

**EcoHeat 412 Heat Pump**

**Main features**

Application	space heating and hot water heating
Description	the heat pump is equipped with a mixing valve (with an actuator) to ensure the supply of heating water at the required temperature, a circulating pump for connection to a well or ground loop, storage tank with integrated copper heat exchanger for hot water supply and control system for individual setting and function monitoring; a room temperature sensor is included in the standard delivery
Working fluid	R407C (refrigerant), antifreeze fluid (brine circuit), water (heating c.)
<b>Code</b>	<b>13444</b>

**Technical data**

Output <sup>1</sup>	11,75 kW
Power input <sup>1</sup>	2,55 kW
COP <sup>1</sup>	4,61
Max. starting current	23,5 A
Max. compressor operating current	8,2 A
Power supply	3/N/PE ~ 400V 50Hz
IP rating	IPX1
Compressor	Scroll
Refrigerant	R407C
Refrigerant quantity	2,3 kg
CO2 equivalent <sup>2</sup>	4,08 tun
Refrigerant max. working pressure	31 bar
Brine system min./max. pressure	0,2 / 3,0 bar
Brine system min./max. temperature	-5 / 20 °C
Antifreeze fluid volume in HP	3,4 l
Brine system min. flow through HP ( $\Delta t = 5$ K)	1584 l/h
Brine system max. flow through HP ( $\Delta t = 3$ K)	2628 l/h
Brine circuit connection	2 x Cu28
Max. heating water outlet temperature	65 °C
Max. storage tank temperature	110 °C
Max. storage tank working pressure	2,5 bar
Storage tank volume	223 l
Nominal heating water flow rate through HP	1010 l/h
Min. heating water flow rate through heating circuit	unlimited
DHW heat exchanger water volume	5,7 l
DHW heat exchanger max. working pressure	10 bar
DHW heat exchanger max. working temperature	110 °C
DHW heat exchanger connections	2 x Cu22
Overall dimensions	1904 x 595 x 672 mm
Min. ceiling height	1930 mm
Weight	279 kg

<sup>1</sup>) at B0/W35 temperatures <sup>2</sup>) is not covered by the annual check for leaking refrigerant according to EU no. 517/2014

**Bivalent source**

Max. output of backup source with circuit breaker size <sup>3</sup>	2,1 kW (16 A) 6,9 kW (20 A) 9,0 kW (25 A)
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<sup>3</sup>) the backup source output can be adjusted between 0 and 9.0 kW in 0.3 kW steps

## EcoHeat 412 Heat Pump

### Parameters for distribution tariff change

Nominal power input (required input)	3,75 kW
Heat output <sup>4</sup>	11,75 kW
Steady current <sup>4</sup>	4,1 A
Starting current	23,5 A
Nominal voltage / number of phases	400V 3f

<sup>4</sup>) at B0/W35 temperatures

### Sound data

Sound power level LWA by EN 12 102	48 dB
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### Energy efficiency data

(for average climatic conditions, others see the Product Fiche)

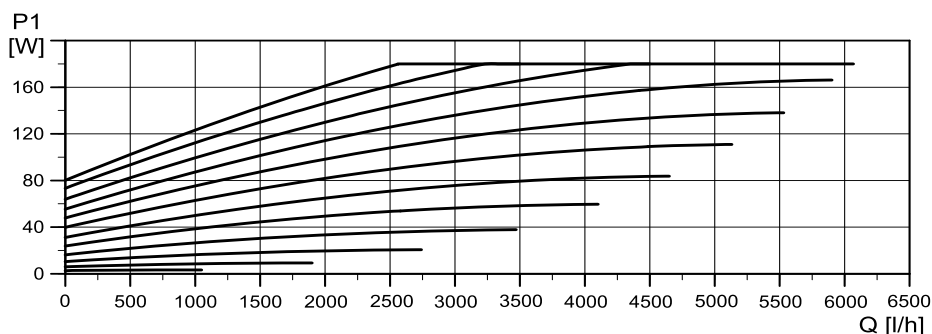
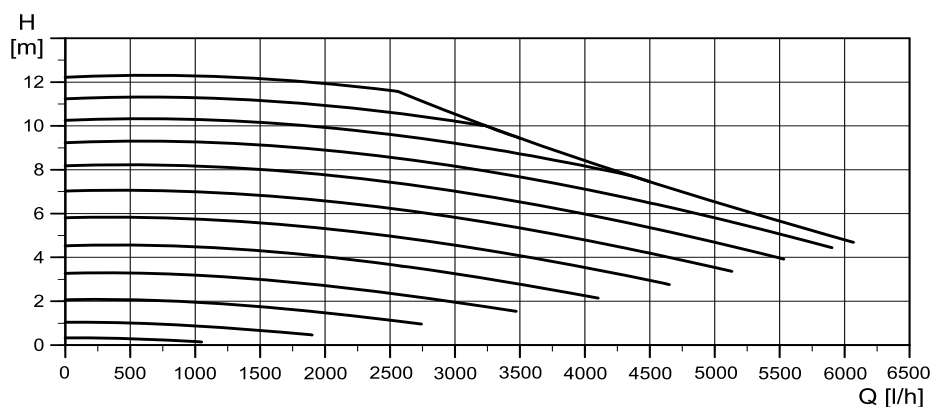
Energy Efficiency Class for space heating (W55)	A++
Energy Efficiency Class for hot water heating (W55)	A
Declared Load Profile	L

### Output parameters <sup>5</sup>

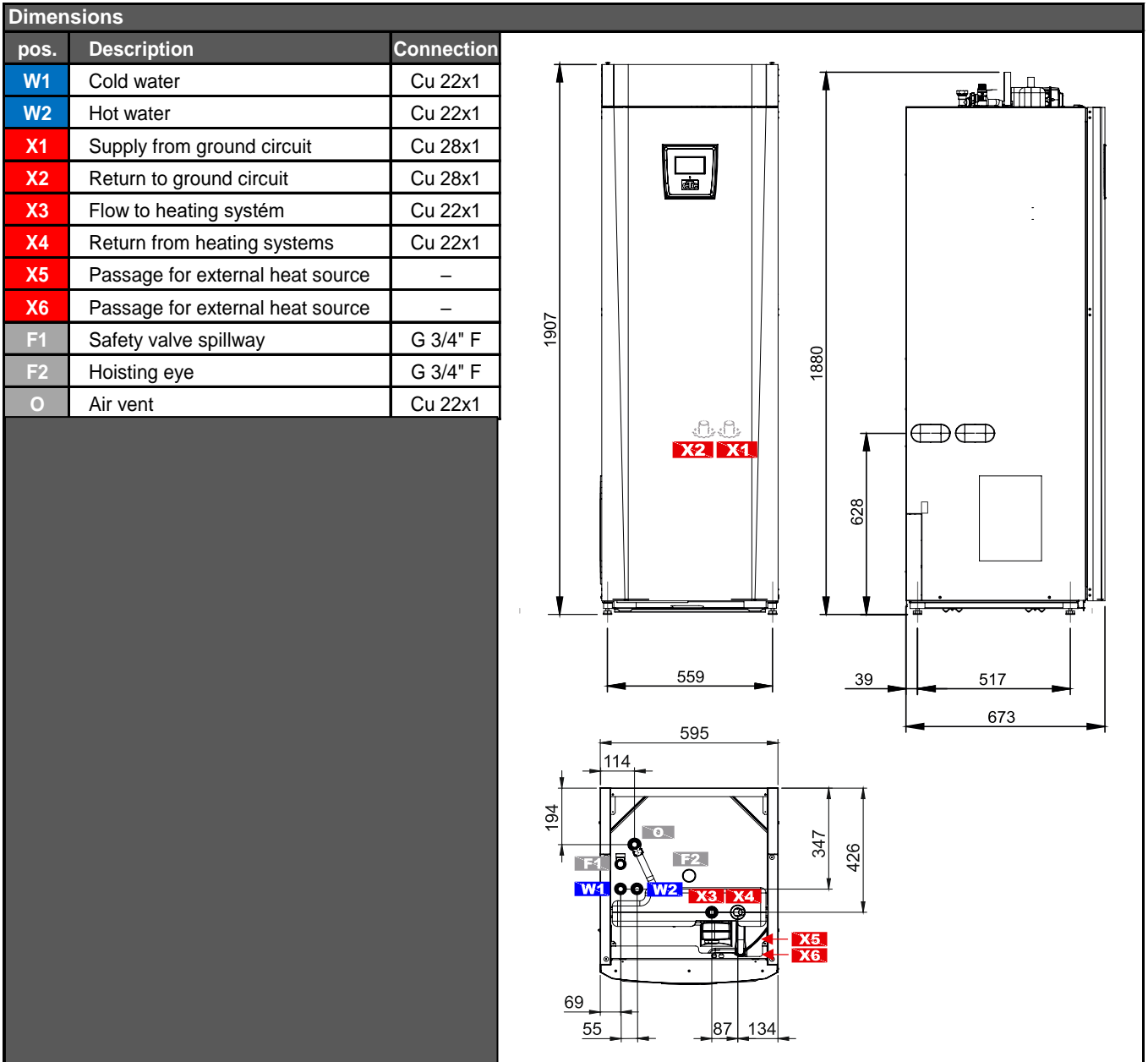
	[°C]	-5/25	-5/35	-5/45	-5/55
Output	[kW]	-	-	9,88	-
Power input	[kW]	-	-	2,99	-
COP	[-]	-	-	3,30	-
	[°C]	0/25	0/35	0/45	0/55
Output	[kW]	-	11,75	11,24	10,97
Power input	[kW]	-	2,55	3,07	3,71
COP	[-]	-	4,61	3,66	2,96
	[°C]	5/25	5/35	5/45	5/55
Output	[kW]	-	13,53	12,95	12,57
Power input	[kW]	-	2,65	3,15	3,75
COP	[-]	-	5,11	4,11	3,35

<sup>5</sup>) values measured according to EN 14 511 at the manufacturer's test lab

### Performance curves for brine circuit pump



## EcoHeat 412 Heat Pump



**EcoHeat 412 Heat Pump**

v1.1\_01/2021

The energy efficiency of the package of products provided for in fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

 Supplier: **REGULUS spol. s.r.o.**

 Model: **EcoHeat 412**

I	The value of the seasonal space heating energy efficiency of the preferential space heater	123	%
II	The factor for weighting the heat output of preferential and supplementary heaters of a package	-	-
III	The value of the mathematical expression $294/(11 \cdot P_{\text{rated}})$	2,06	-
IV	The value of the mathematical expression $115/(11 \cdot P_{\text{rated}})$	0,80	-
V	The value of the difference between the seasonal space heating energy efficiencies under average and colder climate conditions	2,00	%
VI	The value of the difference between the seasonal space heating energy efficiencies under warmer and average climate conditions	1,00	%

Seasonal space heating energy efficiency of heat pump  $I = \mathbf{123} \%$

Temperature control (from fiche of temperature control)

Class I = 1,0%	Class II = 2,0%	Class III = 1,5%	+ $\mathbf{3,5} \%$
Class IV = 2,0%	Class V = 3,0%	Class VI = 4,0%	
Class VII = 3,5%	Class VIII = 5,0%		

Supplementary boiler (from fiche of boiler)

$$\left( \boxed{\phantom{0}} - I \right) \cdot II = \mathbf{-3} \%$$

Solar contribution (from fiche of solar device)

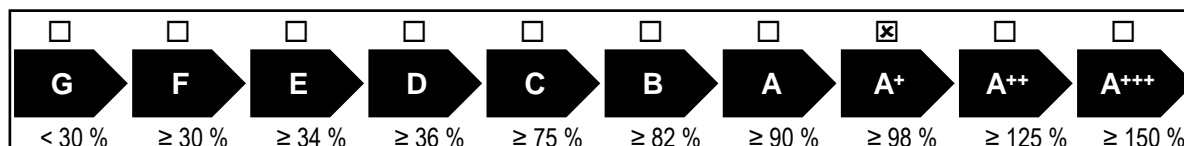
$$\left( III \cdot \boxed{\phantom{0}} + IV \cdot \boxed{\phantom{0}} \right) \cdot 0,45 \cdot \left( \boxed{\phantom{0}} / 100 \right) \cdot \boxed{\phantom{0}} = \mathbf{+4} \%$$

Tank volume (in m<sup>3</sup>)

Tank rating: A<sup>+</sup> = 0,95 A = 0,91 B = 0,86 C = 0,83 D-G = 0,81

Seasonal space heating energy efficiency of package under average climate  $\mathbf{127} \%$

Seasonal space heating energy efficiency class of package under average climate



Seasonal space heating energy efficiency under colder and warmer climate conditions

Colder:  $\mathbf{123} - V = \mathbf{125} \%$

Warmer:  $\mathbf{123} + VI = \mathbf{128} \%$

The energy efficiency of the package of products provided for in fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

I	Water heating energy efficiency of combination heater	86	%
II	The value of the mathematical expression $(220 \cdot Q_{ref}) / Q_{nonsol}$	-	-
III	The value of the mathematical expression $(2,5 \cdot Q_{aux}) / (220 \cdot Q_{ref})$	-	-

Water heating energy efficiency of combination heater  $I = \boxed{1} \boxed{86} \%$

Declared load profile L

Solar contribution (from fiche of solar device)

Auxiliary electricity

$(1,1 \cdot I - 10\%) \cdot II - \boxed{III} - I = + \boxed{2} \boxed{-} \%$

Water heating energy efficiency of package under average climate 3 86 %

Water heating energy efficiency class of package under average climate

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	<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A+</b>	<b>A++</b>	<b>A+++</b>
<input type="checkbox"/> M	< 27 %	≥ 27 %	≥ 30 %	≥ 33 %	≥ 36 %	≥ 39 %	≥ 65 %	≥ 100 %	≥ 130 %	≥ 163 %
<input checked="" type="checkbox"/> L	< 27 %	≥ 27 %	≥ 30 %	≥ 34 %	≥ 37 %	≥ 50 %	≥ 75 %	≥ 115 %	≥ 150 %	≥ 188 %
<input type="checkbox"/> XL	< 27 %	≥ 27 %	≥ 30 %	≥ 35 %	≥ 38 %	≥ 55 %	≥ 80 %	≥ 123 %	≥ 160 %	≥ 200 %
<input type="checkbox"/> XXL	< 28 %	≥ 28 %	≥ 32 %	≥ 36 %	≥ 40 %	≥ 60 %	≥ 85 %	≥ 131 %	≥ 170 %	≥ 213 %

Water heating energy efficiency of package under colder and warmer climate conditions

Colder: 3 78 - 0,2 · 2 - = 86 %

Warmer: 3 78 + 0,4 · 2 - = 86 %