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control electronics

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PRICELIST

VT sistema[®]
CONTROL SYSTEMS TECHNOLOGIES



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Control system for AHU with EC motors, plate or rotary heat exchanger, electric or water heater

DESCRIPTION

The control system is intended to be used for control of AHU with plate heat exchangers, supply and extract fans with EC motors, supply air electric heater, outside air damper, plate heat exchanger "Bypass" damper.

For the parameters settings measured data monitoring, remote control with the touch screen is connected to the control board. The remote control with the control board is connected using 4 wire cable and data transmitted RS485 MODBUS mode.

For economical and accurate AHU control 4 or 5 (depending on AHU type) temperature sensors are connected to the control board. Temperature sensors help quickly to reach the user's defined settings.

For the fan motors control, PCB has 0-10VDC control outputs. PCB has an input for fan motors TACHO or NC feedback signal connection. With TACHO or NC system gets the fan fault signals. The electric heater is controlled by the PID algorithm and this allows to obtain good temperature control accuracy.

The control system has a heat exchanger frost protection function. If the exhaust air temperature drops below the set limit (factory default 1-10) and appears freezing risk of heat exchanger then first according to default settings pre-heaters turn on, then if exhaust temperature does not rise „Bypass" damper opens. If the exhaust temperature still does not rise above the set limit supply and exhaust fan speeds are altered to rise exhaust air temperature (supply air fan speed is gradually reduced to 30%, then exhaust air fan speed is increased gradually up to 100%).

The system controls heat exchanger and free-cooling modes.

The control system also can check the status of external signals such as : filter pollution from pressure switch, fire alarm for the fire alarm system.

TECHNICAL DATA:

- ▶ Power supply: 230 VAC, 50 Hz.
- ▶ Remote control connection: RS485 MODBUS.
- ▶ Temperature setpoint range: 5..30°C.
- ▶ Fans rotation speed setpoint range: 20..100 %.
- ▶ Air damper actuator control: 230 VAC.
- ▶ Electric heater and preheater control: total power 230VAC up to 3,6kW (16A) or 0-10VDC output for heater.
- ▶ Fans control signals: 0-10 VDC.
- ▶ Fans motors failure signal: pulse.
- ▶ Temperature sensors quantity and type: 5 pcs., NTC10K.
- ▶ Filter pollution alarm digital input: voltage free, NO.
- ▶ Fire alarm digital input: voltage free, NO.
- ▶ Dimensions of electrical plate: 90x160 mm.
- ▶ Dimensions of remote controller: 86x92x19 mm.



Type	Input voltage [V]	Current[A]	Weight [kg]	Price Eur
RPA-EC-230-3-M6-PE1-8, VT1-15-3.5/P/M6x4NTC	230	16,0	0,6	319,04

(Prices without VAT).

Water leakage detection relay LDW

DESCRIPTION

The water leakage detection relay LDW is used to prevent water flooding in the room if there is water leakage in the plumbing system. The water leakage is detected on the floor with a water sensor.

TECHNICAL DATA:

- ▶ Power supply: 12 VDC/1,5 A.
- ▶ Motorized valve output: max 12 VDC/1,0 A.
- ▶ Protection class: IP44.
- ▶ Max. ambient temperature: 40°C.
- ▶ Dimensions: 80x80x27 mm.

Type	Price Eur
LDW	135,45

(Prices without VAT).



Water leakage detection systems LDRF with radio frequency

DESCRIPTION

The water leakage detection system with radio frequency LDRF is used to prevent water flooding in the rooms if there is water leakage in the plumbing system. The water leakage is detecting on the floor with a humidity sensor.

TECHNICAL DATA:

LDCRF – controller of the water leakage detection system:

- ▶ Power supply: 12 VDC/1,5 A.
- ▶ Motorized valve output: max 12 VDC/1,0 A.
- ▶ Protection class: Ip44.
- ▶ Max. ambient temperature: 40°C.
- ▶ Dimensions: 80x80x27 mm.

LDSRF – remote switch of the water leakage detection system:

- ▶ Power supply: 3, CR 2032.
- ▶ Protection class: Ip44.
- ▶ Max. ambient temperature: 40°C.
- ▶ Dimensions: 82x82x11 mm.

LDTRF – transmitter of the water leakage detection system:

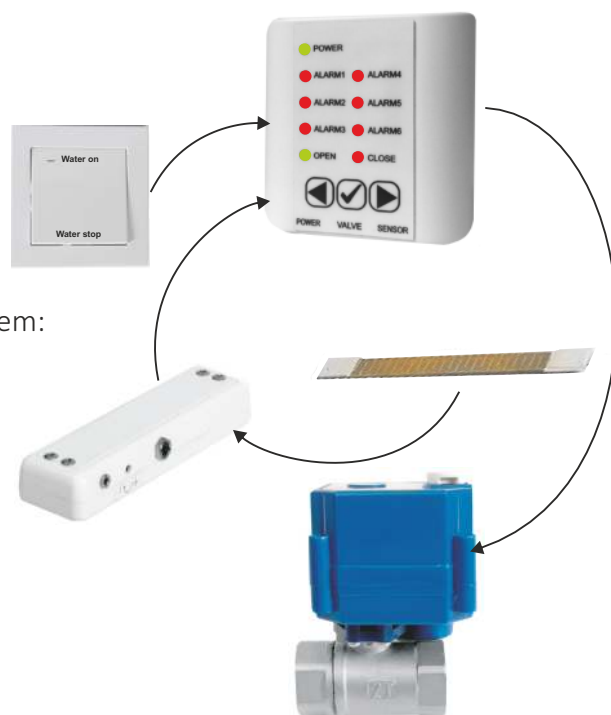
- ▶ Power supply: 5 VDC plugin adapter or 2xAAA 1,5 VDC.
- ▶ Protection class: Ip44.
- ▶ Max. ambient temperature: 40°C.
- ▶ Dimensions: 129x40x25,5 mm.

LDHS – humidity sensor of the water leakage detection:

- ▶ Connector: 2,5 mm plug.
- ▶ Cable: 1,5 m.
- ▶ Dimensions: 150x19x0,8 mm.

Type	Price Eur
LDRF	252,00

(Prices without VAT).



Electronic speed controllers ERV..B (230V)

DESCRIPTION

Electronic speed controllers ERV..B are used to change rotation speed by changing supply voltage of motor without overheat external connection. The controller has minimum speed setpoint inside. The hard start time setpoint inside of the controller. The start from the maximum rotating speed with the time delay to set one with a potentiometer. If the setpoint is 0, the controller will start in the soft mode – minimum to maximum. Controllers ERV..B have overheat protection function.

TECHNICAL DATA:

- ▶ Frequency (Hz):50/60.
- ▶ Protection class IP20.
- ▶ Protection class IP44 if installed in the flush box.
- ▶ Overheat protection: 65°C.
- ▶ Max. ambient temperature: 30°C.
- ▶ Storage temperature:-35..+ 50°C.



Type	Input voltage [V]	Current[A]	Fuse 5x20mm[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
ERV 0.5B	230	0,5	0,63	80x80x63x60	0,12	30,66
ERV 1.5B	230	1,5	2,0	80x80x63x60	0,14	32,68
ERV 3.0B	230	3,0	4,0	80x80x63x60	0,18	36,43

(Prices without VAT).

Electronic speed controllers ERV ..T (230V)

DESCRIPTION

Triac speed controllers ERV ..T are designed to change motor rotation speed by changing voltage. Controllers have triac thermal protection function. The regulation of motor rotating speed is stepless from set minimum inside of controller up to full supply voltage on the controllers output. The rotation setpoint can be done with a knob on the cover of the controller. The controllers also have ON/OFF switch with green power supply indication. Fuse is installed in the controllers for safety work.

TECHNICAL DATA:

- ▶ The regulation of motor rotation speed is stepless from set minimum inside of controller up to full supply voltage on the controllers output.
- ▶ Minimum output voltage set point range: 60..150 VAC.
- ▶ Power supply: 230 VAC.
- ▶ Frequency: 50/60[Hz].
- ▶ Protection class: IP54.
- ▶ Max. ambient temperature 35°C.
- ▶ Max. controller temperature 70°C is limited with thermal protection.



Type	Input voltage [V]	Current[A]	Fuse[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
ERV 5.0T	230	0,1-5,0	6,0	125x175x90x75	0,5	77,87
ERV 10.0T	230	0,2-10,0	12,5	125x175x90x75	0,6	89,76

(Prices without VAT).

Electronic speed controllers ERV ..TMB (230V)

DESCRIPTION

Triac speed controllers ERV ..TMB are designed to change the motor rotation speed by changing the output voltage. Controllers have a function of the triac thermo protection. The regulation of the motor rotation speed is stepless from the set minimum inside of the controller up to the full supply voltage on the controllers output. The rotation speed setpoint can be done with a knob which is located on the cover of the controller or with the external control signal 0-10VDC, by the interface RS485 MODBUS. The work mode change of the controllers mode can be changed with the external relay contacts. The controllers also have ON/OFF switch with green power supply indication. The fuse is installed in the controller for safety work.

TECHNICAL DATA:

- ▶ The regulation of motor rotating speed is stepless from set minimum inside of controller up to full supply voltage on the controllers output.
- ▶ Minimum output voltage set point range: 50..150 VAC \pm 5%.
- ▶ Power supply: 230 VAC \pm 5%.
- ▶ Frequency: 50/60[Hz].
- ▶ Protection class IP54.
- ▶ Max. ambient temperature 35°C+5%.
- ▶ Max. controller temperature 70°C+5% is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Fuse[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
ERV 5.0TMB	230 \pm 5%	0,1-5,0	6,3	125x175x90x75	0,5	112,53
ERV 10.0TMB	230 \pm 5%	0,2-10,0	12,5	125x175x90x75	0,6	142,60

(Prices without VAT).

Potentiometer EC-10

DESCRIPTION

The controller EC-10 is designed for direct control or nominal value present of EC-fans with potentiometer input or any application where a DC control signal required. For the manual control of speed and airflow of electrical fans with 0-10V output. Additionally equipped with an enabling push switch. The jet proof IP54 enclosure is achieved with the included surface mounting case. Flush-mounting a splash-proof IP44 enclosure also suitable for highly demanding environments as bathrooms etc.

TECHNICAL DATA:

- ▶ Protection class: IP44/54 .
- ▶ Max. ambient temperature 0 to 40°C.
- ▶ Weight: 130 gr.
- ▶ Control range: 0...20 Kohm.
- ▶ Output voltage: 0...10 VDC.
- ▶ Switch rating: 3A/250 VAC, 10A/12 VDC.



Type	Switch rating	Supply voltage	Output voltage	Ambient temperature	Dimensions [mm]	Price Eur
EC-10	3A/250V AC	10V DC	0...10VDC	0+45°C	80x80x63x60	20,63

(Prices without VAT).

Setpoint potentiometer with relay output ECS10

DESCRIPTION

Setpoint potentiometer with relay output ECS10 is designed to change EC (electronically commutated) motor rotating speed by changing control signal 0..10 VDC. The ECS10 can be also used to change control input DC signals for a frequency inverters or other devices that can be controlled by input DC signal. The ECS10 has an enclosure for the surface installation. For the output signal regulation, the voltage 3..15 VDC must be supplied to the ECS10. For enabling the controlled device the ECS10 has relay output. The minimum and maximum level of the potentiometer output signal can be adjusted with inside installed trimmers.

TECHNICAL DATA:

- ▶ The supply voltage: 3..15 VDC.
- ▶ The adjustable output signal limited with minimum and maximum.
- ▶ The relay output voltage free for enabling controlled device.
- ▶ The minimum setpoint range: 10..70% of the supply voltage.
- ▶ The maximum setpoint range: 30..100% of the supply voltage.
- ▶ The protection class: IP44 (ECS10, IP44), IP54 (ECS10, IP54),
- ▶ The max. ambient temperature: 40°C.
- ▶ The max. ambient humidity 90% without the condensation.



ECS10, IP44



ECS10, IP54

Type	Input voltage [V DC]	Dimensions [mm]	Weight [kg]	Price Eur
ECS10, IP44	3..15	80x80x26x32	0,07	27,72
ECS10, IP54	3..15	80x80x63x60	0,08	21,37

(Prices without VAT).

Controller ECS10-PWM

DESCRIPTION

The controller ECS10-PWM is designed to change EC (electronically commutated) motor rotating speed or to control other devices by changing control signals 0..10 VDC, 2..20 mA or PWM 10..100 %. The selection of signal type can be done with the switch inside the controller. The ECS10-PWM has an enclosure for the surface installation. The power supply 230 VAC must be supplied to the controller ECS10-PWM. For enabling the controlled device the ECS10-PWM has the relay output. The minimum and maximum level of the potentiometer output signal can be adjusted with inside installed trimmers.

TECHNICAL DATA:

- ▶ The supply voltage: 230 VAC.
- ▶ The adjustable output signal limited with minimum and maximum.
- ▶ The relay output voltage free for enabling controlled device.
- ▶ The minimum setpoint range: 1..7 VDC, 2..10 mA, PWM 1..70%.
- ▶ The maximum setpoint range: 3..10 VDC, 6..20 mA, PWM 30..100%.
- ▶ The protection class: IP44.
- ▶ The max. ambient temperature: 40°C.
- ▶ The max. ambient humidity 90% without the condensation.



Type	Input voltage [V DC]	Dimensions [mm]	Weight [kg]	Price Eur
ECS10-PWM	230	80x80x26x32	0,08	94,39

(Prices without VAT).

Transformer fan speed controllers RV..B (1x230V)

DESCRIPTION

Transformer controllers RV ..B are designed to change motor rotation speed by changing voltage. Controllers are with transformers overheating protection function. The steps have fixed voltages and are switchable with rotary switch. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps the motor rotation speed controller.
- ▶ Power supply: 230 VAC.
- ▶ Frequency (Hz):50/60.
- ▶ Protection class IP54.
- ▶ Max. ambient temperature: 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RV 0.6B	230	0,6	100x120x85x70	1,0	60,86
RV 1.2B	230	1,2	100x120x85x70	1,4	80,50
RV 1.5B	230	1,5	100x120x85x70	1,6	82,33
RV 2.2B	230	2,2	125x175x75x90	2,2	90,79
RV 3.0B	230	3,0	125x175x75x90	3,0	107,43
RV 4.0B	230	4,0	125x175x115x100	3,2	109,86
RV 5.0B	230	5,0	125x175x115x100	3,6	139,27
RV 7.0B	230	7,0	240x190x140x125	6,5	190,32
RV 11.0B	230	11,0	240x190x140x125	7,6	215,77
RV 14.0B	230	14,0	240x190x140x125	11,2	248,01

(Prices without VAT). (Without motor thermo protection connection).

Transformer fan speed controllers RV..(1x230V)

DESCRIPTION

Transformer controllers RV .. are designed to change motor rotation speed by changing voltage. Controllers are with transformers overheating protection function. The steps have fixed voltages and are switchable with rotary switch. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps the motor rotation speed controller.
- ▶ Power supply: 230 VAC.
- ▶ Frequency (Hz):50/60.
- ▶ Protection class IP54.
- ▶ Max. ambient temperature: 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RV 1.2	230	1,2	125x175x90x75	1,6	89,44
RV 1.5	230	1,5	125x175x90x75	1,8	91,89
RV 2.2	230	2,2	125x175x90x75	2,2	102,54
RV 3.0	230	3,0	125x175x90x75	3,0	114,74
RV 4.0	230	4,0	125x175x120x100	3,7	123,52
RV 5.0	230	5,0	125x175x120x100	4,1	160,97
RV 7.0	230	7,0	240x190x145x125	7,0	204,16
RV 11.0	230	11,0	240x190x145x125	8,1	227,35
RV 14.0	230	14,0	240x190x145x125	11,2	264,70

(Prices without VAT). (With motor thermo protection connection).

Transformer fan speed controllers RT..(3x400V)

DESCRIPTION

Transformer controllers RT .. are designed to change motor rotation speed by changing voltage. All controllers have overheating protection function. The steps have fixed voltages and are switchable with rotary switch. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps motor rotation speed controller.
- ▶ Power supply: 400 VAC.
- ▶ Frequency (Hz):50/60.
- ▶ Protection class:
 - IP54 (RT 1.0...RT 5.0) – plastic boxes,
 - IP44 (RT 7.0...RT 14.0) – metal boxes.
- ▶ Max. ambient temperature: 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RT 1.0	400	1,0	240x190x110x90	5,7	168,93
RT 2.0	400	2,0	240x190x110x90	8,3	199,41
RT 3.0	400	3,0	300x220x140x120	10,3	224,31
RT 4.0	400	4,0	300x220x140x120	14,4	262,26
RT 5.0	400	5,0	300x220x140x120	16,3	297,79
RT 7.0	400	7,0	360x300x165x145	23,3	381,21
RT 11.0	400	11,0	380x340x220x200	36,7	442,43
RT 14.0	400	14,0	380x340x220x200	38,1	623,94

(Prices without VAT).

Transformer fan speed controllers RT..EX (3x400V)

DESCRIPTION

Transformer controllers RT ..EX are designed to change motor rotation speed by changing voltage. All controllers have overheating protection function. The steps have fixed voltages and are switchable with rotary switch. With a single speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps motor rotation speed controller.
- ▶ Power supply: 400 VAC.
- ▶ Frequency (Hz):50/60.
- ▶ Protection class:
 - IP54 (RT 1.0EX...RT 5.0EX – plastic boxes),
 - IP44 (RT 7.0EX...RT 14.0EX – metal boxes).
- ▶ Max. ambient temperature: 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.
- ▶ Motor thermo protection – PTC.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RT 1.0EX	400	1,0	240x190x110x90	5,9	311,87
RT 2.0EX	400	2,0	300x220x140x120	8,5	342,19
RT 3.0EX	400	3,0	300x220x140x120	10,5	355,75
RT 4.0EX	400	4,0	300x220x140x120	14,6	398,83
RT 5.0EX	400	5,0	300x220x140x120	16,5	418,20
RT 7.0EX	400	7,0	360x300x165x145	23,5	506,50
RT 11.0EX	400	11,0	380x340x220x200	36,9	576,24
RT 14.0EX	400	14,0	380x340x220x200	38,3	614,13

(Prices without VAT).

(For explosion proof fans).

Transformer fan speed controllers RV..B-2 (1x230V)

DESCRIPTION

Transformer controllers RV ..-2B are designed to change motor rotation speed by changing voltage. All controllers have overheating protection function. The steps have fixed voltages and are switchable with rotary switch. Controllers are equipped with 2 rotary switches. Rotary switch selection can be made with an external signal. In this case, can be selected one of the set speeds.

TECHNICAL DATA:

- ▶ 5 steps motor rotation speed controller.
- ▶ Power supply: 230 VAC.
- ▶ Frequency (Hz): 50/60.
- ▶ Protection class IP54.
- ▶ Max. ambient temperature 40°C.
- ▶ Max. controller temperature 70°C.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RV 1.2B-2	230	1,2	125x175x90x75	1,6	113,40
RV 1.5B-2	230	1,5	125x175x90x75	1,8	113,87
RV 2.2B-2	230	2,2	125x175x90x75	2,2	123,77
RV 3.0B-2	230	3,0	125x175x115x100	3,0	148,53
RV 4.0B-2	230	4,0	125x175x115x100	3,7	155,96
RV 5.0B-2	230	5,0	125x175x120x100	4,1	203,00
RV 7.0B-2	230	7,0	240x190x145x125	7,1	220,94
RV 11.0B-2	230	11,0	240x190x145x125	8,2	242,60

(Prices without VAT). (Without motor thermo protection connection).

Transformer fan speed controllers RV..-2 (1x230V)

DESCRIPTION

Transformer controllers RV ..-2 are designed to change motor rotation speed by changing voltage. Controllers are with transformers and motor overheating protection function. The steps have fixed voltages and are switchable with rotary switch. Controllers are equipped with 2 rotary switches. Rotary switch selection can be made with an external signal. In this case, can be selected one of the set speeds. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controllers current.

TECHNICAL DATA:

- ▶ 5 steps motor rotation speed controller.
- ▶ Power supply: 230 VAC.
- ▶ Frequency (Hz): 50/60.
- ▶ Protection class IP54.
- ▶ Max. ambient temperature 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RV 1.2-2	230	1,2	125x175x90x75	1,7	134,67
RV 1.5-2	230	1,5	125x175x90x75	1,9	138,63
RV 2.2-2	230	2,2	125x175x90x75	2,3	154,48
RV 3.0-2	230	3,0	125x175x115x100	3,1	160,91
RV 4.0-2	230	4,0	240x190x145x125	3,8	183,19
RV 5.0-2	230	5,0	240x190x145x125	4,2	227,76
RV 7.0-2	230	7,0	240x190x145x125	7,1	245,55
RV 11.0-2	230	11,0	240x190x145x125	8,2	255,60

(Prices without VAT). (With motor thermo protection connection).

Transformer fan speed controllers RT ..-2 (3x400V)

DESCRIPTION

Transformer controllers RT ..-2 are designed to change motor rotation speed by changing voltage. Controllers are with transformers and motor thermo protection function. The steps have fixed voltages and are switchable with a rotary switch. Controllers are equipped with 2 rotary switches. Rotary switch selection can be made with an external signal. In this case, can be selected one of the set speeds.

TECHNICAL DATA:

- ▶ 5 steps the motor rotation speed controller.
- ▶ Power supply: 400 VAC.
- ▶ Frequency (Hz): 50/60.
- ▶ Protection class:
 - IP54 (RT 1.0-2..RT 5.0-2) – plastic boxes,
 - IP44 (RT 7.0-2..RT 14.0-2) – metal boxes.
- ▶ Max. ambient temperature 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RT 1.0-2	400	1,0	240x190x105x90	7,0	241,36
RT 2.0-2	400	2,0	300x220x135x120	9,0	268,13
RT 3.0-2	400	3,0	300x220x135x120	11,0	305,09
RT 4.0-2	400	4,0	300x220x135x120	15,1	320,19
RT 5.0-2	400	5,0	300x220x135x120	17,0	381,19
RT 7.0-2	400	7,0	380x300x185x170	24,0	447,74
RT 11.0-2	400	11,0	380x300x185x170	37,4	520,66
RT 14.0-2	400	14,0	380x300x185x170	38,8	572,71

(Prices without VAT).

Transformer fan speed controllers RV ..YS (1x230V) with external relay input (door switch)

DESCRIPTION

Transformer controllers RV ..YS are designed to change motor rotation speed by changing voltage. Controllers are with transformers and motor overheating function. The steps have fixed voltages and are switchable with rotary switch. Controllers have external relay signal input S-S for switching ON/OFF controllers. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps the motor rotation speed controller.
- ▶ Power supply: 230 VAC.
- ▶ Frequency (Hz): 50/60.
- ▶ Protection class IP54.
- ▶ Max. ambient temperature 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RV 1.2YS	230	1,2	125x175x90x75	1,6	106,88
RV 1.5YS	230	1,5	125x175x90x75	1,8	110,45
RV 2.2YS	230	2,2	125x175x90x75	2,2	122,91
RV 3.0YS	230	3,0	125x175x90x75	3,0	138,05
RV 4.0YS	230	4,0	125x175x120x100	3,7	140,72
RV 5.0YS	230	5,0	125x175x120x100	4,1	202,72
RV 7.0YS	230	7,0	240x190x145x125	7,0	224,45
RV 11.0YS	230	11,0	240x190x145x125	8,1	247,10
RV 14.0YS	230	14,0	240x190x145x125	11,2	284,96

(Prices without VAT). (With motor thermo protection connection).

Transformer speed controllers RT ..YS (3x400V) with external relay input (door switch)

DESCRIPTION

Transformer controllers RT ..YS are designed to change motor rotation speed by changing voltage. Controllers are with transformers and motor thermal protection function. The steps have fixed voltages and are switchable with rotary switch. Controllers have external relay signal input S-S for switching ON/OFF controllers. With a single-speed, the controller can control multiple motors, if the total of all motors power consumption does not exceed the maximum controller current.

TECHNICAL DATA:

- ▶ 5 steps motor rotation speed controller.
- ▶ Power supply: 400 VAC.
- ▶ Frequency (Hz): 50/60.
- ▶ Protection class:
 - IP54 (RT 1.0YS...RT 5.0YS) – plastic boxes,
 - IP44 (RT 7.0YS...RT 14.0YS) – metal boxes.
- ▶ Max. ambient temperature 40°C.
- ▶ Max. controller temperature 70°C is limited with thermo protection.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight [kg]	Price Eur
RT 1.0YS	400	1,0	240x190x105x90	5,9	207,67
RT 2.0YS	400	2,0	300x220x135x120	8,5	236,97
RT 3.0YS	400	3,0	300x220x135x120	10,5	249,90
RT 4.0YS	400	4,0	300x220x135x120	14,6	301,59
RT 5.0YS	400	5,0	300x220x135x120	16,5	342,44
RT 7.0YS	400	7,0	380x300x185x170	23,5	426,96
RT 11.0YS	400	11,0	380x300x185x170	37,0	508,79
RT 14.0YS	400	14,0	380x300x185x170	38,3	569,27

(Prices without VAT).

Controllers for two speeds fan motor RD 4.0

DESCRIPTION

Controllers are used for two speeds fan motor control with star/delta electrical connection. Controllers have a motor overheating protection function. If the motor overheat protection gives a signal that motor winding temperature is too high the controller cuts off power supply to the motor.

TECHNICAL DATA:

- ▶ Power supply: 400 VAC.
- ▶ Frequency: 50/60 Hz.
- ▶ Motor power and current: max 4,0 kW, 9,0 A.
- ▶ Protection class: IP54.
- ▶ Max. ambient temperature: 40°C.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight[kg]	Price Eur
RD 4.0	400	9,0	175x125x146x101	1,1	90,33

(Prices without VAT).

Controllers for two speeds fan motor RD 4.0EX

DESCRIPTION

Controllers are used for two speeds fan motor control with star/delta electrical connection. Controllers have a motor overheating protection function. If the motor overheat protection gives a signal that motor winding temperature is too high the controller cuts off power supply to the motor.

TECHNICAL DATA:

- ▶ Power supply: 400 VAC.
- ▶ Frequency: 50/60 Hz.
- ▶ Motor power and current: max 4,0 kW, 9,0 A.
- ▶ Protection class: IP54.
- ▶ Max. ambient temperature: 40°C.
- ▶ Motor thermo protection – PTC.



Type	Input voltage [V]	Current[A]	Dimensions AxBxCxD [mm]	Weight[kg]	Price Eur
RD 4.0EX	400	9,0	175x125x146x101	1,2	154,15

(Prices without VAT). For explosion proof fans.

3 and 4 positions switches PJ-3, PJ-4

DESCRIPTION

Operational speed steps switches can adjust manually the speed of electrical motors/fans. Several motors can be connected to one-step switch if the total of all motor power consumption does not exceed the maximum switch current.

TECHNICAL DATA:

- ▶ Switch: ON/OFF.
- ▶ Control signal: step switch.
- ▶ Protection class: IP44/54.
- ▶ Max. ambient temperature up to 40°C.



Type	Steps	Supply voltage(V)	Switch rating	Dimensions [mm]	Price Eur
PJ-3	2	230	3A/230VAC	80x80x63x60	16,56
PJ-4	3	230	3A/230VAC	80x80x63x60	17,00

(Prices without VAT).

Pressure switches SR ..

DESCRIPTION

SR .. pressure switches are capable to sense tiny pressure changes. Pressure switches can control the flue of the aerator, operation of the fan, filter contamination in a ventilation system. Pressure switches are also suitable for overheat protection in industrial cooling systems. Setpoint is adjusted to be visible due to pressure switches outstanding design.

TECHNICAL DATA:

- ▶ Medium: air, non-combustible and no-aggressive gases.
- ▶ Max. operating pressure: 10kPa.
- ▶ Degree of protection: IP54 (with cover), IP00 (without cover).
- ▶ Contact arrangement: SPDT.
- ▶ Electric rating resistance: initial <50miliohms.
- ▶ Terminal: 6.3mm x 0.8 blade or screw terminal.
- ▶ Operating temperature -40°C...+85°C

Type	Differential	Pressure range	Current/voltage	Price Eur
SR 200	10Pa	20-200Pa	1,5A(0,4)/250V	22,83
SR 500	20Pa	50-500Pa	1,5A(0,4)/250V	23,00
SR 1000	100Pa	200-1000Pa	1,5A(0,4)/250V	26,18
SR 2500	250Pa	500-2500Pa	1,5A(0,4)/250V	28,67
SR 200K	10Pa	20-200Pa	1,5A(0,4)/250V	25,50
SR 500K	20Pa	50-500Pa	1,5A(0,4)/250V	25,67
SR 1000K	100Pa	200-1000Pa	1,5A(0,4)/250V	28,85
SR 2500K	250Pa	500-2500Pa	1,5A(0,4)/250V	31,34

SR..-pressure switch;
(Prices without VAT).

SR..K-pressure switch with accesories.



SR..



SR..K

ACCESSORIES SR..K:

- Plastic tube – 1,5 m.
- Connectors – 2 pcs.
- Screw for connectors – 4 pcs.

Frequency inverters

TECHNICAL DATA:

- ▶ Selectable V/F, sensorless vector control.
- ▶ Motor parameter auto-tuning (turning).
- ▶ 150% torque at 0.5Hz.
- ▶ 0.1 ~ 400Hz frequency output.
- ▶ 1 ~ 15kHz carrier frequency.
- ▶ 0 ~ 10 VDC analog input.
- ▶ IP20 enclosure.
- ▶ Selectable manual/automatic torque boost.
- ▶ Built-in potentiometer.
- ▶ Selectable PNP/NPN input signal.
- ▶ Fault history: last 5 faults.
- ▶ Enhanced process PID control.
- ▶ MODBUS RTU communication.



Input: 1x230V 50/60Hz, output: 3x230V 50/60 Hz	Price Eur
Frequency inverter VT1000 0,4kW/230V/IP20	204,79
Frequency inverter Vt1000 0,75kW/230V/IP20	227,16
Frequency inverter Vt1000 1,5kW/230V/IP20	250,26
Frequency inverter Vt1000 2,2kW/230V/IP20	288,77

(Prices without VAT).

Input: 3x400V 50/60Hz, output: 3x400V 50/60 Hz	Price Eur
Frequency inverter VT1000 0,4kW/400V/IP20	264,32
Frequency inverter VT1000 0,75kW/400V/IP20	277,22
Frequency inverter VT1000 1,5kW/400V/IP20	292,62
Frequency inverter VT1000 2,2kW/400V/IP20	327,27
Frequency inverter VT1000 3,7kW/400V/IP20	396,46
Frequency inverter VT1000 5,5kW/400V/IP20	429,48
Frequency inverter VT1000 7,5kW/400V/IP20	608,87
Frequency inverter VT1000 11,0kW/400V/IP20	737,08
Frequency inverter VT1000 15,0kW/400V/IP20	1038,32
Frequency inverter VT1000 18,5kW/400V/IP20	1192,14
Frequency inverter VT1000 22,0kW/400V/IP20	1281,84
Frequency inverter VT1000 30,0kW/400V/IP20	2038,72
Frequency inverter VT1000 37,0kW/400V/IP20	2301,77
Frequency inverter VT1000 45,0kW/400V/IP20	3146,77

(Prices without VAT).

Setpoint for frequency inverter RES 001/10kom/ON/OFF

DESCRIPTION

RES 001/10kom/ON/OFF is intended to be used for external speed setpoint when it is connected to frequency inverter.

TECHNICAL DATA:

- ▶ Protection class: IP30.
- ▶ Nominal value: 10 kΩ.
- ▶ Speed range: 0..100%.



Type	Price Eur
RES 001/10kom/ON/OFF	38,39

(Prices without VAT).

Frequency inverters

TECHNICAL DATA:

- ▶ Selectable V/F, sensorless vector control.
- ▶ Motor parameter auto-tuning (turning).
- ▶ 150% torque at 0.5Hz.
- ▶ 0.1 ~ 400Hz frequency output.
- ▶ 1 ~ 15kHz carrier frequency.
- ▶ 0 ~ 10 VDC analog input.
- ▶ IP65 enclosure.
- ▶ Selectable manual/automatic torque boost.
- ▶ Built-in potentiometer.
- ▶ Selectable PNP/NPN input signal.
- ▶ Fault history: last 5 faults.
- ▶ Enhanced process PID control.
- ▶ MODBUS RTU communication.



Input: 1x230V 50/60Hz, output: 3x230V 50/60 Hz	Price Eur
Frequency inverter VT5000 0,75kW/230V/IP65	389,25
Frequency inverter VT5000 1,5kW/230V/IP65	422,02
Frequency inverter VT5000 2,2kW/230V/IP65	474,61

(Prices without VAT).

Input: 3x400V 50/60Hz, output: 3x400V 50/60 Hz	Price Eur
Frequency inverter VT5000 0,75kW/400V/IP65	395,73
Frequency inverter VT5000 1,5kW/400V/IP65	429,03
Frequency inverter VT5000 2,2kW/400V/IP65	474,61
Frequency inverter VT5000 3,7kW/400V/IP65	692,89
Frequency inverter VT5000 5,5kW/400V/IP65	758,79
Frequency inverter VT5000 7,5kW/400V/IP65	824,78
Frequency inverter VT5000 11,0kW/400V/IP65	890,74
Frequency inverter VT5000 15,0kW/400V/IP65	1395,32

(Prices without VAT).

Setpoint for frequency inverter RES 001/10kom/ON/OFF

DESCRIPTION

RES 001/10kom/ON/OFF is intended to be used for external speed setpoint when it is connected to frequency inverter.

TECHNICAL DATA:

- ▶ Protection class: IP30.
- ▶ Nominal value: 10 kΩ.
- ▶ Speed range: 0..100%.



Type	Price Eur
RES 001/10kom/ON/OFF	38,39

(Prices without VAT).

Electronic controllers for electrical heating REC16, REC16MB

DESCRIPTION

The controllers REC.. are intended to be used for electrical heating control by PID algorithm. Operating is managed in accordance with set and measured temperatures. If the measured temperature is lower than set one, controllers gradually change the 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 an internal or external temperature sensor or with both at one time when heating control is carried out with temperature limitation of the supply air and the room temperature control according to the set temperature. Controlled phase current is switched at zero angle to avoid radio interference. The controllers can be used for single-phase or two-phase power supply, it is not suitable for a three-phase power supply. Controllers REC16MB are intended to be connected to building management system (BMS) via RS485 mode by MODBUS protocol.

TECHNICAL DATA:

- ▶ Power supply: 1 phase 230VAC or 2 phase 400VAC, 190..410 VAC.
- ▶ Controlled load: up to 16A, 1~ 230VAC/max. 3kW or 2~ 400VAC/max. 6kW.
- ▶ Frequency: 50/60[Hz].
- ▶ Protection class: IP20.
- ▶ 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).



Type	Input voltage [V]	Current[A]	Dimensions AxBxC[mm]	Weight [kg]	Price Eur
REC16	1~230 or 2~400	16,0	140x110x37	0,4	102,69
REC16MB	1~230 or 2~400	16,0	140x110x37	0,4	113,93

(Prices without VAT). **NOTE: Duct temperature sensor TSD/NTC10/2m. must be ordered separately.**

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

DESCRIPTION

The controllers REC.. are intended to be used for electrical heating control by PID algorithm. Operation is managed in accordance with set and measured temperatures. If the measured temperature is lower than set one, controllers gradually change the 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 one 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. The controlled phases current is switched at zero angle to avoid radio interference. The controllers can be used for only three-phases power supply. The controllers can be used for building management system (BMS) via RS485 mode by MODBUS protocol when the control panel is disconnected from control PCB and RS485 connected instead. Controllers are designed only for electric heater control. 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.

TECHNICAL DATA:

- ▶ Power supply: 3 phases 400VAC, 350..425 VAC.
- ▶ Controlled load with triacs: up to 25A, 3~ 400VAC/max.16.44 kW or up to 50A, 3~ 400VAC/max.32.89 kW.
- ▶ Frequency: 50/60[Hz].
- ▶ Protection class: IP20.
- ▶ 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).



Type	Input voltage [V]	Current[A]	Dimensions AxBxC[mm]	Weight [kg]	Price Eur
REC25 4XDO	3~400	25,0	240x168x130	2,48	254,18
REC25B 1XDO	3~400	25,0	240x168x130	2,48	231,46
REC50 4XDO	3~400	50,0	240x168x140	2,60	373,46
REC50B 1XDO	3~400	50,0	240x168x140	2,60	332,96

(Prices without VAT). **NOTE: Duct temperature sensor TSD/NTC10/2m. must be ordered separately.**

Electric circular duct heaters/preheaters for ventilation systems

DESCRIPTION

The electric circular 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 via or produced according to the client requirements. It is possible to connect to the BMS system via the RS485 MODBUS. The heater/preheater cases are produced from aluzinc coated metal sheet, sealing rubber for a tight connection with the ventilation duct system.

The stainless steel heating elements are used in the heaters. All heaters/preheaters are equipped with 2 overheat thermostats. Heaters/preheaters with 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 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. The thermostat push button is installed on heater cover to reset manual reset. Thermostats for 1 and 2 phases are connected in series with a heating element and no extra relay is needed. For 3 phase heaters/preheaters, the external relay is needed for overheat functions. All electric duct heaters have integral controller indication.

Minimum airspeed for heaters/preheaters 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 the output air duct. Setpoint knob is installed on heater case.
- External setpoint with one duct temperature sensor (model SE), duct sensor must be installed in the output air duct.
- Setpoint device 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.

MODEL NAME DESCRIPTION

Example: EHC 250/3.0/2/SE/FC/MB/K
 EHC – electric circular 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.

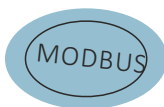


Type	Price Eur EHC	Price Eur EHC..CE	Price Eur EHC..SE	Price Eur EHC..SI	Price Eur EHC..CE/FC EHC..SE/FC EHC..SI/FC
	Without integrated control	With integrated control (0-10)V	With integrated control (external setpoint) (0...+30)	With integrated control (internal setpoint) (0...+30)	Plug & play (with flow and pressure control) (-30...0) (0...+30)*
EHC 100/0.5/1	68,59	117,03	136,20	139,44	176,79
EHC 125/0.5/1	70,75	119,19	138,36	141,60	178,95
EHC 125/1.0/1	71,99	120,43	139,60	142,84	180,19

Type	Price Eur EHC	Price Eur EHC..CE	Price Eur EHC..SE	Price Eur EHC..SI	Price Eur EHC..CE/FC EHC..SE/FC EHC..SI/FC
	Without integrated control	With integrated control (0-10)V	With integrated control (external setpoint) (0...+30)	With integrated control (internal setpoint) (0...+30)	Plug & play (with flow and pressure control) (-30...0) (0...+30)*
EHC 160/0.5/1	73,52	121,97	141,14	144,39	181,73
EHC 160/1.0/1	74,45	122,90	142,07	145,31	182,66
EHC 160/1.5/1	83,41	131,86	151,03	154,27	191,61
EHC 160/2.0/1	86,50	134,95	154,12	157,36	194,70
EHC 160/3.0/1	98,24	146,68	165,86	169,11	206,44
EHC 160/3.0/2	100,15	148,11	167,47	170,75	208,88
EHC 160/4.5/2	108,75	157,58	176,72	179,96	217,37
EHC 200/1.0/1	76,61	125,06	144,23	147,48	184,81
EHC 200/1.5/1	86,81	135,26	154,43	157,67	195,01
EHC 200/2.0/1	89,90	138,35	157,52	160,76	198,10
EHC 200/3.0/1	99,17	147,61	166,79	170,03	207,37
EHC 200/3.0/2	101,09	149,44	168,76	172,04	209,82
EHC 200/4.5/2	111,84	160,67	179,81	183,05	220,46
EHC 200/6.0/2	125,42	174,27	193,40	196,65	234,06
EHC 200/6.0/3	127,86	177,98	196,25	199,49	238,46
EHC 200/9.0/3	153,85	211,35	229,61	232,85	271,82
EHC 250/1.0/1	80,32	128,77	147,94	151,18	188,52
EHC 250/1.5/1	88,04	136,50	155,66	158,91	196,25
EHC 250/2.0/1	91,13	139,59	158,75	162,00	199,34
EHC 250/3.0/1	105,66	154,10	173,28	176,51	213,86
EHC 250/3.0/2	107,71	156,00	175,31	178,59	216,36
EHC 250/4.5/2	113,69	162,52	181,66	184,91	222,32
EHC 250/6.0/2	127,28	176,12	195,26	198,50	235,91
EHC 250/6.0/3	128,44	182,31	200,57	203,82	242,78
EHC 250/9.0/3	159,10	216,60	234,86	238,11	277,07
EHC 315/2.0/1	98,86	147,30	166,48	169,72	207,06
EHC 315/3.0/1	112,76	161,21	180,37	183,62	220,97
EHC 315/3.0/2	114,95	163,17	182,49	185,77	223,54
EHC 315/4.5/2	124,19	173,03	192,17	195,41	232,82
EHC 315/6.0/2	138,71	187,54	206,68	209,92	247,34
EHC 315/6.0/3	141,40	190,64	208,90	212,15	251,12
EHC 315/9.0/3	167,14	224,63	242,89	246,14	285,10
EHC 315/12.0/3	205,44	262,94	281,20	284,44	323,41
EHC 400/3.0/1	126,66	175,11	194,28	197,52	234,86
EHC 400/3.0/2	131,29	180,14	199,27	202,52	239,93
EHC 400/4.5/2	143,65	192,49	211,62	214,87	252,29
EHC 400/6.0/2	156,01	204,85	223,98	227,23	264,64
EHC 400/6.0/3	158,83	208,09	226,53	229,80	269,16
EHC 400/9.0/3	185,05	242,54	260,81	264,05	303,03
EHC 400/12.0/3	221,81	279,32	297,58	300,82	339,79
EHC 400/15.0/3	257,96	319,28	337,13	340,36	380,02

(Prices without VAT).





Type	Price Eur EHC..SE/MB	Price Eur EHC..SI/MB	Price Eur EHC..SE/FC/MB EHC..SI/FC/MB
	With integrated control (external setpoint) with MODBUS	With integrated control (internal setpoint) with MODBUS	Plug & play (with flow and pressure control) with MODBUS
EHC 100/0.5/1	154,74	157,98	195,32
EHC 125/0.5/1	156,90	160,14	197,48
EHC 125/1.0/1	158,14	161,38	198,72
EHC 160/0.5/1	159,68	162,93	200,26
EHC 160/1.0/1	160,61	163,85	201,19
EHC 160/1.5/1	169,57	172,81	210,15
EHC 160/2.0/1	172,66	175,89	213,24
EHC 160/3.0/1	184,39	187,64	224,98
EHC 160/3.0/2	184,75	188,00	225,41
EHC 160/4.5/2	195,26	198,50	235,91
EHC 200/1.0/1	162,77	166,02	203,35
EHC 200/1.5/1	172,97	176,20	213,55
EHC 200/2.0/1	176,05	179,29	216,64
EHC 200/3.0/1	185,32	188,56	225,91
EHC 200/3.0/2	185,68	188,92	226,33
EHC 200/4.5/2	198,35	201,59	239,00
EHC 200/6.0/2	211,93	215,18	252,60
EHC 200/6.0/3	227,14	230,38	269,36
EHC 200/9.0/3	260,50	263,74	302,72
EHC 250/1.0/1	166,48	169,72	207,06
EHC 250/1.5/1	174,19	177,44	214,79
EHC 250/2.0/1	177,28	180,53	217,88
EHC 250/3.0/1	191,81	195,05	232,40
EHC 250/3.0/2	192,17	195,41	232,82
EHC 250/4.5/2	200,20	203,45	240,86
EHC 250/6.0/2	213,79	217,03	254,45
EHC 250/6.0/3	231,46	234,71	273,67
EHC 250/9.0/3	265,75	269,00	307,97
EHC 315/2.0/1	185,01	188,25	225,60
EHC 315/3.0/1	198,91	202,16	239,50
EHC 315/3.0/2	199,27	202,52	239,93
EHC 315/4.5/2	210,70	213,94	251,36
EHC 315/6.0/2	252,22	228,46	265,87
EHC 315/6.0/3	239,80	243,05	282,01
EHC 315/9.0/3	273,78	277,03	316,00
EHC 315/12.0/3	312,09	315,33	354,31
EHC 400/3.0/1	212,82	216,06	253,40
EHC 400/3.0/2	217,80	221,05	258,47
EHC 400/4.5/2	230,16	233,41	270,82
EHC 400/6.0/2	242,52	245,77	283,18
EHC 400/6.0/3	255,24	258,49	297,46
EHC 400/9.0/3	291,71	294,95	333,92
EHC 400/12.0/3	328,47	331,71	370,68
EHC 400/15.0/3	368,02	371,26	410,91

(Prices without VAT).

ACCESSORIES

Type	Price Eur
External controller REC16, 1~230 VAC or 2~400 VAC, 16A	102,69
External controller REC16MB, 1~230 VAC or 2~400 VAC, 16A	113,93
External controller REC25B, 3~400 VAC/max. 16,44 kW, 25A	231,46
External controller REC25, 3~400 VAC/max. 16,44 kW, 25A	254,18
External controller REC50B, 3~400 VAC/max. 32,89 kW, 50A	332,96
External controller REC50, 3~400 VAC/max. 32,89 kW, 50A	373,46
Surface temperature sensor TSS/NTC10K/2 m.	29,86
Duct temperature sensor TSD/NTC10K/2 m.	23,56
External temperature setpoint RES 001	48,90
External temperature setpoint with room sensor RES 002/NTC	58,28

(Prices without VAT).



Duct temperature sensor TSD/NTC10K/2m.



External temperature setpoint RES 001



External temperature setpoint with room sensor RES 002/NTC

***NOTE:** heaters/preheaters with EHC..SE/FC modification have a scale (0...+30); heaters/preheaters with EHC..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 – duct temperature 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 modification.

Electric rectangular duct heaters/preheaters for ventilation systems

DESCRIPTION

The electric 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. It is possible to connect to the BMS system via the RS485 MODBUS. The heater/preheater cases are produced from aluzinc coated metal sheet. The stainless steel heating elements are used in the heaters/preheaters.

All heaters/preheaters are equipped with 2 overheat thermostats. 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 heater/preheater 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. All electric duct heaters have an integral controller indication.

Minimum airspeed for heaters/preheaters 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 the output air duct. Setpoint knob is installed on heater case.
- External setpoint with one duct temperature sensor (model SE), duct sensor must be installed in the output air duct. Setpoint device installed on the wall is used (potentiometer resistance – 10K).
- External control signal 0-10 VDC (model CE). An external control signal from other controller 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 the heater is supplied without an installed electronic controller, an external controller should be used.

MODEL NAME DESCRIPTION

Example: EHR 400x200x200/6.0/3/SI/FC/MB/K MB – MODBUS,
 EHR – electric rectangular heater/preheater, K – contactor.
 400x200x200 – dimensions of duct in mm,
 6.0 – output power kW,
 3 – phase,
 SI – electronic controller type,
 FC – flow and pressure control,

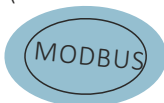


Type	Price Eur EHR	Price Eur EHR..CE	Price Eur EHR..SE	Price Eur EHR..SI	Price Eur EHR..CE/FC EHR..SE/FC EHR..SI/FC
	Without integrated control	With integrated control (0-10)V	With integrated control (external setpoint) (0...+30)	With integrated control (internal setpoint) (0...+30)	Plug & play (with flow and pressure control) (-30...0) (0...+30)*
EHR 400x200/1.0/1	165,28	220,88	233,24	236,33	261,05
EHR 400x200/2.0/1	171,45	227,06	239,42	242,51	267,22
EHR 400x200/3.0/1	189,99	245,60	257,96	261,05	285,76
EHR 400x200/3.0/3	193,08	248,69	261,05	264,14	288,85
EHR 400x200/6.0/3	200,13	253,92	266,27	269,36	290,65
EHR 400x200/9.0/3	231,70	291,02	303,99	337,95	359,47
EHR 400x200/12.0/3	274,95	352,50	359,91	365,46	370,72
EHR 400x200/15.0/3	324,38	402,85	415,20	418,29	441,78
EHR 500x250/3.0/1	194,63	248,42	260,78	263,87	281,13
EHR 500x250/3.0/3	199,26	253,05	265,41	268,49	285,76
EHR 500x250/6.0/3	210,33	264,11	276,46	279,55	300,84
EHR 500x250/9.0/3	241,83	298,06	310,42	313,51	335,03
EHR 500x250/12.0/3	288,95	362,31	374,67	377,76	401,01
EHR 500x250/15.0/3	329,79	408,26	420,61	423,70	447,46
EHR 500x250/18.0/3	383,82	458,73	471,09	474,18	497,58
EHR 500x250/21.0/3	417,06	491,98	504,34	507,42	530,83
EHR 500x250/24.0/3	461,73	541,75	554,11	557,19	581,11
EHR 500x250/27.0/3	497,05	577,06	589,42	592,51	616,41
EHR 500x250/30.0/3	580,18	660,19	672,55	675,64	699,56
EHR 500x250/33.0/3	596,25	700,97	713,33	716,42	742,81
EHR 500x250/36.0/3	641,04	747,63	761,21	763,07	789,64
EHR 500x300/3.0/1	201,43	248,42	265,78	271,87	291,13
EHR 500x300/6.0/3	210,33	264,11	276,46	279,55	300,84
EHR 500x300/9.0/3	241,83	298,06	310,42	313,51	335,04
EHR 500x300/12.0/3	288,95	362,31	374,67	377,76	401,01
EHR 500x300/15.0/3	329,79	408,26	420,61	423,70	447,46
EHR 500x300/18.0/3	383,82	458,73	471,09	474,18	497,58
EHR 500x300/21.0/3	417,06	491,98	504,34	507,42	530,83
EHR 500x300/24.0/3	461,73	541,75	554,11	557,19	581,11
EHR 500x300/27.0/3	497,05	577,06	589,42	592,51	616,41
EHR 500x300/30.0/3	580,18	660,19	672,55	675,64	699,56
EHR 500x300/33.0/3	595,63	700,35	712,71	715,80	742,19
EHR 500x300/36.0/3	644,13	750,71	764,30	766,16	792,73
EHR 600x300/3.0/3	203,90	257,69	270,35	273,13	290,40
EHR 600x300/6.0/3	210,71	262,92	274,92	277,92	298,59
EHR 600x300/9.0/3	268,83	325,06	337,42	340,51	362,03

Type	Price Eur EHR	Price Eur EHR..CE	Price Eur EHR..SE	Price Eur EHR..SI	Price Eur EHR..CE/FC EHR..SE/FC EHR..SI/FC
	Without integrated control	With integrated control (0-10)V	With integrated control (external setpoint) (0...+30)	With integrated control (internal setpoint) (0...+30)	Plug & play (with flow and pressure control) (-30...0) (0...+30)*
EHR 600x300/12.0/3	306,06	379,43	391,79	394,88	418,13
EHR 600x300/15.0/3	345,24	423,70	436,06	439,15	462,90
EHR 600x300/18.0/3	399,79	474,71	487,07	490,16	513,56
EHR 600x300/21.0/3	432,51	507,42	519,78	522,87	546,27
EHR 600x300/24.0/3	477,18	557,19	569,55	572,64	596,56
EHR 600x300/27.0/3	512,49	592,51	604,86	607,95	631,86
EHR 600x300/30.0/3	597,64	677,65	690,01	693,10	717,00
EHR 600x300/33.0/3	620,87	725,69	738,05	741,14	767,52
EHR 600x300/36.0/3	654,94	761,52	775,12	776,97	803,53
EHR 600x300/39.0/3	710,55	817,13	830,73	832,58	859,14
EHR 600x300/42.0/3	753,80	863,16	875,83	878,92	905,79
EHR 600x300/45.0/3	821,77	928,35	941,94	943,79	970,36
EHR 600x300/48.0/3	889,73	999,09	1011,76	1014,85	1041,72
EHR 600x300/54.0/3	960,78	1092,08	1105,67	1107,53	1136,56
EHR 600x350/6.0/3	230,15	285,76	299,36	302,45	324,04
EHR 600x350/9.0/3	285,13	341,35	353,71	366,80	388,34
EHR 600x350/12.0/3	312,24	385,61	397,97	401,06	424,31
EHR 600x350/15.0/3	351,42	429,88	442,24	445,33	469,08
EHR 600x350/18.0/3	405,97	480,89	493,25	496,34	519,74
EHR 600x350/21.0/3	438,69	513,60	525,96	529,05	552,45
EHR 600x350/24.0/3	483,36	563,37	575,73	578,82	602,74
EHR 600x350/27.0/3	518,67	598,69	611,04	614,13	638,04
EHR 600x350/30.0/3	601,81	681,82	694,18	697,27	721,18
EHR 600x350/33.0/3	630,23	734,96	747,32	750,40	776,79
EHR 600x350/36.0/3	661,12	767,70	781,30	783,15	809,71
EHR 600x350/39.0/3	722,91	829,49	843,09	844,93	871,50
EHR 600x350/42.0/3	769,25	878,61	891,28	894,36	921,24
EHR 600x350/45.0/3	846,48	953,06	966,66	968,51	995,07
EHR 600x350/48.0/3	895,90	1005,27	1017,94	1021,03	1047,90
EHR 600x350/54.0/3	966,96	1098,26	1111,85	1113,71	1142,74
EHR 700x400/9.0/3	302,20	358,43	370,78	373,87	395,41
EHR 700x400/12.0/3	349,31	422,68	435,04	438,13	461,38
EHR 700x400/15.0/3	388,49	466,95	479,31	482,40	506,16
EHR 700x400/18.0/3	443,04	517,96	530,32	533,41	556,81
EHR 700x400/21.0/3	475,76	550,68	563,03	566,12	589,52
EHR 700x400/24.0/3	520,43	600,45	612,80	615,89	639,81
EHR 700x400/27.0/3	555,74	635,76	648,12	651,21	675,11
EHR 700x400/30.0/3	638,88	717,34	731,25	734,34	758,24
EHR 700x400/33.0/3	645,68	750,40	762,76	765,85	792,23
EHR 700x400/36.0/3	670,39	776,97	790,57	792,42	818,98
EHR 700x400/39.0/3	732,18	838,76	852,35	854,20	880,77
EHR 700x400/42.0/3	781,61	890,97	903,63	906,72	933,60
EHR 700x400/45.0/3	855,74	962,33	975,93	977,78	1004,34
EHR 700x400/48.0/3	905,17	1014,54	1027,21	1030,30	1057,17
EHR 700x400/54.0/3	976,23	1107,53	1121,12	1122,98	1152,01
EHR 700x400/57.0/3	997,85	1129,16	1142,74	1144,60	1173,64
EHR 700x400/60.0/3	1047,28	1178,59	1192,17	1194,03	1223,07
EHR 700x400/66.0/3	1115,25	1246,55	1260,14	1262,00	1291,03
EHR 800x500/12.0/3	367,01	440,39	452,75	455,84	479,08
EHR 800x500/15.0/3	392,10	472,11	482,93	486,02	509,77
EHR 800x500/18.0/3	446,13	521,05	533,41	536,50	559,90
EHR 800x500/21.0/3	478,85	553,77	566,12	569,21	592,61

Type	Price Eur EHR	Price Eur EHR..CE	Price Eur EHR..SE	Price Eur EHR..SI	Price Eur EHR..CE/FC EHR..SE/FC EHR..SI/FC
	Without integrated control	With integrated control (0-10)V	With integrated control (external setpoint) (0...+30)	With integrated control (internal setpoint) (0...+30)	Plug & play (with flow and pressure control) (-30...0) (0...+30)*
EHR 800x500/24.0/3	523,52	603,53	615,89	618,98	642,90
EHR 800x500/27.0/3	558,83	638,85	651,21	654,29	678,20
EHR 800x500/30.0/3	641,97	721,98	734,34	737,43	761,33
EHR 800x500/33.0/3	658,03	762,76	775,12	778,21	804,59
EHR 800x500/36.0/3	682,75	789,33	802,92	804,77	831,34
EHR 800x500/39.0/3	744,54	851,11	864,71	866,56	893,12
EHR 800x500/42.0/3	797,05	906,41	919,08	922,17	949,04
EHR 800x500/45.0/3	868,10	974,69	988,29	990,13	1016,70
EHR 800x500/48.0/3	911,35	1020,72	1033,39	1036,48	1063,35
EHR 800x500/54.0/3	988,59	1119,89	1133,48	1135,33	1164,37
EHR 800x500/57.0/3	1010,21	1141,51	1155,10	1156,96	1185,99
EHR 800x500/60.0/3	1059,64	1190,94	1204,53	1206,39	1235,42
EHR 800x500/66.0/3	1127,61	1258,91	1272,50	1274,36	1303,39
EHR 1000x500/15.0/3	423,52	501,99	514,34	517,43	541,93
EHR 1000x500/18.0/3	477,55	552,47	564,82	567,91	591,31
EHR 1000x500/21.0/3	510,26	585,18	597,54	600,63	624,04
EHR 1000x500/24.0/3	554,94	634,95	647,31	650,40	674,31
EHR 1000x500/27.0/3	590,25	670,26	682,62	685,71	709,62
EHR 1000x500/30.0/3	673,38	753,39	765,75	768,84	792,76
EHR 1000x500/33.0/3	689,90	772,03	784,39	787,48	813,85
EHR 1000x500/36.0/3	721,28	807,86	821,46	823,31	849,87
EHR 1000x500/39.0/3	756,89	863,47	877,07	878,92	905,48
EHR 1000x500/42.0/3	809,41	918,77	931,44	934,53	961,40
EHR 1000x500/45.0/3	886,64	993,22	1006,82	1008,67	1035,24
EHR 1000x500/48.0/3	932,98	1042,34	1055,01	1058,10	1084,98
EHR 1000x500/54.0/3	1000,94	1132,25	1145,83	1147,69	1176,73
EHR 1000x500/57.0/3	1025,66	1156,96	1170,55	1172,41	1201,44
EHR 1000x500/60.0/3	1068,91	1200,21	1213,80	1215,66	1244,69
EHR 1000x500/66.0/3	1139,96	1271,27	1284,85	1286,71	1315,75
EHR 1000x500/75.0/3	1226,47	1376,30	1389,89	1393,29	1424,34
EHR 1000x500/84.0/3	1557,03	1706,86	1720,45	1723,64	1754,90

(Prices without VAT).



Type	Price Eur EHR..SE/MB	Price Eur EHR..SI/MB	Price Eur EHR..SE/FC/MB EHR..SI/FC/MB
	With integrated control (external setpoint) with MODBUS	With integrated control (internal setpoint) with MODBUS	Plug & play (with flow and pressure control) with MODBUS
EHR 400x200/1.0/1	251,78	254,87	279,58
EHR 400x200/2.0/1	257,96	261,05	285,76
EHR 400x200/3.0/1	276,49	279,58	304,30
EHR 400x200/3.0/3	291,94	295,03	319,74
EHR 400x200/6.0/3	297,17	300,26	321,55
EHR 400x200/9.0/3	334,88	331,82	358,37
EHR 400x200/12.0/3	390,80	396,37	401,62
EHR 400x200/15.0/3	446,10	449,19	472,67

Type	Price Eur EHR..SE/MB	Price Eur EHR..SI/MB	Price Eur EHR..SE/FC/MB EHR..SI/FC/MB
	With integrated control (external setpoint) with MODBUS	With integrated control (internal setpoint) with MODBUS	Plug & play (with flow and pressure control) with MODBUS
EHR 500x250/3.0/1	279,31	282,40	299,67
EHR 500x250/3.0/3	296,30	299,39	316,65
EHR 500x250/6.0/3	307,36	310,45	331,73
EHR 500x250/9.0/3	341,31	344,40	365,93
EHR 500x250/12.0/3	405,57	408,66	431,91
EHR 500x250/15.0/3	451,51	454,60	478,35
EHR 500x250/18.0/3	501,99	505,08	528,48
EHR 500x250/21.0/3	535,23	538,32	561,72
EHR 500x250/24.0/3	585,00	588,09	612,00
EHR 500x250/27.0/3	620,31	623,40	647,31
EHR 500x250/30.0/3	703,44	706,53	730,45
EHR 500x250/33.0/3	744,23	474,32	773,70
EHR 500x250/36.0/3	792,11	793,97	820,53
EHR 500x300/3.0/1	279,31	282,40	299,67
EHR 500x300/6.0/3	307,36	310,45	331,73
EHR 500x300/9.0/3	341,31	344,40	365,93
EHR 500x300/12.0/3	405,57	408,66	431,91
EHR 500x300/15.0/3	451,51	454,60	478,35
EHR 500x300/18.0/3	501,99	505,08	528,48
EHR 500x300/21.0/3	535,23	538,32	561,72
EHR 500x300/24.0/3	585,00	588,09	612,00
EHR 500x300/27.0/3	620,31	623,40	647,31
EHR 500x300/30.0/3	703,44	706,53	730,45
EHR 500x300/33.0/3	743,61	746,70	773,08
EHR 500x300/36.0/3	795,20	797,04	823,62
EHR 600x300/3.0/3	300,94	304,02	321,29
EHR 600x300/6.0/3	314,06	317,15	338,44
EHR 600x300/9.0/3	368,31	371,40	392,94
EHR 600x300/12.0/3	422,68	425,77	449,02
EHR 600x300/15.0/3	466,95	470,04	493,80
EHR 600x300/18.0/3	517,96	521,05	544,45
EHR 600x300/21.0/3	550,68	553,77	577,17
EHR 600x300/24.0/3	600,45	603,53	627,45
EHR 600x300/27.0/3	635,76	638,85	662,75
EHR 600x300/30.0/3	720,90	723,99	744,81
EHR 600x300/33.0/3	768,94	772,03	798,40
EHR 600x300/36.0/3	806,01	807,86	834,43
EHR 600x300/39.0/3	861,62	863,47	890,04
EHR 600x300/42.0/3	906,72	909,81	936,69
EHR 600x300/45.0/3	972,84	974,69	1001,25
EHR 600x300/48.0/3	1042,65	1045,74	1072,62
EHR 600x300/54.0/3	1136,56	1138,42	1167,46
EHR 600x350/6.0/3	330,25	333,34	354,94
EHR 600x350/9.0/3	364,60	367,69	389,23
EHR 600x350/12.0/3	428,86	431,95	455,20
EHR 600x350/15.0/3	473,13	476,22	499,98
EHR 600x350/18.0/3	524,14	527,23	550,63
EHR 600x350/21.0/3	556,85	559,94	583,34
EHR 600x350/24.0/3	606,62	609,71	633,62
EHR 600x350/27.0/3	641,94	645,03	668,93
EHR 600x350/30.0/3	725,07	728,16	752,06

Type	Price Eur EHR..SE/MB	Price Eur EHR..SI/MB	Price Eur EHR..SE/FC/MB EHR..SI/FC/MB
	With integrated control (external setpoint) with MODBUS	With integrated control (internal setpoint) with MODBUS	Plug & play (with flow and pressure control) with MODBUS
EHR 600x350/33.0/3	778,21	781,30	807,68
EHR 600x350/36.0/3	812,19	814,04	840,61
EHR 600x350/39.0/3	873,98	875,83	902,39
EHR 600x350/42.0/3	922,17	925,26	952,13
EHR 600x350/45.0/3	997,54	999,40	1025,97
EHR 600x350/48.0/3	1048,83	1051,92	1078,80
EHR 600x350/54.0/3	1142,74	1144,60	1173,64
EHR 700x400/9.0/3	401,68	404,77	426,30
EHR 700x400/12.0/3	465,93	469,02	492,27
EHR 700x400/15.0/3	510,20	513,29	537,05
EHR 700x400/18.0/3	561,21	564,29	587,70
EHR 700x400/21.0/3	593,93	597,02	620,42
EHR 700x400/24.0/3	643,70	646,79	670,70
EHR 700x400/27.0/3	679,01	682,10	706,00
EHR 700x400/30.0/3	762,14	765,23	789,15
EHR 700x400/33.0/3	793,66	796,74	823,13
EHR 700x400/36.0/3	821,46	823,31	849,87
EHR 700x400/39.0/3	883,25	885,10	911,66
EHR 700x400/42.0/3	934,53	937,62	964,49
EHR 700x400/45.0/3	1006,81	1008,67	1035,24
EHR 700x400/48.0/3	1058,10	1061,19	1088,06
EHR 700x400/54.0/3	1152,01	1153,87	1182,90
EHR 700x400/57.0/3	1173,64	1175,50	1204,53
EHR 700x400/60.0/3	1223,07	1224,93	1217,44
EHR 700x400/66.0/3	1253,43	1255,23	1321,93
EHR 800x500/12.0/3	483,64	486,73	509,97
EHR 800x500/15.0/3	513,82	516,91	540,67
EHR 800x500/18.0/3	564,30	567,39	590,79
EHR 800x500/21.0/3	597,02	600,11	623,51
EHR 800x500/24.0/3	646,79	649,88	673,79
EHR 800x500/27.0/3	682,10	685,19	709,09
EHR 800x500/30.0/3	765,23	768,32	792,24
EHR 800x500/33.0/3	806,01	809,10	835,48
EHR 800x500/36.0/3	833,82	835,67	862,23
EHR 800x500/39.0/3	895,60	897,45	924,02
EHR 800x500/42.0/3	949,97	953,06	979,94
EHR 800x500/45.0/3	1019,18	1021,03	1047,59
EHR 800x500/48.0/3	1064,29	1067,37	1094,24
EHR 800x500/54.0/3	1164,37	1166,23	1195,26
EHR 800x500/57.0/3	1186,00	1187,85	1216,89
EHR 800x500/60.0/3	1235,42	1237,28	1266,32
EHR 800x500/66.0/3	1303,39	1305,25	133,28
EHR 1000x500/15.0/3	545,24	548,33	572,08
EHR 1000x500/18.0/3	595,72	598,81	622,21
EHR 1000x500/21.0/3	628,43	631,52	654,93
EHR 1000x500/24.0/3	678,20	681,29	705,20
EHR 1000x500/27.0/3	713,51	716,60	740,52
EHR 1000x500/30.0/3	796,64	799,73	823,65
EHR 1000x500/33.0/3	815,28	818,37	844,74
EHR 1000x500/36.0/3	852,35	854,20	880,77
EHR 1000x500/39.0/3	907,96	909,81	936,38
EHR 1000x500/42.0/3	962,33	965,42	992,29
EHR 1000x500/45.0/3	1037,72	1039,56	1066,13

Type	Price Eur EHR..SE/MB	Price Eur EHR..SI/MB	Price Eur EHR..SE/FC/MB EHR..SI/FC/MB
	With integrated control (external setpoint) with MODBUS	With integrated control (internal setpoint) with MODBUS	Plug & play (with flow and pressure control) with MODBUS
EHR 1000x500/48.0/3	1085,91	1088,99	1115,87
EHR 1000x500/54.0/3	1176,73	1178,59	1207,62
EHR 1000x500/57.0/3	1201,44	1203,30	1232,33
EHR 1000x500/60.0/3	1244,69	1246,55	1275,59
EHR 1000x500/66.0/3	1315,75	1317,61	1346,64
EHR 1000x500/75.0/3	1420,79	1424,18	1455,24
EHR 1000x500/84.0/3	1751,35	1754,75	1785,79

(Prices without VAT).

ACCESSORIES

Type	Price Eur
External controller REC16, 1~230 VAC or 2~400 VAC, 16A	102,69
External controller REC16MB, 1~230 VAC or 2~400 VAC, 16A	113,93
External controller REC25B, 3~400 VAC/max. 16,44 kW, 25A	231,46
External controller REC25, 3~400 VAC/max. 16,44 kW, 25A	254,18
External controller REC50B, 3~400 VAC/max. 32,89 kW, 50A	332,96
External controller REC50, 3~400 VAC/max. 32,89 kW, 50A	373,46
Surface temperature sensor TSS/NTC10K/2 m.	29,86
Duct temperature sensor TSD/NTC10K/2 m.	23,56
External temperature setpoint RES 001	48,90
External temperature setpoint with room sensor RES 002/NTC	58,28

(Prices without VAT).

***NOTE:** heaters/preheaters with EHR..SE/FC modification have a scale (0...+30); heaters/preheaters with 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 EHR..SE, EHR..SI – duct temperature 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 EHR..SE, EHR..SE/FC modification.



Duct temperature sensor
TSD/NTC10K/2m.



External temperature
setpoint RES 001



External temperature
setpoint with room sensor RES 002/NTC

Heating elements

DESCRIPTION

Tubular heating elements are used in ventilation systems. The possibility to modify the shape of the heating elements is suitable for many applications.



Type	Price Eur
Heating element 6,4mm 500W 230V „U“ L-370mm +/-10	11,52
Heating element 6,4mm 1000W 230V „U“ L-680mm +/-10	17,58
Heating element 6,4mm 1500W 230V „U“ L-990mm +/-15	22,49

(Prices without VAT).

NOTE: heating elements are with double flange and 6,3 tags.

Air damper actuators without spring return

DESCRIPTION

The actuators contain the right products to suit different torques, in all the usual damper sizes. Quality and highly-developed technology are of course a part of the package. Whether for 24, 120 or 240 VAC/DC, the optimized design of the actuators guarantees at least 6000 cycles for springs and motors. Less mechanical components mean that the integrated BLDC technology (brushless direct current) reduces wear.

Type	315-024-04/8E	227C-024-05	227S-024-05	227S-230-05	227-024-10	227-230-10	227C-024-10	227-024-15
Torque motor	4 Nm	5 Nm	5 Nm	5 Nm	10 Nm	10 Nm	10 Nm	15 Nm
3 point control			.	.	.	.	.	.
On / Off			.	.	.	.	.	.
Power supply 24 VAC	.	.	.	.	.	.	.	.
Power supply 230 VAC				.		.		.
Control (0) 2...10 VDC	.	.					.	
With spring return								
Price Eur	170,02	187,02	142,38	142,38	170,02	175,33	245,47	179,57



Type	227-230-15	227C-024-15	363-230-20	363-230-20-S2	363-024-20	363-024-20-S2	363C-024-20
Torque motor	15 Nm	15 Nm	20 Nm	20 Nm	20 Nm	20 Nm	20 Nm
3 point control	.		.	.	.	.	.
On / Off	.		.	.	.	.	.
Power supply 24 VAC		.			.	.	.
Power supply 230 VAC	.		.	.			.
Control (0) 2...10 VDC			.				.
With spring return							
Price Eur	185,96	268,82	197,65	248,64	194,44	242,26	277,35

Air damper actuators with spring return

Type	341-230D-03	341-024D-03	341-230-05	341-230-05-S2	341-024-05-S2	341-024-05	341C-024-05	361-230-10	361-230-10-S2	361-024-10
Torque motor	3 Nm	3 Nm	5 Nm	5 Nm	5 Nm	5 Nm	5 Nm	10 Nm	10 Nm	10 Nm
3 point control										
On / Off	.	.	.	.	.	.	.	.	.	.
Power supply 24 VAC		.								.
Power supply 230 VAC	.		.	.	.			.	.	.
Control (0) 2...10 VDC							.			
With spring return										
Price Eur	194,44	180,64	239,09	270,96	253,95	219,97	297,53	326,23	370,84	274,14

Type	361C-024-10	361-024-10-S2	361-230-20	361-230-20-S2	361-024-20	361-024-20-S2	361C-024-20
Torque motor	10 Nm	10 Nm	20 Nm	20 Nm	20 Nm	20 Nm	20 Nm
3 point control							
On / Off		.	.	.	.	.	.
Power supply 24 VAC	.	.			.	.	.
Power supply 230 VAC			.	.			.
Control (0) 2...10 VDC	.						.
With spring return							
Price Eur	329,41	311,33	388,92	425,04	337,89	374,05	391,25

(Prices without VAT).

Room thermostats

DESCRIPTION

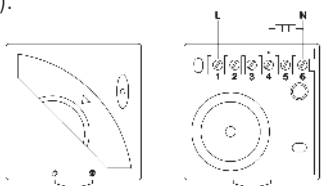
Electromechanical thermostats are indented to be used for control of heating, cooling, air conditioning systems. Thermostats can control fans, coolers, heaters or other types of equipment according to temperature setpoint.

TECHNICAL DATA:

- ▶ Temperature setpoint: 10...30°C.
- ▶ Measurement accuracy: $\pm 1^\circ\text{C}$.
- ▶ Power supply: 230V.
- ▶ Frequency: 50/60 Hz.
- ▶ Protection class: IP20.
- ▶ Dimensions: 80x80x44 mm.
- ▶ Thermostat corresponds with standards-EN60730-1, EN60730-2-9 and marked CE.

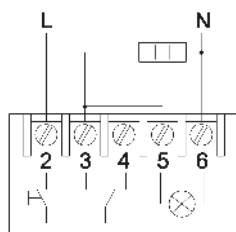
Type	Supply voltage	Temperature setpoint	Control load	Max. ambient temperature	Price Eur
TEM 16	230VAC	+10...+30°C	16(2.5) A, 230V	50°C	33,29

(Prices without VAT).



Type	Supply voltage	Temperature setpoint	Control load	Max. ambient temperature	Price Eur
TMM6	230VAC	+10...+30°C	6(2) A, 230V	50°C	31,49

(Prices without VAT).



Electromechanical room thermostat for fancoil

DESCRIPTION

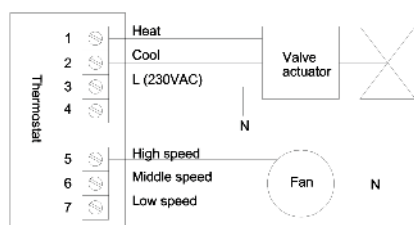
Electromechanical thermostats are indented to be used for control of heating, cooling, air conditioning systems. Thermostats can control heating, cooling valves actuators and 3-speed fans according to temperature set point.

TECHNICAL DATA:

- ▶ Temperature setpoint: 10...30°C.
- ▶ Measurement accuracy: $\pm 1^\circ\text{C}$.
- ▶ Power supply: 230V.
- ▶ Frequency: 50/60 Hz.
- ▶ Protection class: IP20.
- ▶ Dimensions: 128x85x39 mm.
- ▶ Thermostat corresponds with standards -EN60730-1, EN60730-2-9 and marked CE.

Type	Supply voltage	Temperature setpoint	Control load	Max. ambient temperature	Price Eur
TMM6-3V	230VAC	+10...+30°C	6(4) A, 230V	50°C	36,71

(Prices without VAT).



TEM 16TD touch screen weekly heating thermostat

DESCRIPTION

This new design thermostat satisfies all market requirements. It has a large LCD display, easy operation, complete functions. It can control motorized ball valve, motorized valve, thermal valve, solenoid valve, heater, electric heating, carbon crystal. It is used for floor heating. Flush mounting.

TECHNICAL DATA:

- ▶ Power supply: AC200~240V, 50/60.
- ▶ Load current: (3) 16A electric heating.
- ▶ Accuracy: $\pm 0.5^{\circ}\text{C}$.
- ▶ Limit temperature range: 5+99 $^{\circ}\text{C}$.
- ▶ Consumption: <0.3W.
- ▶ Temperature sensor: NTC.
- ▶ Size: 86x86x17 mm.



Type	Supply voltage	Temperature setpoint	Control load	Max ambient temperature	Price Eur
TEM 16TD	230VAC	+5...+60 $^{\circ}\text{C}$	3 A, 240V	50 $^{\circ}\text{C}$	91,78

(Prices without VAT).

TEM 3TD series touch screen thermostat with possibility to connect to BMS system

DESCRIPTION

TEM 3TD series of touch screen thermostat is designed for fan coil unit or central windpipe system. Air condition helps to adjust the indoor temperature by comparing the room temperature with the set temperature. Surface mounting.

TECHNICAL DATA:

- ▶ Power supply: AC100~240V, 50/60.
- ▶ Rated current: 3A.
- ▶ Ambient: 0-50 $^{\circ}\text{C}$.
- ▶ Size: 130x90x27 mm.
- ▶ Installation: surface-mounting.
- ▶ Sensor: NTC.
- ▶ Accuracy: $\pm 0.5^{\circ}\text{C}$.
- ▶ Protection class: IP30.
- ▶ Approvals: EN-60730-1.
- ▶ Storage temperature: 10 $^{\circ}\text{C}$ ~60 $^{\circ}\text{C}$.
- ▶ With RS485.



Type	Supply voltage	Temperature setpoint	Control load	Max. ambient temperature	Price Eur
TEM 3TD	230VAC	+5...+35 $^{\circ}\text{C}$	3 A, 240V	50 $^{\circ}\text{C}$	81,89

(Prices without VAT).

Frost protection thermostat FT 6.0

DESCRIPTION

Frost protection thermostat is developed to protect ventilation components (water heaters) from freezing under cold weather and insufficient heating. Frost protection thermostat works under pressure of steam, reacts fast and has maximum sensitivity.

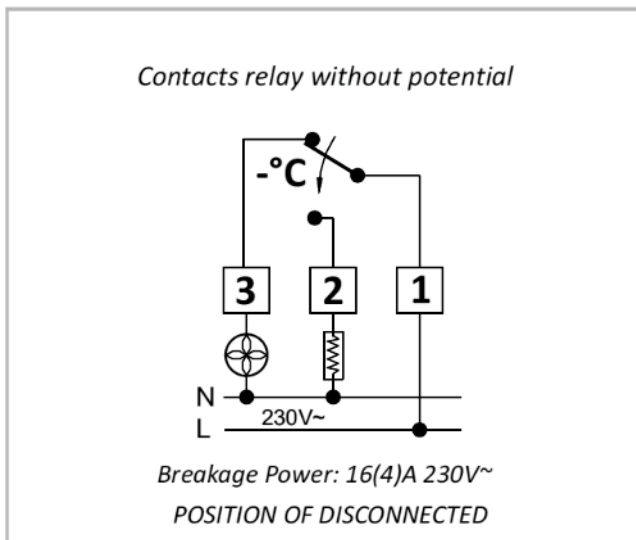
TECHNICAL DATA:

- ▶ Regulation scale: -15°C to +15°C.
- ▶ Differential: 2°C fix.
- ▶ Capillary reaction length 300..600 mm (depending on capillary length).
- ▶ Maximum temperature for the body: 55°C.
- ▶ Minimum capillary bending radius: 5 mm.
- ▶ Connections fast-on: 6,3 x 0,8 DIN or screw.
- ▶ Capillary tinned cooper: 1.8 m./4 m./6 m.
- ▶ Switched contacts: 16(4)A 250 V~.
- ▶ Approvals: EN-60730-1.
- ▶ Mounting accessories 4 sets.

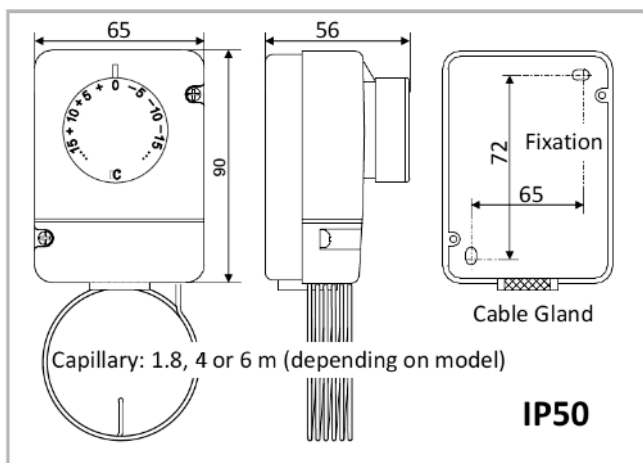
Type	Work range	Reset type	Max. ambient temperature	Mounting type	Price Eur
FT 6.0	-15...+15°C	manual	55°C	Capillary	65,76

(Prices without VAT).

ELECTRICAL CONNECTION



DIMENSIONS



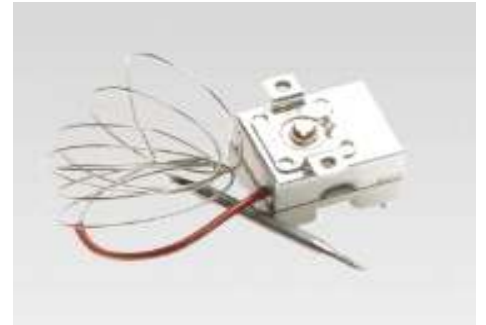
Capillary and surface thermostats

Type	Work range	Reset type	Max. Ambient temperature	Mounting type	Price Eur
TR-K, 70°C	70°C calibrated	automatic	150°C	Capillary	15,66
TR-K, 100°C	100°C calibrated	manual	150°C	Capillary	23,04
T-24-60°C	60°C calibrated	automatic	100°C	Surface	5,22
T-24-70°C	70°C calibrated	automatic	100°C	Surface	5,22
T-24-32-100°C	100°C calibrated	manual	150°C	Surface	6,30

(Prices without VAT).

TECHNICAL DATA- TR-K, 70°C TA:

- ▶ Max. ambient temperature T150.
- ▶ Rated current and voltage 16(3)A/250V NC- 0,5A/250V NO.
- ▶ Minimal current 200 mA.



TECHNICAL DATA- TR-K, 100°C:

- ▶ Max. ambient temperature T150.
- ▶ Rated current and voltage 16(3)A/250V NC- 0,5A/250V NO.
- ▶ Minimal current 200 mA.
- ▶ With reset cap.



TECHNICAL DATA- T-24-60°C, T24-70°C:

- ▶ The number of automatic cycles, at rated current 10 A and power coeff. 0,95, not less than 100000.

TECHNICAL DATA- T-24-32-100°:

- ▶ The number of automatic cycles, at rated current 10 A and power coeff. 0,95, not less than –100000.
- ▶ Rated current power coeff. 0,95, not more 16A. Minimal current 200mA.





AUTOTRANSFORMERS

Description	Code	I in (A)	Weight (kg)	Safety class	Price Eur
Autotransformer 5 outputs, 115V..230V (1,2A..3A), 80V..230V (4A..11A), 50/60Hz	124960	1,2	1,1	IP00	33,23
	124959	1,5	1,3	IP00	36,29
	124964	2,2	1,9	IP00	45,16
	124957	3,0	2,5	IP00	58,98
	124218	4,0	3,0	IP00	71,77
	124185	5,0	3,4	IP00	76,85
	124187	7,0	5,5	IP00	119,99
	124223	11,0	7,4	IP00	141,04

Description	Code	I in (A)	Weight (kg)	Safety class	Price Eur
Autotransformer 5 outputs, 130V..400V, 50/60Hz	124206	1,0	2,2	IP00	53,23
	124183	2,0	2,8	IP00	76,49
	124162	3,0	4,0	IP00	87,49
	124175	4,0	6,3	IP00	125,44
	124161	5,0	7,3	IP00	137,68
	124174	7,0	9,1	IP00	184,48
	124200	11,0	14,3	IP00	247,81
	124184	14,0	15,6	IP00	261,26

(Prices without VAT).

TRANSFORMERS

Description	Code	Primary (V)	Secondary (V)	Power (VA)	Price Eur
230v//18v 30VA encapsulated with tabs	124936	230	1x18	18,0	30,23
230v//18v 15VA/24v 15VA, 30VA encapsul. with tabs	124937	230	1x18//1x18	30,0	31,96
230v//18v 25VA/24v 25VA, encapsulated with tabs	124935	230	1x18//1x24	50,0	39,05

(Prices without VAT).

PCB TRANSFORMERS

Description	Code	Primary (V)	Secondary (V)	Power (VA)	Price Eur
Transformer 1x12V/6,0W	124915	230	1x12	6,0	9,84
Transformer 1x12V/20W	124924	230	1x12	20,0	17,64

Possible to supply various versions according to client requirements.

(Prices without VAT).



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