

RTC 13e 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 $55\text{ }^{\circ}\text{C}$); 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	19437

Technical Data	
Output ¹⁾	5.47 kW/7.64 kW
Power input ¹⁾	1.1 kW/2.46 kW
Coefficient of performance (COP) ¹⁾	4.97/3.11
Nominal current	18.2 A
Power supply	1/N/PE ~ 230 V 50 Hz
Recommended circuit breaker	B20A 1f
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	2 l
Min. volume of non-closable heating system	120 l
Min. flow rate through HP	790 l/h
Min. surface area of heat exchanger in HW storage tank	1.5 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	3150 m ³ /h
Number of fans	1
Fan speed	variable
Max. fan power input	45 W
Compressor type	twin rotary
Refrigerant	R32 (GWP 675)
Refrigerant quantity	1.80 kg
CO ₂ equivalent ²⁾	1.22 t
Refrigerant max. working pressure	42 bar
Connections	G 1" M
Weight	98 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	
<i>(for low-temperature applications under average climatic conditions, others see the Product Fiche)</i>	
Seasonal Energy Efficiency	186%
Energy Efficiency Class	A+++
SCOP	4.71

Sound data (according to ErP)	
Sound power level	52 dB(A)
Sound pressure level at 5 m	30 dB(A)
Sound pressure level at 10 m	24 dB(A)

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Parameters required for connection to the distribution network	
Nominal power input (required input)	3.77 kW
Heat output ³⁾	10.17 kW
Steady current ³⁾	12.6 A
Starting current	4.90 A
Nominal voltage	230 V 1f

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

Output parameters (heating)						
Speed	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]	
90 Hz	2 °C	35 °C	9.39	2.50	3.76	
		45 °C	8.83	2.96	2.98	
		55 °C	7.68	3.50	2.19	
	-7 °C	35 °C	7.64	2.46	3.11	
		45 °C	7.12	2.98	2.39	
		55 °C	6.51	3.75	1.74	
79 Hz	7 °C	35 °C	10.13	2.22	4.56	
		45 °C	9.59	2.76	3.47	
		55 °C	8.71	3.40	2.56	
	2 °C	35 °C	8.53	2.20	3.88	
		45 °C	7.74	2.57	3.01	
		55 °C	6.82	3.09	2.21	
	-7 °C	35 °C	6.74	2.12	3.18	
		45 °C	5.99	2.55	2.35	
		55 °C	5.38	3.12	1.72	
	-15 °C	35 °C	4.86	1.99	2.44	
		45 °C	4.56	2.39	1.91	
		55 °C	3.87	2.85	1.36	
55 Hz	12 °C	35 °C	7.97	1.44	5.53	
		45 °C	7.48	1.83	4.09	
		55 °C	6.72	2.24	3.00	
	7 °C	35 °C	7.17	1.46	4.08	
		45 °C	6.65	1.83	3.63	
		55 °C	5.82	2.24	2.60	
	2 °C	35 °C	5.96	1.46	4.08	
		45 °C	5.65	1.81	3.12	
		55 °C	4.96	2.18	2.28	
	-7 °C	35 °C	4.41	1.42	3.11	
		45 °C	3.94	1.70	2.32	
		55 °C	3.47	2.04	1.70	
	-15 °C	35 °C	3.16	1.41	2.24	
		45 °C	-	-	-	
		55 °C	-	-	-	
	43 Hz	12 °C	35 °C	6.31	1.10	5.74
			45 °C	5.72	1.39	4.12
			55 °C	4.84	1.75	2.77
7 °C		35 °C	5.47	1.10	4.97	
		45 °C	4.88	1.40	3.49	
		55 °C	3.77	1.76	2.14	
2 °C		35 °C	4.68	1.13	4.14	
		45 °C	3.99	1.41	2.83	
		55 °C	3.58	1.70	2.11	

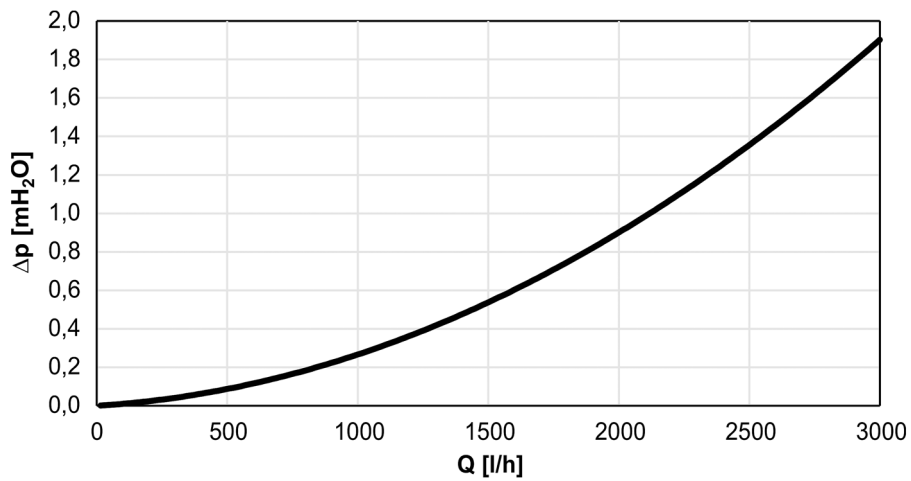
The values of the operating parameters including the defrost cycle are measured on the manufacturer's test bench according to EN 14 511.

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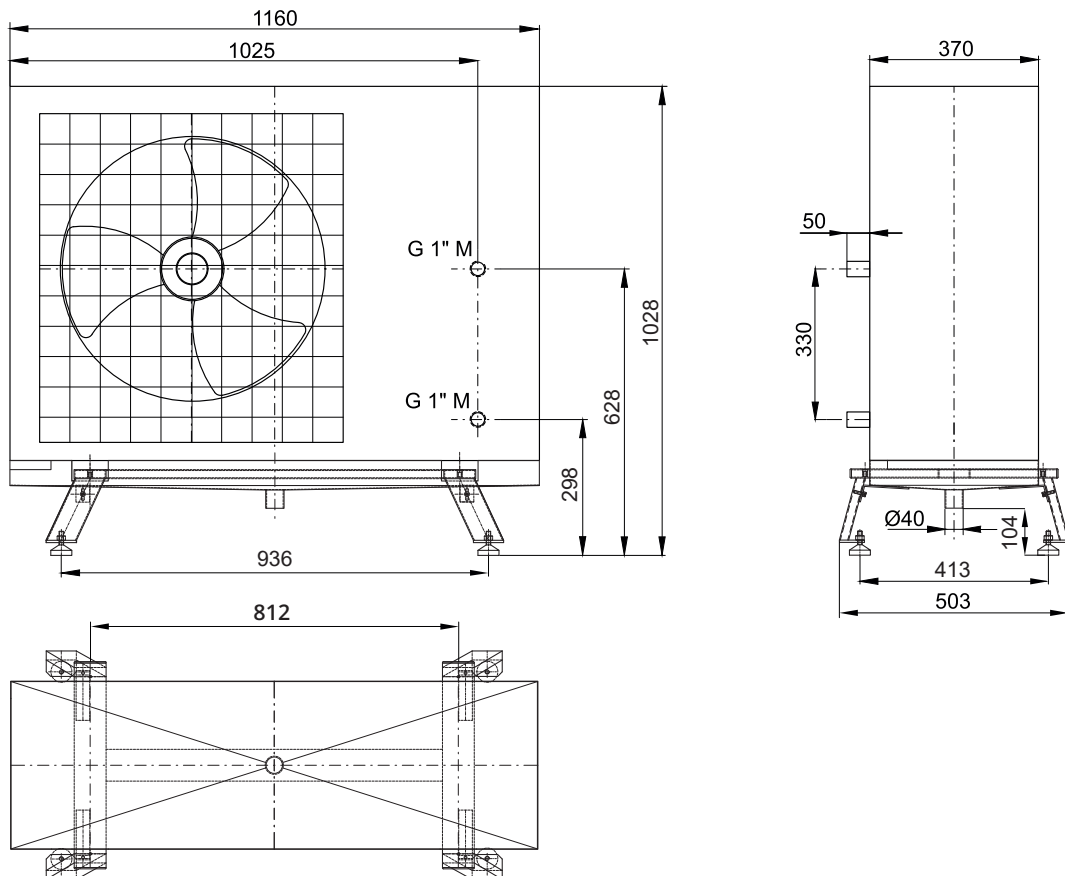
Output parameters (cooling)					
Speed	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
68 Hz	35 °C	18 °C	9.84	2.51	3.92
		7 °C	6.56	2.44	2.69

Sound data (according to EN 12 102)	
Sound power level	52 dB(A)
Sound pressure level at 5 m	30 dB(A)
Sound pressure level at 10 m	24 dB(A)

Heat Pump Pressure Drop Graph



Dimensions



RTC 13e Air-to-Water Heat Pump

Supplier's name *REGULUS spol. s r. o.*
 Supplier's model identifier *RTC 13e*

Parameter	low-temperature application
Seasonal space heating energy efficiency class	A+++
Average climate:	
The rated heat output including any supplementary heaters	8.849 kW
The seasonal energy efficiency	186 %
The annual energy consumption	3879 kWh
Cold climate:	
The rated heat output including any supplementary heaters	– kW
The seasonal space heating energy efficiency	– %
The annual energy consumption	– kWh
Warm climate:	
The rated heat output including any supplementary heaters	– kW
The seasonal space heating energy efficiency	– %
The annual energy consumption	– kWh
The sound power level LWA, outdoors	52 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 13e
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}	9	kW	Seasonal space heating energy efficiency	η_s	186	%
<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj:</i>				<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj:</i>			
Tj = –7 °C	P_{dh}	7.83	kW	Tj = –7 °C	COP_d	3.25	–
Tj = +2 °C	P_{dh}	4.77	kW	Tj = +2 °C	COP_d	4.51	–
Tj = +7 °C	P_{dh}	3.06	kW	Tj = +7 °C	COP_d	5.79	–
Tj = +12 °C	P_{dh}	1.36	kW	Tj = +12 °C	COP_d	9.26	–
Tj = bivalent temperature	P_{dh}	7.83	kW	Tj = bivalent temperature	COP_d	3.25	–
Tj = operation limit temperature	P_{dh}	8.85	kW	Tj = operation limit temperature	COP_d	2.78	–
For air-to-water heat pumps	P_{dh}	–	kW	For air-to-water heat pumps	COP_d	–	–
Tj = –15 °C, if TOL < –20 °C	P_{dh}	–	kW	Tj = –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}	0.017	kW	Rated heat output (*)	P_{sup}	0.00	kW
Thermostat-off mode	P_{TO}	0.017	kW	Type of energy input		electric	
Standby mode	P_{SB}	0.017	kW	For air-to-water heat pumps: rated air flow rate, outdoors		3150	m ³ /h
Crankcase heater mode	P_{CK}	0.033	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}	– / 52	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 $sup(Tj)$.

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