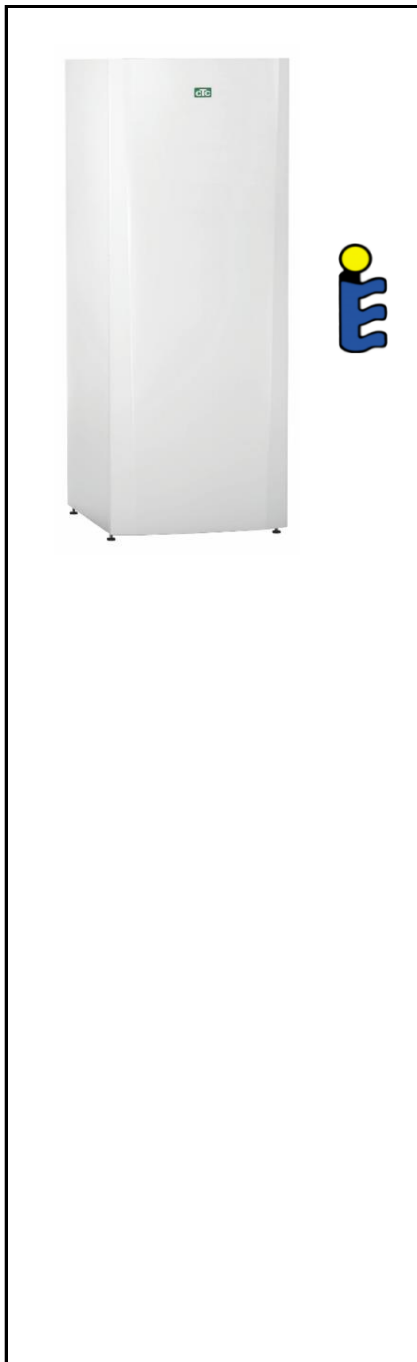


## EcoPart 435 Ground-to-water Heat Pump

v1.2\_10/2019

Main features	
Application	space heating and hot water heating
Description	consists of two heat pumps KM417EP (output 2x17 kW)
Function	heat pumps extract energy from ground; this energy gained from deep bores or ground collectors is then "pumped" to a higher temperature and transferred into heating water; the flow temperature may reach up to 65 °C
Working fluid	R407C (refrigerant), antifreeze fluid (brine circuit), water (heating circuit)
Certification	HP Keymark - European Committee for Standardization quality label
<b>Code</b>	<b>15903</b>




Technical data	EcoPart 435	
	KM417EP	KM417EP
Nominal output	14,8 kW	
Nominal current	27,8 A	
Max. compressor operating current (total)	23,0 A	
Max. compressor operating current (partial)	11,5 A	11,5 A
Starting current	32,0 A	32,0 A
Power supply	400 V 3N ~ 50 Hz	
IP rating	IPX1	
Compressor	scroll	
Refrigerant (GWP)	R407C (1774)	
Refrigerant quantity	2,7 kg	2,7 kg
CO2 equivalent*	4,790 t	4,790 t
Compressor oil	polyoester (POE)	
Refrigerant max.working pressure	31 bar	31 bar
Min./max. brine temperature in brine circuit	- 5°C / 20°C	
Min./max. brine pressure in brine circuit	0,2 bar / 3 bar	
Brine volume in HP	4,07 l	4,07 l
Min. brine flow through HP ( $\Delta t=5K$ )	2270 l/h	2270 l/h
Nom. brine flow through HP ( $\Delta t=3 K$ )	3780 l/h	3780 l/h
Brine pumps	2 x UPMXL GEO 25-125 180	
Brine circuit connections	2x Cu 28x1,5	2x Cu 28x1,5
Max. flow temperature	65 °C	
Max. heating water temperature in system	110 °C	
Max. heating water operating pressure	3 bar	
Heating water flow rate in HP ( $\Delta t = 10K$ at 0/35 °C)	2920 l/h	2920 l/h
Nom. flow rate of heating water in HP ( $\Delta t = 5K$ at 0/35 °C)	1440 l/h	1440 l/h
Heating system circulation pumps	2 x UPM GEO 25-85 130	
Heating circuit connections	2 x Cu 28x1,5	2 x Cu 28x1,5
Weight	359 kg	

\* is not covered by the annual check for leaking refrigerant (EU No 517/2014)

Energy efficiency data	EcoPart 435
<i>(for low-temperature applications under average climatic conditions, others see the Product Fiche)</i>	
Seasonal Energy Efficiency	181%
Energy Efficiency Class	A+++
SCOP	4,7

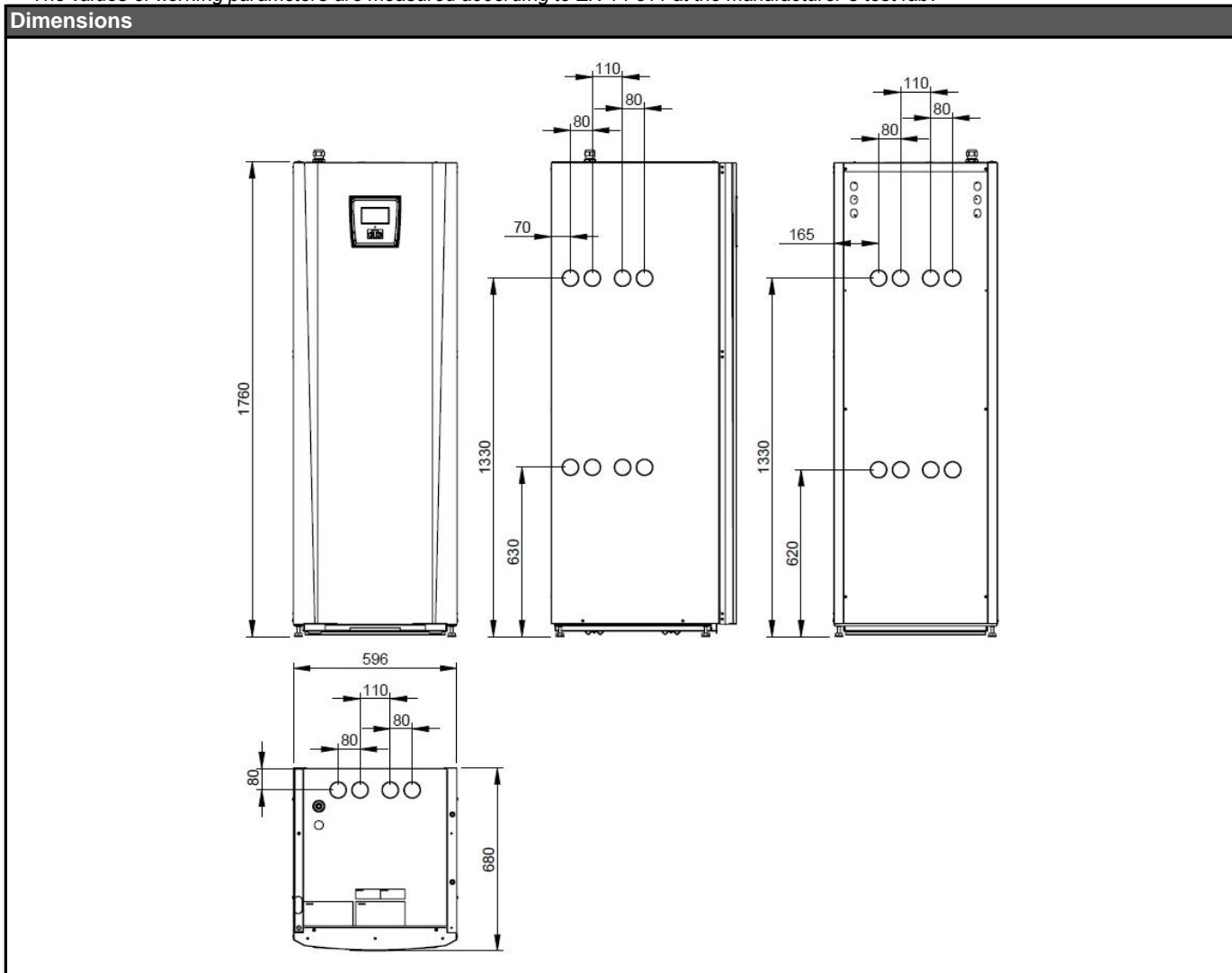
Sound data according to EN 12 102	
Sound power level $L_{WA}$	56 dB(A)

## EcoPart 435 Ground-to-water Heat Pump

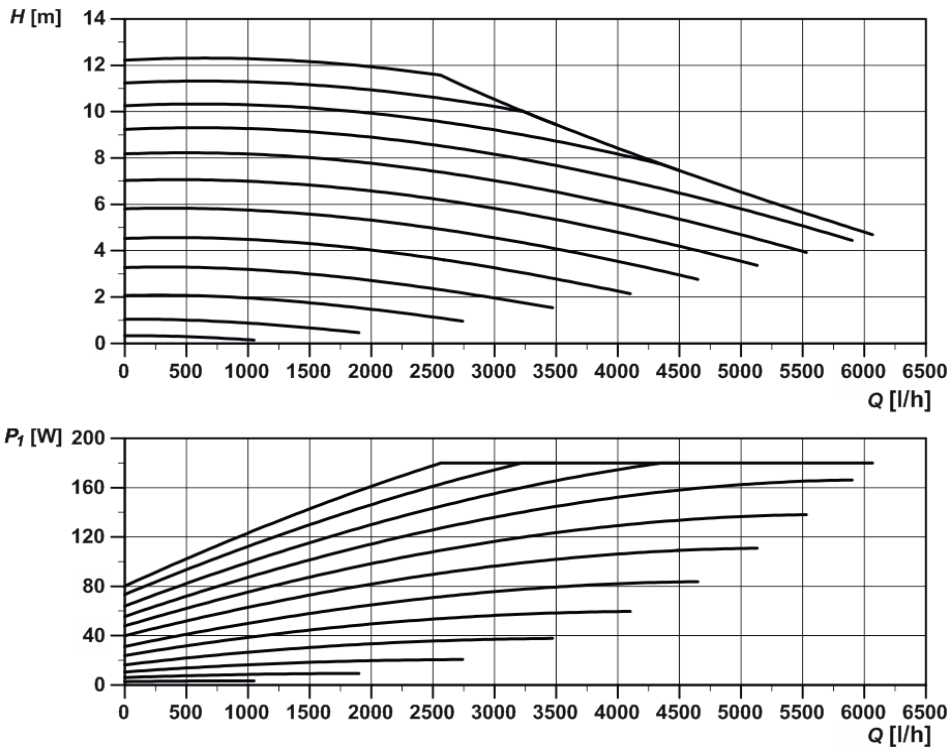
Heating water circuit pumps		Total power		
	2 x Grundfos UPM GEO 25-85 130	Brine system temperature	Flow temperature	Total power [kW]
		5 °C	35 °C	38,50
			45 °C	36,84
			55 °C	36,32
		0 °C	35 °C	32,48
			45 °C	32,28
			55 °C	31,74
		-5 °C	45 °C	28,10

Output parameters							
Brine system temperature	Flow temperature	Output [kW]		Power input [kW]		COP [-]	
		KM417EP	KM417EP	KM417EP	KM417EP	KM417EP	KM417EP
5 °C	35 °C	19,25	19,25	3,83	3,83	5,02	5,02
	45 °C	18,42	18,42	4,55	4,55	4,05	4,05
	55 °C	18,16	18,16	5,37	5,37	3,38	3,38
0 °C	35 °C	16,24	16,24	3,72	3,72	4,36	4,36
	45 °C	16,14	16,14	4,47	4,47	3,61	3,61
	55 °C	15,87	15,87	5,17	5,17	3,07	3,07
-5 °C	45 °C	14,05	14,05	4,40	4,40	3,19	3,19

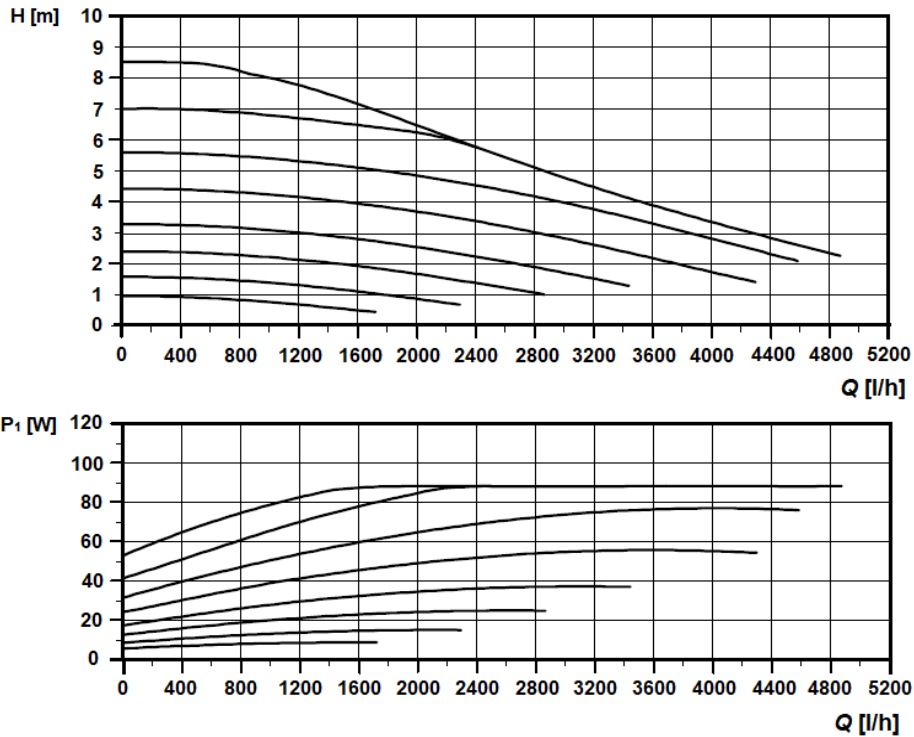
\*\* The values of working parameters are measured according to EN 14 511 at the manufacturer's test lab.



Brine pump performance graph

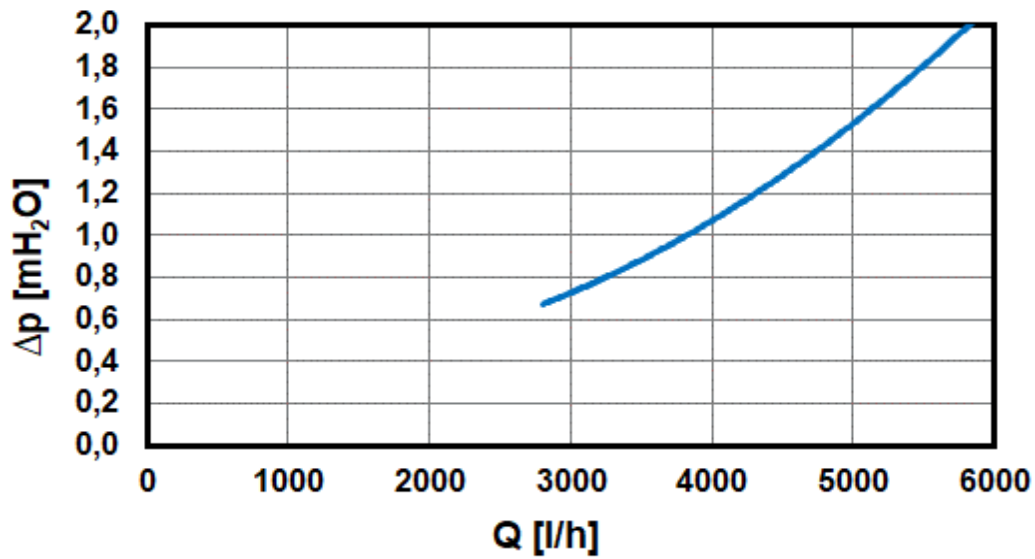


Heating water circuit pumps performance graph

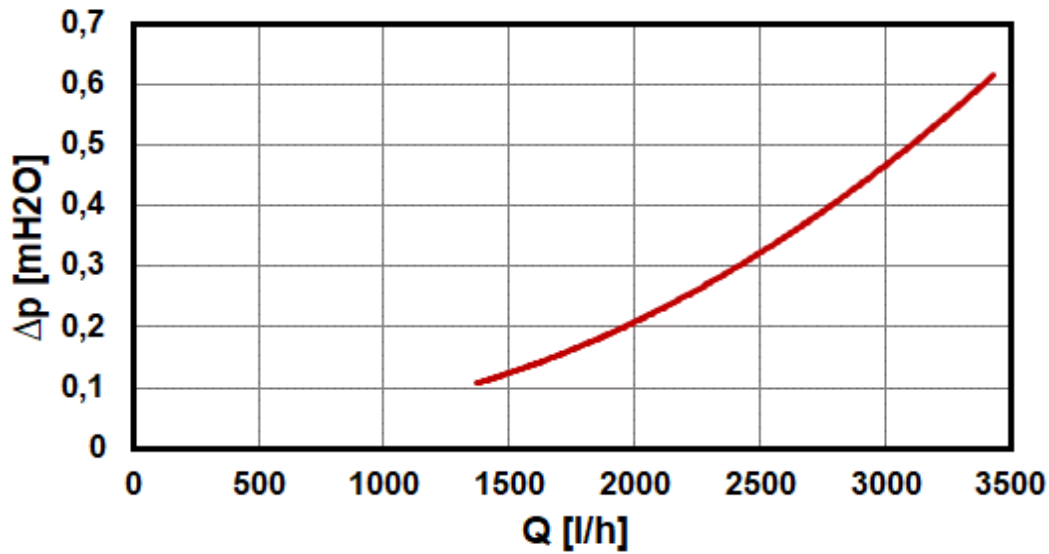


Evaporator and Condenser pressure drop

Evaporator pressure drop



Condenser pressure drop



EcoPart 435 Heat Pump is composed of 2 KM417EP heat pumps, connected in parallel. The graphs depict pressure drop of evaporator and condenser of one KM417EP heat pump.

Supplier's name *REGULUS spol. s r.o.*  
 Supplier's model identifier *CTC EcoPart 435*

Parameter	low temperature	medium temperature
The seasonal space heating energy efficiency class	<b>A+++</b>	<b>A++</b>
<b>Average climate</b>		
The rated heat output including any supplementary heaters	<b>38 kW</b>	<b>36 kW</b>
The seasonal space heating energy efficiency	<b>181%</b>	<b>137%</b>
The annual energy consumption	<b>16 724 kWh</b>	<b>5826 kWh</b>
<b>Cold climate</b>		
The rated heat output including any supplementary heaters	<b>36 kW</b>	<b>34 kW</b>
The seasonal space heating energy efficiency	<b>184%</b>	<b>140%</b>
The annual energy consumption	<b>18 332 kWh</b>	<b>23 108 kWh</b>
<b>Warm climate</b>		
The rated heat output including any supplementary heaters	<b>36 kW</b>	<b>34 kW</b>
The seasonal space heating energy efficiency	<b>180%</b>	<b>137%</b>
The annual energy consumption	<b>10 360 kWh</b>	<b>12 630 kWh</b>
<b>The sound power level <math>L_{WA}</math>, indoors</b>	<b>56 dB</b>	

*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.*

<b>Model:</b>	<b>CTC EcoPart 435</b>
<b>Air-to-water heat pump:</b>	<b>no</b>
<b>Water-to-water heat pump:</b>	<b>yes</b>
<b>Brine-to-water heat pump:</b>	<b>no</b>
<b>Low-temperature heat pump:</b>	<b>no</b>
<b>Equipped with supplementary heater:</b>	<b>no</b>
<b>Heat pump combination heater</b>	<b>no</b>

**Parameters are declared for medium-temperature application and average climate**

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	<b>36</b>	kW	Seasonal space heat.ener. efficiency	$\eta_s$	<b>137</b>	%
<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj.</i>				<i>Declared coefficient of performance or primary energy ratio for part load at indoor temp. 20 °C and outdoor temp. Tj.</i>			
Tj = - 7 °C	$P_{dh}$	<b>32,00</b>	kW	Tj = - 7 °C	$COP_d$	<b>3,23</b>	-
Tj = + 2 °C	$P_{dh}$	<b>32,20</b>	kW	Tj = + 2 °C	$COP_d$	<b>3,60</b>	-
Tj = + 7 °C	$P_{dh}$	<b>32,80</b>	kW	Tj = + 7 °C	$COP_d$	<b>3,97</b>	-
Tj = + 12 °C	$P_{dh}$	<b>33,40</b>	kW	Tj = + 12 °C	$COP_d$	<b>4,36</b>	-
Tj = bivalent temperature	$P_{dh}$	<b>32,00</b>	kW	Tj = bivalent temperature	$COP_d$	<b>3,23</b>	-
Tj = operation limit temperature	$P_{dh}$	-	kW	Tj = operation limit temperature	$COP_d$	-	-
For air-to-water heat pumps:	$P_{dh}$	-	kW	For air-to-water heat pumps:	$COP_d$	-	-
Tj = -15 °C, if TOL < - 20 °C				Tj = -15 °C, if TOL < - 20 °C			
Bivalent temperature	$T_{biv}$	<b>-7</b>	°C	For air-to-water heat pumps:	$T_{OL}$	-	°C
Cycling interval capacity for heating	$P_{cyc}$	-	kW	operation limit temperature			
Degradation coefficient	$C_{dh}$	<b>0,99</b>	-	Cycling interval efficiency	$COP_{cyc}$	-	-
<i>Power consumption in modes other than active mode</i>				Heating water operating limit temp.	$W_{TOL}$	<b>65,00</b>	°C
Off mode	$P_{OFF}$	<b>0,018</b>	kW	<i>Supplementary heater</i>			
Thermostat off-mode	$P_{TO}$	<b>0,008</b>	kW	Rated heat output (*)	$P_{sup}$	<b>4,40</b>	kW
Standby mode	$P_{SB}$	<b>0,018</b>	kW	Type of energy input	<b>electric</b>		
Crankcase heater mode	$P_{CK}$	<b>0,000</b>	kW	For air-to-water heat pumps:			
<i>Other items</i>				rated air flow rate, outdoors			
capacity control		<b>fixed</b>		For water/brine-to-water heat pumps:			
Sound power level, indoors / outdoors	$L_{WA}$	<b>56 / -</b>	dB	rated brine or water flow rate,			
				outdoor heat exchanger			

Contact details **Erntech AB, Box 309, SE-341 26 Ljungby, Svédsko** [www.ctc.se](http://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.