EcoHeat 400

Ground and Water Source Heat Pump with Integral Thermal Store and Controller

Enertech Group

The next generation of ground source heat pump. The EcoHeat 400 is CTC's quietest and most efficient heat pump

The CTC EcoHeat 400 range of ground source heat pumps and integral thermal store offer an extremely efficient solution for space heating and hot water generation. Absorbing energy from the ground, boreholes or water the CTC EcoPart 400 raises the collected energy temperature by means of a refrigeration circuit providing higher temperatures to the heating system. With a thermal baffle the lower section of the thermal store is heated to temperatures required for heating whilst the upper section of the thermal store is heated to a higher temperature to satisfy the hot water demand. This temperature differential maintains a high operating COP.

CTC EcoHeat 400 is housed in a stylish white steel cabinet and is complete with a 4.3 inch colour touch screen controller with EnergyFlex CTC's versatile control philosophy. A 146 mm high vanity cover is fitted to the top of the EcoHeat 400 to cover the heating connections and equipment. Covers 480 mm and 580 mm are also available.

Thanks to a newly developed refrigeration circuit with an electronically controlled expansion valve and highly efficient compressor the EcoHeat 400 boasts excellent efficiency with COP's in excess of 5 (see data table). The compressor and refrigeration components are housed in a separate sound insulated unit. This provides exceptionally low noise levels, below 48dB(A) making it one of the quietest heat pumps ever developed. The cooling module can be removed from the EcoHeat 400 making maintenance of the refrigeration components much easier as well as aiding installation. Continued >>

Key features

- High efficiency up to COP of over 5.0 (at 5/35°C)
- Significantly reduced heating costs
- Intuitive 4.3 inch colour touch screen control interface
- Smart stylish white steel case
- Low noise production
- Weather compensation of two heating circuits
- Low energy pumps for both brine and charge circuits
- EnergyFlex: Flexibility to connect additional heat sources

ENERGY FLEX

EcoHeat 400

With up to two fully weather compensated heating circuits the EcoHeat 400 can be used with radiators, convectors or underfloor heating with both circuits having different flow temperatures. The circuit with the higher flow temperature is controlled by the 4 port mixing valve supplied with the EcoHeat 400 and the additional circuit would be controlled by a three port mixing valve and pump supplied as an accessory. Constant even heat distribution to the heat emitters ensures consistent comfort levels as well as reducing expansion and contraction noise form the heating system associated with fluctuating flow temperatures.

With a built-in copper coil providing copious amounts of hot water the CTC EcoHeat 400 is ideal for small and medium sized developments. With very low stored water quantities, below 6 litres, there is no risk of legionella and costly disinfection cycles are not required.

CTC has developed the EnergyFlex control philosophy giving the freedom to add additional heat sources to CTC systems and with two ingenious connections it is possible to add additional heat sources including solar panels or a water jacketed stove. It is also possible to add swimming pool heating to the EcoHeat 400.

ENERGY FLEX

TECHNICAL DATA					
Electrical Data		EcoHeat 406	EcoHeat 408	EcoHeat 410	EcoHeat 412
Voltage		230V 1Ph[1]			
Rated Power	kW	11.7	12.6	13.4	14.1
Immersion heater (steps of 0.3 kW)	kW	0 - 9.0			
Min. Main fuse @ 3.5 / 5.5 / 9.0 kW immersion heater	A	30 / 38 / 54	34 / 43 / 58	37 / 46 / 61	41 / 49 / 65
IP Class		IPX1			
ErP data for heat pump[2]					
Energy class heating 35/55°C (in package with control)		A+++/A+	A+++/A++	A+++/A++	A+++/A++
Energy class heating 35/55°C (without control)		A++/A++	A++/A++	A++/A++	A++/A+
Energy class hot water / tap profile		A/L	A/L	A/L	A/L
Nominal heat output (Pdesignh) 35/55°C	kW	7/6	10/9	12/10	14/13
Operational data for heat pump					
Output from compressor[3] @ 0/35 / 0/45 / 0/55	kW	5.9 / 5.48 / 5.17	8.19 / 7.87 / 7.55	9.97 / 9.55 / 9.28	11.75 / 11.24 / 10.97
COP[1] @ 0/35 / 0/45 / 0/55		4.57 / 3.54 / 2.76	4.58 / 3.64 / 2.99	4.60 / 3.68 / 2.98	4.60 / 3.66 / 2.96
Output from compressor[3] @ 5/35 / 5/45 / 5/55	kW	6.81 / 6.49 / 6.08	9.44 / 9.05 / 8.65	11.42 / 10.99 / 10.58	13.53 / 12.95 / 12.57
COP[1] @ 5/35 / 5/45 / 5/55		5.24 / 4.15 / 3.18	5.02 / 4.04 / 3.30	5.20 / 4.16 / 3.28	5.11 / 4.11 / 3.35
Max. operating current of Compressor	A	13.0	18.5	20.6	25.0
Heating System					
Water volume thermal store	l	223			
Max. operating pressure thermal store (PS)	bar	2.5			
Max. temperature thermal store (TS)	°C	110			
Heating system min. flow	l/s	Unlimited			
Heating system nominal flow Δt 10°C and 0/35°C heat pump operation	l/s	0.14	0.20	0.24	0.28
Brine System					
Water volume (V)	l	2.3	2.9	2.9	3.4
Brine system min/max temp (TS)	°C	-5/20			
Brine system min/max pressure (PS)	bar	0.2/3.0			
Brine system min. flow Δt = 5°K	l/s	0.27	0.31	0.38	0.44
Brine system nominal flow Δt = 3°K	l/s	0.37	0.51	0.64	0.73
Hot water system					
Water volume hot water coil (V)	l	5.7			
Max. operating pressure hot water coil (PS)	bar	10			
Max. temperature hot water coil (TS)	°C	110			
Other Data					
Refrigerant quantity (R407C)	kg	1.9	1.9	1.9	2.3
High pressure switch rating	MPA/bar	3.3/31			
Weight empty/full	kg	267/497	270/500	272/502	279/509
Width x Height x Depth	mm	595 x 1904 x 672			
Minimum ceiling height	mm	1925			
Noise level	dB(A)	44.9	43.9	48.5	48.0

1) Data for 230V single phase product shown. 400V three phase units are available
2) Further Eco Design and Eco Labelling information is available on the CTC website
3) EN14511:2007 including heating medium pump and brine pump

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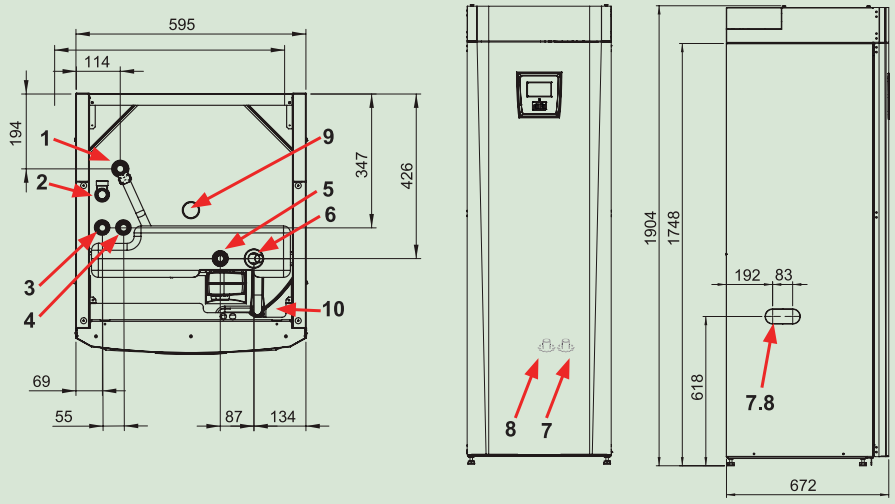
Dimensional drawing of the CTC EcoHeat 400 heat pump



1. Air vent
2. Connection waste pipe 3/4”
3. Cold water connection Ø22
4. Hot water Ø22
5. Radiator primary flow Ø22
6. Radiator return Ø22
7. From ground loop Ø22 (right, left and back)
8. To ground loop Ø22 (right, left and back)
9. Lifting sleeve 3/4” BSP
10. Socket for external systems

Delivery includes:

Connection pipe for cold side
Brine filling kit
Power supply cable and primary/return sensors
Kit bag containing:

- Room and outdoor sensor
- Installation and maintenance manual
- Safety valves for DHW and Brine
- Cable ties and grommets
- Brine level vessel

Accessories:

Vanity cover 480 mm	586463302
Vanity cover 580 mm	586463303
CTC Internet	587581301
CTC wireless room sensor	585520301
Expansion vessel	586749401

Part Number:

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ENERGY FLEX

APPROVED PRODUCT