DATA SHEET

RTC 40p Air-to-water Heat Pump

Main Features	
Application	Heating/cooling, DHW heating.
Description	Heat pump with variable speed compressor (inverter) and ecological refrigerant R290 (propane). In the heating and hot water modes, the heat pump extracts energy from the ambient air (at an outdoor temperature as low as –25 °C) and transfers it to the working fluid, the temperature of which can reach up to 75 °C at the heat pump outlet. In the cooling mode, it extracts heat from the interior spaces via the working fluid, the temperature of which can reach up to 7 °C at the heat pump outlet.
Working fluid	Water, antifreeze fluid for heating systems and heat pumps.
Installation	The heat pump must be installed with the IR 14 smart controller. It is necessary that the installation involves frost protection of the heat pump's heat exchanger for case of power failure (see the installation instructions). The heat pump includes a safety valve with an opening pressure of 2.5 bar.
Code	**21590**

Technical Data	
Heating – performance[1)]	12.7 kW / 27.5 kW
Heating – power input[1)]	2.8 kW / 10.2 kW
Heating factor[1)]	4.54 / 2.70
Cooling – performance[2)]	12.0 kW / 25.1 kW
Cooling – power input[2)]	2.8 kW / 9.4 kW
Cooling factor[2)]	4.27 / 2.67
Nominal current	25.5 A
Power supply	3/N/PE ~ 3 x 400 V 50 Hz
Recommended circuit breaker	B32A 3f
IP protection	IPX4
Min./max. outlet temperature from the heat pump in heating mode	20 / 75 °C
Min./max. outlet temperature from the heat pump in cooling mode	7 / 25 °C
Min./max. heating water inlet temperature in heating mode	15 / 70 °C
Min./max. heating water inlet temperature in cooling mode	12 / 30 °C
Max. heating water working pressure	2.5 bar
Heating water volume in heat pump	4 l
Min. volume of non-closable heating system	320 l
Min. flow rate through the heat pump required for safe defrosting	3300 l/h
Nominal flow rate for efficient operation of the heat pump	4740 l/h
Min. surface area of heat exchanger in HW storage tank	3.6 m^2
Working air temperature for heating mode	–25 to 43 °C
Working air temperature for cooling mode	21 to 43 °C
Nominal air flow rate	12 500 m^3/h
Fan speed	variable
Max. fan power input	1100 W
Compressor type	scroll
Refrigerant	R290 (GWP 0.02) – safety group A3
Refrigerant quantity	4.2 kg
CO_2 equivalent[2)]	0.0126 t
Refrigerant max. working pressure	31 bar
Connections	2 x G 2" M
Weight	320 kg

1) For A+7/W35 at min speed and for A-7/W35 at max. speed according to EN 14511. 2) For A+35/W18 at min speed and for A35/W7 at max. speed according. 3) Not covered by the annual check for leaking refrigerant (EU No 517/2014).

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Energy Data *(for low-temperature applications under average climatic conditions, others see the Product Fiche)*	
Seasonal Energy Efficiency	192%
Energy Efficiency Class	A+++
SCOP	4.86

Sound data	
Sound power level	71 dB(A)
Sound pressure level at 5 m	52 dB(A)
Sound pressure level at 10 m	46 dB(A)

Parameters required for connection to the distribution network	
Nominal power input (required input)	14.1 kW
Heat output[4)]	35.5 kW
Steady current[4)]	17.7 A
Starting current	4.9 A
Nominal voltage	3 x 230/400 V

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

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Output parameters						
Mode	**Compressor speed [Hz]**	**Air temperature [°C]**	**Flow temperature [°C]**	**Output [kW]**	**Power input [kW]**	**COP [–]**
Heating	96	7.0	35.0	38.6	12.3	3.14
			55.0	37.5	13.9	2.69
		2.0	35.0	35.5	11.0	3.21
			55.0	33.2	14.1	2.35
		–7.0	35.0	27.5	10.2	2.70
			55.0	21.3	12.4	1.72
		–15.0	35.0	21.4	9.1	2.35
			55.0	17.2	12.3	1.41
	76	7.0	35.0	32.6	8.2	3.99
			55.0	29.2	9.8	2.99
		2.0	35.0	28.3	8.3	3.43
			55.0	26.1	10.2	2.57
		–7.0	35.0	22.4	8.5	2.64
			55.0	19.8	9.7	2.05
		–15.0	35.0	17.6	7.7	2.28
			55.0	11.9	9.4	1.26
	52	12.0	35.0	25.8	5.2	5.00
			55.0	18.8	6.5	2.89
		7.0	35.0	23.0	5.2	4.41
			55.0	16.8	6.5	2.60
		2.0	35.0	19.6	5.5	3.57
			55.0	15.2	6.4	2.39
		–7.0	35.0	15.9	6.4	2.46
			55.0	14.5	8.0	1.81
		–15.0	35.0	12.1	5.5	2.19
			55.0	10.6	6.6	1.61
	30	12.0	35.0	15.1	2.7	5.68
			55.0	11.8	4.2	2.83
		7.0	35.0	12.7	2.8	4.54
			55.0	8.9	4.1	2.14
		2.0	35.0	11.0	3.1	3.60
			55.0	10.3	5.0	2.09
		–7.0	35.0	8.4	3.1	2.69
			55.0	7.5	4.3	1.77
		–15.0	35.0	6.5	3.0	2.17
			55.0	4.0	3.8	1.07
Cooling	86	35.0	7.0	25.1	9.4	2.67
			18.0	34.2	9.1	3.76
	68	35.0	7.0	22.8	7.9	2.89
			18.0	31.6	7.8	4.05
	48	35.0	7.0	14.5	4.8	3.03
			18.0	23.0	4.8	4.78
	30	35.0	7.0	4.5	2.9	1.55
			18.0	12.0	2.8	4.27

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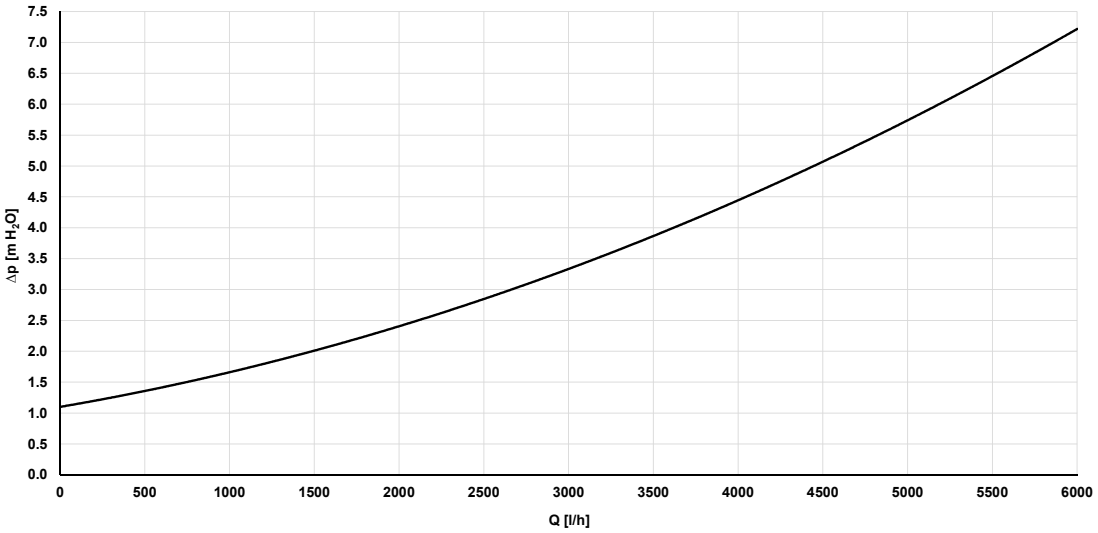
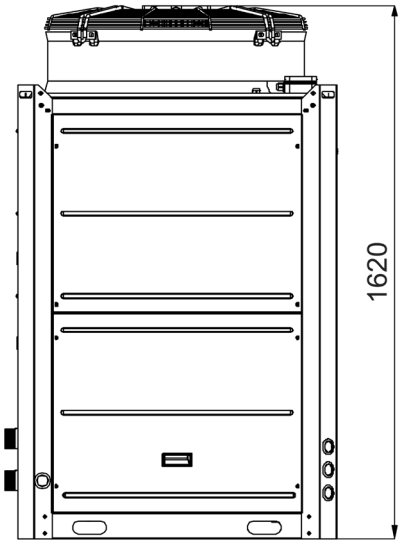
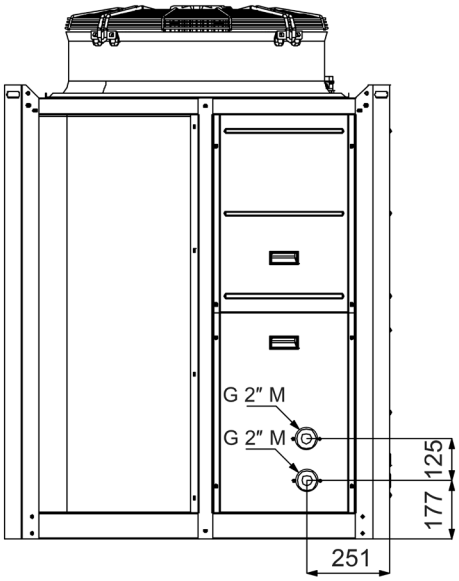
RTC 40p Air-to-water Heat Pump

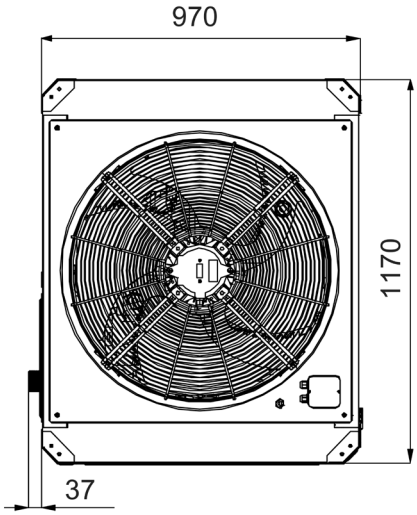
Heat Pump Pressure Drop Graph



Dimensions







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RTC 40p Air-to-water Heat Pump

Placement of the heat pump

The heat pump contains the flammable refrigerant R290 (propane C_3H_8) with UN number 1978 (hazard identification number 23). In the event of leakage, a flammable or explosive atmosphere is formed with the surrounding air. For this reason, it is necessary to pay attention to the correct placement of the heat pump. The images show a safety area (A) that defines the distance between the heat pump and surrounding objects.

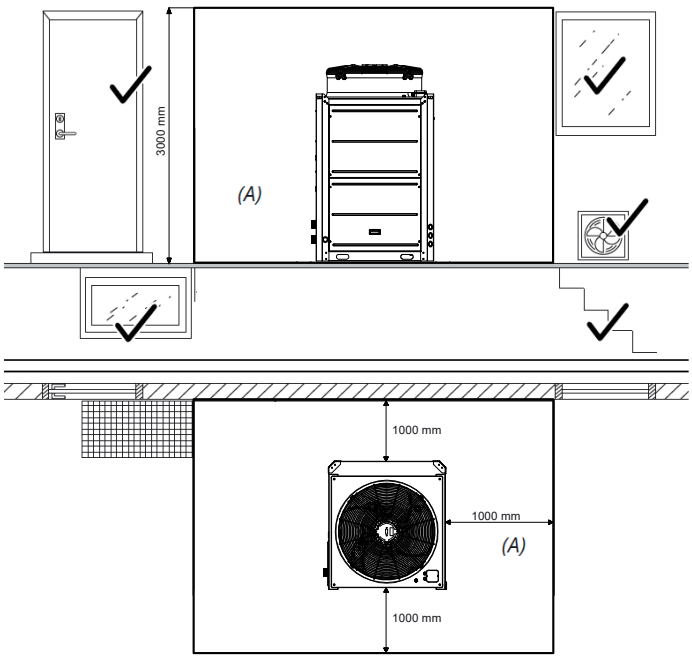
The following conditions must not occur within the safety area:

- Openings in the building, e.g. windows, doors, light sources or skylights.
- Air supply from ventilation and air conditioning systems.
- Property borders, adjacent property, walkways and other roads.
- Pump shafts, inflow to the drainage system without water traps, downpipes and sewage trenches etc.
- Other troughs, wells, recesses, shafts.
- Electrical connections to the building.
- Electrical systems, plug sockets, lights, switches.
- Snowfall from roofs.

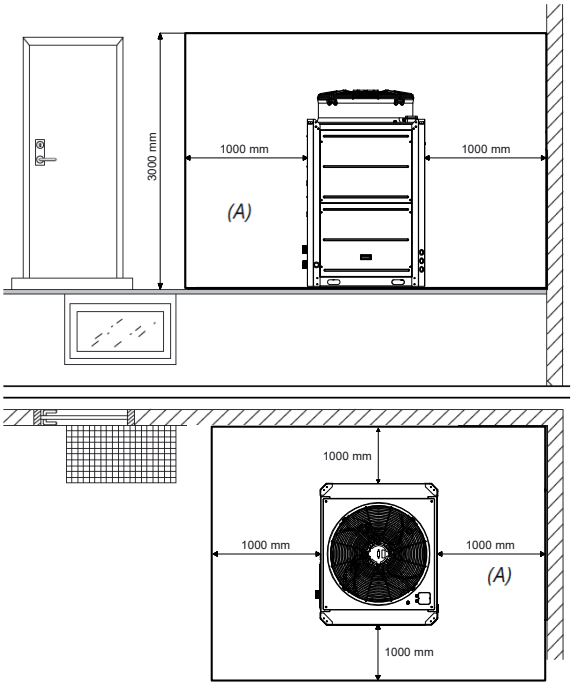
Do not introduce sources of ignition in the safety area:

- Open flames or burner assemblies.
- Grills/barbecues.
- Sparking tools.
- Electrical equipment with sources of ignition, mobile units with inbuilt batteries (e.g. cars, mobile telephones, fitness trackers etc.).
- Objects with a temperature exceeding 360 °C.

Placement of a heat pump against a straight wall:



Placement of a heat pump in a corner:



PRODUCT FICHE

RTC 40p Air-to-water Heat Pump

Supplier's name *R E G U L U S spol. s. r. o.*
Supplier's model identifier *RTC 40p*

Parameter	low temperature	medium temperature
The seasonal space heating energy efficiency class	**A+++**	**A++**
Average climate		
The rated heat output including any suplementary heaters	**29 kW**	**28 kW**
The seasonal space heating energy efficiency	**192 %**	**146 %**
The annual energy consumption	**12 166 kWh**	**15 641 kWh**
The sound power level LWA, outdoors	**71 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 40p**
Air-to-water heat pump:	**yes**
Water-to-water heat pump:	**no**
Brine-to-water heat pump:	**no**
Low-temperature heat pump:	**no**
Equipped with supplementary heater:	**no**
Heat pump combination heater:	**no**

Parameters declared for medium-temperature application and average climate.

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	**28**	kW
Declared capacity for heating for part at indoor temperature 20 °C and outdoor temperature Tj:			
Tj = –7 °C	P_{dh}	**24.9**	kW
Tj = +2 °C	P_{dh}	**15.1**	kW
Tj = +7 °C	P_{dh}	**11.6**	kW
Tj = +12 °C	P_{dh}	**14.9**	kW
Tj = bivalent temperature	P_{dh}	**24.9**	kW
Tj = operation limit temperature	P_{dh}	**23.3**	kW
For air-to-water heat pumps: Tj = –15 °C, if TOL < –20 °C	P_{dh}	–	kW
Bivalent temperature	T_{biv}	**–7**	°C
Cycling interval capacity for heating	P_{cyc}	–	kW
Degradation co-efficient (**)	C_{dh}	**0.9**	–
Power consumption in modes other than active mode:			
Off mode	P_{OFF}	**0.016**	kW
Thermostat-off mode	P_{TO}	**0.029**	kW
Standby mode	P_{SB}	**0.016**	kW
Crankcase heater mode	P_{CK}	**0.071**	kW
Other items:			
Capacity control		**Variable**	
Sound power level, indoors/outdoors	L_{WA}	**– / 71**	dB
Yearly energy consumption	Q_{HE}	**15 641**	kWh

Item	Symbol	Value	Un
Seasonal space heating energy efficiency	η_s	**146**	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj.			
Tj = –7 °C	COP_d	**2.20**	–
Tj = +2 °C	COP_d	**3.83**	–
Tj = +7 °C	COP_d	**4.83**	–
Tj = +12 °C	COP_d	**6.18**	–
Tj = bivalent temperature	COP_d	**2.20**	–
Tj = operation limit temperature	COP_d	**1.90**	–
For air-to-water heat pumps: Tj = –15 °C, pokud TOL < –20 °C	COP_d	–	–
Bivalent temperature	T_{OL}	**–7**	°C
Cycling interval capacity for heating	COP_{cyc}	–	–
Heating water operating limit temp.	W_{TOL}	**75**	°C
Supplementary heater:			
Rated heat output (*)	P_{sup}	**0.00**	kW
Type of energy input		**electrical energy**	
For air-to-water heat pumps: Rated air flow rate, outdoors		**12 500**	m^3/h
For water/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger		–	m^3/h

Contact details **R E G U L U S 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 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.