systemair

Installation instruction EN

Pre-heater for Topvex

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1 Introduction

1.1 Product description

The product is a pre-heater and duct sensor which is intended for use together with Topvex counterflow units.

1.2 Intended use

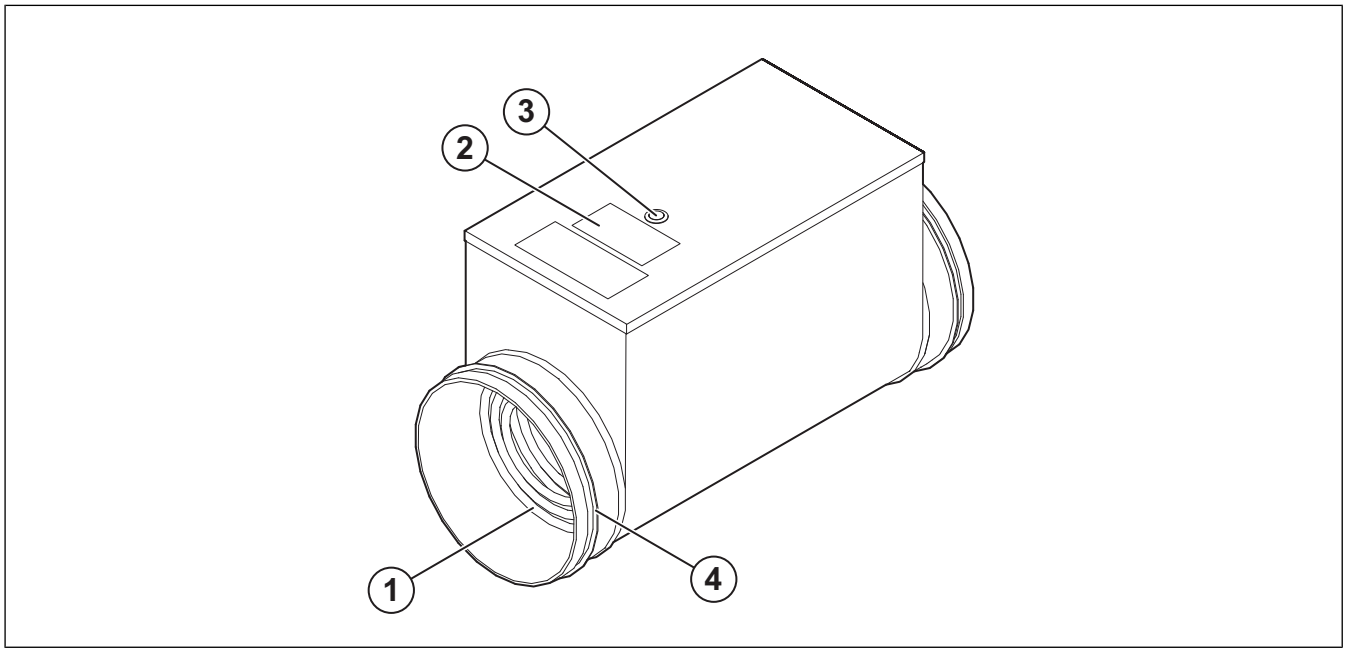
The product is used for compensation of heating capacity and protection against icing in the heat exchanger.

The product is intended for installation together with Topvex air handling units in ventilation systems with circular or rectangular ducts.

The maximum ambient temperature for the pre-heater is 30 ° C.

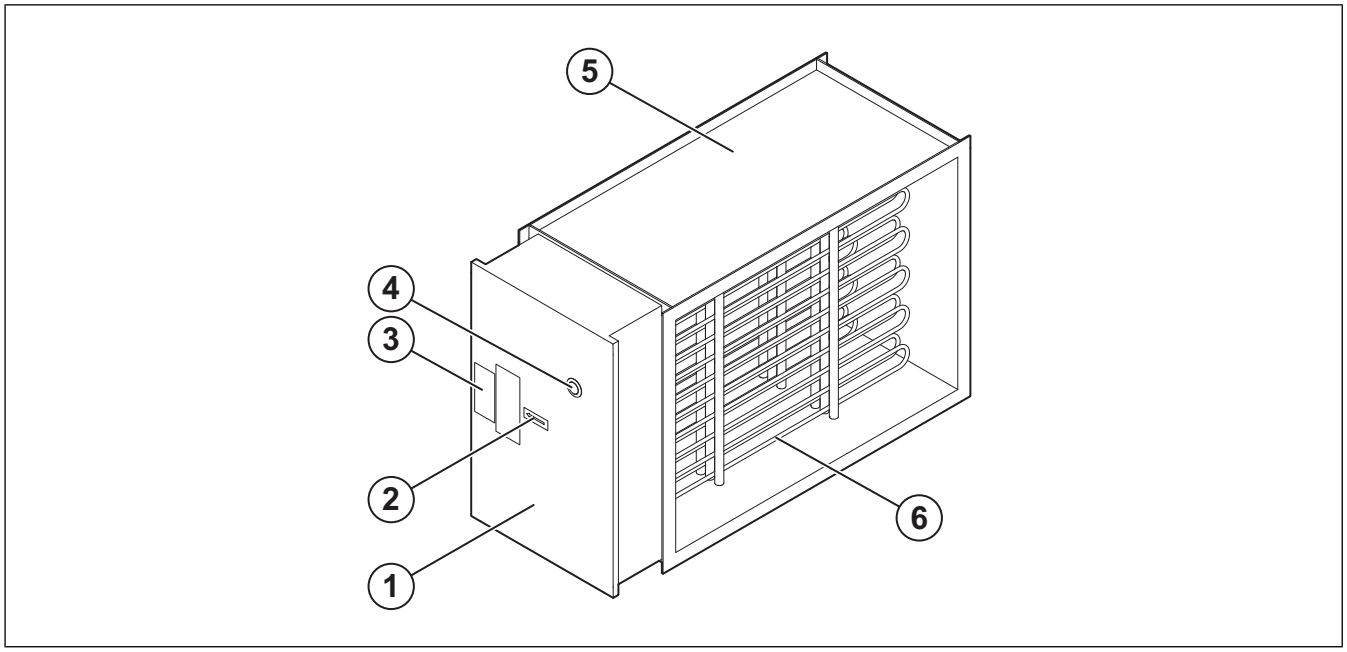
The maximum temperature of the output air is 50 °C.

1.3 Product overview CB



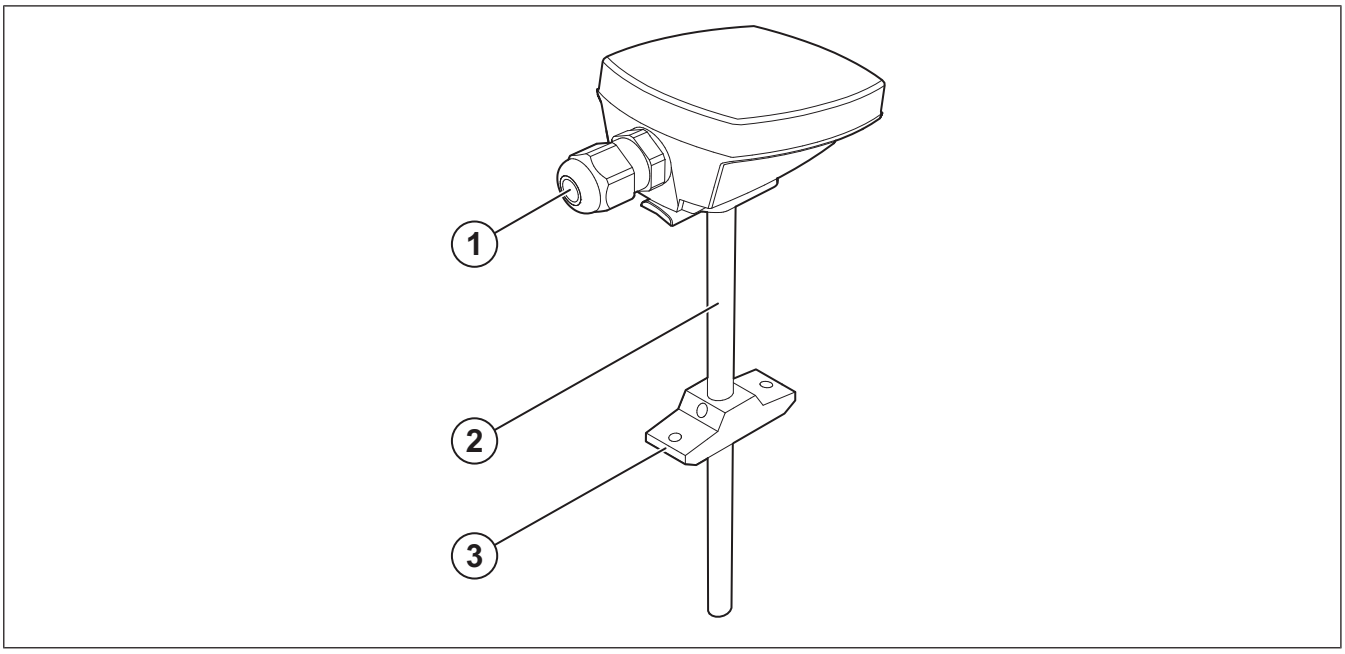
1. Heating rods
2. Name plate
3. Overheat protection reset button
4. Duct joints with rubber rings

1.4 Product overview RB



1. Electric cabinet
2. Air flow direction arrow
3. Name plate
4. Manual overheat protection reset button
5. Casing

1.5 Product overview TG-KH/PT1000



1. Cable gland
2. Sensor probe
3. Mounting bracket

2 Safety

Warning

Set the installed safety switch in the OFF position before you do the maintenance unless the instructions tell you differently. Make sure that the safety switch is not accidentally set in the ON position.

The heater is S-marked, CE-marked, EMC-marked and designed in accordance with SEMKO 111 FA 1982 / EN 61000-6-2.

2.1 Safety definitions

Warnings, cautions and notes are used to point out specially important parts of the manual.

Warning

If you do not obey these instructions, there is a risk of death or injury.

Caution

If you do not obey these instructions, there is a risk of damage to the product, other materials or the adjacent area.

Note:

Information that is necessary in a given situation.

3 Installation

3.1 To do before installation of the product

- Make sure that the pre-heater is connected to the power supply with a fixed round cable and that all cable glands are tight against the cables to prevent leaks.
- Make sure that the airflow through the heater cannot be lower than 1,5 m/s when the pre-heater is in operation.
- Make sure that the air is filtered to make sure there is no contamination of the airflow sensor.
- Make sure that there is enough room for installation, replacement and inspection in the installation location.

3.2 To install the pre-heater

Warning

Minimum distance from the heater to combustible material must be 30 mm.

Warning

Make sure that it is not possible to touch the heating element when the product is in operation.

1 Install the pre-heater in the duct with a minimum of 2 x the duct diameter from a duct bend, filter unit, or other objects that can cause turbulence in the airflow.

   For products with circular duct connections, do these steps:

   a. Put the duct on the duct joint of duct heater. Pull the duct over the rubber rings on the duct joint on duct heater.

   b. Use self drilling screws to attach the duct to the duct joint.

   For products with rectangular duct connections, do these steps:

   a. Install the pre-heater on the duct using guide rails. Guide rails are not supplied by Systemair.

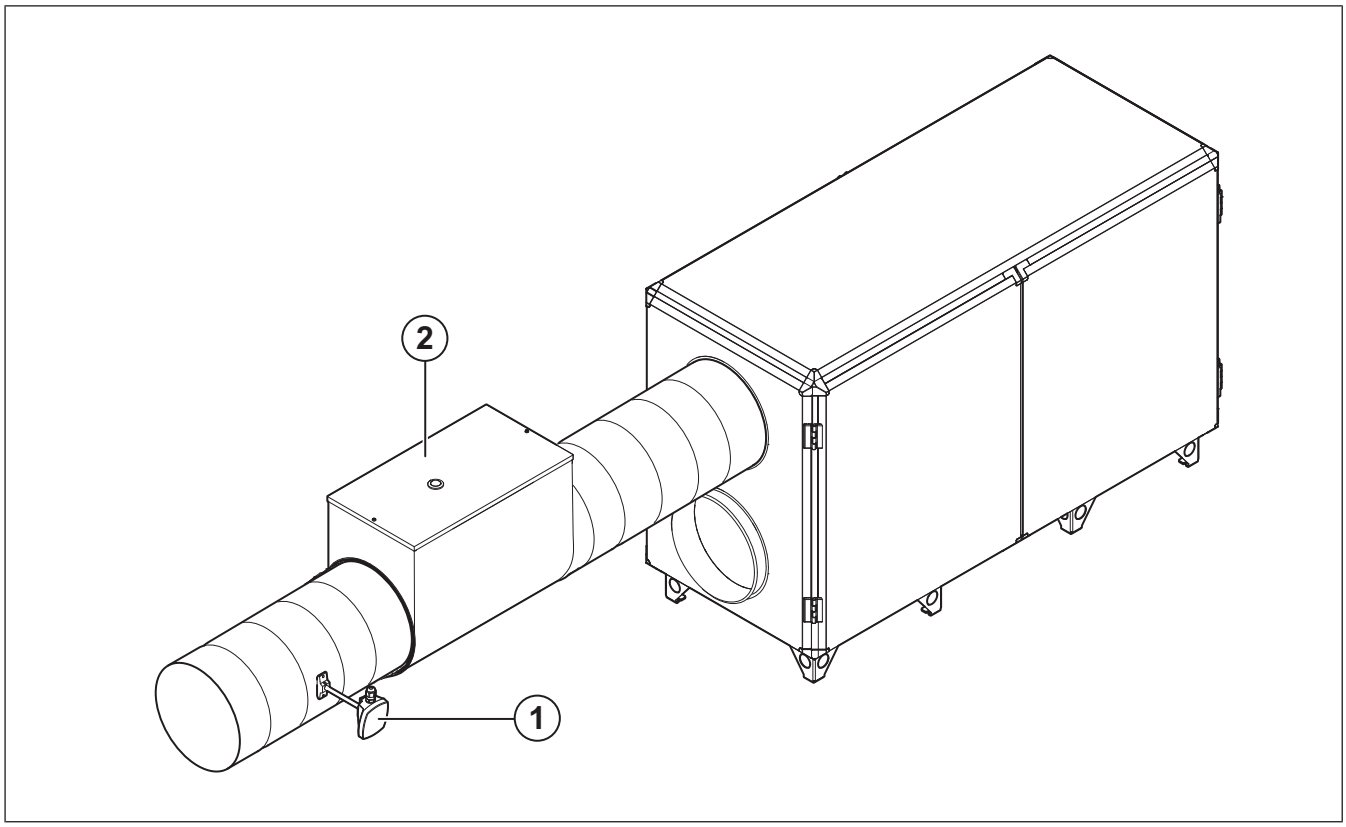
   b. Put fireproof insulation on the pre-heater in accordance with local regulations for ventilation ducts.

2 Install the supplied duct sensor (1) in the duct.

   a. Use a drill to make a hole for the supplied sensor in the outdoor air duct.

   b. Make sure that the distance between the hole and the pre-heater (2) is minimum 1.5 m.

   c. Put the sensor in the hole, adjust the length and attach the sensor with the supplied screws.



3.3 To use the manual overheat reset

Warning

Do not touch the heater, there is a risk of injury.

The duct heater is equipped with manual overheating reset. The overheat protection is designed to prevent overheating when the airflow is too low, or if there is a fault in the system.

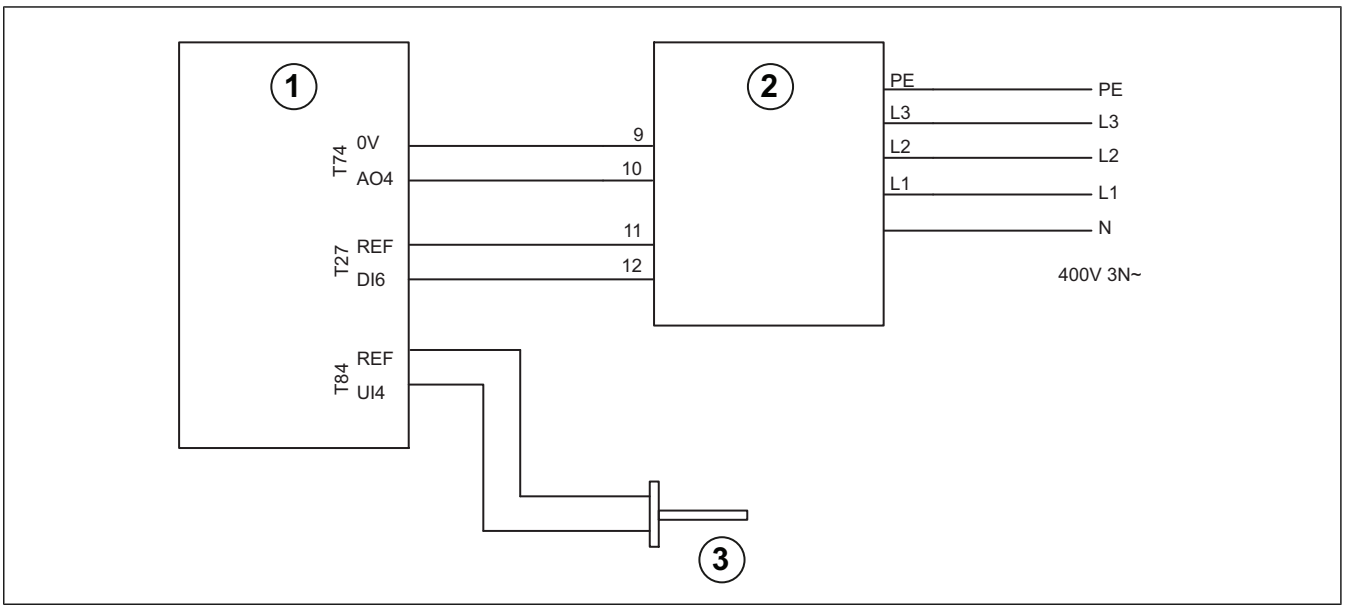
If the manual overheat protection is released, do these steps:

1 Turn off the power supply and wait until the heater is cool.

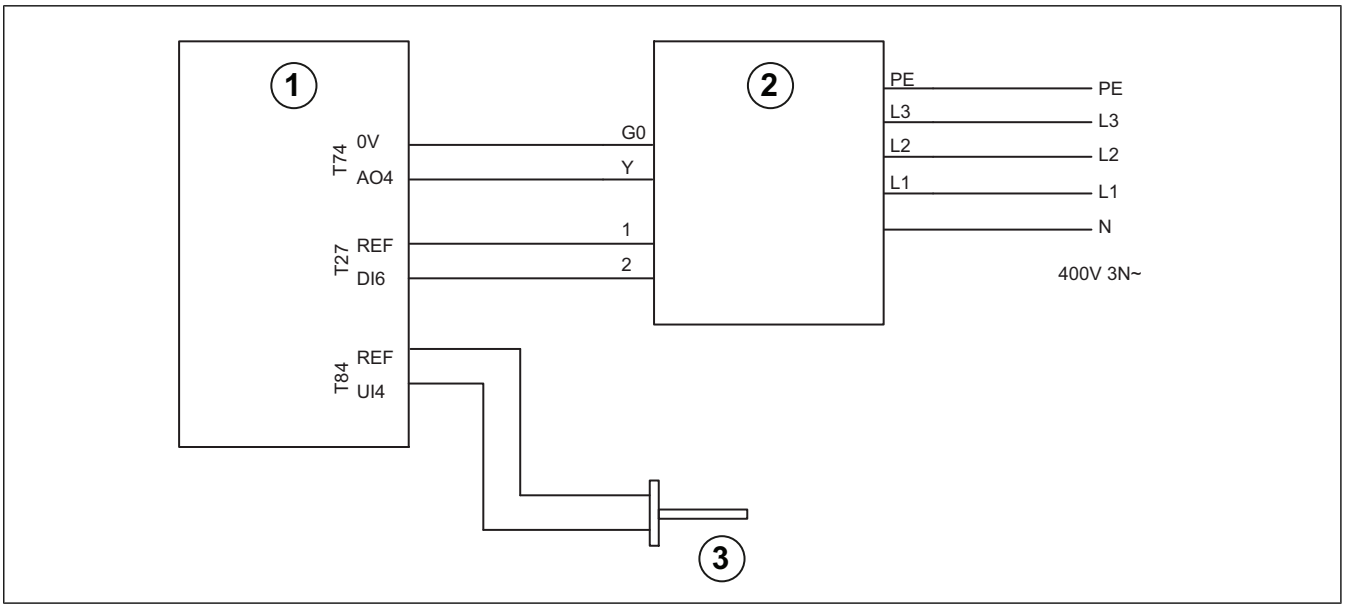
2 Investigate the reason for the released overheat protection.

3 When the problem has been removed, push the overheat protection reset button, refer to 1.3 Product overview CB and 1.4 Product overview RB.

4 Wiring diagram CU27

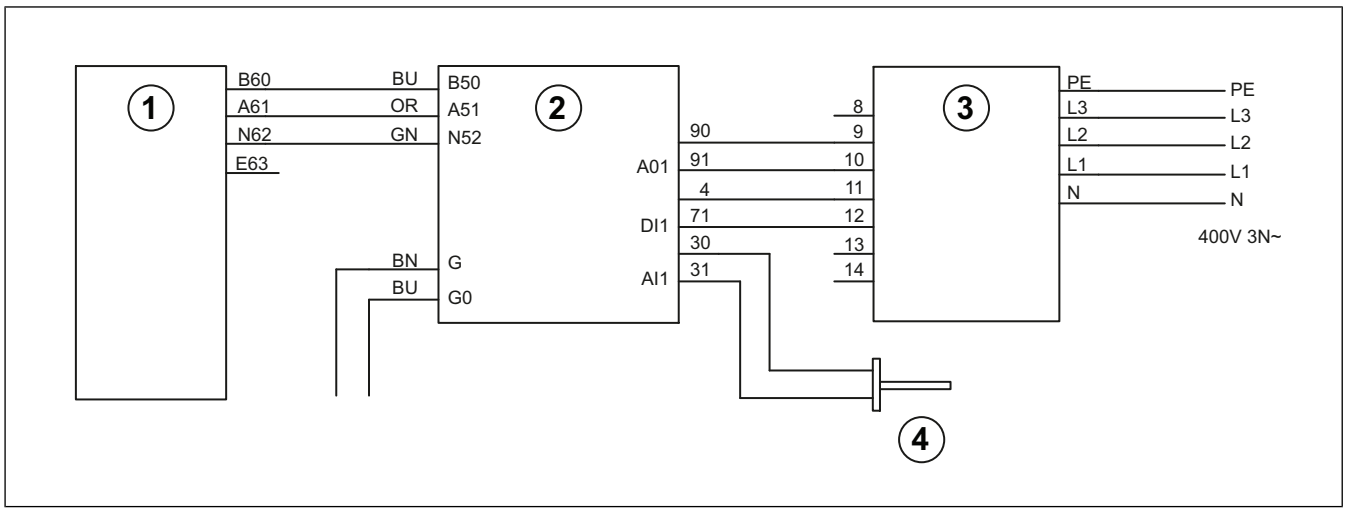


Wiring diagram for CU27 (1), CB (2). Outdoor air sensor (3)

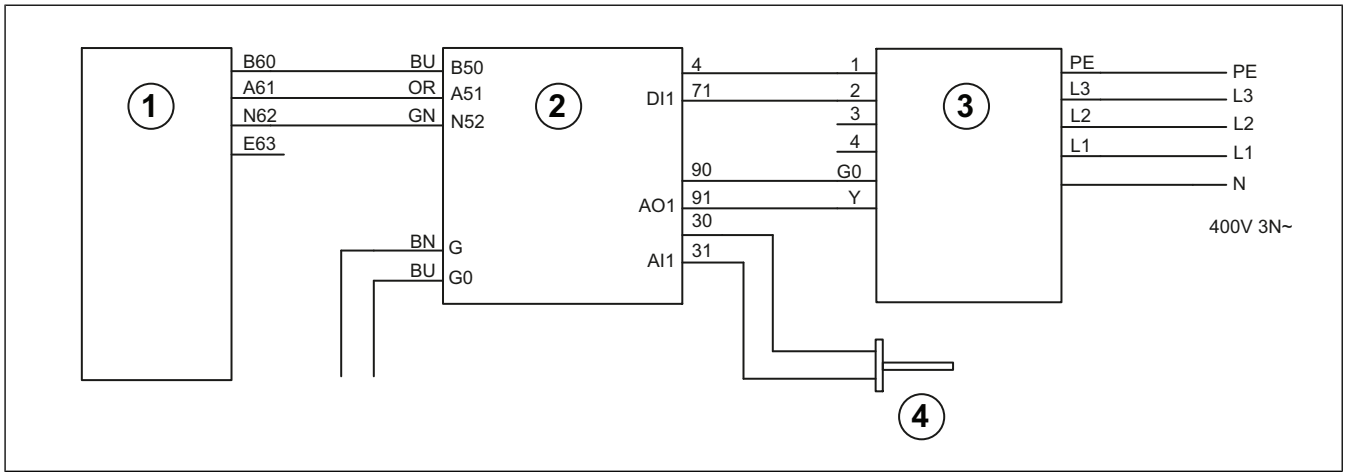


Wiring diagram for CU27 (1), RB (2). Outdoor air sensor (3)

5 Wiring diagram CU283



Wiring diagram for control unit (1), expansion module CEM15 (2) and CB pre-heater (3). Outdoor air sensor (4)



Wiring diagram for control unit (1), expansion module CEM15 (2) and RB pre-heater (3). Outdoor air sensor (4)

6 For Topvex with Access control system from sw 4.X

6.1 To set up the pre-heating function

Log in with service mode using password 0612.

Service

0612

Login

6.2 To activate the pre-heating function

Select Yes as Pre-heater in the list of available functions in the Configuration > Functions > Function activation menu.

Configuration > Functions > Function activation 2024-11-29

Preheater Yes

6.3 To configure the pre-heater

Configure the preheater and its running mode in the Configuration > Functions > Preheater menu.

Select *When defrosting* to maintain supply air temperature at desired level only during by-pass defrosting (Pressure monitoring).

Select *Unit running* if preheater is used to prevent icing in the exchanger or to support section defrosting or heating capacity in very cold climates.

Configuration > Functions > Preheater 2024-11-29

Preheater function	Preheater
Type of preheater	Electric
Preheater temperature sensor	Preheater temperature
Start/Stop function	When defrosting, Unit running
Type of feedback	Alarm

6.4 To allocate the pre-heater

Configuration > I/O allocation settings

Do not use the same in- or output for several functions.

Select I/O placement for the connected temperature sensor and control signals to and from the electric heater in the Configuration > I/O allocation settings submenus.

Configuration > I/O allocation settings > Analog inputs 2024-11-29

Analog inputs	Device	Position
Intake air temperature	Controller	AI4
Preheater temperature	PDT2	UI1

Configuration > I/O allocation settings > Digital inputs 2024-11-29

Digital inputs	Device	Position
Feedback preheater	Controller	DI6

Configuration > ... > Digital inputs> Feedback preheater 2024-11-29

Name	Feedback preheater
Original name	Feedback preheater
Contact function	Normally closed

Configuration > I/O allocation settings > Analog outputs 2024-11-29

Analog outputs	Device	Position
Preheater	Controller	AO4

6.5 Operation settings

Data & Settings > Temperature control > Preheater

Adjust the pre-heater temperature set point in the Data & Settings > Temperature control > Preheater menu

When defrosting:

To maintain a supply temperature during by-pass defrosting, the pre-heater need to compensate for the missing heating capacity. For example, if the correct supply air temperature is 22 °C, but the heating capacity is only 10 °K, the pre-heater setpoint need to be 12 °C.

Unit running:

Example A: To prevent any ice build-up in the exchanger the pre-heater setpoint need to be 0 °C.

Example B: In very cold climates the pre-heater setpoint need to equal the outdoor temperature used for dimensioning the air handling unit's heating capacity. For example, if the unit is dimensioned for outdoor temperatures down to -18 °C but outdoor temperatures in the location is lower, the pre-heater setpoint need to be -18 °C.

	Data & Settings > Temperature control > Preheater	2024-11-29	
	Setpoint preheater		-18 °C

6.6 To save commissioning settings

When the installation is complete and all functions are tested, Systemair recommends to save a local backup of the current configuration in the control unit.

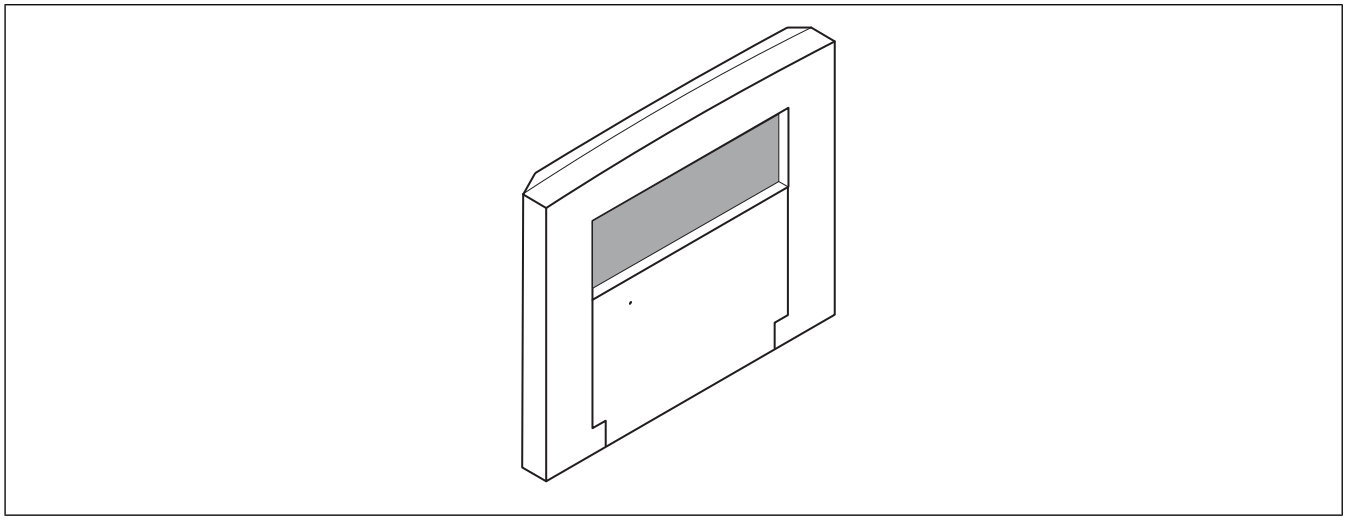
Select Yes on Save commissioning settings in Configuration > System settings > Save and restore settings.

	Configuration > System settings > Save and restore settings	2024-11-29	
	Save commissioning settings		Yes

7 For Topvex with control system sw 3.X

1 Reset the CEM15 by pressing the reset button while the CEM15 is powered.

2 Connect a E3-DSP control panel



3 On first start up the controller will start a program for downloading an application to the main memory.

4 The start screen is displayed.

→Application System Communication Time/Date Input/Output

Use the up and down arrows to move the cursor to *Application* and press the right arrow to view available applications.

→Expansion unit 1 Expansion unit 2 Expansion unit 5 Expansion unit 6

Move the cursor to *Expansion unit 1* and press the right arrow to select.

Title: Expansion unit 1 Activate? No

Press OK and change Activate to Yes. Press OK.

The most recently loaded application will be entered into memory. This will take approximately 30 seconds. The application start screen is displayed.

7.1 To set up pre-heating function

Function with expansion unit.

Log on with admin rights, 3333.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
* Access rights	* Log on	Log on Enter password xxxx Actual level: None	Log on to service level by entering a 4-digit code. After reaching the desired level go back with “LEFT” arrow (press 2 times) on the control panel. Standard code from factory to enter service level is 2222. Back to operator level: 1111. To enter Admin level code: 3333.
→Configuration	→Communication	Function port2 Exp and ext display	→Corrigo E15
	→Input/Output	→AI	AI3: Extra unit temp Raw value: NaN Compensation: 0.0 °C
		→AI exp1	AI1 Exp1: Sign: Outd temp Raw value: 0.0 Compensation: 0.0 °C

		→DI exp 1	DI1 Exp1: NO/NC: NC Signal: Ext alarm1 Status:Off Overheat pre-heater is presented in the display when the alarm is active.
		→AO exp1	AO1 Exp1: Sign: Extra unit Auto Value: 0,0 V Control signal for heater 0-10V
		→DO exp1	DO1 Exp1: Sign: ExtraUnitActi Auto Status: Off Activated during defrosting sequence.
	→Extra control unit	Mode extra unit Run if defrosting	Activated during defrosting sequence. See Example 1
		Mode extra unit Run if units us running	Activated during normal run. See Example 2 Option: Running if unit is running is to avoid defrosting if unbalanced airflow is not permitted.
		Control mode extra unit Heating	
→Settings	→Control extra unit	Control extra unit P-band: 33.0 °C I-time: 100.0 s	Set P-band and I-time for Control extra unit.
→Temperature	Extra unit Actual: NaN °C Setp: 18.0 °C		Set the pre-heater temperature

Example 1

Run if defrosting. If pre-heater is used in order to maintain supply temperature at correct level.

For example, correct supply temperature is +20 °C, the outside air is -4 °C and the heater has an capacity of 10 °C. This is enough during normal operation on these units but during bypass defrosting the heater needs a capacity of 24 K. This is a deficiency by 14 K.

In this example a set point for the pre-heater needs to be +10 °. Set point must be chosen according to heat capacity and airflow.

Example 2

Run if units is running. In this case you need to have a set point at 0 °C.

Pre-heater will be active below 0 °C during normal operation. To use this option configuration must be changed. Same extra sensor as above is used.

It can also be used for a unit in a very cold location when the heating capacity is not enough. For example -30 °C. Set point depending of heat capacity and airflow. In this case a set point can be, for example -18 °C.

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