# Arcus-EDS

# Application Description

# HLK305

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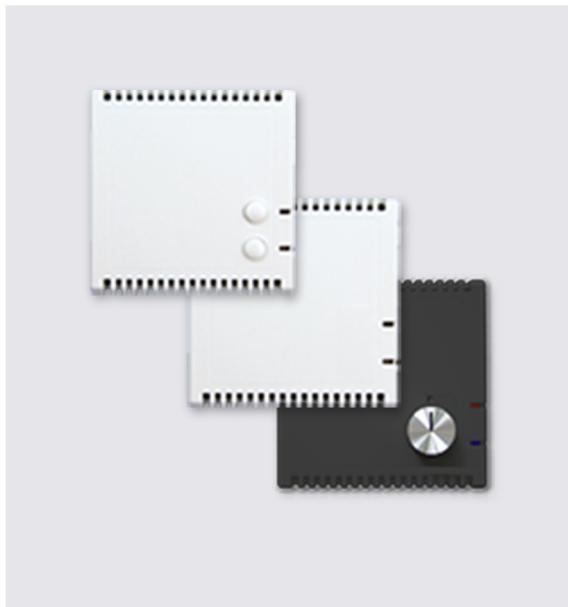
# 1. Parameter

## 1.1 Selection



| Parameter | Settings | Description |
|-----------|----------|-------------|
| Climate Control | TC<br>THC<br>TTHC | Temperature - Climate<br>Temperature - Humidity - Climate<br>Temperature - Temperature - Humidity - Climate |
| Air Quality [CO2, VOC] | None<br>CO2<br>VOC<br>External Input | <br>carbon dioxide<br>volatile organic compounds<br>Input of the air quality via bus |
| **Combination of LUX Sensor and Air Quality is not possible** | | |
| Illumination Sensor [LUX] | No<br>Yes | |
| **The fan control is only available when humidity or air quality sensor is present.** | | |
| FAN | No<br>Yes | A Fan can be controlled by humidity or carbon dioxide concentration |
| Logic Blocks | None<br>1 - 4 | Up to 4 general purpose logic blocks are available |
| Article Key Number | --xx-- | Via the key number, a device can be selected.<br>The setting of the following parameters are set automatically.<br><br>In return, the parameters can be adjusted individually and the code number is set automatically. |

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## 1.2 General

| | |
|---|---|
| Selection | |
| **General** | |
| Temperature Sensor | |
| Primary T. Controller | |
| LED Indicator | |
| Override Settings | |
| Secondary T. Controller | |
| Humidity Sensor | |
| H. Controller | |
| Additional Functions | |
| Air Quality | |
| Fan Control | |
| IOs / Button General | |
| Logic 1: Logic 1 | |
| Logic 2: Logic 2 | |

Startup Time — 5 s

Height above Sea Level [m] — 54

**Primary Temperature Input**

Input Select:
- ● Temperature & Humidity Sensor
- ○ PT1000 Probe

Sending Cycle — 10 s

Send on Change — 0.5 °C

Offset [°C] — 0

Weight of External Temperature Input [%] — 0

Controller Type — PI Controller

**Settings Humidity Sensor**

Sending Cycle — 10 s

Send on Change [%] — 5

Offset [%] — 0

**Secondary Temperature Input**

Settings — Measurement with PI Controller

Input Select:
- ○ Temperature & Humidity Sensor
- ● PT1000 Probe

Sending Cycle — 60 s

Send on Change — 0.5 °C

Offset [°C] — 0

| Parameter | Settings | Description |
|---|---|---|
| Startup Time | 5s - 2h | After restart the first values are sent after this time setting. |
| Height above sea level [m] | 0 - 2000 | Height above sea level of the sensor. Important for the calculation of absolute humidity, enthalpy and dew point. |

| Parameter | Settings | Description |
|---|---|---|
| **Primary Temperature Input** | | |
| Input Select | Temperature & Humidity Sensor<br><br>PT1000 Probe | Choice of the sensor to be used for the primary temperature detection and control. |
| Sending Cycle | None<br>5s - 24h | The measured value is sent cyclically as per this setting. |
| Send on Change | 0,1 - 5 °C | When the measured value has changed as per the set value, it is transmitted regardless of the parameter "Sending Cycle". |
| Offset [°C] | (-5) - 5 | An Offset to the measured actual value can be set for certain bad mounting conditions. |
| Weight of External Temperature Input [%] | 0 - 100 | Setting the percental weighting of the external temperature input *object 1* to the primary temperature measurement *object 0*. |
| Controller Type | None<br><br>2 Point Controller<br><br>PI Controller<br><br>PI+PWM Controller | Setting of the controller type. |
| **Settings Humidity Sensor** | | |
| Sending Cycle | None<br>5s - 24h | Measured value is sent cyclically as per this setting. |
| Send on Change [%] | 0 - 50 | When the measured value has changesdas per the set value, it is transmitted regardless of the parameter "Sending Cycle". |
| Offset [%] | (-50) - 50 | An Offset to the measured actual value can be set for certain bad mounting conditions.. |
| **Secondary Temperature Input** | | |
| Settings | None<br><br>Only Measurement<br><br>Measurement with 2 Point Controller<br><br>Measurement with PI Controller | Setting the function for the secondary temperature input |
| Input Select | Temperature & Humidity Sensor<br><br>PT1000 Probe | Choice of sensor to be used for the secondary temperature detection and control. |
| Sending Cycle | None<br>5s - 24h | Measured value is sent cyclically as per this setting. |
| Send on Change | 0.1 - 5 °C | When the measured value has changed as per the set value, it is transmitted regardless of the parameter "Sending Cycle". |
| Offset [°C] | (-40) - 400 | An Offset to the measured actual value can be set for certain bad mounting conditions.. |

## 1.3 Temperature Sensor

| | |
|---|---|
| Selection | **Limit Configuration** |
| General | Sending Cycle — 10 min |
| **Temperature Sensor** | Hysteresis [°C] — 0.5 °C |
| Primary T. Controller | ( These Parameter Setting is also used for Dewpoint ) |
| LED Indicator | Upper Limit [°C] — 5 |
| Override Settings | Lower Limit [°C] — -5 |
| Secondary T. Controller | Heat Protection [°C] — 40 |
| Humidity Sensor | Frost Protection [°C] — 7 |
| H. Controller | **Min/Max Time Settings** |
| Additional Functions | Sending Cycle — 10 s |
| | Send on Change — 0.5 °C |

| Parameter | Settings | Description |
|---|---|---|
| **Limit Configuration** | | |
| Sending Cycle | None<br>5s - 24h | The limit indication is sent cyclically as per this setting. |
| Hysteresis [°C] | 0.5 - 5 | Setting the switching hysteresis (also used for dewpoint alarm) |
| Upper Limit [°C] | (-40) - 400 | Upper limit setting<br>When the upper limit is exceeded, a *1* is sent to *object 2*.<br>When the upper limit is underrun, a *0* is sent to *object 2*. |
| Lower Limit [°C] | (-40) - 400 | Lower limit setting<br>When the lower limit is underrun, a *1* is sent to *object 4*.<br>When the lower limit is exceeded, a *0* is sent to *object 4*. |
| Heat Protection [°C] | 0 - 200 | Preset temperature for heat protection function |
| Frost Protection [°C] | (-40) - 10 | Preset temperature for frost protection function |
| **Min/Max Time Settings** | | |
| Sending Cycle | On change only<br>5s - 24h | The MIn and Max values are sent cyclically as per this setting. |
| Send on Change | 0.1 - 5 °C | When the min/max values have changed as per  this value, the min/max values are transmitted regardless of the parameter "Sending Cycle". |

## 1.4 Primary T. Controller

| | |
|---|---|
| Selection | **Setpoint Settings** |
| General | Comfort Temperature [°C]  `22` |
| Temperature Sensor | Inc/Dec Value 1 [°C]  `-2` |
| **Primary T. Controller** | Inc/Dec Value 2 [°C]  `-5` |
| LED Indicator | Setpoint Setting  ⦿ Absolute ◯ Relative |
| Override Settings | Standby Temperature [°C]  `19` |
| Secondary T. Controller | Night Temperature [°C]  `16` |
| Humidity Sensor | Sending Cycle  `60 s` ▼ |
| H. Controller | **Controller Settings** |
| Additional Functions | **Heating/Cooling Settings** |
| Air Quality | Operation Mode  `Heating/Cooling (default Heating)` ▼ |
| Fan Control | Output Setting  ⦿ Split ◯ Single |
| IOs / Button General | Gap [°C]  `0` |
| Logic 1: Logic 1 | Turnover Deadtime  `2 min` ▼ |
| Logic 2: Logic 2 | **Activation/Deactivation** |
| | Enable by  `IO, Logic 1` ▼ |
| | Invert Enable  ☐ |

| Parameter | Settings | Description |
|---|---|---|
| **Setpoint Settings** | | |
| Comfort Temperature [°C] | (-40) - 400 | Setting of comfort temperature |
| Inc/Dec Value 1 [°C] | (-10) - 10 | Setting the value for setpoint adjustment<br>***Object 22*** |
| Inc/Dec Value 2 [°C] | (-10) - 10 | Setting the value for setpoint adjustmentt<br>***Object 23*** |
| Setpoint Setting | Absolute | Setpoints for standby and night as absolute temperature values |
| | Relative | Setpoints for standby and night are defined relative to the comfort temperature |

| Parameter | Settings | Description |
|---|---|---|
| **Setpoint Setting = Absolut** | | |
| Standby Temperature [°C] | (-40) - 400 | Setting of standby temperature ( absolute ) |
| Night Temperature [°C] | (-40) - 400 | Setting of night temperature ( absolute ) |
| **Setpoint Setting = Relative** | | |
| Standby Temperature decrease [°C] | 0 - 10 | Setting the Standby Temperature decrease ( relative to the comfort temperature ) |
| Night Temperature decrease [°C] | 0 - 10 | Setting the Night Temperature decrease ( relative to the comfort temperature ) |
| Sending Cycle | None 5s - 24h | The actual setpoint data is sent cyclically as per this setting. |
| **Controller Settings   --->   next page** | | |
| **Heating/Cooling Settings** | | |
| Operation Mode | Cooling Heating Heating/Cooling (default Heating) Heating/Cooling (default Cooling) Heating/Cooling (Automatically) | Mode setting for the primary controller. The Mode can be changed via Object 28 Default is heating Mode(1) The Mode can be changed via Object 28 Default is cooling Mode (0) Heating or cooling mode is set automatically according to the actual temperature. Object 28 is output. |
| Output Setting | Split Single | Split: ***Object 26 : Output, Heating*** ***Object 27 : Output, Cooling*** Single: ***Object 26 : Output, Heating/Cooling*** |
| Gap [°C] | 0 - 10 | Gap between heating and cooling for automatic h/c selection |
| Turnover Deadtime | None 5s - 60min | Switching between heating and cooling is done with the specified deadtime inserted. |
| **Activation/Deactivation** | | |
| Enable by | None IO, Logic 1-10 | Controller can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | enable low-active or high-active(default) |

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## Controller Settings

### *2 Point Controller*

Controller Settings

| Switching Difference [°C] | 0 |
| Sending Cycle | 60 s |

| Parameter | Settings | Description |
|---|---|---|
| Switching Difference [°C] | 0 - 10 | Hysteresis setting of the controller |
| Sending Cycle | None 5s - 24h | The Controller output is sent cyclically as per this setting. |

### *PI Controller*

Controller Settings

| Proportional Band [°C] | 0 |
| Integration Time | 60 Seconds |
| Output Behavior | ○ Standard ⦿ Ramp |
| Ramp Up Time | 120 Seconds |
| Characteristic | ⦿ Symmetrical ○ Asymmetrical |
| Sending Cycle | 60 s |
| Hysteresis [%] | 0 |
| Gap [%] | 0 |

| Parameter | Settings | Description |
|---|---|---|
| Proportional Band [°C] | 0 - 10 | As the temperature variation changes by this setting, the actuating output changes from 0% to 100%. |
| Integration Time | 3 - 36000 s | During the integration time, the output deviation is added once more. |
| Output Behavior | Standard , Ramp | |
| Ramp Up Time | 3 - 36000 s | Only visible at Output Behavior "Ramp" |

| Parameter | Settings | Description |
| --- | --- | --- |
| Characteristic | Symmetrical Asymmetrical | If the measured temperature equals the setpoint, the actuating value is 50% (symmetrical) or 0%(asymmetrical). |
| Sending Cycle | None 5s - 24h | The controller output is sent cyclically as per this adjustment. |
| Hysteresis [%] | 0 - 10 | A change of the controller output within this hysteresis causes no change on the bus. |
| Gap [%] | 0 - 50 | Start/end gap of the actuating output. |

### *PI+PWM Controller*

Controller Settings

| | |
| --- | --- |
| Proportional Band [°C] | 0 |
| Integration Time | 60 Seconds |
| PWM Cycle Time | 60 Seconds |
| Characteristic | ● Symmetrical ○ Asymmetrical |
| Sending Cycle | 60 s |
| Hysteresis [%] | 0 |
| Gap [%] | 0 |

| Parameter | Settings | Description |
| --- | --- | --- |
| Proportional Band [°C] | 0 - 10 | As the temperature variation changes by this setting, the actuating output changes from 0% to 100%. |
| Integration Time | 3 - 36000 | During the integration time, the output deviation is added once more. |
| PWM Cycle Time | 3 - 36000 | PWM Period for a complete on/off cycle. |
| Characteristic | Symmetrical Asymmetrical | If the measured temperature equals the setpoint, the actuating value is 50% (symmetrical) or 0%(asymmetrical) |
| Sending Cycle | None 5s - 24h | The Controller value is sent cyclically as per this setting |
| Hysteresis [%] | 0 - 10 | A change of the PI-controller output within this hysteresis causes no change on the PWM-times |
| Gap [%] | 0 - 50 | Start/end gap of the controller output. |

## 1.5 LED Indicator



| Parameter | Settings | Description |
|---|---|---|
| **LED Settings** | | |
| Intensity [%] | 0 - 100 | Maximum brightness of LED for all functions |
| Brightness according to Ambient | Checkbox | If active, the ambient brightness controls the maximum intensity of the LED's. |
| Flash slowly | Checkbox | If active, the LED's will flash slowly with an amplitude according to the temperature deviation. |
| **Indicates Changes for** | | |
| Up/Down Temperature | Checkbox | If active, the LED's will flash as the setpoint is changed |
| **Indicates Heating/Cooling for** | | |
| Comfort Mode | Checkbox | If active, the LED's are active in comfort-mode |
| Standby Mode | Checkbox | If active, the LED's are active in standby-mode |
| Night/Protection Mode | Checkbox | If active, the LED's are active in protection-mode |

## 1.6 Override Settings

| | | |
|---|---|---|
| Selection | Default Mode | Standby |
| General | | |
| Temperature Sensor | **Override 1 - Comfort** | |
| Primary T. Controller | OVR 1 Mode | Comfort |
| LED Indicator | Timeout [min] | 30 |
| **Override Settings** | Up Steps | 3 |
| Secondary T. Controller | Down Steps | 3 |
| Humidity Sensor | Step [°C] | 0.5 |
| H. Controller | Timeout [min] | 60 |
| Additional Functions | **Override 2 - 3** | |
| Air Quality | OVR 2 Mode | Economy |
| Fan Control | Timeout [min] | 30 |
| IOs / Button General | OVR 3 Mode | Building Protection |
| Logic 1: Logic 1 | Timeout [min] | 30 |
| Logic 2: Logic 2 | **Manual Override** | |
| | Timeout [min] | 30 |

| Parameter | Settings | Description |
|---|---|---|
| Default Mode | Automatic<br>Comfort<br>Standby<br>Economy<br>Building Protection | Setting the default mode |
| **Override 1 - Comfort** | | |
| OVR 1 Mode | Comfort | not changeable |
| Timeout [min] | 0 - 255 | After this time the controller will return to the standard mode. |
| Up Steps | 0 - 5 | Maximum of upward steps for manual setpoint adjustment via front button, rotary controller or up/down-object. |
| Down Steps | 0 - 5 | Maximum of downward steps for manual setpoint adjustment via front button, rotary controller or up/down-object. |
| Step [°C] | 0.1 - 1 | Stepsize in °C per step |
| Timeout [min] | 0 - 255 | After this time the controller will return to the standard mode. |

| Parameter | Settings | Description |
|---|---|---|
| **Override 2 - 3** | | |
| OVR 2 Mode | Automatic<br>Comfort<br>Standby<br>Economy<br>Building Protection | Mode setting for the override object 2 |
| Timeout [min] | 0 - 255 | After this time the controller will return to the standard mode. |
| OVR 3 Mode | Automatic<br>Comfort<br>Standby<br>Economy<br>Building Protection | Mode setting for the override subject 3 |
| Timeout [min] | 0 - 255 | After this time the controller will return to the standard mode. |
| **Manual Override** | | |
| Timeout [min] | 0 - 255 | After this time the controller will return to the standard mode. |

## 1.7 Secondary T. Controller

### 1.7.1 Secondary T. Controller - 2 Point Controller

| Selection |
|---|
| General |
| Temperature Sensor |
| Primary T. Controller |
| LED Indicator |
| Override Settings |
| **Secondary T. Controller** |
| Humidity Sensor |

**Setpoint Settings**

| Setpoint Offset [°C] | 0 |
| Switching Difference [°C] | 0 |
| Mode | ○ Cooling  ⦿ Heating |

**Controller Output Settings**

| Sending Cycle | 10 s |

**Activation/Deactivation**

| Enable by | IO, Logic 1 |
| Invert Enable | ☐ |

| Parameter | Settings | Description |
|---|---|---|
| **Setpoint Settings** | | |
| Setpoint Offset [°C] | (-40) - 400 | The used Setpoit is calculated from the Object 46 value + this offset. |
| Switching Difference [°C] | 0 - 10 | Hysteresis setting of the controller |
| Mode | Cooling  Heating | Setting the controller mode |
| **Controller Output Settings** | | |
| Sending Cycle | None  5s - 24h | The controller output values are sent cyclically as per this setting. |
| **Activation/Deactivation** | | |
| Enable by | None  IO, Logic 1-10 | The controller can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

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## 1.7.2  Secondary T. Controller   -   PI Controller



| Parameter | Settings | Description |
|---|---|---|
| **Setpoint Settings** | | |
| Setpoint Offset [°C] | (-40) - 400 | The used Setpoit is calculated from the Object 46 value + this offset. |
| Proportional Band [°C] | 0 - 10 | As the temperature variation changes by this setting, the actuating output changes from 0% to 100%. |
| Integration Time | 3 - 36000 s | During the integration time, the output deviation is added once more. |
| Mode | Cooling Heating | Setting the controller mode |
| **Controller Output Settings** | | |
| Caracteristic | Symmetrical Asymmetrical | If the measured temperature equals the setpoint, the actuating value is 50% (symmetrical) or 0%(asymmetrical) |
| Sending Cycle | None 5s - 24h | The controller output values are sent cyclically as per this setting. |
| Send on Change [%] | 0 - 50 | When the controller output value has changed as per  this value, the output value is transmitted regardless of the parameter "Sending Cycle". |
| **Activation/Deactivation** | | |
| Enable by | None IO, Logic 1-10 | The controller can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

## 1.8 Humidity Sensor

| Selection | Limit Configuration | |
|---|---|---|
| General | Hysteresis [%] | 5 |
| Temperature Sensor | Upper Limit [%] | 60 |
| Primary T. Controller | Lower Limit [%] | 30 |
| LED Indicator | | |
| Override Settings | Humidity Controller | |
| Secondary T. Controller | Use Controller | P-Controller |
| **Humidity Sensor** | Activation/Deactivation | |
| H. Controller | Enable by | IO, Logic 1 |
| | Invert Enable | ☐ |
| | Enable Limits | ☐ |

| Parameter | Settings | Description |
|---|---|---|
| **Limit Configuration** | | |
| Hysteresis [%] | (-50) - 50 | Setting the switching hysteresis. |
| Upper Limit [%] | 0 - 100 | Upper limit setting<br>When the upper limit is exceeded, a *1* is sent to *object 31*.<br>When the upper limit is underrun, a *0* is sent to *object 31*. |
| Lower Limit [%] | 0 - 100 | Lower limit setting<br>When the lower limit is underrun, a *1* is sent to *object 33*.<br>When the lower limit is exceeded, a *0* is sent to *object 33* |
| **Humidity Controller** | | |
| Use Controller | None<br>P-Controller<br>2 Point Controller | Setting the controller type. |
| **Activation/Deactivation** | | |
| Enable by | None<br>IO, Logic 1-10 | Controller/Limits can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |
| Enable Limits | Checkbox | Enable the limit value outputs by the enable input as well. |

## 1.9  H. Controller

### 1.9.1  H. Controller  -  P Controller

| Selection | Controller Settings | |
| Start Value [%] | 0 |
| General | End Value [%] | 100 |
| Temperature Sensor | Mode | ○ Humidification  ● Dehumidification |
| Humidity Sensor | Inc/Dec Value 1 [%] | 10 |
| H. Controller | Inc/Dec Value 2 [%] | -10 |
| Additional Functions | Controller Output Settings | |
| Air Quality | Sending Cycle | 10 s |
| Fan Control | Send on Change [%] | 0 |

| Parameter | Settings | Description |
|---|---|---|
| **Controller Settings** | | |
| Start Value [%] | 0 - 100 | Beginning from the start value up to the end value the controller output will range from 0% to 100%.(in dehumidification mode) or 100% to 0% (humidification mode) |
| End Value [%] | 0 - 100 | |
| Mode | Humidification  Dehumidification | Setting the controller mode |
| Inc/Dec Value 1 [%] | (-100) - 100 | Setting the value for setpoint adjustment. ***Object 35*** |
| Inc/Dec Value 2 [%] | (-100) - 100 | Setting the value for setpoint adjustment. ***Object 36*** |
| **Controller Output Settings** | | |
| Sending Cycle | None 5s - 24h | The controller output is sent cyclically as per this adjustment. |
| Send on Change [%] | 0 - 50 | When the controller output value has changed as per  this value, the output value is transmitted regardless of the parameter "Sending Cycle". |

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### 1.9.2 H. Controller  -  2 Point Controller

| | |
|---|---|
| Selection | **Controller Settings** |
| General | Setpoint [%]    0 |
| Temperature Sensor | Hysteresis [%]    0 |
| Humidity Sensor | Mode    ○ Humidification  ◉ Dehumidification |
| H. Controller | Inc/Dec Value 1 [%]    10 |
| Additional Functions | Inc/Dec Value 2 [%]    -10 |
| Air Quality | **Controller Output Settings**  Sending Cycle    10 s |

| Parameter | Settings | Description |
|---|---|---|
| **Controller Settings** | | |
| Setpoint [%] | 0 - 100 | Setting the Setpoint |
| Hysteresis [%] | 0 - 50 | Hysteresis setting of the controller |
| Mode | Humidification  Dehumidification | Setting the controller mode |
| Inc/Dec Value 1 [%] | (-100) - 100 | Setting the value for setpoint adjustment. ***Object 35*** |
| Inc/Dec Value 2 [%] | (-100) - 100 | Setting the value for setpoint adjustment. ***Object 36*** |
| **Controller Output Settings** | | |
| Sending Cycle | None  5s - 24h | The controller output values are sent cyclically as per this setting. |

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## 1.10  Additional Function

| | |
|---|---|
| Selection | |
| General | |
| Temperature Sensor | |
| Primary T. Controller | |
| LED Indicator | |
| Override Settings | |
| Secondary T. Controller | |
| Humidity Sensor | |
| H. Controller | |
| **Additional Functions** | |
| Air Quality | |
| Fan Control | |
| IOs / Button General | |
| Logic 1: Logic 1 | |
| Logic 2: Logic 2 | |

**Dewpoint/Abs. Humidity/Enthalpy**

Sending Cycle — 10 s

**Dewpoint Settings**

Alarm Threshold [°C] — 0

Hysteresis [°C] — 0.5 °C

( These Parameter will be change by the Limit Configuration of the Temperature Sensor )

Send on Change — 0.5 °C

Enable by — IO, Logic 1

Invert Enable — ☐

Invert Output — ☐

**Absolute Humidity**

Send on Change [%] — 0

**Enthalpy**

Send on Change [%] — 0

**Lead Settings**

Lead Control — ○ Deactive   ● Active

Minimum Value [°C] — 0

Maximum Value [°C] — 10

Lead Value at Maximum [°C] — 10

Active for

Setpoint Primary Controller — ☐

Upper Limit — ☐

Lower Limit — ☐

Setpoint Secondary Controller — ☐

**Flush Settings**

Cycle Time — Do not use

| Parameter | Settings | Description |
|---|---|---|
| **Dewpoint / Abs. Humidity / Enthalpy** | | |
| Sending Cycle | None<br>5s - 24h | The values dewpoint, abs. humidity and enthalpy are sent cyclically as by this adjustment. |

| Parameter | Settings | Description |
|---|---|---|
| **Dewpoint Settings** | | |
| Alarm Threshold [°C] | (-40) - 400 | When exceeding the set value, the alarm bit **object 40** is set. The set value is an absolute value to the calculated dew point. If the leading value **object 39** is used, the set value is evaluated as a relative value to the calculated dew point. |
| Hysteresis [°C] | 0.5 °C | Set by hysteresis value of the temperature sensor limits |
| Send on Change | 0.1 - 5 | When the dewpoint temperature has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle". |
| Enable by | None IO, Logik 1-10 | The dewpoint alarm can be enabled/disabled by the specified input. |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |
| Invert Output | Checkbox | Inverts the dew point alarm bit **object 40** |
| **Absolute Humidity** | | |
| Send on Change [%] | 0 - 50 | When the absolute Humidity has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle". |
| **Enthalpy** | | |
| Send on Change [%] | 0 - 50 | When the Enthalpy has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle". |
| **Lead Settings** | | |
| Lead Control | Deactive Active | Some Setpoints and Limits can be changes by an external temperature object. |
| Minimum Value [°C] | (-40) - 400 | At the start temperature, the offsett value is still 0 |
| Maximum Value [°C] | (-40) - 400 | At the end temperature, the offset value is the „Lead Value at Maximum" |
| Lead Value at Maximum [°C] | (-40) - 400 | This temperature is added to the specified Setpoint or Limit as the maximum lead input is reached |
| **Active for** | | |
| Setpoint Primary Controller | Checkbox | Lead Offset is added to the primary Controller Setpoint |
| Upper Limit | Checkbox | Lead Offset is added to the Upper limit |
| Lower Limit | Checkbox | Lead Offset is added to the Lower limit |
| Setpoint Secondary Controller | Checkbox | Lead Offset is added to the secondary Controller Setpoint |
| **Flush Settings** | | |
| Cycle Time | Do not use 1 - 12 weeks | The output of the primary controller is enabled every X weeks |

## 1.11  Air Quality

**Sensor Settings**

Send on Startup ☐

Sending Cycle — 60 s

Send on Change [ppm] — 0

**Limit Configuration**

Sending Cycle — 10 min

Hysteresis [ppm] — 50

Limit 1 [ppm] — 500

Limit 2 [ppm] — 1000

Limit 3 [ppm] — 1500

Invert Limit Outputs ☐

**Min/Max Time Settings**

Sending Cycle — On change only

**Activation/Deactivation**

Enable by — IO, Logic 1

Invert Enable ☐

*Left menu:* Selection, General, Temperature Sensor, Primary T. Controller, LED Indicator, Override Settings, Secondary T. Controller, Humidity Sensor, H. Controller, Additional Functions, **Air Quality**, Fan Control, IOs / Button General, Logic 1: Logic 1

| Parameter | Settings | Description |
|---|---|---|
| **Sensor Settings** | | |
| Send on StartUp | Checkbox | When activated, the air quality is sent after the restart regardless of the sending cycle. |
| Sending Cycle | None 5s - 24h | The air quality value is sent cyclically as per this setting. |
| Send on Change [ppm] | 0 - 10000 | When the air quality value has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle". |
| **Limit Configuration** | | |
| Sending Cycle | None 5s - 24h | The limits[1-3] are sent cyclically as by this setting. |
| Hysteresis [ppm] | 0 - 10000 | Setting the hysteresis for the output of the limits[1-3] evaluation. |
| Limit 1 [ppm] | 0 - 10000 | First limit setting *IO:Object 60* When the first limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |
| Limit 2 [ppm] | 0 - 10000 | Second limit setting *IO:Object 62* When the second limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |

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| Parameter | Settings | Description |
|---|---|---|
| Limit 3 [ppm] | 0 - 10000 | Third limit setting *IO:Object 64* <br> When the third limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |
| Invert Limit Outputs | Checkbox | inverts the limits[1-3] outputs <br> *Objekt 59* <br> *Objekt 61* <br> *Objekt 63* |
| **Min/Max Time Setting** | | |
| Sending Cycle | On change only <br> 5s - 24h | The Minimum and Maximum values are sent cyclically as by this setting. |
| **Activation/Deactivation** | | |
| Enable by | None <br> IO, Logik 1-10 | Limits 1-3 can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

## 1.12 Illumination Sensor

| Selection | **Sensor Settings** | |
|---|---|---|
| General | Send on Startup | ☐ |
| Temperature Sensor | Sending Cycle | 60 s ▼ |
| Primary T. Controller | Send on Change [lux] | 0 |
| LED Indicator | **Limit Configuration** | |
| Override Settings | Sending Cycle | 10 min ▼ |
| Secondary T. Controller | Hysteresis [lux] | 10 |
| Humidity Sensor | Limit 1 [lux] | 100 |
| H. Controller | Limit 2 [lux] | 50000 |
| Additional Functions | Limit 3 [lux] | 100000 |
| **Illumination Sensor** | Invert Limit Outputs | ☐ |
| Fan Control | **Min/Max Time Settings** | |
| Logic 1: Logic 1 | Sending Cycle | On change only ▼ |
| Logic 2: Logic 2 | **Activation/Deactivation** | |
| | Enable by | IO, Logic 1 ▼ |
| | Invert Enable | ☐ |

| Parameter | Settings | Description |
|---|---|---|
| **Sensor Settings** | | |
| Send on StartUp | Checkbox | When activated, the illumination level is sent after the restart regardless of the sending cycle. |
| Sending Cycle | None<br>5s - 24h | The illumination level is sent cyclically as per this setting. |
| Send on Change [lux] | 0 - 220000 | When the controller output has changed as per this value, the output value is sent. Regardless of the parameter "Sending Cycle". |
| **Limit Configuration** | | |
| Sending Cycle | None<br>5s - 24h | The limits 1-3 are sent cyclically as per this setting. |
| Hysteresis [lux] | 0 - 220000 | Operating differential for the limits 1-3 |
| Limit 1 [lux] | 0 - 220000 | First limit setting *IO:Object 60*<br>When the first limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |
| Limit 2 [lux] | 0 - 220000 | Second limit setting *IO:Object 62*<br>When the second limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |

| Parameter | Settings | Description |
|---|---|---|
| Limit 3 [lux] | 0 - 220000 | Third limit setting *IO:Object 64*<br>When the third limit is exceeded, a *1* is sent to *Object 59*, otherwise a *0*. |
| Invert Limit Outputs | Checkbox | inverts the limit exceeded bits 1-3<br>*Objekt 59*<br>*Objekt 61*<br>*Objekt 63* |
| **Min/Max Time Setting** | | |
| Sending Cycle | On change only<br>5s - 24h | The MInimum and Maximum values are sent cyclically as per this setting. |
| **Activation/Deactivation** | | |
| Enable by | None<br>IO, Logik 1-10 | The limits[1-3] can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

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## 1.13 Fan Control

| | |
|---|---|
| Selection | |
| General | |
| Temperature Sensor | |
| Primary T. Controller | |
| LED Indicator | |
| Override Settings | |
| Secondary T. Controller | |
| Humidity Sensor | |
| H. Controller | |
| Additional Functions | |
| Air Quality | |
| **Fan Control** | |
| IOs / Button General | |
| Logic 1: Logic 1 | |
| Logic 2: Logic 2 | |

**Time Settings**

Send on Startup ☐

Sending Cycle  60 s ▼

**External Input**

Activate/Deactivate  ⦿ Deactive ◯ Active

**Lead Humidity**

Activate/Deactivate  ⦿ Deactive ◯ Active

**Lead CO2**

Activate/Deactivate  ⦿ Deactive ◯ Active

**Override 1 - 3**

Activate/Deactivate  ⦿ Deactive ◯ Active

**Output Settings**

Output Type  ⦿ 0-100% ◯ Stage [0-3]

Stage 0 [%]  0

Stage 1 [%]  33

Stage 2 [%]  66

Stage 3 [%]  100

**Activation/Deactivation**

Shut Down on Frost Protect ☐

Enable by  IO, Logic 1 ▼

Invert Enable ☐

| Parameter | Settings | Description |
|---|---|---|
| **Time Settings** | | |
| Send on Startup | Checkbox | When activated, the fan output is sent after the restart regardless of the sending cycle. |
| Sending Cycle | None 5s - 24h | The fan output value is sent cyclically as per this setting. |
| **External Input** | | *The fan can be controlled by an external input [0%..100%]* |
| **Lead Humidity** | | *The fan can be controlled by the measured humidity* |
| **Lead CO2 / VOC** | | *The fan can be controlled by the measured air quality* |
| **Override 1 - 3** | | *The calculated fan stage can be overridden by external objects* |

| Parameter | Settings | Description |
|---|---|---|
| **Output Setting** | | |
| Output Type | 0 - 100%<br>Stage [0-3] | If 0-100% is set, the internal stages are output as the following values |
| Stage 0 [%] | 0 - 100 | default = 0% |
| Stage 1 [%] | 0 - 100 | default = 33% |
| Stage 2 [%] | 0 - 100 | default = 66% |
| Stage 3 [%] | 0 - 100 | default = 100% |
| **Activation / Deactivation** | | |
| Shut Down on Frost Protect | Checkbox | When enabled, the fan control is shut off in frost protection mode. |
| Enable by | None<br>IO, Logik 1-10 | The fan control can be enabled/disabled by the specified input. |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

### *External Input*

External Input

Activate/Deactivate    ◯ Deactive   ⦿ Active

Switchpoint 1 [%]    0

Switchpoint 2 [%]    33

Switchpoint 3 [%]    66

Switchpoint 4 [%]    100

| Parameter | Settings | Description |
|---|---|---|
| Activate/Deactivate | Deactiv<br>Activ | If active, the internal stages are calculated from the external input according to the following switchpoints. |
| Switchpoint 1 [%] | 0 - 100 | default = 0 |
| Switchpoint 2 [%] | 0 - 100 | default = 33 |
| Switchpoint 3 [%] | 0 - 100 | default = 66 |
| Switchpoint 4 [%] | 0 - 100 | default = 100 |

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### *Lead Humidity*

Lead Humidity

Activate/Deactivate  ◯ Deactive  ◉ Active

Stage 0 [% r.H.]  50

Stage 1 [% r.H.]  60

Stage 2 [% r.H.]  70

Stage 3 [% r.H.]  80

| Parameter | Settings | Description |
|---|---|---|
| Activate/Deactivate | Deactiv<br>Activ | If  active, the internal stages are calculated from the relative humidity according to the following switchpoints. |
| Stage 0 [% r.H.] | 0 - 100 | default = 50 |
| Stage 1 [% r.H.] | 0 - 100 | default = 60 |
| Stage 2 [% r.H.] | 0 - 100 | default = 70 |
| Stage 3 [% r.H.] | 0 - 100 | default = 80 |

## Lead CO2

Lead CO2

Activate/Deactivate      ○ Deactive   ● Active

Stage 0 [ppm]      1000

Stage 1 [ppm]      1300

Stage 2 [ppm]      1700

Stage 3 [ppm]      2000

| Parameter | Settings | Description |
|---|---|---|
| Activate/Deactivate | Deactiv<br>Activ | If active, the internal stages are calculated from the carbon dioxide value according to the following switchpoints. |
| Stage 0 [ppm] | 0 - 10000 | default = 1000 |
| Stage 1 [ppm] | 0 - 10000 | default = 1300 |
| Stage 2 [ppm] | 0 - 10000 | default = 1700 |
| Stage 3 [ppm] | 0 - 10000 | default = 2000 |

## Override 1 -3

Override 1 - 3

Activate/Deactivate    ◯ Deactive  ◉ Active

OVR 1                  [ Stage 1 ▾ ]

   Timeout [min]       [ 30 ▲▼ ]

OVR 2                  [ Stage 2 ▾ ]

   Timeout [min]       [ 30 ▲▼ ]

OVR 3                  [ Stage 3 ▾ ]

   Timeout [min]       [ 30 ▲▼ ]

Manual Override

   Timeout [min]       [ 30 ▲▼ ]

| Parameter | Settings | Description |
|---|---|---|
| Activate/Deactivate | Deactiv<br>Activ | If active, the internal stage can be overridden by object 66-68. |
| OVR 1 | Stage 0 / Off<br>Stage 1 - 3 | default = Stufe 1<br>will be activated with *object 66* |
| Timeout [min] | 0 - 255 | default = 30 |
| OVR 2 | Stage 0 / Off<br>Stage 1 - 3 | default = Stufe 2<br>will be activated with *object 67* |
| Timeout [min] | 0 - 255 | default = 30 |
| OVR 3 | Stage 0 / Off<br>Stage 1 - 3 | default = Stufe 3<br>will be activated with *object 68* |
| Timeout [min] | 0 - 255 | default = 30 |
| **Manual Override**   will be activated with *object 69* | | |
| Timeout [min] | 0 - 255 | External stage setting with object 69 will be reset after X minutes.<br>default = 30 |

## 1.14 IOs / Button General

Selection

General

Temperature Sensor

Primary T. Controller

   LED Indicator

   Override Settings

Secondary T. Controller

Additional Functions

**IOs / Button General**

   Button Group 1

   Button 2.1

   Button 2.2

   Logic 1: Logic 1

   Logic 2: Logic 2

| | |
|---|---|
| IOs /Buttons | 4 Dry Contacts + 2 simple Pushbuttons ▼ |

**Simple Pushbutton Group 0**

**IO1**

| | |
|---|---|
| Function Type | Toggle ▼ |

**IO2**

| | |
|---|---|
| Function Type | Output ▼ |

**Button Type Selection**

| | |
|---|---|
| Function Select Group 1 | Grouped ▼ |
| Function Select Group 2 | Individual ▼ |

**Button Settings**

| | |
|---|---|
| Debounce Time | 10 ms ▼ |
| Double Time | 0.3 s ▼ |

**Button Group 1**

Type    ◉ Normally Open   ○ Normally Close

**Activation/Deactivation Group 1**

| | |
|---|---|
| Enable by | IO, Logic 1 ▼ |
|   Invert Enable | ☐ |

**Button 2.1**

Type    ◉ Normally Open   ○ Normally Close

**Button 2.2**

Type    ◉ Normally Open   ○ Normally Close

**Activation/Deactivation Group 2**

| | |
|---|---|
| Enable by | IO, Logic 2 ▼ |
|   Invert Enable | ☐ |

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## Button Groups

| Parameter | Settings | Description |
|---|---|---|
| IOs / Buttons | None<br>2 Dry Contacts<br>2 Dry Contacts + 2 Front Pushbuttons<br>4 Dry Contacts<br>4 Dry Contacts + 2 simple Pushbuttons | |

**Special Pushbutton Group 0   ( IOs/Button = 4 Dry Contacts + 2 simple Pushbuttons )**

| **IO1 / IO2** | | |
|---|---|---|
| Function Type | None | Do not use this group. |
| | State | The actual contact state is output. |
| | Toggle | The output state toggles with each contact pulse. |
| | Output | The io can be used as a weak output. |
| | Strong Output | The io can be used as a strong output.<br>An LED can be connected without a resistor. |
| | Beeper Output | **IO1 only**<br>A piezoelectrical beeper can be connected directly.<br>Frequency and beep-interval can be set. |

**Button Type Selection**

| Function Select Group 1/2 | None<br>Grouped<br>Individual | Setting if to use one combined or two individual contacts. |
|---|---|---|

**Button Settings**

| Debounce Time | 5 - 100 ms | Changes on the contact state smaller than the debounce time produces no output. |
|---|---|---|
| Double Time | 0,1 - 1 s | Pressing a switch twice in this timeperiod produces a „double" - Event. |

**Button Group 1/2   ( Button Type Selection = Grouped )**

| Type | Normally Open<br>Normally Close | Setting the switch characteristic |
|---|---|---|

**Activation/Deactivation Group 1/2**

| Enable by | None<br>IO, Logik 1-10 | Button Group 1 can be enabled/disabled by the specified input |
|---|---|---|
| Invert Enable | Checkbox | Enable low-active or high-active(default) |

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| Parameter | Settings | Description |
|---|---|---|
| **Button 1/2.x   ( Button Type Selection = Individual )** | | |
| Type | Normally Open<br>Normally Close | Setting the switch characteristic. |
| **Activation/Deactivation** | | |
| Enable by | None<br>IO, Logik 1-10 | Button 1/2.x can be enabled/disabled by the specified input |
| Invert Enable | Checkbox | Enable low-active or high-active (default) |

*__Button Group 1/2__*



| Parameter | Settings | |
|---|---|---|
| Function Type | None | Do not use this group |
| | Pushbutton<br>Pushbutton (Long/Double/Both) | Simple pushbutton (ON/OFF)<br>Pushbutton group with Long/Double and „Press both" events |
| | Dimmer (Repeat)<br>Dimmer (Start-Stop) | Dimmer with repeated sending<br>Dimmer with „Dimm-start" and „Dimm-stop" |
| | Blind (Short/Long/Short)<br>Blind (Long/Short)<br>Blind (Up/Down/Position) | Blind control with two objects, short and long commands |
| | Shutter | Shutter control with Move/Stop command |

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### *Grouped - Pushbutton*

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 - IO 4** | | |
| Output Size | 1 Bit [0/1]<br>1 Byte [0-100%]<br>1 Byte [0-255] | ON/OFF<br>Value 0 .. 100%<br>Value 0 .. 255 |
| **IO 1 - IO 3** | | |
| Value 1 „Low" | depending on<br>Output Size | This value is sent if the contact goes into OFF-position |
| Value 2 „High" | depending on<br>Output Size | This value is sent if the contact goes into ON-position |
| After Restart | None<br>Value Low<br>Value High | This value is sent at restart after the startup time |
| Enable Action | None<br>Value Low<br>Value High | This value is sent after an enable event |
| Disable Action | None<br>Value Low<br>Value High<br>Toggle | This value is sent after a disable event |
| Repeat | Never<br>If Value is =0<br>If Value is <>1<br>Always | This setting defines under which conditions the output value is repeated |
| **IO 2 -- LONG** | | |
| Long Time | 0.5 - 5 s | Set how long the button must be pressed for a „Long" event |
| **IO 4 -- BOTH** | | |
| Both Function Select | None<br>0<br>1<br>Toggle | Set whether pressing both buttons in a group produces a signal on object 4 of the group |

### *Grouped - Dimmer*

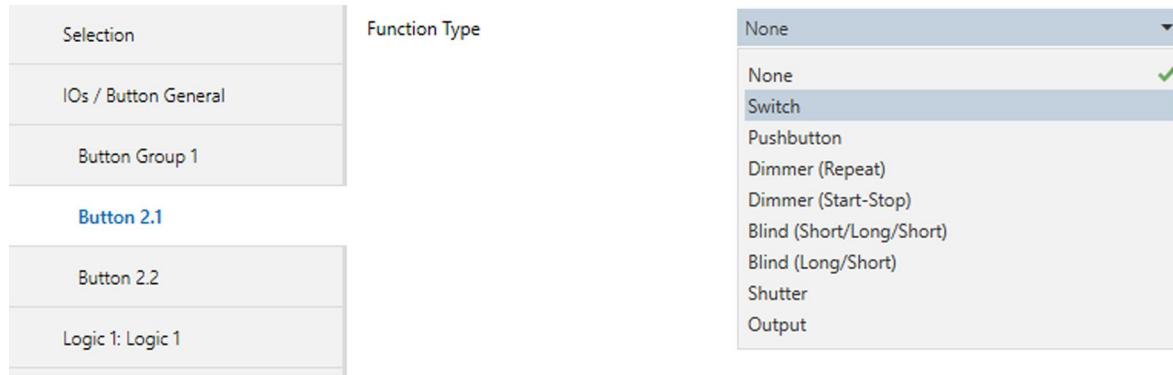| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- DIMMING** | | |
| Dimming Value | None<br><br>1 - 100% Inc/Dec | The dimming value is sent on a long button press. |
| Long Time | 0.5 - 5 s | Set how long the button must be pressed to produce the „dimming" event. |
| Repetition Time [x 0.1] | 3 - 36000 s | **Only by Dimmer (Repeat)**<br>If pressed long, the dimming value is sent repeatedly. |
| **IO 2 -- SWITCH** | | |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event |

*Grouped - Blind*

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- STEP** | | |
| **IO 2 -- MOVE** | | |
| Long Time | 0.5 - 5 s | A short press produces a step event on io1, a long press produces a move event on io2. |
| Run Time | 1sec - 1min | A long press exceeding this period produces no step event on release.<br><br>**Not available at   Blind (Up/Down/Position)** |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event. |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event. |
| **IO 3 -- POSITION (Double Press)** | | |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event. |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event. |

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*Grouped - Shutter*

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- STOP** | | |
| **IO 2 -- MOVE** | | |
| Run Time | 1sec - 1min | A press exceeding this period produces no stop event on release. |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event |

*Button 2.x*



| Parameter | Settings | Description |
|---|---|---|
| Function Type | None | Do not use this button |
| | Switch<br>Pushbutton | Simple switch (ON/OFF)<br>Simple pushbutton (Toggle ON/OFF) |
| | Dimmer (Repeat)<br>Dimmer (Start-Stop) | Dimmer with repeated sending<br>Dimmer with „Dimm-start" and „Dimm-stop" |
| | Blind (Short/Long/Short)<br>Blind (Long/Short) | Blind control with two objects, short and long commands |
| | Shutter | Shutter control with Move/Stop command |
| | Output | Weak output |

### Individual - Switch / Pushbutton

| Parameter | Settings | Description |
|---|---|---|
| Output Size | 1 Bit [0/1]<br>1 Byte [0-100%]<br>1 Byte [0-255] | ON/OFF<br>Value 0 .. 100%<br>Value 0 .. 255 |
| **IO 1** | | |
| Value 1 | Only by 1 Byte<br>Output Size | This value is sent if the button1 of the group is pressed. |
| Value 2 | Only by 1 Byte<br>Output Size | This value is sent if the button2 of the group is pressed. |
| After Restart | None<br>Value 1 or 0<br>Value 2 or 1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>Value 1 or 0<br>Value 2 or 1 | This value is sent after an enable event |
| Disable Action | None<br>Value 1 or 0<br>Value 2 or 1 | This value is sent after a disable event |
| Repeat | Never<br>If Value is =0<br>If Value is <>1<br>Always | This setting defines under which conditions the output value is repeated |

*Individual - Dimmer*

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- DIMMING** | | |
| Dimming Value | None<br><br>1 - 100% Inc/Dec | The dimming value is sent on a long button press. |
| Long Time | 0.5 - 5 s | Set how long the button must be pressed to produce the „dimming" event. |
| Repetition Time [x 0.1] | 3 - 36000 s | If pressed long, the dimming value is sent repeatedly.<br><br>**Only by Dimmer (Repeat)** |
| **IO 2 -- SWITCH** | | |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event |

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### Individual - Blind

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- STEP** | | |
| **IO 2 -- MOVE** | | |
| Long Time | 0.5 - 5 s | A short press produces a step event on io1, a long press produces a move event on IO 2. |
| Run Time | 1sec - 1min | A long press exceeding this period produces no step event on release. |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event |

### Individual - Shutter

| Parameter | Settings | Description |
|---|---|---|
| **IO 1 -- STOP** | | |
| **IO 2 -- MOVE** | | |
| Run Time | 1sec - 1min | A press exceeding this period produces no stop event on release. |
| After Restart | None<br>0<br>1 | This value is sent at restart after the startup time. |
| Enable Action | None<br>0<br>1<br>Toggle | This value is sent after an enable event |
| Disable Action | None<br>0<br>1<br>Toggle | This value is sent after a disable event |

## 1.15  Logic X

| | |
|---|---|
| Selection | |
| General | |
| Temperature Sensor | |
| Primary T. Controller | |
| LED Indicator | |
| Override Settings | |
| Secondary T. Controller | |
| Additional Functions | |
| IOs / Button General | |
| Button Group 1 | |
| Button 2.1 | |
| Button 2.2 | |
| **Logic 1: Logic 1** | |
| Logic 2: Logic 2 | |

Description         Logic 1

Sending Cycle         On change only

**Logic Inputs**

Select A         None

Select B         None

Select C         None

Select D         None

Select E         None

Select F         None

| Function | Command |
|---|---|
| GROUP | () |
| AND | & |
| OR | \| |
| XOR | ^ |
| NEGATE | ~ |
| SEND, IF EQUAL | = |
| ADD | + |
| SUBSTRACT | - |
| MULTIPLY | * |
| VALUE | 0 ... 255 |

Combination         (A&B)|(C^D)

Ignore Update         ☐

Output Size         1 Bit [0/1]

**Activation/Deactivation**

Enable by         IO, Logic 3

Invert Enable         ☐

**Startup**

Send on Startup         ☐

| Parameter | Settings | Description |
|---|---|---|
| Description | max. 32 character | Make a short discription of the purpose of this logic function. |
| Sending Cycle | None<br>5s - 24h | The logic outputs are sent cyclically as per this setting. |
| **Logic Inputs** | | |
| Select A-F | None<br><br>None<br>IO, Logic 2<br>IO, Logic 3<br>IO, Logic 4<br>IO, Logic 5<br>IO, Logic 6<br>IO, Logic 7<br>IO, Logic 8<br>IO, Logic 9<br>IO, Logic 10<br>Temperature Upper Limit Exceeded<br>Temperature Lower Limit Underrun<br>Cool Protection<br>Heat Protection<br>r. Humidity Upper Limit Exceeded<br>r. Humidity Lower Limit Underrun<br>Dewpoint Alarm<br>Output 2. Controller<br>CO2 Limit 1 Exceeded<br>CO2 Limit 2 Exceeded<br>CO2 Limit 3 Exceeded<br>Heat Request<br>Cool Request | At this point objects can be assigned to a letter.<br><br>This can be used in the following setting ***"Combination"***. |

| Function | Command |
|---|---|
| GROUP | ( ) |
| AND | & |
| OR | \| |
| XOR | ^ |
| NEGATE | ~ |
| SEND, IF EQUAL | = |
| ADD | + |
| SUBSTRACT | - |
| MULTIPLY | * |
| VALUE | 0 ... 255 |

| Parameter | Settings | Description |
|---|---|---|
| Combination | max. 20 character | Example:<br>(A&B)\|(C^D)<br>The output is true if A and B are true or either C or D are true. |
| Ignore Update | Checkbox | Set if an update event shall be passed to the output. |
| Output Size | 1-Bit [ 0/1 ]<br>1-Byte [ (-128) - 127 ]<br>1-Byte [ 0 - 255] | Set a data type for the output. |

| Parameter | Settings | Description |
|---|---|---|
| **Activation/Deactivation** | | |
| Enable by | None<br>IO, Logic 1-10 | The logic output can be enabled/disabled by the specified input. |
| Invert Enable | Checkbox | Enable low-active or high-active(default) |
| **Startup** | | |
| Send on Startup | Checkbox | When activated, the logic outputs are sent after a restart regardless of the sending cycle. |

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## 2. Object Overview

| Object | Description |
| --- | --- |
| **Primary Temperature** | |
| 0 : Output, Temperature | Output of the measured Temperature at the primary temperature input. |
| 1 : Input, External Temperature | Input, external temperature value that is combined with the measured value. |
| 2 : Output, Upper Limit Exceeded | Output ,value is higher than upper limit. |
| 3 : IO, Upper Limit | IO, value of upper limit, default set as parameter. |
| 4 : Output, Lower Limit Underrun | Output ,value is lower than lower limit. |
| 5 : IO, Lower Limit | IO, value of lower limit, default set as parameter. |
| 6 : Output, Frost Protection | Output ,measured temperature is lower than protection limit. |
| 7 : Output, Heat Protection | Output ,measured temperature is higher than protection limit. |
| 8 : Output, Measured Maximum | Output, maximum value of measured value since last reset. |
| 9 : Output, Measured Minimum | Output, minimum value of measured value since last reset. |
| 10 : Input, Reset Min/Max | Reset Minimum=Maximum=Actual value. |
| **Primary T. Controller** | |
| 11 : IO, RTC Automatic Mode | Input, This mode is used if no override is active and manual mode is „automatic" default is set as parameter. |
| 12 : IO, RTC Manual Override | Input, This object overrides the automatic mode. |
| 13 : IO, RTC Override 1 / Comfort | Input, This object overrides the automatic mode. |
| 14 : IO, RTC Override 2 | Input, This object overrides the automatic mode. |
| 15 : IO, RTC Override 3 | Input, This object overrides the automatic mode. |
| 16 : IO, RTC Night Override | Input, This object sets the mode to night mode. |
| 17 : Output, Status RHCC | Output, the hvac-state. |
| 18 : Output, Status RTC | Output, the hvac-state. |
| 19 : IO, Comfort | IO, the setpoint in comfort mode. |
| 20 : IO, Night | IO, the setpoint in night mode. |
| 21 : IO, StandBy | IO, the setpoint in standby/economy mode. |
| 22 : Input, Setpoint Inc/Dec Value 1 | Input, increase or decrease the setpoint by a parameterized value. |
| 23 : Input, Setpoint Inc/Dec Value 2 | Input, increase or decrease the setpoint by a parameterized value. |

| Object | Description |
|---|---|
| 24 : Input, Up/Down Setpoint | Input, increase or decrease the setpoint by parameterized steps. |
| 25 : Output, Setpoint | Output, the calculated setpoint for the controller. |
| 26 : Output, Heating | Output, the actuating value of the heating controller ( or combined ). |
| 27 : Output, Cooling | Output, the actuating value of the cooling controller ( if not combined ). |
| 28 : Input, Controller Mode<br>or<br>28 : Output, Controller Mode | IO, set or monitor the used mode ( heating or cooling ). |
| **Lead Control** | |
| 29 : Input, Leading Value | Input, a temperature value, which can change some setpoints and limits. |
| **Humidity** | |
| 30 : Output, Measured Humidity | Output of the measured humidity. |
| 31 : Output, Upper Limit Exceeded | Output ,value is higher than upper limit. |
| 32 : IO, Upper Limit | IO, value of upper limit, default set as parameter. |
| 33 : Output, Lower Limit Underrun | Output ,value is lower than lower limit. |
| 34 : IO, Lower Limit | IO, value of lower limit, default set as parameter. |
| 35 : Input, Setpoint Increase | Input, increase or decrease the setpoint by a parameterized value. |
| 36 : Input, Setpoint Decrease | Input, increase or decrease the setpoint by a parameterized value. |
| 37 : Output, Controller | Output, the actuating value of the humidity controller. |
| **Dewpoint** | |
| 38 : Output, Dewpoint | Output, calculated dewpoint temperature. |
| 39 : IO, Leading Value | Input, a temperature value, which changes the Alarm limit. |
| 40 : Output, Dewpoint Alarm | Output, dewpoint temperatur > Leading Temperature+Parameter setting. |
| **Miscellaneous / Button Group 0** | |
| 41 : Output, Absolute Humidity - Misc<br><br>41 : Output, Function 1 - Button Group 0<br>41 : Input, LED 1 - Button Group 0<br>41 : Input, Beeper - Button Group 0 | Output, absolute humidity.<br><br>Output, Button group 0.<br>Input, sent to LED.<br>Input, sent to Beeper. |
| 42 : Output, Enthalpy - Misc<br><br>42 : Output, Function 2 - Button Group 0<br>42 : Input, Button 2 - Button Group 0 | Output, Enthalpy.<br><br>Output, Button group 0.<br>Input, sent to LED output. |

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| Object | Description |
|---|---|
| **Secondary Temperature** | |
| 43 : Output, Temperature | Output of the measured Temperature at the secondary temperature input. |
| 44 : Output, Setpoint | Output, calculated setpoint used for the controller. |
| 45 : Output, Controller | Output, actuating value. |
| 46 : Input, Setpoint | Input, base setpoint, default set as parameter. |
| **Button Group 1/2** | |
| 47 : Function 1 - Button Group 1 | I/O buttons group 1, according to the set function. |
| 48 : Function 2 - Button Group 1 | I/O buttons group 1, according to the set function. |
| 49 : Function 3 - Button Group 1 | I/O buttons group 1, according to the set function. |
| 50 : Function 4 - Button Group 1 | I/O buttons group 1, according to the set function. |
| 51 : Function 1 - Button Group 2 | I/O buttons group 2, according to the set function. |
| 52 : Function 2 - Button Group 2 | I/O buttons group 2, according to the set function. |
| 53 : Function 3 - Button Group 2 | I/O buttons group 2, according to the set function. |
| 54 : Function 4 - Button Group 2 | I/O buttons group 2, according to the set function. |
| **Air Quality ( CO2 / VOC / External Input / Lux )** | |
| 55 : Output, Measured | Output, measurement value. |
| 56 : Output, Measured Maximum | Output, maximum value of measured value since last reset. |
| 57 : Output, Measured Minimum | Output, minimum value of measured value since last reset. |
| 58 : Input, Reset Min/Max | Reset Minimum=Maximum=Actual value. |
| 59 : Output, Limit 1 Exceeded | Output ,value is higher than limit 1. |
| 60 : IO, Limit 1 | Value of limit 1, default set as parameter. |
| 61 : Output, Limit 2 Exceeded | Output ,value is higher than limit 2. |
| 62 : IO, Limit 2 | Value of limit 2, default set as parameter. |
| 63 : Output, Limit 3 Exceeded | Output ,value is higher than limit 3. |
| 64 : IO, Limit 3 | Value of limit 3, default set as parameter. |
| **FAN** | |
| 65 : Input, Speed | External fanspeed setting. |
| 66 : IO, Override 1 | Override input 1. |

| Object | Description |
|---|---|
| 67 : IO, Override 2 | Override input 2. |
| 68 : IO, Override 3 | Override input 3. |
| 69 : IO, Manual Override | Input, Manual override. |
| 70 : IO, Up/Down Override | Input, Manual override step. |
| 71 : Output, Stage | Output, fan stage. |
| **Logic** | |
| 72 : IO, Logik 1 | Logical I/O 1, Value is input or defined by logical expression 1. |
| 73 : IO, Logik 2 | Logical I/O 2, Value is input or defined by logical expression 2. |
| 74 : IO, Logik 3 | Logical I/O 3, Value is input or defined by logical expression 3. |
| 75 : IO, Logik 4 | Logical I/O 4, Value is input or defined by logical expression 4. |
| 76 : IO, Logik 5 | Logical input 5, Value is input. |
| 77 : IO, Logik 6 | Logical input 6, Value is input. |
| 78 : IO, Logik 7 | Logical input 7, Value is input. |
| 79 : IO, Logik 8 | Logical input 8, Value is input. |
| 80 : IO, Logik 9 | Logical input 9, Value is input . |
| 81 : IO, Logik 10 | Logical input 10, Value is input. |

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