

# WET 112 KNX Room Air Sensor

KNX application description



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# 1 Functional characteristics

WET 112 is a combined sensor for CO<sub>2</sub>, 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.

## 1.1 Operation

The device does not have to be operated manually.

The LED and the switch for the physical address are accessible when cover is removed. If necessary, the switch 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 CO<sub>2</sub> sensor.

## 1.2 Benefits

- Combined measurement of temperature, humidity and CO<sub>2</sub> content in one device.
- Power supply via bus connection, no main power required.

## 2 Technical data

### 2.1 Technical data

Power supply:	bus voltage
Permitted operating temperature:	0 °C ... + 45°C
Current 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:	74 x 74 x 28mm (LxWxH)

#### Measuring ranges:

CO <sub>2</sub>	300 – 9999 ppm
Humidity:	1 – 100 %
Temperature:	0 – 40 °C

#### Accuracy:

CO <sub>2</sub>	300-1000 ppm: +/- 120 ppm 1000-2000 ppm: +/- 250 ppm 2000-5000 ppm: +/- 300 ppm
Humidity:	+/- 5 %
Temperature:	+/- 1 °C (depending on installation)

# 3 WET 112 application program

## 3.1 ETS program

<b>Manufacturer</b>	WindowMaster A/S
<b>Product family</b>	Phys. sensors
<b>Product type</b>	Room air sensor
<b>Application program</b>	WET 112: CO2, Temperature and humidity sensor V1.0

The ETS program can be found on our home page: <http://shop.windowmaster.com>

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

## 3.2 Communication objects

Table 1: Overview

No.	Function	Object name	Type & DPT	Flags			
				K	L	S	T
0	Physical value	CO <sub>2</sub> 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 <sub>2</sub> threshold 1	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
4	input	Lock CO <sub>2</sub> threshold 1	1 bit 1.001	✓	✓	✓	
5	Switching	CO <sub>2</sub> threshold 2	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
6	input	Lock CO <sub>2</sub> threshold 2	1 bit 1.001	✓	✓	✓	
7	Switching	CO <sub>2</sub> threshold 3	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
8	input	Lock CO <sub>2</sub> threshold 3	1 bit 1.001	✓	✓	✓	
9	Value for ventilation actuator	Ventilation of CO <sub>2</sub>	5.001	✓	✓		✓
10	input	Lock ventilation of CO <sub>2</sub>	1 bit 1.001	✓	✓	✓	✓
				K	L	S	T

Continuation:

No.	Function	Object name	Type & DPT	Flags			
				K	L	S	T
11	Scene control	CO <sub>2</sub> scenes	1 byte 18.001	✓	✓		✓
12	input	Lock CO <sub>2</sub> scenes	1 bit 1.001	✓	✓	✓	
13	switch	Humidity threshold 1	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
14	input	Lock humidity threshold 1	1 bit 1.001	✓	✓	✓	
15	switch	Humidity threshold 2	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
16	input	Lock humidity threshold 2	1 bit 1.001	✓	✓	✓	
17	switch	Humidity threshold 3	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
18	input	Lock humidity threshold 3	1 bit 1.001	✓	✓	✓	
19	Value for ventilation actuator	Ventilating relative humidity	1-byte 5.001 5.010	✓	✓		✓
20	input	Lock ventilating relative humidity	1 bit 1.001	✓	✓	✓	
21	Scene control	Relative humidity scenes	1 byte 18.001	✓	✓		✓
22	input	Lock relative humidity scenes	1 bit 1.001	✓	✓	✓	
				K	L	S	T

Continuation:

No.	Function	Object name	Type & DPT	Flags			
				K	L	S	T
23	switch	Temperature threshold	1 bit 1.001				
	Valuator		1 byte 5.001 5.010	✓	✓		✓
	Priority		2 bit 2.001				
24	input	Lock 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	✓		✓	
				K	L	S	T

Table 2: Communication flags

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



### 3.2.1 Description of objects

- **Object 0 "CO<sub>2</sub> value"**

This object sends the CO<sub>2</sub> content 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<sub>2</sub>"**

Output object for the first CO<sub>2</sub> threshold. See [Overview table](#).

- **Object 4 "Lock threshold 1 CO<sub>2</sub>"**

Lock object for the first CO<sub>2</sub> threshold.

- **Object 5 "Threshold 2 CO<sub>2</sub>"**

Output object for the second CO<sub>2</sub> threshold. See [Overview table](#).

- **Object 6 "Lock threshold 2 CO<sub>2</sub>"**

Lock object for the second CO<sub>2</sub> threshold.

- **Object 7 "Threshold 3 CO<sub>2</sub>"**

Output object for the third CO<sub>2</sub> threshold. See [Overview table](#).

- **Object 8 "Lock threshold 3 CO<sub>2</sub>"**

Lock object for the third CO<sub>2</sub> threshold.

- **Object 9 "Ventilation of CO<sub>2</sub>"**

Actuating value for ventilation actuator (1 byte telegram).

This object is used if ventilation is only to be activated by the CO<sub>2</sub> 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 "Lock CO<sub>2</sub> ventilation"**

Lock object for CO<sub>2</sub> dependent ventilation

1 = Lock

0 = Enable

- **Object 11 "CO<sub>2</sub>scenes"**

Transmits the CO<sub>2</sub> dependent scene retrieval code

**Table 3**

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<sub>2</sub> vent"**

Lock object for the CO<sub>2</sub> scenes.

1 = Lock

0 = Enable

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

Output object for the first humidity threshold.  
See [Overview table](#).

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

Lock object for the first CO<sub>2</sub> humidity threshold.

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

Output object for the second humidity threshold.  
See [Overview table](#).

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

Lock object for the second CO<sub>2</sub> humidity threshold.

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

Output object for the third humidity threshold.  
See [Overview table](#).

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

Lock object for the third CO<sub>2</sub> humidity threshold.

- **Object 19 "Ventilating 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 "Lock ventilating relative humidity"**

Lock object for humidity dependent ventilation

1 = Lock

0 = Enable

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

Sends the humidity dependent scene retrieval code .

See above, [Table 4](#).

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

Lock object for the humidity scenes.

1 = Lock

0 = Enable

### Object 23 "Temperature threshold"

Output object for the temperature threshold.  
See [Overview table](#).

- **Object 24 "Lock temperature threshold"**

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

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

Actuating value for ventilation actuator (1 byte telegram).  
This object is used if ventilation is to be activated by CO<sub>2</sub> 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 CO<sub>2</sub> and humidity"**

Activates or deactivates the LEDs to display the CO<sub>2</sub> and humidity thresholds.  
This option is applied on the [Measured values](#) parameter page.

0 = Switch LEDs off completely  
1 = Operate LEDs.

## 3.3 Parameters

### 3.3.1 Overview

Table 4

Name	Description
<b>Measured values</b>	Settings for sending CO <sub>2</sub> content, relative humidity and temperature
<b>CO<sub>2</sub> thresholds</b>	Setting the 3 CO <sub>2</sub> thresholds
<b>Thresholds 1, 2, 3 CO<sub>2</sub></b>	Setting of response to exceeding or not reaching the relevant CO <sub>2</sub> threshold.
<b>Ventilating CO<sub>2</sub></b>	Setting of ventilation speed depending on CO <sub>2</sub> content
<b>CO<sub>2</sub> scenes</b>	Setting of scene numbers to be sent depending on CO <sub>2</sub> content
<b>Humidity thresholds</b>	Setting of the 3 humidity thresholds
<b>Humidity thresholds 1, 2, 3</b>	Setting of response to exceeding or not reaching the relevant humidity threshold.
<b>Ventilating humidity</b>	Setting of ventilation speed depending on relative humidity
<b>Humidity scenes</b>	Setting of scene numbers to be sent depending on relative humidity
<b>Temperature threshold</b>	Setting of temperature threshold and reaction to exceeding or under-running.

### 3.3.2 The Measured values *parameter page*

Table 5

Designation	Values	Application
<i>CO<sub>2</sub> content sends on change in</i>	<i>not due to a change</i>  <i>100 ppm</i> <i>200 ppm</i> <i>300 ppm</i> <i>500 ppm</i>	only send cyclically (if enabled)  Send if the value has changed since the last transmission by the selected amount
<i>Send CO<sub>2</sub> content cyclically</i>	<i>do not send cyclically</i> <i>every minute</i> <i>every 2 minutes</i> <i>every 3 minutes</i>  <i>...</i> <i>every 30 minutes</i> <i>every 45 minutes</i> <i>every 60 minutes</i>	How often should the current measured value be resent?
<i>Send humidity value in the event of a change in ...</i>	<i>not due to a change</i>  <i>2 %</i> <i>3 %</i> <i>5 %</i> <i>10%</i>	only send cyclically (if enabled)  Send if the value has changed since the last transmission by the selected amount
<i>Send humidity value cyclically</i>	<i>do not send cyclically</i> <i>every minute</i> <i>every 2 minutes</i> <i>every 3 minutes</i>  <i>...</i> <i>every 30 minutes</i> <i>every 45 minutes</i> <i>every 60 minutes</i>	How often should the current measured value be resent?
<i>LEDs for CO<sub>2</sub> and humidity</i>	<i>always off</i>  <i>always on</i>  <i>switchable via object 26</i>	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.
<i>Transmit temperature in the event of change of</i>	<i>not due to a change</i>  <i>0.5 °C, 1.0 °C</i> <i>1.5 °C, 2.0 °C</i> <i>2.5 °C</i>	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 temperature. Example: Temperature = 20°C sent temperature = 21°C Adjustment value = 10 (i.e. 10 x 0.1°C)

### 3.3.3 The CO<sub>2</sub>threshold parameter page

#### Essential condition for setting thresholds:

*Threshold 1* must always be smaller than *threshold 2* and *threshold 2* smaller than *threshold 3*.

**Table 6**

Designation	Values	Application
CO <sub>2</sub> threshold 1 (in 10 ppm)	manual input: 10 .. 255	Input of first CO <sub>2</sub> threshold value in 10 ppm. <b>Example: 20 is equivalent to 200 ppm</b>
Hysteresis	100 ppm 200 ppm 300 ppm 500 ppm	The hysteresis prevents frequent switching after small changes in measured values. See accessories: <a href="#">Hysteresis</a>
CO <sub>2</sub> threshold 2 (in 10 ppm)	manual input: 10 .. 255	Input of second CO <sub>2</sub> threshold
Hysteresis	see above	see above
CO <sub>2</sub> threshold 3 (in 10 ppm)	manual input: 10 .. 255	Input of third CO <sub>2</sub> threshold

### 3.3.4 The 1, 2, 3 CO<sub>2</sub> thresholds parameter pages

The parameters are identical for all three CO<sub>2</sub> thresholds.  
Threshold 1 is given as an example.

**Table 7**

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

Continuation:

<b>Designation</b>	<b>Values</b>	<b>Application</b>
Behaviour when setting the lock	<i>Ignore lock</i> <i>do not send</i>  <i>as with under-run threshold</i>   <i>as with exceeded threshold</i>	This threshold cannot be locked The threshold will not send as long as the lock object is set When setting the lock object, the threshold sends the same telegram as with threshold under-run. When setting the lock object, the threshold sends the same telegram as with exceeding the threshold.
Behaviour when cancelling the lock	<i>do not send</i> <i>update</i>	no reaction send current status

### 3.3.5 The *ventilation CO<sub>2</sub>* threshold parameter page

Table 8

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



### 3.3.6 The CO<sub>2</sub>scenes parameter page

Send given scene if:

**Table 9:**

Designation	Values	Application
<i>CO<sub>2</sub> smaller threshold 1</i>	<i>Scene 1 .. scene 64</i>	Setting of scene numbers to be sent depending on CO <sub>2</sub> content.
<i>CO<sub>2</sub> between threshold 1 and 2</i>	<i>Scene 1 .. scene 64</i>	
<i>CO<sub>2</sub> between threshold 2 and 3</i>	<i>Scene 1 .. scene 64</i>	
<i>CO<sub>2</sub> greater threshold 3</i>	<i>Scene 1 .. scene 64</i>	
<i>Behaviour when setting the lock</i>	<i>Ignore lock</i>  <i>do not send</i>  <i>send scene</i>	The scene object cannot be locked The scene object will not send as long as the lock object is set Send a value when setting lock object.
<i>scene if locked</i>	<i>Scene 1 .. scene 64</i>	Scene to be sent when the lock object is set
<i>Behaviour when cancelling the lock</i>	<i>do not send</i>  <i>update</i>	no reaction send current scene

### 3.3.7 The humidity threshold *parameter page*

**Essential condition for setting thresholds:**

*Threshold 1* must always be smaller than *threshold 2* and *threshold 2* smaller than *threshold 3*.

**Table 10**

Designation	Values	Application
<i>Relative humidity threshold 1 (in %)</i>	Manual input 0 ..0.100	Input of the first humidity threshold value in percent.
<i>Hysteresis</i>	1 %, 2 %, 3 % 5 %, 7 %, 10 %	The hysteresis prevents frequent switching after small changes in measured values. See accessories: <a href="#">Hysteresis</a>
<i>Relative humidity threshold 2 (in %)</i>	Manual input 0 ..0.100	Input of the second humidity threshold value in percent.
<i>Hysteresis</i>	1 %, 2 %, 3 % 5 %, 7 %, 10 %	see above.
<i>Relative humidity threshold 3 (in %)</i>	Manual input 0 ..0.100	Input of the third humidity threshold value in percent.
<i>Hysteresis</i>	1 %, 2 %, 3 % 5 %, 7 %, 10 %	see above.

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

Table 11

Designation	Values	Application
Telegram type for humidity threshold 1	<p><i>Switching command</i></p> <p><i>Priority</i></p> <p><i>Value as percentage</i></p> <p><i>Value from 0 to 255</i></p>	<p>The threshold sends: Switching telegrams</p> <p>Priority telegrams</p> <p>A percentage value <b>Important:</b> See appendix <a href="#">Fan control</a></p> <p>Any value between 0 and 255</p>
If humidity threshold 1 is exceeded	<p><i>no telegram</i></p> <p><i>send following telegram once</i></p> <p><i>send cyclically</i></p>	Response to exceeding threshold
Telegram	<p><i>Switch-on command</i></p> <p><i>Switch-off command</i></p>	What is sent if the threshold is exceeded or under-run? The parameter values depend on the type of telegram selected: With <i>switching command</i>
	<p><i>no priority</i></p> <p><i>OFF (up)</i></p> <p><i>ON (down)</i></p>	With <i>priority</i>
	<p><i>0%, 5%, 10%, 15%, 20%, 25%</i></p> <p><i>30%, 35%, 40%, 45%, 50%</i></p> <p><i>55%, 60%, 65%, 70%, 75%</i></p> <p><i>80%, 85%, 90%, 95%, 100%</i></p>	With <i>percentage value</i>
	<p><i>manual input: 0 .. 255</i></p>	With <i>Value from 0 to 255</i>
If humidity threshold 1 is under-run	<p><i>no telegram</i></p> <p><i>send following telegram once</i></p> <p><i>send cyclically</i></p>	Response to under-running threshold
Telegram	see above	see above
Cycle time for humidity threshold 1 (if available)	<p><i>every minute, every 2 minutes</i></p> <p><i>every 3 minutes, every 5 minutes</i></p> <p><i>every 10 minutes, every 15 minutes</i></p> <p><i>every 20 minutes, every 30 minutes</i></p> <p><i>every 45 minutes, every 60 minutes</i></p>	At what time interval are the cyclic telegrams to be sent again?
Behaviour when setting the lock	<p><i>Ignore lock</i></p> <p><i>do not send</i></p> <p><i>as with under-run threshold</i></p> <p><i>as with exceeded threshold</i></p>	<p>This threshold cannot be locked</p> <p>The threshold will not send as long as the lock object is set</p> <p>When setting the lock object, the threshold sends the same telegram as with threshold under-run.</p> <p>When setting the lock object, the threshold sends the same telegram as with exceeding the threshold.</p>
Behaviour when cancelling the lock	<p><i>do not send</i></p> <p><i>update</i></p>	<p>no reaction</p> <p>send current status</p>

### 3.3.9 The Humidity ventilation *parameter page*

Table 12

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 less than 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 greater than threshold 3	manual input 0..255 or 0..100 %	
Behaviour when setting the lock	Ignore lock	This threshold cannot be locked
	do not send	The threshold will not send as long as the lock object is set
	send following value	Send a value when setting lock object.
Value if locked	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 lock 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 13:

Designation	Values	Application
relative humidity is less than 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	The scene object cannot be locked
	do not send	The scene object will not send as long as the lock object is set
	send scene	Send a value when setting lock object.
scene if locked	Scene 1 .. scene 64	Scene to be sent when the lock 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 accessories: <a href="#">Hysteresis</a>
Telegram type for temperature threshold	<i>Switching command</i> <i>Priority</i> <i>Value as percentage</i> <i>Value from 0 to 255</i>	The threshold sends: Switching telegrams Priority telegrams Any percentage value Any value between 0 and 255
If temperature threshold is under-run	<i>no telegram</i> <i>send following telegram once</i> <i>send cyclically</i>	Response to exceeding threshold
Telegram	<i>Switch-on command</i> <i>Switch-off command</i>	What is sent if the threshold is exceeded or under-run? The parameter values depend on the type of telegram selected: With <i>switching command</i>
	<i>no priority</i> <i>OFF (up)</i> <i>ON (down)</i>	With <i>priority</i>
	<i>0%, 5%, 10%, 15%, 20%, 25%</i> <i>30%, 35%, 40%, 45%, 50%</i> <i>55%, 60%, 65%, 70%, 75%</i> <i>80%, 85%, 90%, 95%, 100%</i>	With <i>percentage value</i>
	<i>manual input: 0 .. 255</i>	With <i>Value from 0 to 255</i>
If temperature threshold under-run	<i>no telegram</i> <i>send following telegram once</i> <i>send cyclically</i>	Response to under-running threshold
Telegram	see above	see above
Cycle time for temperature threshold (if available)	<i>every minute, every 2 minutes</i> <i>every 3 minutes, every 5 minutes</i> <i>every 10 minutes, every 15 minutes</i> <i>every 20 minutes, every 30 minutes</i> <i>every 45 minutes, every 60 minutes</i>	At what time interval are the cyclic telegrams to be sent again?
Behaviour when setting the lock	<i>Ignore lock</i> <i>do not send</i>  <i>as with under-run threshold</i>   <i>as with exceeded threshold</i>	This threshold cannot be locked The threshold will not send as long as the lock object is set When setting the lock object, the threshold sends the same telegram as with threshold under-run. When setting the lock object, the threshold sends the same telegram as with exceeding the threshold.
Behaviour when cancelling the lock	<i>do not send</i> <i>update</i>	no reaction send current status

## 4 Typical applications:

### 4.1 Control of air quality via CO<sub>2</sub> dependent ventilation

A fan will provide fresh air if the CO<sub>2</sub> content exceeds the set thresholds.

#### 4.1.1 Devices

- WET 112 KNX
- FCA 1 (492 0 200)

#### 4.1.2 Overview



Figure 1

#### 4.1.3 Objects and links

Table 14

No.	WET 112 KNX	No.	FCA 1	Comments
	Object name		Object name	
9	CO <sub>2</sub> ventilation	0	Actuating value for fan	Ventilation control depending on CO <sub>2</sub> content.

#### 4.1.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

##### WET 112

The standard values can be used here.

The desired ventilation speeds are set on the *CO<sub>2</sub> ventilation* parameter page. See accessories: [Fan control](#).

Table 15: FCA 1

Parameter page	Parameters	Setting
<i>General</i>	<i>Supported function</i>	<i>Ventilation</i>

## 4.2 Control of air quality via CO<sub>2</sub> and humidity dependent ventilation

A fan will provide fresh air if the humidity or CO<sub>2</sub> content exceeds the set thresholds.

### 4.2.1 Devices

- WET 112 KNX
- FCA 1 (492 0 200)

### 4.2.2 Overview



Figure 2

### 4.2.3 Objects and links

Table 16

No.	WET 112 KNX	No.	FCA 1	Comments
	Object name		Object name	
25	Highest active ventilation value	0	Actuating value for fan	Fan control dependent on CO <sub>2</sub> and relative humidity

### 4.2.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

#### WET 112

The standard values can be used here.

The desired ventilation speeds are set on the *Ventilation of CO<sub>2</sub>* and *Humidity ventilation* parameter pages.

See accessories: [Fan control](#)

Table 17: FCA 1

Parameter page	Parameters	Setting
<i>General</i>	<i>Supported function</i>	<i>Ventilation</i>

### 4.3 Control of air quality plus 3 stage manual fan control

A fan will provide fresh air if the humidity or CO<sub>2</sub> content exceeds the set thresholds. There is a choice of 3 manual fan stages (forced operation mode). A 4-way sensor interface is used here (TA 4).

Button layout:

Channel / button 1	Start forced stage 1
Channel / button 2	Start forced stage 2
Channel / button 3	Start forced stage 3
Channel / button 4	Restore automatic operation

After reset or restoration of bus power the fan operates in automatic mode, i.e. depending on CO<sub>2</sub> content and humidity.

If any of buttons 1...3 are pressed, FCA 1 switches to forced operation and assumes the associated fan stage configured in TA 4.

Automatic mode can be restored using button 4.

#### 4.3.1 Devices

- WET 112 KNX
- FCA 1 (492 0 200)
- TA 4 (496 9 204)

#### 4.3.2 Overview

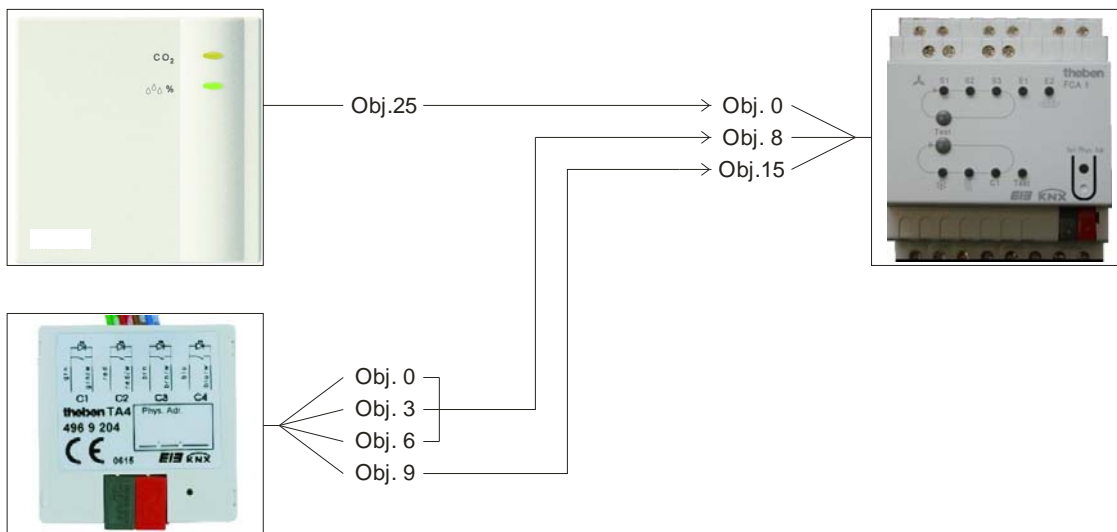


Figure 3

### 4.3.3 Objects and links

Table 18

No.	WET 112 KNX	No.	FCA 1	Comments
	Object name		Object name	
25	Highest active ventilation value	0	Actuating value for fan	Fan control dependent on CO <sub>2</sub> and relative humidity

Table 19:

No.	TA 4	No.	FCA 1	Comments
	Object name		Object name	
0	Channel 1 Valuator	8	Forced fan stage	Manual stage 1 in forced operation mode
3	Channel 2 Valuator			Manual stage 2 in forced operation mode
6	Channel 3 Valuator			Manual stage 3 in forced operation mode
9	Channel 4 switching	15	Fan auto/forced mode	Automatic mode: Fan is controlled by WET 112.

### 4.3.4 Important parameter settings

Standard or customer-defined parameter settings apply to unlisted parameters.

#### WET 112

The standard values can be used here.

The desired ventilation speeds are set on the *Ventilation of CO<sub>2</sub>* and *Humidity ventilation* parameter pages.

Table 20: FCA 1

Parameter page	Parameters	Setting
<i>General</i>	<i>Supported function</i>	<i>Ventilation</i>
	<i>Switch fans between auto and forced</i>	<i>via object auto/forced, <b>Forced = 0</b></i>

Table 21: TA 4

Parameter page	Parameters	Setting
Channel 1..3	<i>Channel function</i>	<i>Switch/key</i>
	<i>Object type</i>	<i>Value 0.. 255 (1 byte)</i>
	<i>Response to rising edge</i>	<i>desired ventilation speed for each forced stage</i>
	<i>Response to falling edge</i>	<i>None</i>
Channel 4	<i>Channel function</i>	<i>Switch/key</i>
	<i>Object type</i>	<i>Switching (1-bit)</i>
	<i>Response to rising edge</i>	<i>On</i>
	<i>Response to falling edge</i>	<i>None</i>
	<i>Response after restoration of the bus supply</i>	<i>None</i>



## 4.4 Dew point alarm for cooling system

A RAM 713 FC room thermostat and an FCA 1 fan coil actuator control a cooling system.

Once humidity has reached a set threshold value (80 %), an alarm telegram is sent to prevent further cooling and an increase in humidity

### 4.4.1 Devices

- WET 112 KNX
- FCA 1 (492 0 200)
- RAM 713 FC

### 4.4.2 Overview

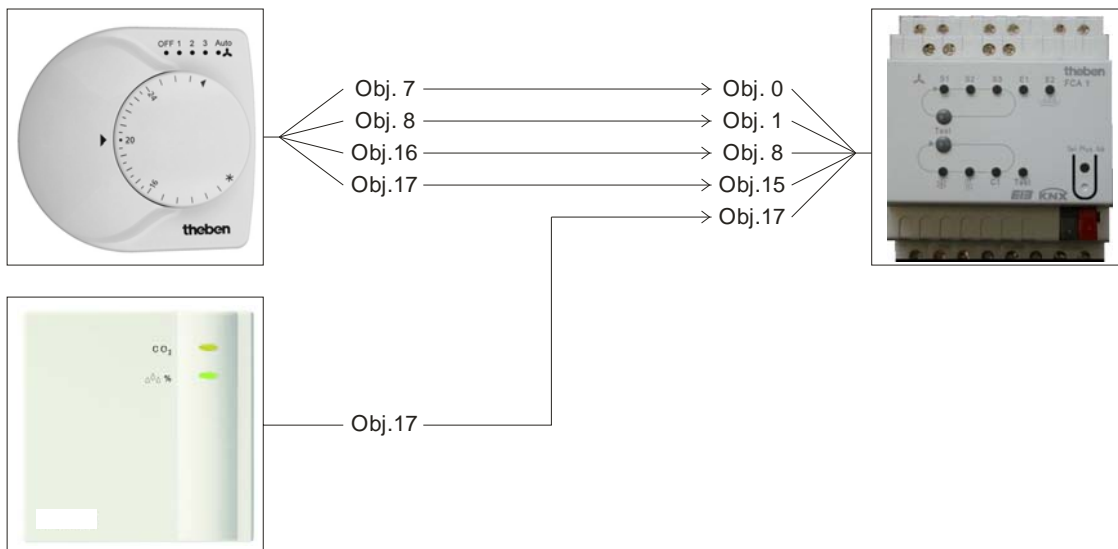


Figure 4

### 4.4.3 Objects and links

Table 22

No.	WET 112 KNX	No.	FCA 1	Comments
	Object name		Object name	
17	<i>Humidity threshold 3</i>	17	<i>Dew point alarm</i>	Do not cool any further, humidity is too high.

**Table 23: Links**

No.	RAM 713 FC	No.	FCA 1	Comments
	Object name		Object name	
7	<i>Heating control variable</i>	0	<i>Heating control variable</i>	FCA receives the heating and cooling control variables from RAM 713 S
8	<i>Cooling control variable</i>	1	<i>Cooling control variable</i>	
16	<i>Forced fan stage</i>	8	<i>Forced fan stage</i>	% value for forced mode
17	<i>Fan forced/auto mode</i>	15	<i>Fan Forced = 1 / Auto = 0</i>	Trigger for forced mode

#### 4.4.4 Important parameter settings

Standard or customer-defined parameter settings apply for unlisted parameters.

**Table 24: WET 112**

Parameter page	Parameters	Setting
<i>Humidity thresholds</i>	<i>Relative humidity threshold 3 (in %)</i>	80 %
	<i>Hysteresis</i>	5 %
<i>Humidity threshold 3</i>	<i>Telegram type for humidity threshold 3</i>	<i>Switching command</i>
	<i>If humidity threshold 3 exceeded</i>	<i>send following telegram once</i>
	<i>Telegram</i>	<i>Switch-on command</i>
	<i>If humidity threshold 3 under run</i>	<i>Switch-off command</i>

**Table 25: FCA 1**

Parameter page	Parameters	Setting
<i>General</i>	<i>Supported function</i>	<i>Heating and cooling</i>
	<i>System type</i>	<i>4-pipe system</i>
	<i>Type of controller used</i>	<i>Remote controller</i>
<i>Heating valve</i>	<i>Type of valve</i>	<i>2-point</i>
<i>Cooling valve</i>	<i>Type of valve</i>	<i>2-point</i>

**Table 26: RAM 713 FC**

Parameter page	Parameters	Setting
<i>Settings</i>	<i>Device type</i>	<i>RAM 713 Fan Coil</i>
<i>Control</i>	<i>Fan coil system used</i>	<i>4-pipe system</i>
<i>Operation mode</i>	<i>Objects for determining the operation mode</i>	<i>alt.: Comfort, night, frost</i>

# 5 Appendix

## 5.1 Hysteresis

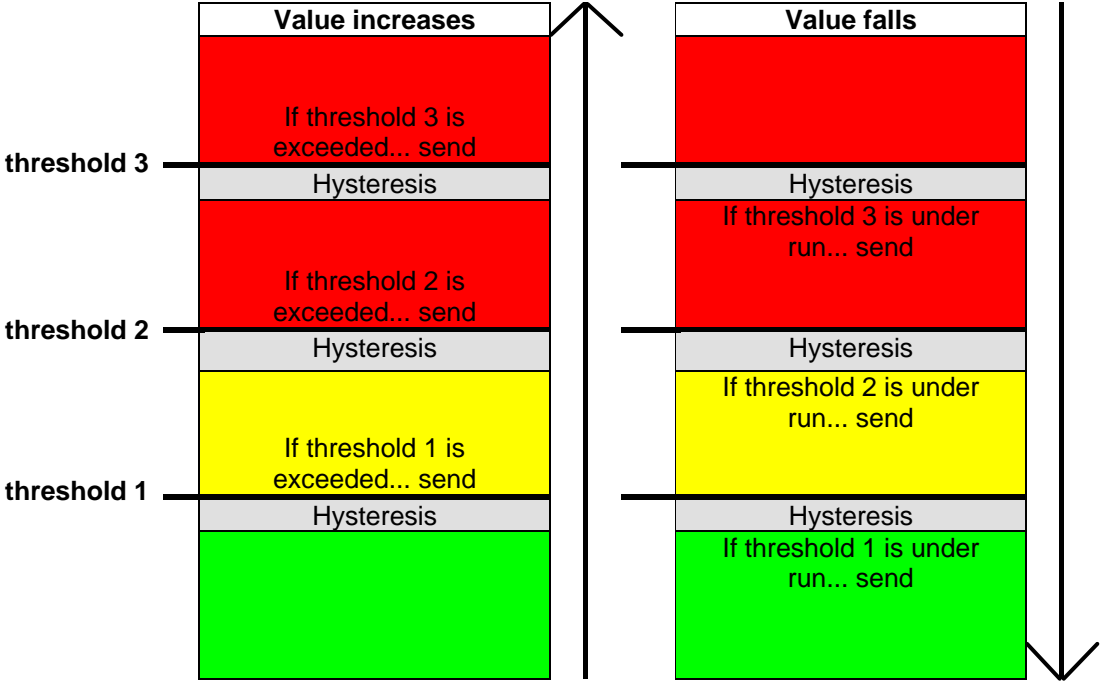
The hysteresis determines the difference between switching on and off value. With the WET 112 it is unilaterally negative.

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

**Example CO<sub>2</sub> threshold:**

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

## 5.2 Switching behaviour of thresholds for CO<sub>2</sub> 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.

### 5.3 Fan control

Note the following for fan control using percentage values:

WET 112 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 for WET 112	Recommended values for FCA 1
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.

### 5.4 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.

### 5.5 CO<sub>2</sub> guide values

