



# reventon

INDUSTRIAL SOLUTIONS

TECHNICAL DOCUMENTATION  
DOKUMENTACJA TECHNICZNA  
ТЕХНИЧЕСКАЯ ДОКУМЕНТАЦИЯ  
TECHNISCHE DOKUMENTATION

INDUSTRIAL AIR CURTAIN  
KURTYNA POWIETRZNA PRZEMYSŁOWA  
ПРОМЫШЛЕННЫЕ ВОЗДУШНЫЕ ЗАВЕСЫ  
INDUSTRIE-TORLUFTSCHLEIER

## MODELS:



HUMMER 150C-1P  
HUMMER 200C-1P  
HUMMER 150W-1P  
HUMMER 200W-1P  
HUMMER 150W-1P 2R  
HUMMER 200W-1P 2R  
HUMMER 150C-EC  
HUMMER 200C-EC

HUMMER 150W-EC  
HUMMER 200W-EC  
HUMMER 150C-1P TURBO  
HUMMER 200C-1P TURBO  
HUMMER 150W-EC 2R  
HUMMER 200W-EC 2R  
HUMMER 150E - 3P  
HUMMER 200E - 3P





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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 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 curtain, all local safety requirements must be respected.

The product was made in Poland.

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## 1.2 STORAGE AND TRANSPORT

The product must be kept and transported on an appropriate pallet, in ambient temperature ranging from -25°C to 60°C and relative humidity ≤90%.

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

## 1.3 APPLICATION

Industrial curtains HUMMER series are available in three version - with a water heat exchanger (devices with 'W' symbol), with PTC heaters (devices with 'E' symbol) and without it (unheated air curtains are marked with the 'C' symbol). Regardless of the version, the curtain function is to protect the room against heat, cold, dust and insects from the outside. In winter they prevent uncontrolled heat loss and in summer they prevent the room from heating up. The curtains with heat exchanger additionally heat up circulating through them air. They are characterized by a large stream and the range of the blown air. For this reason, they are an ideal solution for industrial gate of warehouses, production halls, workshops, garages etc. However, curtains should not be used to remove technological impurities such as dust or aggressive and explosive chemicals. They should neither be used in corrosive environments for aluminum, copper and steel as well as in highly dusty environments (above 0.3 g/m<sup>3</sup>). The devices cannot be also used in places, where it would be exposed to too high humid (relative humidity higher than 90%) or direct contact with water, exceeding the permissible contact due to the protection degree IP (see next section).

# 2. DEVICE CHARACTERISTICS

## 2.1 IP PROTECTION CLASS

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 fans used in HUMMER 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

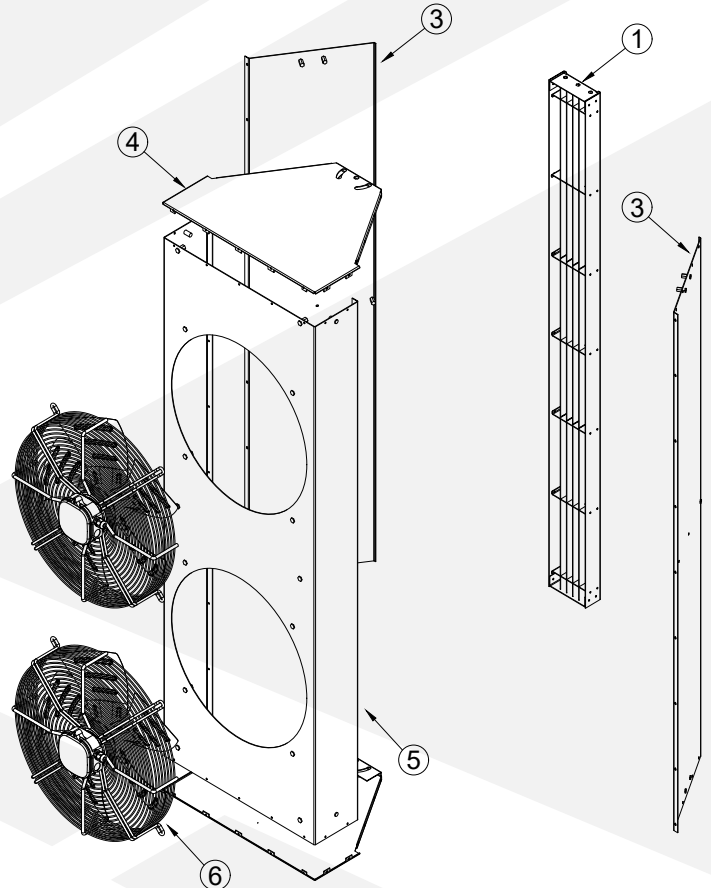
**Housing and Grille:** made of galvanized powder-coated steel. It is possible to adjust manually the grille within +/- 15° to achieve the needed direction of the air flow.

**Water heat exchanger (for the device with the "W" symbol):** 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 model of the device the curtains are equipped with 1 or 2-row heating coils.

**Heat exchanger (for the device with the "E" symbol):** PTC-type heater that regulates its own temperature according to the air flow and prevents overheating. Due to the uniformly heated surface of the heater, the device ensures maximum usage of heating power at each heating stage.

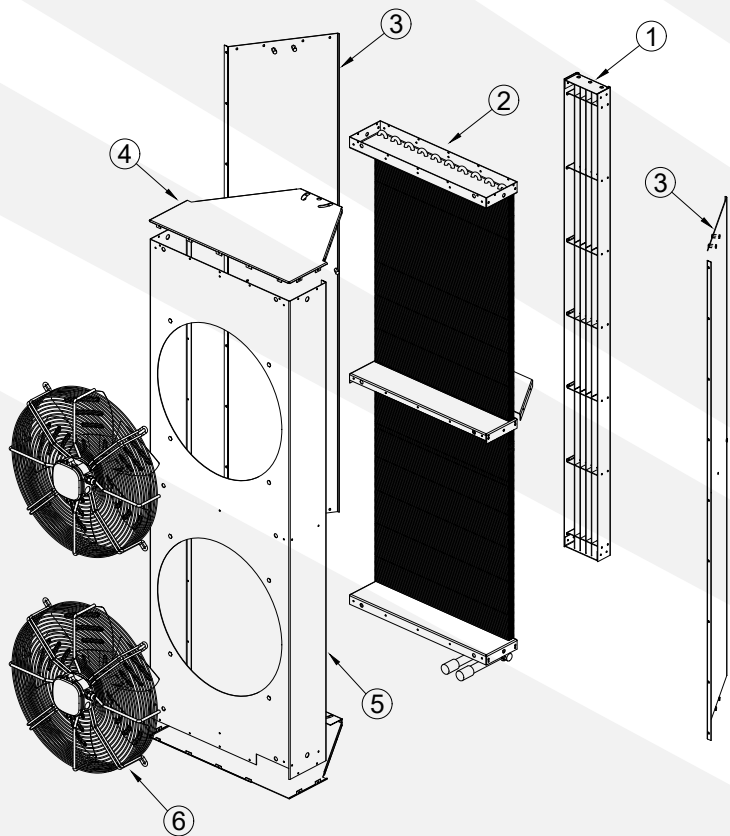
**Axial blowing fan:** impeller made of steel (AC motor) or PP (EC motor). The objective of the fan is to ensure air flow through the exchanger. The AC motor has a single - phase, three speed motor and the EC motor has a single - phase brushless motor characterized by high energy efficiency and wide range of speed control (voltage signal from 1.5 to 10 V).

Models 150C - 200C



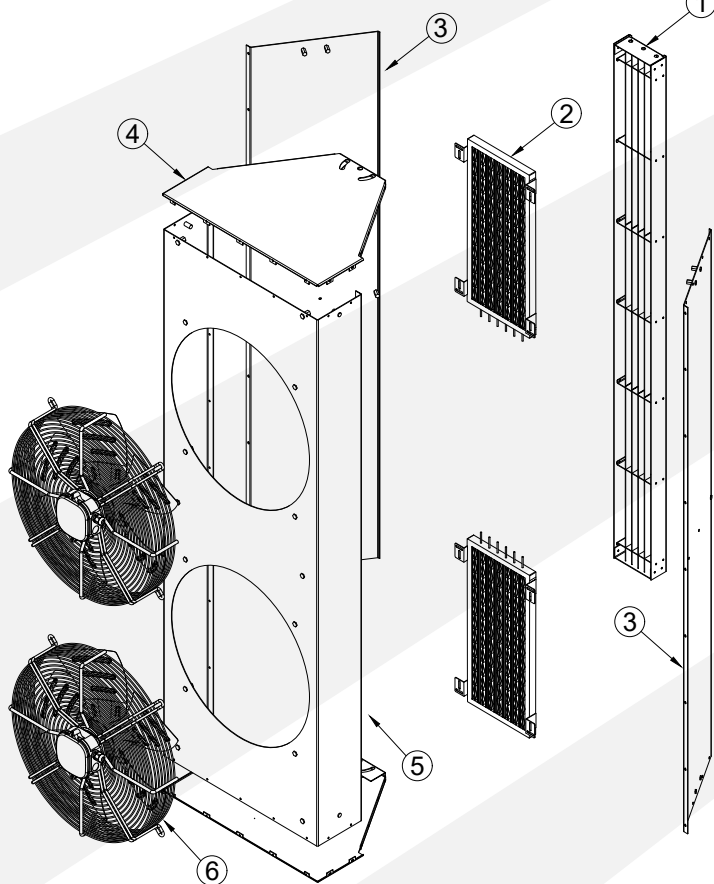
1. Outlet grille
3. Left/Right housing
4. Side housing
5. Back housing
6. AC motor fan/EC motor fan

**Models 150W - 200W**



- 1. Outlet grille
- 2. Water heat exchanger (only for models 150W and 200W)
- 3. Left/Right housing
- 4. Side housing
- 5. Back housing
- 6. AC motor fan/EC motor fan

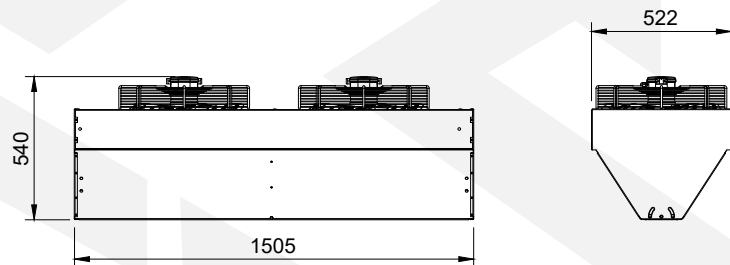
**Models 150E - 200E**



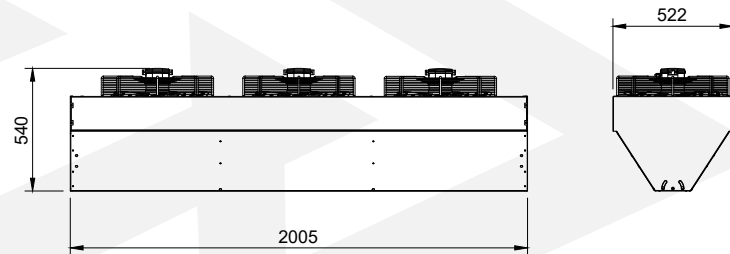
- 1. Outlet grille
- 2. Heat exchanger (only for models 150E and 200E)
- 3. Left/Right housing
- 4. Side housing
- 5. Back housing
- 6. AC motor fan

**2.3 DIMENSIONS**

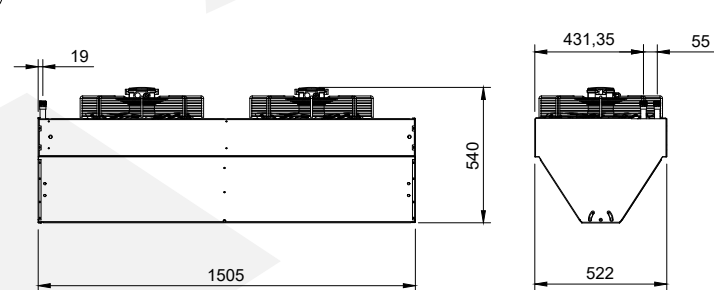
**MODEL 150C**



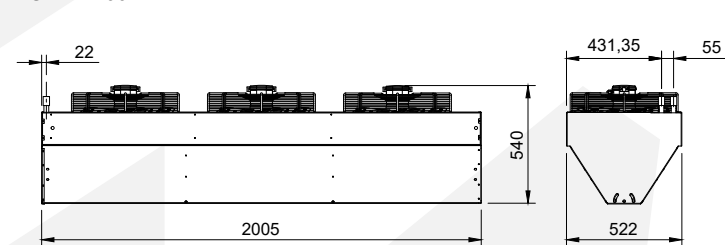
**MODEL 200C**



**MODEL 150W**

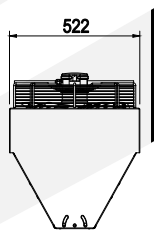
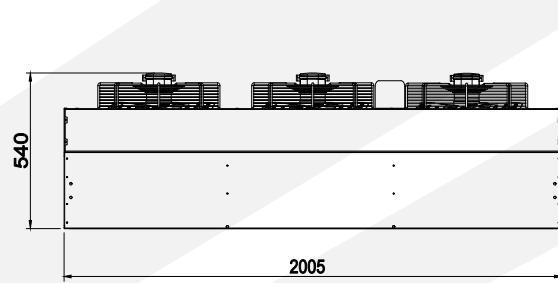
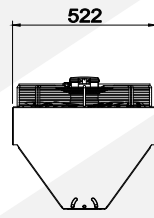
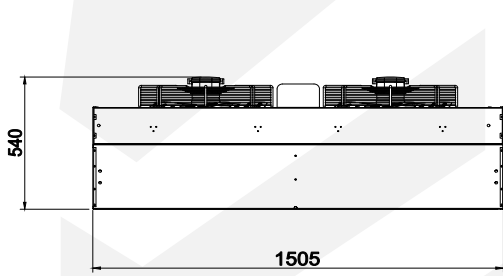


**MODEL 200W**



**MODEL 150E**

**MODEL 200E**



**2.4 TECHNICAL DATA**

TECHNICAL DATA		HUMMER 150C-1P	HUMMER 200C-1P	HUMMER 150C-1P TURBO	HUMMER 200C-1P TURBO	HUMMER 150C-EC	HUMMER 200C-EC
Product code		ACH150C-1999	ACH200C-2000	ACH150CT-2434	ACH200CT-2435	ACH150C-EC-2353	ACH150C-EC-2354
Maximum airflow [m³/h]	III STAGE*	7200	10500	10000	14400	10100	14500
	II STAGE	6100	8600	8400	11800	---	---
	I STAGE	4400	6700	6100	9200	---	---
Maximum range [m]	III STAGE*	6.5	7.0	7.0	8.0	7.0	8.0
	II STAGE	6.5	7.0	7.0	7.5	---	---
	I STAGE	6.0	6.5	6.5	7.0	---	---
Supply voltage [V] / Supply frequency [Hz]		230/50	230/50	230/50	230/50	230/50	230/50
Nominal motor current [A]	III STAGE*	2.16	3.24	4.10	6.15	5.90	8.85
	II STAGE	1.72	2.58	3.30	4.95	---	---
	I STAGE	1.40	2.10	2.80	4.20	---	---
Nominal motor speed [rpm]	III STAGE*	1360	1360	1380	1380	1400	1400
	II STAGE	1050	1050	1200	1200	---	---
	I STAGE	750	750	900	900	---	---
Nominal motor power [W]	III STAGE*	480	720	910	1365	860	1290
	II STAGE	380	570	700	1050	---	---
	I STAGE	320	480	560	840	---	---
IP rating [-]		54	54	54	54	54	54
Net weight [kg]		40	57	43	60	41	58
Noise [dB]****		67	70	64	71	67	70

TECHNICAL DATA		HUMMER 150W-1P	HUMMER 200W-1P	HUMMER 150W-1P 2R	HUMMER 200W-1P 2R	HUMMER 150W-EC	HUMMER 200W-EC	HUMMER 150W-EC 2R	HUMMER 200W-EC 2R
Product code		ACH150WN-2001	ACH200WN-2002	ACH150W2R-2304	ACH200W2R-2305	ACH150W-EC-2355	ACH200W-EC-2356	ACH150W-EC2R-2357	ACH200W-EC2R-2358
Nominal heating capacity [kW] **	III STAGE*	30.8	37.6	74.0	89.1	35.1	42.8	77.4	89.9
	II STAGE	26.0	31.4	67.8	80.3	---	---	---	---
	I STAGE	22.8	28.4	57.1	70.7	---	---	---	---
Heating capacity range [kW]***		3.9 – 40.5	4.2 – 52.4	8.9 – 97.6	11.5 – 117.4	4.04 – 46.3	5.42 – 56.3	8.3 – 102.2	10.1 – 118.5
Maximum airflow [m³/h]	III STAGE*	6500	8500	8700	11000	9500	12400	8900	11200
	II STAGE	5500	7000	7350	9000	---	---	---	---
	I STAGE	4000	5500	5350	7100	---	---	---	---
Maximum range [m]	III STAGE*	6.5	7.0	7.0	7.5	7.0	7.5	7.0	7.5
	II STAGE	6.0	6.5	6.5	7.0	---	---	---	---
	I STAGE	5.5	6.0	6.0	6.5	---	---	---	---
Number of rows [pcs.]		1	1	2	2	1	1	2	2
Capacity of water [dm³]		2.31	3.02	4.35	5.75	2.31	3.02	4.35	5.75
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*	2.16	3.24	4.10	6.15	5.90	8.85	5.90	8.85
	II STAGE	1.72	2.58	3.30	4.95	---	---	---	---
	I STAGE	1.40	2.10	2.80	4.20	---	---	---	---
Nominal motor speed [rpm]	III STAGE*	1360	1360	1380	1380	1400	1400	1400	1400
	II STAGE	1050	1050	1200	1200	---	---	---	---
	I STAGE	750	750	900	900	---	---	---	---
Nominal motor power [W]	III STAGE*	480	720	910	1365	860	1290	860	1290
	II STAGE	380	570	700	1050	---	---	---	---
	I STAGE	320	480	560	840	---	---	---	---
IP rating [-]		54	54	54	54	54	54	54	54
Net weight [kg]		51	70	54	73	52	71	52	71
Noise [dB]****		66	69	65	68	66	69	65	68

\* for fans with EC motor, the highest efficiency is measured

\*\* for parameters 90/70°C and 0°C inlet air temperature

\*\*\* for AC motor max. 120/90°C, 0°C inlet air temperature, III stage // min. 40/30°C, 20°C inlet air temperature, I stage;

for EC motor max. 120/90°C, 0°C inlet air temperature with 100 % air expense // min. 40/30°C, 20°C inlet air temperature with 50 % air expense

\*\*\*\* measurement at the distance 5 m

Parameters		HUMMER 150W-1P III stage 6500 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		26.6	24.5	22.3	20.2	18.2	22.4	20.2	18.2	16.1	14.0	17.1	15.0	13.0	10.9	8.9	12.9	10.9	8.8	6.8	4.8
Dry bulb air outlet temperature [°C]		11.3	15.6	19.9	24.1	28.3	9.5	13.8	18.0	22.2	26.4	7.3	11.5	15.7	19.9	24.1	5.5	9.7	13.9	18.1	22.2
Water flow [m³/h]		1.17	1.08	0.99	0.89	0.80	0.98	0.89	0.80	0.71	0.62	1.49	1.31	1.13	0.95	0.77	1.12	0.94	0.77	0.59	0.41
Pressure drop in the heat exchanger [kPa]		14	12	10	8	7	10	8	7	5	4	23	18	14	10	7	14	10	7	4	2

Parameters		HUMMER 200W-1P III stage 8500 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		32.6	30.0	27.4	24.9	22.4	27.5	25.0	22.4	19.9	17.4	20.9	18.4	15.9	13.5	11.0	15.9	13.4	11.0	8.5	6.0
Dry bulb air outlet temperature [°C]		10.6	15.0	19.3	23.6	27.8	9.0	13.3	17.6	21.8	26.1	6.8	11.1	15.4	19.6	23.8	5.2	9.5	13.7	17.9	22.1
Water flow [m³/h]		1.44	1.32	1.21	1.10	0.99	1.21	1.10	0.99	0.87	0.77	1.83	1.61	1.39	1.17	0.96	1.38	1.17	0.95	0.74	0.52
Pressure drop in the heat exchanger [kPa]		23	20	17	14	12	17	14	12	9	7	39	30	23	17	12	24	17	12	8	4

Parameters		HUMMER 150W-1P 2R III stage 8700 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		63.9	58.7	53.6	48.6	43.6	53.8	48.7	43.6	38.6	33.7	41.0	36.0	31.1	26.1	21.3	31.0	26.1	21.2	16.3	11.5
Dry bulb air outlet temperature [°C]		20.4	24.1	27.7	31.3	34.9	17.1	20.8	24.4	28.0	31.5	13.1	16.7	20.3	23.8	27.3	9.9	13.5	17.0	20.5	23.9
Water flow [m³/h]		2.82	2.60	2.37	2.15	1.93	2.36	2.14	1.92	1.70	1.48	3.58	3.14	2.71	2.28	1.85	2.69	2.26	1.84	1.42	0.99
Pressure drop in the heat exchanger [kPa]		30	25	21	18	14	22	18	15	12	9	49	39	29	21	14	30	21	15	9	5

Parameters		HUMMER 200W-1P 2R III stage 11000 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		77.3	71.1	65.1	59.0	53.0	65.4	59.2	53.2	47.2	41.3	49.7	43.6	37.7	31.8	26.0	37.8	31.9	26.0	20.2	14.4
Dry bulb air outlet temperature [°C]		19.5	23.2	27.0	30.7	34.3	16.5	20.2	23.9	27.5	31.2	12.5	16.2	19.9	23.5	27.0	9.5	13.2	16.8	20.4	23.9
Water flow [m³/h]		3.41	3.14	2.88	2.61	2.34	2.87	2.60	2.34	2.08	1.82	4.33	3.88	3.29	2.78	2.27	3.28	2.77	2.26	1.75	1.25
Pressure drop in the heat exchanger [kPa]		47	40	34	28	23	35	29	24	19	15	78	61	47	34	23	48	35	24	15	8

Parameters		HUMMER 150W-EC 9500 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		30.3	27.8	25.4	23.0	20.7	25.4	23.0	20.6	18.3	15.9	19.5	17.1	14.7	12.4	10.1	14.7	12.4	10.0	7.7	5.4
Dry bulb air outlet temperature [°C]		8.8	13.3	17.7	22.1	26.5	7.4	11.8	16.2	20.6	25.0	5.7	10.1	14.5	18.8	23.2	4.3	8.7	13.0	17.4	21.7
Water flow [m³/h]		1.34	1.23	1.12	1.02	0.91	1.12	1.01	0.91	0.80	0.70	1.75	1.49	1.28	1.08	0.88	1.28	1.07	0.87	0.67	0.47
Pressure drop in the heat exchanger [kPa]		17	15	12	10	9	13	11	9	7	5	29	23	17	13	11	18	13	9	5	3

Parameters		HUMMER 200W-EC 12400 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		37.0	34.1	31.2	28.3	25.5	31.3	28.4	25.5	22.6	19.8	23.8	21.0	18.1	15.3	12.5	18.1	15.3	12.5	9.7	6.8
Dry bulb air outlet temperature [°C]		8.3	12.8	17.2	21.7	26.1	7.0	11.5	15.9	20.3	24.7	5.3	9.8	14.2	18.6	23.0	4.1	8.5	12.9	17.3	21.6
Water flow [m³/h]		1.64	1.51	1.38	1.25	1.12	1.37	1.25	1.12	0.99	0.87	2.08	1.83	1.58	1.33	1.09	1.57	1.33	1.08	0.84	0.59
Pressure drop in the heat exchanger [kPa]		29	25	21	18	15	22	18	15	12	9	49	39	30	22	15	30	22	15	10	5

Parameters		HUMMER 150W-EC 2R 8900 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		66.8	61.4	56.1	50.9	45.6	56.2	50.9	45.6	40.4	35.2	42.9	37.7	32.5	27.3	22.3	32.5	27.3	22.1	17.0	12.0
Dry bulb air outlet temperature [°C]		19.5	23.3	27.0	30.6	34.3	16.4	20.1	23.8	27.4	31.0	12.5	16.2	19.8	23.4	27.0	9.5	13.1	16.7	20.2	23.7
Water flow [m³/h]		2.95	2.71	2.48	2.25	2.01	2.47	2.24	2.01	1.78	1.55	3.74	3.28	2.83	2.38	1.94	2.82	2.37	1.92	1.48	1.04
Pressure drop in the heat exchanger [kPa]		32	28	23	19	16	24	20	16	13	10	54	42	32	23	16	32	23	16	10	5


Parameters		HUMMER 200W-EC 2R 11200 [m³/h]																			
		80/60					70/50					50/40					40/30				
Supply/return water temperature [°C]																					
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]		78.0	71.8	65.7	59.5	53.5	66.0	59.7	53.7	47.7	41.7	50.1	44.0	38.1	32.2	26.3	38.2	32.2	26.2	20.4	14.5
Dry bulb air outlet temperature [°C]		19.3	23.1	26.8	30.5	34.2	16.3	20.1	23.8	27.4	31.1	12.4	16.1	19.8	23.4	27.0	9.4	13.1	16.7	20.3	23.8
Water flow [m³/h]		3.45	3.17	2.90	2.63	2.36	2.90	2.63	2.36	2.10	1.83	4.37	3.84	3.32	2.80	2.29	3.31	2.79	2.28	1.77	1.26
Pressure drop in the heat exchanger [kPa]		48	41	34	29	24	35	29	24	19	15	79	62	47	35	24	49	35	24	15	8


TECHNICAL DATA		HUMMER 150E-3P	HUMMER 200E-3P
Product code		ACH150E3P-2521	ACH200E3P-2522
Unit power [kW]		14.0	21.0
Heater current [A]		20	30
Maximum airflow [m <sup>3</sup> /h]	III STAGE	6800	9500
	II STAGE	5800	7800
	I STAGE	4200	6100
Maximum range [m]		6.5	7.0
Supply voltage [V] / Supply frequency [Hz]		400/50	400/50
Rated motor current [A]	III STAGE	2.16	3.24
	II STAGE	1.72	2.58
	I STAGE	1.40	2.10
Motor power [W]	III STAGE	480	720
	II STAGE	380	570
	I STAGE	320	480
IP rating [-]		54	54
Net weight [kg]		45	64
Noise [dB]*		67	70


\* at the distance 5m


### 3. INSTALLATION PRINCIPLES


#### 3.1 GENERAL PRINCIPLES


 The curtain can be mounted both horizontally (e. g. with mounting pins) or vertically (attached to building partitions). Before installing the device, make sure that all elements to which the curtain is to be attached are strong enough.

 Due to the relatively large weight and the dimensions of the curtain, the assembly should be performed by at least two people and at least one of them must be experienced in mounting of such devices and - if local law requires it with appropriate qualifications.

 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.

 The curtain should be installed in a place, where there is a possibility of easy access to the device and its individual elements. The air outlet from the curtain should be as close as possible to the door opening, blowing air in a direction parallel to this opening (acceptable deviation is up to 15 degrees).

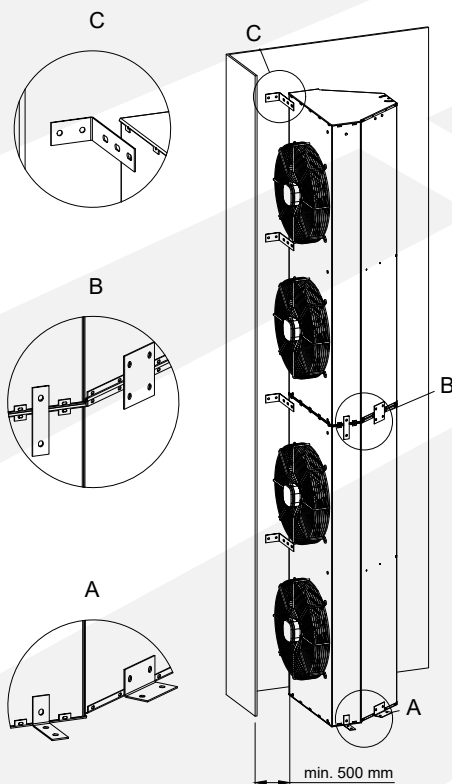
 Installation in a position other than vertical or horizontal is not allowed. Make sure that there is at least 0.5 meter free space above the fans. The curtain should not be used to mount in gates higher / wider than the maximum range of the curtain.

 The width of the curtain should be greater or equal to the width of the door frame - if one device is too short, two or more curtains should be used. As this situation occurs often in the case of long and wide industrial entrance gates, HUMMER series devices have a modular structure, allowing easy connection of two curtains by attached mounting elements (see section 3.5).

#### 3.2 MOUNTING ELEMENTS

Dedicated set of flat and angle bars is provided together with the curtain. The elements should be used, depending on the installation manner, as described below. M8 screws, gaskets and rawplugs will be necessary to install the device with mounting elements.

#### 3.3 VERTICAL INSTALLATION



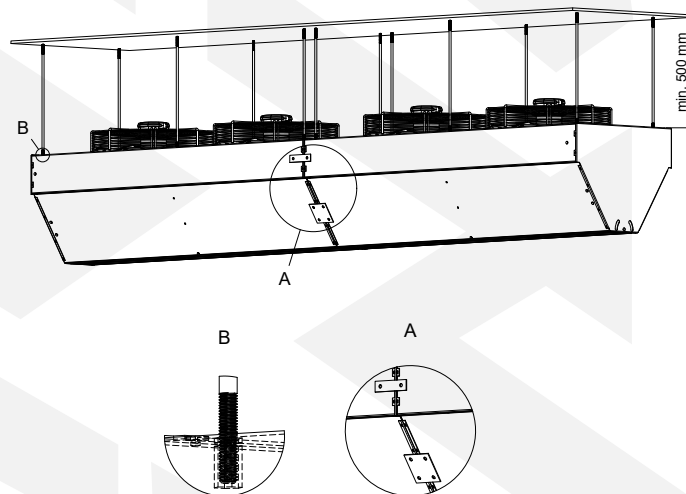
A - Using four angle bars, fix the curtain to the ground in a permanent and stable way, at least in four places - as shown in the figure above. It is suggested to use antivibration pad between the floor and the curtain.

B - When installing several devices, connect them in four places using the set of flat bars provided. Additionally it is suggested to use anti-vibration pad between the curtains.

C - Additionally, the device must be attached to wall in at least two places using dedicated angle bars with one extended arm (the possibility of installing the curtain in the distance from the barrier required by the user).

#### 3.4 HORIZONTAL INSTALLATION

For horizontal assembly, use the threaded holes on the top of the device, to hang the curtain e. g. on mounting pins. In order to dampen possible vibrations of the structure, it is recommended to use anti-vibration mounts. The elements to hang the HUMMER device are not supplied with the curtain. An exemplary horizontal installation is shown in the figure below.

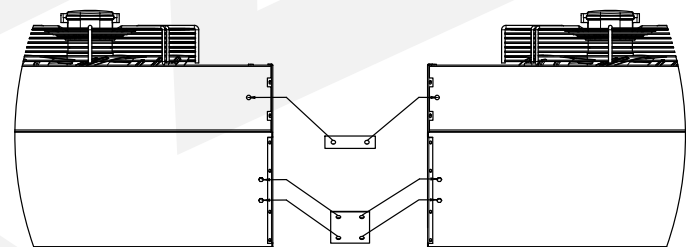


A - When installing several devices, connect them in four places using the set of flat bars provided. Additionally it is suggested to use anti-vibration pad between the curtains.

B - The mounting pins should be inserted and screwed securely into the threaded holes on the top of the device. Each pin should be secure against unscrewing with e. g. a counter nut. Then the curtain should be hung on six mounting pins for model 150 and on eight mounting pins for model 200.

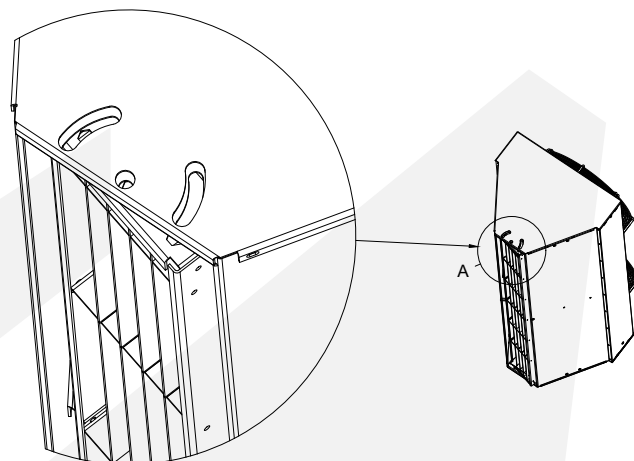
#### 3.5 CONNECTION OF THE CURTAINS

If it is necessary to install more than one curtain, the devices should be connected in four places using the set of flat bars provided. Additionally it is suggested to use anti-vibration pad between the curtains.



#### 3.6 OUTLET GRILLE

The curtain HUMMER series has a movable outlet grille that allows adjustment of the airflow angle. The maximum deviation of the stream axis from the perpendicular direction to the grid plane should not exceed the maximum permissible deviation, i. e. 15 degrees. To increase the effectiveness of the air barrier, air blowing from the outlet grille should be directed as close as possible to the surface of the gate opening.



## 4. HEATING AND ELECTRICAL INSTALLATION

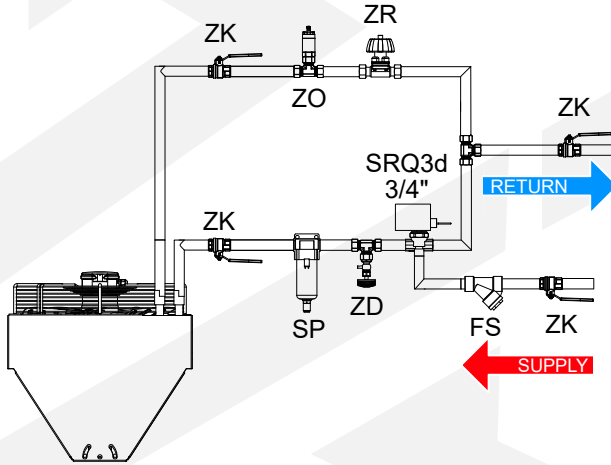
**!** Before connecting the unit to an electrical or heating installation, it must be assembled permanently to a suitable partition (according to the recommendations contained in the section 3).

**!** 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.

**!** Do not install, service or operate the device with wet hands or barefoot.

### 4.1 CONNECTION TO HEATING INSTALLATION

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

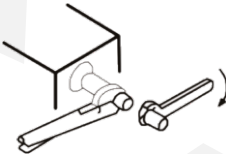


FS - mesh filter; ZO - vent valve; ZK - shut-off valve; ZD - drain valve; ZR - balancing valve; SRQ3d - three-way valve with an actuator; SP - air separator

**!** 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 coil (supply - marked in red, return - marked in blue). The correct connection is shown in the diagram above.

**!** 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).

**!** During vertical installation of the curtain, its connectors should be at the top.

**!** Before connecting the curtain 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 curtain to an installation with the electrical parameters according to the section 2.4 should be made in accordance with the appropriate connection diagram (see section 7).

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

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

**!** The PTC heating element's safety feature is the supervisory relay which measures the current drawn by the fan. If the current is too high or too low compared to the nominal value, the relay prevents the heating element from activating. This protects the system from activating the PTC heating element when the fan is not running.

**!** All products with electric heaters must be equipped with a residual current circuit breaker (RCCB) with a rated residual operating current of 300 mA as fire protection.

**!** For all HUMMER units, the recommended cross-section of the power supply cables for the fans is 1.5 mm<sup>2</sup>. In air curtains with an electric heater, the fan power supply cable must be led to the electrical box located between the fans and connected to the PCB in accordance with the wiring diagram (see section 7.2). For HUMMERs with EC fans, the control signal 0-10V should be provided using a shielded cable:
 

- 2 x 1mm<sup>2</sup>, not longer than 25 m in case of potentiometer EC,
- 3 x 1mm<sup>2</sup>, not longer than 50 m in case of HMI EC BMS.

## 5. OPERATION

### 5.1 OPERATION PRINCIPLES

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

**!** It is forbidden to touch the device during operation. Before any interference in the device, the electricity supply to the curtain must be absolutely cut off. Components of the device may be warm after shutting down.

**!** Device cannot be operated by children and adults with reduced mobility, sensory or intellectual disability. Access to the curtain 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).

**!** Keep the device away from water and its solutions and splashing or dripping liquids. Never put objects with liquids on top or close the device.

**!** EC motor starts if voltage signal is 1.5 V - however, for lower values of voltage the fan still remains under voltage and can also rotate.

**!** The unit is designed for handling of air at temperature ranging from -25°C to 60°C and with relative humidity ≤ 90%.

**!** The curtain 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.

**!** During intalation or adjustment of the outlet grille, do not tighten the fastening/regulation screws too much - this may result in "twisting" the rivet nuts

**!** 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 at the specified frequency and always after two-weeks or a longer period of inactivity.

**!** Before starting any maintenance work, the curtain 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 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 curtain 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 than that it is specified above.

**!** Never use petrol, benzene, thinners or any other chemicals for cleaning the unit

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

## 6. CONTROLS

Using of control dedicated to air curtains HUMMER gives vast possibilities of adjusting the efficiency of the unit in different degree of automation, depending on the needs.

### CONTROLLER WITH THERMOSTAT HMI CURTAIN BMS

Controller is used to regulate air curtains HUMMER equipped with 3-stage fans. Controller has functions like operation in heating, cooling or mixed mode or in accordance with door sensor, valve operation control, 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  
**Communication:** RS485  
**Dimensions:** 86 x 86 x 13.3 mm  
**Weight:** 270 g  
**Degree of protection (housing):** IP 20

### PROGRAMMABLE CONTROLLER HMI EC BMS

Controller is used to regulate air curtains HUMMER equipped with EC motor 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. A maximum of 4 HUMMER 150 units or 3 HUMMER 200 units can be connected to a single controller.



**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

### PROGRAMMABLE CONTROLLER HMI VOLT

Controller is used to regulate devices like HUMMER E - 3P equipped with 3-stage fans. Controller has functions like programmable mode, operation in heating or ventilation mode, automatic selection of the fan speed and can be integrated with BMS building control system. The controller has a function to cool down the heater, i.e. after turning off the device, the fan still runs for about 45 seconds, so the heater cools down. For one controller, connect maximal 10 devices.



**Voltage/ Frequency:** 230 V AC / 50 – 60 Hz  
**Maximum current load:** 5 A (inductive)  
**Maximum current load of L1/L2:** 5 A (inductive)  
**Operating temperature range:** 0 - 45°C  
**Regulation range:** 5°C - 35°C  
**Regulation accuracy:** ± 0.5°C  
**Communication:** RS485  
**Dimensions:** 86 x 86 x 13.3 mm  
**Weight:** 270 g  
**Degree of protection (housing):** IP 20

## 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.

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

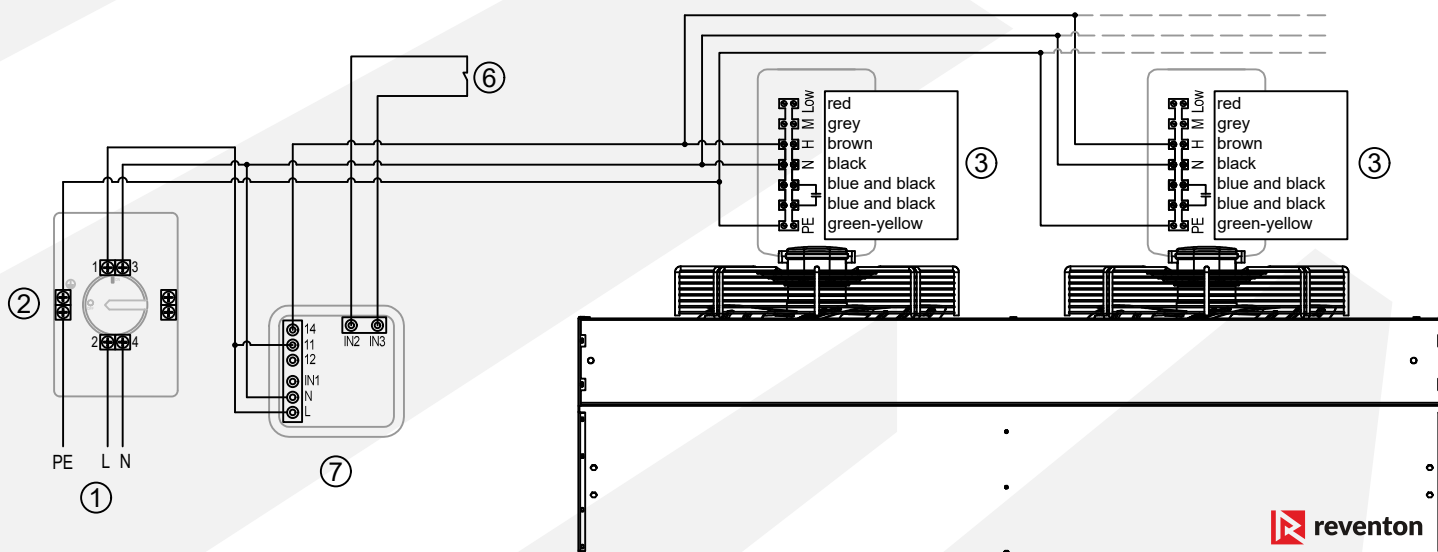
## 7. WIRING DIAGRAMS

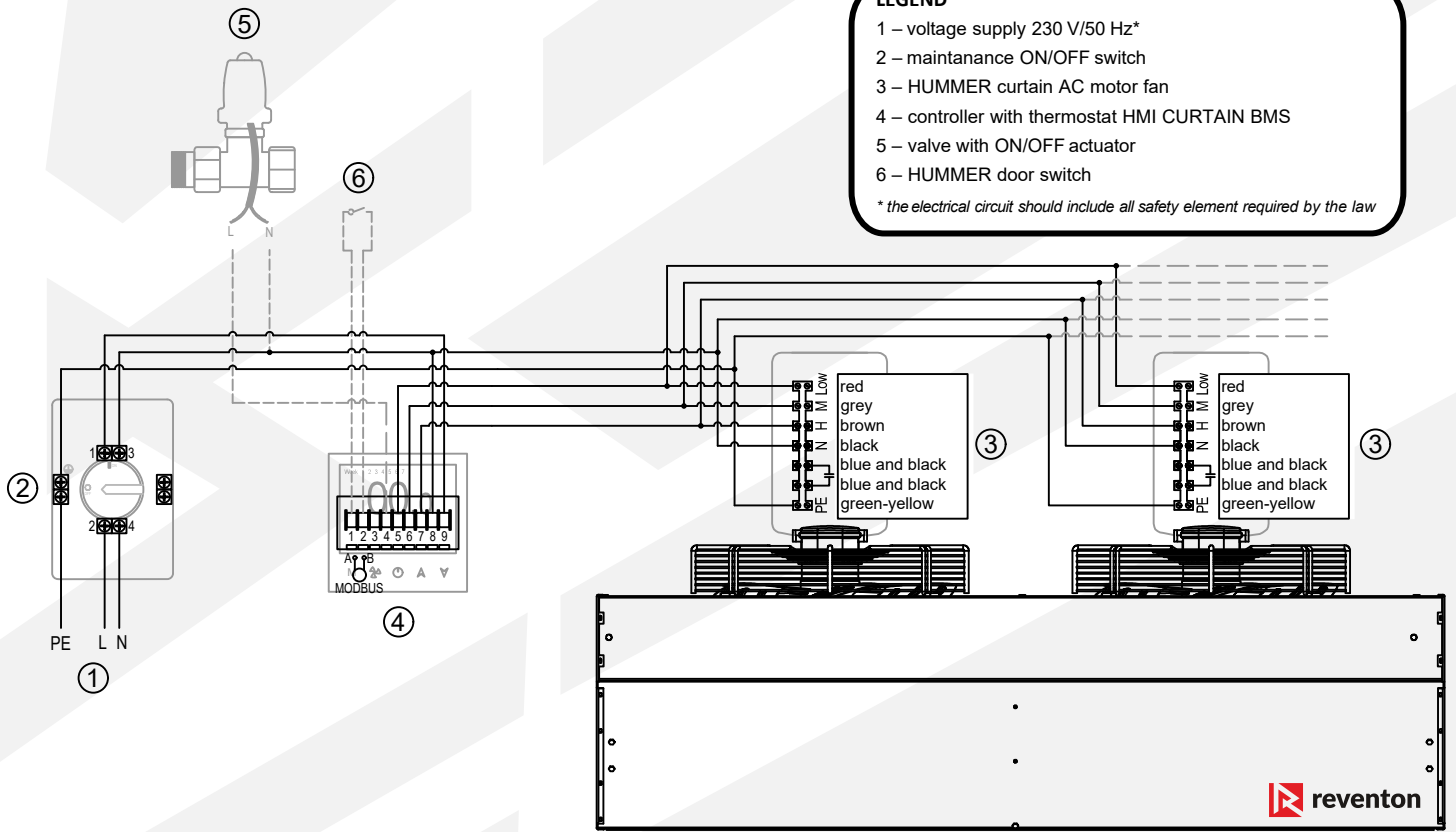
### 7.1 HUMMER C-1P and HUMMER W-1P

#### LEGEND

- 1 – voltage supply 230 V/50 Hz\*
- 2 – maintenance ON/OFF switch
- 3 – HUMMER curtain AC motor fan
- 6 – HUMMER door switch
- 7 – Relay module RM-16A

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





**LEGEND**

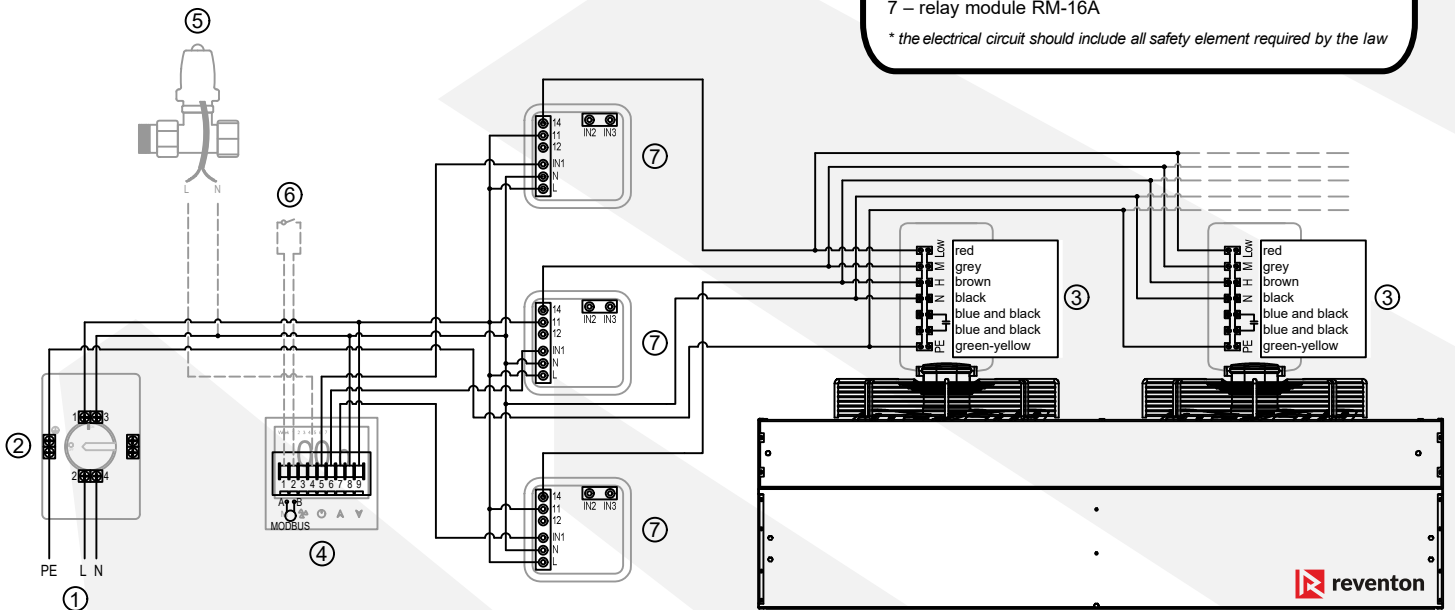
- 1 – voltage supply 230 V/50 Hz\*
- 2 – maintenance ON/OFF switch
- 3 – HUMMER curtain AC motor fan
- 4 – controller with thermostat HMI CURTAIN BMS
- 5 – valve with ON/OFF actuator
- 6 – HUMMER door switch

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

**LEGEND**

- 1 – voltage supply 230 V/50 Hz\*
- 2 – maintenance ON/OFF switch
- 3 – HUMMER curtain AC motor fan
- 4 – controller with thermostat HMI CURTAIN BMS
- 5 – valve with ON/OFF actuator
- 6 – HUMMER door switch
- 7 – relay module RM-16A

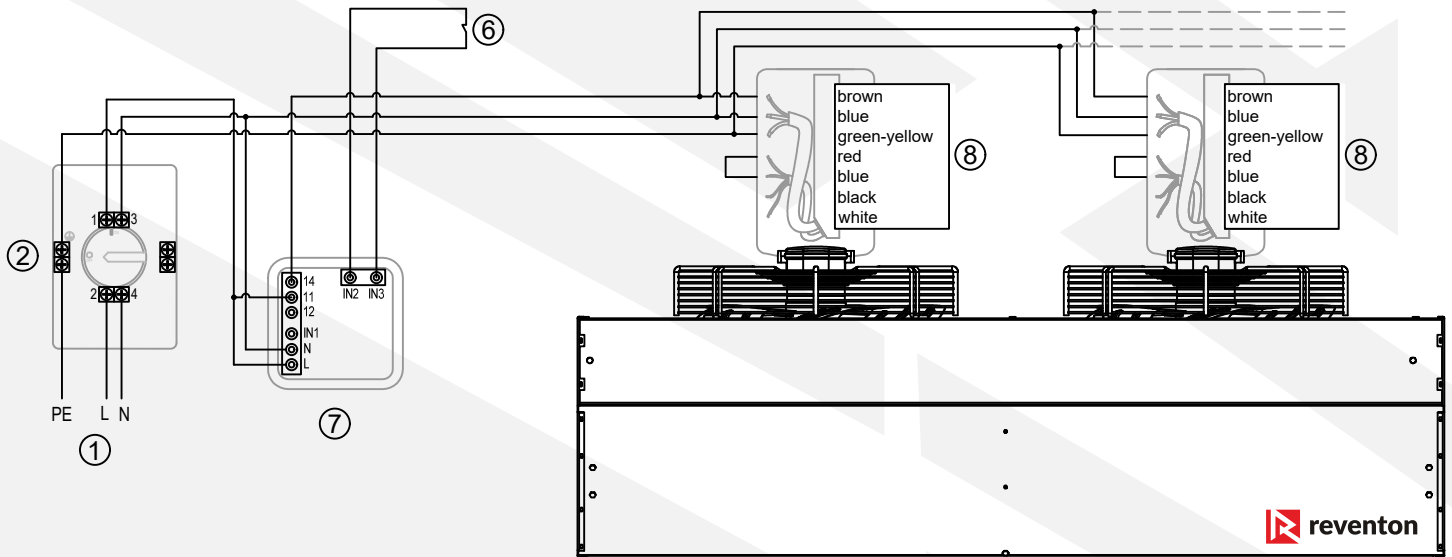
\* the electrical circuit should include all safety element required by the law



**LEGEND**

- 1 – voltage supply 230 V/50 Hz\*
- 2 – maintenance ON/OFF switch
- 6 – HUMMER door switch
- 7 – Relay module RM-16A
- 8 – HUMMER curtain EC motor fan

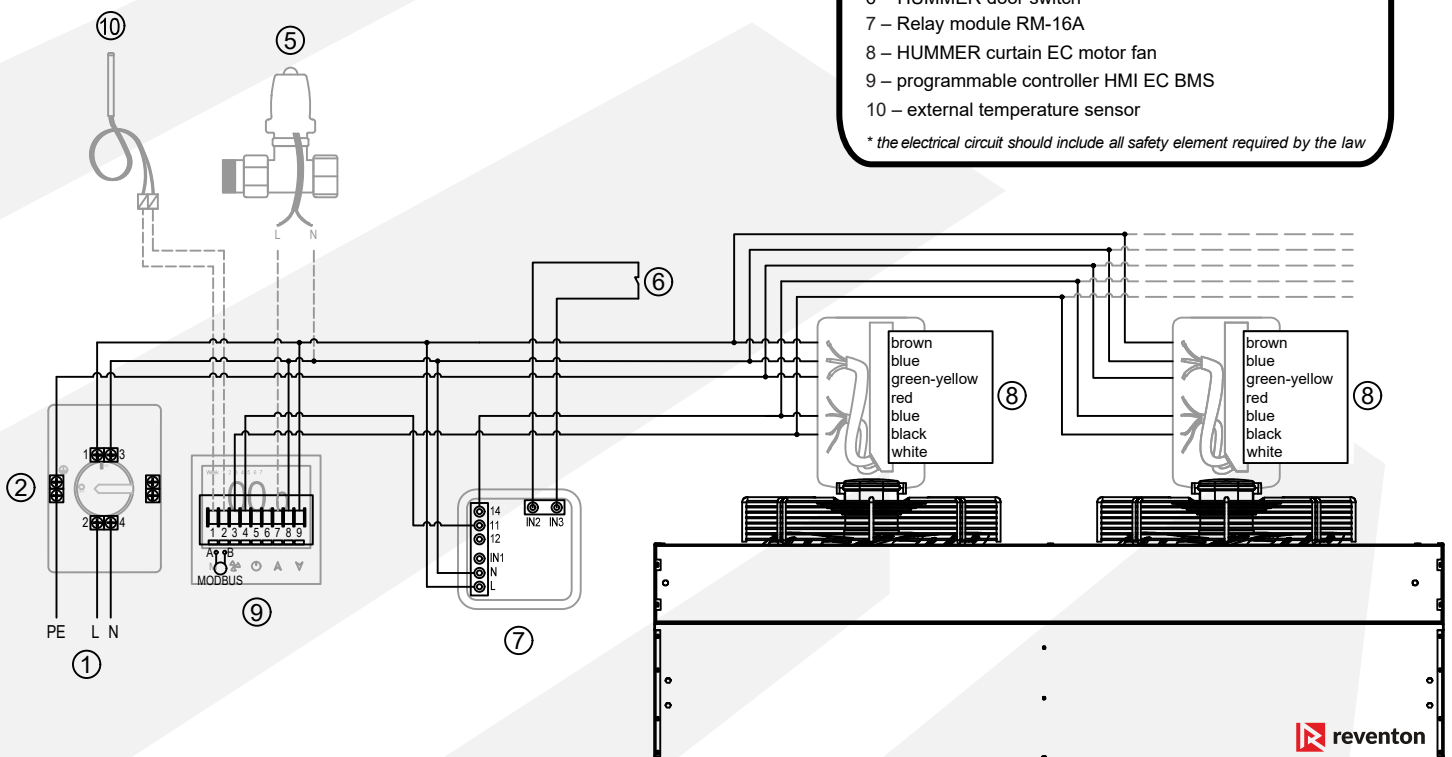
\* the electrical circuit should include all safety element required by the law



**LEGEND**

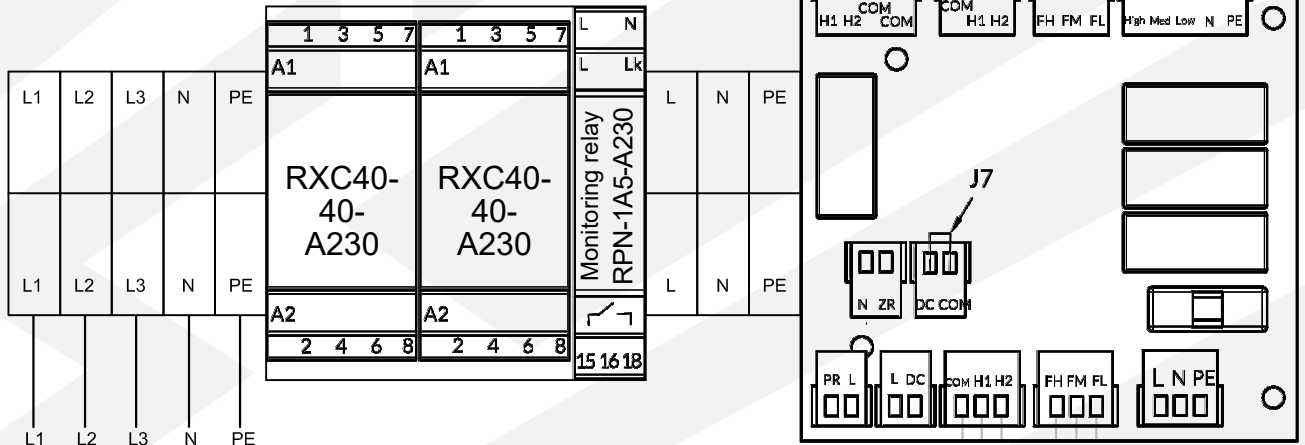
- 1 – voltage supply 230 V/50 Hz\*
- 2 – maintenance ON/OFF switch
- 5 – valve with ON/OFF actuator
- 6 – HUMMER door switch
- 7 – Relay module RM-16A
- 8 – HUMMER curtain EC motor fan
- 9 – programmable controller HMI EC BMS
- 10 – external temperature sensor

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



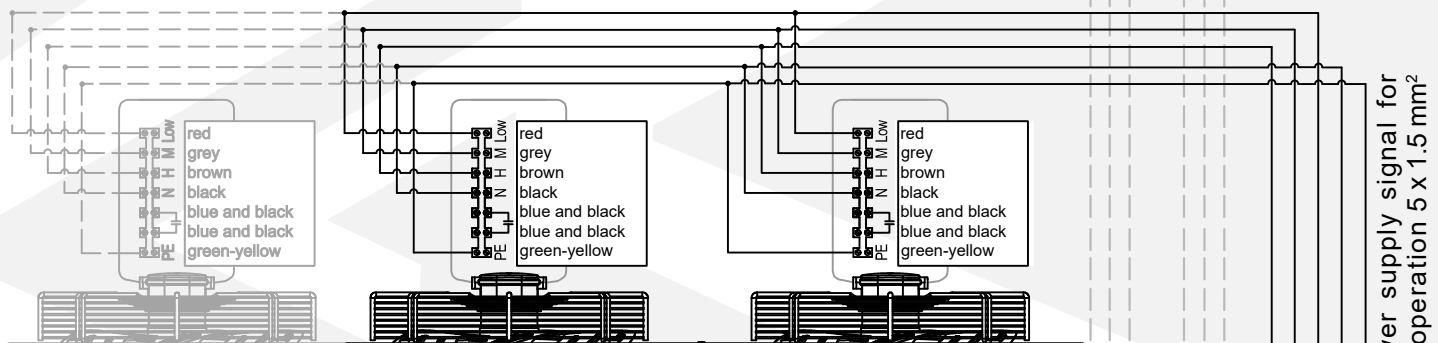
## 7.2 HUMMER E-3P

Control signal to the next heater 6 x 1 mm<sup>2</sup>



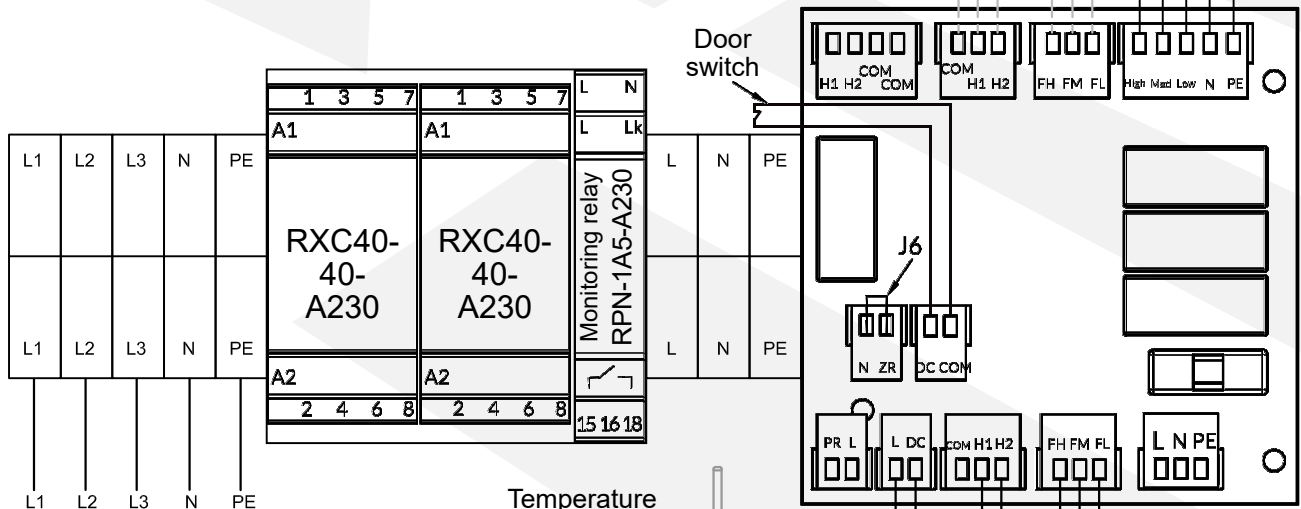
Connecting the power wire 5 x 4mm<sup>2</sup>

Control signal to the next heater 6 x 1 mm<sup>2</sup>



Connection of the third fan applies to HUMMER 200E-3P.

Power supply signal for fan operation 5 x 1.5 mm<sup>2</sup>



Connecting the power wire 5 x 4mm<sup>2</sup>

Temperature sensor

Wire to HMI VOLT 7 x 1 mm<sup>2</sup>

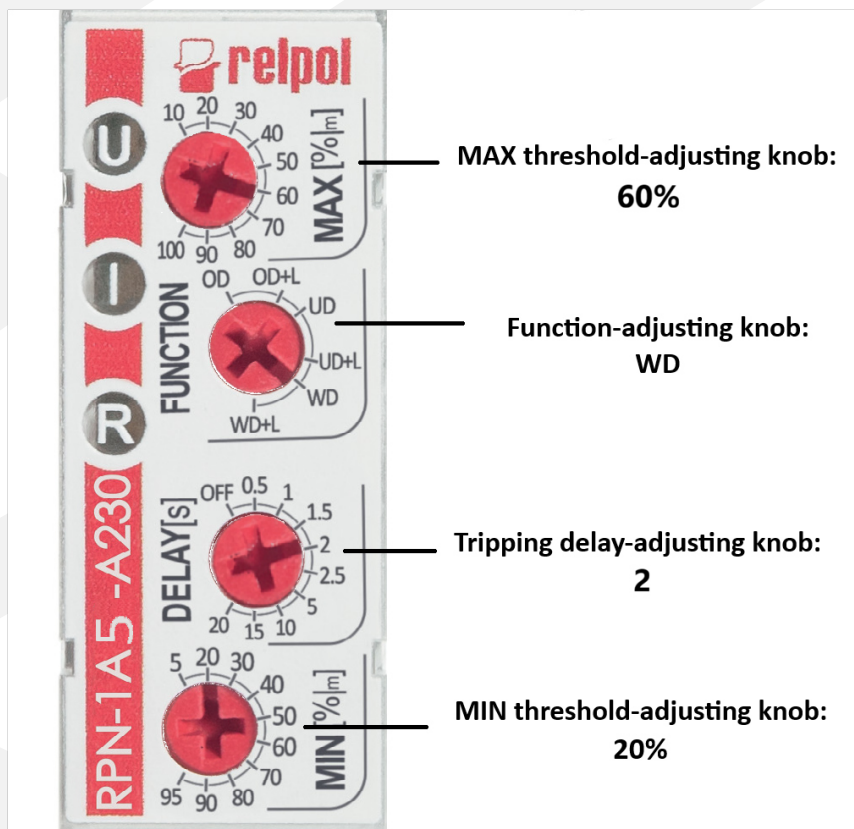
J6 - isolated jumper, required in the module to which the HMI VOLT is connected. In other modules, the jumper is not installed. Jumper installed by the installer during commissioning.

J7 - isolated jumper installed by default. If the air curtain is to operate according to the door switch remove the J7 jumper and connect it instead — but only on the master PCB board (the one connected to the HMI controller).

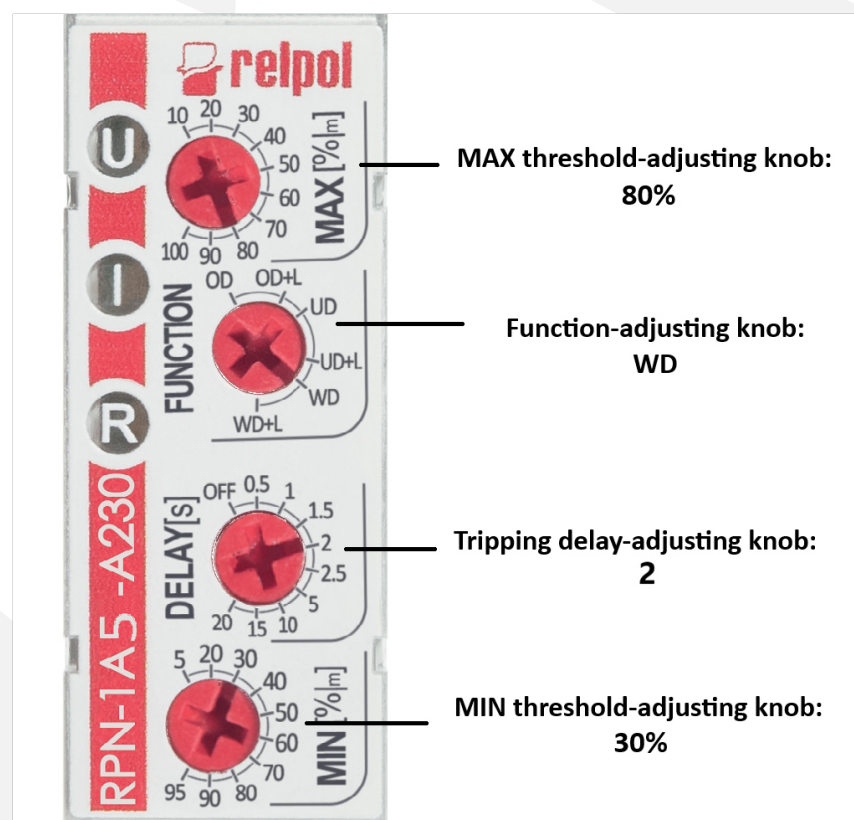
## Monitoring relay

Before starting the device (during electrical connection) verify the settings of the monitoring relay according to the attached formula.

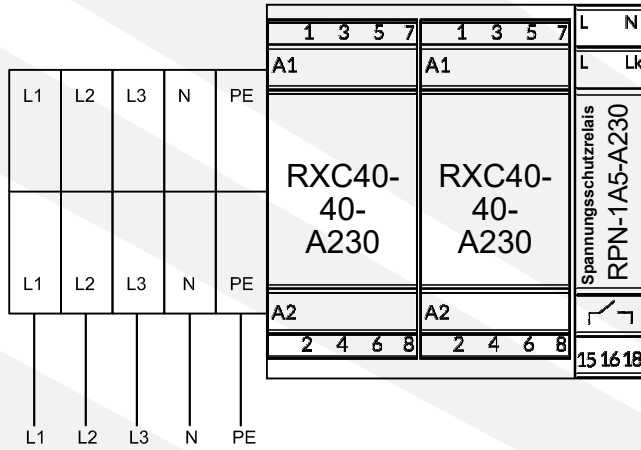
HUMMER 150E-3P



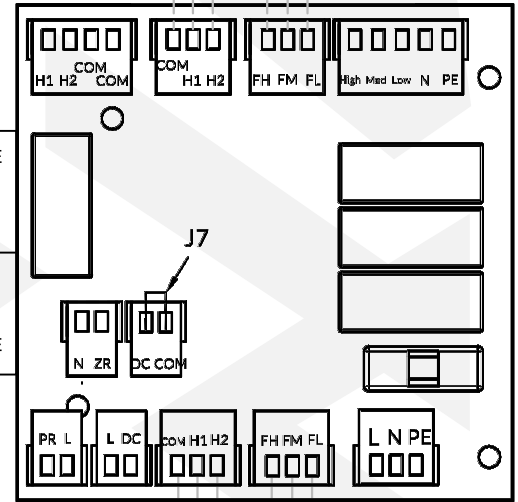
HUMMER 200E-3P



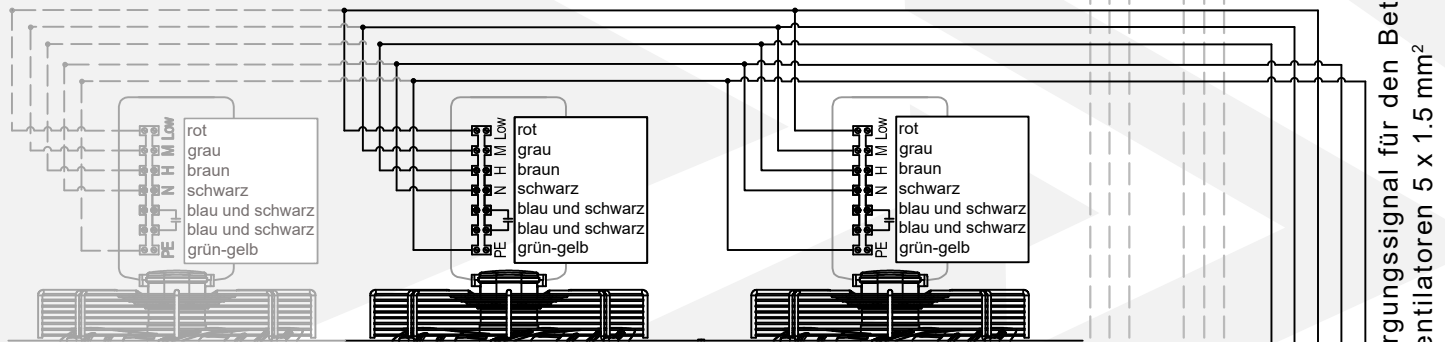
Steuersignal an das nächste Heizgerät 6 x 1 mm<sup>2</sup>



Anschlussstellen des Stromkabels 5 x 4mm<sup>2</sup>

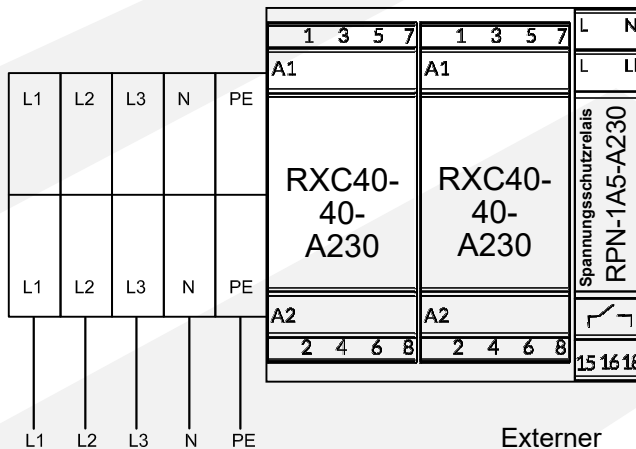


Steuersignal an das nächste Heizgerät 6 x 1 mm<sup>2</sup>



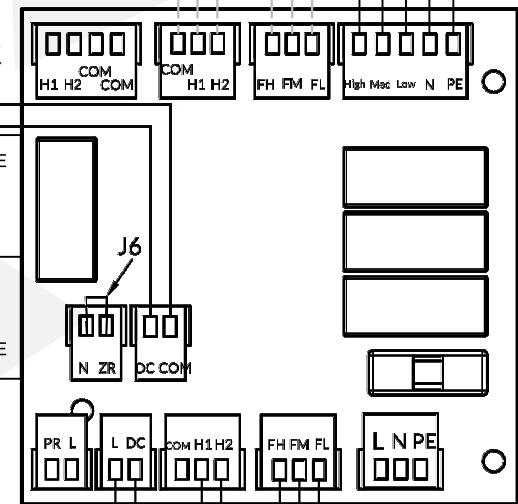
Der Anschluss des dritten Ventilators betrifft die HUMMER 200E-3P Luftschieber.

Versorgungssignal für den Betrieb der Ventilatoren 5 x 1.5 mm<sup>2</sup>



Anschlussstellen des Stromkabels 5 x 4mm<sup>2</sup>

HUMMER Türsensor

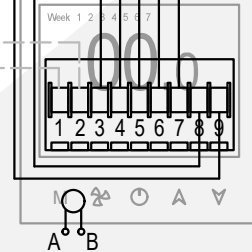


Externer Temperatursensor

Leitung zum HMI VOLT 7 x 1 mm<sup>2</sup>

J6 - isolierte Steckbrücke, erforderlich im Modul, an das das HMI VOLT angeschlossen ist. In anderen Modulen ist die Brücke nicht installiert. Die Steckbrücke wird vom Fachpersonal bei der Inbetriebnahme installiert.

J7 - Wenn der Luftschieber gemäß dem Türschaltersignal arbeiten soll, muss die Brücke J7 entfernt und an ihrer Stelle der Schalter angeschlossen werden — jedoch nur auf der Hauptplatine PCB (derjenigen, an die der HMI-Controller angeschlossen ist).

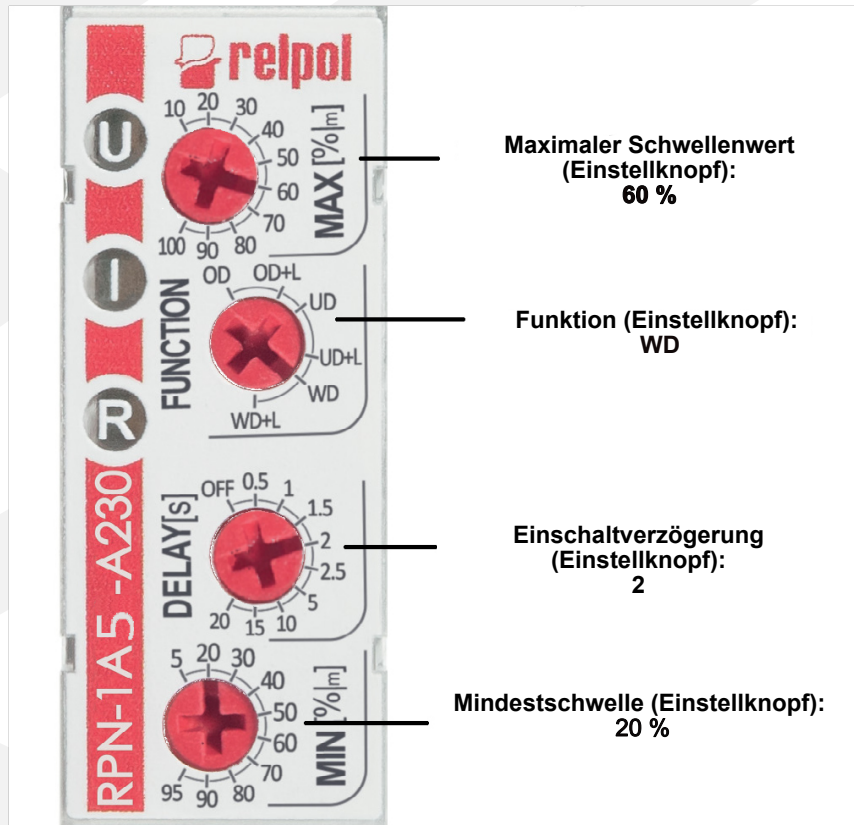


MODBUS

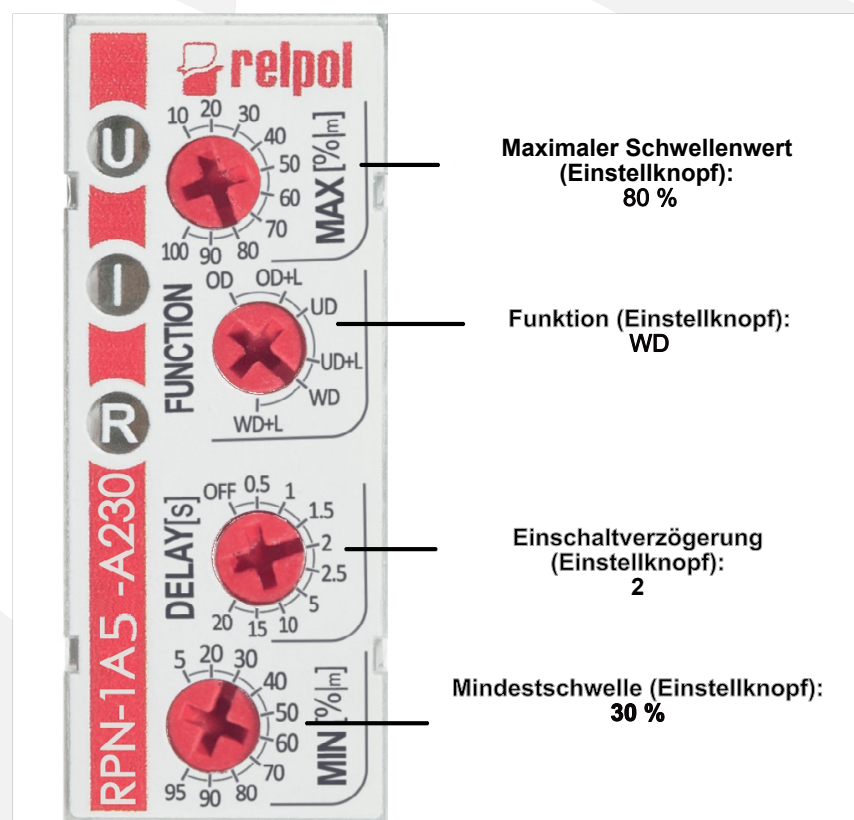
## Spannungsschutzrelais

Überprüfen Sie vor der Inbetriebnahme des Geräts (während des elektrischen Anschlusses) die Einstellungen des Spannungsschutzrelais gemäß der beiliegenden Formel.

HUMMER 150E-3P



HUMMER 200E-3P



**Reventon Group Sp. z o.o.**  
**556 Wyzwolenia Street**  
**43-340 Kozy, Poland**

declares under our sole responsibility, that the products:

HUMMER 150C-1P  
HUMMER 200C-1P  
HUMMER 150C-1P TURBO  
HUMMER 200C-1P TURBO  
HUMMER 150W-1P  
HUMMER 200W-1P  
HUMMER 150W-1P 2R  
HUMMER 200W-1P 2R

TYPE: Air curtain

conform to the following directives and regulations:


**LVD 2014/35/EU**

**ErP 2009/125/EC**

**ROHS 2011/65/EU & (EU) 2015/863**

and the following harmonized standards have been applied:

**EN 60034-1: 2010**

The above declaration is the basis for the  marking.

Date of Issue: 02/09/2024

Place of issue: Poland



Signature: \_\_\_\_\_

Name: Tomasz Wysocki

Position: Chief Executive Officer

**Reventon Group Sp. z o.o.**  
**556 Wyzwolenia Street**  
**43-340 Kozy, Poland**

declares under our sole responsibility, that the products:

HUMMER 150C-EC  
HUMMER 200C-EC  
HUMMER 150W-EC  
HUMMER 200W-EC  
HUMMER 150W-EC 2R  
HUMMER 200W-EC 2R

TYPE: Air curtain

conform to the following directives and regulations:

**LVD 2014/35/EU**  
**ErP 2009/125/EC**  
**ROHS 2011/65/EU & (EU) 2015/863**  
**EMC 2014/30/EU**

and the following harmonized standards have been applied:

**EN 60034-1:2010**  
**EN 5801-2019**  
**EN 50581-2012**  
**EN 61000-6-4:2019**  
**EN 61000-6-2:2019**  
**EN 55014-1:2021**  
**EN 55014-2:2021**  
**EN 61000-3-2:2019+A1:2021**  
**EN 61000-3-3:2013+A1:2019+A2:2021**

The above declaration is the basis for the  marking.

Place of issue: Poland

Date of Issue: 02/09/2024



Signature: \_\_\_\_\_  
Name: Tomasz Wysocki  
Position: Chief Executive Officer



**Reventon Group Sp.z o.o.**  
**556 Wyzwolenia Street**  
**43-340 Kozy, Poland**

declares under our sole responsibility, that the products:

HUMMER 150E-1P  
HUMMER 200E-1P

TYPE: Air curtain

conform to the following directives and regulations:

**EMC 2014/30/EU**

**LVD 2014/35/EU**

**ErP 2009/125/EC**


**ROHS 2011/65/EU & (EU) 2015/863**

and the following harmonized standards have been applied:

**EN 60034-1: 2010**

**EN 61000-6-4: 2019**

**EN 61000-6-2: 2019**

The above declaration is the basis for the  marking.

Place of issue: Poland

Date of Issue: 12/12/2025



Signature: \_\_\_\_\_

Name: Tomasz Wysocki

Position: Chief Executive Officer