reventon
INDUSTRIAL SOLUTIONS

Technical documentation

AIR WATER HEATERS IN EPP CASING HC-3S SERIES

MODELS:

HC15-3S HC45-3S

HC20-3S HC50-3S

HC30-3S HC70-3S

HC35-3S HC80-3S

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1. INTRODUCTION

1.1 GENERAL INFORMATION

The owner and the user of unit Reventon brand should read carefully this instruction and follow included guidelines. In case of any doubts, please reach out directly to the manufacturer i. e. company Reventon Group Sp. z o. o. The contact data are given at the section 8 (subsection XVII).

The key recommendations from safety point of view are marked with the warning triangle (like the one on the left). It enables quick and easy localization of these recommendations and remind of them before interference with the unit.

For the same reason, the requirements for periodic inspection and maintenance of the device, are marked with the wrench symbol (like the one on the left).

During installation, usage or maintenance of the heater, all local safety requirements must be respected.

The owner and each user of unit must be familiar with the Warranty Terms included in the section 8 of this instruction and follow its guidelines. In case of any doubts regarding warranty points, please reach out immediately to the company Reventon Group Sp. z o. o. before taking any action.

The product was made in Poland.

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1.2 STORAGE AND TRANSPORT

The product must be storaged and transported on an appropriate pallet, in ambient temperature ranging from -30°C to 60°C and relative humidity ≤ 90%.

During carrying of the heater, it must not be held by the coil's connectors. Due to its weight, the heater should be handled by two people.

1.3 APPLICATION

The device HC-3S is designed for industrial indoor usage. It can be used for the heating or cooling spaces such as: production halls warehouses, commercial room, service spaces, garages, workshops, etc. However heating devices should not be used in corrosive environments for aluminum, copper and steel as well as in highly dusty environments (above 0.3 g/m^3). The device cannot be also used in places, where it would be exposed to too high humid (relative humidity higher that 90%) or direct contact with water, exceeding the permissible contact due to the protection degree IP (see next section).

2. DEVICE CHARACTERISTIC

2.1 PROTECTION DEGREE IP

IP determines the tightness of the electrical device (like fan motor), which is defined by two digits:

- **first characteristic digit -** specifies protection of the device against direct access to its interior as well as against penetration of smaller solids (such as dust)
- **second characteristic digit -** determines resistance of the engine to water ingress, i. e. its waterproofness

The motor of the fan used in HC-3S with IP 54 has the following protection:

- Enclosure protected against ingress of dust in harmful quantities.
- Water splashed against the enclosure from any direction shall have no harmful effects.

2.2 CONSTRUCTION AND PRINCIPLE OF OPERATION

Casing: made of expanded polypropylene (EPP). This material is characterized by low density (light weighted) and high chemical and physical resistance. It has an excellent sound and thermal insulation properties. Moreover, material is environmentally friendly and "green", i.e. 100% recyclable.

Air stators: made of polypropylene PP. It is possible to adjust manually the air stators to achieve the needed direction of the air flow. There are also versions with confusor (increased airflow range) or with diffuser 360° (better mixing of supplied and room air).

Standard version - opening of air stators must be done by two hands in parallel.

Version with diffuser 360° - air stators of diffuser 360° must be done by two hands to the outside.

The stators must be deflected at least 20° before the start-up of the fan.

Version with confusor - the outlet do not have air stators which must be open.

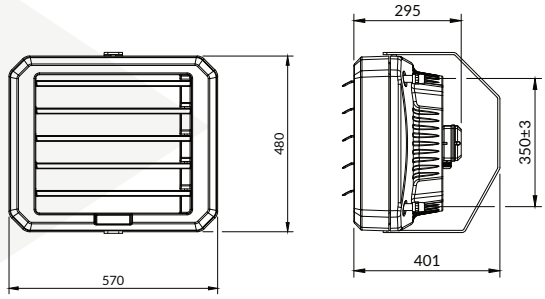
Using diffuser 360° or confusor causes decrease of device airflow around 10% and consequently reduction of its heating capacity about 5%.

Heating coil: made of copper and aluminum. Supplied by distribution medium (heating or cooling), which circulates through the coil and releases or extracts heat from the air. Depending on dimensions of the device the heaters are equipped with 1, 2 or 3-row heating coils.

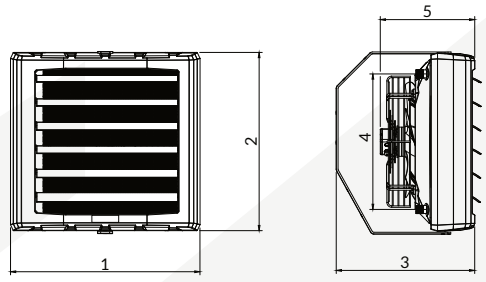
Axial blowing fan: made of steel. The objective of the fan is to ensure air flow through the exchanger. It has a single-phase, three speed motor. Fans have diameter 300 mm (HC15-3S), 400 mm (HC 20-3S, HC 30-3S, HC 35-3S and HC 45-3S) or 450 mm (HC 50-3S, HC 70-3S and HC 80-3S).

2.3 DIMENSIONS

HC15-3S



HC 20-3S, HC 30-3S, HC 35-3S, HC 45-3S, HC 50-3S, HC 70-3S, HC 80-3S



	1	2	3	4	5
HC 20-45 [mm]	635	600	465	455±3	320
HC 50-80 [mm]	739	699	532	550±3	345

2.4 TECHNICAL DATA

TECHNICAL DATA Product code		HC 15-3S WHHC15-3S-2402	HC 20-3S WHHC20-3S-1759	HC 30-3S WHHC30-3S-1760	HC 35-3S WHHC35-3S-1761	HC 45-3S WHHC45-3S-1762	HC 50-3S WHHC50-3S-2006	HC 70-3S WHHC70-3S-1764	HC 80-3S WHHC80-3S-1956
Nominal heating capacity [kW] *	III STAGE	17.2	21.4	26.4	30.3	42.0	49.8	60.6	69.2
	II STAGE	13.4	17.3	20.3	22.9	28.9	45.2	40.1	61.5
	I STAGE	12.1	13.3	15.5	17.3	21.1	34.6	32.7	46.5
Heating capacity range [kW]**		1.79 – 23.3	1.55 – 28.4	1.8 – 34.9	2.14 – 40.1	3.21 – 55.6	5.00 – 65.8	5.0 – 80.1	6.96-91.5
Maximum airflow [m³/h]	III STAGE	1500	3200	3100	2700	2500	5000	3400	4200
	II STAGE	1000	2150	1950	1700	1450	4200	1900	3500
	I STAGE	850	1350	1250	1100	950	2600	1450	2300
Maximum horizontal range [m]		10	19	18	15	14	24	18	21
Number of rows [pcs.]		2	1	1	2	2	2	3	3
Capacity of water [dm³]		0.45	0.65	0.8	1.35	1.7	1.95	2.85	2.85
Maximum temperature of working fluid [°C]		120	120	120	120	120	120	120	120
Maximum working pressure [MPa]		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Connection diameter [``]		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Supply voltage [V] / Supply frequency [Hz]		230/50	230/50	230/50	230/50	230/50	230/50	230/50	230/50
Nominal motor current [A]	III STAGE	0.36	0.82	0.82	0.82	0.82	2.05	1.08	2.05
	II STAGE	0.22	0.62	0.62	0.62	0.62	1.65	0.86	1.65
	I STAGE	0.21	0.41	0.41	0.41	0.41	1.40	0.70	1.40
Nominal motor speed [rpm]	III STAGE	1400	1380	1380	1380	1380	1380	1360	1380
	II STAGE	1200	1030	1030	1030	1030	1200	1050	1200
	I STAGE	1000	650	650	650	650	900	750	900
Nominal motor power [W]	III STAGE	80	185	185	185	185	455	240	455
	II STAGE	48	140	140	140	140	350	190	350
	I STAGE	45	90	90	90	90	280	160	280
Protection degree IP [-]		54	54	54	54	54	54	54	54
Net weight [kg]		10	12.5	12	14	14	20.5	20	22.5
Noise [dB]***	III STAGE	53	57	57	56	56	66	58	65
	II STAGE	47	55	55	54	54	60	53	59
	I STAGE	45	49	49	48	48	54	49	53

** for parameters 90/70°C and 0°C inlet air temperature*
*** max. 120/90°C, 0°C inlet air temperature, III stage // min. 40/30°C, 20°C inlet air temperature, I stage*
**** measurement at the distance 5 m*

Parameters	HC 15-3S III stage 1500 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	14.9	13.7	12.6	11.4	10.3	12.6	11.4	10.2	9.1	7.9	9.6	8.4	7.3	6.1	5	7.3	6.1	5	3.8	2.6
Dry bulb air outlet temperature [°C]	27.5	30.7	33.9	37	40	23.2	26.3	29.4	32.5	35.5	17.7	20.8	23.8	26.8	29.8	13.4	16.4	19.4	22.3	25.1
Water flow [m³/h]	0.65	0.6	0.55	0.5	0.45	0.55	0.5	0.45	0.4	0.35	0.83	0.73	0.63	0.53	0.44	0.63	0.53	0.43	0.33	0.23
Pressure drop in the heat exchanger [kPa]	26	23	19	16	14	20	17	14	11	9	45	35	27	20	14	28	21	14	9	5

Parameters	HC 20-3S III stage 3200 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	18.1	16.4	14.7	13.1	11.5	14.7	13.1	11.5	9.9	8.4	11.6	10.0	8.4	6.9	5.4	8.3	6.8	5.3	3.8	2.4
Dry bulb air outlet temperature [°C]	15.7	19.5	23.3	27.0	30.8	12.8	16.6	20.3	24.1	27.8	10.1	13.8	17.6	21.3	25.0	7.2	11.0	14.7	18.5	22.2
Water flow [m³/h]	0.79	0.72	0.65	0.58	0.51	0.64	0.57	0.50	0.43	0.37	1.01	0.87	0.73	0.60	0.47	0.72	0.59	0.45	0.33	0.20
Pressure drop in the heat exchanger [kPa]	4	3	3	2	2	3	2	2	1	1	7	5	4	3	2	4	3	2	1	0

Parameters	HC 30-3S III stage 3100 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	22.2	20.1	18.1	16.1	14.2	18.0	16.0	14.0	12.1	10.2	14.2	12.3	10.3	8.4	6.6	10.2	8.3	6.4	4.6	2.8
Dry bulb air outlet temperature [°C]	19.9	23.4	26.8	30.2	33.6	16.2	19.6	23.1	26.5	29.8	12.8	16.2	19.6	23.0	26.3	9.1	12.6	16.0	19.3	22.7
Water flow [m³/h]	0.97	0.88	0.79	0.71	0.62	0.79	0.70	0.61	0.53	0.45	1.24	1.07	0.90	0.73	0.57	0.88	0.72	0.55	0.40	0.25
Pressure drop in the heat exchanger [kPa]	6	5	4	3	3	4	3	3	2	1	10	8	5	4	2	5	4	2	1	0

Parameters	HC 35-3S III stage 2700 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	25.6	23.3	21.0	18.7	16.5	21.0	18.7	16.4	14.2	12.1	16.4	14.2	12.0	9.8	7.7	11.9	9.7	7.6	5.5	3.5
Dry bulb air outlet temperature [°C]	26.4	29.4	32.4	35.3	38.2	21.6	24.6	27.6	30.5	33.4	16.9	19.9	22.8	25.7	28.5	12.2	15.2	18.1	21.0	23.9
Water flow [m³/h]	1.13	1.02	0.92	0.82	0.72	0.92	0.82	0.72	0.62	0.53	1.43	1.23	1.04	0.85	0.67	1.03	0.84	0.66	0.48	0.30
Pressure drop in the heat exchanger [kPa]	4	4	3	2	2	3	2	2	1	1	7	5	4	3	2	4	3	2	1	0

Parameters	HC 45-3S III stage 2500 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	36.2	33.0	29.9	26.9	24.0	30.3	27.2	24.2	21.2	18.3	23.1	20.1	17.2	14.3	11.5	17.4	14.4	11.6	8.8	6.0
Dry bulb air outlet temperature [°C]	40.3	42.4	44.5	46.6	48.6	33.7	35.8	37.9	39.9	41.9	25.7	27.8	29.8	31.8	33.8	19.3	21.3	23.4	25.3	27.2
Water flow [m³/h]	1.59	1.45	1.31	1.18	1.05	1.33	1.19	1.06	0.93	0.80	2.01	1.75	1.50	1.25	1.00	1.50	1.25	1.00	0.76	0.52
Pressure drop in the heat exchanger [kPa]	21	18	15	12	10	16	13	10	8	6	35	27	20	15	10	21	15	10	6	3

Parameters	HC 50-3S III stage 5000 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	42.8	39.1	35.5	32.0	28.5	35.7	32.1	28.5	25.1	21.6	27.4	23.9	20.5	17.1	13.7	20.5	17.0	13.6	10.3	7.0
Dry bulb air outlet temperature [°C]	24.1	27.4	30.6	33.8	37.0	20.1	23.4	26.6	29.7	32.9	15.5	18.7	21.9	25.0	28.2	11.5	14.7	17.9	21.1	24.2
Water flow [m³/h]	1.88	1.72	1.56	1.40	1.25	1.56	1.40	1.25	1.10	0.95	2.39	2.08	1.78	1.49	1.19	1.77	1.47	1.18	0.89	0.61
Pressure drop in the heat exchanger [kPa]	16	14	11	9	8	12	10	8	6	5	27	21	15	11	7	16	11	7	4	2

Parameters	HC 70-3S III stage 3400 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	52.2	47.6	43.2	38.8	34.6	43.8	39.3	35.0	30.7	26.6	33.3	29.0	24.8	20.7	16.7	25.1	20.9	16.8	12.7	8.8
Dry bulb air outlet temperature [°C]	42.7	44.7	46.7	48.5	50.4	35.8	37.8	39.7	41.5	43.3	27.3	29.2	31.1	32.9	34.7	20.5	22.4	24.2	26.0	27.7
Water flow [m³/h]	2.29	2.09	1.90	1.71	1.52	1.92	1.72	1.53	1.34	1.16	2.90	2.53	2.16	1.80	1.45	2.17	1.81	1.45	1.10	0.76
Pressure drop in the heat exchanger [kPa]	17	15	12	10	8	13	10	8	6	5	28	22	16	12	8	17	12	8	5	2

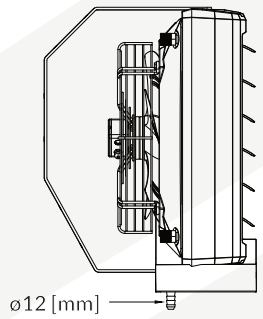
Parameters	HC 80-3S III stage 4200 [m³/h]																			
Supply/return water temperature [°C]	80/60					70/50					50/40					40/30				
Dry bulb air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20	0	5	10	15	20
Heating capacity [kW]	59.6	54.6	49.6	44.8	40.0	49.9	45.0	40.1	35.3	30.6	38.1	33.3	28.5	23.9	19.3	28.6	23.8	19.2	14.6	10.0
Dry bulb air outlet temperature [°C]	39.8	41.9	44.0	46.1	48.1	33.3	35.4	37.5	39.5	41.5	25.5	27.5	29.6	31.6	33.5	19.1	21.1	23.1	25.1	27.0
Water flow [m³/h]	2.62	2.40	2.18	1.97	1.76	2.18	1.97	1.75	1.54	1.34	3.32	2.89	2.48	2.08	1.68	2.48	2.07	1.66	1.26	0.87
Pressure drop in the heat exchanger [kPa]	22	19	16	13	11	16	13	11	8	6	37	28	21	15	10	22	15	10	6	3

COOLING PARAMETERS

Condensation may appear on HC-3S series units used as cooling equipment. For this reason, we recommend using heaters with a drip tray (product code DTFHC15-2428/DTFWHHC2045/ DTFWHHC5080). Installation of HC-3S series unit together with the drip tray is only possible for wall mounting (see section WALL MOUNTING). The device should only be mounted leveled.

In a case of increased condensation, it is recommended to reduce either the waterflow (by adjusting regulating valve or pump speed) or airflow (by lower fan speed). It enable to decrese the amount of condensate taken up by the blown air.

The drainage installation should be executed to remove condensated water. Connect hose to the drip tray connector for drain the condensate to the sawage system.



Parameters	HC15-3S III stage 1500 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	3.6	4.5	5.5	6.5	7.5	2.7	3.6	4.6	5.6	6.7
Dry bulb air outlet temperature [°C]	18.3	19.5	20.8	22.1	23.5	19.5	20.5	21.7	22.9	24.3
Water flow [m³/h]	0.62	0.77	0.94	1.10	1.30	0.38	0.52	0.66	0.80	0.95
Pressure drop in the heat exchanger [kPa]	32	48	67	91	119	14	23	36	51	69

Parameters	HC20-3S III stage 3200 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	3.3	3.8	4.5	4.9	5.4	2.6	3.2	3.7	4.2	4.8
Dry bulb air outlet temperature [°C]	20.9	22.4	23.9	25.3	26.7	21.5	23.0	24.5	25.9	27.4
Water flow [m³/h]	0.56	0.65	0.75	0.84	0.93	0.38	0.45	0.53	0.61	0.68
Pressure drop in the heat exchanger [kPa]	3	4	5	6	7	1	2	2	3	4

Parameters	HC30-3S III stage 3100 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	4.0	4.6	5.3	6.0	11.8	3.2	3.8	4.5	5.2	5.8
Dry bulb air outlet temperature [°C]	20.2	21.5	22.8	24.1	25.3	20.9	22.2	23.6	24.9	26.2
Water flow [m³/h]	0.68	0.79	0.91	1.02	2.02	0.45	0.55	0.64	0.74	0.83
Pressure drop in the heat exchanger [kPa]	4	5	6	8	28	2	3	3	4	5

Parameters	HC35-3S III stage 2700 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	4.7	5.5	9.2	11.5	13.9	3.9	4.6	5.3	9.2	11.5
Dry bulb air outlet temperature [°C]	18.8	19.9	20.9	22.1	23.3	19.7	20.8	22.0	22.9	24.1
Water flow [m³/h]	0.81	0.93	1.58	1.97	2.38	0.55	0.66	0.76	1.31	1.65
Pressure drop in the heat exchanger [kPa]	3	4	10	15	21	1	2	2	7	10

Parameters	HC45-3S III stage 2500 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	9.4	12.1	14.9	OF*	OF*	6.2	9.5	12.3	15.4	18.6
Dry bulb air outlet temperature [°C]	15.3	16.2	17.0	OF*	OF*	16.5	17.3	18.1	19.0	19.8
Water flow [m³/h]	1.62	2.07	2.55	OF*	OF*	0.89	1.36	1.76	2.19	2.66
Pressure drop in the heat exchanger [kPa]	27	43	63	OF*	OF*	9	20	32	47	67

Parameters	HC50-3S III stage 5000 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	8.6	9.8	17.7	21.4	OF*	7.4	8.6	9.8	18.2	22.2
Dry bulb air outlet temperature [°C]	18.8	20.0	21.2	22.5	OF*	19.6	20.8	22.0	23.1	24.5
Water flow [m³/h]	1.48	1.69	3.03	3.67	OF*	1.06	1.23	1.40	2.60	3.16
Pressure drop in the heat exchanger [kPa]	12	16	47	67	OF*	7	9	11	35	51

Parameters	HC70-3S III stage 3400 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	13.7	17.5	21.6	25.9	30.5	9.1	13.9	18.0	22.3	26.9
Dry bulb air outlet temperature [°C]	14.9	15.6	16.4	17.2	18.0	16.0	16.8	17.6	18.4	19.1
Water flow [m³/h]	2.35	3.00	3.70	4.44	5.23	1.29	1.98	2.56	3.18	3.84
Pressure drop in the heat exchanger [kPa]	21	34	50	70	96	7	15	25	37	53

Parameters	HC80-3S III stage 4200 [m³/h]									
Supply/return water temperature [°C]	5/10					6/12				
Dry bulb air inlet temperature [°C]	24	26	28	30	32	24	26	28	30	32
Relative humidity of the air at the inlet [%]	55	55	55	55	55	55	55	55	55	55
Cooling capacity [kW]	15.6	20.0	24.7	29.6	35.0	10.3	15.7	20.4	25.4	30.8
Dry bulb air outlet temperature [°C]	15.4	16.3	17.1	18.0	18.9	16.6	17.4	18.2	19.1	19.9
Water flow [m³/h]	2.67	3.42	4.22	5.08	5.99	1.48	2.25	2.92	3.63	4.40
Pressure drop in the heat exchanger [kPa]	27	43	64	91	124	9	19	32	48	69

*OF - means that for such parameters it is not recommended to operate the device due to overflow.

3. ASSEMBLY

3.1 GENERAL PRINCIPLES

The heater should be assembled and disassembled by people experienced in mounting of such devices and - if local law requires it with appropriate qualifications.

Due to the relatively large weight and the dimensions of the heater, the assembly should be performed by at least two people and at least one of them must meet the requirements in the paragraph above.

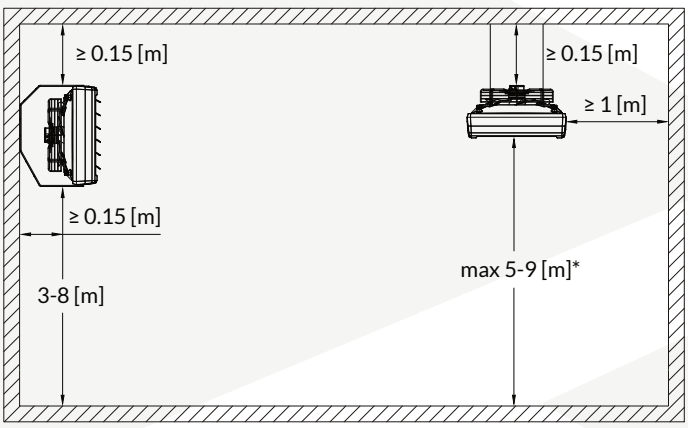
It is the responsibility of the assemblers to make the mounting according to the guidelines from this instruction and in accordance with the local regulations in force.

After mounting of the device, the assembler is obliged to fill out the Warranty Card (positions 1 and 2). It is also treated as a guarantee, that the assembly was made in accordance with the requirements. The Warranty Card is included in this manual under the Warranty Terms.

During carrying of the heater, it must not be held by the coil's connectors.

The heater should be mounted in way providing the horizontal or the vertical air stream keeping the mimum gaps shown in the drawing at the end of this section. The heater must be mounted using elements with a load capacity appropriate to its weight.

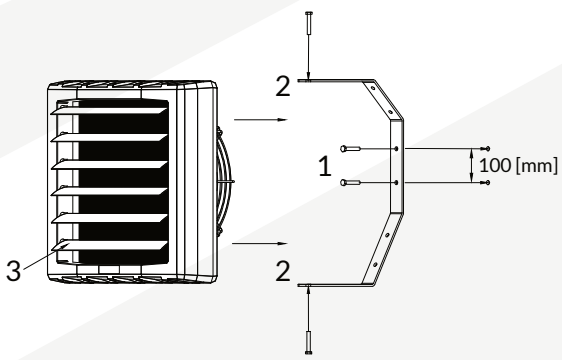
The stators must be deflected at least 20° before the start up of the fan.



* the maximum vertical range depends on the model

3.2 WALL MOUNTING

The example below shows the wall mounting with the rotating mounting bracket (product code RHHC15-2429/ RHHC2045-1518/ RHHC5080-2015).



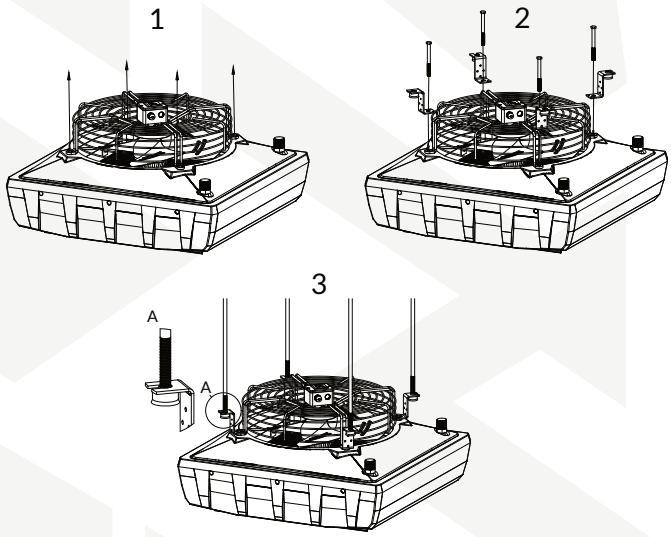
1 - The rotating mounting bracket should be attached to a partition with the appropriate load capacity (see the net weight of the heater in the section 2.4) with e. g. mounting pins and screws M8 x 80 [mm] (or longer).

2 - Hang the heater on the rotating mounting bracket using M8 bolts and spring washers (between the bracket and the bolt). Then turn the device on the bracket according to a required position and tighten the screws securely.

3 - Deflect stators at least 20° before the start-up of the fan to achieve the required stream shape.

3.3 CELLING MOUNTING

The example below shows the ceiling mounting with the Z-type suspension brackets (product code SB-2029).



1 - Unscrew the mounting screws of the heater.

2 - Put the Z-type suspension brackets, spring washers and screw the screws back.

3 - The heater is ready to mounting by the Z-type suspension brackets.

4. INSTALLATION

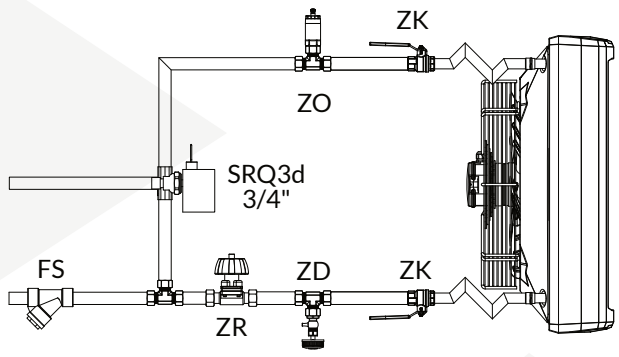
Before connecting the unit to a heating and an electrical installation, it must be assembled permanently to a suitable partition (according to the recommendations contained in the section 3).

All installation, repairs and disassembly works, must be performed by qualified persons i. e. having the appropriate qualifications for these works. It is the responsibility of the installer to make the installation according to the guidelines from this instruction and in accordance with the local regulations in force.

After connecting to the heating or electric installations, the installer is obliged to make an entry in the Warranty Card, confirmed by a stamp and signature (positions 3 and 4). It is also treated as a guarantee, that the installation was made in accordance with the requirements of this point 4. The Warranty Card is included in this manual under the Warranty Terms in the section 8.

4.1 CONNECTION TO HEATING INSTALLATION

Below there is shown and example hydraulic diagram. It is just a recommendation, the final execution of installation and usage of individual components is decided by the HVAC designer.

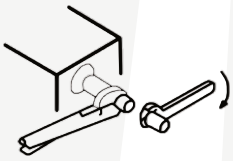


FS - mesh filter; ZO - vent valve; ZK - shut-off valve; ZD - drain valve; ZR - balancing valve; SRQ3d - three-way valve with an actuator

The hydraulic installation must be carried out in accordance with the state of the art and the local regulations in force.

The pipes should be connected in accordance with the indicators on the heater (supply - marked in red, return – marked in blue).

Connecting the device to the hydraulic installation, do remember to hold the connector by a pipe wrench like it is shown in graphic. Not keeping to this recommendation may cause the damages of the coil.



The hydraulic system should include all safety elements required by law (depending on the type of central heating installation and the type of heat source).

Before connecting the heater to an electrical installation, the leakage test of the hydraulic installation should be conducted.

4.2 CONNECTION TO ELECTRICAL INSTALLATION

The electrical installation must be carried out in accordance with the state of the art and the local regulations in force.

The electrical connection of heater to an installation with the electrical parameters according to the section 2.4 should be made in according to the appropriate connection diagram (see section 7).

The electrical circuit to which the device is connected, should include all safety element required by the law and the main ON/OFF switch enabling safe disconnection of the heater from the electrical system.

Before the start up, it is required to check the electrical installation in terms of damaged insulation, incorrect connection in the terminals, risk of potential short circuits etc.

5. EXPLOITATION

5.1 EXPLOITATION PRINCIPLES

The user is obliged to be familiar with this instruction before exploitation of the device.

Before any interference in the device, the electricity supply to the heater must be absolutely cut off.

Access to the device by parties like unauthorised people, children and animals is forbidden and should be prevented or at least hindered.

The device cannot work with covered or restricted air inlet or outlet (e.g. as a result of not keeping the minimum distances from partitions or obstructed inlet/outlet).

The unit is designed for handling of air at temperature ranging from -30°C to 60°C and with relative humidity ≤ 90%.

The heater has no antifreeze protection – as the heating medium should be used a fluid with a lower freezing point than the lowest probable temperature that may occur in the particular room.

In case of any malfunctions (like blow a fuse, unusual noise etc.), immediately cut off the device from the electrical system and contact directly with the installer, the manufacturer or the distributor. It is forbidden to turn on the unit before diagnosing and removing the reason of this malfunction.

If the device is not used for a longer time disconnect the unit from the electrical installation.

Periodical inspection and maintenance of the device according to the guidelines below, should be carried out with the given frequencies and always after two-weeks or a longer period of inactivity.

Before starting any maintenance work, the heater must be disconnected from the power supply.

At the periodic inspection and maintenance, the following should be successively done:

- check the condition of the wiring for its damage and remove/repair any damage,
- blow out the heat exchanger with the compressed air,
- clean the remaining elements from residue with a soft cloth at least twice every year,
- at least once per year, connect the device to the power supply and assess if the fan works correctly; additional murmur, metallic reverberation, grinding noise, vibration etc. says about a malfunction in such case, immediately cut off the device from the electrical system and contact directly with the installer, the manufacturer or the distributor.

Inspection and maintenance of the heater should be carried out by a user who is familiar with this instruction or by an external entity if due to the way of assembly or local regulations additional authorisations like e. g. working with electricity or at heights are required.

The frequency of the service should depend on the actual dirtiness - if the device is operating in an environment with a high concentration of dust, periodic cleaning should be performed much more often that it is specified above.

After exploitation time, please utilise the unit according to the local regulations.

6. CONTROLS

Using of control dedicated to AIR WATER HEATER HC-3S SERIES gives vast possibilities of adjusting the efficiency of the unit in different degree of automation, depending on the needs.

3-STEP CONTROLLER WITH ROOM THERMOSTAT HC3S

Controller is used to regulate devices equipped with 3-stage fans. It has 3-stage speed control and built-in manual thermostat.

Voltage/ Frequency: 230 V AC / 50 – 60 Hz
Maximum current load: 3 A
Operating temperature range: -10°C - 60°C
Regulation range: 10°C - 30°C
Operating mode: continious or thermostatic
Control accuracy: <1°C
Dimensions: 130 x 85 x 40 mm
Weight: 210 g
Degree of casing's protection: IP 30

PROGRAMMABLE CONTROLLER HMI BMS

Controller is used to regulate devices equipped with 3-stage fans. Controller has functions like programmable mode, operation in heating, cooling or mixed mode, automatic selection of the fan speed and can be integrated with BMS building control system.

Voltage/ Frequency: 230 V AC / 50 – 60 Hz
Maximum current load: 5 A
Operating temperature range: 0 - 45°C
Regulation range: 5°C - 35°C
Regulation accuracy: ± 0.5°C
Additional temperature sensor: NTC 10K
Communication: RS485
Dimensions: 86 x 86 x 13.3 mm
Weight: 270 g
Degree of protection (housing): IP 20
Degree of protection (external sensor): IP 68

FAN SPEED CONTROLLER HC

Controller is designed to change the single-phase fan's speed voltage controlled in industrial supply and heating systems.

5 control levels: 80-105-135-170-230 V*
Voltage/ Frequency: 230 V AC / 50 – 60 Hz
Maximum current load (depending on model):
1.2 A, 3 A, 5 A, 7 A, 14 A
Protection: thermal switch
Weight(depending on model):
1.45 kg, 2.5 kg, 4.5 kg, 5.5 kg or 10.5 kg
Degree of protection: IP 54

* regulation for 3 A regulator: 115-135-155-180-230 V

MANUAL ROOM THERMOSTAT HC

Controls operation of the heater. Switches the unit off automatically when the set temperature is reached.

Voltage/ Frequency: 230 V AC / 50 – 60 Hz
Maximum current load: 3 A
Operating temperature range: 0 - 40°C
Regulation range: 10 - 30°C
Regulation accurancy: <1°C
Degree protection: IP 30

ADDITIONAL ACCESSORIES

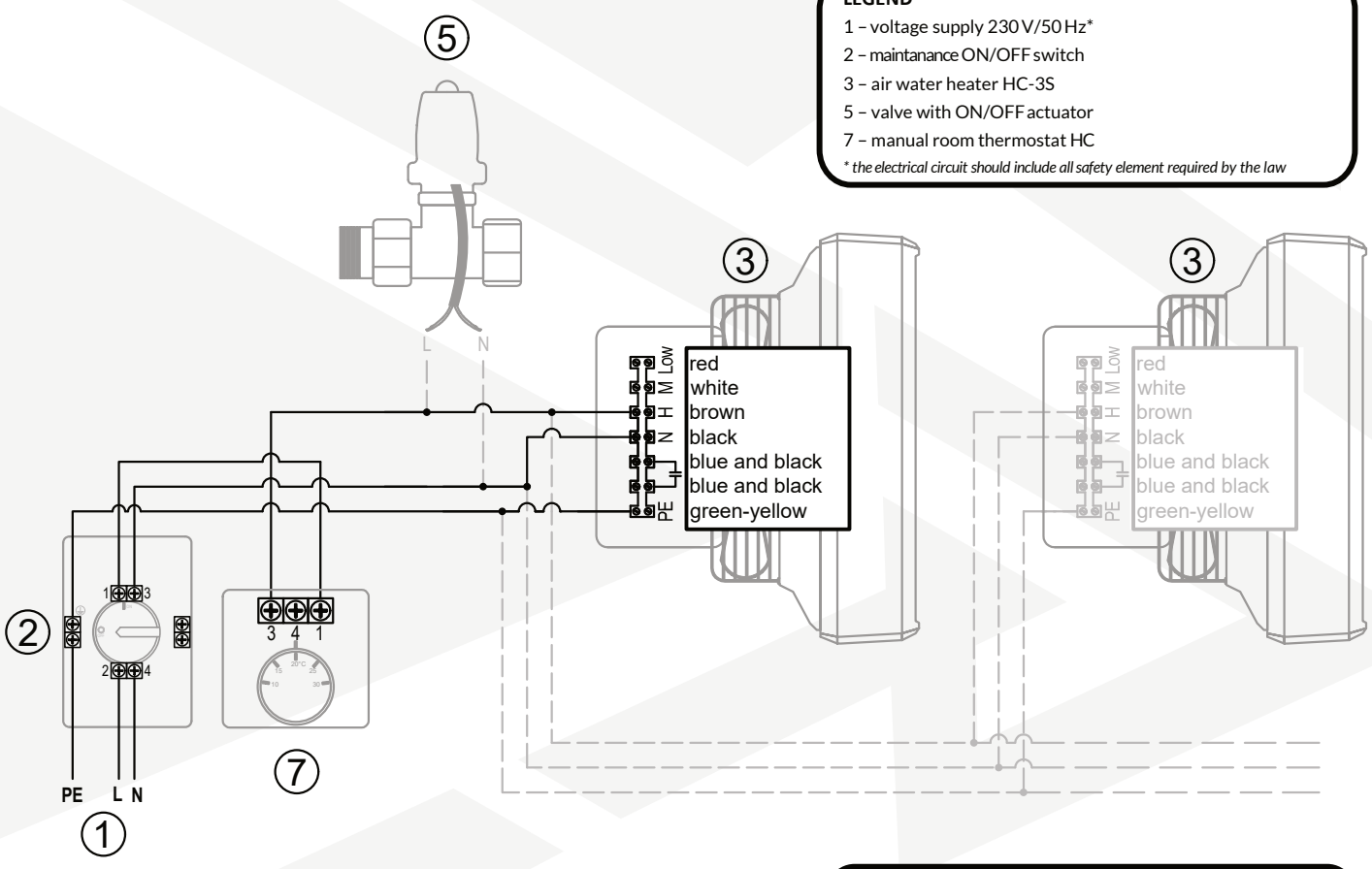
Two-way or three-way valve with actuator HC 3/4" - is used to automatically regulate the flow of the heating medium.

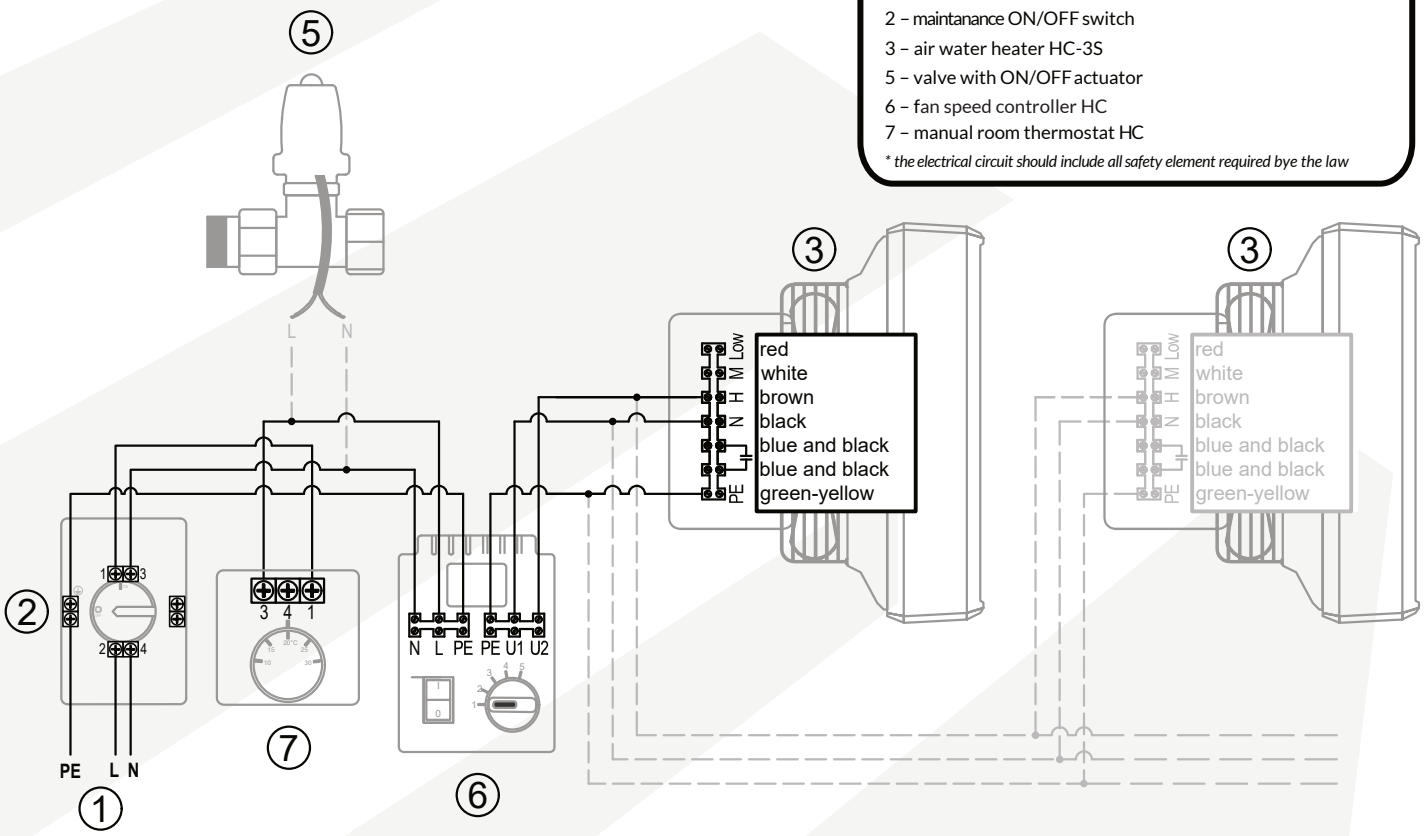
Relay module RM-16A - allows to connect a receiver with higher current consumption than permissible current load of connected controller.

Maintanance ON/OFF switch - is used to stop the machinery quickly when there is a risk of injury or the workflow requires stopping.

COOPERATION OF CONTROLLERS WITH EQUIPMENT								
Model	HC3S	HMI	HC 1.2 A	HC 3 A	HC 5 A	HC 7 A	HC 14 A	RM-16 A
HC15-3S	8	13	3	8	13	19	38	44
HC20-3S	3	5	1	3	5	8	16	18
HC30-3S	3	5	1	3	5	8	16	18
HC35-3S	3	5	1	3	5	8	16	18
HC45-3S	3	5	1	3	5	8	16	18
HC50-3S	1	2	-	1	2	3	6	7
HC70-3S	2	4	1	2	4	6	12	14
HC80-3S	1	2	-	1	2	3	6	7

7. WIRING DIAGRAMS

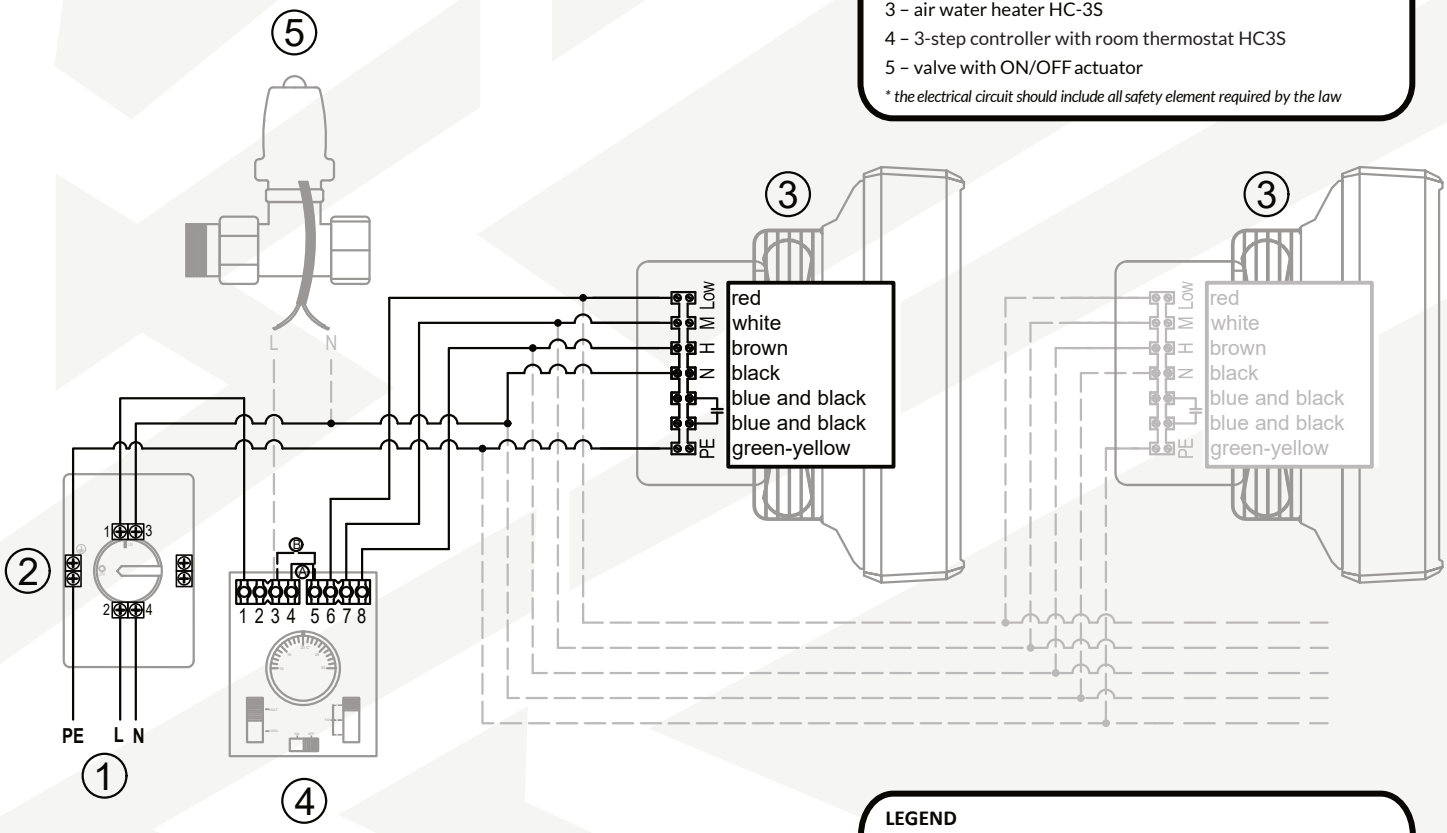




LEGEND

1 – voltage supply 230 V/50 Hz*
2 – maintanance ON/OFF switch
3 – air water heater HC-3S
4 – 3-step controller with room thermostat HC3S
5 – valve with ON/OFF actuator

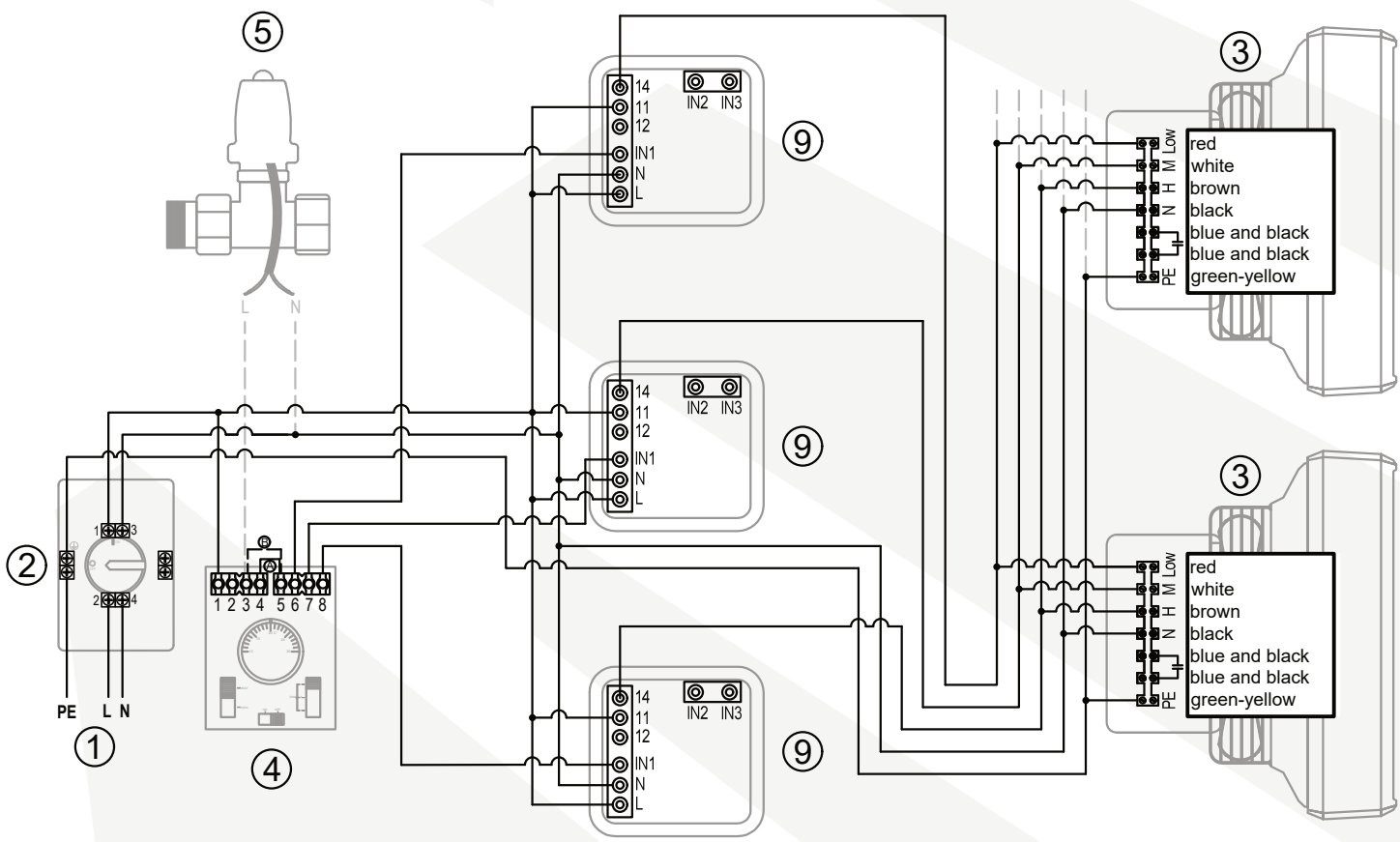
** the electrical circuit should include all safety element required by the law*



LEGEND

1 – voltage supply 230 V/50 Hz*
2 – maintanance ON/OFF switch
3 – air water heater HC-3S
4 – 3-step controller with room thermostat HC3S
5 – valve with ON/OFF actuator
9 – relay module RM-16A

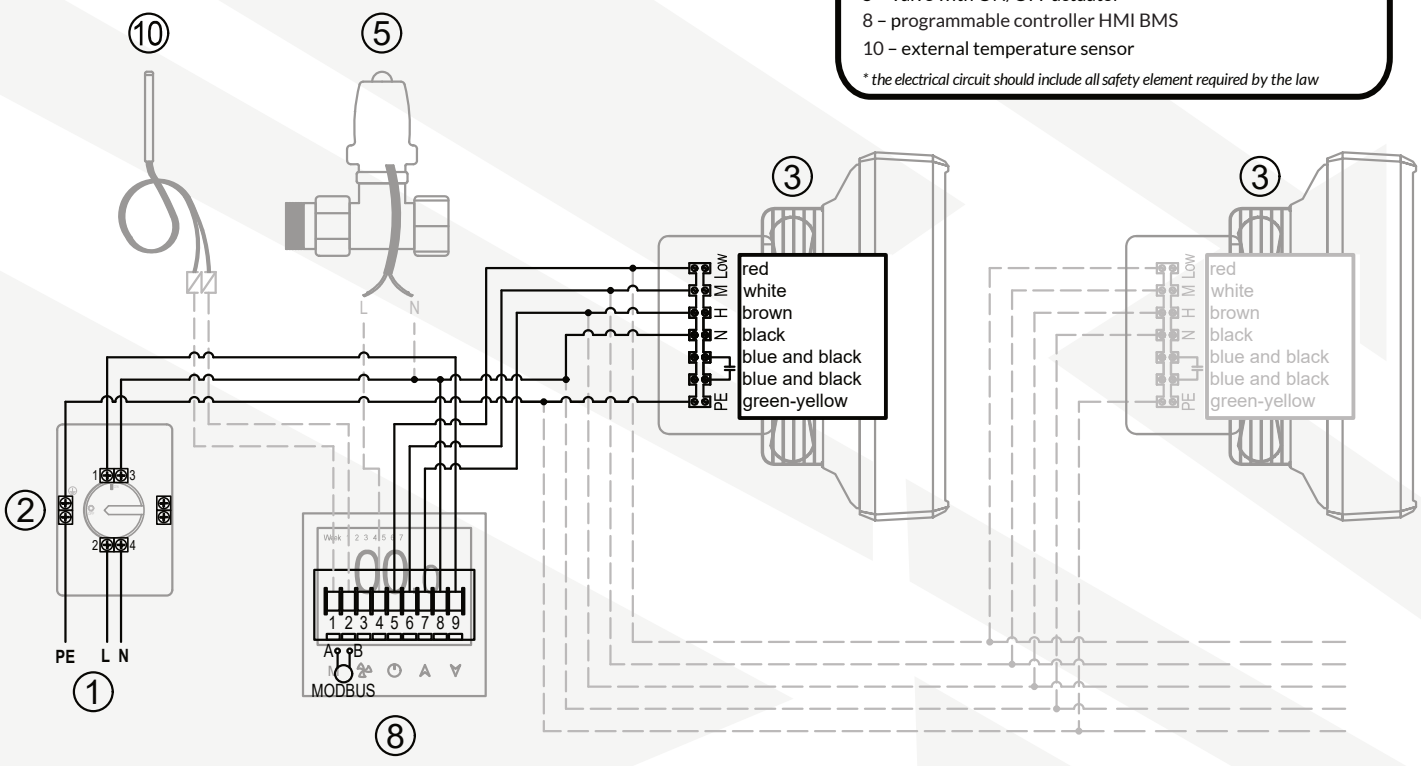
** the electrical circuit should include all safety element required by the law*



LEGEND

1 – voltage supply 230 V/50 Hz*
2 – maintanance ON/OFF switch
3 – air water heater HC-3S
5 – valve with ON/OFF actuator
8 – programmable controller HMI BMS
10 – external temperature sensor

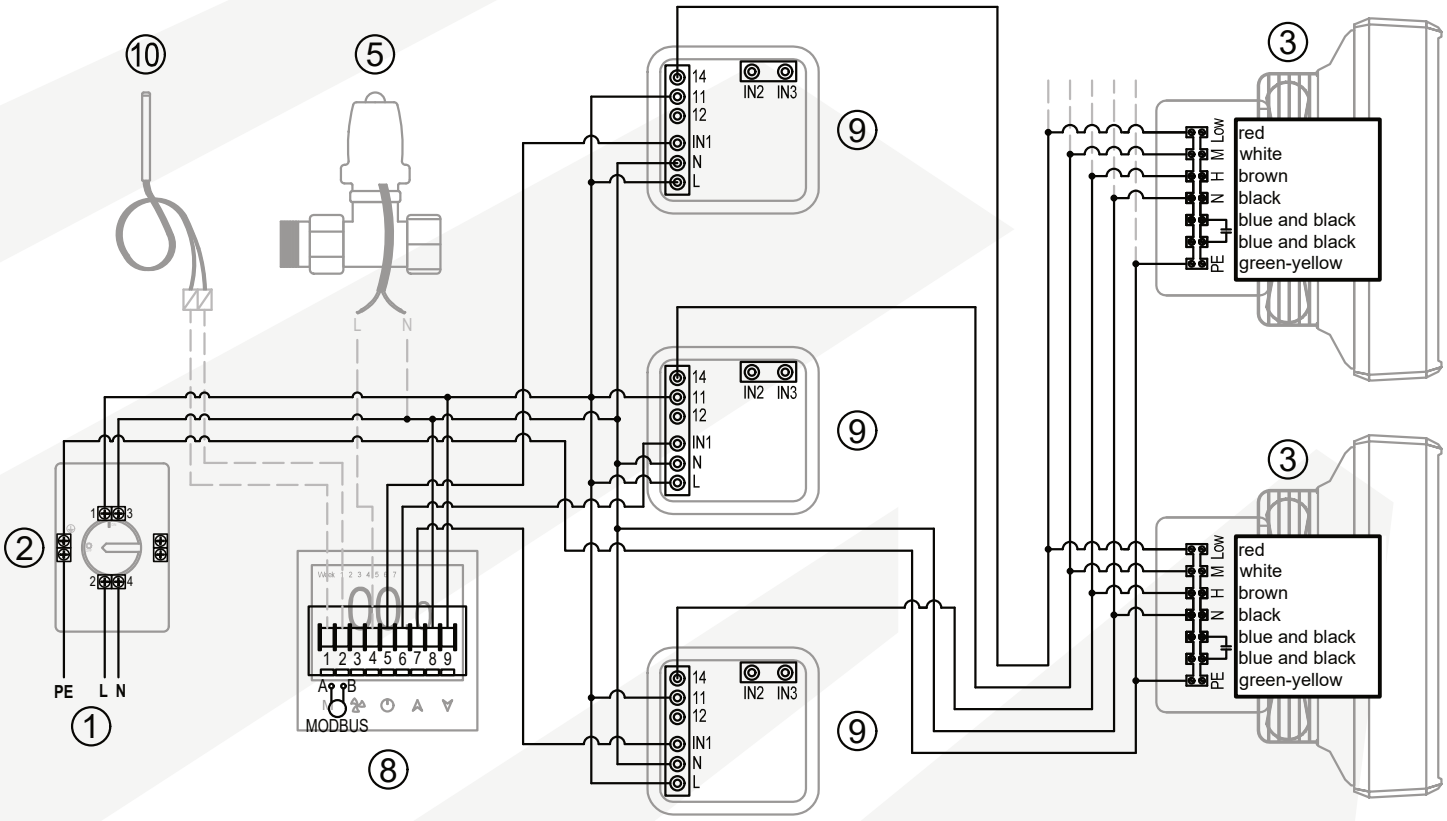
** the electrical circuit should include all safety element required by the law*



LEGEND

1 – voltage supply 230 V/50 Hz*
2 – maintanance ON/OFF switch
3 – air water heater HC-3S
5 – valve with ON/OFF actuator
8 – programmable controller HMI BMS
9 – relay module RM-16A
10 – external temperature sensor

** the electrical circuit should include all safety element required by the law*



8. WARRANTY TERMS

I. The company Reventon Group Sp. z o. o., hereinafter referred to as the guarantor, provides 24-month warranty protection period for the following devices:

- Air water heater HC 15-3S
- Air water heater HC 20-3S
- Air water heater HC 30-3S
- Air water heater HC 35-3S
- Air water heater HC 45-3S
- Air water heater HC 50-3S
- Air water heater HC 70-3S
- Air water heater HC 80-3S

II. The warranty protection is valid from the purchasing date by end user (i.e. the issue date of invoice) but not longer than 30 months from leaving the warehouse of Reventon Group Sp. z o. o.

III. The warranty claim should be reported via the complaint form on the website (https://reventongroup.eu/en/complaints). The scan or the photo of the fulfilled Warranty Card and the purchase invoice must be attached to the form. The Warranty Card is not required in case of accessories.

IV. The guarantor is committed to consider the claim within 14 working days since the date of reporting (i. e. the day of receipt of the correctly fulfilled warranty form).

V. In exceptional cases, the guarantor reserves the right to extend the time for consideration of the request, especially if the defect is not permanent one and its determination requires a deeper analysis. The extension must be notified by the guarantor before the end of the 14th working day.

VI. Under the warranty, the guarantor provides a repairment, replacement (the device or its component) or refund for the defective item within a specified time. The maximum value of refunding is equal to the purchase price of the device, accessories or spare parts qualified by the guarantor for repair or replacement.

VII. In the case of replacement of a device component, the warranty protection of the whole unit is not prolonged.

VIII. The guarantor does not cover the costs of disassembly and eventual reassembly of the complaint device.

IX. The guarantor may decide to bring the defective device or its component to the service of Reventon Group Sp. z o. o. In such case the transport of the item is organised and paid by the guarantor. The responsibility of the device's owner is to prepare the item for the shipment - the device must be packed in a way which protects it against transport damages and the dimensions and weight of the package must not exceed 660 x 650 x 400 mm and 30 kg respectively. In the case of elements which cannot be packed in this way, the method of shipment must be agreed and approved by Reventon Group Sp. z o. o . In the case of sending a non-standard package without agreement of the service of Reventon Group Sp. z o. o., the guarantor reserves the right to charge the owner of device with all additional transport costs.

X. In the case of arrival of the authorized service of the guarantor or an installer to fix the complaint item, the customer must ensure them seamless access to the device and all required media like electricity, water, lighting etc. free of charge.

XI. The warranty protection does not cover the parts of the device subject to the normal wear and tear as well as the following cases:

a) mechanical damage of the product

b) defects and damages through:

- improper storage or transport

- improper or non-compliant use and maintenance (i. e. inconsistent with the manual)

- using the device in the improper conditions (too high humidity, too high or too low temperature, impact of the surrounding, sun etc.)

- unauthorized (i. e. by the user or other unauthorized persons) installations, repairs, modifications or construction changes

- connecting equipment inconsistent with the technical documentation

- connecting additional equipment, which is not recommended by the guarantor

- improper power supply

- random events (like fire, flood, storm etc.)

c) elements which wear and tear such as discolour of the housing

d) devices which were not subject to current maintenance activities as required in the Exploitation Principles.

If there is any of the above, the claimant will be charged for transport and/or repairs.

XII. During collection of the device, the item must be checked exactly by the receiver to exclude transport damages. If any of them is observed, the damage report in presence of the product deliverer have to be filled - such report is the basement for the warranty claim. The damage report must be provided by the product deliverer.

XIII. The guarantor does not take the responsibility for potential losses and damages related to the downtime of the device during its failure and the complaint considering time.

XIV. Any changes in the Warranty Terms, improper use of the product as well as traces of self repairing (beyond the guarantor service) or alterations cause, the warranty become invalid.

XV. These Warranty Terms do not exclude or limit any rights arising from the pledge.

XVI. Not following to any of the warranty regulations makes the protection invalid.

XVII. All correspondence should be sent to the following address: Reventon Group Sp. z o. o., 556 Wyzwolenia Street, 43-340 Kozy, Poland or email address: serwis@reventongroup.eu.

Warranty Card

1 - Model and serial number*	2 – Address and place of assembly
3 – Date of connection to:	**4 – Stamp and signature of installer:**
Heating/cooling installation (if applicable)	
Ventilation installation (if applicable)	
Electrical installation (if applicable)	

***If the device does not have a serial number, put there the product code.**

Reventon Group Sp. z o.o., 556 Wyzwolenia Street, 43-340 Kozy, Poland, www.reventongroup.eu