	121,7 - 123,3	120,2 - 120,4	120,2 - 120,8
<b>Technical data</b>				
Refrigerant / GWP	-	R290 / 3		
Charge of refrigerant	[Kg]	> 12		
Number of refrigerant circuits	N°	4		
Compressor type / quantity	-/N°	Semihermetic reciprocating with VFD (Variable Frequency Drive) / 4		
Expansion valve type	-	Electronic		
Fans quantity / type	-	16 / Axial EC		
Fans power input <sup>(1)</sup> (total)	[kW]	4,21	4,43	5,01
Total air flow <sup>(1)</sup>	[m <sup>3</sup> /h]	171.800	174.900	182.700
<b>Electrical data</b>				
Power supply (main - gas detector)	-	400/3+N/50 - 230/1/50		
Maximum absorbed power	[kW]	220,0	276,3	281,2
Locked rotor current - LRA	[A]	< 10		
Maximum absorbed current (full load)	[A]	375,2	476,0	490,0
<b>Solution BASE-P - with Hydronic Kit</b>				
Pump type	-	Centrifugal		
<b>Standard pump (1,5 bar)</b>				
Motor efficiency	-	IE3		
Pump motor nominal power input	[kW]	7,5	7,5	9,2
Pump motor nominal absorbed current	[A]	13,6	13,6	17,2
<b>Increased pump (3,0 bar)</b>				
Motor efficiency	-	IE3		
Pump motor nominal power input	[kW]	15,0	15,0	15,0
Pump motor nominal absorbed current	[A]	27,7	27,7	27,7
<b>Water connections</b>				
Size (nominal external diameter)	[inch]	5"	5"	6"
<b>Noise levels <sup>(3)</sup></b>				
Total sound power (LN version)	[db(A)]	95	95	96
Total sound pressure (LN version) - at 1 m distance	[db(A)]	74	74	74
Total sound pressure (LN version) - at 10 m distance	[db(A)]	62	62	63
Total sound power (SL version)	[db(A)]	94	94	95
Total sound pressure (SL version) - at 1 m distance	[db(A)]	73	73	73
Total sound pressure (SL version) - at 10 m distance	[db(A)]	61	61	62
Total sound power (XL version)	[db(A)]	92	92	93
Total sound pressure (XL version) - at 1 m distance	[db(A)]	71	71	71
Total sound pressure (XL version) - at 10 m distance	[db(A)]	59	59	60
<b>Dimensions and weights - unit</b>				
Length	[mm]	9.615	9.615	9.615
Width	[mm]	2.280	2.280	2.280
Height (LN, SL)	[mm]	2.385	2.385	2.385
Height (XL)	[mm]	2.560	2.560	2.560
Shipment weight - BP/LN/AS/EC/II version	[Kg]	7.880	8.250	8.340
Shipment weight - BP/SL/AS/EC/II version	[Kg]	7.980	8.350	8.440
Shipment weight - BP/XL/AS/EC/II version	[Kg]	8.100	8.470	8.560

**Reference conditions:**

(1) Outdoor ambient air = +7 °C / 87% r.h. - Condenser water temperature IN/OUT = 40/45 °C - Fluid: water - Results according to UNI EN 14511-2022

(3) The declared cooling capacity are not taking into account the pump motor power input (where provided).

(4) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level.

**Compliance with "Eco-Design"**

The units comply with the European Directive 2009/125/EU, the Commission Regulation (EU) No 811/2013, No 813/2011 and with the Harmonized Standards

The relevant information related to each model (eg.: SCOP, Seasonal Space Heating Energy Efficiency, Annual electricity consumption, ...) are published on our website

# HERA

## Standard equipment and Accessories

### General

#### Optional accessories

##### Anti-vibration spring mounts (supplied separately)



Spring vibration isolation mounting (Kit). The system prevent the transmission of vibrations to the structure where the unit is located.

##### Condensing coil protection panel



Metal protection anti-intrusion grid for condensing coil against accidental impacts.

##### Panels insulated with polyurethane foam sheets



Painted galvanized sheet panels, insulated with polyurethane foam sheets, polyester based, anthracite colour, selfextinguishing non dripping. **Standard for LN version.**

##### Sandwich soundproofing galvanized sheet panels

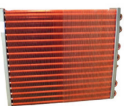


Sandwich soundproofing galvanized sheet panels, painted outside and isolated with high- density rock wool (100 Kg/m<sup>3</sup>). **Standard for SL and XL version**

### Condensing section

#### Optional accessory

##### Cu/Cu condensing coil



Finned pack heat exchanger consisting of copper pipes and fins. This solution allows to increase the heat exchange efficiency and the machine performance.

## Standard equipment and Accessories

### Refrigerant circuit section

#### Standard accessories

##### High & Low pressure manometers



Gauges for the control of low and high refrigerant pressures, embedded in glycerine.

##### Suction and discharge compressor's valves



Intercepting valves on compressor's suction and discharge sides to facilitate maintenance activities.

##### Pressure switch-HP side



Pressure switch installed on HP side according to EN-378:2016 standard to protect the circuit against high-pressure risk.

##### Compressor crankcase oil heater



Crankcase oil heater directly installed on the compressor in order to increase compressor reliability and ensure adequate oil temperature.

##### Electronic expansion valve



Electronic expansion valve for the accurate and timely control of the superheater level, after evaporation and many others operative functions.

##### Safety valve – HP side



Safety valve(s) installed on HP side according to EN-378:2016 standard to protect the circuit against highpressure risk. The safety valve(s) is (are) standard for some models only, according to EN-378:2016 requirements. See accessories Table for more details. All safety valves are conveyed outside the unit.

#### Optional accessories

##### Pressure switch - LP side



Pressure switch installed on LP side to prevent risks related to excessively low evaporating temperatures.

##### Double Safety valve with changeover valve



Double safety valve with changeover valve installed to ensure easy maintenance. This solution is available both for HP and LP side. All safety valves are conveyed outside the unit.

##### Safety valve – LP side



Safety valve(s) installed on LP side to protect refrigeraton circuit against low pressure risk. All safety vals are conveyed outside the unit.

##### Gauges



Gauges for the control of oil pressure, embedded in glycerine.

# HERA

## Standard equipment and Accessories

### Electrical cabinet section

#### Standard accessories

##### Electrical panel installed outside the unit



To ensure higher security level, the cabinet is mounted outside the machine. The propane sensor is equipped with separate power supply.  
Standard power supply: 400V/3ph/50hz.  
Emergency power supply: 230V/1ph/50hz

##### Double- barrier



The cable entry plates consist of a robust hard frame made of plastic which ensure the tightness of the electrical panel.

#### Optional accessories

##### Phase monitoring sequence relay



Sequence phases relay mounted directly inside the electrical box and with the function of stopping the unit in the case where the phase sequence is not correct.

##### Min./Max. voltage relay



Min and max power supply relays mounted directly inside the electrical box and with the function of stopping the unit in case the power supply voltage is outside the tolerance range.

##### Anti-condensation heater with thermostat



System ables to ensure, inside the enclosure, temperature value properly above the dew point.

##### Power factor correction capacitors for compressors



Power factor compressor capacitor to keep the value of the  $\cos\phi$  higher than 0,9.

##### Emergency power electronic expansion valve (Ultracap module)



Ultracap is a emergency power supply device for systems that use electronic expansion valves: this device ensures complete closing of the valves even when there are sudden mains power failures.

##### Device for measuring the electric energy consumed (Energy meter)



Measuring instrument dedicated to the detection of the main electrical parameters and the consumption of the connected loads. Energy meter records consumption and allows for a complete and detailed analysis.

##### Inverter



Inverter driven compressor allows to increase drastically the efficiency at part loads.  
**Standard for all version.**

### Control section

#### Optional accessories

##### Remote control panel



Remote user terminal can be used to get all the readings and duplicate commands on a second display located at a distance and in more accessible site compared to the microprocessor on board the machine.

##### Connectivity





## Standard equipment and Accessories

### Water circuit section

#### Standard accessories

##### Differential pressure switch



Differential pressure switch with function to control the failure or reduced water flow.

##### Air vent valve (manual)



Manual air vent valve for discharging air from water circuit.

##### Electromechanical water flow switch (supplied separately)



Electromechanical flow switch with function to control the failure or reduced water flow.

##### Increased thermal insulation – 19 mm



Closed-cell thermal insulation with special thickness of 19 mm, which ensures an adequate protection against moisture from condensation. For Integrated version adequate insulation is provided also for the pump.

#### Optional accessories

##### Pressure relief valve (4,5 bar setting)



Pressure relief valve for hydraulic circuit.  
Default setting: 4.5 Bar

##### Automatic overpressure by-pass valve



Water circuit automatic overpressure by-pass valve.

##### Sacrificial anode installed inside the unit



Sacrificial anode installed inside the unit prevents the evaporator corrosion by means cathodic protection.

##### High pressure water pump (increased pump pressure)



Pumping group consisting of high head centrifugal electric pump (peripheral for models 21 and 31), suitable for water circuits with high pressure drops.

##### Open expansion tank



Open expansion vessel for the containment of pressure variations in the water circuit. The fluid is in direct contact with the atmosphere.

##### Flanged connections



Flanged couplings for water connections. Available materials: carbon steel and AISI 304L steel (only for nonferrous circuits).

##### Electronic water flow switch (supplied separately)



Electronic flow switch with function to control the failure or reduced water flow.

##### Air vent valve (automatic)



Automatic air vent valve for discharging air from water circuit.

##### Non-ferrous water circuit



Water circuit made entirely from non-ferrous material.

##### Double water pump (stand-by) - Standard pressure



Pumping group consisting of two centrifugal electric pumps, one in stand-by (peripheral for model 21), with standard pressure drops.

##### Victoulic couplings



Victoulic couplings for water connections, which ensure easy start-up operations.

# HERA

## Standard equipment and Accessories

### Safety section

#### Standard accessories

##### ATEX certified Gas detector



The unit is equipped with a stand-alone gas detection system. The sensor is ATEX certified and is pre-calibrated at the factory. The standard setting is set at 10% of LFL (Low Flammability Limit).

##### EC emergency fan



The centrifugal EC fan, managed by the microprocessor, is activated in case of R290 leakage and the ventilation lasts until the dilution of the refrigerant gas is completed. Additional accessories are available to convey the air discharge. Power supply: 230V-1ph- 50Hz

#### Optional accessories

##### Double gas detector



The redundancy of the ATEX certified gas detector allows a higher level of security to be achieved.

##### Calibration kit



The R290 leak detector requires periodic maintenance: the calibration must be carried out according to the indications of the manual. The calibration kit, which allows calibration to be carried out quickly and easily, consists of:

- adapter;
- pressure regulator and pressure gauge;
- service tool

##### Sound alarm



The sound alarm, installed on the electrical panel, is activated in case of R290 leakage.

##### Flanged connection for emergency fan air outlet



Flange to convey the air discharge in rectangular section air ducts. The flange is supplied separately.

##### Emergency stop button



Safety switch for emergency stop installed on the electrical panel.

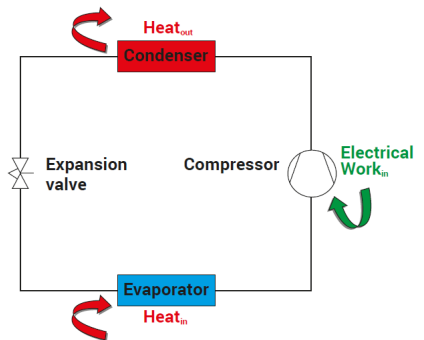
# HERA - Desuperheater

## Options available

### Cooling mode example

#### What is waste heat?

All air-conditioning and refrigerating systems transfer heat from one location to another through the use of electrical work. At the evaporator heat exchanger, heat is drawn into the system to provide indoor cooling while heat leaves the system in the form of wasted heat at the condenser (see figure on the side). The amount of wasted heat is higher than the cooling that the process creates.



#### Benefits of Heat Recovery

The use of a recovery system to generate hot water can reduce the total energy needs of a building and/or a process and allows a significant increase of the global efficiency of the system.

The benefits of Heat recovery systems are several:

- **Increased efficiency**, due to the possibility to use both chilled and hot water for different purposes. To better understand this point, we can analyze the EER (Energy Efficiency Ratio) of the unit without heat recovery system and the TER (Total Efficiency Ratio) with heat recovery system. According to its definition, the EER is the ratio between  $Q_c$  (cooling capacity) and the absorbed electrical power  $W_{el}$ . For a unit with heat recovery system, the TER is the ratio between the sum of useful effects  $Q_c$  and  $Q_{rec}$  (cooling capacity and recovered heat) and the absorbed power.

$$EER = \frac{Q_c}{W_{el}} \quad TER = \frac{Q_c}{W_{el}} + \frac{Q_{rec}}{W_{el}} = \frac{Q_c + Q_{rec}}{W_{el}}$$

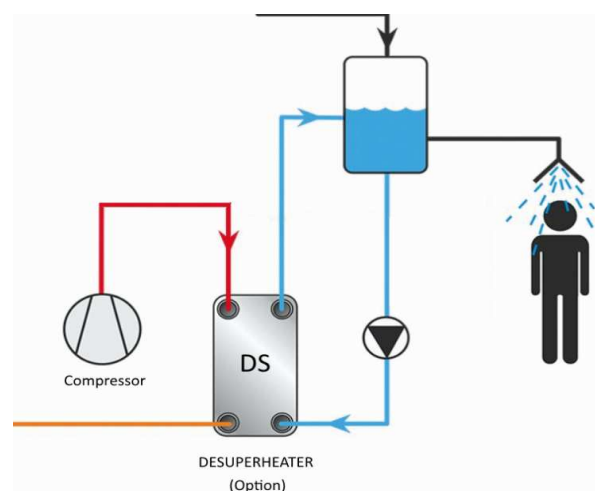
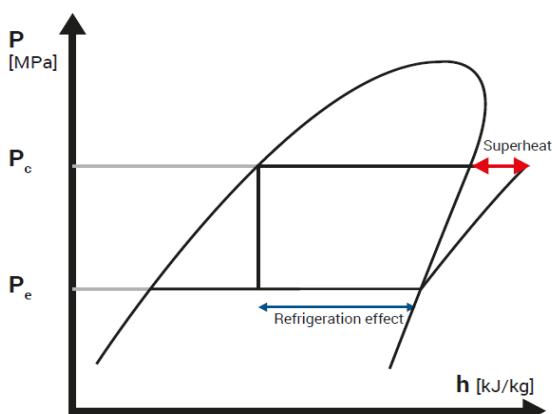
- **Reduction of Energy costs**, if there are simultaneous heating and cooling loads, it's possible to recover heat from heat pump instead of rejecting it to the environment. This gives a double benefit: recovered heat reduces the costs of purchased heat and also reduces the ancillary power necessary to reject the heat (for example cooling towers and/or dry coolers).

A qualitative representation of the cost benefits compared to standard heat generation methods is shown below:

### DESUPERHEATER FUNCTIONING

An additional BPHE (brazed plate heat exchanger) heat exchanger is installed between semi-hermetic piston compressor and Cu/Al Coils.

- Main features:**
- Captures heat from superheated refrigerant, exploiting the hot discharge gas.
  - It is possible to recover only a small amount of heat (up to about 20% of the condensation heat) as this exchanger only deals with the sensible and not latent exchange. The latter takes place in the air-cooled condenser.
  - Hot water temperatures up to 55°C can be achieved.



# HERA

Euroklimat firmly believes that Customer Satisfaction is an indispensable factor for success. A priority objective to achieve this result is the constant improvement of our products, services and the relative production processes. For this reason, we work every day to create reliable products that can help our customers in their business. To achieve this goal, for every single unit we produce there is a lot of work. Therefore, we are pleased to tell you how Euroklimat's CRIO Medium Temperature Chillers are made.

## 1 Products design and development



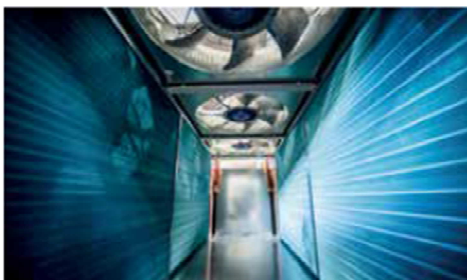
Starting from market's needs we draft a concept which is then transformed into a product. The design involves many people of the company and results in the production of all the necessary documentation such as installation and operating manual, P&ID diagrams, wiring diagrams, 3D drawings and much more.

## 2 Supply chain



The materials procurement process is the result of a constant partnership with all our suppliers and a careful management of the timing. To do this we use modern manufacturing techniques such as MRP (Material Requirements Planning), trend analysis, which are some of the tools that feed the issuance of orders. Euroklimat's supply chain ends with the reception of the materials and their quality check.

## 3 Mechanical assembly



The production of the units starts at the mechanical assembly station. Here the structures are assembled and the main components such as compressors and heat exchangers are positioned and fixed.

## 4 Water circuit

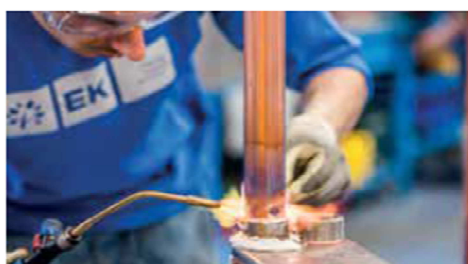


Then the production continues at the water circuit assembly station where all the components of this circuit are mounted.

# How it is made

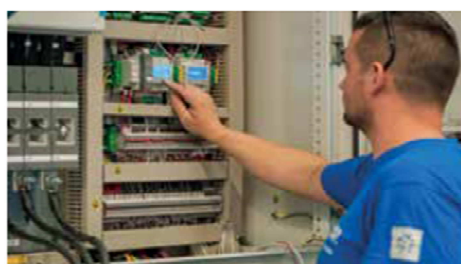
The whole production cycle is subjected to Euroklimat's Quality Management System, that complies with the international standard UNI EN ISO 9001:2015, ensuring quality and long-term reliability.

## 5 Refrigerant circuit



The next step is at refrigerant circuit assembly station. Here the pipes of the circuit are assembled and brazed welded, which will connect the various elements of the unit, such as compressor(s), condenser(s), evaporator(s), etc. The refrigerant circuit is specifically designed in order to minimize load losses and to avoid capacity reduction. The circuit is entirely made of copper tube brazed with silver alloy and it is isolated on the suction part, in order to avoid condensation.

## 6 Electrical wiring



Once completed the refrigeration and water circuit, we perform the electrical wiring and the connection between electric board and compressor, fan, pump, etc. Each unit is equipped with electric panel, built, wired and fully tested at the factory. Wiring numeration and optimized layout facilitate troubleshooting. The installed components are identified by nameplates to better identify the application and the type of action.

## 7 Running test area



The production cycle draws to a close at the running test station. Here all models are individually tested in order to check correct operation, refrigerant charge and settings of microprocessor.

Once all the checks and inspections are completed and successfully passed, the units are disconnected from the testing station and moved to the last station: the shipping area.

## 8 Final inspection and packaging area



The last phase of the production cycle concerns the finishing of the units and the packaging for shipping. Here all the units are subjected to a final check and prepared for the shipping. If a special packaging has not been requested the standard one is realized with heat-shrinkable plastic film that cover the whole unit and protect it from dust, water and other atmospheric agents. Polystyrol corners are also foreseen in order to protect the unit from potential damages caused during transports. The units are then ready for transportation and final installation.

# WebService<sup>2</sup>

## What do I receive with my order?

When you order an Euroklimat product, after the order confirmation, you get your user ID and password to access to WebService<sup>2</sup>.

With the advent of information technology, there are several possibilities for communication and transmission of information in real-time.

Euroklimat wanted to exploit these instruments creating a website, which provides an important support to all customers: WebService<sup>2</sup>.



### WebService<sup>2</sup> - web portal 24/7

The simple and intuitive interface of the site allows you to “browse” quickly and easily reach the information you need. Planned and designed for the specific competences, “webservice” is a web portal that enables customers or support centres to access the detailed documentation for each single machine:

- » order confirmation, waybill and invoice
- » declaration of conformity
- » instructions manual
- » electric diagram
- » construction drawing
- » complete list of spare parts
- » ... and much much more.



# Websevice<sup>2</sup>



The information is consequently always available and up-to-date, also when you are physically at the site of installation.

Thanks to the new features of WebService2, it is now possible to check in real time the availability of spare parts for each serial number, simply by accessing the service with your own web credentials.

The “mission” of Euroklimat is always to improve the service offered to customers.



# R290 References

## Customers who have chosen us



Nestlé



Metro



Roche Diagnostic



Coop



Waitrose



Danish Technological Institute



E.ON Kemkraft



Carrefour



Del Monte Foods



Colruyt



STEF



Clauger



John Lewis Birmingham



Cityringen Copenhagen



The Coca Cola Company



# Some R290 Installations





# Our plants and quality management

## Over 50 years of business

Since we set up business in 1963, the company's head offices have always been in Italy, near Milan. Today, our aim is to be a market leader in chillers with natural refrigerant (propane): by doing this, we are helping the industry to become more efficient, preserving natural resources and protecting the environment.

## Organization in Italy

At our Italian plant spread over an area of 6,000 square metres, with a work force of 60 people, Euroklimat designs and produces refrigeration units, heat pumps and precision air conditioners that can be used both in industrial processes and traditional comfort applications.

## Infinite quality

Euroklimat firmly believes that Customer Satisfaction is an indispensable factor for success. A priority objective to achieve this result is the constant improvement of our products, services and the relative production processes.

This objective means involving all of the company's resources with planned, systematic activities for Quality; for this reason, our system complies with the international standard UNI EN ISO 9001:2015.

## Organization in China

Our plant covers a surface of approximately 100,000 square metres, with over 1,000 people and includes a large test chamber and a sophisticated R&D laboratory, in addition to real production departments, where the performance of the units is measured before being placed on the market.



COMPANY  
WITH QUALITY SYSTEM  
CERTIFIED BY DNV GL  
= ISO 9001 =



Stabilimento Italia • Sizzano



Stabilimento Cina • Huangjiang, Dongguan, Guangdong



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