



REC Temovex RT-1000S

Operation and maintenance manual

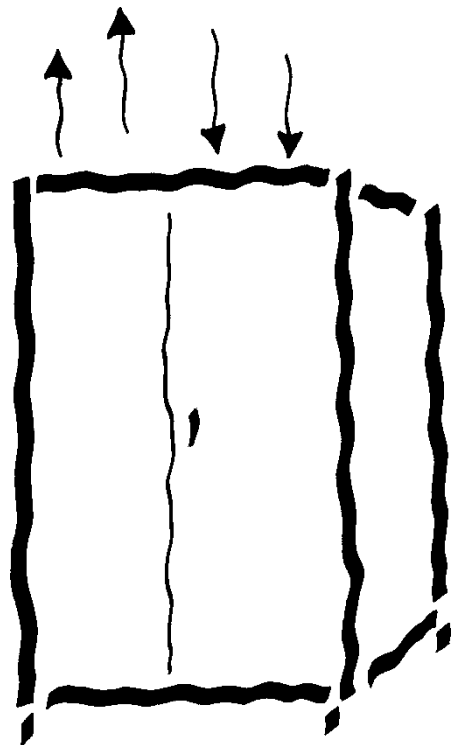
Easy operation!

Environmentally friendly!

Low powerconsumtion !

Low noiselevel !

**High efficiency
heatrecovery !**



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Pressure guard (filter)
Time switch
Damper motor

CE-documents

General

Description:

The REC Temovex RT-1000S AHU is designed for high efficient ventilation of residentials, offices, nurseries and other premises. RT 1000S AHU contains of an high efficiency counterflow heatexchanger (with thermal efficiency above 80%), two fans, automatic bypass damper, filters, 2-way zone valve, valve actuator and electrical controlpanel. The counterflow heatexchanger has completely separated airflows. Separated airflows secures the airquality - no leakage between exhaust and fresh air.

The RT 1000S is designed for airvolumes up to 1000 m³/h at normal available pressure drop. RT 1000S is designed for installation in heated areas.

Installation

The unit is intended for installation indoors/warm area, such as laundry, corridor, workroom, storageroom or similar. Air ducts shall be connected on top of the unit advisibly with flexible hose silencers. There must be possibility to connect the condensation drain to the sewer system

Normally, supply and extract air ducts which are installed in warm areas has no need for insulation. If the ducts are installed in cold area its necessary to apply insulation with a minimum thickness of 150 mm. The ducts for supply and extract air should be completed with silencers.

Exhaust and outdoor ducts must be insulated to avoid condensation on the duct. A plastic diffusion barrier is recommended.

The front and top of the unit should be easily accessible. The condensation drain in the bottom of the unit, 3/4", must be connected to the sewer system. The drain is necessary as the moisture in the extract air can cause a big amount of condensation from the unit. If the drain is located in a cold area the pipe, in all its length, must be well insulated.

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

Height and sideways position of the unit is easily adjusted with the adjustable rubber feets mounted in the bottom.

Cover

The cover of the unit are made of 2 layers hot dipped galvanized metal with insulation in between. The front and gabels are white coated. Doors on the front gives easy access to the complete unit. The AHU is equipped with adjustable feets.

Fans

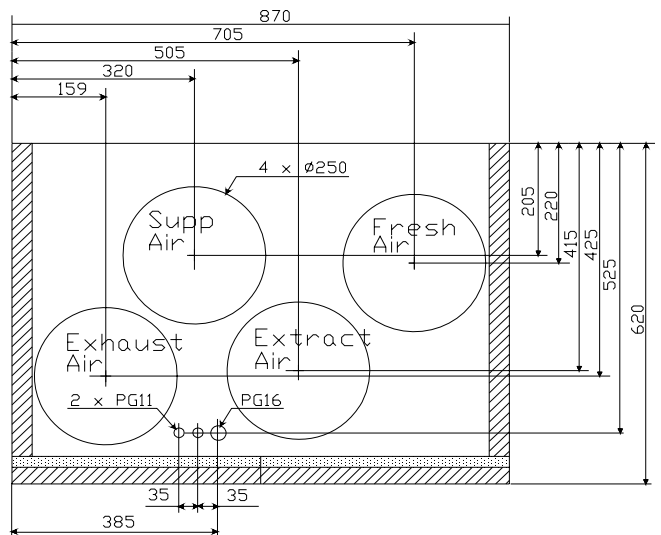
The RT 1000S is equipped with radial fans with forward curved impellers and maintenance free external rotor motors, protected with an internal thermal cut-out. The plug-in connection between the unit and fans ensures that the fans can easily be removed for cleaning, service or replacement. Fan speed is set individually, in 5 steps.

Filter

RT 1000S is equipped with both fresh air filter, F6, and extract air filter, G3. If the pressure drop over the extract air filter increases above the setpoint the lamp on the control panel will indicate. At the same time you should check, and maybe replace, also your fresh air filter.

Short technical data

Fans:	radial fans, internal heat protection
Capacity	above 1000 m³/h
Fresh air filter	F6
Extract air filter:	G3
Ducting:	Ø 250 mm
Drain:	3/4"
Weight:	195 kg
Colour:	White
H/W/D	1900 x 870 x 620 mm



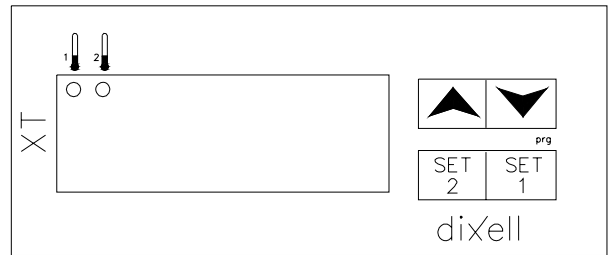
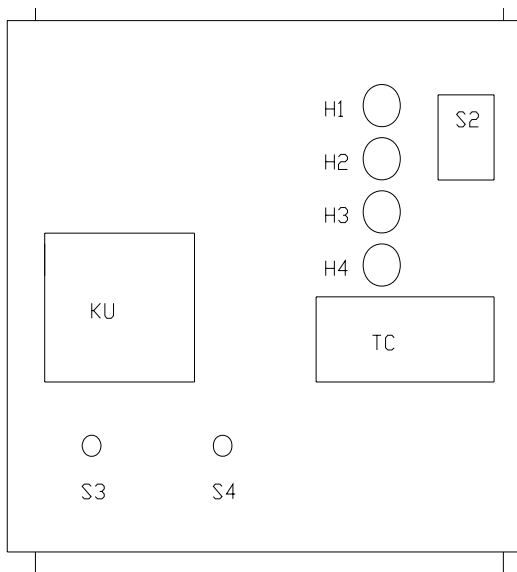
Operation

The RT 1000S is started with the S2 button.
 The fan speed is set individually by the switches S3 and S4.
 Temperature settings are made in the Thermostat TC-panel. Room temperature is set on your central heating system. Recommended temperature settings:

Internal clock, KU

See separate instruction, attached, for more detailed information.

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

Before working on the RT 1000S turn the power off by using the S2 button. Disconnect the wall socket.

Changing filter

The extract air filter should be changed 2-3 times a year. Supply air filter should be changed at least twice a year. The filters are changed by pulling them out of their holder and replacing them with new ones. Both filters can be order from REC Temovex AB.

Cleaning the fans

Loosen the plug-in contact to each fan and pull the fan out. Clean the impeller with a clean soft brush.

NOTE!

Make sure that no water or moisture gets in to the motor wirings. Remount in revers order.

Condensation drain

Once a year the condensation drain should be checked and rinsed. Protect from beeing clogged up!

Heatexchanger

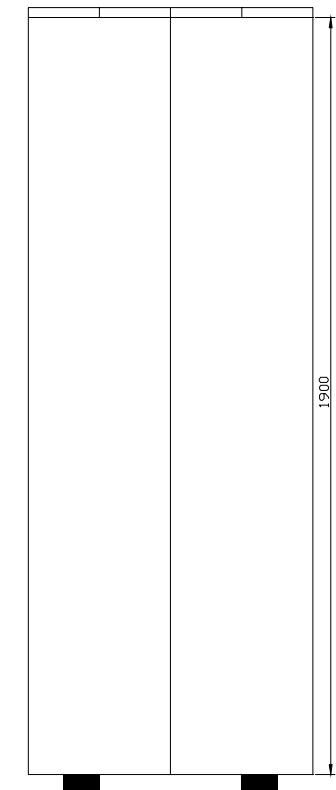
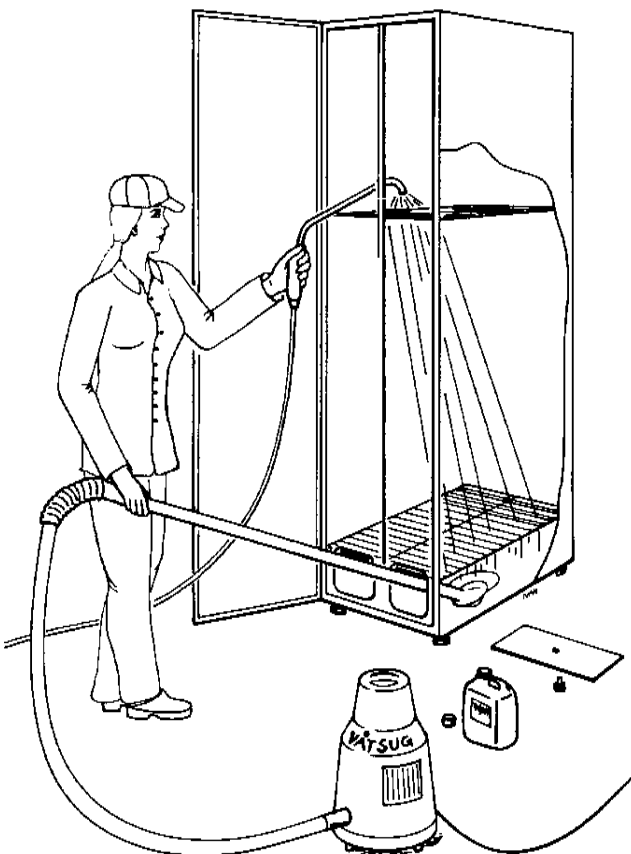
Cleaning of the heatexchanger package is normally not necessary if ordinary maintenance, changing filters etc, has been carried our regularly.

If needed rinse the heatexchanger by using warm water.

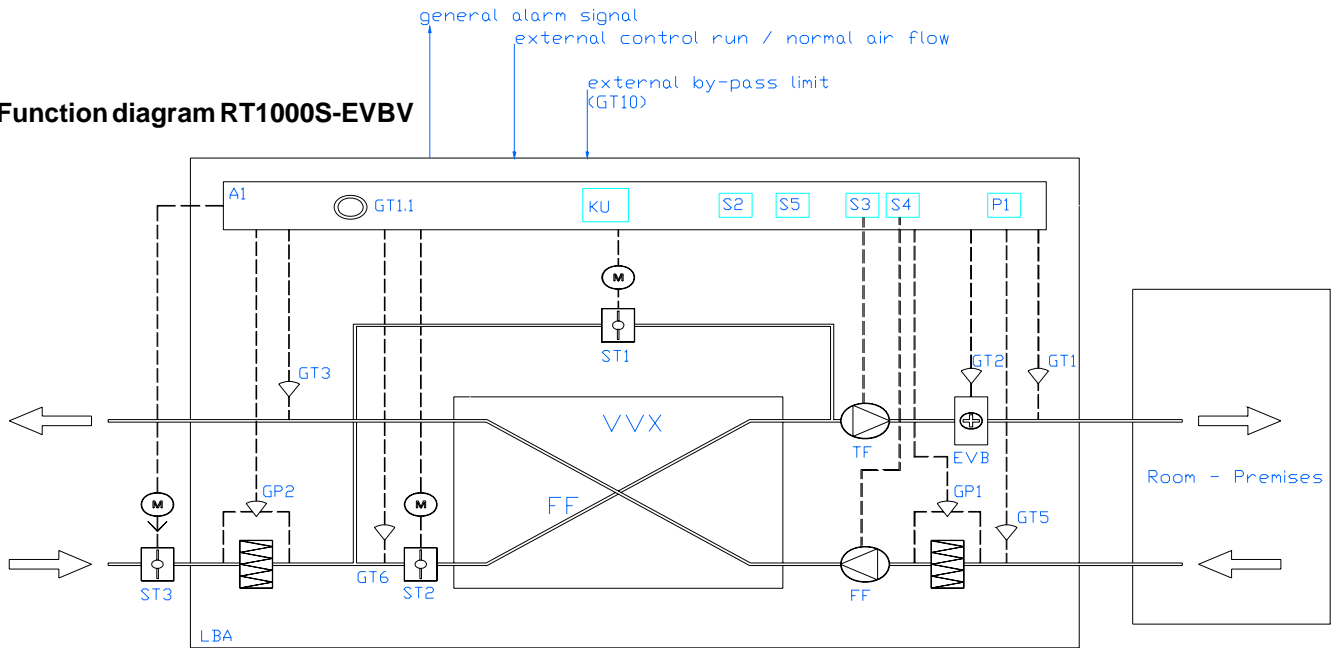
NOTE!

Before rinsing take out the red plastic plug i the bottom of the unit (inside the inspection shutter) and pull out the fans as described earlier.

The rinse water will drain out through the condensation drain.



Function diagram RT1000S-EVBV



Clock function

Adjusting the clock for start/stop of the unit are made on the clock, KU, Channel 1. Channel 2 regulates low speed intervals. More details in attachment.

Temperature

Minimum supply air temperature is maintained by the reheater EVB, thermostat TC and sensor GT1. Settings are made in TC. In case of rising supply air temperature (GT1) or high room temperature (GT5) the bypass will open. To protect the heatexchanger from beeing filled with rime or ice the temperature sensor GT3 is placed in the exhaustair chamber. If the temperatures fall below 0°C the RT 1000S will start deicing process. This will reduce supply air fan to a lower speed.

Filter

If the extract filter is clogged - the pressure drop (GP1) will increase. Need for changing filter will be indicated by the lamp H4 in controlpanel.

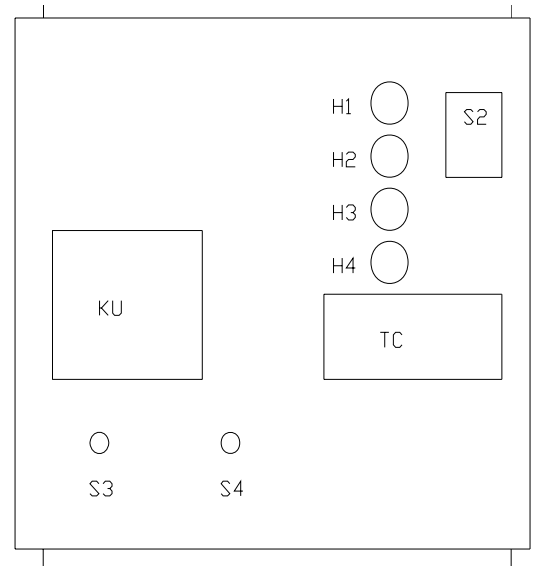
Reheater

When very low outdoor air temperature occur the heat gained from the heatexchanger may not be enough to secure your minimum supply air temperature. The reheater will then be activated and ensure your comfort. The reheater in the RT 1000S is protected against over heating by the thermostat GT2. If over heated the red alarm lamp on the contol panel will light. Simply swith the main switch off and on for reset.

Bypass function

Then the bypass is activated the freshair will be guided through the filter and directly to the supplyair duct. This function gives you the best comfort possible. The reheater is blocked.

Controlpanel in front of the AHU.



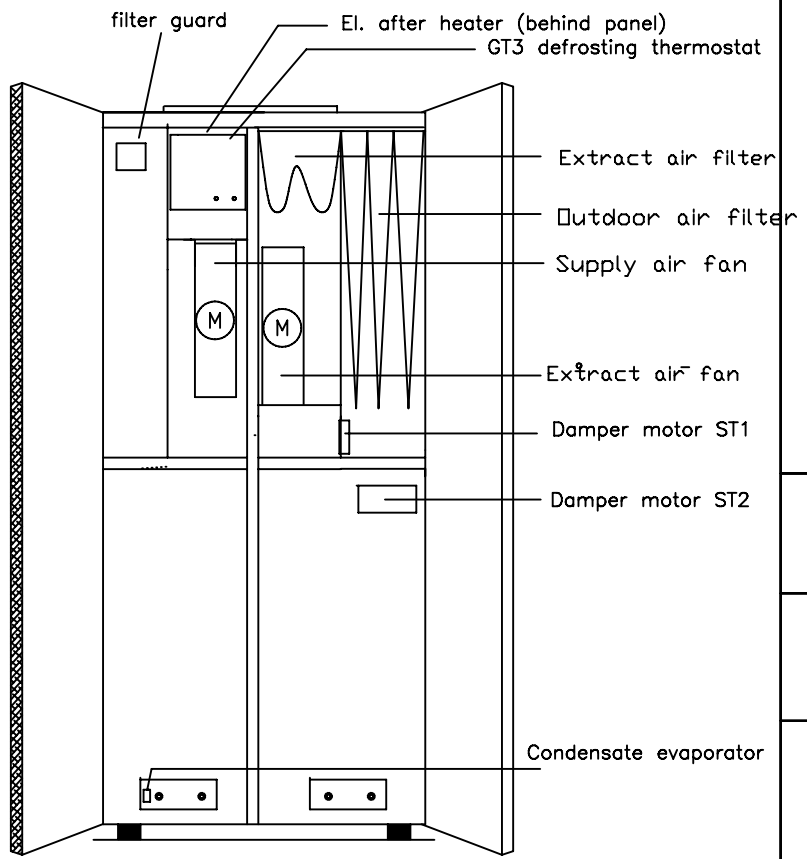
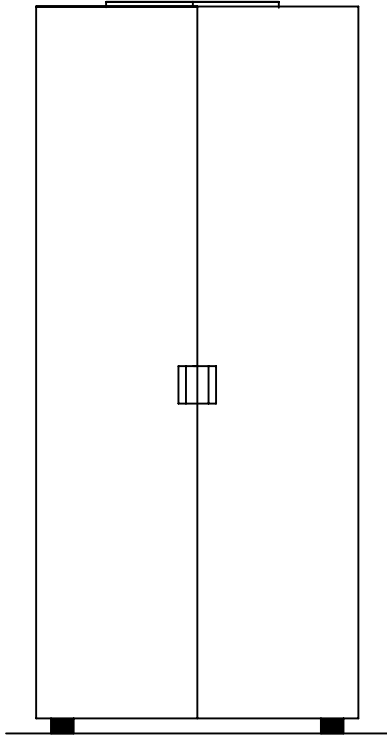
Deicing

If the temperature in the exhaust duct is below 0°C there is a risk for rime or ice in the heatexchanger. GT3 will trigger the deicing process. The supplyair fan will then go to a lower speed.

Component list

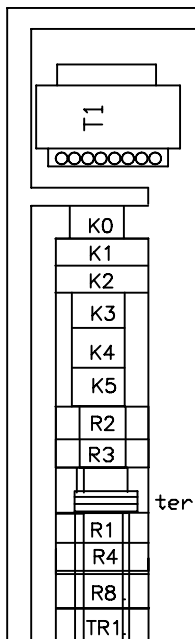
Position	No	Description	Make	Type
FF	1	Extract air fan	Ziehl	SRE-25P-4ER 0.55kW In 2.7A 1300V/m
TF	1	Supply air fan	Ziehl	SRE-28P-4EL 0.82kW 3.8A 1300V/m
GT3	1	Deicing thermostat	Tecaso	850, 250V, 16A 4-40°
ST1,ST2	2	Damper motor	Belimo	LM 230AF, 4Nm
EVB	1	Reheating element	Backer	1 x 2500W,400V
TC	1	Electronic thermostat	DiXell	XT120C-PTC, panel 12VAC
GT1	1	Temperature sensor	DiXell	PTC S6S 1000 0hm
GT2	1	Over heating switch	Kienzler	KW 3C0 090 05, 90 degC,250V
T2	1	Transformer	Brugnera	230V/12V 3VA
C1	1	Capacitor	Facon	14uf, 450V
C2	1	"	"	12uf. 450V
KU	1	Time switch, Clock	Theben	Termina 684 2x6A (6A) 250V
K0	1	Power relay	Telemecanique	LC1K09008M7 230V E 32 306 39 2sl 2br
K1	1	Power relay	Telemecanique	GC 1611M5 16A 250VAC Enr 32 319 10
K2,	1	Power relay	Telemecanique	GC 2520M5 25A 250VAC enr 32 319 14
K3-,4, 5	3	Power relay	Telemecanique	LC1 K0601M7 E nr 32 306 14 230V
R2, R3	2	Relay	Gycom	E 40 209 46
R2, R7	2	Relay	Gycom	E 40 209 64
SK	1	Solid state relay	Crouzet	GN 84137111 25A 660V
F1	1	Automatic fuse	Malmberg	E21 11102 2A 250V
GP1	1	Pressure guard	HK Instrument	PS 600 40-600 3A/250V
T1	1	Auto transformer	Lübcke	A179-26734 4,6A
S3,S4	2	5-step rotary switch	Dreefs	6CH, KZ 18 16(4)A 250V
S2	1	On/Off switch	OEM	C 1550AB 6(4)/250V 2-pol
TR	1	Time relay	Proswede	CRM-81J, 230V
H1..	4	Pilot lamp	Storck	230/400V
	22	Terminal clamp	Wieland	2,5/5 D2 grey
	3	Terminal clamp	"	2,5/5 grey
	6	Terminal clamp	"	2,5/5N blue
	5	Terminal clamp	Weidmuller	4 (PE) Ground
ST3(*)	1	Damper motor	Belimo	LF230, 240V, 10VA, 4Nm, spring return
R1,4,8	3	Relay	Schrack	Enr 40 207 17 5A/250V 2 vxl.
GT5	1	Thermostat	Tecaso	850, 250V, 16A
GT6(*)	1	Thermostat	Tecaso	850, 250V, 16A
Ct	1	Supply air filter	REC TemoVex	Art. nr 4872
Cf	1	Extract air filter	REC TemoVex	Art nr 4871
TK(tr)	1	Thermal fuse	Uchiya	UP 62 100°C reset. 80° 250V-2A

(*)Optional

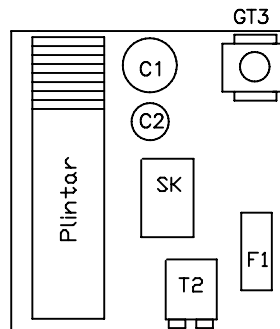


Note	Blad 0	090820
Scale	REC Temovex RT1000S	Diagram. RT1000S-plasch
Conn	Position diagram	
Kop.		

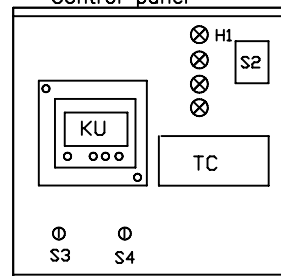
Transformer and relay panel

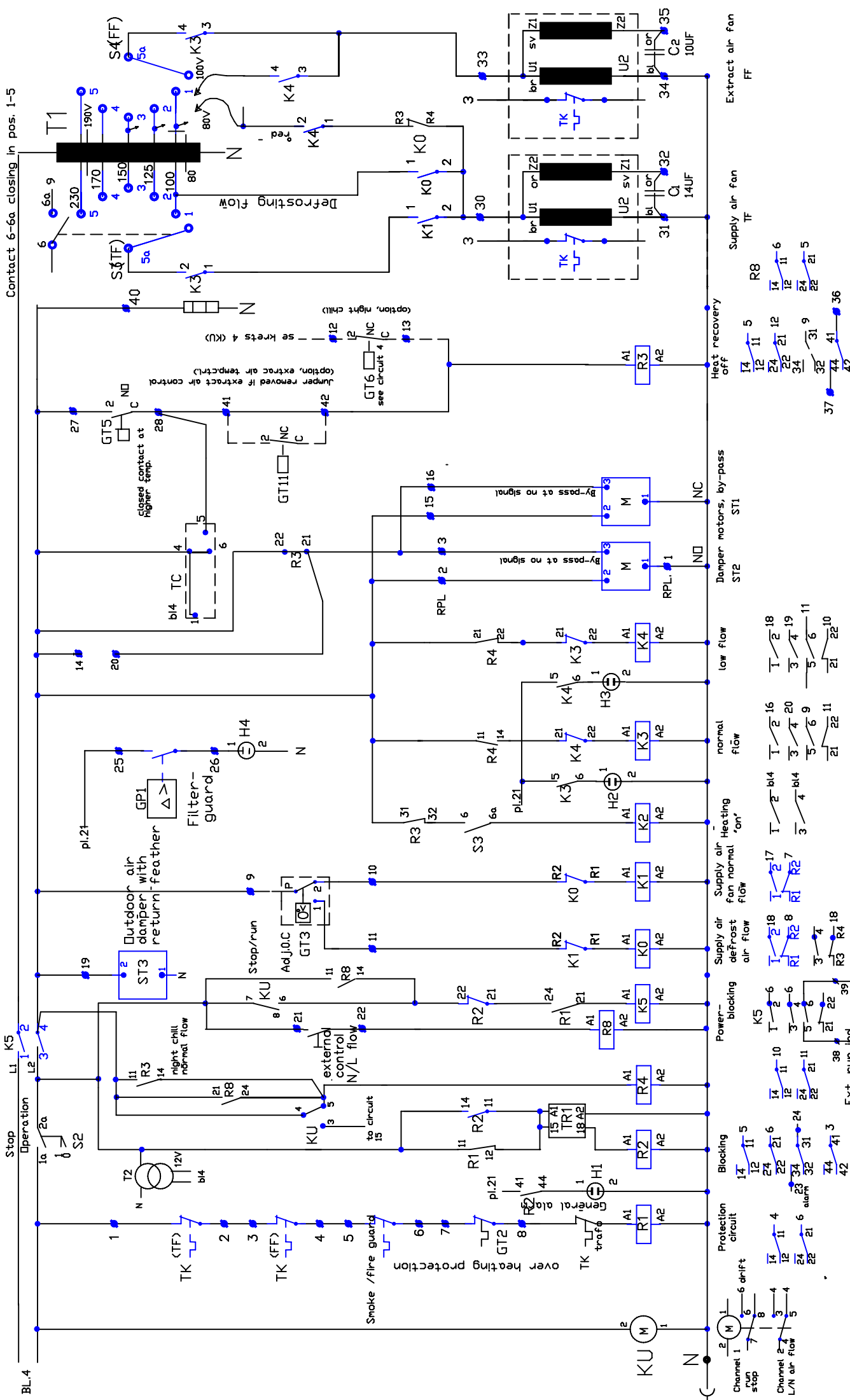


Terminal panel



Control panel





BL.4

Stop Operation LI K5

Contact 6-6a closing in pos. 1-5

Smoke /fire Guard

Over heating protection

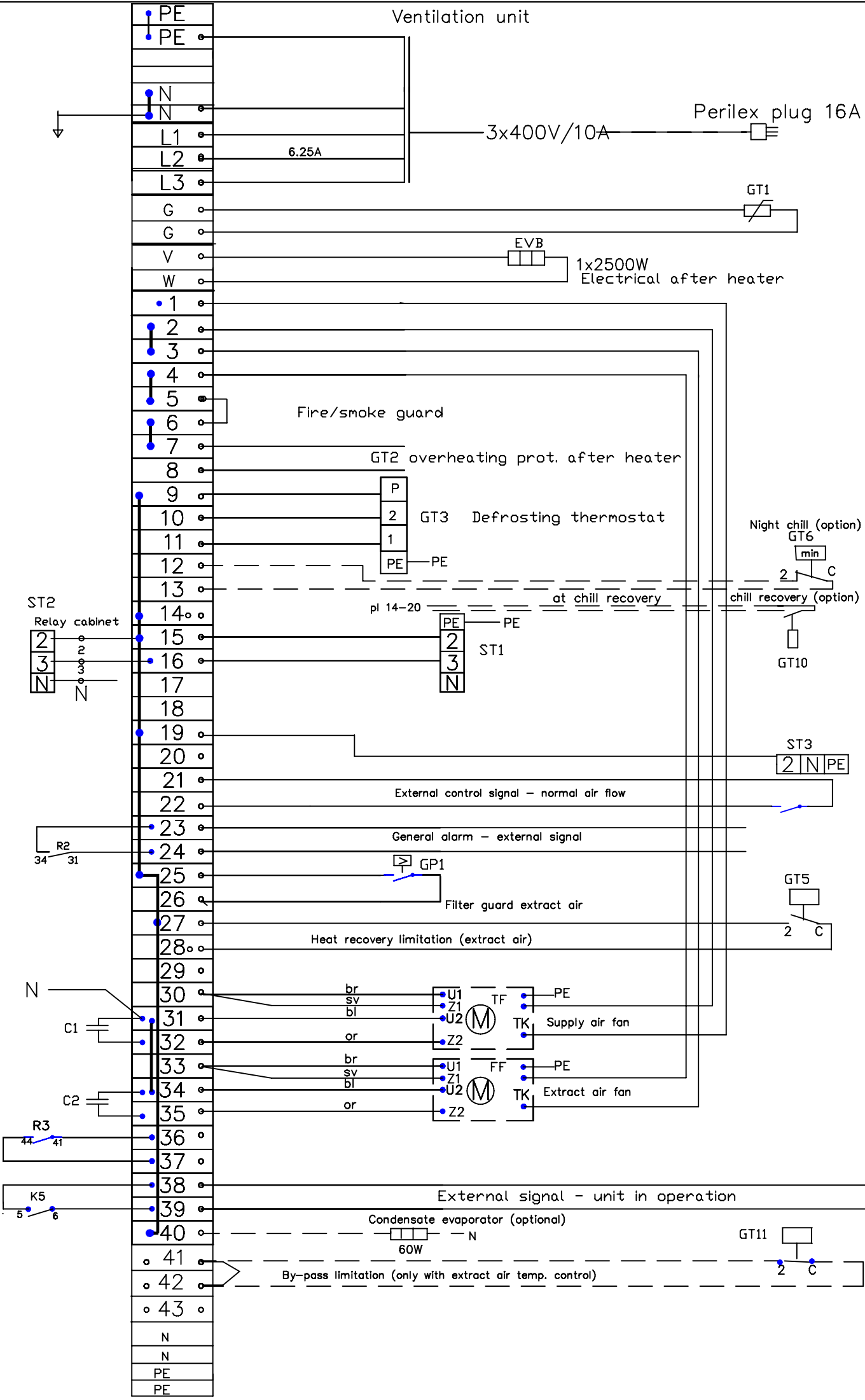
Stop/run

Outdoor air damper return feather

Filter-guard

Channel 1 run stop
Channel 2 L/N air flow
Ext. run ind.

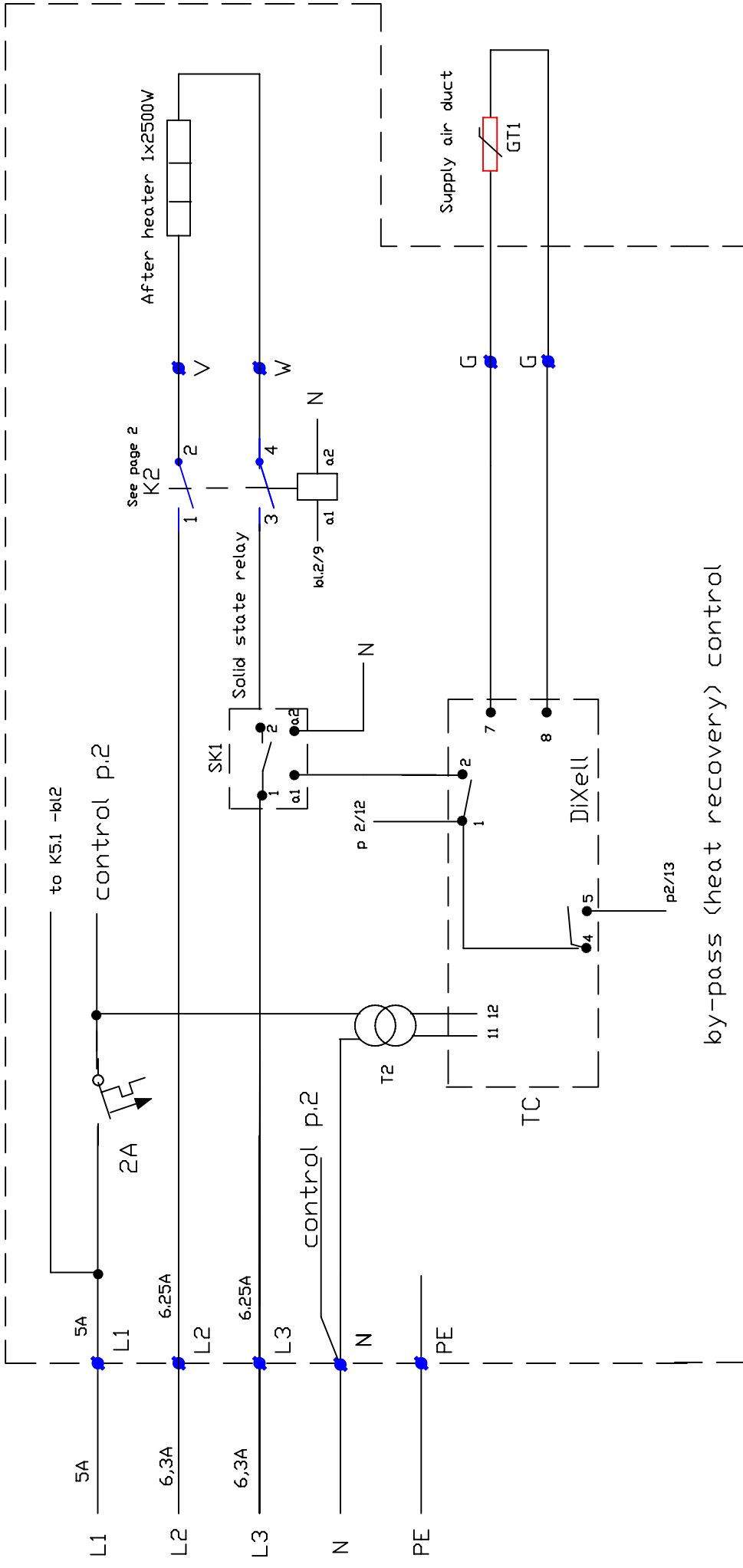
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC Temovex RT1000S Circuit diagram																			
Temovex Tel +46 42 202010										REC Temovex RT1000S Circuit diagram									
Date										Date									
Inf										Inf									
Check										Check									
Nr										Nr									
Date										Date									
Appr.										Appr.									
Constr.										Constr.									
Nr.										Nr.									
Det.-nr										Det.-nr									
Material										Material									
Cop										Cop									
Checked										Checked									
Scale										Scale									
Comment										Comment									
Replaced by										Replaced by									
Date										Date									
Bl.2										Bl.2									
RT1000S-krersch_eng.dwg										RT1000S-krersch_eng.dwg									



Comm	Expected by	Blad 3	RT1000S-plitsch_eng.dwg
Material	Checked	REC Temovex RT1000S	Blad 3
Scale	Scale	REC Temovex AB	Blad 3
Equip.	Equip.	Tel +46 42 202010	Blad 3
Blender	Blender	REC Temovex AB	Blad 3
Constr.	Constr.	Tel +46 42 202010	Blad 3
Connection diagram		REC Temovex AB	Blad 3
		Tel +46 42 202010	Blad 3

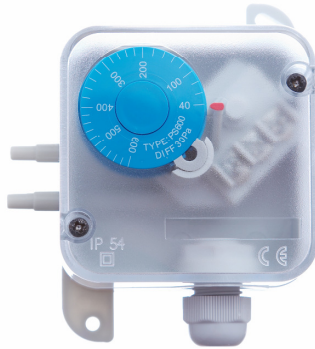
Nr	Nr	Inf	Date	Nr	Nr

AHU



DIXell Thermostat		Replaced by 090820	
REC Temovex AB	REC Temovex RT1000S	Blad 4	Date 100219
Tel. +46 42 202010	Circuit diagram heating	Dwg.nr. RT1000S_XT-elvsch_eng.dwg	

DIFFERENTIAL PRESSURE SWITCHES MODEL PS



Model summary

Model code	Pressure range	Switching difference	Accuracy of switching point Low limit typ.	Accuracy of switching point High limit typ.	Electrical rating resistive load	Electrical rating inductive load
-5A for 5A microswitch						
PS200	20...200 Pa	10 Pa	20Pa \pm 5 Pa	200Pa \pm 20Pa	0,1A / 250VAC	-
PS300 (-5A)	30...300 Pa	20 Pa	30Pa \pm 5 Pa	300Pa \pm 30Pa	3A / 250VAC *)	2A / 250VAC
PS500 (-5A)	30...500 Pa	20 Pa	30Pa \pm 5 Pa	500Pa \pm 30Pa	3A / 250VAC *)	2A / 250VAC
PS600 (-5A)	40...600 Pa	30 Pa	40Pa \pm 5 Pa	600Pa \pm 30Pa	3A / 250VAC *)	2A / 250VAC
PS1500 (-5A)	100...1500 Pa	80 Pa	100Pa \pm 10Pa	1500Pa \pm 50Pa	3A / 250VAC *)	2A / 250VAC
PS4500	500...4500 Pa	180 Pa	500Pa \pm 50Pa	4500Pa \pm 200Pa	5A / 250VAC	2A / 250VAC

*) 5A / 125VAC with 5A micro switch

Accessories

Standard accessories:

- 2 fixing screws
- 2 plastic duct connectors
- 2 m tube \varnothing 4 / 7 mm

Optional accessories:

- metallic duct connectors

Technical data

Materials

Housing	ABS
Cover	PC
Membrane	silicone
Duct connectors	ABS
Tubing	PVC, soft

Connections

Electrical connections	3 screw terminals
Cable entry	M16
Pressure connections	Male \varnothing 5 mm

Weight

150 grams (350 grams with accessories)

Ambient and operation conditions

Operation temperature	-20...+60°C
Storage temperature	-40...+85°C

Maximum pressure 50 kPa

Admissible media Air and non-aggressive gases

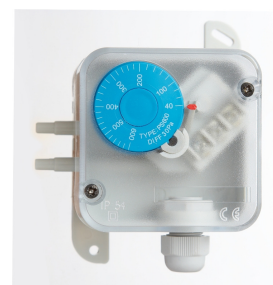
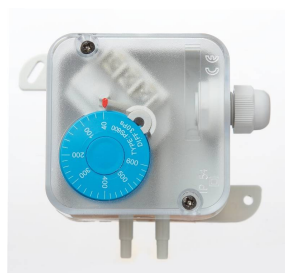
Service life > 1 000 000 switching operations

Safety

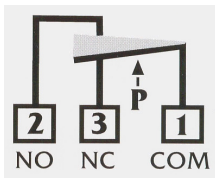
IP Protection standard	IP54
Conformity	Meets the requirements for CE marking: EMC directive 89/336/EEC Rohs Directive 2002/95/EY Low voltage 73/32/EEC

Mounting position

To be installed vertical position, either the pressure inlets or the electrical cable downwards.



Connection terminals

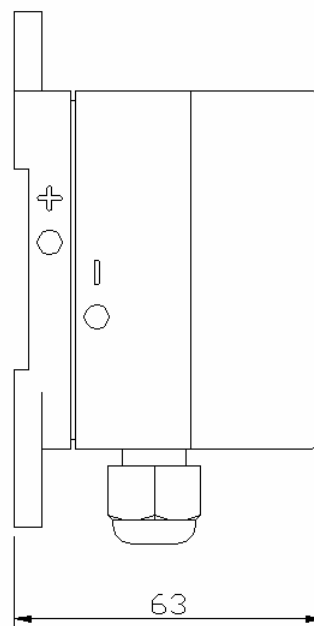
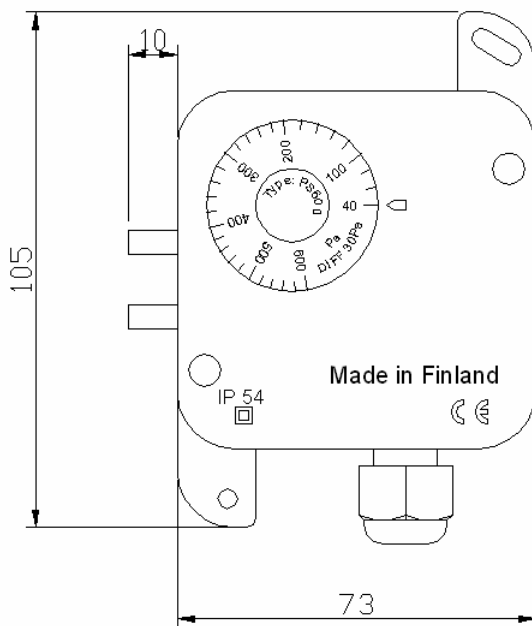


When differential pressure increases:

1 – 3 open

1 – 2 close

Dimensions



theben

TERMINA 684 top

310 922

- | | | |
|---|--|----|
| Ⓢ | Bedienungsanleitung
Zeitschaltuhr | 1 |
| Ⓢ | Operating instructions
Time switch | 15 |
| Ⓢ | Mode d'emploi
Interrupteur horaire | 27 |
| Ⓢ | Gebruiksaanwijzing
Schakelklok | 39 |



TR 611 top DCF



SYN 269 h



SYN 269 g



TR 686

Contents

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1. Designated use

The time switch **TR 684 top** is suited for flush fitting in dry rooms. This time switch allows time dependent on and off switching of electrical appliances.

Designated use also includes adherence to the instructions for installation and operation. Any other use is considered contrary to the designated use. The manufacturer accepts no liability for damage resulting from such use.

GB

The time switch is pre-programmed with date, automatic summer / winter time changeover and real time as a weekly clock.

- Permanent program retention by means of EEPROM.
Programmed switching times are retained for a period of approx. 10 years even in the event of a power failure or insufficient battery reserve.
- Automatic program recall
- 99 days holiday program, programmable 99 days ahead
- Override switching and permanent switching ON / OFF
- Sleep mode after approx. 15 minutes without mains voltage
- PIN code

2. Safety note



Installation of electrical devices should only be carried out by a professional electrician. National regulations and safety requirements must be adhered to! Tampering with or making modifications to the device will invalidate the guarantee.

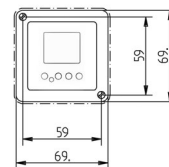
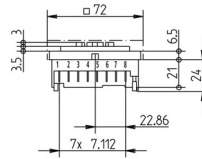
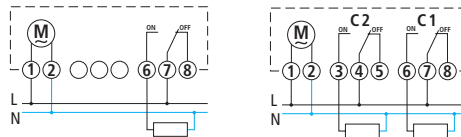
Installation

Regardless of expensive protective measures, strong electromagnetic fields can interfere with the microprocessor-controlled timer.

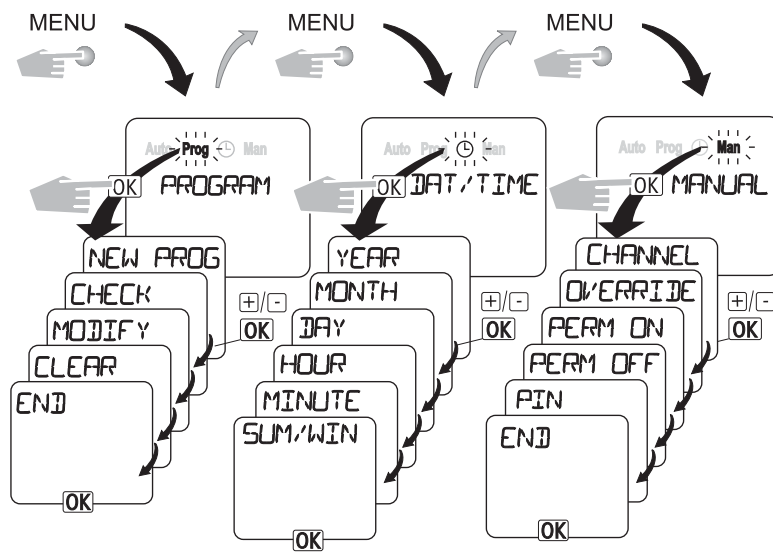
Please note therefore, before installation:

1. Shield inductive consumer with appropriate RC filter.
2. Use a separate line for the service voltage supply.
3. Do not install device close to sources of interference, e.g. transformers, contactors, PC, television and remote control devices.
4. Perform a RESET after any type of interruption.

3. Electrical connection/dimensions



4. Overview of input menu



5. Operating information

The timer is delivered in so-called sleep mode (Display is shut off).

1. Activate without service voltage:

Briefly press the **Menu** key.

2. Activate with service voltage:

If the timeswitch is pre-programmed with the actual time, the weekday, and the changeover setting for summer-/winter time, the actual time and status display appears after selection of the national language.

RESET (Nur im Notfall)

Should you press RESET on the timer, the settings of the actual time and weekday will be deleted. The programmed switching times remain intact in the EEPROM. However the timer will then still display the language last selected and the summer-/winter norm time changeover last selected.

Press the **Res** key with a pointed object for approx. 1 second.

Operating information

The main overall principle of operation

1. Read the textlines:
Flashing text or flashing symbol always indicates a question.



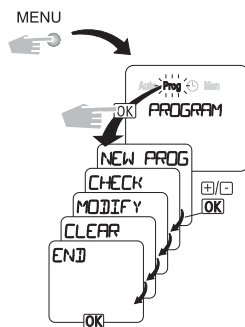
2. Make a decision:
Answer the question by pressing a key.



Decision YES:
Confirmation
with key **ok**

Decision NO:
Change/revise
with **+** or **-** key

6. Menu PROG



Switching program

Using the Menu key, **you** go from Automatic mode to the main menu of the input mode. Select menu item **PROG (PROGRAM)** and confirm with the **OK** key. Using the + or - key, you can switch between the sub-menus **New, Check, Modify, Clear** and **Finish**. Using the **OK** key, confirm the respective Menu. By confirming **Finish**, you return back to Automatic mode.

Menu PROG

Programming of switching times

Formation of day groups

If the same switching times are active on several days of the week, they occupy just **one** memory location. **42** memory locations are available.

Group formation

In answer to the text question **Copy**, decide by pressing the **OK** key that the day program should be copied to another day of the week.

Program review

Following programming the timer makes a program review back to midnight and then sets the correct switching status.

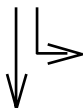
Programming ON and OFF switching times simultaneously

When programming an ON and OFF switching time, e. g. Monday 9 AM, a switch-off at 9 AM always has priority.

Menu PROG

Example: Switching ON of channel C1

- Select **Prog** by pressing the **Menu** key.
- Store your selection by pressing the **ok** key.
- Select **NEW** by pressing + or –.
- Store your selection by pressing the **ok** key.
- Select channel **C1** by pressing + or –.
- Store your selection by pressing **ok**.
- Select **ON** by pressing + or –.
- Store your selection by pressing **ok**.
- Set the **hours** by pressing the + or – key.
- Store selection by pressing **ok**.
- Set the **minutes** by pressing the + or – key.
- Store selection by pressing **ok**.



To store this day of the week only
Select weekday by pressing + or –. Select
store by pressing **ok**.
Select **STORE** by pressing the + key.
Store by pressing **ok**.

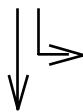
To copy to other days of the week

- Store **COPY** by pressing **ok**.
- Select weekday by pressing + or –.
- Store by pressing **ok**.
- To leave out a day of the week, skip by pressing the + key.
- Finally select the **STORE** display by pressing +
- Store your selection by pressing **ok**.

Menu PROG

Example: Switching OFF of channel C1

- Select **OFF** by pressing + or –.
- Store your selection by pressing **ok**.
- Set the **hours** by pressing the + or – key.
- Store selection by pressing **ok**.
- Set the **minutes** by pressing the + or – key.
- Store selection by pressing **ok**.

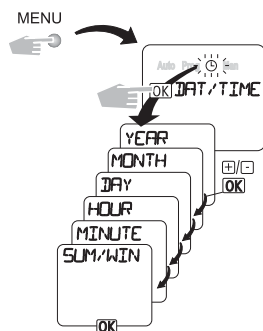



To store this day of the week only
Select weekday by pressing + or –. Select
store by pressing **ok**.
Select **STORE** by pressing the + key.
Store by pressing **ok**.

To copy to other days of the week

- Store **COPY** by pressing **ok**.
- Select weekday by pressing + or –.
- Store by pressing **ok**.
- To leave out a day of the week, skip by pressing the + key.
- Finally select the **STORE** display by pressing +
- Store your selection by pressing **ok**.

7. Menu



Using the **Menu** key, you go from the Automatic mode to the main menu of the input mode. Select menu item  (**TIME/DATE**) and confirm with the **OK** key. With the + or – keys, you can switch between the sub-menus **TIME**, **Date**, **SU/WI** and **Finish**.

Using the **OK** key, confirm the respective Menu. By confirming **Finish**, you return back to Automatic mode.

Menu

Summer/winter time changeover (SU/WI)

Depending on the particular version, an automatic summer/winter time changeover is already pre-programmed. If you want to set a different summer/winter time, choose this from the table.


Setting / scope	Start of the for summer time	Start of the winter time	changeover-hours
Europe	last week in March	last week in October	2:00 a.m.
Great Britain/ Portugal	last week in March	last week in October	1:00 a.m.
SF/Greece/TR	last week in March	last week in October	3:00 a.m.
USA/Canada	first week in April	last week in October	2:00 a.m.
freely -- --	selectable	selectable	selectable

Note for FREE

The automatic summer / winter time changeover can be programmed individually. All entered switching times are saved in EEPROM and are available again after a reset.

Menu

Setting/changing the Year, Month, Day and clock time

1. Choose the menu item with the **Menu** key  .
2. Confirm with the **OK** key.
The Sub-menu **YEAR** appears.
3. Use the + or – key to set the current year.
4. Confirm with the **OK** key.
The Sub-menu **MONTH** appears.
5. Use the + or – key to set the current month.
6. Confirm with the **OK** key.
The Sub-menu **DAY** appears.
7. Use the + or – key to set the current day.
8. Confirm with the **OK** key.
The Sub-menu **HOUR** appears.
9. Use the + or – key to set the current hour.
10. Confirm with the **OK** key.
The Sub-menu **MINUTE** appears.
11. Use the + or – key to set the current minute.
Confirm with the **OK** key.

Menu

Changing the summer/winter time changeover

You can choose:

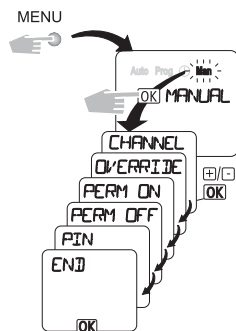
- **with** automatic summer / winter time changeover
- **without** automatic summer / winter time changeover

1. Select **WITH S/W**.

You can choose between 5 rules (see table below):

2. Confirm with the **OK** key.
3. Use the + or – key to select a changeover rule from the table.
4. Confirm with the **OK** key (this rule is now activated).
The display shows **FINISH**.
5. Confirm with the **OK** key.

8. Menu MAN



Using the **Menu** key you go from the automatic mode to the main menu of the input mode. Select menu item **MAN (MANUAL)** and confirm with the **OK** key. Using the + or – key, you can switch between the sub-menus **Man, Perm, Holiday** and **Finish**.

Using the **OK** key, confirm the respective Menu. By confirming **Finish**, you return back to Automatic mode.

Menu MAN

Manual switching

Manual switchings **ON** or **OFF** always return to the current switching status of the program. They are automatically corrected by the stored program at the next sequential switch time.

Set manual switching

1. Use the **Menu** key to select the Menu item **MAN (MANUAL)**.
2. Confirm with the **OK** key.
3. Use the + or – key to select **MANUAL**.
The display shows **MAN ON** or **MAN OFF** (depending on previous switching status).
4. Confirm with the **OK** key.

The timer reverts back to Automatic mode, the switching status is changed and instead of the date showing in the display, **MAN ON** or **MAN OFF** appears.

Menu MAN

Delete manual switching

When you want to delete Manual switching,

1. Use the **Menu** key to select the menu item **MAN (MANUAL)**.
2. Confirm 2 x with **OK** key.
3. Use the **+** key to select **CLEAR**.
4. Confirm with the **OK** key.

The clock reverts back to Automatic mode and the switching status is changed.
The date appears again in the display.

Permanent switching

Set PERM ON / PERM OFF

1. Use the **Menu** key to select the Menu item **MAN**.
2. Confirm 2 x with the **OK** key.
3. Use the **+** or **-** key to select **PERM ON** or **PERM OFF**.
4. Confirm with the **OK** key.

Menu MAN

The timer reverts back to Automatic mode and the selected switching status is accepted. The display shows **PERM ON** or **PERM OFF**. This switch status remains until permanent switching is again reset.

Cancel/delete permanent switching

1. Use the **Menu** key to select the Menu item **MAN**.
2. Confirm 2 x with the **OK** key.
3. Use the **+** or **-** key to select **CLEAR**.
4. Confirm with the **OK** key.

The timer reverts back to Automatic mode and the applicable switch status according to the switch program is accepted. The date appears again in the display.

Note

Manual switching (manual and permanent switching) can be activated and deleted in Automatic mode by simultaneously pressing the **+** and **-** keys.

Menu MAN

PIN

The device can be locked against unauthorized use with a 4-digit code number.

1. Use the **Menu** key to select the Menu item **MAN**.
2. Confirm 2 x with the **OK** key.
3. Use the + or – key to select the Sub-menu **PIN**.
4. Confirm with the **OK** key. The display shows **NO PIN**.

Selection WITH PIN (enter new PIN)

5. Use the + or – key to select **WITH PIN**.
6. Confirm with the **OK** key.
7. Create and make note of any desired 4-digit number.
8. Use the + or – key to select the first digit of the 4-digit code.
9. Confirm the input digit with the **OK** key.
10. Select the other digits as described with the + or – key.
11. Confirm in each instance with the **OK** key.
The display shows **FINISH**.

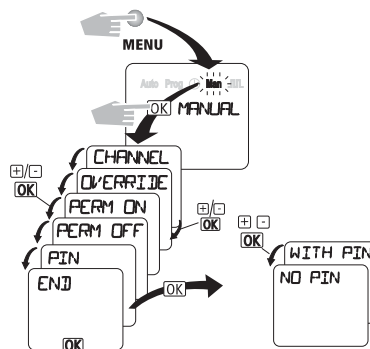
Menu MAN

12. With the **OK** key you return back to Automatic mode.

90 seconds after the last key activation, the keyboard lock engages, i.e. PIN appears. Operation can now only continue after inputting the correct PIN code.

If a PIN code has been activated, the timer can no longer be activated without a valid PIN code after a RESET.

The device must be sent in!



9. Technical Data

TR 684 top

Type of program:	day or week
Operating voltage:	230 V +10/-15 %
Nominal frequency:	50 – 60 Hz
Internal consumption:	max. 6 VA
Switching capacity (1-channel):	6 (2) A
Switching capacity (2-channel):	2 x 6 (2) A, 250 V~
Contact material:	AgSnO ₂
Type of contact:	changeover
Time base:	quarz
Memory locations:	42
Min. switching interval:	1 minute
Switching accuracy:	to the second
Ganggenauigkeit:	≤± 1 sec. / day at 20 °C
Power reserve:	Lithium approx. 10 years at 20 °C

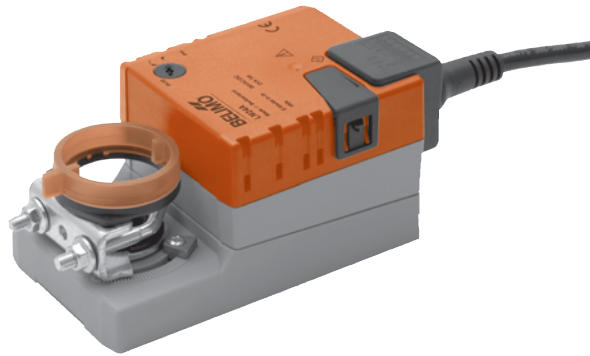
Technical Data

Perm. ambient temp.:	-10 °C ... +50 °C (- 10 T 50)
Class of protection:	II in accordance with EN 60730-1 if in- stalled as directed
System of protection:	IP 20 in accordance EN 60529
Type:	1 BSTU in accordance EN 60730-1 and EN 60730-2-7

Subject to technical alterations.

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 m²
- 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 ²
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	II Totally insulated <input type="checkbox"/>
	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
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
Mechanical accessories	Shaft extension AV6-20	T2 - Z-LM..A..

Electrical installation

Wiring diagrams

Note

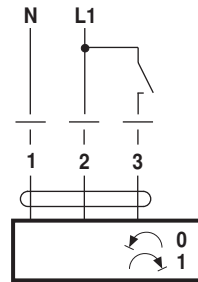
- Caution: Power supply voltage !
- Other actuators can be connected in parallel. Please note the performance data.



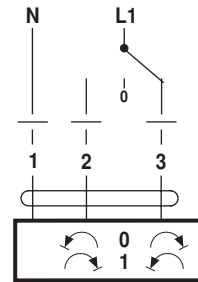
Direction of rotation



Open-close control

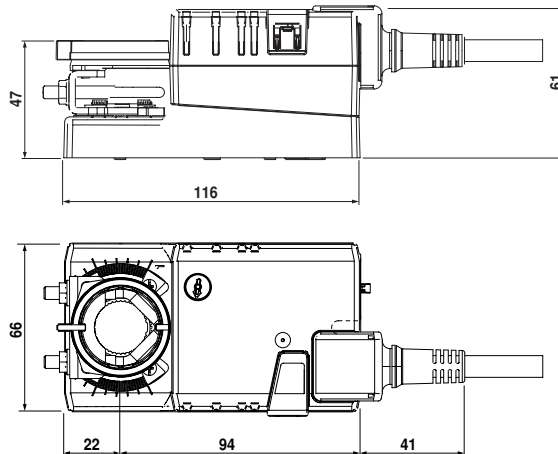


3-point control

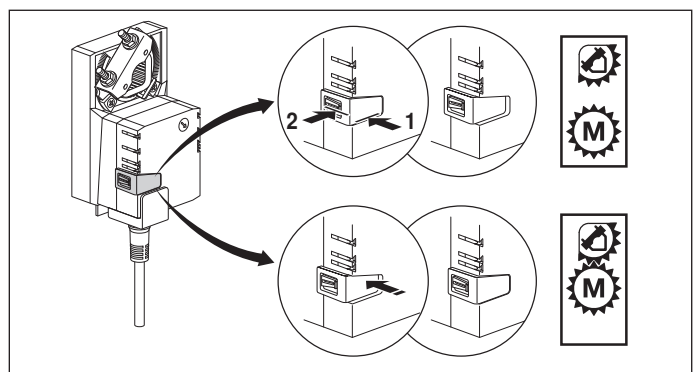
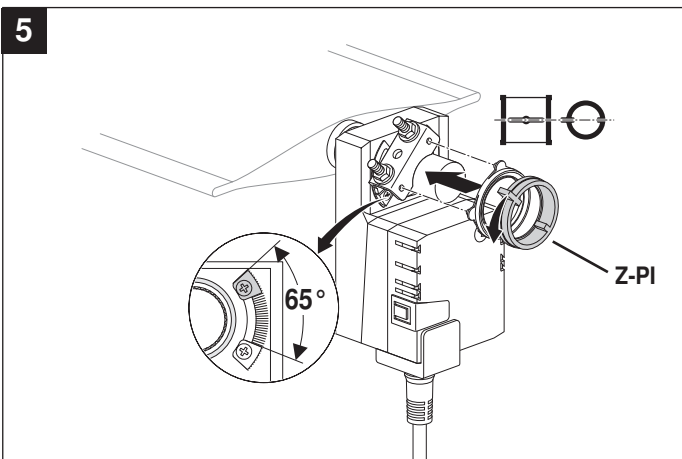
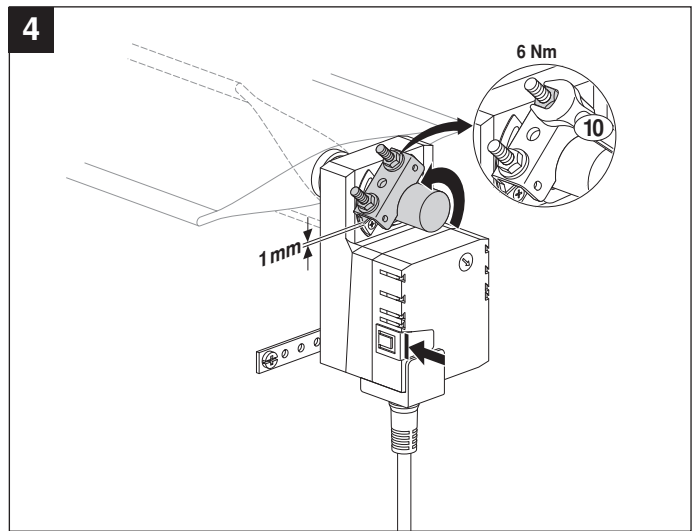
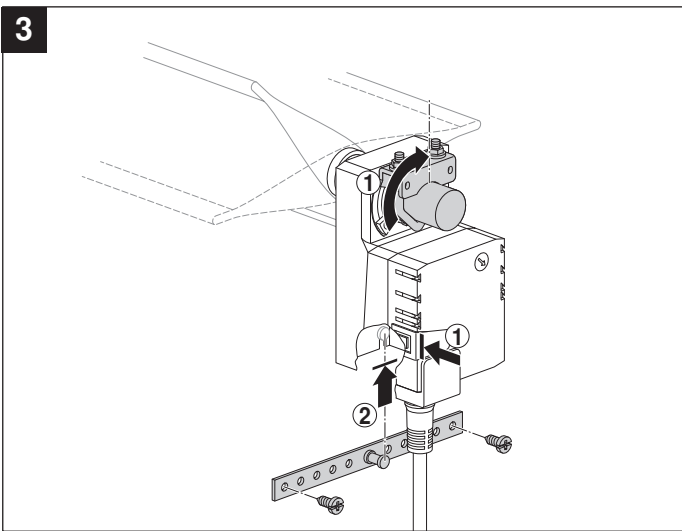
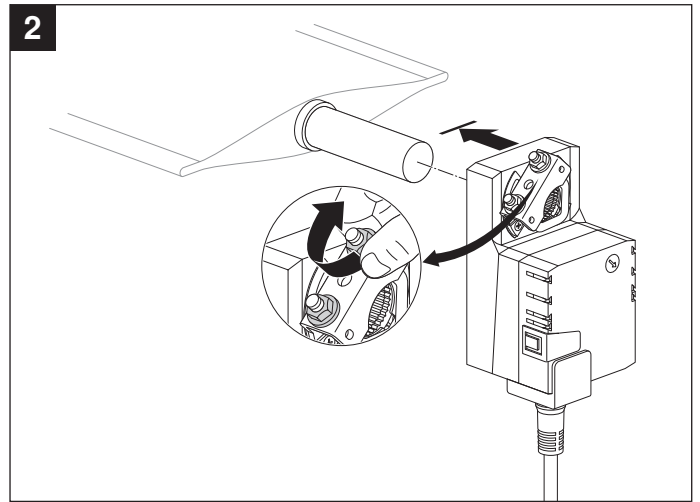
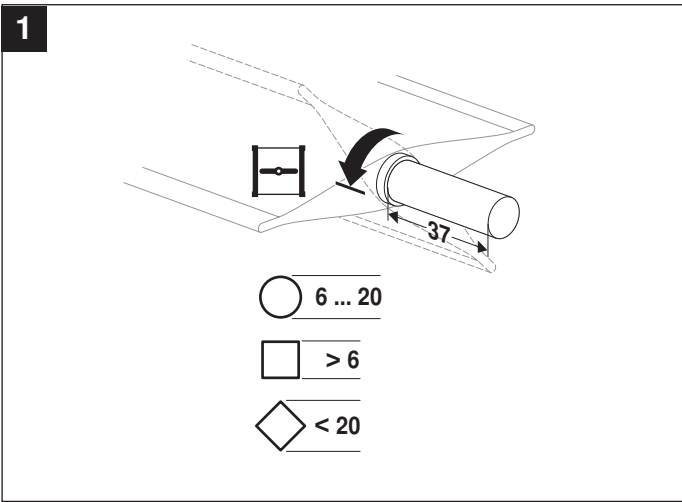


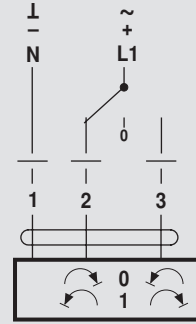
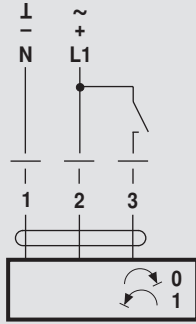
Dimensions [mm]

Dimensional drawings



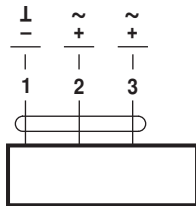
Damper spindle	Length	
	min. 37	6 ... 20



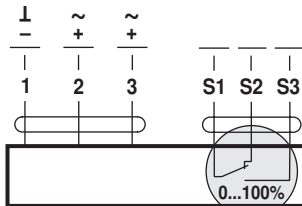


AC 24 V / DC 24 V

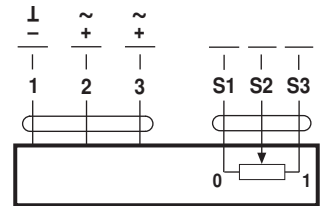
DC 48 ... 110 V
(LM72A..)



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

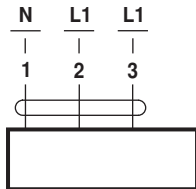


LM24A-S.. TMC24A-S..

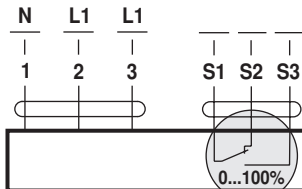


LM24AP5..

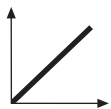
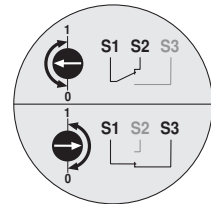
AC 100 ... 240 V



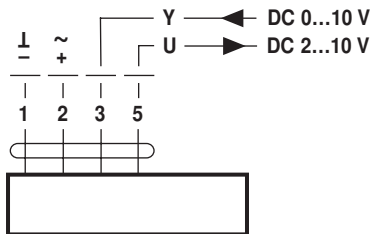
LM230A.. LMC230A..
TMC230A..



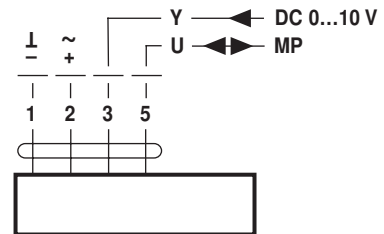
LM230A-S.. TMC230A-S..



AC 24 V / DC 24 V

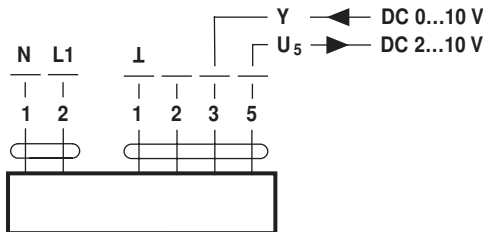


LM24A-SR.. LMC24A-SR..
LM24A-MF.. TMC24A-SR..



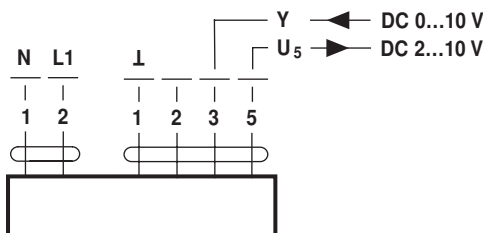
LM24A-MP..

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



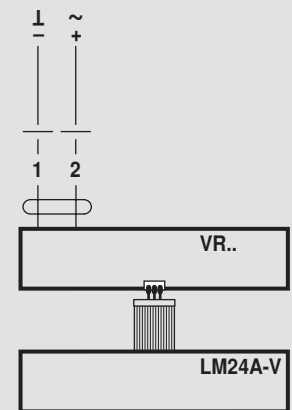
LM72A-SR..

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-1000S

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*