VT sistema

CONTROL SYSTEMS TECHNOLOGIES

ELECTRONIC CONTROLLERS FOR ELECTRICAL HEATING, ELECTRIC DUCT HEATERS/PREHEATERS

ELECTRONIC CONTROLLERS FOR ELECTRICAL HEATING

Electronic controllers for electrical heating

The controllers REC.., are intended to be used for electrical heating control by PID algorithm. The operation is managed in accordance with set and measured temperatures. If the measured temperature is lower than set one, the heating controller gradually changes pulse and pause time of the heater's power supply voltage in order to get the precise value of set temperature. The controllers can work with 1 temperature sensor for controlling supply air temperature or with 2 sensors when heating control is carried out with temperature limitation of the supply air and with the room temperature control according to the set temperature. REC16, REC16MB can be used for single-phase or two-phase power supply, it is not suitable for a three-phase power supply. REC25, REC25B, REC50, REC50B can be used only for a three-phase power supply. The controllers can be used for building management systems (BMS) via RS485 mode by MODBUS protocol when the control panel is disconnected from control PCB and RS485 connected instead. Controllers REC25 and REC50 have 4 relay outputs for extra load control if the heater has more than 1 step. REC25B and REC50B have 1 relay output.

Electronic controllers for electrical heating

Type	Input voltage [VAC]	Controlled current with triacs [A] (max.)	Controlled power with triacs [kW]	Dimensions HxWxD	Weight [kg]
REC16	1~230 or 2~400	16	1F~3kW or 2F~6kW	140x110x37	0,4
REC16MB	1~230 or 2~400	16	1F~3kW or 2F~6kW	140x110x37	0,4
REC25 x4DO	3~400	25	3F~16kW	240x168x130	2,5
REC25B x1DO	3~400	25	3F~16kW	240x168x130	2,5
REC50 x1DO	3~400	50	3F~32kW	240x168x140	2,6
REC50B x4DO	3~400	50	3F~32kW	240x168x140	2,6

table 1

TECHNICAL DATA

Electronic controllers for electrical heating REC16, REC16MB

- Power supply: 1 phase 230VAC or 2 phase 400VAC, 190..410 VAC.
- Controlled load: up to 16A, 1~ 230VAC/max.3.5 kW or 2~ 400VAC/6.3 kW.
- Frequency [Hz]: 50/60.
- Protection class: IP20.
- Dimensions:140x110x37 mm.
- Max. ambient temperature: 30°C.
- Storage temperature -35..+50°C.
- Temperature setpoint: 0..+30°C or 0..+60°C (can be set in programming menu).

Electronic controllers for electrical heating REC25, REC25B, REC50, REC50B

- Power supply: 3 phase 400VAC, 350..425 VAC.
- Controlled load with triacs: up to 25A, 3~400VAC/max.16.44 kW.
- Frequency [Hz]: 50/60.
- Protection class: IP20.
- Dimensions: 240x168x130 mm..
- Max. ambient temperature: 30°C.
- Storage temperature -35..+50°C.
- Temperature setpoint: 0..+30°C or 0..+60°C (can be set in programming menu).

ELECTRIC CIRCULAR AND RECTANGULAR DUCT HEATERS/PREHEATERS FOR VENTILATION SYSTEMS

Electric duct heaters/preheaters

The electric circular and rectangular duct heaters/preheaters are intended to be used for heating of clean air in the ventilation systems. Also, heaters/preheaters can be used for heating or preheating function with air handling units. The heaters/preheaters can be supplied with or without the installed electronic controller, with pressure and flow monitoring system or produced according to the client requirements. The heater/preheater cases are produced from aluzinc coated metal sheet, sealing rubber for a tight connection with ventilation duct system. The stainless steel heating elements are used in the heaters/preheaters.

MODEL NAME DESCRIPTION

Electric circular duct heater/preheater

Example:
EHC 250/3.0/2/SE/FC/MB/K
EHC – electric circular duct heater/preheater;
250 – diameter of duct in mm;
3.0 – output power kW;
2 – phase;
SE – electronic controller type;
FC – flow and pressure control;
MB – MODBUS
K – contactor.

Electric rectangular duct heater/preheater

Example:
EHR 200x200x200/3.0/2/SE/FC/MB/K
EHR – electric rectangular duct heater/preheater;
200x200x200 – dimensions of duct WxHxD mm;
3.0 – output power kW;
2 – phase;
SE – electronic controller type;
FC – flow and pressure control;
MB – MODBUS
K – contactor.

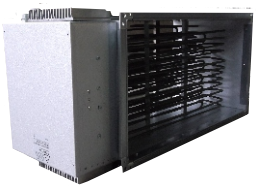
TECHNICAL DATA

Electric circular duct heaters/preheaters

- Voltage: 1~230V, 2~400V, 3~400V;
- Output power: 500W..15000W, 18000W..24000W;
- Diameter: 100 mm, 125 mm, 160 mm, 200 mm, 250 mm, 315 mm, 355 mm, 400 mm, 450 mm, 500 mm, 630 mm;
- Degree of protection: IP44;
- Electronic controller types (if equipped): setpoint internal with one duct temperature sensor (model SI), setpoint external with one duct temperature sensor (model SE), control signal 0-10 VDC external (model CE); FC – pressure and flow control; F - flow control; MB - MODBUS.
- Pressure monitoring switch range (if equipped): 0-200 Pa (model SR 200), 0-500 Pa (model SR500);
- Heaters/preheaters with a diameter under 250 mm have automatic reset thermostat 60°C that controls output air temperature, manual reset thermostat 100°C is for cut off function in case of overheat. Heaters/preheaters with a diameter from 250 mm have automatic reset thermostat 70°C that controls output air temperature, manual reset thermostat 100°C is for cut off function in case of overheat.

Electric rectangular duct heaters/preheaters

- Voltage: 1~230V, 2~400V, 3~400V;
- Output power: 500W..99000W;
- Duct dimensions: 200..1000 x 200..1000 mm.;
- Degree of protection: IP44;
- Electronic controller types (if equipped): setpoint internal with one duct temperature sensor (model SI), setpoint external with one duct temperature sensor (model SE), control signal 0-10 VDC external (model CE), FC – pressure and flow control, F - flow control; MB - MODBUS.
- Overheat protection installed in all models: automatic reset 70°C, manual reset 100°C.



FUNCTIONS

Electric circular and rectangular duct heaters/preheaters for ventilation systems

All heaters/preheaters are equipped with 2 overheat thermostats. Electric circular heaters/preheaters with a diameter under 250 mm have automatic reset thermostat 60°C that controls output air temperature, manual reset thermostat 100°C is for cut off function in case of overheat. Electric circular heaters/preheaters with diameter from 250 mm have automatic reset thermostat 70°C that controls output air temperature, manual reset thermostat 100°C is for cut off function in case of overheat. Electric rectangular heaters/preheaters have automatic reset thermostat 70°C is for controlling output air temperature, manual reset thermostat 100°C is for cut off function in case of overheat. The thermostat push button is installed on the heater cover to reset manual reset. Thermostats for 1 and 2 phases are connected in series with the heating element and no extra relay is needed. For 3 phase heaters, the external relay is needed for overheat functions. Minimum airspeed for heaters must be not less than 1,5 m/s.

Flow monitor makes possible to monitor airflow in ducts and prevents from operating and overheating if there is no airflow. In this case, no extra interlocking with fans or air handling units is needed.

Heaters/preheaters with the installed electronic controller can be supplied in 6 types:

- Internal setpoint with one duct temperature sensor (model SI), duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case.
- External setpoint with one duct temperature sensor (model SE), duct sensor must be installed in an output air duct. A setpoint device an installed on the wall is used (potentiometer resistance – 10K).
- External control signal 0-10 VDC (model CE). An external control signal from other controllers must be supplied.
- FC – flow and pressure control.
- F – flow control.
- MB – MODBUS. Temperature setpoint and other settings can be adjusted using the RS485 serial interface and MODBUS protocol. MODBUS master can be BMS (building management system) module, local server or computer.

If heater/preheater is supplied without an installed electronic controller, an external controller should be used.

TYPES SPECIFICATION

Electric circular and rectangular duct heaters/preheaters for ventilation systems

1	2	3	4	5	6	7	8

Code	Type
EHC	Electric circular duct heaters/ preheaters for ventilation systems
EHR	Electric rectangular duct heaters/ preheaters for ventilation systems

Code	Dimension
W	Width
H	Height
D	Depth

Code	Power kW

Code	Phase
1	230~1 phase
2	400~2 phase
3	400~3 phase

Code	Flow and pressure control modification
F	Flow control
FC	Flow and pressure control

Code	Modification
	Without integrated control
CE	With integrated control (0-10 V)
SE	With integrated control (external setpoint)
SI	With integrated control (internal setpoint)

Code	MODBUS
MB	RS485

Code	Contactor
K	1 ph - relay
K	2 ph - relay
K	3 ph - contactor

figure 1

TYPES

Electric circular duct heaters/preheaters

1. **EHC.../kW/...**– a type of modification without integrated control.
2. **EHC.../kW/...CE** – a type of modification has an external control signal 0-10 VDC.
3. **EHC.../kW/.../SE** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K).
4. **EHC.../kW/.../SI** – a type of modification has an internal setpoint with one duct temperature sensor, the duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case.
5. **EHC.../kW/.../CE/FC** – type of modification has external control signal 0-10 VDC. With flow and pressure control.
5.1. **EHC.../kW/.../SE/FC** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow and pressure control.
5.2. **EHC.../kW/.../SI/FC** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow and pressure control.
6. **EHC.../kW/.../CE/F** – type of modification has external control signal 0-10 VDC. With flow control.
6.1. **EHC.../kW/.../SE/F** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K).With flow control.
6.2. **EHC.../kW/.../SI/F** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow control.
7. **EHC.../kW/.../K** – a type of modification without integrated control. Modification has a contactor for interlocking with fans or air handling units.
7.1. **EHC.../kW/.../CE/K** – a type of modification has an external control signal 0-10 VDC. Modification has a contactor for interlocking with fans or air handling units.
7.2. **EHC.../kW/.../SE/K** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). Modification has a contactor for interlocking with fans or air handling units.
7.3. **EHC.../kW/.../SI/K** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. Modification has a contactor for interlocking with fans or air handling units.
8. **EHC.../kW/.../CE/FC/K** – type of modification has external control signal 0-10 VDC. With flow and pressure control. Modification has a contactor for interlocking with fans or air handling units.
8.1. **EHC.../kW/.../SE/FC/K** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow and pressure control. Modification has a contactor for interlocking with fans or air handling units.
8.2. **EHC.../kW/.../SI/FC/K** – a type of modification has an internal setpoint with one

TYPES

Electric circular duct heaters/preheaters

duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow and pressure control. Modification has a contactor for interlocking with fans or air handling units.

9. **EHC.../kW/.../CE/F/K** – a type of modification has external control signal 0-10 VDC. With flow control. Modification has a contactor for interlocking with fans or air handling units.

9.1. **EHC.../kW/.../SE/F/K** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow control. Modification has a contactor for interlocking with fans or air handling units.

9.2. **EHC.../kW/.../SI/F/K** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow control. Modification has a contactor for interlocking with fans or air handling units.

10. **EHC.../kW/.../SE/MB** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). Also, the temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

10.1. **EHC.../kW/.../SI/MB** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

11. **EHC.../kW/.../SE/FC/MB** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow and pressure control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

11.1. **EHC.../kW/.../SI/FC/MB** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow and pressure control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

12. **EHC.../kW/.../SE/F/MB** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

12.1. **EHC.../kW/.../SI/F/MB** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. Setpoint

the knob is installed on the heater case. With flow control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

13. **EHC.../kW/.../SE/MB/K** – type modification has an external setpoint with one duct temperature sensor, the duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). Also, the temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

13.1. **EHC.../kW/.../SI/MB/K** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

14. **EHC.../kW/.../SE/FC/MB/K** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow and pressure control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

14.1. **EHC.../kW/.../SI/FC/MB/K** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow and pressure control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

15. **EHC.../kW/.../SE/F/MB/K** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

15.1. **EHC.../kW/.../SI/F/MB/K** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. With flow control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

TYPES

Electric rectangular duct heaters/preheaters

1. **EHR.../kW/...**– a type of modification without integrated control.
2. **EHR.../kW/...CE** – a type of modification has an external control signal 0-10 VDC.
3. **EHR.../kW/.../SE** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K).
4. **EHR.../kW/.../SI** – a type of modification has an internal setpoint with one duct temperature sensor, the duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case.
5. **EHR.../kW/.../CE/FC** – type of modification has external control signal 0-10 VDC. With flow and pressure control.
5.1. **EHR.../kW/.../SE/FC** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). With flow and pressure control.
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TYPES

Electric rectangular duct heaters/preheaters

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10. **EHR.../kW/.../SE/MB** – a type of modification has an external setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). Also, the temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.
10.1. **EHR.../kW/.../SI/MB** – a type of modification has an internal setpoint with one duct temperature sensor, duct sensor must be installed in an output air duct. A setpoint knob is installed on the heater case. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.
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12.1. **EHR.../kW/.../SI/F/MB** – a type of modification has an internal setpoint with one

TYPES

Electric rectangular duct heaters/preheaters

duct temperature sensor, duct sensor must be installed in an output air duct. Setpoint the knob is installed on the heater case. With flow control. Also, temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer.

13. **EHR.../kW/.../SE/MB/K** – type modification has an external setpoint with one duct temperature sensor, the duct sensor must be installed in an output air duct. A setpoint device installed on a wall is used (potentiometer resistance -10K). Also, the temperature setpoint and other settings can be adjusted using RS485 serial interface and MODBUS protocol (see register description), MODBUS master can be BMS (building management system) module, local server or computer. Modification has a contactor for interlocking with fans or air handling units.

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TYPES

Electric circular duct heaters/preheaters

Type	EHC, EHC/K	EHC...CE, EHC...CE/K	EHC...SE, EHC...SE/K, EHC...SE/MB, EHC SE/MB/K	EHC...SI, EHC SI/K, EHC SI/MB EHC...SI/MB/K	EHC...CE/FC, EHC... SI/FC, EHC...SE/FC, EHC...SI/FC/MB, EHC...SE/FC/MB
	Without integrated control, with contactor	With integrated control (0-10)V, with contactor	With integrated control (external setpoint 0...+30), with contactor, with MODBUS	With integrated control (internal setpoint 0...+30), with contactor, with MODBUS	Plug & play (with flow and pressure control) (-30..0), (0..+30)* with MODBUS
EHC 100/0.5/1	x	x	x	x	x
EHC 125/0.5/1	x	x	x	x	x
EHC 125/1.0/1	x	x	x	x	x
EHC 160/0.5/1	x	x	x	x	x
EHC 160/1.0/1	x	x	x	x	x
EHC 160/1.5/1	x	x	x	x	x
EHC 160/2.0/1	x	x	x	x	x
EHC 160/3.0.1	x	x	x	x	x
EHC 160/3.0/2	x	x	x	x	x
EHC 160/4.5/2	x	x	x	x	x
EHC 200/1.0/1	x	x	x	x	x
EHC 200/1.5/1	x	x	x	x	x
EHC 200/2.0/1	x	x	x	x	x
EHC 200/3.0/1	x	x	x	x	x
EHC 200/3.0/2	x	x	x	x	x
EHC 200/4.5/2	x	x	x	x	x
EHC 200/6.0/2	x	x	x	x	x
EHC 200/6.0/3	x	x	x	x	x
EHC 200/9.0/3	x	x	x	x	x
EHC 250/1.0/1	x	x	x	x	x
EHC 250/1.5/1	x	x	x	x	x
EHC 250/2.0/1	x	x	x	x	x
EHC 250/3.0/1	x	x	x	x	x
EHC 250/3.0/2	x	x	x	x	x
EHC 250/4.5/2	x	x	x	x	x
EHC 250/6.0/2	x	x	x	x	x
EHC 250/6.0/3	x	x	x	x	x
EHC 250/9.0/3	x	x	x	x	x
EHC 315/2.0/1	x	x	x	x	x
EHC 315/3.0/1	x	x	x	x	x
EHC 315/3.0/2	x	x	x	x	x
EHC 315/4.5/2	x	x	x	x	x
EHC 315/6.0/2	x	x	x	x	x
EHC 315/6.0/3	x	x	x	x	x
EHC 315/9.0/3	x	x	x	x	x
EHC 315/12.0/3	x	x	x	x	x
EHC 400/3.0/1	x	x	x	x	x
EHC 400/3.0/2	x	x	x	x	x
EHC 400/4.5/2	x	x	x	x	x
EHC 400/6.0/2	x	x	x	x	x
EHC 400/6.0/3	x	x	x	x	x
EHC 400/9.0/3	x	x	x	x	x
EHC 400/12.0/3	x	x	x	x	x
EHC 400/15.0/3	x	x	x	x	x

table 2

TYPES

Electric rectangular duct heaters/preheaters

Type	EHR, EHR/K	EHR...CE, EHR...CE/K	EHR...SE, EHR...SE/K, EHR...SE/MB, EHR...SE/MB/K	EHR...SI, EHC...SI/K, EHR...SI/MB EHR...SI/MB/K	EHR...CE/FC, EHR... SI/FC, EHR...SE/FC, EHR...SI/FC/MB, EHR...SE/FC/MB
	Without integrated control, with contactor	With integrated control (0-10)V, with contactor	With integrated control (external setpoint 0...+30), with contactor, with MODBUS	With integrated control (internal setpoint 0...+30), with contactor, with MODBUS	Plug & play (with flow and pressure control) (-30..0), (0..+30)* with MODBUS
EHR 400/200/1.0/1	x	x	x	x	x
EHR 400/200/2.0/1	x	x	x	x	x
EHR 400/200/3.0/1	x	x	x	x	x
EHR 400/200/3.0/3	x	x	x	x	x
EHR 400/200/6.0/3	x	x	x	x	x
EHR 400/200/9.0/3	x	x	x	x	x
EHR 400/200/12.0/3	x	x	x	x	x
EHR 400/200/15.0/3	x	x	x	x	x
EHR 500/250/3.0/1	x	x	x	x	x
EHR 500/250/3.0/3	x	x	x	x	x
EHR 500/250/6.0/3	x	x	x	x	x
EHR 500/250/9.0/3	x	x	x	x	x
EHR 500/250/12.0/3	x	x	x	x	x
EHR 500/250/15.0/3	x	x	x	x	x
EHR 500/250/18.0/3	x	x	x	x	x
EHR 500/250/21.0/3	x	x	x	x	x
EHR 500/250/24.0/3	x	x	x	x	x
EHR 500/250/27.0/3	x	x	x	x	x
EHR 500/250/30.0/3	x	x	x	x	x
EHR 500/250/33.0/3	x	x	x	x	x
EHR 500/250/36.0/3	x	x	x	x	x
EHR 500/300/3.0/1	x	x	x	x	x
EHR 500/300/6.0/3	x	x	x	x	x
EHR 500/300/9.0/3	x	x	x	x	x
EHR 500/300/12.0/3	x	x	x	x	x
EHR 500/300/15.0/3	x	x	x	x	x
EHR 500/300/18.0/3	x	x	x	x	x
EHR 500/300/21.0/3	x	x	x	x	x
EHR 500/300/24.0/3	x	x	x	x	x
EHR 500/300/27.0/3	x	x	x	x	x
EHR 500/300/30.0/3	x	x	x	x	x
EHR 500/300/33.0/3	x	x	x	x	x
EHR 500/300/36.0/3	x	x	x	x	x
EHR 600/300/3.0/3	x	x	x	x	x
EHR 600/300/6.0/3	x	x	x	x	x
EHR 600/300/9.0/3	x	x	x	x	x
EHR 600/300/12.0/3	x	x	x	x	x
EHR 600/300/15.0/3	x	x	x	x	x
EHR 600/300/18.0/3	x	x	x	x	x
EHR 600/300/21.0/3	x	x	x	x	x
EHR 600/300/24.0/3	x	x	x	x	x
EHR 600/300/27.0/3	x	x	x	x	x
EHR 600/300/30.0/3	x	x	x	x	x
EHR 600/300/33.0/3	x	x	x	x	x
EHR 600/300/36.0/3	x	x	x	x	x

table 3

TYPES

Electric rectangular duct heaters/preheaters

Type	EHR, EHR/K	EHR...CE, EHR...CE/K	EHR...SE, EHR...SE/K, EHR...SE/MB, EHR...SE/MB/K	EHR...SI, EHR...SI/K, EHR...SI/MB EHR...SI/MB/K	EHR...CE/FC, EHR... SI/FC, EHR...SE/FC, EHR...SI/FC/MB, EHR...SE/FC/MB
	Without integrated control, with contactor	With integrated control (0-10)V, with contactor	With integrated control (external setpoint 0...+30), with contactor, with MODBUS	With integrated control (internal setpoint 0...+30), with contactor, with MODBUS	Plug & play (with flow and pressure control) (-30..0), (0..+30)* with MODBUS
EHR 600/300/39.0/3	x	x	x	x	x
EHR 600/300/42.0/3	x	x	x	x	x
EHR 600/300/45.0/3	x	x	x	x	x
EHR 600/300/48.0/3	x	x	x	x	x
EHR 600/300/54.0/3	x	x	x	x	x
EHR 600/350/6.0/3	x	x	x	x	x
EHR 600/350/9.0/3	x	x	x	x	x
EHR 600/350/12.0/3	x	x	x	x	x
EHR 600/350/15.0/3	x	x	x	x	x
EHR 600/350/18.0/3	x	x	x	x	x
EHR 600/350/21.0/3	x	x	x	x	x
EHR 600/350/24.0/3	x	x	x	x	x
EHR 600/350/27.0/3	x	x	x	x	x
EHR 600/350/30.0/3	x	x	x	x	x
EHR 600/350/33.0/3	x	x	x	x	x
EHR 600/350/36.0/3	x	x	x	x	x
EHR 600/350/39.0/3	x	x	x	x	x
EHR 600/350/42.0/3	x	x	x	x	x
EHR 600/350/45.0/3	x	x	x	x	x
EHR 600/350/48.0/3	x	x	x	x	x
EHR 600/350/54.0/3	x	x	x	x	x
EHR 700/400/9.0/3	x	x	x	x	x
EHR 700/400/12.0/3	x	x	x	x	x
EHR 700/400/15.0/3	x	x	x	x	x
EHR 700/400/18.0/3	x	x	x	x	x
EHR 700/400/21.0/3	x	x	x	x	x
EHR 700/400/24.0/3	x	x	x	x	x
EHR 700/400/27.0/3	x	x	x	x	x
EHR 700/400/30.0/3	x	x	x	x	x
EHR 700/400/33.0/3	x	x	x	x	x
EHR 700/400/36.0/3	x	x	x	x	x
EHR 700/400/39.0/3	x	x	x	x	x
EHR 700/400/42.0/3	x	x	x	x	x
EHR 700/400/45.0/3	x	x	x	x	x
EHR 700/400/48.0/3	x	x	x	x	x
EHR 700/400/54.0/3	x	x	x	x	x
EHR 700/400/57.0/3	x	x	x	x	x
EHR 700/400/60.0/3	x	x	x	x	x
EHR 700/400/66.0/3	x	x	x	x	x
EHR 800/500/12.0/3	x	x	x	x	x
EHR 800/500/15.0/3	x	x	x	x	x
EHR 800/500/18.0/3	x	x	x	x	x
EHR 800/500/21.0/3	x	x	x	x	x

table 4

TYPES

Electric rectangular duct heaters/preheaters

Type	EHR, EHR/K	EHR...CE, EHR...CE/K	EHR...SE, EHR...SE/K, EHR...SE/MB, EHR...SE/MB/K	EHR...SI, EHC...SI/K, EHR...SI/MB EHR...SI/MB/K	EHR...CE/FC, EHR... SI/FC, EHR...SE/FC, EHR...SI/FC/MB, EHR...SE/FC/MB
	Without integrated control, with contactor	With integrated control (0-10)V, with contactor	With integrated control (external setpoint 0...+30), with contactor, with MODBUS	With integrated control (internal setpoint 0...+30), with contactor, with MODBUS	Plug & play (with flow and pressure control) (-30..0), (0..+30)* with MODBUS
EHR 800/500/24.0/3	x	x	x	x	x
EHR 800/500/27.0/3	x	x	x	x	x
EHR 800/500/30.0/3	x	x	x	x	x
EHR 800/500/33.0/3	x	x	x	x	x
EHR 800/500/36.0/3	x	x	x	x	x
EHR 800/500/39.0/3	x	x	x	x	x
EHR 800/500/42.0/3	x	x	x	x	x
EHR 800/500/45.0/3	x	x	x	x	x
EHR 800/500/48.0/3	x	x	x	x	x
EHR 800/500/54.0/3	x	x	x	x	x
EHR 800/500/57.0/3	x	x	x	x	x
EHR 800/500/60.0/3	x	x	x	x	x
EHR 800/500/66.0/3	x	x	x	x	x
EHR 1000/500/15.0/3	x	x	x	x	x
EHR 1000/500/18.0/3	x	x	x	x	x
EHR 1000/500/21.0/3	x	x	x	x	x
EHR 1000/500/24.0/3	x	x	x	x	x
EHR 1000/500/27.0/3	x	x	x	x	x
EHR 1000/500/30.0/3	x	x	x	x	x
EHR 1000/500/33.0/3	x	x	x	x	x
EHR 1000/500/36.0/3	x	x	x	x	x
EHR 1000/500/39.0/3	x	x	x	x	x
EHR 1000/500/42.0/3	x	x	x	x	x
EHR 1000/500/45.0/3	x	x	x	x	x
EHR 1000/500/48.0/3	x	x	x	x	x
EHR 1000/500/54.0/3	x	x	x	x	x
EHR 1000/500/57.0/3	x	x	x	x	x
EHR 1000/500/60.0/3	x	x	x	x	x
EHR 1000/500/66.0/3	x	x	x	x	x
EHR 1000/500/75.0/3	x	x	x	x	x
EHR 1000/500/84.0/3	x	x	x	x	x

table 5

*NOTE: heaters/preheaters with EHC..SE/FC, EHR..SE/FC modification have a scale (0...+30); heaters/preheaters with EHC..SI/FC, EHR..SI/FC modification have a scale (-30...0) or (0...+30).

NOTE: to specify a temperature scale (-30..0) or (0..+30) in order.

NOTE: heaters/preheaters with integrate control system EHC..SE, EHC..SI, EHR..SI – temperature duct sensor L–2.0 m. included.

NOTE: external temperature setpoint RES 001 and external temperature setpoint with room sensor RES 002/NTC are needed for EHC..SE, EHC..SE/FC, EHR..SE, EHR..SE/FC modification.

HEATERS RANGE

Electric circular duct heaters/preheaters

Model		EHC 100	EHC 125	EHC 160	EHC 200	EHC 250	EHC 315	EHC 355	EHC 400	EHC 450	EHC 500	EHC 630
Duct dimension mm		100	125	160	200	250	315	355	400	450	500	630
Supply voltage	Power W											
230 1~	500	x	x	x								
230 1~	1000		x	x	x	x	x					
230 1~	1500			x	x	x	x					
230 1~	2000			x	x	x	x					
230 1~	3000			x	x	x	x	x	x	x		
400 2~	3000			x	x	x	x	x	x	x	x	x
400 2~	4500			x	x	x	x	x	x	x	x	x
400 2~	6000			x	x	x	x	x	x	x	x	x
400 3~	6000			x	x	x	x	x	x	x	x	x
400 3~	9000				x	x	x	x	x	x	x	x
400 3~	12000						x	x	x	x	x	x
400 3~	15000								x	x	x	x
400 3~	18000								x	x	x	x
400 3~	21000										x	x
400 3~	24000											x

table 6

Electric rectangular duct heaters/preheaters

Model		EHR 200x200	EHR 400x200	EHR 500x250	EHR 500x300	EHR 600x300	EHR 600x350	EHR 700x400	EHR 800x500	EHR 1000x500	EHR 1000x1000
Duct dimension mm		200x200	400x200	500x250	500x300	600x300	600x350	700x400	800x500	1000x500	1000x1000
Supply voltage	Power W										
230 1~	500...3000	x									
400 2~/3~	3000...6000	x	x								
400 3~	9000...21000		x	x							
400 3~	9000...45000				x	x	x				
400 3~	9000...66000							x	x	x	
400 3~	15000...81000									x	x
400 3~	21000...99000										x

table 7

ACCESSORIES

- External controllers REC16 and REC16MB, 1~230 VAC or 2~400 VAC, 16A;
- External controllers REC25 and REC25B, 3~400 VAC/max. 16,44 kW, 25A;
- External controllers REC50 and REC50B, 3~400 VAC/max. 32,89 kW, 50A;
- Duct temperature sensor TSD/NTC10K/2m.;
- External temperature setpoint RES 001;
- External temperature setpoint with room sensor RES 002/NTC.

External temperature setpoint RES 001, external setpoint with room sensor RES 002/NTC

External temperature setpoints RES 001, RES 002/NTC

The RES 001, RES 002/NTC are intended to be used for external temperature setting when they are connected to electric heater's controller REH installed in heaters EHC.. or EHR.. RES 002/NTC is external temperature setpoint with room sensor.

Duct temperature sensor TSD/NTC10K/2m.

Duct temperature sensor TSD/NTC10K/2m.

Sensor with NTC – element for measuring air temperature in ventilation ducts. The sensor has an adjustable insertion length and delivered with 2.0 m. cable.

Electronic controller for electrical heating REC16, REC16MB

Electronic controllers for electrical heating

The controllers REC16, REC16MB, REC25, REC25B, REC50, REC50B are intended to be used for electric heating control by PID algorithm. These external controllers are used for the heaters/preheaters without integrated control system.

Electronic controller for electrical heating REC25, REC25B, REC50, REC50B

VT sistema

CONTROL SYSTEMS TECHNOLOGIES

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