DATA SHEET

EcoAir 720M 3 x 400 V Air-to-water Heat Pump

Main Features	
Application	Heating, cooling, DHW heating.
Description	Heat pump with variable speed of compressor (with inverter, modulating) and with ecological refrigerant R290 (propane). In the mode of space and DHW heating, the heat pump gains energy from the surrounding air (at an outdoor temperature of down to –25 °C) and transfers it to the working fluid, the temperature of which can reach up to 70 °C at the outlet from the heat pump. In the cooling mode, it draws heat from the interior spaces (at an ambient air temperature of up to 40 °C) through the working fluid, the temperature of which can reach up to 5 °C at the outlet from the heat pump.It is equipped with a compressor with variable speed.
Working fluid	Water, antifreeze fluid for heating systems and heat pumps.
Installation[1)]	The heat pump shall be installed with either RegulusBOX, RegulusHBOX, RegulusHBOX K indoor unit or with a CSE IR pump station with IR 14 controller. For variants kindly consult the Catalogue. The heat pump includes a safety valve with an opening pressure of 2 bar. If necessary, it can be replaced with a 2.5 bar safety valve.
Code	**21548**

1) In case of installation in series, the first heat pump in series shall be installed with Pump Station Kit w. Smart Controller, all the heat pumps following in series shall be installed with CSE TC W iPWM pump station (for codes see Catalogue).

Technical Data	
Heating – performance[2)]	4.28 kW / 13.57 kW
Heating – power input[2)]	0.82 kW / 6.06 kW
COPr[2)]	5.22 / 2.24
Cooling – performance[3)]	11.90 kW / 13.00 kW
Cooling – power input[3)]	2.89 kW / 5.21 kW
Cooling factor[3)]	4.12 / 2.50
Nominal current	16.55 A
Power supply	3/N/PE ~ 3 x 400 V 50 Hz
Recommended circuit breaker	B20A 3p
IP rating	IPX4
Min./max. heat pump flow temperature	5 / 75 °C
Max. heating water temperature at HP inlet	80 °C
Max. working pressure of heat. water	2.5 bar
Heating water volume in heat pump	4.5 l
Min. volume of heating system that cannot be shut off	120 l
Min. flow rate through HP necessary for safe defrosting	612 l/h
Nominal flow rate for efficient HP operation	1836 l/h
Min. surface area of heat exchanger in tank	1.5 m²
Air operating temperature for heating mode	–25 to 40 °C
Air operating temperature for cooling mode	15 to 40 °C
Max. air volume	7319 m³/h
Fan speed	variable
Compressor	double rotary
Refrigerant	R290 (GWP 0.02) – safety group A3
Refrigerant quantity	1.2 kg
CO_2[4)] equivalent	0.000024 t
Refrigerant max. working pressure	31 bar
Connections	2 x Cu 28 x 1.5
Weight	206 kg

2) For temperatures A+7/W35 at min. speed and A-7/W35 at max. speed following EN 14511. 3) For temperatures A+35/W18 at min. speed and A+35/W7 at max. speed. 4) Not subject to mandatory leak checks under EU Regulation No. 517/2014.

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EcoAir 720M 3 x 400 V Air-to-water Heat Pump

Energy efficiency data *(for low-temperature applications under average climatic conditions for others see the Product Fiche)*	
Seasonal Energy Efficiency	211%
Energy Efficiency Class	A+++
SCOP	5.35

Sound data	
Sound power level	54 dB(A)
Sound pressure level at 5 m	35 dB(A)
Sound pressure level at 10 m	29 dB(A)

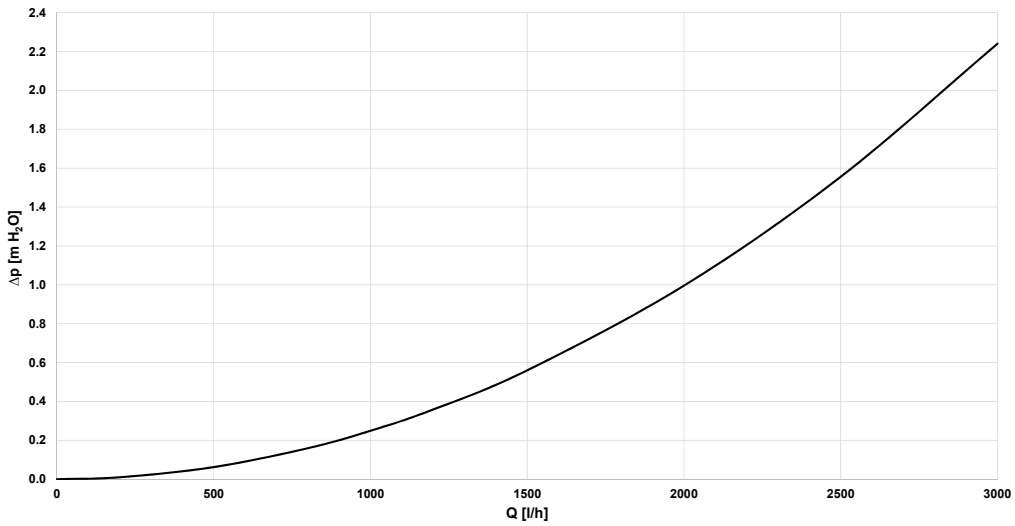
Parameters for distribution tariff change	
Parameters for distribution tariff change	10.52 kW
Heat output[5)]	15.49 kW
Steady current[5)]	9.6 A
Starting current	1.49 A
Nominal voltage	3 x 230/400 V

5) For temperatures A2/W35 and max. compressor rpm.

Performance Data – heater	
Heating capacity max.: W35 & A +12/+7/+2/–7/–15	21.82/18.20/15.49/14.32/13.57/12.01 kW
Nominal heating output: W35 & A +12/+7/+2/–7/–15	11.92/10.46/7.77/8.01/7.02/5.51 kW
Heating capacity min.: W35 & A +12/+7/+2/–7/–15	4.88/4.28/4.64/6.39/–/– kW
Power input max.: W35 & A +12/+7/+2/–7/–15	5.79/6.05/5.97/5.91/6.06/5.98 kW
Nominal power input: W35 & A +12/+7/+2/–7/–15	1.79/2.15/2.06/2.13/2.10/2.09 kW
Power input min.: W35 & A +12/+7/+2/–7/–15	0.79/0.82/1.05/1.65/–/– kW
Coefficient of performance, heating (COP) max.: W35 & A +12/+7/+2/–7/–15	3.77/3.01/2.59/2.42/2.24/2.01
Nominal coefficient of performance, heating (COP): W35 & A +12/+7/+2/–7/–15	6.67/4.85/3.77/3.76/3.34/2.63
Coefficient of performance, heating (COP) min.: W35 & A +12/+7/+2/–7/–15	6.21/5.19/4.40/3.88/–/–

Performance Data – cooling	
Cooling performance max.: A35 & W18/W7	17.22/13 kW
Nominal cooling power: A35 & W18/W7	11.9/8.68 kW
Cooling performance min.: A35 & W18/W7	11.9/3.3 kW
Power input max.: A35 & W18/W7	5.89/5.21 kW
Nominal power input: A35 & W18/W7	2.89/2.7 kW
Power input min.: A35 & W18/W7	2.89/0.92 kW
Energy efficiency ratio, cooling (EER) max.: A35 & W18/W7	2.92/2.49
Nominal coefficient of performance, cooling (EER): A35 & W18/W7	4.12/3.21
Energy efficiency ratio, cooling (EER) min.: A35 & W18/W7	4.12/3.58

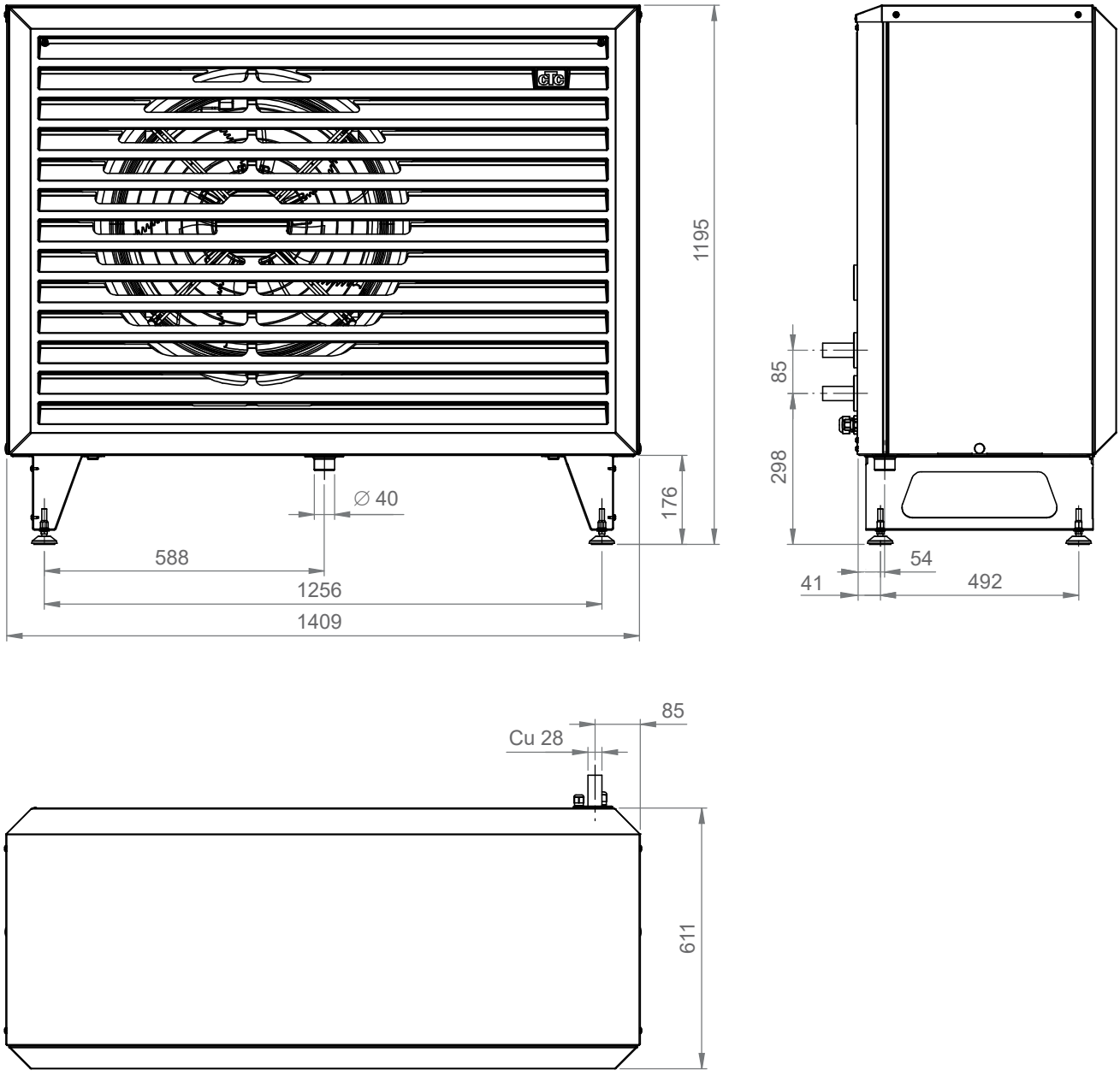
Heat pump pressure drop graph



DATA SHEET

EcoAir 720M 3 x 400 V Air-to-water Heat Pump

Dimensions



DATA SHEET

EcoAir 720M 3 x 400 V Air-to-water Heat Pump

Placement of the heat pump

The heat pump contains the flammable refrigerant R290 (propane C_3H_8) with UN number 1978 (hazard identification number 23). In the event of leakage, a flammable or explosive atmosphere is formed with the surrounding air. For this reason, it is necessary to pay attention to the correct placement of the heat pump. The images show a safety area (A) that defines the distance between the heat pump and surrounding objects.

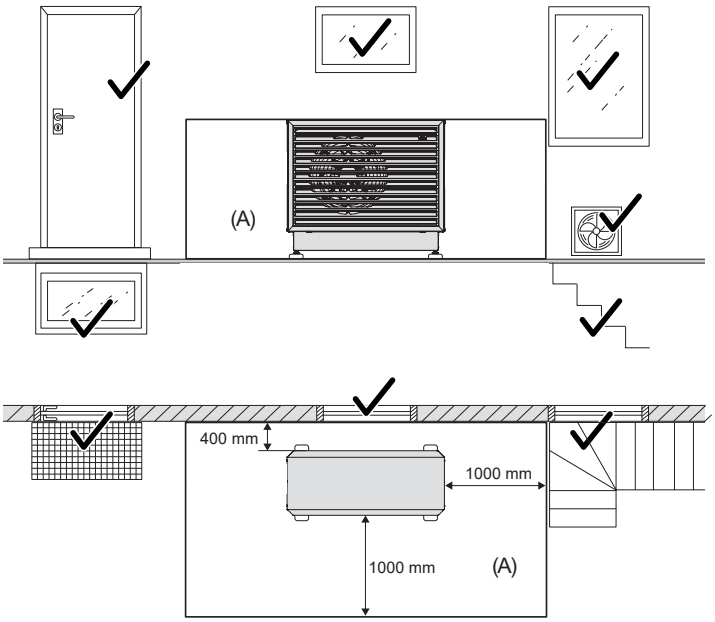
The following conditions must not occur within the safety area:

- Openings in the building, e.g. windows, doors, light sources or skylights.
- Air supply from ventilation and air conditioning systems.
- Property borders, adjacent property, walkways and other roads.
- Pump shafts, inflow to the drainage system without water traps, downpipes and sewage trenches etc.
- Other troughs, wells, recesses, shafts.
- Electrical connections to the building.
- Electrical systems, plug sockets, lights, switches.
- Snowfall from roofs.

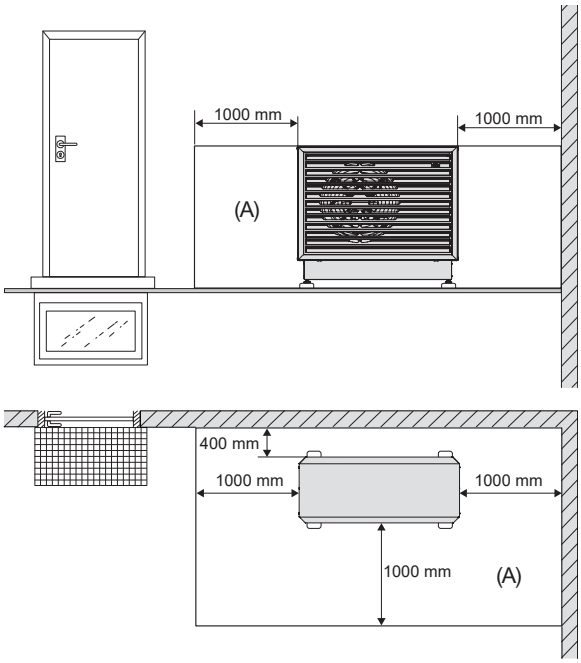
Do not introduce sources of ignition in the safety area:

- Open flames or burner assemblies.
- Grills/barbecues.
- Sparking tools.
- Electrical equipment with sources of ignition, mobile units with inbuilt batteries (e.g. cars, mobile telephones, fitness trackers etc.).
- Objects with a temperature exceeding 360 °C.

Placement of a heat pump against a straight wall:



Placement of a heat pump in a corner:



PRODUCT FICHE

EcoAir 720M 3 x 400 V Air-to-water Heat Pump

Supplier's name *REGULUS spol. s. r. o.*
Supplier's model identifier *CTC EcoAir 720M 3 x 400 V*

Parameter	low temperature	medium temperature
The seasonal space heating energy efficiency class	**A+++**	**A+++**
Average climate		
The rated heat output including any suplementary heaters	**12 kW**	**12 kW**
The seasonal space heating energy efficiency	**211 %**	**161 %**
The annual energy consumption	**4483 kWh**	**6159 kWh**
Cold climate		
The rated heat output including any suplementary heaters	**16 kW**	**15 kW**
The seasonal space heating energy efficiency	**165 %**	**134 %**
The annual energy consumption	**9100 kWh**	**10 817 kWh**
Warm climate		
The rated heat output including any suplementary heaters	**15 kW**	**16 kW**
The seasonal space heating energy efficiency	**250 %**	**188 %**
The annual energy consumption	**3208 kWh**	**4375 kWh**
The sound power level LWA, outdoors	**54 dB**	

Any specific precautions that shall be taken when the space heater is assembled, installed or maintained are stated in the manual that is a part of the supply.

Model:	**CTC EcoAir 720M 3 x 400 V**
Air-to-water heat pump:	**yes**
Water-to-water heat pump:	**no**
Brine-to-water heat pump:	**no**
Low-temperature heat pump:	**no**
Equipped with supplementary heater:	**no**
Heat pump combination heater:	**no**

Parameters declared for medium-temperature application and average climate.

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	**12**	kW
Declared capacity for heating for part at indoor temperature 20 °C and outdoor temperature Tj:			
Tj = –7 °C	P_{dh}	**10.8**	kW
Tj = +2 °C	P_{dh}	**6.6**	kW
Tj = +7 °C	P_{dh}	**4.5**	kW
Tj = +12 °C	P_{dh}	**5.3**	kW
Tj = bivalent temperature	P_{dh}	**11.9**	kW
Tj = operation limit temperature	P_{dh}	**11.9**	kW
For air-to-water heat pumps: Tj = –15 °C, if TOL < –20 °C	P_{dh}	–	kW
Bivalent temperature	T_{biv}	**–10**	°C
Cycling interval capacity for heating	P_{cyc}	–	kW
Degradation co-efficient (**)	C_{dh}	**1.00**	–
Power consumption in modes other than active mode:			
Off mode	P_{OFF}	**0.017**	kW
Thermostat-off mode	P_{TO}	**0.017**	kW
Standby mode	P_{SB}	**0.017**	kW
Crankcase heater mode	P_{CK}	**0.016**	kW
Other items:			
Capacity control		**Variable**	
Sound power level, indoors/outdoors	L_{WA}	**– / 54**	dB
Yearly energy consumption	Q_{HE}	**6159**	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	**161**	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj.			
Tj = –7 °C	COP_d	**2.43**	–
Tj = +2 °C	COP_d	**4.00**	–
Tj = +7 °C	COP_d	**5.50**	–
Tj = +12 °C	COP_d	**6.82**	–
Tj = bivalent temperature	COP_d	**2.01**	–
Tj = operation limit temperature	COP_d	**2.01**	–
For air-to-water heat pumps: Tj = –15 °C, if TOL < –20 °C	COP_d	–	–
Bivalent temperature	T_{OL}	**–10**	°C
Cycling interval capacity for heating	COP_{cyc}	–	–
Heating water operating limit temp.	W_{TOL}	**55**	°C
Supplementary heater:			
Rated heat output (*)	P_{sup}	**0.00**	kW
Type of energy input		**electrical energy**	
For air-to-water heat pumps: Rated air flow rate, outdoors		**6159**	m^3/h
For water/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger		–	m^3/h

Contact deatils **Enertech AB, Box 309, SE-341 26 Ljungby, Sweden** **www.ctc.se**

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the capacity for heating sup(Tj).
(**) If Cdh is not determined by measurement then the default degradation is Cdh = 0.9.