KEYTER



NATURAL R-290 PROPANE

NESEA *Pro*

2-16 kW 4-22 kW

Scroll-Inverter · EC · heat recovery · HT

Air-to-water Heat Pumps Suitable for Cold Climates | Water production up to 75ºC

In heating-only, cooling-only and reversible designs, suitable for residential or commercial applications.

New PRO Series: Optimized for the use of R290 refrigerant and **Full-Inverter Technology**.

NATURAL R-290 PROPANE

Pro series

Adaptation and Environment

- Reduced charge of natural R290 refrigerant, class A3, eco-friendly with low environmental impact (GWP = 3) and high thermodynamic performance. Also available with class A2L R454C refrigerant.
- Robust and reliable design integrates leak detection and an ATEX extraction fan for maximum safety.
- With careful insulation, they ensure proper equipment protection and noise reduction, achieving ultra-quiet operation.
- Units equipped with intelligent control that ensures an optimal defrosting process.

Codification:

KWFA | **1** | **020** | **I** | **V** | **S4D**

Series · Size · Power

Operating mode
I - Reversible heat pump
R - Cooling only

Version - Compressor Type
V - Scroll inverter compressor

Hydraulic Version
S - Standard unit
P - Version with hydraulic group

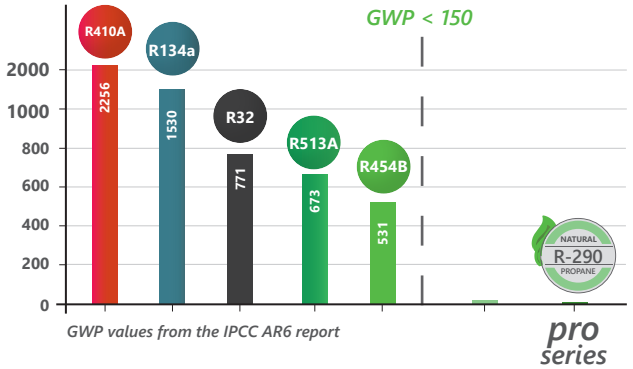
Electrical supply
4 - 400V/III/50Hz with neutral (standard)

Refrigerant
D - R290

Energy Efficiency

- Compact **Full-Inverter** units equipped with a hermetic Scroll inverter compressor, electronic expansion valve, and EC fans that ensure the best seasonal performance (SEER/SCOP).
- Wide operating range with high efficiency and extended operating limits (operation down to -20ºC outdoor temperature at full load).
- Partial heat recovery available with the possibility of integrating the recirculation pump.

Refrigerants - GWP



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range specification

		KWFA
General characteristics		
Refrigerant	R290	✓
	Equipment with refrigerant charge	✓
	Leak detector	✓R290
	ATEX axial fan for refrigerant extraction	✓R290
	ATEX centrifugal fan for refrigerant extraction	●
	Indicator light in case of leakage	✓R290
Bodywork	Self-supporting bodywork/cabinet made of galvanised steel with oven cured polyester paint treatment	✓
	Customized color to suit the needs of the installation	●
	Perimeter-enclosed equipment with 20 mm sandwich panels	✓
	Anti-vibration supplements	●
Compressor	Inverter scroll technology	✓
	Compressor anti-vibration mounts	✓
	Acoustic insulation jacket	●
Expansion valves	Electronic expansion valves	✓
	Display for electronic expansion valve	●
Fans		
Outdoor fans	EC axial fans with integrated curved nozzle	✓
Heat exchangers		
Coils	Cu tube and Al fin coils	✓
	Cu tube bundle / polyurethane pre-lacquered Al fins	●
	BLYGOLD: Cu tubes / Al fins with Blygold coating	●
	COPPERFIN: Cu tubes / Cu fins	●
Heat exchangers	Propane-water heat exchanger, AISI 316L stainless steel plates, copper-welded and thermally insulated	✓
Energy		
Energy recovery	Partial recovery of condensation energy for domestic hot water (DHW)	●
	Electric anti-icing heater in the plate heat exchanger for domestic hot water (DHW) recovery	●
Hydraulic		
Hydraulic components	Low temperature kit for operation with water outlet temperature < 0 ºC	●
	Low outdoor temperature kit	●
	Flexible water inlet and outlet connections	●
	Water filter	●
	Installation of pressure gauges at the inlet and outlet of the equipment for S version	●

✓ Included as standard
● Optional
- Not applicable

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range specification

KEYTER

		KWFA
Installation		
Insulation	Thermal insulation in all cold metal lines (refrigerant or water)	●
Power supply	400 V / III ph / 50 Hz with neutral	✓
	400 V / III ph / 60 Hz	●
	Other electrical voltages (see different options available)	●
Packaging	Packaging for maritime transport	●
Control		
Electronic control and communication	Programmable AQUAMATIX electronic control	✓
	Climatix HMI user terminal for AQUAMATIX control	✓
	RS485 communication interface for ModBus communication	✓
	Modbus TCP/IP and BACnet IP communication	✓
Defrosting	Defrosting by cycle reversal using a 4-way valve	✓
Additional control and safety components	Main switch in electrical panel	✓
	Magneto-thermal protections for compressors, fans and pumps	✓
	Low pressure switch for pump protection	●
	PREMIUM phase control relay, with phase failure detection and direction of rotation protection	✓
	EXCELLENT phase monitoring relay, adds phase unbalance, overvoltage and undervoltage detection	●
	Triple protection for the plate heat exchanger with a water flow switch and anti-ice protections for both water and refrigerant	✓
	Electric energy meter	●
Electrical panel	Electrical panel insulated against refrigerant leaks	✓
	Fully wired electrical panel, with IP54 protection	✓
	Forced ventilation of the electrical panel	✓
	Design of electrical switchgear for high temperatures	✓
	Tropicalised electrical panel	●
	Socket for common use	●
	Antifreeze electrical resistor in electrical panel for low outdoor temperatures	●

NATURAL R-290 PROPANE

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R-290 technical data

KWFA Model			KWFA 1020		
HEAT PUMP VERSION (I)					
	Compressor speed	Hz	1100	4550	5500
Cooling mode	Cooling power (1)	kW	2,5	13,7	15,4
		TR	0,7	3,9	4,4
		kBTU/h	8,5	46,6	52,6
	Absorbed power (2)	kW	0,8	5,3	6,8
	EER (3)	kW/kW	3,00	2,57	2,25
		BTU/(h*W)	10,23	8,78	7,69
	SEER (4)	kWh/kWh		5,1	
	ηs,c (4) (5)	%		202,2%	
Heating Mode 30/35	Heating power (6)	kW	4,8	18,6	21,8
	Absorbed power (2)	kW	1,0	4,4	5,5
	COP (3)	kW/kW	4,73	4,24	3,96
		BTU/(h*W)	16,14	14,48	13,53
	SCOP average (9) | SCOP warmer (12)	kWh/kWh		4.6 | 5.8	
	ηs,h average (9)(5) | ηs,h warmer (12)(5)	%		182.6% | 229.3%	
Heating Mode 47/55	Heating power (7)	kW	4,2	17,5	20,9
	Absorbed power (2)	kW	1,4	5,9	7,2
	COP (3)	kW/kW	2,91	2,98	2,89
		BTU/(h*W)	9,94	10,18	9,85
	SCOP average (10) | SCOP warmer (13)	kWh/kWh		3.8 | 4.5	
	ηs,h average (10)(5) | ηs,h warmer (13)(5)	%		147.7% | 178.1%	
Heating Mode 55/65	Heating power (8)	kW	3,9	17,0	20,3
	Absorbed power (2)	kW	1,8	6,8	8,5
	COP (3)	kW/kW	2,20	2,48	2,40
		BTU/(h*W)	7,52	8,48	8,20
	SCOP average (11) | SCOP warmer (14)	kWh/kWh		3.3 | 4.0	
	ηs,h average (11)(5) | ηs,h warmer (14)(5)	%		130.5% | 155.8%	
TECHNICAL SPECIFICATIONS					
Power supply			400 V / III / 50 Hz with neutral		
Refrigeration circuit	Refrigerant fluid / GWP	kg CO_2	R290/3		
	No. of refrig. circuits / compressors		1/1		
	No. power stages		33-100%		
Hydraulic circuit	Indoor water flow rate	m³/h	0,8	3,2	3,8
	Type of heat exchanger		brazed stainless steel plate heat exchanger		
	Hydraulic connections Ø	inch	1''		
Outdoor fan	Outdoor air flow rate	m³/h	6000	8000	
	Number of fans		1		
	Ø and Type of fan	mm	630 EC HIDRIA		
Equipment sound pressure (Lp 10) (8)		dB (A)	38,6	42,9	43,5
Weights	Empty weight (S version)	kg	285,5	285,5	285,5

(1) Nominal cooling capacity for a water inlet/outlet temperature of 12/7 °C (53.6/44.6 °F) and an outdoor air temperature of 35 °C (95 °F). Capacities calculated with a fouling factor in the plate heat exchanger of 0.4310E-4 (m²K/W).
(2) Nominal power input absorbed by compressors and outdoor fans.
(3) EER and COP calculated in accordance with standard EN 14511-2022.
(4) Seasonal efficiencies calculated in accordance with EN 14825:2022.
(5) Values ηs,c in compliance with Ecodesign Regulation (EU) 2016/2281 for comfort applications. Values ηs,h in accordance with the ecodesign requirements of Regulation (EU) 813/2013 for heat pump application.
(6) Nominal heating capacity for a water inlet/outlet temperature of 30/35 °C (86/95 °F) and an outdoor air temperature of 7 °C (44.6 °F). Capacities calculated with a fouling factor in the plate heat exchanger of 0.4310E-4 (m²K/W).
(7) Nominal heating capacity for a water inlet/outlet temperature of 47/55 °C (86/95 °F) and an outdoor air temperature of 7 °C (44.6 °F). Capacities calculated with a fouling factor in the plate heat exchanger of 0.4310E-4 (m²K/W).
(8) Nominal heating capacity for a water inlet/outlet temperature of 55/65 °C (86/95 °F) and an outdoor air temperature of 7 °C (44.6 °F). Capacities calculated with a fouling factor in the plate heat exchanger of 0.4310E-4 (m²K/W).
(9) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for low-temperature applications and average climate.
(10) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for medium-temperature applications and average climate.
(11) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for high-temperature applications and average climate.
(12) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for low-temperature applications and warmer climate.
(13) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for medium-temperature applications and warmer climate.
(14) Seasonal coefficient of performance (SCOP) and seasonal space heating energy efficiency (ηs,h) calculated for high-temperature applications and warmer climate.
(15) Sound pressure level in dB(A) in free field, at 10 m distance from the source and directivity 1.

nesea pro

energy efficiency and decarbonization

Energy Efficiency

Compact Full-Inverter units equipped with hermetic Scroll inverter compressors and high efficiency heat exchangers that ensure very high seasonal performance (SEER/SCOP).

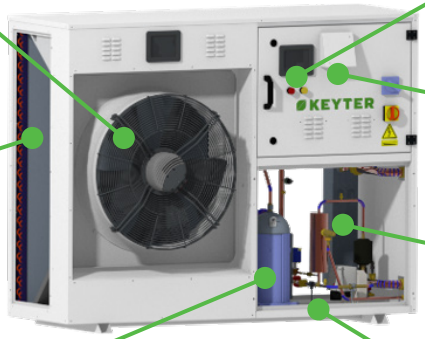
Robust and reliable design for indoor installation integrates leak detection and an ATEX axial extraction fan for maximum safety.

Inverter

The optimized electronic axial fan minimizes noise.

Removable panel for access to the copper aluminum coil optimized for refrigerant charge reduction.

Refrigeration circuit with scroll inverter compressor and electronic expansion valve.



Indicator lights in case of refrigerant leakage.

- Electrical panel in a sealed compartment separate from the refrigeration circuit.
- SIEMENS electronic control programmable AQUAMATIX and CLIMATIX HMI terminal.

Brazed plate heat exchanger made of AISI 316L stainless steel. Optimized for:
- Maximizing energy efficiency.
- Minimizing pressure losses.

Fully enclosed refrigeration compartment with an optional 20mm sandwich panel.

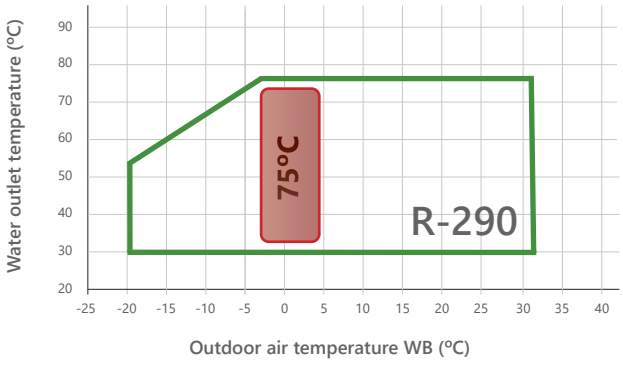
Decarbonization

High-temperature water production throughout the year for boiler replacement and carbon footprint reduction.

Heating mode (R-290):

KWFA 1020 at 4550 rpm

HT



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cascade system and dimensions

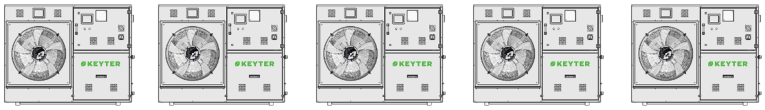
Cascade system

Nesea Pro heat pumps can be installed in a cascade of up to 5 units in parallel, reaching a total modulation capacity in a single installation of:

Total heating capacity up to 5 x 23 kW → up to 115 kW
Total cooling capacity up to 5 x 16 kW → up to 80 kW

This simultaneous cascade system operation requires a rotation board that allows for the optimal management of this system.

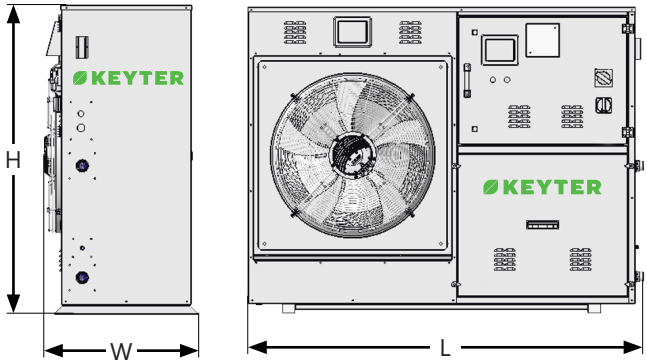
The control management for cascade installations allows monitoring of the operating hours of each unit to extend their lifespan and prioritizes operation at partial load to optimize system performance.



2-80 kW **4-115 kW**

Dimensions

Series 1 S/P



Standard equipment dimensions (mm)	
Bodywork	**Series 1 S/P**
L	1670
W	600
H	1300

NATURAL R-290 PROPANE