

## DATA SHEET

### RTC 12i Air-to-water Heat Pump



#### Main Features

Application	Heating, cooling, DHW heating.
Description	In heating and hot water modes, the heat pump draws energy from the ambient air (at an outdoor temperature of up to $-25\text{ }^{\circ}\text{C}$ ) and transfers it to the heating water, the temperature of which can reach up to $55\text{ }^{\circ}\text{C}$ at the heat pump outlet. In cooling mode, it absorbs heat from the cooling water (at an ambient temperature of up to $55\text{ }^{\circ}\text{C}$ ), the temperature of which can reach up to $5\text{ }^{\circ}\text{C}$ at the outlet from the heat pump. It is equipped with a compressor with speed control.
Working fluid	Water (heating circuit).
Installation	The heat pump shall be installed with the pump station and controller, for the codes see the Product Catalogue.
<b>Code</b>	<b>17448</b>

#### Technical Data

Nominal output <sup>1)</sup>	5.34 kW/8.07 kW
Nominal power input <sup>1)</sup>	1.04 kW/2.78 kW
COP <sup>1)</sup>	5.13/2.90
Nominal current	18 A
Power supply	1/N/PE ~ 230 V 50 Hz
Recommended circuit breaker	B20A 1f
Ingress protection (IP)	IPX4
Min./Max. flow temperature	5/55 $^{\circ}\text{C}$
Max. temperature in heating system	100 $^{\circ}\text{C}$
Max. heating water working pressure	3 bar
Heating water volume in heat pump	4.5 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 storage	1.5 m <sup>2</sup>
Working air temperature for heating mode	$-25$ to $45\text{ }^{\circ}\text{C}$
Working air temperature for cooling mode	0 to $55\text{ }^{\circ}\text{C}$
Max. flow rate	4200 m <sup>3</sup> /h
Number of fans	2
Fan speed	variable
Fan input power	150 W
Compressor / oil type	twin rotary / FV50S
Refrigerant	R410A (GWP 2088)
Refrigerant quantity	3 kg
CO <sub>2</sub> equivalent <sup>2)</sup>	6.26 t
Refrigerant max. working pressure	42 bar
Connections	2 x G 1" F
Weight	140 kg

1) for temp. A+7/W35 at max. speed, 2) not covered by the annual check for leaking refrigerant (EU No 517/2014)

#### Energy efficiency data

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

Seasonal Energy Efficiency	153%
Energy Efficiency Class	A++
SCOP	3.90

#### Sound Data (according ErP)

Sound power level	65 dB(A)
Sound pressure level at 5 m	43 dB(A)
Sound pressure level at 10 m	37 dB(A)

**RTC 12i Air-to-water Heat Pump**

Parameters for distribution tariff change	
Nominal power input (required input)	3.80 kW
Heat output <sup>3)</sup>	11.42 kW
Steady current <sup>3)</sup>	12.3 A
Starting current	3.8 A
Nominal voltage / number of phases	230 V 1f

3) for temperatures A2/W35 and max. compressor rpm

Output parameters					
RPS	Air temperature	Flow temperature	Output [kW]	Power input [kW]	COP [-]
85 Hz	12 °C	35 °C	14.31	2.67	5.36
		45 °C	14.20	3.10	4.58
		55 °C	13.28	3.80	3.49
	7 °C	35 °C	12.24	2.60	4.71
		45 °C	12.60	3.16	3.9
		55 °C	11.48	3.64	3.15
	2 °C	35 °C	11.42	2.55	4.48
		45 °C	10.58	3.01	3.51
		55 °C	10.23	3.56	2.87
	-7 °C	35 °C	8.54	2.40	3.56
		45 °C	8.07	2.78	2.90
		55 °C	7.55	3.26	2.32
-15 °C	35 °C	6.67	2.21	3.02	
	45 °C	6.52	2.66	2.45	
	55 °C	5.91	3.02	1.96	
55 Hz	12 °C	35 °C	9.50	1.35	7.04
		45 °C	8.77	1.65	5.32
		55 °C	8.62	2.04	4.23
	7 °C	35 °C	7.92	1.39	5.70
		45 °C	7.71	1.65	4.67
		55 °C	7.19	2.12	3.39
	2 °C	35 °C	6.90	1.40	4.93
		45 °C	6.76	1.66	4.07
		55 °C	6.32	2.07	3.05
	-7 °C	35 °C	5.21	1.41	3.70
		45 °C	5.25	1.67	3.14
		55 °C	4.45	1.98	2.25
-15 °C	35 °C	4.64	1.33	3.49	
	45 °C	3.91	1.63	2.40	
	55 °C	2.97	1.82	1.63	
36 Hz	12 °C	35 °C	6.12	0.86	7.12
		45 °C	6.11	1.03	5.93
		55 °C	5.22	1.41	3.70
	7 °C	35 °C	5.37	0.92	5.84
		45 °C	5.34	1.04	5.13
		55 °C	4.86	1.43	3.40
	2 °C	35 °C	4.48	0.95	4.72
		45 °C	4.27	1.01	4.23
		55 °C	4.04	1.42	2.85
	-7 °C	35 °C	3.64	0.91	4.00
		45 °C	3.42	1.16	2.95
		55 °C	2.57	1.35	1.90
-15 °C	35 °C	2.58	0.94	2.74	
	45 °C	2.27	1.13	2.01	
	55 °C	1.88	1.29	1.46	

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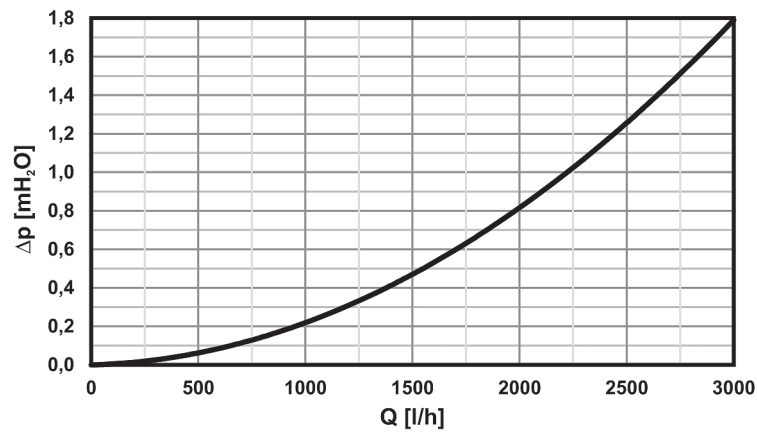
#### Output parameters

RPS	Air temperature	Flow temperature	Output [kW]	Power input [kW]	EER [-]
max.	35 °C	18 °C	10.37	3.16	3.28
		7 °C	7.91	3.01	2.63
min.	35 °C	18 °C	4.29	0.96	4.48
		7 °C	2.34	1.00	2.34

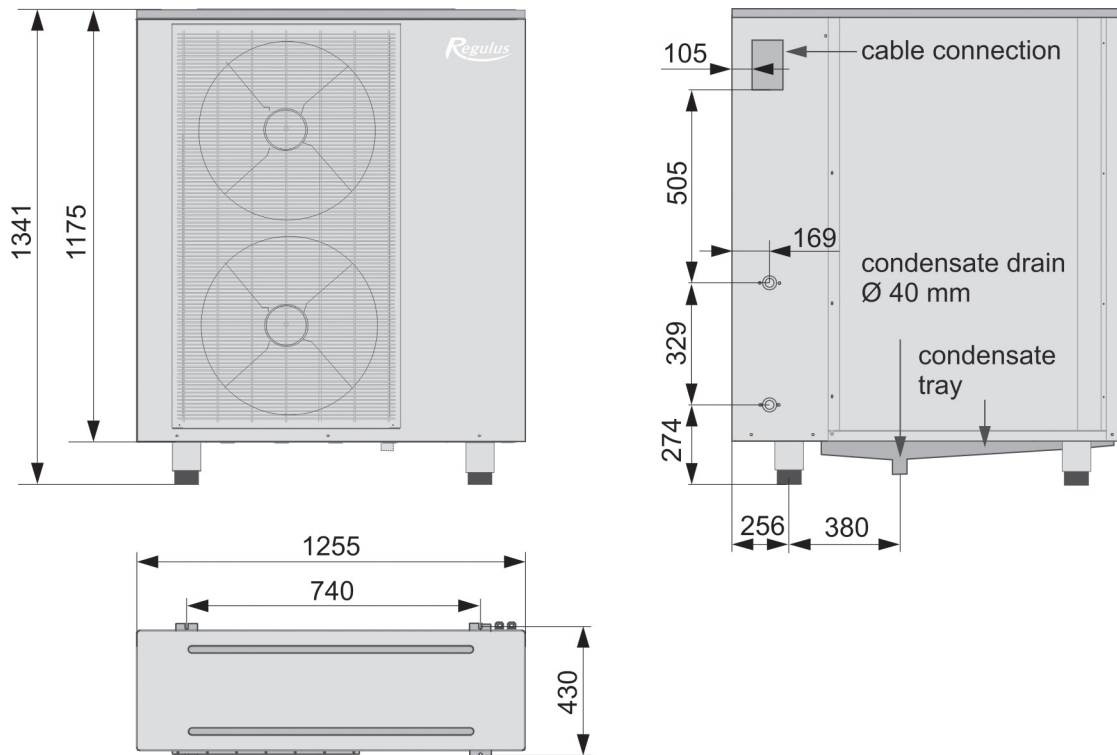
#### Sound Data at max. compressor rpm

Sound power level	65 dB(A)
Sound pressure level at 5 m	43 dB(A)
Sound pressure level at 10 m	37 dB(A)

#### Heat Pump Pressure Drop Diagram



#### Dimensions



Supplier's name *REGULUS spol. s r. o.*  
 Supplier's model identifier *RTC 12i*

Parameter	low temperature
The seasonal space heating energy efficiency class	<b>A++</b>
<b>Average climate</b>	
The rated heat output including any supplementary heaters	<b>9,6 kW</b>
The seasonal space heating energy efficiency	<b>153 %</b>
The annual energy consumption	<b>5127 kWh</b>
<b>Cold climate</b>	
The rated heat output including any supplementary heaters	<b>9,3 kW</b>
The seasonal space heating energy efficiency	<b>138 %</b>
The annual energy consumption	<b>6511 kWh</b>
<b>Warm climate</b>	
The rated heat output including any supplementary heaters	<b>10,5 kW</b>
The seasonal space heating energy efficiency	<b>171 %</b>
The annual energy consumption	<b>3297 kWh</b>
<b>The sound power level LWA, outdoors</b>	<b>65 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>RTC 12i</b>
<b>Air-to-water heat pump:</b>	<b>yes</b>
<b>Water-to-water heat pump:</b>	<b>no</b>
<b>Brine-to-water heat pump:</b>	<b>no</b>
<b>Low-temperature heat pump:</b>	<b>yes</b>
<b>Equipped with supplementary heater:</b>	<b>no</b>
<b>Heat pump combination heater:</b>	<b>no</b>

### Parameters declared for low-temperature application and average climate.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	$P_{rated}$	<b>10</b>	kW	Seasonal space heating energy efficiency	$\eta_s$	<b>153</b>	%
<i>Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature <math>T_j</math>.</i>				<i>Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature <math>T_j</math>.</i>			
$T_j = -7$ °C	$P_{dh}$	<b>8,50</b>	kW	$T_j = -7$ °C	$COP_d$	<b>2,74</b>	–
$T_j = +2$ °C	$P_{dh}$	<b>5,20</b>	kW	$T_j = +2$ °C	$COP_d$	<b>3,72</b>	–
$T_j = +7$ °C	$P_{dh}$	<b>3,30</b>	kW	$T_j = +7$ °C	$COP_d$	<b>4,93</b>	–
$T_j = +12$ °C	$P_{dh}$	<b>1,50</b>	kW	$T_j = +12$ °C	$COP_d$	<b>6,44</b>	–
$T_j =$ bivalent temperature	$P_{dh}$	<b>8,10</b>	kW	$T_j =$ bivalent temperature	$COP_d$	<b>2,85</b>	–
$T_j =$ operation limit temperature	$P_{dh}$	<b>9,60</b>	kW	$T_j =$ operation limit temperature	$COP_d$	<b>2,50</b>	–
For air-to-water heat pumps:				For air-to-water heat pumps:			
$T_j = -15$ °C (if TOL < -20 °C)	$P_{dh}$	–	kW	$T_j = -15$ °C (if TOL < -20 °C)	$COP_d$	–	–
Bivalent temperature	$T_{biv}$	<b>-6</b>	°C	For air-to-water heat pumps:	$T_{OL}$	<b>-10</b>	°C
Cycling interval capacity for heating	$P_{cyc}$	–	kW	operation limit temperature	$COP_{cyc}$	–	–
Degradation co-efficient (**)	$C_{dh}$	<b>0,99</b>	–	Cycling interval efficiency			
<i>Power consumption in modes other than active mode</i>				Heating water operating limit temp.	$W_{TOL}$	<b>55</b>	°C
Off mode	$P_{OFF}$	<b>0,017</b>	kW	<i>Supplementary heater</i>			
Thermostat-off mode	$P_{TO}$	<b>0,000</b>	kW	Rated heat output (*)	$P_{sup}$	<b>0,00</b>	kW
Standby mode	$P_{SB}$	<b>0,017</b>	kW	Type of energy input		<b>electric</b>	
Crankcase heater mode	$P_{CK}$	<b>0,033</b>	kW	For air-to-water heat pumps:			
Other items				rated air flow rate, outdoors		<b>4200</b>	m <sup>3</sup> /h
capacity control		<b>variable</b>		For water/brine-to-water heat pumps:			
Sound power level, indoors / outdoors	$L_{WA}$	<b>65</b>	dB	Rated brine or water flow rate, outdoor heat exchanger		–	m <sup>3</sup> /h

Contact details **REGULUS spol. s r. o. Do Koutů 1897/3, 143 00 Praha 4** [www.regulus.eu](http://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  $C_{dh} = 0,9$ .