



## **REC TemoVex RT-700S**

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***Operation and service manual***

**Easy operation!**

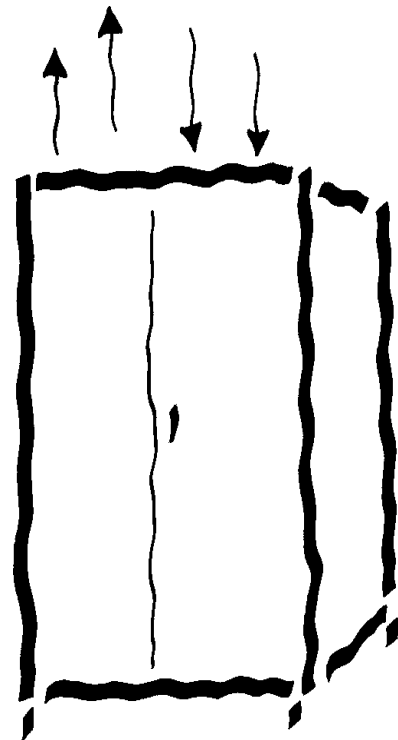
**Environmentally friendly!**

**Low power consumption!**

**Low noiselevel !**

**Effective**

**heat recovery!**



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## ***Attachments:***

Electrical wiring diagram

Belimo, throttle motor

CE-confirmation

## Product information

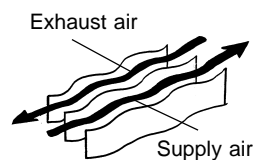
### Description

The REC TemoVex RT-700S model is designed for effective ventilation of private houses, offices, nurseries and other premises. The unit contains a counterflow heat exchanger with heat recovery efficiency of >80 %. The aggregate consists of body, heat exchanger in aluminium, two fans, by-pass throttle valves and electrical control equipment. REC TemoVex counterflow heat exchanger has completely separated airflows, which prevents leakage between incoming outdoor air and exhaust air leaving the house.

The aggregate is designed for 750 m<sup>3</sup>/h maximum airflow at normal available pressure drop.

### Heat exchanger

The heat exchanger is built up by thin corrugated aluminium sheets which form ducts where exhaust air is completely separated from the supply air. The heat is transferred through the sheets.



### Cover

Hot dipped galvanised metal with insulation in between. White coated front and gables. The front door makes service easy. The cupboard is equipped with adjustable feet.

### Fans

The two fans consists of backward curved fan wheel blades. This gives low energy consumption (high fan efficiency) combined with lower noise levels. The fans are of plug in type. The air flows can be adjusted in 5 steps, individual for each fan. If the fans are overheated, the fans overheating protection is triggered. The power to the fans is switched off and the fans stop. Restart will be done automatically after cooling of.

### Filter

The unit is equipped with outdoor air filter and exhaust air filter. The outdoor air filter, filters the incoming air to the house. The filter has filter class EU6.

The exhaust air filter protects the unit fans and heat exchanger from fouling. The filter has filter class EU3.

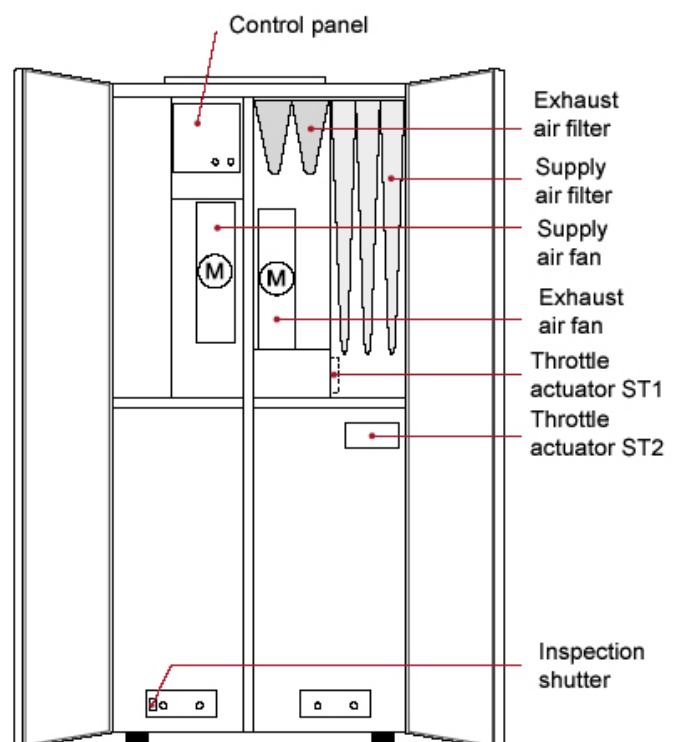
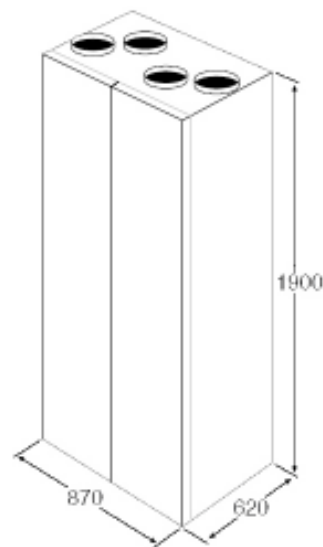
### Electric equipment

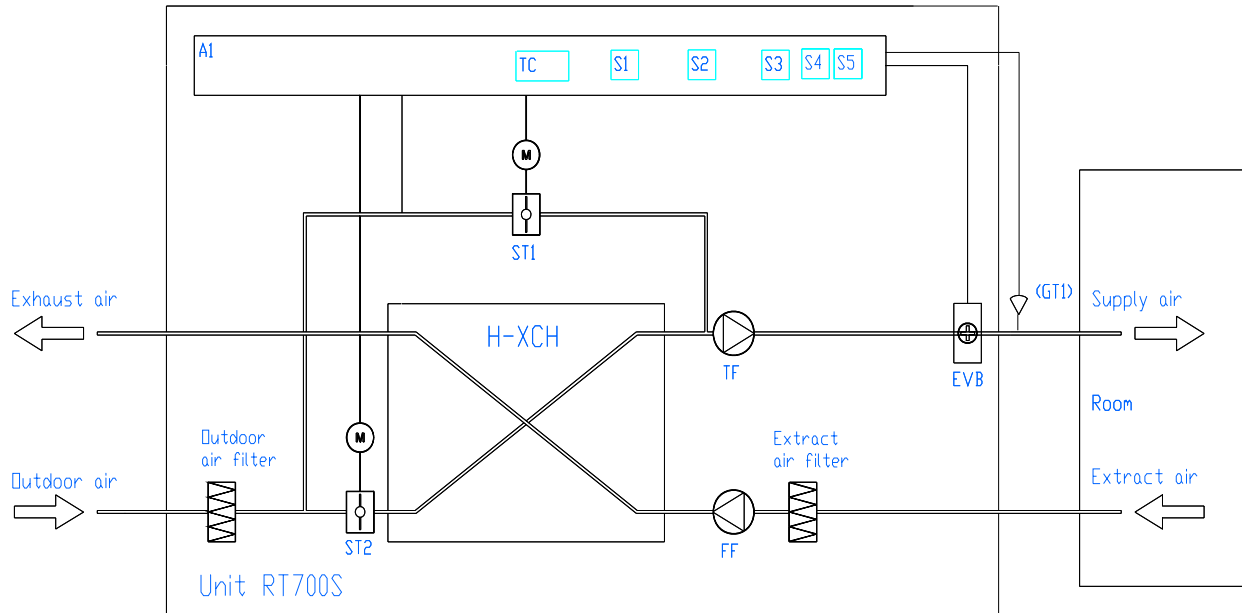
The electric equipment consists of:

Connection cable with grounded plug.

Two fan motors with built in overheating protection and belonging capacitors.

Electric panel with two five step switches for airflow, switch for operation/stop, and electronic thermostat to control the automatic by-pass function and the after heating.



**Function diagram**

<i>H-XCH</i>	<i>Heat exchanger (counter flow)</i>	<i>S5</i>	<i>Power on/off</i>
<i>TF</i>	<i>Supply air fan</i>	<i>S1</i>	<i>Speed switch supply air fan</i>
<i>FF</i>	<i>Extract air fan</i>	<i>S2</i>	<i>Speed switch extract air fan</i>
<i>TC</i>	<i>Temperature controller</i>	<i>S4</i>	<i>Heater Auto/off</i>
<i>GT1</i>	<i>Temperature probe</i>	<i>ST1, ST2</i>	<i>By-Pass damper motors</i>
<i>S3</i>	<i>Max flow switch</i>	<i>EVB</i>	<i>After heater</i>

**Other technical data**

Electric-heater 1,8 kW with overheating protection and automatic by-pass function from electronic thermostat

Electricity connection 1x230 V/10 A

Dimensions (HBD): 1900, 870, 620 mm

Fans: Centrifugal, back curved blades, with overheating protection

Capacity: 750 m<sup>3</sup>/h

Supply air filter : EU 6 (bag)

Extract air filter: EU 3 (bag)

Fire class: A 15

Air duct connections: Ø 200 mm

Weight: 180 kg

Colour: White

## Operation

### Fans

The unit is started with the start button (S1). The electric panel contains a transformer with connections for five connected voltages. The two five-steps switches (S2,S3) make it possible operating with 5 different air flows (voltages) for each fan.

The fan motors has built-in overheating protections, which are activated at a too high temperature in the motor winding.

An overheated motor is reseted automatically as the motor is cooled off. If this is repeated often the fans should be checked by an authorized service technician.

If both the fans stops, the power to the ventilation aggregate must be checked as well as the automatic fuse (F1) behind the electric panel.

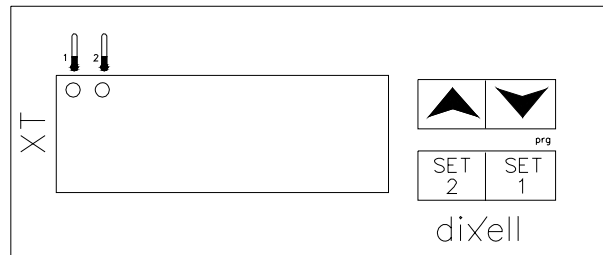
### After-heater

If the temperature in the after-heater is to high (around 90°C), the overheating protection will trigger.

With the switch for operation/stop you can switch off the power to the ventilation aggregate. After 3 minutes , the overheating protection is automatically reseted. The overheating can be caused by a clogged up supply air filter, a fault in the electronic thermostat etc.

### Manual and automatic by-pass

A high indoor temperature can be lowered if by-passing the heat recovery unit, letting the colder out door air into the room. This is easily done by activating the by-pass function. The two by-pass dampers are automatically controlled by the electronic thermostat on the control panel.



### Min. supply air temperature

The actual measured temperature is normally shown in the display.

Press and keep SET-1 pressed to select minimum supply air temperature setpoint. The selected setpoint is showned (flashing LED). The setpoint can be adjusted up and down with the arrow buttons. Confirm selected setpoint by pressing SET-1 shortly or wait 10s.

The selected setpoint can be checked easily by shortly press SET-1

Active afterheating is indicated by the LED 1 (thermometer symbol above).

### Max. supply air temperature:

Press and keep SET-2 pressed to select maximum supply air temperature setpoint. The selected setpoint is showned (flashing LED). The setpoint can be adjusted up and down with the arrow buttons. Confirm selected setpoint by pressing SET-2 shortly or wait 10s.

The selected setpoint can be checked easily by shortly press SET-2

Active by-pass is indicated by the LED 2 (thermometer symbol above).

### Note !

*It's important that the ventilation aggregates temperature adjustment is adjusted to the premises heating system.*

*From a general point of view the maximum supply air from the aggregate shall be set higher than the temperature of the house (i.e. the temperature setpoint adjustment of the heating system of the house). This to avoid the systems to interfere with each other.*

### Example:

Minimum supply of air temperature	18°C
Maximum supply air temperature	22°C
Temperature of the heating system of the house	20°C

## Maintenance

### Changing of filter

The exhaust air filter (bag), shall be changed 2-3 times a year.

**Note!** If the filter is not changed, over-pressure is created in the house. In the long run this can give moisture damages to the house.

The outdoor air filter has to be changed at least twice a year.

The filters are changed by pulling them out of their holder and replace with new.

Both filters can be ordered from REC

Temovex. Order numbers are article nr. 4871 (extract) and 4872 (supply).

### Cleaning the fans

Switch off the power. Loosen the screw on the electrical connector to each fan and disconnect the fans. The fans can now be pulled out for cleaning. Clean with a soft brush. Re-mount in reversed order.

### Condensation pipe

The water-pipe and hose for condensate shall be controlled every year to avoid the outflow from becoming clogged up.

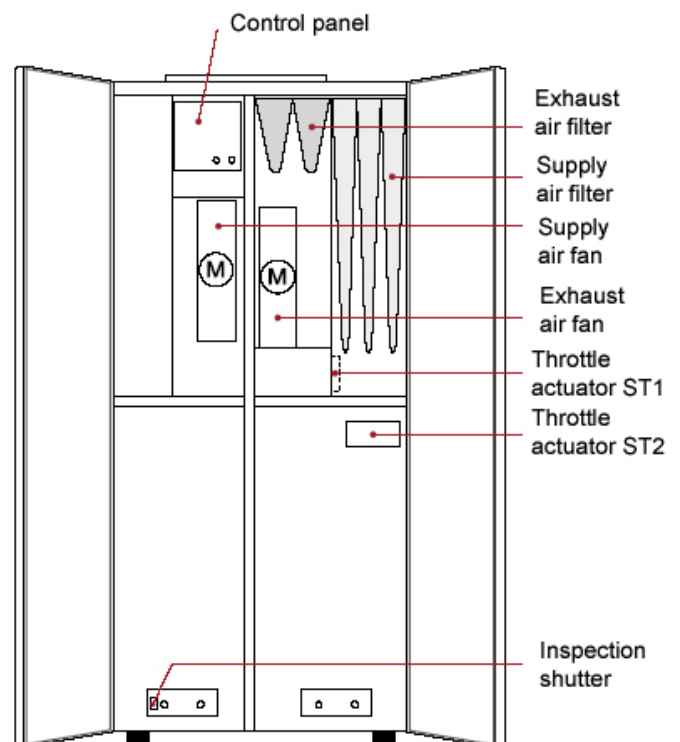
### Cleaning the heat exchanger

Cleaning of the heatexchanger package is normally not needed if the unit maintenance (change of filters etc.) has been carried out regularly.

Cleaning the heat exchanger:

Switch off power to the unit. Open the door, unscrew the covering sheet and the cleaning shutter located at the very bottom of the closet. Take out the plastic plug. Dismount the exhaust and the supply air fans by loosening the electrical connections and pull the fans out.

Spray the heatexchanger parts with a mild de-tergent, rinse carefully with water. The water will drain out through the condensate drainage hose. Never use high pH cleaners containing for example ammonia or caustic in combination with aluminium (heat exchanger package).



## Receiving and installation

### Receiving control

Control that the number of parcels agrees with the ordered and that the goods isn't damaged by the transport. If any transport damages, please contact the transport company immediately.

Store the goods indoors.

### Installation

The unit is intended for installation in a heated place, such as laundry, corridor, workroom, storage room or similar. There must be possibility for connection to a ceespool, sink etc. connected to the sewer system. Air ducts shall be connected on top of the aggregate, advisably with flexible hose silencers.

Normally, supply and exhaust air ducts which is installed in a warm place does not have to be insulated. Extract and outdoor air ducts shall be insulated to avoid condensation on the ducting. Supply and exhaust air ducts located in cold areas shall be insulated with minimum 150 mm insulation.

The front of the aggregate should be easily accessible. The aggregate has in the bottom a 3/4" condensation drain for connection to the sewer system or a collecting vessel (optional). The condense drain is needed as condensate can be produced if the exhaust air contains a lot of moisture. If the condensate pipe is located in a cold place, the pipe must be well insulated.

The aggregate is adjusted in height and sideways with adjustable rubber feet.

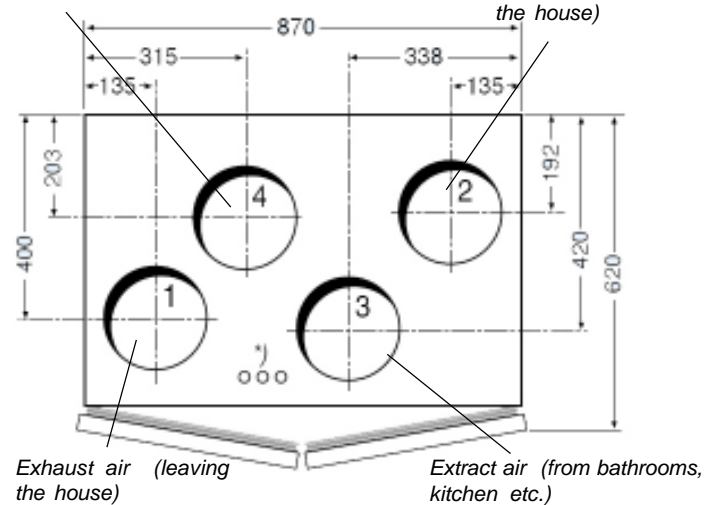
The unit should be connected to a earth grounded wall socket (230V/10A).

The electronic thermostats temperature probe, mark GT1, is normally placed in the extract air duct to control the room temperature.

To instead control the minimum supply inlet temperature the probe should be placed in the supply air duct some distance from the outlet.

Supply air (to bedrooms, living-room etc.)

Out door air (entering the house)



### Start-up and adjustments

When the ventilation unit is installed, the aggregate should be inspected and adjusted preferable by a qualified installation technician.

- Control that the fans are effected by the speed switches.
- Control that air ducts and details are correctly installed, and the condensate hose is connected draining to the sewer system. In some cases no condensate is formed (i.e. low humidity, favourable temperature profiles ) why the connection can be left out.
- Control that supply air blows out from all room air inlets, and all the exhaust air outlets removes air.
- Adjust the ventilation system according to the given values stated on the ventilation drawing.

The air flows can be adjusted in 5-steps, individually for each fan.

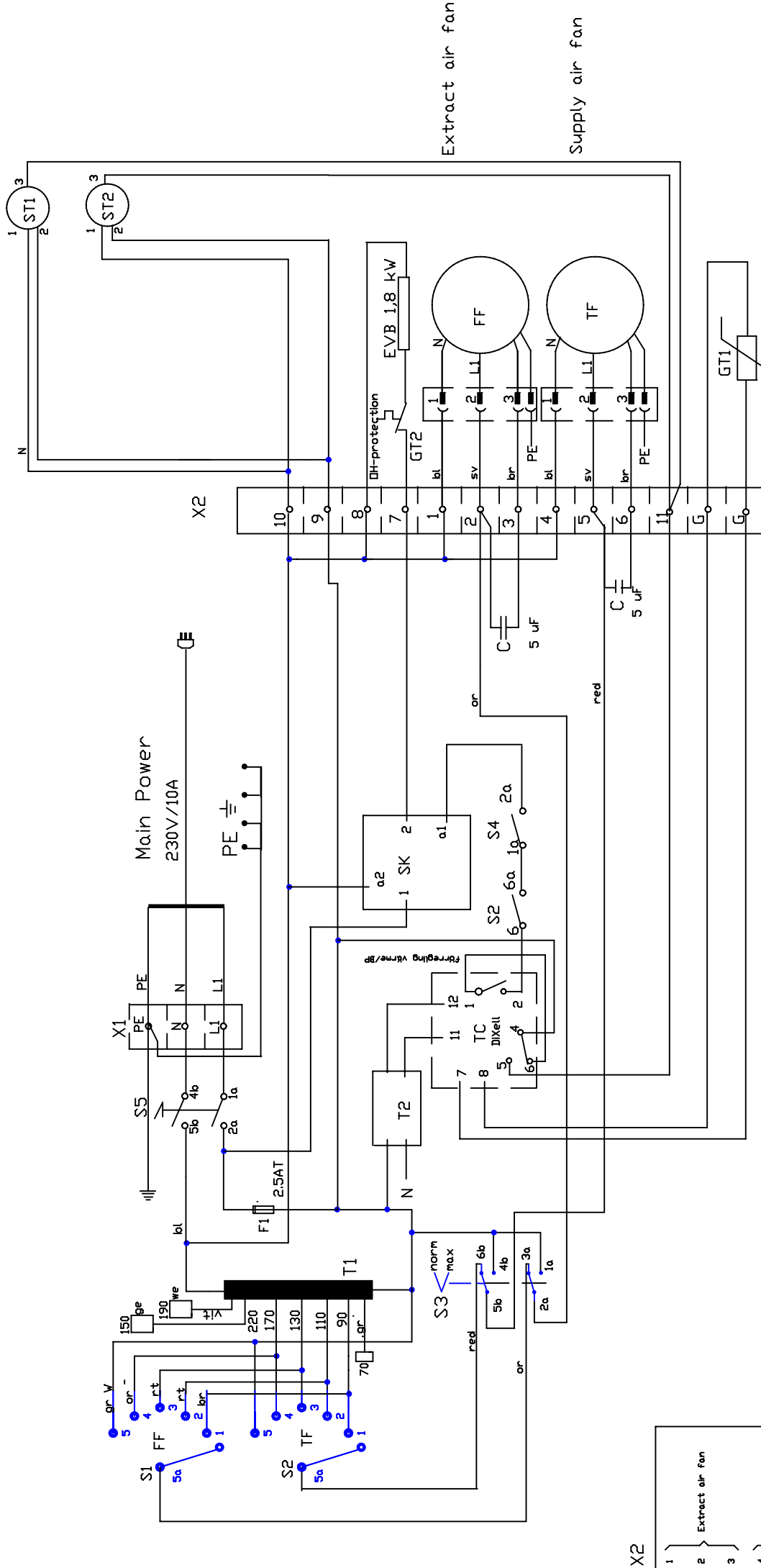
The exhaust air flow shall be 10% higher than the supply air flow to create a moderate under-pressure in the premises

- Adjust the wanted temperature setpoint for the after heater and by-pass function (see operation).

### Component list RT-700S Model with afterheater and by-pass function (electronic thermostat)

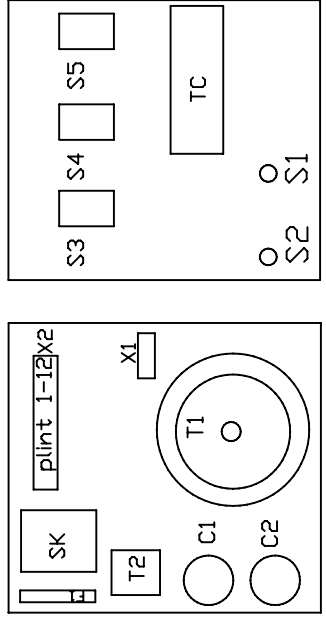
Position	No.	Description	Make	Type
FF	1	Extract air fan	Ziehl	RZE 250-AS47-10, 155W 0,7 A, 230V
TF	1	Supply air fan	Ziehl	RZE 250-AS47-10, 155W 0,7 A, 230V
EVB	2	Afterheater	Veab	900W, 230V
ST1,ST2	2	By-pass actuator motor	Belimo	LM230F
GT1	1	Temperature probe	DiXell	PTC S6S 1000 Ohm
TC	1	Electronic thermostat	DiXell	XT120C-PTC, panel 12VAC
GT2	1	Overheating thermostat	Kienzler	Type KW 94-200° 250V 16A 80°
SK	1	Electronic relay	Crouset	GN84137111, 50-600V, 25A
T2	1	Transformer	Brugnera	153/M 230/12V
C1	2	Capacitor	Ziehl	5 uf, 400V
F1	1	Automatic fuse	Chiri PTF	250V 4AT
T1	1	Autotransformer	Lübcke	RA 131 - 27893 1.5A volt outp. 70, 90, 110, 130, 150, 170, 190V
S3,S4	2	Rocker switch	General	1834 6(4)250V
S1, S2	1	5-step change-over switch	Dreefs	A6CH
S5	1	On/off switch	Comprimé	230V, 10A, 2-pol with indicator
X1	1	Plinth socket		
Extract air filter	1	Extract air filter	REC Temovex	4871, filter class EU3
Supply air filter	1	Supply air filter	REC Temovex	4872, filter class EU6





Extract air fan  
Supply air fan

- 1 } Extract air fan
- 2 }
- 3 }
- 4 } Supply air fan
- 5 }
- 6 }
- 7 } EVB (after heater)
- 8 }
- 9 } Bypass motor
- 10 }
- 11 }
- G } GTI Temp. probe
- G }



Konstr.	Ritad	Kop.	Kontr.	Skola	Dixell thermostat
REC Temovex RT-700S					Erdfilter 071120
Circuit diagram					Datum 100219
					Rit-nr RT700S_XT-eng-krtsch.dwg

Nr	Datum	Inf	Godk.	Nr	Ant
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Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- For air control dampers up to approx. 1 m<sup>2</sup>
- Torque 5 Nm
- Nominal voltage AC 100 ... 240 V
- Control: Open-close or 3-point



## Technical data

Electrical data	Nominal voltage	AC 100 ... 240 V, 50/60 Hz
	Nominal voltage range	AC 85 ... 265 V
	Power consumption	In operation 1.5 W @ nominal torque
		At rest 0.4 W
	For wire sizing	4 VA
	Connection	Cable 1 m, 3 x 0.75 mm <sup>2</sup>
Functional data	Torque (nominal torque)	Min. 5 Nm @ nominal voltage
	Direction of rotation	Reversible with switch 0 ↺ or 1 ↻
	Manual override	Gearing latch disengaged with pushbutton, self-resetting
	Angle of rotation	Max. 95° ↔, limited on both sides by means of adjustable, mechanical end stops
	Running time	150 s
	Sound power level	Max. 35 dB (A)
	Position indication	Mechanical, pluggable
	Safety	Protection class
Degree of protection		IP54 in any mounting position
EMC		CE according to 89/336/EEC
Low voltage directive		CE according to 73/23/EEC
Mode of operation		Type 1 (to EN 60730-1)
Ambient temperature range		-30 ... +50 °C
Non-operating temperature		-40 ... +80 °C
Ambient humidity range		95% r.H., non-condensating (EN 60730-1)
Maintenance	Maintenance-free	
Dimensions / Weight	Dimensions	See «Dimensions» on page 2
	Weight	Approx. 500 g

## Safety notes



- The damper actuator is not allowed to be used outside the specified field of application, especially not in aircraft or any other form of air transport.
- Caution: Power supply voltage !
- Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

**Product features**

- Simple direct mounting** Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.
- Manual override** Manual operation is possible with the self-resetting pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed).
- Adjustable angle of rotation** Adjustable angle of rotation with mechanical end stops.
- High functional reliability** The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

**Accessories**

	Description	Data sheet
<b>Electrical accessories</b>	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
<b>Mechanical accessories</b>	Shaft extension AV6-20	T2 - Z-LM..A..

**Electrical installation**

**Wiring diagrams**

**Note**

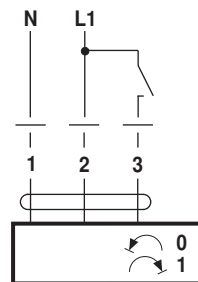
- Caution: Power supply voltage !
- Other actuators can be connected in parallel. Please note the performance data.



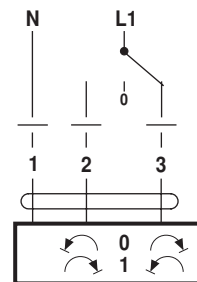
Direction of rotation



**Open-close control**

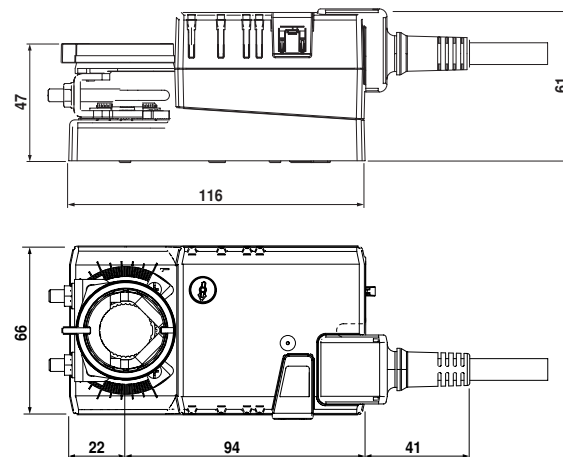


**3-point control**

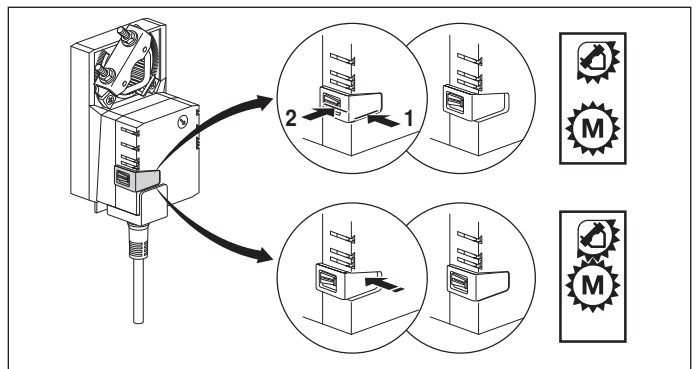
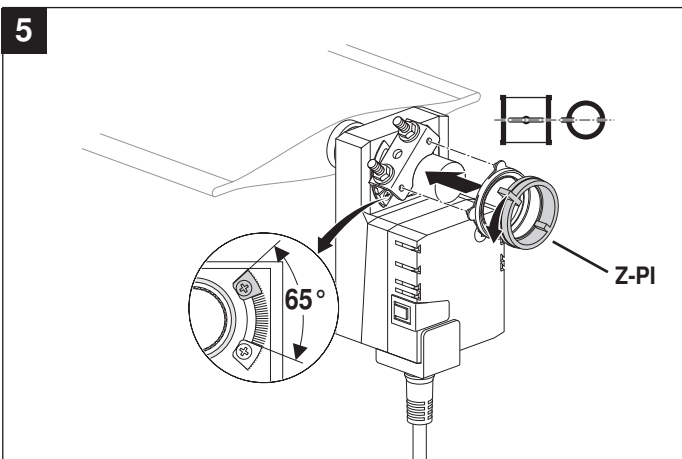
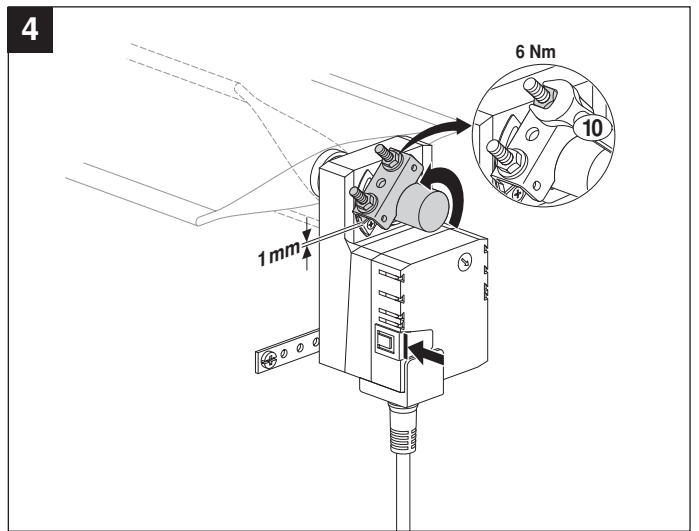
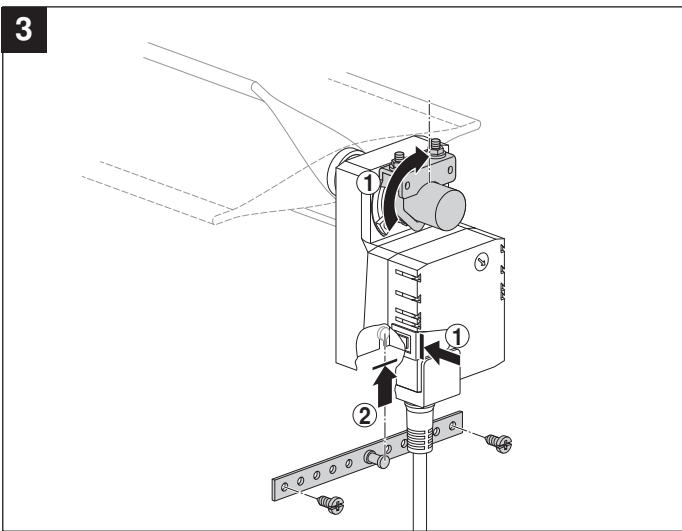
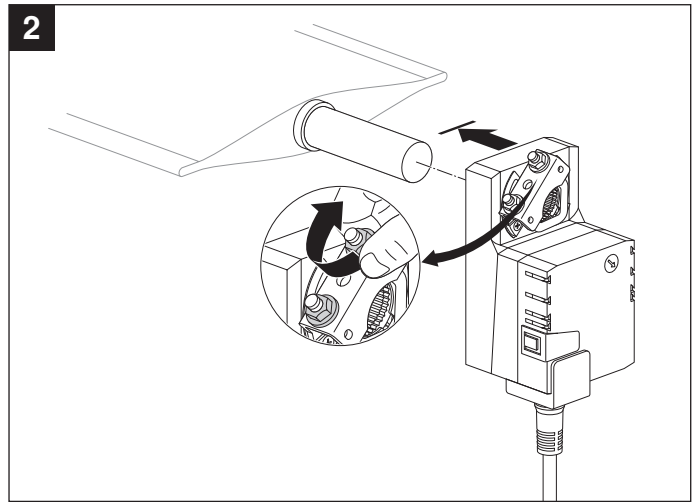
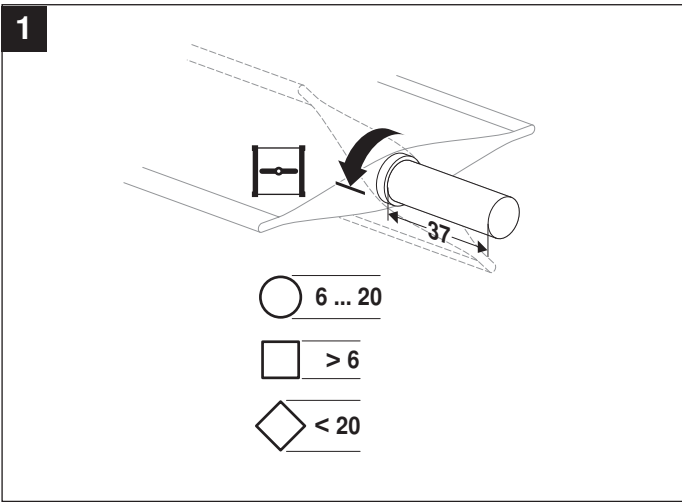


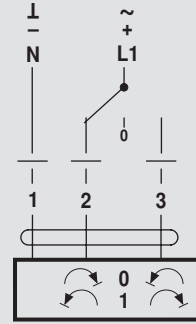
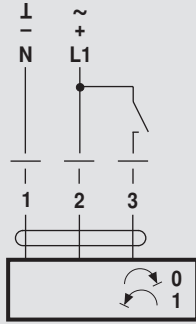
**Dimensions [mm]**

**Dimensional drawings**



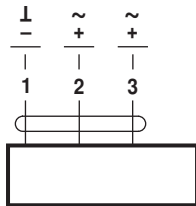
Damper spindle	Length	
	min. 37	6 ... 20



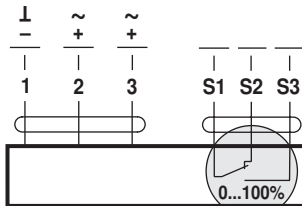


AC 24 V / DC 24 V

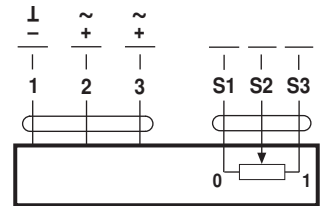
DC 48 ... 110 V  
(LM72A..)



LM24A.. LMC24A..  
LM72A.. TMC24A..

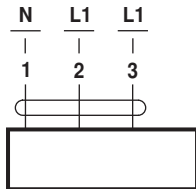


LM24A-S.. TMC24A-S..

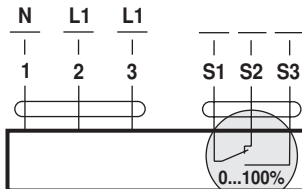


LM24AP5..

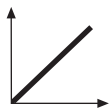
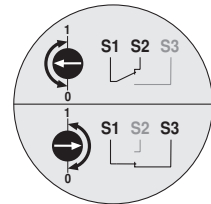
AC 100 ... 240 V



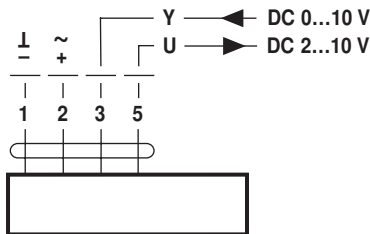
LM230A.. LMC230A..  
TMC230A..



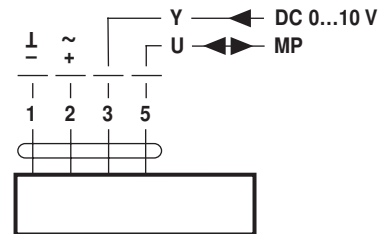
LM230A-S.. TMC230A-S..



AC 24 V / DC 24 V

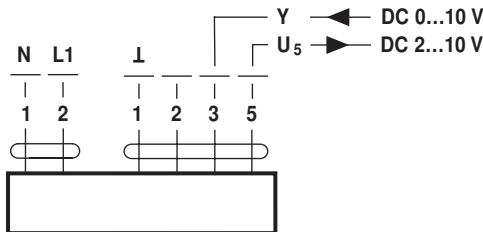


LM24A-SR.. LMC24A-SR..  
LM24A-MF.. TMC24A-SR..



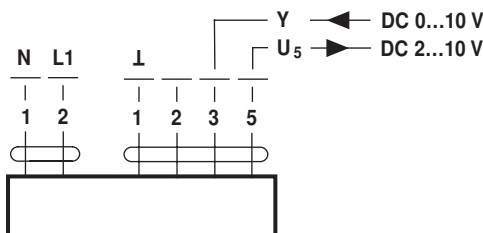
LM24A-MP..

DC 48 ... 110 V  
(LM72A-SR..)



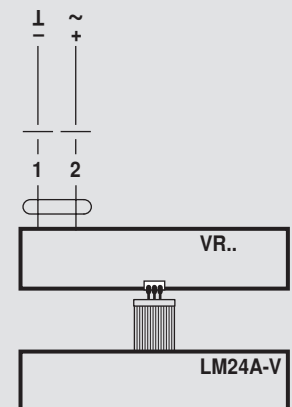
LM72A-SR..

AC 100 ... 240 V



LM230ASR..

AC 24 V / DC 24 V  
(LM24A-V / VR..)



LM230A-V / VR..



## EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE EC/EEA DECLARATION OF CONFORMITY

Undertecknad representerande följande tillverkare *The undersigned, representing the following manufacturer*

**Namn Name:** REC Temovex® AB  
**Adress Address:** Fornminnesgatan 11  
**Telefon Telephone no:** +46 31 675500  
**Telefax Facsimile no:** +46 42 202238

försäkrar härmed att produkt *herewith declares that the product*

**materialslag type of equipment:** Ventilationsvärmväxlare *Air to air heat exchangers for ventilation*

**modell/typ model/type:** RT-700S

överensstämmer med bestämmelserna i följande EG-direktiv *is in conformity with the provisions of the following EC directives*

Referens nr <i>reference no</i>	Titel <i>title</i>
73/23/EEG 93/68/EEG	Lågspänningsdirektivet(LVD) <i>Low Voltage directive (LVD)</i>
89/392/EEG 91/368/EEG 93/44/EEG 93/68/EEG	Maskindirektivet (MD) <i>Machinery directive</i>
89/336/EEG 92/31/EEG 93/68/EEG	Direktivet för elektromagnetisk kompatibilitet (EMC) <i>Electromagnetic Compatibility (EMC-directive)</i>

Helsingborg 2005-07-01

Lennart Skoglund, Verkställande Direktör *Managing Director*