

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)

RTC 13e Air-to-Water Heat Pump

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

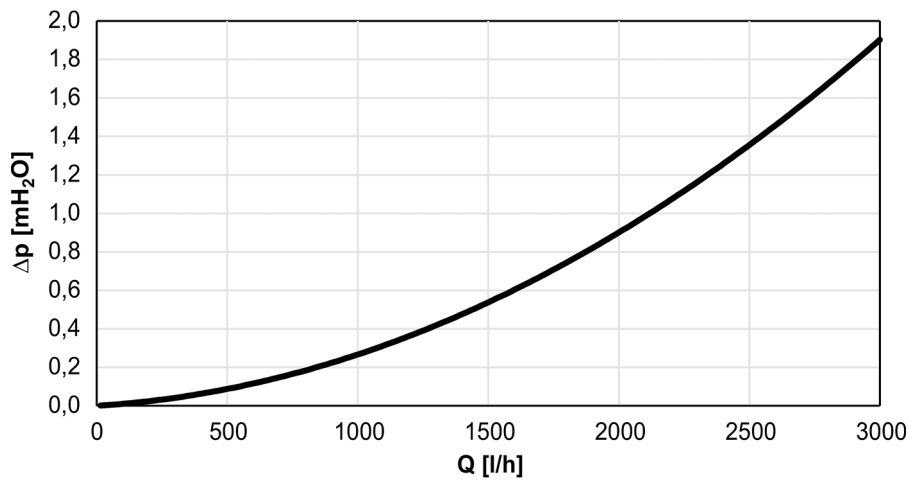
The values of the operating parameters including the defrost cycle are measured on the manufacturer's test bench according to EN 14 511.

RTC 13e Air-to-Water Heat Pump

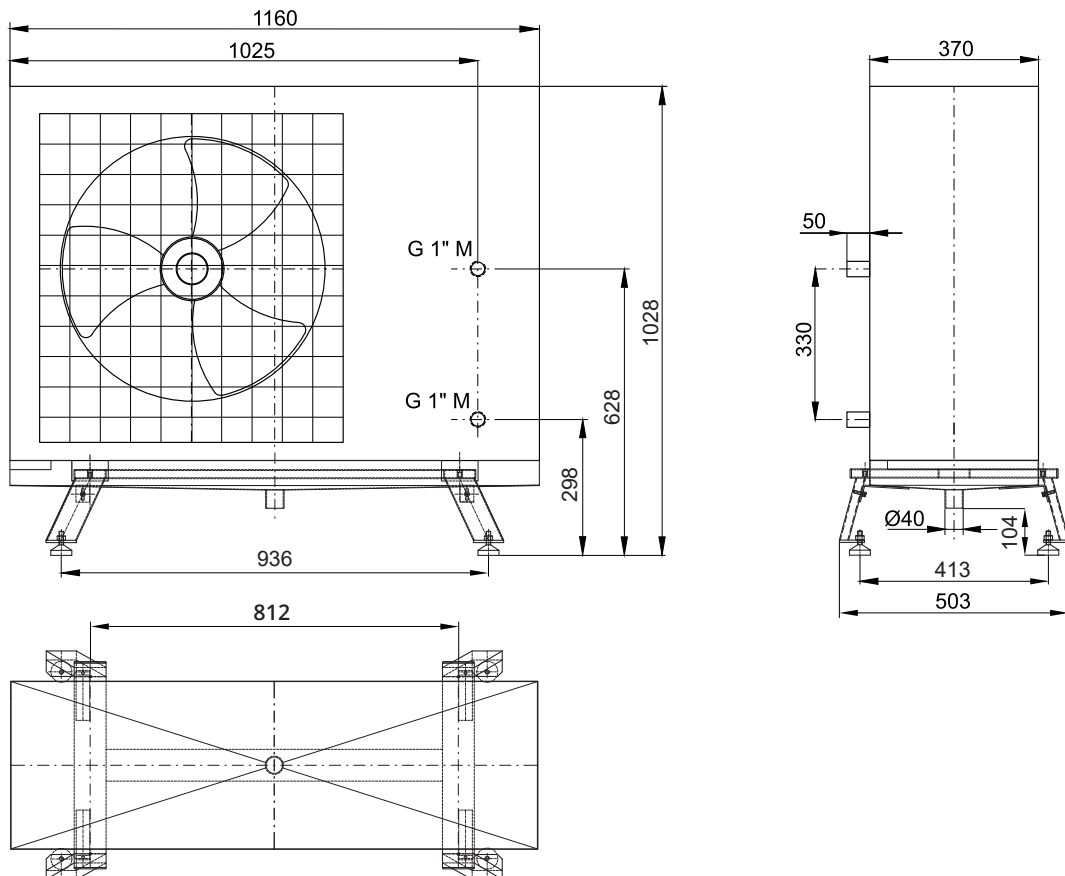
Output parameters (cooling)					
Speed	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
68 Hz	35 °C	18 °C	9.84	2.51	3.92
		7 °C	6.56	2.44	2.69

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	medium-temperature applications
Seasonal space heating energy efficiency class	A+++	A++
Average climate:		
The rated heat output including any supplementary heaters	8.849 kW	7.0 kW
The seasonal energy efficiency	186 %	129 %
The annual energy consumption	3879 kWh	3910 kWh
Cold climate:		
The rated heat output including any supplementary heaters	7.6 kW	6.5 kW
The seasonal space heating energy efficiency	156 %	110 %
The annual energy consumption	4020 kWh	4112 kWh
Warm climate:		
The rated heat output including any supplementary heaters	10,3 kW	8.1 kW
The seasonal space heating energy efficiency	194 %	142 %
The annual energy consumption	3480 kWh	3560 kWh
The sound power level L_{WA}, 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 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}	7.83	kW	T _j = -7 °C	COP_d	3.25	-
T _j = +2 °C	P_{dh}	4.77	kW	T _j = +2 °C	COP_d	4.51	-
T _j = +7 °C	P_{dh}	3.06	kW	T _j = +7 °C	COP_d	5.79	-
T _j = +12 °C	P_{dh}	1.36	kW	T _j = +12 °C	COP_d	9.26	-
T _j = bivalent temperature	P_{dh}	7.83	kW	T _j = bivalent temperature	COP_d	3.25	-
T _j = operation limit temperature	P_{dh}	8.85	kW	T _j = operation limit temperature	COP_d	2.78	-
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}	0.017	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 $sup(T_j)$.

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