systemair

Installation instruction EN

VAV duct pressure control kit

Table of content

1 Introduction

1.1 Product description

Included in the kit are two settable differential pressure transmitters, two measuring taps, one red and one blue tube (2 m), one two-wire cable (4 m) and one installation instruction.

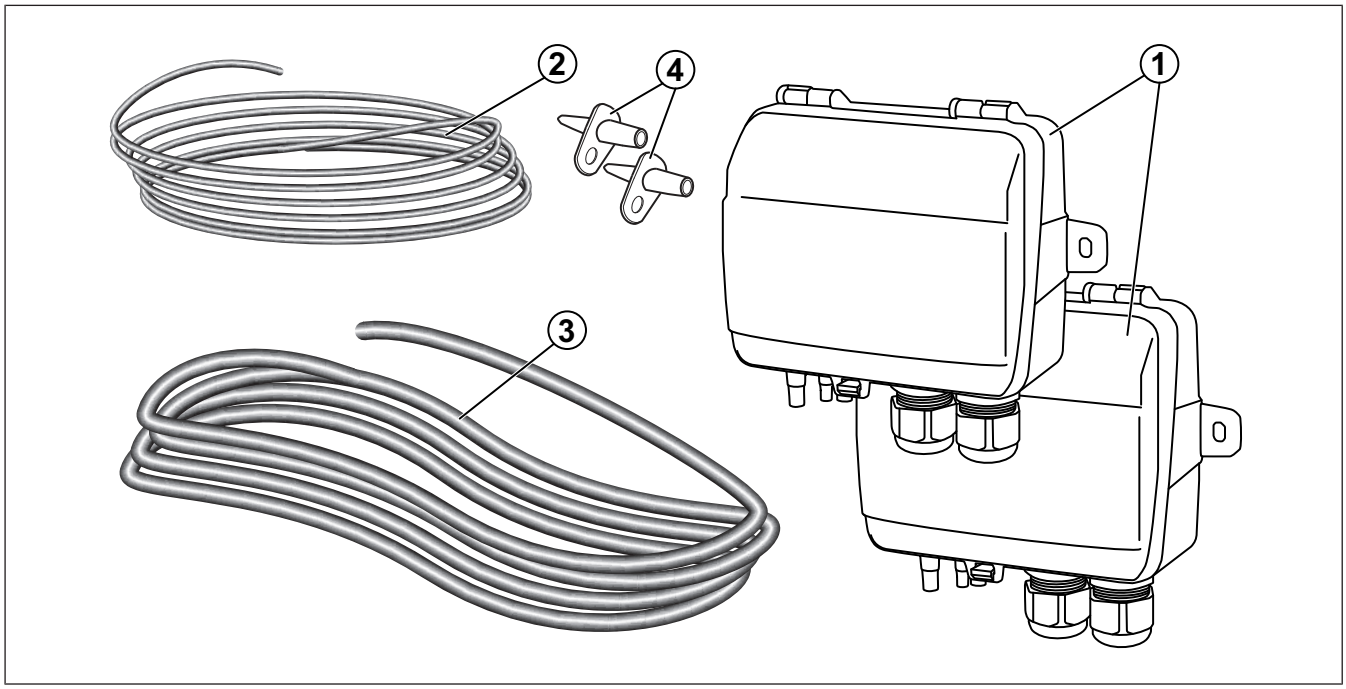
1.2 Intended use

The VAV duct pressure control kit is used for VAV control of air handling units.

1.3 Document description

This document contains instructions for installation and configuration of the product. The procedures must be done by approved personnel only.

1.4 Product overview



1. Differential pressure transmitter
2. Electrical cable
3. Tubes
4. Pressure measuring taps

2 Product liability

Systemair is not liable for damages that the product causes in these conditions:

- The product is incorrectly installed, operated or maintained.
- The product is repaired with parts that are not original spare parts from Systemair.
- The product is used together with accessories that are not original accessories from Systemair.

3 Safety

3.1 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.

3.2 Safety instructions

Warning

Read the warning instructions that follow before you do work on the product.

- Read this manual and make sure that you understand the instructions before you do work on the product.
- Obey local conditions and laws.
- The ventilation contractor and the operator are responsible for correct installation and intended use.
- Keep this manual at the location of the product.
- Do not install or operate the product if it is defective.
- Do not remove or disconnect safety devices.

3.3 Personal protective equipment

Use personal protective equipment during all work on the product.

- Approved eye protection
- Approved protective helmet
- Approved hearing protection
- Approved protective gloves
- Approved protective shoes
- Approved work clothing

4 Installation

4.1 To do before the installation of the product

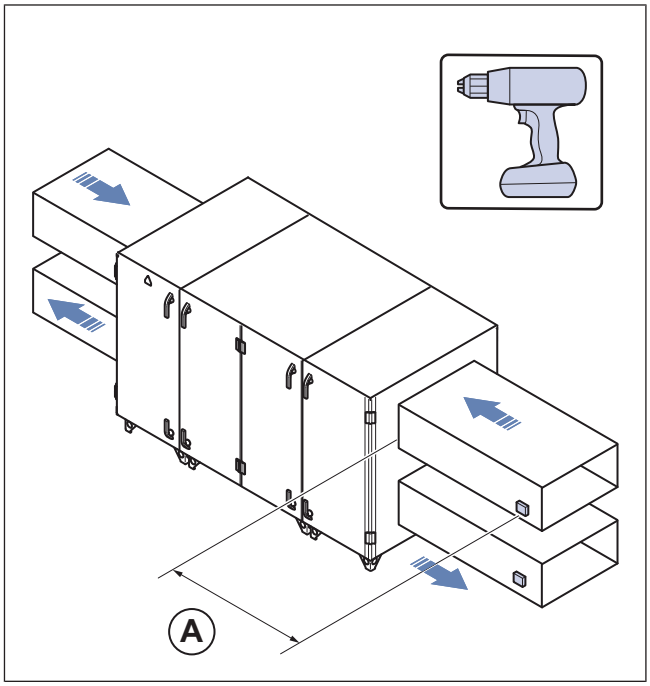
- Examine the packaging for transportation damage and remove the packaging from the product carefully.
- Examine the product and all components for damage.

4.2 To install the differential pressure transmitters

Note:

In humid environment, fasten the differential pressure transmitter vertically with the cable gland edge of the product pointing down.

1 Fasten the differential pressure transmitters on the supply and extract air duct. Make sure that the distance (A) is a minimum of 3 meter.



Example Topvex SC

2 Fasten the pressure measuring taps.

Note:

Avoid measuring points with turbulent air flow. Perform the measuring at a distance of 2 duct diameters before bends and branching and at 6 duct diameters after bends and branching.

a. Drill a 6 mm hole for the pressure measuring taps on the supply and extract air duct.

b. Fasten the taps with the enclosed screws.

c. Connect the red tube to the supply air duct and the blue tube to the extract air duct.

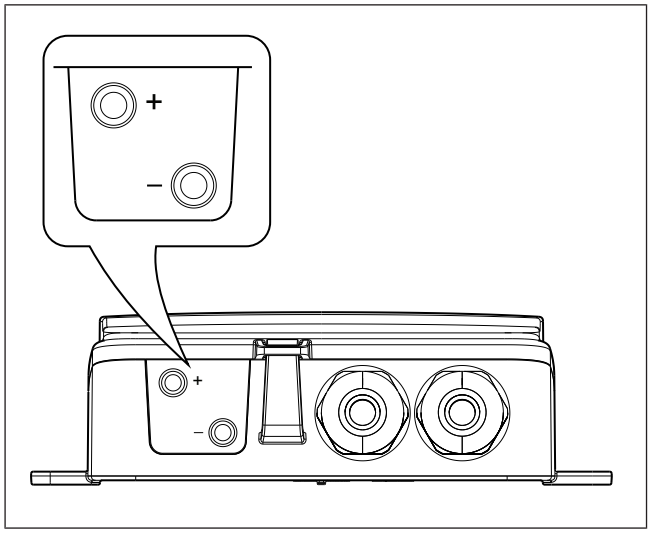
3 Connect the other end of the tubes to the differential pressure transmitter's inlet ports.

Caution

Be careful when connecting the hoses to the inlet ports, the thin inner connections of the inlets are very sensitive. The lid should be kept closed while performing the connections, or the thin tubing might detach from the sensor.

a. Connect the red tube from the supply air duct to + on one of the pressure transmitter.

b. Connect the blue tube from the extract air duct to - on the other pressure transmitter.



4 Connect the cables according to 5.1 Wiring diagrams.

4.3 Description of the pressure transmitter

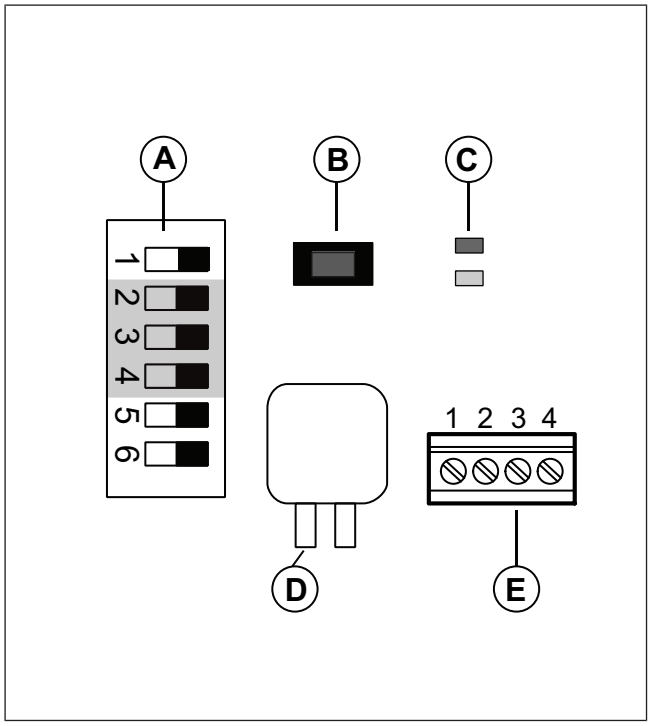


Figure show dip-switches to the left, position OFF.

A. DIP-switches
B. Push button
C. Status LED
D. Sensor 1
E. Terminals

4.3.1 To set the pressure range on the pressure transmitter

Dip-switch setting	Pressure range (Pa)
2 = OFF, 3 = OFF, 4 = OFF	0...50
2 = ON, 3 = OFF, 4 = OFF	0...100
2 = OFF, 3 = ON, 4 = OFF	0...300
2 = ON, 3 = ON, 4 = OFF	0...500
2 = OFF, 3 = OFF, 4 = ON	0...700
2 = ON, 3 = OFF, 4 = ON	0...1000
2 = OFF, 3 = ON, 4 = ON	0...1250

4.3.2 To zero point calibrate the pressure sensors

1. Disconnect the pressure ports before zero setting.
2. Let the product warm up for 10 minutes before attempting the procedure.
3. Quick press the push button. Zero point calibration takes about 5 seconds. The yellow LED will light up while the zero point calibration is in progress.
4. If the yellow LED starts blinking during the zero point calibration, the procedure has failed. Ensure that the pressure ports are open and try again.
5. If the procedure still fails, a sensor error is present and the product must be replaced.

4.3.3 To reset to factory settings

- Long press (10 s) the push button

  The red and yellow LED lights will flash alternating for the duration of the operation. The product will then reset and restart.

4.3.4 Status LED light

The red LED lights up when the power is on and goes out when the built-in sensory circuit is ready for use.

Flashing red LED after power-up:

The product has lost important system settings and must be taken back to the factory for reprogramming.

Steady red LED during normal operation:

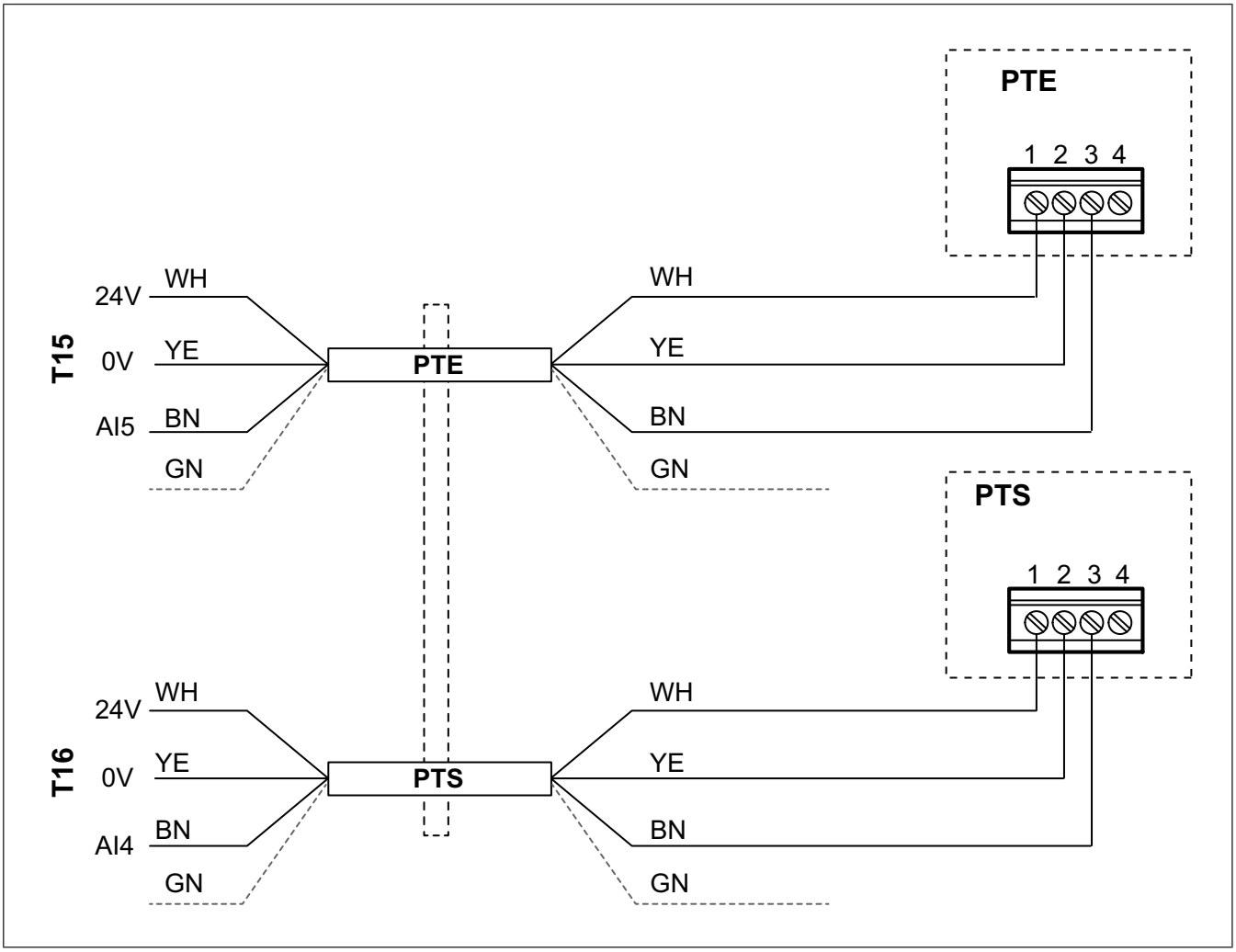
The product is damaged and should be returned or discarded.

5 Technical data

5.1 Wiring diagrams

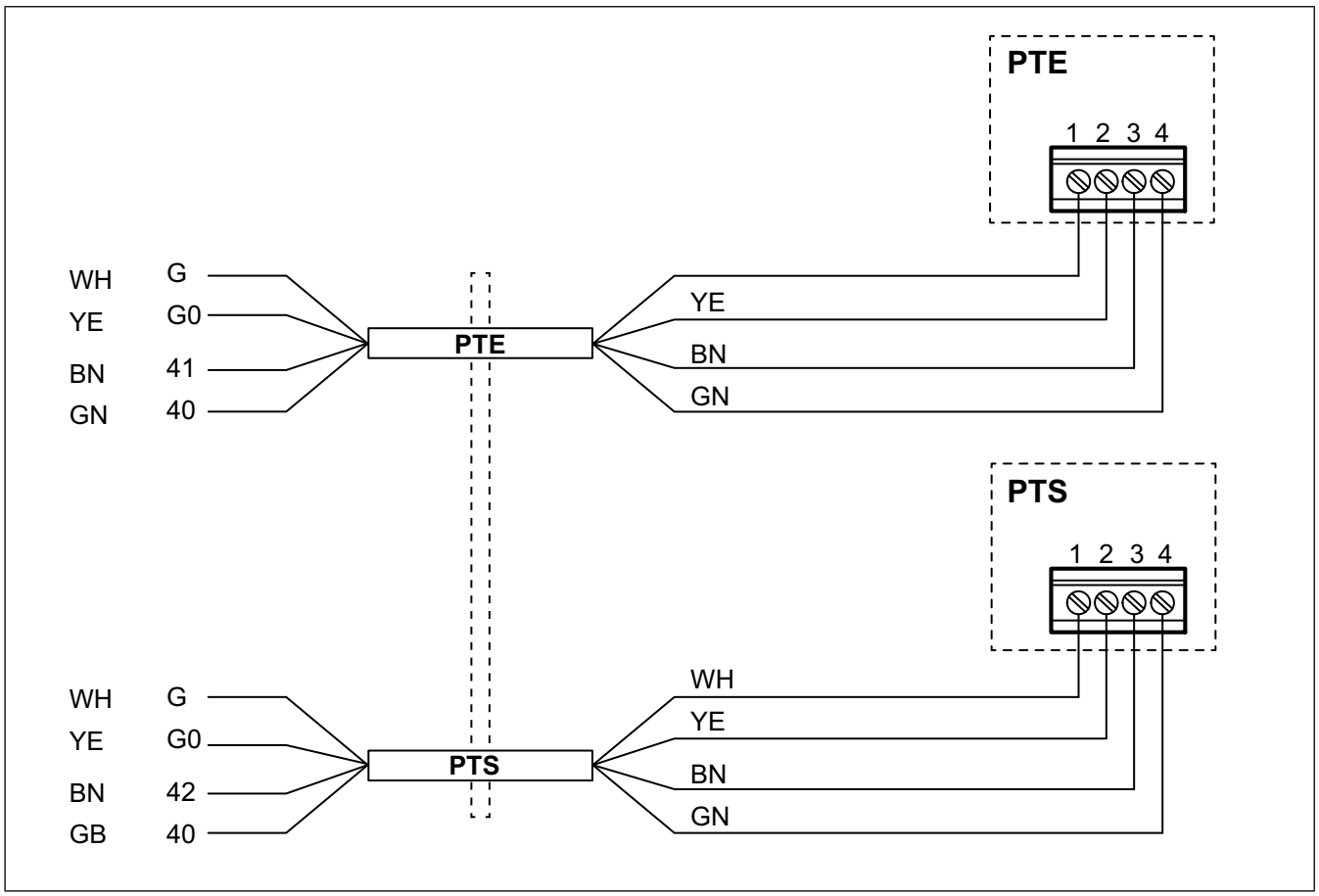
Abbreviation in wiring diagram	Cable colour
YE	Yellow
WH	White
GN	Green
BN	Brown
PTE	Pressure transmitter extract air
PTS	Pressure transmitter supply air
T15, T16	Terminals in Topvex SR, TR, SC, TC control unit
G0, G, 42, 40	Terminals in Topvex FR, FC, SF control unit

5.2 Topvex SR/TR, SC/TC



Green cable should not be used. Isolate to avoid short circuit.

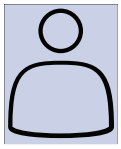
5.3 Topvex FR, FC, SF



6 To configure the pressure transmitter in the air handling unit controller

6.1 For SR/TR, SC/TC, FC, FR

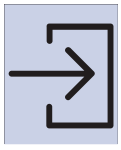
6.1.1 To log in



1. Open the log in window

2. Select service from drop down list

3. Type in password 0612

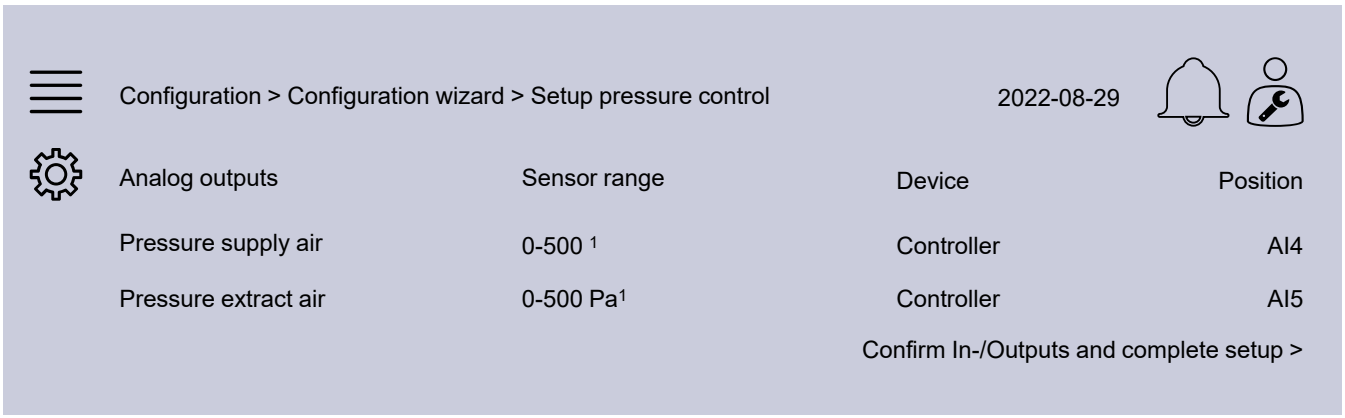


4. Press Login.

6.1.2 To start the configuration wizard

A configuration wizard is available from software version 4.1.

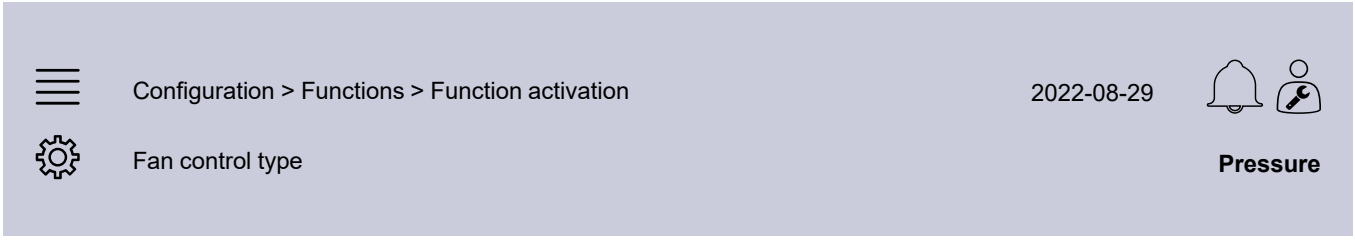
By using the wizard, the following steps in 6.1.3 To activate the pressure control function and 6.1.4 To allocate differential pressure sensors can be omitted.



1. The set pressure range in the pressure transmitter.

1. Select Configuration from navigation icons
2. Select Configuration wizard
3. Select Set up pressure control
4. Set sensor range
5. Select In-/Outputs
6. Select Confirm In-/Outputs and complete setup
7. Confirm and activate the selected configuration with Yes complete setup.

6.1.3 To activate the pressure control function

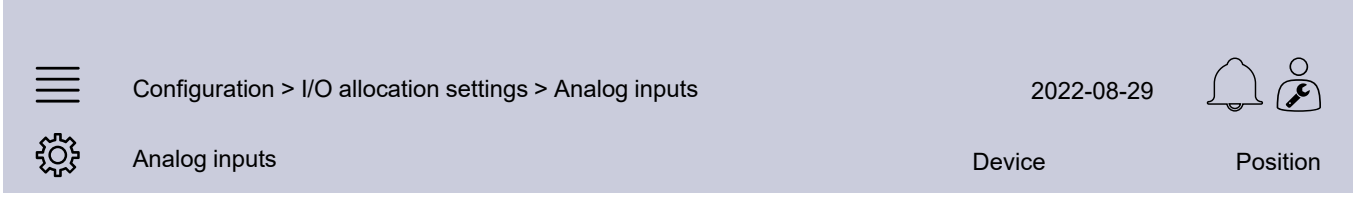


1. Select Configuration from the navigation icons
2. Select Functions
3. Select Function activation
4. Select Pressure as Fan control type.

6.1.4 To allocate differential pressure sensors

Note:

Observe the different IO settings for different Topvex units



Topvex SR, TR, SC, TC **Pressure supply air** **Pressure extract air**	Controller	**AI4** **AI5**
Topvex FR, FC **Pressure supply air** **Pressure extract air**	Controller	**UI2** **UI1**

Configuration > Analog inputs > Pressure supply air		2022-08-29	
Sensor value at V_{min}			**0.0**
Sensor value at V_{max}			**500.0**

1. Select Configuration from the navigation icons
2. Select I/O allocation settings
3. Select Analog inputs
4. Select AI4 / UI2 signal for Pressure supply air
5. Select AI5 / UI1 signal for Pressure extract air
6. Select Pressure supply air
7. Set Sensor value at V_{min} the same as the start point of the sensor's selected measuring range
8. Set Sensor value at V_{max} the same as the end point of the sensor's selected measuring range
9. Go back to Analog inputs (use the navigation path Configuration > I/O allocation settings > Analog inputs)
10. Select Pressure extract air and repeat steps 7 and 8.

6.1.5 To adjust the fan pressure set points

Data settings> Fan control > Fan setpoints	2022-08-29	
Setpoint low speed supply air fan		**100 Pa**
Setpoint low speed extract air fan		**100 Pa**
Setpoint normal speed supply air fan		**200 Pa**
Setpoint normal speed extract air fan		**200 Pa**
Setpoint high speed supply air fan		**200 Pa**
Setpoint high speed extract air fan		**200 Pa**

1. Select Data & settings from the navigation icons
2. Select Fan control
3. Select Fan setpoints
4. Select and adjust set points for the available fan speed levels.

6.1.6 To save local settings

When the installation is complete and all functions are tested, we recommend to save a local backup of the current configuration in the controller.

Configuration > System settings > Save and restore settings	2022-08-29	

	Save commissioning settings	**Yes**

1. Select Configuration from the navigation icons
2. Select System settings
3. Select Save and restore
4. Select Yes on Save commissioning settings.

6.2 For SF units

6.2.1 To log in

Log in to Administrator level with password 3333.

Menu level 1	Menu level 2	Menu level 3
Temperature Air control Time settings → Access rights	→ Log on Log off Change password	→ Log on Enter password: 3333 Actual level: Admin

Note:

The grey-marked instructions is only for when Topvex SF have an external extract air fan installed.

6.2.2 To set the fan control type

Change the fan control to Pressure control.

Menu level 1	Menu level 2	Menu level 3
Manual/Auto Settings → Configuration Access rights	Sensor settings Control function → Fan control Extra sequence Y4	Fan control Pressure control

6.2.3 To set the adjusted working range

Set the adjusted working range for the added VAV pressure transmitters in menu Configuration/Sensor setting.

Adjust SAF (supply air fan) and EAF (extract air fan) actual pressure range at 10,0 V.

Example: If pressure transmitter is set to 0...500 Pa set: 0,0 V: 0,0 Pa and 10,0 V : 500,0 Pa. Filter factor is not to be changed.

Menu level 1	Menu level 2	Menu level 3
Manual/Auto Settings → Configuration Access rights	Inputs/Outputs → Sensor settings Control functions Fan control	SAF pressure at 0,0 V: 0,0 Pa 10,0 V: XXX Pa Filter factor ↓
		EAF pressure at 0,0 V:0,0 Pa 10,0 V: XXX Pa Filter factor

6.2.4 To set air control setpoint

Adjust the new Pressure ctrl SAF and Pressure ctrl EAF set points.

Menu level 1	Menu level 2	Menu level 3
Running mode Temperature → Air control Time settings	Pressure ctrl SAF Actual: 0 Pa Setp: 0 Pa → ↓	Pressure ctrl SAF Setp 1/1: 200 Pa Setp 1/2: 100 Pa ←
	Pressure ctrl EAF Actual: 0 Pa Setp: 0 Pa → ↓	Pressure ctrl EAF Setp 1/1: 200 Pa Setp 1/2: 100 Pa ←

6.2.5 To set alarm limit

Deviation from pressure setpoint value

Menu level 1	Menu level 2	Menu level 3
Manual/Auto → Settings Configuration Access rights	Control temp Control pressure → Alarm settings	→Alarm limits Alarm delays Restore alarm
		Control dev SAF 25.0 Pa
		Control dev EAF 25.0 Pa

6.2.6 To allocate in- and outputs

Menu level 1	Menu level 2	Menu level 3
Manual auto Settings → Configuration Access rights	→ Inputs/Outputs Sensor settings Control function Fan control	AI → UI DI UI

Menu level 4	Menu level 5	
UI1:→ Choose AI or DI sign AI sign:Not used DI sign:Not used ↓	UAI1: Sign: EAF pressure Raw value: NaN Compensation: 0.0 °C ←	
UI2:→ Choose AI or DI sign AI sign: Not used DI sign: Not used	UAI2: Sign: SAF pressure Raw value: NaN Compensation: 0.0 °C	

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