GB

EXcon Instructions

CX3000 Control system

Original instructions

EXHAUSTO A/S
Odensevej 76
5550 Langeskov, Denmark

Tel.: +45 65 66 12 34
Fax: +45 65 66 11 10
exhausto@exhausto.dk
www.exhausto.dk

EXHAUSTO

7. Service settings

1. Product information

Symbols and terms

Prohibition symbol

Failure to observe instructions marked with a prohibition symbol may result in serious or fatal injury.

Danger symbol

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the unit.

Scope and terma of the manual

These instructions apply to **the control system**, hereinafter referred to as **EXcon**, of an EXHAUSTO **CX unit**, hereinafter referred to as **the unit**. For accompanying accessories and additional equipment, please see the product guidelines for the specific item.

The instruction manual must be fully observed to ensure personal safety and the safety of others, and to protect equipment and ensure correct operation. EXHAUSTO A/S accepts no liability for accidents caused by a failure to use the product in accordance with the manual's instructions and specifications.

Terms

These instructions use the following names for airflows as specified in DS447-2013:

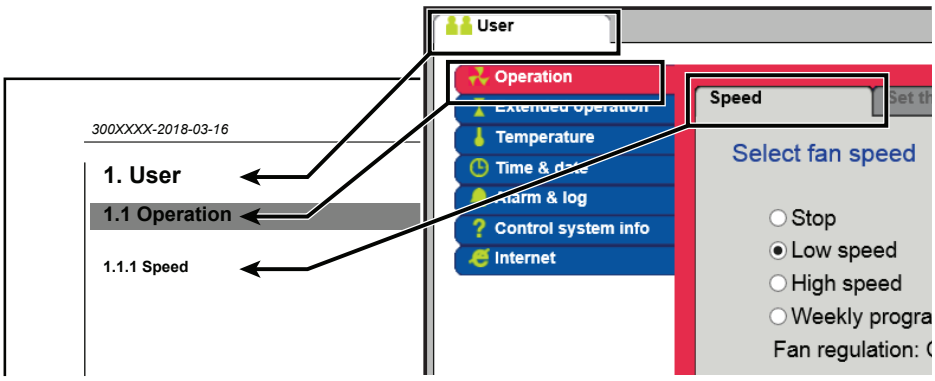
- Supply air
- Extract air
- Outdoor air
- Exhaust air

Screen images

In this instruction manual there are screen displays which are meant to help the user and indicate where on the web interface the user is currently. These screen displays are examples and settings, which will usually not be identical to the settings of the relevant unit on this web user interface.

Headers/web user interface

This guidance is structured such that the section headers correspond to the tabs on the web user interface.
See example below:



EXHAUSTO

1.1 Software version

Software version

These instructions are for use with the following version:

- Master SW version: AE 6.xx
- HMI Touch panel SW: 1.xx

The current software version for the unit can be seen on the web user interface in the menu: **User > About the control system.**

The current software version for both the Master and the HMI can be seen in the HMI in the menu: **Settings > About the control system.**

1.2 Application

Browser

The EXcon web user interface can be used via:

- Explorer 10 and 11
- Chrome
- Edge
- Firefox

The EXcon control system controls and monitors the unit functions.
EXcon can be operated via:

- Touch control panel (simple operation and settings)
- PC browser (advanced operation, settings and configuration)

This allows the following applications:

- A local PC can be connected to the unit.
- The unit can be connected to a local area network (LAN) and be controlled by a PC connected to the LAN.
- The unit can be connected to the internet and accessed by external PCs.

1.2.1 Browsing history

The **Temporary internet files** folder (or cache) is used by the web browser to save content from websites on the computer's hard drive, so that they can be displayed quickly.
This cache means that the web browser only has to retrieve the content that has changed since the website in question was last displayed, instead of retrieving all of a site's content every time it is to be displayed.

Delete browsing history

Step	Action
1	Start Web browser.
2	Click on the **Functions** tab and select **Internet settings**
3	Click on **delete...**
Keep data for favourite websites: ● If the address on the EXcon web user interface is added as a **Favourite**, it may **not** be ticked. **Temporary internet files and website files:** ● **Must** be ticked.	
4	Click on **Delete** when the required data has been selected.

2. Operation and passwords

Operation

Operation of the unit typically makes use of several user interfaces – depending on requirements and situations. Changes made using the HMI Touch remote control can be seen on the browser immediately, and vice versa. Operation and setting of the unit can thus be flexibly and suitably adapted to the given situations.

User levels

Users of the online user interface can log in as one of three user types. These are user, installer and service. Service is the highest level, with most rights and access to most setting adjustments. Different user types and levels are not used in connection with use and operation via BACnet or Modbus. As an option LonWorks may also be used.

2.1 User interfaces

The unit can be set up and controlled via the EXcon web user interface, the EXcon HMI Touch remote control, Modbus or BACnet. As an option LonWorks may also be used, this requires a LONmodule to be installed.

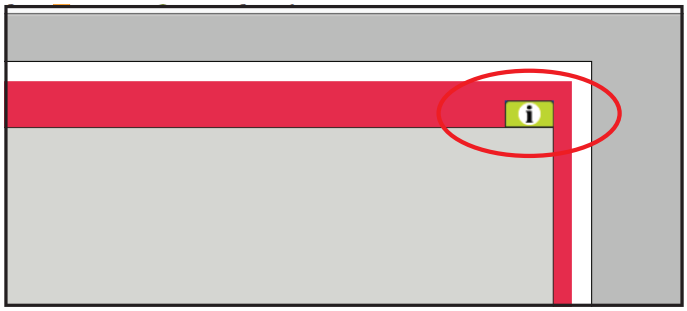
2.1.1 Online user interface

The online user interface permits setup and control of all functions in the unit. Depending on requirements and user type, users may log in on one of three user levels, with corresponding passwords and rights.

Log-in procedure

1. Open a browser
2. Enter the IP address of the unit *(see – Communication Setup)*
3. Enter a username and password.*(see Passwords)*

On pages which offer help, the help functions are opened and closed by clicking the **I** button in the top right-hand corner.



2.1.2 HMI Touch control panel

The HMI permits adjustment of the basic functions. The HMI can be mounted on the unit or in the room as room control.
For changes to settings and operation with the HMI, see the EXcon HMI Touch instructions.

2.1.3 Modbus

Configuration and operation via Modbus is performed with the configuration program selected by the user.
For more information and a list of parameters, see the **Modbus protocol.**

2.1.4 LonWorks

Configuration and operation via LonWorks is performed with the configuration program selected by the user.
For more information and a list of parameters, see the **LON protocol.**

2.1.5 BACnet

Configuration and operation via BACnet is performed with the configuration program selected by the user.
For more information and a list of parameters, see the **BACnet protocol.**

2.2 Passwords

2.2.1 Online user interface

A login at a higher level also gives access to the underlying level's menus.

The following login and password are factory settings on the web user interface:

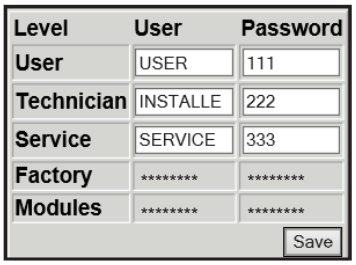
Niveau (Level)	User name	Password
Bruger (User)	USER	111
Technician	INSTALLER	222
Servicing	SERVICE	333
Factory	Contact EXHAUSTO	
EXcon modules	Contact EXHAUSTO	

Letters in the password are case-sensitive.

Change password

It is possible to change the username and password for User Level on the web user interface. For more information, see under: **User > Internet > Login.**

To change the password for Technician and Service levels you will need to log in at Factory Level. Contact EXHAUSTO for more information.

Step	Action	Screen image
1	Log in via a web browser at Factory Level: **Factory > Settings > Login.**	
2	Enter a username and password for the levels that are needed to be changed, max. 8 characters.	
3	Press **Save** to save the settings.	

2.2.2 HMI Touch control panel

There are no access levels for operating the HMI.
However, a LOGIN code is required for resetting to factory settings, and for configuration and settings for certain parameters.

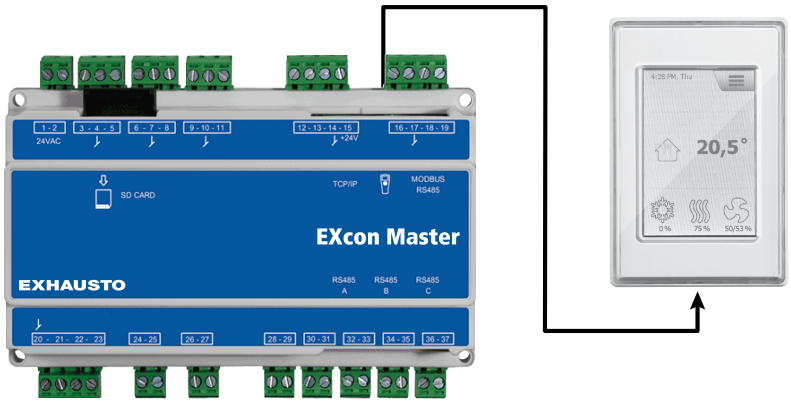
Contact EXHAUSTO for more information.

3. Communication setup

3.1 HMI Touch control panel

Connect HMI Touch control panel

Check that the cable between the HMI and the EXcon Master is correctly connected as shown below.



1. Turn on the Master
2. Check that the HMI display has lit up
3. Wait about 30 seconds until the control system is ready

At least one active alarm will often appear on the HMI display when starting up the Master.
Remove alarms by pressing **ESC**.

3.1.1 Set language

NB:

Language settings can be changed without knowledge of the LOGIN code.

Step	Action
1	Press the HMI menu icon in the top right-hand corner of the home page.
2	Select **Settings**, and then **Language**
3	Mark the desired language and return to the home page.

3.1.2 Set IP address

To allow communication between the Master and a directly connected PC, the Internet settings must be entered.
The Master be set to for either **Static** or **DHCP** IP address via the HMI.

For further information, see **Configuration of communication**.

NB:

Changes to IP address settings can only be made by service technicians with knowledge of the LOGIN code.

Step	Action
1	Press the HMI menu icon in the top right-hand corner of the home page.
2	Select **Communication**
3	Mark one of the parameters which it is wished to change.

Step	Action
4	To set the chosen parameter,enter the LOGIN code and select ✓.

3.2 Updating of software

3.2.1 Software updating with HMI Touch panel

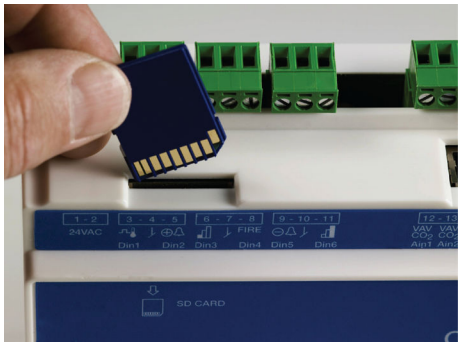
Use SD card

In the event of the unit software needing to be updated, this is done via an SD card.
Follow the sequence below to update the software.

NB! All settings that are already saved in the software are kept.

NB:

Software updates should only be made by service technicians with knowledge of the LOGIN code.

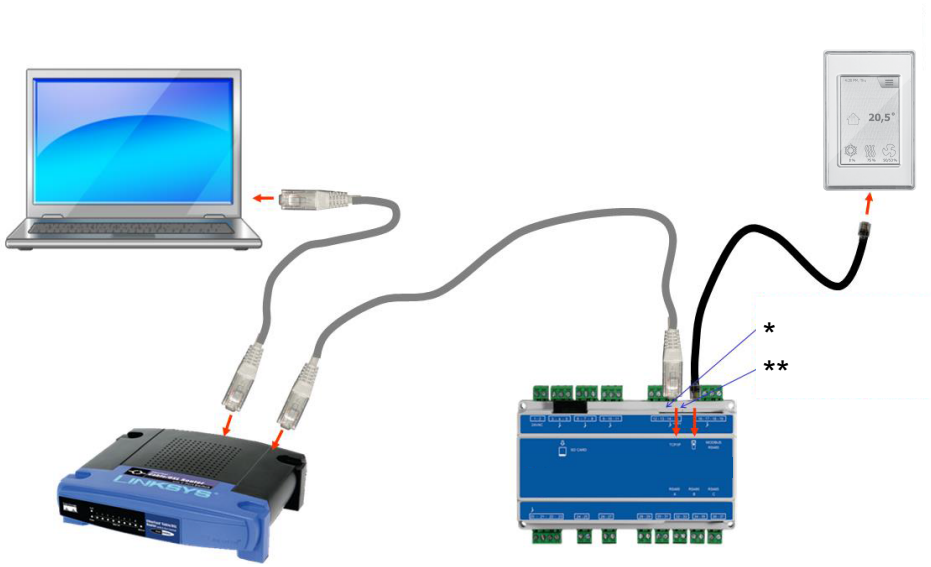
Step	Action	NB:
1	Copy 4 files (.gz and .crc.files) onto an SD card.	The files must be placed in the root directory on the SD card and not in sub-directories.
2	Ensure that the Master is powered up.	
3	Ensure that the HMI is connected.	Check that there is light on the display
4	Place the SD card in the card reader in the Master.	
5	Click on the HMI menu's icon in the top right-hand corner of the home page and select **Updating**.	SD card found. Please wait...
6	Select ✓ and enter the LOGIN code if updating is required.	Updating is running. Please wait...
it is very important that the UPDATING PROCESS IS COMPLETED before clicking on the screen again. When the updating process is complete, the screen will automatically revert to the home page.		

3.3 Configuration of communication

3.3.1 Configuration WITH router

If communication is configured WITH router on the TCP/IP network, the PC is automatically assigned an IP address by the network or router. Using the HMI, set the IP address to **DHCP**

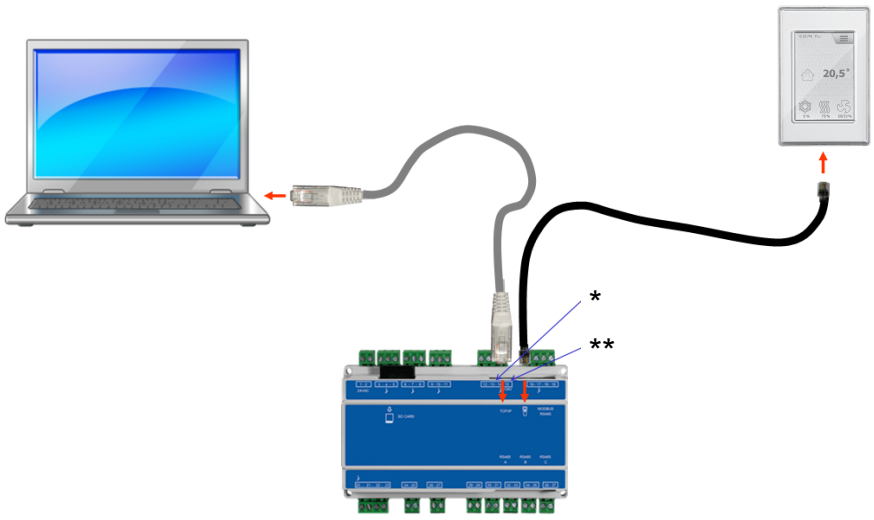
*Yellow LED: Lights up when LAN connection is OK
** Green LED: Flashes when communication is active.



3.3.2 Configuration WITHOUT router

If communication is configured WITHOUT router, the PC must be set to **Static** IP address. Using the HMI, also set the IP address to **Static** and set the required IP address (e.g. 192.168.1.100).

*Yellow LED: Lights up when LAN connection is OK
** Green LED: Flashes when communication is active.



For Windows 7 users

Step	Action
1	Select **Network and sharing centre** on the control panel.
2	Under the menu on the left-hand side, select **Edit network card settings.**
3	Right-click on the **LAN connection** icon, and select properties. If it asks for administrator password, contact the system administrator.
4	Mark TCP/IPv4 (Internet Protocol Version 4), select properties.
5	Select Use following IP address and enter the IP address which the network card is to have (e.g 192.168.1.100). The IP address may not be the same as set in the control system, but must be in the same network mask. **NB!** Be aware that it is the wired network card that is to be configured.
6	Press OK to end.

For Windows 8 and 10 users

Step	Action
1	Start Internet Explorer.
2	Check whether Internet Explorer is set up for Proxy server: Select **Functions >Internet settings > connections.**
3	Select **LAN settings.**
4	If the **Use a proxy server for LAN** field has been ticked, this must be removed. Click on **OK.**
5	Open **Control Panel > Network and Internet > Network and Sharing Centre > Edit settings for network card.**
6	Right-click on the LAN connection used and then on **properties.** If it asks for administrator password, contact the system administrator.
7	Mark**Internet protocol TCP/IP.**
8	Select **Properties.**
9	Select Use following IP address and enter the IP address which the network card is to have (e.g 192.168.1.100). The IP address may not be the same as set in the control system, but must be in the same network mask. **NB!** Be aware that it is the wired network card that is to be configured.
10	Press OK to end.

3.3.3 Start Web browser

Control of the unit from the web user interface supports:

- Internet Explorer 10 and 11 (no compatibility display)
- Edge
- Chrome
- Firefox

Step	Action
1	Start the browser
2	Enter IP address in the address line and press **Enter**
When the Log-in image is displayed, the connection to EXcon Master has been created	
	
3	Enter the Username/Password which gives access to the desired operation level. For further information, see **Web user interfaces** under **Access codes.**
4	Select language and press the Login button.
When you have logged in, the **User > Operation** tab will be displayed. Inactive tabs are shown with a grey background colour/grey text. They are activated depending on the settings made on the current or related pages.	

4. Starting up the unit for operation

The Modbus connectors must not be connected or removed while the units are powered up. Both Modbus units must be switched off before making changes, otherwise the units may be damaged.

During commissioning, it may be necessary to work with the control system boxes open. Components in these boxes must only be touched with electrically-insulated tools.

Before doing any work on motor controls or motor cables and terminal boxes, the power supply must be switched off for at least five minutes to allow the capacitors to discharge.

Before commissioning begins

- Check that the supply voltage is connected
- Log in to service level, see chapter **Passwords**.

4.1 Getting started

Implementation

When logged in, then follow the below sequence in order to get started with commissioning.

Step	Action	Niveau (Level)
1	Select operating mode - it is recommended to select **Low speed** during start-up.	Bruger (User)
2	Set/activate operation settings.	Technician
3	Set safety function settings:	
3A	• Fire -> Ventilation > Fire alarm (temperature sensor/accessories)	Technician
3B	• Air handling unit > Fire alarm (temperature sensor/standard)	Service
3C	• Unit > Settings > Click on the water heating coil (option) > Frost protection	Servicing
4	Select operating mode - Low/Medium/High, Weekly program or Calendar. Set Weekly program/Calendar if this type of operating mode is required.	Bruger (User)

5. User settings

5.1 User parameters

The unit can be set to accept changing requirements for temperatures, air changes, logging of alarms, etc. Many settings are entered once only, but others are intended for shorter periods. The EXcon web user interface creates a starting point for which parameters are described.

NB: There is a difference between levels on the user interfaces in terms of which parameters are available and where they are located.

User interface	Menus	Parameters/tab sheets
User ->	Operation ->	Speed
		Set the program
		Basic program
		Daily schedule
		Exceptions
		Calendar
	Extended operation ->	Set minute timer
	Temperature ->	Setpoint
	Time & date ->	Settings
	Alarm & log >	Alarms
		Alarm log
		Alarm forecast
		Data log
		Status
	About the control system ->	Version
	Internet ->	IP address
		E-mail (Email)
		Login

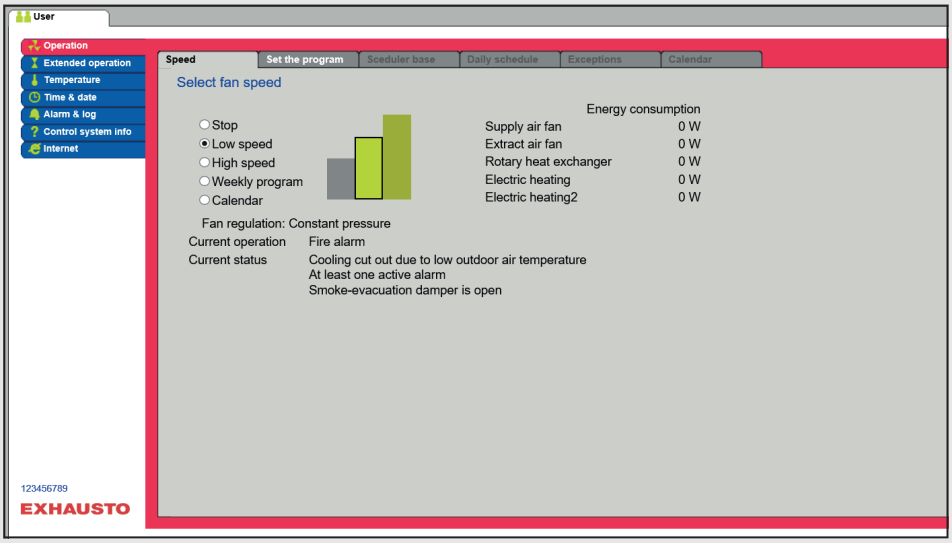
5.2 Operation

The **operation** parameters are used to determine the speed of air changes and the times for switching between the different speeds.

The unit may be in one of four operating modes: stopped, low, medium or high speed.
It can be programmed to follow one of three weekly programs, or the calendar can be used for more detailed operating settings.

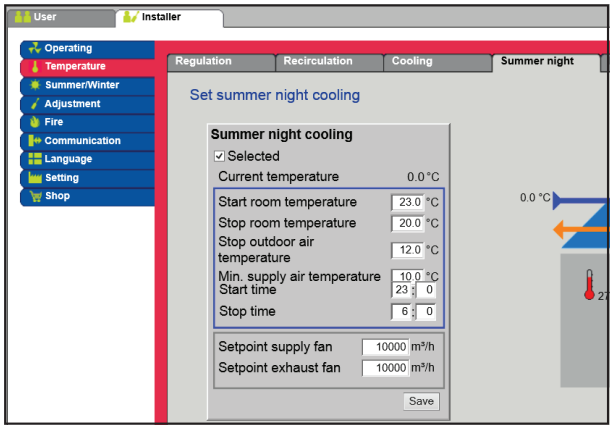
The current mode can be temporarily overridden by means of extended operation.

5.2.1 Speed

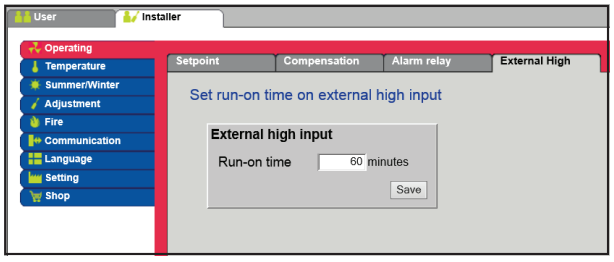


Select fan speed	
Stop	The unit has stopped. ● Safety features er still active. ● Damper to the outside air is closed. **NB!** By using the **STOP** setting , it is possible to override/restart the unit via the web user interface, HMI Touch control panel/manual terminal, BACnet or Modbus. During service and maintenance, the unit must be stopped by: ● using the **Service stop** setting on the HMI Touch panel home page.
Low speed	The unit runs at a constant speed in accordance with the set parameters for **Low speed**. ● There is no access for setting operating times in the weekly program or calendar.
Medium speed	The unit runs at a constant speed in accordance with the set parameters for **Medium speed**. ● There is no access for setting operating times in the weekly program or calendar.
High speed	The unit runs at a constant speed in accordance with the set **High speed** parameters. ● There is no access for setting operating times in the weekly program or calendar. If digital input for High speed is activated, the unit will start and switch to high speed. If digital input is deactivated again, the air handling unit will continue at high speed for the set time under: **Installer > Operations > External high.**
Weekly program	The unit runs in accordance with the set weekly program. ● Access is permitted for setting operating times in the weekly program. Although the unit may be stopped according to set weekly program, it can still start automatically according to the settings below.
Calendar	The unit runs in accordance with the set calendar. ● Access is permitted for setting operating times in the calendar. Although the unit may be stopped according to calendar settings, it can still start automatically according to the settings below.

Installer > Summer night

Settings	
If, under **Installer > Temperature > Summer night,** summer night cooling **is selected**, the unit will start according to the set parameters for summer night cooling.	

Installer > External high

Settings	
If digital input for High speed is activated, the unit will start and switch to high speed. If digital input is deactivated again, the air handling unit will continue at high speed for the set time under: **Installer > Operations > External high.**	

5.2.2 Set the program

For access to this parameter, select **Weekly program** under: **Operation > Speed.**
The settings will be overridden by any period of extended operation or cancelled if the unit is set to follow something other than the weekly program.
The parameter uses timelines, in which a maximum of four operating periods can be set per line. Each operating period indicates a time during which a requested operating mode is active.

Set weekly program
Whole week • Operating at the same times on every day of the week.
Weekday & weekend • Operation at the same times on Monday to Friday, with other times on Saturday-Sunday.
Day program • Operating at individual times on every day of the week.

Click on the  symbol in the top right-hand corner for more information.

Calendar

The calendar function allow operating times to be set for a year or more.
An operating pattern can be set for normal operation of the unit.
At the same time, special operating modes in connection with planned holidays, public holidays or special opening days can be set.

The calendar function consists of four tabs:

- Basic program
- Daily schedule
- Exceptions
- Calendar

To use the calendar, all four tabs must be set.

Colours on buttons

For buttons in the parameters Daily schedule, Exceptions and Calendar, the following colour rules apply:

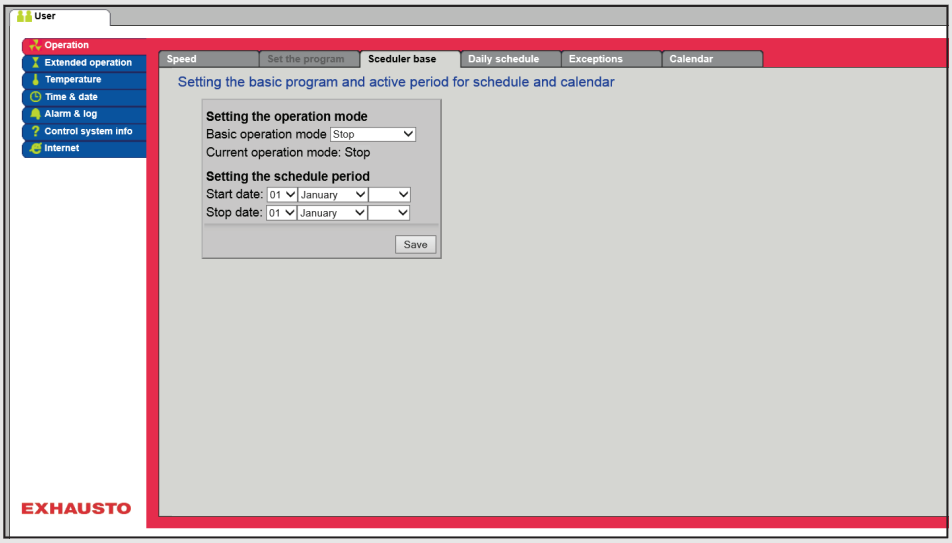
- Light grey - the button is active and can be set.
- Green - at least one activity has been set.
- Dark green - no activities have been set.

The settings will be overridden by any period of extended operation, or cancelled if the unit is set to follow something other than the calendar.

5.2.3 Basic program

For access to this parameter, **Calendar** must be selected under: **Operation > Speed.**

The basic program is used for setting the operating mode which the unit is to run, e.g. at night, in holiday periods or other stop periods.
The period for which the basic program is to run for is also set here.



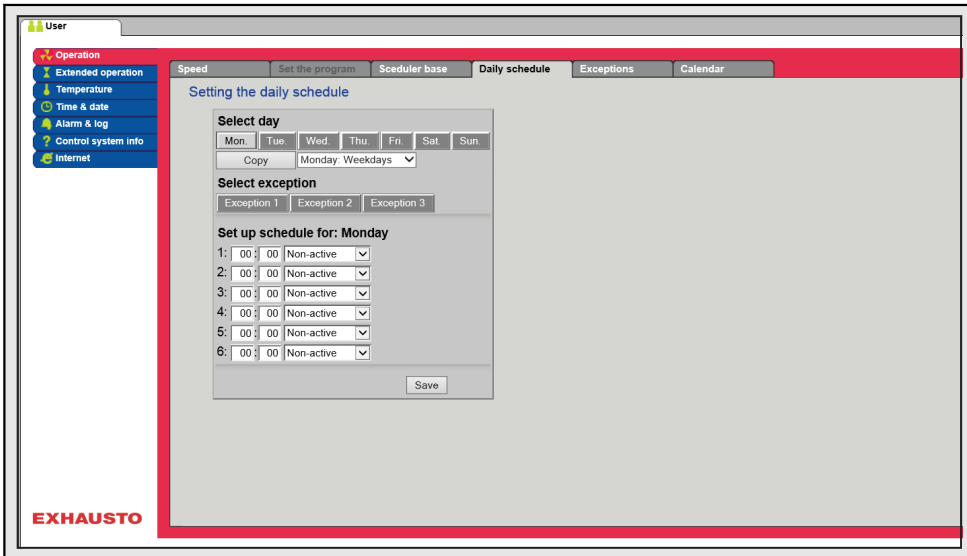
Operating mode settings - basic operating mode	
Stop	The unit has stopped. Frost protection and other safety functions are active.
Low speed	The unit is in operation in accordance with Low Speed settings **(Installer > Operation > Set point)**
Medium speed	The unit is in operation in accordance with the settings for Medium Speed **(Installer > Operation > Set Point)**
High speed	The unit is in operation in accordance with the settings for High Speed **(Installer > Operation > Set Point)**
Extended stop	The unit has stopped. Frost protection and other safety functions are active. The unit can be started - if the operating conditions are fulfilled for ● Summer night cooling ● Minimum night temperature - or by other override functions.
Table for period settings	
Start date	The start and stop dates indicate the period when the settings in the **Daily schedule, Exceptions** and **Calendar** tabs are active. Outside the given period, the settings in **Basic operating mode** are automatically applied
Stop date	
Press **Save** to save the settings.	

Click on the  symbol in the top right-hand corner for more information.

5.2.4 Daily schedule

For access to this parameter, **Calendar** must be selected under: **Operation > Speed.**

The Daily schedule is used for setting the operating pattern laid down as standard in the periods where the unit is running normal operation.
It is subsequently possible to set up to three exceptions, in which the operating pattern deviates from normal operation.



Select day - Set up schedule	
Step	**Action**
1	Select day and set up schedule by setting operating times and modes. For a description of the possible operating modes, see the Chapter **Basic program**
	Repeat step 1 for each week day if different settings are desired for the different days.
2	Use the copy function if the same setting is desired for all the days of the week or week-days. **NB! Even if the copy function is used, the days can later be individually changed if the same operating pattern is not desired**
Select exception - Set up schedule	
1	Select exception and set up schedule by setting operating times and modes. For a description of the possible operating modes, see the Chapter **Basic program** **NB! As a rule, it is recommended to select the exceptions first which take up the shortest time, and leave the longer lasting exceptions to last.**
Press **Save** to save the settings.	

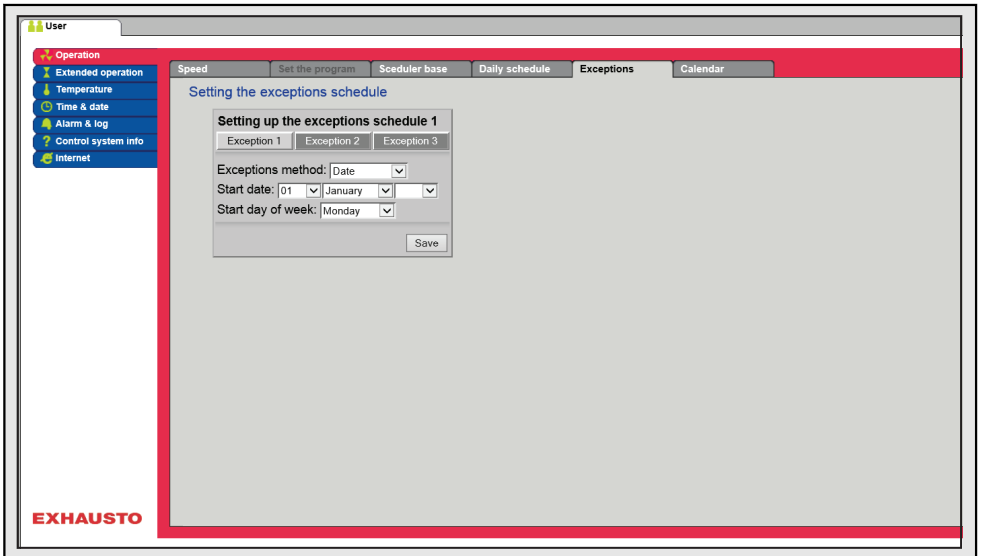
Click on the  symbol in the top right-hand corner for more information.

5.2.5 Exceptions

For access to this parameter, **Calendar** must be selected under: **Operation > Speed.**

Exceptions is used to set when exceptions 1-3 are to be active.

- Exception 1 has first priority
- Exception 2 has second priority
- Exception 3 has third priority



Select and set the exception method	
Not active	Exception has been deactivated and is not in use
Date	Exception is set to one particular date. • Start date • Start day of week **NB. It is important to set the day of the week correctly for the selected date.**
Date interval	Exception is active within the selected start/stop dates. • Start date • Stop date

Day of the week	Exception is active within the selected week in the selected month.
	• Start date
	  • 1-7 = First week in the selected month
	  • 8-14 = Second week in the selected month
	  • 15-21 = Third week in the selected month
	  • 22-28 = Fourth week in the selected month
	  • 29-31 = Fifth week in the selected month
	  • Last 7 days = The last week in the selected month
	  • Every day = Every day in the selected month
	• Start day of week
	
	The start day of the week indicates the day in the specified week on which the exception starts to be active.

Calendar	The exception is specified to follow the calendar as set in the **Calendar** parameter **NB. No more than one exception may be set using the Calendar exception method.**
Press **Save** to save the settings.	

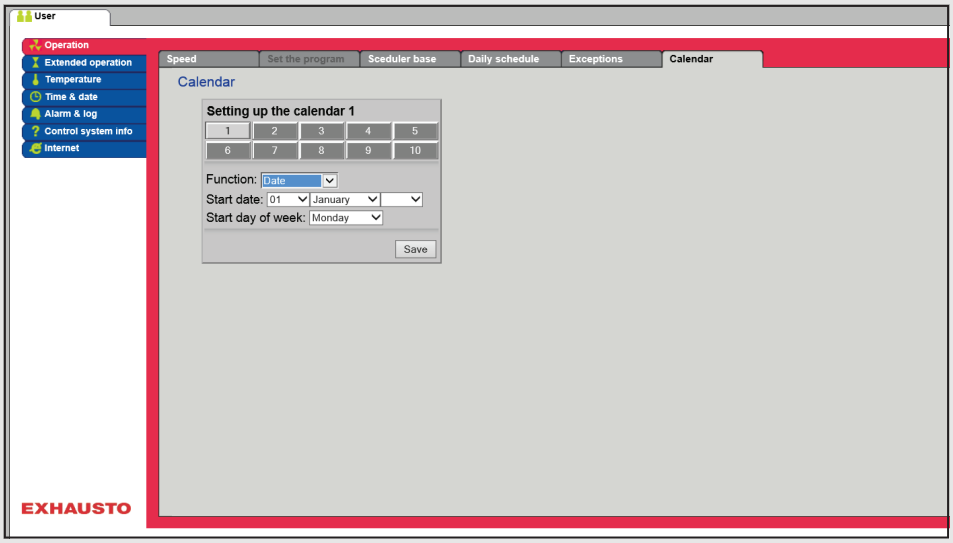
Click on the  symbol in the top right-hand corner for more information.

5.2.6 Calendar

For access to this parameter, **Calendar** must be selected under: **Operation > Speed.**

Calendar is used to set when an exception is to be active, if calendar has been selected as the exception method.

Up to 10 periods or dates (calendar numbers) may be set for when the exception is to be active.



Select and set calendar number	
Not active	Calendar number has been deactivated and is not in use
Date	Calendar number is set to one particular date. • Start date • Start day of week **NB. It is important to set the day of the week correctly for the selected date.**
Date interval	Calendar number is active within the selected start/stop dates. • Start date • Stop date

Day of the week	The calendar number is active within the selected week in the selected month.
	• Start date
	  • 1-7 = First week in the selected month
	  • 8-14 = Second week in the selected month
	  • 15-21 = Third week in the selected month
	  • 22-28 = Fourth week in the selected month
	  • 29-31 = Fifth week in the selected month
	  • Last 7 days = The last week in the selected month
	  • Every day = Every day in the selected month
	• Start day of week
	
	The start day of the week indicates the day in the specified week on which the calendar number starts to be active

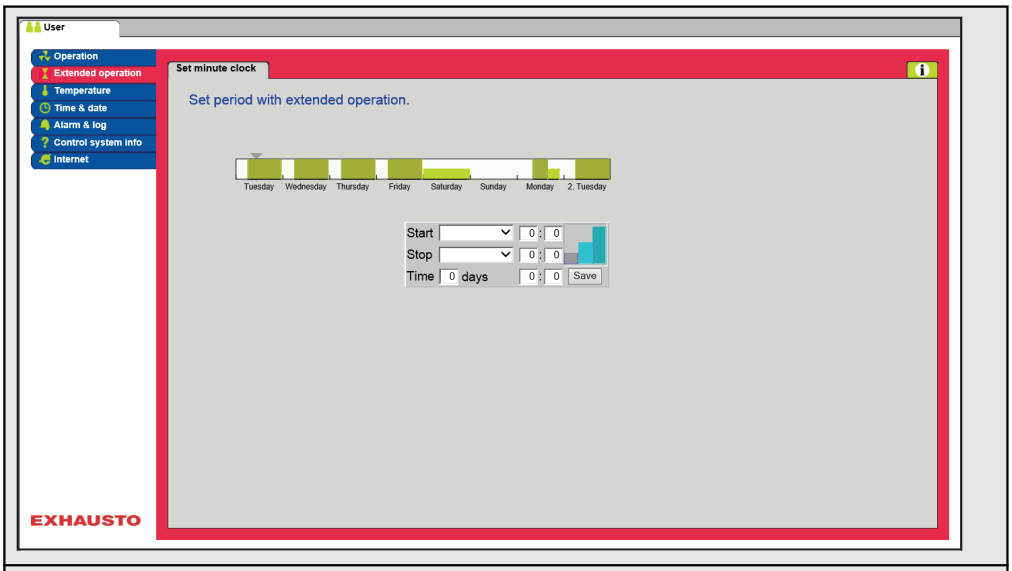
Press **Save** for each setup/calendar number before proceeding to the next number, in order to save the settings.	

Click on the  symbol in the top right-hand corner for more information.

5.3 Extended operation

The parameter for the menu **Extended operation** is used to override the current operating mode in the unit for a period of up to a week from the current time.
When the period runs out, operation will automatically continue according to the weekly program or calendar.

5.3.1 Set minute clock



Set extended operation

Enter the values in the white fields or use the mouse/marker to select the period in the "bar".

Click on the symbol in the top right-hand corner for more information.

5.4 Temperature

The **Temperature** menu parameter is used to indicate the desired temperature, which the unit must maintain in the rooms served.

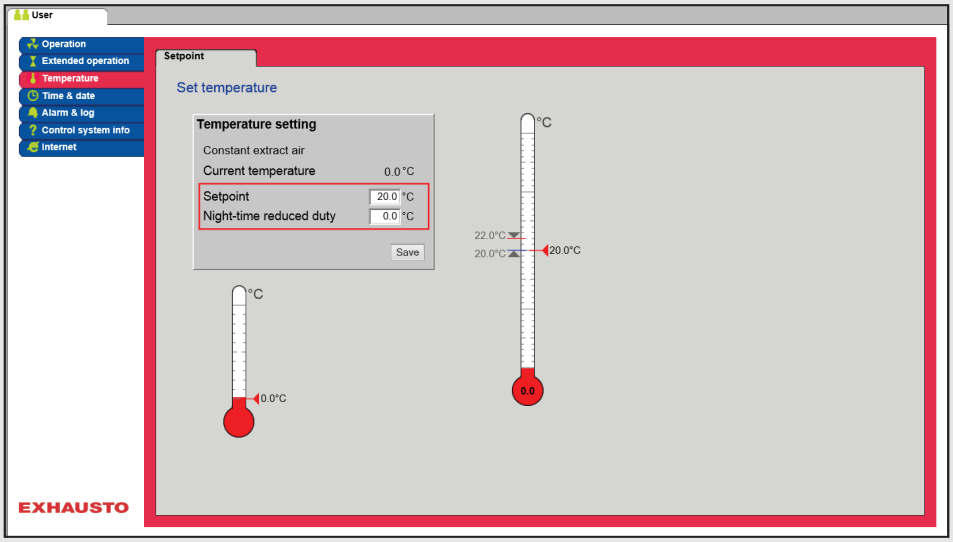
The temperature that the unit attempts to maintain is regulated by the selected regulation mode. This is primarily done by regulation of heating/cooling coils or by recovery and by regulating the airflow.

5.4.1 Setpoint

Set the setpoint temperature for the selected regulation mode. Setpoint temperatures can be set for each of the four regulation modes:

- Constant supply air
- Constant extract air
- Constant room
- Constant supply/extract difference

NB: The desired regulation mode must be selected when setting the setpoint temperature. The regulation mode is selected under: **Installer > Temperature > Regulation.**

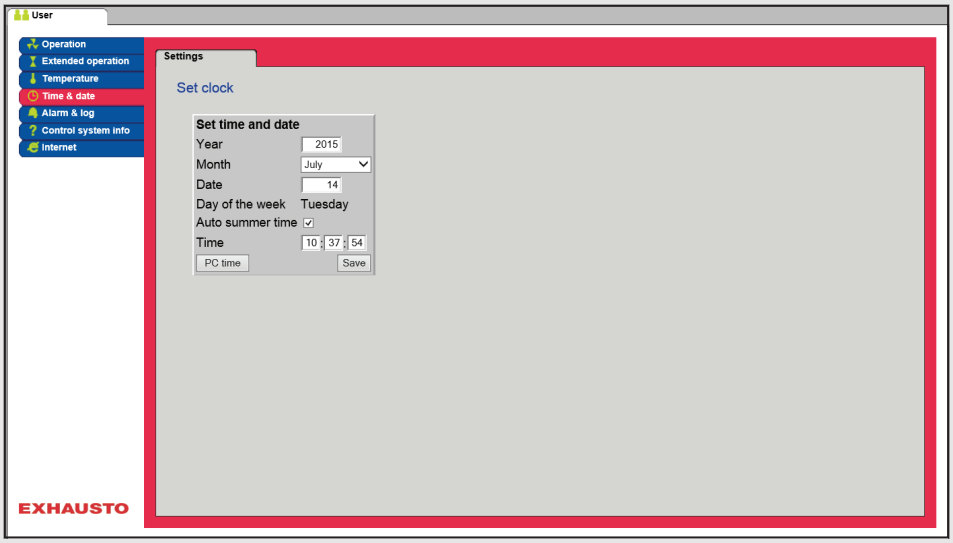


Set the temperature	
Setpoint	Set the setpoint for supply air temperature. Applies to the temperature regulations: ● Constant supply air ● Constant extract air ● Constant room
	Set the desired setpoint for differences between the supply air and extract air temperature. Applies to temperature regulation: ● Constant supply/extract difference
Night-time reduced duty	Set outdoor temperature for night-time reduced duty. Applies to the temperature regulations: ● Constant supply air ● Constant extract air ● Constant room
Night-time reduced duty is the number of degrees the EXcon control system allows the temperature setpoint to be raised/reduced by, before it starts to heat/cool to maintain the setpoint temperature. **NB!** Night-time reduced duty has no effect on: ● temperature regulation supply/extract difference ● **High** and **Medium** operating modes.	
Press **Save** to save the settings.	

5.5 Time and date

The parameters for the menus **Time and date** are used to set the control system clock. The clock is used for controlling the selected operating program and for logging alarms.

5.5.1 Settings



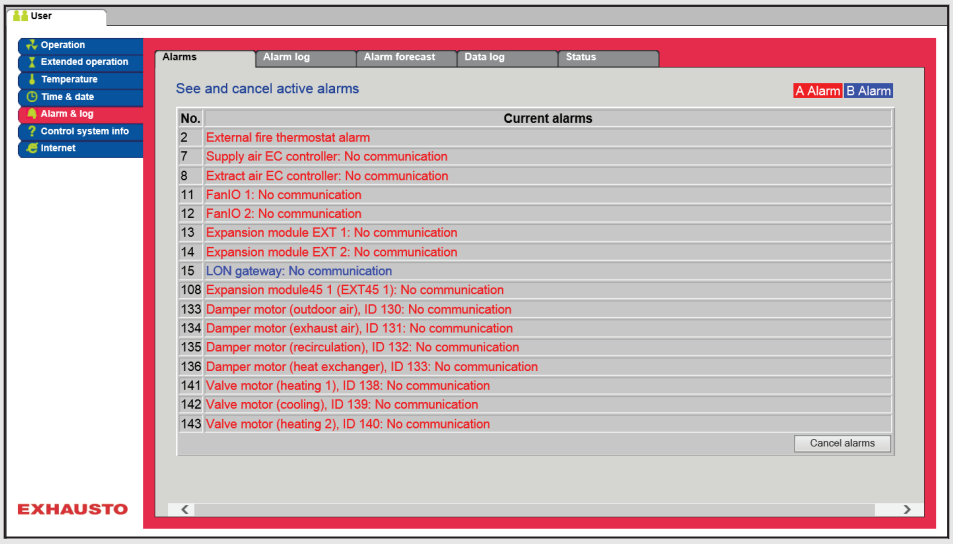
Set time and date	
Manual setting	• current year • current month • current date • select/deselect automatic summer/winter time changeover • current time
Automatic configuration	• PC time: Retrieve current time and date from connected PC
Press **Save** to save the settings.	

5.6 Alarm and log

The parameters in the **Alarm and Log** menu are used to log alarms and operating data which have occurred since the last startup of the unit. A log is kept of which alarms have occurred, which alarms are nearing their limit values and operating data history. The logged alarms can be reviewed via the web user interface or the HMI. If BACnet or Modbus are being used the logged alarms will also be available. Apart from current alarms, the online user interface also shows impending alarms and the logged operating data.

5.6.1 Alarms

Whether an alarm will activate a shutdown will depend on the type of alarm. A distinction is made between A alarms and B alarms, where A alarms activate a shutdown.

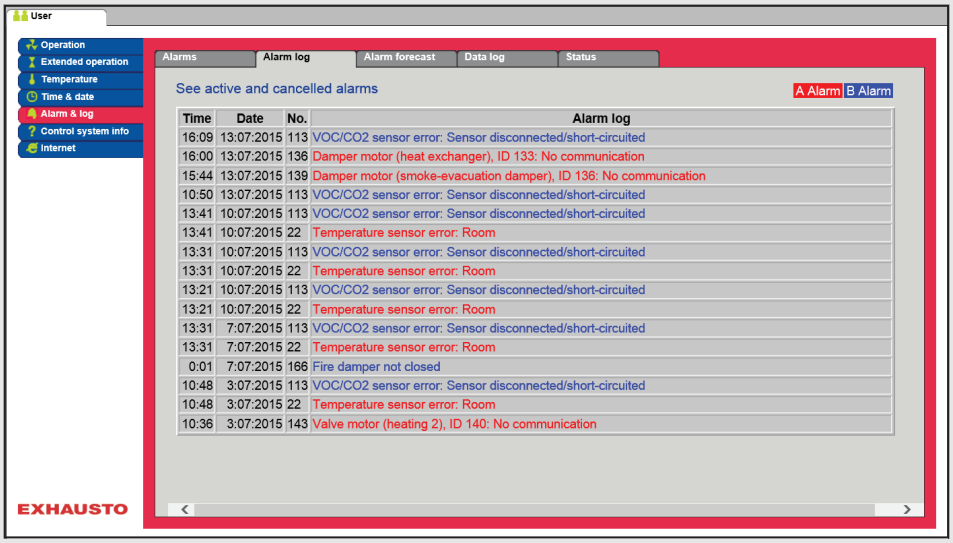


List of current alarms in the system

- Red alarm text is A alarms
- Blue alarm text is B alarms

Press **Cancel alarms** to acknowledge alarms. The list and the active alarms which are still active are restored and displayed.

5.6.2 Alarm log

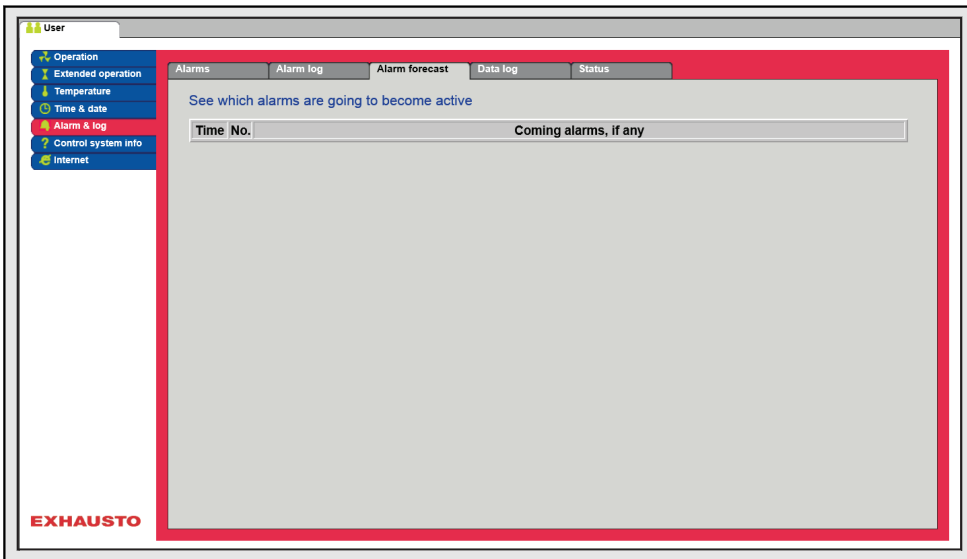


List of the last 16 alarms which have appeared in the system

- Time and date of alarms is shown

5.6.3 Alarm forecast

Alarms approaching the set limit values are shown in the **Alarm view** tab. If the limit values are exceeded, these alarms are moved to the list of current alarms and the alarm log is updated.

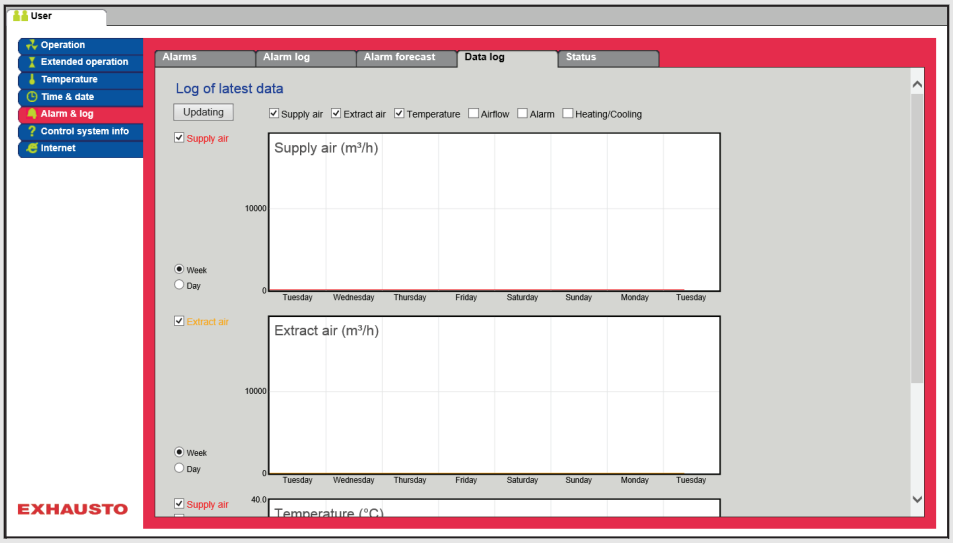


List of alarms which are approaching the set limit values

Example:
If the pressure drop over a filter goes over the set alarm value, the alarm will be delayed for the set time period and shown on this list.
If the pressure drop is still above the set value after the set time period, the alarm is deleted from this list and shown on the **Alarms** list

For more information about A and B alarms, alarm limits and alarm delays, see the document **Alarm summary - EXcon control system**

5.6.4 Datalog



The VEX unit's values are stored in a log database for one week

The desired groups for display can be selected by ticking them off:

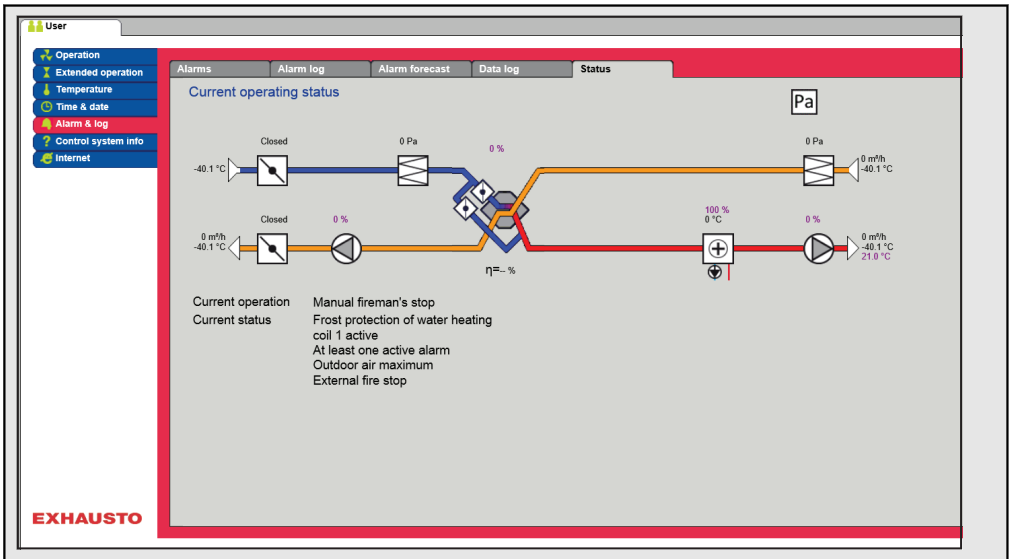
- Supply air (m^3/h) or (Pa) in case of pressure control
- Extract air (m^3/h) or (Pa) in case of pressure control
- Temperature (°C)
- Airflow (m^3/h)
- Active alarms (number)
- Heat/Recovery/Cooling (%)

Within each group the desired values for display can be selected.

Select **Week** or **Day** to show log values from last week or the last 24 hours.

Click the display window with the left mouse key for enlarged scale display.

5.6.5 Status



List of current alarms in the system

The screen shows the unit's current status and operating mode.

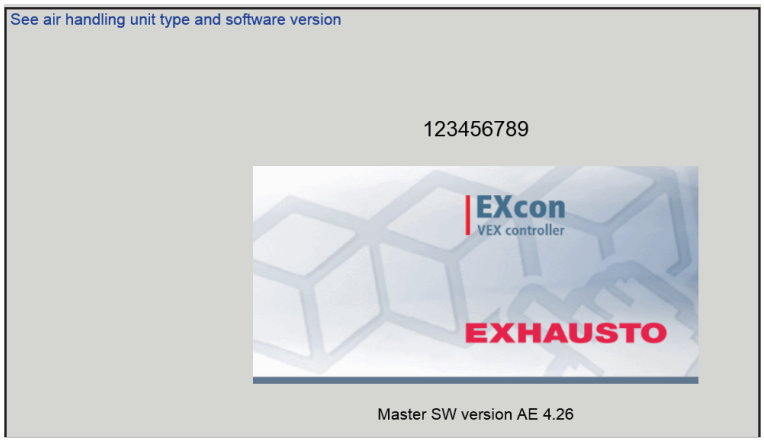
- Values in black print show current values.
- Values in purple print show estimated values.

Click the icons/components for further information on parameter settings.

5.7 About the control system

The parameter in the **About the control system** menu contains information about which software version is controlling the unit.

5.7.1 Version



- The name and software version number of the unit control system are displayed.
- This must be quoted in connection with technical support.

The name of the unit is written in the 'Unit name' field under **Factory > Factory > Retrieve/Save**

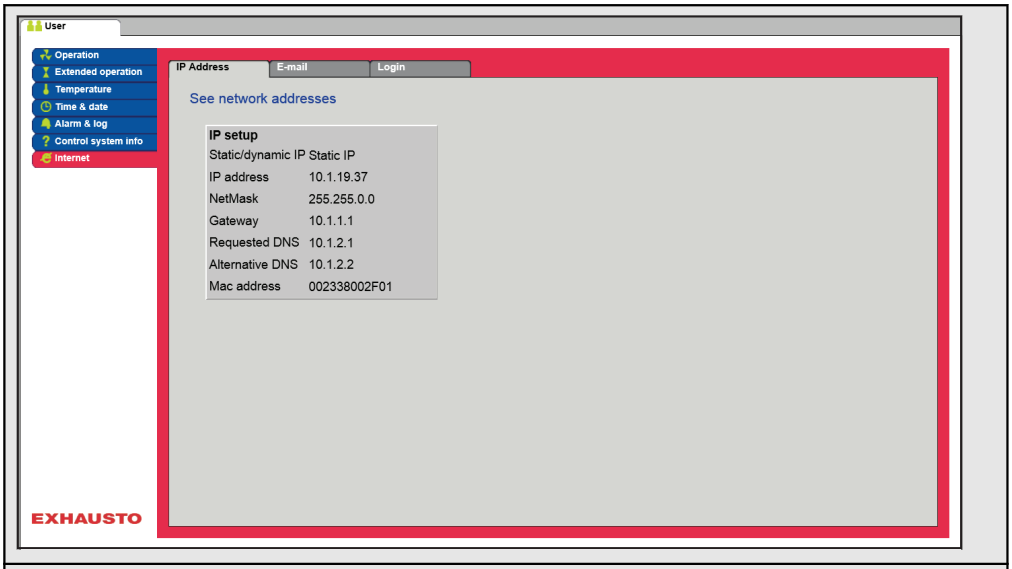
5.8 Internet

The parameters in the **Internet** menu make it possible to view the IP address setup, set up email communication and to change the login.

5.8.1 IP Address

This parameter shows the current IP address and the settings used for communication with the unit via a network.

- Changing this will require access at installer level on the online user interface.
- The parameter can be changed on the HMI Touch control panel with the LOGIN code.

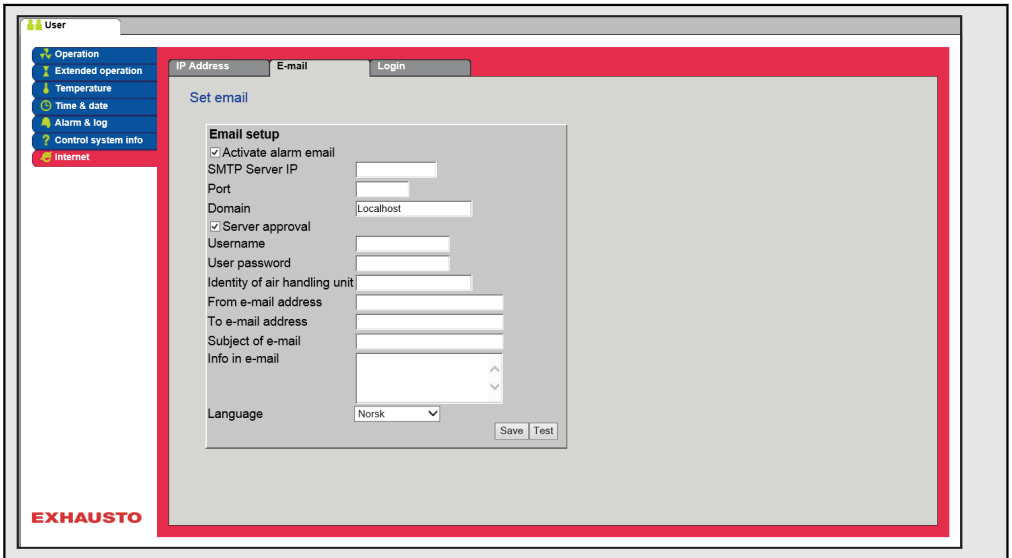


See network addresses - IP setup	
Static/Dynamic IP	Shows whether static or a dynamic IP address is used.
IP Address	Shows the IP address assigned to the unit.
Netmask	Shows the subnet mask to which the unit is linked.
Gateway	Shows the gateway address which the unit uses.
Requested DNS	Shows the primary name server which the unit uses.
Alternative DNS	Shows the secondary name server which the unit uses.
Mac Address	Shows the hardware address for the electronics in the unit.

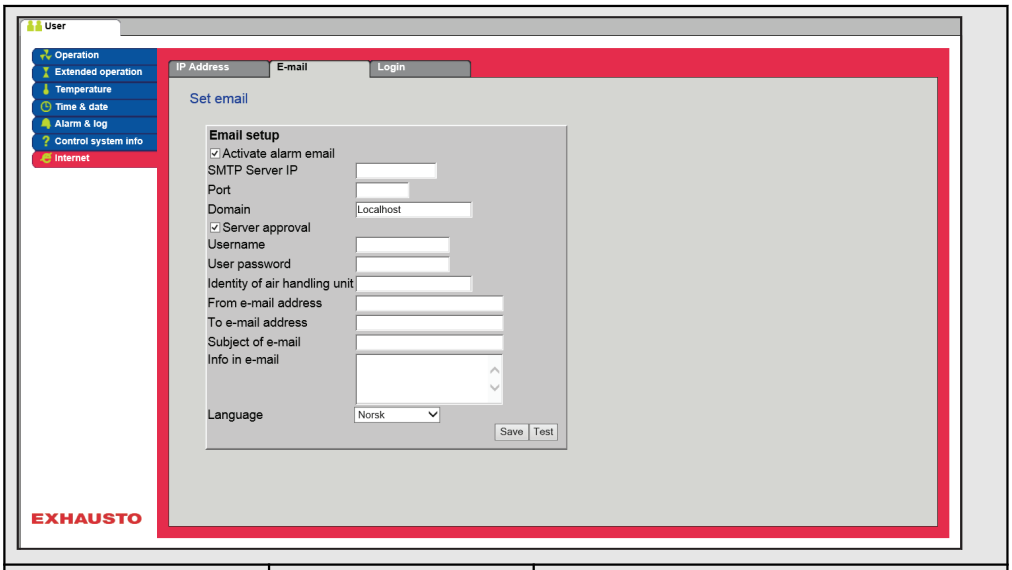
5.8.2 Email

This parameter is used for setting up email communication from the unit.

- E-mail is sent automatically to the contact person if errors arise on the unit.
- The parameter can be set only via the online user interface.



Settings	Values	Description
SMTP server IP	xxx.xxx.xxx.xxx	Indicate the address on the SMTP server for sending e-mails. The address can be obtained from the network administrator or provider. If access requires the address to be set up on the SMTP server, mark the **Server approval** field.
Port	Port 25 is standard	State port number for the SMTP server.
Domain	Optional	Enter the domain name for Excon control system.
Server godkendelse	To/From	Indicate whether approval is required for logging into the SMTP server.
User name	abc... [79 characters]	Enter user name for unit on SMTP server.
User password	abc... [79 characters]	Enter password for SMTP server.
Unit ID	abc... [79 characters]	Provide a description of the plant/unit. e.g., its location.
From email adresse	abc@abc.abc [79 characters]	Enter sender's address.
To email address	abc@abc.abc abc1@abc1.abc1; .. [80 characters]	Enter recipients' addresses. Where several recipients are entered, these should be separated by semicolons (;).
Email subject	abc... [79 characters]	Enter email subject. e.g., **ventilation unit error in building 2**
Info in the email	abc... [364 characters]	Type in a longer text message, describing, e.g., where the unit is located, passwords, location of access keys, contact persons, telephone numbers, special circumstances, etc.
Language	Danish, English, German, Swedish, Norwegian, Spanish, French, Polish, Russian, Italian, Dutch, Finnish.	Select language of text in messages sent from the unit.

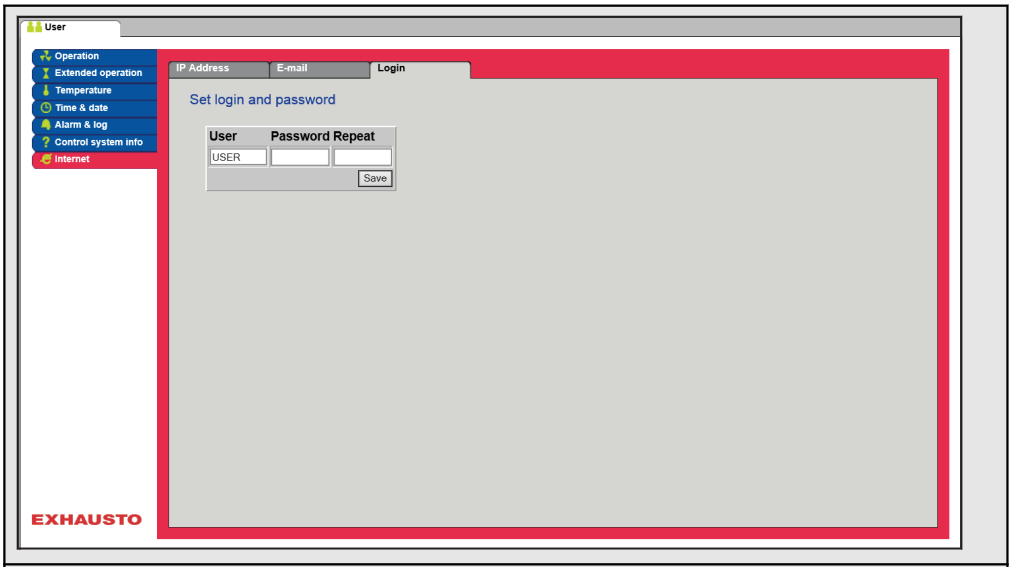


Settings	Values	Description

Press **Save** to save the settings.
Press **Test** to test the email configuration or send a test email.

5.8.3 Login

This parameter is for changing the password used to log into the unit.



Set login and password

- Please enter a password.
- The parameter can be set only via the online user interface.

6. Installer settings

6.1 Installer parameters

When installing the unit, there are a number of parameters which need setting up to meet the required functions. These are parameters which the ordinary user seldom or never needs to know about. The installer should review and set these parameters at the time of installation.

The online user interface is the starting point for the parameters described.

NB: There is a difference between user interfaces in terms of which parameters are available and where they are located.

User interface	Menus	Parameters/tab sheets
Installer >	Operation >	Setpoint
		Compensation
		Alarm relay
		External high
	Temperature >	Regulation
		Cooling
		Summer night
	Summer/winter >	Compensation
		Summer/winter changeover
	Initial adjustments >	Setpoint
	Fire >	Ventilation
		Fire damper
	Communication >	Internet
		Modbus
		Lon
		BACnet
	Language>	Set
	Settings >	Retrieve
		Air handling unit
	External rotary selector >	Configuration

6.2 Regulation methods

EXcon is able to control the unit in various ways. The two primary regulation methods are airflow and temperature regulation, which in turn can be divided into several types.
See the following sections for a more detailed description of the regulation methods.

6.2.1 Airflow regulation CX3000

CX3010-20

Method	Description
Constant pressure (VAV)	The pressure is held constant in the supply and extract air ducts. **NB! Requires external pressure sensors**
Constant VOC/CO_2	The CO_2 content in the air is held constant at the set CO_2 volume (ppm). A minimum and maximum airflow are defined. A difference between the supply and extract airflow may be incorporated. Note! Requires external CO_2 sensor.
Constant motor speed	The speed of the fans is controlled individually according to the entered setpoints.

CX3030-40-50-60

Method	Description
Constant pressure (VAV)	The pressure is held constant in the supply and extract air ducts. **NB! Requires external pressure sensors**
Constant airflow	The supply and extract airflows are held constant at the set value.
Constant VOC/CO_2	The CO_2 content in the air is held constant at the set CO_2 volume (ppm). A minimum and maximum airflow are defined. A difference between the supply and extract airflow may be incorporated. Note! Requires external CO_2 sensor.
Constant motor speed	The speed of the fans is controlled individually according to the entered setpoints.

6.2.2 Temperature regulation

Method	Description
Constant supply air temperature	The supply air temperature is held constant at the set value.
Constant extract air temperature	The extract air temperature is held constant at the set value. Minimum and maximum supply air temperatures can be set.
Constant room temperature	The room air temperature is held constant at the set value. Minimum and maximum supply air temperatures can be set. **NB!** Requires external room sensor
Constant extract/supply air difference	The supply air temperature is held constantly lower than the extract air temperature at the set temperature difference. Min. and maxi. supply air temperature can be configured.

6.3 Operation

6.3.1 Setpoint - Fan control

This parameter in the **Operations** menu indicates the setpoints for regulating the fans. The online user interface shows the current operation and alarm status together with the settings. The current values for airflows generated by the unit are also shown.

6.3.2 Constant pressure

- Supply air and exhaust air fans are regulated according to the pressure measured in the respective supply and extract air duct.
- The unit must be fitted with two separate PTH pressure transmitters, one in the supply air duct and one in the extract air duct.

For fan control 'Constant pressure':

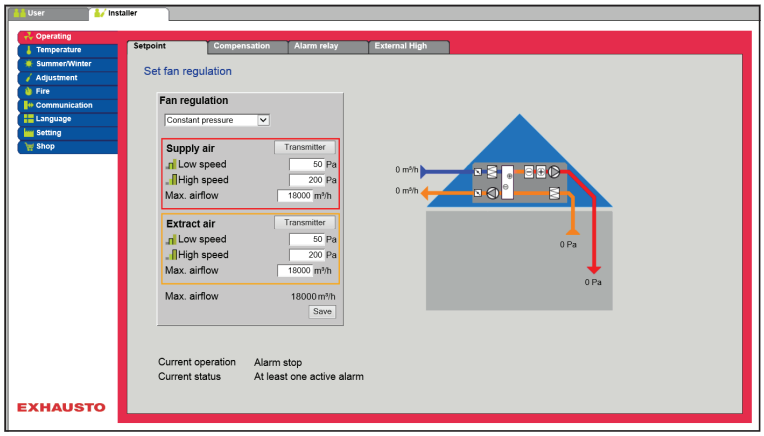
Max. airflow

The airflow has a higher priority than the pressure/speed setpoint entered, i.e. if the desired pressure setpoint for pressure is not achieved before the maximum set speed or airflow is reached, it is the airflow which limits further increase of the fan speed.

NB! The max. airflow cannot be set to a higher value than the max. unit airflow as set under: **Factory > Settings > Supply air/Extract air**.

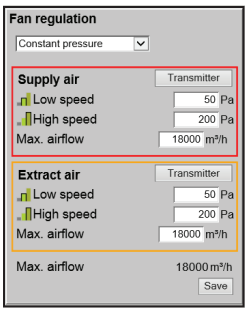
Minimum airflow

The minimum airflow is permanently set in the EXcon control system to 15% of the maximum airflow, and the minimum airflow has higher priority than the configured setpoint for pressure/speed.



Prerequisite for set-up

- EXcon Modules > Configure > Settings: **Normal** must be selected.



Fan regulation (supply/extract air):

- Low speed: Set the desired setpoint for duct pressure at Low speed
- High speed: Set the desired setpoint for duct pressure at high speed
- Max. airflow: Set the maximum airflow

Press **Save** to save the settings.

6.3.3 Constant airflow only CX3030-60

- Supply air and exhaust air fans are regulated according to the airflow measured in the respective supply and extract air duct.
- Airflows are measured/estimated by measuring the difference between the static and dynamic pressure over the fans.
- The difference between the static and dynamic pressure is measured with pressure transmitters via either EXcon FanIO or PTH.

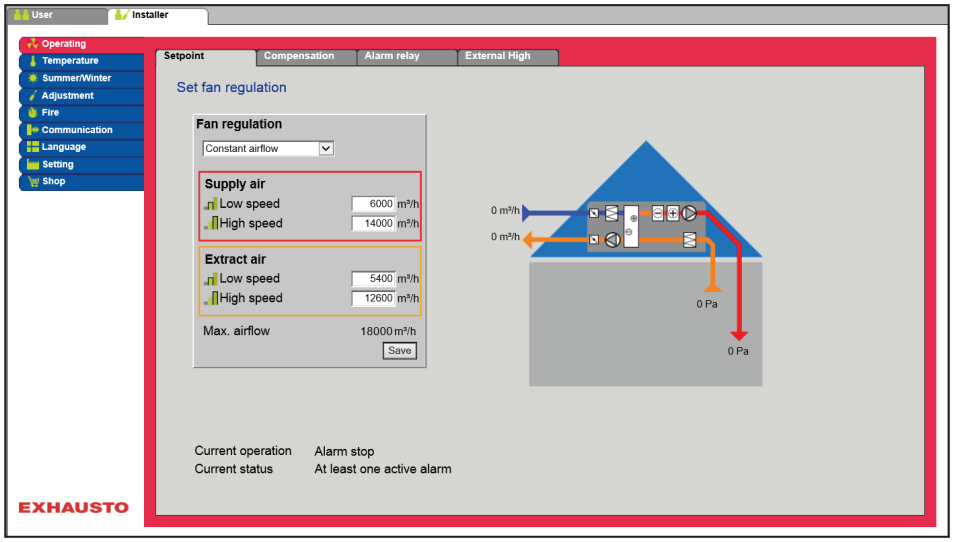
For fan control 'Constant airflow':

Max. airflow

Maximum airflow for the unit is set under: **Factory > Settings > Supply air/Extract air**.

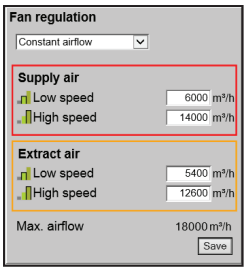
Minimum airflow

Minimum airflow is permanently set in the EXcon control system as 15% of the maximum airflow. Setpoints for **Low** and **High** can thus never be set to less than this value.



Prerequisite for set-up

- EXcon Modules > Configure > Settings: **Normal** must be selected.



Fan regulation (supply/extract air):

- Low speed: Enter the desired setpoint for flow at low speed
- High speed: Enter the desired setpoint for flow at high speed

Press **Save** to save the settings.

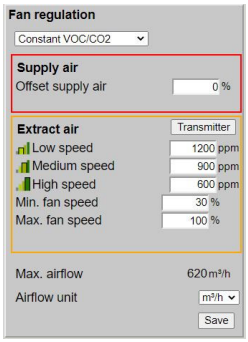
6.3.4 Constant VOC/CO2 without airflow measurement CX3010-20

Constant VOC/CO2 without airflow measurement

VOC/CO2 regulation

The room's VOC/CO2 content is regulated by adjusting the fans' speed.

- In case of increasing VOC/CO2 in the room, increase the speed of the fans/air exchange towards max. set speed (%).
- When VOC/CO2 in the room decreases, the fan speed / air exchange decreases towards min. set speed (%).



Fan regulation Constant VOC/CO2

- The function is used to maintain a constant/maximum VOC/CO2 level in a room or extract air duct.
- At a VOC/CO2 level above the set value in the setpoint, the extraction will increase by modulation to the maximum speed.
- At a VOC/CO2 level below the set value in the setpoint, the extraction will be reduced by modulation to the minimum speed.
- The supply air fan speed follows the exhaust air fan speed with a set offset.

Supply air

- Set the desired offset for the supply air fan speed.

Extract air

Extract air speed	Choose the setpoint
Low speed	Set the desired setpoint for ppm level in extraction at 'Low' speed
Medium speed	Set the desired setpoint for ppm level in extraction at 'Medium' speed
High speed	Set the desired setpoint for ppm level in extraction at 'High' speed
Min. Speed	Setpoint for minimum speed on extract air fan [Set. range: 10% -> 50%]
Max. speed	Setpoint for maximum speed on exhaust air fan [Setting range: 10% -> 100%]

6.3.5 Constant VOC/CO_2 CX3030-60

- The unit must be configured with a VOC/CO_2sensor.
- The VOC/CO_2 sensor is either a room sensor or duct sensor (located in the extract air duct).

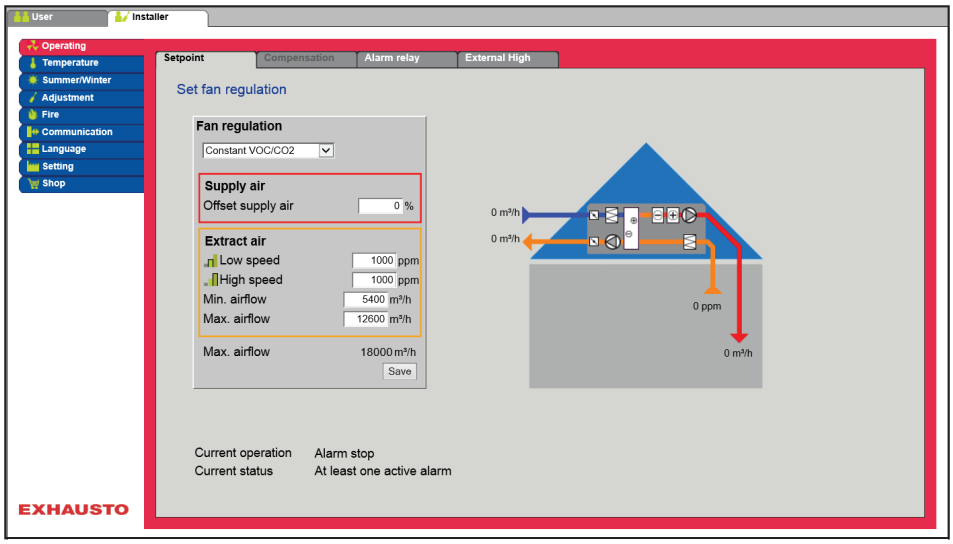
For 'Constant VOC/CO_2' the following applies:

Minimum airflow

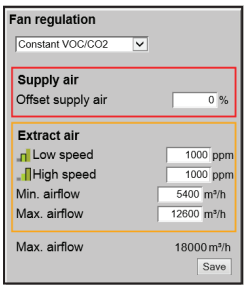
NB! The minimum airflow cannot be set to a lower value than 15% of the maximum airflow.

Max. airflow

NB! The maximum airflow may not be set at a higher value than the maximum airflow as set under: Factory > Settings > Extract air.



- The function is used to maintain a constant/maximum VOC/CO_2 level in a room or extract air duct.
- At a VOC/CO_2 level above the setpoint value, the extract air will be increased by modulation of the maximum airflow.
- At a VOC/CO_2 level below the setpoint value, the extract air will be decreased by modulation to the minimum airflow.
- The supply airflow follows the extract airflow with a set offset (+/- %).



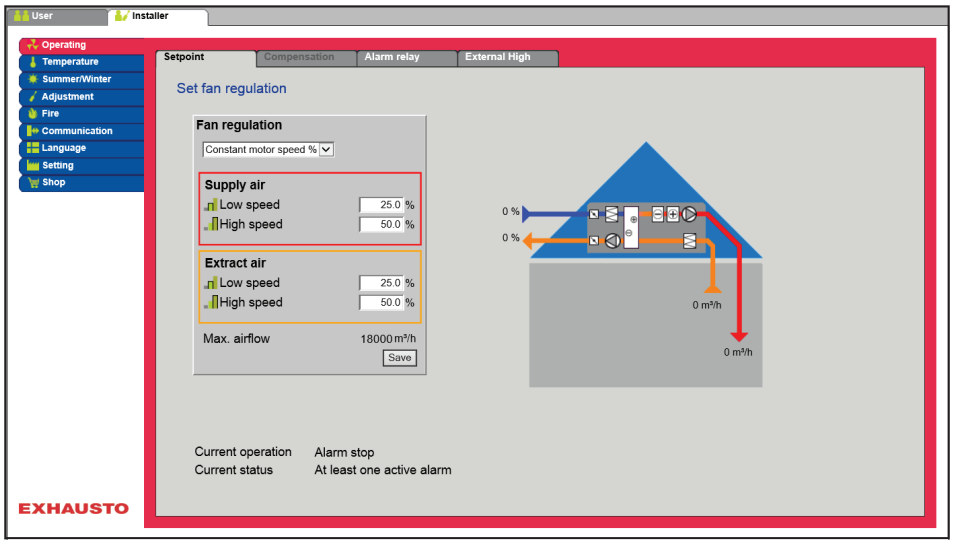
Fan regulation (supply/extract air):

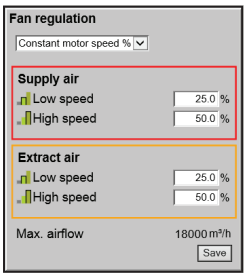
- Offset supply air: Supply air follows the extract airflow, with an offset at a set value
- Low speed: Set the desired setpoint for duct pressure at Low speed
- High speed: Set the desired setpoint for duct pressure at high speed
- Min. airflow: Set the minimum airflow
- Max. airflow: Set the maximum airflow

Press **Save** to save the settings.

6.3.6 Constant motor speed %

- The speed of the fans is controlled individually according to the entered setpoints for percentage speed.





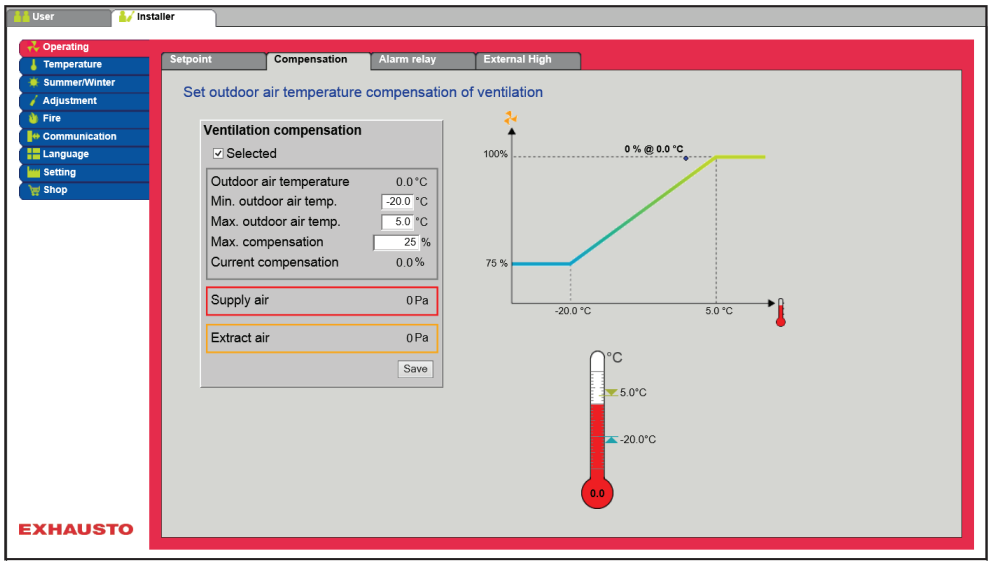
Fan regulation (supply/extract air):

- Low speed: Set the desired setpoint for fan speed in % in case of at low speed
- Medium speed: Set the desired setpoint for fan speed in % at medium speed
- High speed: Set the desired setpoint for fan speed in % in case of at high speed

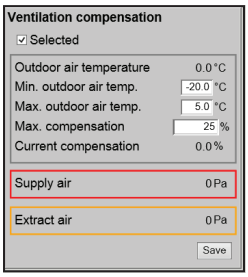
Press **Save** to save the settings.

6.3.7 Compensation

This parameter in the **Operation** menu allows compensation for fan speed depending on the outdoor temperature.



- Where outdoor air temperature is falling, the fan speed may be lowered in accordance with the entered curve.
- The entered setpoint will be offset according to the entered compensated setpoint when the outdoor air temperature is within the set compensation curve.
- The outdoor air temperature is measured with an outdoor air temperature sensor or a sensor in the outdoor air intake.



Ventilation compensation:

- Min. outdoor air temperature: Set the outdoor temperature for full compensation
- Max. outdoor air temperature Set the outdoor temperature for start compensation setpoint for duct pressure at high speed
- Max. compensation: Maximum setpoint reduction as a % at minimum outdoor air temperature

Press **Save** to save the settings.

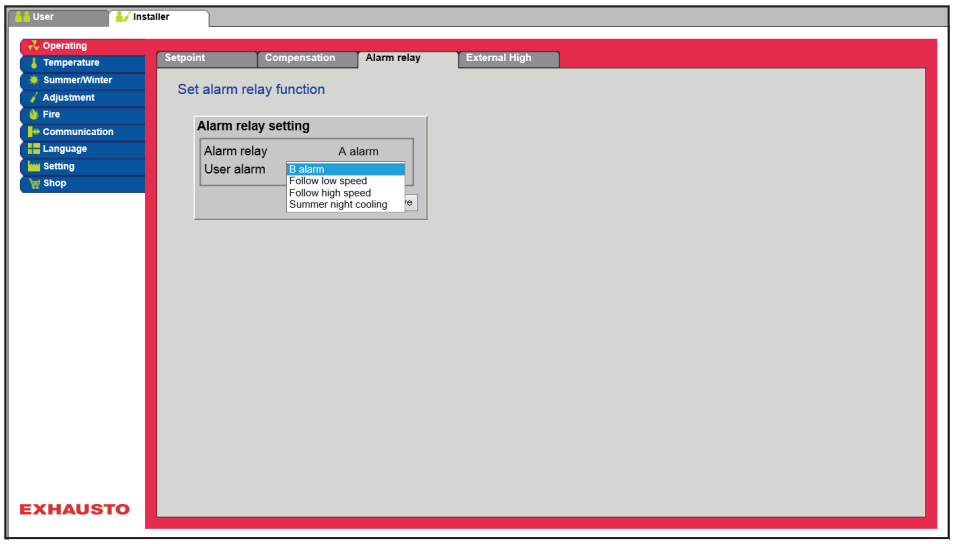
6.3.8 Alarm relay

The CX3000 has two digital outputs that can be configured for different functions. Customer DO 2 (terminals 15–16) is default set to An alarms
This can also be configured for B alarms, where with this parameter in **Operation you** can select the desired function for B alarm.

Alarm relay functions

In addition to alarms, the alarm relay function can also be used to:

- follow low speed.
- follow medium speed.
- follow high speed.
- follow summer night's cooling.



Alarm relay setting

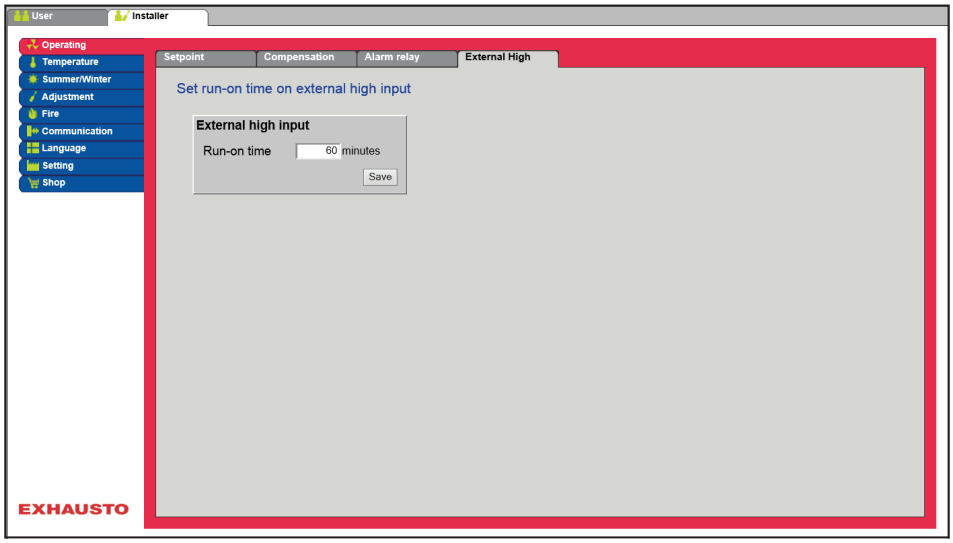
B Alarm	The digital output configured for the B alarm relay follows B alarms.
Follow low speed	The digital output configured for the B alarm relay follows low speed. The A alarm relay is activated by both A alarms and B alarms.
Follow high speed	The digital output configured for the B alarm relay follows high speed. The A alarm relay is activated by both A alarms and B alarms.
Summer night cooling	The digital output configured for the B alarm relay follows summer night cooling. The A alarm relay is activated by both A alarms and B alarms.

Press **Save** to save the settings.

6.3.9 External High

With this parameter in the **Operation** menu, It is possible to increase the fan speed temporarily for a limited period of time.

- If the unit is stopped, momentary activation of the digital input will start the unit at high speed for the set time.
- If the unit is operating at low speed, it will change to high speed for the set period of time.
- If the unit is already at high speed in relation to the set weekly program, it will remain at high speed.
- A alarms always have a higher priority.



External high input

- Run-on time: Set the time that the unit is to run at high speed.

Press **Save** to save the settings.

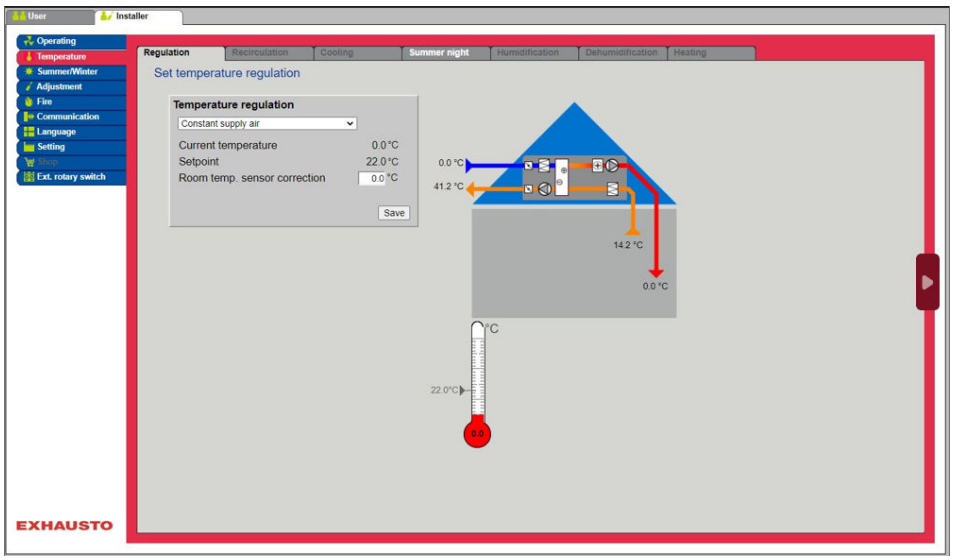
6.4 Temperature

6.4.1 Regulation

This parameter in the **Temperature** menu can be used for controlling and regulating the temperature. The temperature can be set to perform regulation according to the following operating modes:

- Constant supply air
- Constant extract air
- Constant room
- Constant supply air/extract air difference

Constant supply air



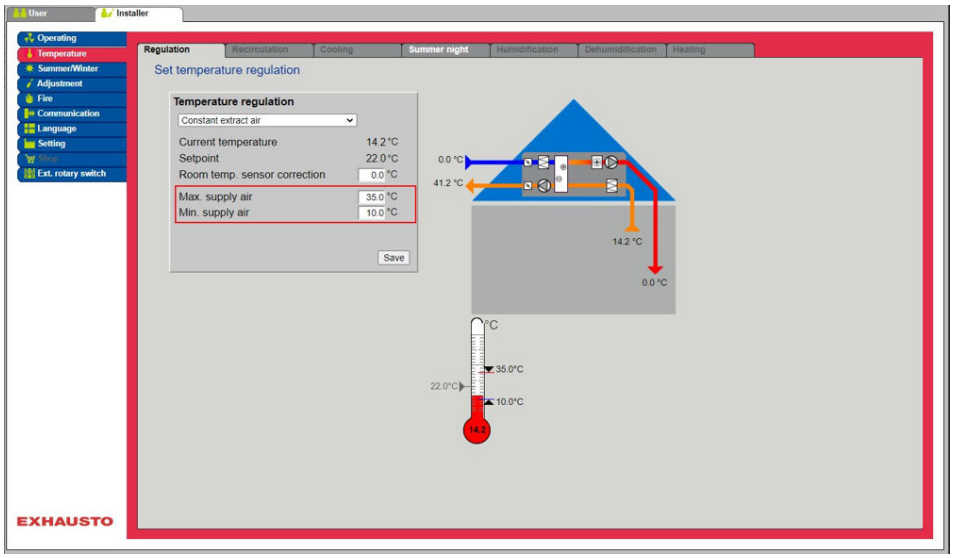
- Temperature is regulated according to constant supply air temperature, as measured by the sensor in the supply air duct.
- The setpoint for supply air temperature is set under:**User > Temperature > Setpoint.**

Temperature regulation:

- Room temperature sensor correction: Set correction value for the room temperature sensor. Settings range +/-3°C

Click on **Save** to save the settings.

Constant extract air



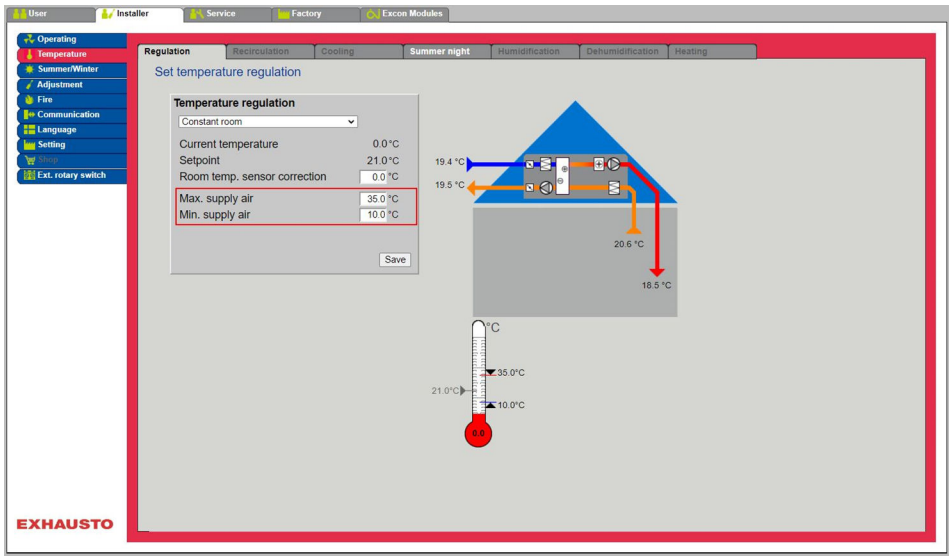
- Temperature is regulated according to constant extract air temperature, as measured by the sensor in the extract air duct.
- The setpoint for supply air temperature is set under:**User > Temperature > Setpoint.**

Temperature regulation:

- Room temperature sensor correction: Set correction value for the room temperature sensor. Settings range +/-3°C
- Max. supply air: Set max. permitted temperature for supply air
- Min. supply air: Set min. permitted temperature for supply air

Click on **Save** to save the settings.

Constant room



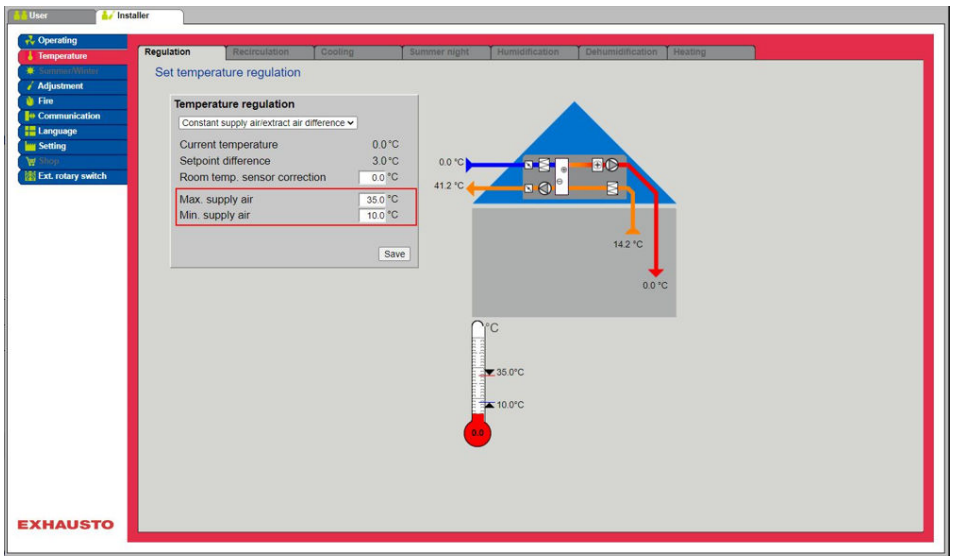
- Temperature is regulated according to constant room temperature, as measured by the sensor in the room.
- The setpoint for supply air temperature is set under:**User > Temperature > Setpoint.**

Temperature regulation:

- Room temperature sensor correction: Set correction value for the room temperature sensor. Settings range +/-3°C
- Max. supply air: Set max. permitted temperature for supply air
- Min. supply air: Set min. permitted temperature for supply air

Click on **Save** to save the settings.

Constant supply/extract difference



- The temperature is regulated according to the difference between the supply air temperature and the extract air temperature.

Temperature regulation:

- Room temperature sensor correction: Set correction value for the room temperature sensor. Settings range +/-3°C
- Max. supply air: Set max. permitted temperature for supply air
- Min. supply air: Set min. permitted temperature for supply air

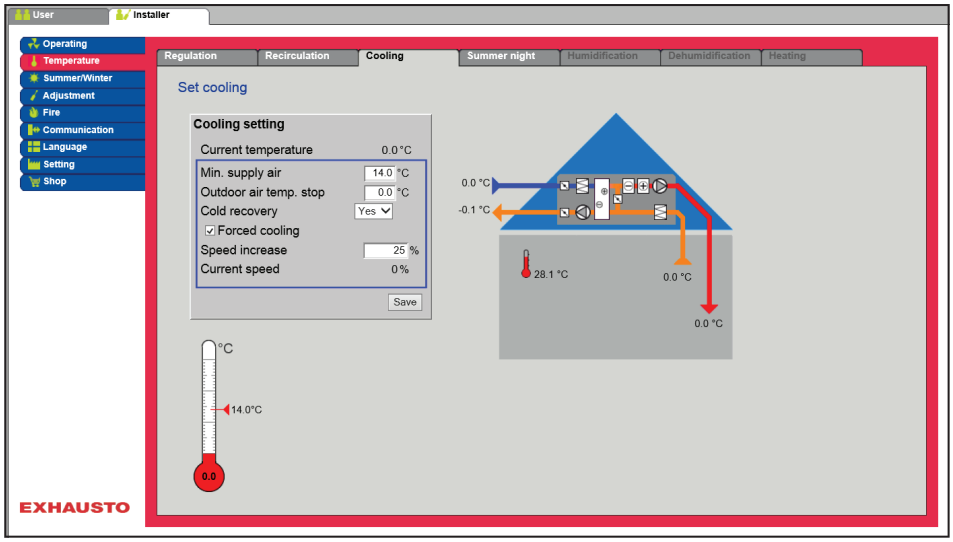
Press **Save** to save the settings.

External outdoor air temperature sensor

The external outside air temperature sensor is used in all functions where the outside air temperature is included in the EXcon control system and can replace the channel mounted outside air temperature sensor.
The external outside air temperature must be configured. The external outdoor temperature sensor must be configured and activated via SmartLink.
To achieve the best measuring results, the sensor should be mounted on a north-facing wall.

6.4.2 Cooling

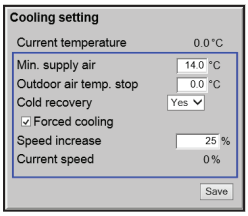
With this parameter in the **Temperature** menu, it is ensured that active cooling is only used under certain pre-set conditions.



Pre-conditions for setting

One of the following cooling types must be installed and configured:

- **Water cooling**
- **Combi coil (change-over)**



Cooling setting:

- **Minimum supply air** : Setpoint for the minimum supply air temperature when cooling is active.
- **Outdoor temperature stop**: When outdoor temperature is below the entered setpoint, cooling stops.
- **Cooling recovery** Select Yes/No
- **Forced cooling**: When this option is selected, the airflow will be increased when cooling is active.
- **Speed increase**: The fan speed will increase by the entered percentage when cooling is active. Max. airflow has higher priority.

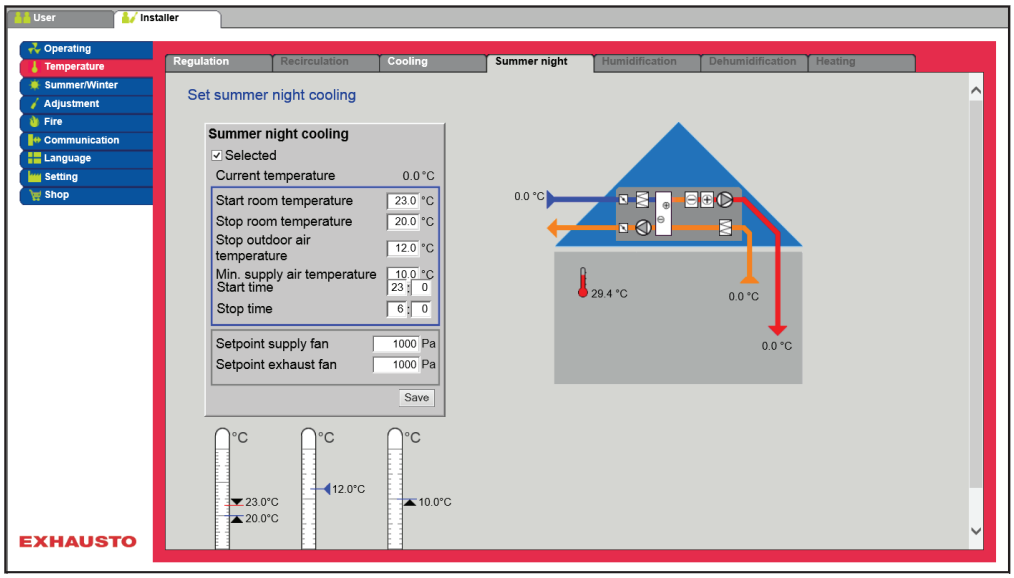
Press **Save** to save the settings.

6.4.3 Summer night (Free cooling)

With this parameter in the **Temperature** menu, a room may be cooled down with outdoor air without use of active cooling.

The function is only active when the weekly program has been selected under **User** and the weekly program must be in the **Stop** status for **summer night cooling** to be activated.
The **Summer night** function may only be selected if an outdoor air temperature sensor is mounted and configured and for the following temperature regulation modes:

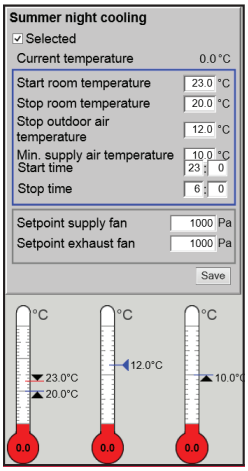
- Constant supply air
- Constant extract air
- Constant room



Pre-conditions

Summer night cooling is activated only if all the following settings are met

- If there has been no heat from the heating coil for more than 60 minutes in total over the latest time period between 12.00 and 23.59
- Outdoor air temperature is above the set value **Outdoor stop temperature**
- Room temperature is above the set value **Start room temperature** .
- Outdoor air temperature must at least be >2 °C lower than the room temperature.



Summer night cooling:

- Start room temperature: Summer night cooling starts at a higher room temperature than the set value **Start room temperature**
- Stop room temperature: Summer night cooling stops at a lower room temperature than the set value **Stop room temperature**
- Stop outdoor air temperature: Summer night cooling stops at a lower outdoor air temperature than **Outdoor stop temperature**
- Min. supply air: Set the minimum temperature of the supply air when summer night cooling is active

  The heat exchanger is used to ensure that minimum supply air can be maintained.
- Start time: Set the earliest time that summer night cooling may start. **Settings range: Hours 20.00 – 02.00**
- Stop time: Set the latest time that summer night cooling may stop. **Settings range: Hours 03.00 – 08.00**
- Setpoint supply air fan: Set the setpoint for supply air fan during summer night cooling
- Setpoint extract air fan: Set the setpoint for the extract air fan during summer night cooling

Press **Save** to save the settings.

Summer night cooling with temperature sensor

When unit is configured with a room temperature sensor, it will continuously monitor the room temperature and start the unit as needed within the set **Start/Stop time**.

Summer night cooling without temperature sensor

If the unit is not configured with a room sensor, but only with a temperature sensor for extract air, the DEX unit will start up at the set **Start time.** The air handling unit will be in operation for 10 minutes when the current room/extract air temperature is measured.

If the conditions for summer night cooling are satisfied, the unit will remain in operation until the stop conditions are satisfied.

If the conditions for summer night cooling are not satisfied, the unit will stop after 10 minutes of operation. This start up is only done once, and occurs at the set **Start time**.

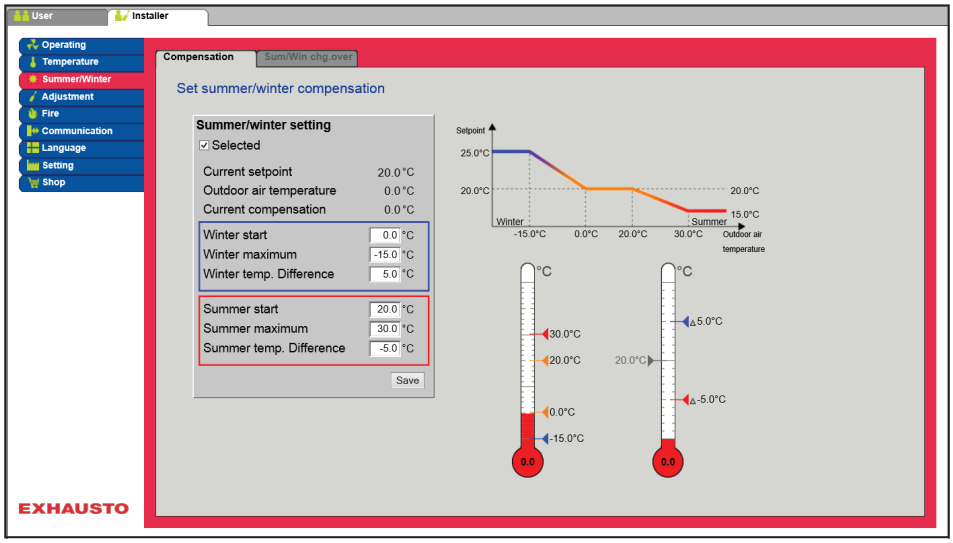
6.5 Summer/Winter

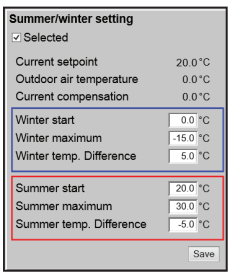
6.5.1 Compensation

With this parameter in the **Summer/winter** menu, it is possible for the selected temperature setpoint for supply air to be offset in relation to the outdoor temperature in summer and/or winter.

The function **Compensation** may only be selected with the following temperature regulation modes:

- Constant supply air
- Constant extract air
- Constant room





Summer/winter setting:

- **Summer/winter setting:** Select whether compensation is to be active by entering a tick.
- **Winter start**: Set the outdoor air temperature for when the winter compensation must begin.
- **Winter maximum**: Set the outdoor air temperature for when the winter compensation must be at maximum.
- **Winter temp. difference**: Set the number of degrees the setpoint temperature for supply air is increased in case of maximum winter compensation.
- **Summer start :** Set the outdoor air temperature for when the summer compensation must begin.
- **Summer maximum :** Set the outdoor air temperature for when the summer compensation must be at maximum.

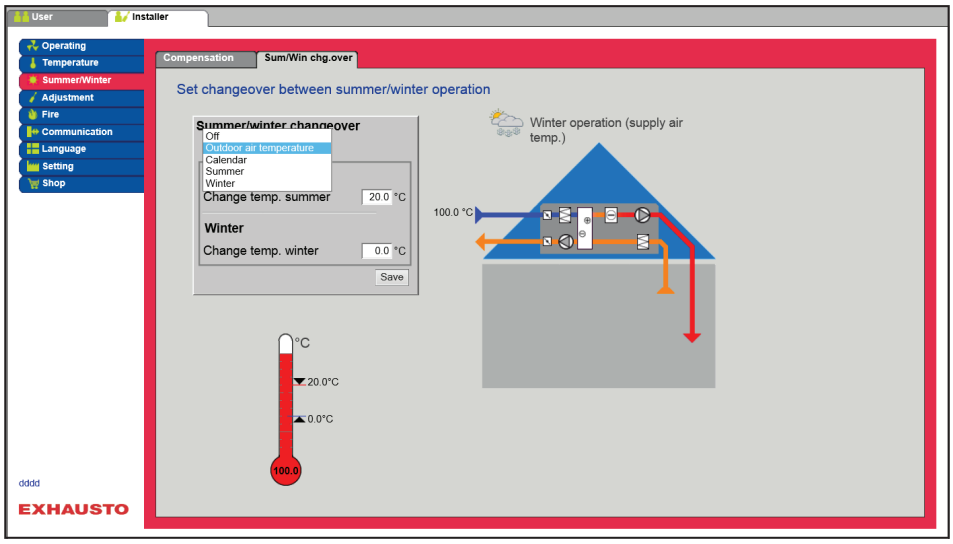
Press **Save** to save the settings.

6.5.2 Summer/winter changeover

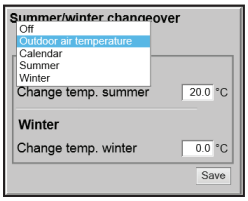
With this parameter in the **Summer/winter** menu, it is possible to select automatic switching between different operating modes depending on the outside air temperature, or according to the calendar.

The function **Summer/winter changeover** may only be selected with the following temperature regulation modes:

- Constant extract air
- Constant room



- The regulation mode switch between constant room temperature during winter operation and constant supply air temperature during summer operation.



Summer/winter changeover:

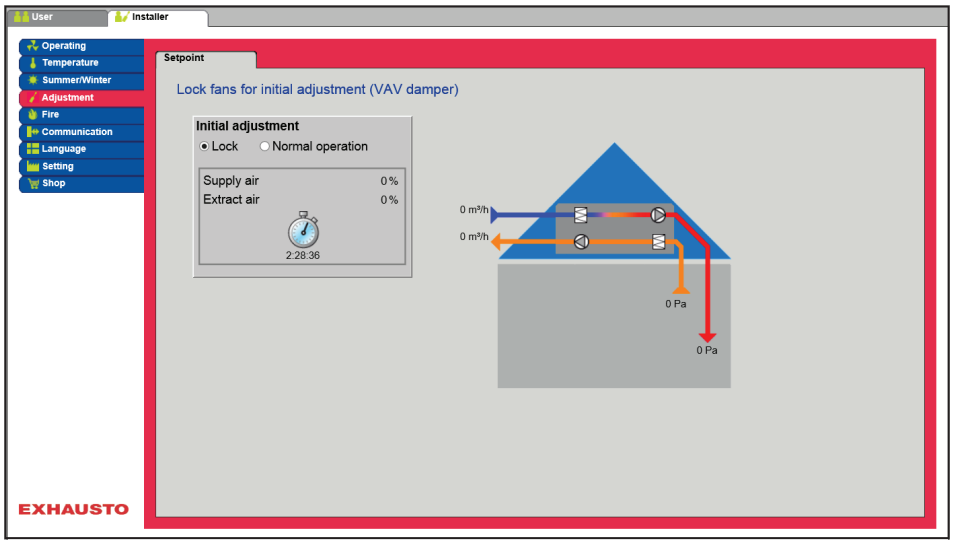
- **From :** No changeover between operating modes
- **Outdoor temperature**: speed: Set the desired setpoint for duct pressure at high speed
  - **Summer:** Regulation mode
  - **Winter:** Regulation mode
- **Calendar**: The regulation form changes between summer and winter operation in accordance with the set dates in the calendar
- **Summer:** Constant summer operation (Room temperature)
- **Winter:** Constant winter operation (Supply air temperature)

Press **Save** to save the settings.

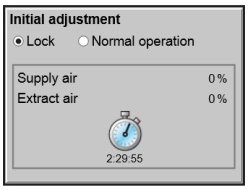
6.6 Initial adjustment

6.6.1 Setpoint

With this parameter in the **Adjustment** menu, it is possible to lock the fan/airflow during regulation work in connection with VAV installations.



- The speed is locked at the values entered under the **Fire** tab.



Initial adjustment:

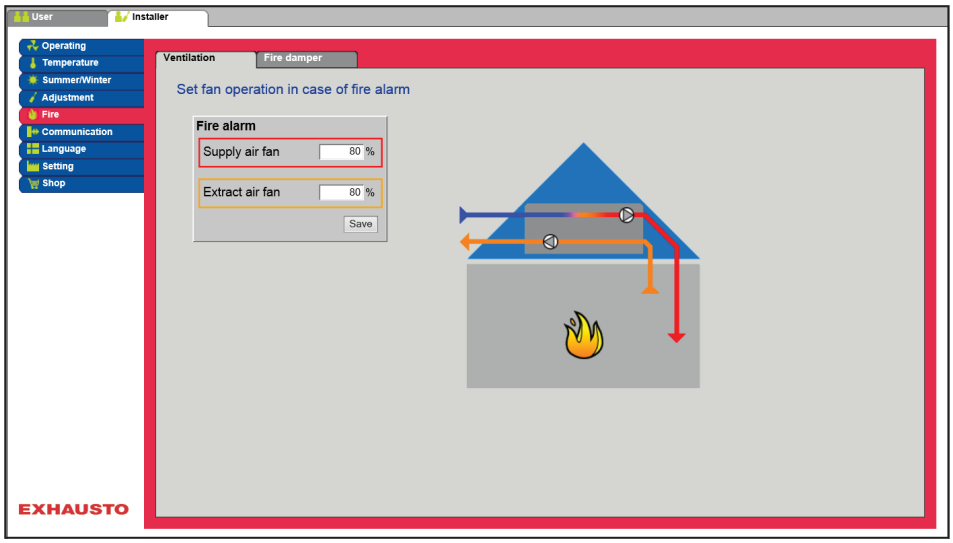
- When selecting **Lock**, time limits can be selected by clicking the clock.
- The time can be adjusted between 2½ and 8 hours.
- The function is automatically cancelled when the time expires and the unit returns to normal operation

Safety: Frost protection of the heating coil is active – ordinary temperature regulation is not active.

6.7 Fire

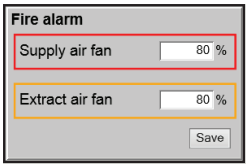
6.7.1 Ventilation

This parameter in the Fire menu is a function used in case of fire alarm, e.g. from a central fire alarm unit (ABA) or smoke detectors.
The function can also be used for smoke evacuation and fireman's stop, if a 3-position selector is installed and configured.



- The function is activated when the digital input **Fire alarm (fire setpoint)** is opened.
- Is default set to digital input Customer DI 1 (terminals 33–34).

- Is default set to digital input Customer DI 1 (terminals 33–34).



Set fan operation in case of fire alarm

- If the setting is 0% for both fans, the dampers towards the outside are closed.
- If just one of the values is >0%, both dampers will be open.
- The fan is forced to run at the set speed when the fire alarm is activated.

Click on **Save** to save the settings.

NB:

The selected operating mode of the fans should meet regulatory standards.

Fire stop (fireman's stop)

The function is used in case of fire e.g. emergency stop or smoke detectors in the outdoor air duct.

Prerequisite for set-up

- EXcon moduler > configure > Digtial in/out: **Firestop** must be configured. Is not factory-configured by default

When the input is activated/opened:

- The unit stops.
- Any overrides and operating modes are cancelled.
- Heat recovery stops.
- Alarm no. 266 is generated: Manual fireman's stop.
- If the unit is in the fire damper test, this test stops.
- HMI and web user interface notify the **Current status**: **Ekstern brandstop**.

6.7.2 Fire damper test

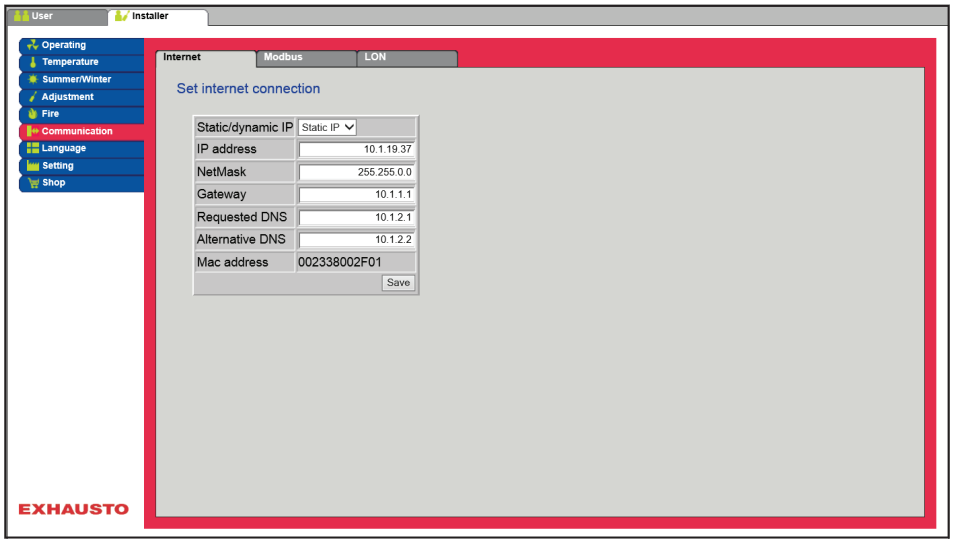
This parameter in the **Fire** menu can be used for automatic function testing of the building's fire dampers.
The function can also be used for smoke evacuation.

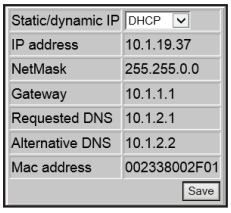
6.8 Communication

Internet - Modbus

The parameters in the Communication menu are used to set the Internet connection and external connection of Modbus or BACnet.

6.8.1 Internet

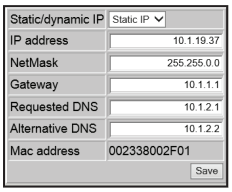




Internet connection DHCP

- Select DHCP. The IP address is allocated by the DHCP server on the local network or from the Internet.

Click on **Save** to save the settings.



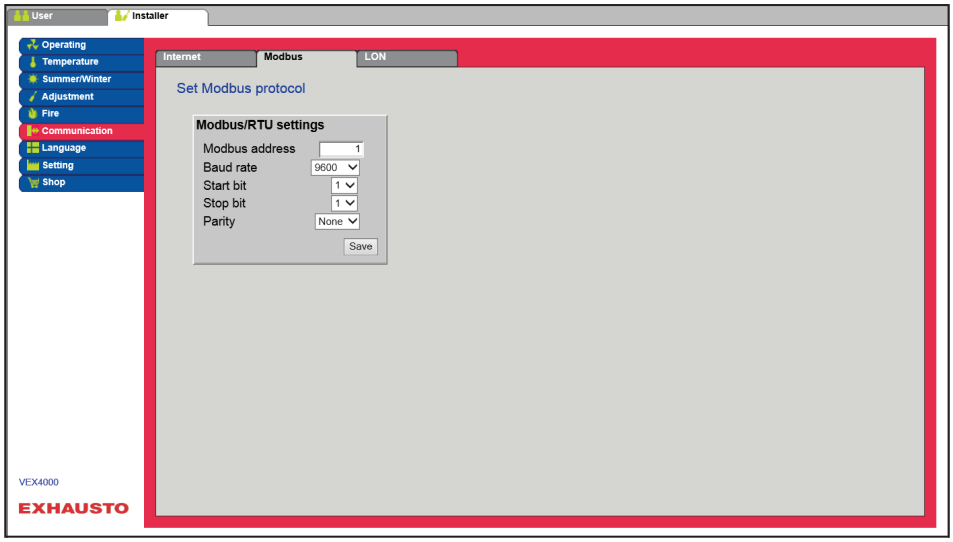
Internet connection Static

The installer will indicate the following communication parameters:

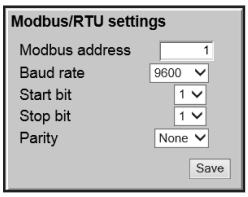
- IP address
- Netmask
- Gateway
- Requested DNS
- Alternative DNS

Click on **Save** to save the settings.

6.8.2 Modbus



- Settings for external Modbus RTU.
- Modbus RTU for external connection of Modbus for e.g. BMS unit.



Set Modbus/RTU

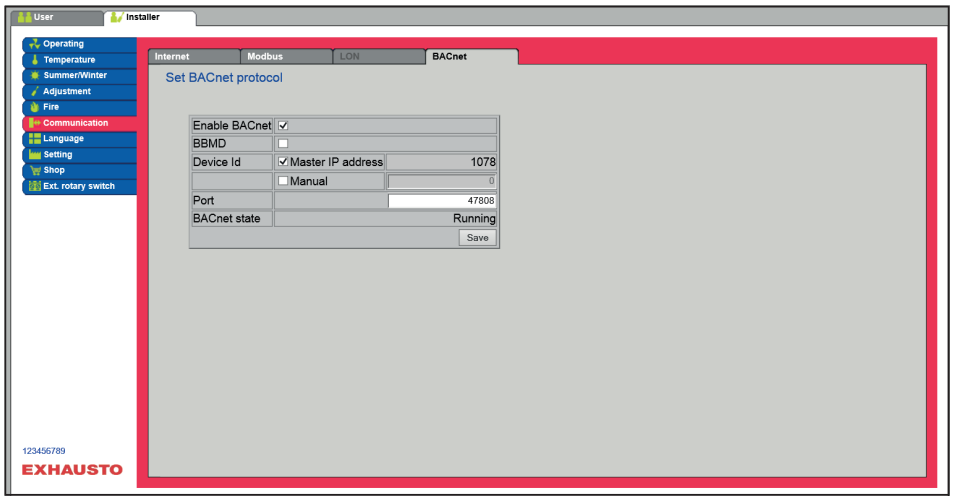
- Modbus address
- Baud rate **(9600, 19200, 38400 baud)**
- Start bit – Settings range: **1**
- Stop bit – Settings range: **1** or **2**
- Parity – Settings range: **None - Even - Odd**

Press **Save** to save the settings.

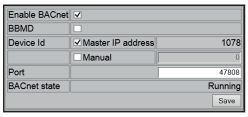
6.8.3 LON

If LON is selected, it is possible to see information about the LON gateway.
For further information please see the LON protocol.

6.8.4 BACnet



- BACnet TCP/IP for external connection of BACnet to e.g. BMS/CTS systems.



Set BACnet TCP/IP

- Activate BACnet (Factory setting is "Active")
- BBMD: Activating and setting BACnet Broadcast Management Device
- Unit ID
  - Master IP address: The BACnet Object Identifier is formed from the Master IP address (see the BACnet protocol)
  - Manual setting of the BACnet Object Identifier
- Port – Setting of the BACnet Server port

Press **Save** to save the settings.

6.9 Language

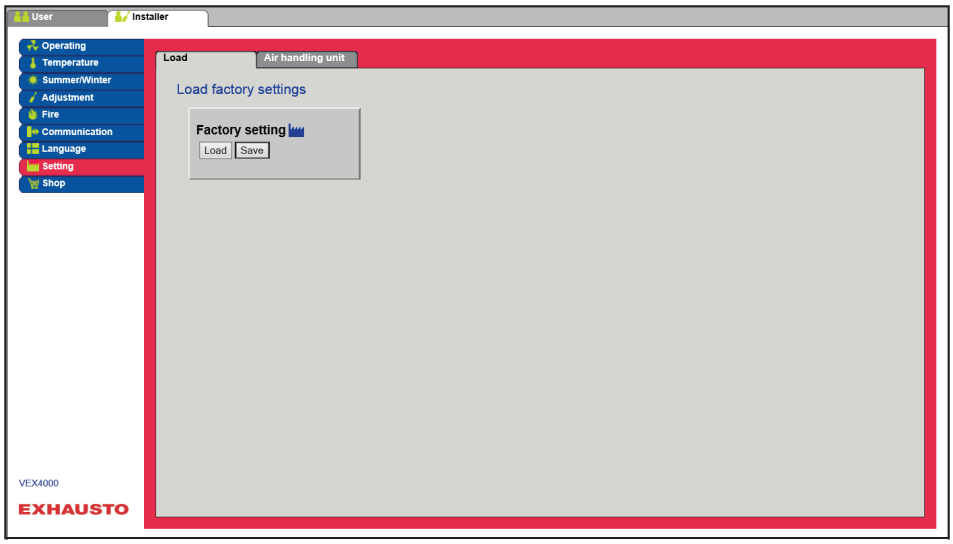
6.9.1 Set

In the **Language** menu the required language for the web user interface is selected.

Select the required language

6.10 Configuration

6.10.1 Download



- The factory settings input with the **Download** button are the EXHAUSTO factory settings saved under **EXcon modules > Factory> Download/Save**.
- The factory settings can also be restored with the hand-held terminal, see the instructions: **EXcon Hand-held terminal - Menus and alarms**.

Download

With the **Retrieve** button, it is possible to download/reload the last saved settings on the control system.

Save

The **Save** button can be used to save the user and installer settings that have been defined in addition to the original EXHAUSTO factory settings.
The settings are saved as a .txt file and can be saved on a hard disk, a server, a network, a USB stick or a standard SD card. The settings are also saved on the Master.

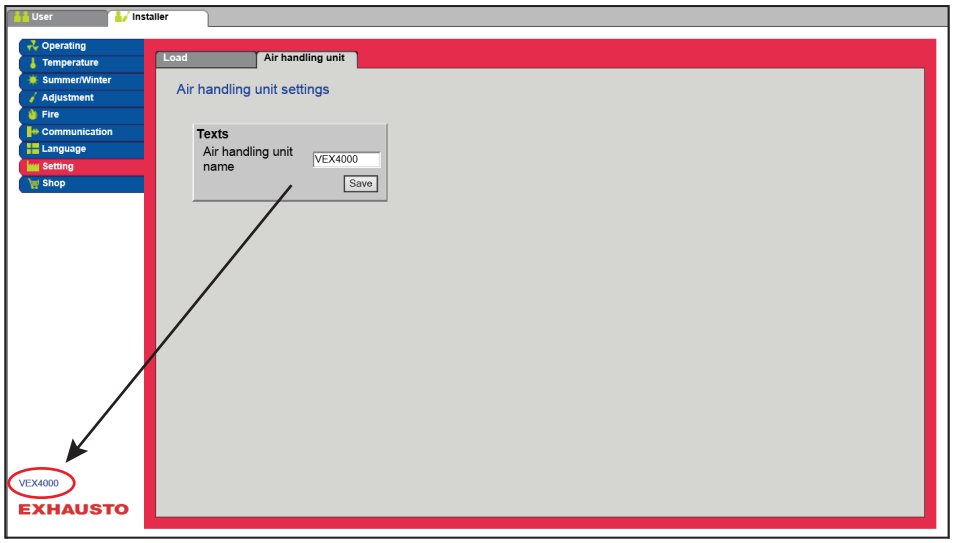
If the settings are saved on a standard SD card, it is possible to copy the saved settings to another Master by using the SD card reader.

To copy settings to a Master with an SD card, it is important that only this settings file is present on the SD card (the user_factory_settings.txt name may be used, but it must be a file with a .txt extension).

⚠ **Only one .txt file may be present on the SD card. If updating programs (xxx.tar.gz and xxx.crc) are also present, these are the files which are copied to EXcon Master.**

6.10.2 Air handling unit

With this parameter in the **Settings** menu, it is possible to name the unit/plant.



- Enter the unit name in the white field and press **Save**.
- The selected name will appear in the bottom left-hand corner and in the login screen.

7. Service settings

7.1 Service parameters

During service on the unit, it is possible to override, adjust and set up components, and see connections/plug connections on the Master, Fan IO and extension modules. The online user interface is the starting point for the parameters described.

NB: There is a difference between user interfaces in terms of which parameters are available and where they are located.

User interface	Menus	Parameters/tab sheets
Service >	Unit>	Status
		Settings
		Fire alarm
	Master >	Master
	Extension >	EXT. 1
		EXT. 2
		EXT. 3
		EXT. 4
		EXT. 5
		EXT. 45 1
		EXT. 45 2
	PTH6202-2	PTH6202-2#1
		PTH6202-2#2
		PTH6202-2#3
		PTH6202-2#4
		PTH6202-2#5
	Alarm log	Alarms
		Alarm log
		Alarm forecast
		Data log
	Zones	Zone 1
	Zones	Zone 2
	Zones	Zone 3
	Zones	Zone 4
	Zones	Settings

7.1.1 IMPORTANT when servicing

Do not open the service doors before the power has been disconnected at the isolation switch (OFF position), and the fans have stopped. The isolation switch is located in the control system box on the unit.

NB:

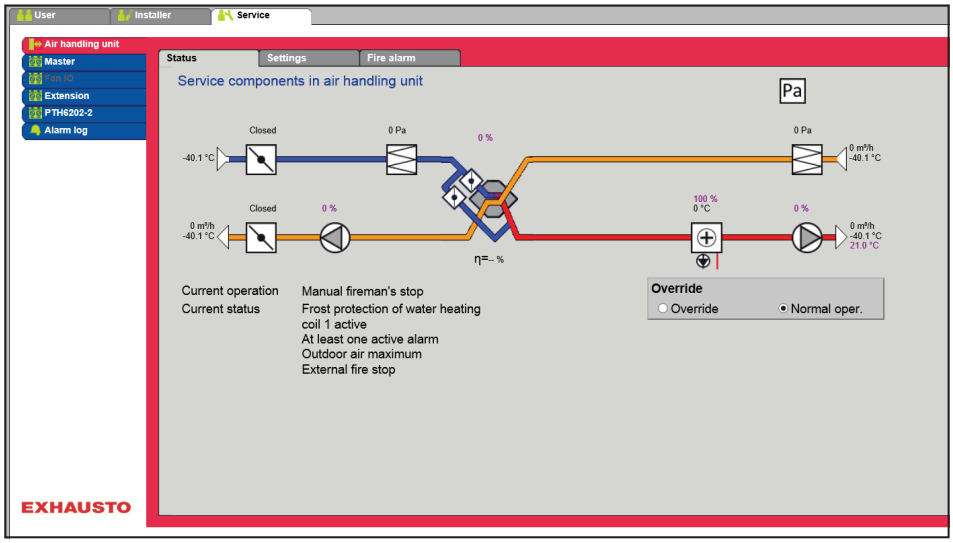
Before opening the doors, ensure that the air handling unit has stopped operating for at least five minutes, because the fans have run-on time.

7.2 Unit

7.2.1 Status

The **Status** parameter in the **Unit** menu provides an overview of components and the unit's current status and operating state. It is also possible to override the components in a given period of time.

- Values with black script are current values.
- Values with purple script are calculated values.



Override

The **Override** function can be used to control the components for a given period of time. This can be used during service and maintenance tasks. For the function to be used, there may not be active alarms on the unit.

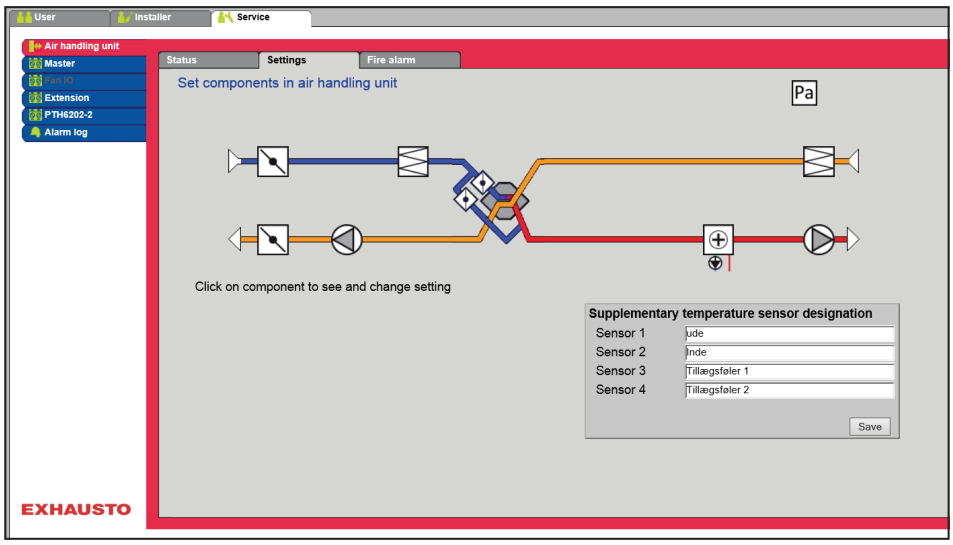
Override:

- Click on the component that must be overridden
- Mark **Override** to change from normal operation.
- Enter the value of the parameter that the component must be overridden with.
- Click on **Override** to activate/save the entered value.
- Click on the clock to set up the period of time for which the override must be active. (The clock begins with a period of time of 1 hour and it is increased with an interval of 1 hour for each click)

Override is terminated automatically when the time expires or by setting the control mode back to **Normal**.

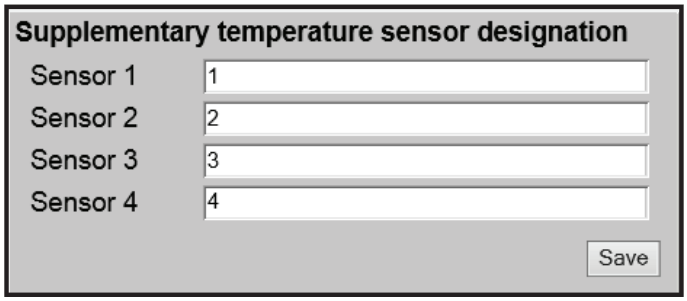
7.2.2 Settings

The **Settings** parameter in the **Unit** menu is used to set the individual components. Click on component to see and change setting.



Naming of additional temperature sensors

The additional sensors can be freely named with text/numbers. The name that is indicated here is also the name that appears on the status side under **Service > Unit > Status** and at the location under which the sensor inputs are configured: **EXcon modules > Configure > Temperature/Pressure.**

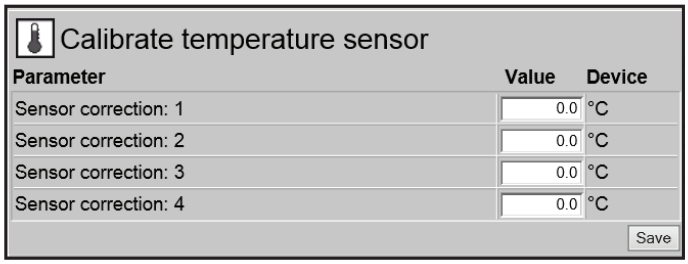


- Name the configured additional temperature sensors.

Press **Save** to save the settings.

Temperature sensor correction

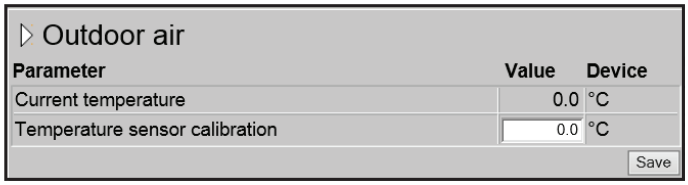
Prerequisite for calibration



- Correct each of the temperature sensors individually. Settings range: -**3.5** to **+3.5 °C**

Press **Save** to save the settings.

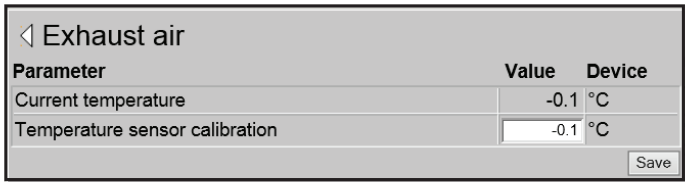
Outdoor air - temperature sensor



- Set calibration value for the temperature sensor. Settings range: -**3.5** to **+3.5 °C**

Press **Save** to save the settings.

Exhaust air - temperature sensor



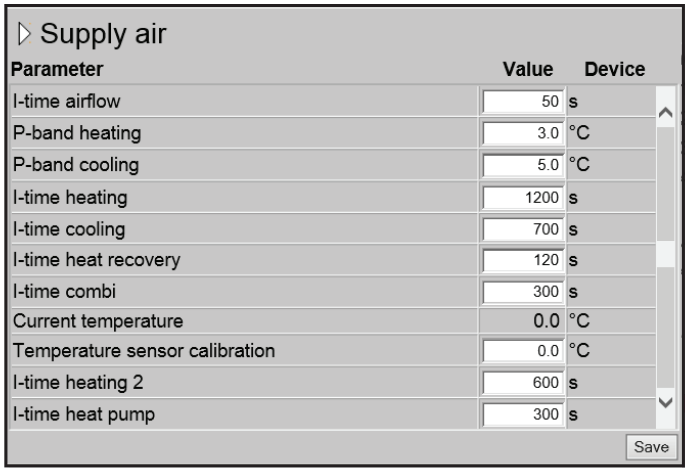
- Set calibration value for the temperature sensor. Settings range: -**3.5** to **+3.5 °C**

Press **Save** to save the settings.

Supply air

The settings below are valid for the following temperature forms of regulation:

- Constant supply air
- Constant supply air/extract air difference



- **I-time airflow:** Set I-time for the regulation of fan/regulator.*
- **P-band heating:** Set P-band for the regulation of heating coil/regulator.
- **P-band cooling:** Set P-band for the regulation of cooling coil/regulator.
- **I-time heating:** Set I-time for the regulation of heating coil/regulator.
- **I-time cooling:** Set I-time for the regulation of cooling coil/regulator.
- **I-time heat recovery:** Set I-time for the regulation of heat exchangers/regulator.
- **I-time combi:** Set I-time for the regulation of combi coil/regulator.
- **Current temperature:** Displays current supply air temperature.
- **Temperature sensor calibration:** Set calibration value for the temperature sensor.
- **I-time heating 2:** Set I-time for the regulation of heating coil 2/regulator.
- **I-time heat pump:** Set I-time for the heat pump/regulator.

Press **Save** to save the settings.

I-time

During reduction of I-time [sec], the regulator reacts with more power.
* In systems with ALC, “I-time airflow” should not be changed. Contact support if necessary.

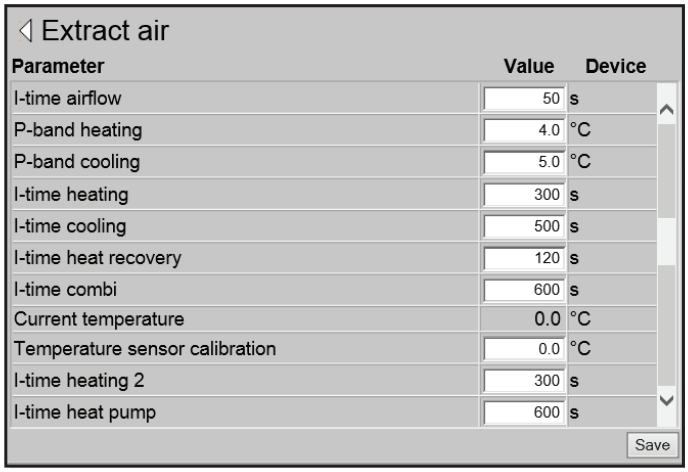
P-band

During reduction of P-band [°C], the regulator reacts more aggressively.

Extract air

The settings below are valid for the following temperature forms of regulation:

- Constant extract air
- Constant room



- **I-time airflow:** Set I-time for the regulation of fan/regulator.*
- **P-band heating:** Set P-band for the regulation of heating coil/regulator.
- **P-band cooling:** Set P-band for the regulation of cooling coil/regulator.
- **I-time heating:** Set I-time for the regulation of heating coil/regulator.
- **I-time cooling:** Set I-time for the regulation of cooling coil/regulator.
- **I-time heat recovery:** Set I-time for the regulation of heat exchangers/regulator.
- **I-time combi:** Set I-time for the regulation of combi coil/regulator.
- **Current temperature:** Displays current supply air temperature.
- **Temperature sensor calibration:** Set calibration value for the temperature sensor.
- **I-time heating 2:** Set I-time for the regulation of heating coil 2/regulator.
- **I-time heat pump:** Set I-time for the heat pump/regulator.

Press **Save** to save the settings.

I-time

During reduction of I-time [sec], the regulator reacts with more power.
* In systems with ALC, “I-time airflow” should not be changed. Contact support if necessary.

P-band

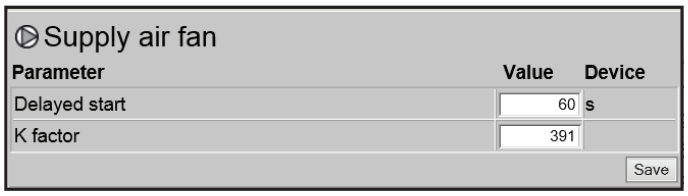
During reduction of P-band [°C], the regulator reacts more aggressively.

7.2.3 Fans

Supply air fan

The settings below are valid for the following motor controllers:

- 0–10 V



- **Delayed start:** Set time delay for start of supply air fan, measured from start-up of exhaust air fan.
- **K factor:** Set K factor as a constant for recalculation from fan pressure to airflow.

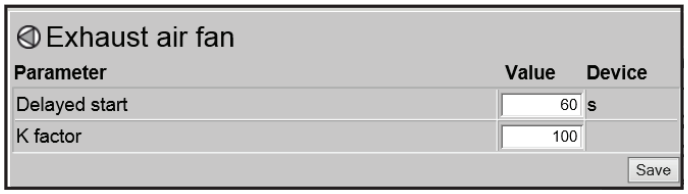
For more information, see the chapter **Determination of airflow** in the Assembly and Installation instructions.

Press **Save** to save the settings.

Exhaust air fan

The settings below are valid for the following motor controllers:

- 0–10 V



- **Delayed start:** Set time delay for start of exhaust air fan, measured from start-up of heat exchanger.
- **K factor:** Set K factor as a constant for recalculation from fan pressure to airflow.

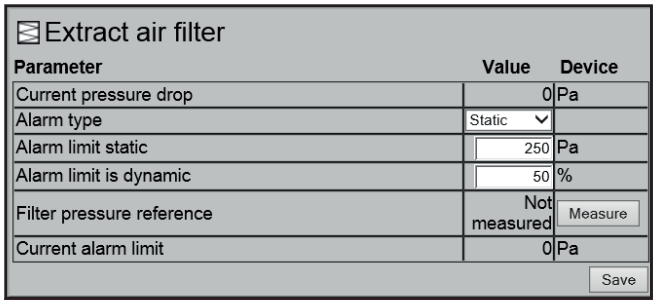
For more information, see the chapter **Determination of airflow** in the Assembly and Installation instructions.

Press **Save** to save the settings.

7.2.4 Filters

Outdoor/extract air filter

The settings below for filter monitoring with pressure transmitters are valid for both extract air and supply air filters, which can be set individually.



- **Alarm type:** Select alarm type
  - **Static**: A filter alarm (B-alarm) is given if the alarm limit that has been set in the **Alarm limit, static** is exceeded.
  - **Dynamic**: A filter alarm (B alarm) is given if the loss of pressure over the filter exceeds the set value in the **alarm limit, dynamic.** This is in relation to the measurement on a new filter.
- **Alarm limit, static:** Set the static alarm limit for allowed pressure loss over the filter. Alarm type must be set to **Static**.
- **Alarm limit dynamic:** Set the dynamic alarm limit for how high the pressure loss may be in relation to the pressure loss over a new filter. Alarm limit must be set to **Dynamic**. See **Dynamic filter monitoring** for further information.
- **Filter pressure reference:** During start-up of a new unit, or after change of filter, a new measurement of the filter must be conducted. See **Dynamic filter monitoring** for further information.

Press **Save** to save the settings.

Dynamic filter monitoring

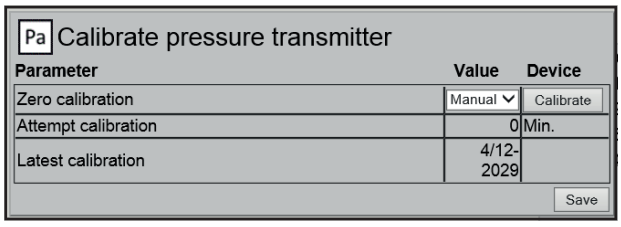
This function can be used if the filter monitoring occurs with pressure transmitters.
The loss of pressure is measured over a completely new filter and thus knows the EXcon control system pressure loss characteristic on a new filter.

- **Filter pressure reference:** Click on **Measure**

Clicking on **Measure** stops all fans. Thereafter, they are started again slowly from 0 > 100%. Simultaneously, during this start-up, the loss of pressure is registered over the filter.

- **Alarm limit dynamic:** Thereafter set up as a percentage-wise higher value in relation to the loss of pressure over a completely new filter. The function is performed on both filters at the same time. Then measurement must also occur one time on one of the filters.

7.2.5 Calibrate pressure transmitter



- **Zero calibration:**
  - **Manual**: Set to **Manual** and activate the Calibrate button. The unit stops temporarily and the zero calibration is performed.
  - **Auto:** Zero calibration is carried out automatically every time the unit is stopped.

Press **Save** to save the settings.

7.2.6 Damper

Setting option **Normal** for damper/damper actuators is selected below: **EXcon Modules > Configure > Settings**
The following settings apply to:

- **Outdoor air damper**
- **Exhaust damper**

Normal

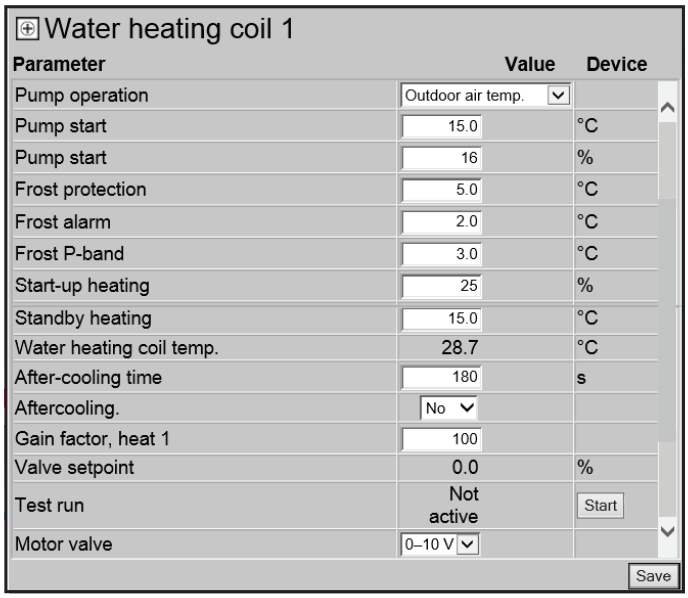
- The damper actuator is **On/Off** controlled.

There is no possibility for settings on the damper actuator.

7.2.7 Heating

Water heating coil 1

The water heating coil is used to increase the temperature of the supply air if the recovered heat does not supply enough.



- **Pump operation:**
  - **Constant:** The pump runs constantly when there is tension on EXcon Master.
  - **Auto:** Pump operates with heating requirement
  - **Outdoor air temperature:** The pump runs when the outside air temperature falls **below** the set value in **Pump start** or when there is a heat requirement.
  - **Heating requirement:** The pump starts when the motor valve is opened more than the set value.

Pump motioning: If the pump has not been started for the last 24 hours, it will become motioned in 1 minute regardless of the heating requirement. This is to combat the pump getting stuck.

- **Pump start:** Set temperature for the pump to start. The pump starts at outdoor air temperatures below the set value. During pump operation, **Outdoor air temperature** must be selected.
- **Pump start:** Set values for the pump to start. The pump starts when the motor valve is opened more than the set percentage rate. During pump operation, **Heating requirement** must be selected.
- **Frost protection:** Set the temperature on return water from the heating coil where the motor valve must be 100% open. Opening of the motor valve begins when the temperature comes below the set value +**Frost P-band**.
- **Frost alarm:** Sets at which temperature a frost alarm must be given. Lower temperatures on return water from the heating coil than set value trigger the frost alarm.
- **Frost P band:** Set the temperature on the P band. Frost protection of the heating coil starts when the temperature falls below the set value + the set value in the parameter **Frost protection**.
- **Start-up heating:** Set the value for opening the motor valve during the start-up sequence. This overriding of the motor valve ceases when the start-up sequence is completed and the supply air fan has reached its setpoint for airflow.
- **Standby heating:** Set the minimum temperature for return water from the heating coil during standby. During standby/stop of the unit, the motor valve will ensure that the temperature does not reach below the set value.
- **Aftercooling time:** Set the aftercooling time of the heating coil.

In order to remove excess heat and thus avoid overheating of the heating coil, the fans continue to run in the set time (aftercooling time), after the heating coil has been disconnected.

- **Aftercooling:** Select whether aftercooling and thereby a possibility for set up of aftercooling time should be active. Yes/No.
- **Amplification factor heating 1:** Set the heating coil's gain factor. This factor strengthens the effect of the regulator, when it either increases or reduces the heat. When the value is 100, the factor is neutral.
- **Valve setpoint:** Displays the current valve position from 0 to 100%.
- **Test sequence:** Press **Start** to begin the test sequence of the valve motor. (Only applicable to the Belimo modbus valve motor).
- **Motor valve:** Set the motor valve's regulatory range. Always select 2-10V

Press **Save** to save the settings.

Safety function

A return sensor is always connected to a water heating coil on the heating coil's outlet pipe in order to protect the heating coil from frost. When the temperature nears the set setpoint/minimum temperature for frost protection, the motorvalve opens so that the heat increases. If maximum heat input is not enough to maintain the minimum temperature for frost protection, a frost alarm is sounded on the heating coil and the valves stop.

7.2.8 Electric pre-heating coil CX3010-20

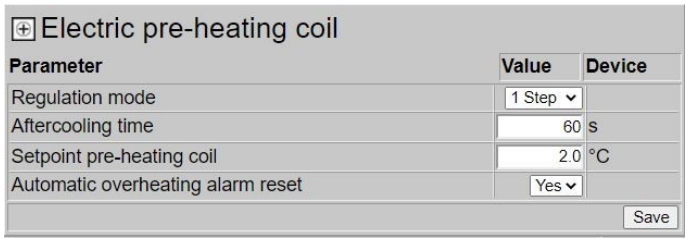
Monitoring of the electric heating coil

To protect the electric heating coil against overheating and the consequent fire hazard, the electric heating coil is
secured by 2 different fuse systems.
The following is a description of the two fuse systems.

Monitoring of the electric heating coil against overheating and that the contactor is waiting, i.e. connected even though it has received a cut-out signal. Overheating protection in the electric heating coil
is connected in series with a make contact on the contactor, and the serial connexion is connected to digital
Input "Heating coil fault". 'Electric heating coil – overheating alarm' is triggered if the input is open when electrical heating is connected (superheat*thermostat)*and 'Contactor hanging' is triggered if the input is closed when heating should have been disconnected.
There is no exact minimum airflow, as airflow measurement is not possible.

For this reason, the temperature is monitored by an additional operating thermostat that switches off the PHCE/HCE at temperatures above 60°C, and switches the heat on again when the temperature is reduced to below 45°C.
This thermostat is not part of the electric heating coil's safety system.

- Operation of electric heating coils will not be released as long that this input is not activated if there is no airflow measurement on the unit.



The preheating coil ensures that the temperature before the heat exchanger is maintained at a desired minimum level. The temperature sensor is located in the air flow immediately after the preheating coil.

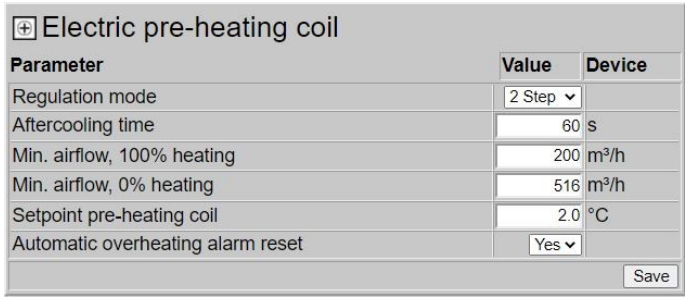
- **Regulation mode:**
  - 0–10 V: Analogue heat regulation is connected to an analogue 0-10V output.
  - Single step: The electric heating coil is controlled with 2-step's On/Off (digital relay output)
  - Two step: The electric heating coil is controlled with a 2-step On/Off (digital relay output)

Aftercooling time: Set the aftercooling time on the heating coil

- **Setpoint preheating coil:** Enter the desired setpoint for the preheating coil.
- **Automatic reset of superheat alarm**: Set whether the B alarm from 70°C superheat thermostat should be reset automatically.

Press Save to save the settings.

7.2.9 Electrical preheating coil CX3030-60



The preheating coil ensures that the temperature before the heat exchanger is maintained at a desired minimum level. The temperature sensor is located in the air flow immediately after the preheating coil.

- **Regulation mode:**
  - 0–10 V: Analogue heat regulation is connected to an analogue 0-10V output.
  - Single step: The electric heating coil is controlled with 2-step's On/Off (digital relay output)
  - Two step: The electric heating coil is controlled with a 2-step On/Off (digital relay output)

Aftercooling time: Set the aftercooling time on the heating coil
When the airflow is reduced or stopped completely, there is a risk of the preheating coil overheating. During the aftercooling period, the heating coil is disconnected completely and the valves continue to run with regards to the set airflow setpoint. The set value indicates the time that is necessary to remove the excess heat from the heating coil.

- **At least airflow, 100% heating:** (only active if the unit is supplied with flow measurement) Set minimum airflow at 100% heating on the heating coil.

Minimum airflow, 0% heating: (Only active if the unit is supplied with flow measurement) Set minimum airflow at 0% heating on the heating coil.

- **Setpoint preheating coil:** Enter the desired setpoint for the preheating coil.
- **Automatic reset of superheat alarm**: Set whether the B alarm from 70°C superheat thermostat should be reset automatically.

Press Save to save the settings.

Monitoring of the electric heating coil

The electric heating coil is protected against overheating using two overheating controls that are placed in the airflow between the heating elements.

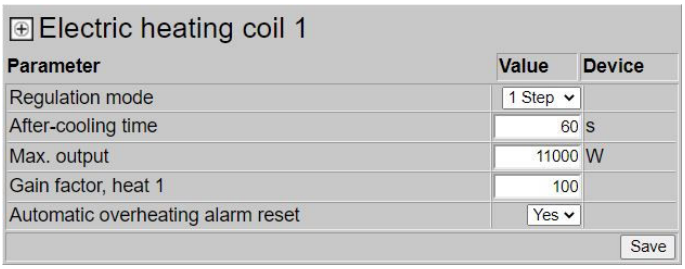
7.2.10 Electric heating coil 1 CX3010-20

Monitoring of the electric heating coil

To protect the electric heating coil against overheating and the consequent fire hazard, the electric heating coil is
secured by 2 different fuse systems.
The following is a description of the two fuse systems.

Monitoring of the electric heating coil against overheating and that the contactor is waiting, i.e. connected even though it has received a cut-out signal. Overheating protection in the electric heating coil
is connected in series with a make contact on the contactor, and the serial connexion is connected to digital
Input “Heating coil fault”. 'Electric heating coil – overheating alarm' is triggered if the input is open when electrical heating is connected (superheat*thermostat)*and 'Contactor hanging' is triggered if the input is closed when heating should have been disconnected.
To ensure that there is air flow through the electric heating coil before power is applied,
an airflow switch/pressure switch connected to a digital input “All Electric heating batteries, airflow OK” is used.

- Operation of electric heating coils will not be released as long that this input is not activated if there is no airflow measurement on the unit.



The electric heating coil is used to increase the temperature of the supply air if the recovered heat does not supply enough.

- **Regulation mode:**
  - 0–10 V: Analogue heat regulation is connected to an analogue 0-10V output.
  - Single step: The electric heating coil is controlled with 2-step’s On/Off (digital relay output)
  - Two step: The electric heating coil is controlled with a 2-step On/Off (digital relay output)

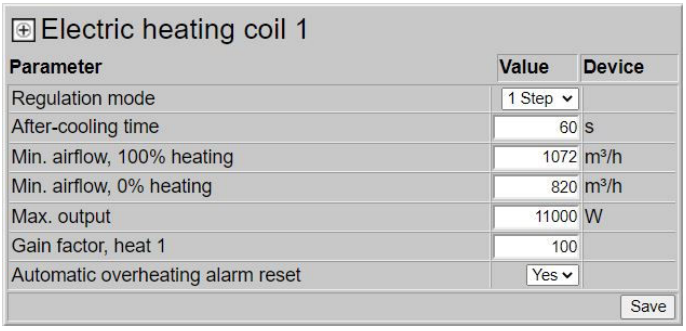
Aftercooling time: Set the aftercooling time on the heating coil
When the airflow is reduced or stopped completely, there is a risk of the heating coil overheating. During the after-cooling period, the heating surface is switched off completely and the fans continue to run according to the setpoint for fan speed. The set value indicates the time that is necessary to remove the excess heat from the heating coil.

- **Max. power: Set the maximum effect of the heating coil.**

Amplification factor heating 1: Set the heating coil’s gain factor. This factor strengthens the effect of the regulator, when it either increases or reduces the heat. When the value is 100, the factor is neutral.
Press Save to save the settings.

Electric heating coil 1 CX3030-60

The electric heating coil is used to increase the temperature of the supply air if the recovered heat does not supply enough.



- **Regulation mode:**
  - 0–10 V: Analogue heat regulation is connected to an analogue 0-10V output.
  - Single step: The electric heating coil is controlled with 1-step's On/Off (digital relay output)
  - Two step: The electric heating coil is controlled with 2-step's On/Off (digital relay output)
- **Aftercooling time:** Set the aftercooling time on the heating coil

When the airflow is reduced or stopped completely, there is a risk of overheating of the heating coil. During the aftercooling period, the heating coil is disconnected completely and the valves continue to run with regards to the set airflow setpoint. The set value indicates the time that is necessary to remove the excess heat from the heating coil.

- **Minimum airflow, 100% heating** Set the minimum airflow for 100% heating on the heating coil.
- **Minimum airflow, 0% heating:** Set the minimum airflow for 0% heating on the heating coil.
- **Max. output:** Set the maximum effect of the heating coil.
- **Amplification factor heating 1:** Set the heating coil's gain factor. This factor strengthens the effect of the regulator, when it either increases or reduces the heat. When the value is 100, the factor is neutral.

Press **Save** to save the settings.

Monitoring of the electric heating coil

The electric heating coil is protected against overheating using two overheating controls that are placed in the airflow between the heating elements.

External fire thermostat

The function is used in case of fire/smoke outside the building.

Prerequisite for set-up

- EXcon Modules > Configure > Digital in/out: **External fire thermostat** must be configured. Is not factory-configured by default.

When the input is activated/opened:

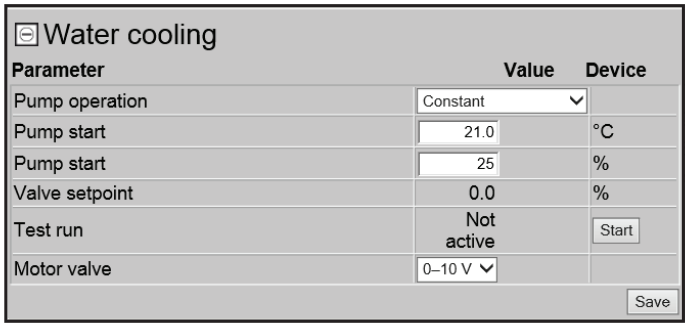
- The unit stops
- Damper to the outside air closes
- An alarm is triggered

When the input is closed again, the unit will start up in normal operation.

7.2.11 Cooling

Water cooling

Water cooling is configured to control an analogue valve in the water circuit via a 2-10V output that is configured. Start/Stop of a circulation pump in the cooling circuit via digital output. Alarm from a pump can be connected to ä digital input, **Cooling error** , which will trigger a pump alarm when the input is opened.



- **Pump operation:** Select parameter for pump operation
  - **Constant:** The pump runs constantly when there is tension on EXcon Master.
  - **Auto:** Pump operates with cooling requirement
  - **Outdoor air temperature:** The pump runs when the outside air temperature rises **above** the set value in **Pump start** or when there is a cooling requirement.
  - **Cooling requirement:** The pump starts when the motor valve is opened more than the set value.

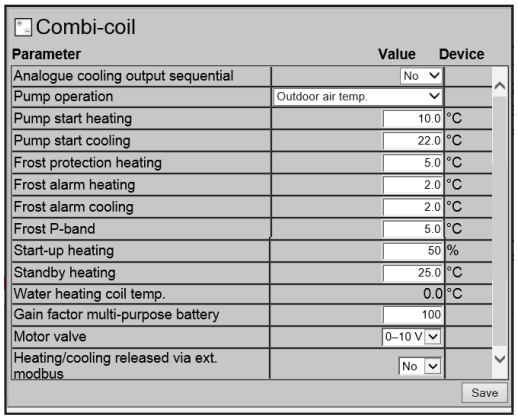
Pump motioning: If the pump has not been started for the last 24 hours, it will become motioned in 1 minute regardless of the cooling requirement. This is to combat the pump getting stuck.

- **Pump start:** Set temperature for the pump to start. The pump starts when the outdoor air temperature is above the set value. During pump operation, **Outdoor air temperature** must be selected.
- **Pump start:** Set values for the pump to start. The pump starts when the motor valve is opened more than the set percentage rate. During pump operation, **Cooling requirement** must be selected.
- **Valve setpoint:** Displays the current valve position
- **Test run:** Press Start to begin the test sequence of the valve motor. (Only applicable in case of Belimo modbus valve motor)
- **Motor valve:** Set the motor valve's regulatory range. Always select 2-10V

Press **Save** to save the settings.

Combi-coil

Combi coil is used for CW and DX when the coil can both cool and heat. On a demand for heating or cooling, the analogue output is controlled modulating from 0-100% and the circulation pump is started via a digital output.



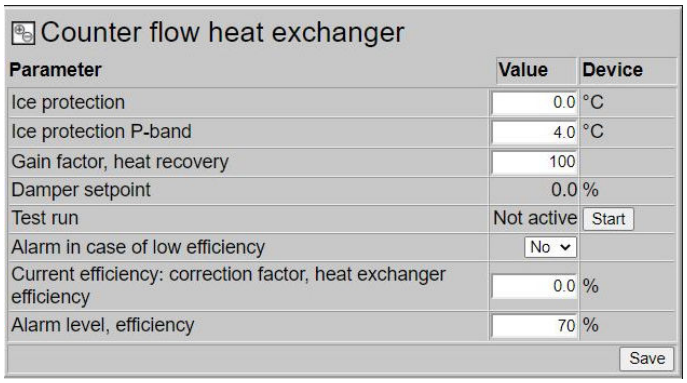
- **Analogue cooling output sequential:** Select NO as there is only one analogue output.
- **Pump operation**:
  - **Constant:** The pump runs constantly when there is tension on EXcon Master.
  - **Auto:** Pump operates with cooling requirement
  - **Outdoor air temperature:** The pump runs when the outside air temperature rises **above** the set value in **Pump start** or when there is a cooling/heating requirement
- **Pump start heating:** Set temperature for the pump to start. The pump starts when the outdoor air temperature is above the set value. During pump operation, **Outdoor air temperature** must be selected.
- **Pump start cooling:** Set temperature for the pump to start. The pump starts when the outdoor air temperature is above the set value. During pump operation, **Outdoor air temperature** must be selected.
- **Frost protection, heating:** Set the temperature of return water from the combi-coil where the motor valve must be 100% open. The function is only active when heat is required.
- **Frost alarm heating:** Sets at which temperature a frost alarm must be given. The function is only active when heat is required.
- **Frost alarm cooling:** Sets at which temperature a frost alarm must be given. The function is only active when cooling is required.
- **Frost P band:** Set the temperature on the P band. Frost protection of the heating coil starts when the temperature falls below the set value + the set value in the **Frost protection, heating** parameter.
- **Start-up heating:** Set the value for opening the motor valve during the start-up sequence. This overriding of the motor valve ceases when the start-up sequence is completed and the supply air fan has reached its setpoint for airflow.
- **Standby heating:** Set the minimum temperature for return water from the heating coil during standby. During standby/stop of the unit, the motor valve will ensure that the temperature does not reach below the set value.
- **Water heating coil temp.:** Read off current return water temperature
- **Amplification factor combi-coil:** Set the combi-coil amplification factor. This factor strengthens the effect of the regulator, when it either increases or reduces the heat/cooling. When the value is 100, the factor is neutral.
- **Motor valve:** Set the motor valve's regulatory range. Always select 2-10V
- **Heating/cooling release via ext. modbus:**Release of heating/cooling via digital inputs.

Press **Save** to save the settings.

7.2.12 Heat recovery, Plate heat exchanger

Counterflow heat exchanger (temperature) CX3010-20

Heat recovery **Counterflow heat exchanger** – with ice protection via temperature sensor



General

The damper on the counterflow heat exchanger is modulatingly controlled. The counterflow heat exchanger is protected against icing by recording the exhaust air temperature after the exhaust air has passed the counterflow heat exchanger.

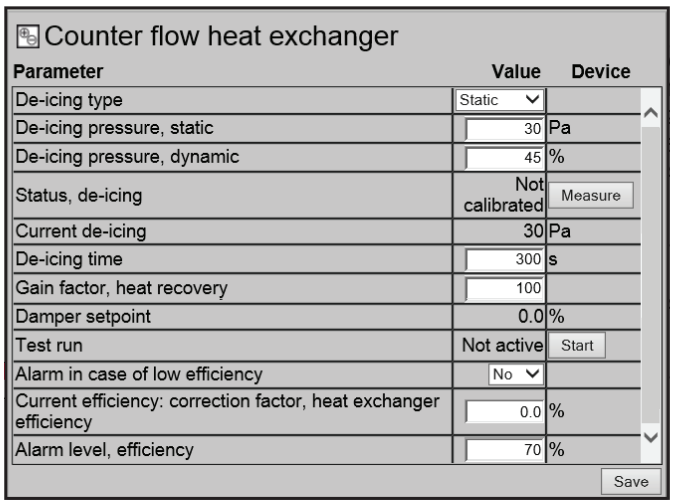
Ice protection

At temperatures below the set value + P-band, the bypass damper is modulated to 100% open. The outdoor air thereby passes past the counterflow heat exchanger and the exhaust air from the room thereby passes through the counterflow heat exchanger. This function will, by virtue of the relatively high room temperature, cause the ice coating on the counterflow heat exchanger to thaw.

- **Ice protection P-band**At temperatures below the set value + the set value in the “Ice protection” parameter, the bypass damper will override it by modulation to 100% open. At the set value for **ice protection, the bypass** will be 100% open.
- **Amplification factor, counterflow heat exchanger** Set the counterflow heat exchanger’s amplification factor.
- **Damper counterflow heat exchanger** ***(Only applicable for Direct Modbus actuators)***
- **Test-run, bypass damper** ***(Only applicable for Direct Modbus actuators)***
  Press “Start” to start a test sequence of the connected Direct Modbus damper.
- Alarm in case of low efficiency
  Select whether an alarm must be given in the event of low efficiency
- **Efficiency correction factor**
  Set the efficiency calculation correction factor
- Alarm level, efficiency
  Set alarm limit for low efficiency alarm
  In order for the alarm to be triggered, the unit must be in the “Operation” status, the efficiency values below the set value must be set, and the parameter “Low efficiency alarm” must be set to “Yes”.

Counterflow heat exchanger (pressure) CX3030-60

The counterflow heat exchanger's bypass damper is controlled by a modulating damper actuator. The counterflow heat exchanger is protected against icing by measuring the pressure drop across the heat exchanger.



- **De-icing type:** Select de-icing type.
  - **Static**: De-icing is started if the current pressure drop above the counterflow heat exchanger exceeds the setpoint that is set under **De-icing pressure static.**
  - **Dynamic**: De-icing is started if the current pressure drop above the counterflow heat exchanger exceeds the calculated setpoint. The calculated setpoint is a percentile rise in the pressure drop above the exchanger. For the function to be used, a measurement of the pressure drop above an ice-free and clean counterflow heat exchange must be performed. During de-icing, the bypass damper is opened 100% during the set **de-icing time**.
- **De-icing pressure, static:** Set static setpoint for pressure drop across the exchanger. De-icing type must be set to **Static**.
- **De-icing pressure, dynamic:** Set the dynamic setpoint for how high the pressure loss may be in relation to the pressure loss over a clean and ice-free counterflow heat exchanger. De-icing type must be set to **Dynamic**.
  See **Measurement dynamic de-icing** for further information.
- **Status, de-icing:**
  If **Dynamic de-icing** is selected, a measurement of the loss of pressure over the counterflow heat exchanger must be conducted when the unit is put into operation.
  See **Measurement of dynamic de-icing** for further information.
- **Current de-icing pressure:** In the case of **Static** de-icing type, the set static pressure is displayed.
  In the case of **Dynamic** de-icing type, the calculated dynamic pressure is displayed..
- **De-icing time:** Setting the de-icing time. The set de-icing time is the period when the bypass damper is 100% open.
- **Amplification factor, heat exchanger** Set the counterflow heat exchanger's amplification factor. This factor strengthens the effect of the regulator, when it either increases or reduces the heat. When the value is 100, the factor is neutral.
- **Damper setpoint** Shows the current setpoint for the bypass damper.

- **Test run:** Press **Start** to start the test sequence for the bypass damper. (Only applicable to the Belimo damper actuator)
- **Alarm in the event of low efficiency:** Select whether an alarm must be given in the event of low efficiency of heat recovery. **Yes/No**
- **Efficiency: correction factor, heat exchanger efficiency:** Set the correction factor for calculation of efficiency. (0-5%)
  The correction factor is added to the calculated efficiency and thus compensates for the heat that is measured in the emittance from the exhaust air/fan.

- **Alarm level, efficiency:** Set the alarm limit for **alarm in the event of low efficiency**. For the alarm to sound, it is a condition that:
  - **Alarm in the event of low efficiency** is set to **Yes**
  - The unit must be in operation.
  - The efficiency must be **below** the set value.

For further information concerning the calculation of efficiency, see the **Efficiency** section

Press **Save** to save the settings.

De-icing

When the current pressure drop above the exchanger exceeds the setpoint (static or dynamic), the bypass damper is opened 100%. The outdoor air will **bypass** the counterflow heat exchanger and the extract air will pass **through** the counterflow heat exchanger, and thereby ice formation on the heat exchanger will thaw. The bypass damper will be open for the set time. During the de-icing period, where the bypass damper is 100% open, the supply air temperature will instead be maintained by a possible after heating coil.

Measuring of dynamic de-icing

The loss of pressure is measured over a clean and ice-free exchanger, so that the control system knows the value of the exchanger's pressure loss.

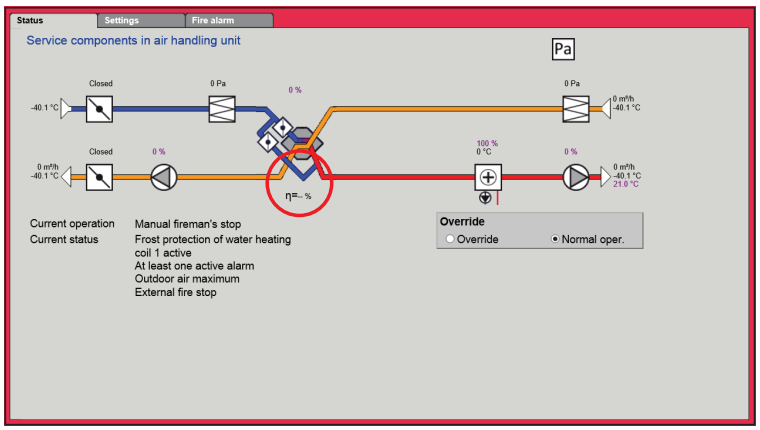
- **Status, de-icing:** Click on **Measure**

Clicking on **Measure** stops all fans. When all the fans have stopped, they are slowly started again from 0 to 100%. Simultaneously, during this start-up, the loss of pressure is registered over the exchanger.

De-icing pressure dynamic is thereafter set as a percentage higher value in relation to the loss of pressure over a clean and ice-free heat exchanger.

7.2.13 Efficiency

EXcon control system automatically calculates the level of efficiency for the heat exchangers that are fitted and configured in the unit. The level of efficiency (η) can be seen in connection with the heat exchanger on the status image under: **User > Alarm & Log > Status** or **Service > Unit > Status.**



Under certain circumstances the calculation will display large deviations:

- When the control signal for the recovery is lower than 5%, or the outside air temperature is higher than 10°C, the level of efficiency displays - - %.
- When the level of efficiency assumes values below the set level, and the control signal for heat recovery is 100%, an alarm will sound for: **Too low recovery**.

Calculation

The level of efficiency is calculated using the current measured temperatures. In order for the level of efficiency calculation to provide as accurate a picture as possible of the current level of efficiency, it is important that the sensors are placed correctly in the airflow. During calculation of the heat exchangers' level of efficiency, sensors are used that measure:

- Extract air temperature
- Exhaust air temperature
- Outdoor air temperature

The level of efficiency is calculated using the formula:

- Level of efficiency[%] = ((Extract air - Exhaust air) / (Extract air - Outdoor air)) * 100 + **Y**.

Y is a correction factor which indicates the heat that the exhaust fan emits into the air. **Y** can be set to values between 0 og 5%.

7.3 Master, PTH6202-2 and Extension

7.3.1 EXcon modules terminal overview

In the menus Master, PTH-6202-2 and Extension, it is possible to see the inputs and outputs of the different modules. Hold the mouse/marker over the texts to see help texts.

7.4 Alarm log

The parameters in the menu **Alarm log** are used to log alarms and operating data which have occurred since the last startup of the VEX unit. A log is kept of which alarms have occurred, which alarms are nearing their limit values and operating data history. The logged alarms can be reviewed via the web user interface or the HMI Touch control panel/manual terminal. Apart from current alarms, the online user interface also shows impending alarms and the logged operating data.
For a more detailed description of the parameters, see under: **User > Alarm & log**

NB: If an alarm repeatedly triggers, contact a service technician.

7.4.1 EXcon Alarm overview

See the instructions **Alarm overview EXcon control system CX3000**

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