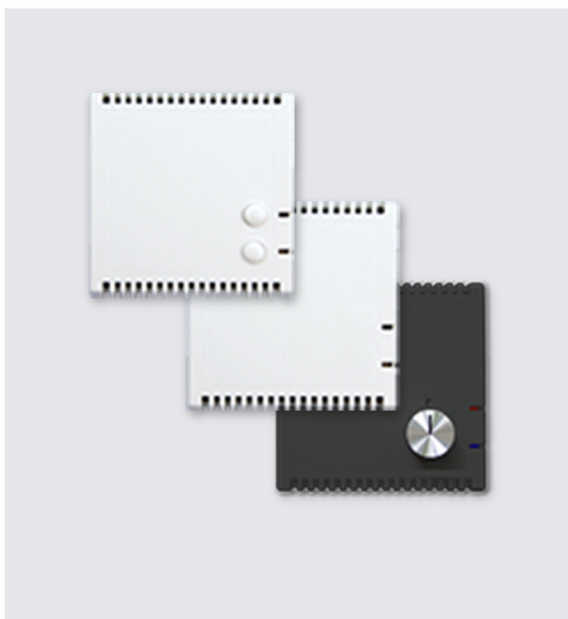




# Arcus-EDS

## Application Description

### HLK305



## 1. Parameter

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## Imprint

## 1.1 Selection

Device: 1.0.1 HLK305

Selection	Key Number (if available, otherwise use the Selection below)	-- 12 -- [ TC-CO2 ]	-- 00 -- [ none ]
General			-- 00 -- [ none ]
Temperature Sensor			-- 02 -- [ CO2 ]
Primary T. Controller			-- 03 -- [ VOC ]
LED Indicator			-- 04 -- [ LUX ]
Override Settings	Climate Control	TC -- Temperature Control	-- 05 -- [ ex.Input ]
Secondary T. Controller	Air Quality [CO2, VOC]	CO2 Sensor internal	-- 11 -- [ TC ]
Additional Functions	--- Combination of LUX Sensor and Air Quality is not possible ---		-- 12 -- [ TC-CO2 ]
Air Quality	Illumination Sensor [LUX]	No	-- 13 -- [ TC-VOC ]
IOs / Button General	Fan Control	No	-- 14 -- [ TC-LUX ]
	Logic Blocks	None	-- 15 -- [ TC-ex.Input ]
			-- 31 -- [ THC ]
			-- 32 -- [ THC-CO2 ]
			-- 33 -- [ THC-VOC ]
			-- 34 -- [ THC-LUX ]
			-- 35 -- [ THC-ex.Input ]
			-- 41 -- [ TTHC ]
			-- 42 -- [ TTHC-CO2 ]
			-- 43 -- [ TTHC-VOC ]
			-- 44 -- [ TTHC-LUX ]
			-- 45 -- [ TTHC-ex.Input ]

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

## 1.2 General

Device: 1.0.1 HLK305

Selection

- General
- Temperature Sensor
- Humidity Sensor
- Additional Functions
- Air Quality
- IOs / Button General

Startup Time: 5 s

Height above Sea Level [m]: 54

---

Primary Temperature Input

Input Select: Temperature & Humidity Sensor

Sending Cycle: 60 s

Send on Change: 0.5 °C

Offset [°C]: 0

Weight of External Temperature Input [%]: 0

Controller Type: None

---

Settings Humidity Sensor

Sending Cycle: 60 s

Send on Change [%]: 5

Offset [%]: 0

---

Secondary Temperature Input

Settings: Only Measurement

Input Select: 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
<b>Primary Temperature Input</b>		
Input Select	Temperature & Humidity Sensor PT1000 Probe	Choice of the sensor to be used for the primary temperature detection and control.
Sending Cycle	None 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 <b>object 1</b> to the primary temperature measurement <b>object 0</b> .
Controller Type	None 2 Point Controller PI Controller PI+PWM Controller	Setting of the controller type.
<b>Settings Humidity Sensor</b>		
Sending Cycle	None 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..
<b>Secondary Temperature Input</b>		
Settings	None Only Measurement Measurement with 2 Point Controller Measurement with PI Controller	Setting the function for the secondary temperature input
Input Select	Temperature & Humidity Sensor PT1000 Probe	Choice of sensor to be used for the secondary temperature detection and control.
Sending Cycle	None 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

Gerät: 1.0.1 HLK305

Selection  
General  
Temperature Sensor  
Humidity Sensor  
Additional Function  
Air Quality  
IOs / Button General

Limit Configuration

Sending Cycle: 10 min

Hysteresis [°C]: 0,5 °C

( These Parameter Setting is also used for Dewpoint )

Upper Limit [°C]: 5

Lower Limit [°C]: -5

Heat Protection [°C]: 40

Frost Protection [°C]: 7

---

Min/Max Time Settings

Sending Cycle: On change only

Send on Change: 0,5 °C

Parameter	Settings	Description
<b>Limit Configuration</b>		
Sending Cycle	None 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 When the upper limit is exceeded, a <b>1</b> is sent to <b>object 2</b> . When the upper limit is underrun, a <b>0</b> is sent to <b>object 2</b> .
Lower Limit [°C]	(-40) - 400	Lower limit setting When the lower limit is underrun, a <b>1</b> is sent to <b>object 4</b> . When the lower limit is exceeded, a <b>0</b> is sent to <b>object 4</b> .
Heat Protection [°C]	0 - 200	Preset temperature for heat protection function
Frost Protection [°C]	(-40) - 10	Preset temperature for frost protection function
<b>Min/Max Time Settings</b>		
Sending Cycle	On change only 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

Gerät: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor
- H. Controller
- Additional Function
- Air Quality
- IOs / Button General

**Setpoint Settings**

Comfort Temperature [°C]

Inc/Dec Value 1 [°C]

Inc/Dec Value 2 [°C]

Setpoint Setting

Standby Temperature [°C]

Night Temperature [°C]

Sending Cycle

---

**Controller Settings**

---

**Heating/Cooling Settings**

Operation Mode

Output Setting

Gap [°C]

Turnover Deadtime

---

**Activation/Deactivation**

Enable by

Invert Enable

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

Parameter	Settings	Description
<b>Setpoint Setting = Absolut</b>		
Standby Temperature [°C]	(-40) - 400	Setting of standby temperature ( absolute )
Night Temperature [°C]	(-40) - 400	Setting of night temperature ( absolute )
<b>Setpoint Setting = Relative</b>		
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.
<b>Controller Settings ---&gt; see below</b>		
<b>Heating/Cooling Settings</b>		
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: <b>Object 26 : Output, Heating</b> <b>Object 27 : Output, Cooling</b>  Single: <b>Object 26 : Output, Heating/Cooling</b>
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.
<b>Activation/Deactivation</b>		
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)



## Controller Settings

2 Point Controller

Controller Settings

Switching Difference [°C]

Sending Cycle

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]

Integration Time    Sekunden

Characteristic

Sending Cycle

Hysteresis [%]

Gap [%]

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.
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.

Parameter	Settings	Description
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]

Integration Time    Sekunden

PWM Cycle Time    Sekunden

Characteristic

Sending Cycle

Hysteresis [%]

Gap [%]

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

Gerät: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator**
- Override Settings
- Humidity Sensor
- Additional Function
- Air Quality
- IOs / Button General

**LED Settings**

Intensity [%]

Brightness according to Ambient

Flash slowly

---

**Indicates Changes for**

Up/Down Temperature

---

**Indicates Heating/Cooling for**

Comfort Mode

Standby Mode

Night/Protection Mode

Parameter	Settings	Description
<b>LED Settings</b>		
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.
<b>Indicates Changes for</b>		
Up/Down Temperature	Checkbox	If active, the LED's will flash as the setpoint is changed
<b>Indicates Heating/Cooling for</b>		
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

Gerät: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings**
- Humidity Sensor
- Additional Function
- Air Quality
- IOs / Button General

---

Default Mode StandBy

---

Override 1 - Comfort

OVR 1 Mode Comfort

Timeout [min] 30

---

Up Steps 3

Down Steps 3

Step 0.5

Timeout None

---

Override 2 - 3

OVR 2 Mode Economy

Timeout [min] 30

OVR 3 Mode Building Protection

Timeout [min] 30

---

Manual Override

Timeout [min] 30

Parameter	Settings	Description
Default Mode	Comfort Standby Economy Building Protection	Setting the default mode
<b>Override 1 - Comfort</b>		
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.

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

Gerät: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller**
- Humidity Sensor
- H. Controller
- Additional Function
- Air Quality
- IOs / Button General

**Setpoint Settings**

Setpoint Offset [°C]

Switching Difference [°C]

Mode Heating

---

**Controller Output Settings**

Sending Cycle None

Send on PowerUp

---

**Activation/Deactivation**

Enable by IO, Logic 1

Invert Enable

Parameter	Settings	Description
<b>Setpoint Settings</b>		
Setpoint Offset [°C]	(-40) - 400	The used Setpoint 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
<b>Controller Output Settings</b>		
Sending Cycle	None 5s - 24h	The controller output values are sent cyclically as per this setting.
Send on PowerUp	Checkbox	When activated, the controller output is sent after the restart regardless of the sending cycle.
<b>Activation/Deactivation</b>		
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)

## 1.7.2 Secondary T. Controller - PI Controller

Gerät: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
  - LED Indicator
  - Override Settings
  - Secondary T. Controller**
- Humidity Sensor
  - H. Controller
- Additional Function
- Air Quality
- IOs / Button General

**Setpoint Settings**

Setpoint Offset [°C]

Proportional Band [°C]

Integration Time    Sekunden

Mode

---

**Controller Output Settings**

Characteristic

Sending Cycle

Send on Change [%]

Send on PowerUp

---

**Activation/Deactivation**

Enable by

Invert Enable

Parameter	Settings	Description
<b>Setpoint Settings</b>		
Setpoint Offset [°C]	(-40) - 400	The used Setpoint 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
<b>Controller Output Settings</b>		
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 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".

Parameter	Settings	Description
Send on PowerUp	Checkbox	When activated, the controller output is sent after the restart regardless of the sending cycle.
<b>Activation/Deactivation</b>		
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

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor**
- H. Controller
- Additional Functions
- Air Quality
- IOs / Button General

**Limit Configuration**

Hysteresis [%]

Upper Limit [%]

Lower Limit [%]

---

**Humidity Controller**

Use Controller

---

**Activation/Deactivation**

Enable by

Invert Enable

Enable Limits

Parameter	Settings	Description
<b>Limit Configuration</b>		
Hysteresis [%]	(-50) - 50	Setting the switching hysteresis.
Upper Limit [%]	0 - 100	Upper limit setting When the upper limit is exceeded, a <b>1</b> is sent to <b>object 31</b> . When the upper limit is underrun, a <b>0</b> is sent to <b>object 31</b> .
Lower Limit [%]	0 - 100	Lower limit setting When the lower limit is underrun, a <b>1</b> is sent to <b>object 33</b> . When the lower limit is exceeded, a <b>0</b> is sent to <b>object 33</b>
<b>Humidity Controller</b>		
Use Controller	None P-Controller 2 Point Controller	Setting the controller type.
<b>Activation/Deactivation</b>		
Enable by	None 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

Device: 1.0.1 HLK305

Selection	Controller Settings	
General	Start Value [%]	0
Temperature Sensor	End Value [%]	100
Primary T. Controller	Mode	Dehumidification
LED Indicator	Inc/Dec Value 1 [%]	10
Override Settings	Inc/Dec Value 2 [%]	-10
Secondary T. Controller	Controller Output Settings	
Humidity Sensor	Sending Cycle	None
H. Controller	Send on Change [%]	0
Additional Functions		
Air Quality		
IOs / Button General		

Parameter	Settings	Description
<b>Controller Settings</b>		
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. <b>Object 35</b>
Inc/Dec Value 2 [%]	(-100) - 100	Setting the value for setpoint adjustment. <b>Object 36</b>
<b>Controller Output Settings</b>		
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".

## 1.9.2 H. Controller - 2 Point Controller

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor
- H. Controller**
- Additional Functions
- Air Quality
- IOs / Button General

**Controller Settings**

Setpoint [%]

Hysteresis [%]

Mode

Inc/Dec Value 1 [%]

Inc/Dec Value 2 [%]

---

**Controller Output Settings**

Sending Cycle

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

## 1.10 Additional Function

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor
- H. Controller
- Additional Functions**
- Air Quality
- IOs / Button General

**Dewpoint/Abs. Humidity/Enthalpy**

Sending Cycle None

---

**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 5

Invert Enable

Invert Output

---

**Absolute Humidity**

Send on Change [g/m<sup>3</sup>] 0

---

**Enthalpy**

Send on Change [kJ/kg] 0

---

**Lead Settings**

Lead Control 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 1 Week

Active Time 1 min

Parameter	Settings	Description
<b>Dewpoint/Abs. Humidity/Enthalpy</b>		
Sending Cycle	None 5s - 24h	The values dewpoint, abs. humidity and enthalpy are sent cyclically as by this adjustment.
<b>Dewpoint Settings</b>		
Alarm Threshold [°C]	(-40) - 400	When exceeding the set value, the alarm bit <b>object 40</b> is set.
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	Invert the dew point alarm bit <b>object 40</b>
<b>Absolute Humidity</b>		
Send on Change [g/m <sup>3</sup> ]	0 - 50	When the absolute Humidity has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle".
<b>Enthalpy</b>		
Send on Change [kJ/kg]	0 - 50	When the Enthalpy has changed as per this value, the value is transmitted regardless of the parameter "Sending Cycle".
<b>Lead Settings</b>		
Lead Control	Inaktiv Aktiv	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
<b>Active for</b>		
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

Parameter	Settings	Description
<b>Flush Settings</b>		
Cycle Time	not used 1 - 12 weeks	The output of the primary controller is enabled every X weeks
Active Time	0.5 - 10 min	It is enabled for X minutes



## 1.11 Air Quality

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor
- H. Controller
- Additional Functions
- Air Quality**
- IOs / Button General

**Sensor Settings**

Send on Startup

Sending Cycle

Send on Change [ppm]

---

**Limit Configuration**

Sending Cycle

Hysteresis [ppm]

Limit 1 [ppm]

Limit 2 [ppm]

Limit 3 [ppm]

Invert Limit Outputs

---

**Min/Max Time Settings**

Sending Cycle

---

**Activation/Deactivation**

Enable by

Invert Enable

Parameter	Settings	Description
<b>Sensor Settings</b>		
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".
<b>Limit Configuration</b>		
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.

Parameter	Settings	Description
Limit 1 [ppm]	0 - 10000	First limit setting <b>IO:Object 60</b> When the first limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Limit 2 [ppm]	0 - 10000	Second limit setting <b>IO:Object 62</b> When the second limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Limit 3 [ppm]	0 - 10000	Third limit setting <b>IO:Object 64</b> When the third limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Invert Limit Outputs	Checkbox	inverts the limits[1-3] outputs <b>Objekt 59</b> <b>Objekt 61</b> <b>Objekt 63</b>
<b>Min/Max Time Setting</b>		
Sending Cycle	On change only 5s - 24h	The Minimum and Maximum values are sent cyclically as by this setting.
<b>Activation/Deactivation</b>		
Enable by	None 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

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Humidity Sensor
- H. Controller
- Additional Functions
- Illumination Sensor**
- Fan Control

**Sensor Settings**

Send on Startup

Sending Cycle

Send on Change [lux]

---

**Limit Configuration**

Sending Cycle

Hysteresis [lux]

Limit 1 [lux]

Limit 2 [lux]

Limit 3 [lux]

Invert Limit Outputs

---

**Min/Max Time Settings**

Sending Cycle

---

**Activation/Deactivation**

Enable by

Invert Enable

Parameter	Settings	Description
<b>Sensor Settings</b>		
Send on StartUp	Checkbox	When activated, the illumination level is sent after the restart regardless of the sending cycle.
Sending Cycle	None 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".
<b>Limit Configuration</b>		
Sending Cycle	None 5s - 24h	The limits 1-3 are sent cyclically as per this setting.
Hysteresis [lux]	0 - 220000	Operating differential for the limits 1-3

Parameter	Settings	Description
Limit 1 [lux]	0 - 220000	First limit setting <b>IO:Object 60</b> When the first limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Limit 2 [lux]	0 - 220000	Second limit setting <b>IO:Object 62</b> When the second limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Limit 3 [lux]	0 - 220000	Third limit setting <b>IO:Object 64</b> When the third limit is exceeded, a <b>1</b> is sent to <b>Object 59</b> , otherwise a <b>0</b> .
Invert Limit Outputs	Checkbox	inverts the limit exceeded bits 1-3 <b>Objekt 59</b> <b>Objekt 61</b> <b>Objekt 63</b>
<b>Min/Max Time Setting</b>		
Sending Cycle	On change only 5s - 24h	The Minimum and Maximum values are sent cyclically as per this setting.
<b>Activation/Deactivation</b>		
Enable by	None 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)



### 1.13 Fan Control

Device: 1.0.1 HLK305

- 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 2
- Logic 3
- Logic 4

**Time Settings**

Send on Startup

Sending Cycle

---

**External Input**

Activate/Deactivate

---

**Lead Humidity**

Activate/Deactivate

---

**Lead CO2**

Activate/Deactivate

---

**Override 1 - 3**

Activate/Deactivate

---

**Output Settings**

Output Type

Stage 0 [%]

Stage 1 [%]

Stage 2 [%]

Stage 3 [%]

---

**Activation/Deactivation**

Shut Down on Frost Protect

Enable by

Invert Enable



Parameter	Settings	Description
<b>Time Settings</b>		
Send on Startup	Checkbox	When activated, the fan output is sent after the restart regardless of the sending cycle.

Parameter	Settings	Description
Sending Cycle	None 5s - 24h	The fan output value is sent cyclically as per this setting.
<b>External Input</b>		<i>The fan can be controlled by an external input [0%..100%]</i>
<b>Lead Humidity</b>		<i>The fan can be controlled by the measured humidity</i>
<b>Lead CO2</b>		<i>The fan can be controlled by the measured air quality</i>
<b>Override 1 - 3</b>		<i>The calculated fan stage can be overridden by external objects</i>
<b>Output Setting</b>		
Output Type	0 - 100% 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%
<b>Activation/Deactivation</b>		
Shut Down on Frost Protect	Checkbox	When enabled, the fan control is shut off in frost protection mode.
Enable by	None 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 Active ▾

Switchpoint 1 [%] 0 ▲  
▼

Switchpoint 2 [%] 33 ▲  
▼

Switchpoint 3 [%] 66 ▲  
▼

Switchpoint 4 [%] 100 ▲  
▼

Parameter	Settings	Description
Activate/Deactivate	Deactiv 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

**Lead Humidity**

Lead Humidity

Activate/Deactivate

Stage 0 [% r.H.]

Stage 1 [% r.H.]

Stage 2 [% r.H.]

Stage 3 [% r.H.]

Parameter	Settings	Description
Activate/Deactivate	Deactiv 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	Active
Stage 0 [ppm]	1000
Stage 1 [ppm]	1300
Stage 2 [ppm]	1700
Stage 3 [ppm]	2000

Parameter	Settings	Description
Activate/Deactivate	Deactiv 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

OVR 1

Timeout [min]

OVR 2

Timeout [min]

OVR 3

Timeout [min]

---

Manual Override

Timeout [min]

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

## 1.14 IOs / Button General

Device: 1.0.1 HLK305

Selection

- IOs / Button General
- Button Group 1
- Button 2.1
- Button 2.2

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

---

Activation/Deactivation Group 1

Enable by IO, Logic 5

Invert Enable

---

Button 2.1

Type Normally Open

---

Button 2.2

Type Normally Open

---

Activation/Deactivation Group 2

Enable by IO, Logic 5

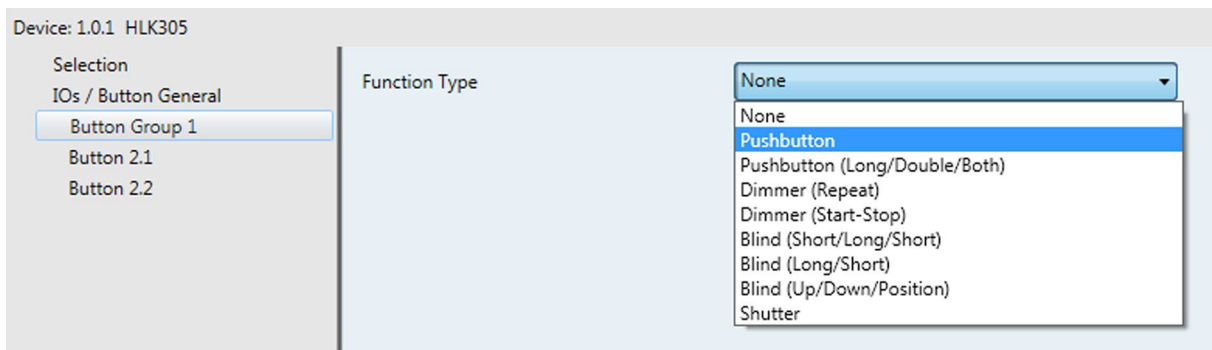
Invert Enable



**Button Groups**

Parameter	Settings	Description
IOs / Buttons	None 2 Dry Contacts 2 Dry Contacts + 2 Front Pushbuttons 4 Dry Contacts 4 Dry Contacts + 2 simple Pushbuttons	
<b>Special Pushbutton Group 0</b>		
<b>IO1 / IO2</b>		
Function Type	None State Toggle Output Strong Output Beeper Output	Do not use this group. The actual contact state is output. The output state toggles with each contact pulse. The io can be used as a weak output. <b>IO1 only</b> The io can be used as a strong output. An LED can be connected without a resistor. A piezoelectrical beeper can be connected directly. Frequency and beep-interval can be set.
<b>Button Type Selection</b>		
Function Select Group 1/2	None Grouped Individual	Setting if to use one combined or two individual contacts.
<b>Button Settings</b>		
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.
<b>Button Group 1 ( Button Type Selection = Grouped )</b>		
Type	Normally Open Normally Close	Setting the switch characteristic.
<b>Activation/Deactivation</b>		
Enable by	None 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)
<b>Button 2.x ( Button Type Selection = Individual )</b>		
Type	Normally Open Normally Close	Setting the switch characteristic.

Parameter	Settings	Description
<b>Activation/Deactivation</b>		
Enable by	None IO, Logik 1-10	Button Group 2 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	Simple pushbutton (ON/OFF)
	Pushbutton (Long/Double/Both)	Pushbutton group with Long/Double and „Press both“ events
	Dimmer (Repeat)	Dimmer with repeated sending
	Dimmer (Start-Stop)	Dimmer with „Dimm-start“ and „Dimm-stop“
	Blind (Short/Long/Short)	Blind control with two objects, short and long commands
	Blind (Long/Short)	
	Blind (Up/Down/Position)	
	Shutter	Shutter control with Move/Stop command

Grouped - Pushbutton

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

Grouped - Dimmer

Parameter	Settings	Description
<b>IO 1 -- DIMMING</b>		
Dimming Value	None 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) If pressed long, the dimming value is sent repeatedly.
<b>IO 2 -- SWITCH</b>		
After Restart	None 0 1	This value is sent at restart after the startup time
Enable Action	None 0 1 Toggle	This value is sent after an enable event
Disable Action	None 0 1 Toggle	This value is sent after a disable event

Grouped - Blind

Parameter	Settings	Description
<b>IO 1 -- STEP</b>		
<b>IO 2 -- MOVE</b>		
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.
After Restart	None 0 1	This value is sent at restart after the startup time.
Enable Action	None 0 1 Toggle	This value is sent after an enable event.
Disable Action	None 0 1 Toggle	This value is sent after a disable event.

Grouped - Shutter

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

Button 2.x

Device: 1.0.1 HLK305

Selection  
IOs / Button General  
Button Group 1  
Button 2.1  
Button 2.2

Function Type

None  
None  
Switch  
Pushbutton  
Dimmer (Repeat)  
Dimmer (Start-Stop)  
Blind (Short/Long/Short)  
Blind (Long/Short)  
Shutter  
Output

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

Individual - Switch / Pushbutton

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

Individual - Dimmer

Parameter	Settings	Description
<b>IO 1 -- DIMMING</b>		
Dimming Value	None 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) If pressed long, the dimming value is sent repeatedly.
<b>IO 2 -- SWITCH</b>		
After Restart	None 0 1	This value is sent at restart after the startup time.

Parameter	Settings	Description
Enable Action	None 0 1 Toggle	This value is sent after an enable event
Disable Action	None 0 1 Toggle	This value is sent after a disable event

**Individual - Blind**

Parameter	Settings	Description
<b>IO 1 -- STEP</b>		
<b>IO 2 -- MOVE</b>		
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.
After Restart	None 0 1	This value is sent at restart after the startup time.
Enable Action	None 0 1 Toggle	This value is sent after an enable event
Disable Action	None 0 1 Toggle	This value is sent after a disable event

**Individual - Shutter**

Parameter	Settings	Description
<b>IO 1 -- STOP</b>		
<b>IO 2 -- MOVE</b>		
Run Time	1sec - 1min	A press exceeding this period produces no stop event on release.
After Restart	None 0 1	This value is sent at restart after the startup time.

Parameter	Settings	Description
Enable Action	None 0 1 Toggle	This value is sent after an enable event
Disable Action	None 0 1 Toggle	This value is sent after a disable event





## 1.15 Logic X

Device: 1.0.1 HLK305

- Selection
- General
- Temperature Sensor
- Primary T. Controller
- LED Indicator
- Override Settings
- Secondary T. Controller
- Additional Functions
- IOs / Button General
  - Button Group 1
  - Frontbuttons [Group 2]
  - Logic 1**
  - Logic 2
  - Logic 3
  - Logic 4

---

Description

---

Sending Cycle

---

Logic Inputs

Select A

Select B

Select C

Select D

Select E

Select F

---

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

---

Combination

Ignore Update

Output Size

---

Activation/Deactivation

Enable by

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 5s - 24h	The logic outputs are sent cyclically as per this setting.																						
<b>Logic Inputs</b>																								
Select A-F	<div style="border: 1px solid black; padding: 5px;"> <div style="background-color: #e0e0e0; padding: 2px;">None</div> <div style="background-color: #0070c0; color: white; padding: 2px;">None</div> <div style="padding: 2px;">IO, Logic 2</div> <div style="padding: 2px;">IO, Logic 3</div> <div style="padding: 2px;">IO, Logic 4</div> <div style="padding: 2px;">IO, Logic 5</div> <div style="padding: 2px;">IO, Logic 6</div> <div style="padding: 2px;">IO, Logic 7</div> <div style="padding: 2px;">IO, Logic 8</div> <div style="padding: 2px;">IO, Logic 9</div> <div style="padding: 2px;">IO, Logic 10</div> <div style="padding: 2px;">Temperature Upper Limit Exceeded</div> <div style="padding: 2px;">Temperature Lower Limit Underrun</div> <div style="padding: 2px;">Cool Protection</div> <div style="padding: 2px;">Heat Protection</div> <div style="padding: 2px;">r. Humidity Upper Limit Exceeded</div> <div style="padding: 2px;">r. Humidity Lower Limit Underrun</div> <div style="padding: 2px;">Dewpoint Alarm</div> <div style="padding: 2px;">Output 2. Controller</div> <div style="padding: 2px;">CO2 Limit 1 Exceeded</div> <div style="padding: 2px;">CO2 Limit 2 Exceeded</div> <div style="padding: 2px;">CO2 Limit 3 Exceeded</div> <div style="padding: 2px;">Heat Request</div> <div style="padding: 2px;">Cool Request</div> </div>	<p>At this point objects can be assigned to a letter.</p> <p>This can be used in the following setting "<b>Combination</b>".</p>																						
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Function</th> <th>Command</th> </tr> </thead> <tbody> <tr> <td>GROUP</td> <td>()</td> </tr> <tr> <td>AND</td> <td>&amp;</td> </tr> <tr> <td>OR</td> <td> </td> </tr> <tr> <td>XOR</td> <td>^</td> </tr> <tr> <td>NEGATE</td> <td>~</td> </tr> <tr> <td>SEND, IF EQUAL</td> <td>=</td> </tr> <tr> <td>ADD</td> <td>+</td> </tr> <tr> <td>SUBSTRACT</td> <td>-</td> </tr> <tr> <td>MULTIPLY</td> <td>*</td> </tr> <tr> <td>VALUE</td> <td>0 ... 255</td> </tr> </tbody> </table>	Function	Command	GROUP	()	AND	&	OR		XOR	^	NEGATE	~	SEND, IF EQUAL	=	ADD	+	SUBSTRACT	-	MULTIPLY	*	VALUE	0 ... 255	
Function	Command																							
GROUP	()																							
AND	&																							
OR																								
XOR	^																							
NEGATE	~																							
SEND, IF EQUAL	=																							
ADD	+																							
SUBSTRACT	-																							
MULTIPLY	*																							
VALUE	0 ... 255																							
Combination	max. 20 character	<p>Example: (A&amp;B) (C^D) The output is true if A and B are true or either C or D are true.</p>																						
Ignore Update	Checkbox	Set if an update event shall be passed to the output.																						
Output Size	1-Bit [ 0/1 ] 1-Byte [ (-128) - 127 ] 1-Byte [ 0 - 255]	Set a data type for the output.																						

Parameter	Settings	Description
<b>Activation/Deactivation</b>		
Enable by	None 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).
<b>Startup</b>		
Send on Startup	Checkbox	When activated, the logic outputs are sent after a restart regardless of the sending cycle.



## 2. Object Overview

Object	Description
<b>Primary Temperature</b>	
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.
<b>Primary T. Controller</b>	
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 or 28 : Output, Controller Mode	IO, set or monitor the used mode ( heating or cooling ).
<b>Lead Control</b>	
29 : Input, Leading Value	Input, a temperature value, which can change some setpoints and limits.
<b>Humidity</b>	
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.
<b>Dewpoint</b>	
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.
<b>Miscellaneous / Button Group 0</b>	
41 : Output, Absolute Humidity - Misc	Output, absolute humidity.
41 : Output, Function 1 - Button Group 0	Output, Button group 0.
41 : Input, LED 1 - Button Group 0	Input, sent to LED.
41 : Input, Beeper - Button Group 0	Input, sent to Beeper.
42 : Output, Enthalpy - Misc	Output, Enthalpy.
42 : Output, Function 2 - Button Group 0	Output, Button group 0.
42 : Input, Button 2 - Button Group 0	Input, sent to LED output.

Object	Description
<b>Secondary Temperature</b>	
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.
<b>Button Group 1/2</b>	
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.
<b>Air Quality ( CO<sub>2</sub> / VOC / External Input / Lux )</b>	
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.
<b>FAN</b>	
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.
<b>Logic</b>	
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.

## Imprint

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