# CS2500

**EN** **USER MANUAL**
ProNordic

# Contents

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# 1. Introduction

## 1.1. Document description

This document describes the main functions of the CS2500 automatic control and is divided into different sections for different parts of the system. If you only want to make basic settings to start the ventilation unit, there is a special section describing the startup procedure. If you require more detailed information, select the relevant section in the document.

> ⚠ All electrical connections must be made by an expert.

## 1.2. Highlighted boxes

A number of different text boxes are used in the document to draw the user's attention to various things. This may be anything from pure information text to particularly important details to ensure that the system is not used incorrectly. Here is a brief description of the various boxes:

> ⚠ **DANGER!** When a text box is this colour, it means that a life-threatening or serious personal injury may be the consequence of not following the instructions.

> ⚠ **NOTICE!** When a text box is this colour, it means that a poor utilisation ratio or product operating issues may be the consequence of not following the instructions.

> ⚠ **CAUTION!** When a text box is this colour, it means that material damage may be the consequence of not following the instructions.

> ⓘ **INFO!** When a text box is this colour, it means that it contains important information.

*Our products are subject to continuous development and we therefore reserve the right to make changes. We also accept no liability for any printing errors that may occur.*

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## 1.3. System overview

### 1.3.1. System structure

The control system is divided into two subgroups:
1. One part that is located in the ventilation unit's unit's switching space
2. One part that is located in a separate control cabinet on the outside of the ventilation unit

**1**

**Terminal blocks** for incoming power supply
Fuse for automatic control and fans (not electric heating coil)

**Modbus extender -** a communication card that connects the ventilation unit's components to the regulator via data communication

**Power supply board -** a circuit board that distributes the power supply to the ventilation unit's components and makes it possible to connect components to a water heating coil

**2**

**Regulator** - the ventilation unit's general control system

**Terminal board** - a circuit board with terminal blocks for connecting additional components and accessories

**HMI** - the control panel used to communicate with the regulator

*ProPanel*          *ProPTouch*
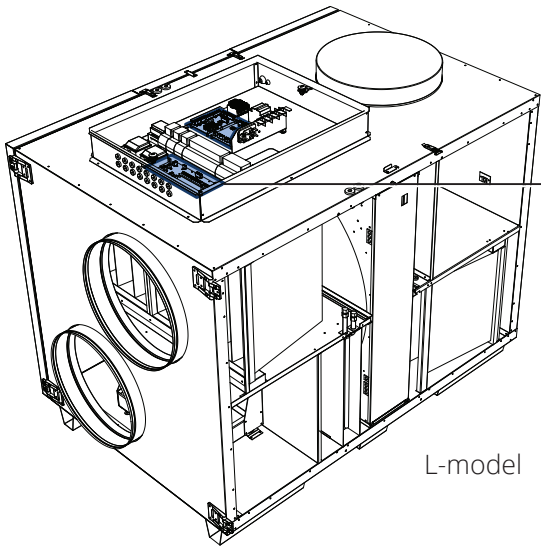
L-model
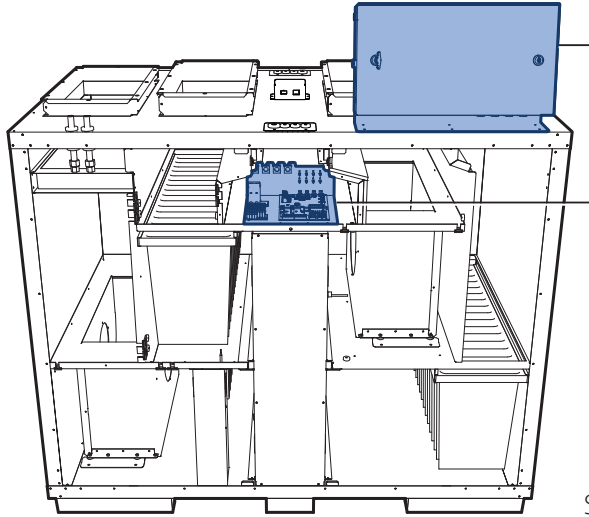
S-model

## 1.3.2. Ventilation unit's switching space

### Modbus extender



A3
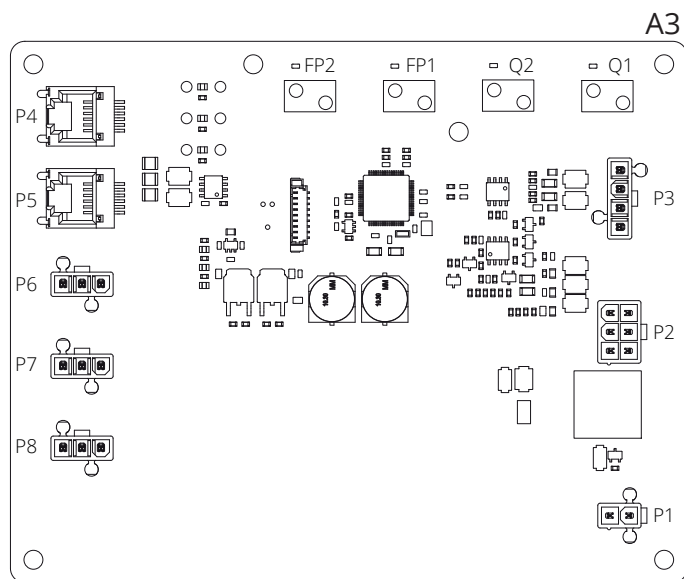
A communication card that connects the ventilation unit's components to the regulator.

The four dip switches and the rotary switches marked 'FACTORY' are factory-set and must not be changed.

The board's components have the following functions.

| Component | Function |
|-----------|----------|
| P1 | Power supply |
| P2 | Control signals to electrical afterheater |
| P3 | Control signals to rotor and temperature sensor |
| P4 | Communication connection |
| P5 | Communication connection |
| P6 | Communication connection |
| P7 | Communication connection |
| P8 | Control signals to fans |
| Q1 | Differential pressure monitor for flow measurement on supply air fan |
| Q2 | Differential pressure monitor for flow measurement on extract air fan |
| FP1 | Differential pressure monitor for supply air filter |
| FP2 | Differential pressure monitor for extract air filter |

### Power supply board



A4
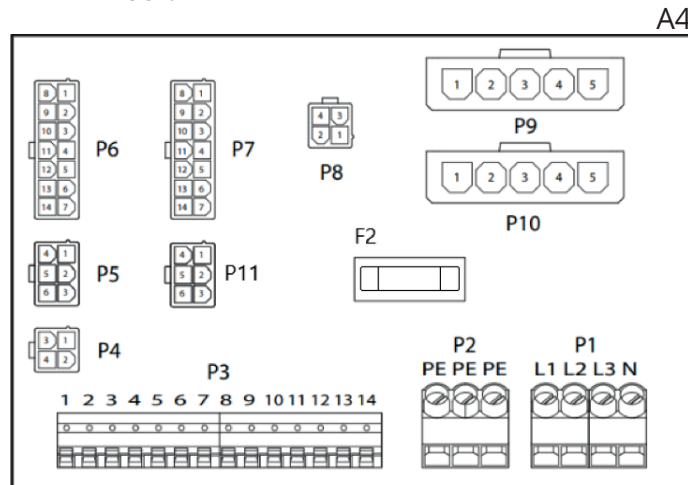
This is a circuit board that distributes the power supply to the components of the ventilation unit (not the electric heating coil) and control cabinet. There is also a terminal block for the return water sensor.

The board's components have the following functions.

| Component | Function |
|-----------|----------|
| P1 | Terminal block for power supply |
| P2 | Terminal block for protective earth (PE) |
| P3 | Terminal block for accessories |
| P4 | Supply voltage L1 Out (not in use) |
| P5 | Power supply to control cabinet |
| P6 | Control signals to electric heating coil |
| P7 | Control signals to electric heating coil and return water sensor signal from water heating coil. |
| P8 | Power supply to rotor control |
| P9 | Power supply to supply air fan |
| P10 | Power supply to extract air fan |
| P11 | Power supply to modbus extender |
| F2 | Fuse for circuit board power supply |

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Terminal block P3 has the following signals:

| Block 3 | | |
|---|---|---|
| Block no. | Function | Type |
| 1 | G0 | Signal earth, external accessory |
| 2 | 24VAC | Power supply, external accessory |
| 3 | G0 | Power supply, external accessory |
| 4 | AO 0-10V | (EV heating EB1 control signal) Alternative |
| 5 | G0 | B5 Temp sensor return water WB1 Signal earth |
| 6 | DI | (F10 Overheating thermostat EB1 signal) Alternative |
| 7 | AI | B5 Temp sensor return water WB1 signal |
| 8 | N/A | (Not used) |
| 9 | N | Power supply, external accessory |
| 10 | NO | EV2 (Potential-free contact) |
| 11 | C | EV2 (Potential-free contact) |
| 12 | L1 Out 230V | Power supply, external accessory. Max 4A. |
| 13 | N | Power supply, external accessory |
| 14 | L1 Out 230V | Power supply, external accessory. Max 4A. |

### 1.3.3. Ventilation unit control cabinet

**Regulator**

A1



*The battery must be installed under the cover.*
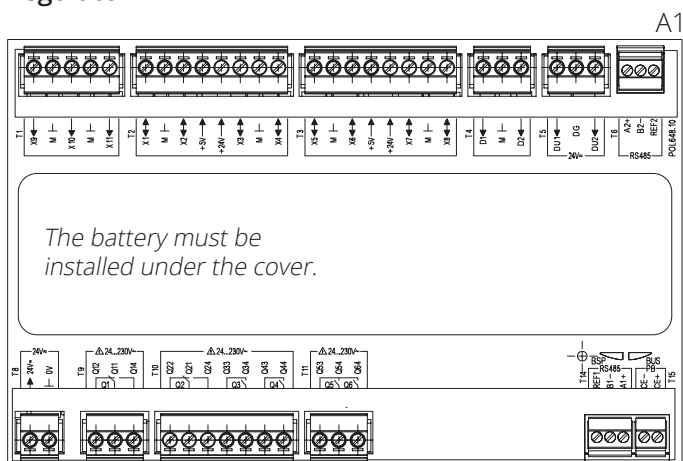


The ventilation unit's control system. This is where the control panel (HMI) and sensors and other components of the ventilation unit are connected. It is also possible to connect an SD memory card to back up or reload configuration settings and parameters for the regulator.

The controller can be supplemented with a backup battery type BR2032 to expand the memory of alarm history etc. in the event of a power failure.
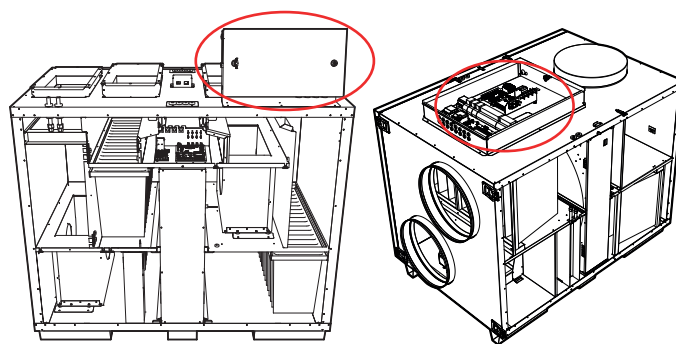
**HMI**
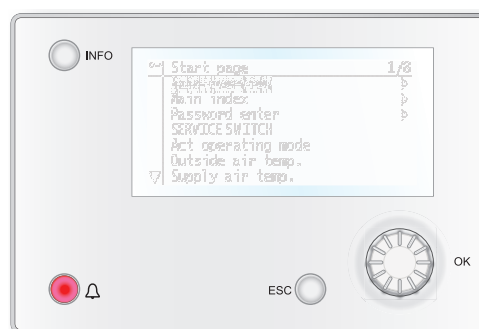


The ProPanel control panel has an 8-line graphic display and you navigate the menu tree by turning a dial. Selections are confirmed by pressing the same button.



The ProTouch control panel has a graphic TFT touch display and you navigate the menu tree by touching the display.

> **INFO!** The ProTouch panel is not mentioned in further detail in this manual. Please see the separate manual for the panel.

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## Terminal board



A2
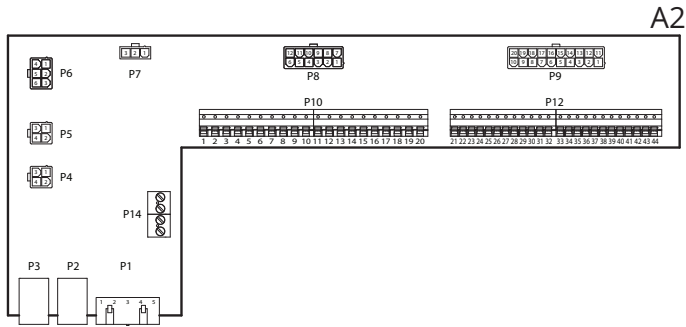
This is a circuit board that connects the components to the regulator. External components such as dampers are connected to this board via the terminal blocks on the board.

The board's components have the following functions.

| Component | Function |
|-----------|----------|
| P1 | Connection for power supply |
| P2 | Data communication |
| P3 | Data communication |
| P4 | Connection for external pressure sensor (accessory) |
| P5 | Connection for external pressure sensor (accessory) |
| P6 | Connection for 24V transformer |
| P7 | Data communication |
| P8 | Connection for digital outputs |
| P9 | Connection for control signals |
| P10 | Terminal block for 230V signals |
| P12 | Terminal block for control signals |
| P14 | Terminal block for protective earth (PE) |

Terminal block P10 has the following signals:

| Block 10 | | |
|----------|----------|------|
| Block no. | Function | Type |
| 1 | L1 Out 230V | Power supply, external accessory |
| 2 | N | Power supply, external accessory |
| 3 | L 230V | Power supply Outdoor air damper |
| 4 | L1 230V | Outdoor air damper ON/OFF |
| 5 | N | Power supply Outdoor air damper |
| 6 | L230V | Power supply Exhaust air damper |
| 7 | L1 230V | Exhaust air damper ON/OFF |
| 8 | N | Power supply Exhaust air damper |
| 9 | C | DX2 Cooling (potential-free contact) |
| 10 | NO | DX2 Cooling (potential-free contact) |
| 11 | N/A | (Not used) |
| 12 | Alarm C | Buzzer alarm (potential-free contact) |

| Block 10 | | |
|----------|----------|------|
| Block no. | Function | Type |
| 13 | Alarm NO | Buzzer alarm (potential-free contact) |
| 14 | Cooling C | DX1 Cooling/Pump (potential-free contact) |
| 15 | Cooling NO | DX1 Cooling/Pump (potential-free contact) |
| 16 | L1 Out 230V | Power supply, external accessory |
| 17 | Heating NO | EV1 WB1 Pump |
| 18 | Heating C | EV1 WB1 Pump |
| 19 | N | Power supply, external accessory |
| 20 | N/A | (Not used) |
| | | Max 4A load on the relay outputs |

Terminal block P12 has the following signals:

| Block 12 | | |
|----------|----------|------|
| Block no. | Function | Type |
| 21 | AO 0-10V | Cooling Control signal |
| 22 | G0 | Cooling Signal earth |
| 23 | DI | External control 1 Signal |
| 24 | G0 | External control 1 Signal earth |
| 25 | DI | External control 2 Signal |
| 26 | G0 | External control 2 Signal earth |
| 27 | DI | Alarm Fire/smoke Signal |
| 28 | G0 | External control 3 Signal earth |
| 29 | AI 0-10V | Air quality Signal |
| 30 | G0 | Air quality Signal earth |
| 31 | AO 0-10V | Heating WB1 Control signal valve |
| 32 | 24VAC | Power supply Fire damper/Alarm Fire/smoke WB1 |
| 33 | G0 | Heating WB1 Signal earth valve |
| 34 | DI | External control 3 Signal |
| 35 | DI | Fire damper position reset Signal |
| 36 | G0 | Signal earth |
| 37 | AO 0-10V | AUX damper Control signal |
| 38 | G0 | AUX damper Signal earth |
| 39 | DI | F10 Overheating thermostat EB1 Signal |
| 40 | G0 | F10 Overheating thermostat EB1 Signal earth |
| 41 | CE- | KNX bus |
| 42 | CE + | KNX bus |
| 43 | AI 0-10V | External setpoint Supply air fan |
| 44 | AI 0-10V | External setpoint Extract air fan |

## 2.    Quick guide

### 2.1.    HMI ProPanel

A central element in the system is the HMI (control panel), where you can adjust settings and take readings. The control panel consists of an 8-line graphic display, indicator lamps and controls for the settings. Here is a short introduction to the control panel showing how to enter the initial settings in the system.
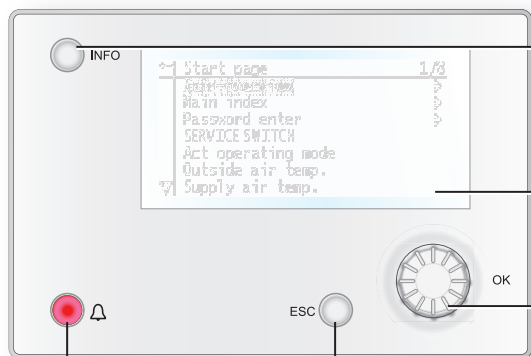
**Info button**
Press to enter the main menu
· Off = Stop, cool down
· Green lamp, steady = Normal operation
· Flashing green = Starting, Night operation test, Nighttime cooling or Night heating/nighttime cooling.
· Orange lamp, steady = Fire damper exercise
· Alternating green/orange = Manual control

**Display**
Shows information

**Dial**
· Turn anticlockwise/clockwise to go up/down in menus or to change values
· Press the button to enter a menu or change a value
· Hold the button down to go directly to the login menu if the value you want to change
· requires login.

**Alarm button**
· Flashing red = alarm
· Red lamp, steady = alarm acknowledged but remaining

**ESC button**
· Returns to the previous menu page
· Cancels current editing

### 2.2.    Settings

#### 2.2.1.    Introduction

The first time the system is started, you need to go through some simple steps to ensure that the system will function.

If a heating coil has been installed in the ventilation unit, this must be configured in the control system (see heating coil manual). There is a quick menu for accessing the commonest functions on the control panel, Language, Timing program and Set point settings.

#### 2.2.2.    Select language

To change the language on delivery:

> **Start page > Quick menu > Commissioning > Language selection**

Select your preferred language.

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### 2.2.3. Login

In order to make changes to the system, it is normally necessary to log in. There are four authority levels in the system, and three of them are password protected. The level at which the user is currently logged in is shown by the number of keys in the top left hand corner of the display. The menus show more options or fewer, depending on the level at which you are logged in.

The following key symbols will be used from now on in the manual to describe the login level before the different menus/functions can be made visible and editable. The same key symbols are shown at the top left of the control panel.

## The following actions are possible at the different levels:

Level 1: No restrictions, no password required.
- Read access to all menus except system parameters, configuration and detail menus.
- Read access to alarm lists and alarm history.

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Level 2: End user, password 1000.

*One key symbol*  ⊙━

- All rights as for level 1, plus:
- Read access to all menus except configuration menus.
- Write access to the most important setpoints (Setpoints/Settings > Setpoints).
- Alarms and alarm history can be acknowledged and reset.

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Level 3: System administrator, password 2000.

*Two key symbol*  ⊙━

- All rights as for level 2, plus:
- Rights to all menus except I/O configuration and system settings.

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Level 4: OEM, password given only in consultation with the Flexit service organisation.

*Three key symbol*  ⊙━

- All rights as for level 3, plus:
- Rights to all menus and system settings.

> **Start page > Main menu > Enter PIN**

### 2.2.4. Set time/time channels

> ⊙━  **Start page > Quick menu > SetUp > Date/Time Input**

### 2.2.5. Set the calendar and timing program

> ⊙━  **Start page > Quick menu > SetUp > Timeswitch program**

**General**
This section describes functions and settings for the timing program and calendars.

When no object with higher priority (for example Manual control <> Auto) is activated, the system can be switched off or the steps changed via the timing program.
A maximum of six switch-over times can be specified per day.
The calendar stop overrides the calendar exception, which in turn overrides the normal timing program (only in operating mode). Up to 10 periods or exception days can be specified for each calendar.

> ⓘ **NB.** Both setpoints for fan steps and temperature setpoints (comfort /economy) are controlled by the timing program.

## 2.2.6.  Week schedule

| Parameter | Value | Function |
| --- | --- | --- |
| Present value | --- | Switch-over according to schedule |
| Monday | | Shows current command when the current day is Monday. The latest time that can be entered for a day is 23:59. Go to the daily switch-over schedule for Mondays. |
| Copy schedule | -Mo<br>-Tu-Fr<br>-Tu-Su<br>-Tu<br>-We<br>-Th<br>-Fr<br>- Sa<br>-Su<br>-Ecpt | Copies times for the timing program from Monday to Tuesday-Friday/Tuesday-Sunday.<br>-Passive (no copying).<br>-Copying starts. Return to the display screen.<br>-Exception |
| Tuesday | | Same function as for Monday. |
| ... | | ... |
| Sunday | | Same function as for Monday. |
| Exception | | Shows current command when the current day is an exception day. Go to the daily switch-over schedule for exception days. |
| Period: Start | | (Only Authority level 3.)<br>Start date for weekly schedule. *,**. 00 means that the weekly schedule is always activated. ---> Activate weekly schedule. |
| Period: End | | (Only Authority level 3.)<br>Start date and time for disabling of weekly schedule. |

## 2.2.7.  Day schedule

| Parameter | Value | Function |
| --- | --- | --- |
| Present value | --- | Switch-over according to the schedule when the current weekday is the same as the switch-over day |
| Day schedule | -Passive<br><br>-Active | Status for current week or exception day:<br>-Current weekday (system day) is not the same as the switch-over day.<br>-Current weekday (system day) is the same as the switch-over day. |
| Time-1 | | This is locked to 00:00 |
| Value-1 | Off<br>Eco.St1<br>Comf.St1<br>Eco.St2<br>Comf.St2<br>Eco.St3<br>Comf.St3 | Indicates the unit's operating mode when Time-1 occurs |
| Time-2 | 00:01-23:59 | Switch-over time 2.<br>*:* ---> Time inactivated |
| Value-2 ...<br>Value-6 | Off<br>Eco.St1<br>Comf.St1<br>Eco.St2<br>Comf.St2<br>Eco.St3<br>Comf.St3 | Indicates the unit's operating mode when Time-2 occurs |
| Time-3<br>Time-6 | 00:01-23:59 | Switch-over time 3-6.<br>*:* ---> Time deactivated |

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## 2.2.8. Calendar (exceptions and stop)

Exception days can be defined in the calendar.
These can include specific days, periods or weekdays.
Exception days override the weekly schedule.

**Calendar exceptions**
Switch-over follows the weekly schedule and the exceptions specified in the daily schedule when a switch-over time is activated in the calendar exception.

**Calendar stop**
The system is turned off when the calendar stop is activated.

**Parameter:**

🔑 **Start page > Quick menu > SetUp > Timeswitch program > Calendar execption**

🔑 **Start page > Quick menu > SetUp > Timeswitch program > Calendar fix off**

| Parameter | Value | Function |
|---|---|---|
| Current value | -Passive -Active | Shows whether a calendar time is activated: - No calendar time activated - Calendar time activated |
| Selection -x | -Date -Interval -Weekday -Passive | Specification of exception type: -A certain day (e.g. 1 May) -A period (e.g. holiday) -A certain weekday -Times are deactivated This value must always be placed last, after the date |
| -(Start) Date | | -Selection-x = interval: Enter the start date for the period -(Selection-x = Date: Enter specific date) |
| -End date | | -Selection-x = interval: Enter the end date for the period The end date must be later than the start date |
| Weekday | | -Selection-x = only weekdays: Enter a weekday. |

**Example: Selection-x = Date**

Only the time for (start) is relevant.

- (Start)Date = *,01.01.16
  Result: 1 January 2016 is an exception date.

- (Start)Date = Mo,*.*.00
  Every Monday is an exception day

- (Start)Date = *,*.Even.00

All days in even months (February, April, June, August, etc.) are exception days.

**Example: Selection-1 = interval**

The times for (Start)Date and End date are adjusted.

- (Start)Date = *,23.06.16  /  -End date = *,12.07.16.

  23 June 2016 until end of 12 July 2016 are exception days (for example holidays).

- (Start)Date = *,23.12.16  /  End date = *,31.12.16

  23-31 December are exception days every year. Time End date = *,01.01.16 will not work, because 1 January comes before 23 December.

- (Start)Date = *,23.12.16  /  -End date = *,01.01.17.

  23 December 2016 up to and including 1 January 2017 are exception days.

- (Start)Date = *,*.*.17  /  -End date = *,*.*.17

**Warning!** This means that the exception is always active! The system is constantly in exception mode or turned off.

**Example: Selection-1 = Weekday**

Selection-1 = Weekday

The times for weekdays are adjusted.
- Weekday = *,Fr,*

  Every Friday is an exception day.

- Weekday = *,Fr,Even
  Every Friday in even months (February, April, June, August, etc.) is an exception day.

- Weekday = *,*,*

**Warning!** This means that the exception is always active! The system is constantly in exception mode or turned off.

## 2.3. Adjust setpoints for speeds and temperatures

**Start page > Quick menu > Settings > Setpoints/Settings**

| Parameter | Function |
|---|---|
| All settings | > |
| Comfort htg stpt | Indicates the temperature setpoint for comfort operation (daily operation) |
| Economy htg stpt | Indicates the temperature setpoint for economy operation (nighttime setback) |
| Sply fan st 1 stpt | Indicates the supply airflow |
| Sply fan st 2 stpt | Indicates the supply airflow |
| Sply fan st 3 stpt | Indicates the supply airflow |
| Extr fan st 1 stpt | Indicates the extract airflow |
| Extr fan st 2 stpt | Indicates the extract airflow |
| Extr fan st 3 stpt | Indicates the extract airflow |

## 2.4. Service switch

The service switch is used to stop the unit for servicing.
**NB.** If the electric coil was active when the unit was turned off, there will be 180 seconds run-on time before the unit stops cooling the coil.

**Start page > SERVICE SWITCH**

| Parameter | Function |
|---|---|
| Auto | The unit is controlled via time channel |
| Off | Service mode, the unit is stationary |

## 2.5. Extract air regulation

As standard, the unit is configured to regulate the temperature via the supply air, but can easily be configured to regulate this via the extract air instead. To do this, go into the following menu:

**Start page > Main menu > Configuration > Configuration 1 > Tmp control mode**

| Parameter | Function |
|---|---|
| Supply | Temperature regulation is controlled by the supply air temperature |
| ExtrSplyC | Temperature regulation is controlled as a function of the extract and supply air sensors and maintains the set extract air temperature |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

**RESTART**

To adjust limitations to the inlet temperature in the case of extract air regulation.

**Start page > Quick menu > Settings > Setpoints/Settings**

| Parameter | Function |
|---|---|
| Supply tmp min | Indicates the lowest permitted supply air temperature |
| Supply tmp max | Indicates the highest permitted supply air temperature, |

## 2.6. Changing the flow display units

The standard setting for the unit is $m^3/h$, but can easily be changed to l/s. When the units are changed, the setpoint values for airflow are automatically recalculated.

**Start page > Main menu > Configuration > Configuration 2 > Flow display**

| Parameter | Function |
|---|---|
| No | Not used |
| l/s | Shows the airflow in l/s |
| $m^3/h$ | Shows the airflow in $m^3/h$ |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

## 2.7. Alarm handling

If an alarm has been triggered, it will be shown by the flashing alarm symbol. You can get more information by pressing the alarm button. To reset the alarm, press the alarm button twice and select 'Confirm/Reset' and then Execute in the menu.

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# 3. Backup and program updates

When the system has been fully configured and the parameters have been set, it can be backed up to an SD memory card and/or internally in the regulator, or reset using the data on the memory card or the settings on the regulator. Two different sets of parameters for a configured system can be backed up or reset. For example, you can back up the standard settings (Save factory settings) and adjusted/startup settings (Save startup settings).

The options below can be selected only with the relevant authority level. This is done using menu option:

> **Start page > Main menu > System objects Save/Load**

## 3.1. Save a configuration

After initiation and adjustment, the parameters and configurations can be saved to the SD card. For example, you can load these values on another process unit with the same basic configuration (operating system, application, control panel, HMI4Web and language/communication).



*MAX 32GB*
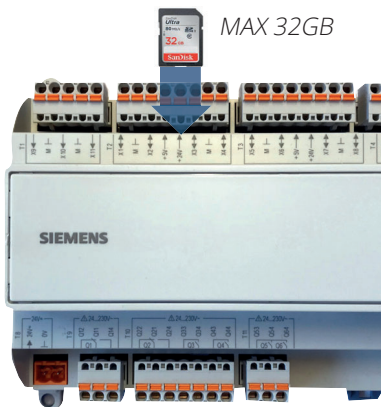
*Location of SD memory card*

**Procedure:**
1. Insert a blank SD memory card into the regulator.
2. Backup the values to the memory card.

> **Start page > Main menu >System objects > Save/load > Sett.save > Ext.m. > Execute**

or internally in the controller

> **Start page > Main menu >System objects > Save/load > Sett.service save**

3. Wait until:

> **Start page > Main menu > System objects > Save/load > Ready**

Standard settings (Factory settings) and adjusted settings (Startup settings) are handled in the same way.

## 3.2. Load a configuration

**Procedure:**
1. Insert the memory card into the regulator.
2. Load the values from the memory card.

> **Start page > Main menu > System objects > Save/Load > Sett.load > Ext. m > Execute**

or internally in the controller

> **Start page > Main menu > System objects > Save/Load > Sett.service load**

3. Wait until:

> **Start page > Main menu > System objects Save/Load > Ready**

4. Restart the process unit:

> **Start page > Main menu > System objects Save/Load > Restart required! = Execute**

> **RESTART**

Standard settings (Factory settings) and adjusted settings (Startup settings) are handled in the same way.

## 4. General functions

**Operating modes - Changes**
The system can be set into different operating modes.

> **Start page > Main Menu > Unit >
> Operating mode > Manual operation**

| Manual operation | |
|---|---|
| No | Unit operating on time switch program |
| Eco.St1 | Unit operating on economy temperature and "Step 1" speed |
| Comf.St1 | Unit operating on comfort temperature and "Step 1" speed |
| Eco.St2 | Unit operating on economy temperature and "Step 2" speed |
| Comf.St2 | Unit operating on comfort temperature and "Step 2" speed |
| Eco.St3 | Unit operating on economy temperature and "Step 3" speed |
| Comf.St3 | Unit operating on comfort temperature and "Step 3" speed |

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## 5. Configuration

On delivery, the ventilation unit is configured and ready. Therefore, no adjustments to the configuration are normally required. If, on the other hand, you have bought a heating battery or other accessory, this must be configured. See the manual for the current accessory.

However, the addition of accessories and other equipment may require a change to the configuration.
Where necessary, there is a more detailed description in this manual or with the accessory.
This section is, therefore, intended more as general information.

The configuration includes the following three steps:
- Configuration 1
- Configuration 2
- Configuration with inputs and outputs

### 5.1. Configuration 1

If adjustments are needed, 'Configuration 1' is the first step in the configuration.

- Configuration is done sequentially, which means that it is not possible to skip any options.
- Configuration 1 must have been completed and the process unit have been restarted before you continue with Configuration 2.

> **Start page > Main menu > Configuration > Configuration 1**

After making a change in a configuration menu, RESTART

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

⟳ **RESTART**

ⓘ **NB.** The ventilation unit is supplied fully configured and does not normally need to be changed.

| Parameter | Value | Function |
|---|---|---|
| General | | |
| Expansion modules | No | Only the process unit's inputs and outputs are used. |
| | One | An expansion module is connected via address 1. DIP switches 5 and 6 on the module must be set to On. |
| | Two | Two expansion modules are connected via addresses 1 and 2. DIP switch 5 on module 1 and DIP switches 4 and 6 on module 2 must be set to On. |
| Activate zones | None One Two Three | Option for up to three different temperature zones. **NB.** Requires one or more expansion modules. |
| Fire alarm | No | No fire alarm. |
| | Alarm | External fire alarm such as smoke detectors, thermostat, fire alarm control centre, etc. |
| | Tmp | Internal fire alarm via measurement of normal supply air and extract air temperature when both sensors are accessible. A fire alarm is triggered when one of the two temperatures reaches a specific value. |
| | Alarm+Tmp | Both fire alarms. |

| Parameter | Value | Function |
|---|---|---|
| Filter alarm | No | No filter alarm. |
| | Combined | Supply air and extract air filter with common alarm input. |
| | Supply | Input only for supply air filter alarm. |
| | Extract | Input only for extract air filter alarm. |
| | Sply+Extr | Two separate filter alarm inputs for supply air and extract air filters. |
| Filter alarm analogue | No | No filter alarm. |
| | Supply | Analogue input for supply air filter alarm only. |
| | Extract | Analogue input for extract air filter alarm only. |
| | Sply+Extr | Two separate filter inputs for supply air and extract air filters. |
| Emergency stop | No | Input for emergency stop. If the signal on this input is TRUE, the system is switched off immediately. No alarm is triggered. |
| | Yes | |
| Alarm ackn input | No | Input for acknowledging or resetting an alarm. Open alarms are acknowledged; closed alarms are reset. |
| | Yes | |
| Su/Wi input | No | Input for summer/winter switch-over. If the signal on this input is TRUE, summer compensation is selected. Further settings can be made under: Main menu > General func. > Summer-winter mode. |
| | Yes | |
| TSP function | No | No timing program. |
| | Steps | Timing program with possible settings for fan steps (Off and Stx). The parameter Timing program step determines the number of possible steps. |
| | Steps+Tmp | Timing program with possible settings for fan steps and temperature regulation type (Off, Econ.x and Comf.x). The parameter Timing program step determines the number of possible steps.<br>The temperature mode comfort or economy can be selected for each fan step. Comfort and economy operation have separate setpoints for temperature regulation. |
| TSP steps | Activation of possible fan steps. This setting controls the number of setpoints for regulated fans. | |
| | 1 Step | Timing program function = Step ---> Possible settings for timing program: Off, St1.<br>Timing program function = Step+Temp ---> Possible settings for timing program: Off, Econ1, Comf1. |
| | 2 Step | Timing program function = Step ---> Possible settings for timing program: Off, St1, St2.<br>Timing program function = Step+Temp ---> Possible settings for timing program: Off, Econ1, Econ2, Comf1, Comf2. |
| | 3 Step | Timing program function = Step ---> Possible settings for timing program: Off, St1, St2, St3.<br>Timing program function = Step+Temp ---> Possible settings for timing program: Off, Econ1, Econ2, Econ3, Comf1, Comf2, Comf3. |
| Ext control input | None | No external input for operating mode switch-over, timer, button, detector for external control, etc. |
| | One | One input (e.g. on/off). |
| | Two | Two inputs (e.g. Auto/Off/St1/St2). |
| | Three | Three inputs (e.g. Auto/Off/St1/St2/St3). |
| Alarm outputs | None | No alarm output. |
| | One | One output (for example for priority and non-priority alarms). |
| | Two | Two outputs (for priority and non-priority alarms). |

| Sensor | | |
|---|---|---|
| Room tmp sensor | Sensor 1 | Inputs for room temperature sensors. Select max, min, average or individual value for regulation for one or more sensors in Configuration 2. |
| | Sensor 2 | |
| | Rm unit 1 | |
| | Rm unit 2 | |
| | QMX 1 | |
| | QMX 2 | |

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| Parameter | Value | Function |
|---|---|---|
| Extract air tmp sen | No | Input for extract air sensor. |
| | Yes | |
| | Yes+Hold | If the system has been in operation for more than 5 minutes, the max temperature is saved when it is switched off; otherwise the actual temperature is saved. The setting is meaningful only if there is no room sensor and nighttime operation (for example nighttime cooling) without a temperature test is to be used. This setting should not be used with support operation. (Temperature test: the system is started briefly to update the duct sensor temperature.) |
| Supply tmp sensor | No | Input for supply air sensor. |
| | Yes | |
| Outs air tmp sensor | No | Input for sensor for outdoor air temperature. |
| | Yes | |
| | Yes+Hold | If the system has been in operation for more than 5 minutes, the min temperature is saved when it is switched off; otherwise the actual temperature is saved. The setting is meaningful only if a sensor is fitted in the duct and nighttime support operation (for example nighttime cooling) is activated, or as a safety function for pump start at low outdoor air temperatures. |
| Hrec supply air | Yes | Input for extra supply air sensor, which can be used for efficiency measurement. |
| | No | |

| Functions | | |
|---|---|---|
| Exhaust air | Yes | Input for supply air sensor |
| | No | |
| Damper | No | No air damper |
| | Combined | Two air dampers with a common output. |
| | Outside | Outdoor air damper output. |
| | Outs+Exh | Two dampers with separate outputs. |
| | MB Outside | Outdoor air damper via ModBus |
| | MBOut+Exh | Outdoor+Extract air via ModBus |
| Fan | Supply | Config supply air fan |
| | Extract | Config Extract air fan |
| | SiemensMB | Choose if using siemens Modbus fan control |
| | EBM MB | Choose if using EBM papst Modbus controled fans |
| | Danfo.MB | Choose if using Danfoss Modbus controled fans |
| | Ziehl-Abegg | Choose if using Ziehl.Abegg Modbus controled fans |
| Fan control mode | Direct | Up to three digital outputs each for direct-drive fans. |
| | DirectVar | Up to three digital outputs each for frequency-regulated fans with fixed steps. |
| | Fix Speed | One digital and analogue output each for frequency-regulated fans regulated via modulating analogue outputs (e.g. St1 = 2 V, St2 = 5 V, St3 = 8 V). |
| | Pressure | One digital and analogue output and one analogue input each for frequency-regulated fans in pressure-regulated systems. |
| | Flow | One digital and analogue output and one analogue input each for frequency-regulated fans regulated in flow-regulated systems. |
| | SplySlave | One digital and analogue output each and three analogue inputs for frequency-regulated fans in pressure-regulated systems where the supply air fan is driven depending on the extract air fan. |
| | ExtrSlave | One digital and analogue output each and three analogue inputs for frequency-regulated fans in pressure-regulated systems where the extract air fan is driven depending on the supply air fan. |

| Parameter | Value | Function |
|---|---|---|
| Tmp control mode | Select the regulation algorithm for temperature regulation | |
| | Supply | Temperature regulation of supply air only. |
| | Rm casc. | Cascade regulation of room and supply air temperature. |
| | ExtrSplyC | Cascade regulation of extract and supply air temperature. |
| | RmSplyCSu | Cascade regulation of room and supply air temperature in summer; regulation of supply air temperature only in winter. |
| | ExSplyCSu | Cascade regulation of extract and supply air temperature in summer; regulation of supply air temperature only in winter. |
| | Room | Room regulation only. |
| | Extract | Temperature regulation of extract air only. |
| Hrec damper | Active | Activates function 100% recirculation = 10V output signal to damper |
| | Invert | Inverts function 100% recirculation = 0V output signal to damper |
| | MB Exhaust | Extract air damper is ModBus controlled |
| | MB Outside air | Supply air damper is ModBus controlled |
| | MB Mix Air | Mixing damper is ModBus controlled |
| | LimExtrFan | Reduces speed of extract air fan proportionately using the mixing damper. If the damper increases to 60%, the fan decreases to 40%. |
| Heat recovery | Select heat recovery regulation with rotary heat exchanger, plate heat exchanger or water heat exchanger. | |
| | No | No heat recovery. |
| | Wheel | Rotary heat exchanger. One analogue output for regulation of rotary heat exchanger. |
| | PlateExch | Plate heat exchanger. One analogue output for regulation of regulating air damper. |
| | WheelInv | Rotary heat exchanger. An analogue output for regulation of rotary heat exchanger. Inverted output signal 100% load = 0V |
| | PlateInv | Plate heat exchanger. One analogue output for regulation of regulating air damper. Inverted output signal 100% load = 0V |
| Waterheating | No | No water heating configured |
| | Yes | Water heating without preheating coil. |
| | Yes+PreH.TOa | Water heating + preheating controlled by outdoor air temperature |
| | Yes+PreH.TFr | Water heating + preheating controlled by frost protection temperature |
| | Yes+Modbus | Switches between analogue output and Siemens ModBus valve |
| | Yes+PreH.TOa+Modbus | |
| | Yes+PreH.TFr+Modbus | |
| Electrical heating | Electric heating register and type of regulation. | |
| | No | No electric heating register available. |
| | Analog | Electric heating register with regulation via one analogue output. |
| | 1step | 1-step electric heating register with regulation via one analogue and one digital output. |
| | 2step | 2-step electric heating register with regulation via one analogue and two digital outputs. |
| | 3stepBin | 3-step electric heating register with binary regulation via one analogue and two digital outputs. |
| Water Heating 2 | If no option has been ticked, the water heating is deactivated | |
| | Yes | Water heating without preheating coil |
| | +PreH OutsideTemp | Water heating + preheating controlled by outdoor air temperature |
| | +PreH FrostTemp. | Water heating + preheating controlled by frost protection temperature |
| | ModBus | Switches between analogue output and Siemens ModBus valve |

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| Parameter | Value | Function |
|---|---|---|
| El Heating 2 | | Extra electric heating register and type of regulation. |
| | No | No extra electric heating register available. |
| | Analog | Extra electric heating register with regulation via one analogue output. |
| | 1step | Extra 1-step electric heating register with regulation via one analogue and one digital output. |
| | 2step | Extra 2-step electric heating register with regulation via one analogue and two digital outputs. |
| | 3stepBin | Extra 3-step electric heating register with binary regulation via one analogue and two digital outputs. |
| Cooling | | Select cooling register and type of regulation |
| | | If no option has been ticked, the cooling function is deactivated |
| | Water | Analogue output for liquid cooling |
| | DX 1step | One analogue and one digital output for DX cooling |
| | DX 2step | One analogue and two digital outputs for DX cooling |
| | DX 3step | One analogue and two digital outputs (Binary) for DX cooling |
| | ModBus | ModBus controlled valve in combination with liquid cooling |
| Cooling 2 | | Extra cooling register and type of regulation. |
| | | If no option has been ticked, the cooling function is deactivated |
| | Water | Analogue output for liquid cooling |
| | DX 1step | One analogue and one digital output for DX cooling |
| | DX 2step | One analogue and two digital outputs for DX cooling |
| | DX 3step | One analogue and two digital outputs (Binary) for DX cooling |
| | ModBus | ModBus controlled valve in combination with liquid cooling |
| Fire damper | | Fire damper. |
| | No | No fire damper. |
| | Yes | One digital output and input each for fire damper regulation. |
| | FollowUnit | One digital output and input each for fire damper regulation. The fire damper is opened when the unit starts and closed when the unit stops. |
| | 2 | Same as "Yes" but with 2 fire dampers. |
| | 2+FolwUn | Same as "Yes+FollUnit" but with 2 fire dampers. |
| | 3 | Same as "Yes" but with 3 fire dampers. |
| | 3+FolwUn | Same as "Yes+FollUnit" but with 3 fire dampers. |
| | 4 | Same as "Yes" but with 4 fire dampers. |
| | 4+FolwUn | Same as "Yes+FollUnit" but with 4 fire dampers. |
| Firefan | No | Fire fan control deactivated. |
| | Yes | Fire fan control activated. |
| External set-point | No | No analogue input for connection of external setpoint or compensation for external setpoint. |
| | Volt | Input for 0–10 V DC signal. |
| | Ohm | Input for 0–2500 ohm signal. |
| | QAA27 | Input for QAA27. |
| | BSG21 | Input for BSG21 setpoint compensation. |
| Configuration 1 | | With this parameter, the system is activated after parameter settings have been set, i.e. when Configuration 1, Configuration 2 and Config. In/Outputs have been set (value Ready). |
| | Not done | The system is locked and cannot be started. |
| | Done | The system is unlocked after the parameter settings have been set (value Ready for Configuration 2 and Config.In/Outputs), i.e. the system can be started. |
| Restart required | Execute | The system must be restarted after parameter settings have been set in Configuration 1. Changed settings in Configuration 2 are implemented. After restart, the value is changed automatically from Execute to Passive. |

## 5.2. Configuration 2

 **NB.** The ventilation unit is supplied fully configured and does not normally need to be changed.

If any adjustments are needed, subfunctions for certain parts of the system can be set in Configuration 2.

**Preconditions:**
Configuration 1 must have been completed, including restart of the regulator.

- Configuration is done sequentially, which means that it is not possible to skip any options
- Configuration 2 must have been completed, including restart of the process unit, before you continue with Config.In/Outputs

**Start**
If necessary: Enter the password for level 3:

**Start page > Log in**

Then:

**Startpage > Main menu > Configuration > Configuration 2**

| Parameter | Value | Function |
|---|---|---|
| Free cooling | None | Nighttime cooling deactivated. |
| | 12 hours | Starts no earlier than 12 hours before the next active time channel (Startup) |
| | 9 hours | Starts no earlier than 9 hours before the next active time channel (Startup) |
| | 6 hours | Starts no earlier than 6 hours before the next active time channel (Startup) |
| | 3 hours | Starts no earlier than 3 hours before the next active time channel (Startup) |
| | Always | Can be started at any time |
| Fan step | 1 | The fans run at step 1 during nighttime cooling |
| | 2 | The fans run at step 2 during nighttime cooling |
| | 3 | The fans run at step 3 during nighttime cooling |
| Tmp start | Starts nighttime support operation. Precondition: The function can be selected only if a room or extract air sensor is available. Temperature motion is activated automatically if only one extract air sensor which holds the values is available. If the extract air sensor holds the values, the temperature is used for start. | |
| | No | The function is not available. |
| | Htg | The function is available only for heating. |
| | Clg | The function is available only for cooling. |
| | Htg+Clg | The function is available for heating and cooling. |
| Fan step | 1 | The fans run at step 1 during support operation. |
| | 2 | The fans run at step 1 during support operation. |
| | 3 | The fans run at step 1 during support operation. |
| Boost | Optimum start of the system with heating and cooling via separate setpoints. Precondition: The function can be selected only if a room or extract air sensor is available. | |
| | No | The function is not available. |
| | Htg | The function is available only for heating. |
| | Clg | The function is available only for cooling. |
| | Htg+Clg | The function is available for heating and cooling. |
| Tmp start/ OSSTP blk | Block the air damper or extract air fan when the system is started optimally or via temperature delta. **NB.** This function is intended to be used in an emergency situation. **Warning!** A regulating air damper must be in place and be open when the function is selected. Otherwise, the system may suffer damage. | |
| | None | No blocking. |
| | Damper | Air dampers remain closed. |
| | Dmpr+Fan | Air dampers remain closed and only the supply air fan is started. |
| Damper fdbk | None | No damper return. |
| | One | Return for supply air damper (or common return for both dampers). Digital input for return. |
| | Two | Separate return for supply air and extract air dampers. Two digital inputs for return. |

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| Parameter | Value | Function |
|---|---|---|
| Fan steps freq conv | 1step | Digital output for activating frequency-regulated fans (always activated) |
| | 2step | An extra digital output for alternative connections which are dependent on fan step 2. |
| | 3step | Two extra digital outputs for alternative connections which are dependent on fan step 3. |
| Flow display | No | The function is not available. |
| | l/s | Shows airflow in litres/second. |
| | m³/h | Shows the airflow in m³/hour. |
| Fan steps type | Necessary fan regulation output that concerns settings for Fan regulation type, Timing program step and Dig.step freq.conv. | |
| | Separated | Digital output for each step. Example: Fan regulation type = Direct / Timing program step = 2 / Extract air fan = Yes ---> 4 digital outputs: 2 each for step 1 and step 2, separated for supply air and extract air fans. |
| | Sep.Comb. | Separate outputs for the first step, common outputs for subsequent steps. Example: Fan regulation type = Pressure reg. / Timing program function = Step+Temp / Timing program step = 3 / Extract air fan = Yes / Dig.step freq.conv = 3. ---> 4 digital outputs: Step 1 as separate activation of frequency-regulated fans, two extra outputs that can be used (Dig.step freq.conv) for step 2 and step 3. |
| | Binary | The outputs for steps are binarily coded. The setting can be used for Fan regulation type = Direct or Dir.fro. Example: Fan regulation type = Direct / Timing program function = Step+Temp / Timing program step = 3 / Extract air fan = Yes ---> 4 digital outputs: 2 digital outputs each per fan (Step 1 = DO1 TRUE, Step 2 = DO2 TRUE, Step 3 = DO1 and DO2 TRUE). |
| Fan alarm | Inputs for fan alarm (e.g. thermojunction). Logical 1 = alarm. | |
| | No | No alarm. |
| | Combined | Digital input for common alarm. |
| | Supply | Digital input for supply air fan alarm. |
| | Extract | Digital input for extract air fan alarm. |
| | Sply+Extr | Two digital inputs for supply air and extract air fan alarms. |
| Fan fdbk | Inputs for operating messages from fans (e.g. pressure current guard or relay contact). Logical 1 = activated fan. | |
| | No | No return. |
| | Combined | Digital input for common operating messages. |
| | Supply | Digital input for operating messages for supply air fan. |
| | Extract | Digital input for operating messages for extract air fan. |
| | Sply+Extr | Two digital inputs for operating messages for supply air and extract air fans. |
| Fan deviation alarm | Setpoint or actual value for monitoring pressure or flow. The alarm is triggered in the event of a deviation that remains for a certain period of time. | |
| | No | No monitoring |
| | Supply | Monitoring of supply air only. |
| | Extract | Monitoring of extract air only. |
| | Sply+Extr | Monitoring of supply and extract air. |
| Fan comp room tmp | No | Room temperature-dependent fan compensation. Precondition: Room or extract air sensor activated. |
| | Yes | |
| Fan comp air qual | No | Air quality-dependent fan compensation. Activation of analogue sensor input |
| | Yes | |

| Parameter | Value | Function |
|---|---|---|
| Ext. Fan setpoint | No | Function deactivated |
| | Supply | Supply air fan is regulated via an external setpoint. |
| | Extract | Extract air fan is regulated via an external setpoint. |
| | Sply+Extr | Both supply and extract air fans are regulated via an external setpoint. |
| Ext. SP funct. Supply Fan | Relative | Setpoint compensation. |
| | Absolute | Main setpoint. |
| Ext stpt funct.Exh | Relative | Setpoint compensation. |
| | Absolute | Main setpoint. |
| Fan comp outs tmp | No | Outdoor air temperature-dependent fan compensation. |
| | Yes | Precondition: Outdoor air sensor activated. |
| Fan htg / clg | The fan is used as heating or cooling sequence. | |
| | No | No sequential fan activation. |
| | Htg | Fan activation only in connection with heating sequence. |
| | Clg | Fan activation only in connection with cooling sequence. |
| | Htg+Clg | Fan activation in connection with both sequences. |
| Tmp stpt selection | Predefined settings for temperature setpoints: | |
| | Htg+Dz | Enter heating setpoint and dead zone. Setpoint for cooling = heating setpoint + dead zone. |
| | Htg/Clg | Setpoints for heating and cooling are entered directly. |
| | +/- 1/2Dz | Enter base setpoint and dead zone. Heating setpoint = base setpoint – half dead zone. Setpoint for cooling = base setpoint + half dead zone. |
| | Clg-Dz | Enter setpoint for cooling and dead zone. Heating setpoint = setpoint for cooling –dead zone. |
| Room temp. mix | Selection of room temperature where there is more than one sensor | |
| | Average | Average of installed sensors |
| | Min | Regulates from sensor with lowest temperature |
| | Max | Regulates from sensor with highest temperature |
| | Room sensor 1 | Regulates from Room sensor 1 |
| | Room sensor 2 | Regulates from Room sensor 2 |
| | Room unit 1 | Regulates from Room unit 1 |
| | Room unit 2 | Regulates from Room unit 2 |
| Floating Min/Max | Indicates a floating supply air limitation as a function of extract air temperature. Requires cascade regulation | |
| | Yes | Function activated |
| | No | Function deactivated |
| Sequence fan clg | Sequence for cooling and fan register, requires fan cooling/heating to be activated | |
| | Fan-Clg | Increases the fan speed first and then starts the cooling sequence |
| | Clg-Fan | Starts the cooling sequence first and then the fan speed |
| Mixing damper sequence | Sequence for heating and mixing damper, requires mixing damper to be activated | |
| | Damper-Heating | Opens the mixing damper first and then the heating sequence |
| | Heating-Damper | Runs the heating sequence first and then opens the mixing damper |
| Deviation alarm tmp | Monitors setpoint/current value for temperature. The alarm is triggered in the event of a deviation that remains for a certain period of time. | |
| | No | No monitoring |
| | Supply | Monitoring of supply air only. |
| | Room Extr | Room and extract air temperature. |
| | Sply Room | Monitoring of supply air and room temperature. |

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| Parameter | Value | Function |
|---|---|---|
| Su/Wi comp tmp | No | Summer/winter compensation of temperature setpoint. |
|  | Yes | Precondition: Sensor for outdoor air temperature must be available. |
| Hrec frost protect | No | No frost protection for heat recovery |
|  | Detector | Frost protection via guard. Digital input for frost guard |
|  | TempSensor | Frost protection via sensor. One analogue input for regulated frost protection via setpoint. Rotary heat exchanger and plate heat exchanger: extract air sensor, water heat exchanger: water sensor. |
|  | Temp+Dtctr | Frost protection via sensor and guard. One analogue input for regulated frost protection and one digital input for frost guard. |
|  | PressSnsr | Frost protection via pressure sensor. One analogue input for regulated frost protection via setpoint. |
|  | Pres+Dtctr | Frost protection via pressure sensor and guard. One analogue input for regulated frost protection and one digital input for frost guard. |
| No Hrec (pump) cmd | No | No pump. |
|  | Yes | Pump without. |
|  | Yes+Kick | Pump with exercise function |
| Heat recovery alarm | No | No alarm. |
|  | Alarm | Alarm: activation by a digital alarm input: Logical 1 = alarm. |
|  | Fdbk | Reset signal. Digital input for reset. Pulse during operation |
|  | Both | Pump with alarm and reset. Two digital inputs for pump alarm and reset.. |
| Hrec clg recovery | Type of cooling recovery. | |
|  | No | No cold recovery. |
|  | Temp | Cold recovery via difference in outdoor and indoor temperature. |
|  | Enthalpy | Cold recovery via difference in outdoor and indoor enthalpy. |
| Hrec efficiency | Calculation of heat recovery efficiency. Precondition: Heat recovery (e.g. rotary heat exchanger) must be activated and there must be a sensor for both outdoor air temperature and extract air. | |
|  | No | No calculation of heat recovery efficiency. |
|  | Exhaust | For calculation with extract air sensor: One analogue input for the extract air sensor unless the frost guard has been activated. |
|  | Supply | For calculation with the supply air sensor located immediately behind the heat exchanger: One analogue input for extra supply air sensor. |
| Aux binary inputs | Input | A digital input solely for display/status |
|  | Alarm | A digital input for triggering the alarm. |
|  | Smoke alarm | A digital input for triggering the smoke alarm. |
|  | Smoke det. dirty | A digital input for dirty smoke detector. |
|  | Fire Fan contr. | Two digital inputs for overriding supply/extract air fans in case of fire/smoke alarm. |
| Aux tmp sensor | No | No extra analogue input. |
|  | Yes | Extra analogue input for connection of temperature display. |
| Aux TSP output | No | No extra digital output. |
|  | Yes | One digital aux. output with separate timing program. |
| AdjDiscrg Aux Analog outp | No | No extra analogue output. |
|  | Fan | Analogue output that generates a 0-10V signal, depending on current fan step. |
|  | AdjDiscrg | Analogue output that generates a 0-10V signal, depending on temperature. |
| Aux op mode indicat | No | No extra digital output. |
|  | Yes | An extra digital output, the status of which depends on the current operating mode (e.g. Comfort or Off). |

| Parameter | Value | Function |
|---|---|---|
| Configuration 2 | With this parameter, the system is activated after parameter settings have been set, i.e. when Configuration 1, Configuration 2 and Config. In/Outputs have been set (value Ready). | |
| | Done | The system is unlocked after the parameter settings have been set (value Ready for Configuration 2 and Config.In/Outputs), i.e. the system can be started. |
| | Not Done | The system is locked and cannot be started. |
| Restart required! | Execute | The system must be restarted after parameter settings have been set in Configuration 2. Changed pre-settings in Config. Inputs/outputs modified. After restart, the value is changed automatically from Execute to Passive. |
| Air quality damper comp. | Ensures sufficient air quality in case of recirculation. Requires connection of air quality sensor. | |
| | No | Function deactivated |
| | Yes | Function activated |
| Cold recovery. mixing | Cold recovery with mixing damper | |
| | No | Function activated |
| | Temp | Cold recovery via difference in outdoor and indoor air temperature |
| | Enthalpy | Cold recovery via difference in outdoor and indoor enthalpy |
| Frost guard, heating | Frost guard for water heating | |
| | No | No frost protection |
| | Sensor | Frost protection via analogue sensor and a setpoint. |
| | Sens+2sp | Frost protection via analogue sensor and two setpoints, operating and standby temperatures |
| | Guard | Frost guard via digital input |
| | Sens+Guard | Frost guard via digital input and Frost protection via analogue sensor and a setpoint |
| | 2sp+Guard | Frost guard via digital input and Frost protection via analogue sensor and two setpoints, operating and standby temperatures. |
| Pump water heating | Circulation pump settings | |
| | No | No pump installed |
| | Yes | Digital output for circulation pump activated |
| | Yes+Exercise | Digital output for circulation pump activated and exercise function |
| Pump alarm water heating | Alarm/reset for circulation pump | |
| | No | Pump without alarm and reset |
| | Alarm | Pump with alarm, digital input |
| | Reset, | Pump with feedback, operating signal |
| | Alarm+ Reset | Pump with alarm and operating signal |
| Combi-coil | Selection of coil function for both heating and cooling | |
| | Normal seq. | One coil for both heating and cooling |
| | Extra seq. | A coil which can be run as extra heating and extra cooling |
| | 1Valve 1Pump | Coil with combined valve for regulating heating and cooling. One digital output for switching between heating and cooling. |
| | 2Valves 1Pump | Coil with separate valves for regulating heating and cooling. One digital output for switching between heating and cooling. |
| | Heat pump | Coil with three separate outputs, one analogue and two digital. |
| | DX Com | Heating pump connection via process bus |
| | Inv. Valve | Analogue output signal inverted |
| Yes El htg alarm | Alarm for electric heating coil | |
| | No | Function deactivated |
| | Yes | Function activated |
| Electical heater 2 Pos | Two different steps for electric heating | |
| | No | Function deactivated |
| | Yes | Function activated |

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| Parameter | Value | Function |
|---|---|---|
| Cooling pump | Circulation pump settings | |
| | No | No pump installed |
| | Yes | Digital output for circulation pump activated |
| | Yes+Kick | Digital output for circulation pump activated and exercise function |
| Cooling pump alarm | Alarm/reset for circulation pump | |
| | No | Pump without alarm and reset |
| | Alarm | Pump with alarm, digital input |
| | Fdbk | Pump with feedback, operating signal |
| | Both | Pump with alarm and operating signal |
| HP Defrosting | Defrosting function for heat pump | |
| | No | Function deactivated |
| | Yes | Function activated |
| Fire damper reset | Type of reset from fire damper | |
| | Closed | Reset only in case of closed damper, one digital input |
| | Clo+Op | Reset in case of both open and closed damper, two digital inputs |
| | Comb. | Reset in case of both open and closed damper, one digital input |
| | Closed.inv | Inverted Reset only in case of closed damper, one digital input |

## 5.3. Configuration of inputs and outputs

If any adjustments are needed, subfunctions for certain parts of the system can be set in Configuration 1, Configuration 2 and Configuration of inputs and outputs.

In Config.In/Outputs a physical location is allocated to the inputs and outputs specified in Configuration 1 and Configuration 2. Also, parameter settings are carried out for the current sensor conversion (e.g. Ni1000, Pt1000, 0-10 V = 0–1000 Pa).

**Positions in regulator and expansion modules**
- Regulator: All single-digit positions, for example X1.
- Modbus extender: xxxxx
- Expansion module 1: All positions X1x, DI1x, DO1x, AO1x, for example X11, DO14
- Expansion module 2: All positions X2x, DI2x, DO2x, AO2x, for example X21, DO24.

**Preconditions**
Configuration 1 and Configuration 2 must be ready (processing unit must be restarted after each configuration).

Then:

> **Startpage > Main menu > Configuration > Configuration IOs**

**NB.** The ventilation unit is supplied fully configured and does not normally need to be changed.

**NB.** The inputs and outputs in the expansion modules can be used if the module has been activated in Configuration 1.

| Parameter | Value | Function |
|---|---|---|
| Integrations | | Internal bus communication |
| Temperatures | | Go to the hardware configuration page for all temperature sensors. |
| Pressures / flows | | Go to the hardware configuration page for all pressure and airflow sensors. |
| Digital inputs | | Go to the hardware configuration page for all digital inputs without alarm function. |
| Digital alarm | | Go to the hardware configuration page for all digital inputs with alarm function. |
| Other | | Go to the hardware configuration page for External setpoint |
| Outputs damper | | Go to the hardware configuration page for supply air, extract air and fire dampers. |
| Output fans | | Go to the hardware configuration page for fans. |
| Outputs tmp control | | Go to the hardware configuration page for heating, cooling, heat recovery, etc. |
| Outputs alarm | | Go to the hardware configuration page for both alarm outputs. |
| Configuration IOs | | Activation of system is activated after parameter settings have been set, i.e. when Configuration 1, Configuration 2 and Config. In/Outputs have been set (value Ready). |
| | Done | The system is unlocked after the parameter settings have been set and can be started |
| | Not done | The system is locked and cannot be started. |
| Restart required! | Execute | The system must be restarted after parameter settings have been set in Config. In/Outputs. Changed presettings in Config.In/Outputs are implemented. After restart, the value is changed automatically back. |

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# 6. Cooling

The settings below only apply to a cooling machine. If you want both heating and cooling via a heat pump, see chapter 13.

**DX cooling one step or liquid**
As standard, the system is set up to control liquid cooling or two DX steps. Either linear (two cooling machines of equal size) or binary (one small and one large cooling machine). Cooling control in accordance with following guidance.

## 6.1. Installation
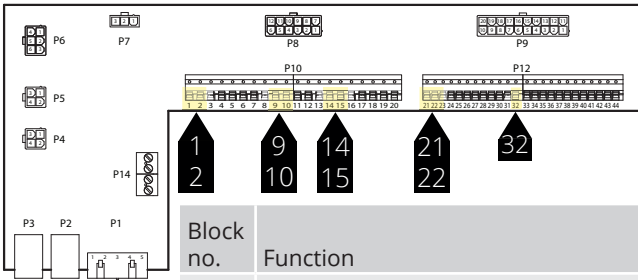


| Block no. | Function |
|---|---|
| 1 | L |
| 2 | N |
| 9 | DX Cooling Output 2 IN |
| 10 | DX Cooling Output 2 OUT |
| 14 | DX Cooling Output 1/Cooling pump OUT |
| 15 | DX Cooling Output 1/Cooling pump OUT |
| 21 | Cooling - 0-10V [AO] |
| 22 | Cooling - G0 |
| 32 | +24V Power supply |

## 6.2. Configuration - Cooling control

Then go in via the control panel to configure the system For DX cooling control or liquid.

> **Start page > Main menu > Configuration > Configuration 1 > Cooling**

| Parameter | Function |
|---|---|
| Water | Analogue output for liquid cooling |
| DX 1step | One analogue and one digital output for DX cooling |
| DX 2step | One analogue and two digital outputs for DX cooling |
| DX 3step | One analogue and two digital outputs (Binary) for DX cooling |

Enter the desired choice and complete with Ready. After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

RESTART

## 6.3. To activate the circulation pump (liquid cooling only)

> **Start page > Main menu > Configuration > Configuration 2 > Cooling pump**

| Parameter | Function |
|---|---|
| No | Pump control deactivated |
| Yes | Pump control activated |
| Yes+Kick | Pump control activated + exercise function |

To make parameter settings, go to the following menus via the control panel.

## 6.4. Blocking for outdoor air temperature

> **Start page > Main menu > Unit > Temp control > Cooling > Disable by outs tmp**

| Parameter | Function |
|---|---|
| -64.0 to 64.0 | Indicates lowest permissible outdoor air temperature for cooling operation |

## 6.5. Cycle times (DX cooling only)

> **Start page > Main menu > Unit > Temperature regulation > Cooling > Direct expansion**

| Parameter | Function | Beskrivning |
|---|---|---|
| Operation | Auto From Step 1 Step 2 Step 3 | Manual operation of output |
| Min cycle time | 0-36000 | Minimum initiation time in seconds for cooling machine |
| Minimum termination time | 5-600 | Minimum termination time in seconds for cooling machine |
| Min step time | 5-600 | Min operating time per step before next step can start |
| Start step 1 | 0-100% | Percentage cooling load on the regulator when the different steps kick in |
| Start step 2 | Start step 1 -100% | Percentage cooling force on the regulator when the different steps kick in |
| Start step 3 | Start step 2 -100% | Percentage cooling load on the regulator when the different steps kick in |
| Hysteresis, termination | 0-20% | How far below the initiation level the step will terminate as the cooling requirement goes down |

## 6.6. Cooling limitation as function of fan speed (DX cooling only)

**Start page > Main menu > Unit > Temperature regulation > Cooling > Max. signal fan step**

| Parameter | Function |
|---|---|
| Fan step 1> 0-100% | Permitted DX cooling output signal when the system is running in step 1 or using the setpoint for step 1 |
| Fan step 2> 0-100% | Permitted DX cooling output signal when the system is running in step 2 or using the setpoint for step 2 |
| Fan step 3> 0-100% | Permitted DX cooling output signal when the system is running in step 3 or using the setpoint for step 3 |

| > EXAMPLE OF COOLING LIMITATION | |
|---|---|
| Fan step 1 = 30% | The control system limits the cooling load to 30% at fan step 1. |
| Fan step 2 = 60% | The control system limits the cooling load to 60% at fan step 2. |
| Fan step 3 = 100% | No limitation of cooling load at fan step 3. |

## 6.7. Setting of temperature setpoints

**Start page > Quick menu > Setup > Setpoints/Settings**

| Parameter | Function |
|---|---|
| Comfort clg stpt | Indicates the temperature setpoint for comfort operation |
| Economy clg stpt | Indicates the temperature setpoint for economy operation |

# 7. Temperature regulation

## 7.1. Extract cascade

As standard, the unit is configured to regulate the temperature via the supply air, but can be reconfigured to regulate this via the extract air.
**(Extract air casc).** To do this, go into the following menu.

**Start page > Main menu > Configuration > Configuration 1 > Tmp control mode**

| Parameter | Function |
|---|---|
| Supply | Temperature regulation of supply air only |
| Rm casc | Temperature regulation is controlled by the extract air temperature. |
| ExtrSplyC | Cascade regulation of room and supply air temperature |
| RmSplyCSu | Cascade regulation of extract and supply air temperature |
| ExSplyCSu | Cascade regulation of extract and supply air temperature in summer; regulation of supply air temperature only in winter |
| Room | Room regulation only. |
| Extract | Temperature regulation of extract air only |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

**RESTART**

## 7.2. To adjust limitations to the inflow temperature in the case of cascade regulation

**Start page > Quick menu > Setup > Setpoints/Settings**

| Parameter | Function |
|---|---|
| Supply tmp min | Indicates minimum permitted inflow temperature in supply air |
| Supply tmp max | Indicates maximum permitted inflow temperature in supply air |

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# 8. Summer/Winter compensation

**Summer compensation:**
Adjusts the fan/temperature setpoint in relation to regulation of high outdoor air temperatures in summer. E.g. Lowers temperature setpoint and increases fan setpoint.

**Winter compensation:**
Adjusts the fan/temperature setpoint in relation to regulation of low outdoor air temperatures in winter. E.g. Increases the temperature setpoint and lowers the fan setpoint.

## 8.1. Adjustment of fan setpoint in case of high/low outdoor air temperatures

> **Start page > Main menu > Configuration > Configuration 2 > Fan comp outs tmp**

| Parameter | Function |
|-----------|----------|
| No | Function deactivated |
| Yes | Function activated |

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

## 8.2. Parameter settings for fan compensation

> **Start page > Main menu > Unit > Fan control > Act summer comp fan / Act winter comp fan**

| Parameter | Function |
|-----------|----------|
| Outs air tmp start | Outdoor air temperature when compensation is activated |
| Outs air tmp end | Outdoor air temperature when the max (summer) or min (winter) fan setpoint is achieved |
| Delta | Setpoint change in % E.g. in airflow regulation and summer compensation: Fan setpoint start = 500 l/s Outdoor air temp start = 20 degrees Outdoor air temp end = 30 degrees Delta = 20% Fan setpoint end (at 30 degrees) = 600 l/s |

## 8.3. Adjustment of temperature setpoint in case of high/low outdoor air temperatures

> **Start page > Main menu > Configuration > Configuration 2 > Su/Wi comp tmp**

| Parameter | Function |
|-----------|----------|
| No | Function deactivated |
| Yes | Function activated |

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

## 8.4. Parameter settings for temperature compensation

> **Start page > Main menu > Unit > Main setpoint > All settings > Settings tmp ctrl > Tmp setpoints**
> **>Act summer comp tmp**
> **>Act winter comp tmp**

| Parameter | Function |
|-----------|----------|
| Outs air tmp start | Outdoor temperature when compensation is activated |
| Outs air tmp end | Outdoor air temperature when the max (summer) or min (winter) Fan setpoint is achieved |
| Delta | Setpoint change in degrees. E.g. in case of temperature regulation and summer compensation: Temperature setpoint start (at 20 degrees) = 22 degrees Outdoor air temp start = 20 degrees Outdoor air temp end = 30 degrees Delta = -5 degrees Temperature setpoint end (at 30 degrees) = 17 degrees |

## 8.5. Settings switch between summer/ winter operation

Switches between extract air regulation in summer and supply air regulation in winter. The function can be switched via three different factors, physical input, date or outdoor air temperature

> **Start page > Main menu > Configuration > Configuration 1 > Tmp control mode**

| Parameter | Function |
|---|---|
| ExSplyCSu | Extract air regulation in summer and supply air in winter |
| RmSplyCSu | Room regulation in summer and supply air in winter. **NB.** Requires room sensor as external accessory |

## 8.6. Switch between summer/winter via physical input

> **Start page > Main menu > Configuration > Configuration 1 > Su/Wi input**

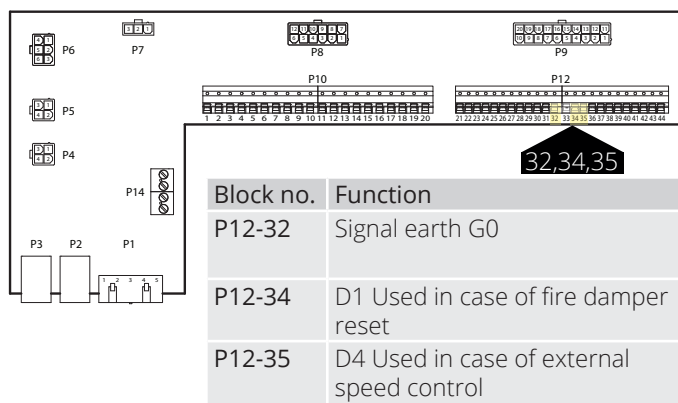| Parameter | Function |
|---|---|
| No | Function deactivated |
| Yes | Switches between summer/winter operation. 1 = summer & 0 = winter |

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

> ⟳ **RESTART**

A physical input must then be connected to the function. There are different inputs to choose between, fire damper reset (fire  damper is installed) and external speed control. If fire damper reset is activated, the speed control input is used, and vice versa.

> **Start page > Main menu > Configuration > Configuration IOs > Digital inputs > Su/ Wi input**



| Block no. | Function |
|---|---|
| P12-32 | Signal earth G0 |
| P12-34 | D1 Used in case of fire damper reset |
| P12-35 | D4 Used in case of external speed control |

| Parameter | Function |
|---|---|
| D1 | Used in case of fire damper reset |
| D4 | Used if you have speed 3 via external speed control |

If D1 Is selected, the external speed control function must be deactivated. This is done via the following search path.

> **Start page > Main menu > Configuration > Configuration 1 >Ext control input > Two**

Ater making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

> ⟳ **RESTART**

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## 8.7. Switch between summer/winter via date/outdoor air temperature

🔑 **Start page > Main menu > Global functions > State**

| Parameter | | Function |
|---|---|---|
| Status | | Display of current operating status |
| SuWi setting | None | No limitations |
| | NoHeatSu | No heating in summer state |
| | NoCoolWi | No cooling in winter state |
| | Both | No heating in summer state and no cooling in winter state |
| Outs air tmp damped | | Average outdoor air temperature over given time constant |
| Summer date time | | Date/time for switching to summer operation. If * is indicated instead of date/time, the switch is to Outdoor air temp. moderated |
| Winter date time | | Date/time for switching to winter operation. If * is indicated instead of date/time, the switch is to Outdoor air temp. suppressed |
| Time constant | | Time constant for calculating Outdoor air temp. moderated. Set to 0 for 10 seconds to reset moderated outdoor air temperature. Set constantly to 0 for switching to current outdoor air temperature |
| Outs air tmp summer | | Outdoor air temperature for switching to summer operation |
| Outs air tmp winter | | Outdoor air temperature for switching to winter operation |

| > EXAMPLE |
|---|
| Outdoor air temp. moderated=shows average temperature over the last X hours (24 in this case) |
| Date/Time summer=* |
| Date/Time winter=* |
| Time constant=24 |
| Outdoor air temp. Summer=15 |
| Outdoor air temp. Winter=10 |
| If average temperature is over 15 degrees for 24 hours, the control system switches to summer operation. If the average temperature is under 12 degrees for 24 hours, the control system switches to winter operation. If date and time are shown instead, this will override the temperature settings and the control system will switch to date/time instead. |

## 8.8. Free cooling

Night cooling works so that the unit can start and run at night to cool down the room. Configure as follows:

🔑 **Start page > Main menu > Configuration > Configuration 2 > Free cooling**

| Parameter | Function |
|---|---|
| No | Free cooling deactivated |
| 12 hours | Starts at least 12 hours before the next operating period |
| 9 hours | Starts at least 9 hours before the next operating period |
| 6 hours | Starts at least 6 hours before the next operating period |
| 3 hours | Starts at least 3 hours before the next operating period |
| Always | Can be started at any time |

🔑 **Start page > Main menu > Configuration > Configuration 2 > Free cooling > Fan step**

| 1 | The fans run at step 1 during nighttime cooling |
|---|---|
| 2 | The fans run at step 2 during nighttime cooling |
| 3 | The fans run at step 3 during nighttime cooling |

🔑 **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

🔄 RESTART

🔑 **Start page > Main menu > Unit > Operating mode > Free cooling**

| Parameter | Function |
|---|---|
| Room tmp setpoint | Shows the current setpoint for room/extract air (only shown when supply air regulation is configured) |
| Hysteresis | Hysteresis for power on (Power on = Setpoint room + Hysteresis). |
| Delta | Minimum difference between room/extract air and outdoor air temperature |
| Min outs tmp | Minimum permitted outdoor air temp for activating nighttime cooling |
| Min run time | Function deactivated |
| Fan step | Which fan step will be needed for nighttime cooling |

## 8.9. Support operation

Nighttime support operation prevents the building from overheating or overcooling. This is regulated via a separate setpoint for heating and cooling.
The temperature test starts the unit after a long period of inactivity in order to update the duct sensor temperature. This temperature is used as a criterion for starting free cooling or support operation, and must always be kept updated.

The function is activated automatically when the following conditions are met:

### 8.9.1. To activate the function

🔑 **Start page > Main menu > Configuration > Configuration 2 > Tmp start**

| Parameter | Function |
|---|---|
| No | Function deactivated |
| Htg | Function activated for heating |
| Clg | Function activated for cooling |
| Htg+Clg | Function activated for both heating and cooling |

After making a change in a configuration menu, RESTART

🔑 **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

🔄 **RESTART**

### 8.9.2. To configure the function

🔑 **Start page > Main menu > Unit > Operating mode > Tmp start**

| Parameter | Function |
|---|---|
| Start stpt cooling | Start temperature for cooling, extract air > Start cooling |
| Cooling set-point | Supply air setpoint when support operation cooling is activated |
| Start stpt heating | Start temperature for heating, extract air > Start cooling |
| Heating set-point | Supply air setpoint when support operation Heating is activated |
| Hysteresis | Hysteresis for power off: In case of cooling: Extract air< Start cooling - Hysteresis In case of heating: Extract air> Start Heating+ Hysteresis |
| Minimum off time | Shortest power off time after activation of heating or cooling |
| Min run time | Shortest cycle time after start |
| Fan step | Which fan step will be needed for support operation |

| > EXAMPLE SUPPORT OPERATION COOLING |
|---|
| Start stpt cooling = 25 degrees |
| Cooling setpoint = 16 degrees |
| Hysteresis = 3 degrees |
| Minimum off time = 30 min |
| Min run time = 15 min |
| A temperature test is performed and the extract air is 26 degrees. The unit then goes into support operation cooling and regulates the supply air to 16 degrees. The unit stops when the extract air has dropped to 22 degrees (Start cooling – Hysteresis), but no earlier than 15 mins. Support operation starts again no earlier than 30 mins after the last stop. |

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## 8.10. Temperature test for free cooling operation

The function is used when room sensors are installed. The unit then starts up as usual to sense the temperature in the exhaust air. Used to determine whether the unit should continue in night cooling / support mode or not.

Night cooling or support operation must be activated to be able to run temperature tests. See 8.9 or 8.10 to activate the function.

> **Start page > Main menu > Configuration > Configuration 2 > Free cooling**

> **Start page > Main menu > Configuration > Configuration 2 > +Tmp start**

After making a change in a configuration menu, RESTART

> **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

To allow free cooling or support operation, the unit must start up and detect the temperatures. This is configured under:

Configure as follows:

> **Start page > Main Menu > Unit > Operating mode > Fan-Kick exh tmp**

| Parameter | Function |
|---|---|
| Kick time | Time for temperature test |
| Interval time | How often the temperature test is to be carried out |
| On time | Operating time for temperature test, **NB.** Not less than 180 seconds. |

| > EXAMPLE FREE COOLING OPERATION TEMP TEST |
|---|
| Kick time = 23:00 |
| Interval time = 3 |
| On time = 300 |
| The unit is turned on for 300 seconds if it has been turned off for at least 3 hours since 23:00 |
| **NB.** Exercise time = 24:60 and interval time = 0.0 = no temperature test carried out. |

| >EXAMPLE NIGHTTIME COOLING |
|---|
| Setpoint room = 22 |
| Hysteresis = 2 |
| Delta = 5 |
| Min outdoor air temp = 10 |
| Min cycle time = 30 |
| A temperature test is performed and the room/extract air is > 24 degrees and the outdoor air temperature between 10 and 17 degrees. The unit starts and stops only when the room/extract air is 22 degrees and at least 30 mins have passed since startup. |

CS2500

# 9. Fan regulation

## 9.1. Select method of regulation

### 9.1.1. Selection fan regulation method

All fan regulation functions are selected under the menu option:

> **Start page > Main menu > Configuration > Configuration 1 > Fan control mode**

### 9.1.2. Flow regulation

'Flow regulation' is selected by default. This means that the fans will regulate according to the set airflow in the control system. E.g. l/s or m³/h.

---

**NB.** The options 'Direct' and 'Dir. fro' must not be used!

### 9.1.3. Fixed speed

This means that the fans will regulate according to the set percentage in the control system. E.g. 50%

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

**RESTART**

Set parameters in the menu option:

> **Start page > Quick menu > Setup > Setpoints/Settings**

| Parameter | Function Mengderegulering | Function Fast frekvens |
|---|---|---|
| Sply fan st 1 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |
| Sply fan st 2 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |
| Sply fan st 3 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |
| Extr fan st 1 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |
| Extr fan st 2 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |
| Extr fan st 3 stpt | Airflow l/s or m³/h supply air fan step 1 | Speed in % supply air fan step 1 |

## 9.2. Pressure control

Before selecting pressure control, one or two pressure sensors must be mounted and connected to the unit. If pressure sensors from Flexit are used, these must be connected to P5 and P4, see accessories manual. When using other makes, these should be connected to Block P12, see table.



| Block no. | Funktion |
|---|---|
| 40 | Signal earth G0 |
| 43 | Supply air fan 0-10V |
| 44 | Extract air fan 0-10V |
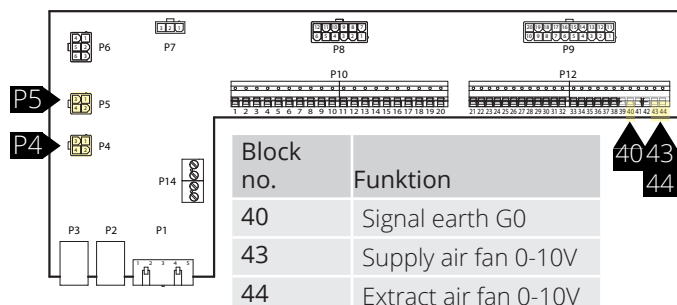
Then go in via the control panel to configure the system for pressure control.

> **Start page > Main menu > Configuration > Configuration 1 > Fan control mode**

| Parameter | Function |
|---|---|
| Pressure | Requires two pressure sensors. The fans regulate individually towards their own setpoints |
| SplySlave | Requires one pressure sensor on the extract air fan. The supply air fan follows the extract air fan with an adjustable slave offset |
| ExtrSlave | Requires one pressure sensor on the supply air fan. The extract air fan follows the supply air fan with an adjustable slave offset |

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

**RESTART**

### 9.2.1. Configuration of measurement ranges in pressure sensors

> **Start page > Main menu > Configuration > Configuration IOs > Pressures / flows > Supply air pressure**

| Parameter | | Function |
|---|---|---|
| X7 | 500Pa | X7 = Physical input (must not be changed). 500Pa = Max set value of connected pressure sensor. |
| Type | 0-10V | Type of signal. Must not be changed. |

**⚏ Start page > Main menu > Configuration > Configuration IOs > Pressures/flows > Extract air press**

| Parameter | | Function |
|---|---|---|
| X8 | 500Pa | X8 = Physical input (must not be changed). 500Pa = Max set value of connected pressure sensor. |
| Type | 0-10V | Type of signal. Must not be changed. |

**Setpoint adjustment of pressure.**
If Supply Fan or Extract Fan are selected as slaves, only three setpoint steps will be shown.

**⚏ Start page > Quick menu > Setup > Setpoints/Settings**

| Parameter | Function |
|---|---|
| Sply fan st 1 stpt | Setpoint supply air fan speed 1 i Pa |
| Sply fan st 2 stpt | Setpoint supply air fan speed 2 i Pa |
| Sply fan st 3 stpt | Setpoint supply air fan speed 3 i Pa |
| Extr fan st 1 stpt | Setpoint extract air fan speed 1 i Pa |
| Extr fan st 2 stpt | Setpoint extract air fan speed 2 i Pa |
| Extr fan st 3 stpt | Setpoint extract air fan speed 3 i Pa |

When selecting Supply Fan slave or Extract Fan slave for the fan regulation type, an offset must be set for the selected fan to regulate towards. Supply/extract air fans are pressure regulated. The supply/extract airflow is calculated and regulated towards the slave offset, see e.g.

**⚏ Start page > Quick menu > Setup > Setpoints/Settings > All settings > Fan control**
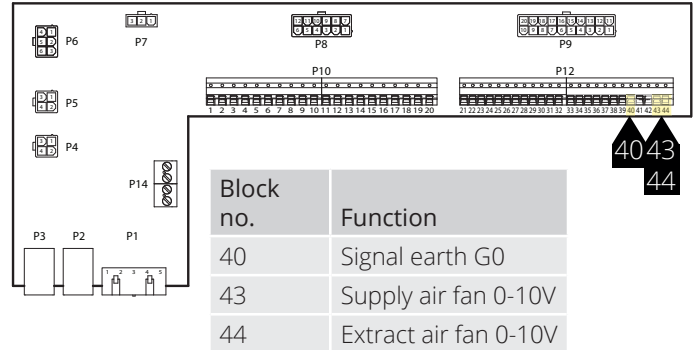
**Explanation:**
The offset indicates the difference between the master fan and the slave fan.

| > EXAMPLE OFFSET | |
|---|---|
| Ex 1. | If the offset is 0 l/s, the slave fan will operate with the same airflow as the master fan. |
| Ex 2. | If the offset is -100 l/s, the slave fan will operate with an airflow 100 l/s less than the master fan. |
| Ex 3. | If the offset is 100 l/s, the slave fan will operate with an airflow 100 l/s higher than the master fan. |

After setting the offset, it may be necessary to adjust the alarm limit for airflow deviations and the acceleration amplification factor on the fan.

## 9.3. External setpoint fan

The fans can be controlled directly via an analogue 0-10V input on the control system. A min and max speed/airflow are defined corresponding to 0 and 10V on the input.



| Block no. | Function |
|---|---|
| 40 | Signal earth G0 |
| 43 | Supply air fan 0-10V |
| 44 | Extract air fan 0-10V |

Activated via the following menu choice:

**⚏ Start page > Main menu > Configuration > Configuration 2 > Ext. Fan setpoint**

| Parameter | Function |
|---|---|
| No | Not activated: |
| Supply | External control of supply air fan |
| Extract | External control of extract air fan |
| Sply+Extr | External control of both supply air and extract air fans |

After making a change in a configuration menu, RESTART.

**⚏ Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**↻ RESTART**

The function has two operating modes:
1. Relative — A basic airflow via steps 1, 2 or 3 for fan operation + relative
2. Absolute — The fan is controlled solely by the 0-10V input and steps 1, 2 and 3 become inactive.

**Start page > Main menu > Configuration > Configuration 2 > Ext stpt funct.Sply Ext stpt funct.Exh**

| Parameter | Function |
| --- | --- |
| Relative | Example of relative.<br>Relative is set to 0V = 0l/s and 10V = 500l/s<br>Step 1 is set to 100 l/s and the input for external setpoint is 0V. The fan will run at 100 l/s<br>Step 2 is set to 300 l/s and the input for external setpoint is 10V. The fan will run at 800 l/s |
| Absolute | Example of Absolute.<br>Absolute is set to 0V = 100l/s and 10V = 1000l/s<br>The input for external setpoint is 0V. The fan will run at 100 l/s<br>The input for external setpoint is 5V. The fan will run at 500l/s |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

After the restart, the unit starts with an alarm: "External setpoint Supply Fan + Extract Fan conf. error" This means that one or two physical inputs need to be defined for the function.
This is done via:

**Start page > Main menu > Configuration > Configuration IOs > Other > Ext. setp. SplyFan**

| Parameter | Function |
| --- | --- |
| X6 | Defines which input the function should be connected to |

**Start page > Main menu > Configuration > Configuration IOs > Other > Exh.fan Ext. Setp**

| Parameter | Function |
| --- | --- |
| X7 | Defines which input the function should be connected to |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration IOs > Restart required! > Execute**

**RESTART**

### 9.3.1. Parameter settings for Comp.

**Start page > Quick menu > Setup > Setpoints/Settings > All settings > Fan control > Supply fan/Extract fan**

| Parameter | Function |
| --- | --- |
| Act supply stpt<br>Act extract stpt | Shows the current setpoint for the supply air/extract air fan, including compensation |
| Stage 1 | Setpoint supply air/extract air fan speed 1 |
| Stage 2 | Setpoint supply air/extract air fan speed 2 |
| Stage 3 | Setpoint supply air/extract air fan speed 3 |
| Ext stpt curve Y1 - Present value | Scaling of 0-10V signal, speed/airflow at 0V |
| Ext stpt curve Y2 - Present value | Scaling of 0-10V signal, speed/airflow at 10V |
| External setpoint Supl.fan Exh.fan | Shows the current setpoint for the 0 -10V input |

### 9.3.2. Parameter settings for Main

**Start page > Quick menu > Setpoints/Settings > All settings > Fan control > Supply air fan/Extract air fan**

| Parameter | Function |
| --- | --- |
| Act supply stpt<br>Act extract stpt | Shows the current setpoint for the Supply air/Extract air fans |
| Stage 1 | Not active |
| Stage 2 | Not active |
| Stage 3 | Not active |
| Ext stpt curve Y1 - Present value | Scaling of 0-10V signal, speed/airflow at 0V |
| Ext stpt curve Y2 - Present value | Scaling of 0-10V signal, speed/airflow at 10V |
| External setpoint Supl.fan Exh.fan | Shows the current setpoint for the 0 -10V input |

**FLEXIT**

## 9.4. External fan control via digital inputs
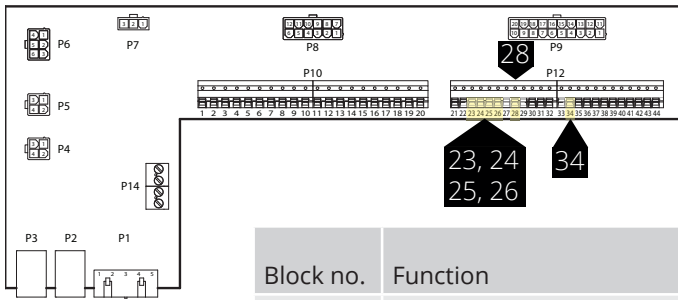


| Block no. | Function |
|-----------|----------|
| 23 | Eksternstyring 1 (DI) |
| 24 | Eksternstyring 1 (G0) |
| 25 | Eksternstyring 2 (DI) |
| 26 | Eksternstyring 2 (G0) |
| 28 | Eksternstyring 3 (G0) |
| 34 | Eksternstyring 3 (DI) |

Connection of signal(s) for controlling fan speeds from external components. It is possible to connect various types of switch/sensor that have pulsed or fixed positions. By default the regulator is set for switches with fixed values.

| Parameter | |
|-----------|--|
| External control 1 | ON = Speed 1 |
| External control 2 | ON = Speed 2 |
| External control 3 | ON = Speed 3 |
| External control 1 | ON = Stop |

## 9.5. Fire fan

The unit has a potential-free output for controlling an external fire fan. This requires the installation of an SP90 expansion module.

# 10. Connection of external equipment

## 10.1. Fire damper

The unit is able to control and exercise fire dampers. Fire dampers can be included in the unit control; either via autotest or always open. Monitoring of defined end positions is carried out. The current status and operating mode of the fire damper is displayed.

To activate the function.

> **Start page > Main menu > Configuration > Configuration 1 > Fire damper**

| Parameter | Function |
|---|---|
| No | Function deactivated |
| Yes | Function activated The fire damper will remain open even when the unit has stopped. |
| FollowUnit | Function activated The fire damper is opened when the unit starts and closed when the unit stops. |
| 2-4 | Not used |
| 2-4+FollUnit | Not used |

After making a change, a restart must be carried out.

> **Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**
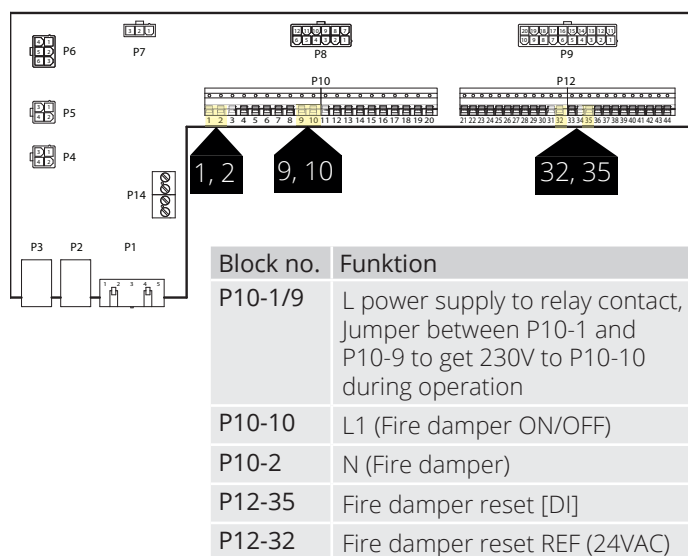
> **RESTART**

Continue configuring the fire damper feedback.

> **Start page > Main menu > Configuration > Configuration 2 > Fire damper fdbk**

| Parameter | Function |
|---|---|
| Closed | Only one reset for closed damper with NC input |
| Clsd+Opnd | Not used |
| Combined | Resets for open and closed position, but only one signal/input with a sequence as follows: 1 (closed) ---> 0 (closes/opens) ---> 1 (open) |
| Clsd.Inv | Only one reset for closed damper with NO Invert input |

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

> **RESTART**



| Block no. | Funktion |
|---|---|
| P10-1/9 | L power supply to relay contact, Jumper between P10-1 and P10-9 to get 230V to P10-10 during operation |
| P10-10 | L1 (Fire damper ON/OFF) |
| P10-2 | N (Fire damper) |
| P12-35 | Fire damper reset [DI] |
| P12-32 | Fire damper reset REF (24VAC) |

Example of connection description for fire damper indication with combined signal for open and closed.

**FLEXIT**
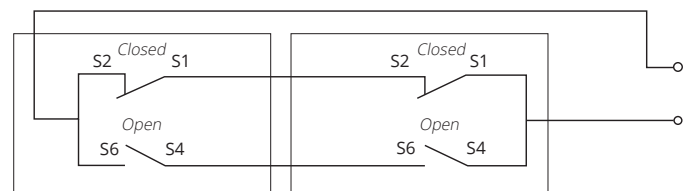
Fire dampers can be included in the unit control;

> **Start page > Main menu > Unit > Damper control > Fire damper cmd**

| Parameter | Value | Function |
|---|---|---|
| Operation | Off | Current status for outdoor air damper. |
|  | On | Go to page for all settings of digital outputs. |
| Feedback opened Feedback closed | OK | Active reset if the damper is closed. This must always be set. |
|  | 1 / 2 / 3 /4 + all possible combinations | The numbers indicate which damper has an error. There is only an input for one damper in the control system. |
| State | N/A | Only possible during configuration |
|  | Closed | Closed |
|  | Cl/Op | Closes/opens. |
|  | Open | Open See example below |
| Mode | N/A | Only possible during configuration |
|  | OK | OK |
|  | Test | Test mode. |
|  | Alarm | Alarm mode |
| Opening time | 1...600 [s] | Time for damper opening (see product sheet for damper actuator). |
| Closing time | 1...600 [s] | Time for damper closing (see product sheet for damper actuator). |
| Start manual test | Passive Active | Activate fire damper test manually. |
| Auto test date/ time | Time, Day of week, Date | Time of automatic start of damper test The autotest is deactivated for Configuration 1 > Fire damper = Yes+FollUnit See example below |
| Auto test interval | 0...36000 [h] | Time interval for automatic damper test. See example below |

| > EXAMPLE DAMPER COMMAND 0 -> 1: | |
|---|---|
| When the damper has received a signal to start opening, the damper feedback must give an "open signal" within 15% of the set opening time. | Otherwise an alarm is triggered for lack of movement. |
| When the damper has received a signal to start opening, the damper feedback must give a "close signal" within 115% of the set opening time. | Otherwise a reset alarm is triggered for open position Damper command 1 -> 0. |

| > EXAMPLE DAMPER COMMAND 0 -> 1: | |
|---|---|
| When the damper has received a signal to start closing, the damper feedback must give an "open signal" within 15% of the set closing time. | Otherwise an alarm is triggered for lack of movement. |
| When the damper has received a signal to start closing, the damper feedback must give a "close signal" within 15% of the set opening time. | Otherwise a reset alarm is triggered for open position Damper command 1 -> 0. |

Automatic testing can be carried out at a certain time (day, time) and/or at a certain interval.

| > EXAMPLE TEST INTERVAL: | |
|---|---|
| Auto test date/time = *.*   *,*.* / Auto test interval = 24 | The test is performed every 24 hours, whatever the time of day. |
| Auto test date/time = 23.*   Mo,*.* / Auto test interval = 47 h | The test is performed every month at 23:00, with the previous test having been held at least 47 hours previously. |
| Auto test date/time = *.*     *,*:* and Auto test interval = 0 | No automatic test is carried out. Test sequence = 1 |

Test mode: The entire aggregate stops. After the period Deferral delay. the outdoor air and exhaust air dampers are closed and fire damper tests are initiated.

The test is run according to the above example of damper maneuver. If everything works as intended, the unit will start up again. Otherwise, the unit continues to stop and an alarm on an incorrect fire damper is activated.

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## 10.2. Fire/smoke detector

**Start page > Main menu > Configuration > Configuration 1 > Fire alarm**

| Parameter | Function |
|---|---|
| No | No fire alarm |
| Alarm | External fire alarm such as smoke detectors, thermostat, fire alarm control centre, etc. |
| Tmp | Internal fire alarm via measurement of normal supply air and extract air temperature when both sensors are accessible. A fire alarm is triggered when one of the two temperatures reaches a specific value. |
| Alarm+Tmp | Both fire alarms. |

After making a change in a configuration menu, RESTART.

**Start page > Main menu > Configuration > Configuration 1 > Restart required! > Execute**

**RESTART**

On choice of Tmp or Alarm+Tmp, the alarm limits for temperatures are configured as follows:

**Start page > Quick menu > Setup > Setpoints/Settings > All settings > Alarm limit set**

| Parameter | Function |
|---|---|
| Supply tmp lim fire | Alarm limit too high supply air temperature. |
| Extract tmp lim fire | Alarm limit too high extract air temperature. |

On choice of Tmp or Alarm+Tmp, the fan regulation is configured as follows.

**Start page > Main menu > Unit > Fan control> Firemode**

| Parameter | Function |
|---|---|
| Stop | The fans stop in case of fire. |
| Run Sply | The Supply air fan runs at max. set step, the Extract air fan stops. |
| Run Exh | The Extract air fan runs at max. set step, the Supply air fan stops. |
| Run both | Both fans run at the max set step. |



| Block-nr. | Function |
|---|---|
| 27 | Fire/smoke [DI] |
| 32 | Fire/smoke +24VDC |
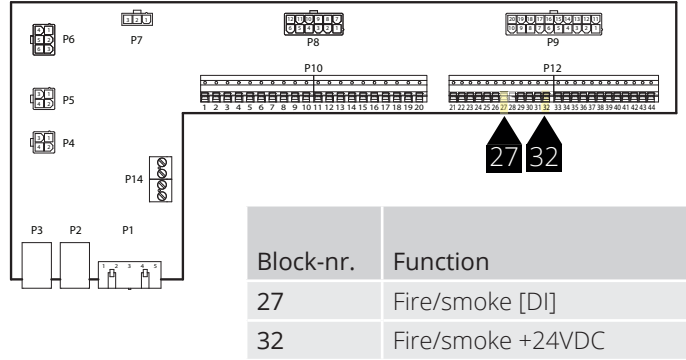
The input is normally open (NO) and triggers an alarm when closed. This can be reconfigured to normally closed (NC) via:

**Start page > Main menu > Unit > Inputs > Fire > Contact function**

| Parameter | Function |
|---|---|
| NO | Normally open - triggers alarm if input is closed. |
| NC | Normally closed - triggers alarm if input is opened |

## 10.3. Air quality

Fans (see Fan compensation) are regulated by air quality. The outdoor air volume increases when the carbon dioxide content exceeds a certain value (fan speed increases and the circulation volume decreases if a bypass damper has been installed). The outdoor air volume goes down when the carbon monoxide content exceeds the set value (fan speed decreases and circulation volume goes up).

> **Start page > Main menu > Configuration > Configuration 2 > Fan comp air qual = Yes**

After making a change in a configuration menu, RESTART.

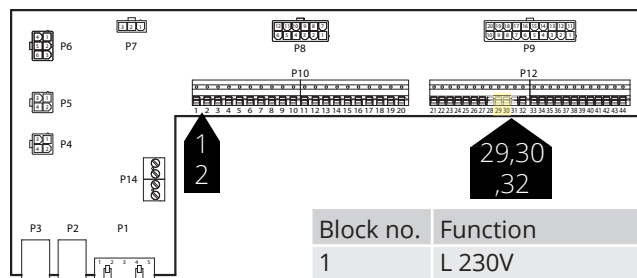> **Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute**

**RESTART**

> **Start page > Main menu > Unit > Air quality control**

| Parameter | Value | Function |
|---|---|---|
| Controller | 0...100[%] | Current regulator value. Go to page for regulator settings. |
| Function | The output signal must be selected according to the actual need: | |
| | Normal | Normal for $CO_2$ |
| | Inverted | Inverted for carbon monoxide. |
| Setpoint | 0...3000 [ppm] | Setpoint for air quality regulation. |

Scaling of $CO_2$ sensor.

> **Start page > Main menu > Configuration > Configuration IOs > Other > Air quality sensor**

| Parameter | Value | Function |
|---|---|---|
| Air quality sensor | X8 | This is the physical input on the regulator and must not be changed. |
| Scale | 2000 ppm | This is the upper limit on the $CO_2$ sensor. At 10V on the output. |



| Block no. | Function |
|---|---|
| 1 | L 230V |
| 2 | N 230V |
| 29 | (0-10V) |
| 30 | (G0) |
| 32 | 24VAC |

**Parameter**

The setpoint is set to 800 ppm and the $CO_2$ sensor detects an actual value of 1000 ppm. The unit switches up to speed 3 and runs at this speed until the $CO_2$ sensor detects an actual value of under 800 ppm, when it switches down to the speed set for the current time channel.

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## 10.4. AUX Damper

The output signal is affected by the speed at which the ventilation unit is operating. The function can be used, e.g., to open a damper when the unit switches to a higher speed. The function must be activated in the control system. This is done via the following menu option.

> **Start page > Main menu > Configuration > Configuration 2**

| Parameter | Value | Function |
|---|---|---|
| Aux Analog outp | No | Analogue aux. output that generates a 0-10V signal, depending on current fan step. |
| | Fan | Output signals can be set for each fan step. E.g. 10% at step 1 and 60% at step 2. |
| | AdjDiscrg | The output signal will depend on the difference between the supply air temp and the room temp. The setting will determine the difference which will result in 0V and 10V. E.g., Supply air temp-room temp = 5 degrees gives a 7V output signal. |

After making a change in a configuration menu, RESTART

> **Start page > Main menu > Configuration > Configuration 2 > Restart**

> ↻ **RESTART**

> **Start page > Main menu > Unit > Auxiliary**

| Parameter | Function |
|---|---|
| Fan step 0 | Aux. output signal for unit shutdown (also in case of unit malfunction). |
| Fan step 1 | Aux. output signal for active fan step 1 (setpoint 1 for regulated fans). |
| Fan step 2 | Aux. output signal for active fan step 2 (setpoint 2 for regulated fans). |
| Fan step 3 | Aux. output signal for active fan step 3 (setpoint 3 for regulated fans). |



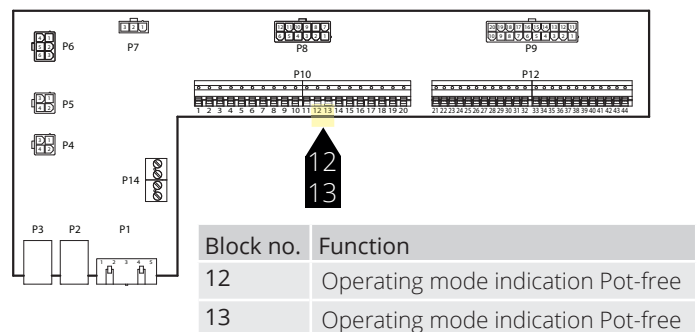| Block no. | Function |
|---|---|
| 37 | (0-10V) |
| 38 | (G0) |
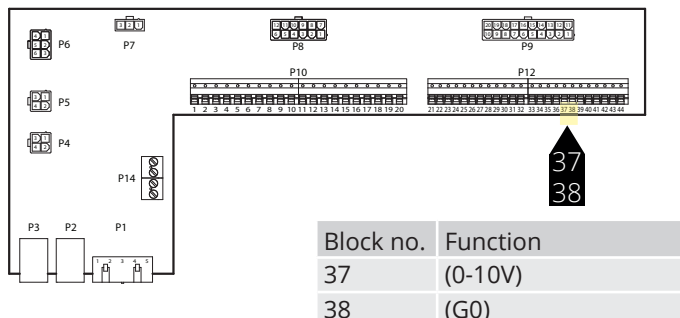
## 10.5. AUX operating mode indicator

The function of the digital output can be selected. By default, this is the buzzer alarm, but other functions can be selected. See table.

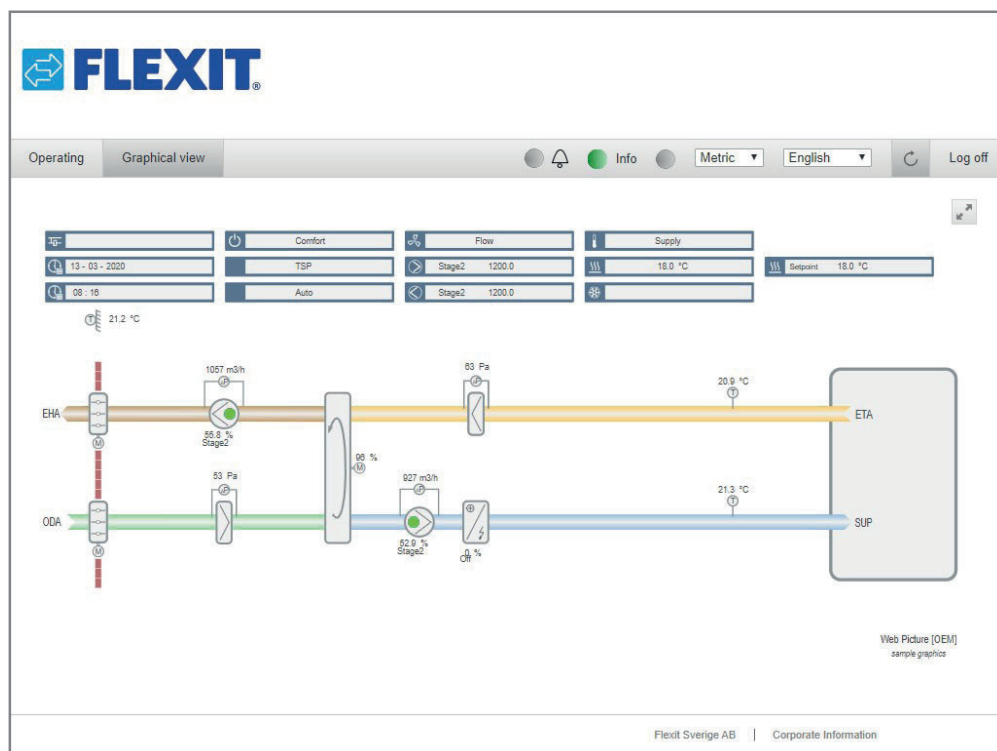> **Start page > Main menu > Configuration > Configuration 2 > Aux. operating mode starts > Yes**

> **Start page > Main menu > Configuration > Configuration 2 > Restart**

> **Start page > Main menu > Unit > Auxiliary > Operating mode indic. selection**

| Step | Measure |
|---|---|
| Off | System switched off. |
| On/comfort | The unit is switched on or comfort operation. |
| Economy | Economy operation |
| Manual: | Manual control activated. |
| Osstp | Optimum start activated optimisation function). |
| Nighttime cooling | Nighttime cooling activated. |
| Support operation | Support operation activated. |
| Test temp | Temperature test activated. |
| Damper exercise | Fire damper test activated. |
| Fire | Fire alarm activated; the system is in fire alarm mode. |
| Stop | The unit has stopped and has been blocked. |
| Operation | The unit is in operation (Supply air/Co/Ec/Osstp/Nighttime cooling/Support operation/TestTemp/Startup). |
| Full heating | Hot water or electric heating register with 100% capacity. |
| Full recovery | Heating recovery (plate, rotary, water heat exchanger) with 100% capacity. |
| Full cooling | Cooling with 100% capacity. |
| Summer | Indicates that the control system is in summer operation. |
| Winter | Indicates that the control system is in winter operation. |
| Heating requirements | Indicates that the control system has a requirement for heating (both rotor and/or heating). |
| Normal operation | Indicates that the control system is in normal operation, no alarms or overrides. |



| Block no. | Function |
|---|---|
| 12 | Operating mode indication Pot-free |
| 13 | Operating mode indication Pot-free |

## 11. Internet



The unit can be controlled via the Internet. This is done by joining the regulator to a network. This is then connected by entering the regulator's IP address into a computer web browser.

To configure the function, access the following:

> **Start page > Main menu > Communication overview > IP-Config > DHCP**

| Parameter | Function |
|-----------|----------|
| Active | The regulator is assigned an IP address from the network. |
| Passive | A fixed IP address is entered in the regulator. |

Information on other settings in the communications menu can be obtained from personnel with network responsibility.

After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Communication overiview > IP-Config. > Restart**

> RESTART

After restart, go into:

> **Start page > Main menu > Communication > IP-Config.**

and note **Current IP.**

Open the web browser on a computer connected to the same local network as the unit and enter the IP number in the address field. To log into the web page, use the following information.

**Username:** ADMIN
**Password:** SBTAdmin!

Then enter the password 2000 to access the regulator.

# 12. ModBus TCP/IP & RS485

The unit can be controlled via ModBus, either via TCP/IP or RS485 (RTU) as a standard function in the regulator.

To configure the TCP/IP function, access the following:

> **Start page > Main menu > Communication > IP-Config > DHCP**

| Parameter | Function |
|-----------|----------|
| Active | The regulator is assigned an IP address from the network. |
| Passive | A fixed IP address is entered in the regulator. |

Information on other settings in the communications menu can be obtained from personnel with network responsibility.
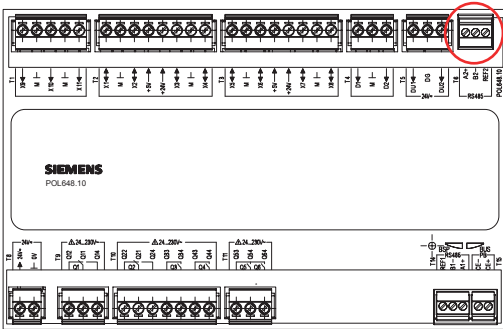
After making a change, a restart must be carried out.

> **Start page > Main menu > Communication overview > IP-Config > Restart**

> **RESTART**

> **Start page > Main menu > Communication > IP-Config.**

and note **Current IP.**



The ModBus parameter list is available for downloading on www.flexit.com

To configure RS485 (RTU), access the following:

> **Start page > Main menu > Communication > ModBus RTU (RS485)**

| Parameter | Function |
|-----------|----------|
| Slave address | Select slave address (1...247): Enter the corresponding ModBus slave address |
| +RS485:1 | Used internally. |

| Parameter | Function |
|-----------|----------|
| +RS485:2 | Enter the output for the regulator |
| Baud rate | Select transfer speed: |
| Parity | Select parity: No, even or odd parity |
| Stop bit | Select stop bits: One or two stop bits |
| Delay | Delay between question sent and bus reply |
| Response timeout | Select response timeout: Settings access time for master Master must provide read access within this period, otherwise an alarm is triggered |
| Unit alarm | What type of alarm |
| Alarm address | Which slave issues the alarm |

# 13.  DX heating/cooling

The control system is able to control a heat pump for heating and cooling, which is connected to a ducted coil. It can be used both as a free-standing unit or in sequence beforehand with the internal electric coil, which can then be used as peak heating and/or as reserve heating while the heat pump is defrosting.

**For the function to operate, I/O module SP90 must be installed and configured. See accessories manual**

**If you wish to use the internal electric-powered coils, these must be installed/configured as shown in the manual supplied with the coils.**

## 13.1.  Configuration of control system

> **Start page > Main menu > Configuration > Configuration 1 > Water Heating 2**

| Parameter | Function |
|---|---|
| Yes | Additional heating activated |
| +PreH Outside-Temp. | Additional heating with preheating based on outdoor air temperature. Analogue heating valve output. |
| +PreH Frost-Temp | Additional heating with preheating based on frost protection temperature. |
| ModBus | Switches between analogue output and Siemens ModBus valve |

Select ´Yes´ to activate the function and then ´Ready´.

> **Start page > Main menu > Configuration > Configuration 1 > Cooling 2**

| Parameter | Function |
|---|---|
| Water | Additional cooling via 0-10V signal |
| DX 1step | Additional cooling Off/On 1 step |
| DX 2step | Additional cooling Off/On 2 step |
| DX 3step | Additional cooling Off/On 3 step |
| ModBus | Switches between analogue output and Siemens ModBus valve |

Select ´Water´ and then Ready to activate the 0-10V output signal for the function.
After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 1 > Restart**

> **RESTART**

The unit will show an alarm on startup. This can be removed by the configuration shown further down.

> **Start page > Main menu > Configuration > Configuration 2 > Water Heating 2 pump**

| Parameter | Function |
|---|---|
| No | No Off/On signal to pump |
| Yes | Off/On signal to pump |
| Yes+Kick | Off/On signal to pump + exercise motion |

> **Start page > Main menu > Configuration > Configuration 2 > HP Defrost**

Select ´Yes´on both heating and cooling. Use to signal a heating/cooling requirement to the heating pump.

> **Start page > Main menu > Configuration > Configuration 2 > HP Defrost**

| Parameter | Function |
|---|---|
| No | Defrosting function deactivated |
| Yes | Defrosting function activated |

Select ´Yes´. Used to lock the output signal to the heat pump and if necessary activate electric heating (if connected) when defrosting the heat pump.

> **Start page > Main menu > Configuration > Configuration 2 > Water heating 2 control**

| Parameter | Function |
|---|---|
| StandAlone | Regulation seeks its own temperature setpoint |
| Seq H-Heating2 | Regulation uses the sequence electrical heating - heat pump |
| Seq Heating2-H | Regulation uses the sequence heat pump -electrical heating |

Select ´Seq Heating2-H´ to force the regulation to operate using the sequence Heat pump first and electrical heating second.

> **Start page > Main menu > Configuration > Configuration 2 > Cooling 2 control**

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| Parameter | Function |
|---|---|
| Standalone | Regulation seeks its own temperature setpoint |
| Sequence | Regulation uses the sequence before or after ordinary cooling regulation |

Select ´Sequence´ to force the regulation to operate in sequence with heat recovery and heating.

> **Start page > Main menu > Configuration > Configuration 2 > Combi-coil**

| Parameter | Function | |
|---|---|---|
| Combi-coil | Selection of coil function for both heating and cooling | |
| | Normal seq. | One coil for both heating and cooling |
| | Extra seq. | A coil which can be run as extra heating and extra cooling |
| | 1Valve 1Pump | Coil with combined valve for regulating heating and cooling. One digital output for switching between heating and cooling. |
| | 2Valves 1Pump | Coil with separate valves for regulating heating and cooling. One digital output for switching between heating and cooling |
| | Heat pump | Coil with three separate outputs, one analogue and two digital. |
| | DX Com | Heating pump connection via process bus |
| | Inv. valve | Analogue output signal inverted |

Select ´Extra seq´ and then Ready to send the same signal (0-10V) to the heat pump for both heating and cooling.
After making a change in a configuration menu, RESTART.

> **Start page > Main menu > Configuration > Configuration 2 > Restart**

> ⟳ **RESTART**

After restarting, an alarm will appear on the regulator requiring configuration of which input is connected to the heat pump defrosting function. This is done via:

> **Start page > Main menu > Configuration > Configuration IOs > Digital inputs > HP Defrost**

| Parameter | Function |
|---|---|
| D4 | Block P12-35 |

Select ´D4´ This will connect block P12-35 on the A2 circuit board to the function. The input is also used for resetting the fire damper. If both functions are used, contact Support to configure a new input.

For the output that alternates between heating and cooling to work, the pump output must be configured differently.
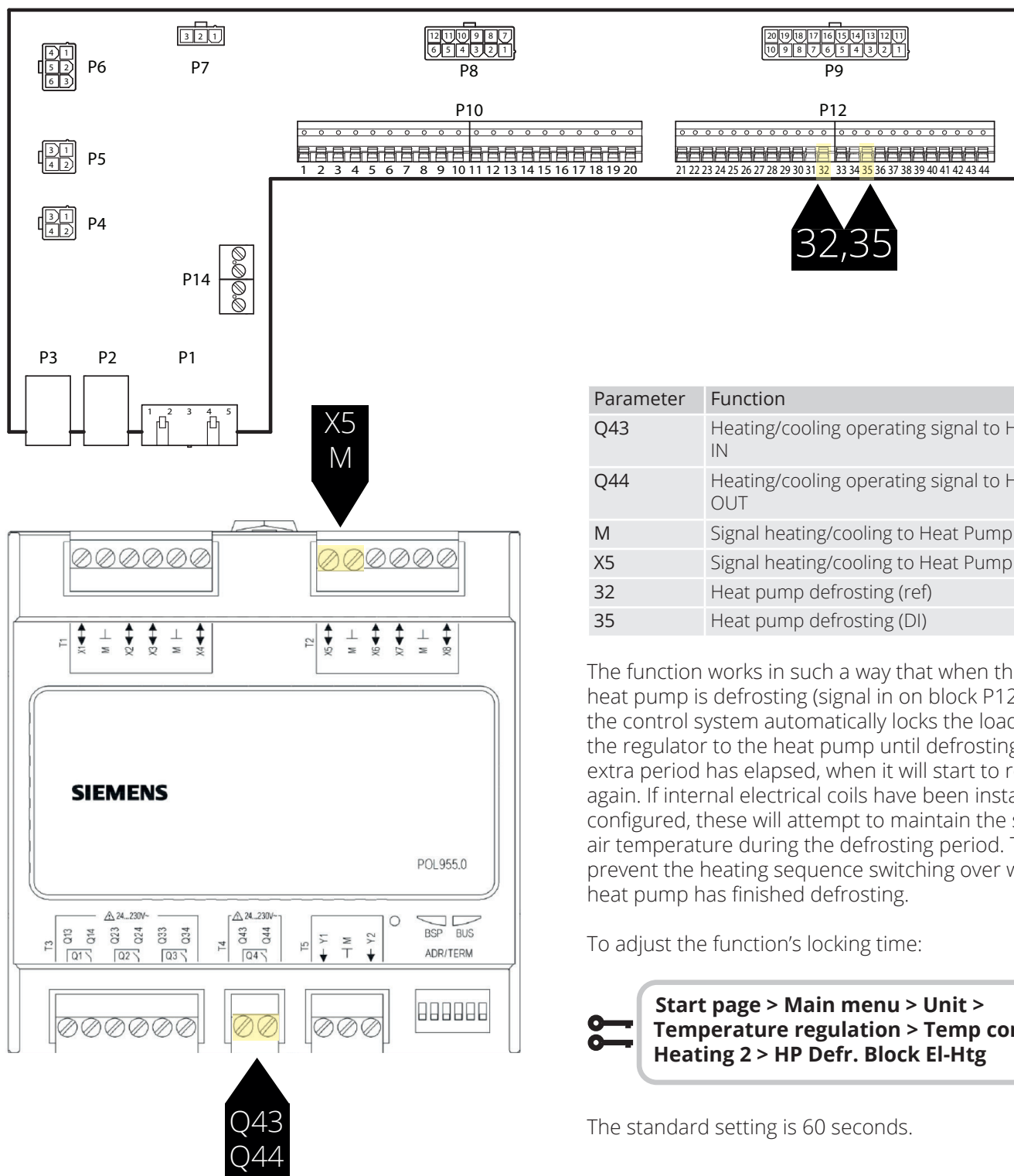
> **Start page > Main menu > Unit > Outputs > Heating 2 pump cmd > Contact function > NO/NC**

Set this to NO

> **Start page > Main menu > Unit > Outputs > Cooling 2 pump cmd > Contact function > NO/NC**

Set this to NC

## 13.2. Installation



| Parameter | Function |
|-----------|----------|
| Q43 | Heating/cooling operating signal to Heat Pump IN |
| Q44 | Heating/cooling operating signal to Heat Pump OUT |
| M | Signal heating/cooling to Heat Pump (G0) |
| X5 | Signal heating/cooling to Heat Pump (0 -10V) |
| 32 | Heat pump defrosting (ref) |
| 35 | Heat pump defrosting (DI) |

The function works in such a way that when the heat pump is defrosting (signal in on block P12-35), the control system automatically locks the load from the regulator to the heat pump until defrosting plus an extra period has elapsed, when it will start to regulate again. If internal electrical coils have been installed and configured, these will attempt to maintain the supply air temperature during the defrosting period. This is to prevent the heating sequence switching over when the heat pump has finished defrosting.
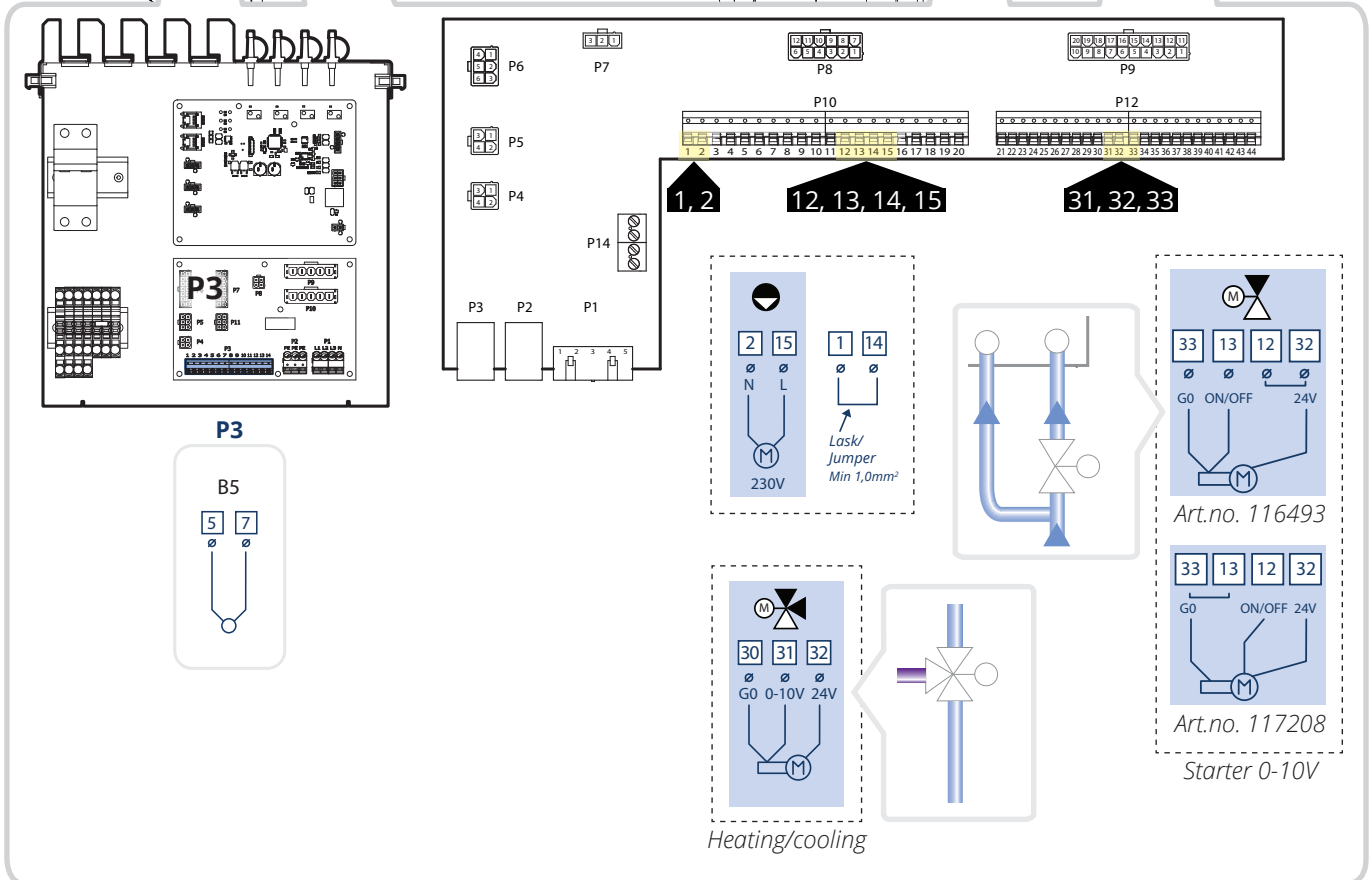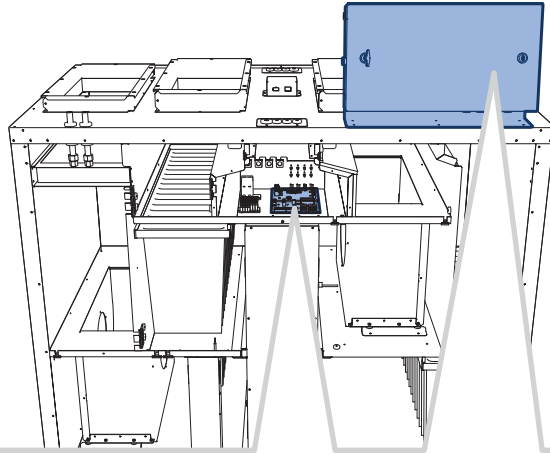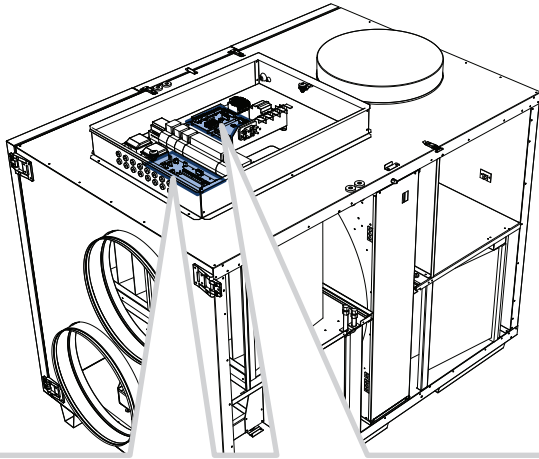
To adjust the function's locking time:

**Start page > Main menu > Unit > Temperature regulation > Temp control > Heating 2 > HP Defr. Block El-Htg**

The standard setting is 60 seconds.

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# 14. Combi battery

The unit is able to control a combined liquid coil which is operated as heating coil in winter and a cooling coil in summer. Make sure that valves and pump and frost guard are connected as instructed below.

## 14.1. Installation



**P3**

B5

5  7

1, 2

12, 13, 14, 15

31, 32, 33

2  15
ø  ø
N  L

1  14
ø  ø
Lask/
Jumper
Min 1,0mm²

230V

33  13  12  32
ø  ø  ø  ø
G0  ON/OFF  24V

*Art.no. 116493*

30  31  32
ø  ø  ø
G0  0-10V  24V

*Heating/cooling*

33  13  12  32
G0  ON/OFF  24V

*Art.no. 117208*

*Starter 0-10V*

## 14.2. Configuration

Then go in via the control panel to configure the unit as described below.

**Start page > Main menu > Configuration > Configuration 1 > Type of Heater**

| Parameter | Function |
|-----------|----------|
| Water | Water heating without preheating coil |

**Start page > Main menu > Configuration > Configuration 1 > Cooling**

| Parameter | Function |
|-----------|----------|
| Water | Analogue output for liquid cooling |

**Start page > Main menu > Configuration > Configuration 1 > Restart**

**RESTART**

Then select for heating and cooling to operate in normal sequence, with a combined regulator valve for both heating and cooling.

**Start page > Main menu > Configuration > Configuration 2 > Combi coil**

| Parameter | Function |
|-----------|----------|
| 1 Active | One coil for both heating and cooling |
| 1Vlv<br>1Pu | Coil with combined valve for regulating heating and cooling. One digital output for switching between heating and cooling. |

**Start page > Main menu > Configuration > Configuration 2 > Restart**

**RESTART**

To set the valve switching between heating and cooling operation.

**Start page > Main menu > Configuration > Configuration 2 > Aux. operating mode starts > Yes**

**Start page > Main menu > Configuration > Configuration > Restart**

**Start page > Main menu > Unit > Auxiliary > Op mode outp select**

| Parameter | Function |
|-----------|----------|
| Summer | Output to valve 2 (switches between heating and cooling) activated when the unit enters summer operation. |
| Winter | Output to valve 2 (switches between heating and cooling) activated when the unit enters winter operation. |

Other settings between summer and winter operation, see Sections 8.6 and 8.7.

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