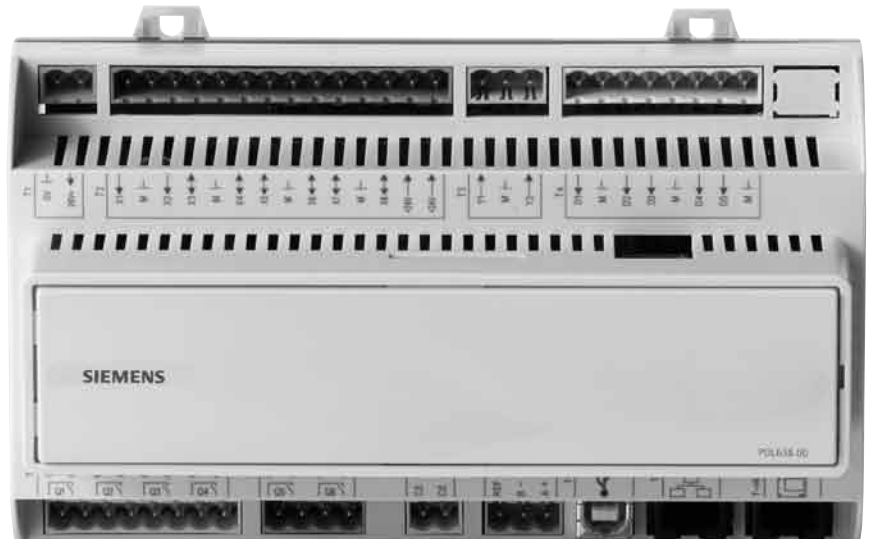


Control Equipment

# Siemens Climatix

Basis Document Climatix Control System



Air handling with the focus on LCC



# Content

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<b>1</b>	<b>About this document .....</b>	<b>7</b>
1.1	Revision history.....	7
1.2	Referenced documents.....	7
1.3	Before you start.....	7
<b>2</b>	<b>Philosophy of air handling units .....</b>	<b>9</b>
2.1	Overview .....	9
2.2	Properties.....	9
2.3	Safety .....	10
2.4	Packing, transport and storage.....	11
2.5	Maintenance and service .....	11
2.6	Environmental protection and waste management.....	11
2.7	Abbreviations .....	11
<b>3</b>	<b>Function overview .....</b>	<b>12</b>
3.1	General .....	12
3.2	Diagram standard AHU.....	13
3.3	Workflow diagram .....	14
<b>4</b>	<b>Hardware overview .....</b>	<b>15</b>
4.1	Basic controller (POL638x).....	15
4.2	Extension module (POL955).....	18
4.3	Inbuild HMI .....	20
4.4	External HMI (DM) .....	20
4.5	Room unit.....	25
<b>5</b>	<b>Functions .....</b>	<b>33</b>
5.1	Global functions .....	33
5.2	Operating mode .....	35
5.3	Damper control.....	46
5.4	Fan control .....	50
5.5	Temperature control .....	59
5.6	Heat recovery damper .....	67
5.7	Heat recovery (Plate, wheel, water).....	69
5.8	Heating / Heating 2 .....	73
5.9	Electrical heating / Electrical heating 2 .....	77
5.10	Cooling / Cooling 2.....	79
5.11	Humidity control .....	83
5.12	Air quality control.....	90
5.13	Auxiliary functions .....	91
5.14	Alarm handling (Alarm outputs) .....	93
<b>6</b>	<b>Detail pages: Inputs and outputs.....</b>	<b>95</b>
6.1	General .....	95
6.2	Analog outputs .....	95
6.3	Digital outputs .....	98

6.4	Multistate outputs .....	100
6.5	Analog inputs.....	102
6.6	Digital inputs.....	106
<b>7</b>	<b>Detail pages: Controller.....</b>	<b>110</b>
7.1	Loop controller .....	110
7.2	Cascade controller .....	111
<b>8</b>	<b>Detail pages: Time switch program.....</b>	<b>114</b>
8.1	General.....	114
8.2	Week scheduler.....	114
8.3	Day scheduler .....	115
8.4	Calendar (exception and fixed off) .....	115
<b>9</b>	<b>Communication .....</b>	<b>118</b>
9.1	General.....	118
9.2	Modbus.....	119
9.3	LON .....	124
9.4	BACnet.....	128
9.5	Room units .....	131
<b>10</b>	<b>Application Info .....</b>	<b>135</b>
<b>11</b>	<b>Save / restore parameters .....</b>	<b>136</b>
<b>12</b>	<b>Onboard WEB functionalities .....</b>	<b>139</b>
<b>13</b>	<b>System settings.....</b>	<b>141</b>
13.1	Password settings .....	141
13.2	Change passwords .....	141
13.3	Language Support.....	142
13.4	Target .....	142
13.5	Daylight saving time .....	143
13.6	HMI (operating unit) .....	145
13.7	Diagnostics.....	145
13.8	Diag object handler .....	146
<b>14</b>	<b>SD card and modem .....</b>	<b>148</b>
14.1	SD card functions (Update application) .....	148
14.2	Modem / SMS .....	149
<b>15</b>	<b>Configuration.....</b>	<b>152</b>
15.1	Configuration 1 .....	154
15.2	Configuration 2.....	159
15.3	Configuration I/Os .....	167
15.4	Check config I/Os.....	176
<b>16</b>	<b>Examples.....</b>	<b>177</b>
<b>17</b>	<b>HMI.....</b>	<b>177</b>
17.1	Overview .....	177
17.2	Start page.....	177
17.3	Main index.....	177

17.4	Main overview .....	178
17.5	Configuration.....	178
17.6	Configuration 1.....	178
17.7	Configuration 2.....	180
17.8	Configuration I/Os .....	184
17.9	Check config I/Os.....	188
17.10	Global functions .....	189
17.11	Inputs .....	189
17.12	Operating mode .....	191
17.13	Damper control.....	194
17.14	Fan control .....	195
17.15	Temperature control .....	197
17.16	Humidity control .....	206
17.17	Air quality control.....	208
17.18	Auxiliary.....	209
17.19	Loop controllers.....	209
17.20	Operation hours .....	210
17.21	Alarm handling (Alarm outputs) .....	211
17.22	Outputs.....	212
<b>18</b>	<b>Time scheduler.....</b>	<b>213</b>
18.1	Week schedulers.....	213
18.2	Detail pages: Analog outputs .....	214
18.3	Detail pages: Digital outputs .....	215
18.4	Detail pages: Multistate outputs.....	216
18.5	Detail pages: Analog inputs.....	217
18.6	Detail pages: Digital inputs.....	219
<b>19</b>	<b>Alarming.....</b>	<b>222</b>
19.1	General .....	222
19.2	Alarm list detail.....	223
19.3	Alarm list .....	224
19.4	Alarm history .....	224
19.5	Alarm list / history settings .....	225
19.6	Alarm lists.....	226
<b>20</b>	<b>Appendices.....</b>	<b>230</b>
20.1	Point tables .....	230
20.2	Diagnostic tables for check I/O .....	232
20.3	Navigation illustrations .....	235
20.4	Parameter list room unit.....	239
<b>Index</b>	<b>241</b>	



# 1 About this document

## 1.1 Revision history

Version	Date	Changes	Section	Pages
V1.0	02.07.2009	New document	---	---
V1.02	18.01.2010	New sub section New sub section Revised	4.5 – Room unit 20.4 – Parameter list room device 19.6 – Alarm lists	25-33 242-244 229-232

## 1.2 Referenced documents

Document title	Type of document	Document no.
Climatix Controllers POL6XX	Documentation on basics	CB1P3903en
Climatix Controllers POL63y.XX/XXX	Data sheet	CB1Q3230de
Climatix Extension Module POL955	Documentation on basics	CB1P3920en
Climatix AHU ext. module 14 I/O POL955.XX.XXX	Data sheet	CB2N3262de
Climatix BACnet communication modules POL904.00/XXX, POL908.00/XXX	Documentation on basics	CB1P3933en
Climatix communication BACnet MS/TP module POL904.00/xxx	Data sheet	CB1Q3932de
Climatix LON communication module POL906.00/XXX	Documentation on basics	CB1P3931en
Climatix communication LON module POL906.00/XXX	Data sheet	CB1Q3931de
Climatix MODBUS communication module POL902.00/XXX	Documentation on basics	CB1P3934en
Climatix communication MODBUS module POL902.00/XXX	Data sheet	CB1Q3934de

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## 2 Philosophy of air handling units

### 2.1 Overview

---

Climatix OEM controller product range

With the Climatic controller product range for OEM, Siemens is supporting the trend within the industry to integrate applications for air conditioning and refrigeration technology into the devices at the factory and to lower in this way the costs of plant installation and commissioning.

The Climatix product range covers all application segments: From standard controllers for simple, cost-optimized HVAC applications such as fan coils to more challenging, communicating applications, up to and including freely programmable controllers for complex solutions using AHU or chillers that demand a maximum amount of flexibility for communications and extensions.

Climatix 6xx controller product range

All Climatix POL6xx controllers are freely programmable and can be programmed accordingly for the corresponding use such as ventilation, refrigeration or district heating.

Various standard applications were created to help OEM customers speed up time-to-market and benefit from our application knowledge and experience in integrating into the building automation and control system.

The applications are based on years of experience in the corresponding application segments, are checked and tested and equipped with the required communication interfaces such as BACnet, LON and Modbus.

The standardization in turn significantly lowers costs at OEM, reduces support expenses as well and guarantees integration into Siemens building automation and control systems.

### 2.2 Properties

---

Climatix standard AHU application

The application includes all standard as well as special ventilation functions which can be selected for the OEM and defined using the operator unit (HMI).

The OEM loads the generated parameter file at the end of line test so that the AHUs are ready to install.

Authorized personnel are also able to enable additional functions in the field to make it possible to add any desired extensions.

The AHU standard application stands out with its flexible hardware and software, but also thanks to the standardization of integration.

## 2.3 Safety

---

### Use with other components

All equipment that is connected to the system must be CE marked and comply with the Machine Safety Directive.

### 2.3.1 Requirements regarding personnel for installation and start-up

---

Installation and start-up of POL 63X may only be carried out by qualified personnel who have relevant technical expertise and who are well acquainted with all the safety and installation regulations.

### 2.3.2 Safety regulations

---

The following safety regulations do not relate solely to POL 63X but also to the regulator's surroundings (e.g. control panel) and the technical plant in the property.



Observe all safety directions and comply with the corresponding general safety regulations in order to prevent personal injury and damage to property.

- Safety devices may not be removed, bypassed or taken out of operation.
- Apparatus and system components may only be used in a technically fault-free state. Faults that can affect safety must be rectified immediately.
- Observe the required safety instructions against excessively high contact voltages.
- The plant may not be in operation if the standard safety devices are out of operation or if their effects are influenced in some other way.
- All handling that affects the prescribed disconnection of the protective extra-low voltage (AC 24 V) must be avoided.
- Disconnect the supply voltage before opening the apparatus cabinet. Never work when the power is on!
- Avoid electromagnetic and other interference voltages in signal and connection cables.
- Assembly and installation of system and plant components may only be performed in accordance with corresponding installation instructions and instructions for use.
- The following equipment must be protected against static charging: electronic components, open printed circuit boards, freely accessible connectors and apparatus components that are connected with the internal connection.

In this context, also observe necessary protective measures such as earthing, potential equalisation, conducting surfaces (avoid highly insulating materials), etc.

## 2.4 Packing, transport and storage

---

The required packing of the system for storage and transport is dependent on the mechanical and climate conditions.

### Packing

Use the original packaging from Siemens or from the supplier when mechanical and climate conditions have an impact on transport.

### Transportation

During transport under particularly difficult conditions, a special package must be used.

### Storage

If the equipment is not to be installed immediately, store it in a well ventilated area, protected against high temperatures, humidity, dust and metal particles.

- For storage and transport, the limit values specified in data sheet CE2Q3226 always apply.  
Contact your supplier or Siemens in the event of any uncertainty.
- Damage that arises as a result of incorrect packing, storage or transport is not the responsibility of Siemens.

## 2.5 Maintenance and service

---

### Cleaning

All that is required to maintain POL63x is regular cleaning. System components that are arranged within the control panel are most easily separated from dust and dirt in conjunction with the prescribed maintenance checks.

### Faults

Diagnostics, the rectifying of faults and restarting may only be carried out by authorised staff. This also applies to work within the control panel (e.g. inspections, replacing fuses).

In the event of unauthorised interventions, Siemens cannot undertake to honour any guarantees. The responsibility for any damage that occurs in the system and any consequential damage rests with whoever caused the damage.

## 2.6 Environmental protection and waste management

---

### Environmental protection

Process unit POL 63X has no negative impact on the environment.

### Waste management

The apparatus includes electrical and electronic components and when discarded must not be handled together with household waste. **Always observe local regulations!**

## 2.7 Abbreviations

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HMI	Human Machine Interface (operating unit)
KP	Gain factor (P-effect)
LED	Light emitting diode
NC	Normally Closed (opening contact)
NO	Normally Open (closing contact)
SD	Secure device
TN	Integral action time (I-time)

## 3 Function overview

### 3.1 General

---

#### Scope of delivery

- 49 inputs and outputs are available on the base controller POL63x and a maximum of 2 POL955.00/ALG extension modules.
- All functions and the positioning of I/Os are freely configurable on the operator unit without programming.
- Sensor types (Pt1000, LGNi1000, Ni1000, NTC10k) and the areas for active sensors are freely selectable.
- Step-by-step configuration. Functions that can no longer be selected are automatically hidden in later steps.
- Disabled functions are hidden on operator units (HMI; HMI4Web) and for comm.
- Support of various languages (currently English, German and Swedish).
- The operating units are password protected and connected over the bus. A single HMI possible for multiple controllers.
- Application software update and controller firmware with backup of plant parameters using the SD card.
- Download preconfigured plants using SD cards or a PC with the Saphir Scope Tool.
- USB interface as the standard connection between the controller and PC.

#### Control functions

- Supply air, room and return air and cascade control with optional limitation of supply air.
- Summer/winter compensation of setpoint.
- External setpoint default or setpoint shift.
- Night start of plant when room temperature with separate setpoint is too low (too high).
- 4 different heat recovery variants.
- 4 heating registers (2 warm water, 2 electric registers with up to 3 steps, or 0-10V DC) with up to 3 included in the heating sequence.
- Limitation of electric register dependent on fan speed (stage).
- Preheating for the warm water register, including frost sensor and/or detector.
- 2 cooling registers (cold water or up to 3 stages or analog DX).
- Limitation of direct expansion evaporator dependent on fan speed (stage).
- Shut off cooling register when the outside air temperature is too low.
- Cooling recovery.
- Fresh air and exhaust air damper control.
- Fire damper control with autotest function.
- Extract air fan can be disabled.
- Stepped (maximum 3 steps), frequency controlled or modulating analog controlled fans.
- Emergency off function.
- Time switch catalog with daily, weekly and annual program.

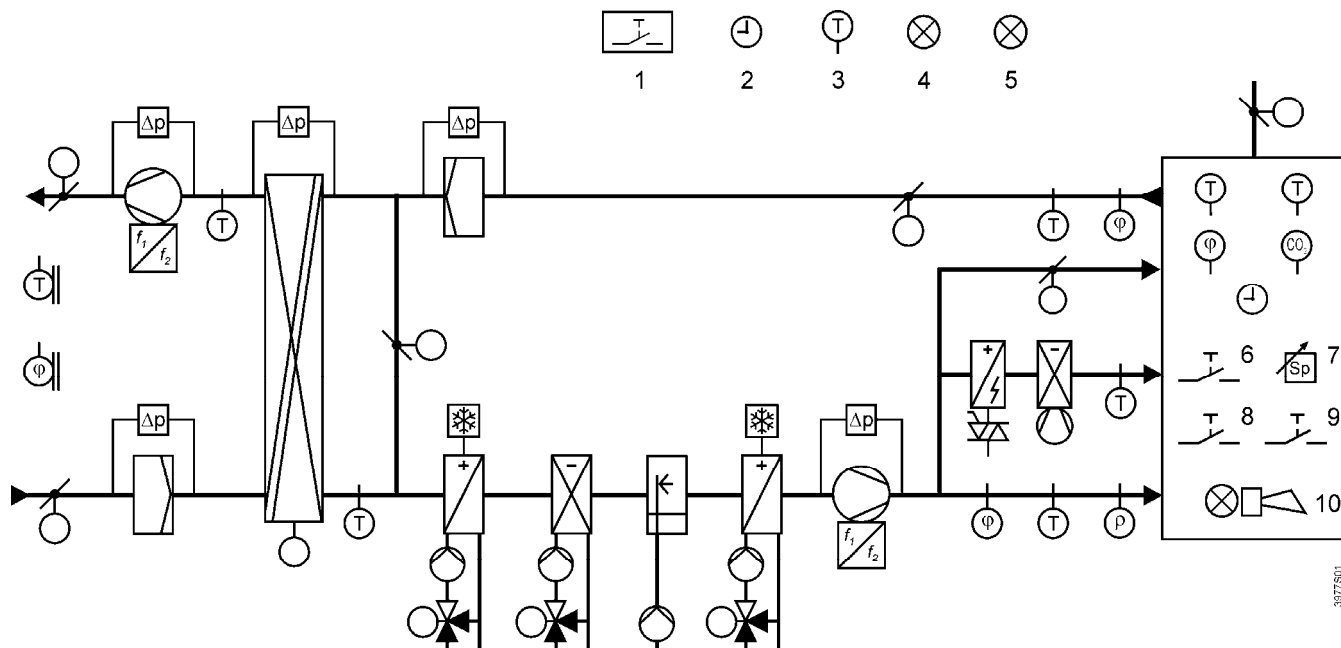
#### Implemented communications

- Modbus RTU or TCP (master, Energy Meter EM24 from Carlo Gavazzi).
- Modbus RTU or TCP (Slave).
- BACnet IP and MSTP.
- LON.
- OPC via TCP/IP or modem.

#### Remote operation, service

- Web HMI. (for POL 638.xx only) automatically configured when configuring the plant.
- Saphir Scope Tool via modem, TCP/IP or LON.
- Alarm messages per e-mail or SMS (GSM modem required).

## 3.2 Diagram standard AHU



The figure displays a schematic of the entire functional scope for the standard AHU application. All aggregates, sensors and functions are selected and configured when configuring the air handling unit.

### Legend

- Fire detector
- Time switch program
- Free temperature sensor
- Free alarm display
- Display of certain operating modes
- Occupancy button
- Setpoint settings
- Emergency button
- Acknowledge alarm
- Alarm display

### Heat recovery

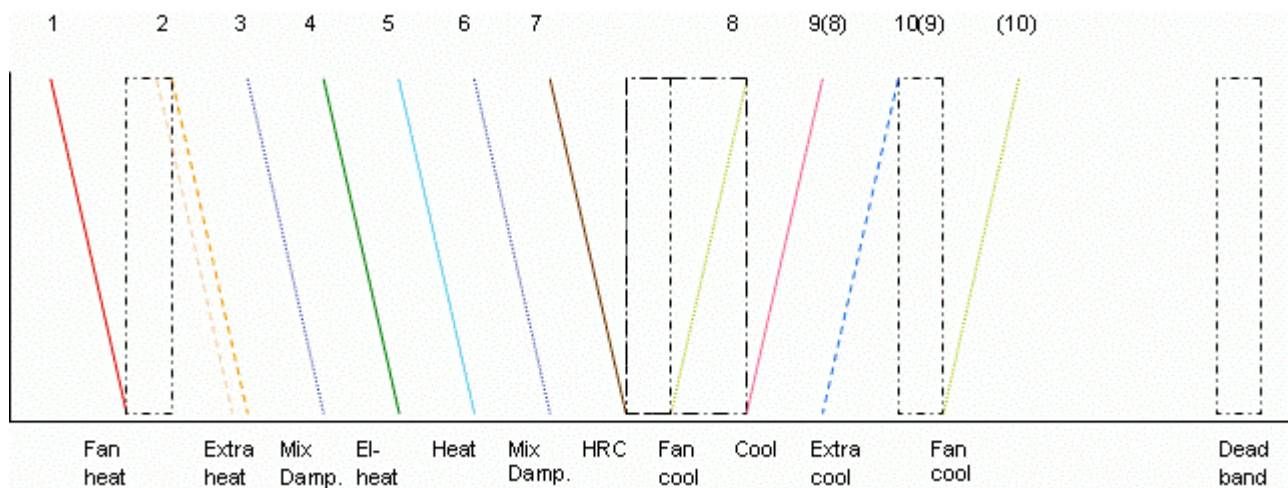
Heat recovery can be implemented in the following ways:

- Rotary heat exchanger.
- Plate heat exchanger.
- Water heat exchanger.

### 3.3 Workflow diagram

#### With all aggregates

- Mixing dampers have changeable placement.
- Fan cooling have changeable placement.
- Deadband between heating and cooling can be changed.
- Fanheat and Fancool have their own changeable deadband.



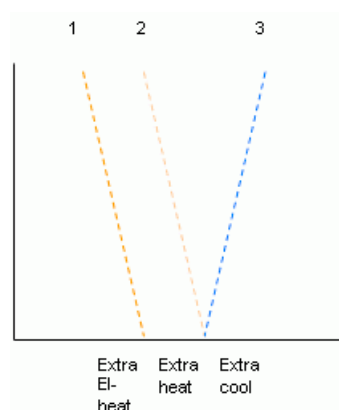
The figure displays a schematic of all possible sequences included in the application. Individual sequences and series are set automatically during configuration or for sequence 3, 6 mix damper and 8, 9 fan cool, cooling by configuring the sequence.

#### Legend

- |   |                                |       |               |
|---|--------------------------------|-------|---------------|
| 1 | Fan heating                    | 7     | Heat recovery |
| 2 | Heating 2 or Electro heating 2 | 8     | Fan cooling   |
| 3 | Mixing dampers                 | 9 (8) | Cooling       |
| 4 | Electro Heating                | 10(9) | Cooling 2     |
| 5 | Heating                        | (10)  | Fan cooling   |
| 6 | Mixing dampers                 | DB    | Dead band     |

#### Stand alone

Extra sequences can be placed in the normal sequence (above) or as an own sequence (stand alone):



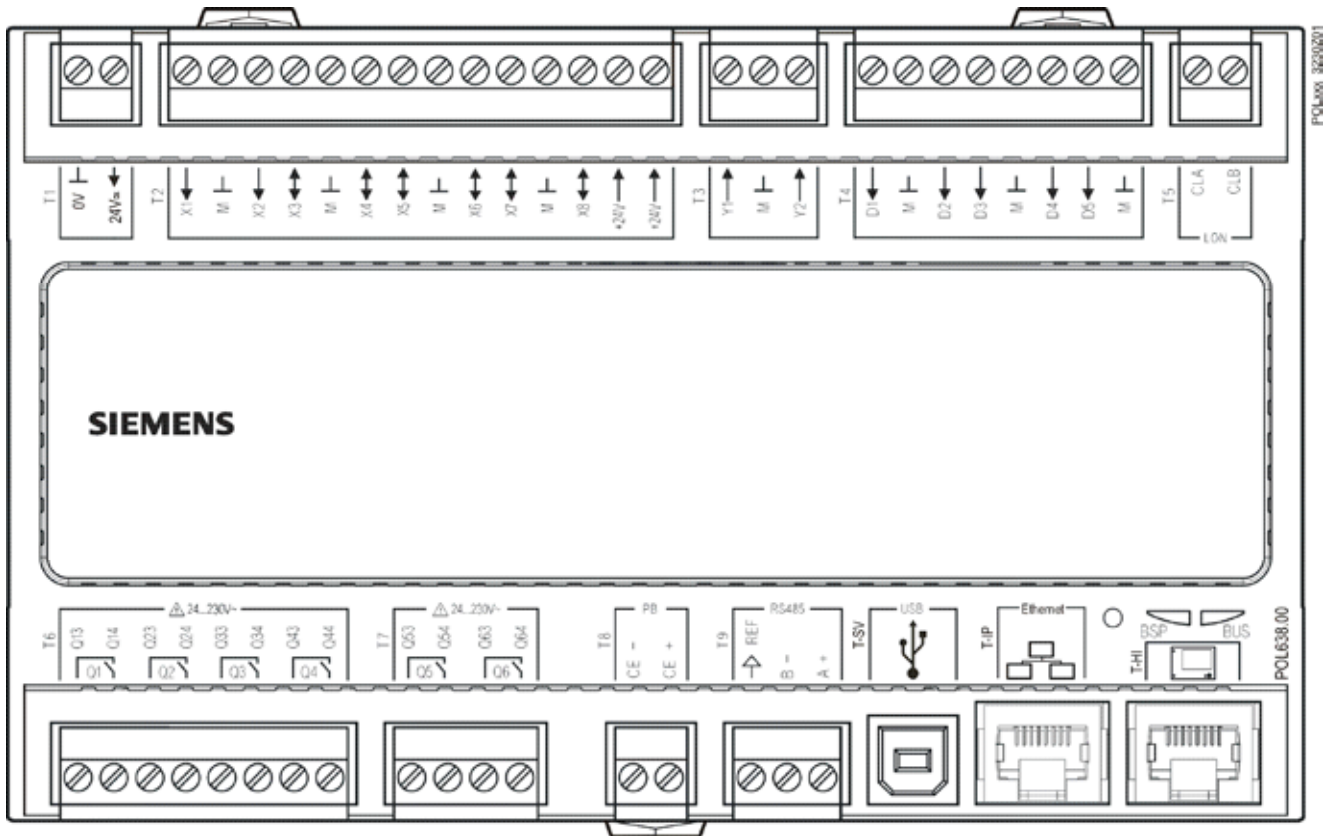
#### Legend

- |   |                   |
|---|-------------------|
| 1 | Electro Heating 2 |
| 2 | Heating 2         |
| 3 | Cooling 2         |

# 4 Hardware overview

## 4.1 Basic controller (POL638x)

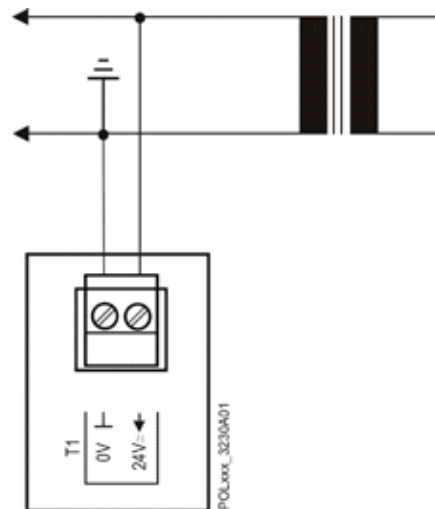
The exact designation of inputs / outputs in the program or HMI is available in the point table in the appendix.



### Connection instruction

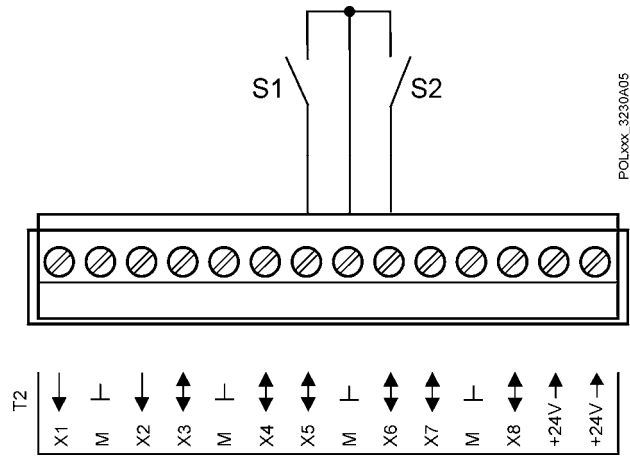
To connect external components to the process unit, these instructions must be followed.

#### Power supply



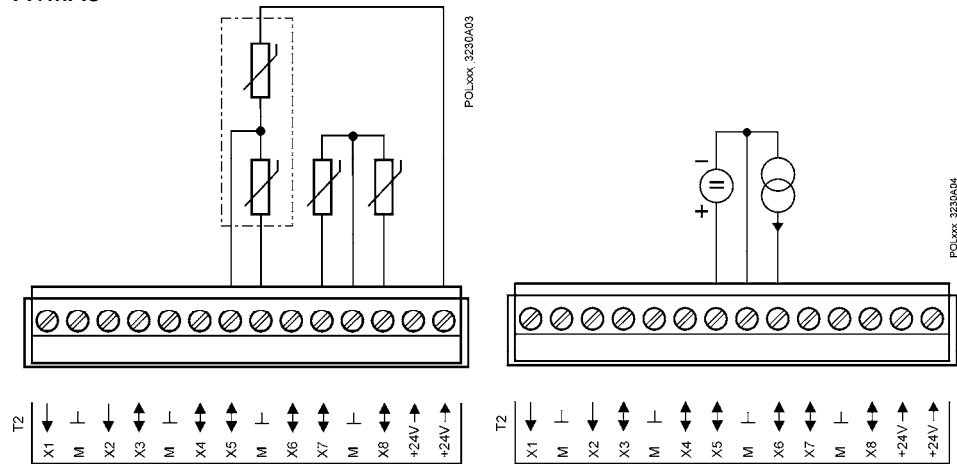
#### Digital inputs

X1...X8



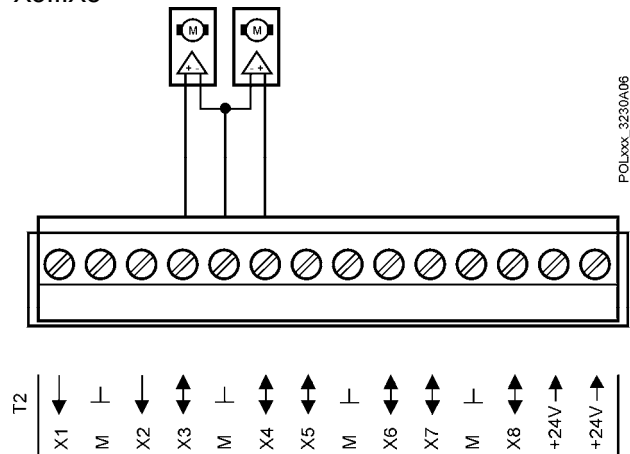
Analog inputs

X1...X8



Analog outputs

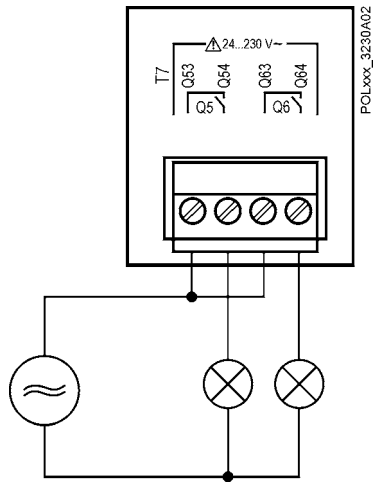
X3...X8



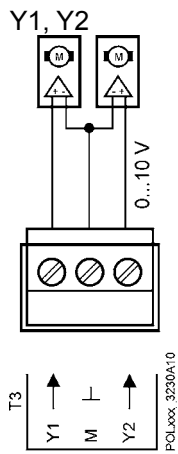
Relay outputs

Q1...Q6

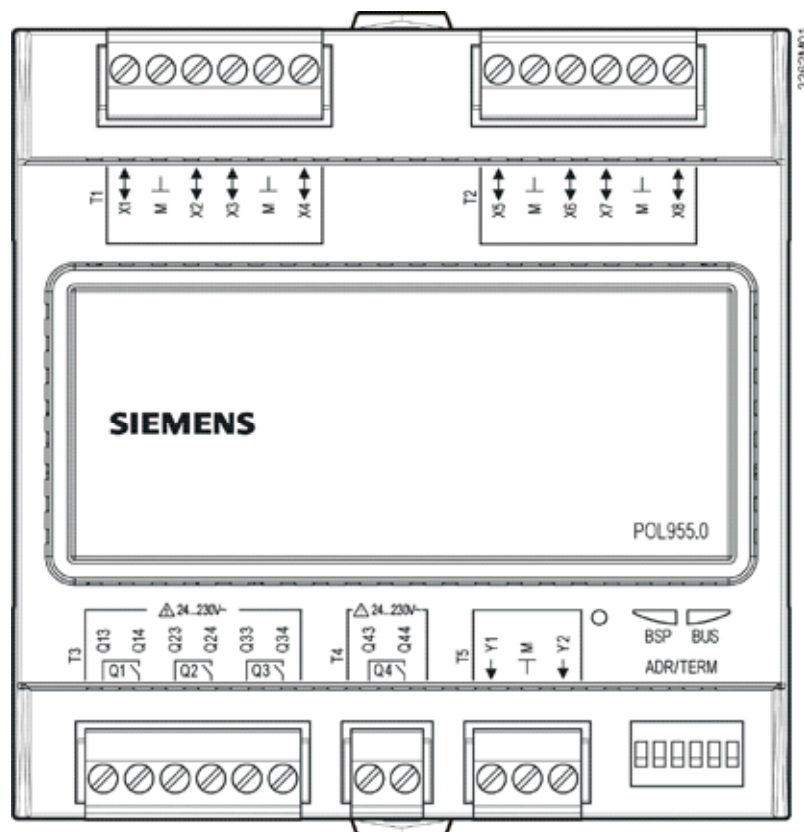




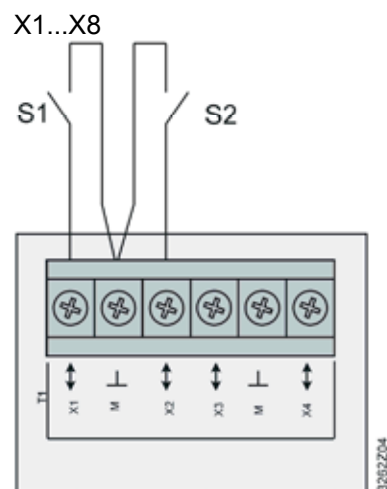
Analog outputs



## 4.2 Extension module (POL955)

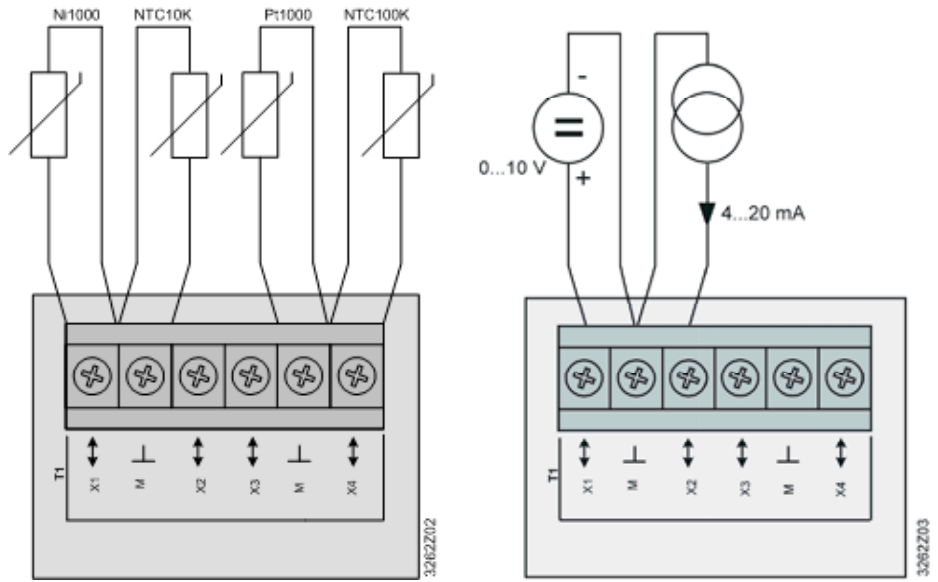


Digital inputs

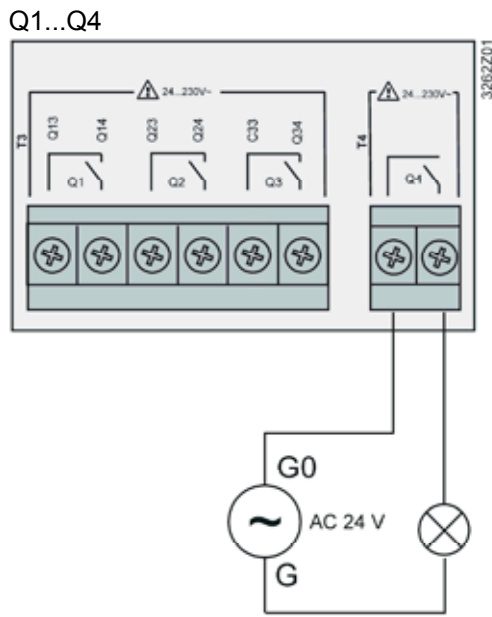


Analog inputs

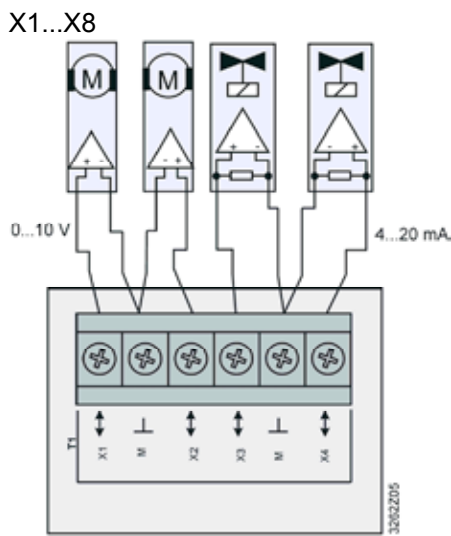
X1...X8



Relay outputs

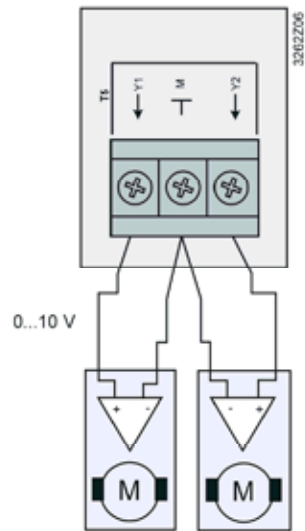


Analog outputs



Analog outputs

Y1...Y2



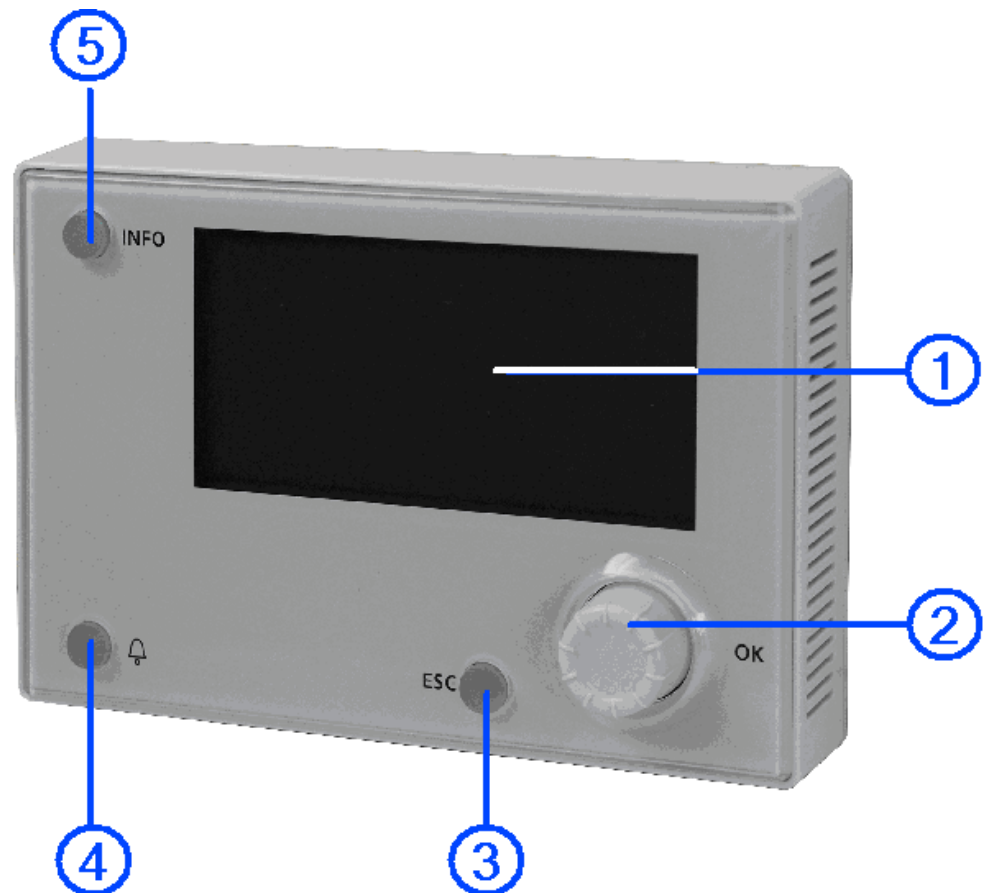
### 4.3 Inbuild HMI

Implemented at a later date.

### 4.4 External HMI (DM)

#### Operator elements

The external operator unit includes the following operating elements:



1. **Display**  
Displays menus, parameters, parameter values, commands, etc.
2. **Setting knob**
  - Select menu, parameters, parameter values: **Turn**.
  - Change parameter values: **Turn**.
  - Go to lower levels or to setting pages: **Press**.
  - Exit setting pages and assume changed values: **Press**.
  - Go to password handling page: **Press long**.
3. **ESC button**
  - Go to the next higher level: **Press**.
  - Exit setting pages and reject changed values: **Press**.
  - Go to start page: **Press long**.
  - Go back to last active page (after going to password handling page using the setting knob): **Press**.
  - Go back to last active page (after going to Main Index page using the Info button): **Press**.
4. **Alarm button**

LED:

  - Off: No alarm.
  - Blinking: Alarm pending.
  - Lit continuously: Pending acknowledged alarm.

Press button:

  - Go to last alarm.
  - Go to alarm list (displays pending alarms and alarm history).
  - Go to alarm history.
  - Go to alarm settings.
  - Acknowledge and reset alarms in the alarm list or alarm history.

Additional information

For more information, refer to section 19

Alarming. page 222.

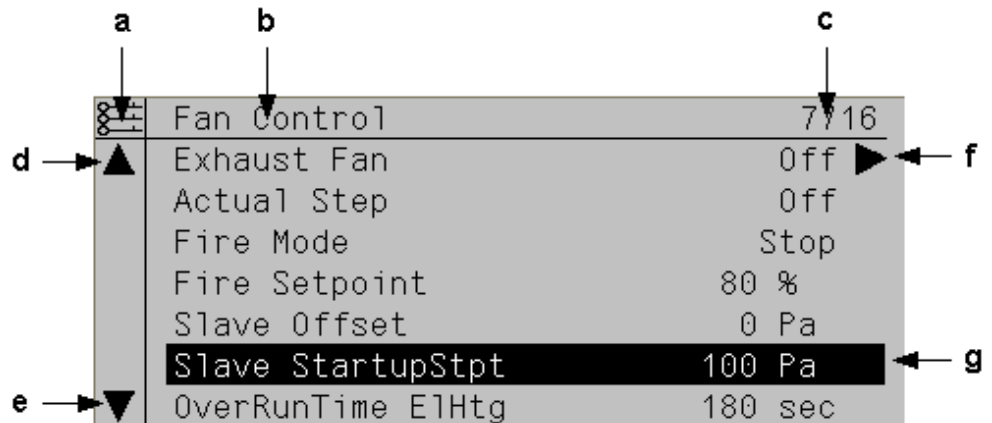
5. **Info button**

- Go to Main Index page: **Press.**
- Go to HMI basis page: **Press long.**

## Display

Display design:

- a Present access levels:
  - No symbol: No Level
  - 1st key: Level 6
  - 2nd key: Level 4
  - 3rd key: Level 2.
- b Title of displayed pages.
- c 7: Number of selected lines; 16: Number of available lines for the page.
- d Page includes additional lines above ---> You can scroll up.
- e Page includes additional lines below ---> You can scroll down.
- f Another level is located below this line. You can go to it.
- g Currently selected line.



## Navigation lines



On navigation lines, the object is highlighted in black when selected. It displays the present value for a component in front of the navigation arrow.

### Navigation:

- Select line: **Turn setting knob.**
- Switch to level below: **Press setting knob.**

## Display line



The object is also highlighted in black when selected for display lines (read only). It displays the present value for a component.

## Setting lines



The parameter name and its present value are highlighted in black for the parameter setting lines.

### Set value:

- Select line: **Turn setting knob.**
- To switch setting page: **Press setting knob.**
- Set the parameter value on the setting page: **Turn setting knob.**
- Exit setting page and assume changed parameter values: **Press setting knob.**
- Exit setting page without saving parameter values: **Press ESC.**

Set discrete parameter values.

When only one value is selectable:

```
Fire Mode
√ Fire Setpoint
Slave Offset
Slave StartupStpt
```

The checked off line (Fire Setpoint) displays the presently set value. Changed as follows:

- Select new value: **Turn setting knob.**
- Assume new value (and exit setting page): **Press setting knob.**  
or
- Retain old value (and exit setting page): **Press ESC button.**

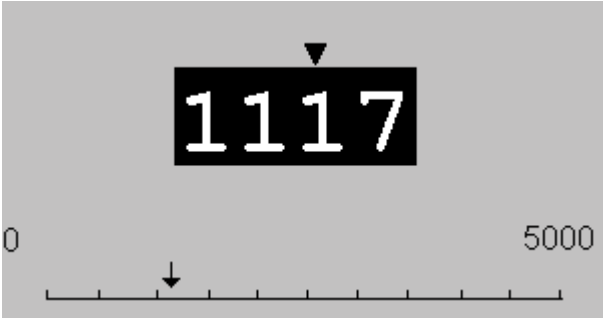
When multiple values can be selected:

```
enb1LowLimit
√ enb1OffNormal
enb1Fault
selfRelease
√ typeAlarm
√ evtOffNormal
```

Checked off lines display presently selected values. Changed as follows:

- Select a value: **Turn setting knob.**
- Select/deselect value: **Press setting knob.**
- Assume new selection:
  - Select **Done**: **Turn setting knob.**
  - Select **Done**: **Press setting knob.**or
- Retain old value (and exit setting page): **Press ESC button.**

Set analog parameter values.



The scale displays minimum and maximum adjustable values.

Present value changed as follows:

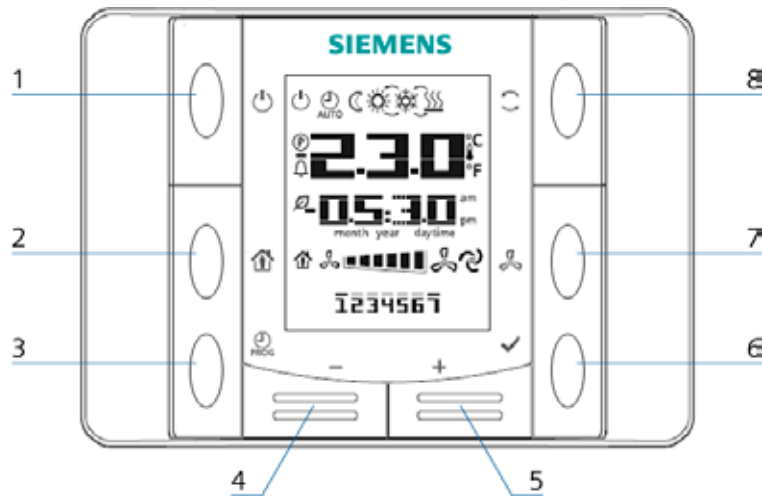
- Adjust number under the arrow ▼: **Turn setting knob.**
- Move arrow to the left: **Turn continuously via a increments of ten** (9--->0 or 0--->9).
- Move arrow to right: **Do not turn for about 1 second.**
- Assume new value (and exit setting page): **Press setting knob.**  
or
- Retain old value (and exit setting page): **Press ESC button.**



## 4.5 Room unit

### Operating elements

The room unit has the following operating elements:



6. **(1) On/Off**
- Button to changeover from OFF to ON state. Buttons 2-8 are locked and the display is switched off in the OFF state.
7. **(2) Occupancy**
- Button to switch on/off a programmed occupancy mode
8. **(3) Program**
- **Long press:** Set date and time on the room unit.
  - **Short press:** Change the scheduler program.
9. **(4) Minus**
- Button to adjust the temperature setpoint. Each push of the button lowers the temperature setpoint by 0.1 °C/1.0 F or by 0.5 °C/1.0 °F.
10. **(5) Plus**
- Button to adjust the temperature setpoint. Each push of the button increases the temperature setpoint by 0.1 °C/1.0 F or by 0.5 °C/1.0 °F.
11. **(6) OK**
- Key to confirm date/time and scheduler program entries.
12. **(7) Fan**
- Button to adjust plant stage.
  - **Press:** The speed is increased by one stage each time you press the button.
  - *It is cyclical: 1-2-3-Auto-1-2-3-Auto, etc.*
13. **(8) Mode**
- Button to select between a maximum of three energy modes: Auto, comfort and economy.
  - **Press:** The mode changes each time you press the button and displayed with the corresponding symbol.
  - *It is cyclical: Auto – Comfort – Economy – Auto, etc.*

## Display

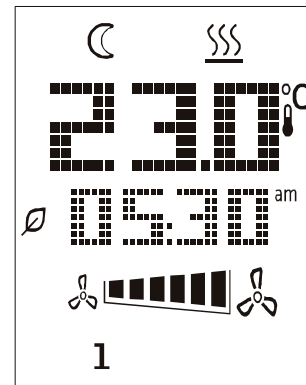
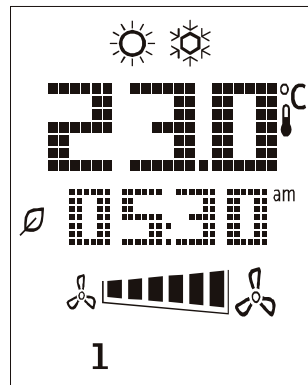
The display shows:

- Selected temperature display
  - exhaust temperature, or
  - the given room device temperature, or
  - mixed room temperature
- Setpoint shift
- Energy mode
- Plant stage
- Time
- Day of the week

The table below displays and explains all the symbols available on the display.



Display	Meaning
	Temperature display range <i>Displays exhaust temperature for the given room device temperature or the mixed room temperature in °C or °F.</i>
	Temperature in °C <i>Resolution 0.1 °C</i>
	Temperature in °F <i>Resolution 1.0 °F</i>
	Setpoint shift <i>Can be displayed/changed to °C or to °F Resolution 0.1°C/1.0F or 0.5°C/1.0F</i>
	Time
	Plant stage
	Day of week display ( <i>POL822.60/xxx only</i> ) <i>1=Monday</i>
	ON/OFF <i>The device does not fully shut down with OFF, but rather goes to standby.</i>
	Auto mode active <i>The controller overrides the room device when the symbol blinks (see 5.2.2 Prioritization operating modes...) Buttons 1, 2, 5 and 8 are locked.</i>
	Economy mode active
	Comfort mode active
	Cooling
	Heating
	Automatic plant control
	Occupancy mode
	Energy tracking
	Alarm display
	Parameter mode



### 4.5.1 Startup behavior

The room unit initializes automatically after the room unit is connected to the controller and the communication is operating (commissioning is completed). First, all the symbols appear, then the symbol P\_\_ appears on the display. The display returns to normal after a short period. The displays state on P\_\_ if communication is not properly established (e.g. incorrect room unit address).

#### Date and time



User **presses the PROG button** long (more than 1 second) to enter data and time. The following applies:

- Flashing parameters can be changed using the + **plus** and – **minus** buttons.
- Changes can (and must) be completed by pressing the ✓ **OK** button. The display automatically goes to the next adjustable parameter.

**i** Please note: This is cyclical. The clock blinks again after changing and confirming the month and day. You can exit the menu at this point by pressing the PROG button.

05:30  
time pm

17:30  
time

2009  
year

07:30  
month day

1. Press **PROG button** long (*hour display blinks*), then set the **hour** with the + **plus** and – **minus** buttons.
2. Taste ✓ Press **OK** (*the hour is saved and the minute display flashes*), then set **minutes** with the + **plus** and – **minus**.
3. Press ✓ **OK** button (*minutes are saved and the entire time display flashes*), then set the **time display format** (12/24 hour display; use the + **plus** or – **minus** buttons)
4. Press ✓ **OK** (*the display format is saved and the year display flashes*), and set the desired **year** with the + **plus** and – **minus** buttons.
5. Press ✓ **OK** (*the year is saved and the display shows the month/day display, the month display blinks*), and set the **month** with the + **plus** and – **minus** buttons.
6. Press ✓ **OK** (*the month and saved and the day display flashes*), and set the **day** with the + **plus** and – **minus** buttons.
7. Press ✓ **OK** (*month and day is saved; display returns to the time*).
8. Press **PROG** (*the display returns to normal*).

**i** The display returns automatically to normal when the **PROG** is not pressed within one minute.

**i** Please note: The room unit does not have an internal clock. The precise time is periodically synchronized with the controller (master).

## Scheduler function

The weekly and daily schedule for the time switch catalog (so-called "scheduler") can be programmed:

- for all 7 days of the week.
- Daily with up to 6 switching entries (referred to as "Entry")

You can do the following when setting up the entries

- determine a switching time and
- select the state to be run in Auto mode.

**i** Possible state assignments (e.g. 0=Off, 1=EcoSt1, 2=ComfSt1, etc.) are predefined as part of the controller configuration. A max. 7 states are possible.

The selected operation is automatically run at the defined time after the entry is setup.

**i** The following button assignments are enabled when programming the scheduler:

- **PROG** → Cancel.
- **OK**. → Confirm.

## Program time switch catalog



The workflow includes explanations of the individual steps from a technical view-point. As a practical matter, individual steps may not be needed, while others must be repeated, etc. As a result, we are listing an example in this section that illustrates a practical example on programming a room unit.

## Select days of the week

**1**

1. Press **PROG**  
*(the display goes to **1** and flashes; Press plus or minus to quickly cycles the display through the days of the week).*

2. Select **weekday** with **plus** and **minus** (1=Monday), then confirm selection with **OK**.

**i** Note: The same settings apply to the selected days. You must proceed through the entire instruction chain to program different settings for certain days.

3. Conduct weekdays through day 7 as per step 2.

4. **1 time** (!) press the **plus** button.  
*You now see the selected days; a flashing bar appears above the numbers.*

5. Confirm selected weekdays: **1 time** (!) press **OK**.  
*The display changes to the first entry page, the state is "00X", time is 00:00 :Do not change the time for this entry!*

**i** Three entries per day are prepared and may vary depending on the configured plant, e.g. State 001 at 00:00 am, state 002 at 08:00 am, state 001 at 6:00 pm. The entries do not need to be entered in chronological order.

The following illustrates how to create a new (the fourth) entry.



## Change schedule and/or state

6. Press **plus** or **minus** to select the entry to be changed; click **OK** to confirm.  
*Entry is selected, hour display flashes.*
7. Set **hours** to "XX" with **plus** or **minus**, then Press **OK**.  
*The minute display flashes.*
8. Set **minutes** to "XX" with **plus** or **minus**, then Press **OK**.  
*The state display flashes.*
9. Set command to "X" with **plus** or **minus**, then Press **OK**.  
*Entry display is static.*
10. If other entries required: Repeat steps 6 to 9; you must enter a status each time.
11. After the final entry: Press **OK** (*status line is idle*), then Finish programming with **PROG**.

## Add schedules

12. Press **plus** to select entry "Status 000 —:—", then Press **OK**,  
*the hour display flashes*  
**Then start over at step 7 above.**

## Delete schedule

13. Press **plus** or **minus** to select the entry for deletion; click **OK** to confirm.  
*Entry is selected, hour display flashes.*
14. **Disable entry** by setting the hour to —:X X, with X X = any number available in the minute display.  
**Then press OK**  
the entry display changes to 000 and —:—
15. If no other changes required:  
After the final entry: Press **OK** (*status line is idle*), then Finish programming with **PROG**.

## Hints

Up to 7 states can be programmed depending on configuration. They can be assigned, for example, as follows:

### Example 1

0 = OFF	4 = ComfSt2
1 = EcoSt1	5 = EcoSt3
2 = ComfSt1	6 = ComfSt3
3 = EcoSt2	

### Example 2

0 = OFF
1 = Stage 1
2 = Stage 2

## Hints

**i** Press **PROG** at any time to return to a previous page when programming the scheduler.

**i** The room unit returns to normal if no entry is made for longer than 1 minute.

**w** Parameter programming is lost through the last **OK**, if you return to the normal page. The same applies when no entries are made on the room unit for more than 1 minute.

## 4.5.2 Parameters

### Access levels

The room unit distinguishes between 3 access levels:

- Level 6 End users (password 1000).
- Level 4 Service operator (password 2000).
- Level 2 OEM (password 6000).

## Group and overall lists

The parameters are compiled into three groups.  
All available values in the parameter lists affect the application (see 20.4 – Parameter list room unit , page 239).

includes...

### Group






...

- S** Room settings and acknowledge (change be changed depending on the password).
- U** The most important present values (read only).
- C** The main setpoints (may be changed depending on the password).



## 4.5.3 Edit function parameters (parameterization mode)


The function parameters available in the room unit are edited in parameter mode. The appropriate password required to access it. The following descriptions are therefore directed in the main toward service personnel.



### Hints

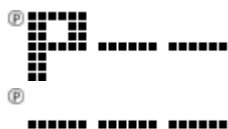
-  Use the mode button  to confirm an entry.
-  In the parameter mode, use the On/Off button  to cancel or generally go back to the previous page.
-  The room unit returns to normal if no entry is made for longer than 1 minute.


### Parameter mode

1. Simultaneous press – **minus**, + **plus** and  **mode**.  
*goes to password entry pages for parameter mode, the first position for the password flashes.*  
The symbol  parameter is displayed.
2. Press **plus** or **minus** for the first position of the password, then press **Mode**.  
*The first position is saved, the second flashes.*
3. Repeat step 2 for the other positions.


 After the **correct password**, after entering the final position, a parameter group (A, C, S) must be selected on a new page.

 For an **false password** or missing group name, the error message to the side appears and the first position flashes. Press On/Off  to cancel and re-enter the password.








4. Select a group with **plus** or **minus**, then press **Mode** to confirm.  
*The following is displayed. The following applies:*
  - Letter = Parameter group.
  - Upper line = Parameter-ID.
  - Lower line = Parameter value.
5. Press **plus** or **minus** to select parameter ID and then press **Mode** to set the parameter value.  
*For RW (read/write) access, the parameter value flashes and can be edited; the parameter ID line continues to flash for lower rights.*
6. Use **plus** or **minus** to set parameter value, then press **Mode** to confirm.  
*The insert mark returns to the parameter ID line.*
7. Press parameter mode  **On/Off** to exit.

### Room unit parameter list

 The room unit parameter list includes all room unit parameters that can be read/described (see 20.4 – page 239).

## 4.5.4 Edit room unit parameters (diagnostic mode)



Room unit parameters for the room unit are edited in diagnostic mode. They impact only the room unit where the setting is entered and saved. The following descriptions are therefore directed exclusively toward service personnel.

-  Use the mode button  to confirm an entry.
-  Use the **On/Off** button  to cancel or generally go back to the previous page.
-  The room unit returns to normal if **no entry** is made for longer than 1 minute.






### Diagnostic mode

The following local parameters can be viewed/edited in diagnostics mode.




1. Simultaneously press  **on/off**, **- minus**, **+ plus** and  **mode**.  
The display goes to the first diagnostic pages; the following is displayed
  - Software version (3 digit) and
  - Build number (4 digit).




2. Press  **mode**.  
The display goes to the parameter 1 KNX connectivity (RO)  
(parameter overview: see following table)  
 This parameter cannot be changed (display only).
3. Select additional parameters (0...9) with **- minus** or **+ plus**.  
Proceed as follows to change a parameter:
  - Select parameter (**- minus** or **+ plus**, parameter flashes).
  - Press  **mode** (parameter value flashes).
  - Enter new parameter value with **- minus** or **+ plus**.
  - Press  **mode** (parameter flashes).
4. As soon as all parameters are (re-)set: Press  **on/off** until the main page appears.

### Room device parameters


 The individual addresses of multiple HMI devices connected to a network cannot be the same!

No	Room unit parameter/description
001	<b>connectivity (RO)</b> The KNX connectivity page displays <ul style="list-style-type: none"> <li>• <b>OK</b> to indicate that the process bus is active This is the cases if any data frames are received over the past 70 seconds.</li> <li>• <b>NG</b> if the process bus is <i>not</i> active.</li> </ul>
002	<b>individual addresses – Line address (RW) - (X.1.1).</b> Address range: 0...15 (is generated automatically, see parameter 9).
003	<b>individual addresses – address range (RW) - (1.X.1).</b> Address range: 0...15 (is generated automatically, see parameter 9).
004	<b>individual addresses – device range (RW) - (1.1.X).</b> Address range: 1...252 (is generated automatically, see parameter 9).
005	<b>geographic address apartment (RW) - (X.1.1).</b> Numbering range for apartment: 1...126.  Default value set to 5 (only requires change if multiple controllers are operated with room devices on one bus) see as well Main Index > Integrations > Room units Settings > Room zone.

No	Room unit parameter/description
006	<p><b>geographic address room (1.X.1).</b>            Numbering range for room: 1...14.            Default value set to 1.</p>
007	<p><b>geographic address sub zone (RW)(1.1.X).</b>            Numbering range for sub zone: 1...15.            This value must be changed from default 1 to 2 for two room units on the same controller.</p>
008	<p><b>Network error recognition on/off (RW).</b>            Parameter to turn on/off the network error recognition function, with            0 = off (P__ is displayed when no data frames are received in the last 70 seconds and the function is turned on).            1 = On.  <b>NET</b> flashes, when no data frames are received over the past 70 seconds and the function is turned on.   <b>Timeout</b> Network error recognition during parameter initialization: 30 seconds.</p>
009	<p><b>Automatic assignment of individual addresses on/off (RW).</b>            0 = The room unit uses the unit devices as a fixed assigned individual address.            1 = Automatic addressing on the process bus  <i>The room unit changes as required (e.g. for address conflict on the process bus) the individual address via DAA mechanism (Detect And Avoid mechanism)</i>            Default value 1 = automatic addressing</p>

## Alarm display

When the controller sends an alarm to the room unit, the

- Alarm is displayed 
- Depending on parameterization, the alarm number, including the grouping, flashes, or only the alarm is displayed  
 A = Alarm switched off,  
 B = Normal alarm,  
 C = Warning

Details see [19.6 – Alarm lists](#) and [9.5 – Communication room unit](#)



# 5 Functions

## 5.1 Global functions

### 5.1.1 General

This section describes special functions that related to the application as a whole.

Prerequisites None.

**Parameters** **Main Index > Global functions**

Parameter	Range	Function
Su-Wi calculation	<ul style="list-style-type: none"><li>– Summer</li><li>– Winter</li></ul>	Displays present status for summer and winter operation. Go to page to parameterize summer/winter changeover.
Manual mode	<ul style="list-style-type: none"><li>– Auto</li><li>– Manual</li></ul>	Displays whether one of the outputs is not in auto mode (intervention via HMI), a sensor is out of service or the manual operation mode is not on auto. Go to page with all digital inputs, e.g. to set the alarm class for enabled manual alarm. <ul style="list-style-type: none"><li>– Auto mode: No element in manual mode or out of service.</li><li>– Manual mode: At least one element is in manual operation or out of service.</li></ul>
Enable manual alarm	<ul style="list-style-type: none"><li>– No</li><li>– Yes</li></ul>	Enables an alarm if when Manual mode = Manual. <ul style="list-style-type: none"><li>– No alarm trigger.</li><li>– Alarm trigger.</li></ul>
Enable comm test		Function not yet available.
Communication test		Function not yet available.

### 5.1.2 Summer Winter changeover

Prerequisite None.

Function It decides whether the plant is in summer or winter operation based on various options (hardware input, date, temperature). This information is required (as an option) to shut down humidification in summer, to changeover the Combi Coils and to changeover temperature control (Tmp control mode = RmSplyC Su or RtSplyC Su).  
A hardware input enabled for the changeover (Main Index > Configuration > Configuration 1 > Su/Wi input = Yes) has the highest priority (Signal 1 = Summer).  
The temperature or date can affect the changeover depending on parameterization. Both criteria must be met when both are enabled. There is no changeover and the plant in continuously in winter operation when no criterion is enabled.

**Parameter** **Main Index > Global functions > Su/Wi calculation**

Parameter	Range	Function
State	<ul style="list-style-type: none"> <li>– Winter</li> <li>– Summer</li> </ul>	Status of Summer/Winter changeover: <ul style="list-style-type: none"> <li>– Winter operation is enabled.</li> <li>– Summer operation is enabled.</li> </ul>
Su/Wi input	<ul style="list-style-type: none"> <li>– Winter</li> <li>– Summer</li> </ul>	Status of input on hardware side for changeover. Go to page with all digital input settings. For example, you can change the input's direction of control there. <ul style="list-style-type: none"> <li>– Winter operation enabled: Signal 0.</li> <li>– Summer operation enabled: Signal 1.</li> </ul>
Outs air tmp damped		Damped outside air temperature.
Summer date / time	*.* *.*	Set date and time for changeover to summer operation. Example: 23:30 01.Apr ---> Changeover on April 1 at 11:30 pm. <ul style="list-style-type: none"> <li>– Asterisks only (*.* *.*): Changeover date is not relevant; changeover occurs based on temperature.</li> <li>– Permissible time entries: *.* ---&gt; 00:00 *.:20 ---&gt; 00:20 10:* ---&gt; 10:00.</li> <li>– Date entry: Allowed: 15.May Not allowed by month: Odd / Even.</li> </ul>
Winter date / time	*.* *.*	Set date and time for changeover to winter operation. Example: 10:40:00 PM 01.Oct ---> Changeover on October 1 at 10:40 pm. Note: See summer date / time
Time constant	0...36000 [h]	Time constant to calculate dampened (determined over this period) outside air temperature. Set this value for the short period to 0 to reset the dampened or assume present outside air temperature.
Outs air tmp summer	-64...64 [°C]	Changes over to summer operation when the damped outside air temperature is greater than this value.
Outs air tmp winter	-64...64 [°C]	Changes over to winter operation when the damped outside air temperature is less than this value.

## 5.2 Operating mode

### 5.2.1 General

Purpose	Function to set and display all settings for the operating mode in question, i.e. start conditions, switch-off conditions, operating mode. The plant may also be control using the HMI.
Prerequisites	None.
Parameterization	None.  The configuration in Configuration1 and Configuration2 provide the various ways to switch on the plant.

#### Displays/settings **Main Index > Unit > Operating Mode**

Parameter	Range	Function
Actual	<ul style="list-style-type: none"> <li>– Off</li> <li>– On/Comfort</li> <li>– Economy.</li> <li>– Na</li> <li>– Osstp</li> <li>– NightClg</li> <li>– UnOcc</li> <li>– NightKick</li> <li>– FireDamper</li> <li>– Fire</li> <li>– Stop.</li> <li>– OverRun</li> <li>– StartUp</li> </ul>	Plant operating state: <ul style="list-style-type: none"> <li>– Plant is switched off.</li> <li>– Plant operating in Comfort Mode.</li> <li>– Plant operating in Economy Mode.</li> <li>– Available operating mode, currently unused.</li> <li>– Optimum start (boost function active).</li> <li>– Night cooling, active.</li> <li>– Not used (temperature start at night) heating or cooling active.</li> <li>– Night kick active for the plant to update the duct temperature.</li> <li>– Fire damper test running.</li> <li>– Plant in fire mode (depending on the parameterization of Fire mode).</li> <li>– Plant stopped and locked(Controller in Startup-Phase, Configuration not Done; HighClass Alarm; Emergency Stop).</li> <li>– Fan overrun.</li> <li>– Plant in start-up routine.</li> </ul>
Manual operation	<ul style="list-style-type: none"> <li>– Auto</li> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> <li>– Auto</li> <li>– Off</li> <li>– Eco St1</li> </ul>	Manual plant operation via HMI (only possible for Tsp function <> Steps+Tmp). <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul> Manual plant operation via HMI (only possible for Tsp function = Steps+Tmp). <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in Economy at stage 1 (using setpoint stage 1 for analog controlled plants).</li> </ul>
Manual operation (cont.)	<ul style="list-style-type: none"> <li>– Comf St1</li> </ul>	<ul style="list-style-type: none"> <li>– Plant operating in Comfort mode at stage 1 (us-</li> </ul>

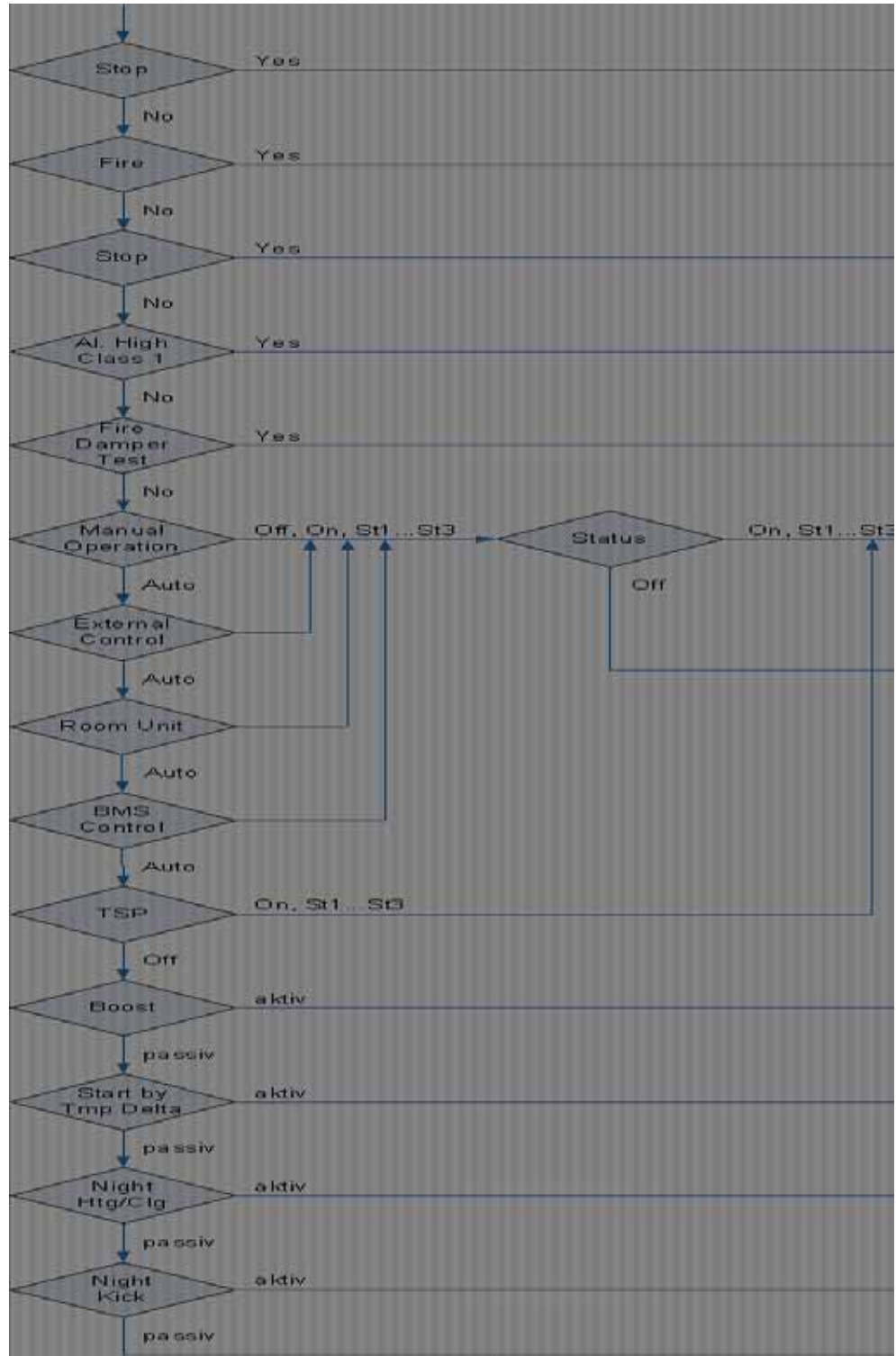
Parameter	Range	Function
	<ul style="list-style-type: none"> <li>– Eco St2</li> <li>– Comf St2</li> <li>–</li> <li>– Eco St3</li> <li>– Comf St3</li> </ul>	<ul style="list-style-type: none"> <li>ing setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in Economy at stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in Comfort mode at stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in Economy at stage 3 (using setpoint stage 3 for analog controlled plants).</li> <li>– Plant operating in Comfort mode at stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul>
Time switch program	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1...Stage 3</li> </ul>	<p>Displays current command for time switch catalog (for Tsp function = Steps only). Jumps to page to parameterize time switch catalog.</p>
Time switch program	<ul style="list-style-type: none"> <li>– Off</li> <li>– Eco</li> <li>– Comf</li> </ul>	<p>Displays present command for time switch catalog. (for Tsp function = Steps+Tmp only). Jumps to page to parameterize time switch catalog.</p>
From BACS	<ul style="list-style-type: none"> <li>– Auto</li> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> <li>– Auto</li> <li>– Off</li> <li>– Eco St1</li> <li>– Comf St1</li> <li>– Eco St2</li> <li>– Comf St2</li> <li>– Eco St3</li> <li>– Comf St3</li> </ul>	<p>Displays plant command from BMS (for TspFunction &lt;&gt; Steps+Tmp only). The value may also be operated using HMI even when communication not connected.</p> <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul> <p>Displays plant command from BMS (for TspFunction = Steps+Tmp only). The value may also be operated using HMI even when communication not connected.</p> <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in Economy at stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in Comfort mode at stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in Economy at stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in Comfort mode at stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in Economy at stage 3 (using setpoint stage 3 for analog controlled plants).</li> <li>– Plant operating in Comfort mode at stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul>

Parameter	Range	Function
External control	<ul style="list-style-type: none"> <li>– Auto</li> <li>– Off</li> <li>– Stage 1</li> <li>–</li> <li>– Stage 2</li> <li>–</li> <li>– Stage 3</li> </ul>	<p>Displays current plant command from hardware plant switch.</p> <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul>
Roomunit op mode	<ul style="list-style-type: none"> <li>– Auto</li> <li>– Comfort</li> <li>– Standby</li> <li>– Economy.</li> </ul>	<p>Displays present plant command from room unit</p> <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant operating in Comfort Mode.</li> <li>– Plant is in standby.</li> <li>– Plant operating in Economy Mode.</li> </ul>
Night kick exh tmp	---	<p>Starts plant to update sensor values for return-air controlled plant and activated night cooling or Unit-Start TmpDelta. (Temperature difference start). Jumps to page to parameterize night kick.</p>
Night cooling	---	<p>Night cooling (free cooling). Jumps to page to parameterize night cooling.</p>
Tmp start	---	<p>Starts plant at night based on temperature difference. Jumps to page to parameterize temperature difference start.</p>
Boost	---	<p>Boost plant start. Jumps to page to parameterize boost plant start.</p>
Power up delay	0...36000 [s]	<p>Delayed plant start after controller restart.</p>

## 5.2.2 Prioritize various operating modes and switch-on sequences

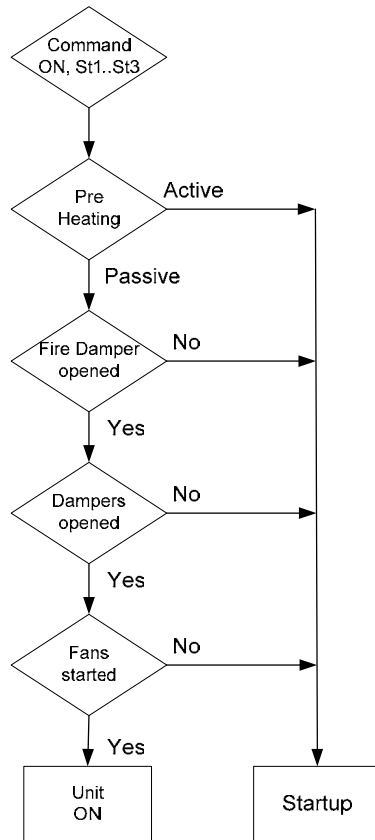
### OpMode

Display of various operating modes: Disabled functions and elements are ignored.



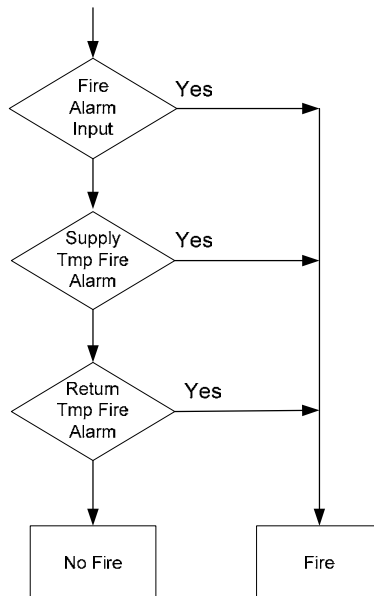
## Start sequence

Plant start sequence. Disabled functions and elements are ignored.



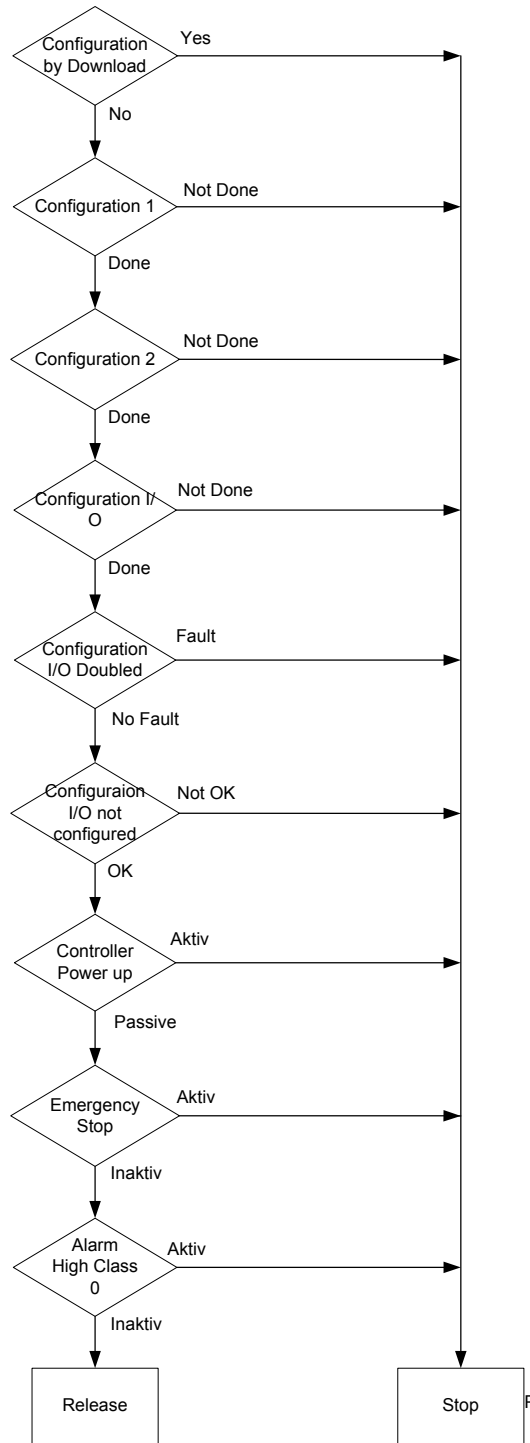
## Fire

Conditions to trigger a fire alarm.



# Stop

## Conditions that stop the plant:





### 5.2.3 Time switch program

**Prerequisite** A time switch catalog is enabled:  
Main Index > Configuration > Configuration 1 > TSP function <> No

**Function** The plant is controlled via the time switch program.

**Parameter** **Main Index > Unit > Operating mode > Time switch program**

Parameter	Range	Function
Schedule	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage1...Stage3</li> </ul>	Present plant operating mode from the time switch catalog for Tsp function <= Steps. Goes to details page to parameterize time switch catalog.
Schedule	<ul style="list-style-type: none"> <li>– Off</li> <li>– Eco St1...Eco St3</li> <li>– Comf St1...Comf St3</li> </ul>	Present plant operating mode from the time switch catalog for Tsp function = Steps+Tmp. Goes to details page to parameterize time switch catalog.
Calendar exception	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Calendar for vacation and holidays. The entry for the exception day of the scheduler is enabled when this entry is enabled. Goes to details page to parameterize time switch catalog.
Calendar fix off	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Additional calendar to switch off the plant. Goes to details page to parameterize second calendar.

### 5.2.4 External Control (parameterize plant switch)

**Prerequisite** The external plant switch is enabled:  
Main Index > Configuration > Configuration 1 > Ext control input <> None

**Function** Plant operation via external plant switch, presence detectors or buttons (Ext control input 1, Ext control input 2). The plant can be switched to auto mode, a set stage or to off depending on parameterization and configuration. The command defaulted here is only enabled when no higher priority command is not active, e.g. Manual Operation is enabled via HMI.

**Parameter** **Main Index > Unit > Operating mode > External control**

Parameter	Range	Function
Actual mode	<ul style="list-style-type: none"> <li>– Auto</li> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Actual plant operating mode as triggered by the plant switch. <ul style="list-style-type: none"> <li>– Auto mode: Time switch catalog, night cooling, etc., can switch on the plant.</li> <li>– Plant off.</li> <li>– Plant operating in stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>– Plant operating in stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>– Plant operating in stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul>

Parameter	Range	Function
Tmp stpt input 1	<ul style="list-style-type: none"> <li>- Comfort</li> <li>- Economy.</li> </ul>	<p>Applied temperature setpoint at the active input Ext control input 1; enabled only for Tsp function = Steps+Tmp.</p> <ul style="list-style-type: none"> <li>- Comfort setpoint.</li> <li>- Economy setpoint.</li> </ul> <p>Note: The present temperature setpoint is determined by the value from Tmp stpt input 2 if both inputs are enabled.</p>
Tmp stpt input 2	<ul style="list-style-type: none"> <li>- Comfort</li> <li>- Economy.</li> </ul>	<p>Applied temperature setpoint at the active input Ext control input 2; enabled only for Tsp function = Steps+Tmp.</p> <ul style="list-style-type: none"> <li>- Comfort setpoint.</li> <li>- Economy setpoint.</li> </ul> <p>See not for Tmp stpt input 1!</p>
Off delay	0...23.0 [h]	<p>Switch-off delay. Plant goes to auto mode after the delay.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>- Off delay = 0 ---&gt; The present command is pending as long as the impacted input is enabled. This is mandatory for plant switches.</li> <li>- Off delay &gt; 0 ---&gt; Is used exclusively for external buttons or presence detectors that requires resetting the plant to auto mode after a set period.</li> </ul>
Fan steps	<ul style="list-style-type: none"> <li>- Auto</li> <li>- Off</li> <li>- 1Step</li> <li>- 2Step</li> <li>- 3Step</li> </ul>	<p>Select fan step:</p> <ul style="list-style-type: none"> <li>- Auto mode.</li> <li>- Plant off.</li> <li>- Plant operating in stage 1 (using setpoint stage 1 for analog controlled plants).</li> <li>- Plant operating in stage 2 (using setpoint stage 2 for analog controlled plants).</li> <li>- Plant operating in stage 3 (using setpoint stage 3 for analog controlled plants).</li> </ul>
Start/stop function	<ul style="list-style-type: none"> <li>- Off</li> <li>- On</li> </ul>	<p>Define input functions:</p> <ul style="list-style-type: none"> <li>- Each pulse on the input start the Timer Off delay.</li> <li>- The first pulse on the input starts the Timer Off delay and sets the command. The next pulse resets to auto mode. The same applies when the timer expires.</li> </ul>

#### Fan steps function

- Main Index > Configuration > Configuration 1 > **Ext control input = One** ---> Only input Ext control input 1 is enabled. The command set with fan steps is issued when Ext control input 1 = On.
- Main Index > Configuration > Configuration 1 > **Ext control input = Two** ---> Both inputs Ext control input 1 and Ext control input 2 are enabled. In this case:
  - Ext control input 1 = Off and Ext control input 2 = Off ---> Command = Auto mode.
  - Ext control input 1 = Off and Ext control input 2 = On ---> Command = 1Step.
  - Ext control input 1 = On and Ext control input 2 = On ---> Command = 2Step.
  - Ext control input 1 = On and Ext control input 2 = On ---> Command as determined by fan step.

Start/stop function and off delay

- Start/stop function = Off and Off delay = 0 ---> The command is issued as long as the signal is pending.
- Start/stop function = Off and Off delay > 0 ---> The command is issued during the off delay period for a pulse at the input. The timer restarts for each new pulse on the input.
- Start/stop function = On and Off delay = 0 ---> The command is issued for a pulse on the input and then reset against at the next pulse.
- Start/stop function = On and Off delay > 0 ---> The command is issued for a pulse on the input and then reset against at the next pulse or after the off delay period.

## 5.2.5 Night kick function

Prerequisite

Function automatically enabled when the following conditions are met:

- Non room sensor available and
- the return tmp sensor is not parameterized as saved and
- Night cooling or start is enabled based on the temperature difference:

Main Index > Configuration > Configuration 1 > **Room tmp sensor = No**  
and

Main Index > Configuration > Configuration 1 > **Exh air tmp sensor = Yes**  
Und

Main Index > Configuration > Configuration 2 > **Night cooling = Yes**

Main Index > Configuration > Configuration 2 > **Tmp start <> No**

Function

Plant kick ramps up the plant after a longer period of inoperation to update the measured return temperature in the duct.

This temperature is used as the decision-making criterion to start night cooling or temperature difference start and should be kept updated as much as possible.

Parameter

Main Index > Unit > Operating mode > Night kick exh tmp

Parameter	Range	Function
Kick time	00:00...23:59	Time to execute kick. Example: 23:00 Kick is run at 11:00 pm. *:* Time is not relevant; the interval applies accordingly.
Interval time	0.0...36000.0 [h]	Interval time to execute kick. Example: 3.0 Run every 3 hours. 0.0 Interval is not relevant; kick time applies accordingly.
On time	0...36000 [s]	Kick period.

Example

Kick time = 23:00 / Interval time = 3 / On time = 300

---> The plant is switched-on for 300 seconds if the plant has been off for at least 3 hours as of 11:00 pm.

Note

Kick time = \*.\* and interval time = 0.0 h ---> No plant kick is triggered.

## 5.2.6 Night cooling (Free Cooling)

Prerequisite	Night cooling (free cooling) is enabled. Main Index > Configuration > Configuration 2 > <b>Night cooling &lt;&gt; No</b>
Function	<p>Night cooling cools down a building at night using cool outside air without auxiliary energy for high daytime temperatures.</p> <ul style="list-style-type: none"> <li>• Night cooling is <b>switched on</b> in the following cases: <ul style="list-style-type: none"> <li>– Outside air temperature is greater than the lower level: Out tmp &gt; Min outs tmp and</li> <li>– Outside air temperature is less than the difference from room temperature and switch-on differential: Out tmp &lt; Room tmp - Delta and</li> <li>– Room temperature is greater than the sum of the room setpoint and hysteresis: Room tmp &gt; Room tmp setpoint + hysteresis.</li> </ul> </li> <li>• Night cooling is <b>switched off</b> in the following cases: <ul style="list-style-type: none"> <li>– Timer Min run time = 0 and</li> <li>– Plant switches on. or</li> <li>– Outside air temperature is less than the difference from room temperature and switch-off differential: Out tmp &gt; Room tmp – 1 or</li> <li>– Room temperature is less than or equal to room setpoint: Room tmp &lt;= Room tmp setpoint</li> </ul> </li> </ul>
Note	The function is disabled for faulty outside air or room temperature.

### Parameter **Main Index > Unit > Operating mode > Night cooling**

Parameter	Range	Function
Room tmp setpoint	-64.0...64.0 [°C]	Room setpoint for night cooling. Setpoint applies to return air for night cooling with a return air sensor.
Hysteresis	0.0...64.0 [°C]	Hysteresis for switch on.
Delta	1.0...64.0 [°C]	Minimum difference between room and outside air temperature.
Min outs tmp	-64.0...64.0 [°C]	Minimum outside air temperature to activate night cooling.
Min run time	0...999 [min]	Minimum runtime after a start.

## 5.2.7 Temperature difference start

Prerequisite	Plant start by temperature difference is enabled: Main Index > Configuration > Configuration 2 > <b>Tmp start &lt;&gt; No</b>
Function	<p>Plant night start based on temperature difference prevents the building from cooling down or heating up too much. It is controlled to a separate setpoint for heating and cooling.</p> <p>The heating and or cooling start can be enabled separately: Main Index &gt; Configuration &gt; Configuration 2 &gt; Tmp start</p> <p>The function can be implemented using a return air sensor if no room sensor is available.</p>

Cooling demand      The plant **night start** by temperature difference for cooling demand occurs when the following conditions are met:

- Room tmp > Start stpt cooling und
- Timer Minimum off time = 0

The **shutdown** occurs for:

- Room tmp < Start stpt cooling - Hysteresis

Heating demand      The plant **night start** by temperature difference for heating demand occurs when the following conditions are met:

- Room tmp > Start stpt heating und
- Timer Min off time = 0

The **shutdown** occurs for cooling demand occurs for:  
Room tmp > Start stpt heating + Hysteresis

Note      The function when the room temperature sensor (return air sensor) fails.

**Parameter      Main Index > Unit > Operating mode > Tmp start**

Parameter	Range	Function
Start stpt cooling	-64.0...64.0 [°C]	Start temperature for cooling.
Cooling setpoint	-64.0...64.0 [°C]	Cooling setpoint.
Start stpt heating	-64.0...64.0 [°C]	Start temperature for heating.
Heating setpoint	-64.0...64.0 [°C]	Heating setpoint.
Hysteresis	0.1...64.0 [°C]	Shutdown hysteresis.
Minimum off time	0...999 [min]	Minimum switch-off time after active heating or cooling.
Min run time	0.0...999.0 [min]	Minimum runtime after a start.

**5.2.8 Boost function (boost plant start)**

Prerequisite:      Boost is enabled:  
Main Index > Configuration > Configuration 2 > **Boost <> No**

Function      Boost ensures a comfortable room temperature when the plant is switched on normally.

The heating and or cooling start can be enabled separately:  
Main Index > Configuration > Configuration 2 > Boost

The function can be implemented using a return air sensor if no room sensor is available.

Cooling demand      **Boost** for cooling demand occurs when the following conditions are met:

- Room tmp > Start stpt cooling + Hysteresis and
- Time to normal start via the time switch program < Compensation time

The **shutdown** occurs for:

- Room tmp < Start stpt cooling

Heating demand      **Boost** for heating demand occurs when the following conditions are met:

- Room tmp < Start stpt heating - Hysteresis and
- Time to normal start via the time switch program < Compensation time

The **shutdown** occurs for:

- Room tmp > Start stpt heating

Note      The function when the room temperature sensor (return air sensor) fails.

**Parameter** **Main Index > Unit > Operating mode > Tmp start**

Parameter	Range	Function
Room tmp setpoint	-64.0...64.0 [°C]	Boost room setpoint.
Start stpt cooling	-64.0...64.0 [°C]	Start temperature for cooling.
Start stpt heating	-64.0...64.0 [°C]	Start temperature for heating.
Hysteresis	0.1...64.0 [°C]	Shutdown hysteresis.
Compensation time	0...999 [min]	Time by which plant start is advanced.

**5.2.9 Optimum Start Stop Function**

Not yet available.

**5.3 Damper control****5.3.1 General**

**Prerequisite** Dampers are enabled in configuration 1, configuration 2 and configuration I/Os, preconfigured and the inputs, outputs defined.

**Enable** **Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Damper	<ul style="list-style-type: none"> <li>- No</li> <li>- Combined</li> <li>- Supply</li> <li>- Supply+Exh</li> </ul>	<ul style="list-style-type: none"> <li>- No opening/closing of dampers.</li> <li>- Two dampers with common output.</li> <li>- Outside air damper with output.</li> <li>- Two dampers with separate outputs.</li> </ul>
Fire damper	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> <li>- FollowUnit</li> </ul>	<ul style="list-style-type: none"> <li>- No fire dampers.</li> <li>- Fire dampers.</li> <li>- Fire dampers are opened with Unit Start or closed with Unit Stop.</li> </ul>

**Configuration** **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Damper fdbk	<ul style="list-style-type: none"> <li>- No</li> <li>- One</li> <li>- Two</li> </ul>	<ul style="list-style-type: none"> <li>- No damper feedback.</li> <li>- Feedback for outside air dampers (or a common feedback for both dampers).</li> <li>- Separate feedback for outside air and exhaust air damper.</li> </ul>
Fire damper fdbk	<ul style="list-style-type: none"> <li>- Closed</li> <li>- Clsd+Opnd</li> <li>- Combined</li> </ul>	Fire damper feedback. <ul style="list-style-type: none"> <li>- Only one feedback for close.</li> <li>- Two separate feedbacks for open and close.</li> <li>- Two feedbacks for open and close, but only one signal. The syntax must be correct: 1 (close) ---&gt; 0 (moving) ---&gt; 1 (open)</li> </ul>

**Parameterization** **Main Index > Unit > Damper Control**

Parameter	Range	Function
Off delay by fanoff	0...36000 [s]	Switch-off delay for outside air, exhaust and fire dampers. The dampers are closed after this period after switching off the supply air fan.

Parameter	Range	Function
Damper	---	Jump to damper page to parameterize the outside and exhaust air damper.
Fire damper	– On – Off	Current fire damper status. Jump to fire damper page to parameterize the fire damper.

### 5.3.2 Supply / Exhaust damper

#### Prerequisite

Air and exhaust air dampers are enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

#### Function

Per settings outside and exhaust air damper open at plant start and close at plant stop. Damper opening times can be defined separately. A common default period can be set if no damper feedback exists. The damper command can still be kept at pending for a feedback alarm.

Only the output for the outside air damper is enabled if two dampers are enabled as combined. This is also true for triggering feedback alarms for the exhaust air damper, if a separate feedback per damper is enabled.

Outside damper is forced by the supply fan. Exhaust damper is forced by the exhaust fan. If combined damper is selected, then the output for outside damper is forced by both supply fan or exhaust fan. Take care if for example Firemode RunExh is used.

#### Parameter

#### Main Index > Unit > Damper Control > Damper

Parameter	Range	Function
Outside air cmd	Off On	Current state of outside air damper command. Go to page with all digital output settings.
Outside air fdbk	No Yes	Active feedback as to whether the damper is open. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Outs offby fdbk alm	No Yes	Determines, in the event of a feedback fault, whether a damper command is still pending or whether to switch off the command.
StrtUpDly outs fdbk	0...36000 [s]	Defines the period after an open command without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Extract air cmd	Off On	Current state of exhaust air damper command. Go to page with all digital output settings.
Extract air fdbk	No Yes	Active feedback as to whether the damper is open. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Extr offby fdbk alm	No Yes	Determines, in the event of a feedback fault, whether a damper command is still pending or whether to switch off the command.
StrtUpDly Extr fdbk	0...36000 [s]	Defines the period after an open command without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Opening time	0...36000 [s]	Estimates damper opening time for both dampers, if

not active feedback (fdbk) is enabled. It is assumed that the dampers are open after this period and that the start release is issued for the fans.

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

### 5.3.3 Fire damper

**Prerequisite** Fire dampers are enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

**Function** Fire dampers can be driven together with the plant, with automatic test or they are always open. Reaching and leaving the given end switch is monitored. Displays the current state and operating state of the dampers.

Fire damper is forced by both supply fan or exhaust fan.

**Parameter** **Main Index > Unit > Damper Control > Fire damper**

Parameter	Range	Function
Command	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Current state of outside air damper command. Go to page with all digital output settings.
Feedback opened	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Active feedback if the damper is open. The feedback opened is automatically set after 115% of open time if fdbk Open is not enabled in configuration 2.
Feedback closed	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Active feedback if the damper is closed. This feedback must always be available.
No move	<ul style="list-style-type: none"> <li>– OK.</li> <li>– alarm</li> </ul>	Alarm message no reaction occurs to both feedbacks after a change in the damper command. See example below.
State	<ul style="list-style-type: none"> <li>– NotDefined</li> <li>– Closed</li> <li>– Move</li> <li>– Opened</li> </ul>	Current damper state. <ul style="list-style-type: none"> <li>– Only possible during configuration.</li> <li>– Closed.</li> <li>– Moving.</li> <li>– Opened.</li> </ul> See example below.
Mode	<ul style="list-style-type: none"> <li>– NotDefined</li> <li>– Ok</li> <li>– Debug</li> <li>– Alarm</li> </ul>	Damper operating state. <ul style="list-style-type: none"> <li>– Only possible during configuration.</li> <li>– Okay.</li> <li>– In test mode.</li> <li>– In alarm state.</li> </ul>
Opening time	1...600 [s]	Positioning time to open the damper (See Data-sheet damper actuator).
Closing time	1...600 [s]	Positioning time to close the damper (See Data-sheet damper actuator).
Start manual test	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Active triggers a manual test of the fire dampers. See examples below.
Auto test	Uhrzeit, Wochentag, Datum	Determines the time for an automatic start of the damper test. The automatic test is disabled for Configuration 1 > Fire damper = FollowUnit. See examples below.
auto test interval	0...36000 [h]	Set the time interval for a period automatic damper test. See examples below.



**Examples of no move and state**

Damper command 0 → 1:

- After 15% of Open Time, fdbk must be Closed = No, otherwise a no move alarm is triggered.
- After 115% of Open Time, fdbk must be Opened = Ok, otherwise a fdbk Open alarm.

Damper command 1 → 0:

- After 15% of Close Time, fdbk must be Opened = No, otherwise a no move alarm occurs.
- After 115% of Close Time, fdbk must be Close = Ok, otherwise a fdbk close alarm.

Examples of manual test, auto test, auto test interval

The automatic test can be set to a time (day, time) and / or conducted periodically.

- Auto test = \*.\* \*.\* / Auto test interval = 24 --->  
A test is conducted every 24 hours regardless of the time.
- Auto test = 23:\* Mo,\*.\* / Auto test intervall = 47 h --->  
A test is conducted each month at 11:00 pm to the extent the last test is older than 47 hours.

Note:

Auto test = \*.\* \*.\* und Autotest interval = 0 --->  
No automatic test is conducted.

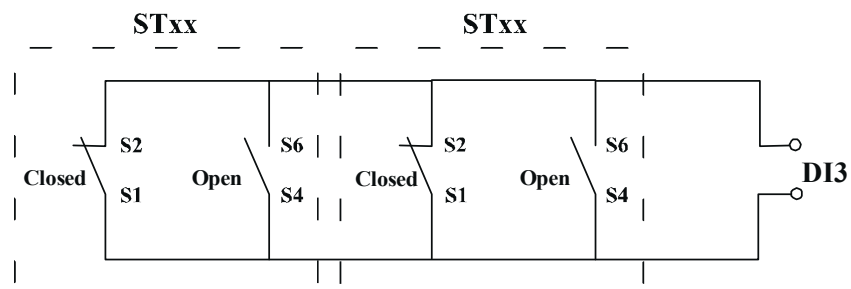
Test flow (manual or automatic)

Pending command = 1

- Test Start
- Mode goes to test, the entire unit is stopped. After the period Off delay by fanoff, outside and exhaust air dampers are closed and the fire damper test is started.
- The command switches to: 1 → 0  
After 15% of Close Time, Fdbk must be Opened = No, otherwise no move alarm.  
After 115% of Close Time, fdbk must be Closed = Ok, otherwise a fdbk close alarm.
- If everything is OK: Command switches to: 0 → 1  
After 15% of Open Time, Fdbk must be Closed = No, otherwise no move alarm.  
After 115% of Open Time, fdbk must be Opened = Ok, otherwise a fdbk opened alarm.
- If everything is OK: Mode goes to OK; the unit is restarted.

Connection intruction

Connection instruction for indication of smokedampers



Smoke dampers must be connected as the instruction above for correct functionality.

## 5.4 Fan control

This section deals with the topics fans, air flows, air pressures and associated control, such as pressure control.

### 5.4.1 Configuration

#### Prerequisite

The main air control functions are enabled, preconfigured and the inputs/outputs are defined in configuration 1 and configuration 2 and Configuration I/Os. Exhaustfan should be set to "combined" if combined outputs for the supply fan and exhaust are wanted, and set to "no" if no exhaust fan.

#### Enable

#### Main Index > Configuration > Configuration 1

Parameter	Range	Function
TSP steps	<ul style="list-style-type: none"> <li>– 1Step</li> <li>– 2Steps</li> <li>– 3Steps</li> </ul>	Enable possible fan steps. <ul style="list-style-type: none"> <li>– Single-step fan (only one setpoint).</li> <li>– 2-step fan (two setpoints).</li> <li>– 3-step fan (three setpoints).</li> </ul>
Fan control mode	<ul style="list-style-type: none"> <li>– Direct</li> <li>– DirectVar</li> <li>– FixedSpeed</li> <li>– Pressure</li> <li>– Flow</li> <li>– SupplySlv</li> <li>– ExhaustSlv</li> </ul>	Select fan and control type. <ul style="list-style-type: none"> <li>– Digitally controlled stepped fans.</li> <li>– Digitally controlled variable speed drives.</li> <li>– Stepped analog controlled variable speed drive with digital release [%].</li> <li>– Pressure-controlled plant with modulating controlled variable speed drive and digital release [Pa].</li> <li>– Volume-controlled plant with modulating controlled variable speed drive and digital release [l/s].</li> <li>– One digital and analog output each for the variable speed drives in pressure-controlled plants where the supply air fan operates dependent on the exhaust fan [Pa]/[l/s]. The exhaust fan is pressure controlled and the exhaust flow is calculated, the supply fan is flow controlled to follow the exhaust flow.</li> <li>– One digital and analog output each for the variable speed drives in pressure-controlled plants where the exhaust air fan operates dependent on the supply air fan [Pa]/[l/s]. The supply fan is pressure controlled and the supply flow is calculated, the exhaust fan is flow controlled to follow the supply flow.</li> </ul>

#### Configuration

#### Main Index > Configuration > Configuration 2

Parameter	Range	Function
Fan steps freq conv	<ul style="list-style-type: none"> <li>– 1Step</li> <li>– 2Steps</li> <li>– 3Steps</li> </ul>	Activation of additional digital outputs depending on the selected fan type. Function available only for analog controlled variable speed drives (Fan control mode <> Direct or DirectVar). The switch does not affect air control and fan behavior. <ul style="list-style-type: none"> <li>– Enable variable speed drive (always active).</li> <li>– Output for optional wiring depending on fan step 2.</li> <li>– Outputs for optional wiring depending on fan step 3.</li> </ul>

Parameter	Range	Function
Fan steps type	<ul style="list-style-type: none"> <li>– Separated</li> <li>– SepCombin e</li> <li>– Binary</li> </ul>	<p>Coding of digital outputs for fan control.</p> <p>The number of outputs and possible Steps (setpoints) depends on the setting in TSP steps and also FanStep FreqConv, for analog controlled variable speed drives.</p> <p>Refer to explanation under General Operating Modes.</p> <ul style="list-style-type: none"> <li>– On digital output per stage and fan.</li> <li>– Separate outputs on the first step, common outputs for additional steps.</li> <li>– Outputs for the steps are binary coded. The setting is permitted for Fan Type = direct or directVar.</li> </ul>

Parameterization

**Main Index > Unit > Fan Control**

Functions not enabled in Configuration 1 and/or Configuration 2 are hidden.

Parameter	Range	Function
Supply fan	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Current supply air fan status. Go to parameter page for supply air fan.
Exhaust fan	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Current exhaust air fan status. Go to parameter page for exhaust air fan.
Actual step	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Current calculated, valid stage (setpoint for control) for fans.
Fire mode	<ul style="list-style-type: none"> <li>– Stop.</li> <li>– RunSply</li> <li>– RunExh</li> <li>– Run both</li> </ul>	<p>Fan behavior in the event of a fire alarm:</p> <ul style="list-style-type: none"> <li>– Fans are off.</li> <li>– Only the supply air fan starts at the maximum enabled stage.</li> <li>– Only the exhaust air fan starts at the maximum enabled stage.</li> <li>– Both fans start at the maximum enabled stage.</li> </ul>
Fire setpoint	0...100 [%]	Output signal for fan start in the event of a fire alarm for all analog controlled variable speed drives.
Slave offset	-999....999 [Pa]	Setpoint offset for fan control mode = Supply Slv or Exhaust Slv.
Slave start up stpt	0....999 [l/s]	Start setpoint for fan control mode = Exhaust Slv for exhaust fan until the supply air fan is operating. The exhaust air fan then operates using the Slave Offset setpoint.
Rundown time el htg	0...36000 [s]	Supply air fan overrun if an electrical heating register is active.
Min stage time	0...999 [s]	<p>Minimum runtime for a stage prior to stepping up to the next step.</p> <p>Note: This period remains active when intervening using the operator unit: Even for a direct jump from off to stage 3, the output remains on each individual step for the minimum runtime.</p>
Coasting time	0..99 [s]	Coasting time when reducing each stage.

Parameter	Range	Function
Disable high speed	-64.0...64.0 [°C]	Stages greater than 1 (setpoint stage 1) are blocked (as with manual operation) if the outside air temperature < Disable High-Speed. All possible stages are enabled for outside air temperature > Disable HighSpeed + 1K. In Winter (at low outside air temperature) the function prevents too great a volume of air from discharging requiring heating, saving energy in this manner.
Disable fan comp	<ul style="list-style-type: none"> <li>- None</li> <li>- St4age 1</li> <li>- St4age1+Stage 2</li> </ul>	Limit to compensated step up (step up switching): <ul style="list-style-type: none"> <li>- No limit. For active stage 1 can be switched to stage 2, for active stage 2 to stage 3. For analog controlled variable speed drives (Fan control mode &lt;&gt; Direct or DirectVar), can be stepped up per curve (see Fan compensation) for active stage1 setpoint and stage2 setpoint.</li> <li>- Compensation blocked for active stage 1(Stage1 setpoint). Can be switched to stage 3 for active stage 2. For analog controlled variable speed drives (Fan control mode &lt;&gt; Direct or DirectVar), can be stepped up per curve (see Fan compensation) for active stage2 setpoint.</li> <li>- Compensation blocked for active stage 1 and active stage 2. For analog controlled variable speed drive the active stage 3 can be compensated to MaxForce.</li> </ul>
Summer comp	-100....100%	Present value for summer compensation. Go to parameter page for summer compensation.
Winter comp	-100....100%	Present value for winter compensation. Go to parameter page for winter compensation.
Op hours settings		Go to parameter page for fan maintenance messages.

## 5.4.2 General Operating Modes

The following relationship apply among the values for the parameters fan control mode, TSP steps, fan step freq conv and fan steps type.

**Fan steps type = Separated**

**Fan control mode = Direct/DirectVar**

	DO1	DO2	DO3	
Off	0	0	0	DOs each for supply fan and exhaust fan (if selected)
Stage1	1	0	0	
Stage2	0	1	0	
Stage3	0	0	1	

**Fan control mode <> Direct/DirectVar, Fan steps freq conv = 1**

	DO1	
Off	0	DO1 each for supply fan and exhaust fan (if selected)
Stage1	1	
Stage2	1	
Stage3	1	

**Fan steps type = Separated (Forts.)**

**Fan control mode <> Direct/DirectVar, Fan steps freq conv > 1**

	DO1	DO2	DO3	
Off	0	0	0	DOs each for supply fan and exhaust fan (if selected)
Stage1	1	0	0	
Stage2	1	1	0	

Stage3      1      0      1

**Fan steps type = SepCombine**

**Fan control mode = Direct/DirectVar**

	DO1	DO2	DO3	
Off	0	0	0	– DO1 each for supply fan and exhaust fan (if selected)
Stage1	1	0	0	
Stage2	0	1	0	– DO2, DO3: Combined output for both fans
Stage3	0	0	1	

**Fan control mode <> Direct/DirectVar, Fan steps freq conv = 1**  
**In this case, fan steps freq conv = 1 has no impact, since output DO1 is always available for supply and exhaust air fan.**

	DO1	
Off	0	DO1 each for supply fan and exhaust fan (if selected)
Stage1	1	
Stage2	1	
Stage3	1	

**Fan control mode <> Direct/DirectVar, Fan steps freq conv > 1**

	DO1	DO2	DO3	
Off	0	0	0	– DO1 each for supply fan and exhaust fan (if selected)
Stage1	1	0	0	
Stage2	1	1	0	– DO2, DO3: Combined output for both fans
Stage3	1	0	1	

**Fan steps type = Binary**

**Fan control mode = Direct/DirectVar**

	DO1	DO2	
Off	0	0	DOs each for supply fan and exhaust fan (if selected)
Stage1	1	0	
Stage2	0	1	
Stage3	1	1	

Note For all frequency controlled fans: Stage = active setpoint

**5.4.3 Supply / Exhaust fan Control**

Configuration Supply air fan is always available; cannot be disabled. Only the exhaust air fan must be enabled:

**Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Exhaust fan	– No	– No exhaust air fan.
	– Yes	– Exhaust air fan with separate outputs.
	– Combined	– Exhaust and supply air fan with common outputs.

Function Fans can be operated staged, pressure-controlled, flow controlled and as master-slave. Common or separate outputs are used depending on the configuration.

Function (cont.) Fans may include an alarm and/or active feedback contact.

Up to 3 setpoints per fan can be defaulted for controlled fans and achieving the setpoints can be monitored.

You can influence the fan stage (speed) by room temperature, air quality, humidity, outside air temperature or supply air temperature.

Operating hours are recorded separately. A message can be triggered upon reaching a certain number of operating hours for the supply air fan.

**Parameterization**

**Main Index > Unit > Fan Control > Supply fan**  
**Main Index > Unit > Fan Control > Exhaust fan**

Parameter	Range	Function
Actual Value	xx [l/s], [Pa]	Depends on control type (fan control mode), e.g. present value of pressure.
Controller	0...100 [%]	Present value for the controller. Go to page with all controller settings.
Output signal	0...100 [%]	Present value for output. Go to page with all analog output settings.
Command	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Present state of fan. Go to page with all digital modulating output settings.
Fdbk	<ul style="list-style-type: none"> <li>– Alarm</li> <li>– Ok</li> </ul>	Condition: Master Index > Configuration > Configuration 2 > Fan fdbk <> No. Present value of the feedback. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Alarm	<ul style="list-style-type: none"> <li>– Ok</li> <li>– Alarm</li> </ul>	Condition: Master Index > Configuration > Configuration 2 > Fan alarm <> No. Present alarm state of fan. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Alarm	<ul style="list-style-type: none"> <li>– Ok</li> <li>– Alarm</li> </ul>	For supply air fan only! Condition: Master Index > Configuration > Configuration 2 > Fan alarm <> Combined. Present alarm state for both fans. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Setpoints/settings	xx [%], [l/s], [Pa]	Depends on control type (fan control mode), present calculated setpoint. Go to parameter settings page for supply air fan.

**Parametrierung (Forts.)**

**Main Index > Unit > Fan Control > Supply fan > Setpoints/Settings**  
**Main Index > Unit > Fan Control > Exhaust fan > Setpoints/Settings**

Parameter	Range	Function
Actual step	<ul style="list-style-type: none"> <li>–</li> <li>– Off</li> <li>– Stage1</li> <li>– Stage2</li> <li>– Stage3</li> </ul>	Present fan stage. <ul style="list-style-type: none"> <li>– Off.</li> <li>– Stage 1 (setpoint 1) active.</li> <li>– Stage 2 (setpoint 2) active.</li> <li>– Stage 3 (setpoint 3) active.</li> </ul>
Act supply stpt	0...100 [%] 0...40'000 [l/s] 0...5000 [Pa]	Depends on control type (fan control mode <> Direct or DirectVar): Present calculated setpoint for fan.
Stage 1	0...100 [%] 0...40'000 [l/s] 0...5000 [Pa]	Depends on control type (fan control mode <> Direct or DirectVar): Setpoint for stage 1 (TSP steps >= 1 for controlled fans).
Stage 2	0...100 [%] 0...40'000 [l/s] 0...5000 [Pa]	Depends on control type (fan control mode <> Direct or DirectVar): Setpoint for stage 2 (TSP steps >= 2 for controlled fans).
Stage 3	0...100 [%] 0...40'000 [l/s] 0...5000 [Pa]	Depends on control type (fan control mode <> Direct or DirectVar): Setpoint for stage 3 (TSP steps = 3 for controlled fans).

Max forcing	0...(100-Stage max.) [%] 0...(40'000-Stage max.) [l/s] 0...(5000-Stage max.) [Pa]	Depends on control type (fan control mode <> Direct or DirectVar): The maximum possible fan compensation is derived from the following formula: Stage max. + Max forcing - Stage x [%], [l/s], [Pa] (See Fan compensation).
Min runtime	0...36000 [s]	Define the minimum runtime for the fan after a start.
Switch on delay	0...36000 [s]	For supply air fan only! Defines switch-on delay for the supply air fan after a exhaust fan start.
Start up delay fdbk	0...36000 [s]	Defines the period after a fan start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Deviation alarm	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Condition: Fan control mode <> Direct, DirectVar or FixedSpd. Present state for the setpoint/actual value monitoring of the supply air pressure (or volume). Go to parameter page for supply air monitoring. <ul style="list-style-type: none"> <li>- No alarm.</li> <li>- Alarm pending.</li> </ul>

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

#### 5.4.4 Summer/Winter compensation

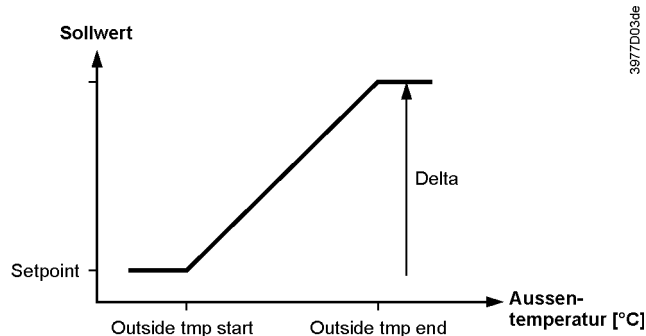
##### Prerequisites

- An outside air temperature sensor must be available:  
Main Index > Configuration > Configuration 1 > Outside tmp sensor = Yes.
- Summer/winter compensation must be enabled:  
Main Index > Configuration > Configuration 2 > Fancomp Outsidetmp = Yes.

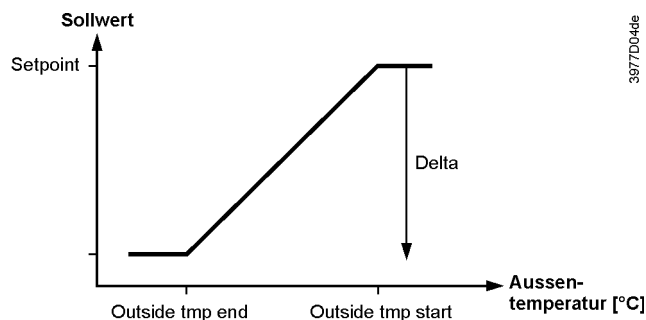
##### Function

- **Summer compensation:** Adjustment to setpoint relevant to control when the outside air temperature is high during the summer.
- **Winter compensation:** Adjustment to setpoint relevant to control when the outside air temperature is low during the winter.

##### Setpoint compensation during summer



Setpoint compensation during the winter.



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### Parameterization

- Main Index > Unit > Fan Control > Summer comp
- Main Index > Unit > Fan Control > Winter Comp

Parameter	Range	Function
Outside tmp start	-64...64 [°C]	Outside air temperature at which point the compensation begins to act.
Outside tmp end	-64...64 [°C]	Outside air temperature by which the maximum (summer) or minimum setpoint is reached.
Delta	-100...100 [%]	Fan setpoint compensation relating to the maximum allowed fan compensation (See Fan compensation as well).

### Note

Setpoint compensation is not undertaken during the summer and winter when the outside air temperature sensor fails. Minus value means that the fan is decreased, plus value means that the fan is increased. For Fan control mode = Direct, DirectVar, the delta must be set to -100% or 100% due to that a switch up or down takes place when the total added compensations is above 90% (switch back at 10%), but could be less if other compensations is active.

## 5.4.5 SupplyFan / Exhaust fan Deviation alarms

### Prerequisites

- Main Index > Configuration > Configuration 1 > Fan control mode <> Direct, DirectVar oder FixedSpd
- Fan deviation alarm must be enabled:  
Main Index > Configuration > Configuration 2 > Fan deviation alarm <> No

### Function

Setpoint/actual value monitoring of air control: An alarm is triggered for the following cases when the air pressure (or dws volume) deviates from the setpoint during a certain period:

### Function (cont.)

- Actual value < Min Limit (Is also used as feedback if act value > Min limit, for example to enable electrical heating)
- Actual value > Setpoint + maximum.
- Actual value < Setpoint – maximum.
- When setpoint – maximum < Min Limit, Min Limit applies as the comparison value.

### Parameterization

- Main Index > Unit > Fan Control > Supply Fan > Setpoints/Settings > Deviation alarm
- Main Index > Unit > Fan Control > Exhaust fan > Setpoints/Settings > Deviation alarm

Parameter	Range	Function
Alarm	– Passive	Alarm state. Go to settings page for digital alarms. Set all



	– Active	control-related settings such as alarm delay (default 60 s).
Min limit	-0...40'000 [%; Pa]	Depends on control type (fan control mode), an alarm is triggered when it breaches this value.
Maximum deviation	-0...40'000 [%; Pa]	Depends on control type (fan control mode); maximum allowed deviation between setpoint and actual value.
Start up delay	0...36000 [s]	The function is activated after this period after a start.

Note Monitoring is switched off when the sensor fails.

## 5.4.6 Operating hours monitoring

Prerequisite None.

Function An alarm (low class) can be triggered for maintenance purposes when the present operating hours for the supply air fan exceeds the operating hours limit.

**Parameterization** **Main Index > Unit > Fan Control > Op hours settings**

Parameter	Range	Function
Op hours alarm	– Passive – Active	Present alarm status.
Enble ophours alarm	– No – Yes	Alarm enable.
Op hours limit	0...999999 [h]	Operating hours limit to trigger an alarm.

## 5.4.7 Fan compensation

General notes

- Disable comp parameter setting (Main Index > Unit > Fan control > Disable comp) must be observed for each compensation.
- All types of compensation that results in a step-up or switch, are added to the overall compensation  $\Sigma$  comp.
- All types of compensation that result in a step-down or switch, are subtracted from the overall compensation  $\Sigma$  comp.
- $\Sigma$  comp up and  $\Sigma$  comp down are limited to 100 %.

Percentage of  $\Sigma$  comp up

- Temperature control:
  - Fan cooling [%]
  - Fan compensation [%] (Increase)
- From fan control:
  - Summer compensation [%] (if positive).
  - Winter compensation [%] (if positive).
- From humidification:
  - Fan compensation [%] (Increase)
- From air quality control:
  - Function normal [%]

Percentage of  $\Sigma$  comp down

- From temperature control:
  - Fan Heating [%]
  - Fan compensation [%] (Decrease)

- From fan control:
  - Summer compensation [%] (if negative).
  - Winter compensation [%] (if negative).
- From humidification:
  - Fan compensation [%] (Decrease)
- From air quality control:
  - Function inverse [%].

### Staged fans

Fan control mode = Direct or DirectVar.

- $\sum$  comp up > 90% ----> If possible step-up of a stage (see Disable comp).
- $\sum$  comp up < 10% ----> Remove compensation stage.
- $\sum$  comp down > 90% ----> Step-down of a stage (Stage 1 is the minimum).
- $\sum$  comp down < 10% ----> The removed stage is enabled again.

### Analog fans

Fan control mode <> Direct or DirectVar.

Calculates maximum compensation (100 % compensation):

**Highest stage setpoint + Max forcing – Stage1 Setpoint** with fixed minimum limit at Stage 1 setpoint and maximum limit at Stage max + Max forcing.

#### Example 1

$\sum$ comp up	80%
Fan control mode	Pressure
TSP steps	3
Stage1 Setpoint	500 Pa
Stage2 Setpoint	800 Pa
Stage3 Setpoint	1000 Pa
Max forcing	200 Pa
Active stage setpoint	Stage1, 500 Pa

- Maximum compensation =  $1000 + 200 - 500 = 700$  [Pa]
- Compensation setpoint = Setpoint stage1 + 80 % of maximum compensation.  
=  $500 + 700 * 0,8 = 500 + 560 = 1060$  [Pa]
- Maximum possible setpoint = Stage3 setpoint + max force.  
=  $1000 + 200 = 1200$  [Pa]

#### Example 2

$\sum$ comp down	30%
Fan control mode	Pressure
TSP steps	3
Stage1 Setpoint	500 Pa
Stage2 Setpoint	800 Pa
Stage3 Setpoint	1000 Pa
Max forcing	200 Pa
Active stage setpoint	Stage2, 800 Pa

- Maximum compensation  $1000 \text{ Pa} + 200 \text{ Pa} - 500 \text{ Pa} = 700 \text{ Pa}$ .
- Setpoint = Setpoint stage2 - 30 % of maximum compensation.  
=  $800 - 700 * 0.3 = 800 - 210 = 590$  [Pa]
- Minimum possible setpoint = Stage 1 setpoint = 500 Pa, since the setpoint compensation is limited to this value.

## 5.5 Temperature control

### 5.5.1 General

**Prerequisite** Displays only the functions enabled in configuration 1 or configuration 2. All other functions are hidden. General there is a mix of use of exhaust and return air sensor!

**Parameterization** **Main Index > Unit > Temp control**

Parameter	Function
Act controlled tmp	Present temperature used for control. Eight supply air, room or return temperature depending on the setting and control type.
Tmp setpoints	Go to setpoint page with all setpoints affected by temperature control, e.g. comfort, economy, cascade min max, deviation alarm, summer-winter compensation.
Cascade controller	Displays heating and cooling setpoint. Go to cascade controller page with detailed settings.
Min/max ctrlr sply	Go to page for min/max ctrlr sply to parameterize the minimum and maximum limit controller. You can use the existing supply air sensor to limit the minimum or maximum allowable supply air temperature if purely room or return air control is active.
Hrec damper	Present value of the mixed air damper control. Go to parameter page for mixed air damper control.
Heat recovery	Present value for heat recovery control. Go to parameter page for heat recovery control.
Heating	Present value for heating register control. Go to parameter page for heating register control.
Electrical heating	Present value for electrical heating register control. Go to parameter page for electric heating register control.
Cooling	Present value for cooling register control. Go to parameter page for cooling register control.
Heating 2	Present value for heating register control for an additional register. Go to parameter page for heating register control.
El Heating 2	Present value for electric heating register control for an additional register. Go to parameter page for electric heating register control.
Cooling 2	Present value for cooling register control for an additional register. Go to parameter page for cooling register control.
Fan heating	Present value of the fan heating sequence. Go to parameter page for fan heating sequence.
Fan cooling	Present value of the fan cooling sequence. Go to parameter page for fan cooling sequence.
Fan compensation	Present value of the fan temperature compensation. Go to parameter page for fan temperature compensation.

## 5.5.2 Temperature setpoints

**Prerequisite** Displays only the functions enabled in configuration 1 or configuration 2. All other functions are hidden.

**Parameterization** **Main Index > Unit > Temp control > Tmp setpoints**

Parameter	Range	Function
Act controlled tmp	---	Present temperature used for control. Eight supply air, room or return temperature depending on the setting and control type.
Act cooling stpt	---	Present calculated room or supply air setpoint for cooling.
Act heating stpt	---	Present calculated room or supply air setpoint for heating.
Act sply clg stpt	---	Present calculated supply air setpoint in cooling for a cascade control.
Act sply htg stpt	---	Present calculated supply air setpoint in heating for a cascade control.
External setpoint	---	Present external setpoint or setpoint compensation.
Sply air comp	-10.0...10.0 [°C]	Setpoint compensation for winter operation for: Tmp control mode = RmSplyC Su (Room supply air cascade control in summer, pure supply air control in winter). or Tmp control mode = RtSplyC Su (return supply air cascade control in summer, pure supply air control in winter). The room setpoint for cascade control, active in the summer, are active (summer - winter changeover). During winter, these room setpoints must be adapted to the supply air control.
Comfort setpoint	0...99 [°C]	Comfort based setpoint. Only available when Tmp stpt selection = +/-Half degree Celsius.
Comfort cooling	0...99 [°C]	Comfort cooling setpoint. Only available when Tmp stpt selection = Htg/Clg or Clg-degrees Celsius.
Comfort heating	0...99 [°C]	Comfort heating setpoint. Only available when Tmp stpt selection = Htg/Clg or Htg-degrees Celsius.
Comfort deadzone	0...20 [°C]	Comfort dead zone. Only available when Tmp stpt selection = Clg-degrees Celsius or Htg+degrees Celsius or +/-Half degree Celsius.
Economy setpoint	0...99 [°C]	Economy base setpoint. Only available when Tmp stpt selection = Spv+Halfdegree Celsius.
Economy cooling	0...99 [°C]	Economy setpoint for cooling. Only available when Tmp stpt selection = Htg/Clg or Clg-degrees Celsius.
Economy heating	0...99 [°C]	Economy setpoint for heating. Only available when Tmp stpt selection = Htg/Clg or Htg-degrees Celsius.
Economy deadzone	0...20 [°C]	Economy dead zone. Only available when Tmp stpt selection = Clg-degrees Celsius or Htg+degrees Celsius or +/-Half degree Celsius.
Extra Seq setpoint	0...99 [°C]	Setpoint for Heating 2, El Heating 2, Cooling 2 if configured as stand alone.
Supply tmp min stpt	15.0... Supply tmp max stpt [°C]	Lower allowable supply air temperature for pure room or return air control with additional available supply air sensor. Limited control of the cooling setpoint occurs if the supply air temperature < Supply tmp min. The heating register is started if this is not enough.
Supply tmp max stpt	Supply tmp min stpt ... 50.0 [°C]	Highest allowable supply air temperature for pure room or return air control with additional available supply air sensor.

Parameter	Range	Function
		sor. Limited control of the heating setpoint occurs if the supply air temperature > Supply tmp min.
Supply tmp min stpt	-64.0 ...99.0 [°C]	Lowest allowable supply air temperature for a cascade control.
Supply tmp max stpt	-64.0 ...99.0 [°C]	Highest allowable supply air temperature for a cascade control.
Draught htg max dev	0.0...64.0 [°C]	Maximum difference between supply air and room temperature for heating when the room draught limit is enabled (configuration 2).
Draught clg max dev	0.0...64.0 [°C]	Maximum difference between supply air and room temperature for cooling when the room draught limit is enabled (configuration 2).
Fan htg deadzone	0...20 [°C]	Controller dead zone: Setpoint = Supply air heating setpoint – dead zone.
Fan clg deadzone	0...20 [°C]	Controller dead zone: Setpoint = Supply air heating setpoint – dead zone. Or if sequence is placed last: Supply air cooling setpoint + dead zone.
Fan comp tmp stpt	0...99 [°C]	Setpoint for room related fan compensation. See Fan compensation; Function: Increase/decrease fan setpoint based on room temperature.
Fan comp tmp functn	Increase Decrease	See Fan compensation; Function: Increase/decrease fan setpoint based on room temperature.
Summer comp	---	Present value for summer compensation. Go to parameter page for summer compensation.
Winter comp	---	Present value for winter compensation. Go to parameter page for winter compensation.
Sply tmp dev alarm	---	Present state for the setpoint/actual value monitoring of the supply air pressure: 14. Passive: No alarm. 15. Active: Pending alarm. Go to parameter page for supply air temperature monitoring.
Room tmp dev alarm	---	Present state for the setpoint/actual value monitoring of the room temperature: 16. Passive: No alarm. 17. Active: Pending alarm. Go to parameter page for room temperature monitoring.

### 5.5.3 Summer/Winter compensation

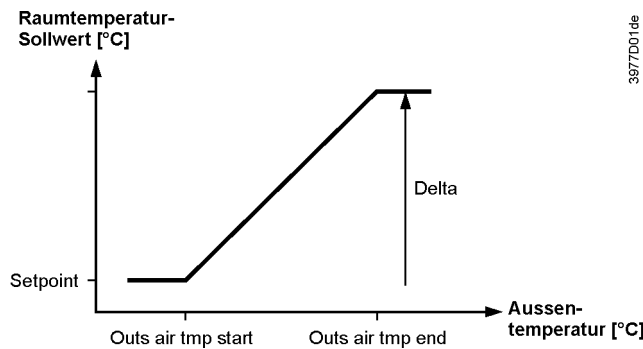
#### Prerequisites

- Summer/winter compensation must be enabled:  
Main Index > Configuration > Configuration 2 > So-Wi comp tmp = Yes
- An outside air temperature sensor must be available:  
Main Index > Configuration > Configuration 1 > Outside tmp sensor <> No.

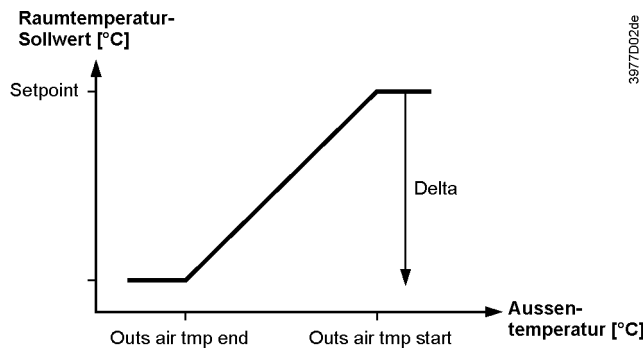
#### Function

- **Summer compensation:** Adjustment to temperature setpoint (depending on control, supply air, room or return air) relevant to control when the outside air temperature is high during the summer.
- **Winter compensation:** Adjustment to temperature setpoint (depending on control, supply air, room or return air) relevant to control when the outside air temperature is low during the winter.

#### Setpoint compensation during summer



#### Setpoint compensation during the winter.



#### Parameterization

Main Index > Unit > Temp control > Setpoints > Summer comp  
Main Index > Unit > Temp control > Setpoints > Winter comp

Parameter	Range	Function
Outs air tmp start	-64.0...64.0 [°C]	Outside air temperature at which point the compensation begins to act.
Outs air tmp end	-64.0...64.0 [°C]	Outside air temperature by which the maximum (summer) or minimum setpoint is reached.
Delta	-64.0...64.0 [K]	Maximum setpoint temperature-compensation.

#### Note

Setpoint compensation is not undertaken during the summer and winter when the outside air temperature sensor fails.

## 5.5.4 Temperatur deviation alarms

- Prerequisites
- For supply air deviation alarm, a supply air sensor must be available:  
Main Index > Configuration > Configuration 1 > Supply tmp sensor = Yes.
  - Deviation alarm tmp must be enabled:  
Main Index > Configuration > Configuration 2 > Deviation alarm tmp<> No
  - For room air deviation alarm, a room or return air sensor must be available:  
Main Index > Configuration > Configuration 1 > Room tmp Sensor = Yes.

- Function
- Setpoint/actual value monitoring of temperature: An alarm is triggered for the following cases when the temperature deviates from the setpoint during a certain period:
- Actual value < Min limit.
  - Actual value > Setpoint + maximum.
  - Actual value < Setpoint – maximum.
  - When setpoint – maximum < Min limit, min limit applies as the comparison value.

- Parameterization
- Main Index > Unit > Temp control > Tmp setpoints > Sply tmp dev alarm**  
**Main Index > Unit > Temp control > Tmp setpoints > Room tmp dev alarm**

Parameter	Range	Function
Alarm	18. Passive 19. Active	Alarm state. Go to settings page for digital alarms. Set all control-related settings such as alarm delay (default 3600 s).
Min limit	0...99.0 [°C]	An alarm is triggered below this temperature.
Maximum deviation	0...99.0 [°C]	Maximum allowable deviation between setpoint and actual value.
Start up delay	0...36000 [s]	The function is activated after this period after a start.

- Note
- Monitoring is switched off when the temperature sensor fails.

## 5.5.5 Supply Minimum Maximum Controller

- Prerequisites
- Main Index > Configuration > Configuration 1 > Tmp control mode = Room oder Exhaust
  - Main Index > Configuration > Configuration 1 > Supply tmp sensor = Yes

- Function
- Limits the supply air temperature for pure room or return air control to prevent discharge temperatures that are too high or too low.

- Parameterization
- Main Index > Unit > Temp control > Min/max ctrlr sply**

Parameter	Range	Function
Min controller	0...100 [%]	Present value for the minimum limit controller. Go to controller settings page. This is where you enter all control-related settings.
Max controller	0...100 [%]	Present value for the maximum limit controller. Go to controller settings page. This is where you enter all control-related settings.
Min setpoint	15...Max setpoint [°C]	Lowest allowable supply air temperature for pure room temperature or return air temperature control. A controlled limiting of the cooling setpoint controller occurs for supply

Parameter	Range	Function
		air temperature < Min setpoint. The heating register is started if this is not enough.
Max setpoint	Min setpoint...50 [°C]	Highest allowable supply air temperature for pure room temperature or return air temperature control. A controlled limiting of the heating controller occurs for supply air temperature > Max setpoint.

## 5.5.6 Fan Heating / Cooling

**Prerequisite** Fan heating / cooling enabled in configuration 2. No settings required for I/Os in configuration 1 and configuration.

**Enable** **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Fan htg / clg	<ul style="list-style-type: none"> <li>– No</li> <li>– Htg</li> <li>– Clg</li> <li>– Htg+Clg</li> </ul>	<p>The fan is further used as a heating or cooling sequence.</p> <ul style="list-style-type: none"> <li>– No sequential impact on the fan.</li> <li>– Only impacts fan during the heating sequence.</li> <li>– Only impacts fan during the cooling sequence.</li> <li>– Impact on fan in both sequences.</li> </ul>
Sequence fan clg	<ul style="list-style-type: none"> <li>–</li> <li>– Fan-Clg</li> <li>– Clg-Fan</li> </ul>	<p>For fan cooling only!</p> <ul style="list-style-type: none"> <li>– Fan sequence prior to cooling sequence.</li> <li>– Cooling sequence prior to fan sequence.</li> </ul>

**Function** Controller output reduced (increased during cooling) the fan setpoint as it relates to the maximum allowable fan compensation (see Fan compensation as well) in the event the supply air setpoint is not achieved.

The fan speed (stage) is reduced when all available heating registers are operating at 100% during heating. This heats up the discharged air.

The fan speed (stage) is increased if all available cooling registers are operating at 100 % (Sequence fan clg = Clg-Fan) during cooling. This cools down the discharged air. The fan speed (stage) is first increased during the sequence fan clg = Fan-Clg and the first cooling register is switched on.

**Parameterization** **Main Index > Unit > Temperature control > Fan heating**  
**Main Index > Unit > Temperature control > Fan cooling**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the controller. Go to controller settings page.
Deadzone	0...20 [°C]	<p>Controller dead zone heating: Setpoint = Supply air setpoint – dead zone.</p> <p>Controller dead zone clg: Setpoint = Supply air heating setpoint + dead zone. Or if sequence is placed last (Clg-Fan): Supply air cooling setpoint + dead zone</p>

**Heating example**

- Calculated supply air setpoint for heating register: 22 °C.
- Dead zone for the fan heating controller (dead zone): 2 °C.
- > Effective setpoint for the controller = 22 °C – 2 °C = 20 °C.



Ensures that the fans are only influenced, if the heating register does not supply the required output. This function not required when the heating register is sufficiently sized.

#### Calculation

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max forcing, e.g. = 120 Pa).
  - Maximum allowable fan compensation (100 % compensation): 40 Pa.
  - Controller output: 50 %.
- > New setpoint:  $80 \text{ Pa} - (40 \text{ Pa} * 50 \%) = 60 \text{ Pa}$  (Not exactly true, see Fancomp for exactly calculation!!!, this text is used on several places!!)

The fan stage is reduced by reducing the setpoint. The air volume to be heated at the heating register becomes smaller and the discharge air temperature increases.

#### Cooling example

#### Switching sequence fan clg: Clg-Fan

- Calculated supply air setpoint for cooling register: 24 °C.
  - Dead zone for the fan cooling controller (dead zone): 2 °C.
- > Effective setpoint for the controller =  $22 \text{ °C} - 2 \text{ °C} = 24 \text{ °C}$ .

Ensures that the fans are only influenced, if the cooling register does not supply the required output. This function not required when the cooling is sufficiently sized.

#### Switching sequence fan clg: Fan-Clg

- Calculated supply air setpoint for cooling: 24 °C.
  - Calculated supply air setpoint for heating register: 22 °C.
  - Dead zone for the fan cooling controller (dead zone): 1 °C.
- > Effective setpoint for the controller:  $22 \text{ °C} + 1 \text{ °C} = 23 \text{ °C}$ .

Ensure that fans are influence prior to the start of the cooling register. This function can also be used if no coolingregister is available. You don't get colder air but you have better comfort due to that the air volume is increased.

#### Calculation

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max Force, e.g. = 120 Pa).
  - Maximum allowable fan compensation (100 % compensation): 40 Pa.
  - Controller output: 50 %.
- > New setpoint:  $80 \text{ Pa} + (40 \text{ Pa} * 50 \%) = 100 \text{ Pa}$ .

## 5.5.7 Fan compensation

**Prerequisite** Fan cmp room tmp enabled in configuration 2. No settings required for I/Os in configuration 1 and configuration.

**Enable** **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Fan comp room tmp	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Room-temperature dependent fan compensation.

**Function** The controller output reduces or increases the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

The fan setpoints are increased or reduced if the room temperature is below the setpoint when  $KP > 0$  or if the room temperature is above the setpoint when  $KP < 0$  (heating/cooling behavior).

**Parameterization** **Main Index > Unit > Temperature control > Fan compensation**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the controller. Go to controller settings page.
Setpoint	0...99 [°C]	Controller setpoint relating to the room temperature.
Function	<ul style="list-style-type: none"> <li>– Increase</li> <li>– Decrease</li> </ul>	<ul style="list-style-type: none"> <li>– Increase the fan setpoint.</li> <li>– Reduce the fan setpoint.</li> </ul>

**Example**

- Room temperature setpoint: 22 °C.
- Present room temperature: 20°C.
- > Controller output > 0 % (e.g. 50 %).

### Switch function: Increase

The controller output increases the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max Force, e.g. = 120 Pa).
- Maximum allowable fan compensation (100 % compensation): 40 %.
- Controller output: 50 %.
- > New setpoint = 80 Pa + (40 Pa \* 50 %) = 100 Pa.

### Switch function: Decrease

The controller output reduces the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max Force, e.g. = 120 Pa).
- Maximum allowable fan compensation (100 % compensation): 40 Pa.
- Controller output: 50 %.
- > New setpoint = 80 Pa – (40 Pa \* 50 %) = 60 Pa.

## 5.5.8 Combi coil

**Prerequisite** One heating register water and one cold water register for cooling is enabled.  
 Main Index > Configuration > Configuration 1 > Heating <> No  
 Main Index > Configuration > Configuration 1 > Cooling = Water

## Configuration

## Main Index > Configuration > Configuration 2

Parameter	Range	Function
Combi Coil	<ul style="list-style-type: none"><li>– None</li><li>– 1 output</li><li>– 2 outputs</li></ul>	This setting determines whether it is a 2 (1Output) or 4 (2Outputs) line CombiCoil.

## Function

A common register is used for heating and cooling.

For the CombiCoil with one output, the input for summer-winter changeover should be enabled in all cases so that the information on summer or winter operation is available. (Configuration 1 > Su-wi input = Yes)

The heating register is exclusively active during the winter; the cooling register exclusively during the summer.

The various control settings can be made separately for heating and cooling.

If an additional electrical register is activated, it acts as a second heating register during the winter and a normal heating register during the summer. This makes it possible to heating as needed during the summer.

Output for heating is used for both heating and cooling.

The summer-winter changeover is not used for CombiCoil with 2 outputs, but the heating output and cooling can never be active at the same time.

For both 1 output and 2 output mode are the frost controller and the frost alarm deactivated in summer, or if the cooling valve is open.

Only one output for pump is used (heating), but the pump functionality must be enabled even for cooling if also cooling should control the output.

## 5.6 Heat recovery damper

### Prerequisite

Heat recovery with mixed air dampers are enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

### Enable

## Main Index > Configuration > Configuration 1

Parameter	Range	Function
Hrec damper	<ul style="list-style-type: none"><li>– No</li><li>– Normal</li><li>– Inverse.</li></ul>	<ul style="list-style-type: none"><li>– No mixed air damper.</li><li>– Mixed air damper with output signal 100% for complete recirculation.</li><li>– Mixed air damper with output signal 0% for complete recirculation.</li></ul>

### Configuration

## Main Index > Configuration > Configuration 2

Parameter	Range	Function
HrecDampr Sequence	<ul style="list-style-type: none"><li>– Damper-Htg</li><li>– Htg-Damper</li></ul>	Intervention sequence for mixed air dampers and heating register. <ul style="list-style-type: none"><li>– Mixed air dampers first.</li><li>– Heating register first.</li></ul>
Hrec clg recovery	<ul style="list-style-type: none"><li>– No</li><li>– Hrec</li><li>– DamperHrec</li><li>– Both</li></ul>	<ul style="list-style-type: none"><li>– No cooling recovery.</li><li>– Cooling recovery, e.g. using a rotary heat exchanger.</li><li>– Cooling recovery using mixed air dampers.</li><li>– Both variants active.</li></ul>

- HrecDampr Sequence
- Position Damper-Htg: For heating, the mixed air damper is deployed to the maximum allowable recirculating position (depends on Min FreshAir), before the subsequent heating register starts.
  - Position Htg-Damper: For heating, the heating register is first deployed to full load prior the mixed air damper control starts. The startup function for the mixed air damper control must be disabled (StartupTime = 0 s), since otherwise the heating register starts off directly at 100%& output.

Function

Mixed air damper control is used for heat or cooling recovery. The direction of control action (normal/inverse) and a minimum ration of fresh air can be set. The plant can be started for a set period at full recirculation in dependence on the outside air temperature.

Mixed damper is forced to full return air if:

- Night unoccupied (temperaturstart) heat and cool
- OSSTP/Boost

Mixed damper is forced to full fresh air if:

- Summer night cooling
- Supply fan after run
- Fire mode with running fan

**Parameterization** **Main Index > Unit > Temp control > Hrec damper**

Parameter	Range	Function
Controller	0...100 [%]	Present value of the mixed air controller. Go to controller settings page.
Output signal	0...100 [%]	Present value for damper actuator output. Go to page with all analog output settings.
Recovery value	0...100 [%]	Displays present heat recovery. For Hrec damper = Normal, this value is always the same as the output signal. For Hrec damper = Inverse, this value is always the inverse of the output signal.
Min fresh air	0...100 [%]	Minimum fresh air ratio. The controller output is limited to 100 % - min fresh air. This ensures that some amount of fresh air always makes it to the room.
Start up time	0...600 [s]	Time for controller start behavior (100 % recirculation).
Start up tmp	-64.0...64.0 [°C]	Temperature limit for start behavior.

Startup behavior

The mixed air damper is fully opened during the startup period for outside air temperature < Startup temp at startup. The controller determines the present position after this period expires.

If heat demand exists at startup, the heating register is started in parallel, and after successful startup, the mixed air controller for heat recovery deploys to the maximum allowable position (100% - MinFreshAir).

Function

Cooling recovery function

Cooling recovery **starts**, when the following conditions are met:

- Outside air temperature > room temperature + 2K
- and*
- Room temperature > room setpoint + 1K

Cooling recovery **stops** for the following cases:

- Outside air temperature <= Room temperature
- or*
- Room temperature >= room setpoint.

For pure supply air control, the room setpoint test is disabled and then only the outside air temperature-room temperature condition is considered.

**Note** An outside air and room or return air temperature sensor required. If both a room and return air sensor is active then the return air sensor is used.

**Sensor failure** The function is blocked when the sensor fails.

## 5.7 Heat recovery (Plate, wheel, water)

### 5.7.1 General

**Prerequisite** Heat recovery is enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

**Enable heat recovery** [Main Index > Configuration > Configuration 1](#)

Parameter	Range	Function
Heat recovery	<ul style="list-style-type: none"> <li>- No</li> <li>- Wheel</li> <li>- PlateExch</li> <li>- Water</li> </ul>	<ul style="list-style-type: none"> <li>No heat recovery.</li> <li>Rotary heat exchanger.</li> <li>Plate heat exchanger.</li> <li>Water heat exchanger.</li> </ul>

**Configuration** [Main Index > Configuration > Configuration 2](#)

Parameter	Range	Function
Heat recovery frost	<ul style="list-style-type: none"> <li>- No</li> <li>- Detector</li> <li>- sensor</li> <li>- Dtctr+Snsr</li> <li>- PressSnsr</li> <li>- Pres+Dtctr</li> </ul>	<ul style="list-style-type: none"> <li>- No frost protection.</li> <li>- Frost protection using a detector.</li> <li>- Frost protection using a sensor.</li> <li>- Frost protection using a sensor and detector.</li> <li>- Frost protection using a pressure sensor.</li> <li>- Frost protection using a pressure sensor and detector.</li> </ul>
Hrec pump / cmd	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> <li>- Yes+Kick</li> </ul>	<ul style="list-style-type: none"> <li>- No pump.</li> <li>- Heat exchanger pump without pump kick.</li> <li>- Heat exchanger pump with pump kick.</li> </ul>
Hrec pump alarm	<ul style="list-style-type: none"> <li>- No</li> <li>- Alarm</li> <li>- Fdbk</li> <li>- Both</li> </ul>	<ul style="list-style-type: none"> <li>- Pump without alarm or feedback.</li> <li>- Pump with alarm.</li> <li>- Pump with feedback.</li> <li>- Pump with alarm and feedback.</li> </ul>
Heat recovery alarm	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>	Heat recovery with or without alarming.
Hrec clg recovery	<ul style="list-style-type: none"> <li>- No</li> <li>- Hrec</li> <li>- DamperHrec</li> <li>- Both</li> </ul>	<ul style="list-style-type: none"> <li>- No cooling recovery.</li> <li>- Cooling recovery, e.g. using a rotary heat exchanger.</li> <li>- Cooling recovery using mixed air dampers.</li> <li>- Both variants enabled.</li> </ul>

**Function** Heat recovery serve to recover heat or cooling. One plate, wheel or water exchanger (with pump control and frost protection) is available. The plant can be started for a set period at full recirculation in dependence on the outside air temperature.

- Heat recovery is forced off if:
- Night unoccupied (temperaturstart) cool
  - Summer night cooling
  - Firemode with running fan

Note

- Pump can also be used as a command for wheel.
- Frost sensor with wheel or plate activate an exhaust sensor. Frost sensor with water activate a water sensor. The exhaust sensor can also be used for efficiency.

**Parameter Master Index > Unit > Temperature Control > Heat recovery**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the heat exchanger controller. Go to controller settings page.
Output signal	0...100 [%]	Present value for analog output. Go to page with all analog output settings.
Pump / cmd	– Off – On	Current pump status. Go to heat recovery pump page.
Alarm	– Ok – Alarm	Alarm state for heat recovery. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Frost monitor	– Ok – Frost.	Present state of frost detector. Go to page with digital input settings. The output limited for DeFrost MaxSpeed for “Frost” state. The plant is shut down after 20 minutes and an alarm is triggered.
Frost protection	– 0...100%	Present value for the frost controller. Go to Hrec frost protect page to parameterize frost control.
Frost protect press	---	Go to pressure frost page to parameterize frost control.
Efficiency	0...100%	Present value of heat recovery efficiency. Go to page with settings for heat recovery efficiency.
Start up time	0...600 [s]	Time for controller start behavior.
Start up tmp	–64.0...64.0 [°C]	Temperature limit for start behavior.
Max speed defrost	0...100%	Maximum allowable output value for frost detection.

Startup behavior

The startup time for the output is set to 100% if the outside air temperature < Start up tmp. Afterwards, the controller determines the present position.

If heat demand exists at startup, the heating register is started in parallel, and after successful startup, the controller for heat recovery deploys to the maximum allowable position (100%).

Funktion Cooling recovery

Cooling recovery **starts**, when the following conditions are met:

- Outside air temperature > room temperature + 2K  
and
- Room temperature > room setpoint + 1K

Cooling recovery **stops** for the following cases:

- Outside air temperature <= Room temperature  
or
- Room temperature >= room setpoint.

For pure supply air control, the room setpoint test is disabled and then only the outside air temperature-room temperature condition is considered.

Note	An outside air and room or return air temperature sensor required. If both a room and return air sensor is active then the return air sensor is used.
Sensor failure	The function is blocked when the sensor fails.

## 5.7.2 Heat recovery Pump

Prerequisite	Heat recovery pump is enabled: Main Index > Configuration > Configuration 2 > Hrec (pump) / cmd <> No
Function	The pump <b>starts</b> , if one of the following conditions is met: <ul style="list-style-type: none"> <li>• No fault is pending <b>and</b> the heat exchanger valve is opened to at least 5 %.</li> <li>or</li> <li>• Pump kick is enabled.</li> </ul> The pump <b>stops</b> for the following cases: <ul style="list-style-type: none"> <li>• A fault occurs.</li> <li>or</li> <li>• The heating valve is under 1 %.</li> </ul>
Note	The pump output can, e.g. for a heat wheel, be used as a digital enable as well. The pump kick should not, however, be enabled in this case.
Record operating hours	Operating hours for the pump can be recorded and reset: Main Index > Unit > Operating hours > Hrec (pump) cmd

### Parameter **Main Index > Unit > Temp control > Heat recovery > Pump/Cmd**

Parameter	Range	Function
Command	– Off – On	Current pump state. Go to page with digital output settings.
Fdbk	– OK. – No fdbk	Present state of pump feedback. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Alarm	– OK. – Alarm	Current pump alarm state. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Start up delay fdbk	0...36000 [s]	Defines the period after a pump start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Off by fdbk alarm	– No – Yes	Determines, in the event of a feedback fault, whether a pump command is still pending or whether to switch off the command.
Min run time	0...36000 [s]	Define the minimum runtime for the pump after a start.

Note	Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.
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## 5.7.3 Pumpenkick

Prerequisite	Pump kick is enabled. Main Index > Configuration > Configuration 2 > Hrec (pump)/cmd = Yes+Kick
Function	The pump is switched on for a short period for longer idle periods. This prevents lock up.

**Parameter**                      **Main Index > Unit > Temp control > Heat recovery > Pump / cmd**

Parameter	Range	Function
Kick date / time	Mo 00:00...So 23:29	Weekday and time for pump kick. Sets the weekday (Mon...Sun) and time to run the pump kick. Examples: Mon *.*    Each Monday at midnight. Sat 07:*   Each Saturday at 7:00 am. * *.*       Time is not relevant; the kick interval applies accordingly.
Kick interval	0.0...36000.0 [h]	Idle time for pump kick. Set the idle time after which a pump kick is run. Examples: 168        After 168 hours. 123.4      After 123 hours and 24 minutes. 0           Idle time is not relevant; kick date/time applies accordingly.
Kick on time	0.0...36000 [s]	Set the period for the pump kick. Examples: 10         Period = 10 seconds. 0           Period = 1 controller cycle (ca. 150 ms).

Note                                      Kick date/time = \* \*.\* and kick interval = 0 --->  
No pump kick is run.

### 5.7.4 Heat recovery Frost

Prerequisite	Frost protection type is enabled: Master Index > Configuration > Configuration 2, Heat recovery frost <> No
Two types of frost detection:	<ul style="list-style-type: none"> <li>• <b>Temperature frost protection:</b> Detects icing using a temperature sensor in the water exchanger if selected as water or in exhaust air if selected as plate or wheel. This applies for the following settings: Heat recovery frost = Detector, sensor or Dtctr+Snsr.</li> <li>• <b>Air-side frost protection:</b> Detects icing using a pressure sensor. This applies for the following settings: Heat recovery frost = PressSnsr und Pres+Dtctr.</li> </ul>
Function	<ul style="list-style-type: none"> <li>– For output Frost controller &gt; Output recovery ---&gt; The output follows the recovery.</li> <li>– For output Frost controller &lt; Output recovery ---&gt; The output follows the frost controller.</li> <li>– Controller is disabled when the sensor fails.</li> </ul> <p>The heat recovery controller goes to 100 % output signal as soon as the frost controller is no longer enabled, when the subsequent heating register was enabled during frost control.</p>



**Parameter** **Master Index > Unit > Temp control > Heat recovery > Frost**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the frost controlled. Go to controller settings page.
Setpoint	-64...64 [°C]	For temperature frost protection only! For one setpoint: Present setpoint for the frost controller.
Fan stage 1 stpt	0...5000 [Pa]	For air-side frost protection only! Setpoint for the controller at fan stage 1.
Fan stage 2/3 stpt	0...5000 [Pa]	For air-side frost protection only! Setpoint for the controller at fan stage 2 and 3.

## 5.8 Heating / Heating 2

### 5.8.1 General

**Prerequisite** Heating / heating 2 is enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

Enable heating group **Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Heating / Heating 2	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> <li>– Yes+Preheat</li> </ul>	<ul style="list-style-type: none"> <li>– No (additional) heating register.</li> <li>– (Additional) heating register without preheating.</li> <li>– (Additional) heating register with preheating.</li> </ul>

Configuration **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Htg frost protect / Heating 2 frost	<ul style="list-style-type: none"> <li>– No</li> <li>– sensor</li> <li>– Sensor2Spv</li> <li>– Detector</li> <li>– Snsr+Dtctr</li> <li>– 2Spv+Dtctr</li> </ul>	<ul style="list-style-type: none"> <li>– No frost protection.</li> <li>– Frost protection using a sensor.</li> <li>– Frost protection using a sensor and 2 setpoints.</li> <li>– Frost protection using a detector.</li> <li>– Frost protection using a sensor and detector.</li> <li>– Frost protection using a sensor, 2 setpoints and detector.</li> </ul>
Heating pump / Heating 2 pump	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> <li>– Yes+Kick</li> </ul>	<ul style="list-style-type: none"> <li>– No heating register pump.</li> <li>– Heating register pump without pump kick.</li> <li>– Heating register pump with pump kick.</li> </ul>
Htg pump alarm / Heating 2 pump alm	<ul style="list-style-type: none"> <li>– No</li> <li>– Alarm</li> <li>– Fdbk</li> <li>– Both</li> </ul>	<ul style="list-style-type: none"> <li>– Pump without alarm or feedback.</li> <li>– Pump with alarm.</li> <li>– Pump with feedback.</li> <li>– Pump with alarm and feedback.</li> </ul>
Heating 2 control	<ul style="list-style-type: none"> <li>– StandAlone</li> <li>– InSequence</li> </ul>	<ul style="list-style-type: none"> <li>– Not integrated in sequence.</li> <li>– Integrated in sequence.</li> </ul>

**Function** The hot ware registers can be operated with pump (pump kick, alarm, feedback) or without pump. Frost detection and controlled frost protection is integrated. The additional heating register can be operated as a separate register with its own setpoint. The heating register is forced off if:

- Night unoccupied (temperaturstart) cool
- Summer night cooling
- Combicool at summer (only heating, not heating2)

**Note** A maximum of one of the two additional registers Heating 2 or EI heating 2 can be integrated into the temperature control sequence.

## Parameterization

**Main Index > Unit > Temp control > Heating**  
**Main Index > Unit > Temp control > Heating 2**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the heating controller. Go to page with all controller settings.
Output signal	0...100 [%]	Present value for heating valve output. Go to page with all analog output settings.
Setpoint Extra Seq	0.0...99.0 [°C]	<b>For Heating 2 only:</b> Setpoint for additional stand-alone heating register.
Frost protection	0...100 [%]	Present value for the frost controller. Go to heating register frost protection page to parameterize frost control.
Pump	– On – Off	Current pump status. Go to heat pump page to parameterize the pump.
Pre heating	– Passive – Active	Present state of preheating. Go to heating register preheating page to parameterize the preheating function for the register.
Frost monitor	– OK. – Frost.	Present state of frost detector. Go to page with digital input settings. For the “Frost” state, the pump starts, the heating valve opens to 100% and the plant is shut down and locked.

### 5.8.2 Heating pump

#### Prerequisite

Heat pump is enabled:

Main Index > Configuration > Configuration 2 > Heating pump <> No  
 Main Index > Configuration > Configuration 2 > Heating 2 pump <> No

#### Function

The pump **starts**, if one of the following conditions is met:

- No fault is pending **and** the heating valve is opened to at least 5 %.  
*or*
- The outside air temperature is less than the pump start tmp  
*or*
- Pump kick is enabled.

The pump **stops** for the following cases:

- A fault occurs.  
*or*
- The heating valve is under 1 %.

#### Record operating hours.

Operating hours for the pump can be recorded and reset:

Main Index > Unit > Operating hours > Heating pump bzw. Heating 2 pump Reset

#### Parameter

**Main Index > Unit > Temp control > Heating > Pump**  
**Main Index > Unit > Temp control > Heating 2 > Pump**

Parameter	Range	Function
Command	– Off – On	Current pump state. Go to page with digital output settings.
Fdbk	– OK – No Fdbk	Present state of pump feedback. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 5 s).

Parameter	Range	Function
Alarm	– OK – Alarm	Current pump alarm state. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Start up delay fdbk	0...36000 [s]	Defines the period after a pump start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Off by fdbk alarm	– No – Yes	Determines, in the event of a feedback fault, whether a pump command is still pending or whether to switch off the command.
Outs tmp start	-64...64 [°C]	The pump starts when the outside air temperature drops below this value. Heat is thus available immediately for heating (passive frost protection) when switching on the plant. The function is disabled when no outside air temperature is configured or the sensor fails.
Min run time	0...36000 [s]	Define the minimum runtime for the pump after a start.

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

### 5.8.3 Pump kick

Prerequisite Pump kick is enabled.  
Main Index > Configuration > Configuration 2 > Heating pump = Yes+Kick  
Main Index > Configuration > Configuration 2 > Heating 2 pump = Yes+Kick

Function The pump is switched on for a short period for longer idle periods. This prevents lock up.

Parameter **Main Index > Unit > Temp control > Heating > Pump**  
**Main Index > Unit > Temp control > Heating 2 > Pump**

Parameter	Range	Function
Kick date / time	Mo 00:00...So 23:29	Weekday and time for pump kick. Sets the weekday (Mon...Sun) and time to run the pump kick. Examples: Mon *.* Each Monday at midnight. Sat 07:* Each Saturday at 7:00 am. * *.* Time is not relevant; the kick interval applies accordingly.
Kick interval	0.0...36000.0 [h]	Idle time for pump kick. Set the idle time after which a pump kick is run. Examples: 168 After 168 hours. 123.4 After 123 hours and 24 minutes. 0 Idle time is not relevant; kick date/time applies accordingly.
Kick on time	0.0...36000 [s]	Set the period for the pump kick. Examples: 10 Period = 10 seconds. 0 Period = 1 controller cycle (ca. 150 ms).

Note Kick date/time = \* \*.\* and kick interval = 0 --->  
No pump kick is run.

## 5.8.4 Heizregister-Frostschutz

Prerequisite Frost protection type is enabled:  
 Master Index > Configuration > Configuration 2, Htg frost protect<> No  
 Master Index > Configuration > Configuration 2, Heating 2 frost protect <> No

Function

- For heat demand frost controller > Heat demand heating controller ---> The output follows the frost controller.
- For heat demand frost controller < Heat demand heat controller ---> The output follows the heating controller.
- Frost control remains active when the plant is off. (Building Protection).
- Controller is disabled when the sensor fails.
- For the "Frost" state (frost detector is triggered), the pump starts, the heating valve opens to 100% and the plant is shut down and locked.

Parameter **Master Index > Unit > Temp control > Heating > Frost protection**  
**Master Index > Unit > Temp control > Heating 2 > Frost protection**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the frost controlled. Go to controller settings page.
Setpoint	-64...64 [°C]	<ul style="list-style-type: none"> <li>– For one setpoint: Present setpoint for the frost controller.</li> <li>– For 2 setpoints: Present setpoint for the frost controller, if the plant is <b>operating</b>.</li> </ul>
Standby Setpoint	-64...64 [°C]	Present setpoint for the frost controller, if the plant is <b>not operating</b> . This value only exists on one of the following settings is selected: Master Index > Configuration > Configuration 2, HtgFrost = Sensor2Spv oder 2Spv+Dtctr

## 5.8.5 Preheat heating register

Prerequisite Preheating is enabled:  
 Master Index > Configuration > Configuration 1, Heating = Yes+PreHeat  
 Master Index > Configuration > Configuration 1, Heating 2 = Yes+PreHeat

Function

- The heating valve is 100% opened for the period "Pre htg on time" if the outside air temperature is lower than "Outs air tmp X1" at plant start. The heating valve then goes to the position defaulted by both auxiliary points and is released for plant start.
- It assumes the present position after the complete heating controller is released.
- The function is blocked for the period "Min off time" after preheating is completed.
- The function is deactivated when the outside air temperature sensor not activated or fails.

Parameter **Main Index > Unit > Temp control > Heating > Preheating**  
**Main Index > Unit > Temp control > Heating 2 > Preheating**

Parameter	Range	Function
Mode	<ul style="list-style-type: none"> <li>– On</li> <li>– Off</li> </ul>	Current status preheating.
Outs air tmp X1	-30.0...5.0 [°C]	Lower design temperature.

Parameter	Range	
Outs air tmp X2	0.0...50.0 [°C]	Upper design temperature.
Output signal Y1	0...100 [%]	Value for lower design temperature.
Output signal Y2	0...100 [%]	Value for upper design temperature.
Pre htg on time	0...600 [s]	Time to preheat lines and register.
Min off time	0.0...1400.0 [min]	Minimum off time for the function after preheating is completed.

## 5.9 Electrical heating / Electrical heating 2

### 5.9.1 General

#### Prerequisite

Electrical heating / Electrical heating 2 are enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

#### Enable electric register

**Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Electrical heating / EI Heating 2	– No	– No (additional) electric register.
	– Analog	– (Additional) electric register with analog control.
	– 1Step	(Additional) single-stage electric heating register.
	– 2Steps	(Additional) two-stage electric heating register.
	– 3Steps	(Additional) three-stage electric heating register.

#### Configuration

**Main Index > Configuration > Configuration 2**

Parameter	Range	Function
EI Htg alarm / EI heating 2 alarm	– No	– No alarm.
	– Alarm	– With alarm.
EI heating 2 control	– StandAlone	– Not integrated in sequence.
	– InSequence	– Integrated in sequence.

#### Function

Both electric registers can be deployed with up to 3 stages (binary). An alarm is possible for each register. Register output is limited by fan out, which prevent the register from overheating. The additional electric heating register can be operated as a separate register with its own setpoint.

The electrical heating register is forced off if:

- Night unoccupied (temperaturstart) cool
- Summer night cooling

#### Note

A maximum of one of the two additional registers Heating 2 or EI heating 2 can be integrated into the temperature control sequence.

#### Stage control

The stages are controlled as follows for electric heating registers:

	DO1	DO2
<b>Off</b>	0	0
<b>Stage1</b>	1	0
<b>Stage2</b>	0	1
<b>Stage3</b>	1	1

## Parameterization

**Main Index > Unit > Temp control > Electrical heating /  
Main Index > Unit > Temp control > EI Heating 2**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the heating controller. Go to controller settings page.
Output signal	0...100 [%]	Present value for output. Go to page with all analog output settings.
Command	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage 1</li> <li>– Stage 2</li> <li>– Stage 3</li> </ul>	Present state of electric register. Go to page with the staged output settings.
Extra Seq setpoint	0.0...99.0 [°C]	<b>For EI Heating 2 only:</b> Setpoint for additional stand-alone heating register.
Alarm	<ul style="list-style-type: none"> <li>– Ok</li> <li>– alarm</li> </ul>	Register alarm state. Go to page with digital inputs.
Start stage 1	0...100 [%]	Controller heat demand to start the first stage.
Start stage 2	Start stage 1...100 [%]	Controller heat demand to start the second stage.
Start stage 3	Start stage 2...100 [%]	Controller heat demand to start the third stage.
Stage hys off	0...Start stage 1 [%]	Shutdown hysteresis of the stages. See example.
Max limitation fan		Go to Max fan limitation page to parameterize the register output limitation by fan output.

Example of shutdown hysteresis

Start stage 1 = 20 %  
Start stage 2 = 40 %  
Start stage 3 = 60 %  
Stage hys off = 10 %

Off Stage 3: 50 %  
Off Stage 2: 30 %  
Off Stage 1: 10 %

### 5.9.2 Max limitation fan

Prerequisite

Electric heating register is enabled.  
Main Index > Configuration > Configuration 1 > Electrical heating <> No  
Main Index > Configuration > Configuration 1 > EI heating 2<> No

Parameter

**Main Index > Unit > Temp control > Electrical heating > Max limitation fan  
Main Index > Unit > Temp control > EI heating 2 > Max limitation fan**

Parameter	Range	Function
		Set the maximum allowable electric register output for the given active fan stage. The value limits the maximum possible control heat demand. The settings depend on electric register and fan output. Must be clarified with the manufacturer as required!
Fan stage 1	0...100 [%]	Allowed electric register output when the fan is operating on stage 1 or using the setpoint with the setpoint for stage 1.
Fan stage 2	0...100 [%]	Allowed electric register output when the fan is operating on stage 2 or using the setpoint with the setpoint for stage 2.
Fan stage 3	0...100 [%]	Allowed electric register output when the fan is operating on stage 3 or using the setpoint with the setpoint for stage 3.

Example

Fan stage1 = 30 %  
Start stage2 = 40 %

In this case, the controller output for fan state 1 is limited to 30%. So that the switch-on point of 40% for electric register stage 2 is never achieved.

## 5.10 Cooling / Cooling 2

### 5.10.1 General

#### Prerequisite

Cooling / Cooling 2 enabled and preconfigured in configuration 1, configuration 2 and configuration I/Os.

#### Enable cooling register

**Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Cooling / Cooling 2	<ul style="list-style-type: none"> <li>– No</li> <li>– Water</li> <li>– DX 1Step</li> <li>– DX 2Steps</li> <li>– DX 3Steps</li> </ul>	<ul style="list-style-type: none"> <li>– No (additional) cooling register.</li> <li>– (additional) cold water register.</li> <li>– (additional) 1 step direct expansion evaporator aggregate.</li> <li>– (additional) 2 step direct expansion evaporator aggregate.</li> <li>– (additional) 3 step direct expansion evaporator aggregate.</li> </ul>

#### Configuration

**Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Cooling pump / Cooling 2 pump	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> <li>– Yes+Kick</li> </ul>	<ul style="list-style-type: none"> <li>– No cooling register pump.</li> <li>– Cooling register pump without pump kick.</li> <li>– Cooling register pump with pump kick.</li> </ul>
Clg pump alarm / Cooling 2 pump alm	<ul style="list-style-type: none"> <li>– No</li> <li>– Alarm</li> <li>– Fdbk</li> <li>– Both</li> </ul>	<ul style="list-style-type: none"> <li>– Pump without alarm or feedback.</li> <li>– Pump with alarm.</li> <li>– Pump with feedback.</li> <li>– Pump with alarm and feedback.</li> </ul>
ClgDX alarm / Cooling 2 Dx alarm	<ul style="list-style-type: none"> <li>– No</li> <li>– Alarm</li> <li>– Fdbk</li> <li>– Both</li> </ul>	<ul style="list-style-type: none"> <li>– Direct expansion evaporator without alarm or feedback.</li> <li>– Direct expansion evaporator with alarm.</li> <li>– Direct expansion evaporator with feedback.</li> <li>– Direct expansion evaporator with alarm and feedback.</li> </ul>
Cooling 2 control	<ul style="list-style-type: none"> <li>– StandAlone</li> <li>– InSequence</li> </ul>	<ul style="list-style-type: none"> <li>– Not integrated in sequence.</li> <li>– Integrated in sequence.</li> </ul>

#### Function

You can select between cold water register and direct expansion evaporator for both cooling registers. The cold water register can be operated with or without pump (with pump kick, alarm, feedback). The direct expansion evaporator register can have up to 3 stages (binary control). It blocks cooling when outside air temperatures are too low. The additional cooling register can be operated as an option as a separate register with its own setpoint, or an additional register can be integrated into the temperature control sequence.

The cooling register is forced off if:

- Night unoccupied (temperaturstart) heating
- Summer night cooling

#### Stage control

The stages are controlled as follows for direct expansion evaporators:

	DO1	DO2
<b>Off</b>	0	0
<b>Stage1</b>	1	0
<b>Stage2</b>	0	1
<b>Stage3</b>	1	1

## Parameterization

Main Index > Unit > Temp control > Cooling /  
Main Index > Unit > Temp control > Cooling 2

Parameter	Range	Function
Controller	0...100 [%]	Present value for cooling controller. Go to controller settings page.
Output signal	0...100 [%]	Present value for heating valve output. Go to page with all analog output settings.
Extra Seq setpoint	0.0...99.0 [°C]	<b>For Cooling 2 only:</b> Setpoint for additional stand-alone cooling register.
Disable by outs tmp	-64...64.0 [°C]	Cooling is blocked when the outside air temperature is below this value. The function is disabled when no outside air temperature is configured or the sensor fails.
Pump	– On – Off	Current pump status. Jump to pump for cooling register page to parameterize the pump.
Direct expansion	– Off – Stage1 – Stage2 – Stage3	Present state of direct expansion evaporator. Jump to DX cooling page to parameterize the direct expansion evaporator.
Max limitation fan	---	Go to Cooling Fan Max Limitation page to parameterize output limitation for the direct expansion evaporator.

### 5.10.2 Cooling pump

#### Prerequisite

Pump for cooling register enabled:

Main Index > Configuration > Configuration 2 > Cooling Pump <> No  
Main Index > Configuration > Configuration 2 > Cooling 2 pump <> No

#### Function

The pump **starts**, when the following conditions are met:

- No fault is pending **and** the cooling valve is at least opened to 5 %.
- or*
- Pump kick is enabled.

The pump **stops** for the following cases:

- A fault occurs.
- or*
- The cooling valve is opened under 1 %.

#### Record operating hours.

Operating hours for the pump can be recorded and reset:

Main Index > Unit > Operating hours > Cooling Pump or Cooling 2 pump reset.

#### Parameter

Main Index > Unit > Temp control > Cooling > Pump  
Main Index > Unit > Temp control > Cooling 2 > Pump

Parameter	Range	Function
Command	– On – Off	Present value of the pump. Go to page with digital output settings.
Fdbk	– OK. – No fdbk	Present state of pump feedback. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Alarm	– – OK.	Current pump alarm state.



Parameter	Range	Function
	– Alarm	Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Start updelay fdbk	0...36000 [s]	Defines the period after a pump start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Off by fdbk alarm	– No – Yes	Determines, in the event of a feedback fault, whether a pump command is still pending or whether to switch off the command.
Min run time	0...36000 [s]	Define the minimum runtime for the pump after a start. In the event of a fault, the evaporator is shut down immediately without regard to the minimum runtime.

**Note** Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

### 5.10.3 Pump kick

**Prerequisite** Pump kick is enabled.

Main Index > Configuration > Configuration 2 > Cooling pump = Yes+Kick  
Main Index > Configuration > Configuration 2 > Cooling 2 pump = Yes+Kick

**Function** The pump is switched on for a short period for longer idle periods. This prevents lock up.

**Parameter** **Main Index > Unit > Temp control > Cooling > Pump**  
**Main Index > Unit > Temp control > Cooling 2 > Pump**

Parameter	Range	Function
Kick date / time	Mo 00:00...So 23:29	Weekday and time for pump kick. Sets the weekday (Mon...Sun) and time to run the pump kick. Examples: Mon *.* Each Monday at midnight. Sat 07:* Each Saturday at 7:00 am. * *.* Time is not relevant; the kick interval applies accordingly.
Kick interval	0.0...36000.0 [h]	Idle time for pump kick. Set the idle time after which a pump kick is run. Examples: 168 After 168 hours. 123.4 After 123 hours and 24 minutes. 0 Idle time is not relevant; kick date/time applies accordingly.
Kick on time	0.0...36000 [s]	Set the period for the pump kick. Examples: 10 Period = 10 seconds. 0 Period = 1 controller cycle (ca. 150 ms).

**Note** Kick date/time = \* \*.\* and kick interval = 0 --->  
No pump kick is run.

## 5.10.4 DX cooling control

Prerequisite Direct expansion evaporator is enabled:  
 Main Index > Configuration > Configuration 1 > Cooling = DX [x]Step  
 Main Index > Configuration > Configuration 1 > Cooling 2 = DX [x]Step

Parameter **Main Index > Unit > Temp control > Cooling > Direct expansion**  
**Main Index > Unit > Temp control > Cooling 2 > Direct expansion**

Parameter	Range	Function
Command	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage1</li> <li>– Stage2</li> <li>– Stage3</li> </ul>	Present state of direct expansion evaporator. Go to page with the staged output settings.
Fdbk	<ul style="list-style-type: none"> <li>– Ok</li> <li>– Alarm</li> </ul>	Present value of the feedback for the direct expansion evaporator. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 1 s).
Alarm	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Alarm</li> </ul>	Present alarm state of direct expansion evaporator. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Start up delay fdbk	0...36000 [s]	Defines the period after a start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Min run time	0...36000 [s]	Define the minimum runtime after a start.
Min off time	0...600 [s]	Minimum idle time for the direct expansion evaporator after a stop.
Min stage time	5...600 [s]	Minimum runtime for a stage prior to stepping up to the next step. Note: This period remains active when intervening using the operator unit: Even for a direct jump from off to stage 3, the output remains on each individual step for the minimum runtime.
Start stage 1	0...100 [%]	Controller refrigerator demand to start the first stage.
Start stage 2	Start stage 1...100 [%]	Controller refrigeration demand to start the second stage.
Start stage 3	Start stage 2...100 [%]	Controller refrigeration demand to start the third stage.
Stage hys off	0...Start stage 1 [%]	Shutdown hysteresis of the stages. See example.

Example of shutdown hysteresis

Start stage 1 = 20 %  
 Start stage 2 = 40 %  
 Start stage 3 = 60 %  
 Stage hys off = 10 %

Off stage 3: 50 %  
 Off stage 2: 30 %  
 Off stage 1: 10 %

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

## 5.10.5 Max limitation fan

### Prerequisite

Direct expansion evaporator is enabled:  
 Main Index > Configuration > Configuration 1 > Cooling = DX...  
 Main Index > Configuration > Configuration 1 > Cooling 2= DX...

### Parameter

**Main Index > Unit > Temp control > Cooling > Max limitation fan**  
**Main Index > Unit > Temp control > Cooling 2 > Max limitation fan**

Parameter	Range	Function
		Set the maximum allowable expansion evaporator output for the given active fan stage. The value limits the maximum possible refrigeration demand. The settings depend on expansion evaporator and fan output. Must be clarified with the manufacturer as required!
Fan stage 1	0...100 [%]	Allowed expansion evaporator output when the fan is operating on stage 1 or using the setpoint with the setpoint for stage 1.
Fan stage 2	0...100 [%]	Allowed expansion evaporator output when the fan is operating on stage 2 or using the setpoint with the setpoint for stage 2.
Fan stage 3	0...100 [%]	Allowed expansion evaporator output when the fan is operating on stage 3 or using the setpoint with the setpoint for stage 3.

### Example

FanStage1 = 30 %  
 StartStage2 = 40 %

In this case, the controller output for fan state 1 is limited to 30%. So that the switch-on point of 40% for expansion evaporator stage 2 is never achieved.

## 5.11 Humidity control

### 5.11.1 General

This section described parameters and settings relating to humidification and dehumidification.

### Prerequisite

The required sensors and functions are enabled in configuration 1, configuration 2 and configuration I/Os.

Cooling must also be enabled for dehumidification.

### Enable

**Main Index > Configuration > Configuration 1**

Parameter	Range	Function
Room hum sensor	– No – Yes	Room humidity sensor.
Supply air hum sensor	– No – Yes	Supply air humidity sensor.
Outs air hum sensor	– No – Yes	Outside air humidity sensor.
Cooling	– – No – Water – DX 1step	Only required for dehumidification! – No (additional) cooling register. – (additional) cold water register. – (additional) 1 step direct expansion evaporator aggre-

Parameter	Range	Function
	<ul style="list-style-type: none"> <li>- DX2steps</li> <li>- DX3steps</li> </ul>	<ul style="list-style-type: none"> <li>gate.</li> <li>- (additional) 2 step direct expansion evaporator aggregate.</li> <li>- (additional) 3 step direct expansion evaporator aggregate.</li> </ul>
Humidity control	<ul style="list-style-type: none"> <li>- No</li> <li>- Hum</li> <li>- Dehum</li> <li>- Hum+Dehum</li> </ul>	<ul style="list-style-type: none"> <li>- No humidification and dehumidification.</li> <li>- Humidification only.</li> <li>- Dehumidification only.</li> <li>- Humidification and dehumidification.</li> </ul>

## Configuration

### Main Index > Configuration > Configuration 2

Parameter	Range	Function
Hum control mode	<ul style="list-style-type: none"> <li>- No</li> <li>- Room</li> <li>- Supply</li> <li>- RoomCasc</li> </ul>	<ul style="list-style-type: none"> <li>Type of humidity control.</li> <li>- No humidity control.</li> <li>- Room control only.</li> <li>- Supply air temperature control only.</li> <li>- Room / supply air temperature cascade control.</li> </ul>
Hum control unit	<ul style="list-style-type: none"> <li>- Relative</li> <li>- Absolute</li> <li>- CacsRelAbs</li> </ul>	<ul style="list-style-type: none"> <li>Type of humidity control.</li> <li>- Relative humidity control.</li> <li>- Absolute humidity control.</li> <li>- Cascade control with relative room and absolute supply air humidity control.</li> </ul>
Hum stpt selection	<ul style="list-style-type: none"> <li>- Hum/Dehum</li> <li>-</li> <li>- +/- HalfDz</li> <li>- Hum+Dz</li> <li>- dehum-Dz</li> </ul>	<ul style="list-style-type: none"> <li>Predefined variants for humidity setpoints:</li> <li>- Humidification and dehumidification setpoint is entered directly.</li> <li>- Base setpoint and dead zone is entered.</li> <li>- Humidification setpoint and dead zone is entered.</li> <li>- Dehumidification setpoint and dead zone is entered.</li> </ul>
Dehum tmp prio	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>	<ul style="list-style-type: none"> <li>Dehumidification is reduced dependent on the heating output:</li> <li>- Function not enabled.</li> <li>- As of 90%, heating valve position reduces dehumidification.</li> </ul>
Dew point control	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>	<ul style="list-style-type: none"> <li>Dew point monitoring.</li> </ul>
Hum deviation alarm	<ul style="list-style-type: none"> <li>- No</li> <li>- Room/Exh</li> <li>- Supply</li> <li>- Sply+RmExh</li> </ul>	<ul style="list-style-type: none"> <li>Monitors setpoint/actual value of humidification. An alarm is triggered for deviations over a certain period:</li> <li>- No monitoring.</li> <li>- Monitors room humidity only.</li> <li>- Monitors supply air humidity only.</li> <li>- Monitors supply air and room humidity.</li> </ul>
Humidifier pump	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> <li>- Yes+Kick</li> </ul>	<ul style="list-style-type: none"> <li>- No humidifying pump.</li> <li>- Humidifying pump without pump kick.</li> <li>- Humidifying pump with pump kick.</li> </ul>
Hum pump alarm	<ul style="list-style-type: none"> <li>- No</li> <li>- Alarm</li> <li>- Fdbk</li> <li>- Both</li> </ul>	<ul style="list-style-type: none"> <li>- Pump without alarm or feedback.</li> <li>- Pump with alarm.</li> <li>- Pump with feedback.</li> <li>- Pump with alarm and feedback.</li> </ul>
Humidifier fdbk	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>	<ul style="list-style-type: none"> <li>- Humidifier without feedback.</li> <li>- Humidifier with feedback.</li> </ul>

Note

Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

Function

Water vapor or air washer is used for humidification.  
 Enable and analog control signal planned for the humidifier.

A pump (with or without kick functions, with alarm and/or feedback signal) can be enabled. Humidification can be locked in summer.

It can monitor achieving the setpoint or deviations over longer periods. Any eventual dehumidification can be limited when heat demand is too large.

It can also monitor and impact dew point and supply air temperature.

**Parameter** **Main Index > Unit > Humidity control**

Parameter	Range	Function
Act controlled hum	---	Actual humidity used to control humidity. This may be supply air or room humidity depending on setting and control type.
Setpoints	---	Go to setpoint page with all setpoints related to humidity control: Humidification, dehumidification, cascade control, deviation alarm.
Cascade controller	---	Displays humidification and dehumidification setpoint. Go to cascade controller page with detailed settings.
Max controller sply		Go to page for max ctrl sply to parameterize the maximum limit controller. You can limit the maximum allowable supply air humidity via the supply air humidity sensor when room control only is enabled.
Humidification	0...100 [%]	Present value of humidity control. Go to parameter page for humidity control.
Dehumidification	0...100 [%]	Present value of dehumidification control. Go to parameter page for dehumidification control.
Fan compensation	0...100 [%]	Present value of the fan humidity compensation. Go to parameter page for fan humidity compensation.
Summer disable	- No - Yes	Shuts off humidification in the summer (summer/winter changeover must be enabled).
Dew point	-64...64 [°C]	Present calculated dew point.
Dew point dead zone	-64...64 [°C]	Dead zone for dew point. (Minimum discharge temperature for temperature control = present calculated dew point + dead zone.

**5.11.2 Humidity setpoints**

Prerequisite

Displays only the functions and values enabled in configuration 1 or configuration 2. All other functions are hidden.

**Parameterization** **Main Index > Unit > Humidity control > Setpoints**

Parameter	Range	Function
Act controlled hum	- Room [%rH] oder [g/kg] - Supply [%rH] oder [g/kg]	Actual humidity used for control (%rH or g/kg depending on control type). This may be supply air or room humidity depending on setting and control type.
Act dehum stpt	0.0...100.0 [%rH] oder [g/kg]	Actual calculated room or supply air dehumidification setpoint (%rH or g/kg).
Act hum stpt	0.0...100.0 [%rH] oder [g/kg]	Actual calculated room or supply air humidification setpoint (%rH or g/kg).

Parameter	Range	Function
Act sply dehum stpt	0.0...100.0 [%rH] oder [g/kg]	Actual calculated supply air humidification setpoint for a cascade control (%rH or g/kg).
Act sply hum stpt	0.0...100.0 [%rH] oder [g/kg]	Actual calculated supply air humidification setpoint for a cascade control (%rH or g/kg).
Setpoint	0...100 [%rH]	Base setpoint. Only available when Hum stpt selection = +/-Half degree Celsius.
Dead zone	0...100 [%rH]	Comfort dead zone. Only available when Hum stpt selection = Dehum -degrees Celsius or Hum+degrees Celsius or +/-half degree Celsius.
Dehum stpt	0...100 [%rH]	Setpoint for dehumidification. Only available when Hum stpt selection = Hum/dehum or dehum/-degree Celsius.
Hum stpt	0...100 [%rH]	Setpoint for humidification. Only available when Hum stpt selection = Hum/dehum or Hum/-degree Celsius.
Setpoint	0...100 [g/kg]	Base setpoint. Only available when Hum stpt selection = +/-Half degree Celsius.
Dead zone	0...100 [g/kg]	Comfort dead zone. Only available when Hum stpt selection = Dehum -degrees Celsius or Hum+degrees Celsius or +/-half degree Celsius.
Dehum stpt	0...100 [g/kg]	Setpoint for dehumidification. Only available when Hum stpt selection = Hum/dehum or dehum/-degree Celsius.
Hum stpt	0...100 [g/kg]	Setpoint for humidification. Only available when Hum stpt selection = Hum/dehum or Hum/-degree Celsius.
Sply hum min stpt	0...100 [%rH]	Lowest allowable supply air humidity for a cascade control.
Sply hum max stpt	0...100 [g/kg]	Highest allowable supply air humidity for a cascade control.
Sply hum max stpt	0...100 [%rH] oder [g/kg]	Highest allowable supply air humidity for pure cascade control for room humidity control with supplemental available supply air humidity sensor. Limited control of the humidity controller occurs for supply air humidity > Supply hum min.
Sply hum dev alarm	---	Go to parameter page for supply air humidity monitoring.
Room hum dev alarm	---	Go to parameter page for room humidity monitoring.

### 5.11.3 Humidity deviation alarms

#### Prerequisite

Supply air humidity deviation alarm:

- A supply air humidity sensor must be available:  
Main Index > Configuration > Configuration 1 > **Supply hum sensor = Yes.**
- Deviation alarm must be enabled:  
Main Index > Configuration > Configuration 2 > **Deviation alarm hum <> No.**

Room air humidity deviation alarm:

- A room air humidity sensor must be available:  
Main Index > Configuration > Configuration 1 > **Room hum Sensor = Yes.**

#### Function

Setpoint/actual value monitoring of humidity: An alarm is triggered for the following cases when the humidity deviates from the setpoint during a certain period:

- Actual value < Min limit.
- Actual value > Setpoint + maximum.
- Actual value < Setpoint – maximum.
- When setpoint – maximum < Min limit, min limit applies as the comparison value.

**Parameter**

**Main Index > Unit > Humidity control > Hum setpoints > Sply hum dev alarm**  
**Main Index > Unit > Humidity control > Hum setpoints > Room hum dev alarm**

Parameter	Range	Function
Alarm	– Passive – Active	Alarm state. Go to settings page for digital alarms. Set all control-related settings such as alarm delay (default 3600 s).
Min limit	0...99.0 [%rH] oder [g/kg]	An alarm is triggered below this humidity.
Maximum deviation	0...99.0 [%rH] oder [g/kg]	Maximum allowable deviation between setpoint and actual value.
Start up delay	0...36000 [s]	The function is enabled after this period after a start.

**Note**

Monitoring is switched off when the humidity sensor fails.

### 5.11.4 Supply maximum controller

---

**Prerequisite**

Main Index > Configuration > Configuration 1 > **Supply hum sensor = Yes**  
 Main Index > Configuration > Configuration 2 > **Hum control mode = Room**

**Function**

Limit supply air humidity for room control only to prevent discharge humidity that is too high.

**Parameterization**

**Main Index > Unit > Humidity control > Max controller sply**

Parameter	Range	Function
Max controller sply	0...100 [%rH] oder [g/kg]	Actual value for the maximum limit controller. Go to controller settings page. This is where you enter all control-related settings.
Max setpoint	0.0...100 [%rH] oder [g/kg]	Highest allowable supply air humidity for a room humidity control. Limited control of the humidity controller occurs for supply air humidity > Max.

### 5.11.5 Humidification controller

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**Prerequisite**

Main Index > Configuration > Configuration 1 > **Humidity control = Hum oder Dehum+Hum**

**Function**

Humidification controller

**Parameter**

**Main Index > Unit > Humidity control > Humidification**

Parameter	Range	Function
Controller	0...100 [%]	Present value for the controller. Go to page with all controller settings.
Output signal	0...100 [%]	Present value for output. Go to page with all analog output settings.
Command	– Off – On	Present state of humidifier. Go to page with all digital output settings.
Feedback	– Ok – No Fdbk	Condition: Master Index > Configuration > Configuration 2 > Humidifier fdbk <> No. Present value of the feedback. Go to page with all digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Pump.	– Off – On	Current pump status. Go to humidifier pump page.
Start up delay	0...36000 [s]	Defines the period after a humidifier start without feedback before a feed-

Parameter	Range	Function
fdbk		back alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Off by fdbk alarm	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Determines, in the event of a feedback fault, whether a humidifier command is still pending or whether to switch off the command.

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.

### 5.11.6 Humidifier pump

Prerequisite Humidifier pump is enabled:  
Main Index > Configuration > Configuration 2 > **Humidifier Pump <> No**

Function The pump **starts**, if one of the following conditions is met:

- No fault is pending **and** the output for the humidifier controller is opened to at least 5 %.
- or*
- Pump kick is enabled.

The pump **stops** for the following cases:

- A fault occurs.
- or*
- The humidifier controller is under 1 %. Which conditions apply here?

Record operating hours. Operating hours for the pump can be recorded and reset:  
Main Index > Unit > Operating hours > Humidifier pump

**Parameter Main Index > Unit > Humidity control > Humidification > Pump**

Parameter	Range	Function
Command	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Current pump state. Go to page with digital output settings.
Feedback	<ul style="list-style-type: none"> <li>– OK.</li> <li>– No Fdbk</li> </ul>	Present state of pump feedback. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 5 s).
Alarm	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Alarm</li> </ul>	Current pump alarm state. Go to page with digital input settings. For example, you can set the time for jitter protection (Default: 0 s).
Start up delay fdbk	0...36000 [s]	Defines the period after a pump start without feedback before a feedback alarm is triggered. Jitter time is enabled exclusively if the feedback is pending after this period.
Off by fdbk alarm	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Determines, in the event of a feedback fault, whether a pump command is still pending or whether to switch off the command.
Min run time	0...36000 [s]	Define the minimum runtime for the pump after a start.

Note Feedback can only be used as alarm, when Contact function = NO (Normally Open) and the element is set to ON.



## 5.11.7 Humidifier pump kick

**Prerequisite** Pump kick is enabled.  
Main Index > Configuration > Configuration 2 > Humidifier pump = Yes+Kick

**Function** The pump is switched on for a short period for longer idle periods. This prevents lock up.

**Parameter** **Main Index > Unit > Humidity control > Humidification > Pump**

Parameter	Range	Function
Kick date / time	Mo 00:00...So 23:29	Weekday and time for pump kick. Sets the weekday (Mon...Sun) and time to run the pump kick. Examples: Mon *.* Each Monday at midnight. Sat 07:* Each Saturday at 7:00 am. * *.* Time is not relevant; the kick interval applies accordingly.
Kick interval	0.0...36000.0 [h]	Idle time for pump kick. Set the idle time after which a pump kick is run. Examples: 168 After 168 hours. 123.4 After 123 hours and 24 minutes. 0 Idle time is not relevant; kick date/time applies accordingly.
Kick on time	0.0...36000 [s]	Set the period for the pump kick. Examples: 10 Period = 10 seconds. 0 Period = 1 controller cycle (ca. 150 ms).

**Note** Kick date/time = \*.\* and kick interval = 0 --->  
No pump kick is run.

## 5.11.8 Fan compensation

**Prerequisite** Main Index > Configuration > Configuration 1 > **Room hum sensor = Yes**  
Main Index > Configuration > Configuration 2 > **Fan comp humidity = Yes**

**Enable** **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Fan comp humidity	- No - Yes	Room-temperature dependent fan compensation.

**Function** The controller output reduces or increases the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

Fan setpoints are increased or decreased, if:

- KP > 0: Room humidity < setpoint.
- KP < 0: Room humidity > setpoint

## Parameterization

### Main Index > Unit > Humidity control > Fan compensation

Parameter	Range	Function
Controller	0...100 [%]	Present value for the controller. Go to controller settings page.
Setpoint	0...100 [%]	Controller setpoint relating to the room humidity.
Function	<ul style="list-style-type: none"><li>– Increase</li><li>– Decrease</li></ul>	<ul style="list-style-type: none"><li>– Increase the fan setpoint.</li><li>– Reduce the fan setpoint.</li></ul>

#### Example

- Room humidity setpoint: 50 %rH.
- Present room humidity: 40 % rH.
- > Controller output > 0 % (e.g. 50 %).

#### Switch function: Increase

The controller output increases the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max Force, e.g. = 120 Pa).
- Maximum allowable fan compensation (100 % compensation): 40 %.
- Controller output: 50 %.
- > New setpoint = 80 Pa + (40 Pa \* 50 %) = 100 Pa.

#### Switch function: Decrease

The controller output reduces the fan setpoint relating to the maximum allowable fan compensation (See as well Fan compensation).

- Setpoint supply air pressure: 80 Pa (maximum possible setpoint = Setpoint of the maximum enabled stage + Max Force, e.g. = 120 Pa).
- Maximum allowable fan compensation (100 % compensation): 40 Pa.
- Controller output: 50 %.
- > New setpoint = 80 Pa – (40 Pa \* 50 %) = 60 Pa.

## 5.12 Air quality control

#### Prerequisite

Main Index > Configuration > Configuration 2 > **Fan comp air qual = Yes**  
*und/oder*

Main Index > Configuration > Configuration 1 > **Hrec comp air qual = Yes**

#### Function

Fans (see fan compensation) and/or mixed air dampers are influenced based on air quality. The fresh air volume is increased when CO<sub>2</sub> content is too high (fan speed increases; recirculation flow is reduced). The fresh air volume is increased when CO content is too high (fan speed decreases; recirculation flow is increased).

#### Parameter

### Main Index > Unit > Air quality control

Parameter	Range	Function
Controller	0...100 [%]	Present value for the controller. Go to controller settings page.
Function	<ul style="list-style-type: none"><li>– Normal</li><li>– Inverted</li></ul>	The control direction of the controller must be selected depending on demand: Normal for CO <sub>2</sub> . Inverted for CO.
Setpoint	0...3000 [ppm]	Air quality control setpoint.

## 5.13 Auxiliary functions

### 5.13.1 General

Prerequisites In Configuration 1: keine

**Configuration** **Main Index > Configuration > Configuration 2**

Parameter	Range	Function
Auxiliary input	<ul style="list-style-type: none"> <li>– No</li> <li>– Input</li> <li>– Alm</li> <li>– Inp+Alm</li> </ul>	<ul style="list-style-type: none"> <li>– No auxiliary input.</li> <li>– Auxiliary input for display only.</li> <li>– Auxiliary input with alarm.</li> <li>– Two auxiliary inputs: To display and with alarm.</li> </ul>
Aux tmp sensor	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Auxiliary input for temperature sensor.
Aux TSP output	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	An auxiliary digital output controller by its own time switch program.
Aux A outp fan	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Auxiliary analog output that provides a 0-10 V signal depending on the present fan step.
Aux op mode indicat	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Auxiliary digital output that displays whether a desired operating mode for the plant (e.g. Comfort, Off) is enabled.

Function These auxiliary functions (inputs, outputs, TSP) have no influence on control. They are used exclusively to display, switch or control independent devices.

**Parameter** **Main Index > Unit > Auxiliary**

Parameter	Range	Function
TSP output	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Present state of the output controlled by the time switch program. Go to parameter page for the output.
Analog output	0...100 [%]	Present value of output Aux A outp fan. Go to page with all analog output settings.
A outp fan step 0	0...100 [%]	Voltage value at output for shut off plant (for plant faults as well).
A outp fan step 1	0...100 [%]	Voltage value on the output for active fan step 1 (setpoint 1 for controlled fans).
A outp fan step 2	0...100 [%]	Voltage value on the output for active fan step 2 (setpoint 2 for controlled fans).
A outp fan step 3	0...100 [%]	Voltage value on the output for active fan step 3 (setpoint 3 for controlled fans).
Alarm input	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Present state of alarm for auxiliary input. Go to page with digital input settings. The behavior NO/NC for the input can be changed there. <ul style="list-style-type: none"> <li>– Logical 0 at input.</li> <li>– Logical 1 at input.</li> </ul>
Input	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Present state of input for auxiliary input. Go to page with digital input settings. The behavior NO/NC for the input can be changed there. <ul style="list-style-type: none"> <li>– Logical 0 at input.</li> <li>– Logical 1 at input.</li> </ul>
Auxiliary tmp	-64.0...64.0 [°C]	Present value of temperature at input aux tmp sensor. Go to page with analog input settings.

Parameter	Range	Function
Op mode output	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Displays whether the desired (using Op mode outp select) operating mode for the plant is enabled. Go to page with digital output settings.
Op mode outp select	<ul style="list-style-type: none"> <li>– Off</li> <li>– On/Comfort</li> <li>– Economy</li> <li>– Manual</li> <li>– Osstp</li> <li>– Night clg</li> <li>– Unocc</li> <li>– Night kick</li> <li>– Fire dmper</li> <li>– Fire</li> <li>– Stop</li> <li>– Running</li> <li>– Htg full</li> <li>– Hrec full</li> <li>– Clg full</li> </ul>	<p>Selection of operating modes to be displayed on output op mode output:</p> <ul style="list-style-type: none"> <li>– Plant off.</li> <li>– Plant on or in Comfort mode.</li> <li>– Plant in Economy mode.</li> <li>– Manual intervention enabled.</li> <li>– Boost enabled.</li> <li>– Night cooling, active.</li> <li>– Not used, active (Temp. difference start).</li> <li>– Plant kick enabled.</li> <li>– Fire damper test enabled.</li> <li>– Fire alarm enabled; plant in fire alarm mode.</li> <li>– Plant stopped and locked.</li> <li>– Plant is operating (On/Co/Ec/Osstp/ NightClg/Unocc/Nightkick/Startup).</li> <li>– Hot water or electrical register on 100 %.</li> <li>– Heat recovery (plates, water, heat wheel) at 100%.</li> <li>– Cooling at 100 %.</li> </ul>

### 5.13.2 TSP output

#### Parameter Main Index > Unit > Auxiliary > TSP output

Parameter	Range	Function
Output	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Present state for output. Go to page with digital output settings.
Manual operation	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> <li>– NULL</li> </ul>	<p>Manual adjustment of output (always has the highest priority).</p> <ul style="list-style-type: none"> <li>– Off.</li> <li>– On.</li> <li>– Auto: The time switch catalog or the BACS controls the output.</li> </ul>
Schedule	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Present value for the time switch program. Go to page with time switch program settings.
Calendar exception	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<p>Present status of calendar for exception days. Go to page with calendar settings.</p> <ul style="list-style-type: none"> <li>– Calendar not in intervention.</li> <li>– Calendar in intervention.</li> </ul>
From BACS	<ul style="list-style-type: none"> <li>– Auto</li> <li>–</li> <li>– Off</li> <li>– On</li> </ul>	<p>Control output via BACS:</p> <ul style="list-style-type: none"> <li>– No intervention by BACS: The time switch catalog only acts on the output in this position.</li> <li>– Off from BACS.</li> <li>– On from BACS.</li> </ul>

## 5.14 Alarm handling (Alarm outputs)

### Enable

### Main Index > Configuration > Configuration 1

Parameter	Range	Function
Alarm outputs	<ul style="list-style-type: none"> <li>– None</li> <li>– One</li> <li>– Two</li> </ul>	Number of alarm outputs.

### Function

Displays communication module states and parameterization of alarm outputs. Is determines the alarm to be displayed (high A and/or low B) for a single alarm output. For two outputs, output 1 always displays the high (A) alarms and output 2 the low (B) alarms.

### Parameter

### Main Index > Alarm handling

Parameter	Range	Function
Alarm acknowledge	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Acknowledge button (for pending alarms) or reset button (for alarms that are no longer pending).
Danger (A)	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Displays alarm class danger (The plant is shut down without delay, except for the special case for fire mode).
Critical (A)	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Displays alarm class critical (the plant is shut down normally).
Low (B)	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Displays alarm class low (plant continues to operate).
Warning (C)	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Displays warnings (plant continues to operate). Is not displayed on digital outputs; see below. <ul style="list-style-type: none"> <li>– No warning.</li> <li>– Warning pending.</li> </ul>
Alarm outp 1 select	<ul style="list-style-type: none"> <li>– High (A)</li> <li>– H+L (A+B)</li> </ul>	Function of alarm output 1 for a single output: <ul style="list-style-type: none"> <li>– Signals only alarms for group a (Danger and Critical).</li> <li>– Signals only alarms for groups A and B (Danger, Critical and Low).</li> </ul>
Alarm output 1	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Present state of alarm output 1. Go to page with digital output settings.
Alarm output 2	<ul style="list-style-type: none"> <li>– Normal</li> <li>– Alarm</li> </ul>	Present state of alarm output 2. Go to page with digital output settings.
Modbus communicat	0...1	Displays Modbus communication state.
Comm module 0		Displays communication state of the module on position 0 (only available when module is plugged in). Go to Comm module overview page.
Comm failure	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<ul style="list-style-type: none"> <li>– No error.</li> <li>– Pending error on module 0.</li> </ul>
State		Cause of error.
Comm module 1		Displays communication state of the module on position 1 (only available when module is plugged in). Go to Comm module overview page.
Comm failure	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<ul style="list-style-type: none"> <li>– No error.</li> <li>– Pending error on module 1.</li> </ul>
State		Cause of error.
Comm module 2		Displays communication state of the module on position 2 (only available when module is plugged in). Go to Comm module overview page.
Comm failure	<ul style="list-style-type: none"> <li>– Passive</li> </ul>	<ul style="list-style-type: none"> <li>– No error.</li> </ul>

Parameter	Range	Function
State	- Active	- Pending error on module 2. Cause of error.

# 6 Detail pages: Inputs and outputs

## 6.1 General

This section describes all the detail pages for analog and digital inputs and outputs as well as multistate (=digital modulating) outputs.

Most of the listed and briefly outlines values are parameters are designed exclusively for experts.

- Note Possible reliability states (messages) for the base controller and the extension modules may differ.
- Access level Detail pages can only be read/written at the following access levels:
- **Read:** Levels 6, 4 and 2, Special Settings with levels 4 and 2 only.
  - **Write:** Levels 4 and 2.
- Caution Changes to parameters and settings may have a massive impact on plant operation and safety.

## 6.2 Analog outputs

### 6.2.1 General

- Access The details page for analog outputs can be reached multiple ways, including:
- Main Index > Unit > Outputs > Analog outputs > Plant Element  
*or*
  - Main Index > Unit > Element Control > Analog Element > Output Signal
- Example
- Main Index > Unit > Outputs > Analog outputs > Exh fan outp signal  
*or*
  - Main Index > Unit > Fan Control > Exhaust fan > Output signal

#### Parameter

Parameter	Range	Function
Manual operation	0...100 [%]	Manual intervention on the output. The output goes directly to manual operation when entering a value (for 0 as well). Is not automatically reset. An alarm can be triggered after a set period when the manual alarm function is enabled.
Manual operation	– NULL – Active	– Auto: The program controls the output. Reset a manual intervention to auto mode. – Displays a manual intervention. The value entered above (0...100 %) controls the output.
Present Value	0...100 [%]	Present value for output.

Parameter	Range	Function
Reliability	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Other</li>   <li>– Process Error</li>   <li>– Config err</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>– Basis controller: Calibration lacking (output defective). Extension module POL955: Calibration lacking (Output defect) or communication to base controller unavailable or the output is incorrectly configured.</li> <li>– Basis controller: Process error in program.</li> <li>– Extension module: Message no available.</li> <li>– Basis Controller: Output configured incorrectly. Extension module: Message no available.</li> </ul>
Active prio	<ul style="list-style-type: none"> <li>– Out of serv.</li> <li>– Prio1</li> <li>– ....</li> <li>– Prio16</li> <li>– Default</li> </ul>	Displays the wired Prio elements currently on the output.
Special settings	---	Go to Special settings page (at access levels 4 and 2 only).
Special infos	---	Go to Special info page (at access levels 6, 4 and 2 only).
Priority array	---	Go to Priority array page (at access levels 6, 4 and 2 only).

## 6.2.2 Special settings

Access level

- Read: Levels 4 and 2.
- Write: Levels 4 and 2.

### Parameter

Parameter	Range	Function
Msg class fault	<ul style="list-style-type: none"> <li>– Danger (A)</li> <li>– High (A)</li> <li>– Low (B)</li> <li>– Warning (C)</li> <li>– No alarm</li> </ul>	Set alarm class (and groups A, B, C): <ul style="list-style-type: none"> <li>– Set the Unit in Stop Mode.</li> <li>– Set the Unit in Off Mode.</li> <li>– Only Message.</li> <li>– Only Message.</li> <li>– No Message, no Alarm.</li> </ul>
High limit	0...100 [%]	Upper limit of output signal.
Low limit	0...100 [%]	Lower limit of output signal.



### 6.2.3 Special information

Access level

- Read: Levels 6, 4 and 2.
- Write: Not possible.

#### Parameter

Parameter	Range	Function
Physical value	0...100 [%]	Value on output. Only differs from present value with out of service intervention via BACnet.
Disable OffNormal	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	The OffNormal alarm is disabled. Example: A value greater than the high limit does not trigger an alarm: <ul style="list-style-type: none"> <li>– Alarm is triggered.</li> <li>– Alarm is not triggered.</li> </ul>
ToOffNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time the last off normal alarm occurred.
ToFault	Day of week, dd.mm.yyyy hh:mm:ss	Data and time last fault alarm (Reliability <> 0) occurred.
ToNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time last alarm was reset.
Communication infos	---	Not enabled for analog outputs.

### 6.2.4 Priority array

Access level

- Read: Levels 6, 4 and 2.
- Write: Read only.

#### Parameter

Parameter	Range	Function
Default	0...100 [%]	Replacement value, when no priority is active.
Prio 01	Fix 0 [%]	Value for priority 1 (always 0%): Plant is locked during configuration or during controller start up.
Prio 02	0...100 [%]	Value for priority 2: Not used.
Prio 03	0...100 [%]	Value for priority 3: Not used.
Prio 04	Fix 0 [%]	Value for priority 4 (always 0%): Shut off for error.
Prio 05	0...100 [%]	Value for priority 5: Forced to a certain value, e.g. for frost protection.
Prio 06	0...100 [%]	Value for priority 6: For example, the minimum runtime for the element or overshoot time, e.g. dampers remain open until the fan is off.
Prio 07	0...100 [%]	Value for priority 7: Not used.
Prio 08	0...100 [%]	Value for priority 8: Manual intervention via HMI.
Prio 09	0...100 [%]	Value for priority 9: Special function to reset from priority 8 to auto mode.
Prio 10 bis Prio 14	0...100 [%]	Value for priority 10 through 14: Not used.
Priority 15	0...100 [%]	Value for priority 15: Normal plant operation.
Priority 16	0...100 [%]	Value for priority 16: Timeswitch catalogs.

The lowest active priority controls the output.

## 6.3 Digital outputs

### 6.3.1 General

#### Access

The details page for digital outputs can be reached multiple ways, including:

- Main Index > Unit > Outputs > Analog outputs > Plant Element  
or
- Main Index > Unit > Element Control > Analog Element > Output Signal

#### Example

- Main Index > Unit > Outputs > Digital outputs > Htg pump cmd  
or
- Main Index > Unit > Temp control > Heating > Pump > Command

#### Parameter

Parameter	Range	Function
Manual operation	<ul style="list-style-type: none"><li>– Off</li><li>– On</li><li>– NULL</li></ul>	Manual operation on element (e.g. pump). Manual operation is not automatically reset! An alarm can be triggered after a set period when the manual alarm function is enabled. NULL: Auto; The program controls the output.
Present Value	<ul style="list-style-type: none"><li>– Off</li><li>– On</li></ul>	Present value for output.
Reliability	<ul style="list-style-type: none"><li>– OK.</li><li>– Other</li>   <li>– Process Error</li>  <li>– Config err</li></ul>	Reliability state for hardware. <ul style="list-style-type: none"><li>– Basis controller: Calibration lacking (output defective).</li><li>Extension module POL955: Calibration lacking (Output defect) or communication to base controller unavailable or the output is incorrectly configured.</li><li>– Basis controller: Process error in program.</li><li>Extension module: Message no available.</li><li>– Basis Controller: Output configured incorrectly.</li><li>Extension module: Message no available.</li></ul>
Active prio	<ul style="list-style-type: none"><li>– Out of serv.</li><li>– Prio1</li><li>– ....</li><li>– Prio16</li><li>– Default</li></ul>	Displays the wired Prio elements currently on the output.
Operating hours	0... [h]	Number of operating hours for the output.
Operating seconds (Reset)	0... [s]	Number of operating seconds for the output. Input of 0 seconds reset operating hours to 0.
Last op hours reset	Wday, dd.mm.yyy hh:mm:ss	Date and time for the last time operating hours was reset.

Parameter	Range	Function
Special settings	---	Go to Special settings page (at access levels 4 and 2 only).
Special infos	---	Go to Special info page (at access levels 6, 4 and 2 only).
Priority array	---	Go to Priority array page (at access levels 6, 4 and 2 only).

### 6.3.2 Special settings

- Access level
- Read: Levels 4 and 2.
  - Write: Levels 4 and 2.

#### Parameter

Parameter	Range	Function
Contact Function	<ul style="list-style-type: none"> <li>– NO</li> <li>– NC</li> </ul>	Changes output from Normal open to Normal closed: Normal open (Default) Normal closed (In this position, the output is enabled when the plant is shut down).

### 6.3.3 Special information

- Access level
- Read: Levels 6, 4 and 2.
  - Write: Not writable.

#### Parameter

Parameter	Range	Function
Physical value	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Value on output. Only differs from present value with out of service intervention via BACnet.
Disable OffNormal	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	The OffNormal alarm is disabled: <ul style="list-style-type: none"> <li>– Alarming is enabled.</li> <li>– Alarming is switched off.</li> </ul>
BACnet fdbk value		If connected: Feedback value from the bus.
Communication infos	---	Not enabled for digital outputs.

### 6.3.4 Priority array

- Access level
- Read: Levels 6, 4 and 2.
  - Write: Read only.

#### Parameter

Parameter	Range	Function
Default	Off / On / NULL	Replacement value, when no priority is active. NULL means the Prio is disabled.
Prio 01	Fix Off	Value for priority 1 (always Off): Plant is locked during configuration or during controller start up.
Prio 02	Off / On / NULL	Value for priority 2: Not used.

Parameter	Range	Function
Prio 03	Off / On / NULL	Value for priority 3: Not used.
Prio 04	Fix Off	Value for priority 4 (always Off): Shut off for error.
Prio 05	Off / On / NULL	Value for priority 5: Forced to a certain value, e.g. for frost protection.
Prio 06	Off / On / NULL	Value for priority 6: For example, the minimum runtime for the element or overshoot time, e.g. dampers remain open until the fan is off.
Prio 07	Off / On / NULL	Value for priority 7: Not used.
Prio 08	Off / On / NULL	Value for priority 8: Manual intervention via HMI.
Prio 09	Off / On / NULL	Value for priority 9: Special function to reset from priority 8 to auto mode.
Prio 10 bis Prio 14	Off / On / NULL	Value for priority 10 through 14: Not used.
Priority 15	Off / On / NULL	Value for priority 15: Normal plant operation.
Priority 16	Off / On / NULL	Value for priority 16: Timeswitch catalogs.

The lowest active priority controls the output.

## 6.4 Multistate outputs

### 6.4.1 General

#### Access

The details page for multistate outputs can be reached multiple ways, including:

- Main Index > Unit > Outputs > Analog outputs > Plant Element  
*or*
- Main Index > Unit > Element Control > Analog Element > Output Signal

#### Example

- Main Index > Unit > Outputs > Digital outputs > Supply fan cmd  
*or*
- Main Index > Unit > Fan Control > Supply fan > Output signal

#### Parameter

Parameter	Range	Function
Manual operation	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage1</li> <li>– Stage2</li> <li>– Stage3</li> <li>– NULL</li> </ul>	<p>Manual operation on element (e.g. fan). Manual operation is not automatically reset! An alarm can be triggered after a set period when the manual alarm function is enabled.</p> <p>NULL: Auto; The program controls the output.</p>
Present Value	<ul style="list-style-type: none"> <li>– NULL</li> <li>– Off</li> <li>– Stage1</li> <li>– Stage2</li> <li>– Stage3</li> </ul>	Present value for output.

Parameter	Range	Function
Reliability	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Other</li>   <li>– Process Error</li>   <li>– Config err</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>– Basis controller: Calibration lacking (output defective).</li> <li>Extension module POL955: Calibration lacking (Output defect) or communication to base controller unavailable or the output is incorrectly configured.</li> <li>– Basis controller: Process error in program.</li> <li>Extension module: Message no available.</li> <li>– Basis Controller: Output configured incorrectly.</li> <li>Extension module: Message no available.</li> </ul>
Active prio	<ul style="list-style-type: none"> <li>– Out of serv.</li> <li>– Prio1</li> <li>– ....</li> <li>– Prio16</li> <li>– Default</li> </ul>	Displays the wired Prio elements currently on the output.
Special infos	---	Go to Special info page (at access levels 6, 4 and 2 only).
Priority array	---	Go to Priority array page (at access levels 6, 4 and 2 only).

### 6.4.2 Special information

Access level

- Read: Levels 6, 4 and 2.
- Write: Not writable.

#### Parameter

Parameter	Range	Function
Physical value	<ul style="list-style-type: none"> <li>– Off</li> <li>– Stage1</li> <li>– Stage2</li> <li>– Stage3</li> </ul>	Value on output. Only differs from present value with out of service intervention via BACnet.
Disable OffNormal	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	The OffNormal alarm is disabled: <ul style="list-style-type: none"> <li>– Alarming is enabled.</li> <li>– Alarming is switched off.</li> </ul>
Communication infos	---	Not enabled for multistate outputs.

### 6.4.3 Priority array

Access level

- Read: Levels 6, 4 and 2.
- Write: Read only.

#### Parameter

Parameter	Range	Function
Default	Off / Stage1 / Stage2 / Stage3 / NULL	Replacement value, when no priority is active. NULL means the Prio is disabled.
Prio 01	Fix Off	Value for priority 1 (always Off): Plant is locked during configuration or during control-

Parameter	Range	Function
		ler start up.
Prio 02	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 2: Not used.
Prio 03	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 3: Not used.
Prio 04	Fix Off	Value for priority 4 (always Off): Shut off for error.
Prio 05	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 5: Forced to a certain value, e.g. for frost protection.
Prio 06	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 6: For example, the minimum runtime for the element or overshoot time, e.g. dampers remain open until the fan is off.
Prio 07	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 7: Not used.
Prio 08	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 8: Manual intervention via HMI.
Prio 09	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 9: Special function to reset from priority 8 to auto mode.
Prio 10 bis Prio 14	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 10 through 14: Not used.
Priority 15	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 15: Normal plant operation.
Priority 16	Off / Stage1 / Stage2 / Stage3 / NULL	Value for priority 16: Timeswitch catalogs.

The lowest active priority controls the output.

## 6.5 Analog inputs

### 6.5.1 General

#### Access

The details page for analog inputs can be reached multiple ways, including:

- Main Index > Unit > Inputs > Element Group > Plant Element  
or
- Main Overview > Plant Element

#### Example

- Main Index > Unit > Inputs > Temperatures > Outside air  
or
- Main Overview > Outside air temp

#### Parameter

Parameter	Range	Function
Present Value	Depends on hardware.	Present input value.
Reliability (Basis Controller)	<ul style="list-style-type: none"> <li>– OK.</li> <li>– No sensor</li> <li>– Over range</li> <li>– Shorted loop</li> <li>– Other</li> <li>– Process Error</li> <li>– Config Error</li> </ul>	<ul style="list-style-type: none"> <li>Reliability state for hardware.</li> <li>– Interrupt for sensors NI1000, PT1000, R2500, NTC10k, NTC100k.</li> <li>– Value outside measuring range on 0-10V DC inputs.</li> <li>– Short circuit at sensors NI1000, PT1000, R2500, NTC10k, NTC100k.</li> <li>– Calibration lacking. Controller must be returned to the factory.</li> <li>– Internal fault.</li> <li>– Input not configured.</li> </ul>
Reliability (Extension Modul POL 955)	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Over range</li> </ul>	<ul style="list-style-type: none"> <li>Reliability state for hardware.</li> <li>– Value outside measuring range on 0-10V DC inputs. Interrupt for sensors NI1000, PT1000,</li> </ul>

Parameter	Range	Function
	<ul style="list-style-type: none"> <li>– Under range</li> <li>– Other</li> </ul>	R2500, NTC10k, NTC100k. <ul style="list-style-type: none"> <li>– Short circuit at sensors NI1000, PT1000, R2500, NTC10k, NTC100k.</li> <li>– Calibration lacking. Controller must be returned to the factory; internal fault or input not configured.</li> </ul>
High limit active	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Display an Off normal Alarms, when Present Value > High limit.
High limit active	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Display an Off normal Alarms, when Present Value < Low limit.
High limit	Depends on hardware.	Limit value for a high-limit alarm.
Low limit	Depends on hardware.	Limit value for a low-limit alarm.
Sensor correction	Depends on hardware.	Sensor correction value. Example: If the present value is 20.4 and the real temperature is 20.1, the value should be set to -0.3.
PT1 filter HW	0...32767 [s]	Time constant for the input filter. Allows you, for example, to filter out peaks for pressure sensors.
Time delay	0...65535 [s]	Alarm time delay for high and low-limit alarms.
Special settings	---	Go to Special settings page (at access levels 4 and 2 only).
Special infos	---	Go to Special info page (at access levels 6, 4 and 2 only).

## 6.5.2 Special settings

Access level

- Read: Levels 4 and 2.
- Write: Levels 4 and 2.

### Parameter

Parameter	Range	Function
Out of service	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Take input offline to manually enter a value, e.g. a temperature. Manual operation is not automatically reset. An alarm can be triggered after a set period when the manual alarm function is enabled. <ul style="list-style-type: none"> <li>– The input is in Auto mode.</li> <li>– Input is out of service: The present value for the hardware has not influence on the input.</li> </ul>
Present value	Depends on hardware.	Present value. You can enter a value for out of service = active.

Parameter	Range	Function
Alarm config	<ul style="list-style-type: none"> <li>– enbHighLimit</li> <li>– enbLowLimit</li> <li>– enbOffNormal</li> <li>– enbFault</li> <li>– self Release</li>   <li>– type Alarm</li> <li>– evtOffNormal</li> <li>– evtFault</li> <li>– evtNormal</li> <li>– Done</li> </ul>	<p>Alarm response: Definition of a trigger for an alarm event.</p> <ul style="list-style-type: none"> <li>– High-limit alarms are enabled.</li> <li>– Low-limit alarms are enabled.</li> <li>– Not available for analog inputs.</li> <li>– Fault alarms (Reliability <math>\neq</math> 0) are enabled.</li> <li>– Automatic reset of fault and off normal alarms.</li> <li>– Not used.</li> <li>– Not used.</li> <li>– Not used.</li> <li>– Assumes changed parameters. Must be set after a change.</li> </ul>
Msg class OffNormal	<ul style="list-style-type: none"> <li>– Danger (A)</li> <li>– High (A)</li> <li>– Low (B)</li>   <li>– Warning (C)</li> <li>– No Alarm</li> </ul>	<p>Defines message class for OffNormal alarms (high limit; Low limit):</p> <ul style="list-style-type: none"> <li>– Plant goes to stop.</li> <li>– Plant shuts down.</li> <li>– The impacted plant portion switches off (e.g. the heat pump).</li> <li>– Message only.</li> <li>– No alarm.</li> </ul>
Msg class fault	<ul style="list-style-type: none"> <li>– Danger (A)</li> <li>– High (A)</li> <li>– Low (B)</li>   <li>– Warning (C)</li> <li>– No Alarm</li> </ul>	<p>Defines message class for fault alarms (reliability <math>\neq</math> 0, value = invalid):</p> <ul style="list-style-type: none"> <li>– Plant goes to stop.</li> <li>– Plant shuts down.</li> <li>– The impacted plant portion switches off (e.g. the heat pump).</li> <li>– Message only.</li> <li>– No alarm.</li> </ul>
Value selector	<ul style="list-style-type: none"> <li>– Hardware</li> <li>– Comm</li> <li>– Average</li>   <li>– Minimum</li>   <li>– Maximum.</li>   <li>– PreferredHW</li>   <li>– PrefComm</li> </ul>	<p>Select valid input value for the application:</p> <ul style="list-style-type: none"> <li>– Value on hardware input.</li> <li>– Value from communications.</li> <li>– Average from the values on hardware input and from communications. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Lowest value from the values on hardware input and from communications. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Highest value from the values on hardware input and from communications. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Value on hardware input has priority. The value from communications assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> <li>– Value from communications has priority. The value from hardware input assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> </ul>



### 6.5.3 Special information

Access level

- Read: Levels 6, 4 and 2.
- Write: Read only.

#### Parameter

Parameter	Range	Function
BACnet present Value	Depends on hardware.	Present value on BACnet. Value is frozen for an alarm.
Value selector	<ul style="list-style-type: none"> <li>– Hardware</li> <li>– Comm</li> <li>– Average</li>   <li>– Minimum</li>   <li>– Maximum.</li>   <li>– PreferredHW</li>   <li>– PrefComm</li> </ul>	<p>Displays valid input value for the application:</p> <ul style="list-style-type: none"> <li>– Value on hardware input.</li> <li>– Value from communications.</li> <li>– Average from values on the hardware input and communications. An alarm is triggered when one of the two values are invalid (if enabled).</li> <li>– Lowest value from the values on hardware input and from communications. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Highest value from the values on hardware input and from communications. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Value on hardware input has priority. The value from communications assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> <li>– Value from communications has priority. The value from hardware input assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> </ul>
Value HW	Depends on hardware.	Present value for hardware.
Value comm	Depends on hardware.	Present value from communications.
Reliability HW	Depends on hardware.	Present reliability of hardware value.
Reliability comm	Depends on hardware.	Present reliability of value from communications.
Disable OffNormal	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<p>The OffNormal alarm is disabled. Example: A value greater than the high limit does not trigger an alarm:</p> <ul style="list-style-type: none"> <li>– Alarm is triggered.</li> <li>– Alarm is not triggered.</li> </ul>
ToOffNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time the last off normal alarm occurred.
ToFault	Day of week, dd.mm.yyyy hh:mm:ss	Data and time last fault alarm (Reliability <> 0) occurred.
ToNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time last alarm was reset.

Parameter	Range	Function
Communication infos	<ul style="list-style-type: none"> <li>- Comm OK</li> <li>- ????</li> </ul>	Information on the communication status for elements. <ul style="list-style-type: none"> <li>- No error.</li> <li>- Error (Varies – depends on communication – not yet implemented).</li> </ul>

## 6.6 Digital inputs

### 6.6.1 General

#### Access

The details page for digital inputs can be reached multiple ways, including:

- Main Index > Unit > Inputs > Digital inputs > Element  
or
- Main Index > Unit > Inputs > Digital inputs > Extr air dmptr fdbk

#### Example

- Main Index > Unit > Element Control > Element Group > Extr air dmptr fdbk  
or
- Main Index > Unit > Damper control > Damper > Extract air fdbk

#### Parameter

Parameter	Range	Function
Present Value	Depends on hardware.	Present input value. Value is frozen for an alarm.
Reliability (Basis Controller)	<ul style="list-style-type: none"> <li>- OK.</li> <li>- Other</li> <li>- Process Error</li> <li>- Config Error</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>- Calibration lacking. Controller must be returned to the factory.</li> <li>- Internal fault.</li> <li>- Input not configured.</li> </ul>
Reliability (Extension Modul POL 955)	<ul style="list-style-type: none"> <li>- OK.</li> <li>- Other</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>- Calibration lacking. Controller must be returned to the factory; internal fault or input not configured.</li> </ul>
OffNormal	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Displays OffNormal alarms: <ul style="list-style-type: none"> <li>- No alarm.</li> <li>- Alarm</li> </ul>
Operating hours	0... [h]	Number of operating hours for the input: Time, during which input = TRUE applies.
Operating seconds (Reset)	0... [s]	Number of operating seconds for the input. Input of 0 seconds reset operating hours to 0.
Last op hours reset	Wday, dd.mm.yyy hh:mm:ss	Date and time for the last time operating hours was reset.
Time delay	0...65535 [s]	Alarm time delays for off normal alarms.
Special settings	---	Go to Special settings page (at access levels 4 and 2 only).
Special infos	---	Go to Special info page (at access levels 4 and 2 only).

## 6.6.2 Special settings

- Access level
- Read: Levels 4 and 2.
  - Write: Levels 4 and 2.

### Parameter

Parameter	Range	Function
Out of service	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<p>Take input offline to manually enter a value, e.g. a temperature. Manual operation is not automatically reset. An alarm can be triggered after a set period when the manual alarm function is enabled.</p> <ul style="list-style-type: none"> <li>– The input is in Auto mode.</li> <li>– Input is out of service: The present value for the hardware has not influence on the input.</li> </ul>
Present value	Depends on hardware.	Present value. You can enter a value for out of service = active.
Alarm config	<ul style="list-style-type: none"> <li>– enblHighLimit</li> <li>– enblLowLimit</li> <li>– enblOffNormal</li> <li>– enblFault</li> <li>– self Release</li> <li>– type Alarm</li> <li>– evtOffNormal</li> <li>– evtFault</li> <li>– evtNormal</li> <li>– Done</li> </ul>	<p>Alarm response: Definition of a trigger for an alarm event.</p> <ul style="list-style-type: none"> <li>– Not implemented.</li> <li>– Not implemented.</li> <li>– OffNormal Alarm (alarm, e.g. for logical 1 on input) is enabled.</li> <li>– Fault alarms (Reliability <math>\neq 0</math>) are enabled.</li> <li>– Automatic reset of fault and off normal alarms.</li> <li>– Not used.</li> <li>– Not used.</li> <li>– Not used.</li> <li>– Assumes changed parameters. See AI !</li> </ul>
Msg class OffNormal	<ul style="list-style-type: none"> <li>– Danger (A)</li> <li>– High (A)</li> <li>– Low (B)</li> <li>– Warning (C)</li> <li>– No Alarm</li> </ul>	<p>Defines message class for OffNormal alarms (missing feedback):</p> <ul style="list-style-type: none"> <li>– Plant goes to stop.</li> <li>– Plant shuts down.</li> <li>– The impacted plant portion switches off (e.g. the heat pump).</li> <li>– Message only.</li> <li>– No alarm.</li> </ul> <p>Note: This switch must be on No Alarm for all inputs not intended to trigger an alarm (e.g. plant switch).</p>
Msg class fault	<ul style="list-style-type: none"> <li>– Danger (A)</li> <li>– High (A)</li> <li>– Low (B)</li> <li>– Warning (C)</li> <li>– No Alarm</li> </ul>	<p>Defines message class for fault alarms (reliability <math>\neq 0</math>, value = invalid):</p> <ul style="list-style-type: none"> <li>– Plant goes to stop.</li> <li>– Plant shuts down.</li> <li>– The impacted plant portion switches off (e.g. the heat pump).</li> <li>– Message only.</li> <li>– No alarm.</li> </ul>

Parameter	Range	Function
Contact Function	<ul style="list-style-type: none"> <li>– NO</li> <li>– NC</li> </ul>	Changes input from Normal open to Normal closed: <ul style="list-style-type: none"> <li>– Normal open (logical 1 on input = TRUE in the program).</li> <li>– Normal closed (logical 0 on input = TRUE in the program).</li> </ul>
Value selector	<ul style="list-style-type: none"> <li>– Hardware</li> <li>– Comm</li> <li>– And.</li>   <li>– Or.</li>   <li>– PreferredHW</li>   <li>– PrefComm</li> </ul>	Select valid input value for the application: <ul style="list-style-type: none"> <li>– Value on hardware input.</li> <li>– Value from communications.</li> <li>– The input is 1, if the value on the hardware input and the value from communications = 1. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– The input is 1, if the value on the hardware input or the value from communications = 1. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Value on hardware input has priority. The value from communications assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> <li>– Value from communications has priority. The value from hardware input assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> </ul>

### 6.6.3 Special information

Access level

- Read: Levels 4 and 2.
- Write: Not writable.

#### Parameter

Parameter	Range	Function
Value selector	<ul style="list-style-type: none"> <li>– Hardware</li> <li>– Comm</li> <li>– And</li>   <li>– Or</li>   <li>– PreferredHW</li>   <li>– PrefComm</li> </ul>	Displays valid input value for the application: <ul style="list-style-type: none"> <li>– Value on hardware input.</li> <li>– Value from communications.</li> <li>– The input is 1, if the value on the hardware input and the value from communications = 1. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– The input is 1, if the value on the hardware input or the value from communications = 1. Alarm triggers (if enabled), if one of the two values is invalid.</li> <li>– Value on hardware input has priority. The value from communications assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> <li>– Value from communications has priority. The value from hardware input assumed if invalid. Alarm triggers (if enabled), if both values are invalid.</li> </ul>
Value HW	Text abhängig von der	Present value for hardware.

Parameter	Range	Function
	Hardware.	
Value comm	Text abhängig von der Hardware.	Present value from communications.
Reliability (Basis Controller)	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Other</li> <li>– Process Error</li> <li>– Config Error</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>– Calibration lacking. Controller must be returned to the factory.</li> <li>– Internal fault.</li> <li>– Input not configured.</li> </ul>
Reliability (Extension Modul POL 955)	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Other</li> </ul>	Reliability state for hardware. <ul style="list-style-type: none"> <li>– Calibration lacking. Controller must be returned to the factory; internal fault or input not configured.</li> </ul>
Reliability comm	<ul style="list-style-type: none"> <li>– OK.</li> <li>– Fault</li> </ul>	Present reliability of value from communications.
Disable OffNormal	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	The OffNormal alarm is disabled. Example: An alarm is not triggered if alarm input true: <ul style="list-style-type: none"> <li>– Alarm is triggered.</li> <li>– Alarm is not triggered.</li> </ul>
Enable Value	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Displays enable of software input within the application: <ul style="list-style-type: none"> <li>– Input is disabled.</li> <li>– Input is enabled.</li> </ul>
ToOffNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time the last off normal alarm occurred.
ToFault	Day of week, dd.mm.yyyy hh:mm:ss	Data and time last fault alarm (Reliability <> 0) occurred.
ToNormal	Day of week, dd.mm.yyyy hh:mm:ss	Date and time last alarm was reset.
Communication infos	<ul style="list-style-type: none"> <li>– Comm OK</li> <li>– ????</li> </ul>	Information on the communication status for elements. <ul style="list-style-type: none"> <li>– No error.</li> <li>– Function not yet available.</li> </ul>

# 7 Detail pages: Controller

This section describes parameterization of the PID and cascade controllers.

For all control settings from PID controllers a reference is made on the same page for the loop controller; for all control settings for cascade controllers on the same page for the cascade controller. All physical units were left out for this reason.

Furthermore, the outputs Control output clg und Control output htg for humidity controllers are used for dehumidification or humidification.

## 7.1 Loop controller

### 7.1.1 General

**Access** The details page for PID controllers can be reached multiple ways, including:

- Main Index > Unit > Loop controllers > Controller-Element  
or
- Main Index > Unit > Elementgruppe > Element > Controller

**Example**

- Main Index > Unit > Loop controllers > Supply fan  
or
- Main Index > Unit > Fan control > Supply fan > Controller

#### Parameter

Parameter	Range	Function
Control output	0...100 [%]	Present output for the controller.
Present value		Present actual value (input value) for the controller.
Setpoint		Present setpoint for the controller.
Enable.	<ul style="list-style-type: none"><li>– Passive</li><li>– Active</li></ul>	Enable controller: <ul style="list-style-type: none"><li>– Controller disabled.</li><li>– Controller enabled.</li></ul>
Fault	<ul style="list-style-type: none"><li>– Passive</li><li>– Active</li></ul>	Controller fault status, e.g. faulty sensor signal: <ul style="list-style-type: none"><li>– No error.</li><li>– Error pending. Does not trigger an event, since the cause of a control fault must be recorded separately (e.g. sensor fault).</li></ul>
Status	<ul style="list-style-type: none"><li>– GESP</li><li>– UL</li><li>– LL</li><li>– REG</li><li>– Y-NV</li><li>– UDEF</li></ul>	<ul style="list-style-type: none"><li>– Blocked: Controller not enabled or set to out of service.</li><li>– Control output = High limit.</li><li>– Control output = Low limit.</li><li>– Control mode.</li><li>– Direct intervention on hardware output is enabled (e.g. manual via HMI or frost).</li><li>– Undefined.</li></ul>

Parameter	Range	Function
Invert output/funct	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Inverts control action of the controller and the output signal in switched off state: <ul style="list-style-type: none"> <li>- Output signal = 0 %.</li> <li>- Output signal = 100 %.</li> </ul> Function: See relationship between gain and invert under special settings.
High limit		Maximum limit control for the controller.
Low limit		Minimum limit control for the controller.
Special settings		Go to Special settings page (at access levels 4 and 2 only).

## 7.1.2 Special settings

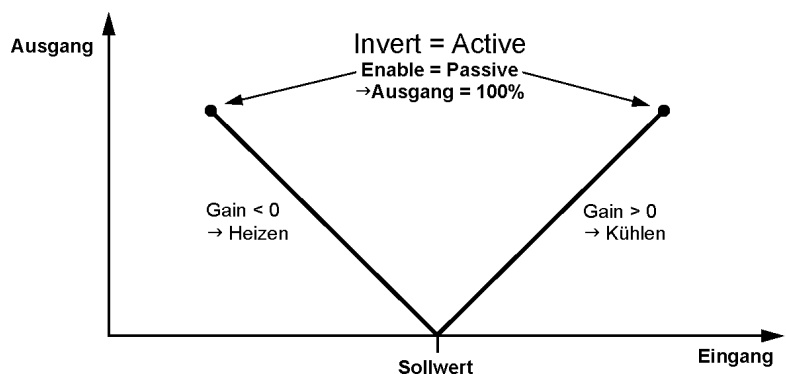
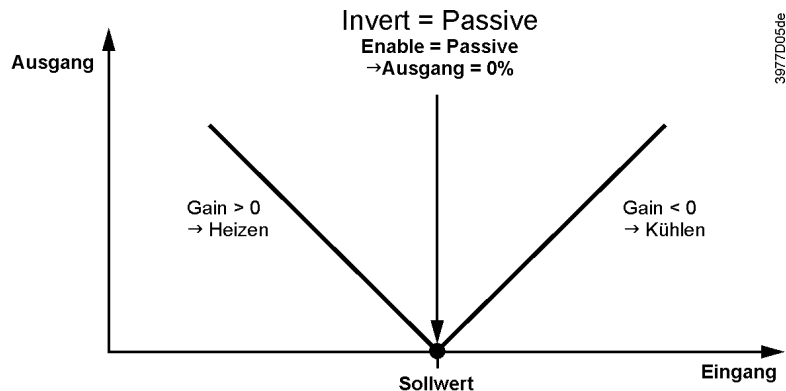
Access level

- Read: Levels 4 and 2.
- Write: Levels 4 and 2.

### Parameter

Parameter	Range	Function
Gain	-1000...1000	Amplification factor (KP). Set control action with Invert output/funct (heating or cooling). Function: See Relationship gain and invert.
Int action time	0....18000 [s]	Integral action time (Tn).
Derivative act time	0....18000 [s]	Derivative action time (Td).
Out of service	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Out of service: Controller is taken out of the sequence and the control output is set to 0.

Relationship gain and invert



## 7.2 Cascade controller

## 7.2.1 General

### Access

The details page for cascade controllers can be reached multiple ways, including:

- Main Index > Unit > Temp control > Cascade controller
- Main Index > Unit > Humidity control > Cascade controller
- Main Index > Unit > Loop controllers > Casc controller tmp
- Main Index > Unit > Loop controllers > Casc controller hum

### Parameter

Parameter	Range	Function
Control output clg		Present controller output for cooling setpoint or dehumidification setpoint.
Control output htg		Present controller output for heating setpoint or humidification setpoint.
Present Value		Present actual value (input value) for the controller.
Room stpt clg/dehum		Cooling or dehumidification setpoint from the program.
Room stpt htg/hum		Heating or humidification setpoint from the program.
High limit	-64.0 ...99.0 [°C] / [% rH]	Maximum supply air temperature or humidity.
Low limit	-64.0...99.0 [°C] / [% rH]	Minimum supply air temperature or humidity.
Load compensation	-64.0...99.0 [°C] / [% rH]	Set compensation for a room load. Calculates the present controller outputs as follows: <ul style="list-style-type: none"> <li>– Control output clg = Internally calculated Control Output clg + Load compensation</li> <li>– Control output htg = Internally calculated Control Output htg + Load compensation</li> </ul>
Setpoint selection	<ul style="list-style-type: none"> <li>– Htg+Dz</li> <li>– Htg/Clg</li> <li>– +/-Half Dz</li> <li>– Clg-Dz</li> </ul>	Displays setpoint variants in the program (Configuration 2 >Tmp stpt selection or Hum stpt selection).
Setpoint dead zone		From the entry of calculated dead zones. (Displays dead zones: Configuration 2 >Tmp stpt selection or Hum stpt selection).
Enable.	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Enable controller: <ul style="list-style-type: none"> <li>– Controller disabled.</li> <li>– Controller enabled.</li> </ul>
Fault	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Controller fault status (e.g. faulty sensor signal): <ul style="list-style-type: none"> <li>– No error.</li> <li>– Error pending. Does not trigger an event, since the cause of a control fault must be recorded separately (e.g. room sensor fault).</li> </ul>



Parameter	Range	Function
Status	<ul style="list-style-type: none"> <li>- GESP</li> <li>- UL</li> <li>- LL</li> <li>- REG</li> <li>- UDEF</li> </ul>	Controller status: <ul style="list-style-type: none"> <li>- Controller disabled.</li> <li>- Control output = High limit.</li> <li>- Control output = Low limit.</li> <li>- Control mode.</li> <li>- Undefined.</li> </ul>
Special settings		Go to Special settings page (at access levels 4 and 2 only).

## 7.2.2 Special settings

Parameter	Range	Function
Gain	0...1000	- Amplification factor (KP).
Int action time	0...18000 [s]	Integral action time (Tn).
Min/max limit	-64.0...99.0 [°C] / [% rH]	Adjusts high und Low limits to end position. Ensures the difference between heating and cooling output in the end position as well as needed.

### Function during cooling

Min/max limit positiv:

- Niedrigster Control output clg = Low limit + Min/max limit
- Niedrigster Control output htg = Low limit

Min/max limit negativ:

- Niedrigster Control output clg = Low limit
- Niedrigster Control output htg = Low limit - Min/max limit

### Function during heating

Min/max limit positiv:

- Niedrigster Control output clg = High limit
- Niedrigster Control output htg = High limit - Min/max limit

Min/max limit negativ:

- Niedrigster Control output clg = High limit + Min/max limit
- Niedrigster Control output htg = High limit

### Example

High limit = 28

Low limit = 16

Min/max limit = -2

Cooling:

- Lowest control output clg = Low limit => 16.
- Lowest control output htg = Low limit - Min/max limit => 16 - 2 = 14.

Heating:

- Lowest control output htg = High limit + min/max limit => 28 - 2 = 30.
- Lowest control output htg = High limit => 28.

# 8 Detail pages: Time switch program

## 8.1 General

This section describes the functions and entries for time switch catalogs and calendars.

Possible entries vary depending on the configuration. It is set in Configuration 1:

Main Index > Configuration > Configuration 1 > TSP function

Main Index > Configuration > Configuration 1 > TSP steps

Calendar in auxiliary

The time switch catalog/calendar available in auxiliary has the set entries Off and On:

Main Index > Configuration > Configuration 2 > Aux TSP output

Function

If no element is active at a higher priority (e.g. Manual Operation <> Auto), the plant can be switched to off or any stage using a time switch catalog (for analog controlled fans to the given stage setpoint). A maximum of 6 switching entries are possible per week.

The calendar Fix Off (in operating mode only) override the calendar exception and this in turn overrides the normal time switch catalog. Up to 10 periods or exception days can be defined for each calendar.

Note

TSP function=Steps+Tmp: The time switch program determines both fan stage setpoint as well as the temperature setpoint (Comfort/Economy).

## 8.2 Week scheduler

Parameter

Main Index > Unit > Main overview > Time switch program > Schedule

Parameter	Range	Function
Present value	---	Resulting switching command from the scheduler.
Monday	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Display is enabled of the present day is Monday. The last entry for the day applies to 23:59. Go to the daily switching plan for Monday.
Copy schedule	<ul style="list-style-type: none"> <li>- Monday to</li> <li>- Tu to Fr</li> </ul>	Copies entries for the time switch program from Monday to Tuesday through Friday: <ul style="list-style-type: none"> <li>- Passive position (copy disabled).</li> <li>- Copy starts. Returns to display.</li> </ul>
Tuesday		Similar to Monday.
...		...
Sunday		Similar to Monday.
Exception		Displays the enabled command, when the present day is an exception day. Go to daily switching plan for exception days.

Parameter	Range	Function
Period:Start		(Only available at access level 2). Start date for the weekly schedule. The entry *,*.00 means that the weekly schedule is always enabled. ---> Enable weekly schedule.
Period:Stop		(Only available at access level 2). Start date and time for when the weekly schedule no longer applies.

## 8.3 Day scheduler

### Parameter

Parameter	Range	Function
Day Schedule	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Status of week or exception day in question: <ul style="list-style-type: none"> <li>- Present week day (system day) does not correspond to the processed day.</li> <li>- Present week day (system day) corresponds to the processed day.</li> </ul>
Time 1		Special case: This entry may not be adjusted; it must always be set to 00:00 and requires password level 4 to change.
Value 1		Switching command for Time 1.
Time 2		Switching time 2. *: * ---> Entry disabled.
Value 2 ... Value 6		Analog value 1.
Time 3 ... Time 6		Analog time 2.

## 8.4 Calendar (exception and fixed off)

Exception days are defined in the calendars. These may include certain days, periods or days of the week. On the exception days, the exception days override the weekly schedule.

**Calendar exception**      The plant switches per the weekly scheduler under the exceptions set in the daily schedule when an entry is enabled in the calendar exception.

**Calendar fix off**      The plant switches off when the entry calendar fix Off is enabled.

- Parameter**
- **Main Index > Unit > Main overview > Time switch program > Calendar exception**
  - **Main Index > Unit > Main overview > Time switch program > Calendar fix off**
  - **Main Index > Unit > Auxiliary > TSP Output > Calendar exception**

Parameter	Range	Function
Present value	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Displays whether a calendar entry is currently enabled: <ul style="list-style-type: none"> <li>- No calendar entry is currently enabled.</li> <li>- A calendar entry is currently enabled.</li> </ul>
Choice-x	<ul style="list-style-type: none"> <li>- Date</li> <li>- Range</li> <li>- WeekDay</li> <li>- Passive</li> </ul>	Specifies the entry for the exception: <ul style="list-style-type: none"> <li>- A certain day (e.g. Friday).</li> <li>- A period (e.g. vacation).</li> <li>- A certain day of the week.</li> <li>- Entries are ignored.</li> </ul> This value should be set last after the date is entered.
-(Start)date		<ul style="list-style-type: none"> <li>- Choice-x = range: Enter start date for the period.</li> <li>- (Choice-x = date: Enter data for a single day).</li> </ul>
-End date		Choice-x = range: Enter end date for the period. End date must always be after the start date.
-Week day		For Choice-x = weekday only: Enter the day of the week.

Examples for  
Choice-x = Date.

Only the entry in (start) is relevant.

- -(start) date = \*,01.01.09  
Result: January 1, 2009 is an exception date.
- -(Start) date = Mo,\*.\*.00  
Every Monday is an exception day.
- -(Start) date = \*,\*.Evn.00  
The days for the entire month are exception day for each even month (February, April, June, August, etc.).

Examples for  
Choice-1 = Range.

The entries in (start) date and end date are relevant.

- -(start) date = \*,23.06.09 / -end date = \*,12.07.09.  
June 23, 2009 through July 12, 2009 are exception days (e.g. vacation).
- -(start) date = \*,23.12.00 / -end date = \*,31.12.00.  
December 23 through 31 are exceptions for each year. The entry end date = \*,01.01.00 does not work here, since January 1 is before December 23.
- -(start) date = \*,23.12.09 / -end date = \*,01.01.10.  
23. December 23, 2009 through January 1, 2010 are exception days.
- -(Start) date = \*,\*.\*.00 / -End date = \*,\*.\*.00  
Caution! This entry is always enabled! The plant is continuously on exception or off.

Examples for  
Choice-1 = WeekDay.

The entries for week day are relevant.

- Week day = \*,Fr,\*  
Every Friday is an exception day.
- Week day = \*,Fr,Evn  
Each Friday in even months (February, April, June, August, etc.) is an exception day.
- Week day = \*,\*,\*

Caution! This entry is always enabled! The plant is continuously on exception or off.

# 9 Communication

## 9.1 General

Various communications are available depending on the basis controller and connected, external communication modules.

Basis controller communications

Basis controller type	MODBUS	LON	TCP/IP
POL635.00/xxx	X		
POL636.00/xxx	X	X	
POL638.00/xxx	X		X

Basis controller and external communication modules

Basis controller type	Possible external communication modules			
	BACnet MSTP POL904.00/x	MODBUS POL902.00/x	LON POL906.00/x	BACnet IP POL908.00/x
POL635.00/xxx	X	X	X	X
POL636.00/xxx	X	X	onboard	X
POL638.00/xxx	X	X	X	X <sup>1)</sup>

### Unit > Main index > System overview > Communication

Parameter	Range	Function
Comm module overview	–	Go to parameterization page for all external communication modules.
Process bus	– OK. – Not OK	Go to parameterization page for the process bus (for HMI and room unit).
TCP/IP	xxx.xxx.xxx.xxx	Controller address on the bus. Controller name on the bus. Go to parameterization page for internal TCP/IP connection (see Web HMI).
Modbus		Go to parameterization page for internal Modbus.
LON		Go to parameterization page for internal LON interface.
Modem		Go to parameterization page for modem connection.
SMS		Go to parameterization page for the SMS function via modem.
IO Extension bus		Go to overview page for I/O extension bus.
Web language	– English – Swedish – German	Language setting for the Advanced Web Module.

## 9.2 Modbus

### Internal interface

Two Modbus interfaces are always available on the basis controller. The RS485 interface can be defined as master or slave. The MODBUS-IP interface is always a slave. Both interfaces can be switched off jointly.

The internal RS485 Modbus interface is automatically set to master if the **Energy meter** function is enabled.

### External communications module

A slave interface is always provided with the external Modbus communications module POL902. The setting **Slave Type** switches the size of the interface from simple to advanced (more values on the bus).

The internal cannot be used if the external module is used and the internal interface is not required as master; the must be connected to terminal T1 of the communication module.

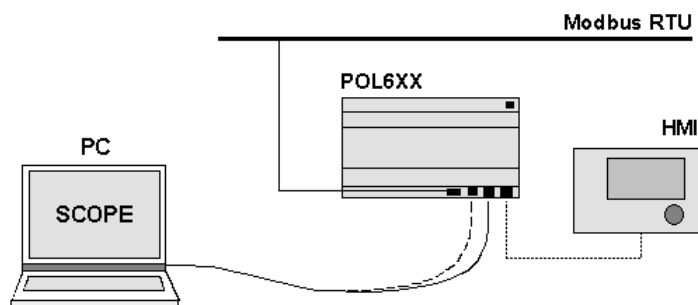
The interface for the Modbus now uses the complete register range from both channels on channel 0 (even more values than for the internal Modbus in the Advanced position). As a result, channel 2 (terminal T2) can no longer be used.

### 9.2.1 Commissioning the internal Modbus

#### Devices

Participating devices

- Climatix POL 636 controller.



#### Prerequisites

Prerequisites for commissioning:

- Working application (e.g. standard AHU application) loaded and started in the Climatix controller.
- Corresponding mapping file (OBH.bin) is loaded. This is the only way the connection to the Modbus is available.

#### Configure internal Modbus interface for EM24

[Main Index > Integrations](#)

Parameter	Range	Function
Energy meter EM24	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	No energy meter selected.
Settings		Go to page with all parameterization for the energy meter or the RS485 MODBUS settings.
Inputs		Go to page with inputs.
Room units	<ul style="list-style-type: none"> <li>– 1 sensor</li> <li>– 2 sensors</li> <li>– 1 RU</li> <li>– 1snsr+ RU</li> </ul>	Inputs for room temperature sensor. You can select whether to apply maximum, minimum, average or individual value for control for more than one sensor in Configuration 2. When select-

Parameter	Range	Function
	– 2 RU	ing 1 RU, 1snsr+RU or 2 RU, the interface to the room unit connection is enabled.
Settings		Goes to page with all settings relevant to parameterizing room units.
Inputs		Go to page with temperature inputs.
Reset required !!	– ✓ – Execute	As a matter of principle, the controller must be set after parameterization to assume the data.

### MODBUS configuration Unit > System overview > Communication > Modbus

Parameter	Range	Function
Communication	– OK – Alarm	Status of Modbus communication.
Internal	– Disable – Master – Slave	Generally enables internal MODBUS and function of MODBUS over RS485: – Internal interface is disabled. – Internal RS485 interface is master. – Internal RS485 interface is slave.
Internal Slave address	0...247	Controller address on the RS485 bus.
Internal settings		
RS485		Go to parameter page for RS485 MODBUS interface.
TCP/IP	–	Go to parameter page for TCP/IP settings.
Module1 Modbus	–	Go to parameter page for MODBUS interface on module 1.
Module1 Modbus	–	Go to parameter page for MODBUS interface on module 1.
Module1 Modbus	–	– Go to parameterization page for MODBUS interface on module 1.

### RS485 MODBUS parameterization Unit > System overview > Communication > Modbus > RS485

Parameter	Range	Function
	–	–
Baud rate	– 2400 – 4800 – 9600 – 19200 – 38400	Transmission rate on bus. All participants must have the same setting.
Parity	– Even – Odd – None	Parity. All participants must have the same setting.
Stop bit	– One – Two	Number of stop bits. All participants must have the same setting.
Delay time	0...2147483647 [ms]	Response telegram delay.

Parameter	Range	Function
Response timeout	0...2147483647 [ms]	Settings access time for master. The master must undertake read access within this period, otherwise an alarm is triggered (this function is not yet fully implemented).
Termination	– Passive	Internal bus connection for the basis controller: – No bus terminating resistor.



	– Active	– With bus terminating resistor.
Reset required !!	– ✓ – Execute	As a matter of principle, the controller must be set after changing the settings to assume the data.

Note For detailed information on the Modbus interface (all transmission values, commissioning, function), see document CB1P3934.

**TCP/IP parameterization**

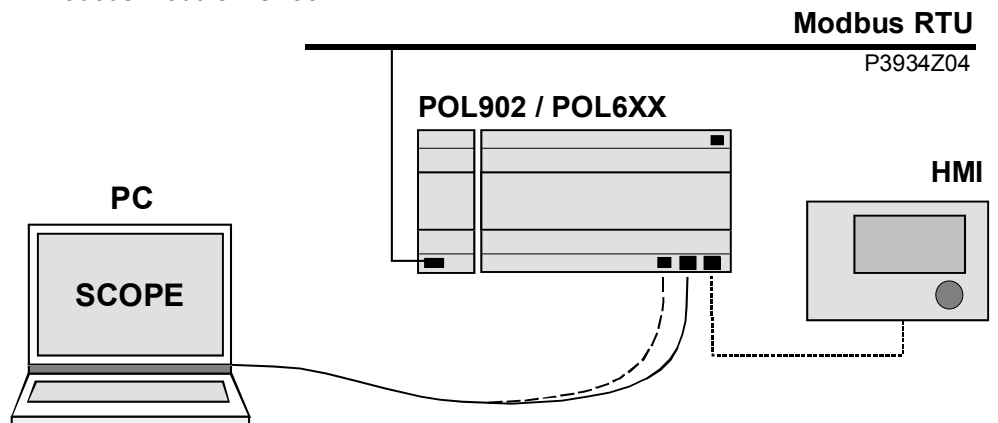
**Unit > System overview > Communication > Modbus > TCP/IP**  
**Unit > System overview > Communication > TCP/IP > Change settings**

Parameter	Range	Function
IP	xxx.xxx.xxx.xxx.	IP address on the bus.
Mask	xxx.xxx.xxx.xxx.	Subnet mask on the bus.
Gateway	xxx.xxx.xxx.xxx.	Gateway
DHCP	– Passive – Active	– Fixed IP address (must be entered). – Automatic address assigned via DHCP server.
Reset required !!	– ✓ – Execute	– As a matter of principle, the controller must be set after changing the settings to assume the data.
User name	–	Enter user name on the network.
Password	–	Enter user name on the network.

**9.2.2 Commission Modbus module**

**Devices**

- Participating devices
- Climatix controller POL6XX.
  - Modbus module POL902.



**Prerequisites**

- Prerequisites for commissioning:
- Working application (e.g. standard AHU application) loaded on the Climatix controller.
  - Corresponding mapping file (OBH.bin) loaded to provide connections to Modbus.
  - Level 4 (password 2000).

**Commission Modbus module**

Proceed as follows to configure the Modbus module and connect to the Modbus bus:

Step	Action
1	Controller <b>OFF</b> .
2	Connect Modbus module to controller using plug connection.
3	Connect Modbus bus cable to Modbus module (pins + and -, Ref for GND).

4	<p>Controller <b>ON</b>:</p> <p>→ The module starts / initialization begins.</p> <p>→ As soon as the two LEDs "BSP" and "BUS" are steady green, communication with the controller and Modbus bus is active.</p> <p>Caution: HMI must be reset a second time to update; prior to parameterization.</p>
5	Configure module.

**Parameter**                      **Main Index > System overview > Communication > Comm module overview > Module[x] Modbus**  
**Main Index > System overview > Communication > Modbus > Module[x] Modbus**

Parameter	Range	Function
State	– OK. – Alarm	Module state.
Comm failure	– Passive – Active	Communication error between module and controller.

Channel 0 / Channel 1. Displays as of this point the data for the first Modbus channel (channel 0, terminal T1) and the second Modbus channel (channel 1, terminal T2) of the module.

These are the corresponding parameters, with the exception of enable:

Enable.	– Passive – Active	Modbus channel 1 only: Displays whether Modbus channel 1 (terminal T2 on the module) is enabled or not. Caution: This parameter must always be set to passive.
Slave	– Active – Passive	Displays whether the channel is used.
Slave address		Current address for the Modbus connection on the bus.
Baud rate	– 2400 – 4800 – 9600 – 19200 – 38400	Displays transmission rate per the Modbus.
Stop bits	– One – Two	Displays number of stop bits: – One stop bit. – Two stop bits.
Parity	– None – Even – Odd	Displays parity.
Response timeout	0...3600 [sec]	Settings access time for master. The master must undertake read access within this period, otherwise an alarm is triggered (this function is not yet fully implemented).

Parameter	Range	Function
Termination	– Passive – Active	A RS485 topology must always be ended using wave resistors. – Terminating resistor disabled. – Terminating resistor enabled.
Settings channel 0 / 1		Go to parameter page for the first / second Modbus channel.

General:

Parameter	Range	Function
Software version		Module software version.
Device ID.		Module internal device ID.
Modules		Module type.
Use default	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Reset parameterization to default values.
Reset required !!	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	As a matter of principle, the controller must be set after changing the settings to assume the data.

**Parameterize Modbus channels**

**Main Index > System overview > Communication > Comm module overview > Module[x] Modbus > Settings channel 0 / 1**

**Main Index > System overview > Communication > Modbus > Module[x] Modbus**

Parameter	Range	Function
Enable.	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Modbus channel 1 only: Enable Modbus channel 1.
Slave address		Set address for the Modbus connection on the bus.
Baud rate	<ul style="list-style-type: none"> <li>– 2400</li> <li>– 4800</li> <li>– 9600</li> </ul>	Transmission rate settings per the Modbus.
Baud rate ( <i>Forts.</i> )	<ul style="list-style-type: none"> <li>– 19200</li> <li>– 38400</li> </ul>	
Stop bits	<ul style="list-style-type: none"> <li>– One</li> <li>– Two</li> </ul>	Displays number of stop bits: <ul style="list-style-type: none"> <li>– One stop bit.</li> <li>– Two stop bits.</li> </ul>
Parity	<ul style="list-style-type: none"> <li>– None</li> <li>– Even</li> <li>– Odd</li> </ul>	Parity setting.
Response timeout	0...3600 [sec]	Settings access time for master. The master must undertake read access within this period, otherwise an alarm is triggered (this function is not yet fully implemented).
Termination	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	A RS485 topology must always be ended using wave resistors. <ul style="list-style-type: none"> <li>– Terminating resistor disabled.</li> <li>– Terminating resistor enabled.</li> </ul>
Reset required !!	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	As a matter of principle, the controller must be set after changing the settings to assume the data.

## 9.3 LON

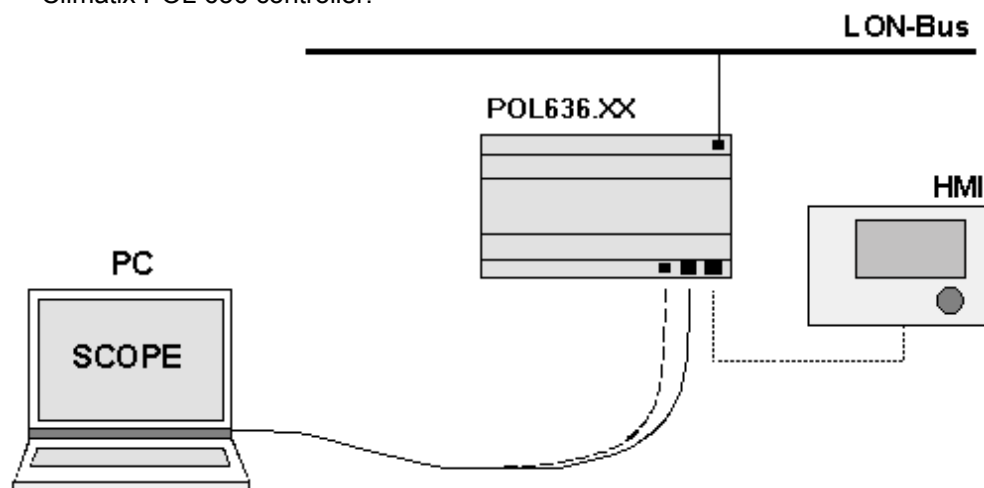
A LON interface is always available on the basis controller POL636.xxx.  
The external LON module POL906.xx also required for controllers POL 635.xxx and POL 638.xxx.

### 9.3.1 Commission internal LON interface

#### Devices

Participating devices

- Climatix POL 636 controller.



#### Prerequisites

Prerequisites for commissioning a LON section:

- The SAPRO application is fully commissioned.
- Level 4 (password 2000).
- Mapping file (OBH.bin) is loaded.

#### Commission controller

Step	Action
1	In the menu <b>System parameter &gt; Communication</b> , select <b>LON Configuration</b> .
2	Configure additional settings as required.

#### Note

After successful LON commissioning via the LON tool, you can access the controller via the LON bus using Saphir Scope.

#### Parameter

**Main Index > System overview > Communication > LON**

Parameter	Range	Function
State	– OK. – Alarm	LON bus state.
Comm failure	– Passive – Active	Communications error between LON and processor. (e.g. no LON application loaded on the Neuron Chip)
Location		Displays information that can be set via the LON chip during bus commissioning.
Application		Name of loaded LON application (list of LON variable) on the Neuron chip.
Neuron ID		Displays ID number for the Neuron chips.
Send heart beat		Displays current interval for sending values.
Receive heart beat		Displays current interval for receiving values.

Parameter	Range	Function
Min send intervall		Displays current minimum interval for sending values. A value may only be sent a maximum of one time during this interval.
Settings		Go to settings page to parameterize LON bus.

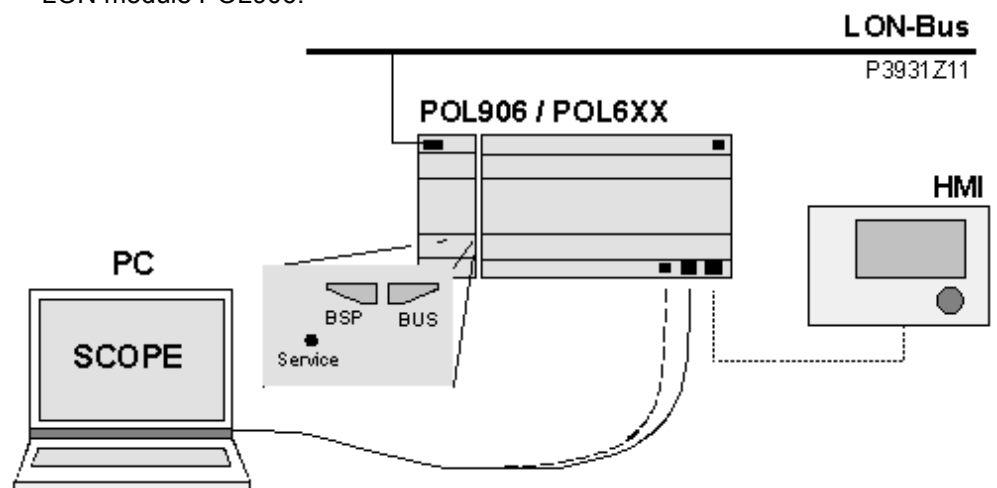
**LON bus parameterization**      **Main Index > System overview > Communication > LON > LON settings**

Parameter	Range	Function
Send heart beat	0...65535 [s]	Set interval for sending values.
Receive heart beat	0...65535 [s]	Set interval for receiving values.
Min send interval	0...65535 [s]	Set minimum interval for sending values.

### 9.3.2 Commission external LON module

**Devices**

- Participating devices
- Climatix POL 636 controller.
  - LON module POL906.



**Prerequisites**

- Prerequisites for commissioning a LON section:
- The SAPRO application is fully commissioned.
  - Level 4 (password 2000).
  - Mapping file (OBH.bin) is loaded.

## Commission LON module

Proceed as follows to configure the LON module and connect to the LON bus:

Step	Action
1	Controller <b>OFF</b> .
2	Connect LON module to controller using plug connection.
3	Connect LON bus cable to LON module (connections CLA and CLB).
4	<p>Controller <b>ON</b>:</p> <p>→ The module starts / initialization begins.</p> <p>→ Communication with the controller and LON bus is active as soon as the two LEDs "BSP" and "BUS" are steady green.</p> <p><b>Caution:</b> HMI must be reset a second time to update; prior to parameterization.</p>
5	The LON card is operational and communicating with the LON network when both LEDs are green.
6	"Generate" a new account in the LON tool (e.g. NL220, LON Maker).
7	<p>Press service pin on the LON module:</p> <p>→ The module is recognized and displayed in the LON tool.</p> <p>→ All network variable are available.</p>
8	Issue logical address via the LON tool.
9	Bind the network variable (or use the system integrator via the LON tool).

### Note

After successful LON commissioning via the LON tool, you can access the controller via the LON bus using Saphir Scope.

### Parameter

**Main Index > System overview > Communication > Comm module overview > Module[x] LON**

Parameter	Range	Function
State	<ul style="list-style-type: none"> <li>- OK.</li> <li>- Alarm</li> </ul>	Module state.
Comm failure	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Communication error between module and controller. (e.g. no LON application loaded on the Neuron Chip).
Location		Displays information that can be set via the LON chip during bus commissioning.
Application		Name of loaded LON application (list of LON variable) on the Neuron chip.
Neuron ID		Displays ID number for the Neuron chips.
Send heart beat		Displays current interval for sending values.
Receive heart beat		Displays current interval for receiving values.
Min send intervall		Displays current minimum interval for sending values. A value may only be sent a maximum of one time during this interval.
Settings		Go to settings page to parameterize LON module.
Software version		Module software version.
Device ID.		Module hardware ID.

## LON module parameterization

Main Index > System overview > Communication > Comm module overview > Module[x] LON > LON module settings

Parameter	Range	Function
Modules		Displays module type (e.g. Pol906LON).
Send heart beat	0...65535 [s]	Set interval for sending values.
Receive heart beat	0...65535 [s]	Set interval for receiving values.
Min send interval	0...65535 [s]	Set minimum interval for sending values.
Use default	<ul style="list-style-type: none"><li>– Passive</li><li>– Active</li></ul>	Reset parameterization to default values.

### Note

The controller must be reset after changes to parameterization to assume the data.

## 9.4 BACnet

### 9.4.1 Commission the BACnet/IP module

#### Devices

Participating devices

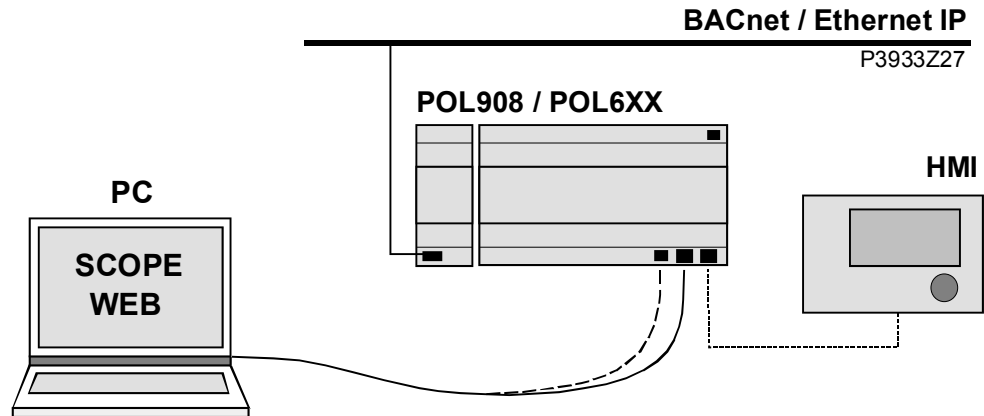
- Climatix controller POL6XX.
- Communication module POL908.

#### Tools

Participating tools:

- Operator unit (HMI).
- PC with web browser.

#### Illustration



#### Prerequisite

The SAPRO application (MBRCode.bin) is fully commissioned.

#### Commission BACnet/IP module

The BACnet/IP module is connected to the bus and configured. Procedure:

Step	Action
1	Controller <b>OFF</b> .
2	Connect BACnet/IP module to the controller via plug connection.
3	Connect the BACnet/IP bus cable to the module.
4	Controller <b>ON</b> : → The module starts / initialization begins. → As soon as the two LEDs "BSP" and "BUS" are steady green, communication with the controller and bus (BACnet) is active. <b>Caution:</b> HMI must be reset a second time to update; prior to parameterization.
5	Enter BACnet settings via HMI and web browser.
6	Configure BACnet/IP module.



**Parameter****Main Index > System overview > Communication > Comm module overview > Module[x] BACnet IP**

Parameter	Range	Function
State	– OK. – Alarm	Module state.
Comm failure	– Passive – Active	Communication error between module and controller.
<b>BACnet:</b>		
Device name.		Controller name on the network.
Device ID.		Controller address on the network.
Port		Communication port on the network.
BACnet Setting		Go to parameter page for BACnet settings.
<b>TCP/IP:</b>		
DHCP	– Active – Passive	Displays type of address assignment: – DHCP server issues addresses. – IP address is fixed.
WINS name		Displays module name.
IP		Displays controller IP address.
Mask		Displays subnet mask.
Gateway		Displays gateway address.
TCP/IP settings		Go to parameter page for TCP/IP settings.
<b>General:</b>		
Software version		Module software version.
Device ID.		Module internal device ID.
Modules		Module type.
Diagnostics.		Displays module hardware and software version.
Use default	– Passive – Active	Resets all BACnet IP parameters to standard module values at delivery.
Reset required !!	– ✓ – Execute	(Display only) As a matter of principle, the controller must be set after parameterization to assume the data (on the "Comm module overview" page).

**BACnet parameterization****Main Index > System overview > Communication > Comm module overview > Module[x] BACnet IP > BACnet settings**

Parameter	Range	Function
Device name		Change BACnet device name. Must be unique for each network.
Device ID.		Change BACnet device ID. Must be unique for each network.
Port	47808...47823	Settings for the communications port.
Imperial unit sys	–	Changes unit from metric system to imperial. – Metric. – Imperial.
Unicode	– Passive – Active	Character set for description language. The standard ASCII character set is used. Only required for languages such as Chinese or Russian (these languages are not yet implemented).

Description lang	<ul style="list-style-type: none"> <li>- English</li> <li>- Swedish</li> <li>- German</li> <li>- Lang4</li> <li>- Lang5</li> </ul>	Description language for the EDE file on BACnet integration.
Security level	0...9	Access level via BACnet.
Alarm server ID	0...8	
Alarm device ID1		
Alarm device ID2		
Alarm device ID3		
Comm mapping	16384	Mapping table for communication: (16384 = Mapping table com1 is used). (16385 = Mapping table com2 is used, but not implemented). Do not change this value!
Reset required !!	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	(Display only) As a matter of principle, the controller must be set after parameterization to assume the data (on the "Comm module overview" page).

**TCP/IP parameterization**

**Main Index > System overview > Communication > Comm module overview > Module[x] BACnet IP > TCP/IP settings**

Parameter	Range	Function
DHCP	<ul style="list-style-type: none"> <li>Active</li> <li>Passive</li> </ul>	Displays type of address assignment: <ul style="list-style-type: none"> <li>- DHCP server issues addresses.</li> <li>- IP address is fixed.</li> </ul>
WINS name		Enter name of DHCP servers.
IP		Enter IP address for DHCP=Passive.
Mask		Enter subnet mask.
Gateway		Enter gateway address.
Write settings	<ul style="list-style-type: none"> <li>- Passive</li> <li>- Active</li> </ul>	Assume changed data on the module.
Reset required !!	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	(Display only) As a matter of principle, the controller must be set after parameterization to assume the data (on the "Comm module overview" page).

## 9.5 Room units

A process interface to connect room units is always available on the basis controller POL636.xxx. The application is designed for a maximum of 2 room units.

### 9.5.1 Commission room unit

#### Devices

- Participating devices
- Climatix POL 636 controller.
  - Climatix POL 822.60 room unit.

#### Prerequisites

- Requirement for commissioning room units:
- Commission of the SAPRO application is completed a constellation with room unit is selected in the **System Parameter > Configuration 1** under Room tmp sensor (you can also select is in the menu Main index > Integrations > Room unit) .
  - Level 4 (password 2000).
  - Mapping file (OBH.bin) is loaded.

#### Commission room units

Step	Action
1	Select a constellation with room unit in the menu <b>System Parameter &gt; Configuration 1</b> under Room tmp sensor.
2	Configure additional settings as required.

#### Note

See as well Section 4.5 Room units.

#### Parameter

#### Main Index > Integrations

Parameter	Range	Function
Energy meter EM24	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	No energy meter selected.
Settings		Go to page with all settings relevant to parameterizing energy.
Inputs		Go to page with inputs.
Room units	<ul style="list-style-type: none"> <li>– 1 sensor</li> <li>– 2 sensors</li> <li>– 1 RU</li> <li>– 1snsr+ RU</li> <li>– 2 RU</li> </ul>	Inputs for room temperature sensor. You can select whether to apply maximum, minimum, average or individual value for control for more than one sensor in Configuration 2. When selecting 1 RU, 1snsr+RU or 2 RU, the interface to the room unit connection is enabled.
Settings		Goes to page with all settings relevant to parameterizing room units.
Inputs		Go to page with temperature inputs.
Reset required !!	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	As a matter of principle, the controller must be set after parameterization to assume the data.

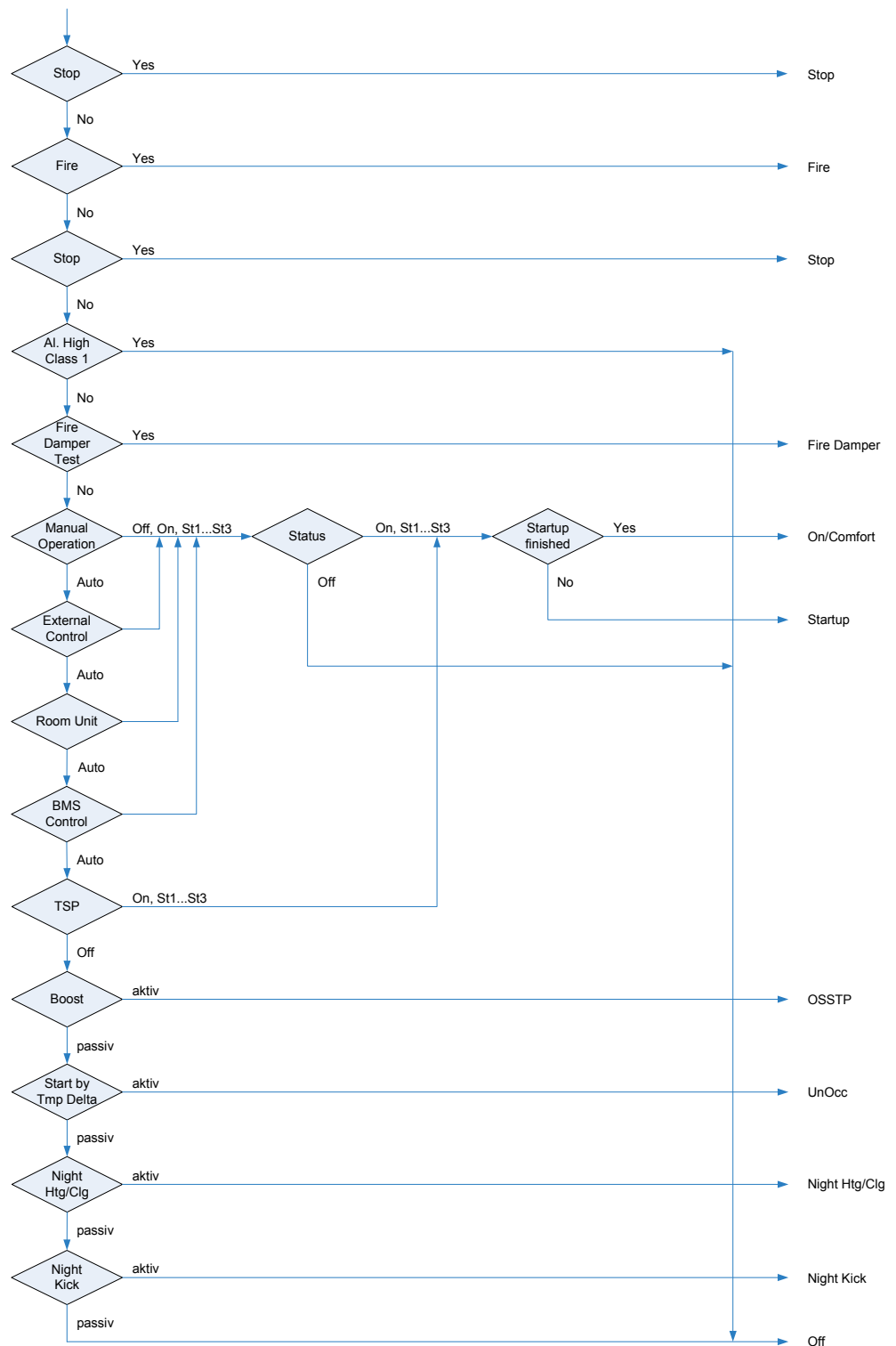
Parameter	Range	Function
Room tmp sensor	<ul style="list-style-type: none"> <li>– 1 sensor</li> <li>– 2 sensors</li> <li>– 1 RU</li> <li>– 1snsr+ RU</li> <li>– 2 RU</li> </ul>	Display the room sensor combination selected.
Displayed Alarm	<ul style="list-style-type: none"> <li>–</li> <li>– none</li> <li>– event</li>   <li>– permanent</li> </ul>	<p>Alarm display on room unit.</p> <ul style="list-style-type: none"> <li>– Only the alarm symbol flashes for an alarm.</li> <li>– The alarm symbol and alarm number flashes for an alarm. After pressing any button, the entire display returns and only the alarm symbol flashes.</li> <li>– For an alarm, the alarm symbol flashes and the alarm number is displayed instead of the clock as long as the alarm is pending.</li> </ul>
Displayed temp	<ul style="list-style-type: none"> <li>– RmUnit</li> <li>– RoomMix</li>   <li>– Exhaust</li> </ul>	<p>Temperature display.</p> <ul style="list-style-type: none"> <li>– Own, measured in the room unit.</li> <li>– Set in configuration 2 with room tmp mix.</li> <li>– Exhaust temperature</li> </ul>
Eng system temp	<ul style="list-style-type: none"> <li>– Target</li> <li>– Metric</li> <li>– Imperial</li> </ul>	<p>Temperature display in the room unit.</p> <ul style="list-style-type: none"> <li>– The valid one for the controller.</li> <li>– Metric system for the room unit.</li> <li>– Imperial system for the room unit.</li> </ul>
Stpt range +/-	0.0.....12.0 [K]	Maximal possible setpoint adjustment.
Stpt increment	<ul style="list-style-type: none"> <li>– 0.1 [K]</li> <li>– 0.5 [K]</li> </ul>	Setpoint adjustment increment.
Hrec display lim	0...100 [%]	Threshold to show energy tracking symbol on the display. The symbol is displayed for value Efficiency > Hrec display lim.
Manual control	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	<p>Enable mode button to changeover operating mode on the room unit.</p> <ul style="list-style-type: none"> <li>– Changeover is locked.</li> <li>– Changeover is enabled.</li> </ul>
Presence time	0...23 [h]	Runtime presence. <b>Plants goes to auto mode after the delay.</b>
Back2Auto Off-Eco	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	<p>Reset setpoint adjustment and presence for change in time switch command from Off &gt; Economy.</p> <ul style="list-style-type: none"> <li>– Reset locked.</li> <li>– Reset enabled.</li> </ul>
Back2Auto Off-Cmf	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	<p>Reset setpoint adjustment and presence for change in time switch command from Off &gt; Comfort.</p> <ul style="list-style-type: none"> <li>– Reset locked.</li> <li>– Reset enabled.</li> </ul>
Back2Auto Eco-Cmf	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	<p>Reset setpoint adjustment and presence for change in time switch command from Economy &gt; Comfort.</p> <ul style="list-style-type: none"> <li>– Reset locked.</li> <li>– Reset enabled.</li> </ul>
Back2Auto Cmf-Eco		Reset setpoint adjustment and presence for change in time switch command from Comfort >

Parameter	Range	Function
	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Economy. <ul style="list-style-type: none"> <li>– Reset locked.</li> <li>– Reset enabled.</li> </ul>
Back2Auto Cmf-Off	<ul style="list-style-type: none"> <li>– Off</li> <li>– On</li> </ul>	Reset setpoint adjustment and presence for change in time switch command from Comfort > Off. <ul style="list-style-type: none"> <li>– Reset locked.</li> <li>– Reset enabled.</li> </ul>
Time format	<ul style="list-style-type: none"> <li>– 24 h</li> <li>– 12 h</li> </ul>	Time format 24 hour or 12 hour clock.
Room zone	0.....127	Room zone address. This value may only be changed if multiple controllers are operated on one bus with the room units. The value must always be the same as room unit parameter 5 (see as well Sec. 4.5 ..please add link here).
Device1 BSP version		Room unit 1 firmware version.
Device1 comm alarm	<ul style="list-style-type: none"> <li>– passive</li> <li>– active</li> </ul>	Present alarm state of communication to room unit 1.
Device2 BSP version		Room unit 2 firmware version.
Device2 comm alarm	<ul style="list-style-type: none"> <li>– passive</li> <li>– active</li> </ul>	Present alarm state of communication to room unit 2.
Process bus		Goes to page with all settings relevant to parameterizing the process bus. Settings are only required on this page if the controller is integrated on the process bus system.

## 9.5.2 Prioritize various operating modes and switch-on sequences

### OpMode

Display of various operating modes: Disabled functions and elements are ignored.



# 10 Application Info

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## Main information

You can always read, i.e. password not required, the main information:

- Application manufacturer.
- Application name and version.
- Date.

## Additional information

Additional information can be edited at access level 4 and thus modified to the present plant (e.g. installation location):

- Name.
- Street.
- City.

## Parameter

- **Main Index > System overview > Application info**

- Minimum access level 4:

**Main Index > System overview > All system settings > Application info**

Parameter	Explanation, example
Application manufacturer	e.g. Siemens.
Application name and version.	e.g. STD_AHU_vX.XX.
Date	Creation data for the application; can be changed by the application manufacturer.
Street	E.g. plant address.
City	E.g. plant address.
Settings	(Requires access level 4). Go to diagnostics special settings page. You can change name, street and city here. See Diagnostics.

# 11 Save / restore parameters

## Functions

- A fully configured and parameterized plant can be backed up on an SD card or load on the controller from the card.
- Two different parameter sets for an identically configured plant can be backed up on the controller and restored. For example, a back up after parameterizing the standard parameters at the factory (Par factory save) and a backup after commissioning the plant (Par service save).

The actions list below only possible with the appropriate access levels.

## Mechanical design

### Main Index > System overview > Save / restore

Parameter	Range	Function
Config save SD	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	Requires access level 4. Backs up present plant configuration with all parameters on the SD card: <ul style="list-style-type: none"> <li>– Passive position.</li> <li>– Run backup. The display than returns to ✓. An existing parameter file (Param.bin) is overwritten on the card.</li> </ul>
Config save SD done	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Displays whether the configuration was successfully backed up on the SD card: <ul style="list-style-type: none"> <li>– Save not conducted or unsuccessful.</li> <li>– Save successful. This parameter reset to No are power outage or reset.</li> </ul>
Config load SD	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	Requires access level 4. Loads configuration file (Param.bin) with the plant configuration and all parameters from the SD card to the controller. A reset required after download! Caution: The Main Index > Configuration > Configuration by = Download must be set prior to fully downloading a new configuration. <ul style="list-style-type: none"> <li>– Passive position.</li> <li>– Execute download. The display than returns to ✓.</li> </ul>
Config load SD done	<ul style="list-style-type: none"> <li>– No</li> <li>– Yes</li> </ul>	Displays whether the configuration download was successful: <ul style="list-style-type: none"> <li>– Download no conducted or unsuccessful.</li> <li>– Download successful. This parameter reset to No are power outage or reset. The controller operate using the configuration loaded from the SD card.</li> </ul>



Reset required !!	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Resets after downloading parameters.</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Reset. The controller operate using the configuration loaded from the SD card.</li> </ul>
Par service load	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Requires access level 6. Downloads parameter files from commissioning.</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Download. The display than returns to ✓ service load.</li> </ul>
Par factory load	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Requires access level 4. Downloads parameter files from factory.</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Download. Display returns to ✓.</li> </ul>
Par service save	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Requires access level 4. Saves parameter files from the commissioning to the controller.</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Save. Display returns to ✓.</li> </ul>
Par factory save	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Requires access level 2. Saves parameter files from factory.</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Save. Display returns to ✓.</li> </ul>
Application default	<ul style="list-style-type: none"> <li>- ✓</li> <li>- Execute</li> </ul>	<p>Requires access level 2. Download configuration with all parameters per the overall standard program loaded at the factory. Requires complete re-commissioning!</p> <ul style="list-style-type: none"> <li>- Passive position.</li> <li>- Download. Display returns to ✓.</li> </ul>



## 12 Onboard WEB functionalities

The controller POL638.xxx has a WEB Server for a remote server using a standard web browser.

### Prerequisite

The following conditions must be met to connect via Ethernet:

- Corresponding mapping file (HMI4WEB) is loaded.
- The controller is connected to the Ethernet.

### Display TCP/IP parameter

**Main Index > System overview > Communication > TCP/IP**

Parameter	Range	Function
IP		Displays controller IP address.
Mask		Displays subnet mask.
Gateway		Displays gateway address.
DHCP	<ul style="list-style-type: none"> <li>– Active</li> <li>– Passive</li> </ul>	Displays type of address assignment: <ul style="list-style-type: none"> <li>– DHCP server issues addresses.</li> <li>– IP address is fixed.</li> </ul>
Name		Display controller name.
MAC		Displays controller MAC address.
Change settings		Go to page to parameterize onboard TCP/IP settings.

### Parameterization

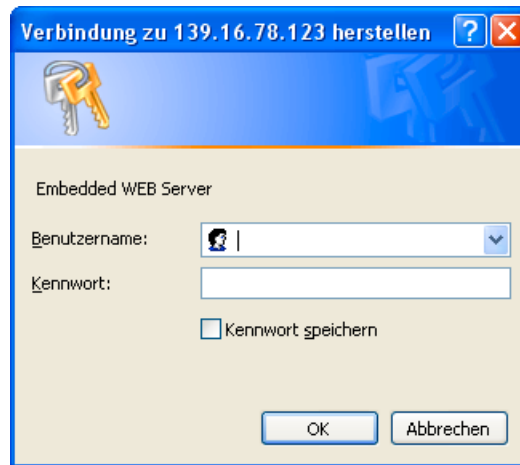
**Main Index > System overview > Communication > TCP/IP > Change settings**

Parameter	Range	Function
IP		Enter controller IP address if DHCP is set to passive.
Mask		Enter subnet mask.
Gateway		Enter gateway address.
DHCP	<ul style="list-style-type: none"> <li>– Active</li> <li>– Passive</li> </ul>	Displays type of address assignment: <ul style="list-style-type: none"> <li>– DHCP server issues addresses.</li> <li>– IP address is fixed.</li> </ul>
Name		Controller name.
100 MBit	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Change transmission rate: <ul style="list-style-type: none"> <li>– 10 MBit</li> <li>– 100 MBit</li> </ul>
Link	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	<ul style="list-style-type: none"> <li>– Keine Verbindung zum Ethernet.</li> <li>– Verbindung zum Ethernet besteht.</li> </ul>
Reset required !!	<ul style="list-style-type: none"> <li>– ✓</li> <li>– Execute</li> </ul>	As a matter of principle, the controller must be set after parameterization to assume the data.
User name		User name for logging onto to WEB HMI.
Password		Password for logging onto to WEB HMI.

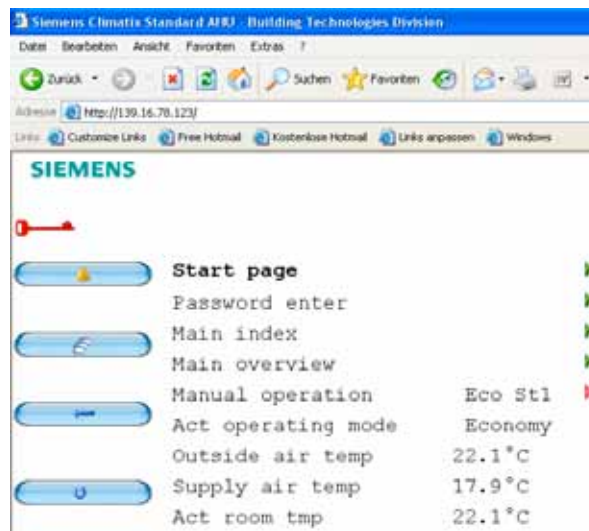
**Establishing communications to WEB HMI for the first time**

Procedure:

- Open web browser.
- Enter address (Target name or IP address)  
---> **Connect to** dialog box:



- Enter user name [ADMIN].
- Enter password [SBTAdmin!].
- Confirm with **OK**  
---> Opens the start page for standard AHU:



The "normal" HMI is now used to operate.

# 13 System settings

## 13.1 Password settings

Password protection consists of a maximum of nine levels. Only three are defined in this application. The number can be increased by modifying the file "HMI template configuration" as required.

The following activities are possible at the various levels:

- No Level - All users; no password not required.
  - Read access to all menu except system parameters, Configuration and Detail Pages.
  - Read access to alarm list and alarm history.
- Level 6 – End users, password 1000.
  - No level access plus:
  - Read access to all menus except Configuration.
  - Write access to most important setpoints (Setpoints/Settings > Main Setpoints).
  - Alarms and alarm history can be acknowledged or reset.
- Level 4 – Service operator, password 2000.
  - Level 6 access plus:
  - Access to all menus except configuration I/Os and system settings.
- Level 2 – OEM, password 6000.
  - Level 4 access plus:
  - Access to all menus and system settings.

The HMI overview below includes access level X – 6 required to read values, to change or go to another operator levels

Each operating level includes the level with the higher number.

## 13.2 Change passwords

You can change the standard passwords. Requires level 4 at a minimum.

### Parameter

**Main Index > System overview > All system settings > Passwort handling**

Parameter	Range	Function
Log in		If logged in at level 4, can be increased here to level 2. Conversely, the system goes to the Main Index page when logging in using a level 6 password The line is unavailable at level 2.
Log off		Logging off. Go to Main Index page.
Change user password		Requires level 4: The password for level 6 can be changed.
Change service password		Requires level 4: The password for level 4 can be changed.
Change factory password		Requires level 2: The password for level 2 can be changed.

Example using the service password

Select **Change service password**.

- Enter the new password under the Enter password line:  
Turn: The active digit changes.

Press: Go to next position.

Press after the fourth position: Go to first position for the Confirm password line.

- Re-enter the new password as described above.  
Press after the fourth position: The new password is accepted.

ESC

Cancel entry of new password. The old password still applies.

## 13.3 Language Support

A maximum of 5 languages possible.

The following already implemented upon delivery:

- English
- Swedish
- German

### Parameter

- Minimum access level 6:  
**Main Index > System overview > Language selection**
- Minimum access level 4:  
**Main Index > System overview > All system settings > Language selection**

Parameter	Range	Function
Current language	<ul style="list-style-type: none"><li>– English</li><li>– Swedish</li><li>– German</li><li>– Lang4</li><li>– Lang5</li></ul>	<ul style="list-style-type: none"><li>– English.</li><li>– Swedish.</li><li>– German.</li><li>– Do not select! No language implemented.</li><li>– Do not select! No language implemented.</li></ul>

## 13.4 Target

### 13.4.1 General

Displays and defines special system data for the controller.

Requires level 4.

### Parameter

**Main Index > System overview > All system settings > Target**

Parameter	Range	Function
Imperial unit sys	<ul style="list-style-type: none"><li>– Passive</li><li>– Active</li></ul>	Changes unit from metric system to imperial. <ul style="list-style-type: none"><li>– Metric system enabled.</li><li>– Imperial system enabled.</li></ul>
BSP version		Controller operating system.
Reset counter		Displays the number of controller resets and can reset the counter to 0.
Internal temp		Internal controller temperature.
GUID target		Unique controller ID number worldwide.
GUID application		Unique application software ID number worldwide.
GUID HMI		Unique HMI ID number worldwide.
GUID Web HMI		Unique web HMI ID number worldwide.
GUID OBH		Unique ID number of the OBH.bin files worldwide (object handler support).

Parameter	Range	Function
Serial number		Controller serial number.
Target ID	<ul style="list-style-type: none"> <li>– 3</li> <li>– 4</li> </ul>	Controller ID number. <ul style="list-style-type: none"> <li>– POL 636-Controller.</li> <li>– POL 638-Controller.</li> </ul>
Applic security	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Displays software lock: <ul style="list-style-type: none"> <li>– Unlocked.</li> <li>– Locked.</li> </ul> Note: Standard AHU is never locked.
Appli start allowed	<ul style="list-style-type: none"> <li>– Yes</li> <li>– No</li> </ul>	Displays whether the installed software can operate on this controller. An application with application security may only operate, for example, on the intended controller.
Special settings		Go to Target special settings page.

### 13.4.2 Special settings

#### Parameter

Parameter	Range	Function
Target name	---	Change controller name on the bus (TCP/IP name and controller USB). Default name is, for example, POL638_128. (128: last three bytes of the MAC address).
Modbus termination	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Activate the terminating resistor for the Modbus.

## 13.5 Daylight saving time

Define changeover from daylight saving time (summer) to standard time (winter).  
 The data refers to Middle European Time (MET).

Requires level 4.

#### Parameter

**Main Index > System overview > All system settings > Daylight saving time**

Parameter	Range	Function
Enable.	<ul style="list-style-type: none"> <li>– Yes</li> <li>– No</li> </ul>	Displays changeover from daylight saving time to standard time.
Active	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Displays whether summer time is currently enabled: <ul style="list-style-type: none"> <li>– Winter time.</li> <li>– Daylight savings time.</li> </ul>
B-time active	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Displays whether the B-time is enabled for the change from daylight saving time to standard time: <ul style="list-style-type: none"> <li>– B time disabled.</li> <li>– B time enabled.</li> </ul>
Time	0...12 [h]	Number of hours for the adjustment.
Start month	Jan ... Dec	Month when daylight saving time is enabled.
Start week day	Mo...Su	Day of the week to start daylight saving time.
Start offset		Week of the month for the changeover to daylight saving time:

Parameter	Range	Function
	<ul style="list-style-type: none"> <li>- 0</li> <li>- 1</li> <li>- 2</li> <li>- 3</li> <li>- 4</li> <li>- 5</li> <li>- 6</li> <li>- 7</li> <li>- 8</li> <li>- 9</li> <li>- 10</li> </ul>	<ul style="list-style-type: none"> <li>- Fifth to last week.</li> <li>- Fourth to last week.</li> <li>- Third to last week.</li> <li>- Second to last week.</li> <li>- Last week.</li> <li>- Not allowed.</li> <li>- First week.</li> <li>- Second week.</li> <li>- Third week.</li> <li>- Fourth week.</li> <li>- Fifth week.</li> </ul>
Start hour	0...23 [h]	Time of day of change to daylight saving time.
Start delay	-32768...32767 [h]	Delay for changeover.
End month	Jan...Dec	Month for changeover to standard time.
End week day	Mo...Su	Day of the week for changeover to standard time.
End offset	<ul style="list-style-type: none"> <li>- 0</li> <li>- 1</li> <li>- 2</li> <li>- 3</li> <li>- 4</li> <li>- 5</li> <li>- 6</li> <li>- 7</li> <li>- 8</li> <li>- 9</li> <li>- 10</li> </ul>	<p>Week of the month for the changeover to standard time:</p> <ul style="list-style-type: none"> <li>- Fifth to last week.</li> <li>- Fourth to last week.</li> <li>- Third to last week.</li> <li>- Second to last week.</li> <li>- Last week.</li> <li>- Not allowed.</li> <li>- First week.</li> <li>- Second week.</li> <li>- Third week.</li> <li>- Fourth week.</li> <li>- Fifth week.</li> </ul>
End hour	1...23 [h]	Time of day for changeover to standard time.
End delay	-32768...32767 [h]	Missing
UTC-difference	-720...720 [min]	<p>Difference between local time and global UTC. The following generally applies: UTC - Local time = UTC-difference. For MET (Default): 12:00 - 13:00 = - 60 min.</p> <p>Caution: Daylight saving time not considered!</p>



## 13.6 HMI (operating unit)

### 13.6.1 General

HMI (operator unit) main settings. The suffix inbuilt means that this parameter applies only to the HMI integrated in the controllers.

#### Parameter

**Main Index > System overview > All system settings > HMI**

Parameter	Range	Function
Current language	<ul style="list-style-type: none"><li>– English</li><li>– Swedish</li><li>– German</li><li>– Lang4</li><li>– Lang5</li></ul>	Displays current language and options for selection: <ul style="list-style-type: none"><li>– English.</li><li>– Swedish.</li><li>– German.</li><li>– Do not select! No language implemented.</li><li>– Do not select! No language implemented.</li></ul>
Logout time	3...30 [min]	Setting time after log in after which an access level expires after the last operation. Must log in again after this period.
Brightness inbuilt	0...31	Brightness of backlit display.
Contrast inbuilt	0...31	Contrast of backlit display.
Message duration Inb	2...15 [s]	Time period during which an error page is displayed. This is the case, for example, when a setpoint is entered that is outside the entry range.
Special settings		Requires access level 2: Go to HMI special settings page.

### 13.6.2 HMI special settings

#### Parameter

Parameter	Range	Function
Alarm ackn level	2, 4, 6	Sets required access level to acknowledge/reset alarms.
Alarm format	---	Modify the display of alarms, e.g. in the HMI. Should only be done by trained programmers and only after consulting with the OEM!

## 13.7 Diagnostics

### 13.7.1 General

This page has the following tasks:

- Information on the controller's required cycle.
- Information on internal software faults.
- General information on the application.
- Enter project-specific information for the application.

Page requires level 4.

#### Parameter

**Main Index > System overview > All system settings > Diagnostic**

Parameter	Range	Function
Par service load	– ✓ – Execute	Downloads parameter files from commissioning. – Passive position. – Download. Display returns to ✓.
Cycle time actual	0... [ms]	Current cycle time for the controller.
Cycle time average	0... [ms]	Average required cycle time for the controller since the last controller start or cycle time reset.
Cycle time min	0... [ms]	Shortest required cycle time for the controller since the last controller start or cycle time reset.
Cycle time max	0... [ms]	Longest required cycle time for the controller since the last controller start or cycle time reset.
MSR failure		Internal software failure.
MSR failure type		Internal software failure type (failure number).
MSR started up	9. Yes 10. No	Control startup successful.
Standard AHU		Application name.
VVSx Vxxx		Operating system version used to create the application; application version.
yyyy-mm-dd		Application creation date.
Name		z. B. Anlagenname.
Street		E.g. plant address.
City		E.g. plant address.
Special settings		Go to Diagnostic special settings page to change the lines: Name, street and city. (See Diagnostics).

### 13.7.2 Diagnostics Special Settings

**Parameter** **Main Index > System overview > All system settings > Diagnostic > Special settings**

Parameter	Range	Function
Settings save/restore		Go to save/restore page.
Cycle time reset	– ✓ – Execute	Reset calculated average, maximum and minimum cycles.
Reset.	– ✓ – Execute	Reset controller.
Application info 4 Name		Text entry for application info 4.
Application info 5 Street		Text entry for application info 5.
Application info 6 City		Text entry for application info 6.

Example of text entry

- Press knob to select entry line.
- Turn knob to change the first position.
- Press knob to go to next character.
- Repeat for each character.  
Maximum of 19 characters.
- Enter # to finish the entry if the string is less than 19 characters.

Note: No characters allowed after #.

### 13.8 Diag object handler

Diagnoses ram, objects and COV or alarm handler clients.

Parameters can be read with level 4. They are always write-protected.

**Parameter** **Main Index > System overview > All system settings > Diag object handler**

Parameter	Range	Function
Actual objects		Number of actual objects for the enabled configuration.
Act object memory	... [B]	Actual required memory.
Act int memory	... [B]	Maximum amount of available dynamic memory.
COV act clients		Number of subscribed internal and external COV clients.
ALH act clients		Number of subscribed internal and external alarm handler clients.
Valid objects	<ul style="list-style-type: none"> <li>– Yes</li> <li>– No</li> </ul>	Displays whether valid data is present in the object handler. For faults, evaluate the measuring and control task of the diagnostic object.
Version		Object handler version.
Data check sum		Internal checksum of the enabled configuration.
Max objects		Maximum number of enabled objects.
Max object memory	... [B]	Maximum memory for objects.
Max int memory	... [B]	Maximum memory for data.
COV max clients		Maximum number of internal and external COV clients.
ALH max clients		Maximum number of internal and external alarm handler clients.

# 14 SD card and modem

## 14.1 SD card functions (Update application)

The controller has an SD card slot with a maximum of 2 GB of memory.

The SD card allows:

- **Download application:**

- Operating system (POL63x.hex).
- Applications software (MBRTcode.bin).
- HMI operating software (HMI.bin).
- Web HMI operating software (HMI4Web.bin).
- Language and communication information (OBH.bin).

- **Download basic configuration:**

- Plant configuration including parameter (Param.bin).

- **Upload application** ("Save", upload):

- Plant configuration including parameter (Param.bin).

### Download application

Function updates/upgrades the controller.

### Prerequisites

- The files for download must be located (unzipped) in the root folder on the SD card.
- The files must have the names listed above and displayed in the screenshot below.

### Files on the SD card

Name	Größe	Typ	Geändert am
OBH.bin	380 KB	BIN File	01.04.2009 17:26
MBRTCode.BIN	297 KB	BIN File	15.04.2009 13:48
HMI.bin	202 KB	BIN File	01.04.2009 17:57
HMI4Web.bin	193 KB	BIN File	01.04.2009 17:57
POL63x.HEX	2'151 KB	HEX File	03.04.2009 15:10
StandardAHU_Vx.zip	1'222 KB	WinZip File	11.05.2009 16:33

### Procedure

- Insert card into the controller.
- Turn off power.
- Using a thin object press the button in the hole next to the controller status display (noticeable, light resistance and a slight clicking sound) and keep pressed.
- Turn on power.
- Wait until the LED flashes red and green.
- Release the button.
- Wait until the LED is orange.
- Turn off power.
- Turn on power.

### Upload and download parameters

You can save the set parameters and configurations on the SD card after successful commissioning and adjustment. For example, you can use it to download to another controller with the same basic configuration (operating system, application, HMI, HMI4Web and language/communications). Requires level 4.

### Procedure

- 1) Insert empty SD card in the controller.
- 2) Save data on the SD card (upload)  
Main Index > System overview > Save / restore > **Config save SD = Execute.**

- 3) Wait until:  
Main Index > System overview > Save / restore > **Config save SD done = Yes.**
- Insert card into the next controller.
- Download data from SD card:  
Main Index > System overview > Save / restore > **Config save SD = Execute.**
- Wait until:  
Main Index > System overview > Save / restore > **Config load SD done = Yes.**
- Reset controller:  
Main Index > System overview > Save / restore > **Reset required !! = Execute**

## 14.2 Modem / SMS

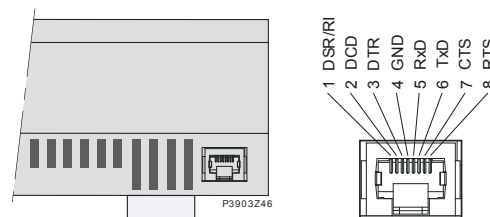
### Remote service interface

All Climatix 6XX controller possess a modem interface for an external modem. This allows for remote service via Saphir Scope. The controller can send alarm SMS. A Siemens TC35 terminal (GSM modem) required, though. Other GSM modems may be connected, but are not tested.

### 14.2.1 Commission Modem/SMS function

Connector type RJ45 jack, 8 pins.

The connection is located on the upper right-hand side of the controller cover:



The illustration displays pin assignment.

### Install and commission

The following steps required to connect a modem:

*To the Climatix controller:*

Step	Action
1	Switch power off
2	Connect modem
3	Switch power on
4	Verify the modem settings

### Requirements

Requirement for commissioning the modem:

- The SAPRO application is fully commissioned.
- Level 4 (password 2000).
- Mapping file (OBH.bin) is loaded.

### Commission controller

Step	Action
1	In the menu <b>System parameter &gt; Communication</b> , select <b>SMS</b> .
2	Configure settings.

### Note

You can access the controller after you successfully commission the modem using the Saphir Scope.

**Parameter** **Main Index > System overview > Communication > SMS**

Parameter	Range	Function
Actual number	20. Disable 21. NO. 1 22. NO. 2 23. NO. 3 24. NO. 4	Disable SMS function Send SMS to telephone numbers 1 -4.
Language	25. English 26. Swedish 27. German 28. Lang4 29. Lang5	Select SMS language. Languages 4 and 5 not yet implemented.
Settings SMS		Go to settings page to parameterize SMS.
Settings Modem		Go to settings page to parameterize modem.

**Parameterize SMS** **Main Index > System overview > Communication > SMS > Settings SMS**

Parameter	Range	Function
Free SMS 1 SAPHIR free SMS....		Free flow text for SMS Text 1 Edit SMS text on the page <b>Main Index &gt; System overview &gt; Communication &gt; SMS &gt; Settings SMS &gt; Settings.</b>
Free SMS 2 SAPHIR free SMS....		Free flow text for SMS Text 2 Edit SMS text on the page <b>Main Index &gt; System overview &gt; Communication &gt; SMS &gt; Settings SMS &gt; Settings.</b>
Fix SMS 1... Fix SMS 10		
Settings		Go to settings page to enter both free flow SMS texts.

**Parameterize modem** **Main Index > System overview > Communication > SMS > Settings Modem**  
**Main Index > System overview > Communication > Modem**

Parameter	Range	Function
Connection type	0 No modem 1 GSM modem 2 Analog modem	Displays whether a modem is connected.
State	0...11	See List below
Signal streng GSM		Signal strength of GSM modem
PIN		Modem PIN number.
SMS PIN		The controller can also receive SMS. Is only edited if you have a certain PIN that can be set here. <b>This function currently not implemented!</b>
Phone nbr 1		Enter telephone 1.
Phone nbr 2		Enter telephone 2.
Phone nbr 3		Enter telephone 3.
Phone nbr 4		Enter telephone 4.
SMS active nbr	0...4	Displays the number to which any potential SMS is sent. 0 = SMS switched off.

Parameter	Range	Function
SMS language	30. English 31. Swedish 32. German 33. Lang4 34. Lang5	Displays language used to send any potential SMS.
Send string		Displays modem initialization string for send.
Receive string		Displays modem initialization string for receive.
Spezial settings		Go to modem settings page to enter required parameters, e.g. initialization string.

#### Description of states

Value	Operating state
0	OK; SMS
1	OK; general
2	Modem is initializing
3	Modem is transferring data
4	Modem is not logged on with the provider
5	Searching for network
6	Provider prevented network logon
7	Unknown registration state
8	Modem is making connection
9	Modem is connected
10	General error, modem not responding, possibly no modem connected
11	Modem initialization failed

#### Parameterize modem

#### Main Index > System overview > Communication > Modem > Modem Special Settings

Parameter	Range	Function
Enable bus LED	35. No 36. Yes	Enable bus LED OFF = No modem connected or LED is not enabled Yellow = Modem connected and initialized no communication active Green = Modem connected and communication active Red = Modem connected but errors active (such as provider missing, no initialization possible...)
Init string 1		Modem initialization string 1.
Init string 2		Modem initialization string 2 (additional).
Force Reset	37. Passive 38. Active	Reset modem with new initialization.
SMS POU mode	39. Passive 40. Active	<b>Passive:</b> SMS are sent as text message. <b>Active:</b> SMS sent in PDU mode (some older cell phones can only use this mode).
Cell phone	41. Passive 42. Active	<b>Passive:</b> A GSM modem connected as sender. <b>Active:</b> Cell phone connected as sender.
Baud rate(19200)	43. Passive 44. Active	<b>Passive:</b> Baud rate between controller and modem is 57.6 kbps. <b>Active:</b> Baud rate is 19.2 kbps.

# 15 Configuration

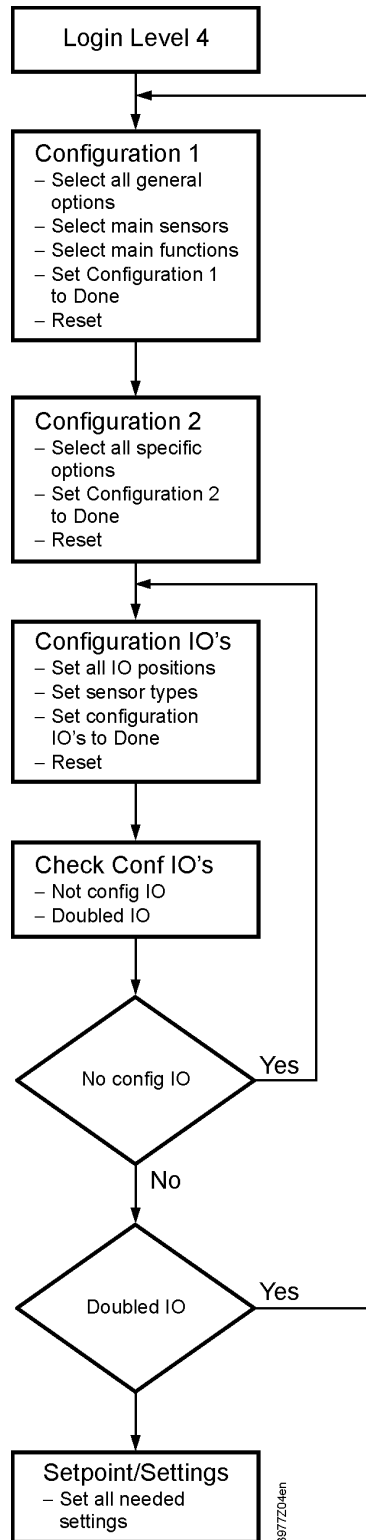
Three main steps:

The desired plant designed is configured. We distinguish between three main steps:

- Configuration 1.
- Configuration 2.
- Configuration I/Os.

Work through the three main steps in sequence.

Illustration





Preparation

Enter password for level 4:  
 Select **Start page, enter password** --->  
 Select **Main Index** page, **Configuration** --->  
**Configuration** page

Content of configuration page

The configuration page includes the following lines and associated parameters:

Line	Parameter	Explanation
Configuration by		Select configuration type.
	Download	You can download a preconfigured plant using the Saphir Scope tool or from a SD card. You must reset the controller after the download.  In this mode, all objects in Saphir Scope Tool and line in HMI are visible.
	HMI Config	The plant is configured in stages using the operator unit.  Requirement: List of all I/Os. It displays the available I/O's and the I/O position they are suppose to occupy. You also need the sensor type for sensors.  This is the normal mode that must be selected to start the plant.  <b>Caution: You cannot change over from HMI Config to download while the plant is running. This would immediately shut down all outputs and reset the controller!</b>
Configuration 1	NotDone Done	Link to Configuration 1 page and displays whether or not parameterization of Configuration 1 was completed.
Configuration 2	NotDone Done	Link to Configuration 2 page and displays whether or not parameterization of Configuration 2 was completed.
Configuration IO's	NotDone Done	Link to Configuration I/Os page and displays whether or not parameterization of Configuration I/Os was completed.
Check Config IO's		To Check Config I/Os page.
Doubled	Fault OK.	Displays whether an input or output can be used multiple times. Fault generates an alarm that locks the plant.
Not Configured	Fault OK.	Displays whether a function is enabled and the required I/Os are not assigned. Fault generates an alarm that locks the plant.

**Note**

The plant cannot be starting without Configuration By=HMI config and Configuration 1=Done, Configuration 2=Done, Configuration IO's=Done.

## 15.1 Configuration 1

Task	Set superposed settings for the plant in Configuration 1.
Notes	<ul style="list-style-type: none"> <li>– Configuration occurs setting-by-setting, i.e. you cannot bypass any lines.</li> <li>– Configuration 1 must be completed with reset prior to starting Configuration 2.</li> </ul>
Start	<p>As required: Enter password for level 4:  <b>Start page &gt; Password Enter</b></p> <p>then:  <b>Main Index &gt; Configuration &gt; Configuration 1</b></p>

Parameter	Range	Explanation
<b>General</b>		
Extension modules	No	The basis controller I/Os are enough for configuration.
	One	One extension module is connecting using address 1. DIP switches 5 and 6 must be set to ON on the module.
	Two	Two extension modules are connected with addresses 1 and 2. DIP switch 5 must be set to ON on extension module 1; on extension module 2, DIP switches 4 and 6.
Fire alarm	No	No fire alarm.
	alarm	External fire alarm such as smoke detectors, thermostats, fire detection control units, etc.
	tmp	Internal fire alarm via temperature measurement of supply and exhaust air temperature, when both sensors exist. A fire alarm is triggered when on of the two temperatures breaches a certain value.
	alarm+tmp	Both fire alarms.
Filter alarm	No	No filter alarm.
	Combined	Supply and exhaust filter with common alarm input.
	Supply	Supply filter alarm input only.
	Exhaust	Exhaust filter alarm input only.
	Sply+Exh	Two separate filter alarm inputs for supply and exhaust filters.
Emergency stop	No Yes	Input for emergency stop. A TRUE signal at this input immediately shuts down the plant. No alarm is triggered.
Alarm ackn input	No Yes	Input to acknowledge/reset an alarm. Alarms still pending are acknowledged; no longer pending alarms are reset.
Su/Wi input	No Yes	Input for Summer/Winter changeover: A TRUE signal on this input means Summer = Enabled.
TSP function	No	No time switch program.
	Steps	Time switch program with possible settings for fan stages (Off and Stx). The parameter TSP Steps determines the number of possible steps x.
	Steps+tmp	Time switch program with settings for fan stages and temperature control mode (Off, Ecox and Comx). The parameter TSP Steps determines the number of possible stages x.  The temperature mode, comfort or economy have separate setpoints for temperature control.
TSP steps		Enable possible fan steps. This setting influences the number of setpoints for controlled fans.
	1Step	TSP function = Steps ---> Possible time switch program settings: Off, St1.  TSP function = Steps+tmp ---> Possible time switch program settings: Off, Eco1, Com1.

Parameter	Range	Explanation
	2Steps	TSP function = Steps ---> Possible time switch program settings: Off, St1, St2. TSP function = Steps+tmp ---> Possible time switch program settings: Off, Eco1, Eco2, Com1, Com2.
	3Steps	TSP function = Steps ---> Possible time switch program settings: Off, St1, St2, St3. TSP function = Steps+tmp ---> Possible time switch program settings: Off, Eco1, Eco2, Eco3, Com1, Com2, Com3.
	Example 1	TSP function = Steps, TSP steps = 2Step. Fan control using 2 setpoints for St1 and St2. Temperature control using a setpoint for Comfort mode.
	Example 2	TSP function = Steps+tmp, TSP steps = 3 Fan control using 3 setpoints for St1 and St2 and St3. Temperature control using separate setpoints for Eco and Comfort.  Under Eco2, the plant operates using the temperature setpoint for Eco and the fan setpoint St2.
Ext control input	No	No external input for operating mode switch, timer, button, occupancy detector, etc.
	One	One input (e.g. off / on).
	Two	Two inputs (e.g. Auto / Off / St1 / St2).
Alarm outputs	No	No alarm output.
	One	One output (e.g. for high alarms).
	Two	Two outputs (for high and low alarms).
External setpoint	No	No analog input for connect an external setpoint or an external setpoint compensation.
	Volt	Input for one 0-10V DC signal.
	Ohm	Input for one 0-2500 Ohm signal.
	QAA27	Input for QAA27.
	BSG21	Input for BSG21 setpoint compensation.

### Sensors

Room tmp Sensor	No 1 sensor 2 sensor 1 RU 1snsr+1RU 2 RU	Inputs for room temperature sensor. You can select whether to apply maximum, minimum, average or individual value for control for more than one sensor in Configuration 2. When selecting 1 RU, 1snsr+RU or 2 RU, the interface to the room unit connection is enabled.
Exhaust tmp sensor	No Yes	Input for return air sensor.
	Yes+Hold	The maximum, otherwise present temperature is stored when shutting down the plant, to the extent the plant ran for more than 5 minutes.  The setting only makes sense when there is no room sensor and night start operations (e.g. night cooling) without plant kick are to be used. (Plant kick: Short, cyclical plant start to update the values of the sensors mounted in the duct).
Supply tmp sensor	No Yes	Input for supply air sensor.
Outs air tmp Sensor	No Yes	Input for outside air temperature sensor.
	Yes+Hold	The minimum, otherwise present temperature is stored when shutting down the plant, to the extent the plant ran for more than 5 minutes.

Parameter	Range	Explanation
		The setting only makes sense when the sensor is mounted in the duct and night start operations (e.g. night cooling) is used or as safety function for the pump start at a low outside air temperature.
Room hum Sensor	No Yes	Input for room humidity sensor.
Supply hum sensor	No Yes	Input for supply air humidity sensor.
Outs air hum sensor	No Yes	Input for outside air humidity sensor.

### Functions

Damper		Open/close damper.
	No	No dampers.
	Combined	Two dampers with only one common output.
	Supply	Supply air damper with output.
	Supply+Exh	Two dampers with separate outputs.
Exhaust fan		Exhaust air fan (supply air fan is always available; cannot be disabled).
	No	No exhaust air fan.
	Yes	Exhaust air fan with separate output.
	Combined	Exhaust and supply air fan with common output.
Fan control mode		Select fan and control type. Positions SupplySlv and ExhaustSlv not possible without enabled exhaust air fan. Positions Direct and DirectVar possible if the exhaust air fan is parameterized as combined. The exact number of outputs depends on the number of steps and whether or not the exhaust air fan is enabled. The number of required inputs/outputs double if the fan is enabled with a separate output. The sensors required for control, e.g. pressure sensors, are enabled here as well.
	Direct	Up to 3 digital outputs each for stepped fans.
	DirectVar	Up to 3 digital outputs each for stepped controlled variable speed fans.
	FixedSpeed	One digital and analog output each for analog – modulating controlled variable speed drives (e.g. St1 = 2V, St2 = 5V, St3 = 8V).
	Pressure	One digital and analog output each and one analog input each for variable speed drives in pressure-controlled plants.
	Flow	One digital and analog output each and one analog input each for variable speed drives in flow-controlled plants.
	SupplySlv	One digital and analog output each and three analog inputs for the variable speed drives in pressure-controlled plants where the supply air fan operates dependent on the exhaust fan.
	ExhaustSlv	One digital and analog output each and three analog inputs for the variable speed drives in pressure-controlled plants where the exhaust air fan operates dependent on the supply air fan.
Tmp control mode		Select control algorithm for temperature control.
	Supply	Supply air temperature control only.
	RmSplyC	Room / supply air temperature cascade control.
	RtrnSplyC	Return / supply air temperature cascade control.
	RmSplyC Su	Room / supply air cascade control during the summer; supply air temperature control only during the winter.

Parameter	Range	Explanation
	RtSplyC Su	Return / supply air cascade control during the summer; supply air temperature control only during the winter.
	Room	Room control only.
	Exhaust	Return air temperature control only.
Hrec damper		Select heat recovery control with mixed air dampers.
	No	No mixed air damper.
	Normal	Mixed air damper with output signal 100% for complete recirculation.
	Inverse.	Mixed air damper with output signal 0% for complete recirculation.
Heat recovery		Select heat recovery control with wheel, plate or hot water heat exchanger.
	No	No heat recovery.
	Wheel	Wheel heat exchanger. An analog output to control heat wheel.
	PlateExch	Plate heat exchanger. An analog output to control bypass damper.
	Water	Water heat exchanger. An analog output to control the valve.
Heating	No	No heating circuit.
	Yes	Heating register without preheating the register. Analog output for heating valve.
	Yes+PreHeat	Heating register with preheating the register. Analog output for heating valve.
Electrical heating		Electric heating register with control type.
	No	No electric heating register available.
	Analog	Electric heating register with control via an analog output.
	1Step	1-step electric heating register with control via one analog and one digital output.
	2Steps	2-step electric heating register with control via one analog and two digital outputs.
	3Steps	3-step electric heating register with binary encoded control via one analog and two digital outputs.
Cooling		Select cooling register with type.
	No	No cooling register.
	Water	An analog output for the water register valve.
	DX 1Step	One analog and one digital output for 1-step control of a direct expansion evaporator.
	DX 2Steps	One analog and two digital outputs for 2-step control of a direct expansion evaporator.
	DX 3Steps	One analog and two digital outputs (binary) for 3-step control of a direct expansion evaporator.
Humidity control		Humidification and dehumidification.
	No	No humidification and dehumidification.
	Hum	One analog and one digital output for humidifier. Only possible if the room or supply air humidity sensor is enabled.
	DeHum	Dehumidification controller. Only possible when cooling enabled.
	Hum+DeHum	Humidification and dehumidification.
Heating 2	No	No additional heating register.
	Yes	Additional heating register without preheating the register. Analog output for heating valve.
	Yes+PreHeat	Additional heating register with preheating the register. Analog output for heating valve.

Parameter	Range	Explanation
El Heating 2		Additional electric heating register with control type.
	No	No additional electric heating register available.
	Analog	Additional electric heating register with control via an analog output.
	1Step	Supplemental, 1-step electric heating register with control via one analog and one digital output.
	2Steps	Supplemental, 2-step electric heating register with control via one analog and two digital outputs.
	3Steps	Supplemental, 3-step electric heating register with binary encoded control via one analog and two digital outputs.
Cooling 2		Additional cooling register with type.
	No	No additional cooling register.
	Water	An analog output for the additional water register valve.
	DX 1Step	One analog and one digital output for 1-step control of an additional direct expansion evaporator.
	DX 2Steps	One analog and two digital outputs for 2-step control of an additional direct expansion evaporator.
	DX 3Steps	One analog and two digital outputs (binary) for 3-step control of an additional direct expansion evaporator.
Fire damper		Fire dampers
	No	No fire dampers.
	Yes	One digital output and input each for fire damper control.
	FollowUnit	One digital output and input each for fire damper control. In this case, damper opened with Unit Start or closed with Unit Stop. This setting only makes sense when the damper also uses shutoff device.
Configuration 1		This parameters enable the plant after successful parameterization. Enable occurs when Configuration 1, Configuration 2 and Configuration I/Os are completed, i.e. when each has the value "done".
	NotDone	Plant locked against switching on.
	Done	The plant is unlocked after complete parameterization (Configuration 2 and Configuration I/Os also have a value "done"), i.e. it can be switched on.
Reset Required !!	Passive Execute	Reset required after successful parameterization in Configuration 1. Assumes the appropriate presettings for Configuration 2. After reset, value automatically goes from execute to passive.

## 15.2 Configuration 2

Task	Subfunctions for parts of plants occurs in Configuration 2.
Prerequisite	Configuration 1 completed with reset.
Notes	<ul style="list-style-type: none"> <li>– Configuration occurs setting-by-setting, i.e. you cannot bypass any lines.</li> <li>– Configuration 2 must be completed with reset prior to starting Configuration IOs.</li> </ul>
Start	<p>As required: Enter password for level 4:  <b>Start page &gt; Password Enter</b></p> <p>then:  <b>Main Index &gt; Configuration &gt; Configuration 2</b></p>

Parameter	Range	Function
Night cooling	No Yes	Free cooling. Requirement: Night cooling can only be selected if one outside air temperature sensor and one room or return air sensor is available. The night kick function is enabled automatically if only one return air sensor with saving property is available. If the return air sensor saves values, the stored temperature is used to start night cooling.
Tmp start		Starts plant at night based on temperature difference. Requirement: Function can only be selected if one room or return air sensor is available. The night kick function is enabled automatically if only one return air sensor with saving property is available. If the return air sensor saves values, the stored temperature is used to start.
	No	Function not enabled.
	Htg	Function enabled for heating only.
	Clg	Function enabled for cooling only.
Boost		Plant boost with heating and cooling to a separate setpoint. Requirement: Function can only be selected if one room or return air sensor is available.
	No	Function not enabled.
	Htg	Function enabled for heating only.
	Clg	Function enabled for cooling only.
Tmp start/OSSTP blk		Block dampers or exhaust air fan when the plant is started via boost or temperature differential. Note: The function is implemented for energy considerations. <b>Caution: A bypass damper must exist and be open when the function is enabled. Otherwise, it may damage the plant.</b>
	None	No block.
	Damper	Dampers remain closed.
	Damper+Fan	Dampers remain closed and only the supply air fan is started.
Damper fdbk	No	No damper feedback.
	One	Feedback for supply air dampers (or a common feedback for both dampers). Digital input for feedback.
	Two	Separate feedback for supply and exhaust air damper. Two digital inputs for feedback.

Parameter	Range	Function
Fan steps freq conv		Activation of additional digital outputs depending on the selected fan type.
	1Step	Digital output to enable variable speed drive (always enabled).
	2Steps	An additional digital output for optional wiring depending on fan step 2.
	3Steps	Two additional digital outputs for optional wiring depending on fan step 3.
Flow display		Display flow and possible output.
	No	Function not available.
	Yes	Display of supply air and (if enabled) exhaust air flow. Analog inputs are enabled if not already enabled by the fan control setting.
Fan steps type		Required output for fan control relating to settings for fan control mode, TSP steps and fan steps freq conv.
	Separated	Digital output for each step. Example: Fan control mode = direct / TSP steps = 2 / Exhaust fan = Yes ---> 4 digital outputs: Step 1 and Step 2 each, separated for supply air and exhaust air fans.
	SepCombine	Separate outputs on the first step, common outputs for additional steps. Example: Fan control mode = pressure / TSP function = Step+tmp / TSP steps = 3 / Exhaust fan = Yes / Fan steps freq conv = 3. ---> 4 digital outputs: Step 1 each as separate variable speed drive enable, two additional outputs open for use (Fan steps freq conv) for Step2 and Step 3.
	Binary	Outputs for the steps are binary coded. The setting is permitted for fan control mode = direct or directVar. Example: Fan control mode = direct / TSP function = Step+tmp / TSP steps = 3 / Exhaust fan = Yes ---> 4 digital outputs: 2 digital output each per fan (Step1 = DO1 TRUE; Step 2 = DO2 TRUE; Step3 = DO1 und DO2 TRUE).
Fan alarm		Inputs for fan alarms (e.g. thermal contact). Logical 1 = alarm.
	No	No alarm.
	Combined	Digital input for common alarm.
	Supply	Digital input for supply air fan alarm.
	Exhaust	Digital input for exhaust air fan alarm.
	Sply+Exh	Two digital inputs for alarms from supply and exhaust air fans.
Fan fdbk		Inputs for operating message from the fans (e.g. pressure switch or relay contact). Logical 1 = Fan running.
	No	No feedback.
	Combined	Digital input for common operating message.
	Supply	Digital input for supply air fan operating message.
	Exhaust	Digital input for exhaust air fan operating message.
	Sply+Exh	Two digital inputs for operating messages from supply and exhaust air fans.
Fan deviation alm		Setpoint/actual value monitoring of the pressure or flow. An alarm is triggered for deviation over a set period.
	No	No monitoring.
	Supply	Supply air monitoring only.
	Exhaust	Exhaust air monitoring only.
	Sply+Exh	Supply and exhaust air monitoring.



Parameter	Range	Function
Fan comp room tmp	No Yes	Room-temperature dependent fan compensation. Requirement: A room or return air sensor is enabled.
Fan comp air quality	No Yes	Air quality-dependent fan compensation. Analog input for the sensor is enabled.
Fan cmp humidity	No Yes	Room humidity-dependent fan compensation. Requirement: Room humidity sensor is enabled.
Fan comp outs tmp	No Yes	Outside air-temperature dependent fan compensation. Requirement: Outside air sensor is enabled.
Fan htg / clg		The fan is further used as a heating or cooling sequence.
	No	No sequential impact on the fan.
	Htg	Only impacts fan during the heating sequence.
	Clg	Only impacts fan during the cooling sequence.
	Htg+Clg	Impact on fan in both sequences.
Tmp stpt selection		Predefined variants for temperature setpoints:
	Htg+Dz	heating setpoint and dead zone are entered. Cooling setpoint = Heating setpoint + dead zone.
	Htg/Clg	Heating and cooling setpoint is entered directly.
	+/- HalfDz	Base setpoint and dead zone is entered. Heating setpoint = Base setpoint – half dead zone. Cooling setpoint = Base setpoint + half dead zone.
	Clg-Dz	Cooling setpoint and dead zone is entered. Heating setpoint = Cooling setpoint – dead zone.
Ext stpt function		Sets whether the external setpoint acts as setpoint compensation or in absolute terms. Value corresponds to the comfort setpoint dependent on the switch Tmp setpoint selection. If the switch Tmp setpoint selection is on HtgClgSpv, the value of the setpoint compensation corresponds to the heating setpoint and the cooling setpoint is calculated from the difference between the entered setpoints for heating and cooling.
	Relative	Setpoint compensation.
	Absolute	Absolute
Room tmp mix		Selection of room temperature used for control if more than one exists.
	Average	Average.
	Minimum	Lowest temperature.
	Maximum.	Highest temperature.
	RoomSnsr1	Room sensor 1.
	RoomSnsr2	Room sensor 2.
	RoomUnit1	Room unit 1 (not yet implemented).
	RoomUnit2	Room unit 2 (not yet implemented).
Room draught limit	No Yes	Limitation to maximum/minimum supply air temperature dependent on room temperature. Requirements: One cascade control is enabled. Function minimizes draughts caused by too large a difference between supply air and room temperature.
		Sets sequence of fan sequence and cooling sequence. Requirement: Fan htg / clg is enabled.
Sequence fan clg		Sets sequence of fan sequence and cooling sequence. Requirement: Fan htg / clg is enabled.
	Fan-Clg	Fan sequence before cooling sequence.
	Clg-Fan	Cooling sequence before fan sequence.

Parameter	Range	Function
Sequence hrec dampr		Sets sequence for heating register and mixed air dampers during heating. Requirement: Heat recovery damper is enabled.
	Damper-Htg	Mixed air dampers first.
	Htg-Damper	Heating register first.
Tmp deviation alarm		Monitors setpoint/actual value temperature. An alarm is triggered for deviations over a certain period.
	No	No monitoring.
	Supply	Supply air monitoring only.
	Room	Room temperature monitoring only.
	Sply+Room	Supply air and room temperature monitoring.
Su-wi comp tmp	No	Summer/winter compensation of temperature setpoints.
	Yes	Requirement: An outside air sensor must be available.
Heat recovery frost	No	No frost protection function on heat recovery.
	Detector	Frost protection using a detector. Digital input for frost detector.
	sensor	Frost protection using a sensor. An analog input for controlled frost protection using a setpoint. Rotation and plates: Outside sensor / Water: Water sensor.
	Dtctr+Snsr	Frost protection using a sensor and detector. An analog input for controlled frost protection and a digital input for the frost detector.
	PressSnsr	Frost protection using a pressure sensor. An analog input for controlled frost protection using a setpoint.
	Pres+Dtctr	Frost protection using a pressure sensor and detector. An analog input for controlled frost protection and a digital input for the frost detector.
Hrec (pump) cmd		Heat recovery with pump. Rotary heat exchanger requiring an enable can enable the pump, for example.
	No	No pump.
	Yes	Pump without pump kick: A digital output for pump.
	Yes+Kick	Pump with pump kick: A digital output for pump and activation of pump kick.
Hrec pump alarm	No	Pump without alarm or feedback.
	Alarm	Pump with alarm. One digital input for the pump alarm: Logical 1 = alarm that immediately shuts down the pump.
	Fdbk	Pump with feedback. One digital input for feedback: Logical 1 = Pump running.
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Heat recovery alarm	No	No alarm.
	Yes	Alarm: A digital input for the alarm is enabled: Logical 1 = Alarm.
Hrec comp air qual		Influences air quality of the mixed air dampers. Requirement: HrecDamper is enabled.
	No	No impact.
	Yes	Function enabled: An analog input for the air quality sensor if not already enabled for Fan comp.
Hrec clg recovery		Type of cooling recovery.
	No	No cooling recovery.
	Hrec	Cooling recovery, e.g. using a rotary heat exchanger.
	DamperHrec	Cooling recovery using mixed air dampers.
	Both	Both variants enabled.

Parameter	Range	Function
Hrec efficiency		Calculation for heat recovery efficiency. Requirement: Heat recovery (e.g. rotary heat exchanger) must be enabled and an outside air temperature as well as a return air sensor must be available.
	No	No calculation of heat recovery efficiency.
	ExhaustAir	To calculate using exhaust air: One analog input for the exhaust sensor if not already enabled for Hrec frost.
	SupplyAir	To calculate with a supply air sensor: On analog input for the supplemental supply air sensor.
Htg frost protect	No	No frost protection.
	sensor	Frost protection using a sensor. An analog input for controlled frost protection using a setpoint.
	Sensor2Spv	Frost protection using a sensor and 2 setpoints. An analog input for controlled frost protection using two setpoints fir StandBy and operation.
	Detector	Frost protection using a detector. Digital input for frost detector.
	Snsr+Dtctr	Frost protection using a sensor and detector. An analog input for controlled frost protection and a digital input for the frost detector.
	2Spv+Dtctr	Frost protection using a sensor, 2 setpoints and detector. An analog input for controlled frost protection using two setpoints for StandBy and operation and a digital input for the frost detector.
Heating pump	No	No heating register pump.
	Yes	Heating register pump without pump kick. Digital output for the pump.
	Yes+Kick	Heating register pump with pump kick. A digital output for pump and activation of pump kick. Pump kick: Pump is switched on for a short period after idling for a longer period. This prevents lock up.
Heating pump alarm	No	Pump without alarm or feedback.
	Alarm	Pump with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Pump with feedback. Digital input for feedback (logical 1 = Pump running).
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Combi Coil		A register used for heating and cooling with 2 or 4 pipe connections. Requirement: Heating and cooling with water are enabled.
	No	No combi coil.
	1Output	Combi coil with a common output. The previously enabled output for cooling valve is disabled.
	2Outputs	Combi coil with two separate outputs.
		Note: The CombiCoil uses only one (heating) physical output for pump control. The cooling pump should always be enabled if it runs for refrigeration demand. Use only heating pump alarm/feedback.
El htg alarm	No	No alarm.
	Yes	A digital input for the alarm is enabled (logical 1 = Alarm).
Hum control mode		Select control algorithm for temperature control.
	No	No humidity control.
	Room	Room humidity control only.
	Supply	Supply air humidity control only.
	RmSplyCasc	Room supply cascade control. Requirement: Room and supply air humidity sensor is enabled.

Parameter	Range	Function
Hum control unit		Type of humidity control.
	Relative	Relative humidity control.
	Absolute	Absolute humidity control.
	CascRelAbs	Cascade control with relative room and absolute supply air humidity control.
Hum stpt selection		Predefined variants for humidity setpoints.
	Hum/dehum	Humidification and dehumidification setpoint is entered directly.
	+/- HalfDz	Base setpoint and dead zone is entered: Humidity setpoint = Base setpoint – half dead zone. Dehumidification setpoint = Base setpoint – half dead zone.
	Hum+Dz	Humidification setpoint and dead zone is entered: Dehumidification setpoint = Humidification setpoint + dead zone.
	dehum-Dz	Dehumidification setpoint and dead zone is entered: Humidification setpoint = Dehumidification setpoint – dead zone.
Dehum tmp prio		Dehumidification is reduced dependent on the heating output.
	No	Function not enabled.
	Yes	As of 90%, heating valve position reduces dehumidification.
Dew point control	No	Dew point monitoring. Minimum limitation to supply air temperature relating to dew point control.
	Yes	
Hum deviation alarm		Monitors setpoint/actual value of humidification. An alarm is triggered for deviations over a certain period.
	No	No monitoring.
	Room/Exh	Monitors room humidity only.
	Supply	Monitors supply air humidity only.
	Sply+RmExh	Monitors supply air and room humidity.
Humidifier pump	No	No humidifying pump.
	Yes	Humidifying pump without pump kick. Digital output for the pump.
	Yes+Kick	Humidifying pump with pump kick. A digital output for pump and activation of pump kick. Pump kick: Pump is switched on for a short period after idling for a longer period. This prevents lock up.
Hum pump alarm	No	Pump without alarm or feedback.
	Alarm	Pump with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Pump with feedback. Digital input for feedback (logical 1 = Pump running).
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Humidifier fdbk	No	Humidifier without feedback.
	Yes	Humidifier with feedback: Digital input for feedback is enabled (logical 1 = Humidifier running).
Cooling pump	No	No water cooling pump.
	Yes	Water cooling pump without pump kick. Digital output for the pump.
	Yes+Kick	Water cooling pump with pump kick. A digital output for pump and activation of pump kick. Pump kick: Pump is switched on for a short period after idling for a longer period. This prevents lock up.
Cooling pump alarm	No	Pump without alarm or feedback.
	Alarm	Pump with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Pump with feedback. Digital input for feedback (logical 1 = Pump running).

Parameter	Range	Function
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Cooling DX alarm	No	Direct expansion evaporator without alarm or feedback.
	Alarm	Direct expansion evaporator with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Direct expansion evaporator with feedback. Digital input for feedback is enabled (logical 1 = Pump running).
	Both	Direct expansion evaporator with alarm and feedback. Two digital inputs for alarm and feedback.
Heating 2 frost protect	No	No frost protection.
	sensor	Frost protection using a sensor. An analog input for controlled frost protection using a setpoint.
	Sensor+2Spv	Frost protection using a sensor and 2 setpoints. An analog input for controlled frost protection using two setpoints fir StandBy and operation.
	Detector	Frost protection using a detector. Digital input for frost detector.
	Snsr+Dtctr	Frost protection using a sensor and detector. An analog input for controlled frost protection and a digital input for the frost detector.
	2Spv+Dtctr	Frost protection using a sensor, 2 setpoints and detector. An analog input for controlled frost protection using two setpoints for StandBy and operation and a digital input for the frost detector.
Heating 2 pump	No	No pump.
	Yes	Pump without pump kick. Digital output for the pump.
	Yes+Kick	Pump with pump kick. A digital output for pump and activation of pump kick. Pump kick: Pump is switched on for a short period after idling for a longer period. This prevents lock up.
Heating 2 pump alm	No	Pump without alarm or feedback.
	alarm	Pump with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	fdbk	Pump with feedback. Digital input for feedback (logical 1 = Pump running).
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Heating 2 control		Positioning of additional hot water register.
	StandAlone	Hat water register not integrated in sequence. An additional analog input for one control sensor (if not already enabled for EI Heating 2 or Cooling 2).
	InSequence	e.g. integrated as re-heater in the sequence. Note: A maximum of one of the two additional registers (Heating 2 or EI heating 2) can be integrated into the sequence.
EI heating 2 alarm	No	No alarm.
	Yes	A digital input for the alarm is enabled (logical 1 = alarm).
EI Heating 2 control		Positioning of additional electric register.
	StandAlone	Electric register not integrated in sequence. An additional analog input for one control sensor (if not already enabled for Heating 2 or Cooling 2).
	InSequence	e.g. integrated as re-heater in the sequence. Note: A maximum of one of the two additional registers (Heating 2 or EI heating 2) can be integrated into the sequence.

Parameter	Range	Function
Cooling 2 pump	No	No additional water cooling pump.
	Yes	Water cooling pump without pump kick. Digital output for the pump.
	Yes+Kick	Water cooling pump with pump kick. A digital output for pump and activation of pump kick. Pump kick: Pump is switched on for a short period after idling for a longer period. This prevents lock up.
Cooling 2 pump alm	No	Pump without alarm or feedback.
	Alarm	Pump with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Pump with feedback. Digital input for feedback (logical 1 = Pump running).
	Both	Pump with alarm and feedback. Two digital inputs for pump alarm and feedback.
Cooling 2 Dx alarm	No	Additional direct expansion evaporator without alarm or feedback.
	Alarm	Direct expansion evaporator with alarm. Digital input for pump alarm. Logical 1 = alarm, immediately shuts down the pump.
	Fdbk	Direct expansion evaporator with feedback. Digital input for feedback is enabled (logical 1 = Pump running).
	Both	Direct expansion evaporator with alarm and feedback. Two digital inputs for alarm and feedback.
Cooling 2 control		Positioning of additional cooling register.
	StandAlone	Cooling register not integrated in sequence. An additional analog input for one control sensor (if not already enabled for Heating 2 or EI Heating 2).
	InSequence	e.g. integrated as second cooling register in the sequence.
Fire damper fdbk		Fire damper feedback.
	Closed	Only one feedback for close. Digital input.
	Clsd+Opnd	Two separate feedbacks for open and close. Two digital inputs.
	Combined	Two feedbacks for open and close, but only one signal. The syntax must be correct 1->0->1 => Close-> Movement -> Open. Digital input.
Auxiliary input	No	No auxiliary input.
	Input	An additional digital input for display only.
	Alm	An additional digital input with alarm.
	Inp+Alm	Two additional digital inputs. One for display and one with alarm.
Aux tmp sensor	No	No additional analog input.
	Yes	Additional analog input to connect a temperature for display.
Aux TSP output	No	No additional digital output.
	Yes	An auxiliary digital output controller by its own time switch program.
Aux A outp fan	No	No additional analog output.
	Yes	Auxiliary analog output that provides a 0-10 V signal depending on the present fan step.
Aux op mode indicat	No	No additional digital output.
	Yes	An additional digital output, switched dependent on present operating mode (e.g. Comfort or Off).
Configuration 2		This parameters enable the plant after successful parameterization. Enable occurs when Configuration 1, Configuration 2 and Configuration IOs are completed, i.e. when each has the value "done".
	NotDone	Plant locked against switching on.
	Done	The plant is unlocked after complete parameterization (Configuration 2 and Configuration I/Os also have a value "done"), i.e. it can be switched on.
Needed Required !!	Passive Execute	Reset required after successful parameterization in Configuration 2. Assumes the appropriate presettings for Configuration I/Os. After reset, value automatically goes from execute to passive.

## 15.3 Configuration I/Os

### 15.3.1 Start page

**Task** In Configuration I/Os, the required I/Os, previously set in Configuration 1 and Configuration 2 by the selected functions, are assigned to hardware.

Moreover, the parameterization of the required conversion for the sensors takes place here (e.g. Ni1000; Pt1000; 0-10 V = 0-1000 Pa).

Distribution to basis controller and extension modules.

- Basis controller: All single-digit positions, e.g. X1.
- Extension module 1: All positions X1x, DI1x, DO1x, AO1x, e.g. X11, DO14.
- Extension module 2: All positions X1x, DI1x, DO1x, AO1x, i.e., for example, X11, DO14.

**Note** The I/Os on the extension modules are available, if the module was enabled in Configuration 1.

**Prerequisite** Configuration 1 and Configuration 2 completed with one reset each.

**Start** As required:  
**Start page > Password Enter**

then:

**Main Index > Configuration > Configuration IO's**

Parameter	Range	Function
Temperatures		Go to hardware configuration page for all temperature sensors.
Pressures / flows		Go to hardware configuration page for all pressure and flow sensors.
Humidity		Go to hardware configuration page for all humidity sensors.
Digital inputs		Go to hardware configuration page for all digital inputs without alarm function.
Digital alarms		Go to hardware configuration page for all digital inputs with alarm function.
Other		Go to hardware configuration page for air quality sensor and the external setpoint adjuster.
Outputs damper		Go to hardware configuration page for supply, exhaust air and fire dampers.
Output fans		Go to hardware configuration page for fans.
Outputs tmp control		Go to hardware configuration page for heating, cooling heat recovery, etc.
Outputs humidifier		Go to hardware configuration page for the humidifier.
Outputs auxiliary		Go to hardware configuration page for auxiliary functions.
Outputs alarm		Go to hardware configuration page for both alarm outputs.
Configuration IOs		This parameters enable the plant after successful parameterization. Enable occurs when Configuration 1, Configuration 2 and Configuration I/Os are completed, i.e. when each has the value "done".
	NotDone	Plant locked against switching on.
	Done	The plant is unlocked after complete parameterization, i.e. it can be switched on.
Reset Required !!	Passive Execute	Reset required after successful parameterization in Configuration I/Os. Assumes the appropriate presettings for Configuration I/Os. After reset, value automatically goes from execute to passive.



## 15.3.2 Temperatures

The listed hard assignments are possible for all temperature sensors.

HW IO	Pos	Type
Supply, Room 1, Room 2, Exhaust, ... , Auxiliary	NUsd, Comm, X1...X8, X11...X18, X21...X28	Pt1k, Ni1k, Ni1kLG, NTC10K

Temperature measurements

- Supply air
- Room
- Room 2
- Exhaust air
- Outside air
- Heating frost
- Extract air
- Heat recovery water
- Hrec supply air
- Supply air 2 (extra supply air temperature, if heating 2 or Cooling 2 to us comming.
- Heating 2 frost
- Auxiliary (additional connectable temperature)

Terminal positions

Position	Explanation
X1...X8	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Sensor is connected via communication and therefore does not occupy a hardware input. Some sensors can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Sensors may also be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Analog Inputs, Sec. 6.5.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Sensor types

The following sensor types are possible for all temperature sensors.

- Pt1k: Platin 1000 Ohm
- Ni1k: Nickel 1000 Ohm
- NTC10K: NTC 10 kOhm
- Ni1kLG: Nickel 1000 Ohm LG (SBT)

## 15.3.3 Pressures / flows

The listed hard assignments are possible for all pressure and flow sensors.

HW IO	Pos	Fact (K-Faktor)	Scale (x Pa bei 10 V)
Supply pressure	NUsd...X28	---	0...5000
Return pressure	NUsd...X28	---	0...5000
Supply air flow	NUsd...X28	0.00...99.90	0...5000
Exhaust air flow	NUsd...X28	0.00...99.90	0...5000
Hrec frost pressure	NUsd...X28	---	0...5000



Terminal positions

Position	Explanation
X1...X8	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Sensor is connected via communication and therefore does not occupy a hardware input. Some sensors can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Sensors may also be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Analog Inputs, Sec. 6.5.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.4 Humidity

The listed hard assignments are possible for all humidity sensors.

HW IO	Pos	Y1 (Feuchte bei 0 V	Y2 (Feuchte bei 10 V)
Supply	NUsd,Comm,X1...X28	0.0...100.0 %r	0.0...100.0%r
Room	NUsd,Comm,X1...X28	0.0...100.0 %r	0.0...100.0%r
Outside	NUsd,Comm,X1...X28	0.0...100.0 %r	0.0...100.0%r

Terminal positions

Position	Explanation
X1...X8	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Sensor is connected via communication and therefore does not occupy a hardware input. Some sensors can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Sensors may also be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Analog Inputs, Sec. 6.5.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.5 Digital inputs

The listed hard assignments are possible for all digital inputs.

HW IO	Pos
External control 1	NUsd,Comm,X4...X28,DI1...DI5
External control 2	NUsd,Comm,X4...X28,DI1...DI5

HW IO	Pos
Emergency stop	NUsd,Comm,X4...X28,DI1...DI5
Su-wi input	NUsd,Comm,X4...X28,DI1...DI5
Alarm ackn button	NUsd,Comm,X4...X28,DI1...DI5
Auxiliary input	NUsd,Comm,X4...X28,DI1...DI5

Terminal positions

Position	Explanation
X4...X8	Terminal on basis controller.
DI1...DI5	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Function is connected via communication and therefore does not occupy a hardware input. Some signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Signals may generally be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Digital Inputs, Sec. 6.6.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.6 Digital alarms

The listed hard assignments are possible for all digital alarms.

HW IO	Pos
Htg frost protect, Heating pump...Auxiliary	NUsd,Comm,X4...X28,DI1...DI5

Terminal positions

Position	Explanation
X4...X8	Terminal on basis controller.
DI1...DI5	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Function is connected via communication and therefore does not occupy a hardware input. Some signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Signals may generally be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Digital Inputs, Sec. 6.6.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.7 Other

The listed hardware assigned are possible Air Quality sensor and the external set-point adjuster/slider.

HW IO	Pos	Scale (bei 10 V; 0 V = 0ppm, fix)
Air quality sensor	NUsd,Comm,X1...X28	0...3000 ppm
External setpoint	NUsd,Comm,X1...X28	---

Terminal positions

Position	Explanation
X4...X8	Terminal on basis controller.
DI1...DI5	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
Comm	Sensor is connected via communication and therefore does not occupy a hardware input. Some sensors can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Sensors may also be enabled in parallel as well (via hardware and communication). The value selector must be set accordingly when enabling via communication (for details page on Analog Inputs, Sec. 6.5.2.).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Note

Parameterize external setpoints in Unit > Inputs > Other.

### 15.3.8 Outputs: Damper

The listed hard assignments are possible for dampers.

HW IO	Pos
Outs air damper DO	DO1...DO24
Extr air damper DO	DO1...DO24
Fire damperDO	DO1...DO24

Terminal positions

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.
DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.9 Outputs: Fans

The listed hard assignments are possible for fans.

HW IO	Pos
Supply fan DO1	NUsd,Comm,DO1..DO24
Supply fan DO2	NUsd,Comm,DO1..DO24
Supply fan DO3	NUsd,Comm,DO1..DO24
Exhaust fan DO1	NUsd,Comm,DO1..DO24
Exhaust fan DO2	NUsd,Comm,DO1..DO24
Exhaust fan DO3	NUsd,Comm,DO1..DO24
Supply fan AO	NUsd,Comm,X3...X28,AO1...AO22
Exhaust fan AO	NUsd,Comm,X3...X28,AO1...AO22

Terminal positions for digital outputs

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.
DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Terminal positions for analog outputs (0...10 V DC)

Position	Explanation
X3...X8	Terminal on basis controller.
AO1,AO2	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
AO11,AO12	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
AO21,AO22	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.10 Outputs: tmpControl

The listed hard assignments are possible for all outputs.

HW IO	Pos
EI heating AO	NUsd,Comm,X3..X28,AO1...AO22
EI heating DO1	NUsd,Comm,DO1..DO24

HW IO	Pos
El heating DO2	NUsd,Comm,DO1..DO24
Heating AO	NUsd,Comm,X3..X28,AO1...AO22
Heating pump DO	NUsd,Comm,DO1..DO24
Hrec damper AO	NUsd,Comm,X3..X28,AO1...AO22
Heat recovery AO	NUsd,Comm,X3..X28,AO1...AO22
Hrec pump DO	NUsd,Comm,DO1..DO24
Cooling AO	NUsd,Comm,X3..X28,AO1...AO22
Cooling pump DO	NUsd,Comm,DO1..DO24
Cooling DX DO1	NUsd,Comm,DO1..DO24
Cooling DX DO2	NUsd,Comm,DO1..DO24
El heating 2 AO	NUsd,Comm,X3..X28,AO1...AO22
El heating 2 DO1	NUsd,Comm,DO1..DO24
El heating 2 DO2	NUsd,Comm,DO1..DO24
Heating 2 AO	NUsd,Comm,X3..X28,AO1...AO22
Heating 2 pump DO	NUsd,Comm,DO1..DO24
Cooling AO	NUsd,Comm,X3..X28,AO1...AO22
Cooling 2 pump DO	NUsd,Comm,DO1..DO24
Cooling 2 DX DO1	NUsd,Comm,DO1..DO24
Cooling 2 DX DO2	NUsd,Comm,DO1..DO24

Terminal positions for digital outputs

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.
DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Klemmenpositionen analoge Ausgänge (0...10 V DC)

Position	Explanation
X3...X8	Terminal on basis controller.
AO1,AO2	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
AO11,AO12	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
AO21,AO22	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.11 Outputs: Humidifier

The listed hard assignments are possible for all outputs.

HW IO	Pos
Humidifier AO	NUsd,Comm,X3..X28,AO1...AO22
Humidifier DO	NUsd,Comm,DO1..DO24
Humidifier pump DO	NUsd,Comm,DO1..DO24

Terminal positions for digital outputs

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.
DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Klemmenpositionen analoge Ausgänge (0...10 V DC)

Position	Explanation
X3...X8	Terminal on basis controller.
AO1,AO2	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
AO11,AO12	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
AO21,AO22	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.12 Outputs: Auxiliary

The listed hard assignments are possible for all outputs.

HW IO	Pos
Auxiliary A outp	NUsd,Comm,X3..X28,AO1...AO22
TSP output DO	NUsd,Comm,DO1..DO24
Aux op mode ind DO	NUsd,Comm,DO1..DO24

Terminal positions for digital outputs

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.

DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

Terminal positions for analog outputs (0...10 V DC)

Position	Explanation
X3...X8	Terminal on basis controller.
AO1,AO2	Terminal on basis controller.
X11...X18	Terminal on extension module 1.
AO11,AO12	Terminal on extension module 1.
X21...X28	Terminal on extension module 2.
AO21,AO22	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

### 15.3.13 Outputs: Alarms

The listed hard assignments are possible for all outputs.

HW IO	Pos
Alarm DO1	NUsd,Comm,DO1..DO24
Alarm DO2	NUsd,Comm,DO1..DO24

Terminal positions for digital outputs

Position	Explanation
DO1...DO6	Terminal on basis controller.
DO11...DO14	Terminal on extension module 1.
DO21...DO24	Terminal on extension module 2.
Comm	This output is connected via communication and therefore does not occupy a hardware input. Some output signals can also be connected via communication (see lists in the documentation on the basics for LON, ModBus, BacNet). Outputs may generally be enabled in parallel as well (via hardware and communication).
NUsd	No used: The hardware position is not yet selected. The plant is locked against switching on if an enabled sensor is set to NUsd and the following fault issued: NotConfigured (Function enabled, but hardware not assigned).

## 15.4 Check config I/Os

**Task** Hardware assignments made in Configuration I/Os are checked using this function:

- Check whether and what points are not assigned.
- Checks whether hardware inputs or outputs exists that are occupied in duplicate.

**Prerequisite** Configuration 1 and Configuration 2 completed with one reset each.

**Start** As required:  
**Start page > Password Enter**

then:

**Main Index > Configuration > Check config IO's**

Parameter	Range	Function
Not config IO	11. No 12. Yes	Displays whether there are unassigned I/Os.
1st notconfig IO pos	0, 1, ...	Displays the position of the first unassigned I/O. The associated plant elements are available in the table in appendix 20.2 Diagnostic tables for check I/O.
Doubled config IO	13. No 14. Yes	Displays whether hardware input or outputs are occupied in duplicate.
Doubled config IO's		Displays positions of the first double occupancy. The associated plant elements are available in the table in appendix 20.2 Diagnostic tables for check I/O.
Doubled config IO pos	XO1...XO28	Displays the first double occupied input or output (exception: DO).
Doubled config DO pos	DO1...DO24	Displays first double occupied DO.
Not used xIO	0... [pcs]	Displays number of unused universal inputs/outputs.
Not used DI	0... [pcs]	Displays the number of unused digital inputs.
Not used AO	0... [pcs]	Displays the number of unused analog outputs.
Not used DO	0... [pcs]	Displays the number of unused digital outputs.



# 16 Examples

A sample configuration is planned for the next documentation version.

## 17 HMI

### 17.1 Overview

The following applies to all tables:

15. Column R: Required read access level

Empty means that it can always be read.

16. Column W: Required write access level or to go to next level

Empty means go to or write is always permitted

X stands for readable value only (e.g. actual value).

### 17.2 Start page

Start page							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Password enter	Jumpline to enter the Password						
Main index	Jumpline to main index Page for the hole Unit						
Main overview	Jumpline to the short overview Page for the Unit						
Manual operation	Actual Status from Manual operation (if the configuration is done you see only one of this two lines)						
Manual operation	Actual Status from Manual operation (if the configuration is done you see only one of this two lines)						
Act operating Mode	Actual operating Mode from the Unit						
Outside air temp	Actual value from the Outside air Temperature	-64.0...64.0	°C				
Supply air temp	Actual value from the Supply air Temperature	-64.0...64.0	°C				
Act room tmp	Actual value from the for controlling used Room Temperature	-64.0...64.0	°C				
Exhaust air temp	Actual value from the Exhaust air Temperature	-64.0...64.0	°C				

### 17.3 Main index

Main Index							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Unit	Main entry into the HMI for all Values						
Global functions	Jumpline to global functions						
Alarm handling	Jumpline to alarm handling						
Integrations	Jumpline to Integrations Energy meter and Room units						
System overview	Jumpline to system overview						
Overview IO confi/rawvalues	Jumpline to Overview for all IO settings and raw Values					4	
Configuration	Indicator if configuration is finished. Jumpline to configuration pages	Not done done				4	

## 17.4 Main overview

Diese Seite enthält eine Übersicht aller Hauptwerte der konfigurierten Applikation.

## 17.5 Configuration

Write access 4 required to go to this page.

Main Index > Configuration							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Configuration by	Choose the way of configuration	HMI Config Download		Download		4	Section: 15
Configuration 1	Indicator if Configuration 1 is finished. Jumpline to Configuration 1	NotDone Done				4	
Configuration 2	Indicator if Configuration 2 is finished. Jumpline to Configuration 2	NotDone Done				4	
Configuration IO's	Indicator if Configuration IO's is finished. Jumpline to the IO Configuration	NotDone Done				4	
Check Config IO's	Jumpline to the IO check						
Doubled	If you have configured one In or Output more than once, you get a Fault	OK. Fault					
Not Configured	If you have configured a function, and not configured the needed IO's you get a Fault.	OK. Fault					
Integrations	Jumpline to the configuration of the communication						
RoomUnit1	Jumpline to room Unit 1 (not implemented)						
RoomUnit2	Jumpline to room Unit 2 (not implemented)						

## 17.6 Configuration 1

Write access 4 required to go to this page.

Main Index > Configuration > Configuration 1 --- General							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Extension modules	Number of extension modules	No One Two		No		4	Section: 0
Fire alarm	Kind of Fire alarm alarm = digital Input for alarm tmp = Supply /Exhaust Temperatur are supervised alarm+tmp = both variants are active	No alarm tmp alarm+tmp		No		4	
Filter alarm	Existing Filter alarms Combined = one alarminput for both Filters Supply = only Supply Filter Exhaust = only Exhaust Filter Sply+Exh = both Filter with separate Inputs	No Combined Supply Exhaust Supply+Exhaust		No		4	
Emergency stop	Digital Input Emergency stop	No Yes		Yes		4	
alarm ackn input	Digital Input for Alarm ackn button Button	No Yes		No		4	
Su/Wi input	Digital Input for Summer Winter Change over TRUE = Summer	No Yes		No		4	
TSP function	Select the needed Scheduler function No = Scheduler disabled Step = possible OpMode Off / [Number of Steps selected in TSP Steps] Step+tmp = possible OpMode Off/ [Number os Modes selected in TSP Steps]	No Step Step+tmp		Step		4	
TSP Steps	If TSP function = Step: Number of Steps for Fan If Tsp Functon = Step+Temp: Number of Setpoints (Off /Eco1-3 /Com1-3)	1Step 2Steps 3Steps		1St		4	

Ext control input	External Control Inputs for Operating Mode	No One Two		No		4
Alarm outputs	Number of Outputs for alarms One = 1 Output for High or/ High and Low Two = 2 Outputs, High and Low	No One Two		No		4
External setpoint	External setpoint Input Type Volt = 0...10 V DC Ohm = 0...2500 Ohm	No Volt Ohm QAA27 BSG21		No		4

### Main Index > Configuration > Configuration 1 --- Sensors

Parameter	Function	Value range	Unit	Standard	R	S	Link
Room tmp sensor	Number and Combination of Room Sensors (Room Unit is not integrated yet)	No 1 sensor 2 sensors 1 RU 1snsr+ RU 2 RU		No		4	Section: 0
Exhaust tmp sensor	Exhaust Temperature Sensor Yes+Hold = max Value is stored	No Yes Yes+Hold		No		4	
Supply tmp sensor	Supply Temperature Sensor	No Yes		Yes		4	
Outsi air tmp sensor	Outside Temperature Sensor Yes+Hold = min Value is stored (only needed if Sensor is mounted in the duct)	No Yes Yes+Hold		No		4	
Room hum sensor	Room Humidity Sensor	No Yes		No		4	
Supply hum sensor	Supply Humidity Sensor	No Yes		No		4	
Outs air hum sensor	Outside Humidity Sensor	No Yes		No		4	

### Main Index > Configuration > Configuration 1 --- Functions

Parameter	Function	Value range	Unit	Standard	R	S	Link
Damper	Kind of mounting and amount of Damper Combined = only one Output for both Dampers Supply = only Supply Damper Supply+Exh = both Damper with seperate Outputs	No Combined Supply Supply+Exh		No		4	Section: 0
Exhaust fan	Exhaust fan Combined = both Fans use the same Outputs	No Yes Combined		Yes		4	
Fan control mode	Controlmode for the Fans Direct and DirectVar are Stepwise working Fans Fixed Speed is a VSD with fix Analog Steps ( 2; 4;8 VDC) Pressure controlled VSD Flow controlled VSD Pressure controlled Master Slave (Supply = Slave) Pressure controlled Master Slave (Exhaust = Slave)	Direct DirectVar FixedSpeed Pressure Flow SupplySlv ExhaustSlv		Direct		4	
Tmp control mode	Control Modes from the Temperature Supply controlled RoomSupplyCascade Return SupplyCascade RoomSupplyCascade in Summer, Supply in Winter ReturnSupplyCascade in Summer, Supply in Winter Room controlled Return controlled	Supply RmSplyC RtSplyC RmSplyC Su RtSplyC Su Room Return		Supply		4	
Hrec damper	Heat recovery Dampers Normal=100% full Hrec Invers = 0% full Hrec	No Normal Inverse.		No		4	

## Main Index > Configuration > Configuration 1 --- Functions

Parameter	Function	Value range	Unit	Standard	R	S	Link
Heat recovery	Choose the Heat recovery Unit	No Wheel PlateExch Water		Wheel		4	Section: 0
Heating	Water Heating Yes = Heating enabled PreHeat = Heating + Preheating function from the Heatingregister	No Yes Yes+PreHeat		Yes		4	
Electrical heating	Choose the Electrical heating Coil Only one analog Output is enabled 1 step = 1 digital Output 2 step = 2 digital Outputs 3 step = 2 digital Outputs	No Analog 1step 2step 3step		No		4	
Cooling	Cooling  If a Dx Cooler is chosen, the analog Output has to be disabled seperately in IO Config if not needed	No Water Dx 1Step Dx 2Steps Dx 3Steps		No		4	
Humidity control	Humidity control Only Humidification Only Dehumidification Humidification and Dehumidification	No Hum DeHum Hum+DeHum		No		4	
Heating 2	Additionally Water Heating Yes = Heating enabled PreHeat = Heating + Preheating function from the Heatingregister	No Yes Yes+PreHeat		No		4	
EI Heating 2	Choose the additionally Electrical heating Coil Only one analog Output is enabled 1 step = 1 digital Output 2 step = 2 digital Outputs 3 step = 2 digital Outputs	No Analog 1step 2step 3step		No		4	
Cooling 2	Additionally Cooling  If a Dx Cooler is chosen, the analog Output has to be disabled seperately in IO Config if not needed	No Water Dx 1Step Dx 2Steps Dx 3Steps		No		4	
Fire damper	Fire damper  Follow Unit= If Unit switch Off Damper close	No Yes FollowUnit		No		4	
Configuration 1	If Configuration 1 is done this must be setted to done for internal lockings	Done NotDone		NotDone		4	
Reset required !!	After Configuration 1 is setted to done, a reset is needed before entering Commisioning 2	Passive Active		Passive		4	

## 17.7 Configuration 2

### Main Index > Configuration > Configuration 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Night cooling	Activate the Night cooling function	No Yes		No		4	Section: 15.2
Tmp start	Enables Unit start in Unoccupied Mode according to Temperatur Difference between the Room and a separate Setpoint In case of a Htg demand In case of a Clg demand In case of a Htg or Clg demand	No  Htg Clg Htg+Clg		No		4	
Boost	Enables Unit start in Unoccupied Mode according to the next start command from sheduler In case of a Htg demand In case of a Clg demand In case of a Htg or Clg demand	No  Htg Clg Htg+Clg		No		4	
Tmp start/OSSTP blk	Block in Case of Tmp start or Boost The Damper (bypass Damper is needed) The Exhaust fan and Damper (bypass Damper is needed)	No Damper Damper+Fan		No		4	

## Main Index > Configuration > Configuration 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Damper fdbk	Damper Feedback Supply Damper fdbk (combined=1fdbk) Exhaust Damper fdbk	No One Two		No		4	
Fan steps freq conv	Additionally digital Outputs for Frequency controlled Fans 1step = Enable signal for FreqConv 2/3steps = extra DO's can be used to switch something according to the Fan step	1Step 2Steps 3Steps		1St		4	
Flow display	Analog Input for Sensor to see the actual Flow without any controlled Function Analog Output for actual flow Value	No Yes Yes+Outp		No		4	
Fan steps type	Select hardware configuration of DO's for Fans Sep = Single Output per Fan and Step SepCombine = Single Output St1 per Fan, St2 and Step3 one Output per Step for both Fans Binary= Single Outputs per Fan but binary coded St3 = both DO per Fan are active	Sep SepCombine Binary		Sep		4	
Fan alarm	Combination and Type of Fan alarms Combined = one alarm for both Fans Supply = only Supply Fan alarm Exhaust = only Exhaust fan alarm Sply+Exh= two separate alarms	No Combined Supply Exhaust Sply+Exh		No		4	
Fan fdbk	Combination and Type of Fan Feedback Combined = one fdbk for both Fans Supply = only Supply Fan fdbk Exhaust = only Exhaust fan fdbk Sply+Exh= two separate fdbk's	No Combined Supply Exhaust Sply+Exh		No		4	
Fan deviation alarm	Alarm if the Pressure/Flow Setpoint is not reached Supply = only Supply deviation alarm Exhaust = only Exhaust deviation alarm Sply+Exh= Supply and Exhaust deviation alarms	No Supply Exhaust Sply+Exh		No		4	
Fan cmp room tmp	Fan compensation according to Room or Exhaust Temperature (only possible with Room or Exhaust air sensor)	No Yes		No		4	
Fan cmp air qual	Fan compensation according to Airquality Control	No/Yes		No		4	
Fan cmp humidity	Fan compensation according to Humidity control						
Fan cmp outs tmp	Fan compensation according to Outside Temperature (only possible with Outside temperature sensor)	No/Yes		No		4	
Fan htg / clg	Influence the Fan according to the Temperature sequence Htg = influence as Heating Sequence Clg = influence as Cooling Sequence Htg+Clg = influence as Htg and Clg Sequence	No Htg Clg/ Htg+Clg		No		4	Section: 15.2
Tmp stpt selection	Setpoint selection for Cascade controller Htg Setpoint + DB = Clg Setpoint Separate Htg and Clg Setpoint Basic Setpoint + ½ DB = Clg; - ½ DB = Htg Clg Setpoint – DB = Htg Setpoint	HtgSpv+Dz HtgClgSpv Spv+HalfDz ClgSpv-Dz		HtgSpv+DB		4	
Ext stpt function	Shift +/- x degrees of the Temperature Setpoint Override the Setpoint	Shift Override		Shift		4	
Room tmp mix	Select the valid Room temperature for controlling (only possible if more than one Room temperature available)	Average Minimum Maximum. RoomSnsr1 RoomSnsr2 RoomUnit1 RoomUnit2		Average			
Room draught limit	No = The setted Min/Max Values from the Temperature Cascade controller are Valid FlowLim = you can set a max allowed temperaturedeviation between the Supply Air and the Room temperature	No FlowLim		No			
Sequence fan clg	Fan Cooling order in Sequence (only possible if Clg is selected)	Fan-Clg Clg-Fan		Fan-Clg		4	

## Main Index > Configuration > Configuration 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Sequence hrec damper	Hrec damper order in Sequence (only possible if Hrecovery Dampers are selected)	Damper-Htg Htg-Damper		Damper-Htg		4	
Deviation alarm tmp	Alarm if the Temperature Setpoint is not reached	No Supply Room Sply+Room		No		4	
Su/Wi comp tmp	Summer Winter compensation	No Yes		No		4	
Frost protect hrec	Type of Frost detection for Heat recovery	No Detector sensor Sensor+Detector PressSnsr Prs+Dtctr		No		4	
Hrec (pump) cmd	Heat recovery Pump (if it is needed to have a digital Output for Heat recovery, activate the Pump)	No Yes Yes with Kick		No		4	
Hrec pump alarm	Alarming for Heat recovery Pump	No alarm fdbk/ both		No		4	
Heat recovery alarm	General Heat recovery alarm	No Yes		Yes		4	
Hrec comp air qual	Heat recovery compensation according to Airquality (only possible if Heat recovery Dampers selected)	No Yes		No		4	
Hrec clg recovery	Heatrecovery cooling recovery (only possible if Outside temperature and Room or Exhaust Air Sensor are selected)	No Hrec DamperHrec both		No		4	
Hrec efficiency	Heat recovery Efficiency Calculation ExhaustAir = Input for Exhaust Temp is enabled SupplyAir = Input for Hrec Supply Temp is enabled (Function only possible if Outside temperature and Exhaust Air Sensor are selected)	No ExhaustAir  SupplyAir		No		4	
Htg frost protect	Htg frost protect function Only Sensor Sensor with 2 Setpoints Only Detector Sensor and Detector Sensor with 2 Setpoints and Detector	No sensor sensor2Spv Detector Snsr+Dtctr 2Spv+Dtctr		sensor		4	Section: 15.2
Heating pump	Heating pump  Heating pump with Pump kick function	No Yes Yes+Kick		Yes+Kick		4	
Heating pump alarm	Alarming for Heating pump	No alarm fdbk both		alarm		4	
Combi Coil	Combi Coil (only possible with Clg Water and Htg) One analog Ouput for Htg and Clg Two analog Ouputs	No  1AO 2AO		No		4	
El htg alarm	Electrical heating alarm	No/Yes		Yes		4	
Hum control mode	How Humidification is controlled Rm = Room control (Room Hum Sensor is needed) Sply = Supply control (Supply Hum Sensor is needed) RmSplyCasc = Room Supply Cascade control (Room and Supply Sensor are needed)	No Rm  Sply  RmSplyCasc		No		4	
Hum control unit	Kind of Humidity control	Relative Absolute CascRelAbs		Relative		4	
Hum stpt selection	Setpoint selection for Cascade controller Hum Setpoint ; Dehum Setpoint Basic Setpoint + ½ DB = DeHum; - ½ DB = Hum Hum Setpoint + DB = DeHum Setpoint DeHum Setpoint – DB = Hum Setpoint	HumDeHum Spv+HalfDB  Hum+DB DeHum-DB		HumDeHum		4	

## Main Index > Configuration > Configuration 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Dehum tmp prio	Dehumidification Control (tmpPrio= if Heating > 90% DeHum is decreased)	No/Yes		No		4	
Dew point control	Dew Point Control (only possible with Hum Supply and Tmp Sply Sensor)	No/Yes		No		4	
Hum deviation alarm	Alarm if the Humidification Setpoint is not reached Room or Exhaust Air is monitored Supply Air is monitored Supply and Room or Exhaust Air are monitored (only possible with a Room or/and a Supply Sensor)	No  RoomExhaust Supply Sply+RmRtr		No		4	
Humidifier pump	Humidification Pump  Humidification Pump with Pump kick function	No Yes Yes+Kick		No			
Hum pump alarm	Alarming for Humidification Pump	No alarm fdbk both		No		4	
Humidifier fdbk	Generally Humidification Feedback	No Yes		No		4	
Cooling pump	Cooling Pump	No Yes Yes+Kick		Yes+Kick		4	
Cooling pump alarm	Alarming for Cooling Pump	No alarm fdbk both		alarm		4	
Cooling DX alarm	Alarming for Dx Cooling	No alarm fdbk both		alarm		4	
Htg 2 frost protect	Heating 2 Frost function Only Sensor Sensor with 2 Setpoints Only Detector Sensor and Detector Sensor with 2 Setpoints and Detector	No sensor Sensor2Spv Detector Snsr+Dtctr 2Spv+Dtctr		No		4	
Heating 2 pump	Heating 2 Pump  Heating pump with Pump kick function	No Yes Yes+Kick		Yes+Kick		4	
Heating 2 pump alm	Alarming for Heating 2 Pump	No alarm fdbk both		alarm		4	
Heating 2 control	Heating 2 Control (In Sequence = additionally Heater eg. ReHeater)	StandAlone/ InSequence		StandAlone		4	
EI heating 2 alarm	Electrical heating 2 alarm	No/Yes		No		4	
EI Heating 2 control	Electrical heating 2 Control (In Sequence = additionally Heater eg. ReHeater)	StandAlone/ InSequence		StandAlone		4	
Cooling 2 pump	Cooling 2 Pump	No Yes Yes+Kick		Yes+Kick		4	
Cooling 2 pump alm	Alarming for Cooling 2 Pump	No alarm fdbk both		alarm		4	
Cooling 2 Dx alarm	Alarming for Dx Cooling 2	No alarm fdbk both		No		4	
Cooling 2 control	Cooling 2 Control (In Sequence = additionally Cooler)	StandAlone/ InSequence		StandAlone		4	
Fire damper fdbk	Fire damper Feedback signals Only one fdbk for Closed Two fdbk's opened and closed One fdbk signalise opened and closed (1=>0=>1 = closed => move => opened)	Clsd Clsd+Opnd Combined		Clsd		4	
Auxiliary input	Auxiliary input Function Input = Auxiliary input only for Display alarm = Input for alarm Inp+Alm = 2 Auxiliarx Inputs one for Display one for alarm	No Input alarm Inp+Alm		No		4	

Section:  
15.2

## Main Index > Configuration > Configuration 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Aux tmp sensor	Auxiliary Temperature sensor	No Yes		No		4	Section: 15.2
Aux TSP output	Auxiliary Output with own Scheduler	No Yes		No		4	
Aux A outp fan	Auxiliary analog Output which is setted according to the actual Fan Step the	No Yes		No		4	
Aux op mode indicat	Auxiliary Output which Indicate the selected Operation Mode	No Yes		No		4	
Configuration 2	If Configuration 2 is done this must be setted to done	Done NotDone		NotDone		4	
Reset required !!	After Configuration 2 done a reset is needed for take away not needed Lines from Configuration 2	Passive Active		Passive		4	

## 17.8 Configuration I/Os

### Main Index > Configuration > Configuration IO's

Parameter	Function	Value range	Unit	Standard	R	S	Link
Temperatures	Jumpline to Configuration IO's Temperatures						Section: 15.3.1
Pressures/Flows	Jumpline to Configuration IO's Pressures/Flows					4	
Humidity	Jumpline to Configuration IO's Humidity					4	
Digital inputs	Jumpline to Configuration IO's digital Inputs					4	
Digital alarms	Jumpline to Configuration IO's digital alarms					4	
Other	Jumpline to Configuration IO's Air Quality, External setpoint					4	
Outputs damper	Jumpline to Configuration IO's Supply-, Exhaust-, Firedampers					4	
Outputs fans	Jumpline to Configuration IO's Exhaust-, Supply Fan						
Outputs tmp control	Jumpline to Configuration IO's for all Temperatur sequence relatet Elements like Heating, Cooling						
Outputs humidifier	Jumpline to Configuration IO's digital alarms						
Outputs auxiliary	Jumpline to Configuration IO's digital alarms						
Outputs alarm	Jumpline to Configuration IO's digital alarms						
Configuration IO's	If Configuration IO's is done this must be setted to done for internal lockings	Done NotDone		NotDone		4	
Reset required !!	After Configuration IO's is setted to done, a reset is needed before starting the parametrising from the Airhandling Unit	Passive Active		Passive		4	

### 17.8.1 Temperatures

#### Main Index > Configuration > Configuration IO's > Temperatures

Parameter	Function	Terminal	Type	R	S	Link
HW IO:		Pos:	Type:			
Supply air	Supply air temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Room	Room temperature 1	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Room 2	Room temperature 2	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Exhaust air	Exhaust air temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Outside air	Outside air temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Heating frost	Heating frost protection temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Heat recovery water	Heat recovery water temperaure	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Extract air	Extract air temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Hrec supply air	Heat recovery supply temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Supply air 2	Supply air 2 temperature (needed if Htg 2 and/or Clg 2 have own Sequence	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Heating 2 frost	Heating 2 frost temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4
Auxiliary	Auxiliary temperature	NUsd,Comm,X1...X28	Pt1k...NTC10k			4



## 17.8.2 Pressures/Flow

### Main Index > Configuration > Configuration IO's > IO conf press/flows

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply pressure	Supply pressure						
Pos	IO Position	NUsd,Comm,X1...X28				4	
Scale	Scale	0...5000	Pa	500		4	
Return pressure	Return pressure					4	
Pos	IO Position	NUsd,Comm,X1...X28				4	
Scale	Scale	0...5000	Pa	500		4	
Supply air flow	Supply air flow					4	
Pos	IO Position	NUsd,Comm,X1...X28				4	
Fact	Factor	0.00.....50.00		0.00		4	
Scale	Scale	0...5000	Pa	500		4	
Exhaust air flow	Exhaust air flow					4	
Pos	IO Position	NUsd,Comm,X1...X28				4	
Fact	Factor	0.00.....50.00		0.00		4	
Scale	Scale	0...5000	Pa	500		4	
Hrec frost pressure	Heat recovery Frost Pressure					4	
Pos	IO Position	NUsd,Comm,X1...X28				4	
Scale	Scale	0...5000	Pa	500		4	

Section:  
15.3.3

## 17.8.3 Humidity

### Main Index > Configuration > Configuration IO's > IO conf humidity

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply	Supply Humidity						
Pos	IO Position	NUsd,Comm,X1...X28				4	
Y1	Humidity Sensor curve Value for 0V	0...100	%rH	0.0		4	
Y2	Humidity Sensor curve Value for 10V	0...100		100.0		4	
Room	Room Humidity						
Pos	IO Position	NUsd,Comm,X1...X28				4	
Y1	Humidity Sensor curve Value for 0V	0...100	%rH	0.0		4	
Y2	Humidity Sensor curve Value for 10V	0...100		100.0		4	
Outside	Outside Humidity						
Pos	IO Position	NUsd,Comm,X1...X28				4	
Y1	Humidity Sensor curve Value for 0V	0...100	%rH	0.0		4	
Y2	Humidity Sensor curve Value for 10V	0...100		100.0		4	

Section:  
15.3.4

## 17.8.4 Digital Inputs

### Main Index > Configuration > Configuration IO's > IO conf digital inp

Parameter	Function	Value range	Unit	Standard	R	S	Link
External control 1	IO Position external Switch1 for switching the Unit	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	
External control 2	IO Position external Switch2 for switching the Unit	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	
Emergency stop	IO Position Emergency stop	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	
Su-wi input	IO Position external Switch for Summer Winter change over	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	
Alarm ackn button	IO Position external Acknowledge Button	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	
Auxiliary input	IO Position Auxiliary input	NUsd,Comm,X4...X28, DI1...DI5		NUsd		4	

Section:  
15.3.5

## 17.8.5 Digital alarms

### Main Index > Configuration > Configuration IO's > IO conf alarms

Parameter	Function	Value range	Unit	Standard	R	S	Link
Htg frost monitor	IO Position Heating frost monitor	NUsd,Comm,X1...X28		NUsd		4	
Heating pump	IO Position Heating pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Heating pump fdbk	IO Position Heating pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
Electrical heating	IO Position Electrical Heater alarm	NUsd,Comm,X1...X28		NUsd		4	
Hrec frost monitor	IO Position Heat recovery frost monitor	NUsd,Comm,X1...X28		NUsd		4	
Hrec (pump)/cmd	IO Position Heat recovery pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Hrec pump fdbk	IO Position Heat recovery pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
Heat recovery	IO Position Heat recovery alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling pump	IO Position Cooling pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling pump fdbk	IO Position Cooling Pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
Cooling Dx	IO Position Dx Cooling alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling Dx fdbk	IO Position Dx Cooling Feedback	NUsd,Comm,X1...X28		NUsd		4	
Humidifier pump	IO Position Humidification Pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Hum pump fdbk	IO Position Humidification Pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
Humidifier fdbk	IO Position Humidification Feedback	NUsd,Comm,X1...X28		NUsd		4	
Htg 2 frost monitor	IO Position Heating 2 frost monitor	NUsd,Comm,X1...X28		NUsd		4	
Heating 2 pump	IO Position Heating 2 pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Htg 2 pump fdbk	IO Position Heating 2 pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
EI Heating 2	IO Position Electrical Heater 2 alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling 2 pump	IO Position Cooling 2 pump alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling 2 pump fdbk	IO Position Cooling 2 Pump Feedback	NUsd,Comm,X1...X28		NUsd		4	
Cooling 2 Dx	IO Position Dx Cooling 2 alarm	NUsd,Comm,X1...X28		NUsd		4	
Cooling 2 Dx fdbk	IO Position Dx Cooling 2 Feedback	NUsd,Comm,X1...X28		NUsd		4	
Fan	IO Position Fan alarm (only if combined Fan)	NUsd,Comm,X1...X28		NUsd		4	
Supply fan	IO Position Supply fan alarm	NUsd,Comm,X1...X28		NUsd		4	
Exhaust fan	IO Position Exhaust fan alarm	NUsd,Comm,X1...X28		NUsd		4	
Supply fan fdbk	IO Position Supply fan Feedback (eg. Pressure switch)	NUsd,Comm,X1...X28		NUsd		4	
Exhaust fan fdbk	IO Position Exhaust fan Feedback (eg. Pressure switch)	NUsd,Comm,X1...X28		NUsd		4	
Filter	IO Position Filter alarm (only if combined Fan)	NUsd,Comm,X1...X28		NUsd		4	
Supply filter	IO Position Supply filter alarm	NUsd,Comm,X1...X28		NUsd		4	
Exhaust filter	IO Position Exhaust filter alarm	NUsd,Comm,X1...X28		NUsd		4	
Fire	IO Position Fire alarm	NUsd,Comm,X1...X28		NUsd		4	
Outs air damper fdbk	IO Position Outside air damper Feedback	NUsd,Comm,X1...X28		NUsd		4	
Extr air damper fdbk	IO Position Extract air damper Feedback	NUsd,Comm,X1...X28		NUsd		4	
Fire damper Closed	IO Position Fire damper Feedback closed	NUsd,Comm,X1...X28		NUsd		4	
Fire damper Opened	IO Position Fire damper Feedback opened	NUsd,Comm,X1...X28		NUsd		4	
Auxiliary	IO Position Auxiliary alarm	NUsd,Comm,X1...X28		NUsd		4	

Section:  
0

## 17.8.6 Other

### Main Index > Configuration > Configuration IO's > Other

Parameter	Function	Value range	Unit	Standard	R	S	Link
Air quality Sensor							
Pos	IO Position	NUsd,Comm,X1...X28		NUsd		4	
Y1	Humidity Sensor curve Value for 0V	0...3000	ppm	2000		4	
External setpoint	IO Position External setpoint						
Pos	IO Position	NUsd,Comm,X1...X28		NUsd		4	

Section:  
15.3.7

## 17.8.7 Outputs damper

### Main Index > Configuration > Configuration IO's > IO conf damper outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Outs air damper DO	IO Position Output Outside air damper	NUsd,Comm,DO1...DO24		NUsd		4	
Extr air damper DO	IO Position Output Extract air damper	NUsd,Comm,DO1...DO24		NUsd		4	
Fire damper DO	IO Position Output Fire damper	NUsd,Comm,DO1...DO24		NUsd		4	

Section:  
15.3.8

## 17.8.8 Outputs fans

### Main Index > Configuration > Configuration IO's > IO conf fan outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply fan DO1	IO Position Supply fan Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	Section: 15.3.9
Supply fan DO2	IO Position Supply fan Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	
Supply fan DO3	IO Position Supply fan Stage 3	NUsd,Comm,DO1...DO2 4		NUsd		4	
Exhaust fan DO1	IO Position Exhaust fan Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	
Exhaust fan DO2	IO Position Exhaust fan Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	
Exhaust fan DO3	IO Position Exhaust fan Stage 3	NUsd,Comm,DO1...DO2 4		NUsd		4	
Supply fan AO	IO Position Supply fan analog Output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Exhaust fan AO	IO Position Exhaust fan analog outputl	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	

## 17.8.9 Outputs temperature control

### Main Index > Configuration > Configuration IO's > IO conf tmp outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
El heating AO	IO Position Electrical Heater analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	Section: 15.3.10
El heating DO1	IO Position Electrical Heater Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	
El heating DO2	IO Position Electrical Heater Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	
Heating AO	IO Position Heater analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Heating pump DO	IO Position Heater Pump	NUsd,Comm,DO1...DO2 4		NUsd		4	
Hrec damper AO	IO Position Heat recovery damper analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Heat recovery AO	IO Position Heat recovery analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Hrec pump DO	IO Position Heat recovery Pump	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling AO	IO Position Cooling analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Cooling pump DO	IO Position Cooling Pump	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling DX DO1	IO Position DX Cooling Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling DX DO2	IO Position DX Cooling Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	
El heating 2 AO	IO Position Electrical Heater 2 analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
El heating 2 DO1	IO Position Electrical Heater 2 Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	
El heating 2 DO2	IO Position Electrical Heater 2 Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	
Heating 2 AO	IO Position Heater 2 analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Heating 2 pump DO	IO Position Heater 2 Pump	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling 2 AO	IO Position Cooling 2 analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	
Cooling 2 pump DO	IO Position Cooling 2 Pump	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling 2 DX DO1	IO Position DX Cooling 2 Stage 1	NUsd,Comm,DO1...DO2 4		NUsd		4	
Cooling 2 DX DO2	IO Position DX Cooling 2 Stage 2	NUsd,Comm,DO1...DO2 4		NUsd		4	

## 17.8.10 Outputs humidifier

### Main Index > Configuration > Configuration IO's > IO conf hum outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Humidifier AO	IO Position Humidifier analog output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	Section: 15.3.11
Humidifier DO	IO Position Humidifier Command	NUsd,Comm,DO1...DO24		NUsd		4	
Humidifier pump DO	IO Position Humidifier pump	NUsd,Comm,DO1...DO24		NUsd		4	

## 17.8.11 Outputs auxiliary

### Main Index > Configuration > Configuration IO's > IO conf aux outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Auxiliary A outp	IO Position Auxiliary analog Output	NUsd,Comm,X3...X28, AO1...AO22		NUsd		4	Section: 15.3.12
TSP output DO	IO Position Auxiliary Scheduler Output	NUsd,Comm,DO1...DO24		NUsd		4	
Aux op mode ind DO	IO Position Digital Output for Auxiliary Operation Mode Indicator	NUsd,Comm,DO1...DO24		NUsd		4	

## 17.8.12 Outputs alarms

### Main Index > Configuration > Configuration IO's > IO conf alarm outp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm DO1	IO Position alarm High Class	NUsd,Comm,DO1...DO24		NUsd		4	Section: 15.3.13
Alarm DO2	IO Position alarm Low Class	NUsd,Comm,DO1...DO24		NUsd		4	

## 17.9 Check config I/Os

### Main Index > Configuration > Check config IO's

Parameter	Function	Value range	Unit	Standard	R	S	Link
Not config IO	Displays whether there are unassigned I/Os.	No Yes					Section: 15.4
1st notconfig IO pos	Displays the position of the first unassigned I/O.	0, 1, ...					
Doubled config IO	Displays whether hardware input or outputs are occupied in duplicate.	No Yes					
Doubled config IO's	Displays positions of the first double occupancy.						
Doubled config IO pos	Displays the first double occupied input or output (exception: DO).	XO1...XO28					
Doubled config DO pos	Displays first double occupied DO.	DO1...DO24					
Not used xIO	Displays number of unused universal inputs/outputs.	0... pcs	pcs				
Not used DI	Displays the number of unused digital inputs.	0... pcs	pcs				
Not used AO	Displays the number of unused analog outputs.	0... pcs	pcs				
Not used DO	Displays the number of unused digital outputs.	0... pcs	pcs				

## 17.10 Global functions

### 17.10.1 General

Main Index > Unit > Global Function							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Su/Wi calculation	Status of Summer Winter compensation	Winter Summer				X	Section: 5.1.1
Manual mode	Status from the Plant if anything is in Manual Mode	Manual Auto				X	
Enable manual alarm	Enable the Alarm for Manual Mode	No Yes		No		6	
Enable comm test	Enable the communication Test	No Yes		No		6	
Communication test	Status from the communication Test	Off On		Off			

### 17.10.2 Su-Wi compensation

Main Index > Unit > Global Function > Su-Wi compensation							
Parameter	Function	Value range	Unit	Standard	R	S	Link
State	State of Summer Winter Compensation	Winter Summer					Section: 5.1.2
Su/Wi input	Status of the Hardware input	Winter Summer					
Outs air tmp damped	Actual damped Outside Temperature						
Summer date / time	Date and Time for switch over to Summer						
Winter date / time	Date and Time for switch over to Winter						
Time constant	Time constant for damped Outside Temperature	0...36000	h	24.0		6	
Outs air tmp summer	If the damped Outside Temperature > the this Value => Summer	-64...64	°C	16.0		6	
Outs air tmp winter	If the damped Outside Temperature < the this Value => Winter	-64...64	°C	14		6	

## 17.11 Inputs

### 17.11.1 Temperatures

Main Index > Unit > Inputs > Temperatures							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Room	Room temperature 1	-64...64	°C			x	Section: 15.3.2
Room 2	Room temperature 2	-64...64	°C			x	
Exhaust air	Exhaust air temperature	-64...64	°C			x	
Supply air	Supply air temperature	-64...64	°C			x	
Outside air	Outside air temperature	-64...64	°C			x	
Extract air	Extract air temperature	-64...64	°C			x	
Hrec supply air	Heat recovery supply air temperature	-64...64	°C			x	
Heat recovery water	Heat recovery water temperature	-64...64	°C			x	
Heating frost	Heating frost protect temperature	-64...64	°C			x	
Heating 2 frost	Heating 2 frost temperature	-64...64	°C			x	
Supply air 2	Supply air 2 temperature (needed if Extra Htg and/or Extra Clg have own sequence)	-64...64	°C			x	
Auxiliary	Auxiliary Temperature	-64...64	°C			x	

### 17.11.2 Pressures/Flows

Main Index > Unit > Inputs > Pressures/Flows							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply pressure	Supply pressure	0...5000	Pa			x	Section: 15.3.3
Supply air flow	Supply air flow	0...40000	l/s			x	
Return pressure	Return pressure	0...5000	Pa			x	

### Main Index > Unit > Inputs > Pressures/Flows

Parameter	Function	Value range	Unit	Standard	R	S	Link
Exhaust air flow	Exhaust air flow	0...40000	l/s			x	
HrecFrost Pressure	Heat recovery Frost Pressure	0...5000	Pa				

### 17.11.3 Humidity

### Main Index > Unit > Inputs > Humidity

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply Rel	Supply Humidity relative	0...100	%rH			x	Section: 15.3.4
Room Rel	Room Humidity relative	0...100	%rH			x	
Outside Rel	Outside Humidity relative	0...100	%rH			x	

### 17.11.4 Other

### Main Index > Unit > Inputs > Other

Parameter	Function	Value range	Unit	Standard	R	S	Link
AirQuality	Air Quality	0...3000	ppm			x	Section: 15.3.7
ExtSetpoint	External setpoint (absolute or shifting)	-64.0...64.0	°C			x	
Settings	Jump line to Curve settings for External setpoint						

### 17.11.5 Digital inputs

### Main Index > Unit > Inputs > Digital Inputs

Parameter	Function	Value range	Unit	Standard	R	S	Link
Emergency stop	Emergency stop	On...Off				x	Section: 15.3.5
SuWi Input	External Switch for Summer Winter change over	Winter...Summer				x	
Ext control input1	External Switch1 for switching the Unit	On...Off				x	
Ext control input2	External Switch2 for switching the Unit	On...Off				x	
Alarm ackn button	Alarm ackn button	active...passive				x	
FireDamper Opened	Fire damper Feedback Opened	OK...Fault				x	
FireDamper Closed	Fire damper Feedback Closed	OK...Fault				x	
SupplyDamper fdbk	Supply Damper Feedback Opened	OK...Fault				x	
ExhaustDamper fdbk	Exhaust Damper Feedback Opened	OK...Fault				x	
Auxiliary input	Auxiliary input	On...Off				x	

### 17.11.6 Digital alarms

### Main Index > Unit > Inputs > Digital alarms

Parameter	Function	Value range	Unit	Standard	R	S	Link
Fire	External Fire alarm	OK...Fault				x	Section: 15.3.5
Fan	If combined Fan generally Fan alarm	OK...Fault				x	
Supply Fan	Supply Fan alarm	OK...Fault				x	
SupplyFan fdbk	Supply Fan Feedback (eg. Pressure Switch)	OK...Fault				x	
ExhaustFan	Exhaust fan alarm	OK...Fault				x	
ExhaustFan fdbk	Exhaust fan Feedback (eg. Pressure Switch)	OK...Fault				x	
Filter	Filter alarm (only if combined Fan)	OK...Fault				x	
Supply Filter	Supply Filter alarm	OK...Fault				x	
Exhaust Filter	Exhaust Filter alarm	OK...Fault				x	
Frost protect hrec	Heat recovery Frost monitor	OK...Fault				x	
Hrec	Heat recovery alarm	OK...Fault				x	
HrecPump	Heat recovery Pump alarm	OK...Fault				x	
HrecPump fdbk	Heat recovery Pump Feedback	OK...Fault				x	
Htg frost protect	Htg frost protect Detector	OK...Fault				x	
Heating pump	Heating pump alarm	OK...Fault				x	
HtgPump fdbk	Heating pump Feedback	OK...Fault				x	
ElHeating	Electrical Heater alarm	OK...Fault				x	
Humidifier fdbk	Humidification Feedback	OK...Fault				x	
Humidifier pump	Humidification Pump alarm	OK...Fault				x	
HumidifierPump fdbk	Humidification Pump Feedback	OK...Fault				x	
CoolingDx	Dx Cooling alarm	OK...Fault				x	

## Main Index > Unit > Inputs > Digital alarms

Parameter	Function	Value range	Unit	Standard	R	S	Link
ClgDx fdbk	Dx Cooling Feedback	OK...Fault				x	
Cooling Pump	Cooling Pump alarm	OK...Fault				x	
ClgPump fdbk	Cooling Pump Feedback	OK...Fault				x	
ExtraHtg Frost	Heating 2 Frost monitor	OK...Fault				x	
ExtraHtg Pump	Heating 2 Pump alarm	OK...Fault				x	
ExtraHtgPump fdbk	Heating 2 Pump Feedback	OK...Fault				x	
EI heating 2 alarm	Extra Electrical Heater alarm	OK...Fault				x	
ExtraCooling DX	ExtraDx Cooling alarm	OK...Fault				x	
ExtraClg DX fdbk	ExtraDx Cooling Feedback	OK...Fault				x	
ExtraClg Pump	Cooling 2 pump alarm	OK...Fault				x	
ExtraClgPump fdbk	Cooling 2 pump Feedback	OK...Fault				x	
Auxiliaryalarm	Auxiliary alarm	OK...Fault				x	

## 17.12 Operating mode

### 17.12.1 General

## Main Index > Unit > Operating mode

Parameter	Function	Value range	Unit	Standard	R	S	Link
Actual	Actual Status from the Unit Unit Off Unit On in comfort Mode Unit On in Economy Mode Not applicable Boost activ Night Cooling active UnOccupied Heating or Cooling activ Night kick active Fire Damper Test active Fire Alarm, Unit in Fire Mode Unit Stopped and locked Fans stay on according to cool down EI Heater Unit Startup is running	Off On/Comfort Economy. Na Osstp NightClg UnOcc NightKick FireDamper Fire Stop. OverRun StartUp				X	
Manual operation	Only if TspFunction <= Steps Auto = TSP Off and Stage 1...Stage 3 = override from HMI	Auto Off Stage 1...Stage 3		Off		6	
Manual operation	Only if TspFunction = Steps+Tmp Auto = TSP Off, Eco St1..3 and Comf St1..3 = override from HMI	Auto Off Eco St1..Eco St33 Comf St1..Comf St3		Off		6	
Time switch program	Only if TspFunction <= Steps Actual Value from TSP; Jumpline to settings	Off Stage 1... Stage 3		Off		6	Section: 5.2.1
Time switch program	Only if TspFunction = Steps+Tmp Actual Value from TSP; Jumpline to settings	Off Eco Comf					
From BACS	Only if TspFunction <= Steps Auto = TSP Off and Stage 1 ..Stage 3 = override from BMS	Auto Off Stage 1... Stage 3		Off		6	
From BACS	Only if TspFunction = Steps+Tmp Auto = TSP Off, Eco St1..3 and Comf St1..3 = override from BMS	Auto Off Eco St1..3 Comf St1..3		Off		6	
External control	Actual Value from External Control; Jumpline to settings	Auto Off Stage 1... Stage 3		Off		6	
Night kick exh tmp	Start the Unit in the Night to get actual Value for the Return Temp Jumpline to settings					X	
Night cooling	Free Cooling function; Jumpline to settings					X	
Tmp start	Start of Unit in unoccupied by Temperature difference; Jumpline to settings					X	
Boost	Pre Start of the Unit to Heat up or cool down with a separate Setpoint; Jumpline to settings					X	
Power up delay	Delay Time for Unit start after a Power up	0...36000	--- S ---	10		4	

## 17.12.2 Time switch program

### Main Index > Unit > Operating mode > Time switch program

Parameter	Function	Value range	Unit	Standard	R	S	Link
Schedule	Only if TspFunction <= Steps Jumpline to the Scheduler	Off Stage1...Stage3		Off		X	Section: 5.2.3
Schedule	Only if TspFunction = Steps+Tmp Jumpline to the Scheduler	Off Eco St1...Eco St3 Comf St1...Comf St3		Off		X	
Calendar exception	Jumpline to the Calendar	Passive...Active				X	
Calendar fix off	Jumpline to the Calendar Off (special settings in Exceptions)	Passive...Active				X	

## 17.12.3 External control

### Main Index > Unit > Operating mode > External control

Parameter	Function	Value range	Unit	Standard	R	S	Link
Act mode	Actual Operating Mode from External Control Auto = TSP Off and Stage 1 ..Stage 3 = override from External Unit Switch	Auto Off Stage1...Stage3				X	Section: 5.2.4
Tmp stpt input 1	Only possible if TSP Function= Step+Temp Start the Unit in selected Mode Only Input 1 Enabled Start the Unit in selected Mode with setted Fan Step Input 1 and 2 Enabled if Input 1 = TRUE Start the Unit in selected Mode with Fan Step 1 if Input 2 = TRUE Start the Unit in selected Mode with Fan Step 2 if both Inputs are TRUE Start the Unit in selected Mode for Input 2 with setted Fan Step	Comfort Economy.		Comfort		4	
Tmp stpt input 2	Only possible if TSP Function= Step+Temp and External Control = Two if Input 2 = TRUE Start the Unit in selected Mode with Fan Step 2 if both Inputs are TRUE Start the Unit in selected Mode for Input 2 with setted Fan Step	Comfort Economy.		Comfort		4	
Off delay	After this Time the External Control is disabled. If this Time is 0 the Timer function is disabled	0...23	h	0.0		4	
Fan steps	The selection of the Step and Operation TSP Function= Step Only Input 1 Enabled Input1=TRUE → selected Fan Step Input1 = False → Auto Two Inputs Enabled Input1 = TRUE → Step1 Input2 = TRUE → Step2 (only one Step enabled St1) Input1 and Input2 = TRUE → selected Fan Step Input1 and Input2 = FASLE → Auto	Auto Off 1Step 2Step 3Step				4	
Start/Stop Funct	Activate the Pushbutton function for the Inputs 1 and 2	Off On		Off		4	



## 17.12.4 Night kick exh temp

### Main Index > Unit > Operating mode > Night kick exh temp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Kick time	Fuction is only available if only a Return Sensor is available and Night Cooling or UnitStart By TmpDelta is activated. It is to start in the Night for measuring the actual Temperature in the Duct. Kick Time					4	Section: 5.2.5
Interval time	Intervall Time for Kick	0.0...36000.0	h	3.0		4	
On time	Pulse for Kick	0...36000	-- S --	300		4	

## 17.12.5 Night cooling

### Main Index > Unit > Operating mode > Night cooling

Parameter	Function	Value range	Unit	Standard	R	S	Link
Room tmp setpoint	Setpoint for Night Cooling	-64...64	°C	22.0		4	Section: 5.2.6
Hysteresis	Hysteresis for Night Cooling	0...64	°C	3.0		4	
Delta	Difference between Room and Outside Temperature	1...64	°C	5.0		4	
Min outs tmp	If Outside Temperature is lower than Minimum OutTmp Night Cooling is blocked (also NightKick RtrnTemp)	-64...64	°C	12.0		4	
Min run time	Minimum Run Time for Night Cooling	0...999	Min.	30.0		4	

## 17.12.6 Start by tmp delta

### Main Index > Unit > Operating mode > Tmp start

Parameter	Function	Value range	Unit	Standard	R	S	Link
Start stpt cooling	Setpoint for Cooling Start	-64...64	°C	30.0		4	Section: 5.2.7
Cooling setpoint	Setpoint for Cooling	-64...64	°C	15.0		4	
Start stpt heating	Setpoint for Heating Start	-64...64	°C	15.0		4	
Heating setpoint	Setpoint for Heating	-64...64	°C	25.0		4	
Hysteresis	Hysteresis for Heating and Cooling	0.1...64	°C	1.0		4	
Minimum off time	For this Time Heating and Cooling Start are blocked	0...999	Min.	30.0		4	
Min run time	Minimum Run Time for Heating and Cooling	0...999	Min.	0.0		4	

## 17.12.7 Boost

### Main Index > Unit > Operating mode > Boost

Parameter	Function	Value range	Unit	Standard	R	S	Link
Room tmp setpoint	Room Setpoint for Boost Function	-64...64	°C	20.0		4	Section: 5.2.8
Start stpt cooling	Setpoint for Cooling Start	-64...64	°C	15.0		4	
Start stpt heating	Setpoint for Heating Start	-64...64	°C	25.0		4	
Hysteresis	Hysteresis for Heating and Cooling	0.1...64	°C	0.5		4	
Compensation time	Defines the Pre start Time before the Start command from scheduler is active	0...999	Min.	0.0		4	

## 17.13 Damper control

### 17.13.1 Start page

#### Main Index > Unit > Damper control

Parameter	Function	Value range	Unit	Standard	R	S	Link
Off delay by fanoff	Delay Off Time for Supply, Exhaust and Fire damper	0...36000	--- S ---	10		6	Section: 5.3.1
Damper	Jumpline to Supply and Exhaust Damper settings					6	
Fire damper	Actual Command; Jump line to Fire damper settings	On...Off				6	

### 17.13.2 Damper

#### Main Index > Unit > Damper Control > Damper

Parameter	Function	Value range	Unit	Standard	R	S	Link
Outside air cmd	Command Outside air Damper (combined Damper)	On...Off				X	Section: 5.3.2
Outside air fdbk	Outside air Damper Feedback (combined Damper)	No...Yes				X	
Outs offby fdbk alm	Take akway Command in case of Feedback alarm	No...Yes		Yes		6	
StrtUpDly outs fdbk	Delay time until Feedback = 1	0...36000	--- S ---	180		6	
Extract air cmd	Command Extract Damper (combined Damper)	On...Off				X	
Extract air fdbk	Extarct Damper Feedback (combined Damper)	No...Yes				X	
Extr offby fdbk alm	Take akway Command in case of Feedback alarm	No...Yes		Yes		6	
StrtUpDly Extr fdbk	Delay time until Feedback = 1	0...36000	--- S ---	180		6	
Opening time	Default Open time for Dampers if no real Feedback	0...36000	--- S ---	20		6	

### 17.13.3 Fire damper

#### Main Index > Unit > Damper Control > Fire damper

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Command Fire damper	On...Off				X	Section: 5.3.3
Feedback opened	Feedback Damper opened	OK...No				X	
Feedback closed	Feedback Damper closed	Ok...No				X	
No move	Message if Damper do not follow Command	Ok...ALarm				X	
State	State of the Fire damper	NDef Clsd Move Opnd				X	
Mode	Operation Mode Fire damper	NDef Ok Debug Alm				X	
Opening time	Open Time for Fire damper	0...36000	--- S ---			6	
Closing time	Close Time for Fire damper	0...36000	--- S ---			6	
Start manual test	Direct start from Auto Test over HMI	Passive Aktive		Passive		6	
Auto Test	Date and Time for Auto Test					6	
auto test interval	Interval for Auto Test	0...3600	h			6	

## 17.14 Fan control

### 17.14.1 General

#### Main Index > Unit > Fan Control

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply fan	Actual Status; Jumpline Supply Fan settings	Off...Stage3				6	
Exhaust fan	Actual Status; Jumpline Exhaust fan settings	Off...Stage3				6	
Actual step	Actual Fan Step; Stage Setpoint if Fan control mode >= fixed Speed	Off...Stage3				6	
Fire mode	Define the behavior of the Fans in case of a Fire alarm	Stop. RunSply RunExh Run		Stop.		6	
Fire setpoint	Setpoint for the Fans in case of a Fire alarm	0...100	%	80.0		6	
Slave offset	Offset for the slave (Fan control mode = SupplySlv or ExhaustSlv)	-999...999	%	0		6	
Slave start up stpt	If Fan control mode = Exhaust Slv Start Setpoint for Exhaust fan until Supply Fan is running	0...9999	%	100		6	
Rundown time el htg	OverRun Time for Fans if any EI Heating is selected	0...36000	--- S ---	180		6	
Min stage time	Min Stage Time	0...999	--- S ---	10		6	
Coasting Time	Time for the Fan if switch down no Output is settled	0...99	--- S ---	5		6	
Disable high speed	Temperature Setpoint for High Speed blocking If Outside Temperature is lower than this Value High Speed is blocked at Stage 1 (Setpoint Stage1)	-64...64	°C	-40.0		6	
Disable fan comp	Disable any up compensation from the Fan None = up compensation allowed in Stage1 and 2 Stage1 = up compensation allowed in Stage2, Stage1 blocked Stage1 +Stage2 = up compensation in Stage1 and Stage2 blocked	None Stage1  Stage1+Stage2		None		6	
Summer comp	Actual Value; Jumpline for Summer compensation settings	-100...100	%	0		6	
Winter comp	Actual Value; Jumpline for Winter compensation settings	-100...100	%	0		6	
Op hours settings	Jumpline for Operation Hour settings for Alarming			0		6	

Section:  
5.4.1

### 17.14.2 Supply fan

#### Main Index > Unit > Fan Control > Supply Fan

Parameter	Function	Value range	Unit	Standard	R	S	Link
Actual value	Supply Fan Actual Value	0...100	%			X	
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Command	Actual Stage; Jumpline to settings	Off...St3				X	
Feedback	Feed back of Supply Fan	Ok...alarm				6	
Alarm	Supply Fan alarm	OK...alarm				6	
Alarm	Fan alarm if combined Fan	OK...alarm				6	
Setpoints/Settings	Actual Value; Jumpline to Supply Fan Setpoints and settings					6	

Section:  
5.4.3

### 17.14.3 Supply fan settings

#### Main Index > Unit > Fan Control > Supply Fan > Setpoints/Settings

Parameter	Function	Value range	Unit	Standard	R	S	Link
Actual step	Supply Fan Actual Stage	Off...St3				X	
Act supply stpt	Actual Setpoint	0...100	%			X	
Stage 1	Output for Stage 1 if Fan control mode is FixedSpeed, Pressure, Flow or ExhaustSlv	0...100	% l/s Pa	40%		6	

**Main Index > Unit > Fan Control > Supply Fan > Setpoints/Settings**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Stage 2	Output for Stage 2 if Fan control mode is FixedSpeed, Pressure, Flow or ExhaustSlv	0...100	% l/s Pa	80%		6	Section: 5.4.3
Stage 3	Output for Stage 3 if Fan control mode is FixedSpeed, Pressure, Flow or ExhaustSlv	0...100	% l/s Pa	100%		6	
Max forcing	Maximum allowed Setpoint for compensations	0...19900	% l/s Pa	0%		6	
Min run time	Min Run Time	0...36000	--- S ---	0		6	
Switch on delay	Switch On delay time	0...36000	--- S ---	30		6	
Start up delay fdbk	Supply Fan Feedback Start up Delay	0...36000	--- S ---	60		6	
Deviation alarm	Actual Status; Jumpline for Settings	Passive Active				x	

**17.14.4 Supply fan deviation alarm**

**Main Index > Unit > Fan Control > Supply Fan > Setpoints/Settings > Deviation alarm**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm	Actual Status Supply Deviation alarm	Active...passive				X	Section: 5.4.5
Min limit	Lowest allowed Present Value for alarm	-64...64	°C	10		6	
Maximum deviation	In maximum allowed Deviation	-64...64	°C	10		6	
Start up delay	Delay until the Deviation is supervised	0...36000	--- S ---	60		6	

**17.14.5 Exhaust fan**

**Main Index > Unit > Fan Control > Exhaust fan**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Actual value	Exhaust fan Actual Value	0...100	%			X	Section: 5.4.3
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Command	Actual Stage; Jumpline to settings	Off...St3				X	
Feedback	Feed back of Supply Fan	Nofdbk...fdbk				6	
Alarm	Exhaust fan alarm	OK...alarm				6	
Alarm	Fan alarm if combined Fan	OK...alarm				6	
Setpoints/Settings	Actual Value; Jumpline to Exhaust fan Setpoints and settings					6	

**17.14.6 Exhaust fan settings**

**Main Index > Unit > Fan Control > Exhaust fan > Setpoints/Settings**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Actual step	Exhaust fan Actual Stage	Off...St3				X	Section: 5.4.3
Act supply stpt	Actual Setpoint	0...100	%			X	
Stage 1	Output for Stage 1 if Fan control mode is FixedSpeed, if Fan control mode is Pressure, Flow or SupplySlv Setpoint Stage 1	0...100	% l/s Pa	40%		6	
Stage 2	Output for Stage 2 if Fan control mode is FixedSpeed, if Fan control mode is Pressure, Flow or SupplySlv Setpoint Stage 2	0...100	% l/s Pa	80%		6	
Stage 3	Output for Stage 3 if Fan control mode is FixedSpeed, if Fan control mode is Pressure, Flow or SupplySlv Setpoint Stage 3	0...100	% l/s Pa	100%		6	
Max forcing	Maximum allowed Setpoint for compensations	0...19900	% l/s Pa	0%		6	
Min run time	Min Run Time	0...36000	--- S ---	0		6	
Start up delay fdbk	Actual Status; Jumpline for Settings	Passive Active				x	
Deviation alarm	Actual Status; Jumpline for Settings	Passive Active				x	

## 17.14.7 Exhaust fan deviation alarm

Main Index > Unit > Fan Control > Exhaust fan > Setpoints/Settings > Deviation alarm							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm	Actual Status Exhaust Deviation alarm	Active...passiv				X	Section: 5.4.5
Min limit	Lowest allowed Present Value for alarm	-64...64	°C	10		6	
Maximum deviation	In maximum allowed Deviation	-64...64	°C	10		6	
Start up delay	Delay until the Deviation is supervised	0...36000	--- S ---	60		6	

## 17.14.8 Fan summer cmp

Main Index > Unit > Fan Control > Summer comp							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Outside tmp start	Start Temperature for Summer compensation	-64...64	°C	25.0		6	Section: 5.4.4
Outside tmp end	End Temperature for Summer compensation	-64...64	°C	30.0		6	
Delta	delta for Summer compensation	-100...100	%	0.0		6	

## 17.14.9 Fan winter cmp

Main Index > Unit > Fan Control > Winter comp							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Outside tmp start	Start Temperature for Winter compensation	-64...64	°C	5.0		6	Section: 5.4.4
Outside tmp end	End Temperature for Winter compensation	-64...64	°C	-20.0		6	
Delta	delta for Winter compensation	-100...100	%	0.0		6	

## 17.14.10 Fan OpHoursSettings

Main Index > Unit > Fan Control > OpHoursSettings							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Op hours alarm	Operation hours alarm	Active*Passive		Passive		6	Section: 5.4.6
Enble ophours alarm	Enables this Function, if the Operation Hours from Supply Fan are > than Operation Hours Limit => alarm	No*Yes		No		6	
Op hours limit	Operation hours Limit	0...999999	h	17520		6	

## 17.15 Temperature control

### 17.15.1 Start page

Main Index > Unit > Temp control							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Act controlled tmp	Actual Value of the controlled Temperature		°C			x	Section: 5.5.1
Tmp setpoints	Jumpline to tmp Setpoints						
Cascade controller	Actual Heating Setpoint; Actual Cooling SetpointJumpline to settings for Cascade Controller	-64.0...64.0	°C			6	
Min/max ctrlr sply	Jumpline to settings for Min Max Controlling					6	
Hrec damper	Actual Value; Jumpline for Heat recovery Damper settings	0...100%	%			6	
Heat recovery	Actual Value; Jumpline for Heat recovery settings	0...100%	%			6	
Heating	Actual Value; Jumpline for Water Heating settings	0...100%	%			6	
Electrical heating	Actual Value; Jumpline for electrical Heating settings	0...100%	%			6	
Cooling	Actual Value; Jumpline for Cooling settings	0...100%	%			6	
Heating 2	Actual Value;Jumpline for Heating 2 settings	0...100%	%			6	

## Main Index > Unit > Temp control

Parameter	Function	Value range	Unit	Standard	R	S	Link
El heating 2	Actual Value;Jumpline for Electrical heating 2 settings	0...100%	%			6	
Cooling 2	Actual Value;Jumpline for Cooling 2 settings	0...100%	%			6	
Fan heating	Actual Value;Jumpline for Fan Heating settings	0...100%	%			6	
Fan cooling	Actual Value;Jumpline for Fan Cooling settings	0...100%	%			6	
Fan compensation	Actual Value;Jumpline for Fan Temperature compensation settings	0...100%	%			6	

## 17.15.2 Temperature setpoints

### Main Index > Unit > Temp control > Tmp setpoints

Parameter	Function	Value range	Unit	Standard	R	S	Link
Act controlled tmp	Actual controlled Temperature for Sequence Value.	Room Exhaust Supply -64.0...64.0	°C	Supply		X	
Act cooling stpt	Calculated Cooling Setpoint for controlling	-64.0...64.0	°C			x	
Act heating stpt	Calculated Heating Setpoint for controlling	-64.0...64.0	°C			x	
Act sply clg stpt	Calculated Cooling Supply Setpoint for cascade controlling	-64.0...64.0	°C			x	
Act sply htg stpt	Calculated Heating Supply Setpoint for cascade controlling	-64.0...64.0	°C			x	
External setpoint	Actual external Setpoint according to the selected function (shifting or override)	-64.0...64.0	°C	-5.0			
Sply air comp	compensation for Supply Temperature Setpoint in case of Temperature control Mode Room Supply Cascade in Winter and Supply in Summer	-10.0...10.0	°C	-2.0		4	
Comfort setpoint	Comfort Basic Setpoint (visible according to tmp stpt selection)	-64.0...64.0	°C	21.0		6	Section: 5.5.2
Comfort cooling	Comfort Setpoint Cooling (visible according to tmp stpt selection)	-64.0...64.0	°C	22.0		6	
Comfort heating	Comfort Setpoint Heating (visible according to tmp stpt selection)	-64.0...64.0	°C	20.0		6	
Comfort deadzone	Comfort Deadzone (visible according to tmp stpt selection)	-64.0...64.0	°C	2.0		6	
Economy setpoint	Economy Basic Setpoint (visible according to tmp stpt selection)	-64.0...64.0	°C	21.0		6	
Economy cooling	Economy Setpoint Cooling (visible according to tmp stpt selection)	-64.0...64.0	°C	24.0		6	
Economy heating	Economy Setpoint Heating (visible according to tmp stpt selection)	-64.0...64.0	°C	18.0		6	
Economy deadzone	Economy Deadzone (visible according to tmp stpt selection)	-64.0...64.0	°C	6.0		6	
Extra Seq setpoint	Extra Setpoint Value (only visible if Extra-Htg or ElHtg or Clg as Stand alone selected)	-64.0...64.0	°C	20.0		6	
Supply tmp min stpt	Minimum allowed Supply Temperature for Supply MinMax controlling (only visible with Temperature control Mode Room or Exhaust and Supply Sensor)	-15.0...MaxStpt	°C	17.0		6	
Supply tmp max stpt	Maximum allowed Supply Temperature for Supply MinMax controlling (only visible with Temperature control Mode Room or Exhaust and Supply Sensor)	MinStpt...50.0	°C	27.0		6	
Supply tmp min stpt	Minimum allowed Supply Temperature for Cascade controlling	-64.0...99.0	°C	17.0		6	
Supply tmp max stpt	Maximum allowed Supply Temperature for Cascade controlling	-64.0...99.0	°C	27.0		6	
Draught htg max dev	Room Flow Limit Heating Max deviation Shift the maximum allowed Supply Temperature according to the Supply-Room or Exhaust deviation (only possible with cascade controlling)	0.0...64.0	°C	2.0		6	Section: 5.5.2

### Main Index > Unit > Temp control > Tmp setpoints

Parameter	Function	Value range	Unit	Standard	R	S	Link
Draught clg max dev	Room Flow Limit Cooling Max deviation Shift the maximum allowed Supply Temperature according to the Supply-Room or Exhaust deviation (only possible with cascade controlling)	0.0...64.0	°C	2.0		6	
Fan htg deadzone	Deadzone for Fan Heating	0.0...20.0	°C	2.0		6	
Fan clg deadzone	Deadzone for Fan Cooling	0.0...20.0	°C	2.0		6	
Fan comp tmp stpt	Temperature Fan compensation Setpoint	0.0...64.0	°C	20.0		6	
Fan comp tmp functin	Temperature Fan compensation operation from the Fans	Increase Decrease		Increase		6	
Summer comp	Actual Value; Jumpline for Summer compensation settings		°C			6	
Winter comp	Actual Value;Jumpline for Winter compensation settings		°C			6	
Sply tmp dev alarm	Actual Status; Jumpline for Settings	Passive Active				x	
Room tmp dev alarm	Actual Status; Jumpline for Settings	Passive Active				x	

### 17.15.3 Temperature setpoints > Summer comp tmp

#### Main Index > Unit > Temp control > Temperature Setpoints > Summer Comp tmp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Outs air tmp start	Start Temperature for Summer compensation	-64...64	°C	25.0		6	Section: 5.5.3
Outs air tmp end	End Temperature for Summer compensation	-64...64	°C	30.0		6	
Delta	delta for Summer compensation	-64...64	K	0.0		6	

### 17.15.4 Temperature setpoints > Winter comp tmp

#### Main Index > Unit > Temp control > Temperature Setpoints > Winter Comp tmp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Outs air tmp start	Start Temperature for Winter compensation	-64...64	°C	5.0		6	Section: 5.5.3
Outs air tmp end	End Temperature for Winter compensation	-64...64	°C	-20.0		6	
Delta	delta for Winter compensation	-64...64	K	0.0		6	

### 17.15.5 Temperature setpoints > Sply tmp dev alarm

#### Main Index > Unit > Temp control > Temperature Setpoints > Sply tmp dev alarm

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm	Actual Status Supply Deviation alarm	Active...passiv				X	Section: 5.5.4
Min limit	Lowest allowed Present Value for alarm	-64...64	°C	10		6	
Maximum deviation	In maximum allowed Deviation	-64...64	°C	5		6	
Start up delay	Delay until the Deviation is supervised	0...36000	--- S ---	60		6	

### 17.15.6 Temperature setpoints > Room tmp dev alarm

#### Main Index > Unit > Temp control > Temperature setpoints > Room tmp dev alarm

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm	Actual Status Supply Deviation alarm	Active...passiv				X	Section: 5.5.4
Min limit	Lowest allowed Present Value for alarm	-64...64	°C	10		6	
Maximum deviation	In maximum allowed Deviation	-64...64	°C	10		6	
Start up delay	Delay until the Deviation is supervised	0...36000	--- S ---	60		6	

## 17.15.7 Min/max ctrlr sply

### Main Index > Unit > Temp control > Min/max ctrlr sply

Parameter	Function	Value range	Unit	Standard	R	S	Link
Min controller	Actual Value Minimum Controller; Jumpline to settings	0...100	%			X	Section: 5.5.5
Max controller	Actual Value Maximum Controller; Jumpline to settings	0...100	%			X	
Min setpoint	Setpoint for the min Controller	15...26	°C	17.0		6	
Max setpoint	Setpoint for the max Controller	17...50	°C	27.0		6	

## 17.15.8 Hrec damper

### Main Index > Unit > Temp control > Hrec damper

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Heat Recovery Damper Controller; Jumpline to settings	0...100	%			X	Section: 5.6
Output signal	Heat Recovery Damper Position; Jumpline to settings	0...100	%			X	
Recovery value	Heat Recovery Value	0...100	%	0.0		6	
Min fresh air	Min Open of Heat Recovery Damper	0...100	%	20		6	
Start up time	Start up Time for Heat Recovery Damper	0...600	--- S ---	60		6	
Start up tmp	Start Up Temperature for Heat Recovery Damper	-64...64	°C	15.0		6	

## 17.15.9 Heat recovery

### Main Index > Unit > Temp control > Heat recovery

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Heat Recovery Controller	0...100	%			X	Section: 5.7.1
Output signal	Heat Recovery Position	0...100	%			X	
Command	Heat Recovery status	On...Off				X	
Pump / cmd	Pump Status; Jumpline for settings	On...Off					
Aalarm	Heat Recovery alarm	OK...alarm				X	
Frost monitor	Heat Recovery Frost monitor	OK...Frost				X	
Frost protection	Jumpline for Frost protection settings	0...100	%			6	
Frost protect press	Jumpline for settings					X	
Efficiency	Heat Recovery Efficiency	0...100	%			X	
Start up time	For this Time the Hrec run with 100% at Startup	0...600	--- S ---	60		6	
Start up tmp	If the Outside temperature is lower or equal this Value the Hrec do run for Start up time	-64...64	°C	15.0		6	
Max speed defrost	Maximum allowed speed in case of Frost (monitor = Frost)	0...100	%	20		6	

## 17.15.10 Heat recovery > Hrec (pump) cmd

### Main Index > Unit > Temp control > Heat recovery > Pump / cmd

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Heat Recovery status	On...Off				X	Section: 5.7.2
Fdbk	Heat Recovery Pump Feedback	Nofdbk...fdbk				X	
Alarm	Heat Recovery Pump alarm	Ok...alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000				6	
Off by fdbk alarm	In case of a Feedback alarm the Pump is switched Off	No...Yes		Yes		6	
Min run time	Minimum On Time after a Start	0...36000		180		6	Section: 5.7.3
Kick date / time	Pump Kick Date and Time					6	
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse length for Pump Kick	0...36000	--- S ---	60		6	



## 17.15.11 Heat recovery > Frost protection

### Main Index > Unit > Temp control > Heat recovery > Frost protection

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Output from loop controller; Jumplin to settings	0...100	%	100		X	Section: 5.7.4
Setpoint	Setpoint for Frostcontroller	-64...64	°C	3.0		6	

## 17.15.12 Heat recovery > Frost protect press

### Main Index > Unit > Temp control > Heat recovery > Frost protect press

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Output from loop controller; Jumpline to settings	0...100	%	100		X	Section: 5.7.4
Fan stage 1 stpt	Frost Setpoint if Fan Stage 1 is active	0...5000	Pa	100		6	
Fan stage 2/3 stpt	Frost Setpoint if Fan Stage 2 or 3 is active	0...5000	Pa	200		6	

## 17.15.13 Heating

### Main Index > Unit > Temp control > Heating

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Heating Controller; Jumpline to settings	0...100	%			X	Section: 5.8.1
Output signal	Heating Valve Position; Jumpline to settings	0...100	%			X	
Frost protection	Actual Value; Jumpline for Frost function settings	0...100	%			X	
Pump.	Actual Status; Jumpline for Pump Function settings	On...Off				X	
Pre heating	Actual Status; Jumpline for PreHtg Function settings	Passive...Active				X	
Frost monitor	Actual Status of Htg frost protect monitor	OK...Frost				X	

## 17.15.14 Heating > Frost protection

### Main Index > Unit > Temp control > Heating > Htg frost protect

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Output from loop controller; Jumpline to settings	0...100	%	100		X	Section: 5.8.4
Setpoint	Frost Setpoint if Unit is On	-64...64	°C	12.0		6	
Standby setpoint	Frost Setpoint if Unit is Off	-64...64	°C	20.0		6	

## 17.15.15 Heating > Pump

### Main Index > Unit > Temp control > Heating > Heating pump

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Heating status	On...Off				X	Section: 5.8.2
Fdbk	Heating pump Feedback	Nofdbk...fdbk				X	
Alarm	Heating pump alarm	Ok...alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000	--- S ---		30	6	
Off by fdbk alarm	In case of a Feedback alarm the Pump is switched Off	No...Yes		Yes		6	
Min run time	Mnimum On Time after a Start	0...36000		180		6	
Pump start outs tmp	If Outside Temperature is lower this Value the Pump Start	-64...64	°C	12.0		6	Section: 5.8.3
Kick date / time	Pump Kick Date and Time					6	
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse for Pump Kick	0...36000	--- S ---	60		6	

## 17.15.16 Heating > Pre heating

### Main Index > Unit > Temp control > Heating > Heating pre heating

Parameter	Function	Value range	Unit	Standard	R	S	Link
Mode	Actual Status	Passive...Active				X	
Outs air tmp X1	lower Outside Temperature	-30.0...5.0	°C	10.0		6	
Outs air tmp X2	End Outside Temperature for Pre Heating Function	0.0...50.0	°C	5.0		6	
Output signal Y1	Output Signal Pre Heating for Temperature X1	0.0...600.0	--- S ---	60.0		6	
Output signal Y2	Output Signal Pre Heating for Temperature X2	0.0...600.0	--- S ---	10.0		6	
Pre h on time	If the Outside Temperature is lower than X2 the system heat up the pipes for this time with 100%	0...600	--- S ---	30		6	
Min off time	If heat up the pipes is finished it is blocked for this Time	0.0...1440.0	Min.	180.0		6	

Section:  
5.8.5

## 17.15.17 Electrical heating

### Main Index > Unit > Temp control > Electrical heating

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Command	Actual Stage command; Jumpline to settings	Off...St3					
Alarm	Electrical heating alarm	OK...alarm					
Start stage 1	Start point Electrical heating Stage 1	0...100	%	20		6	
Start stage 2	Start point Electrical heating Stage 2	0...100	%	40		6	
Start stage 3	Start point Electrical heating Stage 3	0...100	%	80		6	
Stage hys off	Hysteresis to switch Off a Stage	0...20	%	10		6	
Max limitation fan	Jumpline for Fan limitation settings					6	

Section:  
5.9.1

## 17.15.18 Electrical heating > Max limitation fan

### Main Index > Unit > Temp control > Electrical heating > El htg max lim fan

Parameter	Function	Value range	Unit	Standard	R	S	Link
Fan stage 0	Only visible if plant is not configured, not used! Fix setted to 0						
Fan stage 1	Max Output Value for Stage 1	0...100	%	100		6	
Fan stage 2	Max Output Value for Stage 2	0...100	%	100		6	
Fan stage 3	Max Output Value for Stage 3	0...100	%	100		6	

Section:  
5.9.2

## 17.15.19 Cooling

### Main Index > Unit > Temp control > Cooling

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Disable by outs tmp	If the Outside Temperature is lower than this Value the Cooling is blocked	-64...64	°C	12.0		6	
Pump.	Actual Status; Jumpline for Pump Function settings	On...Off				6	
Direct expansion	Actual StatusJumpline for DX Cooling settings	Off...Stage 3				6	
Max limitation fan	Jumpline for Fan limitation settings					6	

Section:  
5.10.1

## 17.15.20 Cooling > Pump

### Main Index > Unit > Temp control > Cooling > Cooling pump

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Cooling status	On...Off				X	
Fdbk	Cooling Pump Feedback	Nofdbk...fdbk				X	
Alarm	Cooling Pump alarm	Ok...alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000				6	Section: 5.10.2
Off by fdbk alarm	In case of a Feedback alarm the Pump is switched Off	No...Yes		Yes		6	
Min run time	Minimum On Time after a Start	0...36000		180		6	
Kick date / time	Pump Kick Date and Time					6	Section: 5.10.3
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse for Pump Kick	0...36000	--- S ---	60		6	

## 17.15.21 Cooling > Direct expansion

### Main Index > Unit > Temp control > Cooling > DX

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Dx Cooling Command	On...St3					
Feedback	Dx Cooling Feedback	Nofdbk...fdbk					
Alarm	Dx Cooling alarm	OK...ALarm					
Start up delay fdbk	Dx Cooling Feedback Start up Delay	0...36000	--- S ---	30		6	
Min run time	Min Run Time of Dx Cooling	0...36000	--- S ---	60		6	
Min off time	Min Off Time of Dx Cooling	5...600	--- S ---	120		6	Section: 5.10.4
Min stage time	Min Stage Time of Dx Cooling	5...600	--- S ---	360		6	
Start stage 1	Start point Electrical heating Stage 1	0...100	%	20		6	
Start stage 2	Start point Electrical heating Stage 2	0...100	%	40		6	
Start stage 3	Start point Electrical heating Stage 3	0...100	%	80		6	
Stage hys off	Hysteresis to switch Off a Stage	0...20	%	10		6	

## 17.15.22 Cooling > Max limitation fan

### Main Index > Unit > Temp control > Cooling > Clg max limit fan

Parameter	Function	Value range	Unit	Standard	R	S	Link
Fan stage 0	Only visible if plant is not configured, not used! Fix setted to 0	0...100	%	0		6	
Fan stage 1	Max Output Value for Stage 1	0...100	%	100		6	Section: 0
Fan stage 2	Max Output Value for Stage 2	0...100	%	100		6	
Fan stage 3	Max Output Value for Stage 3	0...100	%	100		6	

## 17.15.23 Heating 2

### Main Index > Unit > Temp control > Heating 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Heating Controller; Jumpline to settings	0...100	%			X	
Output Signal	Heating Valve Position; Jumpline to settings	0...100	%			X	
Extra Seq setpoint	Extra Setpoint (only activ if Htg 2 or Clg 2 or ElHtg 2 is selected as Stand alone; this Setpoint is valid for all)	0...99	°C	20.0		6	
Frost protection	Actual Status; Jumpline for Frost Function settings	Passive...Active	%			6	Section: 5.8.1
Pump.	Actual Value; Jumpline for Pump Function settings	0...100				6	
Pre heating	Actual Status; Jumpline for Pre heating Function settings	On...Off				6	
Frost protection	Actual Status; Jumpline for Frost Function settings	Passive...Active				6	
Frost monitor	Actual Status of Htg frost protect Monitor	OK...Frost				6	

## 17.15.24

## Heating 2 > Frost protection

### Main Index > Unit > Temp control > Heating 2 > Htg 2 frost protect

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Output from loop controller; Jumpline to settings	0...100	%	100		X	Section: 5.8.4
Setpoint	Frost Setpoint if Unit is On	-64...64	°C	12.0		6	
Standby setpoint	Frost Setpoint if Unit is Off	-64...64	°C	20.0		6	

## 17.15.25

## Heating 2 > Pump

### Main Index > Unit > Temp control > Heating 2 > Pump

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Heating 2 status	On...Off				X	Section: 5.8.2
Fdbk	Heating 2 Pump Feedback	Nofdbk...fdbk				X	
Alarm	Heating 2 Pump alarm	Ok...alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000	--- S ---	30		6	
Off by fdbk alarm	In case of a Feedback alarm the Pump is switched Off	No...Yes		Yes		6	
Min run time	Minimum On Time after a Start	0...36000		180		6	
Pump start outs tmp	If Outside Temperature is lower this Value the Pump Start	-64...64	°C	12.0		6	Section: 5.8.3
Kick date / time	Pump Kick Date and Time					6	
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse for Pump Kick	0...36000	--- S ---	60		6	

## 17.15.26

## Heating 2 > Pre heating

### Main Index > Unit > Temp control > Heating 2 > Heating 2 pre heating

Parameter	Function	Value range	Unit	Standard	R	S	Link
Mode	Actual Status	Passive...Active				X	Section: 5.8.5
Outs air tmp X1	lower Outside Temperature	-30.0...5.0	°C	10.0		6	
Outs air tmp X2	End Outside Temperature for Pre Heating Function	0.0...50.0	°C	5.0		6	
Output signal Y1	Output Signal Pre Heating for Temperature X1	0.0...600.0	--- S ---	60.0		6	
Output signal Y2	Output Signal Pre Heating for Temperature X2	0.0...600.0	--- S ---	10.0		6	
Pre h on time	If the Outside Temperature is lower than X2 the system heat up the pipes for this time with 100%	0...600	--- S ---	30		6	
Min off time	If heat up the pipes is finished it is blocked for this Time	0.0...1440.0	Min.	180.0		6	

## 17.15.27

## EI Heating 2

### Main Index > Unit > Temp control > EI heating 2

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.9.1
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Command	Actual Stage command; Jumpline to settings	Off...St3					
Extra Seq setpoint	Extra Setpoint (only activ if Htg 2 or Clg 2 or EI Htg 2 is selected as Stand alone; this Setpoint is valid for all)	0...99	°C	20.0		6	
Alarm	Electrical heating alarm	OK...alarm					
Start stage 1	Start point Electrical heating Stage 1	0...100	%	20		6	
Start stage 2	Start point Electrical heating Stage 2	0...100	%	40		6	
Start stage 3	Start point Electrical heating Stage 3	0...100	%	80		6	
Stage hys off	Hysteresis to switch Off a Stage	0...20	%	10		6	
Max limitation fan	Jumpline for Fan limitation settings					6	

## 17.15.28 EI Heating 2 > Max limitation fan

Main Index > Unit > Temp control > EI heating 2 > EI htg 2 lim fan							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Fan stage 0	Only visible if plant is not configured, not used! Fix setted to 0	0...100	%	0		6	
Fan stage 1	Max Output Value for Stage 1	0...100	%	100		6	Section: 5.9.2
Fan stage 2	Max Output Value for Stage 2	0...100	%	100		6	
Fan stage 3	Max Output Value for Stage 3	0...100	%	100		6	

## 17.15.29 Cooling 2

Main Index > Unit > Temp control > Cooling 2							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Extra Seq setpoint	Extra Setpoint (only activ if Htg 2 or Clg 2 or EI Htg 2 is selected as Stand alone; this Setpoint is valid for all)	0...99	°C	20.0		6	
Disable by outs tmp	If the Outside Temperature is lower than this Value the Cooling is blocked	-64...64	°C	12.0		6	Section: 5.10.1
Pump.	Actual Status; Jumpline for Pump Function settings	On...Off				6	
Direct expansion	Actual StatusJumpline for DX Cooling settings	Off...Stage 3				6	
Max limitation fan	Jumpline for Fan limitation settings					6	

## 17.15.30 Cooling 2 > Pump

Main Index > Unit > Temp control > Cooling 2 > Cooling 2 pump							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Cooling status	On...Off				X	
Fdbk	Cooling Pump Feedback	Nofdbk...fdbk				X	
Alarm	Cooling Pump alarm	Ok...alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000				6	Section: 5.10.2
Off by fdbk alarm	In case of a Feedback alarm the Pump is switched Off	No...Yes		Yes		6	
Min run time	Mnimum On Time after a Start	0...36000		180		6	
Kick date / time	Pump Kick Date and Time					6	Section: 5.10.3
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse for Pump Kick	0...36000	--- S ---	60		6	

## 17.15.31 Cooling 2 > Direct expansion

Main Index > Unit > Temp control > Cooling > Cooling 2 DX							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Dx Cooling Command	On...St3					
Feedback	Dx Cooling Feedback	Nofdbk...fdbk					
Alarm	Dx Cooling alarm	OK...ALarm					
Start up delay fdbk	Dx Cooling Feedback Start up Delay	0...36000	--- S ---	30		6	Section: 5.10.4
Min run time	Min Run Time of Dx Cooling	0...36000	--- S ---	60		6	
Min off time	Min Off Time of Dx Cooling	5...600	--- S ---	120		6	
Min stage time	Min Stage Time of Dx Cooling	5...600	--- S ---	360		6	
Start stage 1	Start point Electrical heating Stage 1	0...100	%	20		6	
Start stage 2	Start point Electrical heating Stage 2	0...100	%	40		6	
Start stage 3	Start point Electrical heating Stage 3	0...100	%	80		6	
Stage hys off	Hysteresis to switch Off a Stage	0...20	%	10		6	

## 17.15.32

## Cooling 2 > Max limitation fan

### Main Index > Unit > Temp control > Cooling 2 > Clg 2 max limit fan

Parameter	Function	Value range	Unit	Standard	R	S	Link
Fan stage 0	Only visible if plant is not configured, not used! Fix setted to 0	0...100	%	0		6	Section: 0
Fan stage 1	Max Output Value for Stage 1	0...100	%	100		6	
Fan stage 2	Max Output Value for Stage 2	0...100	%	100		6	
Fan stage 3	Max Output Value for Stage 3	0...100	%	100		6	

## 17.15.33

## Fan heating

### Main Index > Unit > Temp control > Fan heating

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.5.6
Deadzone	Heating Deadzone for Fan compensation	0...20	°C	1.0		6	

## 17.15.34

## Fan cooling

### Main Index > Unit > Temp control > Fan cooling

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.5.6
Deadzone	Cooling Deadzone for Fan compensation	0...20	°C	1.0		6	

## 17.15.35

## Fan compensation

### Main Index > Unit > Temp control > Fan comp tmp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.5.7
Setpoint	Setpoint for the controller (related to the actual Room or Exhaust Temperature)	0...99	°C	20.0		6	
Function	Defines If the speed of the Fans increases or decreases if Setpoint is < than Tempereure	Increase Decrease		Increase		6	

## 17.16 Humidity control

### 17.16.1 General

### Main Index > Unit > Humidity control

Parameter	Function	Value range	Unit	Standard	R	S	Link
Act controlled hum	Actual Value of the controlled humidity		%rH, g/kg			X	Section: 5.11.1
Setpoints	Jumpline to Humidity Setpoints					X	
Cascade controller	Jumpline to settings for Cascade Controller Actual Value humidification Actual Value dehumidification		%rH, g/kg			X	
Max controller sply	Jumpline to settings for Max humidification controlling					X	
Humidification	Actual Value; Jumpline for Hunidification settings	0...100	%			X	
Dehumidification	Actual Value; Jumpline to Dehumidification controlller	0...100	%			X	
Fan compensation	Actual Value; Jumpline for Fan Compensation settings	0...100	%			X	
Summer disable	Block the Humidification in Summer	No Yes		No		6	
Dew point	Calculated Dewpoint	-64...64	°C			X	
Dewpoint deadzone	Dew point Deadzone for contorlling	-64...64	°C			6	

## 17.16.2 Humidity setpoints

Main Index > Unit > Humidity control > Setpoints							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Act controled hum	Actual controlled humidity Actual Value	Room Supply	%rH g/kg	Supply		X	
Act dehum stpt	Calculated dehumidification Setpoint for controlling	0.0...100.0	%rH g/kg			X	
Act hum stpt	Calculated humidification Setpoint for controlling	0.0...100.0	%rH g/kg			X	
Act sply dehum stpt	Calculated dehumidification Setpoint for cascade controlling	0.0...100.0	%rH g/kg			X	
Act sply hum stpt	Calculated humidification Setpoint for cascade controlling	0.0...100.0	%rH g/kg			X	
Setpoint	Relative Basic Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	%rH	50.0			4
Dead zone	Relative Deadzone Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	%rH	10.0			4
Dehum setpoint	Relative Dehumidification Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	%rH	60.0			4
Hum setpoint	Relative Humidification Setpoint Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	%rH	40.0			4
Setpoint	Absolute Basic Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	g/kg	10.0			4
Dead zone	Absolute Deadzone Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	g/kg	2.0			4
Dehum setpoint	Absolute Dehumidification Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	g/kg	12.0			4
Hum setpoint	Absolute Humidification Setpoint Setpoint (visible according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	g/kg	8.0			4
Sply hum min stpt	Minimum allowed supply humidity (only with cascade control)	0.0...100.0	%rH	30			4
Sply hum max stpt	Maximum allowed supply humidity (only with cascade control)	0.0...100.0	g/kg	80			4
Sply hum max stpt	Maximum allowed supply humidity (only without cascade control but activated hum supply sensor)	0.0...100.0	%rH g/kg	80.0			4
Sply hum dev alarm	Jumpline to Supply Humidity deviation Alarm settings						4
Room hum dev alarm	Jumpline to Room Humidity deviation Alarm settings						4

Section:  
5.11.2

## 17.16.3 Sply hum dev alarm & Room hum dev alarm

Main Index > Unit > Humidity control > Hum setpoints > Sply hum dev alarm & Room hum dev alarm							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm	Actual Status Supply Deviation alarm	Active Passive				X	
Min limit	Lowest allowed Present Value for alarm	0.0...99.0	%rH, g/kg	10			6
Maximum deviation	In maximum allowed Deviation	0.0...99.0	%rH, g/kg	5			6
Start up delay	Delay until the Deviation is supervised	0...36000	[s]	60			6

Section:  
5.11.3

## 17.16.4 Sply maxController

Main Index > Unit > Humidity control > Max controller sply							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Max controller sply	Actual Vaue; Jumpline to Controller settings	0.0...100.0	%rH g/kg			X	
Max setpoint	Supply Humidification maximum allowed Setpoint (the Unit is according to HumStpt and Hum ControlUnit Selection)	0.0...100.0	%rH g/kg	80.0			X

Section:  
5.11.4

## 17.16.5 Humidification

### Main Index > Unit > Humidity control > Humidification

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.11.5
Output signal	Actual Output Signal; Jumpline to settings	0...100	%			X	
Command	Humifiier status; Jumpline to settings	On Off				X	
Feedback	Humidifier Feedback; Jumpline to settings	No Fdb Ok				X	
Pump.	Pump Status; jumpline to Pump settings	Off On				4	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000	--- S ---	10		6	
Off by fdbk alarm	In case of a Feedback Alarm the Pump is switched Off	No Yes		Yes		6	

## 17.16.6 Humidification > Pump

### Main Index > Unit > Humidity control > Humidification > Pump

Parameter	Function	Value range	Unit	Standard	R	S	Link
Command	Pump command	On Off				X	Section: 5.11.6
Feedback	Pump Feedback	NoFdbk Fdbk				X	
Alarm	Pump Alarm	Ok Alarm				X	
Start up delay fdbk	After this Time the Feedback has to be TRUE	0...36000	--- S ---			6	
Off by fdbk alarm	In case of a Feedback Alarm the Pump is switched Off	No Yes		Yes		6	
Min run time	Mnimum On Time after a Start	0...36000	--- S ---	180		6	
Kick date / time	Pump Kick Date and Time					6	Section: 5.11.7
Kick interval	Intervall Time for Pump Kick	0.0...36000.0	h	168.0		6	
Kick on time	Pulse length for Pump Kick	0...36000	--- S ---	60		6	

## 17.16.7 Humidification > Fan compensation

### Main Index > Unit > Humidity control > Humidification > HumFancomp

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value Controller; Jumpline to settings	0...100	%			X	Section: 5.11.8
Setpoint	Setpoint for the controller (related to the actual Room Humidity)	0...100	%	50.0		6	
Function	Defines if the speed of the Fans increases or decreases if Setpoint is < than Humidity	Increase Decrease		Increase		6	

## 17.17 Air quality control

### Main Index > Unit > Air quality control

Parameter	Function	Value range	Unit	Standard	R	S	Link
Controller	Actual Value; Jumpline to Controller settings	0...100%				X	Section: 5.12
Function	Direction of the Output (0..100 or 100..0)	Normal Inverted		Normal		4	
Setpoint	Setpoint for the controller	0...3000	ppm	800		4	



## 17.18 Auxiliary

### 17.18.1 General

#### Main Index > Unit > Auxiliary

Parameter	Function	Value range	Unit	Standard	R	S	Link
TSP Output	Time Scheduler Output; Jumpline to settings	Off On		Off		6	
Analog output	Actual Value analog Output according to active Fan Stage	0...100	%	0		6	
A outp fan step 0	Output Value if Fan is Off (Default)	0...100	%	0		4	
A outp fan step 1	Output Value if Fan Stage 1 (setpoint stage 1) active	0...100	%	0		4	
A outp fan step 2	Output Value if Fan Stage 2 (setpoint stage 2) active	0...100	%	100		4	
A outp fan step 3	Output Value if Fan Stage 3 (setpoint stage 3) active	0...100	%	100		4	
Alarm input	Alarm Input only for Alarming	Passive Active				X	Chapter: 5.13.1
Input	Digital Input only for display	Off On				X	
Auxiliary tmp	Temperature only for display	-64...64	°C			X	
Op mode output	Output if the selected Operation Mode is active	Off On				x	
Op mode outp select	Operation Mode Selector (set the condition when the Output is active according to the actual state of the Unit)	Off On/comfort Economy. Manual Osstp Night clg UnOcc Night kick Fire dmper Fire Stop. Heat Hrec		Off		4	

### 17.18.2 TSP output

#### Main Index > Unit > Auxiliary > TSP output

Parameter	Function	Value range	Unit	Standard	R	S	Link
Output	Time Scheduler Output	Off On		Off		X	
Manual operation	Operation over HMI NULL = no acces over HMI, TSP or BMS could be active Off and On = override from HMI	Off On NULL		NULL		X	Chapter: 5.13.2
Schedule	Jumpline to the Scheduler	Off On		On		4	
Calendar exception	Jumpline to the Calendar	Passive Active				4	
From BACS	Selection from where the Output is activated Auto = TSP Off and On = override from BMS	Auto Off On		Auto			

## 17.19 Loop controllers

#### Main Index > Unit > Loop controllers

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply fan	Actual Value; Jumpline to Controller settings	0...100	%			X	
Exhaust fan	Actual Value; Jumpline to Controller settings	0...100	%			X	
Air quality	Actual Value; Jumpline to Controller settings	0...100	%			X	
Casc controller tmp	Actual Value Heating/ Cooling; Jumpline to Controller settings	0...100	%			X	
Min supply tmp	Actual Value; Jumpline to Controller settings	0...100	%			X	

## Main Index > Unit > Loop controllers

Parameter	Function	Value range	Unit	Standard	R	S	Link
Max supply tmp	Actual Value; Jumpline to Controller settings	0...100	%			X	Chapter: 7.1
Hrec damper	Actual Value; Jumpline to Controller settings	0...100	%			X	
Heat recovery	Actual Value; Jumpline to Controller settings	0...100	%			X	
Hrec frost protect	Actual Value; Jumpline to Controller settings	0...100	%			X	
Hrec frost pressure	Actual Value; Jumpline to Controller settings	0...100	%			X	
Heating	Actual Value; Jumpline to Controller settings	0...100	%			X	
Htg frost protect	Actual Value; Jumpline to Controller settings	0...100	%			X	
Electrical heating	Actual Value; Jumpline to Controller settings	0...100	%			X	
Casc controller hum	Actual Value Hum/Dehum; Jumpline to Controller settings	0...100	%rH			X	
Max supply hum	Actual Value; Jumpline to Controller settings	0...100	%			X	
Humidification	Actual Value; Jumpline to Controller settings	0...100	%			X	
Dehumidification	Actual Value; Jumpline to Controller settings	0...100	%			X	
Fan comp humidity	Actual Value; Jumpline to Controller settings	0...100	%			X	
Cooling	Actual Value; Jumpline to Controller settings	0...100	%			X	
Heating 2	Actual Value; Jumpline to Controller settings	0...100	%			X	
EI Heating 2	Actual Value; Jumpline to Controller settings	0...100	%			X	
Cooling 2	Actual Value; Jumpline to Controller settings	0...100	%			X	
Fan heating	Actual Value; Jumpline to Controller settings	0...100	%			X	
Fan cooling	Actual Value; Jumpline to Controller settings	0...100	%			X	
Fan comp tmp	Actual Value; Jumpline to Controller settings	0...100	%			X	

## 17.20 Operation hours

### 17.20.1 General

## Main Index > Unit > Operation Hours

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply fan	Supply Fan operation hours		h				Section: 5.4.6
Reset.	Supply Fan operation hours Reset	Active, Passive		Active		6	
Exhaust fan	Exhaust fan operation hours		h				
Reset.	Exhaust fan operation hours Reset	Active, Passive		Active		6	
Fan settings	Jumpline to Fan settings					6	
Hrec (pump)/cmd	Heat Recovery Pump Operation Hours		h	4			
Reset.	Heat Recovery Pump Operation Hours Reset	Active, Passive		Active		6	
Heating pump	Heating pump Operation Hours		h				
Reset.	Heating pump Operation Hours Reset	Active, Passive		Active		6	
Electrical heating	Electrical heating Cmd Operation Hours		h				
Reset.	Electrical heating Cmd Operation Hours Reset	Active, Passive		Active		6	
Cooling pump	Cooling Pump Operation Hours		h			X	
Reset.	Cooling Pump Operation Hours Reset	Active, Passive				6	
Cooling DX	Digital Cooling Operation Hours		h			X	
Reset.	Digital Cooling Operation Hours Reset	Active, Passive				6	
Humidifier	Humidity Cmd Operation Hours		h			X	
Reset.	Humidity Cmd Operation Hours Reset	Active, Passive				6	
Humidifier pump	Humidity Pump Operation Hours		h			X	
Reset.	Humidity Pump Operation Hours Reset	Active, Passive				6	
Heating 2 pump	Heating 2 Pump Operation Hours		h			X	
Reset.	Heating 2 Pump Operation Hours Reset	Active, Passive				6	
EI heating 2	Electrical heating 2 Cmd Operation Hours		h			X	
Reset.	Electrical heating 2 Cmd Operation Hours Reset	Active, Passive				6	
Cooling 2 pump	Cooling 2 Pump Operation Hours		h			X	
Reset.	Cooling 2 Pump Operation Hours Reset	Active, Passive				6	
Cooling 2 Dx	Extra DX Cooling Operation Hours		h			X	
Reset.	Extra DX Cooling Operation Hours Reset	Active, Passive				6	
Aux Tsp Output	Auxiliary Time Schedule output Operation Hours		h			X	
Reset.	Auxiliary Time Schedule Operation Hours Reset	Active, Passive				6	

## 17.20.2 Fan settings

### Main Index > Unit > Operation Hours > Fan Settings

Parameter	Function	Value range	Unit	Standard	R	S	Link
OpHours alarm	Operation hours alarm	Active, Passive				X	
Enable alarmOpHours	Enables this Function, if the Operation Hours from Supply Fan are > than OpHours Limit => alarm	No, Yes		No		6	
OpHours Limit	Operation hours Limit	0...999999	h	17520		6	

## 17.21 Alarm handling (Alarm outputs)

### Main Index > Alarm handling

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm acknowledge	Reset button for Alarms	Off, On				4	
Danger (A)	Aktual Status of Danger Alarms	Normal, Alarm				X	
Critical (A)	Aktual Status of Critical Alarms	Normal, Alarm				X	
Low (B)	Aktual Status of Low Alarms	Normal, Alarm				X	
Warning (C)	Aktual Status of Warnings	Normal, Alarm				X	
Alarm outp 1 select	Selection of signalised Alarms if only one Alarm output is activated High (A) = only High class Alarms H+L (A+B) = High and Low class Alarms	High (A) H+L (A+B)				4	
Alarm output 1	Actual Status from output 1	Normal, Alarm				X	
Alarm output 2	Actual Status from output 2	Normal, Alarm				X	
Modbus communicat	Error Status from MODBUS communication (1 = Alarm)	0...1				X	
Comm module 0	Jumpline to Communication module overview					4	
Comm failure State	Communication failure in Module 0 Reason for Failure in Module 0	Passive, Active Ok Hardware Init Memory DoubleID COV Reg other				X	
Comm module 1	Jumpline to Communication module overview					4	
Comm failure State	Communication failure in Module 1 Reason for Failure in Module 1	Passive, Active Ok Hardware Init Memory DoubleID COV Reg other				X	
Comm module 2	Jumpline to Communication module overview					4	
Comm failure State	Communication failure in Module 2 Reason for Failure in Module 2	Passive, Active Ok Hardware Init Memory DoubleID COV Reg other				X	

Section:  
5.14

## 17.22 Outputs

### 17.22.1 Digital outputs

#### Main Index > Unit > Outputs > Digital outputs

Parameter	Function	Value range	Unit	Standard	R	S	Link
Supply fan cmd	Supply Fan Command	Off, On				4	Section: 6.3
Exhaust fan cmd	Exhaust fan	Off, On				4	
Hrec (pump) cmd	Heat recovery Pump Command	Off, On				4	
Htg pump cmd	Heating pump Command	Off, On				4	
El heating cmd	Electrical heating Stage	Off, On				4	
Humidifier cmd	Humidification Command	Off, On				4	
Humidifier pump cmd	Humidification Pump Command	Off, On				4	
Cooling pump cmd	Cooling Pump Command	Off, On				4	
Cooling DX cmd	Dx Cooling Command	Off, On				4	
Heating 2 pump cmd	Heating 2 Pump Command	Off, On				4	
El heating 2 cmd	Electrical heating 2 Stage	Off, On				4	
Cooling 2 pump cmd	Cooling 2 Pump Command	Off, On				4	
Cooling 2 Dx cmd	Extra Dx Cooling Stage	Off, On				4	
Outs air damper cmd	Outside air Damper Command	Off, On				4	
Extr air damper cmd	Extract Damper Command	Off, On				4	
Fire damper cmd	Fire damper Command	Off, On				4	
Aux TSP output	Auxiliary Time Sheduler Output	Off, On				4	
Alarm output 2	Output for combined Low alarms (B)	Normal, ..., Fault				4	
Alarm output 1	Output for combined high alarms (A)	Normal, ..., Fault				4	

### 17.22.2 Analog outputs

#### Main Index > Unit > Outputs > Analog Outputs

Parameter	Function	Value range	Unit	Standard	R	S	Link
Sply fan outp sign	Supply Fan output signal	0...100	%			4	Section: 6.2
Exh fan outp sign	Exhaust Fan output signal	0...100	%			4	
Hrec output signal	Heat recovery output signal	0...100	%			4	
Hrec dmpr outp sign	Heat recovery Damper Position	0...100	%			4	
Heating outp signal	Heating Valve Position	0...100	%			4	
El htg outp signal	Electrical heating Valve Position	0...100	%			4	
Hum outp signal	Humidity output signal	0...100	%			4	
Cooling outp signal	Cooling Valve Position	0...100	%			4	
Htg 2 outp signal	Heating 2 Valve Position	0...100	%			4	
El htg 2 outp sign	Electrical heating 2 Position	0...100	%			4	
Clg 2 outp signal	Cooling 2 Position	0...100	%			4	
Aux A outp fan	Auxiliary Output by Fan step Actual Value	0...100	%			4	

# 18 Time scheduler

## 18.1 Week schedulers

### Main Index > Unit > Main overview > Time switch program > Schedule

Parameter	Function	Value range	Unit	Standard	R	S	Link
Present Value	Actual value from this this day					6	Section: 8.2
Monday	Actual State from Monday if active; Jumpline to Day Scheduler Monday					6	
Copy schedule	Copy all entries from Monday to Tuesday up to Friday					6	
Tuesday	Actual State from Tuesday if active; Jumpline to Day Scheduler Tuesday					6	
...	Actual State from ...day if active; Jumpline to Day Scheduler ...day					6	
Saturday	Actual State from Saturday if active; Jumpline to Day Scheduler Saturday					6	
Sunday	Actual State from Sunday if active; Jumpline to Day Scheduler Sunday					6	
Exception	Actual State from Exceptionday if active; Jumpline to Day Scheduler Excaptionday					6	
Period:Start	Only with PW level 2; Start Date when Weekschedular is active (Default setting:always active)				2	2	
Period:Stop	Only with PW level 2; Stop Date when Weekschedular is passive				2	2	

### 18.1.1 Day schedulers

#### Schedule > Day

Parameter	Function	Value range	Unit	Standard	R	S	Link
Present Value	Actual value from this this day					6	Section: 8.3
Day schedule	Validity of the day					6	
Time 1	Switching point 1 (always 00:00)	00:00				6	
Value 1		State				6	
Time 2 ... Time 6	Switching point 1 ... Switching poin 6					6	
Value 2 ... Value 6						6	

### 18.1.2 Calendar (Exception, fix off)

#### Schedule > Calendar Exception / Calendar fix off

Parameter	Function	Value range	Unit	Standard	R	S	Link
Present value		Passive Active				6	Section: 8.4
Choice-x	Select the entry in the scheduler One day A period from ... to A special day Entry not used	Date Range WeekDay Passive				6	
-(Start) date						6	
-End date						6	
-Week day						6	

## 18.2 Detail pages: Analog outputs

### 18.2.1 General

#### Main Index > Unit > Outputs > Analog outputs > Element

Parameter	Function	Value range	Unit	Standard	R	S	Link
Manual operation	Enter the value. Function enabled by entering a value.	0...100	[%]				Section: 6.2.1
Manual operation	Status and reset after NULL. NULL: Auto; The program controls the output. Active: A value entered in the upper line.	NULL Active					
Present Value	Present value for output.	0...100	[%]		6	4	
Reliability	Reliability state for hardware.	OK. Other Process error Config err			6	4	
Active prio	Displays the wired Prio elements currently on the output.	Out of serv. Prio1 .... Prio16 Default			6	4	
Special settings	Go to special settings page.					4	
Special infos	Go to special info page.					6	
Priority array	Go to priority array page.					6	

### 18.2.2 Special settings

#### Main Index > Unit > Outputs > Analog outputs > Element > Special settings

Parameter	Function	Value range	Unit	Standard	R	S	Link
Msg class fault	Set alarm class (and groups A, B, C): Set the Unit in Stop Mode Set the Unit in Off Mode Only Message Only Message No Message, no Alarm	Danger (A) High (A) Low (B) Warning (C) No alarm			4	4	Section: 6.2.2
High limit	Upper limit of output signal.	0...100	[%]		4	4	
Low limit	Lower limit of output signal.	0...100	[%]		4	4	

### 18.2.3 Special information

#### Main Index > Unit > Outputs > Analog outputs > Element > Special infos

Parameter	Function	Value range	Unit	Standard	R	S	Link
Physical value	Value on output. Only differs from present value with out of service intervention via BACnet. OK?	0...100	[%]		4		Section: 6.3.3
Disable OffNormal MMI-Texte so OK?	Check: The output is disabled by an alarm. Example: Value greater than high limit value: Output OK. Output switched off.	Passive Active			4		
ToOffNormal	Date and time the last off normal alarm occurred.	Day of week, dd.mm.yyyy hh:mm:ss			4		
ToFault	Data and time last fault alarm (Reliability < 0) occurred.	Day of week, dd.mm.yyyy hh:mm:ss			4		
ToNormal	Date and time last alarm was reset.	Day of week, dd.mm.yyyy hh:mm:ss			4		
Communication infos	Not enabled for analog outputs.				4		

## 18.2.4 Priority array

Main Index > Unit > Outputs > Analog outputs > Element > Priority array							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Default	Replacement value, when no priority is active.	0...100	[%]		4	X	Section: 6.2.4
Prio 01	Value for priority 1.	0...100	[%]		4	X	
...	...	...			4	X	
Priority 16	Value for priority 16.	0...100	[%]		4	X	

## 18.3 Detail pages: Digital outputs

### 18.3.1 General

Main Index > Unit > Outputs > Digital outputs > Element							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Manual operation	Manual operation on element (e.g. pump). Off. On. Auto: The program controls the output.	Off On NULL			4	4	Section: 6.3.1
Present Value	Present value for output.	Off On	[%]		6	4	
Reliability	Reliability state for hardware.	OK. Other Process error Config err			6	4	
Active prio	Displays the wired Prio elements currently on the output.	Out of serv. Prio1 .... Prio16 Default			6	4	
Operating hours	Number of operating hours for the output.	0...	[h]		6		
Operating seconds (Reset)	Number of operating seconds for the output. Enter 0 seconds to reset operating hours to 0.	0...	[s]		6		
Last op hours reset	Date and time for the last time operating hours was reset.	Wday, dd.mm.yyy hh:mm:ss			6		
Special settings	Go to special settings page.					4	
Special infos	Go to special info page.					6	
Priority array	Go to priority array page.					6	

### 18.3.2 Special settings

Main Index > Unit > Outputs > Digital outputs > Element > Special settings							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Contact Function	Changes output from Normal open to Normal closed: Normal open Normal closed (In this position, the output is enabled when the plant is shut down).	NO NC		NO	4	4	Section: 6.3.2

### 18.3.3 Special information

Main Index > Unit > Outputs > Digital outputs > Element > Special infos							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Physical value	Value on output. Only differs from present value with out of service intervention via BACnet. OK?	Off On			6		Section: 6.3.3
Disable OffNormal	Display OffNormal alarms. No alarm pending. Alarm pending.	Passive Activ			6		
BACnet fdbk value	If connected: Feedback value from the bus.				6		
Communication infos	Not enabled for digital outputs.				6		

## 18.3.4 Priority array

### Main Index > Unit > Outputs > Digital outputs > Element > Priority array

Parameter	Function	Value range	Unit	Standard	R	S	Link
Default	Replacement value, when no priority is active.	Off On NULL			6	X	Section: 6.3.4
Prio 01	Value for priority 1.	Off On NULL			6	X	
...	...	...			6	X	
Priority 16	Value for priority 16.	Off On NULL			6	X	

## 18.4 Detail pages: Multistate outputs

### 18.4.1 General

### Main Index > Unit > Outputs > Digital outputs > Element

Parameter	Function	Value range	Unit	Standard	R	S	Link
Manual operation	Manual operation on element (e.g. fan). NULL: Auto; The program controls the output.	Off Stage1 Stage2 Stage3 NULL			4	4	Section: 6.4.1
Present Value	Present value for output.	NULL Off Stage1 Stage2 Stage3			6	4	
Reliability	Reliability state for hardware.	OK. Other Process error Config err			6	4	
Active prio	Displays the wired Prio elements currently on the output.	Out of serv. Prio1 .... Prio16 Default			6	4	
Special infos	Go to special info page.					6	
Priority array	Go to priority array page.					6	

### 18.4.2 Special information

### Main Index > Unit > Outputs > Digital outputs > Element > Special settings

Parameter	Function	Value range	Unit	Standard	R	S	Link
Physical value	Value on output. Only differs from present value with out of service intervention via BACnet. OK?	Off Stage1 Stage2 Stage3			6		Section: 6.4.2
Disable OffNormal	Display OffNormal alarms: No alarm pending. Alarm pending.	Passive Activ			6		
Communication infos	Not enabled for multistate outputs.						



## 18.4.3 Priority array

Main Index > Unit > Outputs > Digital outputs > Element > Priority array							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Default	Replacement value, when no priority is active.	Off Stage1 Stage2 Stage3 NULL			6	X	Section: 6.4.3
Prio 01	Value for priority 1.	Off Stage1 Stage2 Stage3 NULL			6	X	
...	...	...					
Priority 16	Value for priority 16.	Off Stage1 Stage2 Stage3 NULL			6	X	

## 18.5 Detail pages: Analog inputs

### 18.5.1 General

Main Index > Unit > Inputs > Element group > Element							
Parameter	Function	Value range	Unit	Standard	R	S	Link
Present Value	Present input value.	Depends on hardware.			6	4	Section: 6.5.1
Reliability (Basis Controller)	Reliability state for hardware. Interrupt. Value outside measuring range on 0-10V DC inputs. Short circuit. Calibration lacking. Controller must be returned to the factory. Internal fault. Input not configured.	OK. No sensor Over range Shorted loop  Other  Process Error Config Error			6	4	
Reliability (Extension Modul POL 955)	Reliability state for hardware. Value outside measuring range on 0-10V DC inputs. Interrupt for passive sensors. Short circuit for passive sensors. Calibration lacking. Controller must be returned to the factory; internal fault or input not configured.	OK. Over range  Under range  Other			6	4	
High limit active	Display an Off normal Alarms, when Present Value > High limit.	Passive Active			6	4	
High limit active	Display an Off normal Alarms, when Present Value < Low limit.	Passive Active			6	4	
High limit	Limit value for a high-limit alarm.	Depends on hardware.			6	4	
Low limit	Limit value for a low-limit alarm.	Depends on hardware.			6	4	
Sensor correction	Sensor correction value.	Depends on hardware.			6	4	
PT1 filter HW	Time constant for the input filter.	0...32767	[s]		6	4	
Time delay	Alarm time delays for off normal alarms.	0...65535	[s]		6	4	
Special settings	Go to special settings page.					4	
Special infos	Go to special info page.					4	

## 18.5.2 Special settings

### Main Index > Unit > Inputs > Element Group > Element > Special setting

Parameter	Function	Value range	Unit	Standard	R	S	Link
Out of service	Take input offline for manual entry. The input is in Auto mode. Input is out of service: The present value for the hardware or communication has not influence on the input.	Passive  Active			4	4	Section: 6.5.2
Present value	Present value. You can enter a value for out of service = active.	Depends on hardware.			4	4	
Alarm config	Alarm response: Definition of a trigger for an alarm event. High-limit alarms are enabled. Low-limit alarms are enabled. Disabled for AOs. Fault alarms (Reliability <> 0) are enabled. Automatic reset of fault and off normal alarms. nur für BACnet nur für BACnet nur für BACnet nur für BACnet Assumes changed parameters.	enblHighLimit enblLowLimit enblOffNormal enblFault  self Release  type Alarm evtOffNormal evtFault evtNormal Done			4	4	
Msg class OffNormal	Defines message class for OffNormal alarms (high limit; Low limit): Plant goes to stop. Plant shuts down. Impacted plant shuts down. Message only. No alarm.	Danger (A) High (A) Low (B) Warning (C) No Alarm			4	4	
Msg class fault	Defines message class for fault alarms (reliability <> 0, value = invalid): Plant goes to stop. Plant shuts down. Impacted plant shuts down. Message only. No alarm.	Danger (A) High (A) Low (B) Warning (C) No Alarm			4	4	
Value selector	Select valid input value for the application: Value on hardware input. Value from communications. Average from the values on hardware input and from communications. Lowest value from the values on hardware input and from communications. Highest value from the values on hardware input and from communications. Value on hardware input has priority. Value from communications has priority.	Hardware Comm Average  Minimum  Maximum.  PreferedHW PrefComm			4	4	

## 18.5.3 Special information

### Main Index > Unit > Inputs > Element Group > Element > Special infos

Parameter	Function	Value range	Unit	Standard	R	S	Link
BACnet present Value	Present value on BACnet.	Depends on hardware.			6		
Value selector	Select valid input value for the application: Value on hardware input. Value from communications. Average from the values on hardware input and from communications. Lowest value from the values on hardware input and from communications. Highest value from the values on hardware input and from communications. Value on hardware input has priority. Value from communications has priority.	Hardware Comm Average  Minimum  Maximum.  PreferedHW PrefComm			6		
Value HW	Present value for hardware.	Depends on hardware.			6		

**Main Index > Unit > Inputs > Element Group > Element > Special infos**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Value comm	Present value from communications.	Depends on hardware.			6		Section: 6.5.3
Reliability HW	Present reliability of hardware value.	Depends on hardware.			6		
Reliability comm	Present reliability of value from communications.	Depends on hardware.			6		
Disable OffNormal	Display OffNormal alarms: No alarm pending. Alarm pending.	Passive Active			6		
ToOffNormal	Date and time the last off normal alarm occurred.	Day of week, dd.mm.yyyy hh:mm:ss			6		
ToFault	Data and time last fault alarm (Reliability <= 0) occurred.	Day of week, dd.mm.yyyy hh:mm:ss			6		
ToNormal	Date and time last alarm was reset.	Day of week, dd.mm.yyyy hh:mm:ss			6		
Communication infos	Information on the communication status for elements. No error. Fault.	Comm OK Noch nicht implementiert.			6		

## 18.6 Detail pages: Digital inputs

### 18.6.1 General

**Main Index > Unit > Inputs > Digital inputs > Element**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Present Value	Present input value.	Depends on hardware.			6	4	Section: 6.6.1
Reliability (Basis Controller)	Reliability state for hardware. Calibration lacking. Controller must be returned to the factory. Internal fault. Input not configured.	OK. Other  Process Error Config Error			6	4	
Reliability (Extension Modul POL 955)	Reliability state for hardware. Calibration lacking. Controller must be returned to the factory; internal fault or input not configured.	OK. Other			6	4	
OffNormal	Displays OffNormal alarms: No alarm. Alarm	Passive Active			6	4	
Operating hours	Number of operating hours for the output.	0...	[h]		6	4	
Operating seconds (Reset)	Number of operating seconds for the output. Enter 0 seconds to reset operating hours to 0.	0...	[s]		6	4	
Last op hours reset	Date and time for the last time operating hours was reset.	Wday, dd.mm.yyy hh:mm:ss			6	4	
Time delay	Alarm time delays for off normal alarms.	0...65535	[s]		6	4	
Special settings	Go to special settings page.					4	
Special infos	Go to special info page.					6	

### 18.6.2 Special settings

**Main Index > Unit > Inputs > Digital inputs > Element > Special settings**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Out of service	Take input offline for manual entry of state. The input is in Auto mode. Input is out of service: The present value for the hardware has not influence on the input.	Passive  Active			4	4	
Present value	Present value. You can enter a value for out of service = active.	Text abhängig von der Hardware.			4	4	

**Main Index > Unit > Inputs > Digital inputs > Element > Special settings**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Alarm config	Alarm response: Definition of a trigger for an alarm event. Not enabled for digital outputs. Not enabled for digital outputs. OffNormal Alarm (alarm, e.g. for logical 1 on input) is enabled. Fault alarms (Reliability <> 0) are enabled. Automatic reset of fault and off normal alarms. nur für BACnet nur für BACnet nur für BACnet nur für BACnet Assumes changed parameters.	enblHighLimit enblLowLimit enblOffNormal  enblFault  self Release  type Alarm evtOffNormal evtFault evtNormal Done			4	4	
Msg class OffNormal	Defines message class for OffNormal alarms (missing feedback): Plant goes to stop. Plant shuts down. Impacted plant shuts down. Message only. No alarm.	Danger (A) High (A) Low (B) Warning (C) No Alarm			4	4	Section: 6.6.2
Msg class fault	Defines message class for fault alarms (reliability <> 0, value = invalid): Plant goes to stop. Plant shuts down. Impacted plant shuts down. Message only. No alarm.	Danger (A) High (A) Low (B) Warning (C) No Alarm			4	4	
Contact Function	Changes output from Normal open to Normal closed: Normal open. Normal closed.	NO NC			4	4	
Value selector	Select valid input value for the application: Value on hardware input. Value from communications. The input is 1, if the value on the hardware input and the value from communications = 1. The input is 1, if the value on the hardware input or the value from communications = 1. Highest value from the values on hardware input and from communications. Value on hardware input has priority. Value from communications has priority.	Hardware Comm And.  Or.  Maximum.  PreferedHW PrefComm			4	4	

**18.6.3 Special information**

**Main Index > Unit > Inputs > Digital inputs > Element > Special Infos**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Value selector	Select valid input value for the application: Value on hardware input. Value from communications. The input is 1, if the value on the hardware input and the value from communications = 1. The input is 1, if the value on the hardware input or the value from communications = 1. Highest value from the values on hardware input and from communications. Value on hardware input has priority. Value from communications has priority.	Hardware Comm And.  Or.  Maximum.  PreferedHW PrefComm			4		
Value HW	Present value for hardware.	Depends on hardware.			4		
Value comm	Present value from communications.	Depends on hardware.			4		
Reliability HW	Present reliability of hardware value.	Depends on hardware.			4		
Reliability comm	Present reliability of value from communications.	Depends on hardware.			4		

Section:  
6.6.3

**Main Index > Unit > Inputs > Digital inputs > Element > Special Infos**

Parameter	Function	Value range	Unit	Standard	R	S	Link
Disable OffNormal	Displays OffNormal alarms: No alarm. Alarm.	Passive Active			4		
Enable Value	Displays enable of software input within the application: Input is disabled. Input is enabled.	Passive Active			4		
ToOffNormal	Date and time the last off normal alarm occurred.	Day of week, dd.mm.yyyy hh:mm:ss			4		
ToFault	Data and time last fault alarm (Reliability <=> 0) occurred.	Day of week, dd.mm.yyyy hh:mm:ss			4		

# 19 Alarming

## 19.1 General

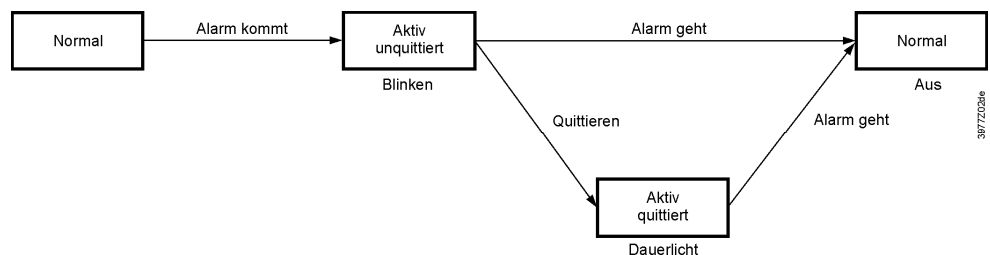
This chapter deals with the following topics:

- Alarms.
- Alarm list.
- History list.
- Acknowledge alarms.
- Reset alarms.

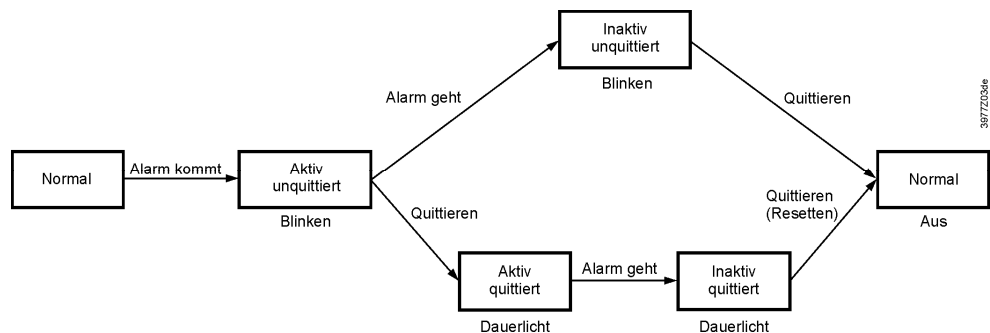
### Principles

- Alarm and history list may include a maximum of 50 entries.
- Each alarm is reported in clear text, notification class, alarm group, date and time.
- Each new alarm generates a line in both the alarm list as well as the history list.
- Active alarms:
  - The alarm LED flashes on the external HMI.
  - The alarm bell symbol rings back and forth in the in-built HMI.
- An acknowledge, but still active alarm:
  - The alarm LED is lit on the external HMI.
  - The alarm bell symbol is still in the in-built HMI.
- Reset alarms:
  - Alarm list: Line is deleted.
  - History list: Display of going alarm.

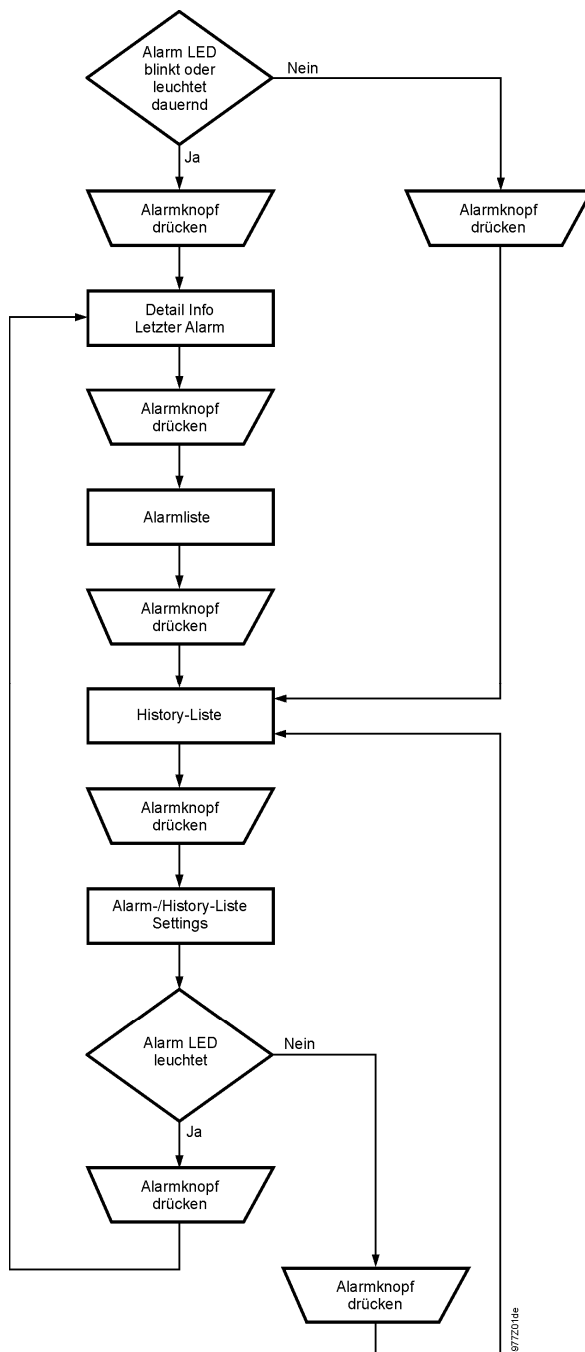
Save and unsaved alarms Workflow for unsaved alarms:



Workflow for saved alarms:



Alarm button function



## 19.2 Alarm list detail

The Alarm list detail includes the following information on the last occurring alarm:

1. Line	+ Alarm name:	State.
2. Line	Notification class	(Detector group).
3. Line	Date	Time of day
Example:	+ Heating frost tmp: 0 15.10.2009	Frost. Emerg(A) 21:32:55

## 19.3 Alarm list

---

Information on the active alarms in the alarm list:

1. Line	The line displays how many alarms are still not acknowledged: Acknowledge          Passive number of unacknowledged alarms. Example: Acknowledge          Passive 14 Pressing the setting knob and select "Active" to acknowledge all unacknowledged alarms or rest the same if the fault as elimi- nated, but not yet saved.
Other lines	+ Alarm name:          State. Example: + Exhaust air temp:    Alarm  – Press knob: Go to alarm's detail information. – Press alarm knob: Go to the list settings.

Note

– List may include up to 50 entries.

## 19.4 Alarm history

---

Information on the active and passive alarms in the alarm history:

1. Line	The line displays how many entries are included in the list: Acknowledge          Passive    Number of entries. Example: Acknowledge          Passive 14 Press setting knobs and select "Active" to delete all entries from the history list.
Other lines	+ Alarm name:          State. Example: + Exhaust air temp:    Alarm (coming alarm). - Exhaust air temp:    OK (going alarm).  – Press knob: Go to alarm's detail information. – Press alarm knob: Go to the list settings.

Note

List may include up to 50 entries.



## 19.5 Alarm list / history settings

### Parameter

Parameter	Range	Function
<b>Alarm list</b>		
Reset.		Reset / acknowledge pending alarms.
Sort order 1	<ul style="list-style-type: none"> <li>–</li> <li>– Time</li> <li>– Name</li> <li>– AlarmClass</li> <li>–</li> <li>– State</li> </ul>	Main sorting criteria <ul style="list-style-type: none"> <li>– Sort by data and time.</li> <li>– Sort alphabetically in ascending order.</li> <li>– Sort by notification class (0,1,2,3 corresponding to Danger/High/Low/Warning).</li> <li>– Sort by status (fault, no fault).</li> </ul>
Sort order 2	<ul style="list-style-type: none"> <li>– Time</li> <li>– Name</li> <li>– AlarmClass</li> <li>– State</li> </ul>	Auxiliary sort criteria: See Sort order 1.
Descending order	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	Alarms sorted in ascending or descending order. What is the criteria applied for? <ul style="list-style-type: none"> <li>– Ascending.</li> <li>– Descending.</li> </ul>
<b>Alarm history</b>		
Reset.		Deletes history list.
Sort order 1	<ul style="list-style-type: none"> <li>– Time</li> <li>– Name</li> <li>– AlarmClass</li> <li>– State</li> </ul>	Main sorting criteria See Alarm list.
Sort order 2	<ul style="list-style-type: none"> <li>– Time</li> <li>– Name</li> <li>– AlarmClass</li> <li>– State</li> </ul>	Auxiliary sort criteria: See Alarm list.
Descending order	<ul style="list-style-type: none"> <li>– Passive</li> <li>– Active</li> </ul>	See Alarm list.

## 19.6 Alarm lists

### 19.6.1 Numerical (alarm numbers)

Alarm text	Notification class / group	Alarm no. room unit	Settings 1	Settings 2
Communication test	3/C	1		Time delay 600 s
External setpoint	2/B	20	High Limit 6.0 °C Low Limit -6.0 °C	Time delay 5s
Aux Alarm	2/B	21		Time delay 0s
Manual mode	2/B	22		Time delay 1800 s
Modbus comm	2/B	23		Time delay 10 s
Processbus comm	2/B	23		Time delay 10 s
Room unit temp	2/B	24		Time delay 17m
Room unit temp 2	2/B	24		Time delay 17m
Outside air temp	2/B	25		Time delay 0s
Room temperature	2/B	26		Time delay 0s
Room temperature 2	2/B	27		Time delay 0s
Extract air tmp	2/B	28	Low Limit -10.0 °C	Time delay 0s
Hrec supply air tmp	2/B	29		Time delay 0s
Supply air tmp 2	2/B	30		Time delay 0s
Auxiliary tmp	2/B	31		Time delay 0s
Sply tmp deviation	2/B	32	Max deviation = 10.0 °C Min Limit = 10.0°C StrtUpDly 60 s	Time delay 3600s
Room tmp deviation	2/B	33	Max deviation = 10.0 °C Min Limit = 10.0°C StrtUpDly 600 s	Time delay 3600 s
Htg pump alarm	2/B	34		Time delay 0s
Htg pump fdbk	2/B	34	StrtUpDly 10 s	Time delay 0s
Cooling 2 DX alarm	2/B	35		Time delay 0s
Cooling 2 DX fdbk	2/B	35	StrtUpDly 10 s	Time delay 5s
Cooling 2 pump alm	2/B	35	StrtUpDly 30 s	Time delay 1s
Cooling 2 pump fdbk	2/B	35		Time delay 0s
Heating 2 pump alm	2/B	36		Time delay 0s
Heating 2 pump fdbk	2/B	36	StrtUpDly 10 s	Time delay 0s
Hum pump alarm	2/B	37		Time delay 0s
Hum pump fdbk	2/B	37	StrtUpDly 30 s	Time delay 5s
Humidifier fdbk	2/B	38	StrtUpDly 10 s	Time delay 5s
Exh filter alarm	2/B	39		Time delay 0s
Filter alarm	2/B	39		Time delay 0s
Supply filter alarm	2/B	39		Time delay 0s
Fan op hours alarm	2/B	40	Alarm Lim Op hours 17520 h	Time delay 0 s
Cooling DX alarm	2/B	41		Time delay 0s
Cooling DX fdbk	2/B	41	StrtUpDly 30 s	Time delay 1s
Cooling pump alarm	2/B	41		Time delay 0s
Cooling pump fdbk	2/B	41	StrtUpDly 10 s	Time delay 5s
Heat recovery alarm	2/B	42		Time delay 0s
Hrec pump alarm	2/B	43		Time delay 0s
Hrec pump fdbk	2/B	43	StrtUpDly 10 s	Time delay 5s
Hrec efficiency	2/B	44		Time delay 600s

Alarm text	Notification class / group	Alarm no. room unit	Settings 1	Settings 2
Hrec damper	2/B	45		Time delay 0 s
Sply air hum rel	2/B	46	High Limit 100% rel Max deviation = 5.0 %rel Min Limit = 10.0 %rel	Time delay 0s
Sply hum deviation	2/B	46	StrtUpDly 60 s	Time delay 3600s
Outs air hum rel	2/B	47	High Limit 100 % rel Max deviation = 10.0 %rel Min Limit = 10.0 %rel	Time delay 0s
Room hum deviation	2/B	48	StrtUpDly 60 s	Time delay 3600 s
Room humidity rel	2/B	48	High Limit 100 % rel	Time delay 0s
Air quality	2/B	49	High Limit 3000 ppm	Time delay 0s
Supply air temp	1/A	60		Time delay 0s
Exhaust air temp	2/B	61		Time delay 0s
El htg alarm	1/A	62		Time delay 0s
El heating 2 alarm	1/A	63		Time delay 0s
Fire damper closed	1/A	64	Start delay = Closing Time * 1,15	Time delay 5s
Fire damper no move	1/A	64		Time delay 5s
Fire damper opened	1/A	64	Start delay = Opening Time * 1,15	Time delay 5s
Extr air dmpwr fdbk	1/A	65	StrtUpDly 180 s	Time delay 5s
Outs air dampr fdbk	1/A	65	StrtUpDly 180 s	Time delay 5s
Fan alarm	1/A	66		Time delay 0s
Supply fan alarm	1/A	66		Time delay 0s
Supply fan fdbk	1/A	66	StrtUpDly 60 s	Time delay 5s
Exhaust fan alarm	1/A	67		Time delay 0s
Exhaust fan fdbk	1/A	67	StrtUpDly 30 s	Time delay 5s
Dew point	0/A	68		Time delay 0 s
Sply fan deviation	0/A	69	StrtUpDly 180 s	Time delay 60 s
Supply air flow	0/A	69	High Limit 40000 l/s	Time delay 10s
Supply air pressure	0/A	69	High Limit 5000 Pa	Time delay 10s
Exh fan deviation	0/A	70	StrtUpDly 180 s	Time delay 60 s
Exhaust air flow	0/A	70	High Limit 20000 l/s	Time delay 10s
Exhaust air press	0/A	70	High Limit 5000 Pa	Time delay 10s
Exh tmp fire alarm	1/A	81	Limit 50 °C	Time delay 2s
Supply tmp fire alm	1/A	81	Limit 70 °C	Time delay 2s
Fire alarm	0/A	81		Time delay 0s
Heating frost tmp	1/A	82	Low Limit 5.0 °C	Time delay 0s
Hrec water tmp	1/A	83	Low Limit -2.0 °C	Time delay 0s
Heating 2 frost tmp	1/A	84	Low Limit 5.0 °C	Time delay 0s
Htg frost monitor	1/A	85		Time delay 0s
Htg 2 frost monitor	1/A	86		Time delay 0s
Hrec frost monitor	1/A	87		Time delay 1200s
Hrec frost pressure	1/A	87	High Limit 5000 Pa	Time delay 0s
Conf alm htg 2	0/not Exist			Time delay 0 s
Doubled config IO	0/not Exist			Time delay 0 s
Not config IO	0/not Exist			Time delay 0 s
IO extension module	0/A			Time delay 0 s

## 19.6.2 Alphabetically (Alarm names)

Alarm Text	Notification class / group	Alarm no. room unit	Settings 1	Settings 2
Air quality	2/B	49	High Limit 3000 ppm	Time delay 0s
Aux Alarm	2/B	21		Time delay 0s
Auxiliary tmp	2/B	31		Time delay 0s
Communication test	3/C	1		Time delay 600 s
Conf alm htg 2	0/not Exist			Time delay 0 s
Cooling 2 DX alarm	2/B	35		Time delay 0s
Cooling 2 DX fdbk	2/B	35	StrtUpDly 10 s	Time delay 5s
Cooling 2 pump alm	2/B	35	StrtUpDly 30 s	Time delay 1s
Cooling 2 pump fdbk	2/B	35		Time delay 0s
Cooling DX alarm	2/B	41		Time delay 0s
Cooling DX fdbk	2/B	41	StrtUpDly 30 s	Time delay 1s
Cooling pump alarm	2/B	41		Time delay 0s
Cooling pump fdbk	2/B	41	StrtUpDly 10 s	Time delay 5s
Dew point	0/A	68		Time delay 0 s
Doubled config IO	0/not Exist			Time delay 0 s
El heating 2 alarm	1/A	63		Time delay 0s
El htg alarm	1/A	62		Time delay 0s
Exh fan deviation	0/A	70	StrtUpDly 180 s	Time delay 60 s
Exh filter alarm	2/B	39		Time delay 0s
Exh tmp fire alarm	1/A	81	Limit 50 °C	Time delay 2s
Exhaust air flow	0/A	70	High Limit 20000 l/s	Time delay 10s
Exhaust air press	0/A	70	High Limit 5000 Pa	Time delay 10s
Exhaust air temp	2/B	61		Time delay 0s
Exhaust fan alarm	1/A	67		Time delay 0s
Exhaust fan fdbk	1/A	67	StrtUpDly 30 s	Time delay 5s
External setpoint	2/B	20	High Limit 6.0 °C Low Limit -6.0 °C	Time delay 5s
Extr air dmpcr fdbk	1/A	65	StrtUpDly 180 s	Time delay 5s
Extract air tmp	2/B	28	Low Limit -10.0 °C	Time delay 0s
Fan alarm	1/A	66		Time delay 0s
Fan op hours alarm	2/B	40	Alarm Lim Op hours 17520 h	Time delay 0 s
Filter alarm	2/B	39		Time delay 0s
Fire alarm	0/A	81		Time delay 0s
Fire damper closed	1/A	64	Start delay = Closing Time * 1,15	Time delay 5s
Fire damper no move	1/A	64		Time delay 5s
Fire damper opened	1/A	64	Start delay = Opening Time * 1,15	Time delay 5s
Heat recovery alarm	2/B	42		Time delay 0s
Heating 2 frost tmp	1/A	84	Low Limit 5.0 °C	Time delay 0s
Heating 2 pump alm	2/B	36		Time delay 0s
Heating 2 pump fdbk	2/B	36	StrtUpDly 10 s	Time delay 0s
Heating frost tmp	1/A	82	Low Limit 5.0 °C	Time delay 0s
Hrec damper	2/B	45		Time delay 0 s
Hrec efficiency	2/B	44		Time delay 600s
Hrec frost monitor	1/A	87		Time delay 1200s
Hrec frost pressure	1/A	87	High Limit 5000 Pa	Time delay 0s
Hrec pump alarm	2/B	43		Time delay 0s

Alarm Text	Notification class / group	Alarm no. room unit	Settings 1	Settings 2
Hrec pump fdbk	2/B	43	StrtUpDly 10 s	Time delay 5s
Hrec supply air tmp	2/B	29		Time delay 0s
Hrec water tmp	1/A	83	Low Limit -2.0 °C	Time delay 0s
Htg 2 frost monitor	1/A	86		Time delay 0s
Htg frost monitor	1/A	85		Time delay 0s
Htg pump alarm	2/B	34		Time delay 0s
Htg pump fdbk	2/B	34	StrtUpDly 10 s	Time delay 0s
Hum pump alarm	2/B	37		Time delay 0s
Hum pump fdbk	2/B	37	StrtUpDly 30 s	Time delay 5s
Humidifier fdbk	2/B	38	StrtUpDly 10 s	Time delay 5s
IO extension module	0/A			Time delay 0 s
Manual mode	2/B	22		Time delay 1800 s
Modbus comm	2/B	23		Time delay 10 s
Not config IO	0/not Exist			Time delay 0 s
Outs air damp fdbk	1/A	65	StrtUpDly 180 s	Time delay 5s
Outs air hum rel	2/B	47	High Limit 100 % rel	Time delay 0s
Outside air temp	2/B	25		Time delay 0s
Processbus comm	2/B	23		Time delay 10 s
			Max deviation = 10.0 %rel Min Limit = 10.0 %rel	
Room hum deviation	2/B	48	StrtUpDly 60 s	Time delay 3600 s
Room humidity rel	2/B	48	High Limit 100 % rel	Time delay 0s
Room temperature	2/B	26		Time delay 0s
Room temperature 2	2/B	27		Time delay 0s
			Max deviation = 10.0 °C Min Limit = 10.0 °C	
Room tmp deviation	2/B	33	StrtUpDly 600 s	Time delay 3600 s
Room unit temp	2/B	24		Time delay 17m
Room unit temp 2	2/B	24		Time delay 17m
Sply air hum rel	2/B	46	High Limit 100% rel	Time delay 0s
Sply fan deviation	0/A	69	StrtUpDly 180 s	Time delay 60 s
			Max deviation = 5.0 %rel Min Limit = 10.0 %rel	
Sply hum deviation	2/B	46	StrtUpDly 60 s	Time delay 3600s
			Max deviation = 10.0 °C Min Limit = 10.0 °C	
Sply tmp deviation	2/B	32	StrtUpDly 60 s	Time delay 3600s
Supply air flow	0/A	69	High Limit 40000 l/s	Time delay 10s
Supply air pressure	0/A	69	High Limit 5000 Pa	Time delay 10s
Supply air temp	1/A	60		Time delay 0s
Supply air tmp 2	2/B	30		Time delay 0s
Supply fan alarm	1/A	66		Time delay 0s
Supply fan fdbk	1/A	66	StrtUpDly 60 s	Time delay 5s
Supply filter alarm	2/B	39		Time delay 0s
Supply tmp fire alm	1/A	81	Limit 70 °C	Time delay 2s

## 20 Appendices

### 20.1 Point tables

As a matter of principle, we recommend the following configuration procedure:

1. During configuration (Configuration 1 and Configuration 2) all required I/Os in the table must be executed using the following sample.
2. Clean up the tables prior to starting I/O configuration.
3. Conduct I/O configuration per the table.

This ensures that

- The plant on the basis controller and the planned extension modules fit.
- It is evident at all times which terminals used for the required inputs and outputs.

#### Basis controller

#### Hardware assignment for the basis controller POL683x

IO	Function	IO type	Connection	Comments
Digital outputs				
DO1		Digital	T6 (Q13,Q14)	
DO2		Digital	T6 (Q23,Q24)	
DO3		Digital	T6 (Q33,Q34)	
DO4		Digital	T6 (Q43,Q44)	
DO5		Digital	T7 (Q53,Q54)	
DO6		Digital	T7 (Q63,Q64)	
Analog outputs				
AO1		0...10 V DC	T3 (Y1,M)	
AO2		0...10 V DC	T3 (Y2,M)	
Binary inputs				
DI1		Digital	T4 (D1,M)	
DI2		Digital	T4 (D2,M)	
DI3		Digital	T4 (D3,M)	
DI4		Digital	T4 (D4,M)	
DI5		Digital	T4 (D5,M)	
Universal inputs				
X <sup>1</sup>			T2 (X1,M)	
X2			T2 (X2,M)	
Universal inputs / outputs				
X3			T2 (X3,M)	
X4			T2 (X4,M)	
X5			T2 (X5,M)	
X6			T2 (X6,M)	
X7			T2 (X7,M)	
X8				

#### Notes

- Universals I/Os X1 and X2 can be configured exclusively as inputs (digital, Ni1000, Pt1000, NTC10K, 0-10V DC).
- Universals I/Os X3 – X8 can be configured as inputs (digital, Ni1000, Pt1000, NTC10K, 0-10V DC) or outputs 0-10V DC.

**Extension module 1**

Hardware assignment of extension module POL955 with address 1

IO	Function	IO type	Connection	Comments
Digital outputs				
DO11		Digital	T3 (Q13,Q14)	
DO12		Digital	T3 (Q23,Q24)	
DO13		Digital	T3 (Q33,Q34)	
DO14		Digital	T4 (Q43,Q44)	
Analog outputs				
AO11		0...10 V DC	T5 (Y1,M)	
AO12		0...10 V DC	T5 (Y2,M)	
Universal inputs / outputs				
X11			T1 (X1,M)	
X12			T1 (X2,M)	
X13			T1 (X3,M)	
X14			T1 (X4,M)	
X15			T2 (X5,M)	
X16			T2 (X6,M)	
X17			T2 (X7,M)	
X18			T2 (X8,M)	

**Note**

Universals I/Os X11 – X18 can be configured as inputs (digital, Ni1000, Pt1000, NTC10K, 0-10V DC) or outputs 0-10V DC.

**Extension module 2**

Hardware assignment of extension module POL955 with address 1

IO	Function	IO type	Connection	Comments
Digital outputs				
DO21		Digital	T3 (Q13,Q14)	
DO22		Digital	T3 (Q23,Q24)	
DO23		Digital	T3 (Q33,Q34)	
DO24		Digital	T4 (Q43,Q44)	
Analog outputs				
AO21		0...10 V DC	T5 (Y1,M)	
AO22		0...10 V DC	T5 (Y2,M)	
Universal inputs / outputs				
X21			T1 (X1,M)	
X22			T1 (X2,M)	
X23			T1 (X3,M)	
X24			T1 (X4,M)	
X25			T2 (X5,M)	
X26			T2 (X6,M)	
X27			T2 (X7,M)	
X28			T2 (X8,M)	

**Note**

Universals I/Os X21 – X28 can be configured as inputs (digital, Ni1000, Pt1000, NTC10K, 0-10V DC) or outputs 0-10V DC.

## 20.2 Diagnostic tables for check I/O

The clear text from the following tables cannot be configured, but is required for a function as well as determining if inputs or outputs are occupied in duplicate.

### Example 1

1rst notconf IO Pos = 82 => Input external control 2 is not assigned an input (Nusd).

Caution: The plant is locked against switch on!

### Example 2

Doubled config I/O = Yes

Doubled config I/Os = 82 81

Doubled conf I/O pos = DI3

Inputs External contrl 1 and 2 were assigned the same output DI3.

Caution: The plant is locked against switch on!

### Analog inputs

Name	Type	Position (IO Check)
Temperature supply	AI	1
Temperature room 1	AI	2
Temperature rum 2	AI	3
Temperature return	AI	4
Temperature out	AI	5
Temperature frost	AI	6
Temperature water recovery	AI	7
Temperature exhaust	AI	8
Temperature supply after recovery	AI	9
Temperature supply Extra seq.	AI	10
Temperature frost Extra heat	AI	11

Name	Type	Position (IO Check)
Temperature Aux	AI	12
Pressure supply	AI	21
Pressure return	AI	22
Flow supply	AI	23
Flow return	AI	24
Pressure over recovery	AI	25
Humidity supply	AI	31
Humidity room	AI	32
Humidity out	AI	33
Air quality	AI	35
External setpoint	AI	36



## Digital inputs

Name	Type	Position (IO Check)
Frost thermostat / External frost	DI	41
Alarm pump heat	DI	42
Feedback pump heat	DI	43
Alarm el.heat / overheat	DI	44
Frost thermostat recovery	DI	45
Alarm pump recovery	DI	46
Feedback pump recovery	DI	47
Alarm recovery / Wheel guard	DI	48
Alarm pump cool	DI	49
Feedback pump cool	DI	50
Alarm cool machine (DX cool)	DI	51
Feedb. Cool machine (DX cool)	DI	52
Alarm pump humidity	DI	53
Feedback pump humidity	DI	54
Feedback humidifier	DI	55
Frost thermostat Extra heat	DI	56
Alarm pump Extra heat	DI	57
Feedback pump Extra heat	DI	58
Alarm Extra el.heat / overheat	DI	59
Alarm pump Extra cool	DI	60
Feedback pump Extra cool	DI	61
Alarm Extra cool machine	DI	62

Name	Type	Position (IO Check)
Feedback Extra cool machine	DI	63
Alarm fans	DI	64
Alarm supplyfan	DI	65
Feedback supplyfan (combined)	DI	66
Alarm exhaustfan	DI	67
Feedback exhaustfan	DI	68
Alarm filter	DI	69
Alarm filter supply	DI	70
Alarm filter return	DI	71
Alarm fire/smoke	DI	72
Feedb. supply damper (combined)	DI	73
Feedb. exhaust damper	DI	74
Feedb. fire damper (open)	DI	75
Feedb. fire damper (close/comb.)	DI	76
Alarm Aux	DI	77
External control 1 (Timer etc)	DI	81
External control 2	DI	82
Emergency stop	DI	83
Summer/Winter switch	DI	84
Input Aux	DI	85
Alarm acknowledge/reset	DI	86

## Analog outputs

Name	Type	Position (IO Check)
Frequency converter supplyfan	AO	91
Frequency converter exhaustfan	AO	92
Electrical heater	AO	95
Valve heater	AO	96
Mix damper	AO	97
Recovery	AO	98

Name	Type	Position (IO Check)
Valve cooler	AO	99
Extra electrical heater	AO	100
Valve Extra heater	AO	101
Valve Extra cooler	AO	102
Aux output	AO	111
Humidifier	AO	116

## Digital outputs

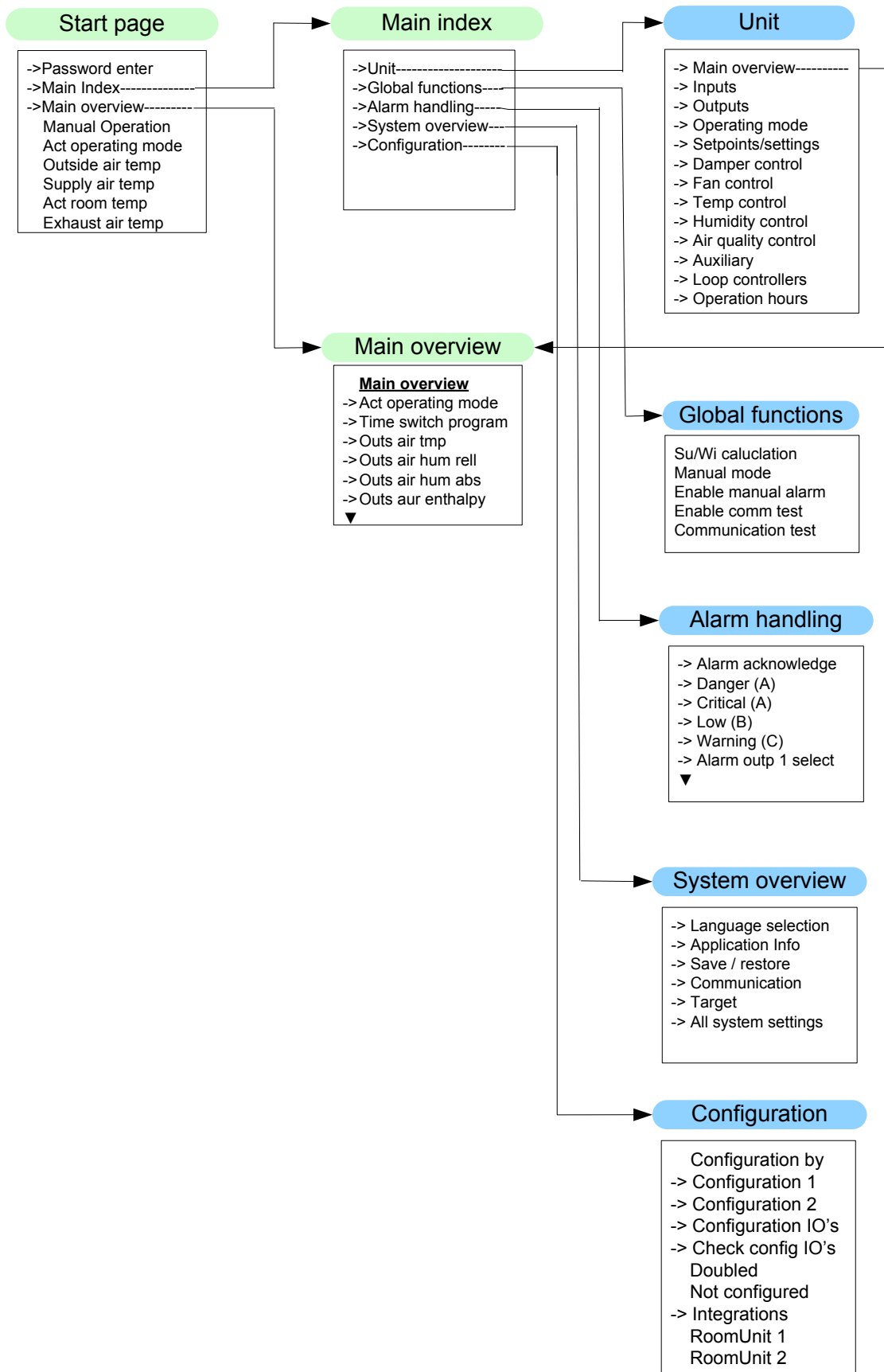
Name	Type	Position (IO Check)
Supply damper (combined)	DO	131
Exhaust damper	DO	132
Fire damper	DO	133
Supplyfan output 1	DO	136
Supplyfan output 2	DO	137
Supplyfan output 3	DO	138
Exhaustfan output 1	DO	139
Exhaustfan output 2	DO	140
Exhaustfan output 3	DO	141
Electrical heater output 1	DO	145
Electrical heater output 2	DO	146
Pump heater	DO	147
Pump/Manoeuvre recovery	DO	148
Pump cooler	DO	149

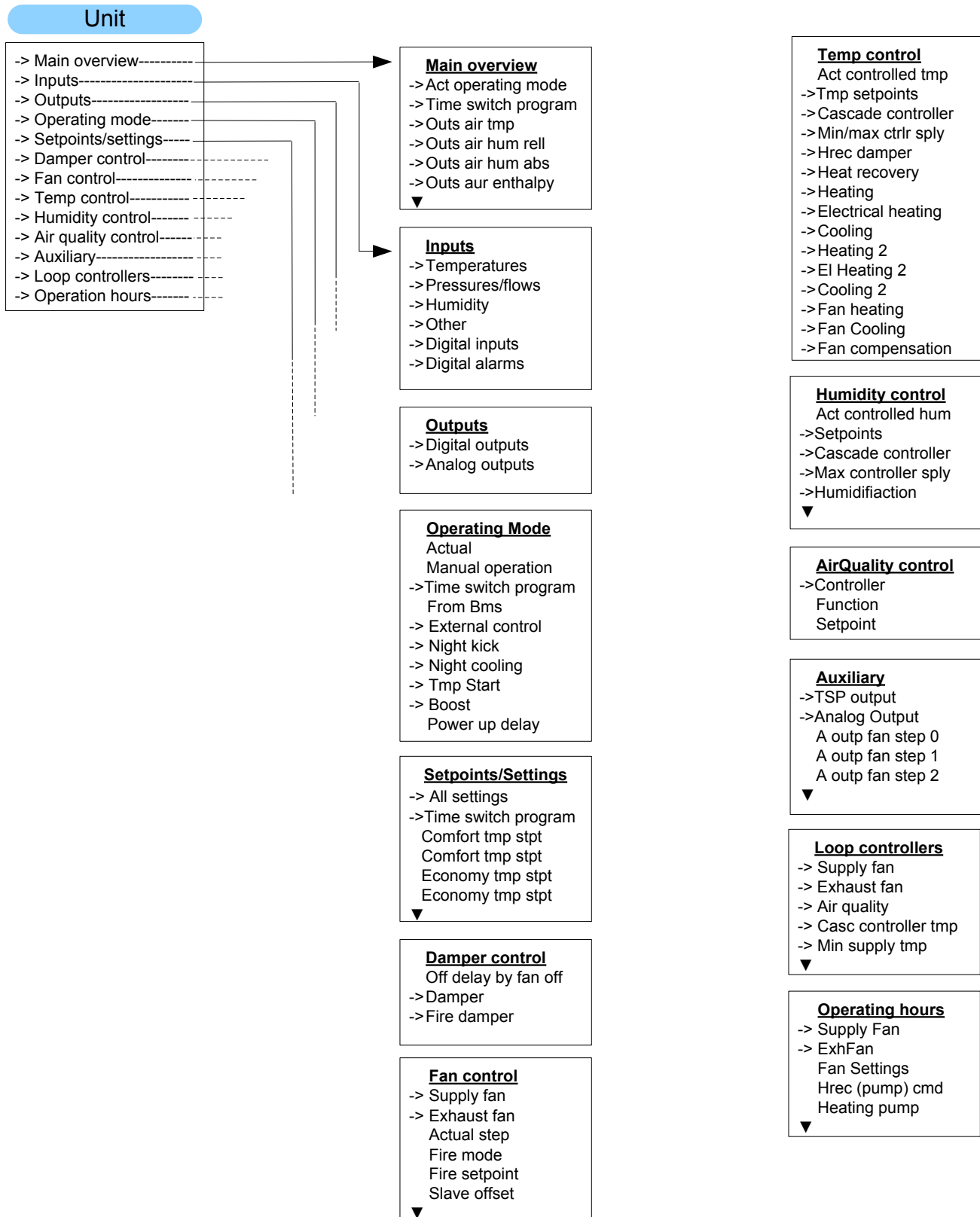
Name	Type	Position (IO Check)
DX cooling output 1	DO	150
DX cooling output 2	DO	151
Extra electrical heater output 1	DO	152
Extra electrical heater output 2	DO	153
Pump Extra heating	DO	154
Pump Extra cooling	DO	155
DX cooling extra cooler output 1	DO	156
DX cooling Extra cooler output 2	DO	157
Aux time switch program	DO	165
Aux operation mode indication	DO	166
Alarm output High/A (combined)	DO	168
Alarm output Low/B	DO	169
Humidifier	DO	171
Pump humidity	DO	172

## 20.3 Navigation illustrations

Start page

Start page > Main index / Main overview





System overview

- > Language selection
- > Application Info
- > Save / restore
- > Communication
- > Target
- > All system settings

**All System Settings**

- > Language selection
- > Communications
- > Password handling
- > Application info
- > Summer/winter time
- > HMI -----
- > Settings save/restore -----
- > Target -----
- > Diagnostic -----
- > Diag object handler -----

**Language selection**

Current language

**Communications**

- >Process bus
- >Tcp/IP
- >Modbus
- >LON
- >Modem
- >SMS
- >IO extension bus
- >Comm module overview

**Password handling**

- Log in
- Log off
- Change user pwd

**Application info**

[Customer]

Standard AHU  
yyyy-mm-dd  
Name  
Street  
City  
->Settings

**Summer/winter time**

- Enable
- Active
- B-Time active
- Time
- Start week day
- Start offset

**HMI**

- Current language
- Reset Time
- Brightness inbuilt
- Contrast inbuilt
- Message duration...
- >Special Settings

**Settings save/restore**

- Parameter save
- Parameter load
- Set service load
- Set factory load
- Set service save
- Set factory save

**Target**

- Imperial unit sys
- BSP version
- Reset counter
- :
- :
- >Special settings

**Diagnostic**

- Set service load
- Cycle time actual
- Cycle time avg.
- :
- :
- >Special settings

**Diag object handler**

- Actual objects
- Act object memory
- Act internal memory
- COV act clients
- ALH act clients
- Valid objects

Configuration

- Configuration by
- > Configuration 1
- > Configuration 2
- > Configuration IO's
- > Check config IO's
- > Doubled
- > Not configured
- > Integrations
- > RoomUnit 1
- > RoomUnit 2

**Configuration 1**  
**General:**  
 Extension modules  
 Fire alarm  
 Filter alarm  
 Emergency stop  
 Alarm ackn input

**Configuration 2**  
 Night cooling  
 Tmp start  
 Boost  
 Tmp start/OSSTP blk  
 Damper fdbk  
 Fan steps freq conv

**Configuration IO's**  
 -> Temperatures  
 -> Pressures / flows  
 -> Humidity  
 -> Digital inputs  
 -> Digital alarms  
 -> Other  
 -> Outputs damper-----  
 -> Outputs fans-----  
 -> Outputs tmp control-----  
 -> Outputs humidifier-----  
 -> Outputs auxiliary-----  
 -> Outputs alarm-----  
 Configuration IO's  
 Reset required !!

**Temperatures**  
 Supply air  
 Room  
 Room 2  
 Exhaust air  
 Outside air  
 Heating frost

**Pressures/flows**  
 Supply air pressure  
 Exhaust air press  
 Supply air flow  
 Exhaust air flow  
 Hrec frost pressure

**Humidity**  
 Supply air  
 Room  
 Outside air

**Digital Inputs**  
 External control 1  
 External control 2  
 Emergency stop  
 Su/Wi input  
 Alarm ackn button  
 Auxiliary input

**Digital alarms**  
 Alarm limit therm  
 Htg frost monitor  
 Heating pump  
 Heating pump fdbk  
 Electrical heating  
 Hrec frost monitor

**Other**  
 Air quality sensor  
 External setpoint

**Outputs damper**  
 Outs air damper D0  
 Extr air damper D0  
 Fire damper D0

**Output fans**  
 Supply fan D01  
 Supply fan D02  
 Supply fan D03  
 Exhaust fan D01  
 Exhaust fan D02  
 Exhaust fan D03

**Outputs tmp control**  
 EI heating A0  
 EI heating D01  
 EI heating D02  
 Heating A0  
 Heating pump D0  
 Hrec damper A0

**Outputs humidifier**  
 Humidifier A0  
 Humidifier D0  
 Humidifier pump D0

**Outputs auxiliary**  
 Auxiliary A outp  
 TSP output D0  
 Aux op mode ind D0

**Outputs alarms**  
 Alarm D01  
 Alarm D02

## 20.4 Parameter list room unit

Parameter Gruppe/ID	Description	access level for writing
S1	Diagnostic/Reset	6
S2	Device/AcknowledgeAll	2
S11	Addr building	4
S12	Addr line	4
S13	Addr device	4
S20	Presence time	6
S21	Apartment	4
S22	AlarmMode	4
S23	OfflsBlckd	6
S24	Displayed RoomTemperature	6
S25	Back2Auto Off-Eco	6
S26	Back2Auto Off-Cmf	6
S27	Back2Auto Eco-Cmf	6
S28	Back2Auto Cmf-Eco	6
S29	Back2Auto Cmf-Off	6
S30	Back2Auto Eco-Off	6
S31	Manual control	4
S32	Heatrecovery display limitation	4
S33	Setpoint range +/-	4
S34	Setpoint increment	4
S35	Time format	4
A1	Actual operating Mode	X
A2	Actual Fan Step	X
A3	Outside air Temperature	X
A4	Actual valid Room Temperature	X
A5	Supply air Temperature	X
A6	Exhaust air Temperature	X
A7	Actual control Mode Temperature	X
A8	Actual value controlled Temperature	X
A9	Actual cooling setpoint	X
A10	Actual heating setpoint	X
A11	Actual supply cooling setpoint	X
A12	Actual supply heating setpoint	X
A13	Cooling output signal	X
A14	Heatrecovery damper recovery value	X
A15	Heatrecovery output signal	X
A16	Heating output signal	X
A17	Electrical heating output signal	X
A18	Actual control Mode humidity	X
A19	Actual value controlled humidity	X
A20	Actual dehumidity setpoint	X
A21	Actual humidity setpoint	X
A22	Actual supply dehumidity setpoint	X
A23	Actual supply humidity setpoint	X
A24	Actual dehumidity value	X

Parameter Gruppe/ID	Description	access level for writing
A25	Humidifier output signal	X
A26	Air quality setpoint	X
A27	Air quality	X
A28	Actual supply fan setpoint	X
A29	Actual supply fan value	X
A30	Supply fan output signal	X
A31	Supply fan command	X
A32	Actual exhaust fan setpoint	X
A33	Actual exhaust fan value	X
A34	Exhaust fan output signal	X
A35	Exhaust fan command	X
C1	Comfort temperature Setpoint (Basic Setpoint)	6
C2	Comfort temperature Cooling Setpoint	6
C3	Comfort temperature Heating Setpoint	6
C4	Comfort temperature Deadband	6
C5	Economy temperature Setpoint	6
C6	Economy temperature Cooling Setpoint	6
C7	Economy temperature Heating Setpoint	6
C8	Economy temperature Deadband	6
C9	Supply temperatur min Setpoint (Room, Return controlled)	6
C10	Supply temperatur max Setpoint (Room, Return controlled)	6
C11	Supply temperatur min Setpoint (Cascade controlled)	6
C12	Supply temperatur max Setpoint (Cacade controlled)	6
C14	Humidity Setpoint relative (Basic Setpoint)	6
C15	Dehumidity Setpoint relative	6
C16	Humidity Setpoint relative	6
C17	Humidity Deadzone relative	6
C18	Humidity Setpoint absolute (Basic Setpoint)	6
C19	Dehumidity Setpoint absolute	6
C20	Humidity Setpoint absolute	6
C21	Humidity Deadzone absolute	6
C22	Supply humidity max Setpoint (Room, Return controlled)	6
C23	Supply humidity max Setpoint (Cacade controlled)	6
C24	Min fresh Air	6
C25	Air quality Setpoint	6
C26	Supply Fan Step 1 Setpoint	4
C27	Supply Fan Step 2 Setpoint	4
C28	Supply Fan Step 3 Setpoint	4
C29	Exhaust Fan Step 1 Setpoint	4
C30	Exhaust Fan Step 2 Setpoint	4
C31	Exhaust Fan Step 3 Setpoint	4



# Index

## A

Abbreviations .....	11
Air quality control .....	90, 208
Alarm handling .....	211
Alarm handling (Alarm outputs) .....	93
Alarm history .....	224
Alarm list .....	224
Alarm outputs .....	211
Alarming .....	222
Analog inputs .....	102, 217
Analog outputs .....	95, 212, 214
Application info .....	135
Auxiliary .....	209
Auxiliary functions .....	91

## B

BACnet .....	128
Basic controller .....	15
Boost .....	193
Boost function .....	45
Boost plant start .....	45

## C

Calendar .....	115, 213
Cascade controllers .....	111
Change passwords .....	141
Check config I/Os .....	176, 188
Combi coil .....	66
Communication .....	118
Configuration .....	152, 178
Configuration 1 .....	154, 178
Configuration 2 .....	159, 180
Configuration I/Os .....	167, 184
Cooling .....	202
Cooling / Cooling 2 .....	79
Cooling 2 .....	205
Cooling 2 pump .....	205
Cooling pump .....	80, 203

## D

Damper .....	194
Damper control .....	46, 194
Day schedulers .....	115, 213
Daylight saving time .....	143
Detail pages analog inputs .....	217
Detail pages analog outputs .....	214
Detail pages digital inputs .....	219
Detail pages digital outputs .....	215
Detail pages multistate outputs .....	216
Deviation alarms .....	196, 197
Diag object handler .....	146

Diagnostic tables for check I/O .....	176, 232
Diagnostics .....	145
Diagnostics special settings .....	146
Digital alarms .....	170, 186, 190
Digital inputs .....	106, 169, 185, 190, 219
Digital outputs .....	98, 212, 215
<i>Direct expansion</i> .....	203, 205
DX cooling control .....	82

## E

EI Heating 2 .....	204
Electrical heating .....	202
Electrical heating / Electrical heating 2 .....	77
Exception calendar .....	115, 213
Exhaust damper .....	47
Exhaust fan .....	196
Exhaust fan control .....	53
Exhaust fan deviation alarms .....	56, 197
Exhaust fan settings .....	196
Extension module .....	18
External control .....	41, 192
External HMI (DM) .....	20

## F

Fan compensation .....	57, 66, 89, 206, 208
Fan control .....	50, 195
Fan cooling .....	206
Fan heating .....	206
Fan heating / cooling .....	64
Fan OpHoursSettings .....	197
Fan settings .....	211
Fan summer cmp .....	197
Fan winter cmp .....	197
Filter .....	154, 186
Fire damper .....	48, 194
Fix off calendar .....	115, 213
Flows .....	168, 185, 189
Free cooling .....	44
<i>Frost protect press</i> .....	201
<i>Frost protection</i> .....	201, 204

## G

General operating Modes .....	52
Global functions .....	33, 189

## H

Hardware overview .....	15
Heat recovery .....	200
Heat recovery (plate, wheel, water) .....	69
Heat recovery damper .....	67
Heat recovery frost .....	72

Heat recovery pump .....	71
Heating.....	201
Heating / Heating 2 .....	73
Heating 2.....	203
Heating 2 pump.....	204
Heating pump.....	74, 201
Heating register frost protection.....	76
HMI .....	20, 177
HMI (operating unit).....	145
<i>Hrec (pump) cmd</i> .....	200
Hrec damper .....	200
Humidifier pump.....	88
Humidifier pump kick .....	89
Humidification .....	208
Humidification controller .....	87
Humidification pump .....	208
Humidity .....	169, 185, 190
Humidity control .....	83, 206
Humidity deviation alarms.....	86
Humidity setpoints.....	85, 207
<b>L</b>	
Language support.....	142
LON.....	124
Loop controllers .....	110, 209
<b>M</b>	
Main index.....	177
Main overview .....	178
Maintenance .....	11
Max limitation fan .....	78, 83, 202, 203, 205, 206
Min/max ctrlr sply .....	200
Modbus .....	119
Modem port.....	149
Multistate outputs.....	100, 216
<b>N</b>	
Navigation illustrations.....	235
Night cooling .....	44, 193
Night kick exh temp .....	193
Night kick function.....	43
<b>O</b>	
Onboard WEB functionalities.....	139
Operating hours monitoring .....	57
Operating mode .....	35, 191
Operating unit .....	145
Operation hours .....	210
OpHoursSettings.....	197
Other .....	171, 186, 190
Outputs alarms.....	175, 188
Outputs auxiliary .....	174, 188
Outputs damper .....	171, 186
Outputs fans.....	172, 187
Outputs humidifier.....	174, 188
Outputs temperature control .....	187

Outputs tmpControl .....	172
--------------------------	-----

<b>P</b>	
Packing.....	11
Parameterize plant switch .....	41
Password settings .....	141
Point tables.....	230
POL638x.....	15
POL955 .....	18
<i>Pre heating</i> .....	202, 204
Preheat heating register .....	76
Pressures .....	168, 185, 189
Prioritize various operating modes .....	38, 134
Pump kick.....	71, 75, 81

<b>R</b>	
Referenced Documents.....	7
Restore parameters.....	136
Revision history .....	7
Room hum dev alarm .....	207
<i>Room tmp dev alarm</i> .....	199
Room unit .....	25
Operating elements.....	25
Parameter .....	29
Parameter list.....	239
Startup behavior .....	27

<b>S</b>	
Safety regulations.....	10
Save parameters .....	136
Schematic diagram.....	13
SD card functions .....	148
Sequence diagram .....	14
Service.....	11
Sply hum dev alarm.....	207
Sply MaxController .....	207
<i>Sply tmp dev alarm</i> .....	199
Start by tmp delta.....	193
Start page .....	167, 177
Storage .....	11
Summer Cmp .....	197
<i>Summer comp tmp</i> .....	199
Summer Winter changeover.....	33
Summer/Winter compensation .....	55, 62
Supply damper .....	47
Supply fan.....	195
Supply fan control.....	53
Supply fan deviation alarms .....	56, 196
Supply fan settings .....	195
Supply maximum controller .....	87
Supply minimum maximum controller .....	63
Su-Wi compensation .....	189
Switch-on sequence .....	38, 134

<b>T</b>	
Target.....	142

Temperature control.....	59, 197
Temperature deviation alarms .....	63
Temperature setpoints .....	60, 198
Temperatures.....	168, 184, 189
Time scheduler .....	213
Time switch program .....	41, 114, 192
Trademarks.....	7
Transport.....	11
TSP output.....	92, 209

## U

Update application.....	148
-------------------------	-----

## W

WEB functionalities .....	139
Week scheduler.....	114, 213
Winter cmp .....	197
<i>Winter comp tmp</i> .....	199



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