118076EN-04
2024-04

CS2500 V2

ART.NO. 118044

EN

USER MANUAL

ProNordic

Contents

1. Introduction

1.1. Document description

CS2500 V2 was introduced in March 2024. To check which version is installed on the controller:
Home > Main Menu > Enter PIN (2000) Home > Main Menu > System Settings > Versions > Application Info.
If the version is V4.18.00 or lower, it is V1.
If the version is V4.20.00 or higher, it is V2.

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.

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

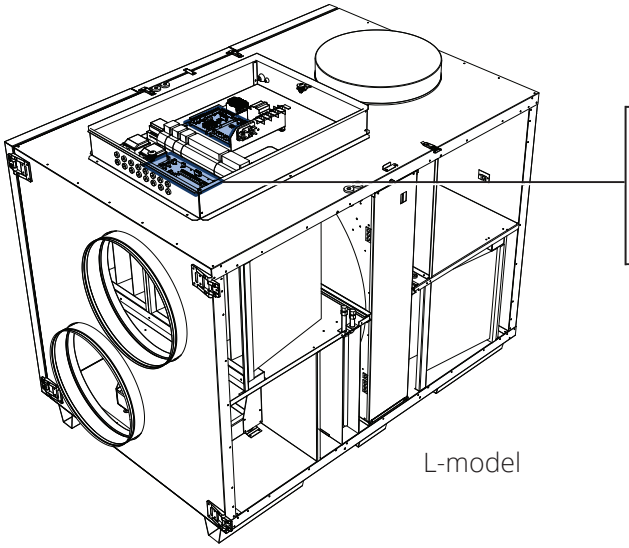
Regulator - the ventilation unit's general control system

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

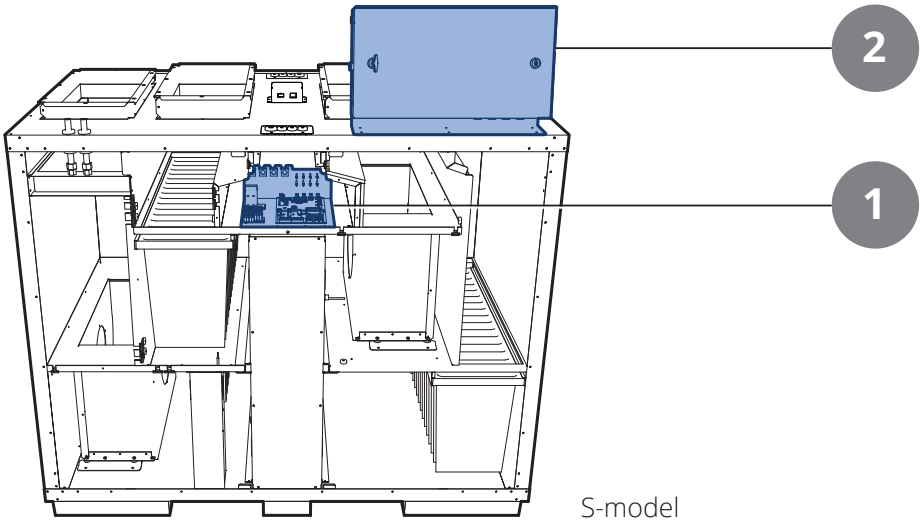
HMI - the control panel used to communicate with the regulator

ProPanel

ProPTouch



L-model

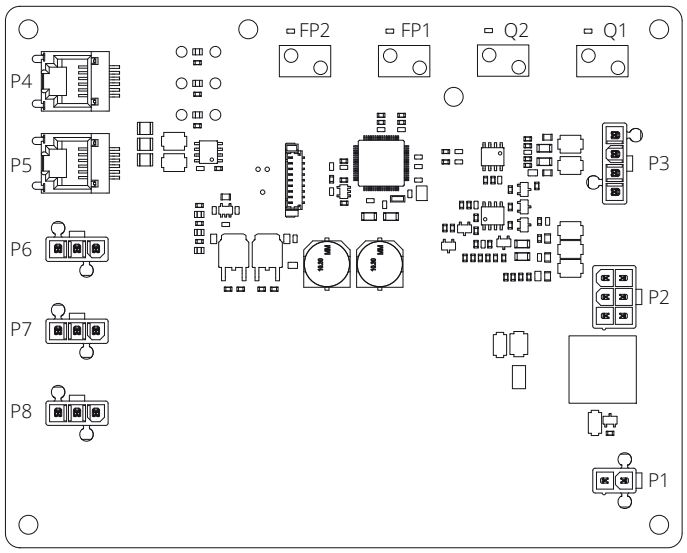


S-model

1.3.2. Ventilation unit's switching space

Modbus extender

A3



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

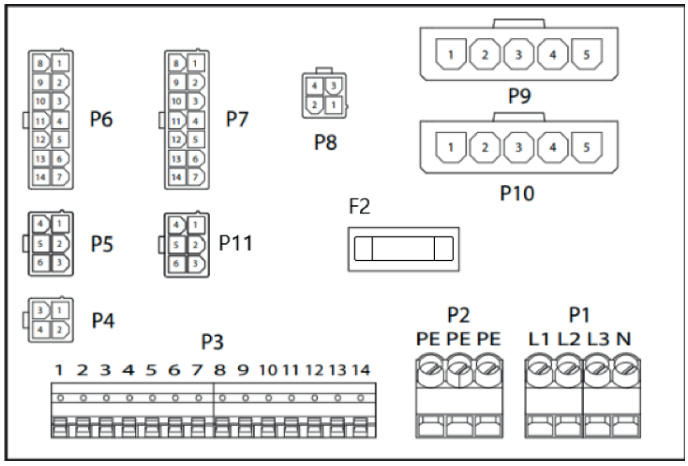
The four dip switches and the rotary switches marked 'FACTORY' are factory-set and must not be changed.

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.

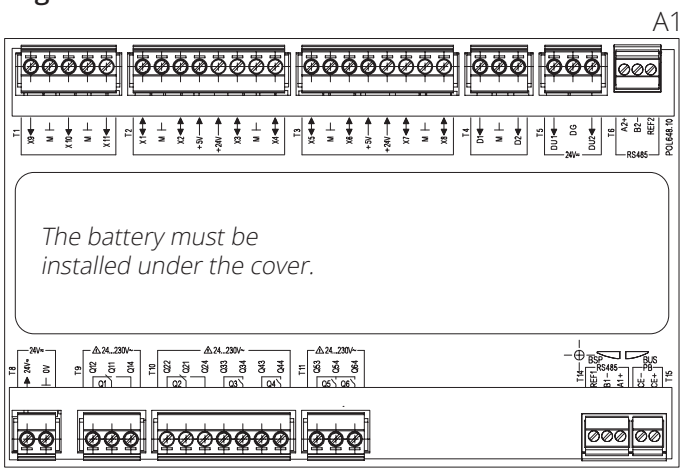
Component	Function
P1	Terminal block for power supply
P2	Terminal block for protective earth (PE)
P3	Terminal block for accessories
P4	Supply voltage L1 Out (not in use)
P5	Power supply to control cabinet
P6	Control signals to electric heating coil
P7	Control signals to electric heating coil and return 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

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.

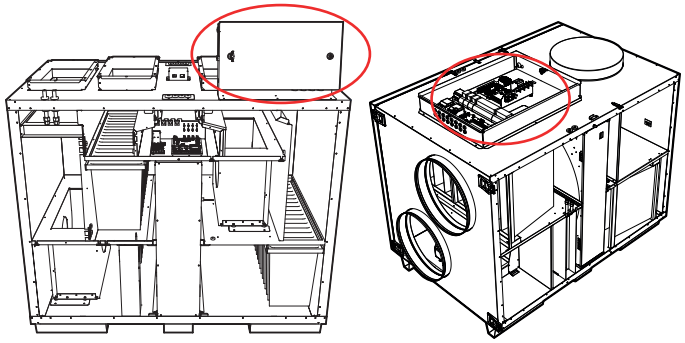
1.3.3. Ventilation unit control cabinet

Regulator

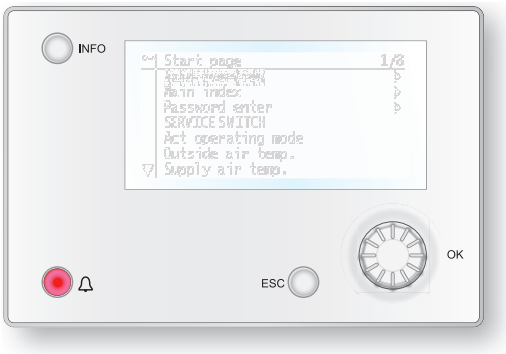


The ventilation unit's control system. This is where the control panel (HMI) and sensors and other components of the ventilation unit are connected. It is also possible to connect an SD memory card to back up or reload configuration settings and parameters for the regulator.

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



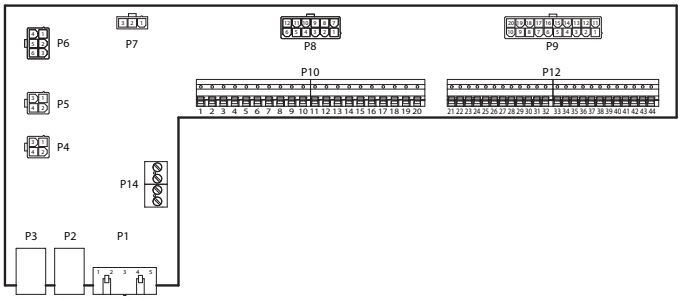
The ProPanel control panel has an 8-line graphic display and you navigate the menu tree by turning a dial. Selections are confirmed by pressing the same button.

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.

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	Cooling step 2 (potential-free contact)
10	NO	Cooling step 2 (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	Cooling step 1 Cooling/Pump (potential-free contact)
15	Cooling NO	Cooling step 1 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

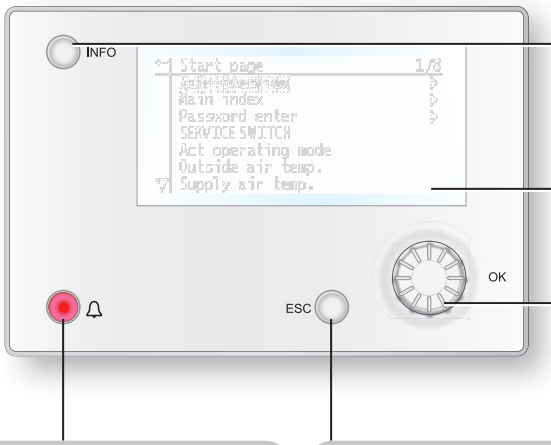
Terminal block P12 has the following signals:

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
- Red lamp = Fire
- Green lamp, steady = Normal operation
- Flashing green = Starting, Night operation test, Nighttime cooling or Night heating/nighttime cooling.
- Orange lamp, steady = Emergency stop, Alarm stop
- Flashing orange lamp = Fire damper exercise, not in service
- Alternating green/orange = Manual control of output or operating mode

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.

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 -Tu-Fr -Tu-Su -Tu -We -Th -Fr - Sa -Su -Ecpt	Copies times for the timing program from Monday to Tuesday-Friday/Tuesday-Sunday. -Passive (no copying). -Copying starts. Return to the display screen. -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.) Start date for weekly schedule. *,**. 00 means that the weekly schedule is always activated. ---> Activate weekly schedule.
Period: End		(Only Authority level 3.) 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 -Active	Status for current week or exception day: -Current weekday (system day) is not the same as the switch-over day. -Current weekday (system day) is the same as the switch-over day.
Time-1		This is locked to 00:00
Value-1	Off Eco.St1 Comf.St1 Eco.St2 Comf.St2 Eco.St3 Comf.St3	Indicates the unit's operating mode when Time-1 occurs
Time-2	00:01-23:59	Switch-over time 2. *:* ---> Time inactivated
Value-2 ... Value-6	Off Eco.St1 Comf.St1 Eco.St2 Comf.St2 Eco.St3 Comf.St3	Indicates the unit's operating mode when Time-2 occurs
Time-3 Time-6	00:01-23:59	Switch-over time 3-6. *:* ---> Time deactivated

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 step 1
Sply fan st 2 stpt	Indicates the supply airflow step 2
Sply fan st 3 stpt	Indicates the supply airflow step 3
Sply fan st 4 stpt	Indicates the supply airflow step 4
Sply fan st 5 stpt	Indicates the supply airflow step 5
Extr fan st 1 stpt	Indicates the extract airflow step 1
Extr fan st 2 stpt	Indicates the extract airflow step 2
Extr fan st 3 stpt	Indicates the extract airflow step 3
Extr fan st 4 stpt	Indicates the extract airflow step 4
Extr fan st 5 stpt	Indicates the extract airflow step 5

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.

3. Backup and program updates

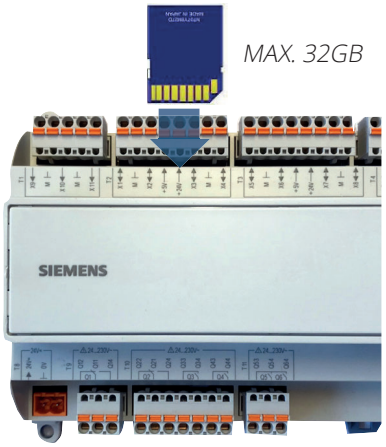
When the system has been fully configured and the parameters have been set, it can be backed up to an SD memory card and/or internally in the regulator, or reset using the data on the memory card or the settings on the regulator. Two different sets of parameters for a configured system can be backed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



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
Eco.St4	Unit operating on economy temperature and “Step 4” speed
Comf.St4	Unit operating on comfort temperature and “Step 4” speed
Eco.St5	Unit operating on economy temperature and “Step 5” speed
Comf.St5	Unit operating on comfort temperature and “Step 5” speed

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

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

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

If adjustments should be needed, the sub-configuration for certain parts of the system can be adjusted in "Configuration 2".

Prerequisites
- Configuration 1 must be performed, including restarting the regulator.
- Configuration is done sequentially, meaning that no options can be skipped.
- Configuration 2 must have been completed, including restarting the process unit before proceeding with
  Config. In-Outputs.

Start page > Main menu > Configuration > Configuration 2

After making a change in a configuration menu, RESTART

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

1.1. Configuration of inputs and outputs

If adjustments are needed, sub-functions for certain parts of the system can be configured in Configuration 1, Configuration 2, and Configuration of inputs and outputs.

In Konfig.Inn-og utganger (Configuration of inputs and outputs), a physical location is assigned to the inputs and outputs specified in Configuration 1 and Configuration 2. Additionally, parameter settings are made for the current sensor conversion (for example, Ni1000, Pt1000, 0-10V = 1000 Pa).

Positions in the controller and expansion modules

- **Controller:** All single-digit positions, for example, X1, DO1.
- **Modbus extender:** All inputs and outputs must be set to Com.
- **Expansion module 1:** All positions start with 1, for example, 1X1x, 1D01.
- **Expansion module 2:** All positions start with 2, for example, 2X1x, 2D01.

Prerequisites

Configuration 1 must be completed, including restarting the controller.

- Configuration is done sequentially. This means that it is not possible to skip any options.
- Configuration 2 must be completed, including restarting the process unit, before continuing with Config. inputs-outputs.

Then:

Start page > Main menu > Configuration > Config. Inputs and outputs

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

NB. The inputs and outputs of the expansion modules can be used if the modules have been activated in Configuration 1.

5.2. Overview of inputs and outputs

If adjustments are needed, sub-functions for certain parts of the system can be configured in Configuration 1, Configuration 2, and Configuration of inputs and outputs.

IO type
DI = Digital input
AI = Analog input
DO = Digital output
AO = Analog output

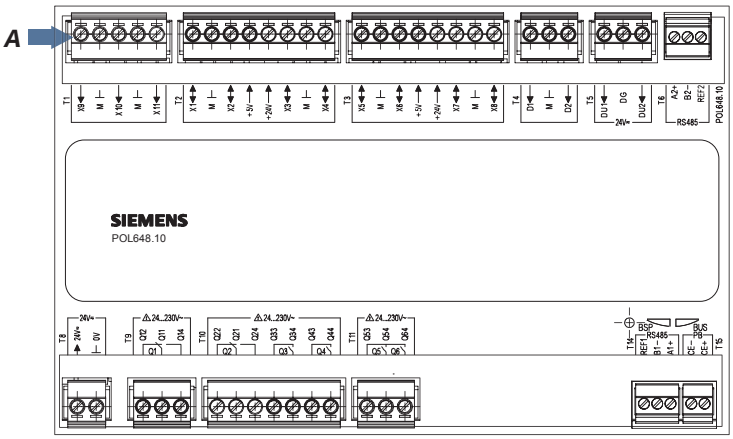
Siemens I/O pos
Siemens address of the input/output in the automation system.

Address in the controller
The address that the physical input/output has in the controller A1 and SP90 module.

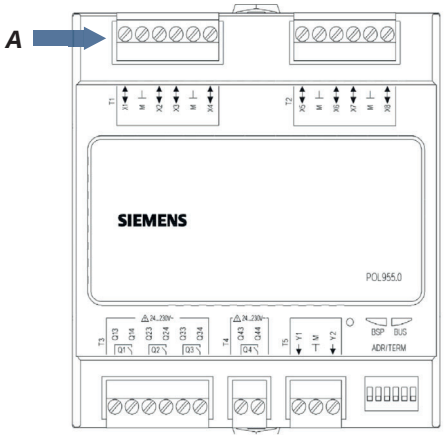
Terminal of the controller (A)
Physical marking on the input/output of the controller A1 and SP90 module

Terminal of the unit (B)
Physical marking on the inputs/outputs on the circuit board A2, A3, A4 in the unit.

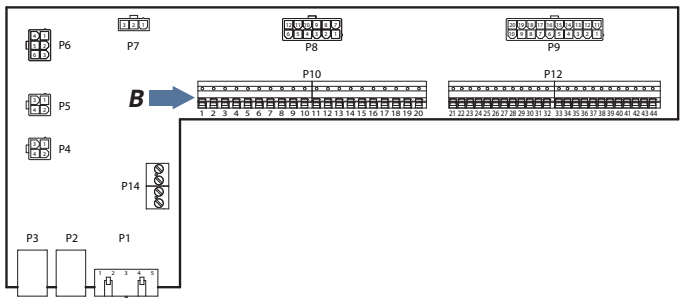
Regulator



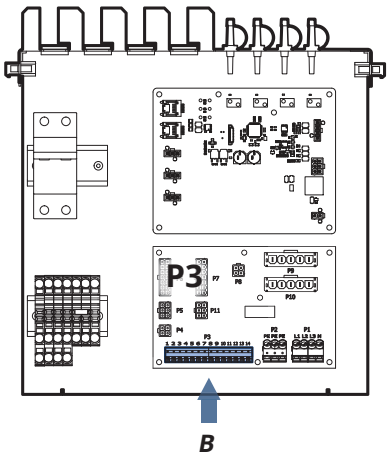
SP90 module



A2 circuit board



A3 circuit board



I/O Type	Siemens I/O	Adress in Controller	Connector in Controller	Connector in Unit	Function	Comment
DI	81	X9	T1-X9	P12-23	Extern regulation 1	Speed 1 or Speed 3 in combination with DI3. Switch or timer.
DI	72	D3	T5-DU1	P12-27	Alarm fire/smoke	24V Ref
DI	82	D2	T4-D2	P12-25	Extern regulation 2	Speed 2 or Speed 3 in combination with DI1. Switch or timer.
DI	90	D1	T4-D1	P12-34	Extern regulation 3	Speed 0. Switch or timer.
DI	75	D4	T5-DU2	P12-35	Feedback fire damper	24V Ref
DI	65	Com	A4 Card	-	Alarm Supplyfan	SPARE Modbus card
DI	67	Com	A4 Card	-	Alarm Extractfan	SPARE Modbus card
DI	48	Com	A4 Card	-	Alarm Heat rec.	Modbus card
Di	44	Com	A4 Card	-	Alarm electrical heater/ Thermostat F10	P2-3 on A3 card
AI	1	X10	T1-X10	-	Temperature supply	Supply air sensor B1
AI	4	X11	T1-X11	-	Temperature extract	Extract air sensor B3
AI	5	X3	T2-X3	-	Temperature outdoor	Outdoor sensor B4
AI	6	X6	A4 Card	P3-7	Temperatur frost protec.	Return water sensor B5
AI	21	X7	T3-X7	P4-2 /P12-43	Pressure supply	External pressure sensor supply
AI	22	X8	T3-X8	P5-2 / P12-44	Pressure extract	External pressure sensor extract
AI	35	X4	T2-X4	P12-29	Air quality	External sensor (CO_2 / CO)
AI	23	Com	A4 Card	Q1	Air flow Supply	Pressure sensor supply fan A4-card
AI	24	Com	A4 Card	Q2	Air flow Extract	Pressure sensor extract fan A4-card
AI	70	Com	A4 Card	PP1	Filter pressure supply	Pressure sensor supply filter A4-card
AI	71	Com	A4 Card	PP2	Filter pressure extract	Pressure sensor extract filter A4-card
AI	7				Temperature Ice Guard	Temp. sensor counter flow, not in use
AI	109				Temperature after heat recover	Temp. sensor temperature efficiency, not in use

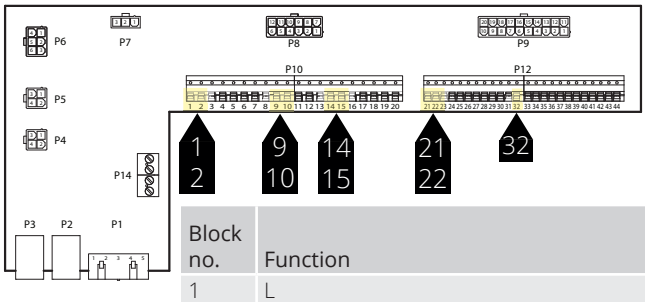
I/O Type	Siemens I/O	Adress in Controller	Connector in Controller	Connector in Unit	Function	Comment
DO	131	Q5	T11-Q54	P10-4	Outdoor air damper	
DO	132	Q6	T11-Q64	P10-7	Exhaust air damper	
DO	145/147	Q3	T10-Q33/34	P10-17/18	Electric. heater / Water-pump	145 = Electric. heater step 1 147 = Water pump
DO	149/150	Q4	T10-Q43/44	P10-14/15	Cooling pump / Cooling machine 1	149 = Cooling pump 150 = Cooling machine 1
DO	168	Q1	T9-Q11/14	P10-12/13	Alarm/Operating status output	AUX Operating status
DO	133/151	Q2	T10-Q21/24	P10-9/10	Fire damper / Cooling machine 2	133 = Fire damper 151 = Cooling machine 2
DO	153	Com	A4 Card	P2-4	Electric. heater step 2	On/Off signal
AO	111	X1	T2-X1	P12-37	AUX damper output	Damper regulation % depending on selected speed 0-10V
AO	99	X2	T2-X2	P12-21	Cooling	0-10V
AO	96	X5	T2-X5	P12-31	Heating valve	0-10V
AO	91	Com	A4 Card	-	Supply fan 0-10V	Spare
AO	92	Com	A4 Card	-	Extract fan 0-10V	Spare
AO	98	Com	A4 Card	P3-1	Heat recovery	0-10V

6. Cooling

The settings below only apply to a cooling machine. If you want both heating and cooling via a heat pump, see "chap. 14. Heating/cooling via heat pump".

Cooling via cooling machine or liquid
As standard, the system is set up to control liquid cooling or two cooling machines. 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	Cooling machine Output 2 IN
10	Cooling machine Output 2 OUT
14	Cooling mach. Output 1/Cooling pump OUT
15	Cooling mach. 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 cooling machine control or liquid.

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

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

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 (cooling machine 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 (cooling machine only)

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

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

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

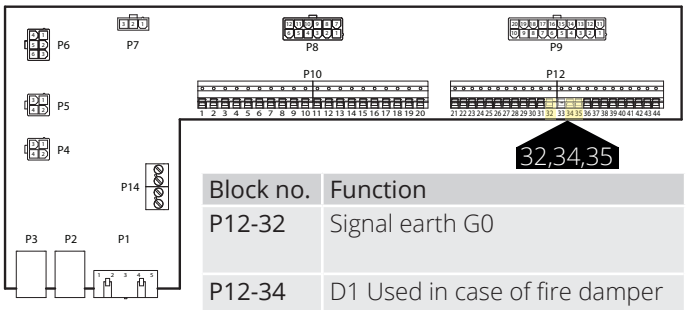
After making a change in a configuration menu, RESTART.

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

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.

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

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.

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

Parameter	Funksjon
Direkte	Brukes ikke
Dir.fro	Brukes ikke
Fast frekv.	Prosent styring av viftene 0-100%
Trykkreg.	Viftene regleres via trykk
Flytsreg.	Viftene reglerer via luftmengde
TF slav	Avtrekksviften reglerer via trykk og tilluftsviften reglerer avhengig av avtrekksviften
FF slav	Tilluftsviften reglerer via trykk og avtrekks-viften reglerer avhgengig av tilluftsviften

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.

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

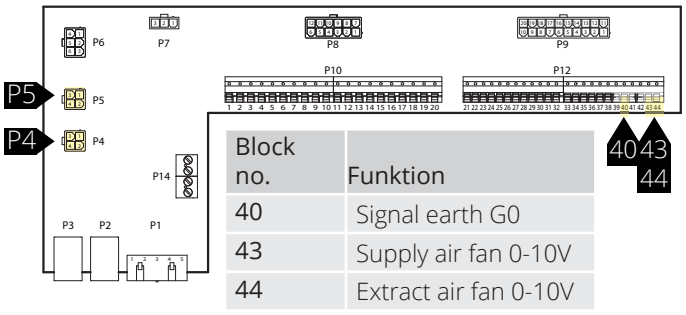
Set parameters in the menu option:

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 2	Speed in % supply air fan step 2
Sply fan st 3 stpt	Airflow l/s or m³/h supply air fan step 3	Speed in % supply air fan step 3
Sply fan st 4 stpt	Airflow l/s or m³/h supply air fan step 4	Speed in % supply air fan step 4
Sply fan st 5 stpt	Airflow l/s or m³/h supply air fan step 5	Speed in % supply air fan step 5
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 2	Speed in % supply air fan step 2
Extr fan st 3 stpt	Airflow l/s or m³/h supply air fan step 3	Speed in % supply air fan step 3
Extr fan st 4 stpt	Airflow l/s or m³/h supply air fan step 4	Speed in % supply air fan step 4
Extr fan st 5 stpt	Airflow l/s or m³/h supply air fan step 5	Speed in % supply air fan step 5

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

If the unit starts up and alerts "Config error", restart the controller once again (using the same search path as above).

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

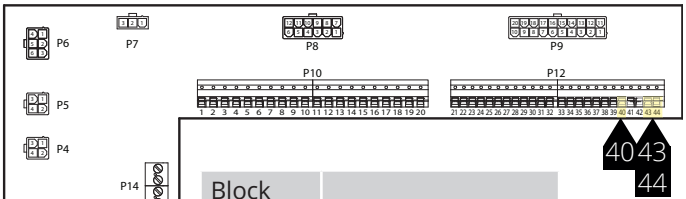
Explanation:
The offset indicates the difference between the master fan and the slave fan.

> 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. Relative is set to 0V = 0l/s and 10V = 500l/s Step 1 is set to 100 l/s and the input for external setpoint is 0V. The fan will run at 100 l/s Step 2 is set to 300 l/s and the input for external setpoint is 10V. The fan will run at 800 l/s
Main	Example of Main. Main is set to 0V = 100l/s and 10V = 1000l/s The input for external setpoint is 0V. The fan will run at 100 l/s 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

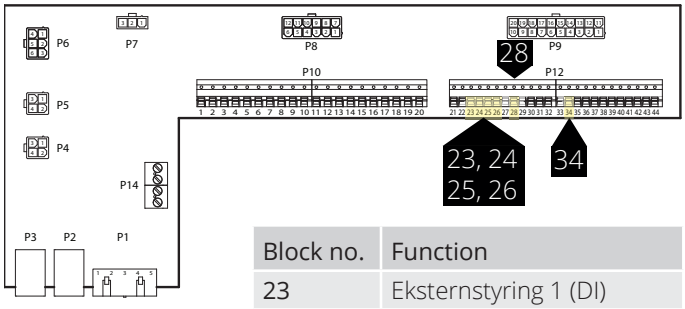
Parameter	Function
Act supply stpt Act extract stpt	Shows the current setpoint for the supply air/extract air fan, including compensation
Stage 1	Setpoint supply air/extract air fan speed 1
Stage 2	Setpoint supply air/extract air fan speed 2
Stage 3	Setpoint supply air/extract air fan speed 3
Ext stpt 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 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

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.

The prioritization between the inputs is that the unit regulates at the most recently activated speed.

Parameter		
External control 1	ON = Speed 1	Used for night set-back/when the room is not in use
External control 2	ON = Speed 2	Used for regular day-time operation
External control 3	ON = Speed 3	Used for higher occupancy of the room, such as person/ humidity loads, etc.
External control 1 & 2	ON = Stop	Used when the room remains empty for extended periods
External control 1 & 3	ON = Speed 4	Can be used for imbalance, e.g. forced exhaust
External control 2 & 3	ON = Speed 5	Can be used for imbalance, e.g. forced supply

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.

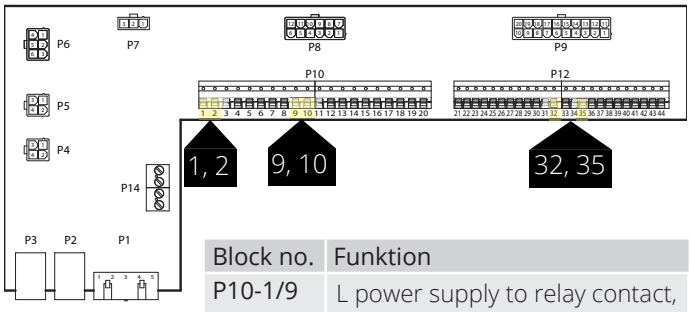
Start page > Main menu > Configuration > Configuration 2 > Fire damper fdbk

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.

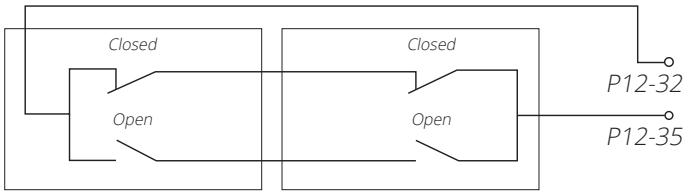
Start page > Main menu > Configuration > Configuration 2 > Restart required! > Execute

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.



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.

10.2. Fire/smoke detector

The unit can have two fire alarms (Fire alarm 1 and Fire alarm 2). Both have the same settings, but may have different functions, for example, one may stop the fans, and the other may force. Fire alarm 1 has the highest priority. Both are described below as 1 and 2.

Start page > Main menu > Configuration > Configuration 1 > Fire alarm 1 (2)

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

If Fire alarm 2 is configured in, it must be connected to an input. If there are no free inputs available, one must use an input that is already connected to another function, such as Digital speed input 3 (DI3) located at P12-34. If it is in use, contact Flexit to determine which input can be used. To be able to use P12-34, the function DI3 must be removed from this input. This is done as follows:

Start page > Main menu > Configuration > Configuration 1 > Ext control input = 2

After changing a configuration menu, a restart should be performed.

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

RESTART

Configure the Fire Alarm 2 function to the input where Speed Input 3 was configured by going to the following:

Start page > Main menu > Configuration > Configuration IOs > Digital alarms > Fire alarm 2 = D1

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

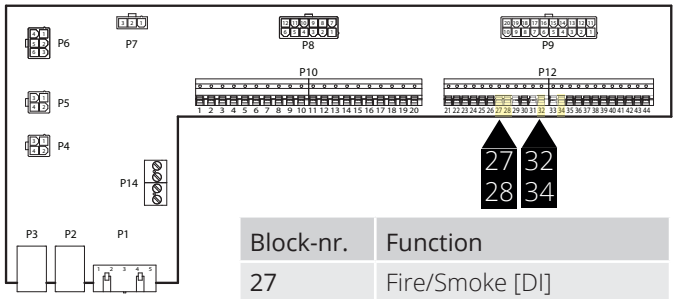
Start page > Quick menu > Setup > Setpoints/Settings > All settings > Alarm limit set

Parameter	Function
Supply tmp lim fire 1	Alarm limit too high supply air temperature. Fire alarm 1
Extract tmp lim fire 1	Alarm limit too high extract air temperature. Fire alarm 1
Supply tmp lim fire 2	Alarm limit too high supply air temperature. Fire alarm 2
Extract tmp lim fire 2	Alarm limit too high extract air temperature. Fire alarm 2

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

Start page > Main menu > Unit > Fan control> Firemode 1 (2)

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
34	Fire/Smoke 2 [DI]
28	Fire/Smoke 2 G0

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 1 (2) > 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 CO_2/CO

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

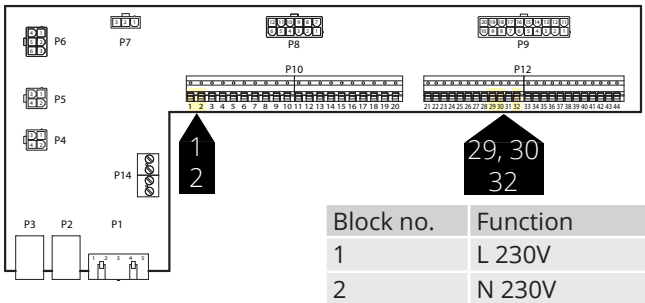
Start page > Main menu > Unit > Air quality control

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	X4	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.

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.

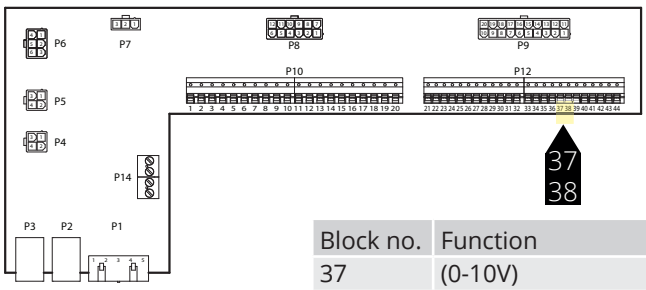
After making a change in a configuration menu, RESTART

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

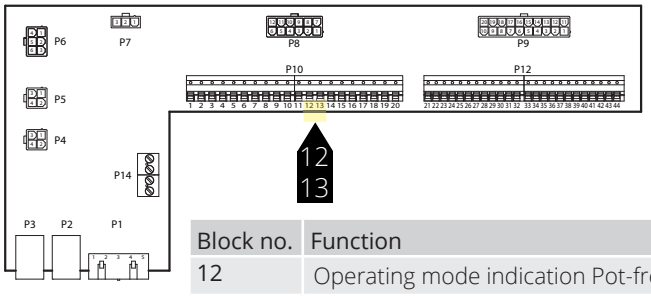
The function of the digital output can be selected. By default, this is the buzzer alarm, but other functions can be selected. See table.

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

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

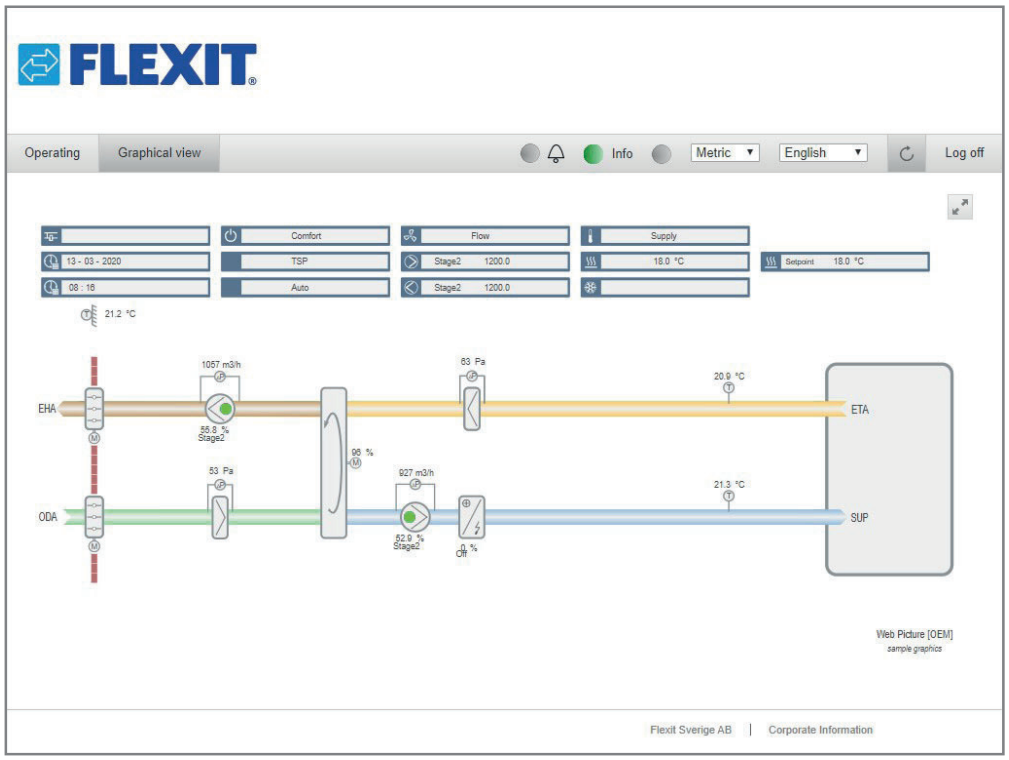
Start page > Main menu > Unit > Auxiliary > Operating mode indic. selection

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.

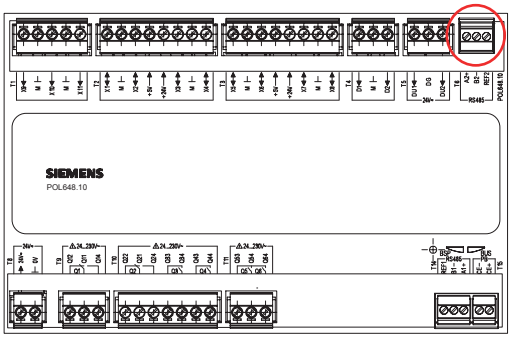
Start page > Main menu > Communication overview > IP-Config > Restart

RESTART

After restart, go to:

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

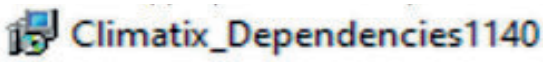
13. Climatix Scope Light

There is a complete Modbus list available for download on Flexit's website. All functions are enabled there. If you want a list containing only the configured functions for the specific unit, you must retrieve it from the controller using Climatix Scope Light.

The controller has different Modbus configurations depending on which functions are activated in the menus. Therefore, it is important that the controller is fully configured before the Modbus list is retrieved.

1. To retrieve the current Modbus list from the controller, use a program called Climatix Scope Light, which can be downloaded from the website www.flexit.com.

2. Unzip the Zip file and start by installing:

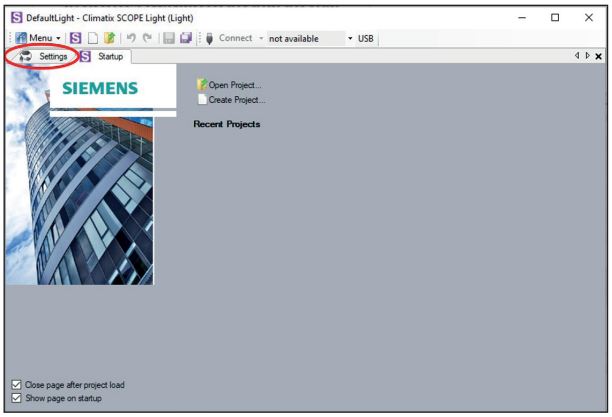


3. Install thereafter:

4. Start the program:

5. Connect the computer to the controller via the USB port (Micro-USB):

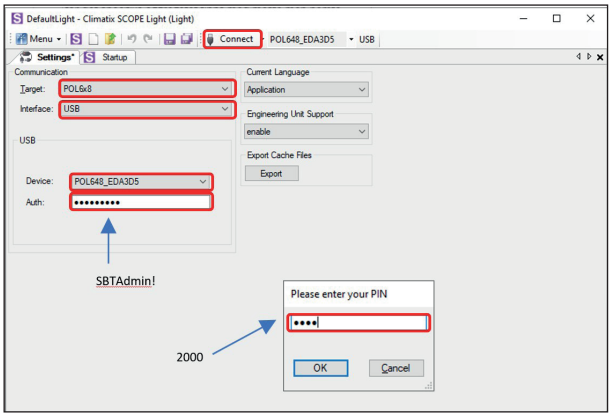
6. Click on på "Settings".



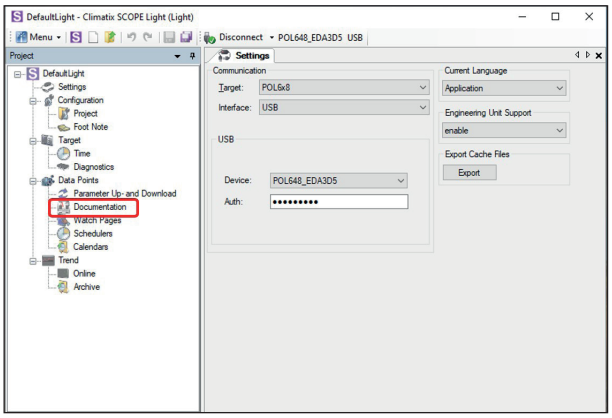
7. Set "Target", "Interface" and "Device" as shown. For "Auth" enter password: SBTAdmin!

Then press "Connect"

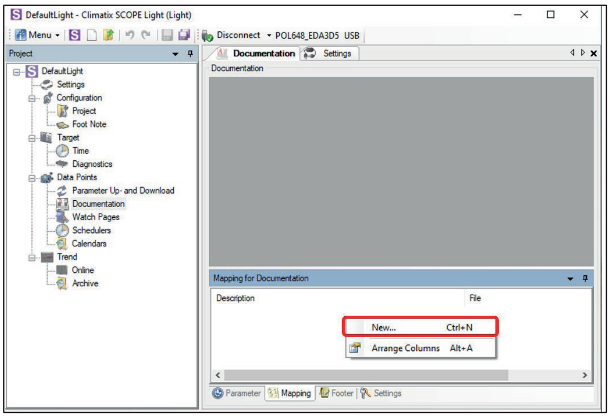
Enter 2000 as pin code in the popup window.



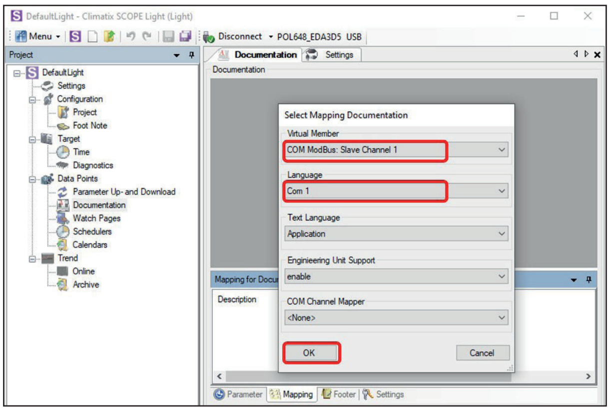
8. Select " Documentation".



9. Right-click in the "description" field and select "New".'



10. Fill in "Virtual Member" and "Language" as shown in the picture and click "OK".



11. The current tag list opens as a PDF on the computer.

Object name	Dimension	Start Register	Data Type	Gain
TspFnct - PresentValue	0=No 1=Step 2=Step+Tmp	3x0220	unsigned word	1.0
TspSteps - PresentValue	0=1St 1=2St 2=3St	3x0221	unsigned word	1.0
FanCntrlMode - PresentValue	0=Dir 1=DirVar 2=FxdSpd 3=Prs 4=Flow 5=SplySlv 6=ExhSlv	3x0222	unsigned word	1.0
TmpCntrlMode - PresentValue	0=Supply 1=RmSplyC 2=RtSplyC 3=RmSplyCSoWi 4=RtSplyCSoWi 5=Room 6=Return 7=HOTC	3x0225	unsigned word	1.0
FanAlm - PresentValue	0=No 1=Cbn 2=Sply 3=Exh 4=Sply+Exh	3x0228	unsigned word	1.0
FanFdbk - PresentValue	0=No 1=Cbn 2=Sply 3=Exh 4=Sply+Exh	3x0229	unsigned word	1.0
OutTmpCmp - PresentValue	0=No 1=Yes	3x0227	unsigned word	1.0
TmpSpvSel - PresentValue	0=HtgSpv+DB 1=HtgClgSpv 2=Spv+HalfDB 3=ClgSpv-DB	3x0226	unsigned word	1.0
CommTestEn - PresentValue	0=No 1=Yes	0x0002	signed word	1.0
CommTest - Prio14	0=Off 1=On 2=NULL	0x0003	signed word	1.0
CommTest - PresentValue	0=Off 1=On 2=NULL	1x0006	signed word	1.0
ManualMode - PresentValue	0=Auto 1=Manual 2=NULL	1x0005	signed word	1.0
ManualMode - inAlarm	0=Passive 1=Active	1x0077	signed word	1.0
AlmCl0 - PresentValue	0=Normal 1=Alarm	1x0001	signed word	1.0
AlmCl1 - PresentValue	0=Normal 1=Alarm	1x0002	signed word	1.0
AlmCl2 - PresentValue	0=Normal 1=Alarm	1x0003	signed word	1.0

14. Heating/cooling via heat pump

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.

To adjust the transition between summer and winter operation, see chap. 8.5.

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.

14.1. 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
HP 1step	Additional cooling Off/On 1 step
HP 2step	Additional cooling Off/On 2 step
HP 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

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.

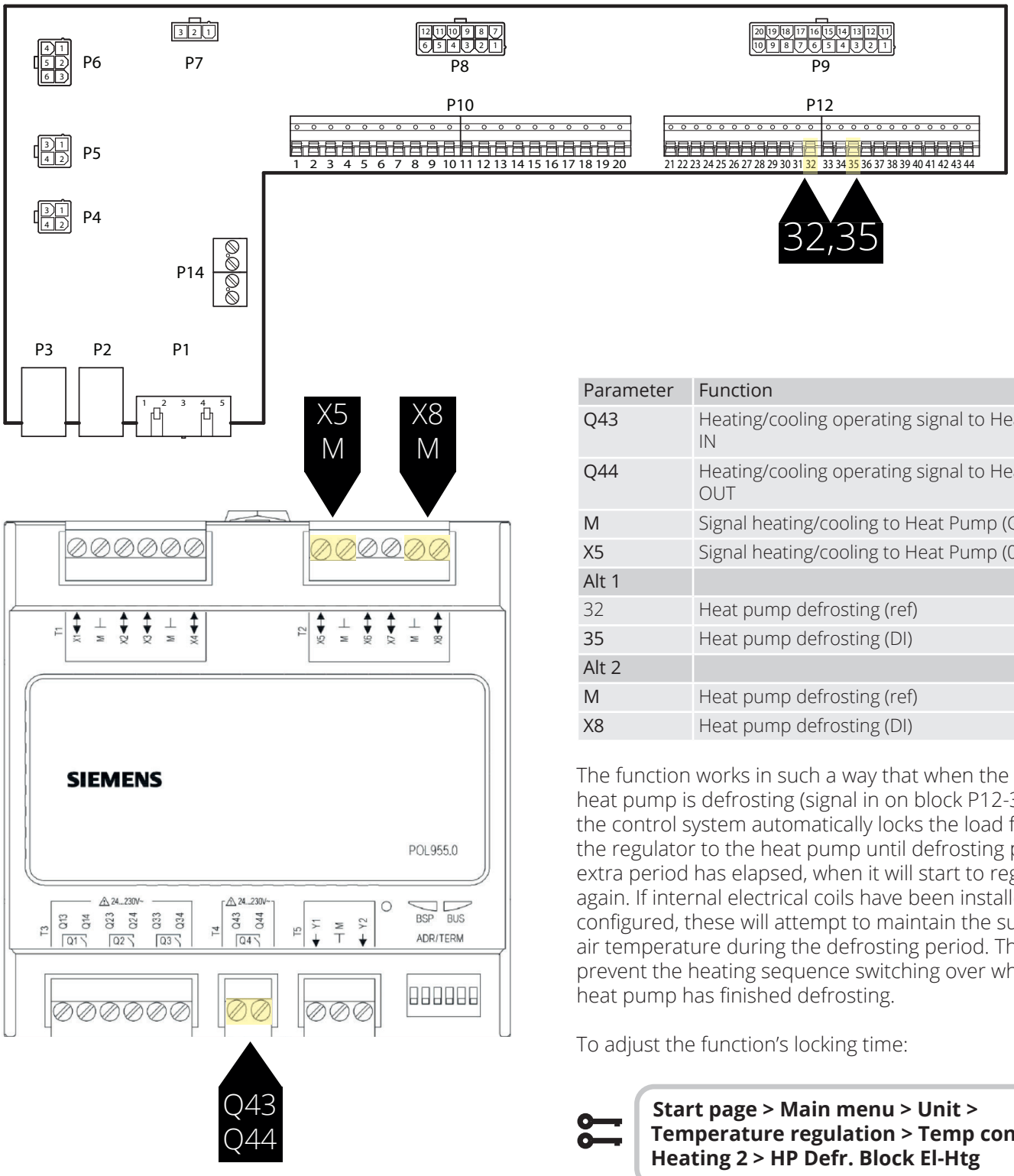
Start page > Main menu > Unit > Outputs > Heating 2 pump cmd > Contact function > NO/NC

Set this to NO

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

Set this to NC

14.2. 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)
Alt 1	
32	Heat pump defrosting (ref)
35	Heat pump defrosting (DI)
Alt 2	
M	Heat pump defrosting (ref)
X8	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:

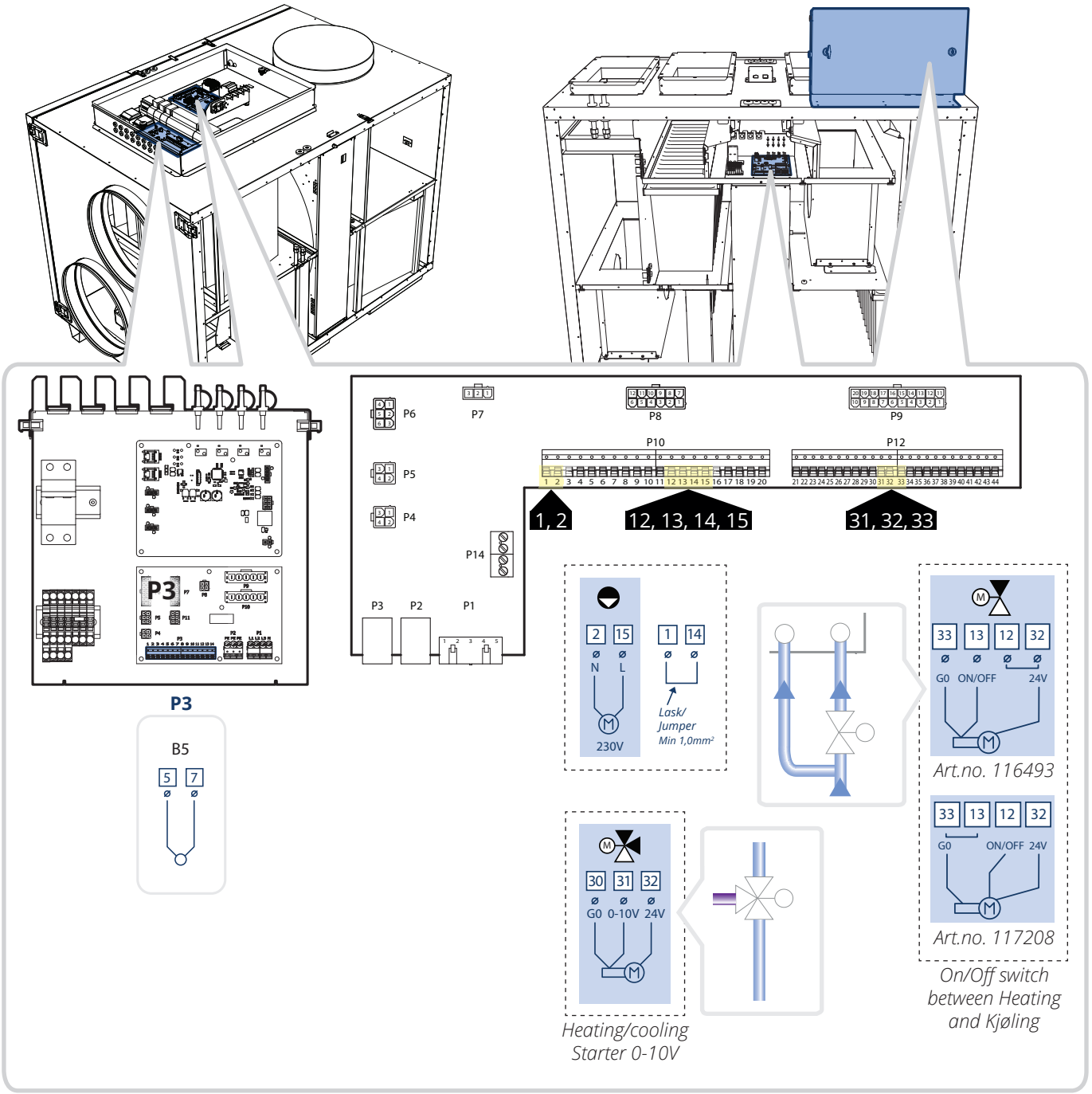
Start page > Main menu > Unit > Temperature regulation > Temp control > Heating 2 > HP Defr. Block El-Htg

The standard setting is 60 seconds.

15. 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.

15.1. Installation



15.2. 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 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

16. Programming of ModBus fans

The ProNordic units have ModBus communication between the fans and the automation system. If a fan needs to be replaced, the spare fan must be addressed so that the automation system knows whether it is a supply or exhaust fan.

ProPanel V4.14.00-

Valid version from V4.14.00 and higher.
To set the current version go to:

Start page > Main menu > System objects > Versions = V4.14.00

1. Make sure the power is switched off and replace the defected fan. **ATTENTION!** If both fans are to be replaced, connect only one fan at the time.
2. Make sure you know if it is the supply air fan or extract air fan you replaced.
3. Switch the power on.
4. If you are not logged in, log in with password: 6000

Start page > Main menu > Enter PIN = 6000

5. Make sure "SERVICE SWITCH" is set to "OFF".

Start page > SERVICE SWITCH > Off

6. The unit must be put into configuration mode for a new fan to be programmed

Start page > Main menu > Configuration > Configuration IOs > Intergrations > Configuration IOs = Not done

7. Go back to Configuration IOs and scroll down to "Restart required" select "Execute". For the device to enter configuration mode.

RESTART

8. Once your device has restarted, go to:

Start page > Main menu > Configuration > Configuration IOs > Integrations > Fan configuration

9. Select the fan you want to configure (Supply air or Extract air).
   "Supl.Fa 1"=Supply air fan
   "Extr.Fa 1"=Extract air fan
   ("Supl.Fa 2" and "Extr.Fa 2" are only valid for units S340 and L350)
10. Wait until the selected fan first appears to the right of "+ Fan configuration." and then changed to «Success» on same place.
11. Now the fan is configured. If the second fan is also to be replaced, connect it and go to point 9 again.
12. When the fan(s) are added press "+ Fan configuration." again and select "Done".
13. Wait until "Done" appear on the right side of "+ Fan configuration".
14. Now the fan(s) are configured to work with the device. Set the configuration mode to complete.

Start page > Main menu > Configuration > Configuration IOs > Intergrations > Configuration IOs = Done

15. Go to «Restart required " at the line below and select "Execute".

RESTART

16. After restarting the device, set "SERVICE SWITCH" to "AUTO" and check the function.

Start page > SERVICE SWITCH = Auto

ProTouch V4.14.00-

Valid version from V4.14.00 and higher.
To set the current version go to:

Start page > Main menu > System objects > Versions = V4.14.00

1. Make sure the power is switched off and replace the defected fan. ATTENTION! If both fans are to be replaced, connect only one fan.
2. Make sure you know if it is the supply air fan or extract air fan you replaced.
3. Switch on the power.
4. If you are not logged in, log in with password: 6000. Then go to Operations.
5. Make sure “SERVICE SWITCH” is set to “OFF”.

Start page > SERVICE SWITCH > Off

6. Push “Confirm”.
7. The unit must be put into configuration mode for a new fan to be programmed.

Main menu > Configuration > Configuration IOs > Integrations > Fan configuration = Not done

8. Push “Confirm”.
9. Go back to Configuration IOs and scroll down to “Restart required” select “Execute”. For the device to enter configuration mode.
10. Once your device has restarted, go to:

Main menu > Configuration > Configuration IOs > Integrations > Fan configuration

11. Select the fan you want to configure (Supply air or Extract air) and pusch ”CONFIRM”.
    ”Supl.Fa 1”=Supply air fan
    ”Extr.Fa 1”=Extract air fan
    (”Supl.Fa 2” and ”Extr.Fa 2” are only valid for units S340 and L350)
12. Wait until the selected fan first appears to the right of “+ Fan configuration.” and then changed to «Success» on same place.
13. Now the fan is configured. If the second fan is also to be replaced, connect it and go to point 9 again.
14. When the fan(s) are added press “+ Fan configuration.” again and select “Done”.
15. Wait until “Done” appear on the right side of “+ Fan configuration”.
16. Now the fan(s) are configured to work with the device. Also set the configuration mode to complete.

Main menu > Configuration > Configuration IOs > Configuration IOs = Done

17. Push “Confirm”.
18. Go to «Restart required ” at the line below and select ”Execute”.

RESTART

19. After restarting the device, set “SERVICE SWITCH” to “AUTO” and check the function.

Start page > SERVICE SWITCH = Auto

20. Push “Confirm”.

17. Reset of ModBus fans

If a fan is accidentally programmed to the wrong address (e.g., supply instead of exhaust), it can be reset to its default settings when delivered.

NOTE: To reset the fan, higher authorization is required. Level 4: OEM, password. This can be obtained in consultation with Flexit's service organization.

Start by disconnecting the other fan to identify its identity (address). It should display "OK" on one of the statuses below and "Alarm" on the other.

Start page > Main menu > Configuration > Configuration IOs > Integrations > SupplyFan Modbus
ExhFan Modbus

If "OK" is displayed on the Supply Fan, then the fan is configured as a supply fan. If "OK" is displayed on the Exhaust Fan, then the fan is configured as an exhaust fan.

To reset the fan, go to Factory Reset and select the relevant fan, the one with the "OK" status.

Start page > Main menu > Configuration > Configuration IOs > Integrations > Factory Reset
> Supply 1
> Extract 1

18. Zero-point calibration of pressure sensors

If the pressure sensors for fans and filters display incorrect readings (they should show 0Pa when the fans are idle, the doors are open, and the outdoor/exhaust dampers are closed), they can be calibrated.

To check their readings, stop the unit by setting the Service switch to OFF.

1. Ensure that the "SERVICE SWITCH" is set to "OFF".

Start page > SERVICE SWITCH > Off

2. Push “Confirm”.
3. Wait until the fans have stopped (may take up to 180 seconds for cooling down) before opening the doors. If outdoor and exhaust dampers are installed, ensure that they are closed.
4. Then, proceed to the following path. **NOTE:** Level 4: OEM, password. This can be obtained in consultation with Flexit's service organization.

Start page > Main menu > Configuration > Configuration IOs > Integrations > Comm. info MB-Extender

5. All the following values should be 0 when the unit is idle:
   Filter pressure 1 = Supply air filter
   Filter pressure 2 = Exhaust air filter
   Airflow 1 = Supply air fan
   Airflow 2 = Exhaust air fan

6. To reset, go to:

Start page > Main menu > Configuration > Configuration IOs > Integrations > Comm.info MB-Extender > Set DeviceMode = Idle Mode

7. And then proceed to the following to calibrate the sensors.

Start page > Main menu > Configuration > Configuration IOs > Integrations > Comm.info MB-Extender > Zero Point Cal. Pressur = Yes

8. After that, you must switch back to Online mode.

Start page > Main menu > Configuration > Configuration IOs > Integrations > Comm.info MB-Extender > Set DeviceMode = OnLine Mode

19. Emergency Stop

The unit can be stopped via an external emergency stop.

1. To activate the function, go through the following path and enable the feature.

Start page > Main menu > Configuration > Configuration 1 > Emergency stop = Yes

2. Afterward, restart the controller.

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

RESTART

3. Set which input the function should be connected to.

Start page > Main menu > Configuration > Configuration IOs > Digital inputs > Emergency stop

4. Set this to D4. If this one is not available, you can use an input connected to another function, such as Digital Speed Input 3 (DI3) located at P12-34. To use P12-34, the function DI3 must be removed from this input. This is done as follows:

Start page > Main menu > Configuration > Configuration 1 > Ext control input = 2

5. Afterwards, restart the controller.

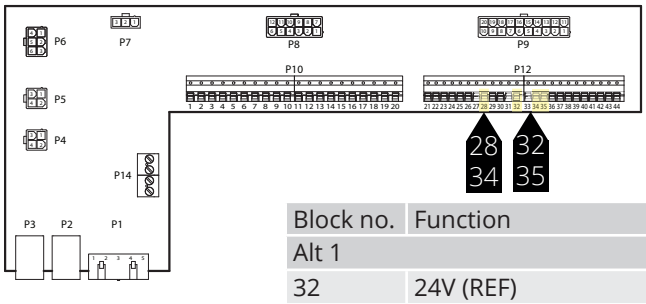
Start page > Main menu > Configuration > Configuration 1 > Restart

RESTART

6. To change the contact function between NO/NC.

Start page > Main menu > Unit > Inputs > Digital inputs > Emergency stop > Contact function

7. The emergency stop signal should be potential-free and connected between P12-32 and P12-35 if D4 is selected previously. If D1 is selected, it should be connected between P12-28 and P12-34 as follows.



Block no.	Function
Alt 1	
32	24V (REF)
35	Emergency stpp (DI)
Alt 2	
28	G0 (REF)
34	Emergency stop (DI)

20. Electrical battery

Follow manual 118206 to see how the electric battery should be installed.

To set up the automation.

Start page > Quick menu > Commissioning > Config.After heater > Type of Heater = Electrical

If the electrical battery has two stages (refer to the battery manual), activate the second stage here:

Start page > Main menu > Configuration > Configuration 2 > El heating 2 = Yes

After making the change, a restart should be performed.

Start page > Quick menu > Commissioning > Config.After heater > Restart = Execute

RESTART

21. Water battery

Follow manual 118205 to see how the water battery should be installed.

To set up the automation.

Start page > Quick menu > Commissioning > Config.After heater > Type of Heater = Water

After making the change, a restart should be performed.

Start page > Quick menu > Commissioning > Config.After heater > Restart = Execute

RESTART

22. Test of functions

When all accessories are connected and the unit is ready for commissioning, you can enter a menu to test, for example, pumps, valves, dampers, etc., individually before starting up the unit.

Place the unit in service stop mode.

Start page > SERVICE SWITCH > Off

Then proceed to:

Start page > Quick menu > Commissioning > Output test

Depending on the configuration (e.g., electric/water battery), the unconfigured accessories are displayed according to the list below.

Digital outputs	
Pump heating	Off
Pump cooling	Off
Outdoor air damper	Off
Exhaust air damper	Off
Analog outputs	
Supply air fan	0%
Extract air fan	0%
Heat recovery	0%
Heating	0%
Cooling	0%

To test an output, navigate to the relevant function:

For Digital Output: Manual control, switch between Auto and On.
On = the output is controlled manually.
Auto = the output is controlled by the automation system.

For Analog Output: Manual control, set 0-100% to provide a signal to the output.
0% = 0V
100% = 10V

When one or more outputs are operated manually, the status lamp on the HMI display alternates between yellow and green.

NOTE! Reset all outputs to Auto after the test is completed.

23. Expansion module SP90

The SP90 is an expansion module that can be connected to a CS2500 controller.

The expansion module offers the following possibilities:
- Power supply: 24 VAC or 24 VDC directly from the controller
- 8 universal I/O (configurable inputs/outputs, for analog or digital signals)
- 4 relay outputs (NO contact)
- 2 analog outputs (0...10 VDC)

Follow manual 118265 for instructions on how to connect the module to the controller.

I/O list of the I/O module.

Step		Function
Q13	DO	Fire fan
Q14	DO	Fire fan
Q23	DO	Spare
Q24	DO	Spare
Q33	DO	Additional cooling, pump
Q34	DO	Additional cooling, pump
Q43	DO	Additional water/Electrical heating
Q44	DO	Additional water/Electrical heating
Y1	AO	Mixing damper (0–10 V)
M	-	G0
Y2	AO	Additional cooling (0–10 V)
X1	AI	External temperature setpoint (0–10 V)
M	-	G0
X2	AI	Temperature, exhaust air
X3	AI	Temperature frost guard, additional heating
M	-	G0
X4	AI	Temperature, exhaust air by additional sequence
X5	AO	Additional heating (0–10 V)
M	-	G0
X6	DI	Alarm, additional electrical heating
X7	-	Spare
M	-	G0
X8	-	Spare

24. Additional cooling

The default function of the main regulator is to control one heating/cooling step. The SP90 module can control additional steps, either in sequence or as a standalone temperature zone.

An additional cooling coil can be connected to the system. It can be included in the temperature regulation loop in two different ways, either as a separate temperature zone (standalone) or as part of the ordinary sequence.

To activate the function:

Start page > Main menu > Configuration > Configuration 1 > Additional cooling

Parameter	Function
Water	Analog output for liquid battery
Cooling machine 1	One digital output for cooling machine
Cooling machine 2	Two digital outputs for cooling machine, sequence regulation.
Cooling machine 3	Two digital outputs for cooling, binary regulation.
ModBus	Modbus-controlled valve in combination with liquid battery

After making a change in a configuration menu, a restart is required.

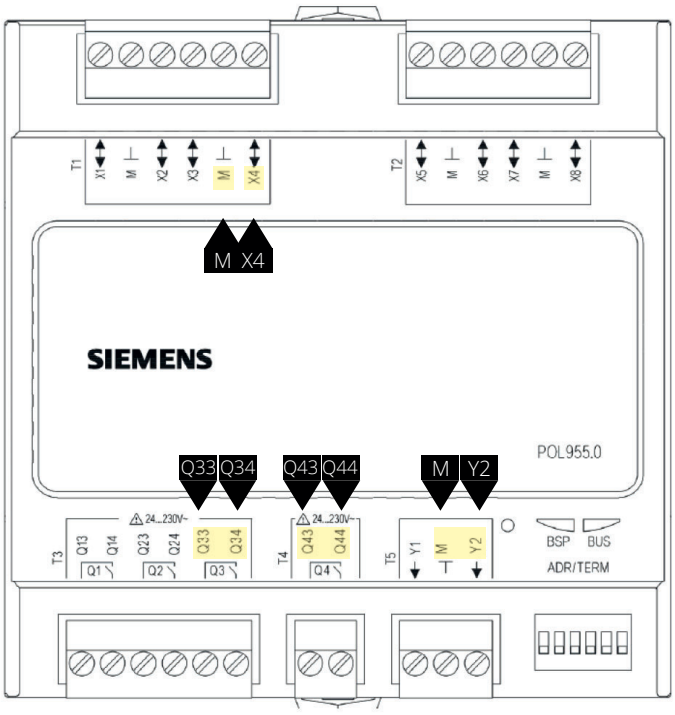
Start page > Main menu > Configuration > Configuration 1 > Restart > Execute

RESTART

To configure the function:

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

Parameter	Function
Sequence	Additional cooling is included in the cooling sequence after the ordinary cooling steps DX1-DX3
Standalone	Additional cooling is regulated separately independently of the ordinary temperature regulation. **NB!** This function requires installation of an additional supply air sensor.



Block no.	Function
Q33	Q33 Additional cooling/Cooling machine 1
Q34	Q34 Additional cooling/Cooling machine 1
Q43	Q43 Additional cooling/Cooling machine 2
Q44	Q44 Additional cooling/Cooling machine 2
X4	Supply air sensor, Additional cooling
M	Supply air sensor, Additional cooling
Y2	Additional cooling 0-10V
M	Additional cooling G0

After making a change in a configuration menu, a restart is required.

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

RESTART

After a restart, outputs to the cooling machine must be selected.

Start page > Main menu > Configuration> Config.Inputs/Outputs > Outputs tmp control

Additional cooling 1 = 1Q3
Additional cooling 2 = 1Q4

If "Standalone' is selected, the setpoint for Additional cooling is adjusted via:

Start page > Quick menu > Setpoints/ Settings

Parameter	Function
Setpoint additional seq.	Indicates the supply air temperature for Additional cooling in 'Standalone' mode

For other cooling settings, see chap. 6.

25. Additional heating

An additional heating coil can be connected to the system. It can be included in the temperature regulation in two different ways, either as a separate temperature zone (standalone) or as an additional coil as part of the ordinary sequence.

25.1. For water heating

To activate the function:

Start page > Main menu > Configuration > Configuration 1 > Additional heating

Parameter	Function
Yes	Additional liquid heating activated
Yes+Preh. Outdoor temp.	Additional liquid heating activated as preheating and controlled by the outdoor temperature
Yes+Preh.Frost protection temp.	Additional liquid heating activated as preheating and controlled by the frost temperature sensor
ModBus	Modbus-controlled valve in combination with liquid battery

After making a change in a configuration menu, a restart is required.

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

RESTART

25.1.1. For configuration of water heating

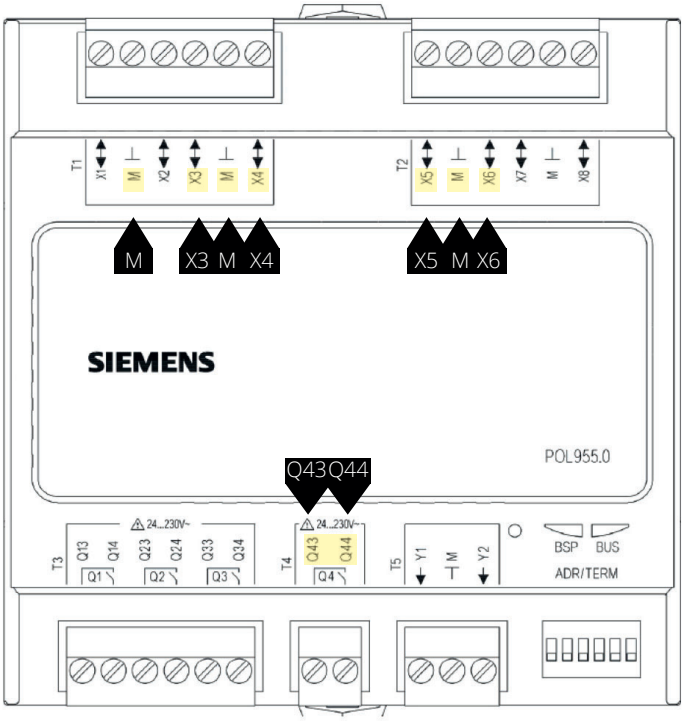
Start page > Main menu > Configuration > Configuration 2 > Frost protection, additional heating

Parameter	Function
No	No frost protection
Sensor	Frost protection via sensor
Sensor+2 sp	Frost protection via sensor and two setpoints
Guard	Frost protection via guard
Sens+Guard	Frost protection via sensor and guard
2sp+Guard	Frost protection via sensor, two setpoints and guard

25.1.2. For configuration of circulation pump for water heating

Start page > Main menu > Configuration > Configuration 2 > Pump, additional heating

Parameter	Function
No	No circulation pump activated
Yes	Circulation pump without maintenance operation
Yes+Motion	Circulation pump with maintenance operation



Block no.	Function
X3	Frost protection sensor
M	Frost protection sensor
X4	Supply air sensor, additional heating
M	Supply air sensor, additional heating
X6	Frost guard
M	Frost guard
Q43	Pump output, additional heating
Q44	Pump output, additional heating
X5	Additional heating 0-10V
M	Additional heating G0

Start page > Main menu > Configuration > Configuration 2 > Additional heating regulation

Parameter	Function
Standalone	Additional heating is regulated separately independently of the ordinary temperature regulation **NB!** This function requires installation of an additional supply air sensor
Seq.: Heating-Additional heating	Additional heating is included in the heating sequence AFTER the ordinary heating step
Seq.: Additional heating-Heating	Additional heating is included in the heating sequence BEFORE the ordinary heating step

After making a change in a configuration menu, a restart is required.

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

RESTART

25.1.3. For parameter setting of the water heating

Start page > Main menu > Unit > Temperature regulation > Additional heating

Parameter	Function
Regulator	Current heating regulator value
Output signal	Current value at analogue output
Setpoint additional seq.	Setpoint for additional sequence when Standalone mode is selected
Frost protection	Current frost regulator value
Pump	Current pump status
Preheating	Current preheating mode
Frost guard	Current position of frost guard

If "Standalone" is selected, the setpoint for Additional water heating is adjusted via:

Start page > Quick menu > Setpoints/ Settings

Parameter	Function
Setpoint additional seq.	Indicates the supply air temperature for Additional water heating in 'Standalone' mode

25.2. For electrical heating

To activate the function:

Start page > Main menu > Configuration > Configuration 1 > Additional electric heating

Parameter	Function
No	No additional electric heating coil activated
Analogue	Additional heating coil with analogue control activated
1step	Additional one-step electric heating register activated
2step	Additional two-step electric heating register activated
3stepBin	Additional three-step electric heating register activated

After restarting, the outputs to the electrical stages must be selected.

Start page > Main menu > Configuration > Config.Inputs/Outputs > Outputs tmp control

Additional heating 1 = 1Q3
Additional heating 2 = 1Q4

After making a change in a configuration menu, a restart is required.

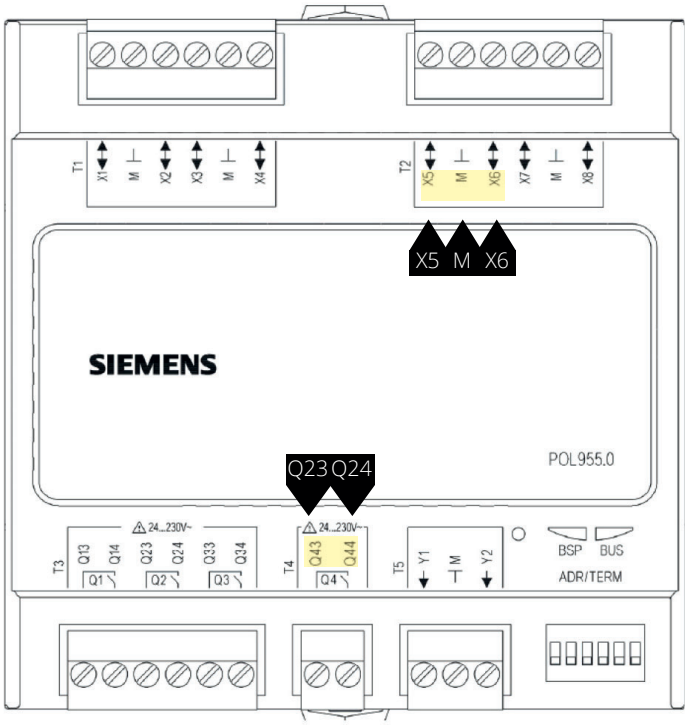
Start page > Main menu > Configuration > Configuration 1 > Restart > Execute

RESTART

25.2.1. For configuration of electric heating

Start page > Main menu > Configuration > Configuration 2 > Alarm, additional electric heating

Parameter	Function
No	No alarm input activated
Yes	Alarm input activated



Block no.	Function
X5	Alarm input electrical heating 0-10V
M	Alarm input electrical heating G0
X6	Fire thermostat DI
M	Fire thermostat DI
Q23	Electrical heating input 1 DO
Q24	Electrical heating input 1 DO
Q43	Electrical heating input 2 DO
Q44	Electrical heating input 2 DO

Start page > Main menu > Configuration > Configuration 2 > Additional electric heating regulator

Parameter	Function
Standalone	Additional heating is regulated separately independently of the ordinary temperature regulation **NB!** This function requires installation of an additional supply air sensor
Seq.: Heating-Additional heating	Additional heating is included in the heating sequence AFTER the ordinary heating step
Seq.: Additional heating-Heating	Additional heating is included in the heating sequence BEFORE the ordinary heating step

After making a change in a configuration menu, a restart is required.

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

RESTART

25.2.2. For parameter setting of the additional heating

Start page > Main menu > Unit > Temperature regulation > Additional electric heating

Parameter	Function
Regulator	Current heating regulator value
Output signal	Current value at analogue output
Operation	Current position of electric heating register
Setpoint additional seq.	Setpoint for additional sequence when Standalone mode is selected
Alarm	Alarm mode for additional heating
Start step 1	Heating regulator value in % for start of first step
Start step 2	Heating regulator value in % for start of second step
Start step 3	Heating regulator value in % for start of third step
Hysteresis, power down	Power down hysteresis in % of steps
Max.signal fan st.	Limits the maximum heating requirement in % at the different fan steps

> Example of start step and power down hysteresis and limitation of heating requirement at different fan steps	
Start step 1 = 20%	Start step 2 = 40%
Fan step 1 = 30%	Fan step 2 = 60%
Power down hysteresis = 10%	
Heating step 1 switches in at 20% heating requirement and remains at max. 30% force while the fan is on step 1. Switches off when the heating requirement has fallen to 10%.	
Heating step 2 switches in at 40% heating requirement and remains at max. 60% force while the fan is on step 2. Switches off when the heating requirement has fallen to 30% or the fan goes down to step 1.	

If "Standalone" is selected, the setpoint for Additional electrical heating is adjusted via:

Start page > Quick menu > Setpoints/ Settings

Parameter	Function
Setpoint additional seq.	Indicates the supply air temperature for Additional water heating in 'Standalone' mode

26. Fire fan

The unit has a potential-free output to control an external fire fan. This function is activated via the fire/smoke input. This assumes that the fire alarm function is activated in the automatic control system (see main manual).

Configure as follows:

Start page > Main menu > Configuration > Configuration 1 > Fire fan

Parameter	Function
Yes	Function activated
No	Function deactivated

After making a change in a configuration menu, a restart is required.

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

RESTART

After the restart, the unit starts with an alarm: 'No config. IO' This means that an output must be defined for the fire fan function.

This is done via:

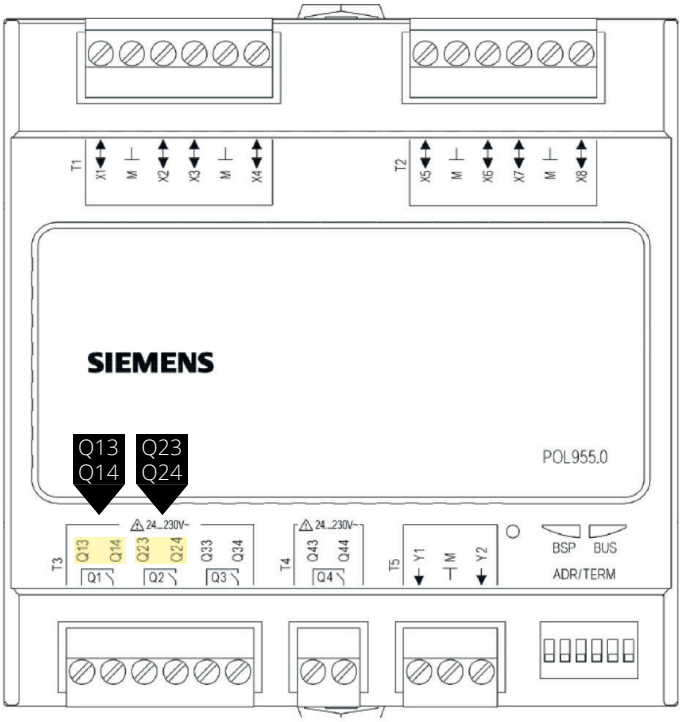
Start page > Main menu > Configuration > Config.Inputs/Outputs > Outputs, Fans > Fire fan Select

Parameter	Function
Q11	Selected unless the operating mode indication function is activated
Q12	Selected unless the DX step 2/3 function is activated

To switch contact function for the output:

Start page > Main menu > Unit > Outputs > Fire fan > Contact function

Parameter	Function
NO	Output normally open
NC	Output normally closed



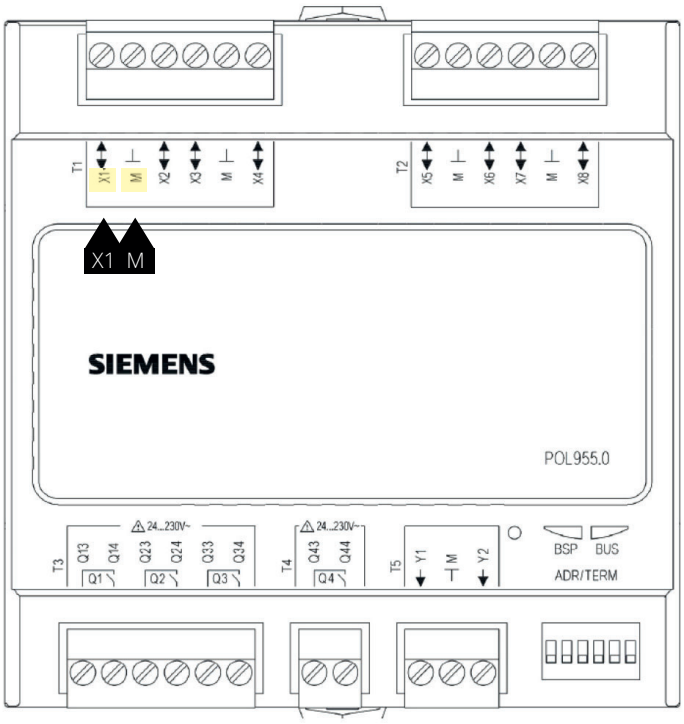
Selection	Block no.	Function
Q11	Q13	Fire fan output
	Q14	Fire fan output
Q12	Q23	Fire fan output
	Q24	Fire fan output

27. External setpoint

The temperature setpoint can be controlled externally. It is possible to specify whether the external setpoint is to be used as setpoint compensation or an absolute value. The value corresponds to the comfort setpoint.

Start page > Main menu > Configuration > Configuration 1 > External setpoint

Parameter	Function
No	External setpoint deactivated
Volt	External setpoint activated and regulated via 0-10 V
Ohm	External setpoint activated and regulated via 0-2.5 kOhm
QAA27	Not used
BSG21	Not used



Plint nr.	Funktion
X1	External setpoint signal
M	External setpoint G0

After making a change in a configuration menu, a restart is required.

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

RESTART

27.1. For configuration of external setpoint

Start page > Main menu > Configuration > Configuration 2 > Ext. setp. function

Parameter	Function
Comp.	Setpoint compensation
Main	Main setpoint

> Example of setpoint compensation
The comfort setpoint is set to +20 degrees
Ext. setpoint curve Y1 = -5
Ext. setpoint curve Y2 = +5
0 V at the input produces a setpoint of +15 degrees
10 V at the input produces a setpoint of +25 degrees

> Example of main setpoint
Ext. setpoint curve Y1 = +10
Ext. setpoint curve Y2 = +30
0 V at the input produces a setpoint of +10 degrees
10 V at the input produces a setpoint of +30 degrees
The comfort setpoint in the regulator has no function

After making a change in a configuration menu, a restart is required.

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

RESTART

27.2. For parameter setting of external setpoint

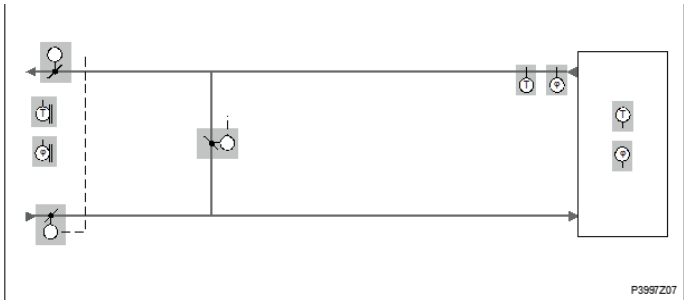
Start page > Quick menu > Setup > Setpoints/Settings > All settings > External setpoint

Parameter	Function
Ext. setpoint curve Y1	Indicates the lowest external setpoint
Ext. setpoint curve Y2	Indicates the highest external setpoint

28. Mixing damper

Mixing dampers can be installed to enable the recirculation of exhaust air back into the supply air duct. This can be done with up to 80% recirculation and 20% outdoor air. Below is a simplified overview of the components involved.

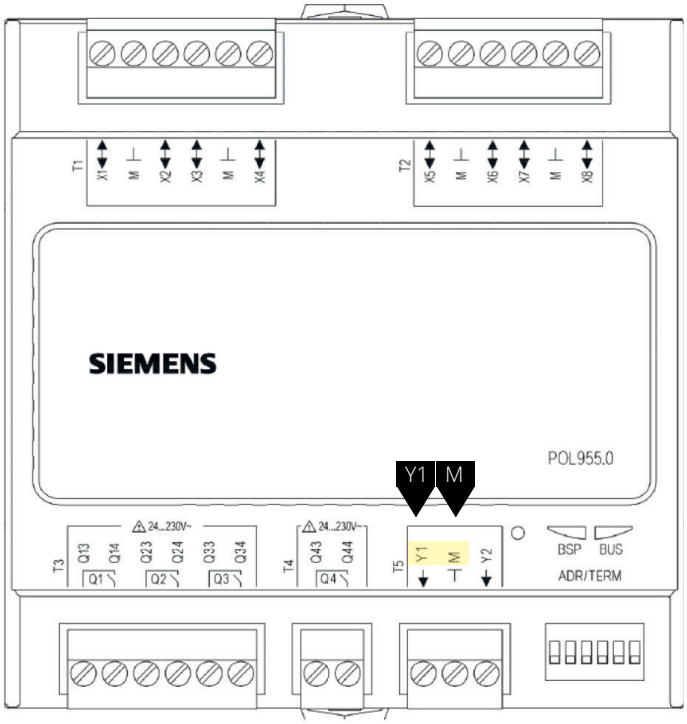
To be smoothly regulated between open and closed positions, all the dampers must have a 0-10V control.



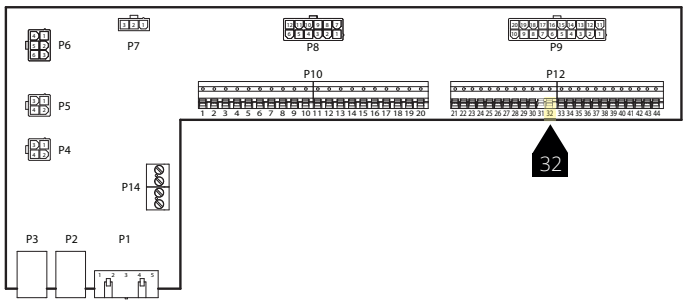
To activate the function:

Start page > Main menu > Configuration > Configuration 1 > Hrec damper

Parameter	Function
Normal	Mixing damper activated, output signal 100% for full circulation
Inverted	Mixing damper activated, output signal 0% for full circulation
MB Exhaust air	Not used
MB Outside air	Not used
MB Mix air	Not used
Limit Extr.fan	The exhaust fan is controlled by the position of the mixing damper.



Block no.	Function
Y1	Damper output 0-10V Mixing damper
M	Damper output G0 Mixing damper
P12-32	+24V power supply Mixing damper



After making a change in a configuration menu, a restart is required.

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

RESTART

28.1. For configuration of the heating sequence

Start page > Main menu > Configuration > Configuration 2 > Mixing damper sequence

Parameter	Function
Damper-Heating	Mixing damper primary, heating register (recovery system+heating) secondary
Heating-Damper	Heating register (recovery system+ heating) primary, mixing damper secondary

After making a change in a configuration menu, a restart is required.

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

RESTART

28.2. For parameter setting

Start page > Main menu > Unit > Temperature regulation > Mixing damper

Parameter	Function
Regulator	Current regulator value for mixed air
Output signal	Current value for damper actuator
Recovery	Shows current heat recovery. For Mixing damper = Normal, this value is always the same as the output signal. For Mixing damper = Inverted, this value is always the inverted output signal.
Min. outdoor air	The minimum volume of outdoor air. The regulator output signal is limited to 100% - Min. outdoor air. This ensures that a certain volume of outdoor air is always blown into the room
Start time	Time for the regulator's start process (100% recirculation).
Start temp.	Temperature limit for start process

> Example of mixing damper
At the start, the mixing damper is entirely open during the period for Start time if outdoor air temperature < Start temp. The regulator determines the current position after this period. If heating is required at the start, the heating register is activated in parallel and after start has been completed the mixed air regulator for heat recovery is set to max. (100% - Min. outdoor air).

29. Exhaust air sensor

A temperature sensor can be installed in the exhaust air for temperature measurement. To activate the function:

Start page > Main menu > Configuration > Configuration 1 > Exhaust air = Yes

After making a change in a configuration menu, a restart is required.

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

RESTART

After the sensor is configured, it should be connected to a physical input.

Start page > Main menu > Configuration > Config.IOs > Temperatures > Exhaust air/ Pos = 1X2

30. Efficiency measurement

Once the exhaust air sensor is installed, the efficiency of the heat exchanger can be read out. **NB!** This is not an exact value of the efficiency as there are many factors involved such as humidity, balance between supply air/ exhaust air, etc.

Start page > Main menu > Configuration > Configuration 2 > Hrecefficiency = Exhaust air

After making a change in a configuration menu, a restart is required.

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

RESTART

Current efficiency is displayed under:

Start page > Main overview

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