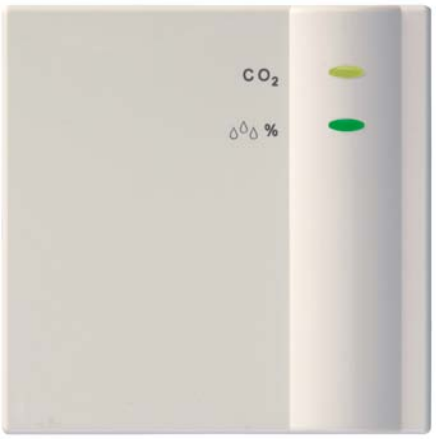
KNX CO², humidity and temperature sensor (surface mounted)



KNX CO2, humidity and temperature sensor	Order no. MTN6005-0001

Contents

1 Functional characteristics

The device is a combined sensor for CO_2, temperature and humidity measurement (relative humidity).

It is designed to monitor air quality in conference/meeting rooms, offices, schools/ kindergartens, passive or low energy houses and living rooms without controlled ventilation.

1.1 Operation

The device does not have to be operated manually.

The LED and the push button for the physical address are accessible when cover is removed. If necessary, the push button can be reached with a thin screwdriver via the upper ventilation slot.

CAUTION: Do not drop the device!
Severe shocks reduce the accuracy of the highly sensitive CO2 sensor.

1.2 Benefits

- Combined measurement of temperature, humidity and CO2 content in one device.
- Power supply via bus connection, no mains power required.

2 Technical data

2.1 Technical data

Power supply:	Bus voltage
Permissible operating temperature:	0 °C... + 45°C
Power draw from bus voltage:	Max. 12 mA
Bus connection:	via bus terminal
Protection class:	III in accordance with EN 60730-1
Protection rating:	IP 20 in accordance with EN 60529
Dimensions of device:	LxWxH 74 x 74 x 30.8 (mm)

Measuring ranges:

CO_2	300 – 9999 ppm
Humidity:	1 – 100 %
Temperature:	0 – 40 °C

Accuracy:

CO2	300-1000 ppm: +/- 120 ppm 1000-2000 ppm: +/- 250 ppm 2000-5000 ppm: +/- 300 ppm
Humidity:	+/- 5 %
Temperature:	+/- 1 °C (depending on installation)

3 The application program "CO2,humidity & temperature sensor 4216/1.0"

3.1 Selection in the product database

Manufacturer	Schneider Electric Industries SAS
Product family	2.9 Physical sensors
Product types	2.9.05 Carbon doxide 2.9.04 Humidity
Program name	KNX CO², humidity and temperature sensor

Table 1

Number of communication objects:	27
Number of group addresses:	128
Number of associations:	128

3.2 Communication objects

Table 2: Overview

No.	Function	Object name	Type & DPT	Flags C	Flags R	Flags S	Flags T
0	Physical value	CO_2 value	2 byte 9.008	✓	✓		✓
1	Physical value	relative humidity	1 byte 5.001	✓	✓		✓
2	Physical value	Temperature value	2 byte 9.001	✓	✓		✓
3	Switching	CO_2 threshold 1	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
4	Input	Disable CO_2 threshold 1	1 bit 1.001	✓	✓	✓	
5	Switching	CO_2 threshold 2	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
6	Input	Disable CO_2 threshold 2	1 bit 1.001	✓	✓	✓	
7	Switching	CO_2 threshold 3	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
8	Input	Disable CO_2 threshold 3	1 bit 1.001	✓	✓	✓	
9	Value for ventilation actuator	Ventilation of CO_2	5.001	✓	✓		✓
10	Input	Disable ventilation of CO_2	1 bit 1.001	✓	✓	✓	✓
				C	R	S	T

Continuation:

No.	Function	Object name	Type & DPT	Flags C	Flags R	Flags S	Flags T
11	Scene control	CO_2 scenes	1 byte 18.001	✓	✓		✓
12	Input	Disable CO_2 scenes	1 bit 1.001	✓	✓	✓	
13	Switching	Humidity threshold 1	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
14	Input	Disable humidity threshold 1	1 bit 1.001	✓	✓	✓	
15	Switching	Humidity threshold 2	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
16	Input	Disable humidity threshold 2	1 bit 1.001	✓	✓	✓	
17	Switching	Humidity threshold 3	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
18	Input	Disable humidity threshold 3	1 bit 1.001	✓	✓	✓	
19	Value for ventilation actuator	Ventilating relative humidity	1 byte 5.001 5.010	✓	✓		✓
20	Input	Disable ventilating relative humidity	1 bit 1.001	✓	✓	✓	
21	Scene control	Relative humidity scenes	1 byte 18.001	✓	✓		✓
22	Input	Disable relative humidity scenes	1 bit 1.001	✓	✓	✓	
				C	R	S	T

Continuation:

No.	Function	Object name	Type & DPT	Flags			
				C	R	S	T
23	Switching	Temperature threshold	1 bit 1.001	✓	✓		✓
	Valuator		1 byte 5.001 5.010				
	Priority		2 bit 2.001				
24	Input	Disable temperature threshold	1 bit 1.001	✓	✓	✓	
25	Value for ventilation actuator	highest active ventilation value	1 byte 5.010	✓	✓		✓
26	Switching On/Off	LEDs for CO2 and humidity	1 bit 1.001	✓		✓	
				C	R	S	T

Table 3: Communication flags

Flag	Name	Application
C	Communication	Object can communicate
R	Read	Object status can be viewed (ETS / display etc.)
S	Write	Object can receive
T	Transmit	Object can send

3.2.1 Description of objects

- **Object 0 "*CO_2 value*"**

This object sends the CO_2content
measured by the sensor (if sending via configuration is permitted).

- **Object 1 "*relative humidity value*"**

This object sends the current relative humidity
measured by the sensor (if sending via configuration is permitted).

- **Object 2 "*Temperature value*"**

This object sends the temperature
currently being measured by the sensor (if sending via configuration is permitted).

- **Object 3 "*Threshold 1 CO_2*"**

Output object for the first CO_2 threshold.
See Overview table.

- **Object 4 "*Disable CO_2 threshold 1*"**

Disable object for the first CO_2 threshold.

- **Object 5 "*CO_2*threshold 2"**

Output object for the second CO_2 threshold.
See Overview table.

- **Object 6 "*Disable CO_2 threshold 2*"**

Disable object for the second CO_2 threshold.

- **Object 7 "*CO_3*threshold 2"**

Output object for the third CO_2 threshold.
See Overview table.

- **Object 8 "*Disable CO_2 threshold 3*"**

Disable object for the third CO_2 threshold.

- **Object 9 "*Ventilation of CO_2*"**

Actuating value for ventilation actuator (1 byte telegram).
This object is used if ventilation is only to be activated by the CO_2 content, such as in conference rooms.
Important: The configuration of the input as a percentage value or as number from 0 to 255 is irrelevant for the ventilation actuator.

- **Object 10 "*Disable CO_2 ventilation*"**

Disable object for CO_2 dependent ventilation
1 = Disable
0 = Enable

- **Object 11 "*CO_2scenes*"**

Transmits the CO_2 dependent scene retrieval code

Table 4

Scene no.	Retrieval code		Scene no.	Retrieval code	
	Hex	Dec		Hex	Dec
1	$00	0	**33**	$20	32
2	$01	1	**34**	$21	33
3	$02	2	**35**	$22	34
4	$03	3	**36**	$23	35
5	$04	4	**37**	$24	36
6	$05	5	**38**	$25	37
7	$06	6	**39**	$26	38
8	$07	7	**40**	$27	39
9	$08	8	**41**	$28	40
10	$09	9	**42**	$29	41
11	$0A	10	**43**	$2A	42
12	$0B	11	**44**	$2B	43
13	$0C	12	**45**	$2C	44
14	$0D	13	**46**	$2D	45
15	$0E	14	**47**	$2E	46
16	$0F	15	**48**	$2F	47
17	$10	16	**49**	$30	48
18	$11	17	**50**	$31	49
19	$12	18	**51**	$32	50
20	$13	19	**52**	$33	51
21	$14	20	**53**	$34	52
22	$15	21	**54**	$35	53
23	$16	22	**55**	$36	54
24	$17	23	**56**	$37	55
25	$18	24	**57**	$38	56
26	$19	25	**58**	$39	57
27	$1A	26	**59**	$3A	58
28	$1B	27	**60**	$3B	59
29	$1C	28	**61**	$3C	60
30	$1D	29	**62**	$3D	61
31	$1E	30	**63**	$3E	62
32	$1F	31	**64**	$3F	63

- **Object 12 " *Lock CO_2 vent*"**

Disable object for the CO_2 scenes.
1 = Disable
0 = Enable

- **Object 13 "*Humidity threshold 1*"**

Output object for the first humidity threshold.
See Overview table.

- **Object 14 "*Disable humidity threshold 1*"**

Disable object for the first CO_2 humidity threshold.

- **Object 15 "*Humidity threshold 2*"**

Output object for the second humidity threshold.
See Overview table.

- **Object 16 "*Disable humidity threshold 2*"**

Disable object for the second CO_2 humidity threshold.

- **Object 17 "*Humidity threshold 3*"**

Output object for the third humidity threshold.
See Overview table.

- **Object 18 "*Disable humidity threshold 3*"**

Disable object for the third CO_2 humidity threshold.

- **Object 19 "Vent relative humidity"**

Actuating value for ventilation actuator (1 byte telegram).
This object is used if ventilation is only to be activated by the relative humidity, such as in a conservatory.

Important: The configuration of the input as a percentage value or as number from 0 to 255 is irrelevant for the ventilation actuator.

- **Object 20 "Disable vent relative humidity"**

Disable object for humidity dependent ventilation
1 = Disable
0 = Enable

- **Object 21 "*Relative humidity scenes*"**

Sends the humidity dependent scene retrieval code.
See above, Table4.

- **Object 22 "*Disable relative humidity scenes*"**

Disable object for the humidity scenes.
1 = Disable
0 = Enable

- **Object 23 "*Temperature threshold*"**

Output object for the temperature threshold.
See Overview table.

- **Object 24 "Disable temperature threshold“"**

Disable object for humidity dependent ventilation
1 = Disable
0 = Enable

- **Object 25 "Highest active vent value"**

Actuating value for ventilation actuator (1 byte telegram).
This object is used if ventilation is to be activated by CO_2 content
and relative humidity.

The actuating values of object 9 and object 19 are monitored and the highest actuating is always sent.

Important: The configuration of the input as a percentage value or as number from 0 to 255 is irrelevant for the ventilation actuator.

- **Object 26 "LEDs for CO2 and humidity"**

Activates or deactivates the LEDs to display the CO_2 and humidity thresholds.
This option is applied on the *Readings* parameter page.

0 = Switch LEDs off completely
1 = Operate LEDs.

3.3 Parameters

3.3.1 Overview

Table 5

Name	Description
Measured values	Settings for sending CO_2 content, relative humidity and temperature
CO_2 thresholds	Setting the 3 CO_2 thresholds
Thresholds 1, 2, 3 CO_2	Setting of response to exceeding or not reaching the relevant CO_2 threshold.
Ventilating CO_2	Setting of ventilation speed depending on CO_2 content
CO_2 scenes	Setting of scene numbers to be sent depending on CO_2 content
Humidity thresholds	Setting of the 3 humidity thresholds
Humidity thresholds 1, 2, 3	Setting of response to exceeding or not reaching the relevant humidity threshold.
Ventilating humidity	Setting of ventilation speed depending on relative humidity
Humidity scenes	Setting of scene numbers to be sent depending on relative humidity
Temperature threshold	Setting of temperature threshold and reaction to exceeding or underrunning.

3.3.2 The Readings *parameter page*

Table 6

Designation	Values	Application
CO_2content sends on change in	*not due to a change* *100 ppm* *200 ppm* *300 ppm* *500 ppm*	only send cyclically (if enabled) Send if the value has changed since the last transmission by the selected amount
Send CO_2 content cyclically	*do not send cyclically* *every minute* *every 2 minutes* *every 3 minutes* *…* *every 30 minutes* *every 45 minutes* *every 60 minutes*	How often should the current measured value be resent?
Send humidity value in the event of a change in …	*not due to a change* *2 %* *3 %* *5 %* *10%*	only send cyclically (if enabled) Send if the value has changed since the last transmission by the selected amount
Send humidity value cyclically	*do not send cyclically* *every minute* *every 2 minutes* *every 3 minutes* *…* *every 30 minutes* *every 45 minutes* *every 60 minutes*	How often should the current measured value be resent?
LEDs for CO2 and humidity	*always off* *always on* *switchable via object 26*	The LEDs are not used The LEDs display the current thresholds. If necessary, the LEDs can be activated or switched off via a switching command to object 26. Typical application: Switch LEDs off overnight with a timer.
Transmit temperature in the event of change of	*not due to a change* *0.5 °C, 1.0 °C* *1.5 °C, 2.0 °C* *2.5 °C*	only send cyclically (if enabled) Send if the value has changed since the last transmission by the selected amount

Continuation:

Designation	Values	Application
Send temperature cyclically	*Do not send cyclically* *every minute* *every 2 minutes* *every 3 minutes* … *every 30 minutes* *every 45 minutes* *every 60 minutes*	At what time interval are the cyclic telegrams to be sent again?
Temperature calibration in 0.1°C stages (-64..64)	manual input: - 64 .. 64	Adjustment to temperature measurement if sent temperature deviates from actual ambient temperature. Example: Temperature = 20°C sent temperature = 21°C Adjustment value = 10 (i.e. 10 x 0.1°C)

3.3.3 The *CO_2* threshold parameter page

Essential condition for setting thresholds:
Threshold 1 must always be smaller then threshold 2 and *threshold 2* smaller than *threshold 3*.

Table 7

Designation	Values	Application
CO_2 threshold 1 (in 10 ppm)	manual input: 10 .. 255	Input of first CO_2 threshold value in 10 ppm. **Example:** **20 is equivalent to 200 ppm**
Hysteresis	*100 ppm* *200 ppm* *300 ppm* *500 ppm*	The hysteresis prevents frequent switching after small changes in readings. See appendix: Hysteresis
CO_2 threshold 2 (in 10 ppm)	manual input: 10 .. 255	Input of second CO_2 threshold
Hysteresis	see above	see above
CO_2 threshold 3 (in 10 ppm)	manual input: 10 .. 255	Input of third CO_2 threshold

3.3.4 The *1, 2, 3* CO_2 thresholds parameter pages

The parameters are identical for all three CO_2 thresholds.
Threshold 1 is given as an example.

Table 8

Designation	Values	Application
Telegram type for CO_2 threshold 1	*Switching command* *Priority* *Value as percentage* *Value from 0 to 255*	The threshold sends: Switching telegrams Priority telegrams A percentage value **Important:** See appendix Fan control Any desired value between 0 and 255
If CO_2 threshold 1 is exceeded	*no telegram* *send following telegram once* *send cyclically*	Response to exceeding threshold
telegram	*Switch-on command* *Switch-off command* *no priority* *OFF (up)* *ON (down)* *0%, 5%, 10%, 15%, 20%, 25%* *30%, 35%, 40%, 45%, 50%* *55%, 60%, 65%, 70%, 75%* *80%, 85%, 90%, 95%, 100%* manual input: 0 .. 255	What is sent if the threshold is exceeded or underrun? The parameter values depend on the type of telegram selected: With *switching command* With *Priority* With *Percentage value* With *Value from 0 to 255*
If CO_2 threshold 1 is underrun	*no telegram* *send following telegram once* *send cyclically*	Response to underrunning threshold
telegram	see above	see above
Cycle time for CO_2 threshold 1 (if available)	*every minute, every 2 minutes* *every 3 minutes, every 5 minutes* *every 10 minutes, every 15 minutes* *every 20 minutes, every 30 minutes* *every 45 minutes, every 60 minutes*	At what time interval are the cyclic telegrams to be sent again?

Continuation:

Designation	Values	Application
Behaviour when setting the lock	*Ignore lock*	This threshold cannot be disabled
	do not send	The threshold will not send as long as the disable object is set
	as with underrun threshold	When setting the disable object, the threshold sends the same telegram as with threshold underrun.
	as with exceeded threshold	When setting the disable object, the threshold sends the same telegram as with exceeding the threshold.
Behaviour when cancelling the lock	*do not send*	no reaction
	update	send current status

3.3.5 The *ventilation CO_2* threshold parameter page

Table 9

Designation	Values	Application
Send given value:	*(Input as number from 0 to 255)* *(Input as percentage)*	Input format for fan control. This setting is not relevant for the actuator.
if CO_2 below threshold 1	manual input 0..255 or 0..100 %	Setting of desired fan speeds depending on CO_2 content.
if CO_2 between threshold 1 and 2	manual input 0..255 or 0..100 %	
if CO_2 between threshold 2 and 3	manual input 0..255 or 0..100 %	
if CO_2 greater threshold 3	manual input 0..255 or 0..100 %	
Behaviour when setting the lock	*Ignore lock* *do not send* *send following value*	This threshold cannot be disabled The threshold will not send as long as the disable object is set Send a value when setting disable object.
Value if disabled	*0%, 5%, 10%, 15%, 20%, 25%* *30%, 35%, 40%, 45%, 50%* *55%, 60%, 65%, 70%, 75%* *80%, 85%, 90%, 95%, 100%*	Value to be sent when the disable object is set
Behaviour when cancelling the lock	*do not send* *update*	no reaction send current fan actuating value

3.3.6 The *CO_2*scenes parameter page

Send given scene if:

Table 10:

Designation	Values	Application
CO_2 below threshold 1	*Scene 1 .. scene 64*	Setting of scene numbers to be sent depending on CO_2 content.
CO_2 between threshold 1 and 2	*Scene 1 .. scene 64*	
CO_2 between threshold 2 and 3	*Scene 1 .. scene 64*	
CO_2 greater threshold 3	*Scene 1 .. scene 64*	
Behaviour when setting the lock	*Ignore lock* *do not send* *send scene*	The scene object cannot be disabled The scene object will not send as long as the disable object is set Send a value when setting disable object.
scene if disabled	*Scene 1 .. scene 64*	Scene to be sent when the disable object is set
Behaviour when cancelling the lock	*do not send* *update*	no reaction send current scene

3.3.7 The humidity threshold *parameter page*

Essential condition for setting thresholds:
Threshold 1 must always be smaller then threshold 2 and *threshold 2* smaller than *threshold 3*.

Table 11

Designation	Values	Application
Relative humidity threshold 1 (in %)	Manual input 0 ..0.100	Input of the first humidity threshold value in percent.
Hysteresis	*1 %, 2 %, 3 %* *5 %, 7 %, 10 %*	The hysteresis prevents frequent switching after small changes in readings. See appendix: Hysteresis
Relative humidity threshold 2 (in %)	Manual input 0 ..0.100	Input of the second humidity threshold value in percent.
Hysteresis	*1 %, 2 %, 3 %* *5 %, 7 %, 10 %*	see above.
Relative humidity threshold 3 (in %)	Manual input 0 ..0.100	Input of the third humidity threshold value in percent.
Hysteresis	*1 %, 2 %, 3 %* *5 %, 7 %, 10 %*	see above.

3.3.8 The *1, 2, 3 humidity* thresholds parameter pages

Table 12

Designation	Values	Application
Telegram type for humidity threshold 1	*Switching command* *Priority* *Value as percentage* *Value from 0 to 255*	The threshold sends: Switching telegrams Priority telegrams A percentage value **Important:** See appendix Fan control Any value between 0 and 255
If humidity threshold 1 is exceeded	*no telegram* *send following telegram once* *send cyclically*	Response to exceeding threshold
telegram	*Switch-on command* *Switch-off command* *no priority* *OFF (up)* *ON (down)* *0%, 5%, 10%, 15%, 20%, 25%* *30%, 35%, 40%, 45%, 50%* *55%, 60%, 65%, 70%, 75%* *80%, 85%, 90%, 95%, 100%* manual input: 0 .. 255	What is sent if the threshold is exceeded or underrun? The parameter values depend on the type of telegram selected: With *switching command* With *Priority* With *Percentage value* With *Value from 0 to 255*
If humidity threshold 1 is underrun	*no telegram* *send following telegram once* *send cyclically*	Response to underrunning threshold
telegram	see above	see above
Cycle time for humidity threshold 1 (if available)	*every minute, every 2 minutes* *every 3 minutes, every 5 minutes* *every 10 minutes, every 15 minutes* *every 20 minutes, every 30 minutes* *every 45 minutes, every 60 minutes*	At what time interval are the cyclic telegrams to be sent again?

Continuation:

Designation	Values	Application
Behaviour when setting the lock	*Ignore lock*	This threshold cannot be disabled
	do not send	The threshold will not send as long as the disable object is set
	as with underrun threshold	When setting the disable object, the threshold sends the same telegram as with threshold underrun.
	as with exceeded threshold	When setting the disable object, the threshold sends the same telegram as with exceeding the threshold.
Behaviour when cancelling the lock	*do not send*	no reaction
	update	send current status

3.3.9 The Humidity ventilation *parameter page*

Table 13

Designation	Values	Application
Send given value:	*(Input as number from 0 to 255)* *(Input as percentage)*	Input format for fan control. This setting is not relevant for the actuator.
if relative humidity is below threshold 1	manual input 0..255 or 0..100 %	Ventilation speeds depending on relative humidity
if relative humidity between thresholds 1 and 2	manual input 0..255 or 0..100 %	
if relative humidity between thresholds 2 and 3	manual input 0..255 or 0..100 %	
if relative humidity is above threshold 3	manual input 0..255 or 0..100 %	
Behaviour when setting the lock	*Ignore lock* *do not send* *send following value*	This threshold cannot be disabled The threshold will not send as long as the disable object is set Send a value when setting disable object.
Value if disabled	*0%, 5%, 10%, 15%, 20%, 25%* *30%, 35%, 40%, 45%, 50%* *55%, 60%, 65%, 70%, 75%* *80%, 85%, 90%, 95%, 100%*	Value to be sent when the disable object is set
Behaviour when cancelling the lock	*do not send* *update*	no reaction send current fan actuating value

3.3.10 The Relative humidity scenes*parameter page*

Send given scene if:

Table 14:

Designation	Values	Application
relative humidity is below threshold 1	*Scene 1 .. scene 64*	Setting of scene numbers to be sent depending on relative humidity
relative humidity between thresholds 1 and 2	*Scene 1 .. scene 64*	
relative humidity between thresholds 2 and 3	*Scene 1 .. scene 64*	
relative humidity is greater than threshold 3	*Scene 1 .. scene 64*	
Behaviour when setting the lock	*Ignore lock* *do not send* *send scene*	The scene object cannot be disabled The scene object will not send as long as the disable object is set Send a value when setting disable object.
scene if disabled	*Scene 1 .. scene 64*	Scene to be sent when the disable object is set
Behaviour when cancelling the lock	*do not send* *update*	no reaction send current scene

3.3.11 Temperature threshold *parameter page*

Designation	Values	Application
Temperature threshold	1 °C .. 40 °C Default value = 15 °C	Input of desired temperature threshold in °C
Hysteresis	1.0 °C, 1.5 °C 2.0 °C, 2.5 °C	The hysteresis prevents frequent switching after small temperature changes. See appendix: Hysteresis
Telegram type for temperature threshold	*Switching command* *Priority* *Value as percentage* *Value from 0 to 255*	The threshold sends: Switching telegrams Priority telegrams Any percentage value Any value between 0 and 255
If temperature threshold is underrun	*no telegram* *send following telegram once* *send cyclically*	Response to exceeding threshold
telegram	*Switch-on command* *Switch-off command* *no priority* *OFF (up)* *ON (down)* *0%, 5%, 10%, 15%, 20%, 25%* *30%, 35%, 40%, 45%, 50%* *55%, 60%, 65%, 70%, 75%* *80%, 85%, 90%, 95%, 100%* manual input: 0 .. 255	What is sent if the threshold is exceeded or underrun? The parameter values depend on the type of telegram selected: With *switching command* With *Priority* With *Percentage value* With *Value from 0 to 255*
If temperature threshold underrun	*no telegram* *send following telegram once* *send cyclically*	Response to underrunning threshold
telegram	see above	see above
Cycle time for temperature threshold (if available)	*every minute, every 2 minutes* *every 3 minutes, every 5 minutes* *every 10 minutes, every 15 minutes* *every 20 minutes, every 30 minutes* *every 45 minutes, every 60 minutes*	At what time interval are the cyclic telegrams to be sent again?

Continuation:

Designation	Values	Application
Behaviour when setting the lock	*Ignore lock*	This threshold cannot be disabled
	do not send	The threshold will not send as long as the disable object is set
	as with underrun threshold	When setting the disable object, the threshold sends the same telegram as with threshold underrun.
	as with exceeded threshold	When setting the disable object, the threshold sends the same telegram as with exceeding the threshold.
Behaviour when cancelling the lock	*do not send*	no reaction
	update	send current status

4 Appendix

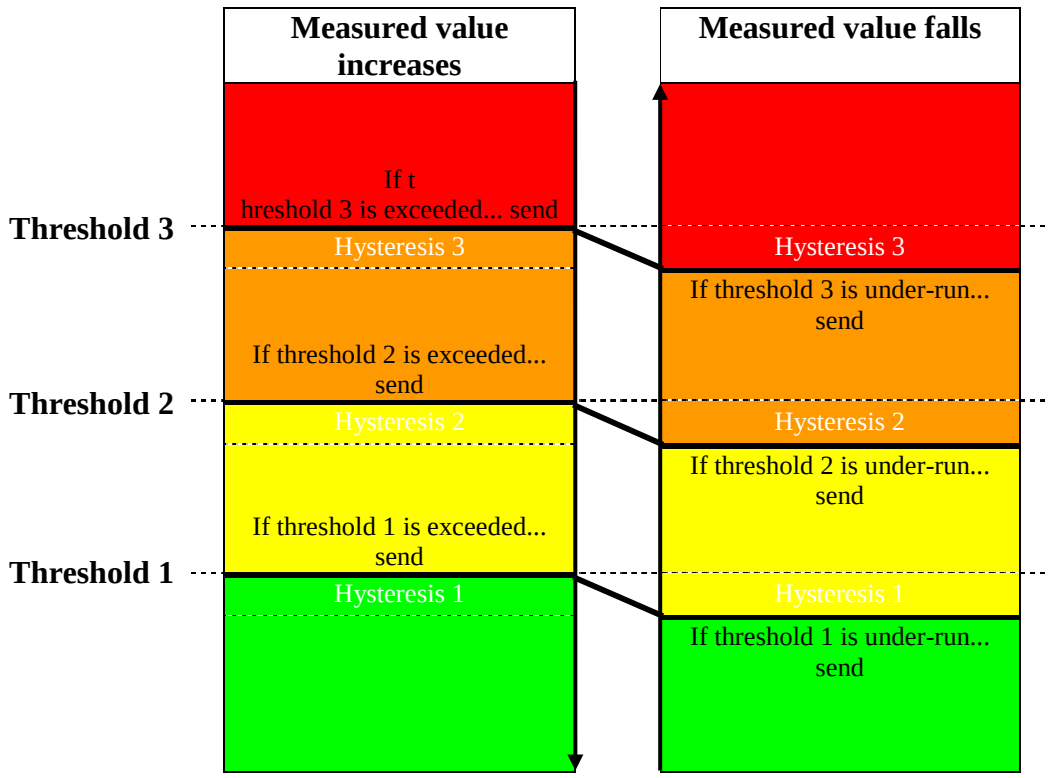
4.1 Hysteresis

The hysteresis determines the difference between switching on and off value.
Here, it is completely negative.

Without hysteresis, the threshold control would switch on and off continuously provided the actual value is within the setpoint value range.

Example CO_2 threshold:
Threshold 1 = 500 ppm, hysteresis = 100 ppm.
The threshold is exceeded if the actual value rises to, or above, 500 ppm.
It is underrun if the actual value falls below the "hysteresis setpoint value"
i.e. 500 ppm – 100 ppm = 400 ppm drops.

4.2 Switching response of thresholds for CO_2 and humidity



The telegram of the last exceeded/under run threshold is sent.
If several thresholds are exceeded from one measurement cycle to the next then the telegrams are sent at an increasing value (from thresholds 1-3) whereas with cyclical sending, only the telegram for the last exceeded threshold is sent cyclically. The same applies with falling values.

4.3 Fan control

Note the following for fan control using percentage values:

The KNX sensor sends a percentage value as the control variable for each threshold.
This control variable (in accordance with the set threshold value) is transferred to the fan coil actuator as a fan stage between 0 and 3.

Important: The sent control variable should always be higher than the threshold setting of the fan coil actuator.

Example:

Threshold value for Fan stage	Set values with KNX sensor	Recommended values for the fan coil actuator
1	20 %	10 %
2	50 %	40 %
3	80 %	70 %

If fan stage 2 is selected using the button, the relevant object
(object 9 or 19) sends the control variable 50 %.
As the threshold value for stage 2 in the fan coil actuator is set at 40 % , the received control variable of 50 % is clearly allocated to fan stage 2 and accepted by the fan.

4.4 Relative humidity

Relative humidity is a measurement for the saturation of air with water vapour.
This is expressed as the relationship to the maximum amount absorbed at the corresponding temperature.

Example: A relative humidity of 60 % means that the air contains 60 % of the maximum absorbable amount of water vapour.
At 100 % the air is completely saturated and cannot absorb any more humidity.

Condensation or mist are produced if the volume of available water vapour exceeds this 100 % threshold .

The ability of air to absorb water vapour depends on temperature.
Warm air can absorb more water vapour than cold air.

4.5 CO_2 guide values

200 000		Fatal danger
100 000		Extinction of a candle flame
40 000…50 000		Concentration of the air we breathe (at exhalation)
5000		Occupational exposure limit (OEL)
4000		Badly ventilated room
1000		Sense of poor air quality
330…350		Outside air

All values in ppm (parts per million)