

DATA SHEET

RTC 20e Air-to-Water Heat Pump



Main Features

Application	Heating/cooling, DHW heating.
Description	In the heating/DHW mode, the heat pump extracts energy from the ambient air (at an outdoor temperature as low as $-25\text{ }^{\circ}\text{C}$) and transfers it into heating water; its flow temp. may reach up to $55\text{ }^{\circ}\text{C}$. In the cooling mode, the heat pump draws heat from the cooling water (at an ambient air temperature up to $43\text{ }^{\circ}\text{C}$); its temperature at the heat pump outlet may be as low as $5\text{ }^{\circ}\text{C}$. The heat pump is equipped with a variable speed compressor.
Working fluid	R32 (cooling circuit), water (heating circuit).
Installation	The heat pump shall be installed with a pump station and a controller (for codes see the Catalogue).
Code	19439

Technical Data

Output ¹⁾	9.19 kW/12.57 kW
Power input ¹⁾	1.83 kW/3.94 kW
Coefficient of performance (COP) ¹⁾	5.02/3.19
Nominal current	9.6 A
Power supply	3/N/PE ~ 400/230 V 50 Hz
Recommended circuit breaker	B16A 3f
IP protection	IPX4
Min./max. flow temperature from HP	5/55 $^{\circ}\text{C}$
Max. heating water temperature at HP inlet	100 $^{\circ}\text{C}$
Max. heating water working pressure	3 bar
Heating water volume in heat pump	3 l
Min. volume of non-closable heating system	120 l
Min. flow rate through HP	1560 l/h
Min. surface area of heat exchanger in HW storage tank	2.5 m ²
Working air temperature for heating mode	-25 to $43\text{ }^{\circ}\text{C}$
Working air temperature for cooling mode	0 to $43\text{ }^{\circ}\text{C}$
Max. air flow rate	7000 m ³ /h
Number of fans	2
Fan speed	variable
Max. fan power input	120 W
Compressor type	twin rotary
Refrigerant	R32 (GWP 675)
Refrigerant quantity	2.60 kg
CO ₂ equivalent ²⁾	1.75 t
Refrigerant max. working pressure	42 bar
Connections	2 x G 5/4" M
Weight	154 kg

1) For A+7/W35 at min speed and for A-7/W35 at max. speed according to EN 14511. 2) Not covered by the annual check for leaking refrigerant (EU No 517/2014).

Energy Data

(for low-temperature applications under average climatic conditions, others see the Product Fiche)

Seasonal Energy Efficiency	191%
Energy Efficiency Class	A+++
SCOP	4.84

Sound data (according to ErP)

Sound power level	61 dB(A)
Sound pressure level at 5 m	39 dB(A)
Sound pressure level at 10 m	33 dB(A)

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Parameters required for connection to the distribution network	
Nominal power input (required input)	5.95 kW
Heat output ³⁾	18.52 kW
Steady current ³⁾	6.67 A
Starting current	3.8 A
Nominal voltage	400 V 3f

3) For temperatures A2/W35 and max. compressor speed.

Output parameters (heating)					
Speed	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
76 Hz	7 °C	35 °C	18.52	4.14	4.47
		45 °C	18.22	4.99	3.65
		55 °C	17.67	5.95	2.97
	2 °C	35 °C	14.97	3.88	3.85
		45 °C	14.15	4.51	3.14
		55 °C	13.47	5.46	2.47
	-7 °C	35 °C	12.57	3.94	3.19
		45 °C	11.67	4.60	2.54
		55 °C	10.68	5.46	1.96
	-15 °C	35 °C	9.72	3.71	2.62
		45 °C	9.03	4.42	2.04
		55 °C	8.50	5.17	1.64
55 Hz	12 °C	35 °C	15.51	2.83	5.48
		45 °C	14.79	3.47	4.26
		55 °C	13.68	4.28	3.20
	7 °C	35 °C	13.95	2.95	4.73
		45 °C	13.15	3.51	3.75
		55 °C	12.40	4.28	2.90
	2 °C	35 °C	12.09	2.84	4.26
		45 °C	11.43	3.44	3.32
		55 °C	9.96	3.90	2.56
	-7 °C	35 °C	9.11	2.80	3.25
		45 °C	8.43	3.28	2.57
		55 °C	7.47	3.91	1.91
-15 °C	35 °C	6.72	2.67	2.52	
	45 °C	6.24	3.13	1.99	
	55 °C	5.51	3.72	1.48	
36 Hz	12 °C	35 °C	10.10	1.75	5.77
		45 °C	9.42	2.27	4.15
		55 °C	8.88	2.80	3.17
	7 °C	35 °C	9.19	1.83	5.02
		45 °C	8.51	2.25	3.80
		55 °C	7.60	2.78	2.73
	2 °C	35 °C	7.75	1.81	4.27
		45 °C	7.18	2.22	3.23
		55 °C	6.79	2.75	2.47
	-7 °C	35 °C	5.75	1.79	3.21
		45 °C	5.36	2.14	2.50
		55 °C	4.49	2.57	1.75
-15 °C	35 °C	4.08	1.73	2.36	
	45 °C	3.70	2.07	1.79	
	55 °C	3.09	2.40	1.29	

The values of the operating parameters including the defrost cycle are measured on the manufacturer's test bench according to EN 14 511.

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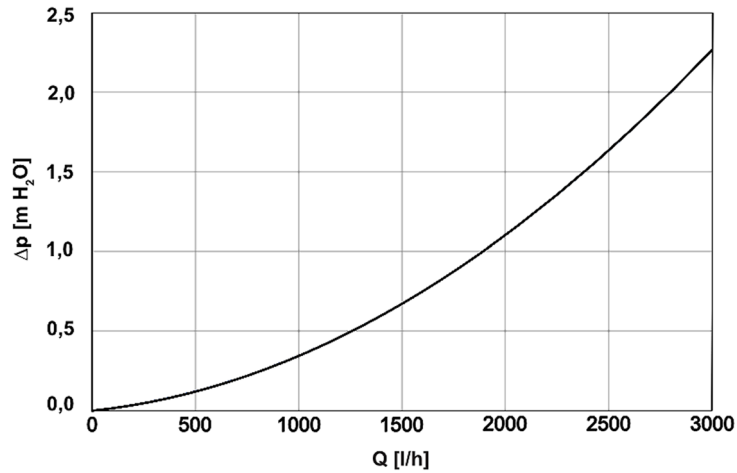
Output parameters (cooling)

Speed	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
76 Hz	35 °C	7 °C	15.80	5.38	2.94
	40 °C	18 °C	19.38	6.26	3.10

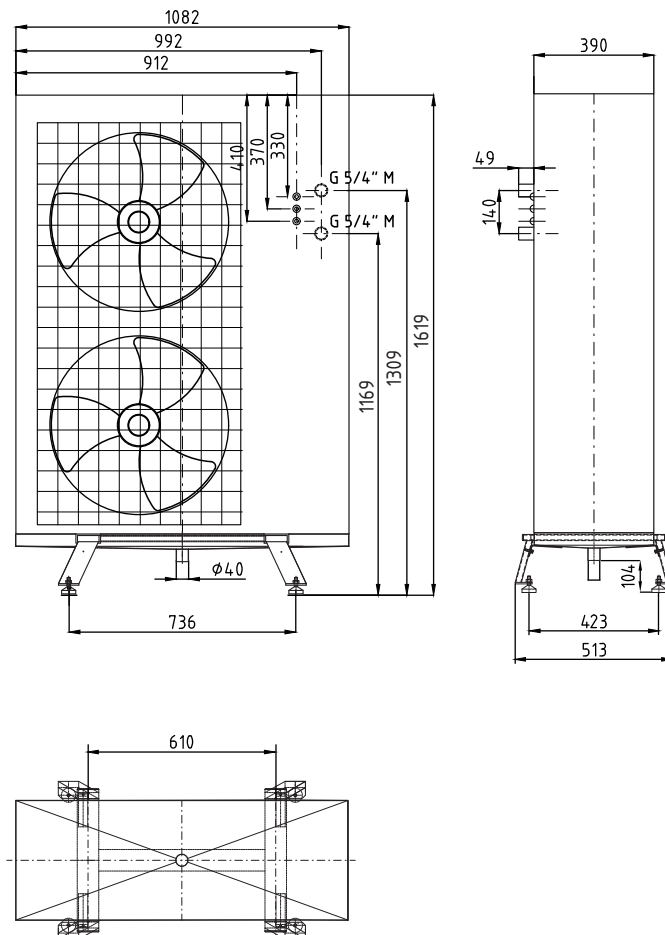
Sound data (according to EN 12 102)

Sound power level	61 dB(A)
Sound pressure level at 5 m	39 dB(A)
Sound pressure level at 10 m	33 dB(A)

Heat Pump Pressure Drop Graph



Dimensions



PRODUCT FICHE

RTC 20e Air-to-Water Heat Pump

Supplier's name *REGULUS spol. s r. o.*
 Supplier's model identifier *RTC 20e*

Parametr	low-temperature application
Seasonal space heating energy efficiency class	A+++
Average climate:	
The rated heat output including any supplementary heaters	16,28 kW
The seasonal energy efficiency	191 %
The annual energy consumption	6953 kWh
Cold climate:	
The rated heat output including any supplementary heaters	-
The seasonal space heating energy efficiency	-
The annual energy consumption	-
Warm climate:	
The rated heat output including any supplementary heaters	-
The seasonal space heating energy efficiency	-
The annual energy consumption	-
The sound power level L_{WA}, outdoors	61 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:	RTC 20e
Air-to-water heat pump:	yes
Water-to-water heat pump:	no
Brine-to-water heat pump:	no
Low-temperature heat pump:	yes
Equipped with supplementary heater:	no
Heat pump combination heater:	no

Parameters declared for low-temperature application and average climate.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	16.28	kW	Seasonal space heating energy efficiency	η_s	191	%
<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j:</i>				<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j:</i>			
T _j = -7 °C	P_{dh}	14.40	kW	T _j = -7 °C	COP_d	3.27	-
T _j = +2 °C	P_{dh}	8.77	kW	T _j = +2 °C	COP_d	4.56	-
T _j = +7 °C	P_{dh}	5.64	kW	T _j = +7 °C	COP_d	6.24	-
T _j = +12 °C	P_{dh}	2.50	kW	T _j = +12 °C	COP_d	8.58	-
T _j = bivalent temperature	P_{dh}	14.40	kW	T _j = bivalent temperature	COP_d	3.27	-
T _j = operation limit temperature	P_{dh}	16.28	kW	T _j = operation limit temperature	COP_d	2.99	-
For air-to-water heat pumps	P_{dh}	-	kW	For air-to-water heat pumps	COP_d	-	-
T _j = -15 °C, if TOL < -20 °C	P_{dh}	-	kW	T _j = -15 °C, if TOL < -20 °C	COP_d	-	-
Bivalent temperature	T_{biv}	-7	°C	For air-to-water heat pumps: operation limit temperature	T_{OL}	-10	°C
Cycling interval capacity for heating	P_{cyc}	-	kW	Cycling interval efficiency	COP_{cyc}	-	-
Degradation co-efficient (**)	C_{dh}	0.99	-	Heating water operating limit temp.	W_{TOL}	55	°C
<i>Power consumption in modes other than active mode:</i>				<i>Supplementary heater:</i>			
Off mode	P_{OFF}	0.015	kW	Rated heat output (*)	P_{sup}	0.00	kW
Thermostat-off mode	P_{TO}	0.015	kW	Type of energy input		electric	
Standby mode	P_{SB}	0.015	kW	For air-to-water heat pumps: rated air flow rate, outdoors		7000	m ³ /h
Crankcase heater mode	P_{CK}	0.035	kW	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger		-	m ³ /h
<i>Other items:</i>							
Capacity control		variable					
Sound power level, indoors / outdoors	L_{WA}	- / 61	dB				

Contact details **REGULUS spol. s r. o. Do Koutů 1897/3, 143 00 Praha 4** **www.regulus.eu**

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output P_{rated} is equal to the design load for heating $P_{designh}$, and the rated heat output of a supplementary heater P_{sup} is equal to the capacity for heating $sup(T_j)$.

(**) If C_{dh} is not determined by measurement then the default degradation is $C_{dh} = 0,9$.