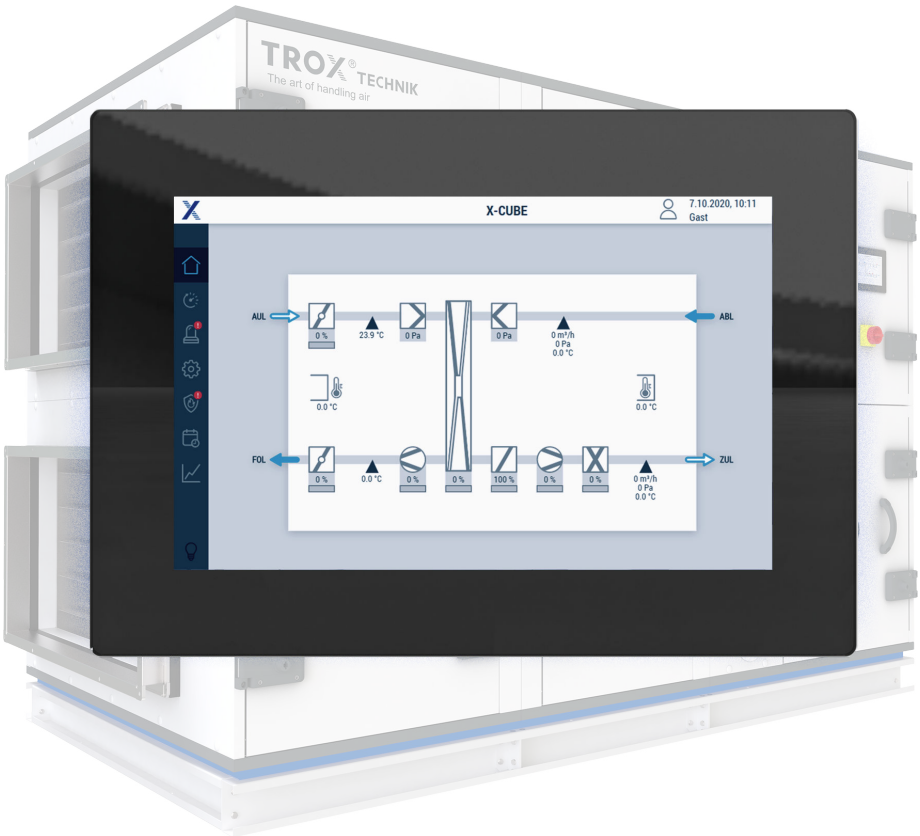
Operating instructions GB/en

Air handling units

X-CUBE CONTROL 3

Controls visualisation for air handling units



TROX® TECHNIK
The art of handling air

Read the instructions prior to performing any task!

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A00000093796, 4, GB/en
11/2024

About this operating manual

This manual describes how to operate the air handling unit using the controls visualisation software.

The operating instructions are intended for operators (instructed persons) and network administrators.

It is essential that instructed persons (*Chapter 1.1 'Qualification' on page 6*) read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with all safety notes and instructions in this manual.

The local regulations for health and safety at work and the general safety regulations for the area of application of the air handling unit also apply.

Illustrations in this manual are mainly for information and may differ from the actual design of the air handling unit.

Other applicable documentation

In addition to these instructions, the following documents apply:

- Transport and installation manual
- Operating manual
- order-specific release drawing

TROX Technical Support

To ensure that your request is processed as quickly as possible, please have the following information ready:

- Product name
- TROX order number and line number
- Delivery date
- Brief description of fault or issue

Online	*www.troxtechnik.com*
Phone	+49 2845 202-0

Copyright

Limitation of liability

The information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

The manufacturer does not accept any liability for damages resulting from:

- Non-compliance with this manual
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- Operation or handling by untrained individuals
- Unauthorised modifications
- Technical changes
- Use of non-approved replacement parts

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The general delivery terms apply to warranty claims. For purchase orders placed with TROX GmbH, see Section VI, Warranty Claims, of the Delivery and Payment Terms of TROX GmbH, *www.trox.de/en/* .

Safety notes

Symbols are used in this manual to alert readers to areas of potential hazard. Signal words express the degree of the hazard.

Comply with all safety instructions and proceed carefully to avoid accidents, injuries and damage to property.

DANGER!
Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!
Potentially hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION!
Potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE!
Potentially hazardous situation which, if not avoided, may result in property damage.

ENVIRONMENT!
Environmental pollution hazard.

Tips and recommendations

Useful tips and recommendations as well as information for efficient and fault-free operation.

Specific safety notes

The following symbols are used in safety notes to alert you to specific hazards:

Warning signs	Type of danger
⚠	Warning – danger zone.

Additional markers

In order to highlight instructions, results, lists, references and other elements, the following markers are used in this manual:

Marker	Explanation
1., 2., 3. ...	Step-by-step instructions
⇨	Results of actions
	References to sections in this manual and to other applicable documents
■	Lists without a defined sequence
[Switch]	Operating elements (e.g. push buttons, switches), display elements (e.g. LEDs)
'Display'	Screen elements (e.g. buttons or menus)

1 Safety

1.1 Qualification

The work described in this manual has to be carried out by individuals with the qualification, training, knowledge and experience described below:

Network administrator
Network administrators design, install, configure and maintain the IT infrastructure in companies or organisations.

Operator
Operators have been instructed by the system owner to enable them to avoid any potential hazards related to the work under consideration. Operators must not carry out any jobs beyond regular operation unless explicitly stated in this manual and unless the system owner has specifically agreed to them.

Any work has to be carried out by individuals who can be expected to carry out their assigned duties reliably. Individuals whose reaction time is delayed due to alcohol, drugs or other medication must not carry out any work.

Passwords

The various functions of the visualisation software are password protected to prevent unauthorised people from using it.

- Every user should have their own, unique user name and password.
- Make sure that each user knows only their own password.
- Do not share your access data with anyone.
- Do not use the same access data for both private and professional purposes.
- Do not store passwords on an internet browser.
- Store passwords (if you need to store them at all) in a safe place; use a password manager, for example.

Instruction

System owners must regularly instruct their personnel. The instruction procedure has to be documented for further reference.

At least the following details have to be documented:

- Date of instruction
- Names of persons being instructed
- Type of instruction
- Name of instructor
- Signature of person being instructed

2 Network configuration

The touch panel and X-CUBE Controller are factory-set in such a way that any visualisation data is displayed on the touch panel.

Factory setting

Own IP address:	`192.168.0.10` or `192.168.0.100`
Target address for visualisation:	`https://192.168.0.180:1020` or `https://192.168.0.200:1020`

Attention

If other IP addresses have been set previously, e.g. as part of commissioning, contact your network administrator.

Use the form in the appendix to document IP addresses and user names, Chapter 11 ‘ Configuration checklist’ on page 134

2.1 Changing the target address for visualisation

Personnel:

- Network administrator

If there is no X-CUBE visualisation (white display or error message `ERR_ADDRESS_UNREACHABLE`), the IP address should be checked and corrected, of necessary.

1. To access the *‘System menu’* on the touch panel, swipe from the left to the centre of the screen.
   ⇨ Back with
2. Select *‘Edit profile’*.
3. Select the *‘General’* tab.
   Enter the IP address of the X-CUBE controller (target address of the controls visualisation) as follows:
   `https://[IP ADDRESS]:1020`
   ⇨ Accept input with .

2.2 Changing your own IP address

Personnel:

- Network administrator

Important: This is not the IP address of the X-CUBE controller.
Changing that address is described in chapter 3.9.2.

1. To access the *‘System menu’* on the touch panel, swipe from the left to the centre of the screen.
   ⇨ Back with
2. Select *‘Edit profile’*.
3. Select the *‘Bridge’* tab.
   Go to the *‘Start page’* field and enter your own IP address and the subnet mask of the touch panel.
   ⇨ Accept input with .

2.3 Visualisation on external devices

You can also use other terminal devices (PC, notebook, tablet, web browser that supports HTML5) for visualisation.

Make sure that the terminal device and X-CUBE controller are part of the same network.

We recommend the following browsers:

- Mozilla Firefox
- Google Chrome
- Microsoft Edge

To call up the visualisation, enter the IP address into the address line of the browser.
`https://192.168.0.180:1020` or
`https://192.168.0.200:1020`

Further information, *‘Factory setting’ on page 7*

3 Description of the user interface

3.1 Start page

Once the visualisation software has been opened correctly, the loading progress and the web server version are shown. During the loading process, the visualisation pages are preloaded into the web browser for smooth navigation.

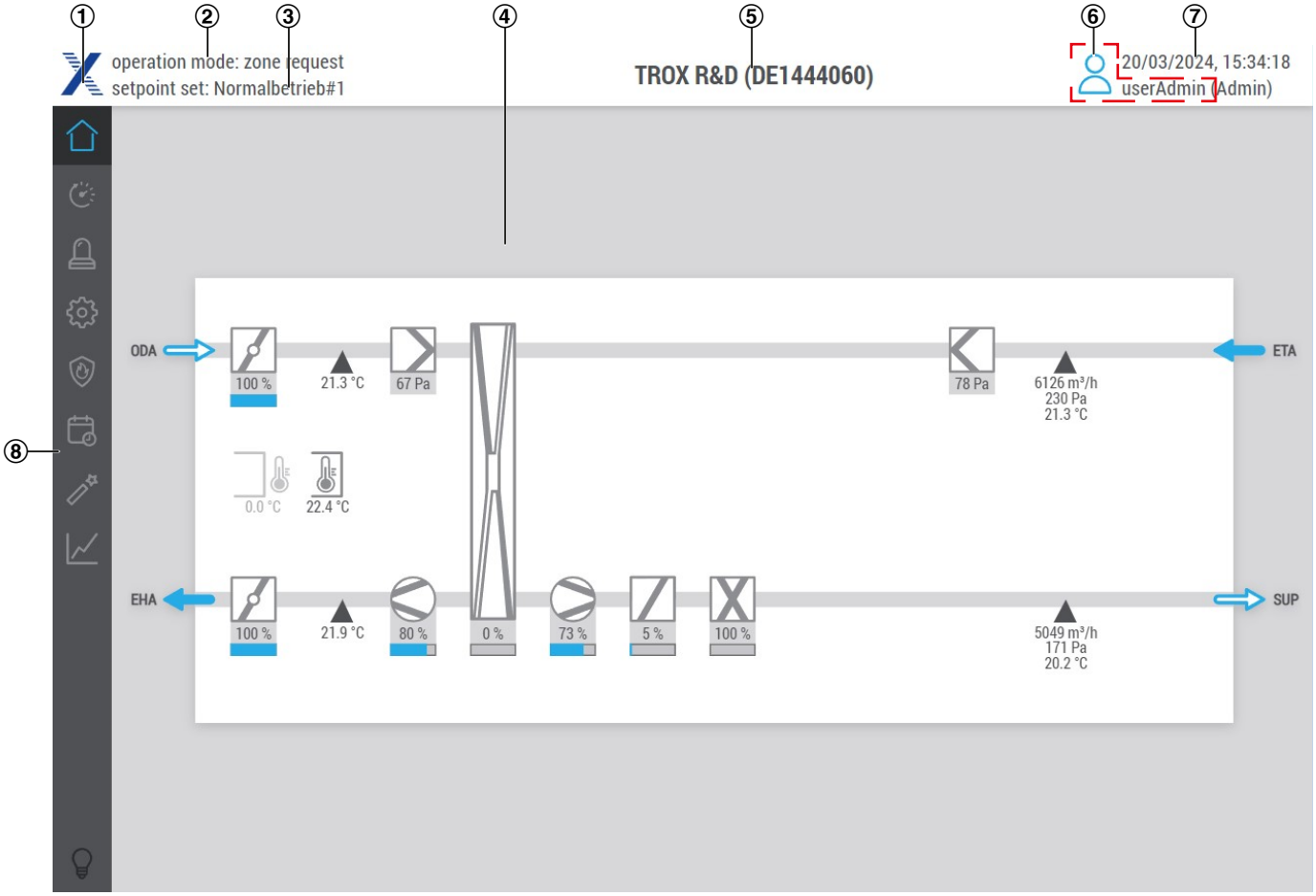


Fig. 1: Visualisation start page

The start page displays a system diagram. If you click on a component, the respective page opens. Header and main menu are permanently visible.

Pos.	Description
1	Select this symbol to display the software version. Refer to these when contacting TROX Service.
2	Shows current operating mode: ■ **Off**: Manual control not possible, timer programme not active. ■ **Standby**: Manual control possible, timer programme active. ■ **Start-up**: Opening the shut-off dampers, in winter the system is primed if necessary ■ **Control**: All relevant control circuits (fans, temperature, humidity and air quality) are enabled. ■ **After-run**: The fans may contunue to run if a cooling coil, electric heater or humidifier is installed. ■ **Fault**: At least one critical fault is present. The system is switched off. ■ **Frost protection**: The frost protection thermostat has been triggered. The heater is activated at full power. ■ **Fire**: The central fire alarm system, a fire damper or a smoke detector has been triggered. ■ **supporting smoke extraction**: The request for smoke extraction via an external contact is present. ■ **Extended operation**: Control via external contact or visualisation required. ■ **Control panel**: Control via control panel required. ■ **Zone requirement**: Control via external zone required. ■ **Maintaining**: Control to maintain temperature, humidity or air quality limits. ■ **Night purge**: Utilisation of cool outdoor night temperatures to cool rooms in summer. ■ **Standby + MCE**: Standby required by the management and control equipment. ■ **Control + MCE**: Control required by the management and control equipment. ■ **Maintaining + MCE**: Maintaining required by the management and control equipment.
3	Display of the active setpoint value.
4	System diagram
5	Shows the name of the system.
6	Shows the name and user status of current user. ■ No user logged in (guest) ■ User logged in (staff, service, or admin) Select this symbol to open the log-in screen.
7	Shows date and time of the X-CUBE controller, Setting: *'Settings ➔ Basic settings'* .
8	Main menu

Main menu

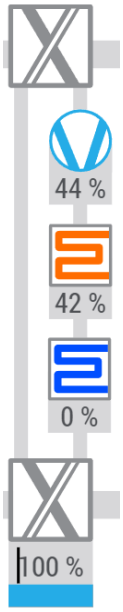
Icon	Menu item	Description
	Start	Select to call up the start page and display the system diagram.
	Status control	When selected, the control status is displayed: This contains a brief overview ▪ Control strategy ▪ Setpoint and actual values for: – Temperature control – Fan – Humidity control (optional)
	Status alarms	Shows list of alarms. Displayed when there is at least one warning. Displayed when there is at least one critical alarm. In case of a critical alarm, the X-CUBE is switched off!
	Settings	Opens the 'Settings' menu, for general settings.
	Fire protection	Opens the 'Fire protection' menu, which shows the status of all fire dampers and smoke detectors. Displayed when there is at least one warning. Displayed when there is at least one critical alarm. In case of a critical alarm, the X-CUBE is switched off!
	Schedules	Opens the 'Schedules' menu, for setting weekly schedules, holidays and public holidays.
	Wizard	The commissioning wizard guides through the first steps of commissioning.
	History	Opens the 'Trend' menu where trends for various parameters (e.g. temperature, humidity or pressure) can be read and downloaded*. *not via touch panel!
	Maintenance lighting	Switches the maintenance lighting (if available) ON or OFF. Maintenance lighting is OFF; select to switch on Maintenance lighting is ON; select to switch off

System diagram symbols

Icon	Description
	Airflow direction left, unused air (outdoor and supply air)
	Airflow direction left, used air (extract and exhaust air)
	Airflow direction right, unused air (outdoor and supply air)
	Airflow direction right, used air (extract and exhaust air)

Icon	Description
	Cooling coil, *Chapter 4.10 ‘Cooling coil (chilled water)’ on page 60* Changeover coil *Chapter 4.14 ‘Changeover coil’ on page 69*

Icon	Description
	Damper, or fire damper ↳ *Chapter 4.1 ‘ Exhaust air damper / Outdoor air damper / Supply air damper / Extract air damper’ on page 24* Mixed air damper, ↳ *Chapter 4.6 ‘Recirculation damper’ on page 39*
	Left fan, ↳ *Chapter 4.3 ‘Supply air fan / extract air fan’ on page 27*
	Right fan, ↳ *Chapter 4.3 ‘Supply air fan / extract air fan’ on page 27*
	Left filter ↳ *Chapter 4.2 ‘ Outdoor air filter, supply air filter, extract air filter’ on page 25*
	Right filter ↳ *Chapter 4.2 ‘ Outdoor air filter, supply air filter, extract air filter’ on page 25*
	Preheater ↳ *Chapter 4.8 ‘ Preheater/reheater (hot water)’ on page 54* Reheater, ↳ *Chapter 4.8 ‘ Preheater/reheater (hot water)’ on page 54* Electric preheater, ↳ *Chapter 4.9 ‘ Electric preheater / electric reheater’ on page 58* Electric reheater, ↳ *Chapter 4.9 ‘ Electric preheater / electric reheater’ on page 58*
	Humidifier, ↳ *Chapter 4.12 ‘ Humidifier’ on page 66* Adiabatic humidifier, ↳ *Chapter 4.13 ‘Adiabatic humidifier’ on page 68*
	Plate heat exchanger, ↳ *Chapter 4.5 ‘Plate heat exchanger’ on page 35*

Icon	Description
	Rotary heat exchanger, ↳ *Chapter 4.4 ‘Rotary heat exchanger’ on page 31*
	Run-around coil system, ↳ *Chapter 4.7 ‘ Run-around coil system’ on page 43*
	Orange: Heat feed Blue: Cooling feed
	Heat pump, ↳ *Chapter 4.15 ‘ Heat pump’ on page 73*
	Room sensor, ↳ *Chapter 4.17 ‘ Combi sensors’ on page 78*
	Outdoor sensor, ↳ *Chapter 4.17 ‘ Combi sensors’ on page 78*
	Sensors, ↳ *Chapter 4.16 ‘ Supply/extract air measured values’ on page 77*

Icon	Description
	Duct smoke detector
	OFF
	On
	Function disabled
	Function enabled
	Status OK
	Status note
	Status warning
	Status error
	manual control Status OK
	manual control Status error

3.2 Status control

Select in the main menu to open the page *'Status control'*.

This page displays a brief overview of the control status. The display varies depending on the control strategy. Navigate through the pages using the arrows *'<'* and *'>'*.

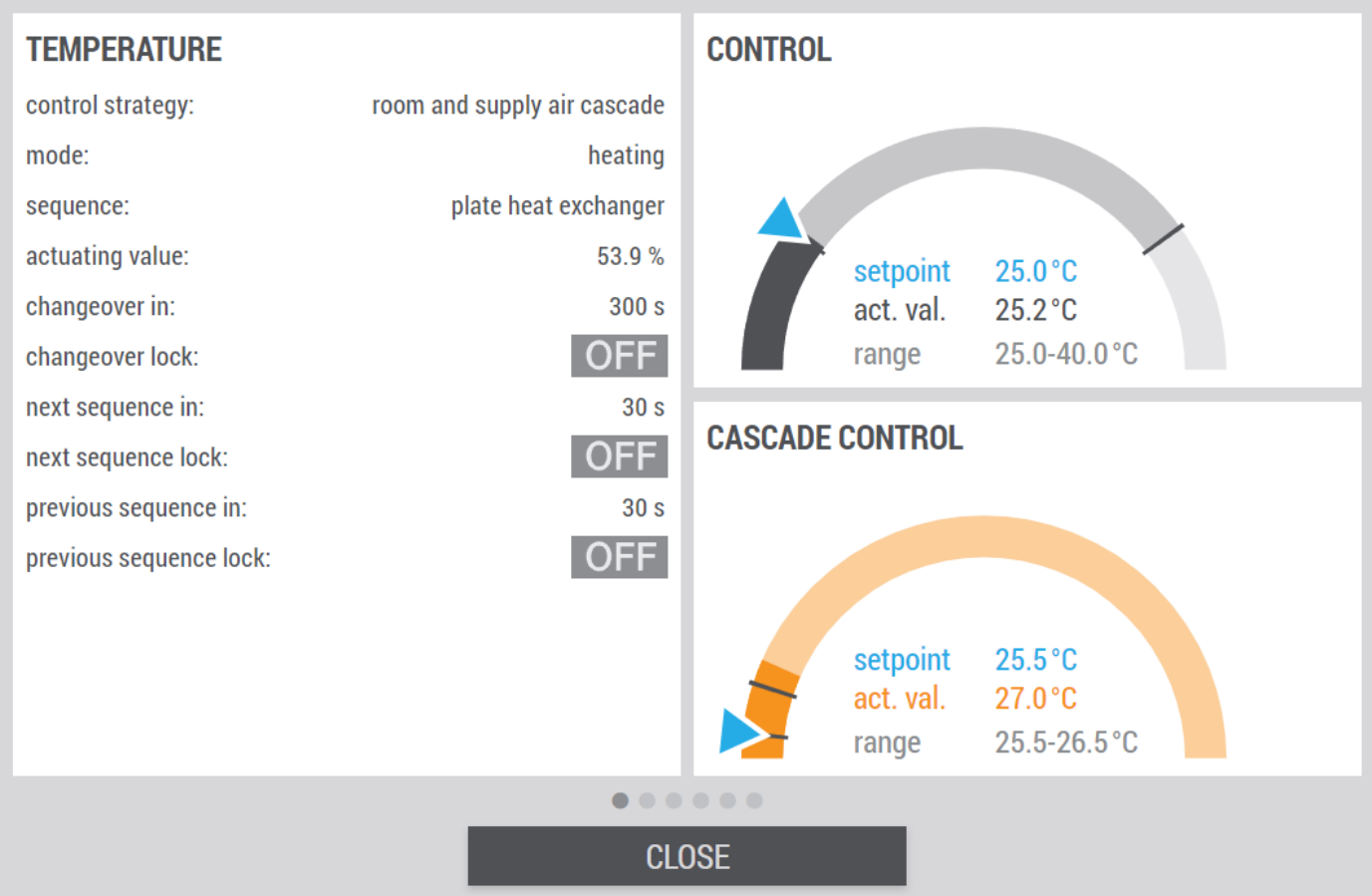


Fig. 2: Control status

Status control

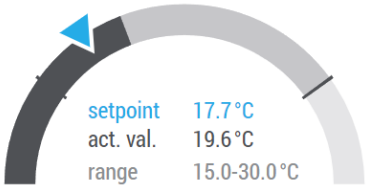
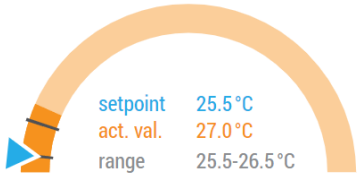
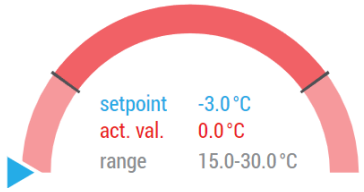
Range	Parameter/description	
Temperature	Display temperature control parameters	
	Control strategy	Display of the current control strategy, e.g. room and supply air cascade
	Mode: ■ heating ■ cooling	Current operating mode (heating shown)
	Sequence	Display of the current heating/cooling generation: e.g. heat pump
	Actuating value	Actuating value of heat generation
	Setpoint value	Displays the setpoint value
	Actual value	Displays the actual value
Supply air fan	Display fan control parameters	
	Strategy	Display of the current control strategy of the supply air fan

Range	Parameter/description	
	Actuating value supply air	Display of the actuating value for the supply air fan
Extract air fan	Strategy	Display of the current control strategy of the extract air fan
	Actuating value extract air	Display of the actuating value for the extract air fan
Humidity	Display of humidity control parameters	
	Setpoint value	Displays the setpoint value
	Actual value	Displays the actual value
	Range	Displays the setting range
Air quality	Display of air quality control parameters	
	Strategy	Display of the current control strategy of the air quality control
	Setpoint value	Displays the setpoint value
	Actual value	Displays the actual value
Close	Close window	

FAN-OPTIMIZER -maximum damper blade position

Range	Parameter/description	
Supply air	Display of the supply air damper blade position	
	Actual value	Displays the actual value
	Range	Displays the setting range
Extract air	Display of the extract air damper blade position	
	Actual value	Displays the actual value
	Range	Displays the setting range

Tachometer explanation

Colour	Display	Description
Neutral/grey		Control loop is OK. Actual value is within defined range.
Orange		Actual value deviates from setpoint value
Red		Actual value is outside of displayed range. ■ Check whether the affected sensor is transmitting the measured values without errors. ■ Please check whether the control system is running.

3.3 General operating notes

Scroll bar

If there is more information in an element than can be displayed at the current size of the element, a blue scroll bar is displayed.

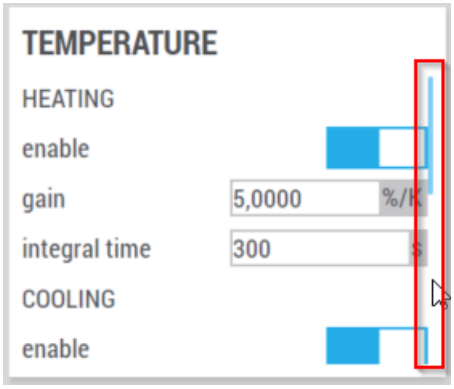


Fig. 3: Vertical scroll bar

In the example above, the blue scroll bar on the right indicates that further setting options for cooling settings follow below.

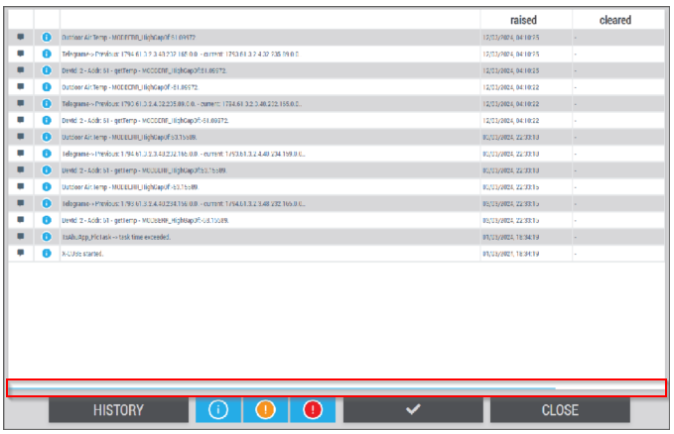


Fig. 4: Horizontal scroll bar

In the example above, the blue scroll bar at the bottom indicates that another table column follows on the right.

These instructions list all values and information that cannot be seen in the screenshot because there is a scroll bar.

Greyed-out settings

In some cases, setting options may be displayed in grey instead of black:

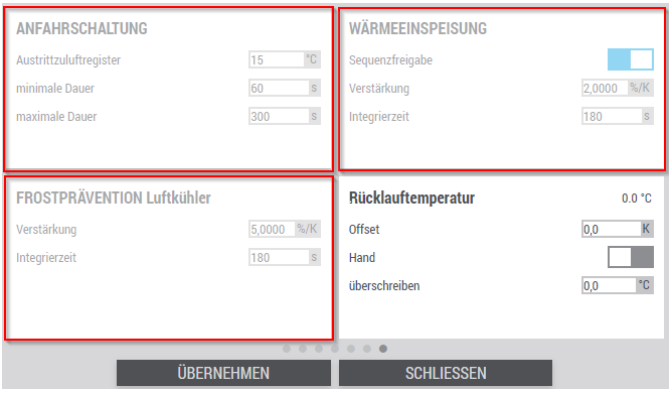


Fig. 5: Greyed-out setting options

In this example, the areas *'START-UP CIRCUIT'*, *'HEAT FEED'* and *'FROST PREVENTION cooling coil'* are greyed out.

Greyed-out setting options are not required due to the structure of the system or the components used and can therefore be disregarded.

3.4 User management

Login users

Select the in the header to open the *'Login'* screen.

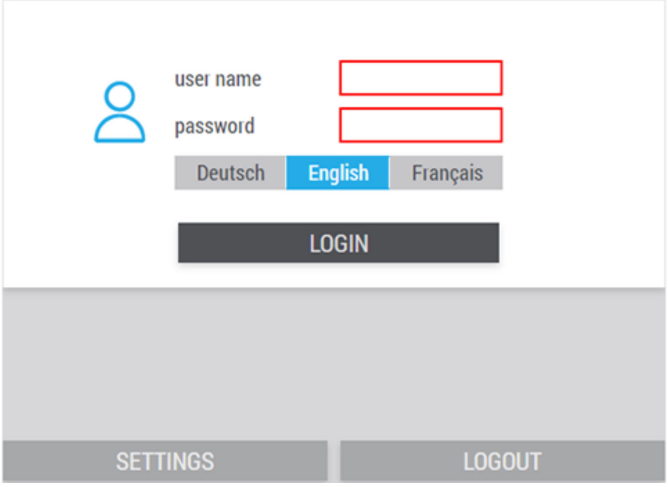


Fig. 6: Login users

To log in, enter the *'user name'* and the corresponding *'password'*, then *[LOGIN]* .

To customise the interface language, select the appropriate language *[Deutsch]*, *[English]* or *[Français]*, the language setting is only adopted after successful login.

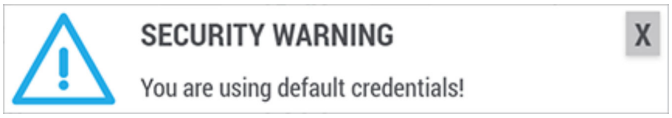
If another user wants to log in, the current active user has to log out first. To do this, open the user login and select *[LOGOUT]* to log out the active user.

Factory settings

User name	Default password	Rights	Automatic logout after …	Typical functions
Guest	-	Guest	-	Read only access
userStaff	userStaff	Staff	15 minutes	Change of setpoints and schedules
userService	userService	Service	1 hour	Changes to controller settings, external devices and MCE interface

During commissioning, replace the standard login data with individual login data. This prevents unauthorised persons from gaining change access to the visualisation.

As long as the default user name and default password are used to log in, the following warning will be shown.



To create new users or edit existing users in the user login, select *[EINSTELLUNGEN]* .

Please note: Rights management allows you to change your own user or to create or change users with the same or fewer access rights.

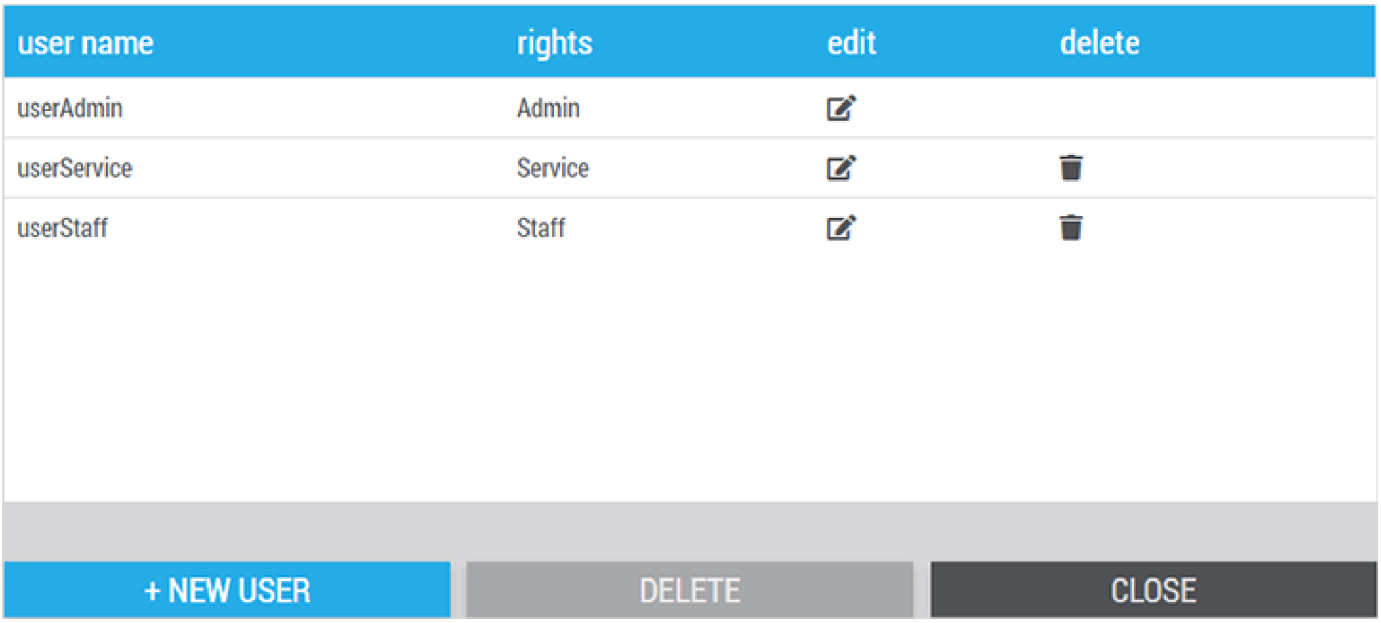


Fig. 7: User log-in settings

Edit users

Go to the *'edit'* column and select to edit user data.

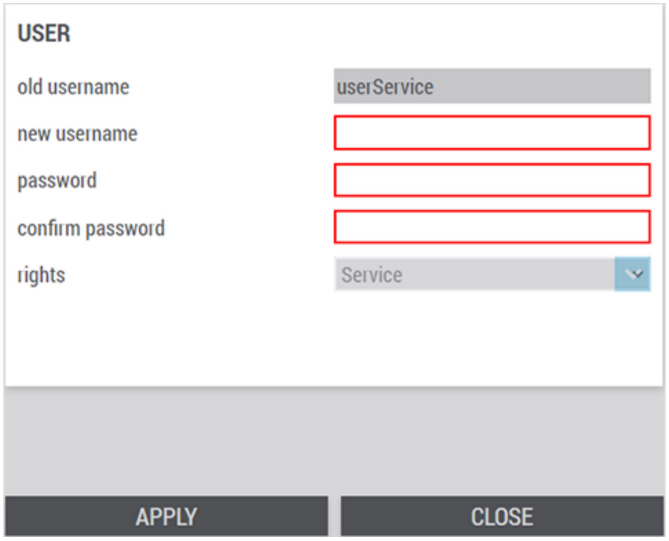


Fig. 8: Edit users

In the window, you may edit the *'user name'* and the *'password'* for a user. Accept data input by clicking on *[APPLY]* .

Creating a new user

*The following steps require **Administrator** rights.*

To create a new user, click on *[+ NEW USER]* .

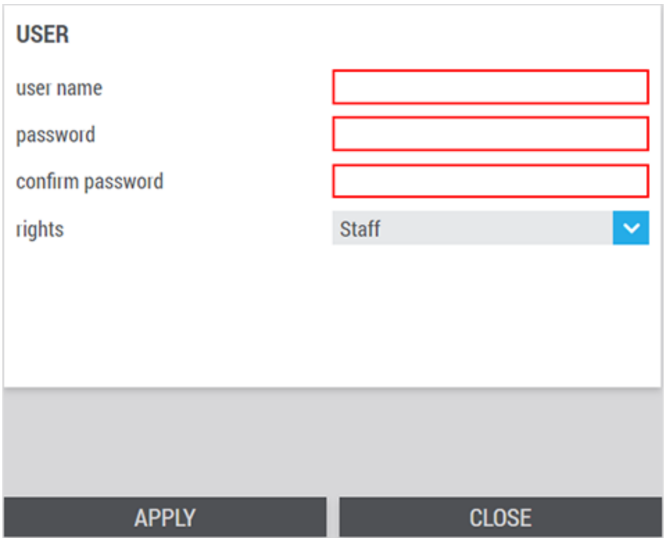


Fig. 9: Creating a new user

Enter the user name, password and rights* in the window and click on *[APPLY]* .

Please note: Rights management allows you to create users with the same or fewer access rights.

Delete users

*The following steps require **Administrator** rights.*

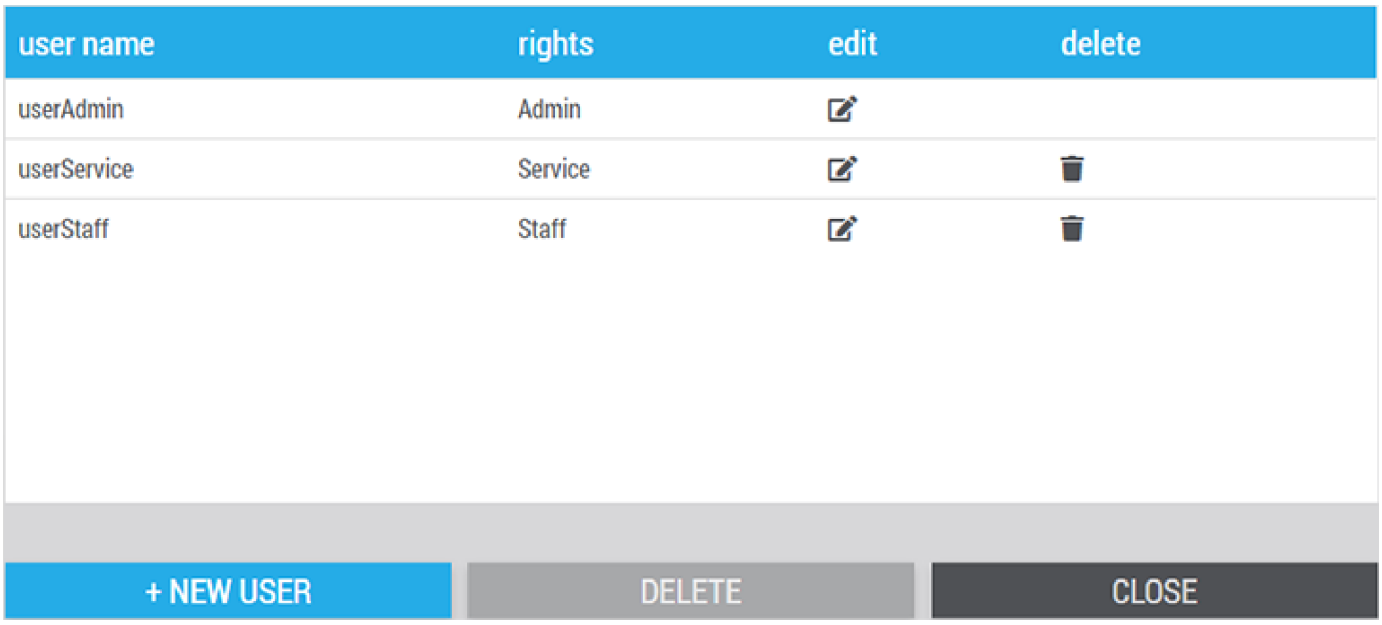


Fig. 10: User log-in settings

In the column *'delete'*, select the symbol to remove the user data.

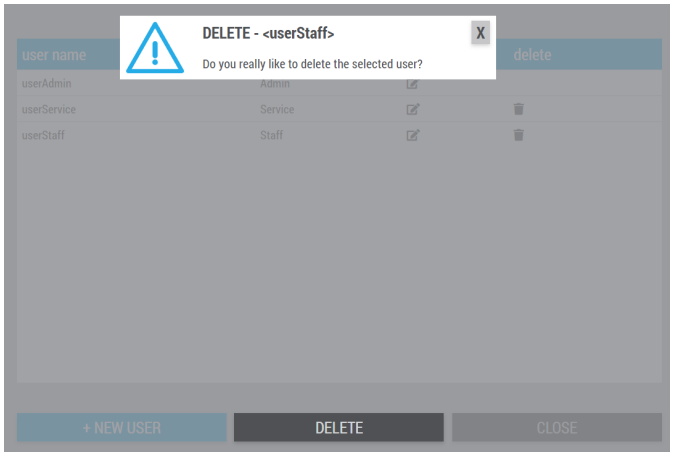


Fig. 11: Confirmation prompt

For the confirmation prompt, click *[DELETE]* to remove the user.

Click *[CLOSE]* to exit the menu without deleting the user.

3.5 List of alarms

Select in the main menu to open the page *'Alarm list'*.

All alarms are displayed and processed in an overview on this page.

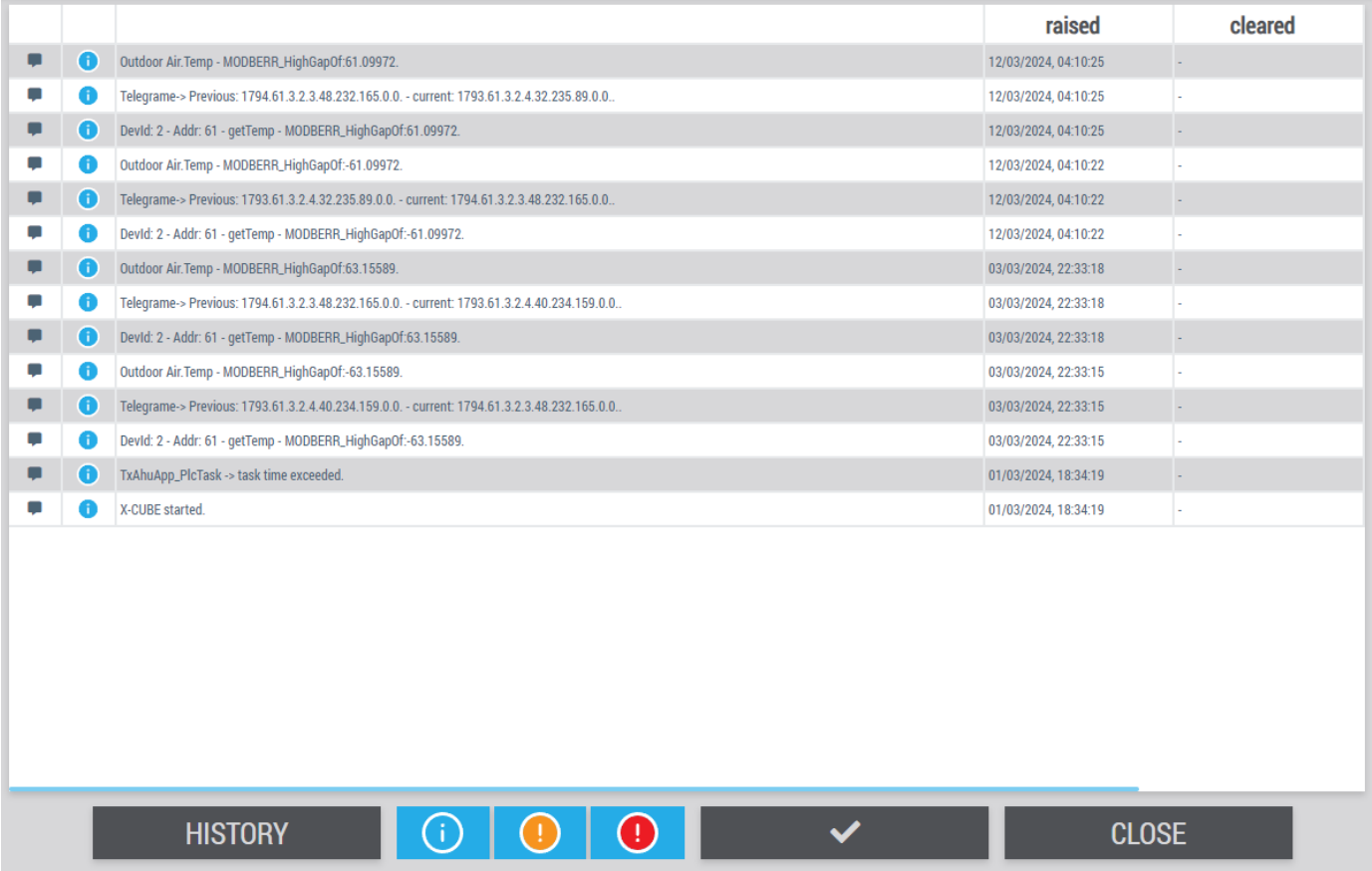
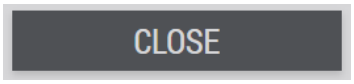


Fig. 12: Alarm overview

– *You can sort the alarms by selecting column headers.*
– *The blue scroll bar above the control elements can be used to display the invisible column 6.*

Explanations

Column	Icon/description	
1	Alarm status	
		The alarm is active.
		The alarm is waiting to be acknowledged.
		The alarm is no longer active
		Message

Column	Icon/description	
2	Alarm priority	
		Information
		Warning
		Critical alarm. In case of a critical alarm, the X-CUBE is switched off.
3	Alarm description	
4	Time stamp at which the alarm occurred.	
5	Time stamp at which the alarm became inactive after the cause was rectified.	
6	Alarm identification number	
		Call up the 'Alarm history' window where you can download the alarm histories as .csv files.
		Select the respective alarm priority to filter the list.
		Acknowledge/delete all alarms. Alarms that are waiting to be acknowledged are removed from the list and transferred to the alarm history. Alarms for unsolved errors will be displayed again after a short while. This function requires at least 'Staff' user rights.
		Close window

*It is **not** possible to download the alarm lists via the touch panel.*

History

On the page *'Alarm list'*, select *[HISTORY]* to go to the page *'Alarm history'*. Navigate through up to 10 pages using the arrows *'<'* and *'>'*.

The historical alarms are displayed on these pages.

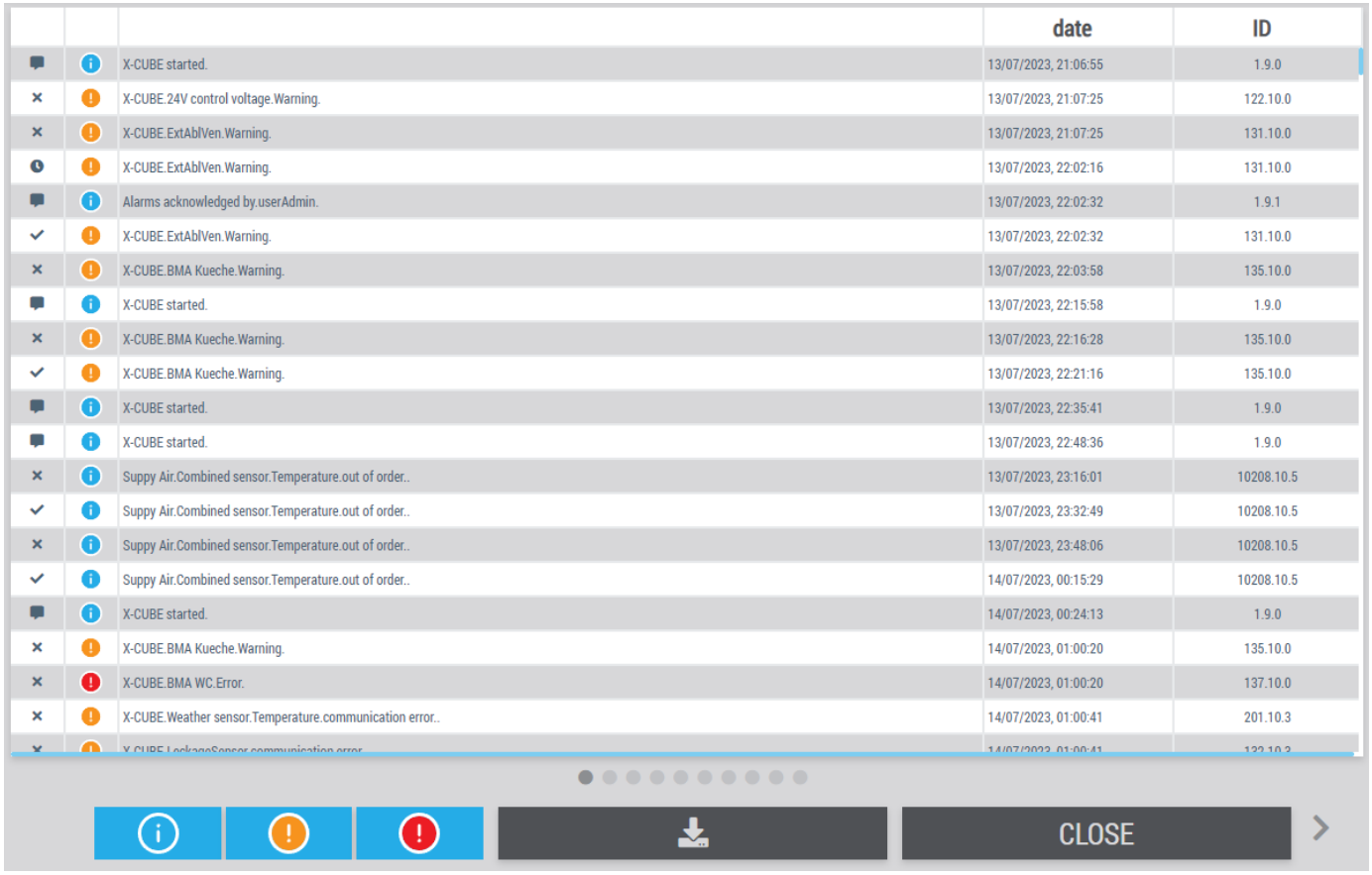
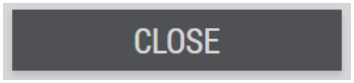


Fig. 13: Window alarm history

Explanations

Column	Icon/description	
1	Alarm status	
		The alarm is active.
		The alarm is waiting to be acknowledged.
		The alarm is no longer active
		Message
2	Alarm priority	
		Information
		Warning
		Critical alarm. In case of a critical alarm, the X-CUBE is switched off.
3	Alarm description	

Column	Icon/description	
4	Time stamp at which the alarm occurred.	
5	Alarm identification number	
		Select the respective alarm priority to filter the list.
		Download alarm history as .csv files. The alarm history comprises up to 600 entries with time stamp, error text and priority. Acknowledgements are saved with the additional information of the logged-in user name. It is not possible to download the alarm lists via the touch panel!
		Close window

4 Component status and settings

4.1 Exhaust air damper / Outdoor air damper / Supply air damper / Extract air damper

Component status

Go to the system diagram ⌂ and select the respective damper ⊿.

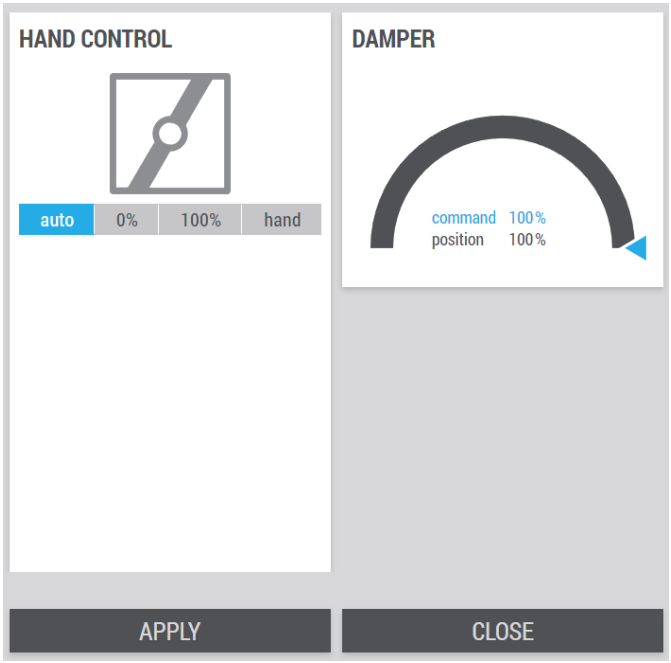
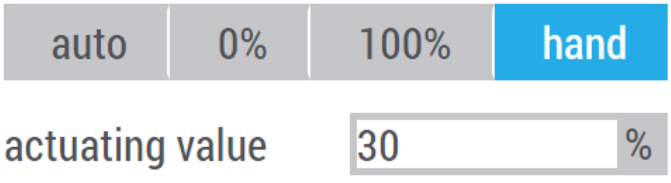


Fig. 14: Damper

Designation	Description	
MANUAL CONTROL	Actuating value damper	The power is controlled manually by selecting one of the following options:  If you select the option *[Hand]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
DAMPER	Damper blade position shown on the tachometer display, *'Tachometer explanation' on page 15*	

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.2 Outdoor air filter, supply air filter, extract air filter

Component status

Go to the system diagram ⌂ and select the respective filter ◺.

In the detail view, you can use the arrows ‘<’ and ‘>’ to navigate between the dampers.

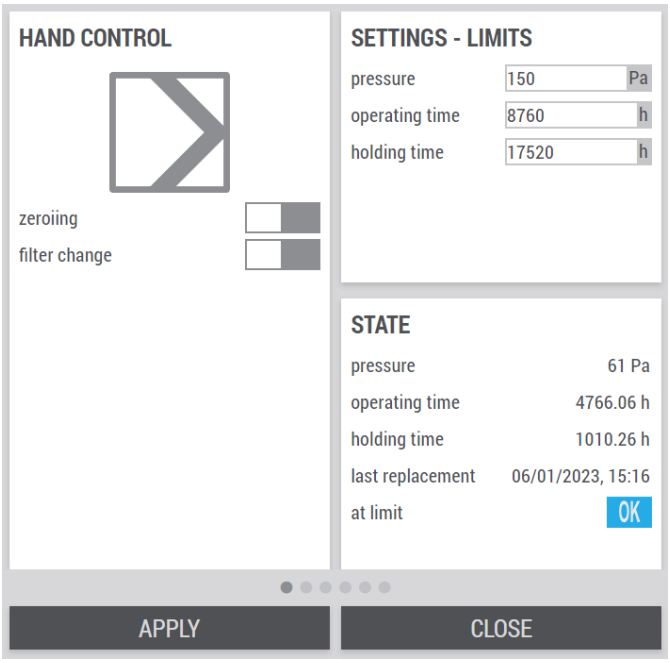


Fig. 15: Status page filter

Designation	Description	
MANUAL CONTROL	Zero-point adjustment	**Important: Only carry out zero-point adjustment while fans are stopped, as otherwise the measured values will not be correct.** Carry out a zero-point adjustment of the differential pressure sensor by setting the slide switch. inactive start zero-point adjustment
	Filter change:	A filter change is signalled to the X-CUBE controller by setting the slide switch. no filter change filter has been changed. This resets the service life and operating times of the filter.
SETTINGS – LIMITS	Input fields for the filter monitoring limit values. **Service user rights are required to make changes to the settings.**	
	Pressure	Enter the maximum differential pressure for the filter. The limit value corresponds to the final pressure specification of the filter manufacturer.
	Operating time	Enter the maximum filter operating time. Use this field if further filter checks are required, e.g. for hygiene purposes.

Designation	Description	
	Filter life	Enter the maximum operating time (filter life). You may enter the filter life given by the filter manufacturer, for example.
STATUS	Pressure Operating time Filter life Last filter change	Filter monitoring actual values
	Limit value reached	Indicates whether a filter change is required (based on the limit values). ! Limit value has been reached, filter change required. OK No filter change required.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.3 Supply air fan / extract air fan

Component status

Go to the system diagram ⌂ and select the respective fan ⏵.

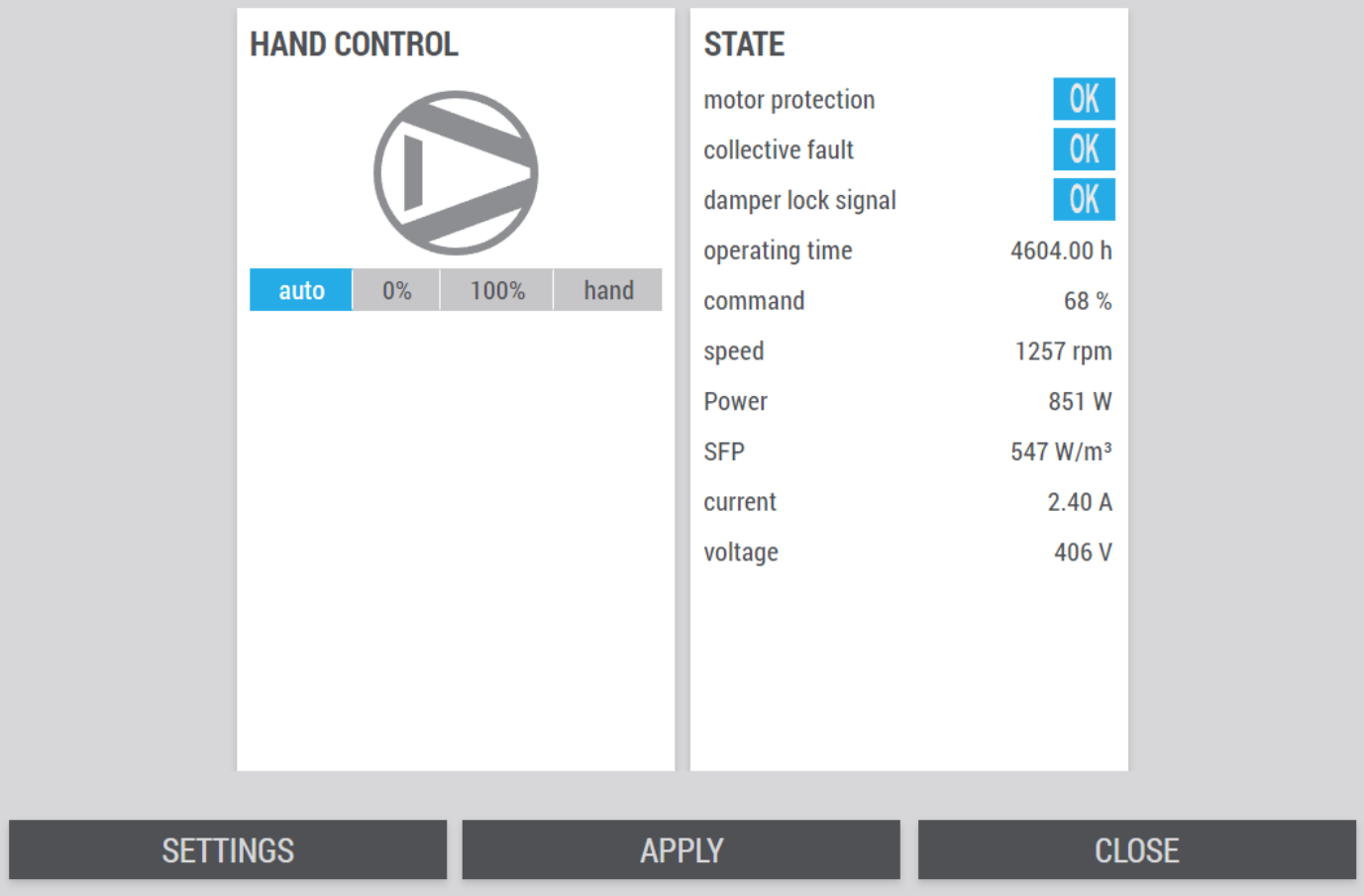


Fig. 16: Status page supply air fan / extract air fan

Designation	Description	
MANUAL CONTROL	Fan	The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
STATUS	Motor protection	! Triggered OK OK
	Collective fault	! At least one fault is present OK no fault

Designation	Description	
	Blocking signal dampers	! Indicates whether the corresponding fan is blocked due to closed dampers. OK Released
	Operating time	Operating hours counter of the fan
	Command	Setpoint value for the fan
	Speed	Speed in revolutions per minute
	Output	present power consumption
	SFP	Specific fan power (SFP)
	Current	present current consumption
	Voltage	present voltage

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

NOTICE!

The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

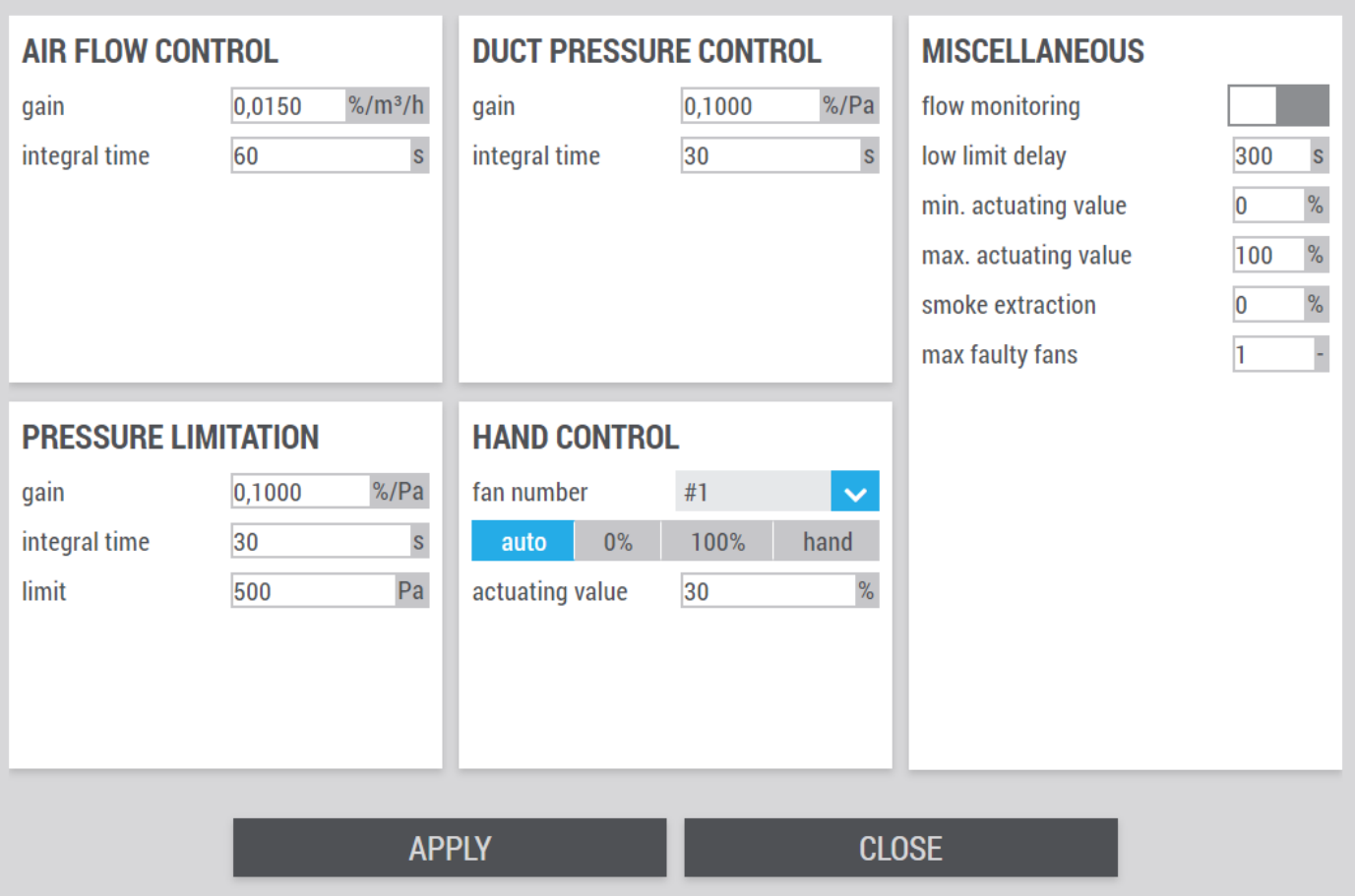
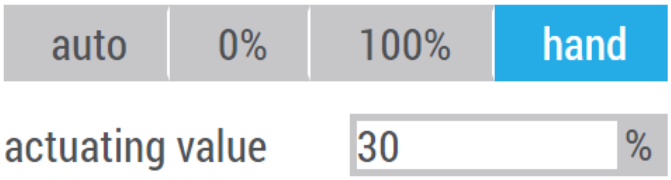


Fig. 17: Settings supply air fan / extract air fan

Designation	Description	
VOLUME FLOW CONTROL	Gain Integral action time	Input fields for the PI controller of the volume flow control.
MAXIMUM PRESSURE LIMITATION	Gain Integral action time	Entry field for PI controller of the maximum pressure limitation of the corresponding fan.
	Limit value	Enter the maximum duct pressure.
DUCT PRESSURE CONTROL	Gain Integral action time	Input fields for the PI controller of the duct pressure control.
MANUAL CONTROL	Fan number	Fan number for selecting the fan, if several are available.

Designation	Description	
		The power is controlled manually by selecting one of the following options: 
		If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
MISCELLANEOUS	Flow monitoring	This can be used to generate an alarm if the minimum volume flow is not reached after the fans are in operation. Minimum volume flow rate setting: *'Settings ➔ Basic settings'*
	Lower limit delay	Delay in seconds before an alarm is generated when the flow rate is falling below the minimum flow rate. Minimum volume flow rate setting: *'Settings ➔ Basic settings'*
	Min. actuating value Max. actuating value	If required, the operating range of the corresponding fan can be restricted here.
	Smoke extraction	Actuating value of the fan in the event of smoke extraction
	Max. defective fans	Minimum number of faulty fans in an air line that lead to the system being switched off.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.4 Rotary heat exchanger

Component status

Go to the system diagram ⌂ and select the rotary heat exchanger ⋈.

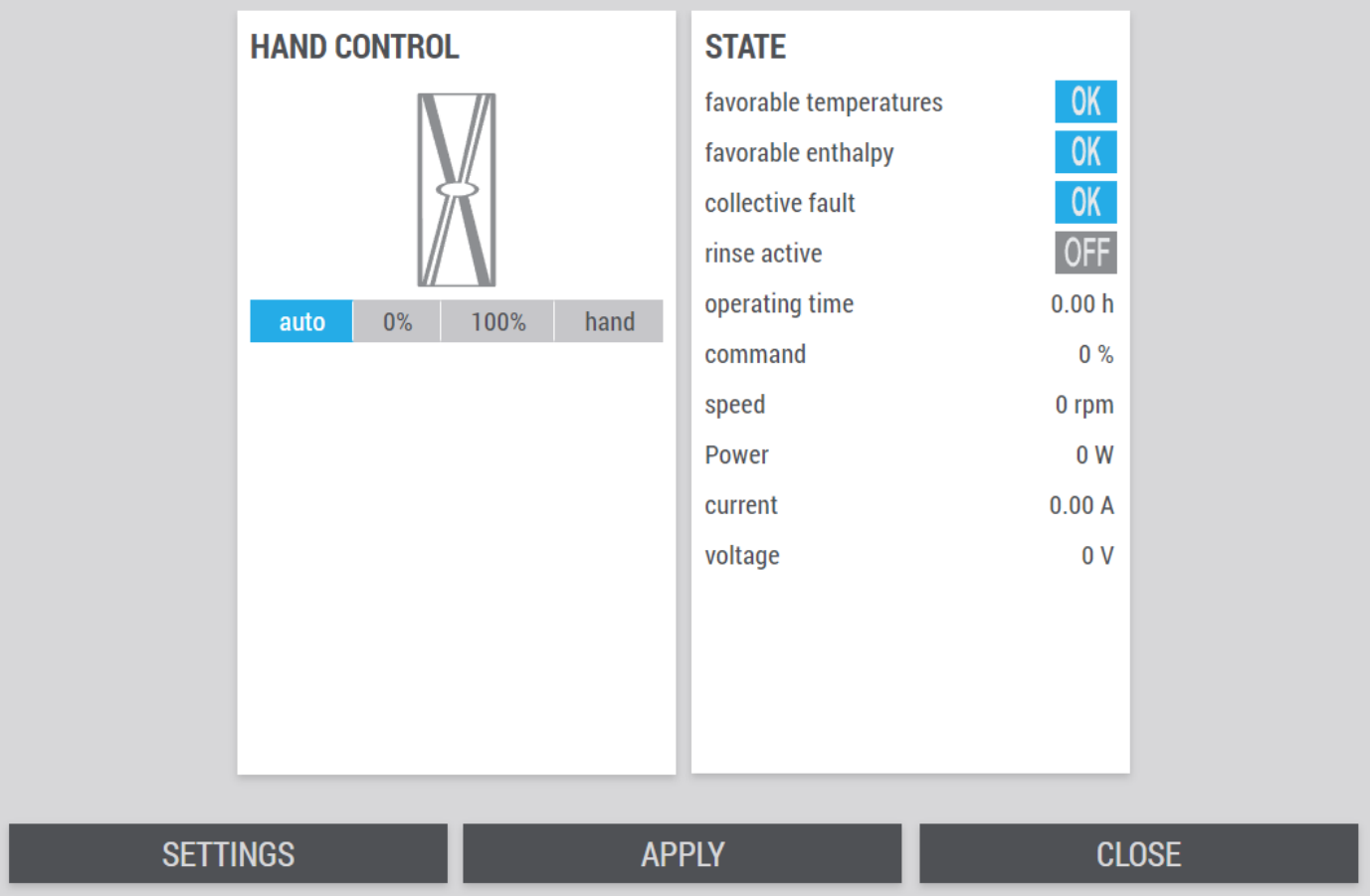


Fig. 18: Rotary heat exchanger

Designation	Description	
MANUAL CONTROL	Performance requirement	The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
STATUS	Favourable temperatures	! No OK Indicates that heat recovery is possible.
	Favourable enthalpy	! No OK Indicates that enthalpy recovery is possible.

Designation	Description	
	Collective fault	! At least one fault is present OK no fault
	Rinse active	OFF Inactive ON Cleaning mode Active
	Operating time	Operating hours counter of the rotary heat exchanger
	Command	Setpoint value for the rotary heat exchanger
	Speed	Speed in revolutions per minute
	Output	present power consumption
	Current	present current consumption
	Voltage	present voltage

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

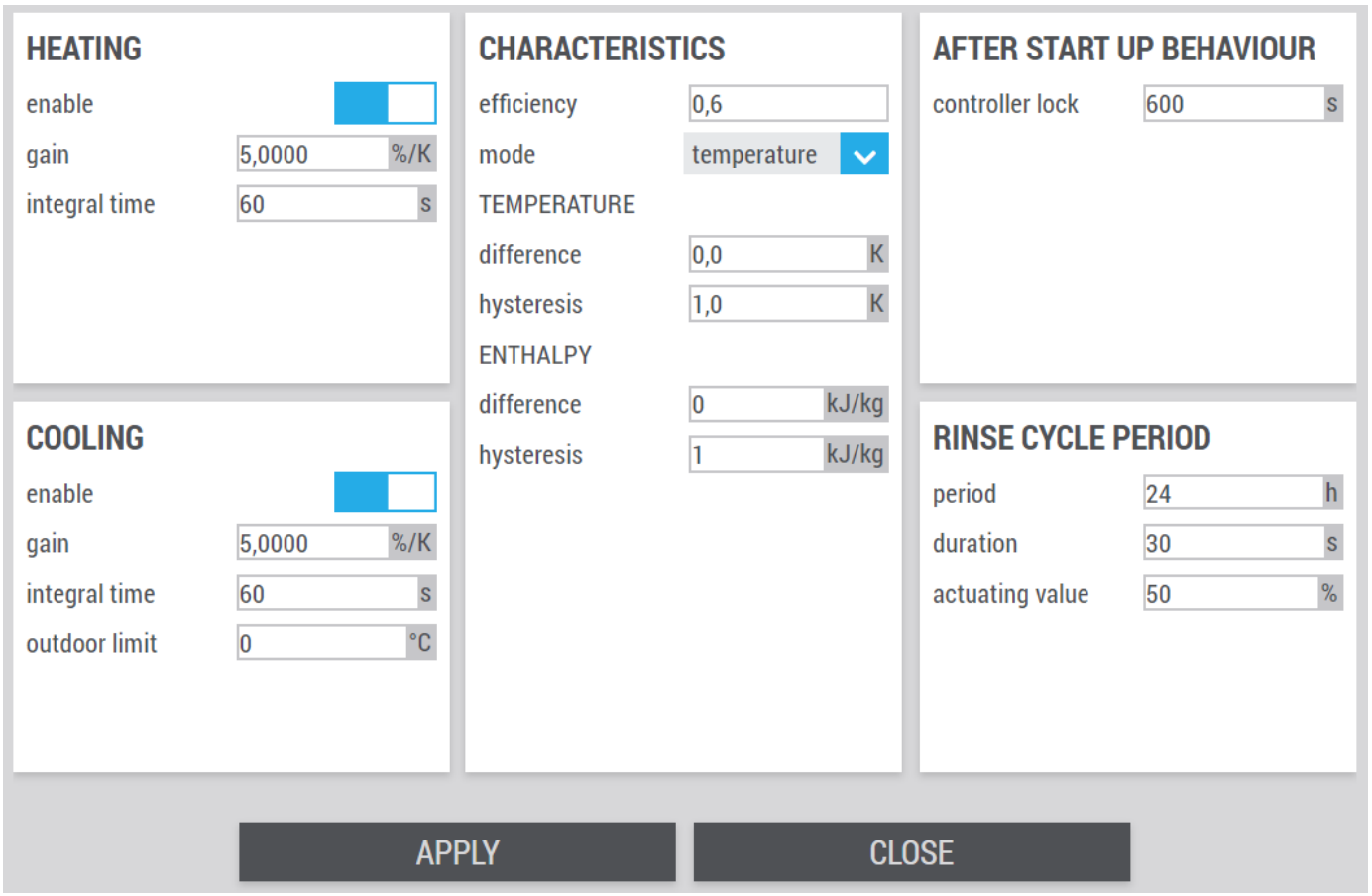


Fig. 19: Rotary heat exchanger settings

Designation	Description	
HEATING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Input fields for PI controller in heating mode.
COOLING	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Input fields for PI controller in cooling mode.
	Outdoor limit	As soon as the outside air temperature falls below this limit, the component is removed from the control chain of the cooling case.
OPERATING BEHAVIOUR	Heat recovery coefficient	To determine the air outlet temperature of the heat recovery system. If the calculated value cannot reach the target value, the controller is synchronised to 100% (boost in the start-up process).

Designation	Description	
	Mode	Determines which values are used to evaluate whether heat recovery is possible. You can choose between temperature, enthalpy or both.
	TEMPERATURE ■ **Difference:** Describes the minimum temperature difference between extract air and outdoor air for enabling heat recovery ■ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.	
	ENTHALPY ■ **Difference:** Describes the minimum enthalpy difference between extract air and outdoor air for the release of heat recovery ■ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.	
	Actuating value	minimum and maximum actuating value
POST START UP BEHAVIOUR	Controller lock	In winter, after the priming, the heat recovery runs at full power for the duration of the controller lock. After that, the control is released.
RINSE CYCLE PERIOD	Period	The rinse cycle is activated if the rotary heat exchanger has not been activated for the duration of the period.
	Duration	Duration of the rinse cycle in seconds
	Actuating value	Actuating value of the rotary heat exchanger during rinse cycle

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.5 Plate heat exchanger

Component status

Go to the system diagram ⌂ and select the plate heat exchanger ⋈.

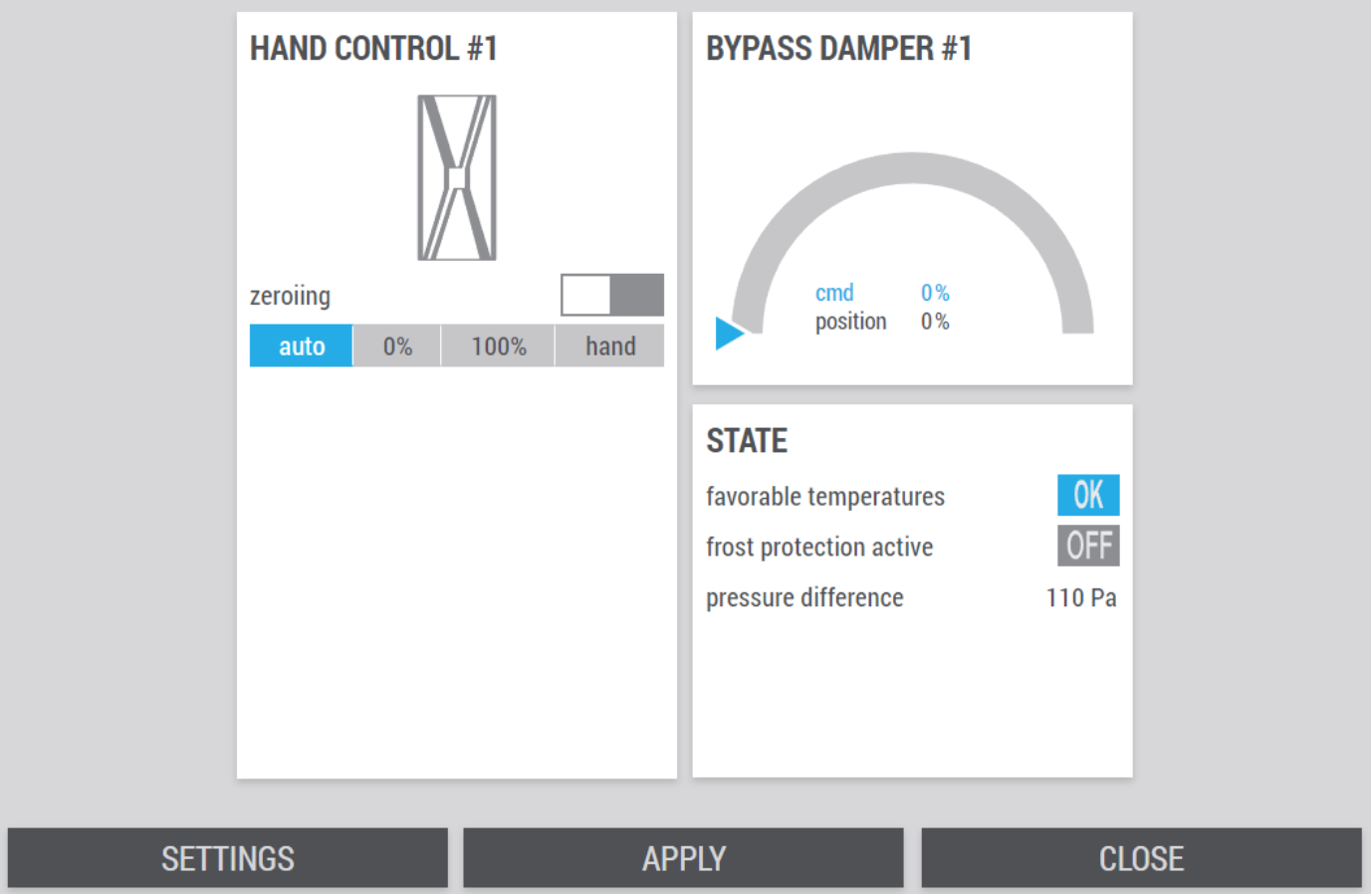
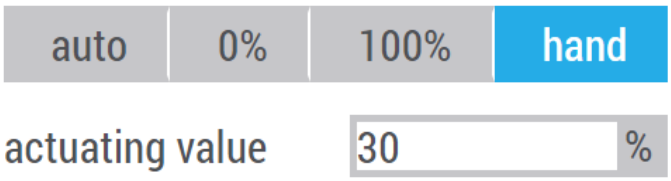


Fig. 20: Plate heat exchanger

Designation	Description	
MANUAL CONTROL	Zero-point adjustment	**Important: Only carry out zero-point adjustment while fans are stopped, as otherwise the measured values will not be correct.** Carry out a zero-point adjustment of the differential pressure sensor by setting the slide switch. inactive start zero-point adjustment
	Plate heat exchanger	The power is controlled manually by selecting one of the following options:  If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
BYPASS DAMPER #1	Tachometer display with request from the X-CUBE controller (actuating value) to the bypass damper and position feedback of the bypass damper (position), *'Tachometer explanation' on page 15* .	
STATUS	Favourable temperatures	! No OK Indicates that heat recovery is possible.
	Anti-icing protection active	OFF Inactive ON Active
	Differential pressure	Displays the current differential pressure of the plate heat exchanger.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

NOTICE!
The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

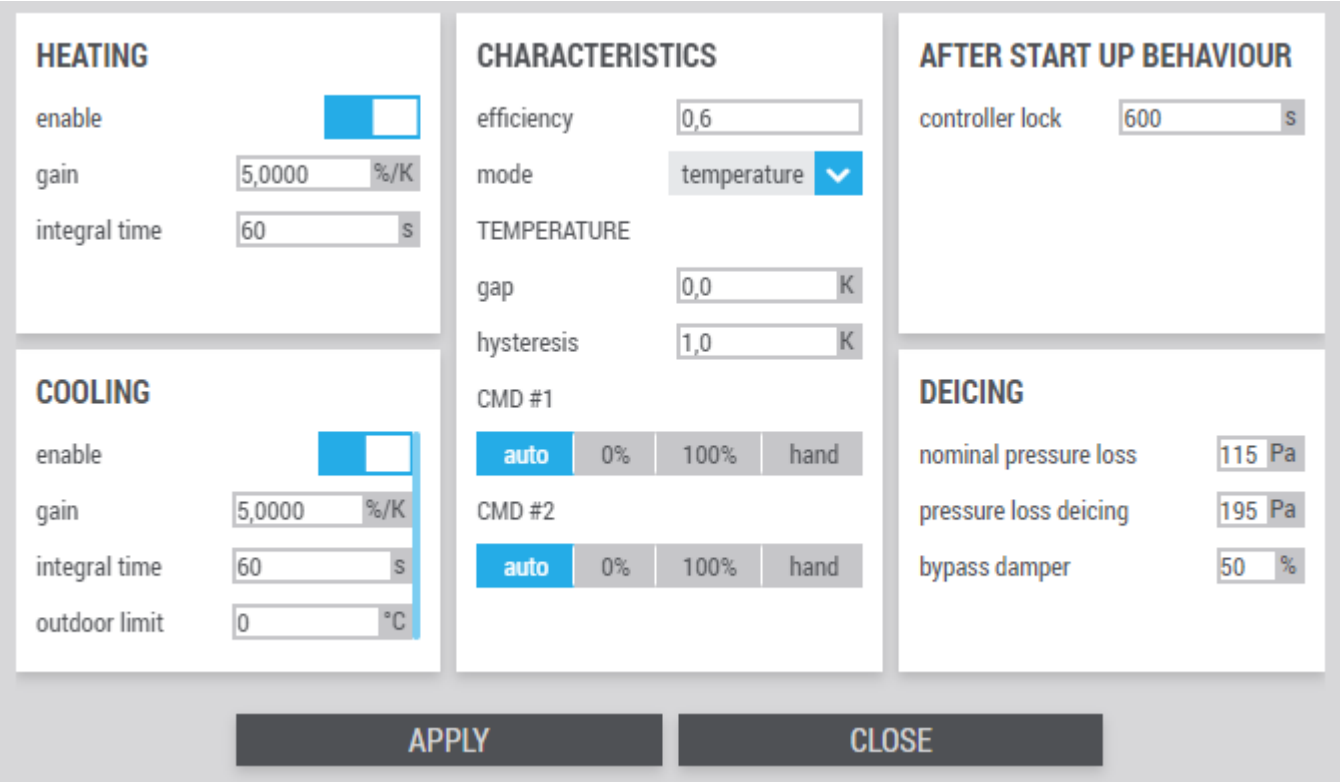
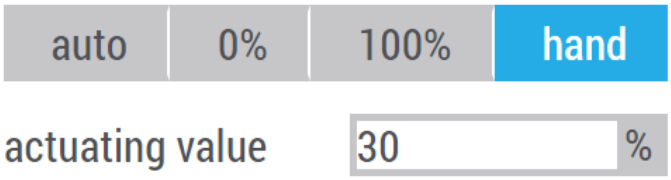


Fig. 21: Plate heat exchanger settings

Designation	Description	
HEATING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Input fields for PI controller in heating mode.
COOLING	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Input fields for PI controller in cooling mode.
	Outdoor limit	As soon as the outside air temperature falls below this limit, the component is removed from the control chain of the cooling case.
OPERATING BEHAVIOUR	Heat recovery coefficient	To determine the air outlet temperature of the heat recovery system. If the calculated value cannot reach the target value, the controller is synchronised to 100% (boost in the start-up process).

Designation	Description	
	Mode	Determines which values are used to evaluate whether heat recovery is possible. You can choose between temperature, enthalpy or both.
	TEMPERATURE	▪ **Difference:** Describes the minimum temperature difference between extract air and outdoor air for enabling heat recovery ▪ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.
	Actuating value #1 / #2 Setting for the respective bypass damper *(Note: Depending on the variant, one or two bypass dampers are installed)*	The power is controlled manually by selecting one of the following options:  If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
POST START UP BEHAVIOUR	Controller lock	In winter, after the priming, the heat recovery runs at full power for the duration of the controller lock. After that, the control is released.
DE-ICING	Normal pressure loss	Lower limit value at which the system can detect whether the plate heat exchanger is free of ice.
	Pressure loss due to icing	Upper limit value above which the plate heat exchanger is recognised as iced up.
	Bypass damper	Enter the damper blade position in case of ice buildup.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.6 Recirculation damper

Component status

Go to the system diagram ⌂ and select the recirculation damper ⍁.

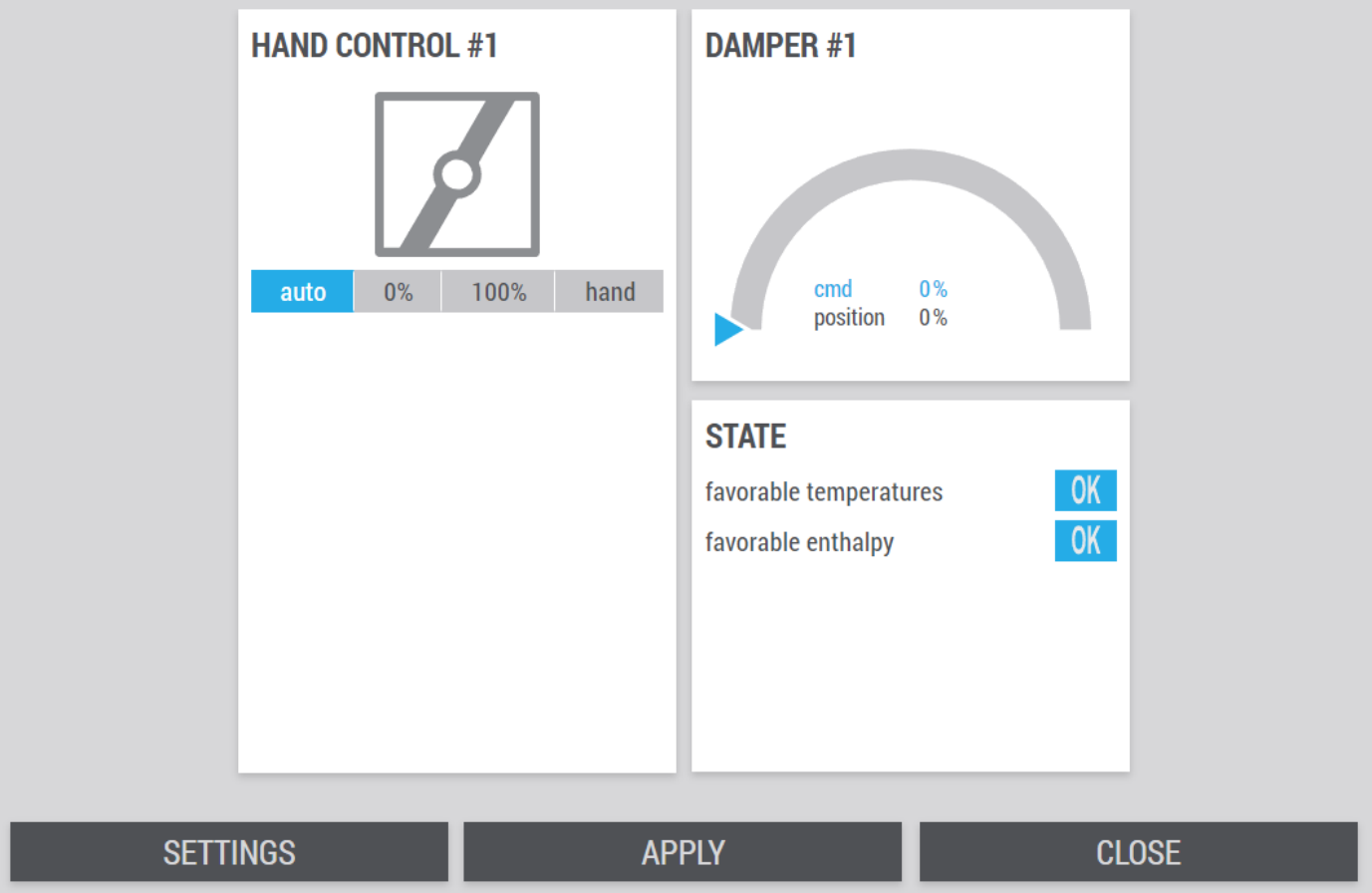


Fig. 22: Component status recirculation damper

Designation	Description	
MANUAL CONTROL	Damper	Manual control of the damper is achieved by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
DAMPER	Tachometer display of the position of the corresponding recirculation damper, ⍁ *'Tachometer explanation' on page 15*	

Designation	Description	
STATUS	favourable temperatures	! No OK Indicates that heat recovery is possible.
	favourable enthalpy	! No OK Indicates that enthalpy recovery is possible.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

NOTICE!
The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

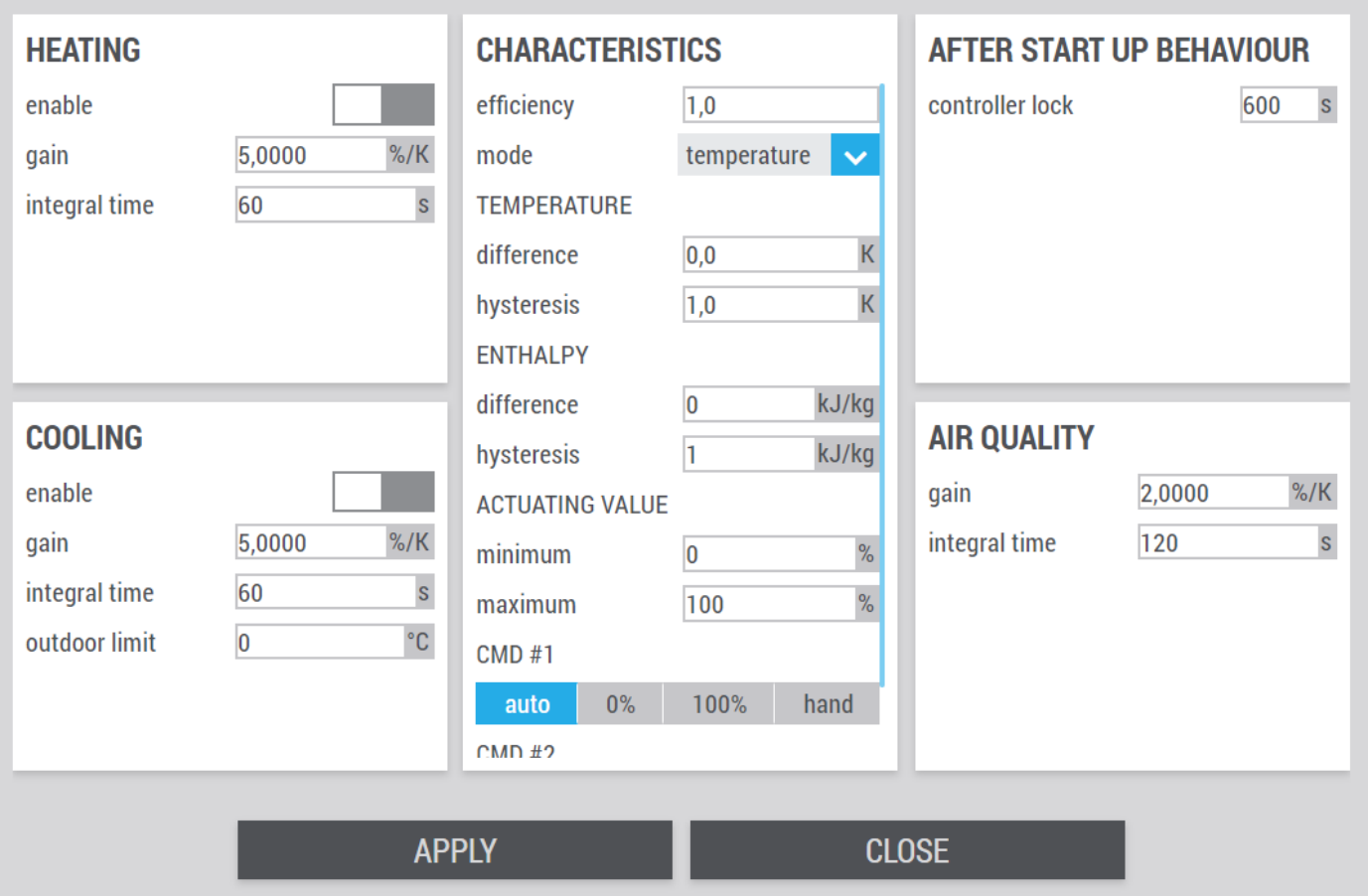
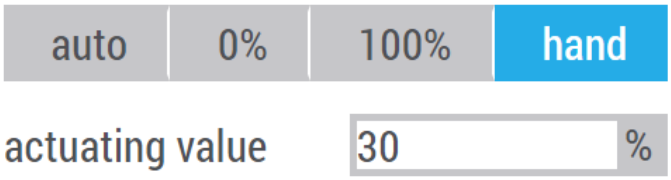


Fig. 23: Recirculation damper settings

Designation	Description	
HEATING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Input fields for PI controller in heating mode.
COOLING	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Input fields for PI controller in cooling mode.
	Outdoor limit	As soon as the outside air temperature falls below this limit, the component is removed from the control chain of the cooling case.

Designation	Description	
OPERATING BEHAVIOUR	Heat recovery coefficient	To determine the air outlet temperature of the heat recovery system. If the calculated value cannot reach the target value, the controller is synchronised to 100% (boost in the start-up process).
	Mode	Determines which values are used to evaluate whether heat recovery is possible. You can choose between temperature, enthalpy or both.
	TEMPERATURE ■ **Difference:** Describes the minimum temperature difference between extract air and outdoor air for enabling heat recovery ■ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.	
	ENTHALPY ■ **Difference:** Describes the minimum enthalpy difference between extract air and outdoor air for the release of heat recovery ■ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.	
	ACTUATING VALUE ■ **Minimum:** Describes the minimum actuating value or the degree of opening of the damper. ■ **Maximum:** Describes the maximum actuating value or the degree of opening of the damper.	
	Actuating value #1 / #2 Setting for the respective damper *(Note: Depending on the variant, one or two dampers are installed)*	Manual control of the component is achieved by selecting one of the following options:  If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
POST START UP BEHAVIOUR	Controller lock	In winter, after the priming, the heat recovery runs at full power for the duration of the controller lock. After that, the control is released.
AIR QUALITY	Gain Integral action time	Input fields for PI controller of the air quality control of the recirculation damper.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.7 Run-around coil system

Component status

Go to the system diagram ⌂ and select the run-around coil system ⊠.

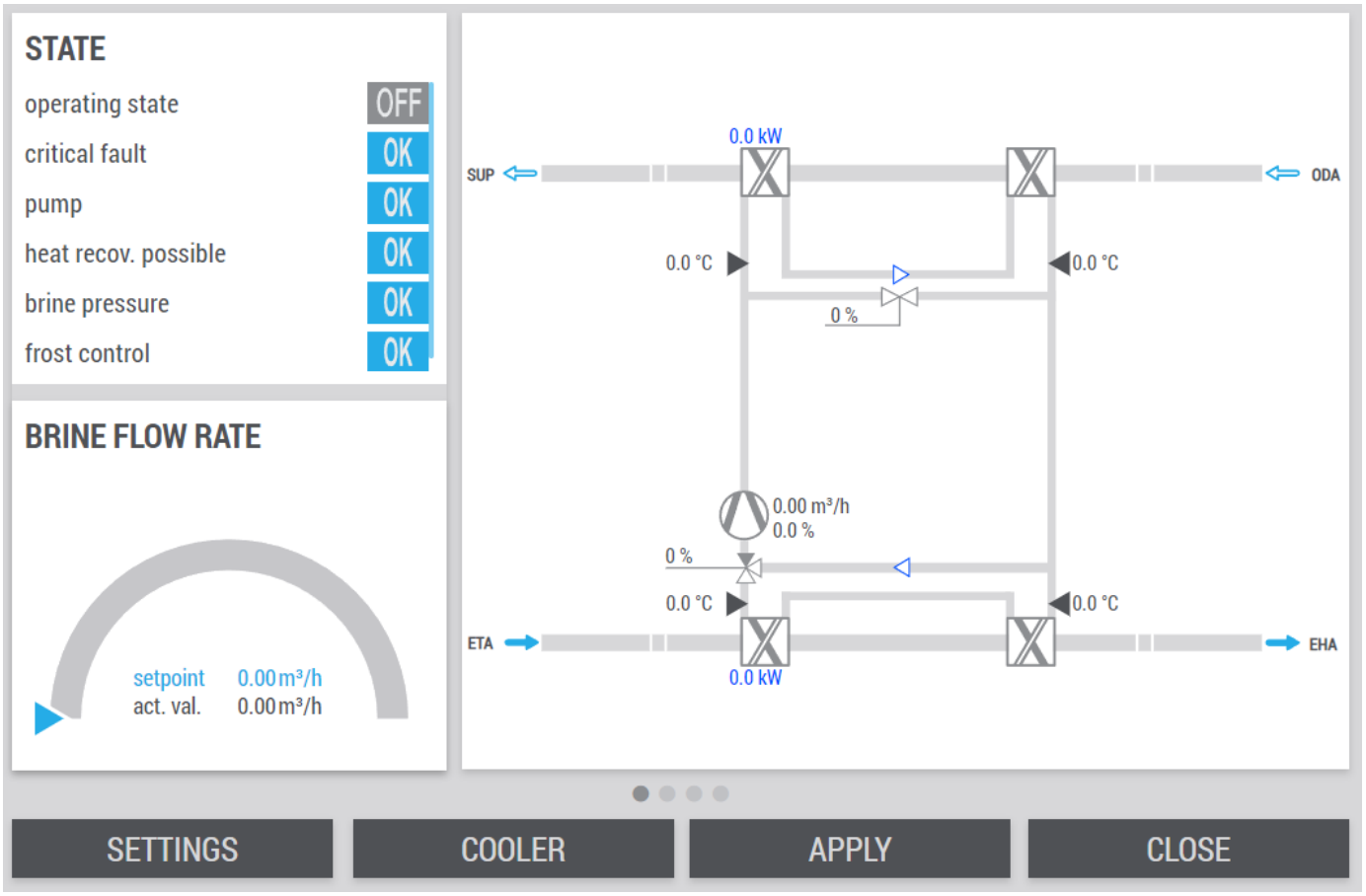


Fig. 24: Status page (1) run-around coil system

Designation	Description	
STATUS	Operating status:	OFF Run-around coil system turned off ON Run-around coil system switched on
	Critical fault	! At least one fault is present OK no fault
	Pump	! At least one fault is present OK no fault
	Heat recovery possible	! No OK Indicates that heat recovery is possible.
	Brine pressure	! Brine pressure outside specifications OK Brine pressure OK
	Anti-icing protection	! Fault anti-icing protection OK Anti-icing protection OK
Brine flow rate	Tachometer for displaying the setpoint and actual value of the brine flow rate ☟ *'Tachometer explanation' on page 15* .	

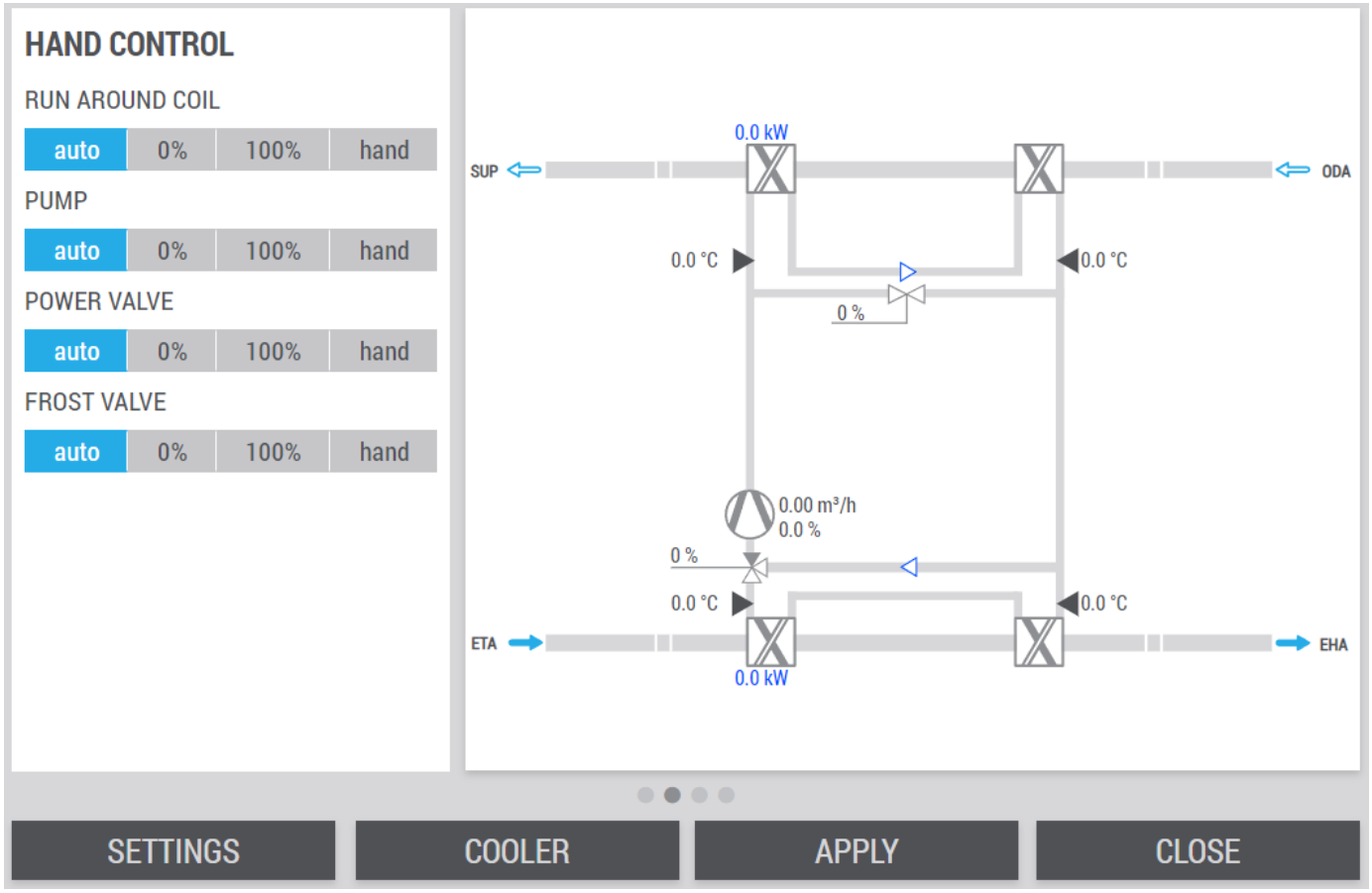


Fig. 25: Status page (2) run-around coil system

Designation	Description	
MANUAL CONTROL	▪ Run-around coil system ▪ Pump ▪ Power valve ▪ Anti-freeze valve ▪ Heat feed ▪ Cooling feed	Manual control of the component is achieved by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %

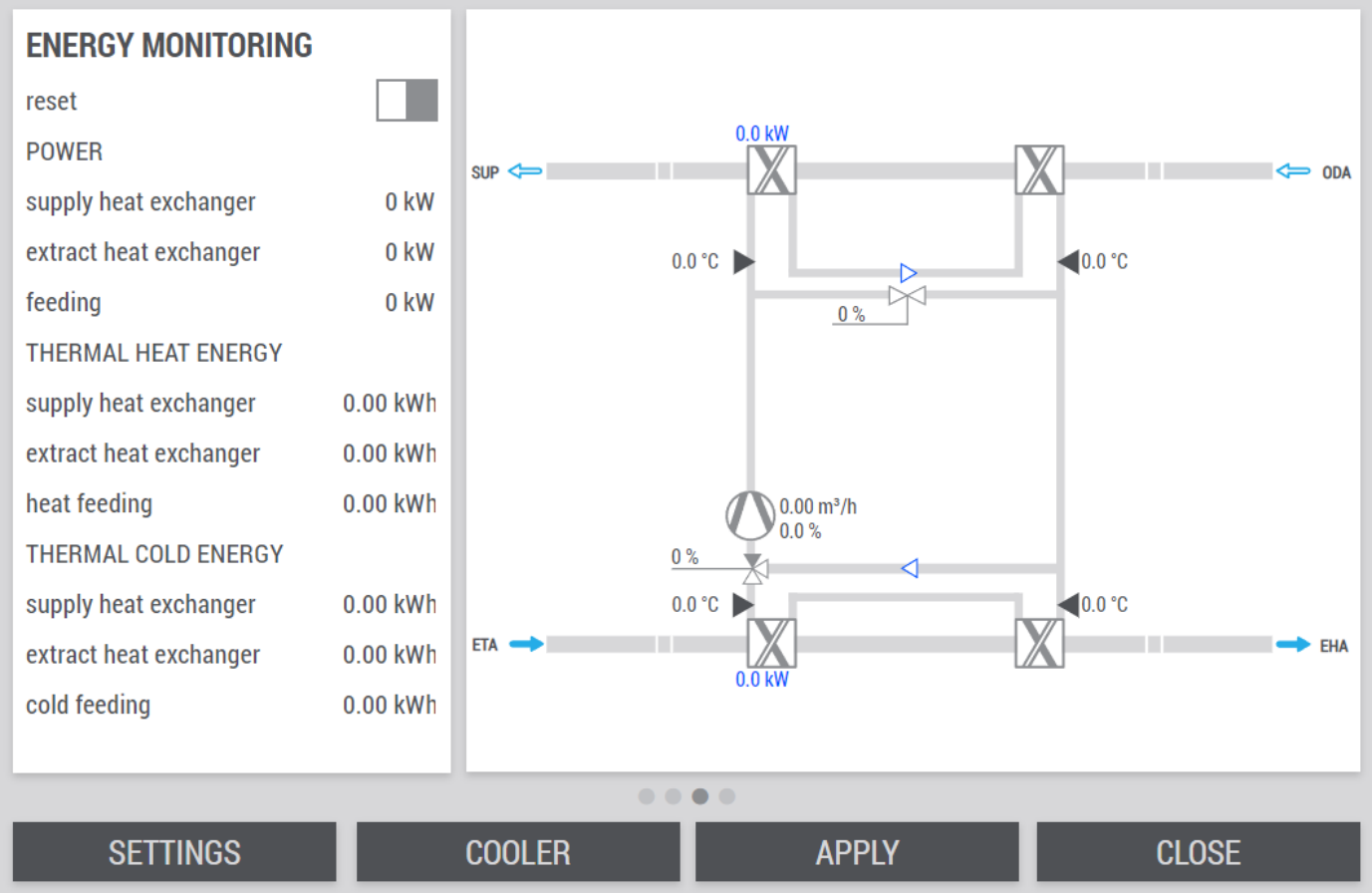


Fig. 26: Status page (3) run-around coil system

Designation	Description	
ENERGY MONITORING	reset	keep values reset accumulated energy values
	Output	Display of the output in kW via the supply/extract air heat exchanger and via heat feed.
	Heating and cooling energy	Display of the cumulative energy in kWh via the supply/ extract air heat exchanger and via heat feed.

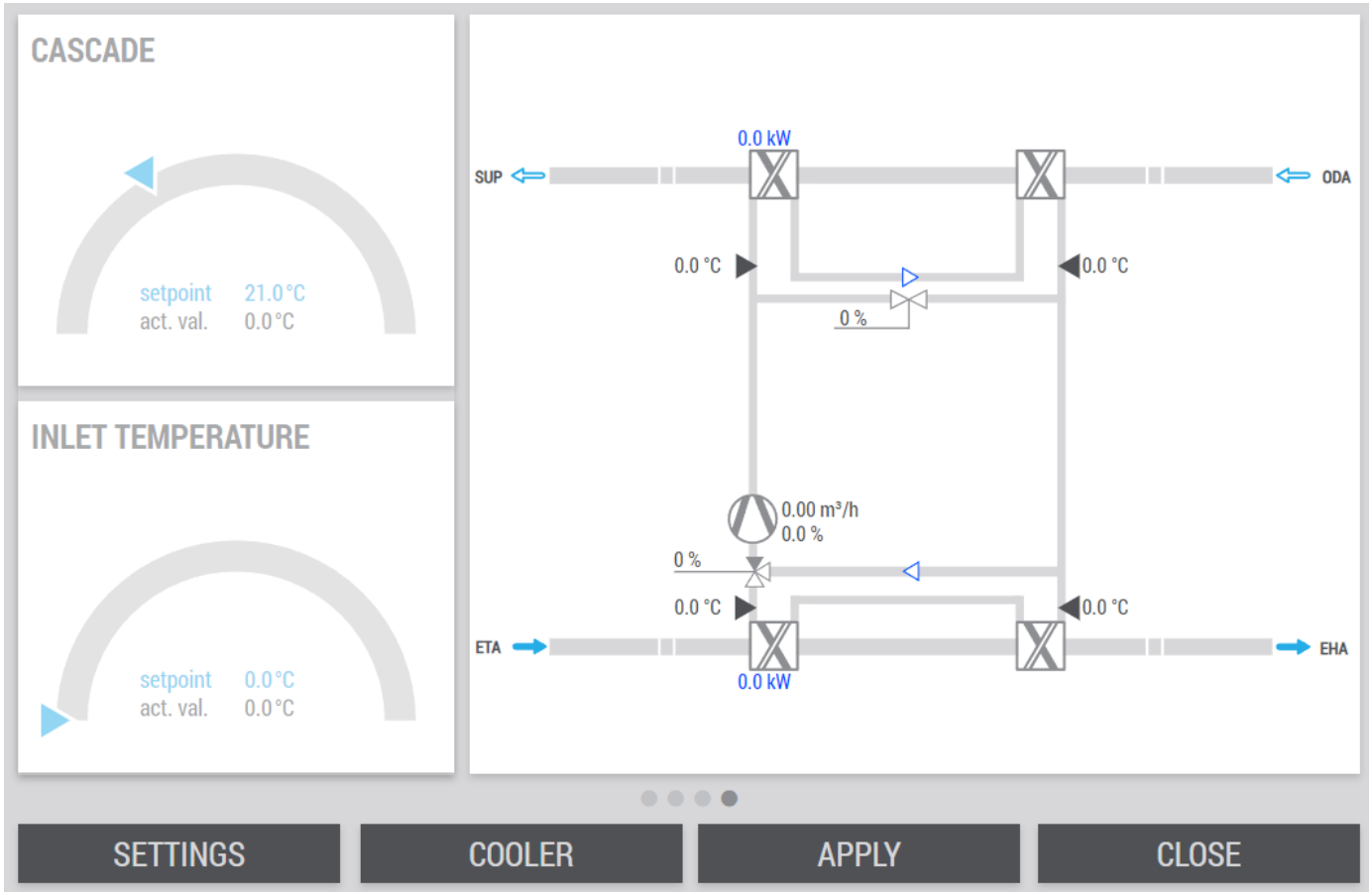


Fig. 27: Status page (4) run-around coil system

Designation	Description
CASCADE FLOW TEMPERATURE	If a heat or cooling feed is available, the flow temperature of the supply air heat exchanger is controlled in cascade with the supply air temperature. The auxiliary controller determines the setpoint for the slave controller, using the supply air temperature as the control variable. The slave controller has the flow temperature of the supply air heat exchanger as a control variable, tachometer: *'Tachometer explanation' on page 15*.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

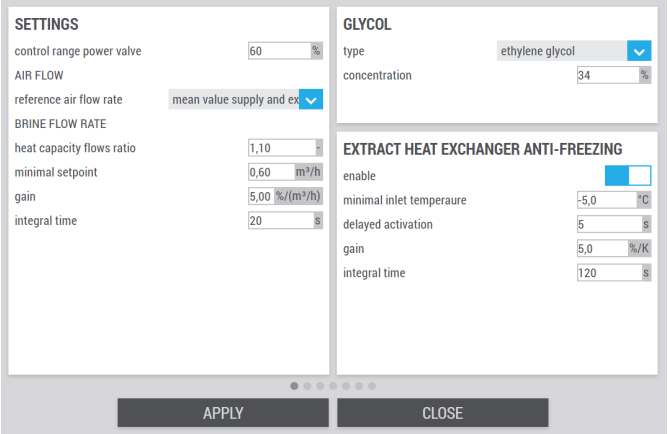


Fig. 28: Settings run-around coil system (1)

Designation	Description	
SETTINGS	Control range power valve	Share of the power requirement that is taken over by the valve
	Air volume flow rate	Reference air volume flow ■ **Mean value for supply and extract air:** The mean value of the incoming air volume flow measurement values is selected to calculate the optimum pump flow rate ■ **Supply air volume flow rate:** Only the SUP volume flow rate is selected to calculate the optimum pump flow rate ■ **Extract air volume flow rate:** Only the ETA volume flow rate is selected to calculate the optimum pump flow rate
	BRINE FLOW RATE Ratio of heat capacity flows	Is used to calculate the optimum brine flow rate and describes the ratio of the air heat capacity flow to the brine heat capacity flow. > 1 = Higher setpoint value (value range: 0.85 - 1.15)
	minimum setpoint value	Corresponds to the minimum volume flow rate. Must be determined during commissioning (manual operation: pump speed = 30%; open power valve in 10% steps from 0% - 100% and note measured value, min. measured value minus 0.3 - 0.5m³/h corresponds to min. setpoint value). Does not generate the error "Minimum volume flow not reached"
	Gain Integral action time	Input fields for the PI controller of the brine volume flow controller
GLYCOL	Type	Corresponds to the glycol type used. The planning specifications are given on the device data sheet.
	Concentration	Corresponds to the glycol concentration used. The planning specifications are given on the device data sheet.

Designation	Description	
ANTI-ICING PROTECTION FOR EXTRACT AIR HEAT EXCHANGER	enable	no release, here the anti-icing protection can be switched off if required. Releases the anti-icing protection.
	Minimum flow temperature	Minimum flow temperature of the extract air heat exchanger
	delayed activation	Delayed activation of the anti-icing controller
	Gain Integral action time	Input fields for the PI controller of the anti-icing controller

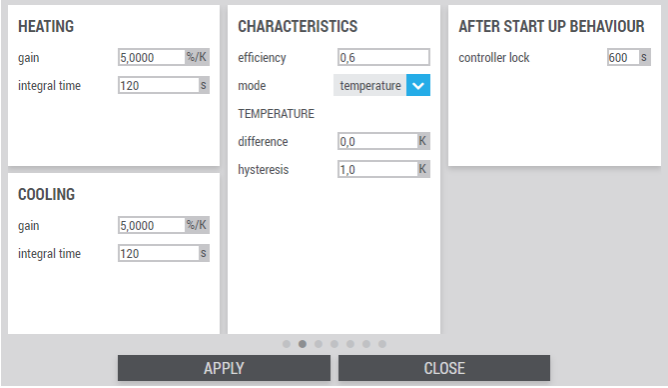


Fig. 29: Settings run-around coil system (2)

Designation	Description	
HEATING	Gain Integral action time	Input fields for PI controller in heating mode.
COOLING	Gain Integral action time	Input fields for PI controller in cooling mode.
OPERATING BEHAVIOUR	Heat recovery coefficient	To determine the air outlet temperature of the heat recovery system. If the calculated value cannot reach the target value, the controller is synchronised to 100% (boost in the start-up process).
	Mode	Determines which values are used to evaluate whether heat recovery is possible. You can choose between temperature, enthalpy or both.
	TEMPERATURE ■ **Difference:** Describes the minimum temperature difference between extract air and outdoor air for enabling heat recovery ■ **Hysteresis:** Minimum difference after switching off the heat recovery to enable it again.	
	Actuating value	minimum and maximum actuating value
POST START UP BEHAVIOUR	Controller lock	After the priming, the heat recovery runs at full power for the duration of the controller lock. PI control is disabled during this time. In winter, the function can be used to prevent the heat recovery from being switched off prematurely by the control system

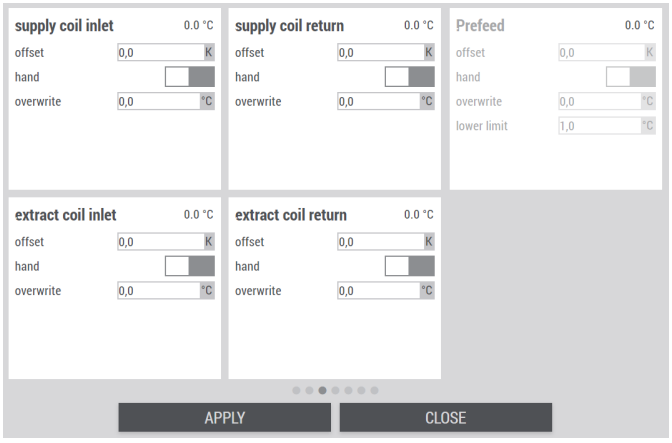


Fig. 30: Settings run-around coil system (3)

Designation	Description	
Supply air coil inlet Extract air coil inlet Supply air coil outlet Extract air coil outlet Feeding inlet	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.
Feeding inlet	Lower limit	Input field for the lower limit, as frost protection for the feed-in. As soon as the temperature falls below the set value, the frost protection valve opens completely and the heat feed (if present) is operated at full power until the temperature rises 2 Kelvin above the set value.

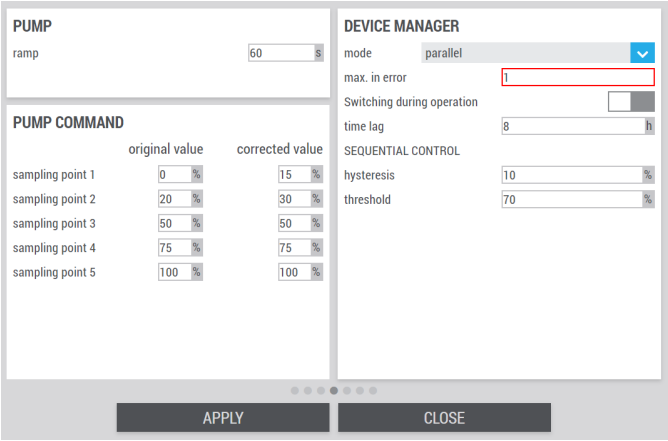


Fig. 31: Settings run-around coil system (4)

Designation	Description	
PUMP	Ramp	Start-up and switch-off ramp (in seconds) of the pump to prevent abrupt switching on and off.
PUMP CONTROL SIGNAL	The original value of the pump control signal is adjusted linearly with the aid of 5 adjustable grid points. This allows the effect on the change in volume flow to be distributed more evenly.	
DEVICE MANAGER	Mode	■ **parallel:** All pumps start up and shut down simultaneously ■ **sequential:** Pumps start up one after the other. If total demand <= threshold value, the threshold value is divided by the number of operating pumps and each individual pump is run up to the threshold value. When all pumps have reached the threshold value, then parallel operation.
	max. in error	Number of pumps that must show errors before the station is switched off.
	Switchover in operation	Prevents the pump from switching off during operation. Allows the pump to be switched off during operation.
	Time difference	Specifies the time at which the switchover between operating pump and reserve pump takes place. The pump with the highest number of operating hours is always switched off.
	Hysteresis	Specifies the value - below the threshold value - at which a pump is switched off again. (Shut down).
	Threshold value	Total demand signal of the pumps. Is divided by the number of operating pumps in the case of sequential control. Pumps then start up one after the other until the speed of the individual pump has reached the threshold value.

The settings in the following window are only relevant if the RAC system is equipped with a dehumidification cold recovery system.

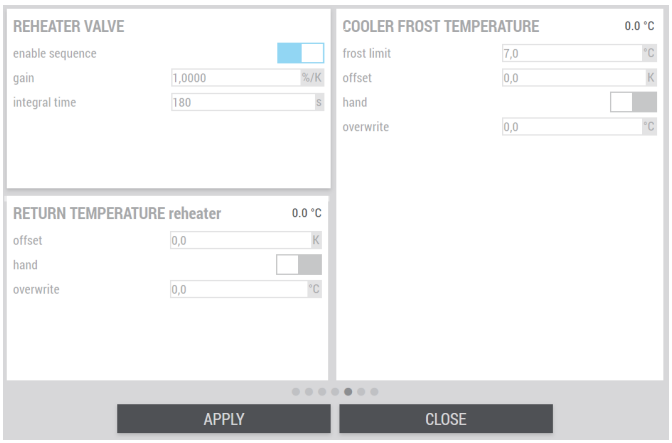


Fig. 32: Settings run-around coil system (5)

Designation	Description	
REHEATER VALVE	Sequence release	Removes the reheater valve from the heating sequence. Integrates the reheater valve into the heating sequence.
	Gain Integral action time	Input fields for the PI controller in heating mode.
Reheater RETURN TEMPERATURE	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.
COOLING COIL FROST TEMPERATURE	Frost limit value	Limit value of the air inlet temperature at the dehumidifying cooling coil.
	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

The settings in the following window are only relevant if the RAC system is equipped with a cooling feed.

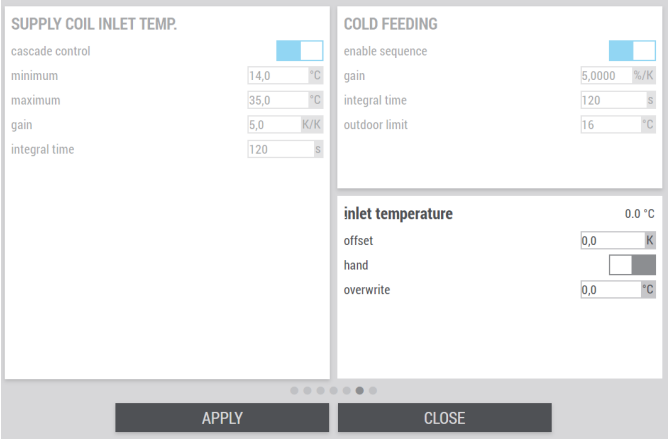


Fig. 33: Settings run-around coil system (6)

Designation	Description	
SUPPLY TEMPERATURE SUPPLY AIR COIL	Cascade control	cascade control not active cascade control active
	Minimum	Minimum brine temperature after feed.
	Maximum	Maximum brine temperature after feed
	Gain Integral action time	Input fields for the PI controller of the auxiliary controller.
COOLING FEED	Sequence release	Removes the cooling feed from the cooling sequence. Integrates the cooling feed into the cooling sequence.
	Gain Integral action time	Input fields for the PI controller of the cooling feed.
	Outdoor limit	Limit temperature below which the cooling feed is blocked for cooling.
Flow temperature	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

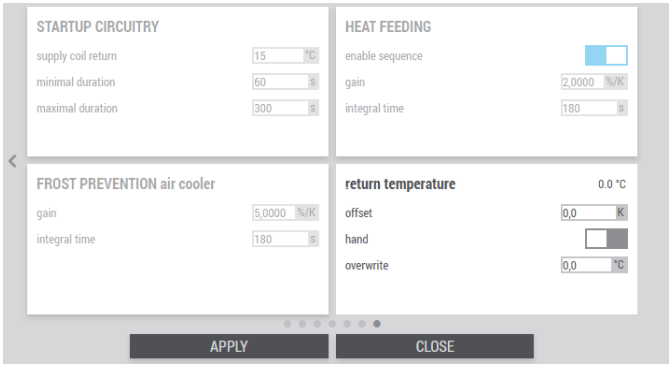


Fig. 34: Settings run-around coil system (7)

Designation	Description	
START-UP CIRCUIT	Outlet supply air coil	Input field for the limit value from which the start-up circuit is deactivated after the minimum duration has elapsed.
	Minimum duration	Minimum duration of the start-up circuit
	Maximum duration	Maximum duration of the start-up circuit
HEAT FEED *(only if heat feed is available)*	Sequence release	Removes the heat feed from the heating sequence. Integrates the heat feed into the heating sequence.
	Gain Integral action time	Input fields for the PI controller of the heat feed.
FROST PREVENTION cooling coil *(only if dehumidification cold recovery is available)*	Gain Integral action time	Input fields for the PI controller for frost protection of the dehumidifying cooling coil.
Return temperature	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

4.8 Preheater/reheater (hot water)

Go to the system diagram ⌂ and select the respective heating coil ⧄.

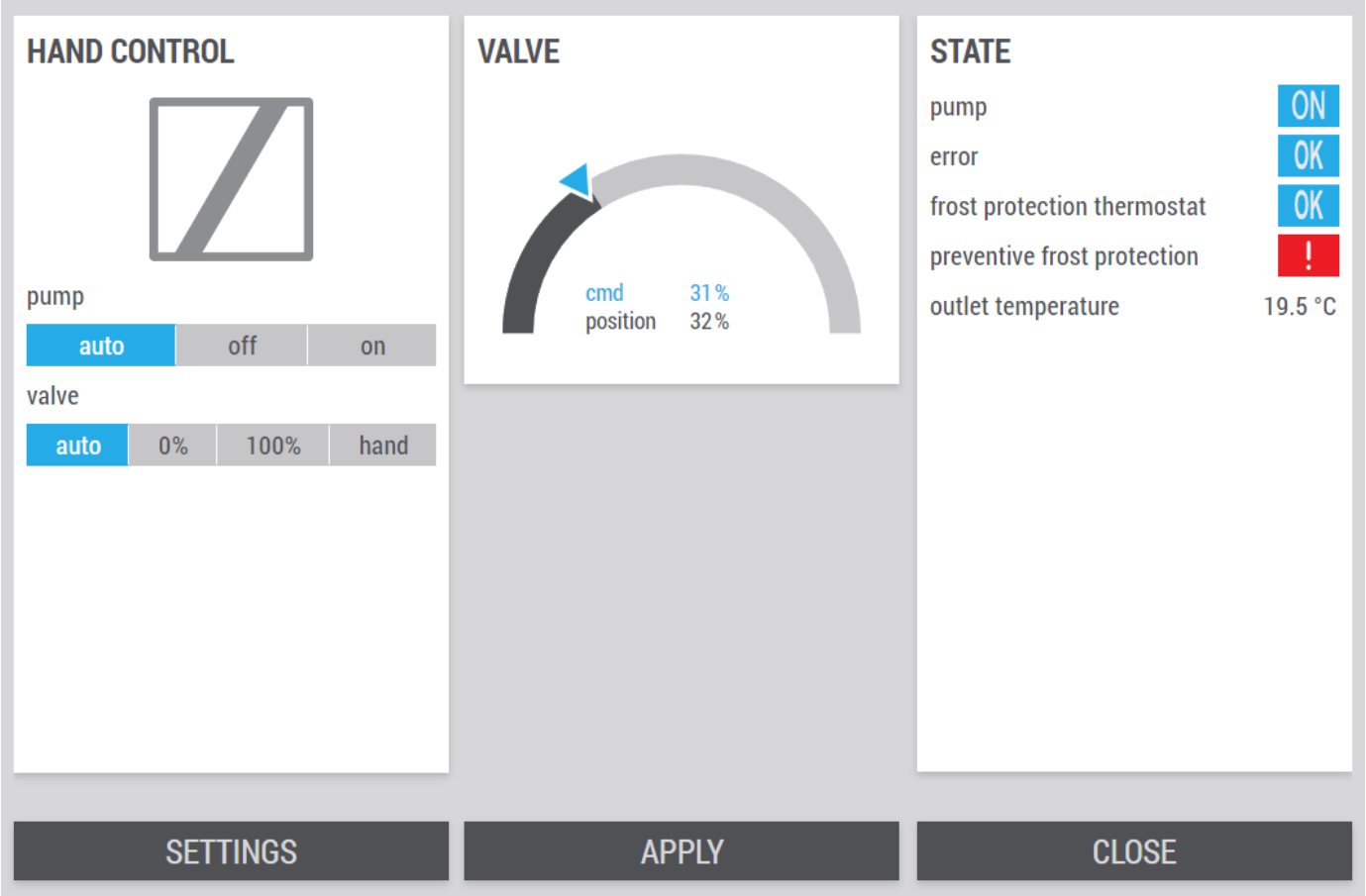


Fig. 35: Status page heating coil

Designation	Description	
MANUAL CONTROL	Pump	Manual control is carried out by selecting one of the following options: auto / off / on
	Valve	The power is controlled manually by selecting one of the following options: auto / 0% / 100% / hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto / 0% / 100% / hand actuating value 30 %

Designation	Description	
VALVE	Request from X-CUBE Control (actuating value) to the valve and feedback from the valve (position) shown on the tachometer display, *'Tachometer explanation' on page 15* .	
STATUS	Pump	OFF OFF ON ON
	Fault	! At least one fault is present OK no fault
	Anti-frost thermostat	! Triggered OK OK
	Preventive frost protection	! Preventive frost protection is carried out OK No need for preventive frost protection
	Return temperature	Displays the current temperature at the return of the corresponding heating coil.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Click *[EINSTELLUNGEN]* to select the settings page of the corresponding heater.

Service user rights are required to make changes to the settings.

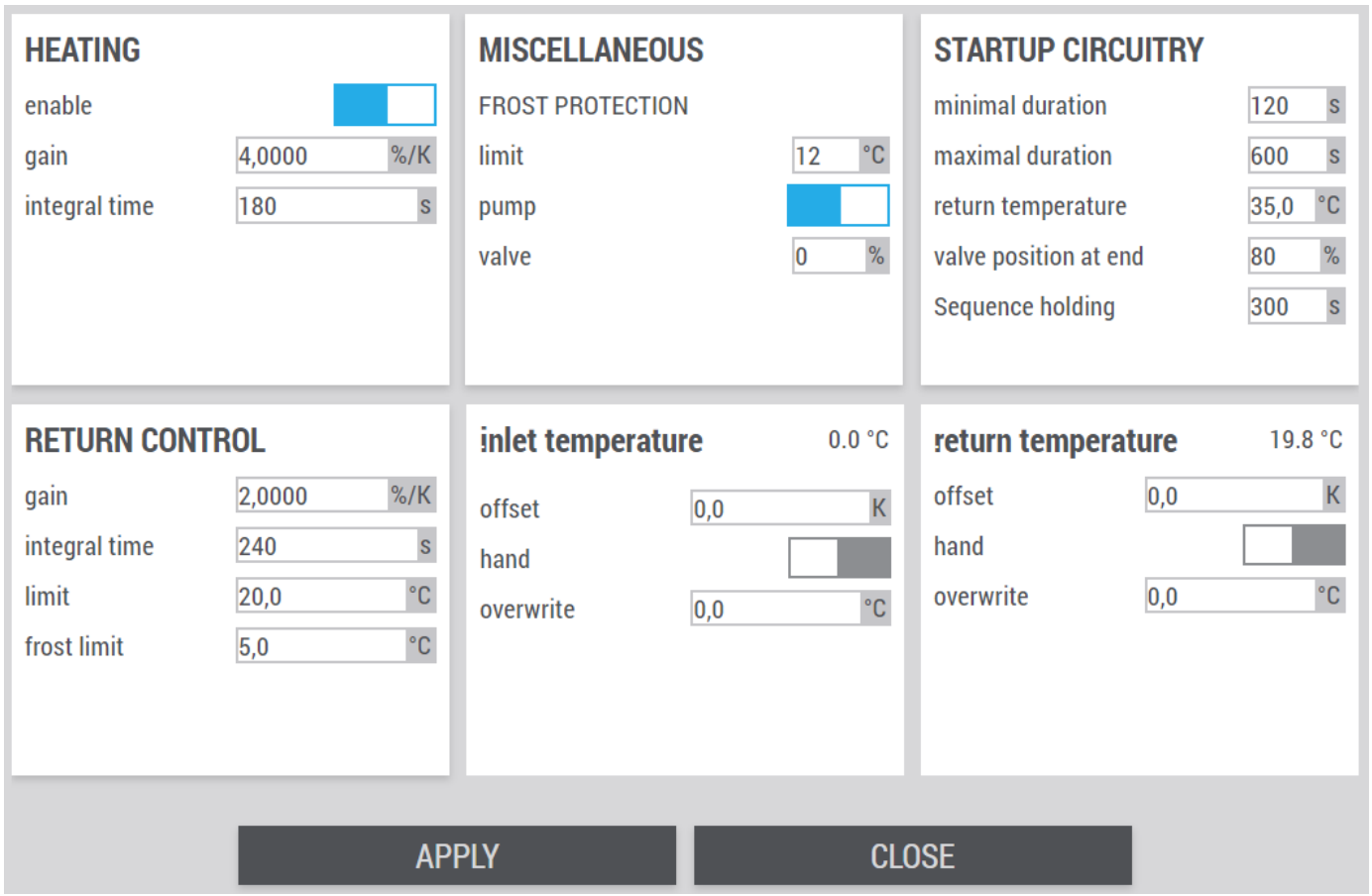


Fig. 36: Heating coil settings

Designation	Description	
HEATING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Enter the values for PI control of the heater.
RETURN CONTROL	Lower limit	Enter the minimum return temperature. If the return temperature falls below this value, the preventive frost protection function opens the valve slightly.
	Gain Integral action time	Input fields for the PI controller of the return temperature monitoring.
	Offset	Entry field for a correction factor of the return temperature sensor (see also: sensor correction).
MISCELLANEOUS	Limit value	If the outside temperature falls below the specified limit value, the following settings apply for the pump and valve.

Designation	Description	
	Pump	not enabled Enables pump when the outside temperature is below the limit value.
	Valve	Minimum actuating value of the valve when the outside temperature is below the limit value
Flow temperature (optional) Return temperature	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.
START-UP CIRCUIT	Minimum duration	Entry field for the minimum period of time for start-up operation. **When the set minimum duration has elapsed, reaching the return temperature setpoint or the *'maximum duration'* will end the start-up circuit.**
	Maximum duration	Enter the maximum period of time for start-up circuit.
	Return temperature	Entry field for the return temperature setpoint when start-up circuit is active.
	End valve position	Input fields for valve position Once the start-up circuit is complete, the valve is moved into this position.
	Sequence hold position	After the start-up circuit, the control starts the heating sequence. The sequence is then held for the duration specified here.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.9 Electric preheater / electric reheater

Go to the system diagram ⌂ and select the respective heating coil ⧄.

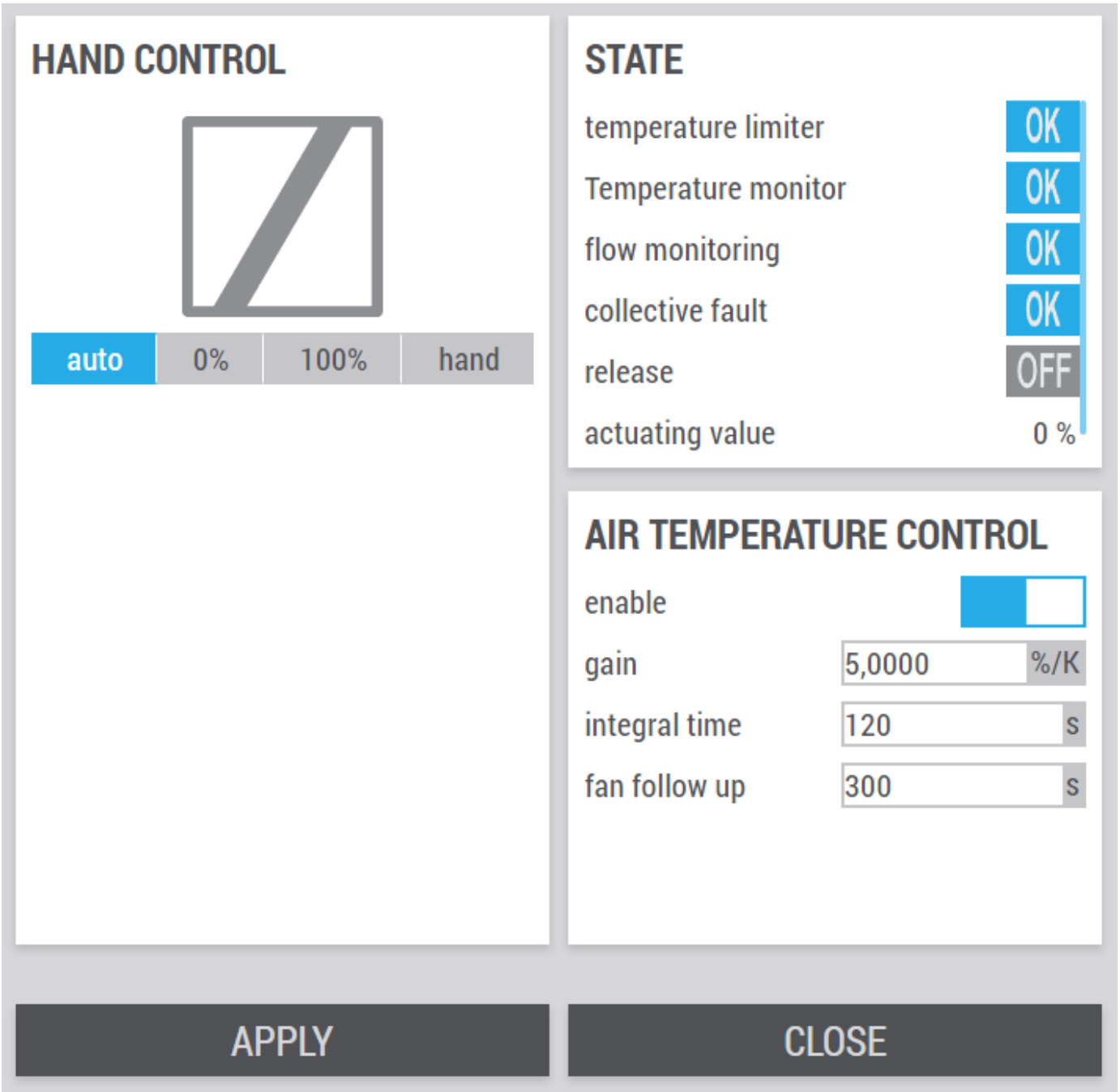
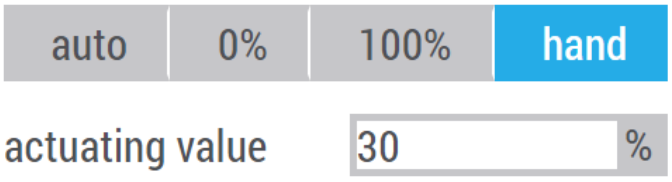


Fig. 37: Status page electric preheater / electric reheater

Designation	Description	
MANUAL CONTROL	Electric preheater / electric reheater	The power is controlled manually by selecting one of the following options:  If you select the option *[Hand]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
STATUS	Temperature limiter	! Triggered OK OK
	Temperature monitor	! Triggered OK OK
	Flow monitoring	OFF Locked ON Released
	Collective fault	! At least one fault is present OK no fault
AIR TEMPERATURE CONTROL	Gain Integral action time	Enter the values for PI control of the heater.
Fan run-down	Fan run-down	Input field for the run-down time of the fans in seconds. Safety function used to cool down the electric air heater.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.10 Cooling coil (chilled water)

Component status

Go to the system diagram ⌂ and select the cooling coil ⊠.

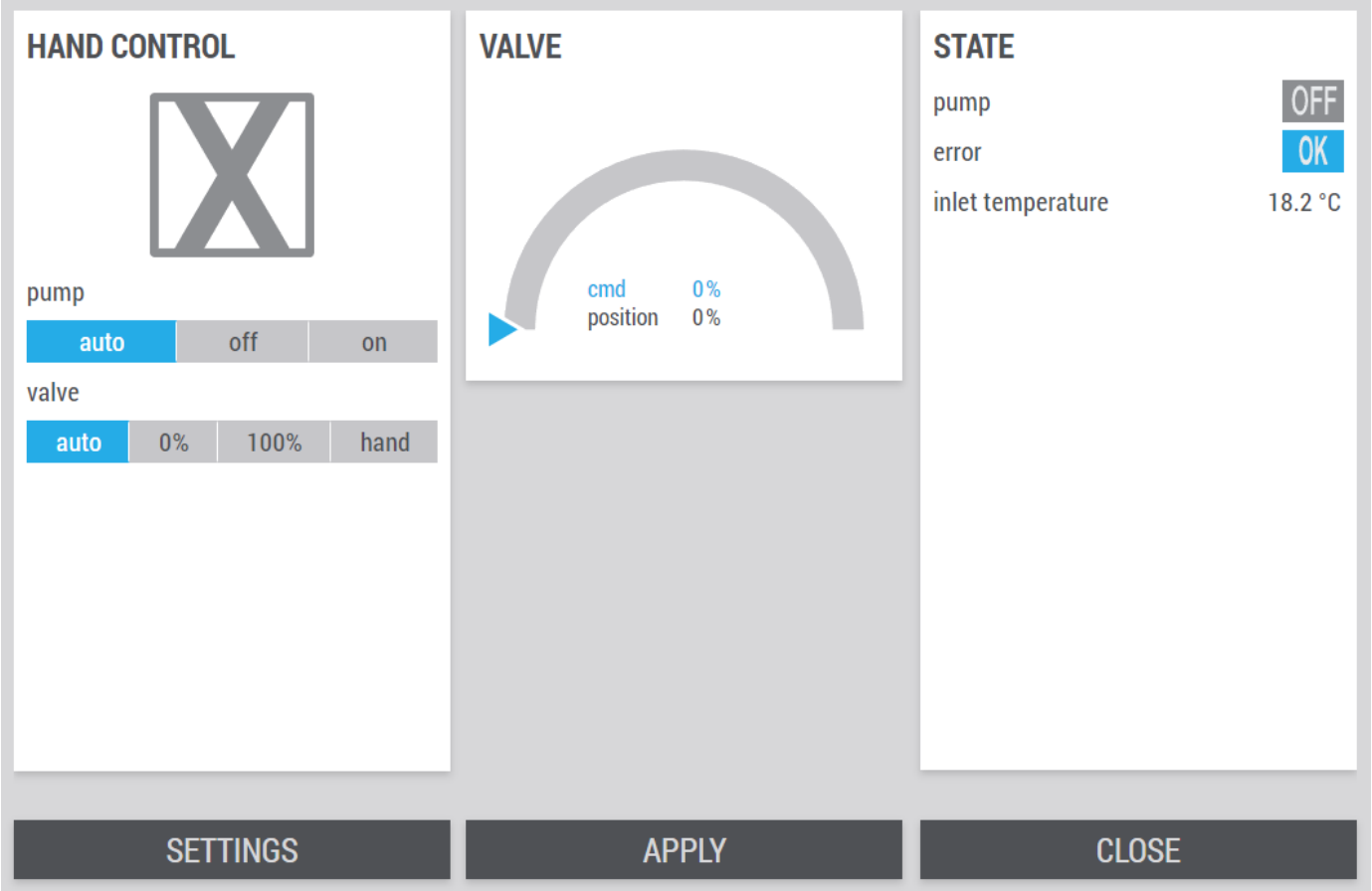


Fig. 38: Status page cooling coil

Designation	Description	
MANUAL CONTROL	Pump	Manual control is carried out by selecting one of the following options: auto off on
	Valve	The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %

Designation	Description	
VALVE	Request from X-CUBE Control (actuating value) to the valve and feedback from the valve (position) shown on the tachometer display, ‘*Tachometer explanation*’ *on page 15* .	
STATUS	Pump:	OFF OFF ON ON
	Fault:	! At least one fault is present OK no fault
	Flow temperature	Displays the current temperature at the flow of the corresponding cooling coil.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

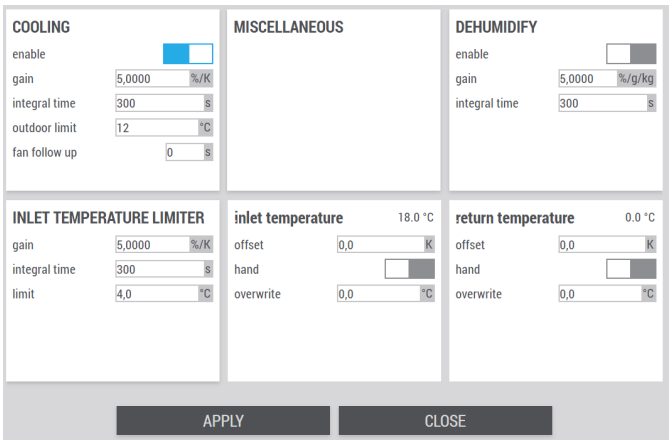


Fig. 39: Cooler settings

Designation	Description	
COOLING	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Enter the values for PI control of the cooler.
	Outdoor limit	Limit temperature below which the component is blocked for cooling.
	Fan run-down	Run-down time for the fan. To ensure that the cooling coil is dried before the system is switched off if condensation has formed.
FLOW TEMPERATURE LIMITATION	Gain Integral action time	Input fields for the PI controller of the return temperature monitoring.
	Limit value	Setpoint value for the flow temperature limiter.
Dehumidification	enable	not enabled Enables the component for the control chain in the event of dehumidification.
	Gain Integral action time	Input fields for the PI controller of the humidity control.
Flow temperature Return temperature (optional)	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.11 External chiller

Component status

Go to the system diagram ⌂ and select external chiller ☒.

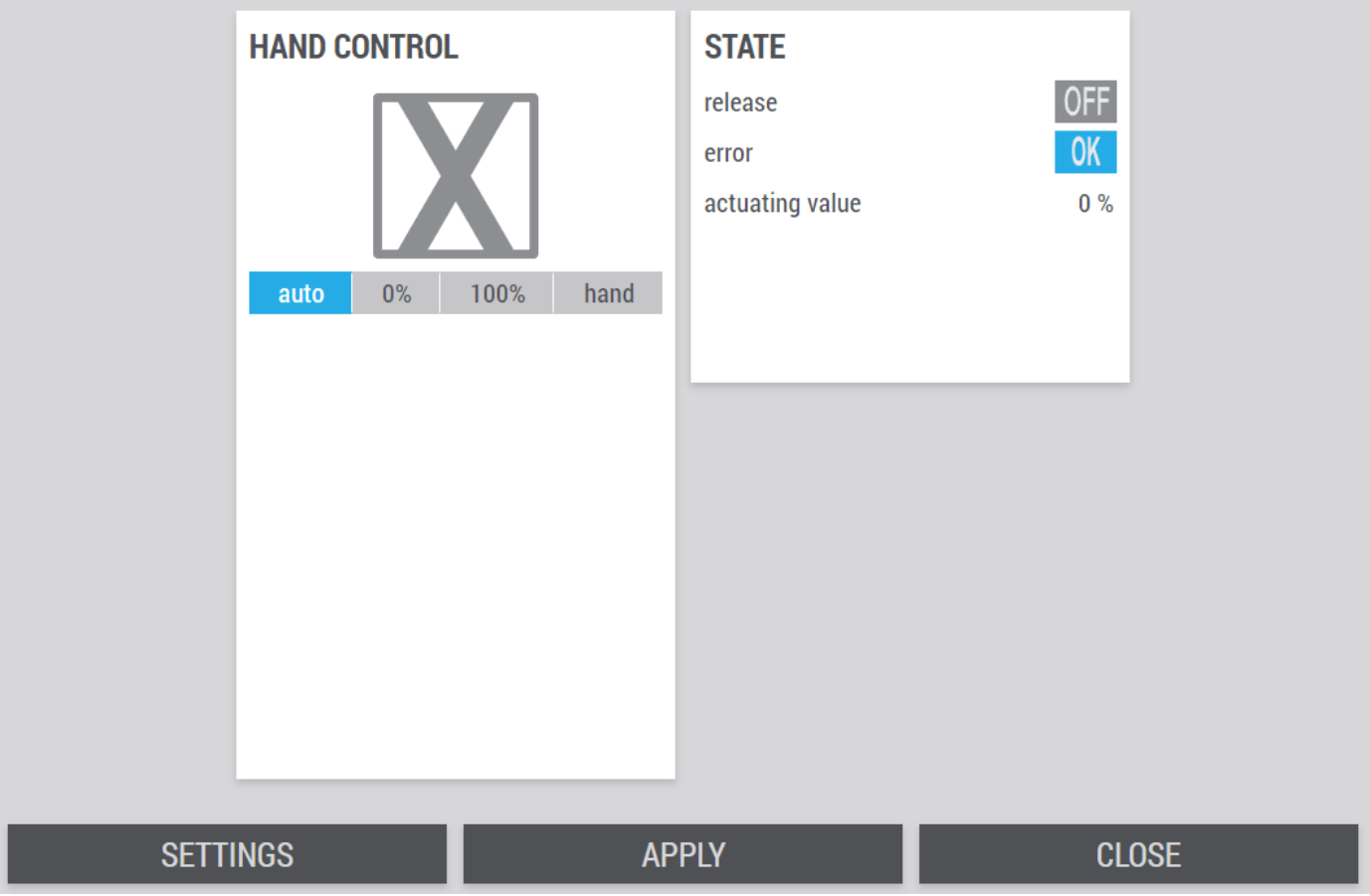


Fig. 40: Status page external chiller

Designation	Description	
MANUAL CONTROL		The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
STATUS	Enabling	OFF Locked ON Released

Designation	Description	
	Fault	! At least one fault is present OK no fault
	Actuating value	Indicates the request of the X-CUBE controller to the external chiller.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

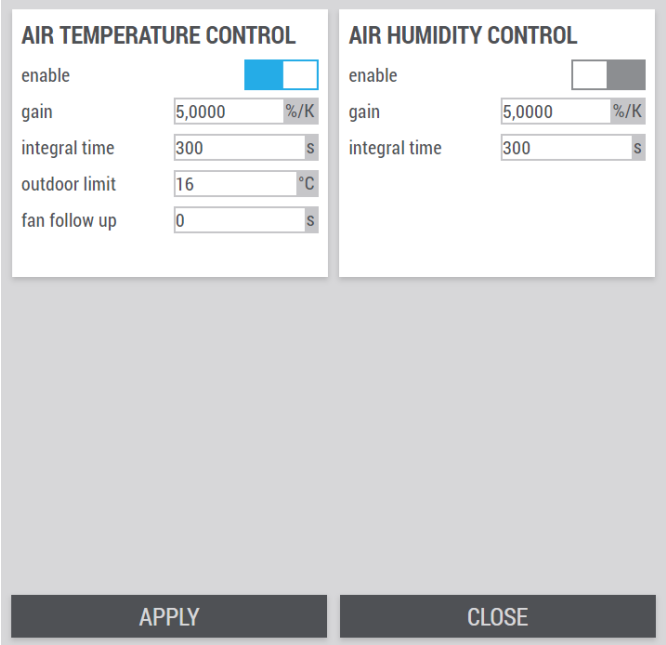


Fig. 41: External chiller settings

Designation	Description	
AIR TEMPERATURE CONTROL	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Input fields for PI controller in cooling mode.
	Outdoor limit	Limit temperature below which the component is blocked for cooling.
	Fan run-down	Run-down time for the fan. To ensure that the cooling coil is dried before the system is switched off if condensation has formed.
AIR HUMIDITY CONTROL	enable	not enabled Enables the component for the control chain in the event of dehumidification. disabled
	Gain Integral action time	Input fields for PI controller for humidity control.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.12 Humidifier

Component status

Go to the system diagram ⌂ and select the humidifier.

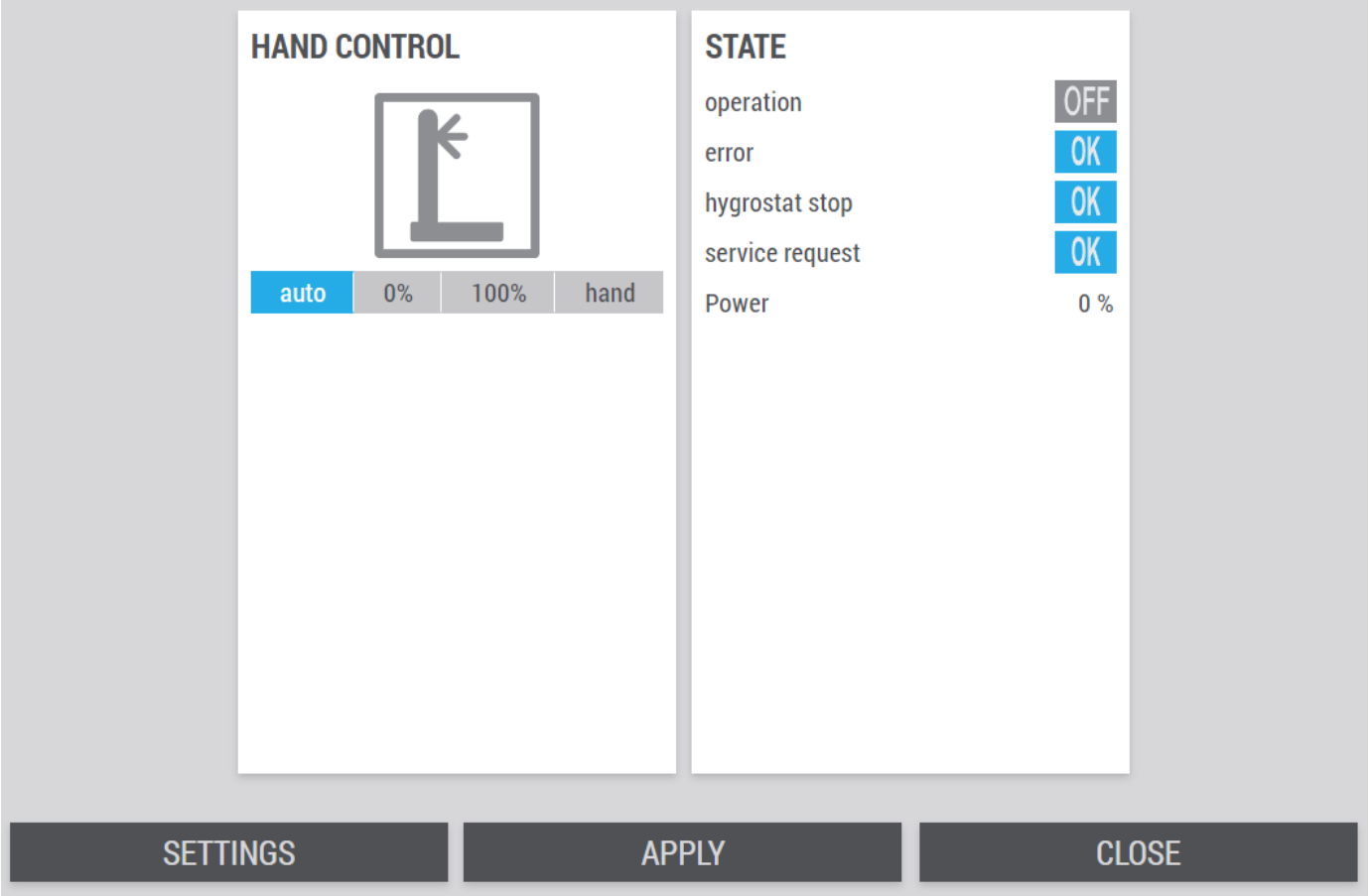


Fig. 42: Status page humidifier

Designation	Description	
MANUAL CONTROL	Humidifier	The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
STATUS	Operation	OFF OFF ON ON
	Fault	! At least one fault is present OK no fault

Designation	Description	
	Hygrostat stop	! The humidity was too high, so the humidifier was switched off. OK OK
	Output	Indicates the request of the X-CUBE Controller to the humidifier.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

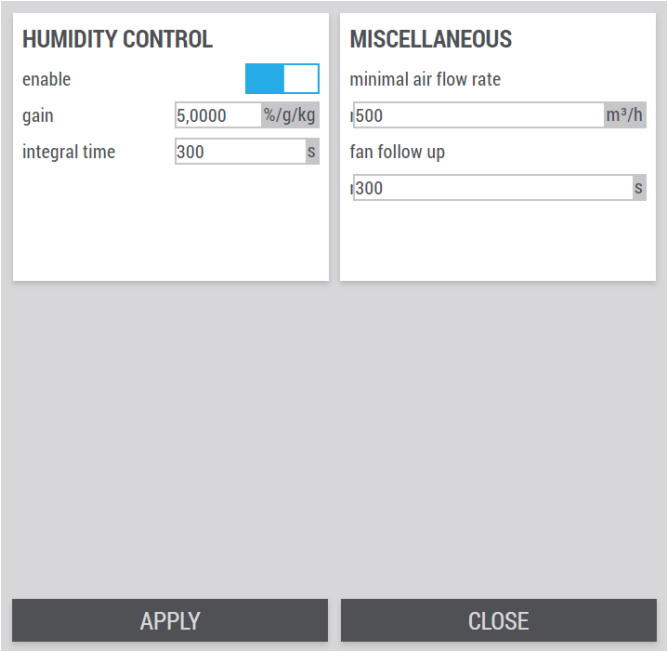


Fig. 43: Humidifier settings

Designation	Description	
HUMIDITY CONTROL	enable	not enabled Enables the component for the control chain in the event of humidification.
	Gain Integral action time	Enter the values for PI control of the humidifier.
Miscellaneous	Min. air volume flow rate	Minimum volume flow required to enable the humidifier.
	Fan run-down	Run-down time of the fans after the humidifier has been in operation. To ensure that the humidifier is dried before the system is switched off.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.13 Adiabatic humidifier

Component status

Select the adiabatic humidifier in the system diagram .

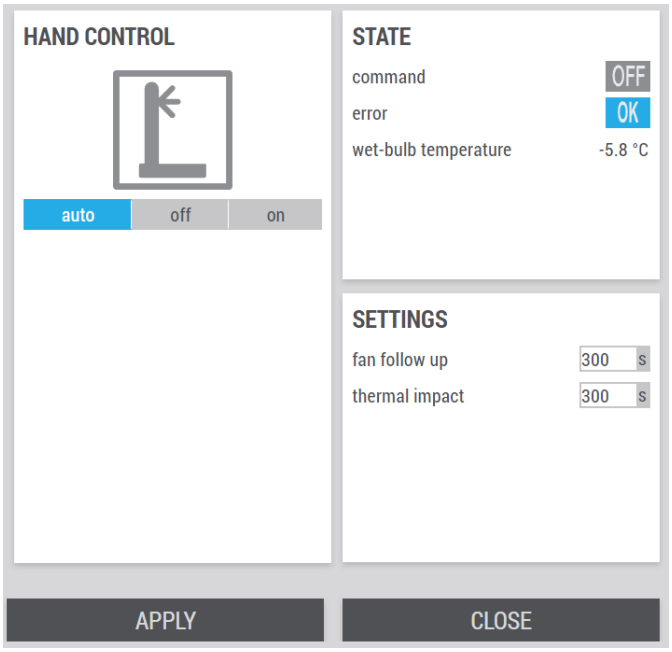


Fig. 44: Status page adiabatic humidifier

Designation	Description	
MANUAL CONTROL	Humidifier	Manual control is carried out by selecting one of the following options: auto off on
STATUS	**Command**	OFF OFF ON ON
	Fault	! At least one fault is present OK no fault
	Wet-bulb temperature	Indicates the calculated wet-bulb temperature.
SETTINGS	Fan run-down	Run-down time of the fans after operation of the humidifier.
	thermal effect	Assumed duration until the cooling effect occurs due to isenthalpic humidification.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.14 Changeover coil

Component status

In the system diagram ⌂, select the corresponding changeover coil ⊠.

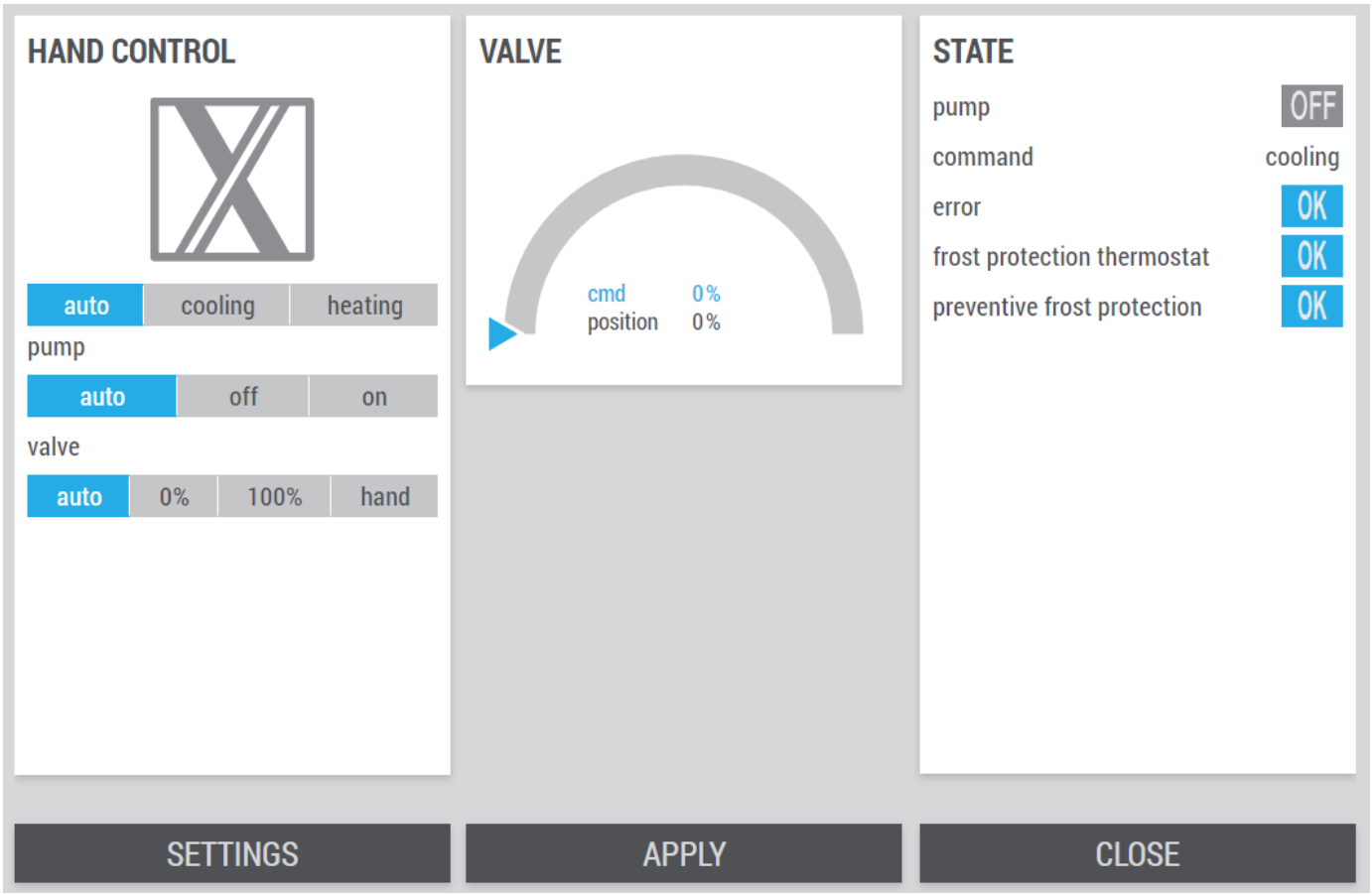
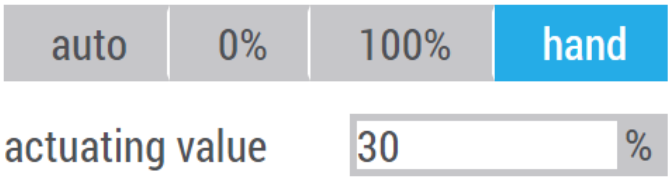


Fig. 45: Status page changeover coil

Designation	Description	
MANUAL CONTROL	Requirement	The manual control of the heating or cooling request is carried out by selecting one of the following options: Auto / kühlen / heizen
	Pump	Manual control is carried out by selecting one of the following options: auto / off / on
	Valve	The power is controlled manually by selecting one of the following options: auto / 0% / 100% / hand

Designation	Description	
		If you select the option *[Manual]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% 
VALVE	Request from X-CUBE Control (actuating value) to the valve and feedback from the valve (position) shown on the tachometer display, *'Tachometer explanation' on page 15* .	
STATUS	Pump	OFF OFF ON ON
	Command	Current "cooling" or "heating" requirement
	Fault	! At least one fault is present OK no fault
	Anti-frost thermostat	! Triggered OK OK
	Preventive frost protection	! Preventive frost protection is carried out OK No need for preventive frost protection

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

Service user rights are required to make changes to the settings.

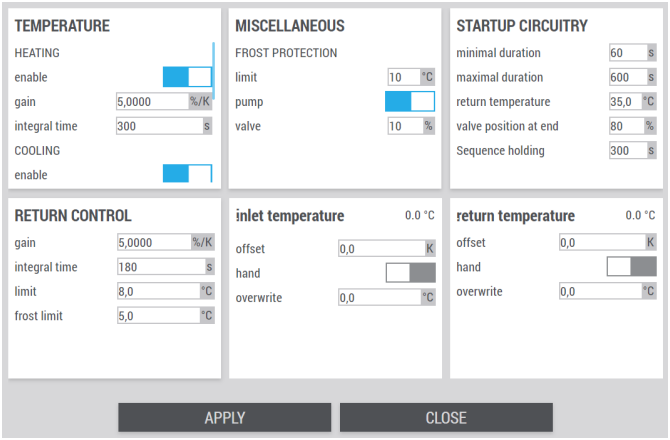


Fig. 46: Settings changeover coil

Designation	Description	
TEMPERATURE HEATING / COOLING / DEHUMIDIFYING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Input fields for PI controller of the heating or cooling coil.
	enable	not enabled Enables the component for the control chain in cooling mode.
	Outdoor limit	Limit temperature below which the component is blocked for cooling.
	Fan run-down	Run-down time for the fan. To ensure that the cooling coil is dried before the system is switched off if condensation has formed.
RETURN TEMPERATURE MONITORING	Gain Integral action time	Input fields for the PI controller of the return temperature monitoring.
	Limit value	Setpoint value for the return temperature limiter.
	Frost limit value	If the return temperature falls below this limit, the system acts as if the anti-frost thermostat had been triggered.
MISCELLANEOUS FROST PROTECTION	Limit value	Frost protection is activated when the outside temperature is below the limit value specified here.
	Pump	not enabled Releases the component for frost protection.
	Valve	Minimum actuating value of the valve when the outside temperature is below the limit value.

Designation	Description	
START-UP CIRCUIT	Minimum duration	The start-up circuit is active for at least this time. **If the set minimum duration has elapsed, reaching the return temperature setpoint or the *'maximum duration'* terminates the start-up circuit.**
	Maximum duration	The start-up circuit is active for a maximum of this time.
	Return temperature	Setpoint value of the return temperature, if the start-up circuit is active.
	End valve position	Once the start-up circuit is complete, the valve starts control in this position.
	Sequence hold position	After the start-up circuit has been executed, the control starts in the heating sequence of the changeover. The sequence is then blocked for the duration of the reduction specified here.
Flow temperature Return temperature	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value.
	Manual	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.15 Heat pump

Component status

In the system diagram ⌂, select the corresponding heat pump ⊠.

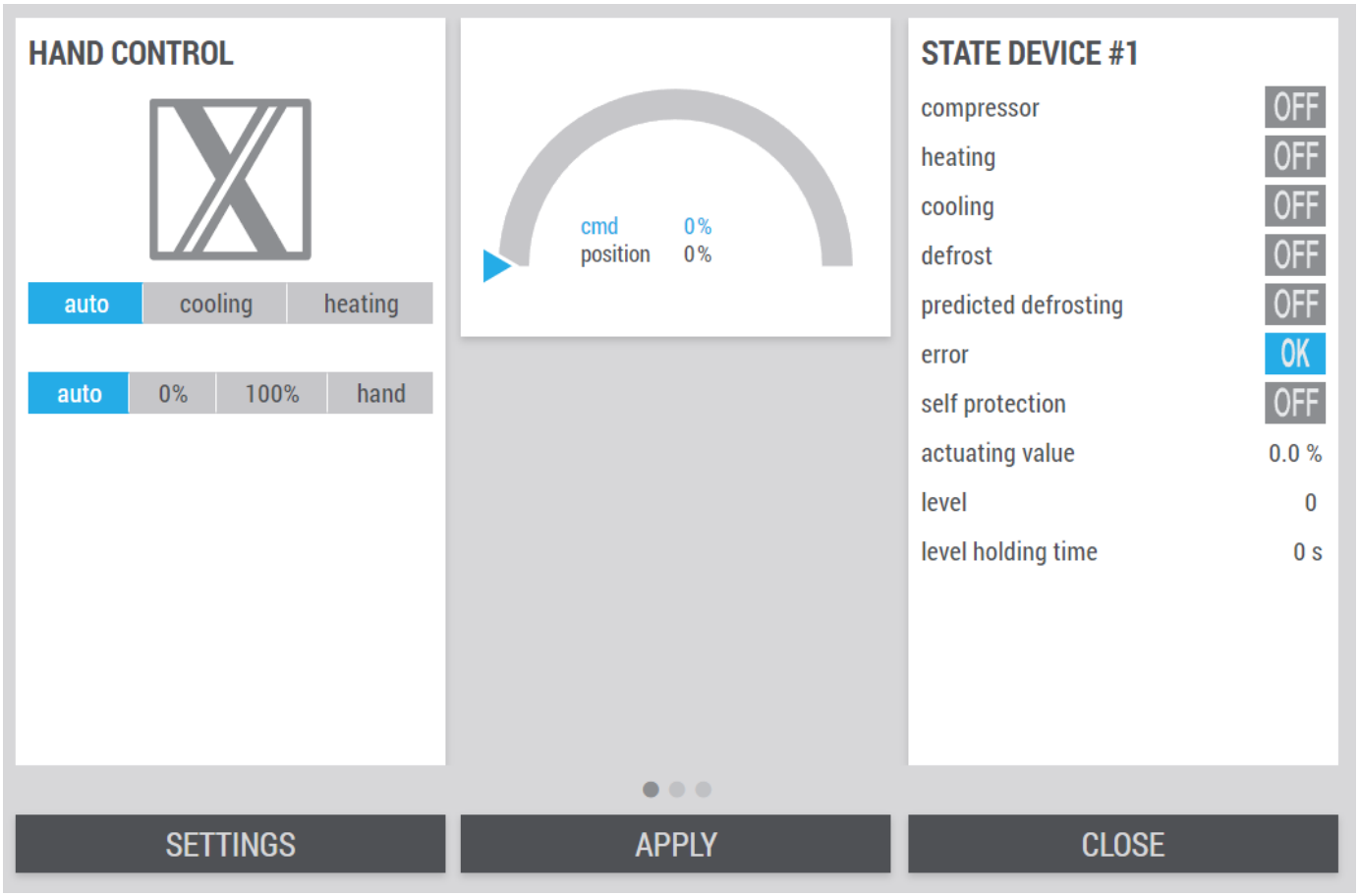
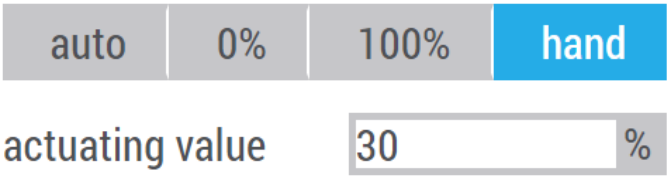


Fig. 47: Status page heating coil

Designation	Description	
MANUAL CONTROL	The manual control of the heating or cooling request is carried out by selecting one of the following options:	
	The power is controlled manually by selecting one of the following options:	
	If you select the option *[Manual]*, the field *'Control value'* appears, where values between 0% and 100% can be entered.	
Tachometer	Tachometer display with request from the X-CUBE controller, shows the required output (actuating value) and the current power output (position) in per cent, ↬ *'Tachometer explanation' on page 15* .	

Designation	Description	
STATUS	Compressor	OFF OFF ON ON
	Heating (Heating mode)	OFF OFF ON ON
	Cooling (Cooling mode)	OFF OFF ON ON
	Defrosting (Defrosting mode)	OFF OFF ON ON
	Preemptive defrosting	OFF OFF ON ON
	Fault	! At least one fault is present OK no fault
	Self-protection	OFF OFF ON ON
	Actuating value	Indicates the request of the X-CUBE controller on the heat pump.
	Stage	The actuating value is divided into 11 stages. Displays the stage corresponding to the output.
	Stage lock time	Each stage has a minimum dwell time. Displays the current dwell time of the stage.

Click *[EINSTELLUNGEN]* to open the settings page.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

Settings

NOTICE!

The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

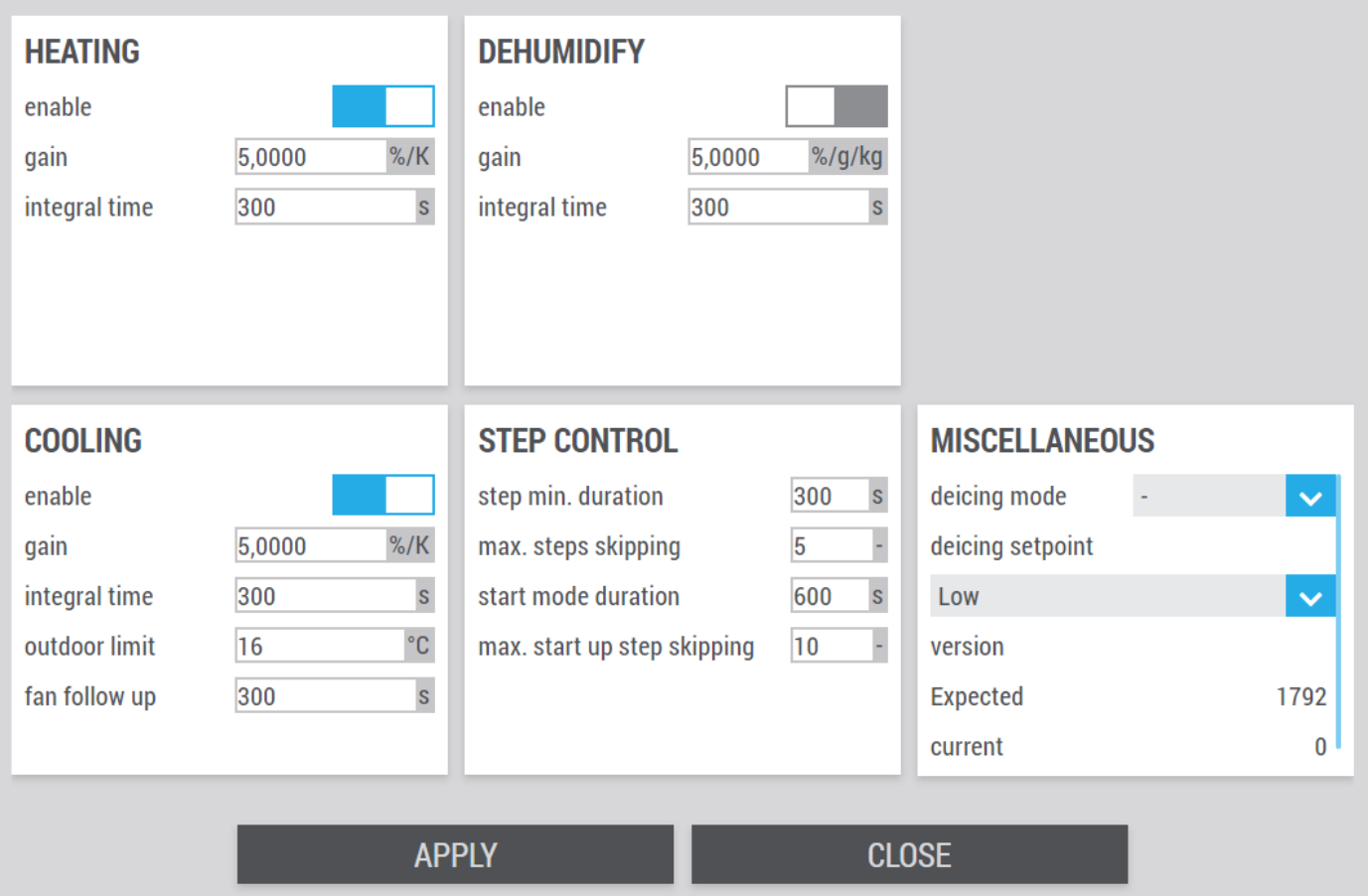


Fig. 48: Heat pump settings

Designation	Description	
HEATING	enable	not enabled Enables the component for the control chain in heating mode.
	Gain Integral action time	Input fields for PI controller in heating mode.
COOLING	enable	not enabled Enables the component for the control chain in cooling mode.
	Gain Integral action time	Input fields for PI controller in cooling mode.
DEHUMIDIFICATION	enable	not enabled Enables the component for the control chain in the event of dehumidification.

Designation	Description	
	Gain Integral action time	Input fields for PI controller in dehumidification mode.
STAGE CONTROL	Minimum dwell time	Minimum holding time of a stage before another stage can be set.
	Max. stage change	Maximum number of stage changes that can be set after the minimum dwell time has expired.
	Minimum start dwell time	Minimum dwell time when starting the heat pump
	Max. start stage change	Maximum stage change when starting the heat pump
MISCELLANEOUS	Defrost mode	The following options are possible in defrost mode: ■ *'- '*: defrosting mode is ignored ■ *'Recirculation mode'*: for systems with recirculation damper, the system is operated with 100% recirculated air ■ *'Setpoint value'*: the defrosting target value is adopted
	Defrost setpoint	The setpoint value here is adopted if the *'setpoint set'* has been selected at *'Defrost mode'*. Selection field for setpoint set to be activated in defrost mode.
	Version	This display is about the software version of the heat pump. If the communication to the heat pump is unstable or faulty, the deviation between the expected version and the actual version may be a possible cause. ■ *'Expected'*: The expected software version ■ *'Is'*: The currently installed software version

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.16 Supply/extract air measured values

Component status

In the system diagram ⌂, select the corresponding sensor ▲ (SUP / ETA).

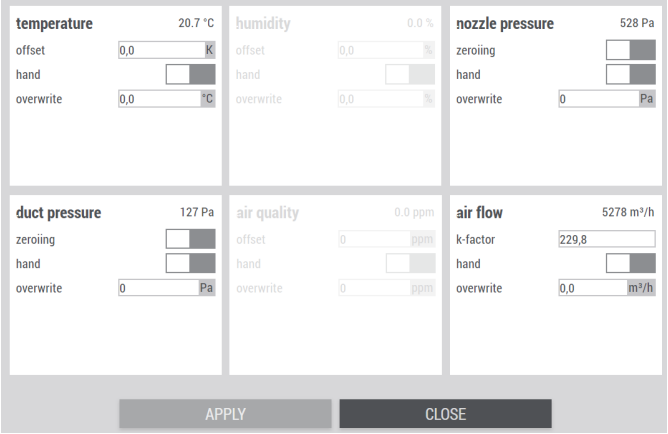


Fig. 49: Status page sensors

Designation	Description	
Temperature Humidity Air quality Air volume flow rate	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value. **Example:** The display shows 19.9 °C, but the actual value captured by the reference sensor is 20.5 °C. Enter 0.6 °C to correct the sensor value. Enter negative corrections with a minus sign.
	Hand	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.
	K factor	The K factor is required to calculate the air volume flow. It is provided by the fan manufacturer.
Duct pressure Fan pressure	Zeroing	**Important: Only carry out zero-point adjustment while fans are stopped, as otherwise the measured values will not be correct.** Carry out a zero-point adjustment of the differential pressure sensor by setting the slide switch. inactive Start zeroing
	Hand	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

4.17 Combi sensors

Component status

In the system diagram, select the weather sensor, room sensor or combination sensor ▲ (ODA / EHA).

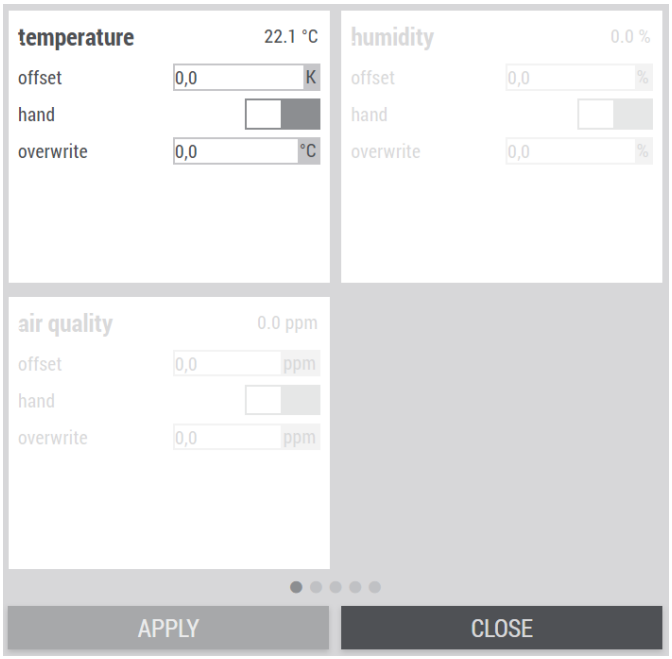


Fig. 50: Status page weather sensor

Designation	Description	
Temperature Humidity Air quality	Offset	Allows the measured value to be corrected by adding the value entered in the input field *'Offset'* to the displayed value. **Example:** The display shows 19.9 °C, but the actual value captured by the reference sensor is 20.5 °C. Enter 0.6 °C to correct the sensor value. Enter negative corrections with a minus sign.
	Hand	The current measured value is adopted. The value from the input field *'overwrite'* is adopted.
	overwrite	Allows the sensor value to be overwritten manually for any tests.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5 Schedules

5.1 Switching the system on/off

5.1.1 Setpoint schedule/setpoint sets

Setting the setpoint schedule

In the main menu ➔ *'Sollwertzeitplan'* opens.

The setpoint schedule allows you to use different set-point profiles.

The following parameters can be set:

- 1 weekly schedule
- 7 profiles
- 10 switching times, each of which can be assigned a setpoint set.

For example, each day of the week can be assigned a profile with up to 10 timings.

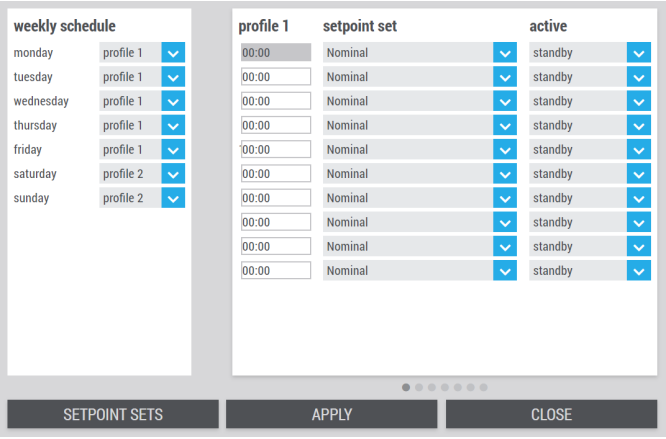


Fig. 51: Setpoint schedule window

Defining setpoint sets

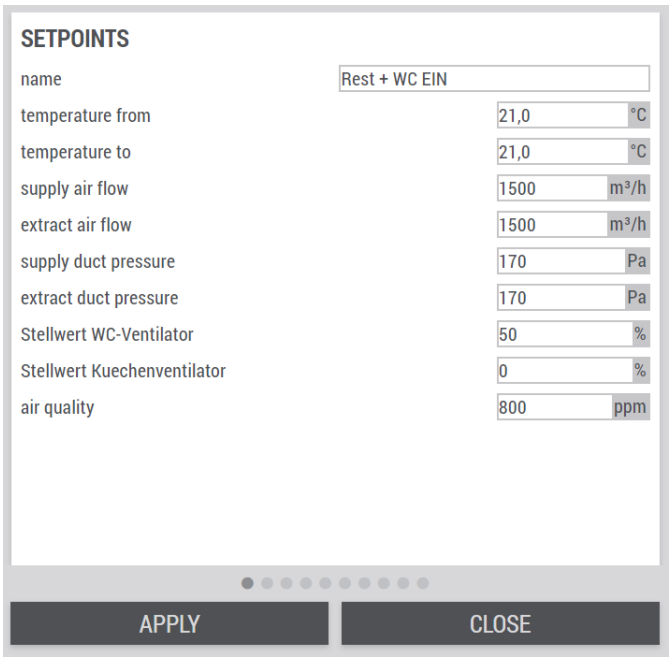


Fig. 52: Setpoint sets window

Range	Parameters	Description
Setpoint values	Name	Enter a name for the setpoint set.
	Temperature from	Set a temperature range to be controlled.
	Temperature up to	Energy-saving concept with dead zone: If this value is within the defined range, there is no active heating or cooling. To achieve a certain setpoint, enter the same value into both fields.
	Supply air volume flow	Setting the setpoint values for supply and extract air volume flows.
	Supply air volume flow	
	Supply air duct pressure	Setting the setpoint values for the supply and extract air duct pressure.
	Extract air duct pressure	
	Humidity from	Set a control range for humidity control.
	Humidity up to	Energy-saving concept with dead zone: If this value is within the defined range, there is no active humidifying or dehumidifying. To achieve a certain setpoint, enter the same value into both fields.
	Air quality	Setting the setpoint value for the air quality.
External devices	UniversalDevice#1 - #10	Schedules can also be used for external devices. Enter the actuating value for the external device.

Setting example 1

Given

Operating time	-	Each working day from 06:00 to 18:00h with the same setpoint values
Setting	-	Monday to Friday: profile 1, Saturday and Sunday: profile 2

Personnel:

- Operator

1. ▸ In the main menu ➔ *'Sollwertzeitplan'* opens.

Defining a *'Weekly schedule'*

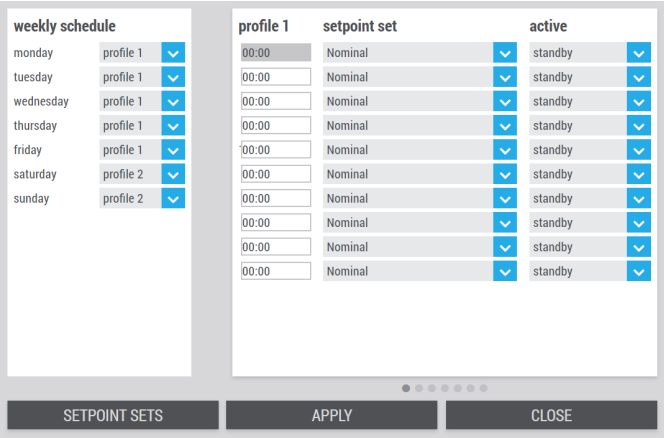


Fig. 53: Setpoint schedule window

2. ▸ Monday to Friday - Profile 1

Saturday and Sunday - Profile 2

Defining *'Profile 1'*

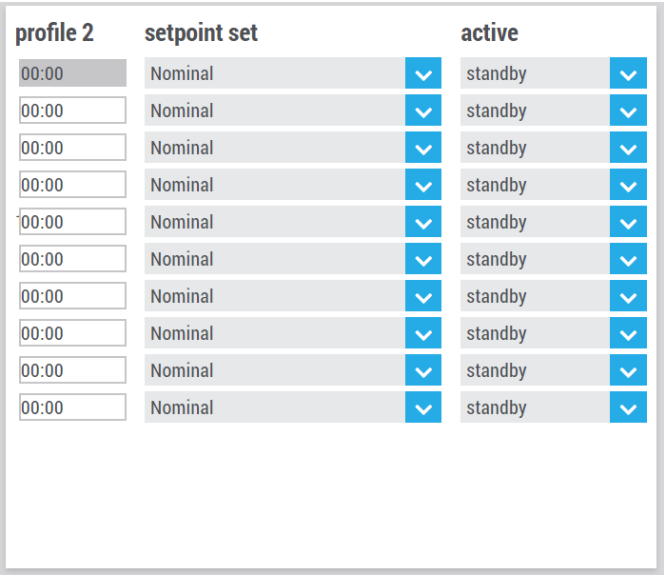


Fig. 54: Setpoint schedule Profile 1

3. ▸ 06:00 - ON

18:00 - Standby

Set all other timings to 00:00 and 'Standby'.

Click *[APPLY]* to save the values.

⇨ When you save your entries, the next profile is shown with the entries you have just made.

Defining *'Profile 2'*

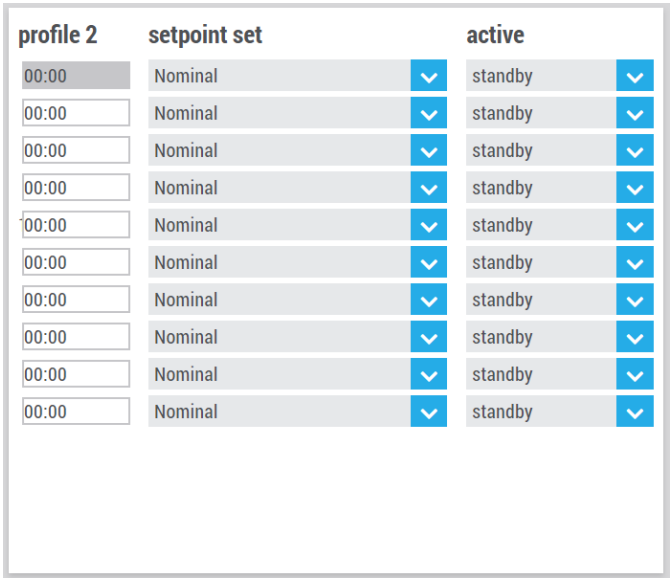


Fig. 55: Setpoint schedule Profile 2

4. ▸ Set all timings to 00:00 and 'Standby'.

Click *[APPLY]* to save the values.

⇨ When you save your entries, the next profile is shown with the entries you have just made.

5. ▸ Use the button *[SOLLWERTSÄTZE]* to open and set the window for setting the setpoint records, ↳ *'Defining setpoint sets' on page 80* .

Setting example 2

Given

Operating time	-	On weekdays, continuous operation 24 hours with the same setpoint values
Setting	-	Monday to Friday: profile 1, Saturday and Sunday: profile 2

Personnel:

- Operator

1. ▸ In the main menu ➔ *'Sollwertzeitplan'* opens.

Defining a *'Weekly schedule'*

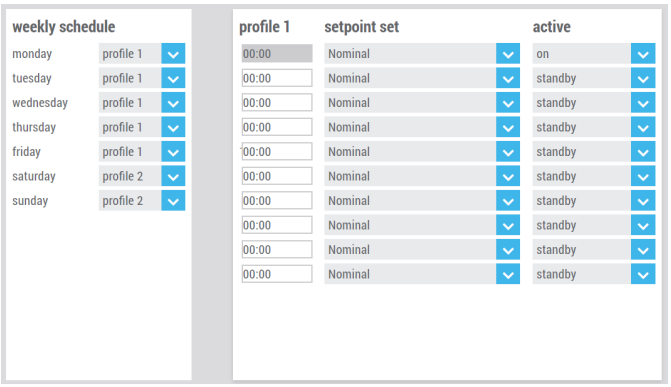


Fig. 56: Setpoint schedule window

2. ▸ Monday to Friday - Profile 1

Saturday and Sunday - Profile 2

Defining *'Profile 1'*

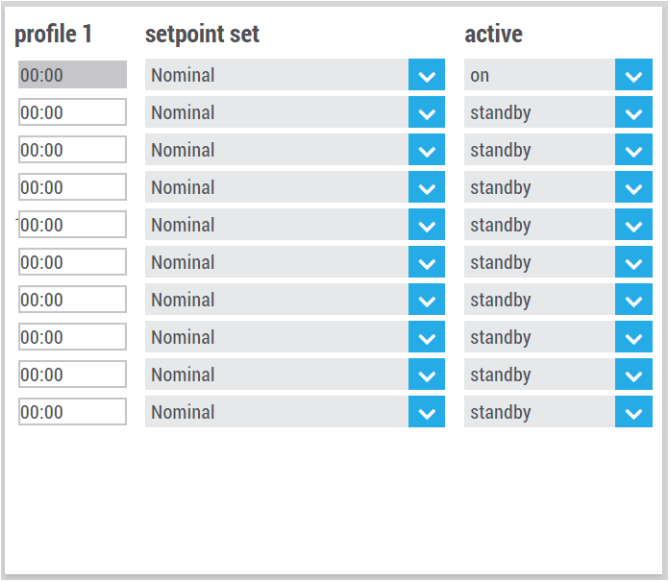


Fig. 57: setpoint schedule

3. ▸ 00:00 - ON

Set all other timings to 00:00 and 'Standby'.

Select *[APPLY]* to save your entries.

⇨ When you save your entries, the next profile is shown with the entries you have just made.

Defining *'Profile 2'*

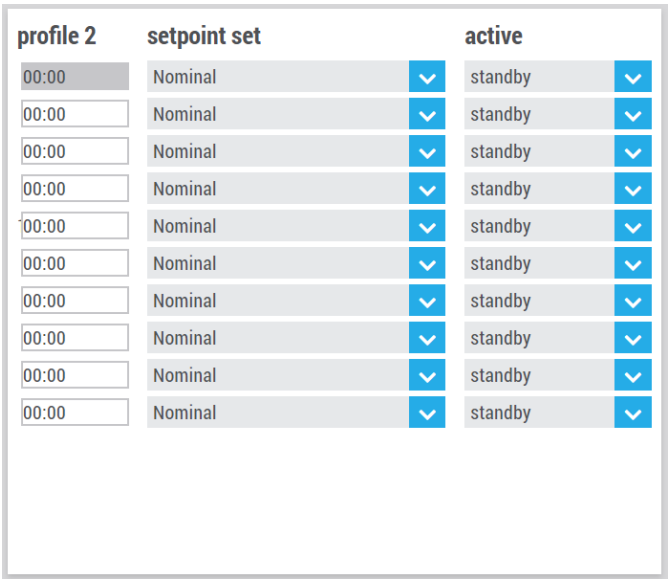


Fig. 58: Setpoint schedule_2a

4. ▸ Set all timings to 00:00 and 'Standby'.

Click *[APPLY]* to save the values.

⇨ When you save your entries, the next profile is shown with the entries you have just made.

5. ▸ Use the button *[SOLLWERTSÄTZE]* to open and set the window for setting the setpoint records, *'Defining setpoint sets' on page 80*.

5.2 Extended operation

Open ➔ *'extended operation'* in the main menu.

With extended operation, the X-CUBE can be switched on outside of a timer schedule.

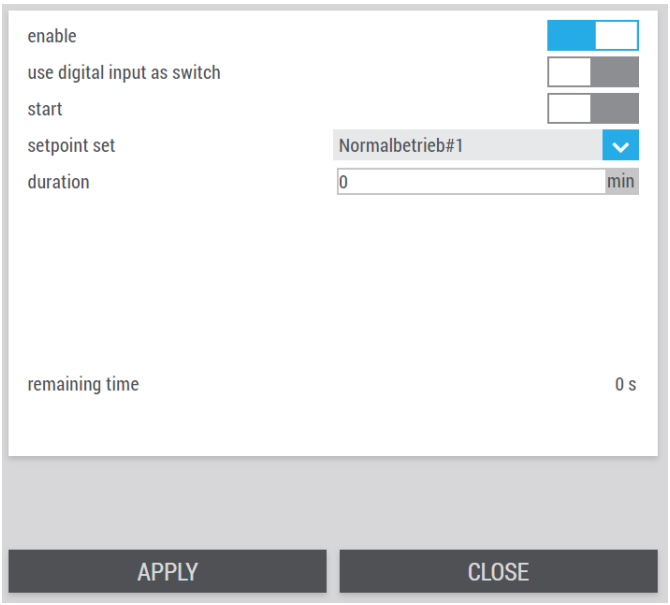


Fig. 59: Page extended operation

Designation	Description
enable	extended operation inactive activate extended operation
Set digital input as switch	Set the behaviour of the digital input. The digital input is used as a push-button The digital input is used as a switch
Start	Switch on extended operation directly. Inactive Active
Setpoint set	Selection field for the setpoint set that is used in extended operation.
Duration	Setting the duration of extended operation in minutes.
Remaining time	Displays the remaining time of extended operation.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.3 Economy mode

Open ➔ *'Economy mode'* in the main menu.

To save energy, there is the option of an economy mode. In this mode, the X-CUBE is switched off once the temperature or air quality setpoint has been reached and switched on again after an adjustable hysteresis. This is an intermittent operation.

These functions require suitable room temperature and/and air quality sensors.

Fig. 60: Economy mode

Designation	Description	
Minimum execution time	Minimum running time in minutes for guided operation. This prevents the system from constantly being switched on and off.	
Lower temperature limit Humidity lower limit	Monitoring of limit values.	The lower limit is not monitored The lower limit is monitored
Upper temperature limit Humidity upper limit Air quality	Monitoring of limit values.	The upper limit is not monitored The upper limit is monitored
Temperature hysteresis	Enter a hysteresis value for temperature-guided operation. During regular operation, the temperature setpoint + hysteresis is set; once that value has been achieved, the AHU switches to standby operation.	
Humidity hysteresis	Hysteresis setting value for humidity-controlled operation. During regular operation, the temperature setpoint + hysteresis is set; once that value has been achieved, the AHU switches to standby operation.	
Air quality hysteresis	Hysteresis setting value for air-quality guided operation. During regular operation, the air quality setpoint + hysteresis is determined; once that value has been achieved, the AHU switches to standby operation.	

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.4 Night purge

Go to the main menu ➔ *'Night purge'*.

With hot outside temperatures during the day, automatically controlled night purge is possible.

Please note that this function requires a room sensor and a weather sensor.

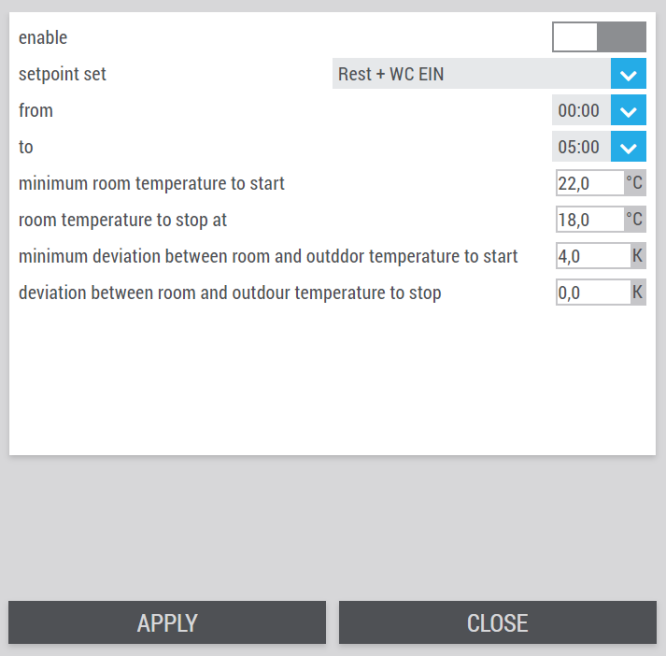


Fig. 61: Night purge

Designation	Description
enable	Enabling night purge not enabled enabled
Setpoint set	Setpoint set valid during night purge
from ... to	Setting in which period of the day night purge may be active.
Minimum room temperature to start	Night purge is activated when the room temperature rises above the entered value.
Room temperature for stop	Night purge is stopped if the room temperature falls below the entered value.
Minimum deviation between room and outdoor temperature to start	Setting the temperature difference between room and outside temperature to start night purge.
Deviation between room and outside temperature for stop	For night purge to remain active, the outside temperature must be lower than the room temperature by the value entered here. Otherwise, night purge is terminated.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.5 Control panel

Go to the main menu ➔ *'Control panel'*.

You can use a room control panel to operate the X-CUBE or to change the temperature setpoint.

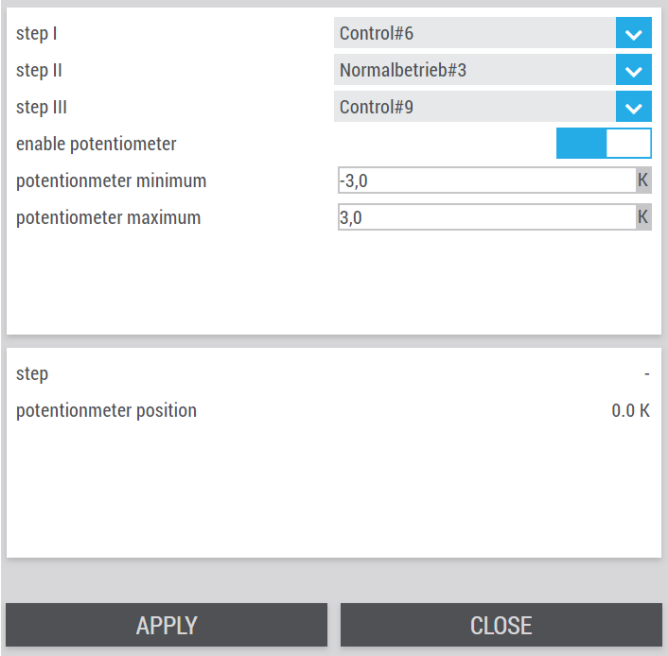


Fig. 62: Control panel

Designation	Description
Stage I	Activation of the setpoint set with rotary switch position stage I.
Stage II	Activation of the setpoint set with rotary switch position stage II.
Stage III	Activation of the setpoint set with rotary switch position stage III.
Enable potentiometer	Activation for changing the temperature setpoint via the room control panel. locked enabled

Designation	Description
Potentiometer minimum value Potentiometer maximum value	Setting the temperature difference to the temperature setpoint, which can be regulated with a potentiometer. Setting example: ■ Potentiometer minimum value: -3 °K ■ Potentiometer maximum value: 3 °K ■ Setpoint temperature of: 21.0 °C ■ Setpoint temperature up to: 21.0 °C The room temperature can be set between 18 °C and 24 °C on the room control panel.
Stage	Displays the current stage.
Potentiometer setting	Displays the current potentiometer setting.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.6 Setting public holidays

Go to the main menu ➔ *'Public holidays'*.

The X-CUBE Controller automatically sets all German public holidays.

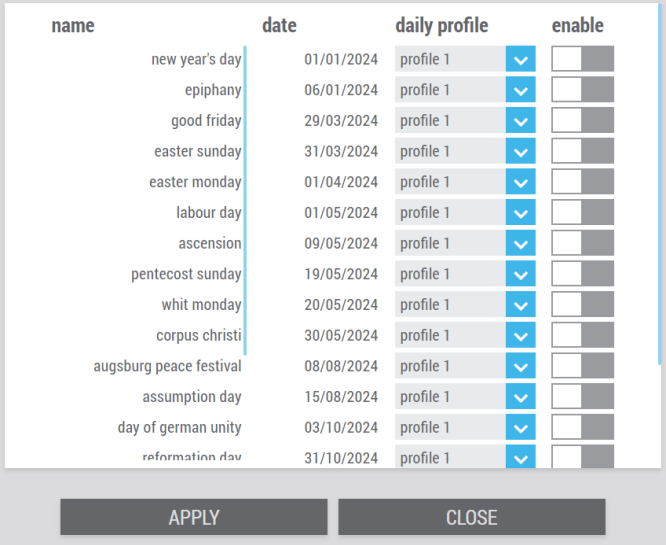


Fig. 63: Page public holidays

Column	Description
Name	Name of the public holiday
Date	Date of the public holiday (calculated automatically)
Daily profile	Select the setpoint set to be applied to the holiday.
enable	Enable the holiday settings with the slide switch: Holiday deactivated Holiday activated

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.7 Setting user-defined holidays

Go to the main menu ➔ *'User-defined holidays'*.

Here you can define an additional 15 holidays.

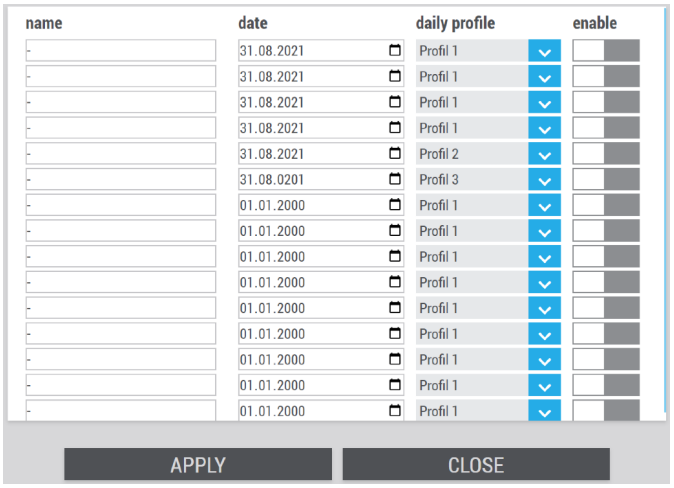


Fig. 64: Page user-defined holidays

Column	Description
Name	Enter a name for the user-defined holiday.
Date	Enter a date for the user-defined holiday.
Daily profile	Select the setpoint set to be applied to the holiday.
enable	Enable the holiday settings with the slide switch: Holiday deactivated Holiday activated

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

5.8 Setting a vacation

Go to the main menu ➔ *'Vacation'*.

Here you can define 7 vacation periods.

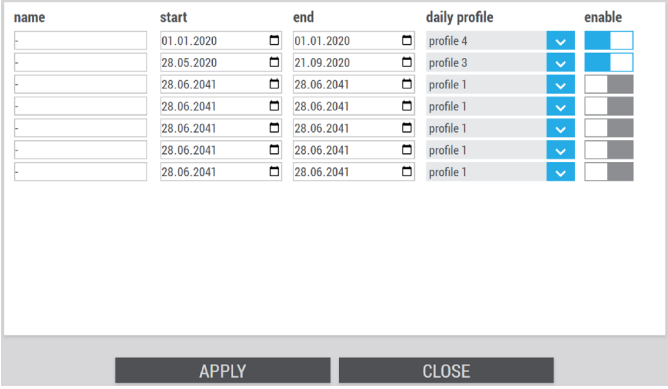


Fig. 65: Vacation

Column	Description
Name	Enter a name for the vacation.
Start	Enter the start and end dates of the vacation period.
End	
Daily profile	Select the setpoint set to be applied to the vacation.
enable	Enable the vacation settings with the slide switch: Vacation deactivated Vacation activated

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6 Settings

6.1 Basic settings

Go to the main menu ⚙ ➔ and open *'Basic settings'*.

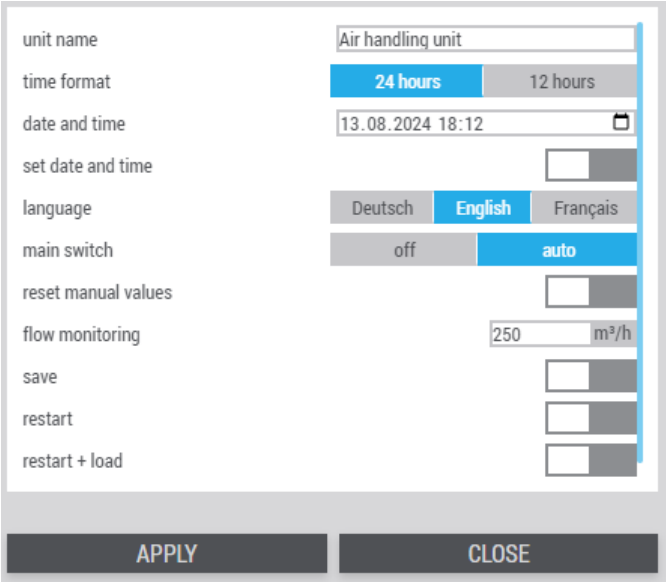


Fig. 66: Basic settings

Designation	Description
Unit name	The unit name appears in the header on the start page.
Time format	Setting the time format in 24 or 12 hours (blue = activated)
Date and time	Set the date and time on the X-CUBE controller and then switch on the slide switch. inactive Enter new date and time The controller is fitted with a battery powered real time clock with automatic switching between summer time and winter time.
Language	Changing the interface language.
Mains isolator	**Off:** X-CUBE is turned off. **Auto:** X-CUBE is controlled automatically based on a schedule, by the management and control equipment (MCE), external release or a room control panel.
Reset manual input	Resets all components in manual mode back to automatic mode.
Flow monitoring	The temperature and humidity control is only enabled if the air volume flow exceeds the value set here.
Parameters	**Save:** The current parameters are saved in a Json file on the X-CUBE controller. **Restart:** This is used to restart the system. **Restart + load:** To activate any new parameters that have been loaded onto the X-CUBE controller. This requires a restart.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.2 Control strategy

Control strategy - temperature

Go to the main menu ⚙ ➔ and open *'Control strategy'*.

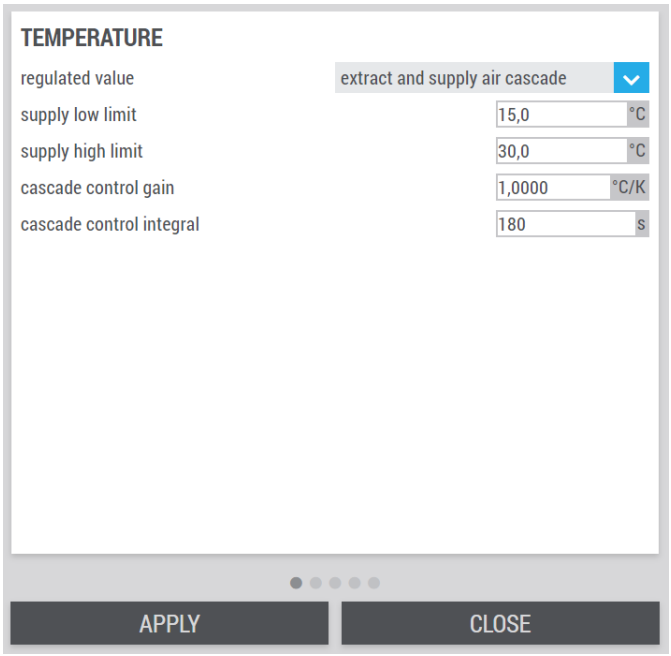


Fig. 67: Control strategy Page 1 Temperature

Designation	Description	
TEMPERATURE	Controlled variable	Set the control strategy for temperature control here. ■ No control ■ Constant supply air ■ Constant extract air ■ Constant room air ■ Extract air and supply air cascade ■ Room air and supply air cascade
	Lower limit supply air	Lower limit for the supply air temperature
	Upper limit for supply air	Upper limit for the supply air temperature
	Gain cascade control	Gain for the auxiliary controller of the cascade control
	Reset time cascade control	Reset time for the auxiliary controller of the cascade control

Press *[Apply]* to save the values, the display switches to the next page.

Control strategy - fans

Fig. 68: Control strategy page 2

Designation	Description	
FANS	Supply air Extract air	Set the control strategy for the fans here. ■ No control ■ Volume flow control ■ Duct pressure control ■ Follow volume flow
	Temperature cascade	The following options can be set for the temperature-dependent shift of the volume flow: ■ No control ■ Only in heating mode ■ Only in cooling mode ■ Heating and cooling mode
	Lower limit volume flow rate Upper limit volume flow rate	In case of a temperature cascade, the range in which the volume flow is shifted is set
	Gain cascade control	Gain for the auxiliary controller of the cascade control
	Reset time cascade control	Reset time for the auxiliary controller of the cascade control
	Offset on the fan control setpoint value	If the control strategy is set to "Follow volume flow", the sum of the leading volume flow and the offset is the setpoint value for the fan.

Click *[APPLY]* to save the values, the display switches to the next page.

Control strategy - humidity

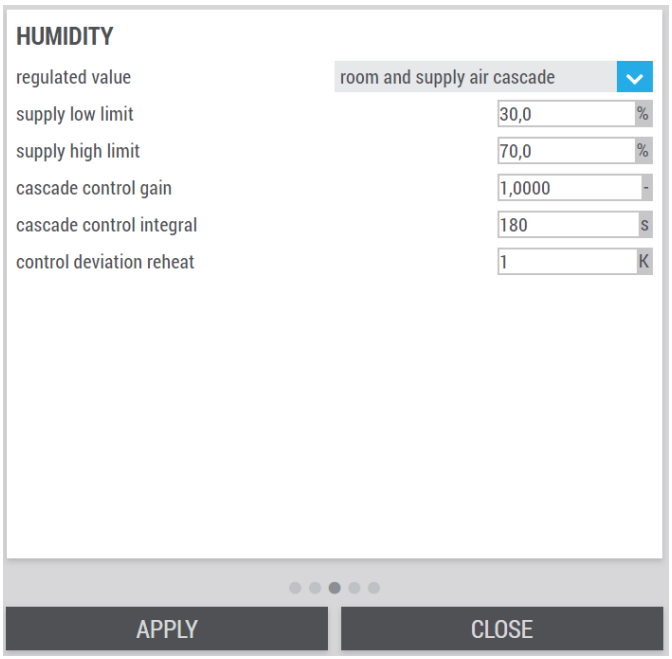


Fig. 69: Control strategy page 3

Designation	Description	
Humidity	Controlled variable	Set the control strategy for humidity control here. ■ No control ■ Constant supply air ■ Constant extract air ■ Constant room air ■ Extract air and supply air cascade ■ Room air and supply air cascade
	Lower limit supply air	Lower limit for the supply air humidity
	Upper limit for supply air	Upper limit for the supply air humidity
	Gain cascade control	Gain for the auxiliary controller of the cascade control
	Reset time cascade control	Reset time for the auxiliary controller of the cascade control
	Control deviation for reheating	In the case of dehumidification, reheating is triggered as soon as the actual value falls below the value set here in comparison to the setpoint value.

Click *[APPLY]* to save the values, the display switches to the next page.

Control strategy - air quality

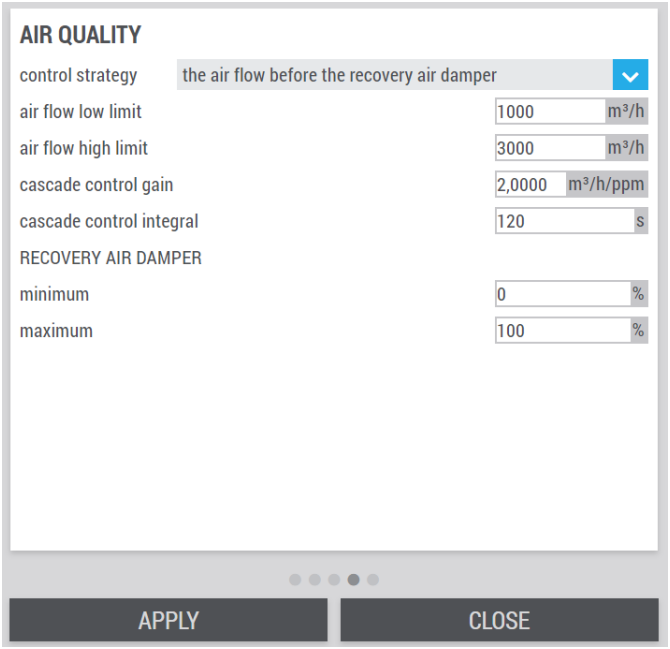


Fig. 70: Control strategy page 4

Designation	Description		
Air quality	Control strategy	Set the control strategy for air quality control here. ■ No control ■ Only via the recirculation damper ■ Only via the volume flow rate ■ Control via recirculation damper before the volume flow rate ■ Control via volume flow rate before recirculation damper	
	Lower limit volume flow rate Upper limit volume flow rate	Range within which the volume flow is shifted	
	Gain cascade control	Gain for the auxiliary controller of the cascade control	
	Reset time cascade control	Reset time for the auxiliary controller of the cascade control	
	RECIRCULATION DAMPER	Minimum Maximum	Range within which the recirculation damper is operated

Click *[APPLY]* to save the values, the display switches to the next page.

Control strategy - Fan Optimiser

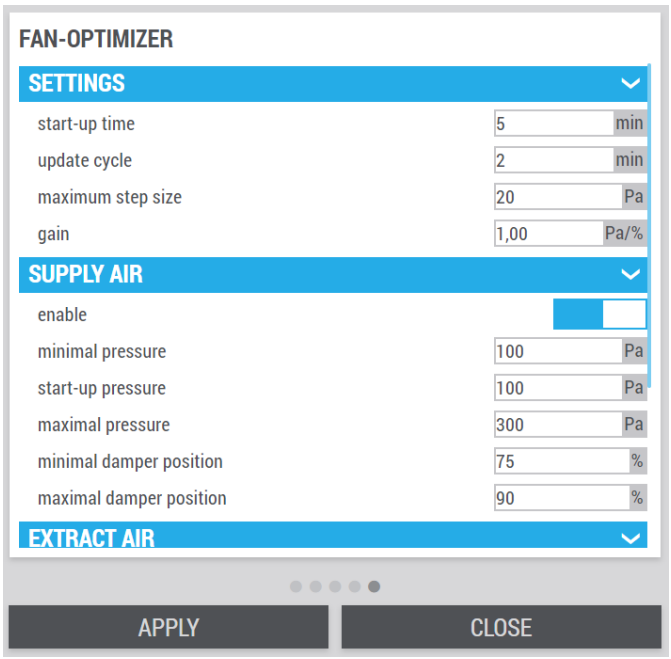


Fig. 71: Control strategy page 5

Designation	Description	
SETTINGS	Start-up time	After starting, no correction of the duct pressure setpoint takes place within this time, regardless of the damper blade positions
	Update cycle	Cycle for demand-based correction of the duct pressure setpoint
	Maximum step size	Maximum possible correction in one step of the duct pressure setpoint value
	Gain	Gain for demand-based correction of the duct pressure setpoint
SUPPLY AIR / EXTRACT AIR	enable	Not enabled Enables the demand-based shift of the duct pressure setpoint for the supply and extract air.
	Minimum pressure	Minimum duct pressure setpoint
	Start-up pressure	Duct pressure setpoint at start-up
	Maximum pressure	Maximum duct pressure setpoint
	Minimum damper blade position	Desired minimum position of the worst damper. If this value falls below this point, the duct pressure setpoint is reduced.
	Maximum damper blade position	Desired maximum position of the worst damper. If this value is exceeded, the duct pressure setpoint is increased.

Click *[APPLY]* to save the values, the display switches to the next page.

6.3 Summer/winter

Open ⚙ ➔ *'Summer/Winter'* in the main menu.

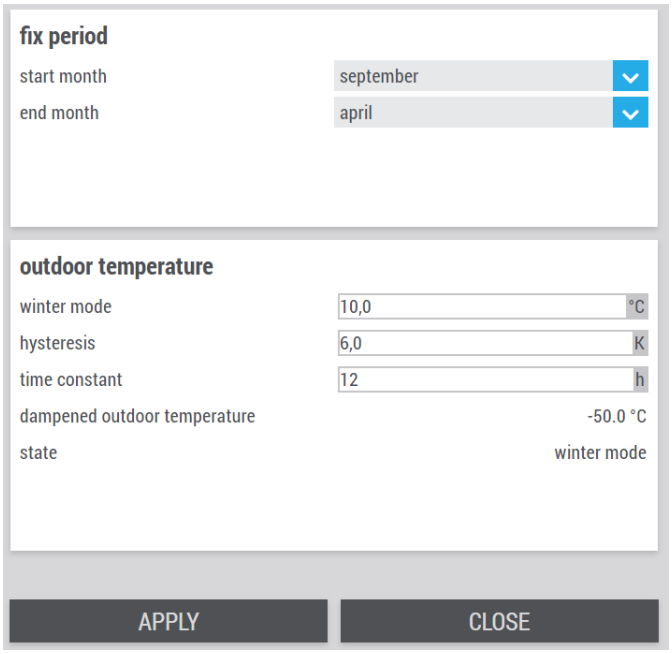


Fig. 72: Summer/winter

The winter or summer operation of the AHU can be defined either via a fixed time period or via the outside temperature.

- If a start and end month are specified, winter operation applies within this period.
- If no fixed time period is specified, winter operation is determined on the basis of the damped outdoor temperature.
  As soon as the damped outdoor temperature falls below the value set for *'winter mode'*, winter mode applies.
- To switch to summer mode, the damped outdoor temperature must be higher than the sum of the values entered for the *'hysteresis'* and *'winter mode'*.

The damped outdoor temperature is calculated as a floating mean value of the outdoor temperature using a *'time constant'*, entered in hours.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.4 Setpoint adjustment

Go to the main menu ⚙ ➔ *'Setpoint adjustment'*.

In case of very low or very high temperatures it may be useful to have the temperature setpoint adjusted automatically (summer/winter compensation, see heating/cooling characteristic curves).

Attention, this function requires a weather sensor.

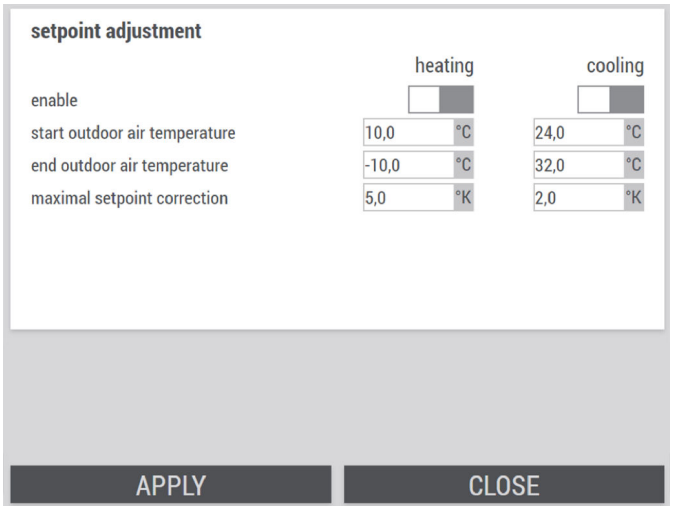


Fig. 73: Setpoint adjustment

Designation	Description	
Setpoint adjustment	enable	Temperature compensation off Temperature compensation for *'heating'* (winter) *'cooling'* (summer)
	Start outdoor air temperature	Limit value above which the setpoint is adjusted.
	End outdoor air temperature	Limit value up to which the setpoint is adjusted.
	Maximal setpoint correction	Maximum value by which the setpoint can be adjusted.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.5 Management operating level (management and control equipment)

In the main menu, open ⚙ ➔ *'Management operating level'*.

The connection to the management and control equipment (MCE) can be configured on this page.

! NOTICE!

The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

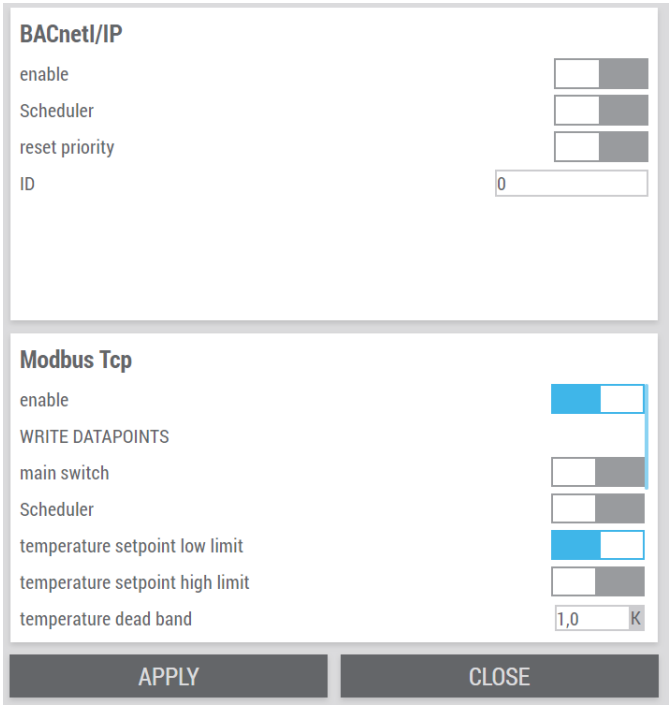


Fig. 74: Management and control equipment

Designation	Description	
BACnet/IP	Enable	Enable BACnet communication. Only valid after restarting the controller. Changes in MCE disabled Changes in MCE released
	Timer	Enabling the control of the time programme for enabling the air handling unit via BACnet not enabled Timer enabled
	Reset priorities	Reset all active priorities (in writable objects) inactive Reset priorities
	ID	Set BACnet ID. Only valid after restarting the controller.

Designation	Description	
Modbus TCP	Enable	General blocking of parameter changes by the MCE. Reading parameters via Modbus TCP communication is always possible. **Attention:** This slide switch has the highest priority! General writing via MCE blocked General writing via MCE released
	Mains isolator	Blocking the override of the main switch by the MCE. Override of the main switch via MCE disabled Override of the main switch via MCE enabled
	Timer	Override release of time programme by MCE. Timer is not overridden by the MCE Timer is overridden by the MCE
	Block temperature set-points Block supply air tempera-ture limits Block humidity setpoints Block supply air humidity limits Block fan setpoints Block extract/supply air volume flow setpoint Block extract/supply air duct pressure setpoint	Blocking the corresponding parameters for changes via the MCE. Writing the respective value via MCE blocked Writing of the respective value via MCE released
	Temperature dead zone Humidity dead zone	The dead zone is relevant if only one limit value has been enabled. It defines the distance to the non-released limit.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.6 External alarms

Go to the main menu for ⚙ ➔ *'External alarms'*.

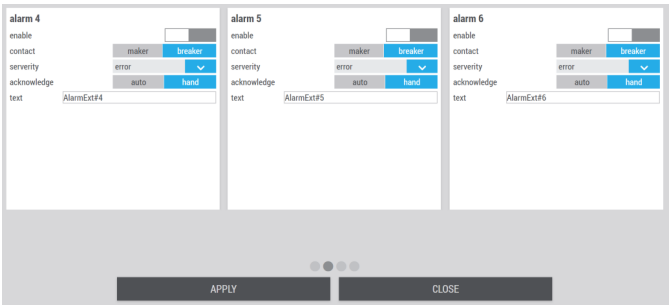


Fig. 75: External alarms

Designation	Description
enable	Activation of external alarm (1-10). deactivated activated
Contact	Selecting the type of contact of the external switch: Normally open contact: establishes the electrical connection when the switch is actuated. Normally closed contact: disconnects an electrical connection when actuated and is closed in the idle state.
Degree of severity	Setting the severity of the fault: ■ Information ■ Warning ■ Fault
Acknowledge	Select how alarms should be acknowledged. Hand Alarm has to be manually deleted auto Alarm is deleted automatically when the fault disappears.
Text	Free text for alarm message that is displayed when the alarm occurs.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.7 External devices

Go to the main menu for ⚙ ➔ *'External devices'*.

Fig. 76: External devices

Designation		Description
Device #	Name	Name of the external device (1-10)
	Operating mode	The power is controlled manually by selecting one of the following options: auto 0% 100% hand If you select the option *[Hand]*, the field *'actuating value'* appears, in which you can enter values between 0% and 100% auto 0% 100% hand actuating value 30 %
	Actuating value minimum	Minimum value
	Actuating value maximum	Maximum value
	Command	Setpoint value
	Position	Actual value

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.8 Modbus RTU monitoring

Go to the main menu ⚙ ➔ *'Modbus RTU monitoring'*.

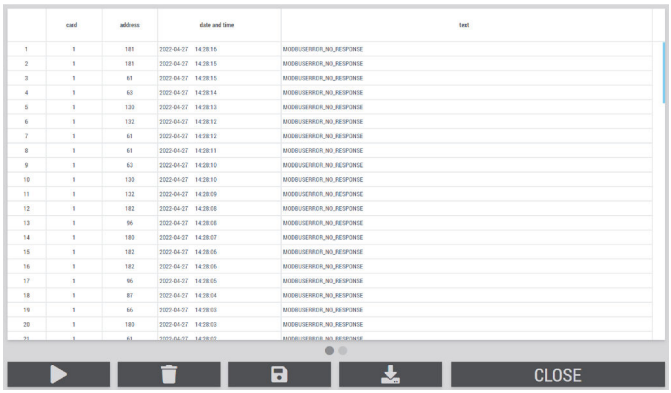


Fig. 77: Modbus RTU monitoring – list of devices

Modbus RTU monitoring page 2

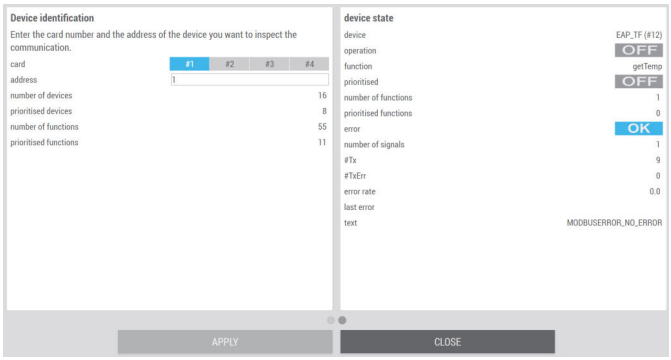


Fig. 78: Modbus RTU monitoring page 2

On this page, status information on communication via Modbus RTU connected devices can be called up.

Admin rights are required for this!

To call up the status information, select the card and enter the address of the device in the address field, then *[APPLY]* .

6.9 X-AIRCONTROL

Go to the main menu ⚙ ➔ to open *'X-AIRCONTROL'*.

Settings and status page for the connection between the X-CUBE controller and the optionally available X-AIRMASTER, which is responsible for room automation (X-AIRCONTROL).

! NOTICE!

The settings may only be made by trained specialist personnel (e.g. TROX service personnel).

Service user rights are required to make changes to the settings.

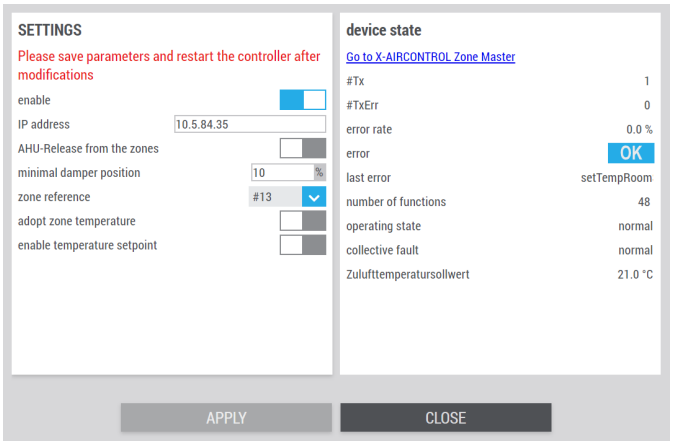


Fig. 79: X-AIRCONTROL

Designation	Description	
Settings **Attention:** Always save the settings with *[APPLY]* . Settings become effective after restarting the controller.	enable	☐ deactivated ☑ Activation of the connection to a connected X-AIRCONTROL Zone Master.
	IP address	Enter the IP address of the X-AIRCONTROL zone master.
	AHU release via the zones	☐ No release via the zones ☑ Release via the zones
	Minimum damper blade position	Minimum position of the damper with the largest opening for releasing the system.
	Reference zone	Selection of a zone whose room temperature can be used for the ventilation system

Designation	Description	
	Accepting temperature setpoint	Setpoint is not accepted Setpoint is accepted
Device status	Go to X-AIRCONTROL zone master	Link to a web based visualisation of the X-AIRCONTROL zone master.
	#Tx	Displays the transmitted communication packages.
	#TxErr	Displays the faulty communication packages.
	Error rate	Displays the percentage of communication (transmission) errors.
	Fault	Displays the percentage of communication (transmission) errors.
	last fault	Displays the last fault that occurred.
	Number of functions	Displays the number of currently executed functions
	Operating mode Collective fault Temperature setpoint	Displays the values that the X-CUBE Controller has received from the X-AIRCONTROL zone master.

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.10 Network adapter

Go to the main menu ⚙ ➔ *'Network adapter'*.

! NOTICE!

Attention: When you change these settings, you may no longer be able to access to the visualisation software. Before any changes: Make sure that your terminal device (touch panel, PC, notebook or tablet) and the X-CUBE controller are part of the same network.

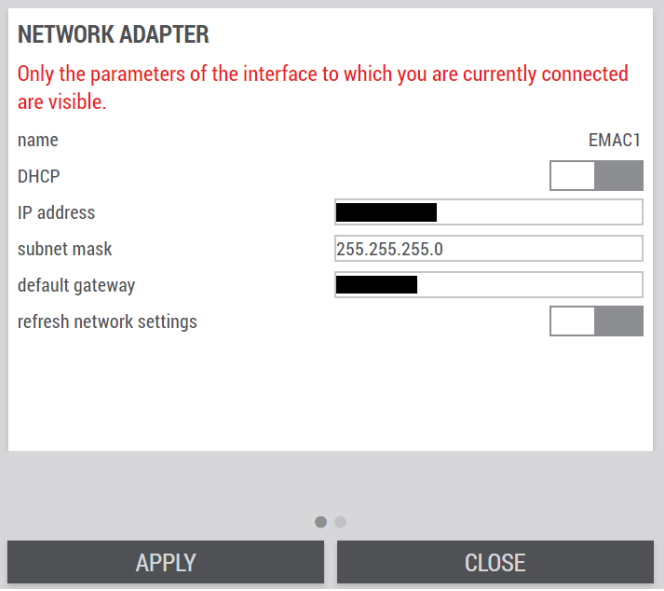


Fig. 80: Network adapter

Designation	Description	
Network adapter	Name	Displays the name of the network connection.
	DHCP	DHCP deactivated IP Address is automatically retrieved from the DHCP server.
	IP address	Here you can enter your IP address. Factory setting: `192.168.0.180` or 192.168.0.200
	Subnet mask	Here you can enter your subnet mask. Factory setting: `255.255.255.0`

Designation	Description	
	Default Gateway	Here you can enter your default gateway. Factory setting: 0.0.0.0
	Update network settings	The parameters are not adopted by the controller The parameters are adopted by the controller

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

6.11 Access sub-systems

In the main menu, open ⚙ ➔ *'Access sub-systems'*.

Links to other systems can be created on this page, which can then simply be accessed via the link.

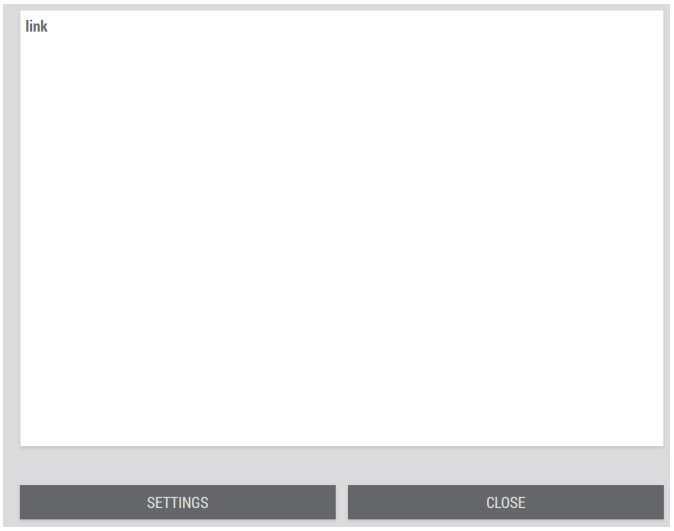


Fig. 81: Access sub-systems

Links to sub-systems can be defined under *[EINSTELLUNGEN]* .

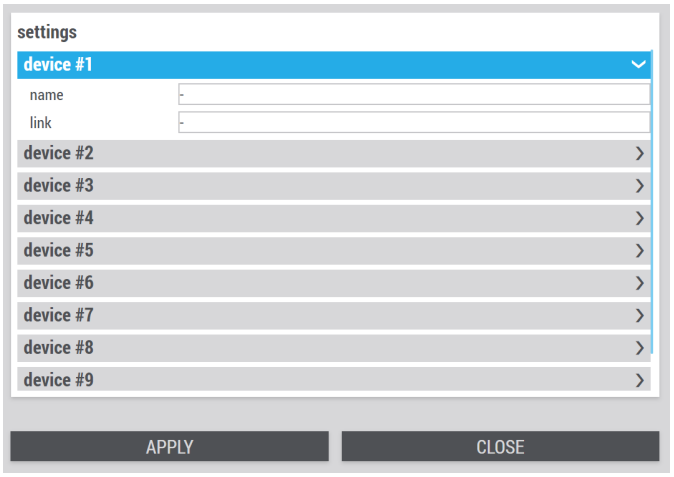


Fig. 82: Settings page

Designation	Description
Name	Name of the link that is displayed on the link page
Link	Address of the target system

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

7 Fire protection

7.1 TROXNETCOM

Go to the main menu ➔ and open *'TROXNETCOM'*.

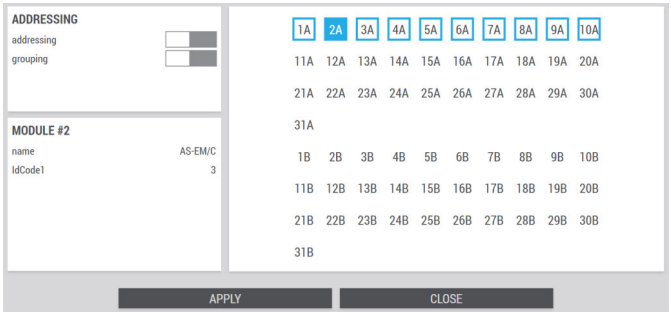


Fig. 83: TROXNETCOM

Designation	Description	
Addressing	(grey)	inactive
	(blue)	Sets the address
Grouping	(grey)	inactive
	(blue)	Grouping active
Module #	Name	Displays the name of the TROXNETCOM module
	Idcode1	Displays the name of the ID code

7.2 Duct smoke detector

Status overview

Go to the main menu ➔ and open *'Smoke detector'*.

User rights Service are required to display smoke detectors that are not available.

Two duct smoke detectors can be connected to the X-CUBE controller via digital inputs. For more than two smoke detectors, you need to add digital inputs (additional hardware).

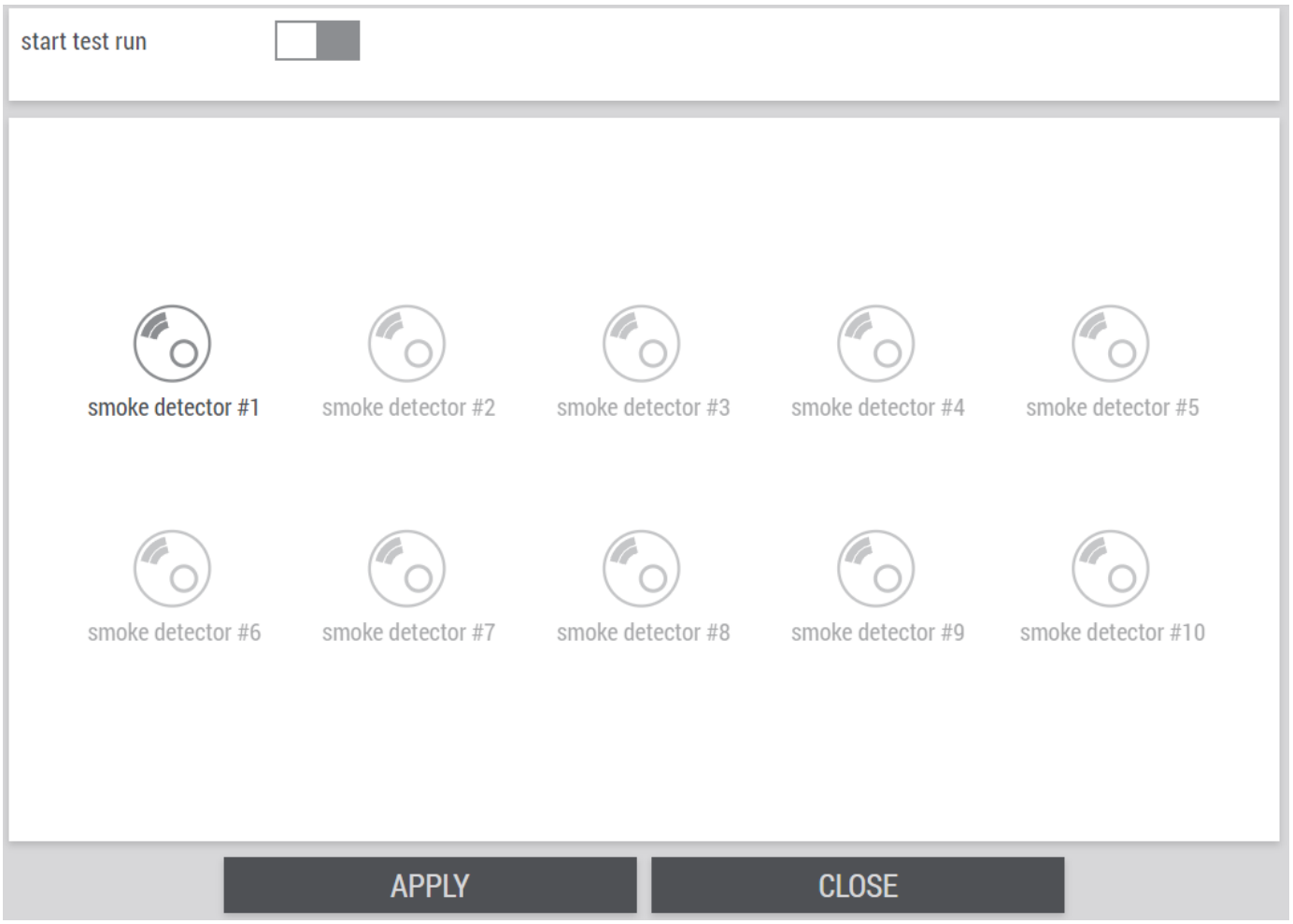


Fig. 84: Overview duct smoke detectors

Designation	Description	
Start test run	**Service user rights are required to start a test run.** To start a test run, set the slide switch to activated and select *[APPLY]*.	
	(grey)	inactive
	(blue)	Start test run
Status display duct smoke detector		Smoke detector OK, not triggered.

Designation	Description	
		Smoke detector not available, but can be set to available. Note: Displaying non-available duct smoke detectors requires *'Service'* access rights.
		Alarm, smoke detector has been triggered.

The details page can be opened by selecting the relevant smoke detector.

Detail duct smoke detector

Service user rights are required to make changes to the settings.

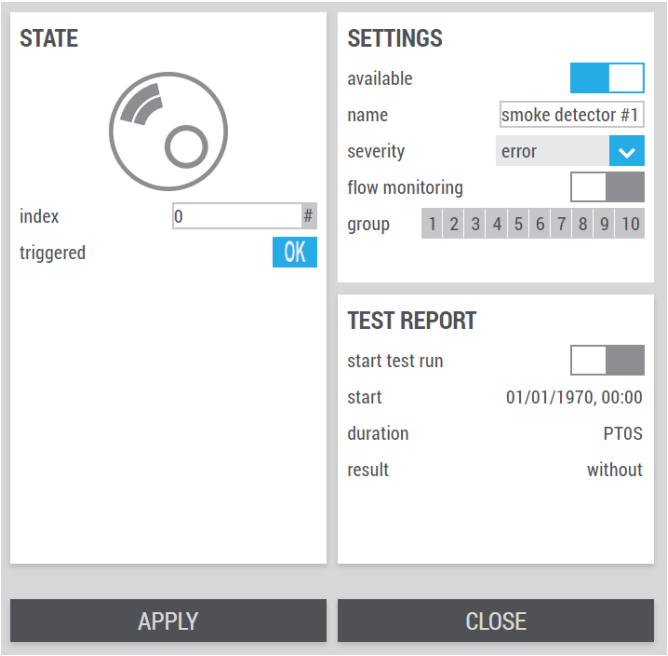


Fig. 85: Detail page duct smoke detector

Designation	Description	
STATUS	Index	Input field to display a different smoke detector status
	triggered	! Alarm, smoke detector has been triggered. OK Smoke detector OK, not triggered.
SETTINGS	available	Smoke detector not available. Smoke detector available.
	Name	Enter the name of the smoke detector; the name will be displayed in the overview.
	Degree of severity	Setting the severity level when the smoke detector is triggered ■ Information ■ Warning ■ Fault
	Flow monitoring	Flow monitoring not active Flow monitoring active
	Group	Use this field to group several smoke detectors. If a smoke detector or a fire damper in a group is triggered, all other devices in the group are also triggered.
Test Report	Start test run	Test run not active Test run is started after selecting *[APPLY]*
	Start	Display of the start time of the test run

Designation	Description	
	Duration	Duration of the most recent test run.
	Result	Result of the most recent test run: ■ without ■ Test running ■ Test passed ■ Test failed ■ Test aborted

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

7.3 Fire dampers

Status overview

Go to the main menu ➔ and open *'Fire dampers'*.

The connected fire dampers and their status are displayed on this page. A triggered fire damper is highlighted in red in the list.

To use the digital inputs for fire dampers, an EJ1809 module in slot 4 and corresponding hardware configuration on the X-CUBE controller are required.
From the ninth fire damper onwards, additional hardware with digital inputs is required.

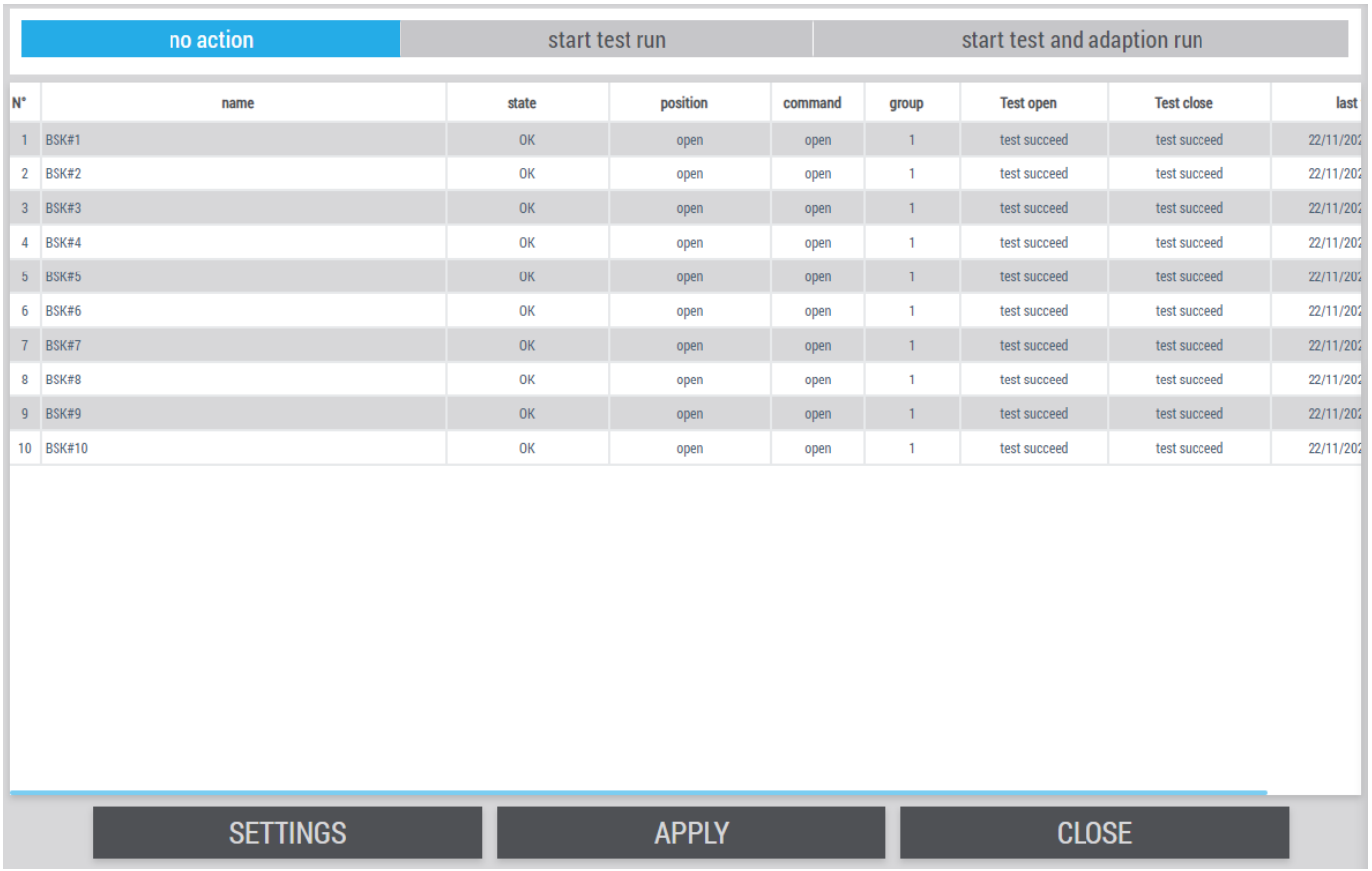


Fig. 86: Overview fire dampers

Service user rights are required to make changes to the settings.

Start test run: To start a test run, first select *[Start test run]*, then *[APPLY]*.

Start adaptation: To start an adaptation run, first select *[Test and Start adaptation]* and then *[ACCEPT]*.

Designation	Description
N°	Consecutive number of the fire dampers
Name	Displays the name of the fire damper
Status	Displays the status of the fire damper: ■ open ■ Position fault ■ Run time Open Fault ■ Run time Close Fault ■ Triggered

Designation	Description
Position	Displays the position of the fire damper: ■ Close ■ closed ■ Intermediate position ■ End position error
Command	Displays the current command of the fire damper: ■ - ■ Close ■ Open
Group	Displays the group set for the fire damper
Test Open Test Close	Displays the result of the runtime test: ■ Test aborted ■ Timeout ■ Test failed ■ running ■ Test not possible
Last test	Time of the last test

Details fire damper

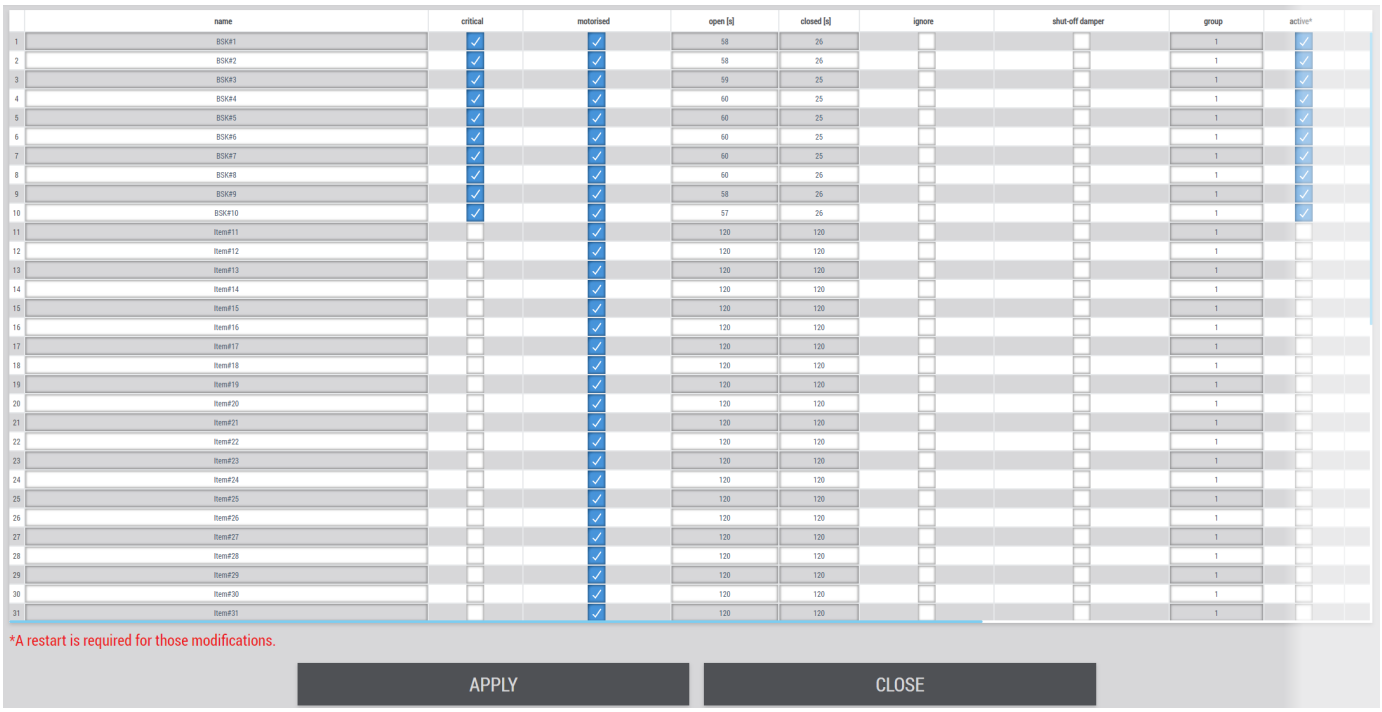


Fig. 87: Detail page fire damper

Designation	Description	
Name	Enter the name of the fire damper; the name will be displayed in the overview.	
critical	☐	X-CUBE will not be switched off.
	☑	If the fire damper is triggered, the X-CUBE will be switched off.
motorised	☐	Fire damper without spring return actuator, shall not be opened by X-CUBE Controller.
	☑	Fire damper with spring return actuator, and may will be opened by X-CUBE Controller.
open [s] closed [s]	Entry fields for the expected runtime of the fire damper	If the runtime is exceeded, a message is issued
ignore	☐	Alarms are displayed
	☑	Alarms are ignored
Shut-off damper	☐	Fire damper remains open when X-CUBE is turned off.
	☑	Fire damper will be closed when X-CUBE is turned off.

Designation	Description	
Group	Input field to combine several fire dampers into a group. If a smoke detector or a fire damper in a group is triggered, all other devices in the group are also triggered.	
Active		Fire damper disabled
		Fire damper enabled
Limit switch OPEN		Fire damper without OPEN limit switches
		Fire damper has OPEN limit switch
Limit switch CLOSED		Fire damper without CLOSED limit switches
		Fire damper has CLOSED limit switch

Click *[APPLY]* to save the values. Click *[CLOSE]* to leave the page without saving.

8 Data history

In the main menu, open ➔ *'Temperature' 'Air volume flow' 'Duct pressure'* or *'Humidity'*.

The data for the selected day are visualised in these displays. The selection goes back up to one year.

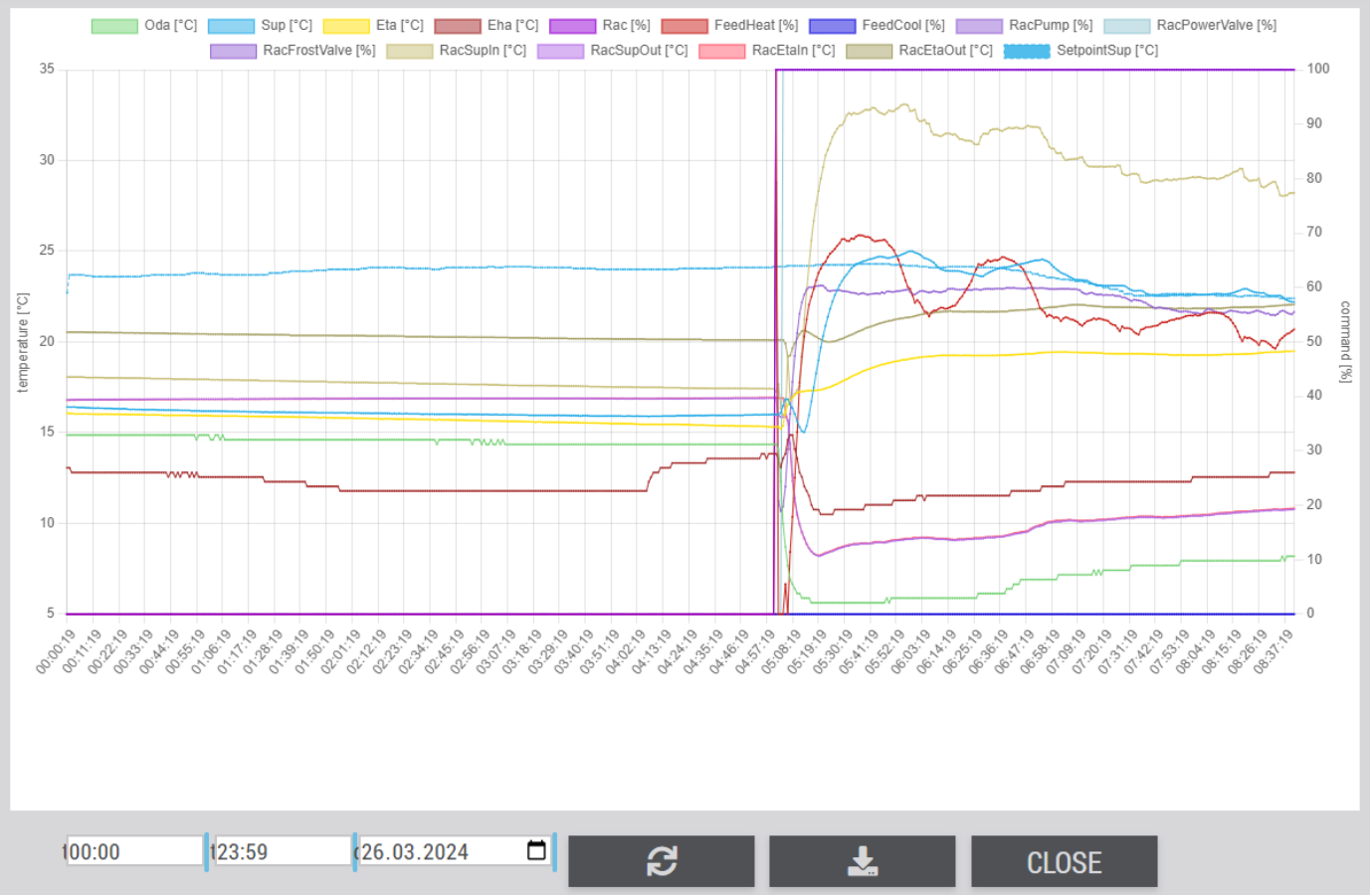


Fig. 88: Temperatures

By selecting the recorded values of the respective day can be downloaded as a CSV file.

Downloading trends is not possible via the touch panel.

9 Faults

9.1 Faults

Fault description	Cause	Remedy
No visualisation displayed	No visualisation on the touch panel	X-CUBE controller and touch panel are not in the same IP address space. ■ Set the correct target address for visualisation (see Chapter 3.1) on the touch panel. If the problem persists, use the mains isolator to switch the X-CUBE off and on again. If the problem persists even after you have switched the X-CUBE off and on again, please contact the TROX Technical Service.

9.2 List of alarms

9.2.1 Digital Alarms

Digital alarms are triggered internally by the software or are connected directly to the terminal connection of a digital input.

The listed severity levels and delays are standard settings, changes on request.

Effect of Severity

Fault - Switches off the ventilation unit

Warning - Does not switch off the ventilation unit, but only the affected component.

ID	Text	Degree of severity	Delay [s]	Note for the user
120.10.0	External lock	Info	1	Device locked by the dig. entry
122.10.0	24V voltage	Fault	1	24V voltage too low
123.10.0	24V Fuse	Fault	1	24V fuse triggered
124.10.0	Overvoltage protection	Fault	1	Surge protection device triggered
130.10.0	External alarm #1	Warning	1	Digital input has been triggered
131.10.0	External alarm #2	Warning	1	Digital input has been triggered
132.10.0	External alarm #3	Warning	1	Digital input has been triggered
133.10.0	External alarm #4	Warning	1	Digital input has been triggered
134.10.0	External alarm #5	Warning	1	Digital input has been triggered
135.10.0	External alarm #6	Warning	1	Digital input has been triggered
136.10.0	External alarm #7	Warning	1	Digital input has been triggered
137.10.0	External alarm #8	Warning	1	Digital input has been triggered
138.10.0	External alarm #9	Warning	1	Digital input has been triggered
139.10.0	External alarm #10	Warning	1	Digital input has been triggered
1001.10.0	Fire alarm	Fault	1	Digital input Fire alarm triggered
10019.10.0	Force night purge	Info	1	Activated by the BACS
1002.10.0	Requirement smoke extraction	Info	1	Digital input has been triggered
14114.10.0	UML damper position error #1	Warning	0	Check damper actuator mechanically
14124.10.0	UML Recirculation damper position error #2	Warning	0	Check damper actuator mechanically
11014.10.0	AUL Outdoor air damper position error #1	Fault	0	Check damper actuator mechanically
11024.10.0	AUL Outdoor air damper position error #2	Fault	0	Check damper actuator mechanically
11034.10.0	ZUL Supply air damper position error #1	Fault	0	Check damper actuator mechanically
11044.10.0	ZUL Supply air damper position error #2	Fault	0	Check damper actuator mechanically
11054.10.0	ABL Extract air damper position error #1	Fault	0	Check damper actuator mechanically

ID	Text	Degree of severity	Delay [s]	Note for the user
11064.10.0	ABL Extract air damper position error #2	Fault	0	Check damper actuator mechanically
11074.10.0	FOL Exhaust air damper position error #1	Fault	0	Check damper actuator mechanically
11084.10.0	FOL Exhaust air damper position error #2	Fault	0	Check damper actuator mechanically
13006.10.0	Change required outdoor air filter AUL #1	Warning	0	Change filter and confirm on the HMI
13016.10.0	Change required outdoor air filter AUL #2	Warning	0	Change filter and confirm on the HMI
13026.10.0	Change required supply air filter ZUL #1	Warning	0	Change filter and confirm on the HMI
13036.10.0	Change required supply air filter ZUL #2	Warning	0	Change filter and confirm on the HMI
13046.10.0	Change required extract air filter ABL #1	Warning	0	Change filter and confirm on the HMI
13056.10.0	Change required extract air filter ABL #2	Warning	0	Change filter and confirm on the HMI
12014.10.0	ZUL supply air fans Collective fault	Fault	0	Number of permitted faulty SUP supply air fans exceeded
12015.10.0	SUP supply air fans collective warning	Warning	0	Min. one SUP supply air fan is faulty
12016.10.0	SUP supply air fans no volume flow	Fault	300	Check air duct, dampers and fans
12104.10.0	SUP supply air fan fault #1	Warning	1	Service tool required, call TROX Service personnel
12124.10.0	SUP supply air fan fault #2	Warning	1	Service tool required, call TROX Service personnel
12144.10.0	SUP supply air fan fault #3	Warning	1	Service tool required, call TROX Service personnel
12164.10.0	SUP supply air fan fault #4	Warning	1	Service tool required, call TROX Service personnel
12184.10.0	SUP supply air fan fault #5	Warning	1	Service tool required, call TROX Service personnel
12204.10.0	SUP supply air fan fault #6	Warning	1	Service tool required, call TROX Service personnel
12224.10.0	SUP supply air fan fault #7	Warning	1	Service tool required, call TROX Service personnel
12244.10.0	SUP supply air fan fault #8	Warning	1	Service tool required, call TROX Service personnel
12264.10.0	SUP supply air fan fault #9	Warning	1	Service tool required, call TROX Service personnel
12284.10.0	SUP supply air fan fault #10	Warning	1	Service tool required, call TROX Service personnel
12304.10.0	SUP supply air fan fault #11	Warning	1	Service tool required, call TROX Service personnel
12324.10.0	SUP supply air fan fault #12	Warning	1	Service tool required, call TROX Service personnel

ID	Text	Degree of severity	Delay [s]	Note for the user
12344.10.0	SUP supply air fan fault #13	Warning	1	Service tool required, call TROX Service personnel
12364.10.0	SUP supply air fan fault #14	Warning	1	Service tool required, call TROX Service personnel
12384.10.0	SUP supply air fan fault #15	Warning	1	Service tool required, call TROX Service personnel
12404.10.0	SUP supply air fan fault #16	Warning	1	Service tool required, call TROX Service personnel
12111.10.0	SUP supply air fan fuse #1	Warning	1	Fuse blown
12131.10.0	SUP supply air fan fuse #2	Warning	1	Fuse blown
12151.10.0	SUP supply air fan fuse #3	Warning	1	Fuse blown
12171.10.0	SUP supply air fan fuse #4	Warning	1	Fuse blown
12191.10.0	SUP supply air fan fuse #5	Warning	1	Fuse blown
12211.10.0	SUP supply air fan fuse #6	Warning	1	Fuse blown
12231.10.0	SUP supply air fan fuse #7	Warning	1	Fuse blown
12251.10.0	SUP supply air fan fuse #8	Warning	1	Fuse blown
12271.10.0	SUP supply air fan fuse #9	Warning	1	Fuse blown
12291.10.0	SUP supply air fan fuse #10	Warning	1	Fuse blown
12311.10.0	SUP supply air fan fuse #11	Warning	1	Fuse blown
12331.10.0	SUP supply air fan fuse #12	Warning	1	Fuse blown
12351.10.0	SUP supply air fan fuse #13	Warning	1	Fuse blown
12371.10.0	SUP supply air fan fuse #14	Warning	1	Fuse blown
12391.10.0	SUP supply air fan fuse #15	Warning	1	Fuse blown
12411.10.0	SUP supply air fan fuse #16	Warning	1	Fuse blown
12110.10.0	SUP supply air fan internal error #1	Warning	0	Service tool required, call TROX Service personnel
12130.10.0	SUP supply air fan internal error #2	Warning	0	Service tool required, call TROX Service personnel
12150.10.0	SUP supply air fan internal error #3	Warning	0	Service tool required, call TROX Service personnel
12170.10.0	SUP supply air fan internal error #4	Warning	0	Service tool required, call TROX Service personnel
12190.10.0	SUP supply air fan internal error #5	Warning	0	Service tool required, call TROX Service personnel
12210.10.0	SUP supply air fan internal error #6	Warning	0	Service tool required, call TROX Service personnel
12230.10.0	SUP supply air fan internal error #7	Warning	0	Service tool required, call TROX Service personnel
12250.10.0	SUP supply air fan internal error #8	Warning	0	Service tool required, call TROX Service personnel
12270.10.0	SUP supply air fan internal error #9	Warning	0	Service tool required, call TROX Service personnel

ID	Text	Degree of severity	Delay [s]	Note for the user
12290.10.0	SUP supply air fan internal error #10	Warning	0	Service tool required, call TROX Service personnel
12310.10.0	SUP supply air fan internal error #11	Warning	0	Service tool required, call TROX Service personnel
12330.10.0	SUP supply air fan internal error #12	Warning	0	Service tool required, call TROX Service personnel
12350.10.0	SUP supply air fan internal error #13	Warning	0	Service tool required, call TROX Service personnel
12370.10.0	SUP supply air fan internal error #14	Warning	0	Service tool required, call TROX Service personnel
12390.10.0	SUP supply air fan internal error #15	Warning	0	Service tool required, call TROX Service personnel
12410.10.0	SUP supply air fan internal error #16	Warning	0	Service tool required, call TROX Service personnel
12514.10.0	ETA extract air fans Collective fault	Fault	0	Number of permitted faulty ETA extract air fans exceeded
12515.10.0	ETA extract air fans collective warning	Warning	0	Min. one ETA extract air fan is faulty
12516.10.0	ETA extract air fans no volume flow	Fault	300	Check air duct, dampers and fans
12604.10.0	ABL extract air fan fault #1	Warning	1	Service tool required, call TROX Service personnel
12624.10.0	ETA extract air fan fault #2	Warning	1	Service tool required, call TROX Service personnel
12644.10.0	ETA extract air fan fault #3	Warning	1	Service tool required, call TROX Service personnel
12664.10.0	ETA extract air fan fault #4	Warning	1	Service tool required, call TROX Service personnel
12684.10.0	ETA extract air fan fault #5	Warning	1	Service tool required, call TROX Service personnel
12704.10.0	ETA extract air fan fault #6	Warning	1	Service tool required, call TROX Service personnel
12724.10.0	ETA extract air fan fault #7	Warning	1	Service tool required, call TROX Service personnel
12744.10.0	ETA extract air fan fault #8	Warning	1	Service tool required, call TROX Service personnel
12764.10.0	ETA extract air fan fault #9	Warning	1	Service tool required, call TROX Service personnel
12784.10.0	ETA extract air fan fault #10	Warning	1	Service tool required, call TROX Service personnel
12804.10.0	ETA extract air fan fault #11	Warning	1	Service tool required, call TROX Service personnel
12824.10.0	ETA extract air fan fault #12	Warning	1	Service tool required, call TROX Service personnel
12844.10.0	ETA extract air fan fault #13	Warning	1	Service tool required, call TROX Service personnel
12864.10.0	ETA extract air fan fault #14	Warning	1	Service tool required, call TROX Service personnel

ID	Text	Degree of severity	Delay [s]	Note for the user
12884.10.0	ETA extract air fan fault #15	Warning	1	Service tool required, call TROX Service personnel
12904.10.0	ETA extract air fan fault #16	Warning	1	Service tool required, call TROX Service personnel
12611.10.0	ABL extract air fan fuse #1	Warning	1	Fuse blown
12631.10.0	ETA extract air fan fuse #2	Warning	1	Fuse blown
12651.10.0	ETA extract air fan fuse #3	Warning	1	Fuse blown
12671.10.0	ETA extract air fan fuse #4	Warning	1	Fuse blown
12691.10.0	ETA extract air fan fuse #5	Warning	1	Fuse blown
12711.10.0	ETA extract air fan fuse #6	Warning	1	Fuse blown
12731.10.0	ETA extract air fan fuse #7	Warning	1	Fuse blown
12751.10.0	ETA extract air fan fuse #8	Warning	1	Fuse blown
12771.10.0	ETA extract air fan fuse #9	Warning	1	Fuse blown
12791.10.0	ETA extract air fan fuse #10	Warning	1	Fuse blown
12811.10.0	ETA extract air fan fuse #11	Warning	1	Fuse blown
12831.10.0	ETA extract air fan fuse #12	Warning	1	Fuse blown
12851.10.0	ETA extract air fan fuse #13	Warning	1	Fuse blown
12871.10.0	ETA extract air fan fuse #14	Warning	1	Fuse blown
12891.10.0	ETA extract air fan fuse #15	Warning	1	Fuse blown
12911.10.0	ETA extract air fan fuse #16	Warning	1	Fuse blown
12610.10.0	ABL extract air fan internal error #1	Warning	0	Service tool required, call TROX Service personnel
12630.10.0	ETA extract air fan internal error #2	Warning	0	Service tool required, call TROX Service personnel
12650.10.0	ETA extract air fan internal error #3	Warning	0	Service tool required, call TROX Service personnel
12670.10.0	ETA extract air fan internal error #4	Warning	0	Service tool required, call TROX Service personnel
12690.10.0	ETA extract air fan internal error #5	Warning	0	Service tool required, call TROX Service personnel
12710.10.0	ETA extract air fan internal error #6	Warning	0	Service tool required, call TROX Service personnel
12730.10.0	ETA extract air fan internal error #7	Warning	0	Service tool required, call TROX Service personnel
12750.10.0	ETA extract air fan internal error #8	Warning	0	Service tool required, call TROX Service personnel
12770.10.0	ETA extract air fan internal error #9	Warning	0	Service tool required, call TROX Service personnel
12790.10.0	ETA extract air fan internal error #10	Warning	0	Service tool required, call TROX Service personnel
12810.10.0	ETA extract air fan internal error #11	Warning	0	Service tool required, call TROX Service personnel

ID	Text	Degree of severity	Delay [s]	Note for the user
12830.10.0	ETA extract air fan internal error #12	Warning	0	Service tool required, call TROX Service personnel
12850.10.0	ETA extract air fan internal error #13	Warning	0	Service tool required, call TROX Service personnel
12870.10.0	ETA extract air fan internal error #14	Warning	0	Service tool required, call TROX Service personnel
12890.10.0	ETA extract air fan internal error #15	Warning	0	Service tool required, call TROX Service personnel
12910.10.0	ETA extract air fan internal error #16	Warning	0	Service tool required, call TROX Service personnel
14314.10.0	Rotor controller fault	Warning	1	Digital input has been triggered
14321.10.0	Fuse rotor controller	Warning	1	Fuse blown
14320.10.0	Rotor controller internal error	Warning	0	Service tool required, call TROX Service personnel
14213.10.0	Plate heat exchanger de-icing	Info	0	Pressure loss too high
14224.10.0	Plate heat exchanger bypass damper position error #1	Warning	0	Check damper actuator mechanically
14234.10.0	Plate heat exchanger bypass damper position error #2	Warning	0	Check damper actuator mechanically
14424.10.0	External RAC system pump fault	Warning	1	Digital input has been triggered
14414.10.0	External RAC system valve position error	Warning	0	Check valve actuator mechanically
14024.10.0	Adiabatic fault	Warning	1	Digital input has been triggered
15103.10.0	Preheater anti-frost thermostat	Fault	1	Anti-frost thermostat triggered
15124.10.0	Preheater pump fault	Fault	1	Digital input has been triggered
15104.10.0	Preheater frost prevention	Warning	0	Return temperature too low
15114.10.0	Preheater valve position error	Fault	0	Check valve actuator mechanically
15314.10.0	Preheater electrical fault	Fault	1	Digital input has been triggered
15303.10.0	Preheater electrical temperature monitor	Warning	1	High temperature at heating coil
15304.10.0	Preheater electric safety temperature limiter	Fault	1	Temperature on heating coil too high
16124.10.0	Cooling coil pump fault	Warning	1	Digital input has been triggered
16114.10.0	Cooling coil valve position error	Warning	0	Check valve actuator mechanically
16213.10.0	External refrigeration system fault	Warning	1	Digital input has been triggered
15203.10.0	Reheater anti-frost thermostat	Fault	1	Anti-frost thermostat triggered
15224.10.0	Reheater pump fault	Warning	1	Digital input has been triggered
15204.10.0	Reheater frost prevention	Warning	0	Return temperature too low
15214.10.0	Reheater valve position error	Warning	0	Check valve actuator mechanically
15414.10.0	Reheater electrical fault	Warning	1	Digital input has been triggered
15403.10.0	Reheater electrical temperature monitor	Warning	1	High temperature at heating coil

ID	Text	Degree of severity	Delay [s]	Note for the user
15404.10.0	Reheater electric safety temperature limiter	Fault	1	Temperature on heating coil too high
17114.10.0	External heat pump error #1	Warning	1	Digital input has been triggered
17116.10.0	External heat pump defrost signal #1	Info	1	Digital input has been triggered
17117.10.0	External heat pump maintenance #1	Warning	1	Digital input has been triggered
17124.10.0	External heat pump error #2	Warning	1	Digital input has been triggered
17126.10.0	External heat pump defrost signal #2	Info	1	Digital input has been triggered
17127.10.0	External heat pump maintenance #2	Warning	1	Digital input has been triggered
17134.10.0	External heat pump error #3	Warning	1	Digital input has been triggered
17136.10.0	External heat pump defrost signal #3	Info	1	Digital input has been triggered
17137.10.0	External heat pump maintenance #3	Warning	1	Digital input has been triggered
17144.10.0	External heat pump error #4	Warning	1	Digital input has been triggered
17146.10.0	External heat pump defrost signal #4	Info	1	Digital input has been triggered
17147.10.0	External heat pump maintenance #4	Warning	1	Digital input has been triggered
17215.10.0	Mitsubishi heat pump error #1	Warning	1	Service tool required, call TROX Service personnel
17224.10.0	Mitsubishi heat pump error #2	Warning	1	Service tool required, call TROX Service personnel
17233.10.0	Mitsubishi heat pump error #3	Warning	1	Service tool required, call TROX Service personnel
17242.10.0	Mitsubishi heat pump error #4	Warning	1	Service tool required, call TROX Service personnel
17251.10.0	Mitsubishi heat pump error #5	Warning	1	Service tool required, call TROX Service personnel
17260.10.0	Mitsubishi heat pump error #6	Warning	1	Service tool required, call TROX Service personnel
17219.10.0	Mitsubishi heat pump defrost signal #1	Info	1	Outdoor unit defrosting
17228.10.0	Mitsubishi heat pump defrost signal #2	Info	1	Outdoor unit defrosting
17237.10.0	Mitsubishi heat pump defrost signal #3	Info	1	Outdoor unit defrosting
17246.10.0	Mitsubishi heat pump defrost signal #4	Info	1	Outdoor unit defrosting
17255.10.0	Mitsubishi heat pump defrost signal #5	Info	1	Outdoor unit defrosting
17264.10.0	Mitsubishi heat pump defrost signal #6	Info	1	Outdoor unit defrosting
17220.10.0	Mitsubishi heat pump pre-defrost signal #1	Info	1	Defrosting starts soon
17229.10.0	Mitsubishi heat pump pre-defrost signal #2	Info	1	Defrosting starts soon
17238.10.0	Mitsubishi heat pump pre-defrost signal #3	Info	1	Defrosting starts soon
17247.10.0	Mitsubishi heat pump pre-defrost signal #4	Info	1	Defrosting starts soon
17256.10.0	Mitsubishi heat pump pre-defrost signal #5	Info	1	Defrosting starts soon

ID	Text	Degree of severity	Delay [s]	Note for the user
17265.10.0	Mitsubishi heat pump pre-defrost signal #6	Info	1	Defrosting starts soon
17221.10.0	Mitsubishi heat pump self-protection #1	Info	1	Compressor is blocked
17230.10.0	Mitsubishi heat pump self-protection #2	Info	1	Compressor is blocked
17239.10.0	Mitsubishi heat pump self-protection #3	Info	1	Compressor is blocked
17248.10.0	Mitsubishi heat pump self-protection #4	Info	1	Compressor is blocked
17257.10.0	Mitsubishi heat pump self-protection #5	Info	1	Compressor is blocked
17266.10.0	Mitsubishi heat pump self-protection #6	Info	1	Compressor is blocked
18014.10.0	Humidifier faulty	Warning	1	Digital input has been triggered
18016.10.0	Humidifier hygrostat	Warning	1	Humidity too high
18017.10.0	Humidifier maintenance	Warning	1	Digital input has been triggered
3011.10.0	Duct smoke detector triggered #1	Fault	1	Smoke detected
3012.10.0	Duct smoke detector contaminated #1	Warning	1	Cleaning the device
3021.10.0	Duct smoke detector triggered #2	Fault	1	Smoke detected
3022.10.0	Duct smoke detector contaminated #2	Warning	1	Cleaning the device
3031.10.0	Duct smoke detector triggered #3	Fault	1	Smoke detected
3032.10.0	Duct smoke detector contaminated #3	Warning	1	Cleaning the device
3041.10.0	Duct smoke detector triggered #4	Fault	1	Smoke detected
3042.10.0	Duct smoke detector contaminated #4	Warning	1	Cleaning the device
3051.10.0	Duct smoke detector triggered #5	Fault	1	Smoke detected
3052.10.0	Duct smoke detector contaminated #5	Warning	1	Cleaning the device
3061.10.0	Duct smoke detector triggered #6	Fault	1	Smoke detected
3062.10.0	Duct smoke detector contaminated #6	Warning	1	Cleaning the device
3071.10.0	Duct smoke detector triggered #7	Fault	1	Smoke detected
3072.10.0	Duct smoke detector contaminated #7	Warning	1	Cleaning the device
3081.10.0	Duct smoke detector triggered #8	Fault	1	Smoke detected
3082.10.0	Duct smoke detector contaminated #8	Warning	1	Cleaning the device
3091.10.0	Duct smoke detector triggered #9	Fault	1	Smoke detected
3092.10.0	Duct smoke detector contaminated #9	Warning	1	Cleaning the device
3101.10.0	Duct smoke detector triggered #10	Fault	1	Smoke detected
3102.10.0	Duct smoke detector contaminated #10	Warning	1	Cleaning the device
2015.10.0	End position error fire damper #1	Fault	0	Adaptation of the end positions required
2025.10.0	End position error fire damper #2	Fault	0	Adaptation of the end positions required
2035.10.0	End position error fire damper #3	Fault	0	Adaptation of the end positions required
2045.10.0	End position error fire damper #4	Fault	0	Adaptation of the end positions required
2055.10.0	End position error fire damper #5	Fault	0	Adaptation of the end positions required
2065.10.0	End position error fire damper #6	Fault	0	Adaptation of the end positions required
2075.10.0	End position error fire damper #7	Fault	0	Adaptation of the end positions required

ID	Text	Degree of severity	Delay [s]	Note for the user
2085.10.0	End position error fire damper #8	Fault	0	Adaptation of the end positions required
2095.10.0	End position error fire damper #9	Fault	0	Adaptation of the end positions required
2105.10.0	End position error fire damper #10	Fault	0	Adaptation of the end positions required
2115.10.0	End position error fire damper #11	Fault	0	Adaptation of the end positions required
2125.10.0	End position error fire damper #12	Fault	0	Adaptation of the end positions required
2135.10.0	End position error fire damper #13	Fault	0	Adaptation of the end positions required
2145.10.0	End position error fire damper #14	Fault	0	Adaptation of the end positions required
2155.10.0	End position error fire damper #15	Fault	0	Adaptation of the end positions required
2165.10.0	End position error fire damper #16	Fault	0	Adaptation of the end positions required
2175.10.0	End position error fire damper #17	Fault	0	Adaptation of the end positions required
2185.10.0	End position error fire damper #18	Fault	0	Adaptation of the end positions required
2195.10.0	End position error fire damper #19	Fault	0	Adaptation of the end positions required
2205.10.0	End position error fire damper #20	Fault	0	Adaptation of the end positions required
2215.10.0	End position error fire damper #21	Fault	0	Adaptation of the end positions required
2225.10.0	End position error fire damper #22	Fault	0	Adaptation of the end positions required
2235.10.0	End position error fire damper #23	Fault	0	Adaptation of the end positions required
2245.10.0	End position error fire damper #24	Fault	0	Adaptation of the end positions required
2255.10.0	End position error fire damper #25	Fault	0	Adaptation of the end positions required
2265.10.0	End position error fire damper #26	Fault	0	Adaptation of the end positions required
2275.10.0	End position error fire damper #27	Fault	0	Adaptation of the end positions required
2285.10.0	End position error fire damper #28	Fault	0	Adaptation of the end positions required
2295.10.0	End position error fire damper #29	Fault	0	Adaptation of the end positions required
2305.10.0	End position error fire damper #30	Fault	0	Adaptation of the end positions required
2315.10.0	End position error fire damper #31	Fault	0	Adaptation of the end positions required
2325.10.0	End position error fire damper #32	Fault	0	Adaptation of the end positions required
2335.10.0	End position error fire damper #33	Fault	0	Adaptation of the end positions required
2345.10.0	End position error fire damper #34	Fault	0	Adaptation of the end positions required
2355.10.0	End position error fire damper #35	Fault	0	Adaptation of the end positions required
2365.10.0	End position error fire damper #36	Fault	0	Adaptation of the end positions required
2375.10.0	End position error fire damper #37	Fault	0	Adaptation of the end positions required
2385.10.0	End position error fire damper #38	Fault	0	Adaptation of the end positions required
2395.10.0	End position error fire damper #39	Fault	0	Adaptation of the end positions required
2405.10.0	End position error fire damper #40	Fault	0	Adaptation of the end positions required
2415.10.0	End position error fire damper #41	Fault	0	Adaptation of the end positions required
2425.10.0	End position error fire damper #42	Fault	0	Adaptation of the end positions required
2435.10.0	End position error fire damper #43	Fault	0	Adaptation of the end positions required
2445.10.0	End position error fire damper #44	Fault	0	Adaptation of the end positions required

ID	Text	Degree of severity	Delay [s]	Note for the user
2455.10.0	End position error fire damper #45	Fault	0	Adaptation of the end positions required
2465.10.0	End position error fire damper #46	Fault	0	Adaptation of the end positions required
2475.10.0	End position error fire damper #47	Fault	0	Adaptation of the end positions required
2485.10.0	End position error fire damper #48	Fault	0	Adaptation of the end positions required
2495.10.0	End position error fire damper #49	Fault	0	Adaptation of the end positions required
2505.10.0	End position error fire damper #50	Fault	0	Adaptation of the end positions required
2515.10.0	End position error fire damper #51	Fault	0	Adaptation of the end positions required
2525.10.0	End position error fire damper #52	Fault	0	Adaptation of the end positions required
2535.10.0	End position error fire damper #53	Fault	0	Adaptation of the end positions required
2545.10.0	End position error fire damper #54	Fault	0	Adaptation of the end positions required
2555.10.0	End position error fire damper #55	Fault	0	Adaptation of the end positions required
2565.10.0	End position error fire damper #56	Fault	0	Adaptation of the end positions required
2575.10.0	End position error fire damper #57	Fault	0	Adaptation of the end positions required
2585.10.0	End position error fire damper #58	Fault	0	Adaptation of the end positions required
2595.10.0	End position error fire damper #59	Fault	0	Adaptation of the end positions required
2605.10.0	End position error fire damper #60	Fault	0	Adaptation of the end positions required
2615.10.0	End position error fire damper #61	Fault	0	Adaptation of the end positions required
2625.10.0	End position error fire damper #62	Fault	0	Adaptation of the end positions required
2015.10.0	Runtime error opening fire damper #1	Fault	0	Opening took too long
2025.10.0	Runtime error opening fire damper #2	Fault	0	Opening took too long
2035.10.0	Runtime error opening fire damper #3	Fault	0	Opening took too long
2045.10.0	Runtime error opening fire damper #4	Fault	0	Opening took too long
2055.10.0	Runtime error opening fire damper #5	Fault	0	Opening took too long
2065.10.0	Runtime error opening fire damper #6	Fault	0	Opening took too long
2075.10.0	Runtime error opening fire damper #7	Fault	0	Opening took too long
2085.10.0	Runtime error opening fire damper #8	Fault	0	Opening took too long
2095.10.0	Runtime error opening fire damper #9	Fault	0	Opening took too long
2105.10.0	Runtime error opening fire damper #10	Fault	0	Opening took too long
2115.10.0	Runtime error opening fire damper #11	Fault	0	Opening took too long
2125.10.0	Runtime error opening fire damper #12	Fault	0	Opening took too long
2135.10.0	Runtime error opening fire damper #13	Fault	0	Opening took too long
2145.10.0	Runtime error opening fire damper #14	Fault	0	Opening took too long
2155.10.0	Runtime error opening fire damper #15	Fault	0	Opening took too long
2165.10.0	Runtime error opening fire damper #16	Fault	0	Opening took too long
2175.10.0	Runtime error opening fire damper #17	Fault	0	Opening took too long
2185.10.0	Runtime error opening fire damper #18	Fault	0	Opening took too long
2195.10.0	Runtime error opening fire damper #19	Fault	0	Opening took too long

ID	Text	Degree of severity	Delay [s]	Note for the user
2205.10.0	Runtime error opening fire damper #20	Fault	0	Opening took too long
2215.10.0	Runtime error opening fire damper #21	Fault	0	Opening took too long
2225.10.0	Runtime error opening fire damper #22	Fault	0	Opening took too long
2235.10.0	Runtime error opening fire damper #23	Fault	0	Opening took too long
2245.10.0	Runtime error opening fire damper #24	Fault	0	Opening took too long
2255.10.0	Runtime error opening fire damper #25	Fault	0	Opening took too long
2265.10.0	Runtime error opening fire damper #26	Fault	0	Opening took too long
2275.10.0	Runtime error opening fire damper #27	Fault	0	Opening took too long
2285.10.0	Runtime error opening fire damper #28	Fault	0	Opening took too long
2295.10.0	Runtime error opening fire damper #29	Fault	0	Opening took too long
2305.10.0	Runtime error opening fire damper #30	Fault	0	Opening took too long
2315.10.0	Runtime error opening fire damper #31	Fault	0	Opening took too long
2325.10.0	Runtime error opening fire damper #32	Fault	0	Opening took too long
2335.10.0	Runtime error opening fire damper #33	Fault	0	Opening took too long
2345.10.0	Runtime error opening fire damper #34	Fault	0	Opening took too long
2355.10.0	Runtime error opening fire damper #35	Fault	0	Opening took too long
2365.10.0	Runtime error opening fire damper #36	Fault	0	Opening took too long
2375.10.0	Runtime error opening fire damper #37	Fault	0	Opening took too long
2385.10.0	Runtime error opening fire damper #38	Fault	0	Opening took too long
2395.10.0	Runtime error opening fire damper #39	Fault	0	Opening took too long
2405.10.0	Runtime error opening fire damper #40	Fault	0	Opening took too long
2415.10.0	Runtime error opening fire damper #41	Fault	0	Opening took too long
2425.10.0	Runtime error opening fire damper #42	Fault	0	Opening took too long
2435.10.0	Runtime error opening fire damper #43	Fault	0	Opening took too long
2445.10.0	Runtime error opening fire damper #44	Fault	0	Opening took too long
2455.10.0	Runtime error opening fire damper #45	Fault	0	Opening took too long
2465.10.0	Runtime error opening fire damper #46	Fault	0	Opening took too long
2475.10.0	Runtime error opening fire damper #47	Fault	0	Opening took too long
2485.10.0	Runtime error opening fire damper #48	Fault	0	Opening took too long
2495.10.0	Runtime error opening fire damper #49	Fault	0	Opening took too long
2505.10.0	Runtime error opening fire damper #50	Fault	0	Opening took too long
2515.10.0	Runtime error opening fire damper #51	Fault	0	Opening took too long
2525.10.0	Runtime error opening fire damper #52	Fault	0	Opening took too long
2535.10.0	Runtime error opening fire damper #53	Fault	0	Opening took too long
2545.10.0	Runtime error opening fire damper #54	Fault	0	Opening took too long
2555.10.0	Runtime error opening fire damper #55	Fault	0	Opening took too long
2565.10.0	Runtime error opening fire damper #56	Fault	0	Opening took too long

ID	Text	Degree of severity	Delay [s]	Note for the user
2575.10.0	Runtime error opening fire damper #57	Fault	0	Opening took too long
2585.10.0	Runtime error opening fire damper #58	Fault	0	Opening took too long
2595.10.0	Runtime error opening fire damper #59	Fault	0	Opening took too long
2605.10.0	Runtime error opening fire damper #60	Fault	0	Opening took too long
2615.10.0	Runtime error opening fire damper #61	Fault	0	Opening took too long
2625.10.0	Runtime error opening fire damper #62	Fault	0	Opening took too long
2015.10.0	Runtime error closing fire damper #1	Fault	0	Closing took too long
2025.10.0	Runtime error closing fire damper #2	Fault	0	Closing took too long
2035.10.0	Runtime error closing fire damper #3	Fault	0	Closing took too long
2045.10.0	Runtime error closing fire damper #4	Fault	0	Closing took too long
2055.10.0	Runtime error closing fire damper #5	Fault	0	Closing took too long
2065.10.0	Runtime error closing fire damper #6	Fault	0	Closing took too long
2075.10.0	Runtime error closing fire damper #7	Fault	0	Closing took too long
2085.10.0	Runtime error closing fire damper #8	Fault	0	Closing took too long
2095.10.0	Runtime error closing fire damper #9	Fault	0	Closing took too long
2105.10.0	Runtime error closing fire damper #10	Fault	0	Closing took too long
2115.10.0	Runtime error closing fire damper #11	Fault	0	Closing took too long
2125.10.0	Runtime error closing fire damper #12	Fault	0	Closing took too long
2135.10.0	Runtime error closing fire damper #13	Fault	0	Closing took too long
2145.10.0	Runtime error closing fire damper #14	Fault	0	Closing took too long
2155.10.0	Runtime error closing fire damper #15	Fault	0	Closing took too long
2165.10.0	Runtime error closing fire damper #16	Fault	0	Closing took too long
2175.10.0	Runtime error closing fire damper #17	Fault	0	Closing took too long
2185.10.0	Runtime error closing fire damper #18	Fault	0	Closing took too long
2195.10.0	Runtime error closing fire damper #19	Fault	0	Closing took too long
2205.10.0	Runtime error closing fire damper #20	Fault	0	Closing took too long
2215.10.0	Runtime error closing fire damper #21	Fault	0	Closing took too long
2225.10.0	Runtime error closing fire damper #22	Fault	0	Closing took too long
2235.10.0	Runtime error closing fire damper #23	Fault	0	Closing took too long
2245.10.0	Runtime error closing fire damper #24	Fault	0	Closing took too long
2255.10.0	Runtime error closing fire damper #25	Fault	0	Closing took too long
2265.10.0	Runtime error closing fire damper #26	Fault	0	Closing took too long
2275.10.0	Runtime error closing fire damper #27	Fault	0	Closing took too long
2285.10.0	Runtime error closing fire damper #28	Fault	0	Closing took too long
2295.10.0	Runtime error closing fire damper #29	Fault	0	Closing took too long
2305.10.0	Runtime error closing fire damper #30	Fault	0	Closing took too long
2315.10.0	Runtime error closing fire damper #31	Fault	0	Closing took too long

ID	Text	Degree of severity	Delay [s]	Note for the user
2325.10.0	Runtime error closing fire damper #32	Fault	0	Closing took too long
2335.10.0	Runtime error closing fire damper #33	Fault	0	Closing took too long
2345.10.0	Runtime error closing fire damper #34	Fault	0	Closing took too long
2355.10.0	Runtime error closing fire damper #35	Fault	0	Closing took too long
2365.10.0	Runtime error closing fire damper #36	Fault	0	Closing took too long
2375.10.0	Runtime error closing fire damper #37	Fault	0	Closing took too long
2385.10.0	Runtime error closing fire damper #38	Fault	0	Closing took too long
2395.10.0	Runtime error closing fire damper #39	Fault	0	Closing took too long
2405.10.0	Runtime error closing fire damper #40	Fault	0	Closing took too long
2415.10.0	Runtime error closing fire damper #41	Fault	0	Closing took too long
2425.10.0	Runtime error closing fire damper #42	Fault	0	Closing took too long
2435.10.0	Runtime error closing fire damper #43	Fault	0	Closing took too long
2445.10.0	Runtime error closing fire damper #44	Fault	0	Closing took too long
2455.10.0	Runtime error closing fire damper #45	Fault	0	Closing took too long
2465.10.0	Runtime error closing fire damper #46	Fault	0	Closing took too long
2475.10.0	Runtime error closing fire damper #47	Fault	0	Closing took too long
2485.10.0	Runtime error closing fire damper #48	Fault	0	Closing took too long
2495.10.0	Runtime error closing fire damper #49	Fault	0	Closing took too long
2505.10.0	Runtime error closing fire damper #50	Fault	0	Closing took too long
2515.10.0	Runtime error closing fire damper #51	Fault	0	Closing took too long
2525.10.0	Runtime error closing fire damper #52	Fault	0	Closing took too long
2535.10.0	Runtime error closing fire damper #53	Fault	0	Closing took too long
2545.10.0	Runtime error closing fire damper #54	Fault	0	Closing took too long
2555.10.0	Runtime error closing fire damper #55	Fault	0	Closing took too long
2565.10.0	Runtime error closing fire damper #56	Fault	0	Closing took too long
2575.10.0	Runtime error closing fire damper #57	Fault	0	Closing took too long
2585.10.0	Runtime error closing fire damper #58	Fault	0	Closing took too long
2595.10.0	Runtime error closing fire damper #59	Fault	0	Closing took too long
2605.10.0	Runtime error closing fire damper #60	Fault	0	Closing took too long
2615.10.0	Runtime error closing fire damper #61	Fault	0	Closing took too long
2625.10.0	Runtime error closing fire damper #62	Fault	0	Closing took too long
2015.10.0	Fire damper triggered #1	Fault	0	Fire detected
2025.10.0	Fire damper triggered #2	Fault	0	Fire detected
2035.10.0	Fire damper triggered #3	Fault	0	Fire detected
2045.10.0	Fire damper triggered #4	Fault	0	Fire detected
2055.10.0	Fire damper triggered #5	Fault	0	Fire detected
2065.10.0	Fire damper triggered #6	Fault	0	Fire detected

ID	Text	Degree of severity	Delay [s]	Note for the user
2075.10.0	Fire damper triggered #7	Fault	0	Fire detected
2085.10.0	Fire damper triggered #8	Fault	0	Fire detected
2095.10.0	Fire damper triggered #9	Fault	0	Fire detected
2105.10.0	Fire damper triggered #10	Fault	0	Fire detected
2115.10.0	Fire damper triggered #11	Fault	0	Fire detected
2125.10.0	Fire damper triggered #12	Fault	0	Fire detected
2135.10.0	Fire damper triggered #13	Fault	0	Fire detected
2145.10.0	Fire damper triggered #14	Fault	0	Fire detected
2155.10.0	Fire damper triggered #15	Fault	0	Fire detected
2165.10.0	Fire damper triggered #16	Fault	0	Fire detected
2175.10.0	Fire damper triggered #17	Fault	0	Fire detected
2185.10.0	Fire damper triggered #18	Fault	0	Fire detected
2195.10.0	Fire damper triggered #19	Fault	0	Fire detected
2205.10.0	Fire damper triggered #20	Fault	0	Fire detected
2215.10.0	Fire damper triggered #21	Fault	0	Fire detected
2225.10.0	Fire damper triggered #22	Fault	0	Fire detected
2235.10.0	Fire damper triggered #23	Fault	0	Fire detected
2245.10.0	Fire damper triggered #24	Fault	0	Fire detected
2255.10.0	Fire damper triggered #25	Fault	0	Fire detected
2265.10.0	Fire damper triggered #26	Fault	0	Fire detected
2275.10.0	Fire damper triggered #27	Fault	0	Fire detected
2285.10.0	Fire damper triggered #28	Fault	0	Fire detected
2295.10.0	Fire damper triggered #29	Fault	0	Fire detected
2305.10.0	Fire damper triggered #30	Fault	0	Fire detected
2315.10.0	Fire damper triggered #31	Fault	0	Fire detected
2325.10.0	Fire damper triggered #32	Fault	0	Fire detected
2335.10.0	Fire damper triggered #33	Fault	0	Fire detected
2345.10.0	Fire damper triggered #34	Fault	0	Fire detected
2355.10.0	Fire damper triggered #35	Fault	0	Fire detected
2365.10.0	Fire damper triggered #36	Fault	0	Fire detected
2375.10.0	Fire damper triggered #37	Fault	0	Fire detected
2385.10.0	Fire damper triggered #38	Fault	0	Fire detected
2395.10.0	Fire damper triggered #39	Fault	0	Fire detected
2405.10.0	Fire damper triggered #40	Fault	0	Fire detected
2415.10.0	Fire damper triggered #41	Fault	0	Fire detected
2425.10.0	Fire damper triggered #42	Fault	0	Fire detected
2435.10.0	Fire damper triggered #43	Fault	0	Fire detected

ID	Text	Degree of severity	Delay [s]	Note for the user
2445.10.0	Fire damper triggered #44	Fault	0	Fire detected
2455.10.0	Fire damper triggered #45	Fault	0	Fire detected
2465.10.0	Fire damper triggered #46	Fault	0	Fire detected
2475.10.0	Fire damper triggered #47	Fault	0	Fire detected
2485.10.0	Fire damper triggered #48	Fault	0	Fire detected
2495.10.0	Fire damper triggered #49	Fault	0	Fire detected
2505.10.0	Fire damper triggered #50	Fault	0	Fire detected
2515.10.0	Fire damper triggered #51	Fault	0	Fire detected
2525.10.0	Fire damper triggered #52	Fault	0	Fire detected
2535.10.0	Fire damper triggered #53	Fault	0	Fire detected
2545.10.0	Fire damper triggered #54	Fault	0	Fire detected
2555.10.0	Fire damper triggered #55	Fault	0	Fire detected
2565.10.0	Fire damper triggered #56	Fault	0	Fire detected
2575.10.0	Fire damper triggered #57	Fault	0	Fire detected
2585.10.0	Fire damper triggered #58	Fault	0	Fire detected
2595.10.0	Fire damper triggered #59	Fault	0	Fire detected
2605.10.0	Fire damper triggered #60	Fault	0	Fire detected
2615.10.0	Fire damper triggered #61	Fault	0	Fire detected
2625.10.0	Fire damper triggered #62	Fault	0	Fire detected

9.2.2 Analogue alarms

Analogue alarms are triggered internally by the software when limits of measured values are reached. The listed severity levels and limits are standard settings, changes on request. Severity level "Fault" switches off the ventilation unit. Severity level "Warning" does not switch off the ventilation unit.

General user information: If a lower or upper limit alarm is triggered, this might also be due to a communication problem with the corresponding device, please check first. If there is no communication alarm, please check the measuring range setting directly on the sensor.

ID	Text	Degree of severity Lower limit	Degree of severity Upper limit	Lower limit	Upper limit
13002.10.x	Filter ODA #1 Differential pressure sensor	Warning	Warning	-50	200
13012.10.x	Filter ODA #2 Differential pressure sensor	Warning	Warning	-50	200
13022.10.x	Filter SUP #1 Differential pressure sensor	Warning	Warning	-50	200
13032.10.x	Filter SUP #2 Differential pressure sensor	Warning	Warning	-50	200
13042.10.x	Filter ETA #1 Differential pressure sensor	Warning	Warning	-50	200
13052.10.x	Filter ETA #2 Differential pressure sensor	Warning	Warning	-50	200
14211.10.x	Plate heat exchanger differential pressure sensor	Warning	Warning	-50	2500
14425.10.x	External run-around coil flow temperature	Warning	Warning	5	75
15106.10.x	Preheater return temperature	Warning	Warning	5	75
16103.10.x	Cooling coil flow temperature	Warning	Warning	5	75
15206.10.x	Reheater return temperature	Warning	Warning	5	75
201.10.x	Weather sensor temperature	Warning	Warning	-40	70
10101.10.x	ODA temperature sensor	Warning	Warning	-40	70
10102.10.x	ODA relative humidity sensor	Warning	Warning	0	100
10208.10.x	SUP temperature sensor	Warning	Warning	5	50
10209.10.x	SUP relative humidity sensor	Warning	Warning	0	100
10214.10.x	SUP duct pressure sensor	Warning	Warning	-50	500
10217.10.x	SUP sensor differential pressure	Warning	Warning	-50	5000
10302.10.x	ETA temperature sensor	Warning	Warning	5	50
10303.10.x	ETA relative humidity sensor	Warning	Warning	0	100
10304.10.x	ETA quality sensor	Warning	Warning	0	2000
10308.10.x	ETA duct pressure sensor	Warning	Warning	-50	500
10311.10.x	ETA differential pressure sensor	Warning	Warning	-50	5000
10401.10.x	EHA temperature sensor	Warning	Warning	5	50
10402.10.x	EHA relative humidity sensor	Warning	Warning	0	100
10501.10.x	Room sensor #1 temperature	Warning	Warning	5	50
10502.10.x	Room sensor #1 relative humidity	Warning	Warning	0	100
10503.10.x	Room sensor #1 quality	Warning	Warning	0	2000
10507.10.x	Room sensor #2 temperature	Warning	Warning	5	50
10508.10.x	Room sensor #2 relative humidity	Warning	Warning	0	100

ID	Text	Degree of severity Lower limit	Degree of severity Upper limit	Lower limit	Upper limit
10509.10.x	Room sensor #2 quality	Warning	Warning	0	2000
10513.10.x	Room sensor #3 temperature	Warning	Warning	5	50
10514.10.x	Room sensor #3 relative humidity	Warning	Warning	0	100
10515.10.x	Room sensor #3 quality	Warning	Warning	0	2000
10519.10.x	Room sensor #4 temperature	Warning	Warning	5	50
10520.10.x	Room sensor #4 relative humidity	Warning	Warning	0	100
10521.10.x	Room sensor #4 quality	Warning	Warning	0	2000
10525.10.x	Room sensor #5 temperature	Warning	Warning	5	50
10526.10.x	Room sensor #5 relative humidity	Warning	Warning	0	100
10527.10.x	Room sensor #5 quality	Warning	Warning	0	2000

9.2.3 Communication alarms

Communication alarms occur if there are problems with the Modbus communication to a device. Some devices may be displayed with different IDs that are not included in the list below. This is because more than one signal is disturbed, but the cause is the same. The listed severity levels are standard settings, changes on request. Severity level "Fault" switches off the ventilation unit. Severity level "Warning" does not switch off the ventilation unit, but switches off the relevant component.

General user information: Please ensure beforehand that all Modbus cables are connected correctly and that terminating resistors are installed at the ends of the Modbus lines.

ID	Text	Degree of severity
201.10.3	Weather sensor temperature	Warning
10101.10.3	ODA temperature sensor	Warning
10102.10.3	ODA relative humidity sensor	Warning
10208.10.3	SUP temperature sensor	Warning
10209.10.3	SUP relative humidity sensor	Warning
10214.10.3	SUP duct pressure sensor	Warning
10217.10.3	SUP sensor differential pressure	Warning
10302.10.3	ETA temperature sensor	Warning
10303.10.3	ETA relative humidity sensor	Warning
10304.10.3	ETA quality sensor	Warning
10308.10.3	ETA duct pressure sensor	Warning
10311.10.3	ETA differential pressure sensor	Warning
10401.10.3	EHA temperature sensor	Warning
10402.10.3	EHA relative humidity sensor	Warning
10501.10.3	Room sensor #1 temperature	Warning
10502.10.3	Room sensor #1 relative humidity	Warning
10503.10.3	Room sensor #1 quality	Warning
10507.10.3	Room sensor #2 temperature	Warning
10508.10.3	Room sensor #2 relative humidity	Warning
10509.10.3	Room sensor #2 quality	Warning
10513.10.3	Room sensor #3 temperature	Warning
10514.10.3	Room sensor #3 relative humidity	Warning
10515.10.3	Room sensor #3 quality	Warning
10519.10.3	Room sensor #4 temperature	Warning
10520.10.3	Room sensor #4 relative humidity	Warning
10521.10.3	Room sensor #4 quality	Warning
10525.10.3	Room sensor #5 temperature	Warning
10526.10.3	Room sensor #5 relative humidity	Warning
10527.10.3	Room sensor #5 quality	Warning
13002.10.3	Filter ODA #1 Differential pressure sensor	Warning
13012.10.3	Filter ODA #2 Differential pressure sensor	Warning

ID	Text	Degree of severity
13022.10.3	Filter SUP #1 Differential pressure sensor	Warning
13032.10.3	Filter SUP #2 Differential pressure sensor	Warning
13042.10.3	Filter ETA #1 Differential pressure sensor	Warning
13052.10.3	Filter ETA #2 Differential pressure sensor	Warning
12102.10.3	SUP supply air fan #1	Warning
12122.10.3	SUP supply air fan #2	Warning
12142.10.3	SUP supply air fan #3	Warning
12162.10.3	SUP supply air fan #4	Warning
12182.10.3	SUP supply air fan #5	Warning
12202.10.3	SUP supply air fan #6	Warning
12222.10.3	SUP supply air fan #7	Warning
12242.10.3	SUP supply air fan #8	Warning
12262.10.3	SUP supply air fan #9	Warning
12282.10.3	SUP supply air fan #10	Warning
12302.10.3	SUP supply air fan #11	Warning
12322.10.3	SUP supply air fan #12	Warning
12342.10.3	SUP supply air fan #13	Warning
12362.10.3	SUP supply air fan #14	Warning
12382.10.3	SUP supply air fan #15	Warning
12402.10.3	SUP supply air fan #16	Warning
12602.10.3	SUP supply air fan #1	Warning
12622.10.3	SUP supply air fan #2	Warning
12642.10.3	SUP supply air fan #3	Warning
12662.10.3	SUP supply air fan #4	Warning
12682.10.3	SUP supply air fan #5	Warning
12702.10.3	SUP supply air fan #6	Warning
12722.10.3	SUP supply air fan #7	Warning
12742.10.3	SUP supply air fan #8	Warning
12762.10.3	SUP supply air fan #9	Warning
12782.10.3	SUP supply air fan #10	Warning
12802.10.3	SUP supply air fan #11	Warning
12822.10.3	SUP supply air fan #12	Warning
12842.10.3	SUP supply air fan #13	Warning
12862.10.3	SUP supply air fan #14	Warning
12882.10.3	SUP supply air fan #15	Warning
12902.10.3	SUP supply air fan #16	Warning
14312.10.3	Rotor controller	Warning
14211.10.3	Plate heat exchanger differential pressure sensor	Warning

ID	Text	Degree of severity
14222.10.3	Plate heat exchanger bypass damper #1	Warning
14232.10.3	Plate heat exchanger bypass damper #2	Warning
14112.10.3	UML Recirculation damper #1	Fault
14122.10.3	UML Recirculation damper #2	Fault
14412.10.3	External run-around coil system valve	Warning
14425.10.3	External run-around coil flow temperature	Warning
11012.10.3	AUL damper #1	Fault
11022.10.3	AUL damper #2	Fault
11032.10.3	SUP damper #1	Fault
11042.10.3	SUP damper #2	Fault
11052.10.3	ETA damper #1	Fault
11062.10.3	ETA damper #2	Fault
11072.10.3	EHA damper #1	Fault
11082.10.3	EHA damper #2	Fault
15112.10.3	Preheater valve	Fault
15106.10.3	Preheater return temperature	Warning
15212.10.3	Reheater valve	Warning
15206.10.3	Reheater return temperature	Warning
16112.10.3	Cooling coil valve	Warning
16103.10.3	Cooling coil flow temperature	Warning
10052.10.3	Control panel	Warning

10 Revision history

The table shows all changes made to this document.

Version no.	Date	Author	Comment/change
3	2024-04-01	Cs	SW version TcHmi 1.12.742 incorporated
2	2022-08-08	Cs	User management adapted
1	2022-04-26	Cs	Revision and transfer to editorial system
0	2020-10-26	As	Internal document

11 Configuration checklist

Building:	**Floor:**	**Device:**
Commissioning: ☐		**Date:** __ . __ . 20__

Activity	**See operating manual**	**Completed**	
		yes	**no**
Setting IP address X-CUBE Controller		☐	☐
Setting IP address visualisation		☐	☐
Setting own IP address		☐	☐
Access via separate terminal device set up			
Users and passwords created			
User 1: **Password:**			
User 2: **Password:**			
User 3: **Password:**			
User 4: **Password:**			
User 5: **Password:**			

Signature: (Maintenance personnel)	
Company: (Stamp)	

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TROX® TECHNIK

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