B.E.G. LUXOMAT® net

KNX Room Climate / Air Quality Controller

WS-VOC/HVAC/KNX

Operation mode / application description

93806

All device data can also be found here:

https://beg-luxomat.com/qr.php?prtno=93806

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1 General information

1.1 Basic information about the KNX-BUS

A KNX commissioning or project planning course is required to understand this manual.
In order to work with the B.E.G. applications, they must first be imported into ETS. ETS version 4 and higher is supported.

1.2 Symbolism

	This symbol indicates text passages which must be read to avoid errors during project planning and commissioning.

2 Basic settings

2.1 Start delay

When the KNX bus is switched on (bus voltage recovery), all devices connected to a line are immediately ready for operation. If many sensors that want to send initialisation or start telegrams are in one line, it can happen that the telegram load is too high when the bus voltage returns and telegrams may be lost.

This switch-on behaviour can be equalised by the start delay. The detector only sends its first telegrams after the start delay has elapsed.

It makes sense to select start delays of different lengths for the sensors/detectors within a line.

Basic settings	
Start delay in seconds	0 ... 255 **[0]**

3 Air quality

The VOC sensor does not measure the CO2 content in the air, but the proportion of volatile organic compounds (VOC) contained in the air. These volatile organic compounds originate from various sources, e.g. evaporations from furniture, building materials or cleaning agents, but also from human beings (deodorants, perfumes, alcohols contained in the breathing air and other evaporations) and are strictly speaking a more accurate indicator of air quality than CO2. However, this also means that the sensor cannot detect the level of CO2 in the air, even if the air would be saturated with CO2. There are two measurement methods selectable in ETS: VOC and CO2eq. CO2eq is a measurement method in which VOCs are measured, but the functionally equivalent amount or concentration of carbon dioxide is used as a reference. In both methods, the VOC content in the air is measured in ppm (parts per million) and can be output via a communication object. Furthermore, up to 4 limit values can be defined, which can also be sent to the bus. The air quality can be visualised directly via the LED traffic light integrated in the device, which can be activated or deactivated. When the LED traffic light is activated, the corresponding limit values can be set. Furthermore, a control system can also be activated with regard to air quality.

	ATTENTION
⚠	➜ Devices with the same history (installation site, operating hours) have similar VOC, CO2 values. ➜ Ventilation should be provided once a day to allow the unit to adapt to the CO2 level of 400 ppm or the VOC level of 0 ppm. It is better to ventilate for several hours overnight. In the case of regulation, a minimum forced ventilation of e.g. 10% can be helpful. ➜ If devices with different histories (installation location and running time) are merged, it can take several days for the offsets of the devices to be adjusted. ➜ The device measures a VOC level which is used to approximate a CO2 value. ➜ Rising CO2 values in an unoccupied room indicate an increase in VOC levels (vapours). In this case it may be better to operate the device in VOC mode. ➜ Chemical substances must be kept away from the device. When cleaning the surface of the device, please ensure that no cleaning agent may enter the device.

Air quality	
Measurement procedure	**CO2 equivalent**
	VOC

Air quality	
Traffic light	deactivated
	activated

Air quality	
Limit value x (x: 1 ... 4)	**deactivated**
	activated

Air quality	
Regulation	**deactivated**
	activated

No.	Name	Function	C	R	W	T	U
21	AS: Output (DPT 9.008)	CO2	X	-	-	X	-

3.1 AS: Air quality sensor

A correction value can be entered for the internal sensor to make an adjustment if the sensor is installed in a location that is unfavourable for measuring air quality. In addition to the internal VOC sensor, an external measured value can be used via a communication object. These two values can either be used separately (0 = not used) or the two values can be weighted (1 to 10 each). If a measured value fails, it is removed from the weighting and the remaining value is automatically used. The communication object for the external sensor can be either read out or monitored. Monitoring is based on the monitoring time, the duration of which can be set between 1 and 255 minutes. The sending behaviour of the subscriber who makes his value available via the communication object must match the monitoring time, i.e. the value must be available within the monitoring time defined here.

AS: Air quality sensor	
Correction in ppm	-500 ...+500 **(0)**

AS: Air quality sensor	
Weighting internal sensor (0 = not used)	0 ... 10 **(1)**

AS: Air quality sensor	
Weighting communication object (0 = not used)	0 ... 10 **(0)**

AS: Air quality sensor	
Read out communication object (only visible with “Weighting communication object ≠ 0”)	deactivated
	activated

AS: Air quality sensor	
Monitoring of the communication object (only visible with “Weighting communication object ≠ 0”)	deactivated
	activated

AS: Air quality sensor	
Monitoring time in minutes (only visible with “Weighting of communication job ≠ 0)	1 ... 255 **(10)**

No.	Name	Function	C	R	W	T	U
20	AS: Input (DPT 9.008)	Air quality	X	-	X	X	X

You can also define the sending behaviour. The measured or weighted value can be sent on change and/or cyclically. Sending of the value can also be deactivated. The change can be set as “absolute” or “relative”, where “absolute” is a value change in ppm and “relative” is a value change in percent. In addition, a duration for one cycle (cycle time) can be specified for the cyclical sending behaviour. The next telegram is then sent only after this duration has elapsed. The cycle time can also be set in minutes and seconds. In addition, the sending range can be restricted to reduce the bus load. For this purpose, a minimum and a maximum value in ppm is specified. The value is only sent if the change in value lies within this range.

AS: Air quality sensor	
Send value	deactivated
	on change
	cyclically
	on change and cyclically

AS: Air quality sensor	
Change (only visible with: send value “on change”)	**absolute**
	relative

AS: Air quality sensor	
Change in ppm (only visible with: send value “on change” and “absolute”)	5 ... 1000 **(10)**

AS: Air quality sensor	
Change in % (only visible with: send value “on change” and “relative”)	1 ... 50 **(10)**

AS: Air quality sensor	
Cycle time in minutes (only visible with: send value “cyclically”)	0 ... 255 **(10)**

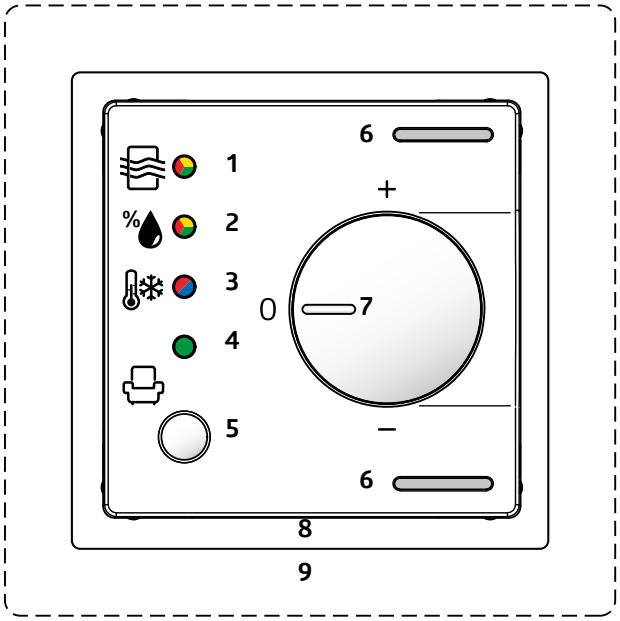
AS: Air quality sensor	
Cycle time in seconds (only visible with: send value “cyclically”)	0 ... 255 **(0)**

AS: Air quality sensor	
Restrict sending range	**deactivated**
	activated

AS: Air quality sensor	
Minimum value in ppm (only visible with: Restrict sending range “activated”)	0 ... 5000 **(0)**

AS: Air quality sensor	
Maximum value in ppm (only visible with: Restrict sending range “activated”)	0 ... 5000 **(5000)**

3.2 AS: Traffic light



The traffic light indicator **(1)** on the device can be used to display the air quality. The colour red stands for poor air quality, yellow for medium air quality and green for good air quality. The limit values for red and yellow can be set and a hysteresis can be defined.

AS: Traffic light	
Red >= value in ppm	0 ... 5000 **(1200)**

AS: Traffic light	
Yellow >= value in ppm	0 ... 5000 **(800)**

AS: Traffic light	
Hysteresis in ppm	1 ... 1000 **(100)**

3.3 AL Limit value 1 (to 4) Air quality

It is possible to define up to four limit values. If a limit value (ppm) is exceeded, the Output Limit value is activated. Different data point types can be selected. The limit values are given in ppm in a range between 0 and 5000 ppm. When the limit value is reached, a corresponding telegram can be sent to the bus.
The parameters for limit values 1 to 4 are identical and are designated here as limit value X.
First, the limit value can be set.

AL: Air quality Limit value X	
Limit value X in ppm	0 ... 5000 **(600), (800), (1000); (1200)**

The limit value can either be determined by parameter or overwritten by communication object.

AL: Air quality Limit value X	
Limit value	**determined by parameter**
	overwritable by object

No.	Name	Function	C	R	W	T	U
22	AL1: Input (DPT 9.008)	Limit value	X	-	X	-	-
25	AL2: Input (DPT 9.008)	Limit value	X	-	X	-	-
28	AL3: Input (DPT 9.008)	Limit value	X	-	X	-	-
31	AL4: Input (DPT 9.008)	Limit value	X	-	X	-	-

You can also decide whether the value should be overwritten during the next ETS download.

AL: Air quality Limit value X	
Value by ETS download (only visible with: limit value “can be overwritten by object”)	**overwritable**
	not overwritable

The hysteresis for the corresponding limit value can be set either in ppm (absolute) or in percent (relative).

AL: Air quality Limit value X	
Hysteresis	**absolute**
	relative

AL: Air quality Limit value X	
Hysteresis in ppm (only visible with: hysteresis “absolute”)	1 ... 1000 **(100)**

AL: Air quality Limit value X	
Change in % (only visible with: hysteresis “relative”)	1 ... 50 **(10)**

The “Activation / Deactivation” parameter can be used to define when and how an activated limit value is used (active) or not used (deactivated). For this purpose, the hysteresis can be subtracted from or added to the measured value.

AL: Air quality Limit value X	
Activation / deactivation	Active >= value; Deactive <= value - hysteresis
	Active >= value + hysteresis; Deactive <= value
	Active >= value + hysteresis; Deactive <= value - hysteresis
	Active <= value; Deactive >= value + hysteresis
	Active <= value - hysteresis; Deactive >= value
	Active <= value - hysteresis; Deactive >= value + hysteresis

Furthermore, a delay for activation or deactivation can be set. If the limit value (including hysteresis if necessary) is exceeded, a duration is defined which must elapse before the object is activated/deactivated.

AL: Air quality Limit value X	
Activation delay in minutes	0 ... 255 **(5)**

AL: Air quality Limit value X	
Deactivation delay in minutes	0 ... 255 **(5)**

You can set the sending behaviour as follows:

AL: Air quality Limit value X	
Sending behaviour	**on change**
	cyclically
	on change and cyclically

In addition, a duration for one cycle (cycle time) can be defined for the cyclical sending behaviour. The next telegram is then sent only after this duration has elapsed.

AL: Air quality Limit value X	
Cycle time in minutes (only visible with “cyclically”)	0 ... 255 **(10)**

AL: Air quality Limit value X	
Cycle time in seconds (only visible with “cyclically”)	0 ... 255 **(10)**

The output format (data point type) of the object offers many possibilities and depends on what should happen when a limit value is exceeded (e.g. opening a window). It can be defined as follows:

AL: Air quality Limit value X	
Output format	**1 bit (DPT 1.001)**
	1 byte percent (DPT 5.001)
	1 byte counter (DPT 5.010)
	1 byte counter with prefix (DPT 6.010)
	2 byte float (DPT 9.x)
	2 byte counter (DPT 7.x)
	2 byte counter with prefix (DPT 8.x)
	4 byte float (DPT 14.x)
	4 byte counter (DPT 12.x)
	4 byte counter with prefix (DPT 13.x)

AL: Air quality Limit value X	
Send value on activation	deactivated
	activated

AL: Air quality Limit value X	
Send value on deactivation	deactivated
	activated

No.	Name	Function	C	R	W	T	U
24	AL1: Output (DPT xxx)	Output Limit value 1	X	-	-	X	-
27	AL2: Output (DPT xxx)	Output Limit value 2	X	-	-	X	-
30	AL3: Output (DPT xxx)	Output Limit value 3	X	-	-	X	-
33	AL4: Output (DPT xxx)	Output Limit value 4	X	-	-	X	-

The limit value object can be assigned a lock. This serves to prevent unwanted start-up of connected actuators. The lock can be set with an ON telegram or with an OFF telegram and can be cancelled with the inverted telegram. When the lock is activated, a value can be sent or the current status is frozen. When the lock is deactivated, either 'unlock' or 'unlock' and the current status is sent.
On bus voltage recovery, you can select whether the lock is active or inactive.

AL: Air quality Limit value X	
Lock	**deactivated**
	activated

AL: Air quality Limit value X	
Locking with (only visible with: lock "activated")	**On telegram**
	Off telegram

AL: Air quality Limit value X	
Behaviour when the lock is activated (only visible with: lock "activated")	**send value**
	freeze

AL: Air quality Limit value X	
Value (only visible with: lock "send value")	0 / 1 **(1)**

AL: Air quality Limit value X	
Behaviour when the lock is deactivated (only visible with: lock "activated")	**entsperren und aktuellen Zustand senden**
	entsperren

AL: Air quality Limit value X	
During bus voltage recovery	**not locked**
	locked

No.	Name	Function	C	R	W	T	U
23	AL1: Input (DPT 1.001)	Lock	X	-	X	-	-
26	AL2: Input (DPT 1.001)	Lock	X	-	X	-	-
29	AL3: Output (DPT 1.001)	Lock	X	-	X	-	-
32	AL4: Output (DPT 1.001)	Lock	X	-	X	-	-

3.4 AR: Air quality regulator

First, the mode and initialisation behaviour can be defined. When selecting the mode, you can specify whether the air quality should be regulated to a set value (i.e. the air quality should always be kept relatively constant) or whether threshold values should be used (e.g. to reduce the bus load). The initialisation behaviour determines the state in which the control system operates after bus voltage failure. Either the initialisation values defined in the ETS can be used as a basis (see Chapter 3.4.1.1 Operating mode switchover) or the values that were stored in the communication object before bus voltage failure.

AR: Air quality regulator	
Mode	**regulation**
	threshold values

AR: Air quality regulator	
Initialisation behaviour	**restore state**
	use initialisation values

3.4.1 Operating mode Regulation

3.4.1.1 Operating mode switchover

There are two operating modes that can be defined more precisely: Lock and day. Lock has priority 1, day has priority 2. The type of telegram for the start of lock or daytime operation and the initialisation value used for the initialisation behaviour (see 3.4 AC: Air Quality Controller) can be defined.

AR: Air quality regulator Operating mode switchover	
Lock with (priority 1)	**On telegram**
	Off telegram

AR: Air quality regulator Operating mode switchover	
Initialisation value Lock	On telegram
	Off telegram

AR: Air quality regulator Operating mode switchover	
Day with (priority 2)	**On telegram**
	Off telegram

AR: Air quality regulator Operating mode switchover	
Initialisation value day	**On telegram**
	Off telegram

No.	Name	Function	C	R	W	T	U
42	AR: Input (DPT 1.001)	Lock (priority 1)	X	-	X	-	-
43	AR: Input (DPT 1.001)	Day/night (priority 2)	X	-	X	-	-

3.4.1.2 Set values

These parameters allow to define the set values (ppm) for day and night which are used for regulation.

AR: Air quality regulator Set values	
Day in ppm	400 ... 5000 **(600)**

AR: Air quality regulator Set values	
Night in ppm	400 ... 5000 **(700)**

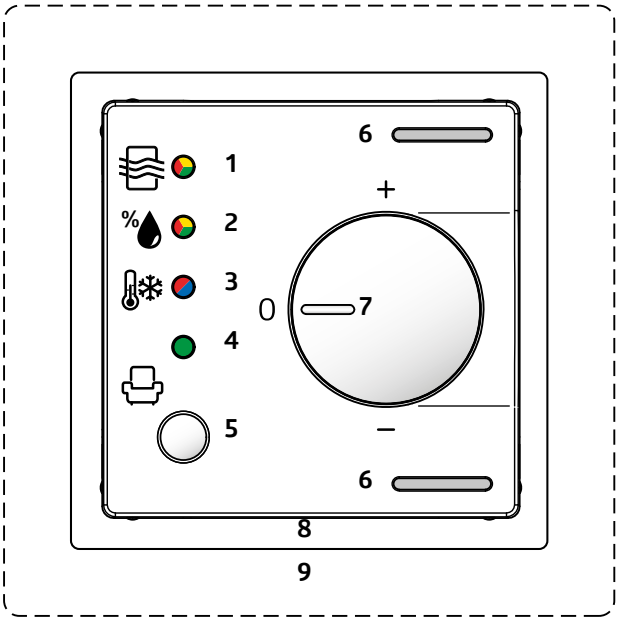
3.4.1.3 Set value adjustment

The set value adjustment allows to define an offset, i.e. a value range, for the specified set value (positive and negative). The device can be reset to the values specified in the ETS via the “Set value Reset” communication object.
In addition, the value can be specified as an absolute value (in ppm).

AR: Air quality regulator Set value adjustment	
Maximum positive offset in ppm	0 ... 1000 **(200)**

AR: Air quality regulator Set value adjustment	
Maximum negative offset in ppm	0 ... 1000 **(200)**

No.	Name	Function	C	R	W	T	U
40	AR: Input (DPT 9.008)	Set value absolutee	X	-	X	-	-
41	AR: Input (DPT 1.015)	Set value Reset	X	-	X	-	-



On the housing of the device there is a control knob **(Potentiometer 7)** with which the adjustment can be changed manually. The set value can be adjusted within the limits of the positive and negative offset either via the communication object in steps or by means of the rotary control. The "Set value Reset" communication object can be used to reset the device to the values specified in the ETS.
In addition, the value can be specified as an absolute value (in ppm).

ATTENTION	
⚠	ATTENTION: The rotary control can be used to offset **either** air quality **or** temperature **or** humidity!

AR: Air quality regulator Set value adjustment	
Verstellung über Potentiometer	**deactivated**
	activated

If this parameter is deactivated, the adjustment can be made via communication objects. It is possible to adjust the set value in steps. The step size can be defined accordingly in the ETS.

AR: Air quality regulator Set value adjustment	
Offset via step object (only visible with: adjustment via potentiometer "deactivated")	10 ... 100 **(50)**

No.	Name	Function	C	R	W	T	U
39	AR: Input (DPT 1.007)	Set value step (plus/minus)	X	-	X	-	-

3.4.1.4 Feedback

Feedback is provided via the set value. For the option “cyclically” or “on change and cyclically”, a cycle time can be defined.

AR: Air quality regulator Feedback	
Send set value	**deactivated**
	on change
	cyclically
	on change and cyclically

AR: Air quality regulator Feedback	
Change in ppm (only visible with: “on change”)	10 ... 100 **(10)**

AR: Air quality regulator Feedback	
Cycle time in minutes (only visible with “cyclically”)	1 ... 255 **(5)**

No.	Name	Function	C	R	W	T	U
44	AR: Output (DPT 9.008)	Set value	X	-	-	X	-

3.4.1.5 Controller

The controller can be set to be normal or inverse. This means that the control starts either at 0% or at 100%.

AR: Air quality regulator Controller	
Operating sense	**normal**
	inverse

Different types of controllers can be used:
If the PI controller is selected, the P-component can be set in ppm and the I-component in minutes (follow-up time). The P-component is responsible for the speed of the control. The smaller the set value, the more sensitive the control reacts and oscillation can occur. The higher the value is set, the smaller the oscillation and the set value is reached more slowly.
The I-component determines how fast the set value is corrected. If the follow-up time is short, there is a risk of continuous oscillation. The larger the time is set, the slower the set value is corrected.
With the 2-step controller, the fan runs continuously until the set value is reached, or a percentage value for ON is sent. When the set value is reached, the fan is switched off or a percentage value for OFF is sent.
The 2-step controller switching works like the 2-step controller, but with switching commands (ON/OFF) instead of percentage values.

AR: Air quality regulator Controller	
Controller type	**PI continuous**
	2-step %
	2-step switching

AR: Air quality regulator Controller	
P-component in ppm (only visible with “PI continuous”)	100 ... 2000 **(800)**

AR: Air quality regulator Controller	
I-component in minutes (only visible with “PI continuous”)	0 ... 255 **(15)**

AR: Air quality regulator Controller	
Hysteresis in ppm (only visible with “2 step %” and “2 step switching”)	0 ... 2000 **(100)**

No.	Name	Function	C	R	W	T	U
45	AR: Output (DPT 5.001)	Ventilation	X	-	-	X	-

3.4.1.6 Control variables

The values for fan control for day and night operation are defined here for both PI control and for 2-step % control. The standard maximum value is lower for night operation to keep noise from fans etc. low during the night.

AR: Air quality regulator Controller Control variables	
Change for sending in %	1 ... 10 **(3)**

AR: Air quality regulator Controller Control variables	
Cyclical sending in minutes	1 ... 60 **(0)**

AR: Air quality regulator Controller Control variables	
Day Minimum in %	0 ... 100 **(10)**

AR: Air quality regulator Controller Control variables	
Day Maximum in %	0 ... 100 **(100)**

AR: Air quality regulator Controller Control variables	
Night Minimum in %	(0 ... 100) **(10)**

AR: Air quality regulator Controller Control variables	
Night Maximum in %	0 ... 100 **(30)**

AR: Air quality regulator Controller Control variables	
Send value when locked	deactivated
	activated

AR: Air quality regulator Controller Control variables	
Locking value in %	0 ... 100 **(0)**

AR: Air quality regulator Controller Control variables	
Send value when locked (only visible with “2 step switching”)	deactivated
	activated

AR: Air quality regulator Controller Control variables	
Locking value (only visible with “2 step switching”)	Switch on
	Switch off

3.4.2 Operating mode Threshold values

If switch mode (“Threshold values”) is selected, stages must be defined to which, for example, the speed of an assigned fan is changed in order to maintain a relatively constant air quality.

3.4.2.1 Operating mode switchover

Parameters and setting options are the same as in regulation mode and are described in chapter 3.4.1.1.

3.4.2.2 Stages

Four stages can be defined, the value of which is given in ppm and can range from 0 to 5000. A default value of 600 ppm is set for stage 1, 800 ppm for stage 2, 1000 ppm for stage 3 and 1200 ppm for stage 4.

AR: Air quality regulator Threshold values Stages	
Stage 1 (to 4) in ppm	0 ... 5000 **(600) (800) (1000) (1200)**

The hysteresis value is also given in ppm and applies to all stages.

AR: Air quality regulator Threshold values Stages	
Hysteresis in ppm	100 ... 2000 **(100)**

The switchover time must be between 0 and 255 minutes and determines the time in which the system switches from one stage to the next.

AR: Air quality regulator Threshold values Stages	
Switchover time in min	0 ... 255 **(1)**

The parameter “Output in percent” is used to switch between stage mode and percentage mode. If the parameter is deactivated, stage mode is activated. The parameters on the “Control variables” card also depend on the operating mode selected here.

AR: Air quality regulator Threshold values Stages	
Output in %	**deactivated**
	activated

3.4.2.3 Control variables

If the parameter “Output in percent” on the “Stages” card has been deactivated, it is possible to choose between stage mode and alternating mode. Stage mode is particularly suitable for connecting several fans in series, i.e. if stage 2 is selected, stage 1 also remains active. Alternating mode is particularly suitable if a fan is to be operated at several speed levels. In this case, stage 1 is deactivated when stage 2 is activated.

AR: Air quality regulator Threshold values Control variables	
Mode (only visible with “Output in %” deactivated)	**Alternating operation**
	Stage operation

AR: Air quality regulator Threshold values Control variables	
Cyclical sending in min	0 ... 60 **(0)**

If the parameter “Output in percent” is activated on the “Stages” card, the percentage values for stages 1 to 4 can be defined.

AR: Air quality regulator Threshold values Control variables	
Stage 1 (to 4) in % (only visible with “Output in %” activated)	0 ... 100 **(25) (50) (75) (100)**

A maximum and a minimum level of air quality regulation can be set for both day and night, for example to set a higher maximum and minimum level during the day than at night in an office that is only occupied during the day.

AR: Air quality regulator Threshold values Control variables	
Day minimum Stage (only visible with “Output in % deactivated)	0 ... 4 **(1)**

AR: Air quality regulator Threshold values Control variables	
Day maximum Stage (only visible with “Output in % deactivated)	0 ... 4 **(4)**

AR: Air quality regulator Threshold values Control variables	
Night minimum Stage (only visible with “Output in % deactivated)	0 ... 4 **(1)**

AR: Air quality regulator Threshold values Control variables	
Night maximum Stage (only visible with “Output in %” deactivated)	0 ... 4 **(2)**

AR: Air quality regulator Threshold values Control variables	
Send value when locked	deactivated
	activated

AR: Air quality regulator Threshold values Control variables	
Locking value (only visible with: send value when “activated” locking)	0 ... 4 **(0)**

No.	Name	Function	C	R	W	T	U
45	AR: Output (DPT 1.001)	Ventilation Stage 1	X	-	-	X	-
46	AR: Output (DPT 1.001)	Ventilation Stage 2	X	-	-	X	-
47	AR: Output (DPT 1.001)	Ventilation Stage 3	X	-	-	X	-
48	AR: Output (DPT 1.001)	Ventilation Stage 4	X	-	-	X	-

4 Temperature

The temperature can be output via communication object. Furthermore, up to 4 limit values can be defined, which can also be sent to the bus. Temperature control is also available. The corresponding cards can be activated here.

No.	Name	Function	C	R	W	T	U
55	TS: Output (DPT 9.001)	Temperature	X	-	-	X	-

Temperature	
Limit value 1 (to 4)	**deactivated**
	activated

Temperature	
Regulation	**deactivated**
	activated

4.1 TS: Temperature sensor

A correction value can be entered for the internal sensor to make an adjustment if the sensor is installed in a location that is unfavourable for measuring the temperature. In addition to the internal temperature sensor, an external measured value can be used via a communication object. These two values can either be used separately (0 = not used) or the two values can be weighted (1 to 10 each). If a measured value fails, it is removed from the weighting and the remaining value is automatically used. The communication object for the external sensor can be either read out or monitored. Monitoring is based on the monitoring time, the duration of which can be set between 1 and 255 minutes. The sending behaviour of the unit who makes its value available via the communication object must match the monitoring time, i.e. the value must be available within the monitoring time defined here.

TS: Temperature sensor	
Correction in 0,1 K	-128 ...+127 **(0)**

TS: Temperature sensor	
Weighting internal sensor (0 = not used)	0 ... 10 **(1)**

TS: Temperature sensor	
Weighting communication object (0 = not used)	0 ... 10 **(0)**

TS: Temperature sensor	
Read out communication object (only visible with “Weighting of communication object” > 0)	deactivated
	activated

TS: Temperature sensor	
Überwachen des Kommunikationsobjekts (nur sichtbar bei „Gewichtung Kommunikationsobjekt“ > 0)	deactivated
	activated

TS: Temperature sensor	
Monitoring of the communication object (only visible with “Weighting of communication object” > 0)	1 ... 255 **(10)**

No.	Name	Function	C	R	W	T	U
54	TS: Input (DPT 9.001)	Temperature	X	-	X	X	X

You can also define the sending behaviour. The measured or weighted value can be sent on change and/or cyclically. Sending of the value can also be deactivated. The change can be set as “absolute” or “relative”, where “absolute” is a value change in Kelvin and “relative” is a value change in percent. In addition, a duration for one cycle (cycle time) can be specified for the cyclical sending behaviour. The next telegram is then sent only after this duration has elapsed. The cycle time can also be set in minutes and seconds. In addition, the sending range can be restricted to reduce the bus load. For this purpose, a minimum and a maximum value in 0.1 K is specified. The value is only sent if the change in value lies within this range.

TS: Temperature sensor	
Send value	deactivated
	on change
	cyclically
	on change and cyclically

TS: Temperature sensor	
Change (only visible with: send value “on change”)	**absolute**
	relative

TS: Temperature sensor	
Change in 0,1 -K (only visible with: send value “on change” and “absolute”)	1 ... 255 **(10)**

You can also select whether to restrict the sending range. When this function is activated, a minimum value and a maximum value in °C can be specified.

TS: Temperature sensor	
Restrict sending range	**deactivated**
	activated

TS: Temperature sensor	
Minimum value in °C (only visible when “Restrict sending range” is activated)	0 ... 50 **(0)**

TS: Temperature sensor	
Maximum value in °C (only visible when “Restrict sending range” is activated)	0 ... 50 **(40)**

4.2 TL Temperature Limit value 1 (to 4)

It is possible to define up to four limit values. The limit values are specified in 0.1 K in a range between -500 and +500 K. When the limit value is reached, a corresponding telegram can be sent to the bus. If a limit value is exceeded, the Output Limit value is activated.
The limit values 1 to 4 are identical and are designated here as limit value X.
First, the limit value can be set.

TL: Temperature Limit value X	
Limit value X in 0.1 K	-500 ... +500 **(210), (190), (170); (70)**

The limit value can either be determined by parameters or overwritten from outside via an object. If “overwritable by object” is selected, it can be defined whether the value can be overwritten by an ETS download or not.

TL: Temperature Limit value X	
Limit value	**determined by parameter**
	overwritable by object

TL: Temperature Limit value X	
Value by ETS download (only visible when “overwritable by object” is activated)	**overwritable**
	not overwritable

No.	Name	Function	C	R	W	T	U
56	TL1: Input (DPT 9.001)	Limit value	X	-	X	-	-
59	TL2: Input (DPT 9.001)	Limit value	X	-	X	-	-
62	TL3: Input (DPT 9.001)	Limit value	X	-	X	-	-
65	TL4: Input (DPT 9.001)	Limit value	X	-	X	-	-

The hysteresis for the corresponding limit value can be defined both in ppm (absolute) and in percent (relative).

TL: Temperature Limit value X	
Hysteresis	**absolute**
	relative

TL: Temperature Limit value X	
Hysteresis in 0,1 K (only visible with: hysteresis “absolute”)	1 ... 255 **(10)**

TL: Temperature Limit value X	
Hysteresis in percent (only visible with: hysteresis “relative”)	1 ... 50 **(10)**

The “Activation / Deactivation” parameter can be used to define when and how an activated limit value is used (active) or not used (deactivated). For this purpose, the hysteresis can be subtracted from or added to the measured value.

TL: Temperature Limit value X	
Activation / deactivation	Active >= value; Deactive <= value - hysteresis
	Active >= value + hysteresis; Deactive <= value
	Active >= value + hysteresis; Deactive <= value - hysteresis
	Active <= value; Deactive >= value + hysteresis
	Active <= value - hysteresis; Deactive >= value
	Active <= value - hysteresis; Deactive >= value + hysteresis

Furthermore, a delay for activation or deactivation can be set. If the limit value (including hysteresis if necessary) is exceeded, a duration is defined which must elapse before the object is activated/deactivated.

TL: Temperature Limit value X	
Activation delay in minutes	0 ... 255 **(5)**

TL: Temperature Limit value X	
Deactivation delay in minutes	0 ... 255 **(5)**

You can set the sending behaviour as follows:

TL: Temperature Limit value X	
Sending behaviour	**on change**
	cyclically
	on change and cyclically

TL: Temperature Limit value X	
Cycle time in minutes (only visible with “cyclically”)	0 ... 255 **(10)**

TL: Temperature Limit value X	
Cycle time in seconds (only visible with “cyclically”)	0 ... 255 **(0)**

The output format (data point type) of the object offers many possibilities and depends on what should happen if a limit value is exceeded (e.g. activation of the air conditioning). It can be defined as follows:

TL: Temperature Limit value X	
Output format	**1 bit (DPT 1.001)**
	1 byte percent (DPT 5.001)
	1 byte counter (DPT 5.010)
	1 byte counter with prefix (DPT 6.010)
	2 byte float (DPT 9.x)
	2 byte counter (DPT 7.x)
	2 byte counter with prefix (DPT 8.x)
	4 byte float (DPT 14.x)
	4 byte counter (DPT 12.x)
	4 byte counter with prefix (DPT 13.x)

TL: Temperature Limit value X	
Send value on activation	deactivated
	activated

TL: Temperature Limit value X	
Send value on deactivation	deactivated
	activated

No.	Name	Function	C	R	W	T	U
58	TL1: Output (DPT xxx)	Output Limit value	X	-	-	X	-
61	TL2: Output (DPT xxx)	Output Limit value	X	-	-	X	-
64	TL3: Output (DPT xxx)	Output Limit value	X	-	-	X	-
67	TL4: Output (DPT xxx)	Output Limit value	X	-	-	X	-

The limit value object can be assigned a lock. This serves to prevent unwanted start-up of connected actuators. The lock can be set with an ON telegram or with an OFF telegram and can be cancelled with the inverted telegram. When the lock is activated, a value can be sent or the current status is frozen. When the lock is deactivated, either 'unlock' or 'unlock' and the current status is sent.
On bus voltage recovery, you can select whether the lock is active or inactive.

TL: Temperature Limit value X	
Lock	**deactivated**
	activated

TL: Temperature Limit value X	
Locking with (only visible with: lock "activated")	**On telegram**
	Off telegram

TL: Temperature Limit value X	
Behaviour when the lock is activated (only visible with: lock "activated")	**send value**
	freeze

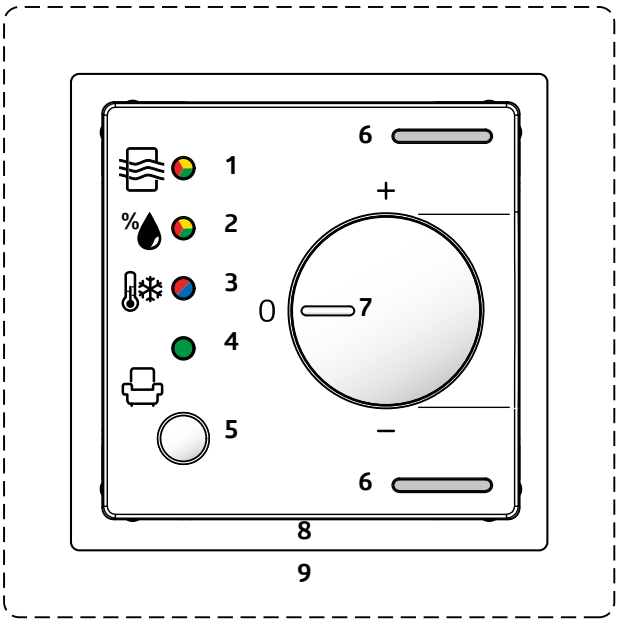
TL: Temperature Limit value X	
Value (only visible with: lock "activated" and "send value")	0 / 1 **(1)**

TL: Temperature Limit value X	
Behaviour when the lock is deactivated (only visible with: lock "activated")	**unlock and send current status**
	unlock

TL: Temperature Limit value X	
during bus voltage recovery (only visible with: lock "activated")	**not locked**
	locked

No.	Name	Function	C	R	W	T	U
57	TL1: Input (DPT 1.001)	Lock	X	-	X	-	-
60	TL2: Input (DPT 1.001)	Lock	X	-	X	-	-
63	TL3: Input (DPT 1.001)	Lock	X	-	X	-	-
66	TL4: Input (DPT 1.001)	Lock	X	-	X	-	-

4.3 TC: Temperature controller



First, the control mode and the initialisation behaviour can be defined. When selecting the control mode, it can be specified whether the device is used for heating and/or cooling. The active operating mode is indicated via LED (3) with "red" for heating and "blue" for cooling. The initialisation behaviour defines the state in which the controller operates after bus voltage failure. Either the initialisation values defined in the ETS can be used as a basis (see Chapter 4.3.1. Operating mode switchover) or the values which were stored in the communication object before bus voltage failure.

TC: Temperature controller	
Control mode	**heating**
	cooling
	heating and cooling

TC: Temperature controller	
Initialisation behaviour	restore state
	use initialisation values

Switchover between heating and cooling mode can be done automatically or manually via communication object.

TC: Temperature controller	
Switchover between heating and cooling (only visible with: heating and cooling")	**automatically**
	via communication object

No.	Name	Function	C	R	W	T	U
85	TC: Input (DPT 1.100)	Switchover between heating / cooling	X	-	X	-	-

With automatic switchover, the moment of switchover can be defined via the hysteresis and the switchover time.

TC: Temperature controller	
Hysteresis between heating and cooling in K (only visible with: “automatically”)	1 ... 10 **(3)**

TC: Temperature controller	
Switchover time in hours (only visible with: “automatically”)	0 ... 255 **(0)**

TC: Temperature controller	
Switchover time in minutes (only visible with: “automatically”)	0 ... 255 **(30)**

4.3.1 Dew point

The parameter “Dew point” is visible if “cooling” or “heating and cooling” is selected as the control mode. The setting options are visible as soon as the dew point calculation is activated.

TC: Temperature controller Dew point	
Dew point calculation	**deactivated**
	activated

If the dew point is calculated with, for example, 12°C, the control can be locked at 13°C by a lead of 1K and released again with a hysteresis of 2K at 14°C.

TC: Temperature controller Dew point	
Lead in K	0 ... 5 **(0)**

TC: Temperature controller Dew point	
Hysteresis for deactivation in K	1 ... 5 **(1)**

In cooling mode, the dew point temperature can be determined and sent. The control can be deactivated by comparing the dew point and the temperature received via the communication object No 78 “Temperature condensation prevention”. This is done internally and relates to the communication object “Lock” (priority 1).

TC: Temperature controller Dew point	
Locking after comparison with CO 78 “Temperature condensate prevention”.	**deactivated**
	activated

TC: Temperature controller Dew point	
Send dew point	deactivated
	on change
	cyclically
	on change and cyclically

TC: Temperature controller Dew point	
Change in 0.1 K (only visible with: “on change”)	1 ... 100 **(5)**

TC: Temperature controller Dew point	
Cycle time in minutes (only visible with: “Cyclically”)	1 ... 255 **(5)**

No.	Name	Function	C	R	W	T	U
78	TC: Input (DPT 9.001)	Temperature condensate prevention	X	-	X	-	-
90	TC: Output (DPT 9.001)	Dew point	X	-	-	X	-

4.3.2 Operating mode switchover

There are six operating modes, each of which is assigned a priority. These six operating modes are as follows:
Priority 1 - “Dew point/lock” (the dew point has been reached)
Priority 2 - “Absence” (holiday mode)
Priority 3 - “Building protection” (frost/heat protection, window contact)
Priority 4 - “Comfort extension” (party function)
Priority 5 - “Comfort” (motion detector)
Priority 6 - “Night” (time switch)

Operating mode 1 “Dew point/lock” (Priority 1)
This is the highest priority (see chapter 4.3.1 “Dew point”).

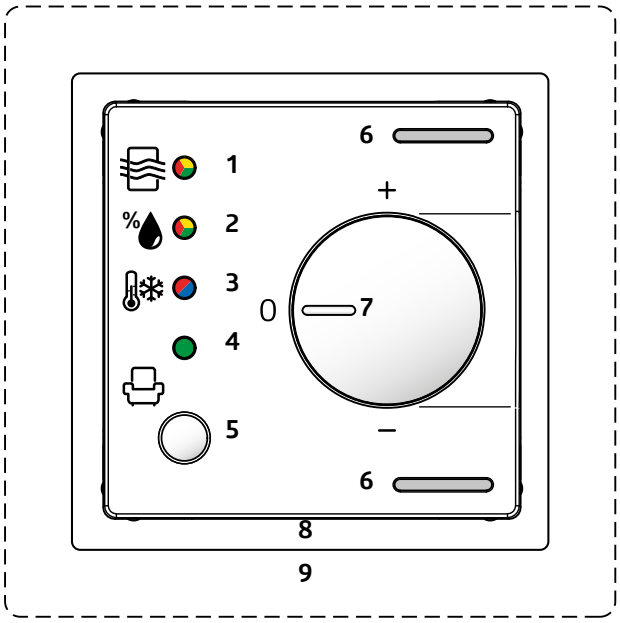
The temperature values for the following operating modes are described in the following section 4.3.3 “Set values”.

For operating modes 2 to 6, you can choose between binary and HVAC formats.
If the operating modes are in HVAC format, the operating mode can be changed during runtime via the DPT HVAC mode.

Operating mode 2 “Absence” (Priority 2)
Here, the activation can be done via pushbutton. The heating system then switches over to the selected mode and remains there. A standard application example is a holiday or a longer absence.

Operating mode 3 “Building protection” (Priority 3)
Here, either the heat or frost protection is activated - depending on which mode (heating or cooling) the device is in - and, for example, the window contact is opened.

Operating mode 4 “Comfort extension” (Priority 4)



The comfort extension allows the comfort temperature to be kept for a selected period in the event of an unscheduled event. This is done either via the communication object or the pushbutton (5) on the device. The activation of the comfort extension is indicated by the green LED (4).

Operating mode 5 “Comfort” (Priority 5)
The comfort temperature can be activated, for example, using a motion detector. When activated, the comfort temperature is approached. After leaving the room and the follow-up time set on the motion detector has expired, the system returns to the standby temperature.
As a heating system tends to be slow, it is recommended to set the follow-up time of the motion detector accordingly longer.

Operating mode 6 “Night” (Priority 6)
The night setback can be activated by means of a timer pulse. It might be influenced by the previous activation of the comfort extension.
The output for the different operating modes can be in two different formats:

TC: Temperature controller Operating mode switchover	
Operating mode 1 Initialisation value (Priority 1 “Dew point/Lockout”)	**deactivated**
	activated

TC: Temperature controller Operating mode switchover	
Control operating mode 2 (Priority 2 “Absence”)	**via binary format**
	via HVAC format

TC: Temperature controller Operating mode switchover	
Operating mode 2 Initialisation value (Priority 2 “Absence”) (only visible with: “via binary format”)	**deactivated**
	activated

TC: Temperature controller Operating mode switchover	
Status on activation (only visible with: “via binary format”)	Automatic
	Comfort
	Standby
	Economy
	Frost/heat protection

TC: Temperature controller Operating mode switchover	
Status on activation (only visible with: “via HVAC Format”)	**Automatic**
	Comfort
	Standby
	Economy
	Frost/heat protection

TC: Temperature controller Operating mode switchover	
Control operating mode 3 (Priority 3 “ Building protection “)	**via binary format**
	via HVAC format

TC: Temperature controller Operating mode switchover	
Operating mode 3 Initialisation value (Priority 3 “Building protection”) (only visible with “Via binary format”)	**deactivated**
	activated

TC: Temperature controller Operating mode switchover	
Initialisation value (only visible with: “Via HVAC format”)	**Automatic**
	Comfort
	Standby
	Economy
	Frost/heat protection

TC: Temperature controller Operating mode switchover	
Delay before activation in minutes	0 ...255 **(0)**

TC: Temperature controller Operating mode switchover	
Control operating mode 4 (Priority 4 “Comfort extension”)	**via binary format**
	via HVAC format

TC: Temperature controller Operating mode switchover	
Duration in hours	0 ...255 **(4)**

TC: Temperature controller Operating mode switchover	
Duration in minutes	0 ...255 **(0)**

TC: Temperature controller Operating mode switchover	
Control operating mode 5 (Priority 5 “Comfort”)	**über Binärformat**
	über HVAC Format

TC: Temperature controller Operating mode switchover	
Operating mode 5 Initialisation value (Priority 5 “Comfort”) (only visible with “via binary format”)	**deactivated**
	activated

TC: Temperature controller Operating mode switchover	
Initialisation value (only visible with: “via HVAC Format”)	**Automatic**
	Comfort
	Standby
	Economy
	Frost/heat protection

TC: Temperature controller Operating mode switchover	
Control operating mode 6 (Priority 6 “Night”)	**via binary format**
	via HVAC format

TC: Temperature controller Operating mode switchover	
Operating mode 6 Initialisation value (Priority 6 “Night”) Only visible with “via binary format”	**deactivated**
	activated

TC: Temperature controller Operating mode switchover	
Initialisation value (only visible with: “via HVAC format”)	**Automatic**
	Comfort
	Standby
	Economy
	Frost/heat protection

Communication objects in binary format:

No.	Name	Function	C	R	W	T	U
79	TC: Input (DPT 1.001)	Dew point / lock (priority 1)	X	-	X	-	-
80	TC: Input (DPT 1.001)	Absence (priority 2)	X	-	X	-	-
81	TC: Input (DPT 1.001)	Building protection (priority 3)	X	-	X	-	-
82	TC: Input (DPT 1.001)	Comfort extension (priority 4)	X	-	X	-	-
83	TC: Input (DPT 1.001)	Comfort (priority 5)	X	-	X	-	-
84	TC: Input (DPT 1.001)	Night (priority 6)	X	-	X	-	-

Communication objects in HVAC format:

No.	Name	Function	C	R	W	T	U
80	TC: Input (DPT 20.102)	HVAC (priority 2)	X	-	X	-	-
81	TC: Input (DPT 20.102)	HVAC delayed (priority 3)	X	-	X	-	-
82	TC: Input (DPT 20.102)	HVAC duration (priority 4)	X	-	X	-	-
83	TC: Input (DPT 20.102)	HVAC (priority 5)	X	-	X	-	-
84	TC: Input (DPT 20.102)	HVAC (priority 6)	X	-	X	-	-

4.3.3 Set values

The different temperatures for the different operating modes can be defined. Depending on how the control mode is set on the “TC: Temperature controller” card, different parameters are visible.

TC: Temperature controller Set values	
Cooling Heat protection in 0,1°C (only visible with: “cooling” and “heating and cooling”)	0 ...500 **(350)**

TC: Temperature controller Set values	
Cooling Economy in 0,1°C (only visible with: “cooling” and “heating and cooling”)	0 ...500 **(250)**

TC: Temperature controller Set values	
Cooling Standby in 0,1°C (only visible with: “cooling” and “heating and cooling”)	0 ...500 **(230)**

TC: Temperature controller Set values	
Cooling Comfort in 0,1°C (only visible with: “cooling” and “heating and cooling”)	0 ...500 **(210)**

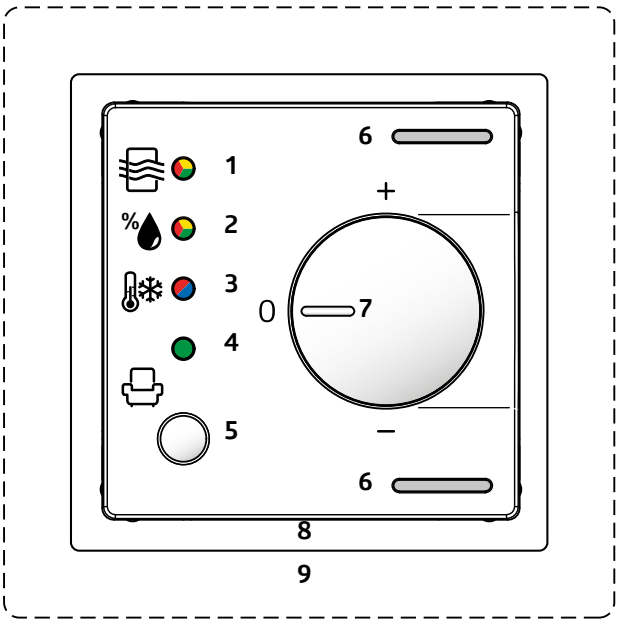
TC: Temperature controller Set values	
Heating Comfort in 0,1°C (only visible with: “heating” and “heating and cooling”)	0 ...500 **(210)**

TC: Temperature controller Set values	
Heating Standby in 0,1°C (only visible with: “heating” and “heating and cooling”)	0 ...500 **(190)**

TC: Temperature controller Set values	
Heating Economy in 0,1°C (only visible with: “heating” and “heating and cooling”)	0 ...500 **(170)**

TC: Temperature controller Set values	
Heating Frost protection in 0,1°C (only visible with: “heating” and “heating and cooling”)	0 ...500 **(70)**

4.3.4 Set value adjustment



On the housing of the device is a control knob (potentiometer, 7) with which the adjustment can be changed manually. The set value can be adjusted within the limits of the positive and negative offset either via the communication object in steps or by means of the rotary control. The communication object “Set value reset” can be used to reset the device to the values specified in the ETS.

In addition, the value can be specified as an absolute value (in °C).

ATTENTION	
⚠	ATTENTION: The rotary control can be used to offset **either** air quality **or** temperature **or** humidity!

TC: Temperature controller Set value adjustment	
Maximum positive offset in K	0 ... 10 **(3)**

TC: Temperature controller Set value adjustment	
Maximum negative offset in K	0 ... 10 **(3)**

TC: Temperature controller Set value adjustment	
Adjustment via potentiometer	**deactivated**
	activated

If this parameter is deactivated, the adjustment can be made via communication objects. It is possible to adjust the set value in steps. The step size can be specified in the ETS. You can choose between 0.5K and 1K.

TC: Temperature controller Set value adjustment	
Offset via step object (only visible at: adjustment via potentiometer “deactivated	**1K**
	0,5 K

No.	Name	Function	C	R	W	T	U
73	TC: Input (DPT 1.001)	Set value Step (plus/minus)	X		X		
74	TC: Input (DPT 9.001)	Set value Relative	X		X		
75	TC: Input (DPT 9.008)	Set value Absolute	X	-	X	-	-
76	TC: Input (DPT 1.015)	Set value Reset	X	-	X	-	-

To prevent the difference between the set value and the outside temperature from becoming too large in cooling mode, the set value temperature can be limited. This prevents the temperature difference in summer from becoming too large for people leaving a cooled interior.

TC: Temperature controller Set value adjustment	
Set value limitation by means of outdoor temperature (only visible at: “Cooling”	**deactivated**
	activated

TC: Temperature controller Set value adjustment	
Difference to outdoor temperature in K (only visible when outdoor temperature is “activated”)	1 ... 10 **(3)**

Nr.	Name	Funktion	C	R	W	T	U
77	TC: Input (DPT 9.001)	Outdoor temperature	X	-	X	-	-

4.3.5 Feedback

Feedback is provided via the defined set value.

TC: Temperature controller Feedback	
Sollwert senden	**deactivated**
	on change
	cyclically
	on change and cyclically

TC: Temperature controller Feedback	
Change in 0.1 K (only visible with: “on change”)	10 ... 100 **(10)**

TC: Temperature controller Feedback	
Cycle time in minutes (only visible with “cyclically”)	1 ... 255 **(5)**

No.	Name	Function	C	R	W	T	U
86	TC: Output (DPT 9.001)	Set value	X	-	-	X	-

Feedback can be given in different ways:
With bit feedback, information about a selected status can be output.

TC: Temperature controller Feedback	
Bit Feedback	**deactivated**
	activated

TC: Temperature controller Feedback	
Information (only visible with: Bit feedback “activated”)	**Comfort**
	Standby
	Economy
	Frost/heat protection
	Dew point alarm/lock
	Heating / Cooling
	Controller inactive

No.	Name	Function	C	R	W	T	U
87	TC: Output (DPT 1.001)	Feedback Bit	X	-	-	X	-

TC: Temperature controller Feedback	
RHCC feedback	**deactivated**
	activated

The following table shows the supported bits that can be output using the RHCC value. These can be used for visualisation. Bits marked with “0” are not supported.

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
0	0	Frost protection	Lock	Heating	0	Night Cooling	Heating

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Cooling	0	0	0	0	0	Night Heating	0

TC: Temperature controller Feedback	
Byte feedback	**deactivated**
	activated

The following table shows the supported bits that can be output using the byte value. Bits marked with “0” are not supported.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Lock	Heating 1 cooling 0	Lock	Frost protection	Night	Standby	Comfort

No.	Name	Function	C	R	W	T	U
88	TC: Output (DPT 22.101)	RHCC feedback	X	-	-	X	-
89	TC: Output DPT (XXX)	Byte feedback	X	-	-	X	-

4.3.6 Heating control

The control can be set to be normal or inverse. This means that the control starts either at 0% or at 100%.

TC: Temperature controller Heating control	
Operating sense	**normal**
	inverse

Different types of controllers can be used:
If the PI controller is selected, the P component can be set in % and the I component in minutes (follow-up time). The P-component is responsible for the speed of the control. The smaller the set value, the more sensitive the control reacts and oscillation can occur. The higher the value is set, the smaller the oscillation is and the set value is reached more slowly.
The I-component determines how fast the set value is corrected. If the follow-up time is short, there is a risk of continuous oscillation. The larger the time is set, the slower the set value is corrected.
With the controller type PI PWM, the heating valve is controlled (ON / OFF) by means of pulse width modulation via, for example, a switching actuator.
With the 2-step controller, the fan runs continuously until the set value is reached, or a percentage value for ON is sent. When the set value is reached, the fan is switched off or a percentage value for OFF is sent.
The 2-step switching controller works like the 2-step controller, but with switching commands (ON/OFF) instead of percentage values.

TC: Temperature controller Heating control	
Controller type	**PI continuous**
	PI PWM
	2-step %
	2-step switching

The following heating curves are stored for the heating system to be controlled. If changes to the P- or I-component are necessary, these can also be adjusted by the user.

TC: Temperature controller Heating control	
Heating system (only visible with “PI continuous” and “PI PWM”)	hot water heating (5K / 150 min)
	floor heating (5K / 240 min)
	electric heating (4K / 100 min)
	fan convector (4K / 90min)
	split unit (4K / 90min)
	set P- and I-component

TC: Temperature controller Heating control	
Hysteresis in 0.1 K (only visible with: “2 step %” and “2 step switching”)	5 ... 30 **(5)**

TC: Temperature controller Heating control	
P-component in 0.1 K (only visible with “PI continuous” and “Set P and I component”)	1 ... 255 **(50)**

TC: Temperature controller Heating control	
I-component in minutes (only visible with “PI continuous” and “Set P and I component”)	0 ... 255 **(240)**

The valve protection can be defined to prevent the heating valves from sticking. This opens the heating valves once every x days for a period of x minutes and closes them again.

TC: Temperature controller Heating control	
Valve protection every x days	0 ... 30 **(0)**

TC: Temperature controller Heating control	
Valve protection End position for x minutes	0 ... 30 **(0)**

No.	Name	Function	C	R	W	T	U
91	TC: Output (DPT 5.001)	Heating stage 1	X	-	-	X	-

The additional stage is a support for the controller to reach the defined set value.

TC: Temperature controller Heating control	
Additional stage	**deactivated**
	activated

TC: Temperature controller Heating control	
Operating sense (only visible with activated additional level)	**normal**
	inverse

TC: Temperature controller Heating control	
Controller type (only visible with activated additional stage)	2-step %
	2-step switching

TC: Temperature controller Heating control	
Hysteresis in 0,1 K (only visible with activated additional level)	5 ... 30 **(5)**

The stage distance is the temperature difference that the additional stage (stage 2) stops working before the controller (stage 1). If, for example, a room temperature of 21 °C is set and a stage distance of 20 (20 x 0.1K = 2K / °C), then stage 2 stops working at 19 °C and stage 1 continues working to reach the set room temperature of 21 °C.

TC: Temperature controller Heating control	
Stage distance in 0.1 K (only visible with activated additional level)	10 ... 100 **(20)**

TC: Temperature controller Heating control	
Valve protection every x days (only visible with activated additional level)	0 ... 30 **(0)**

TC: Temperature controller Heating control	
Valve protection End position for x minutes (only visible with activated additional level)	0 ... 30 **(4)**

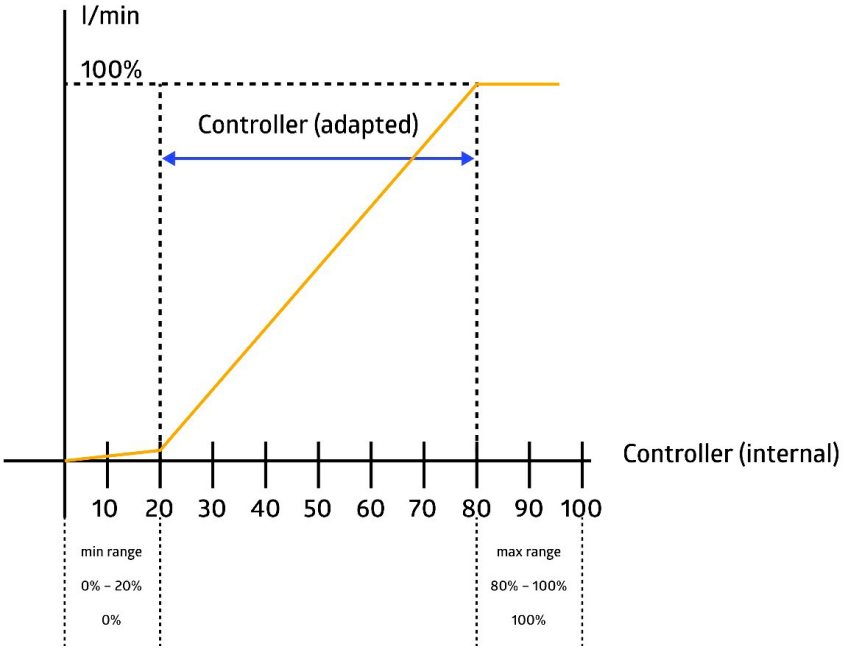
No.	Name	Function	C	R	W	T	U
92	TC: Output (DPT 1.001)	Heating stage 2	X	-	-	X	-

4.3.6.1 Control variables heating

Valves have a different working range. This means that the control range is different from the valve range. If, for example, the working range of the valve only starts at 20% of the control range, i.e. is 0, and already stops at 80% of the control range, i.e. is virtually 100, then the usable control range is between 20% and 80%. The control range from 0% to 100% must therefore be mapped accordingly to the remaining range, in our case 20% to 80%:

Regulation Internal	Valve actuation
0%	20%
25%	35%
50%	50%
75%	65%
100%	80%

In most cases the data sheets of the valves contain such a table. If this is not the case, the conversion values must be calculated or tried out.
With the parameters “Min range 0 to x in percent” and “Max range from x to 100 in percent”, the working range can be defined. In our example x in the Min range corresponds to 20 and x in the Max range corresponds to 80. The parameters “Minimum value” and “Maximum value” can be selected from the respective range. In the above example, for example, 20 can be selected as the minimum value to prevent the valve from whistling, and 100 as the maximum value.



TC: Temperature controller Heating control Heating control variables	
Change for sending in % (only visible with PI continuous)	1 ... 10 **(3)**

TC: Temperature controller Heating control Heating control variables	
Cycle time PWM in minutes (only visible with PI PWM)	1 ... 60 **(15)**

TC: Temperature controller Heating control Heating control variables	
Cyclical sending in minutes	0 ... 60 **(0)**

TC: Temperature controller Heating control Heating control variables	
Min range 0 to x in % (only visible with PI continuous and PI PWM)	0 ... 100 **(0)**

TC: Temperature controller Heating control Heating control variables	
Minimum value in % (only visible with PI continuous and PI PWM)	0 ... 100 **(0)**

TC: Temperature controller Heating control Heating control variables	
Max range from x to 100 in % (only visible with PI continuous and PI PWM)	(0 ... 100) **(100)**

TC: Temperature controller Heating control Heating control variables	
Maximum value in % (only visible with PI continuous and PI PWM)	0 ... 100 **(100)**

TC: Temperature controller Heating control Heating control variables	
Switch-off value in % (only visible, at 2-step %)	0 ... 100 **(100)**

TC: Temperature controller Heating control Heating control variables	
Switch-on value in % (only visible at 2-step %)	0 ... 100 **(100)**

TC: Temperature controller Heating control Heating control variables	
Send value upon locking	deactivated
	activated

TC: Temperature controller Heating control Heating control variables	
Locking value in % (only visible if “Send value upon locking” is activated)	0 ... 100 **(0)**

4.3.6.2 Heating control variables - additional stage

Heating control variables additional stage	
Cyclical sending in minutes	0 ... 60 **(0)**

Heating control variables additional stage	
Send value upon locking	deactivated
	activated

Heating control variables additional stage	
Locking value (only visible if “Send value upon locking” is activated)	Switch on
	Switch off

4.3.7 Cooling control

The regulation can be set to be normal or inverse. This means that the regulation starts either at 0% or at 100%.

TC: Temperature controller Cooling control	
Operating sense	**normal**
	inverse

The controller types are the same as in heating mode and are described in chapter 4.3.6.

TC: Temperature controller Cooling control	
Controller type	**PI continuous**
	PI PWM
	2-step %
	2-step switching

The following cooling curves are stored for the cooling system to be controlled. If changes to the P- or I-component are necessary, these can also be adjusted by the user.

TC: Temperature controller Cooling control	
Cooling system (only visible with “PI continuous” and with “PI PWM”)	fan convector 4 K / 90 min)
	split unit (4 K / 90 min)
	cooling ceiling (5 K / 240 min)
	set P- and I-component

TC: Temperature controller Cooling control	
Hysteresis in 0,1 K (only visible with: “2 step %” and “2 step switching”)	5 ... 30 **(5)**

TC: Temperature controller Cooling control	
P-component in 0.1 K (only visible with “PI continuous” and “Set P and I component”)	1 ... 255 **(50)**

TC: Temperature controller Cooling control	
I-component in minutes (only visible with “PI continuous” and “Set P and I component”)	0 ... 255 **(240)**

The valve protection can be defined to prevent the valves from sticking. This allows the valves to be opened and closed every x days for a period of x minutes.

TC: Temperature controller Cooling control	
Valve protection every x days	0 ... 30 **(0)**

TC: Temperature controller Cooling control	
Valve protection End position for x minutes	0 ... 30 **(0)**

No.	Name	Function	C	R	W	T	U
93	TC: Output (DPT 5.001)	Cooling stage 1	X	-	-	X	-

TC: Temperature controller Cooling control	
Additional stage	**deactivated**
	activated

TC: Temperature controller Cooling control	
Operating sense	**normal**
	inverse

TC: Temperature controller Cooling control	
Controller type	2-step %
	2-step switching

TC: Temperature controller Cooling control	
Hysteresis in 0,1 K (only visible with: additional level “activated”)	5 ... 30 **(5)**

The stage distance is the temperature difference that the additional stage (stage 2) stops working before the controller (stage 1). If, for example, a room temperature of 21 °C is set and a stage distance of 20 (20 x 0.1K = 2K / °C), then stage 2 stops working at 19 °C and stage 1 continues working to reach the set room temperature of 21 °C.

TC: Temperature controller Cooling control	
Stage distance in 0.1 K (only visible with: additional stage “activated”)	10 ... 100 **(20)**

TC: Temperature controller Cooling control	
Valve protection every x days	0 ... 30 **(0)**

TC: Temperature controller Cooling control	
Valve protection End position for x minutes	0 ... 30 **(4)**

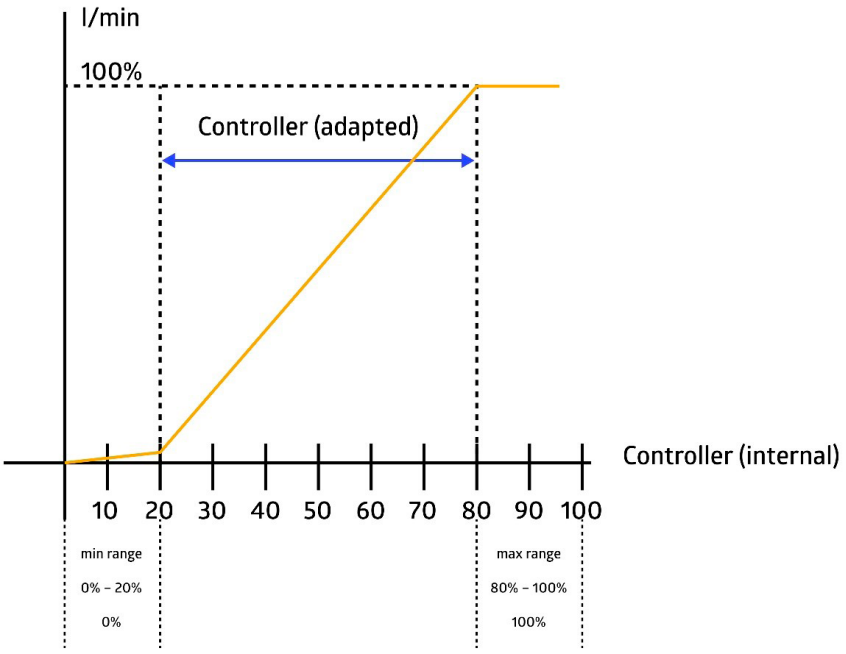
No.	Name	Function	C	R	W	T	U
94	TC: Output (DPT 1.001)	Cooling stage 2	X	-	-	X	-

4.3.7.1 Control variables cooling

Valves have a different working range. This means that the control range is different from the valve range. If, for example, the working range of the valve only starts at 20% of the control range, i.e. is 0, and already stops at 80% of the control range, i.e. is virtually 100, then the usable control range is between 20% and 80%. The control range from 0% to 100% must therefore be mapped accordingly to the remaining range, in our case 20% to 80%:

Internal control	Valve actuation
0%	20%
25%	35%
50%	50%
75%	65%
100%	80%

In most cases the data sheets of the valves contain such a table. If this is not the case, the conversion values must be calculated or tried out.
With the parameters “Min range 0 to x in percent” and “Max range from x to 100 in percent”, the working range can be defined. In our example, x in the Min range corresponds to 20 and x in the Max range corresponds to 80. The parameters “Minimum value” and “Maximum value” can be selected from the respective range. In the above example, 20 can be selected as the minimum value to prevent the valve from whistling, and 100 as the maximum value.



TC: Temperature controller Cooling control Cooling control variables	
Change for sending in % (only visible with PI continuous)	1 ... 10 **(3)**

TC: Temperature controller Cooling control Cooling control variables	
Cycle time PWM (only visible with PI PWM)	1 ... 60 **(15)**

TC: Temperature controller Cooling control Cooling control variables	
Cyclical sending in minutes	0 ... 60 **(0)**

TC: Temperature controller Cooling control Cooling control variables	
Minimum value in % (only visible with PI continuous and PI PWM)	0 ... 100 **(0)**

TC: Temperature controller Cooling control Cooling control variables	
Min range from 0 to x in % (only visible with PI continuous and PI PWM)	0 ... 100 **(0)**

TC: Temperature controller Cooling control Cooling control variables	
Max range from x to 100% in % (only visible with PI continuous and PI PWM)	(0 ... 100) **(100)**

TC: Temperature controller Cooling control Cooling control variables	
Maximum value in % (only visible with PI continuous and PI PWM)	0 ... 100 **(100)**

TC: Temperature controller Cooling control Cooling control variables	
Send value when locked	**deactivated**
	activated

TC: Temperature controller Cooling control Cooling control variables	
Locking value in %	0 ... 100 **(0)**

The communication object “Heating stage 1 (91)” can also be used for “Cooling” if the heating and cooling systems use the same devices (e.g. the radiator also serves as a cooling element). For this purpose, the corresponding setting can be made under “Control variables cooling” and in the control mode “Heating and cooling”. The communication object “Cooling stage 1 (93)” is not required in this case.

TC: Temperature controller Cooling control Cooling control variables	
Use output also for heating	**deactivated**
	activated

4.3.7.2 Control variables cooling - additional stage

TC: Temperature controller Cooling control Cooling control variables Cooling control variables - Additional stage	
Cyclical sending in minutes	0 ... 60 **(0)**

TC: Temperature controller Cooling control Cooling control variables Cooling control variables - Additional stage	
Send value upon locking	deactivated
	activated

TC: Temperature controller Cooling control Cooling control variables Cooling control variables - Additional stage	
Locking value	Switch on
	Switch off

The “Heating stage 2 (92)” communication object can also be used for “Cooling” if the heating and cooling systems use the same devices (e.g. the radiator also serves as a heat sink). For this purpose, the corresponding setting can be made in the “Control value cooling” area and in the “Heating and cooling” control mode. The communication object “Cooling level 2 (94)” is not required in this case.

TC: Temperature controller Cooling control Cooling control variables Cooling control variables - Additional stage	
Use output also for heating	**deactivated**
	activated

5 Humidity

The relative humidity can be output via communication object. Furthermore, up to 4 limit values can be defined, which can also be sent to the bus. The humidity can be directly visualised via the LED traffic light integrated in the device. The corresponding limit values can be set. Humidity control is also available. The corresponding cards can be activated here. The data point type of the communication object “Humidity” can be selected in 1-byte (DPT 5.001) and 2-byte format (DPT 9.007) to display the value in a visualisation.

Humidity	
Format of Humidity communication object	**1Byte (DPT 5.001)**
	2Byte (DPT 9.007)

No.	Name	Function	C	R	W	T	U
99	HS: Output (DPT 5.001)	Humidity	X	-	-	X	-
99	HS: Output (DPT 9.007)	Humidity	X	-	-	X	-

Humidity	
Traffic light	deactivated
	activated

Humidity	
Limit value 1 (to 4)	**deactivated**
	activated

Humidity	
Regulation	**deactivated**
	activated

5.1 HS: Humidity sensor

The humidity can be measured via the internal sensor of the device. The measured value can be finetuned using the correction value. An external value can be included in the evaluation via the communication object input Humidity (no. 98) by means of the weighting. The ratio of the two values (internal and remote) can be entered here.

HS: Humidity sensor	
Correction in %	-50 ...50 **(0)**

HS: Humidity sensor	
Weighting internal sensor (0 = not used)	0 ... 10 **(1)**

HS: Humidity sensor	
Weighting communication object (0 = not used)	0 ... 10 **(0)**

HS: Humidity sensor	
Read out communication object (only visible with “Weighting communication object > 0”)	deactivated
	activated

HS: Humidity sensor	
Monitoring of the communication object (only visible with “Weighting communication object > 0”)	deactivated
	activated

HS: Humidity sensor	
Monitoring time in minutes (only visible with “Weighting communication object > 0”)	1 ... 255 **(10)**

No.	Name	Function	C	R	W	T	U
98	HS: Input (DPT 5.001)	Humidity	X	-	X	X	X

You can also define the sending behaviour. The measured or weighted value can be sent on change and/or cyclically. Sending of the value can also be deactivated. The change can be set as “absolute” or “relative”, whereby the change can refer to a fixed value (absolute) or the last value (relative). The cycle time can also be set in minutes and seconds (for cyclical sending). In addition, the sending range can be restricted to reduce the bus load. For this purpose, a minimum and a maximum value are specified in percent. The value is only sent if the change in value lies within this range.

HS: Humidity sensor	
Send value	deactivated
	on change
	cyclically
	on change and cyclically

HS: Humidity sensor	
Change (only visible with: send value “on change”)	**absolute**
	relative

HS: Humidity sensor	
Change in % (only visible with: send value “on change” and “absolute”)	1 ... 50 **(2)**

HS: Humidity sensor	
Change in % (only visible with: send value “on change” and “relative”)	1 ... 50 **(10)**

HS: Humidity sensor	
Cycle time in minutes (only visible with: send value “cyclically”)	0 ... 255 **(10)**

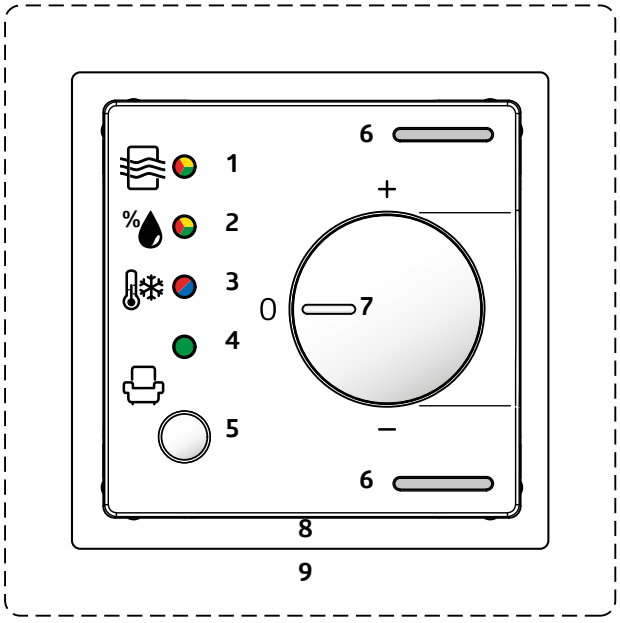
HS: Humidity sensor	
Cycle time in seconds (only visible with: send value “cyclically”)	0 ... 255 **(0)**

HS: Humidity sensor	
Restrict sending range	**deactivated**
	activated

HS: Humidity sensor	
Minimum value in % (only visible with: Restrict sending range “activated”)	0 ... 100 **(0)**

HS: Humidity sensor	
Maximum value in % (only visible with: Restrict sending range “activated”)	0 ... 100 **(100)**

5.2 FS: Ampel



The humidity can be displayed via the traffic light indicator (2) on the device. To do this, use the parameter “Use range red yellow green”, where the colour red stands for poor humidity, yellow for medium humidity and green for good humidity. However, the display can also be reversed to take into account the case of excessively dry air. To do this, use the parameter “Use range green yellow red”, which can also be activated and deactivated. In both cases limit values can be set for red and yellow or yellow and red in %.

HS: Traffic light	
Use range red, yellow, green	deactivated
	activated

HS: Traffic light	
Red >= value in %	0 ... 100 **(70)**

HS: Traffic light	
Yellow >= value in %	0 ... 100 **(60)**

HS: Traffic light	
Use range green, yellow, red	**deactivated**
	activated

HS: Traffic light	
Yellow <= value in %	0 ... 100 **(40)**

HS: Traffic light	
Red <= Value in %	0 ... 100 **(30)**

HS: Traffic light	
Hysteresis in %	1 ... 50 **(2)**

5.3 HL: Humidity Limit value x (1 to 4)

It is possible to define up to four limit values. The limit values are given in percent. When the limit value is reached, a corresponding telegram can be sent to the bus.
The limit values 1 to 4 are identical and are designated limit value x.
First, the limit value can be set.

HL: Humidity Limit value x	
Limit value x in %	0 ... 100 **(60), (65), (70); (75)**

The limit value can either be determined by parameters or overwritten from outside via an object.

HL: Humidity Limit value x	
Limit value	**determined by parameter**
	overwritable by object

If the limit value can be overwritten by object, it can still be decided whether the value should be overwritten during the next ETS download.

HL: Humidity Limit value x	
Value by ETS Download (only visible with: limit value “overwritable by object”)	**overwritable**
	not overwritable

No.	Name	Function	C	R	W	T	U
100	HL1: Input (DPT5.001)	Limit value	X		X		
103	HL2: Input (DPT5.001)	Limit value	X		X		
106	HL3: Input (DPT5.001)	Limit value	X		X		
109	HL4: Input (DPT5.001)	Limit value	X		X		

The hysteresis can be set as “absolute” or “relative”, whereby absolute refers to a fixed value and relative to the last value.

HL: Humidity Limit value x	
Hysteresis	**absolute**
	relative

HL: Humidity Limit value x	
Hysteresis in % (only visible with: “Absolute”)	1 ... 50 **(5)**

HL: Humidity Limit value x	
Hysteresis in % (only visible with: “Relative”)	1 ... 50 **(10)**

The “Activation / Deactivation” parameter can be used to define when and how an activated limit value is used (active) or not used (deactivated). For this purpose, the hysteresis can be subtracted from or added to the measured value.

HL: Humidity Limit value x	
Activation / deactivation	Active >= value; Deactive <= value - hysteresis
	Active >= value + hysteresis; Deactive <= v alue
	Active >= value + hysteresis; Deactive <= value - hysteresis
	Active <= value; Deactive >= value + hysteresis
	Active <= value - hysteresis; Deactive >= value
	Active <= value - hysteresis; Deactive >= value + hysteresis

Furthermore, a delay for activation or deactivation can be set. If the limit value (including hysteresis if necessary) is exceeded, a duration can be defined which must elapse before the object is activated/deactivated.

HL: Humidity Limit value x	
Activation delay in minutes	0 ... 255 **(5)**

HL: Humidity Limit value x	
Deactivation delay in minutes	0 ... 255 **(5)**

You can set the sending behaviour as follows:

HL: Humidity Limit value x	
Sending behaviour	**on change**
	cyclically
	on change and cyclically

HL: Humidity Limit value x	
Cycle time in minutes (only visible with “cyclically”)	0 ... 255 **(10)**

HL: Humidity Limit value x	
Cycle time in seconds (only visible with “cyclically”)	1 ... 255 **(0)**

The output format (data point type) of the object offers many possibilities and depends on what should happen when a limit value is exceeded (e.g. switching a fan). It can be defined as follows:

HL: Humidity Limit value x	
Output format	**1 bit (DPT 1.001)**
	1 byte percent (DPT 5.001)
	1 byte counter (DPT 5.010)
	1 byte counter with prefix (DPT 6.010)
	2 byte float (DPT 9.x)
	2 byte counter (DPT 7.x)
	2 byte counter with prefix (DPT 8.x)
	4 byte float (DPT 14.x)
	4 byte counter (DPT 12.x)
	4 byte counter with prefix (DPT 13.x)

You can specify whether a value (0 or 1) is sent upon activation/deactivation. The window for defining the value is visible when “activated”.

HL: Humidity Limit value x	
Send value on activation	deactivated
	activated

HL: Humidity Limit value x	
Value (only visible with: “Send value”)	0 / 1 **(1)**

HL: Humidity Limit value x	
Send value on deactivation	deactivated
	activated

HL: Humidity Limit value x	
Value (only visible with “Send value”)	0 / 1 **(0)**

No.	Name	Function	C	R	W	T	U
102	HL1: Output (DPT xxx)	Output Limit value	X	-	-	X	-
105	HL2: Output (DPT xxx)	Output Limit value	X	-	-	X	-
108	HL3: Output (DPT xxx)	Output Limit value	X	-	-	X	-
111	HL4: Output (DPT xxx)	Output Limit value	X	-	-	X	-

The limit value object can be assigned a lock. This serves to prevent unwanted start-up of connected actuators. The lock can be set with an ON telegram or with an OFF telegram and can be cancelled with the inverted telegram. When the lock is activated, a value can be sent or the current status is frozen. When the lock is deactivated, either ‘unlock’ or ‘unlock’ and the current status is sent.
On bus voltage recovery, you can select whether the lock is active or inactive.

HL: Humidity Limit value x	
Lock	**deactivated**
	activated

HL: Humidity Limit value x	
Locking with (only visible with: lock “activated”)	**On telegram**
	Off telegram

HL: Humidity Limit value x	
Behaviour when the lock is activated (only visible with: lock “activated”)	**send value**
	freeze

HL: Humidity Limit value x	
Value (only visible with: lock “send value”)	0 / 1 **(1)**

HL: Humidity Limit value x	
Behaviour when the lock is deactivated (only visible with: lock “activated”)	**unlock and send current status**
	unlock

HL: Humidity Limit value x	
Upon bus voltage recovery	**not locked**
	locked

No.	Name	Function	C	R	W	T	U
101	HL1: Input (DPT 1.001)	Lock	X	-	X	-	-
104	HL2: Input (DPT 1.001)	Lock	X	-	X	-	-
107	HL3: Input (DPT 1.001)	Lock	X	-	X	-	-
110	HL4: Input (DPT 1.001)	Lock	X	-	X	-	-

5.4 HC: Humidity controller

First, the control mode and the initialisation behaviour can be defined. When selecting the control mode, you can specify whether the device is used for dehumidification and/or humidification. The initialisation behaviour defines the state in which the controller operates after bus voltage failure. Here, either the initialisation values defined in the ETS can be used as a basis (see Chapter 5.4.1 Operating mode switchover) or the values that were stored in the communication object before bus voltage failure.

HC: Humidity controller	
Regulation type	**dehumidify**
	humidify
	dehumidify and humidify

HC: Humidity controller	
Initialisation behaviour	restore state
	use initialisation values

Switchover between dehumidifying and humidifying mode can be automatic or manual via communication object.

HC: Humidity controller	
Switchover between dehumidify and humidify (only visible with: “dehumidify and humidify”)	**automatically**
	via communication object

No.	Name	Function	C	R	W	T	U
123	HC: Input (DPT 1.100)	Switchover humidify (0)/dehumidify (1)	X	-	X	-	-

With automatic switchover, the duration of switchover can be defined via the hysteresis and the switchover time.

HC: Humidity controller	
Hysteresis for switchover in % (only visible with: “automatically”)	1 ... 20 **(3)**

HC: Humidity controller	
Switchover time in hours (only visible with: “automatically”)	0 ... 255 **(0)**

HC: Humidity controller	
Switchover time in minutes (only visible with: “automatically”)	0 ... 255 **(30)**

5.4.1 Operating mode switchover

There are two operating modes that can be defined more precisely: Lock and day. Lock has priority 1, day has priority 2. The type of telegram for the start of lock or day mode and the initialisation value used for the initialisation behaviour (see 5.4 HC: Humidity controller) can be defined.

HC: Humidity controller Operating mode switchover	
Lock with (priority 1)	**On telegram**
	Off telegram

HC: Humidity controller Operating mode switchover	
Initialisation value Lock	On telegram
	Off telegram

HC: Humidity controller Operating mode switchover	
Day with (priority 2)	**On telegram**
	Off telegram

HC: Humidity controller Operating mode switchover	
Initialisation value day	**On telegram**
	Off telegram

No.	Name	Function	C	R	W	T	U
121	HC: Input (DPT 1.001)	Lock (priority 1)	X	-	X	-	-
122	HC: Input (DPT 1.001)	Day/night (priority 2)	X	-	X	-	-

5.4.2 Set values

The set values used for humidifying and dehumidifying can be set for both daytime and nighttime operation.

HC: Humidity controller Set values	
Humidify night in %	0 ... 100 **(40)**

HC: Humidity controller Set values	
Humidify day in %	0 ... 100 **(50)**

HC: Humidity controller Set values	
Dehumidify day in %	0 ... 100 **(50)**

HC: Humidity controller Set values	
Dehumidify night in %	0 ... 100 **(60)**

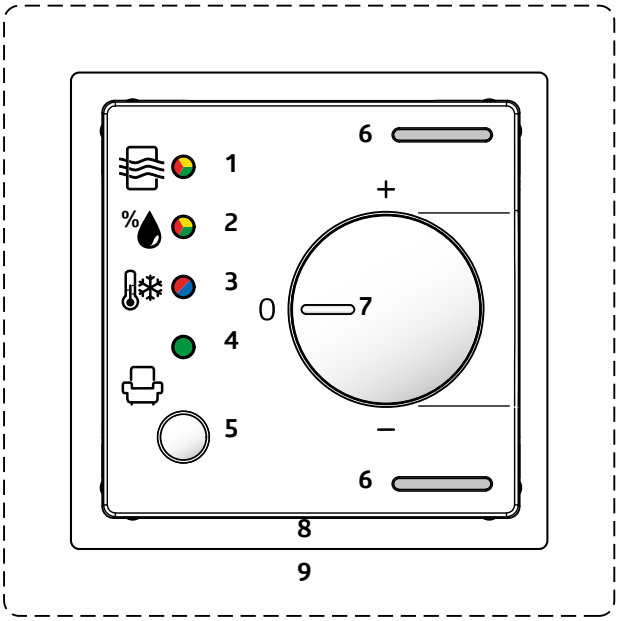
5.4.3 Set value adjustment

The set value adjustment allows you to define an offset for the specified set value (positive and negative). The device can be reset to the values specified in the ETS via the “Set value reset” communication object.
In addition, the value can be specified as an absolute value (in %).

HC: Humidity controller Set value adjustment	
Maximum positive offset in %	0 ... 50 **(5)**

HC: Humidity controller Set value adjustment	
Maximum negative offset in %	0 ... 50 **(5)**

No.	Name	Function	C	R	W	T	U
118	HC: Input (DPT6.001)	Set value Relative	X	-	X	-	-
119	HC: Input (DPT 5.001)	Set value Absolute	X	-	X	-	-
120	HC: Input (DPT 1.015)	Set value Reset	X	-	X	-	-



On the housing of the device there is a control knob (potentiometer, 7) with which the adjustment can be changed manually. The set value adjustment allows to define an offset for the set value (positive and negative). The communication object “Set value reset” can be used to reset the device to the values specified in the ETS.
In addition, the value can be specified as an absolute value (in %).

ATTENTION	
⚠	Attention: The rotary control can be used to offset **either** air quality **or** temperature **or** humidity!

HC: Humidity controller Set value adjustment	
Adjustment via potentiometer	**deactivated**
	activated

If this parameter is deactivated, the adjustment can be made via communication objects. It is possible to adjust the set value step by step in %. The step size can be defined accordingly in the ETS.

HC: Humidity controller Set value adjustment	
Offset via step object (only visible with: adjustment via potentiometer “deactivated”)	1 ... 20 **(1)**

No.	Name	Function	C	R	W	T	U
117	HC: Input (DPT 1.007)	Set value step (plus/minus)	X	-	X	-	-

5.4.4 Feedback

Feedback is provided via the set value.

HC: Humidity controller Feedback	
Send set value	**deactivated**
	on change
	cyclically
	on change and cyclically

HC: Humidity controller Feedback	
Change in % (only visible with: “on change”)	1 ... 20 **(5)**

HC: Humidity controller Feedback	
Cycle time in minutes (only visible with “cyclically”)	1 ... 255 **(5)**

No.	Name	Function	C	R	W	T	U
124	HC: Output (DPT 5.001)	Set value	X	-	-	X	-

5.4.5 Dehumidifying control

The regulation can be set to be normal or inverse. This means that the regulation starts either at 0% or at 100%.

HC: Humidity controller Dehumidifying control	
Operating sense	**normal**
	inverse

Different types of controllers can be used:
If the PI controller is selected, the P-component can be set in % and the I-component in minutes (reset time). The P-component is responsible for the speed of the control. The smaller the set value, the more sensitive the control reacts and oscillation can occur. The higher the value is set, the smaller the oscillation and the set value is reached more slowly.
The I-component determines how fast the set value is corrected. If the follow-up time is short, there is a risk of continuous oscillation. The larger the time is set, the slower the set value is corrected.
With the 2-step controller, the fan runs continuously until the set value is reached, or a percentage value for ON is sent. When the set value is reached, the fan is switched off or a percentage value for OFF is sent.
The 2-step controller switching works like the 2-step controller, but with switching commands (ON/OFF) instead of percentage values.

HC: Humidity controller Dehumidifying control	
Controller type	**PI continuous**
	2-step %
	2-step switching

HC: Humidity controller Dehumidifying control	
P-component in % (only visible with “PI continuous”)	1 ... 100 **(20)**

HC: Humidity controller Dehumidifying control	
I-component in minutes (only visible with “PI continuous”)	0 ... 255 **(15)**

HC: Humidity controller Dehumidifying control	
Hysteresis in % (only visible with “2 step %” and “2 step switching”)	1 ... 20 **(5)**

No.	Name	Function	C	R	W	T	U
125	HC: Output (DPT 5.001)	Dehumidify	X	-	-	X	-

5.4.5.1 Control variables Dehumidify

The values for fan control for day and night operation are defined here for both PI control and for 2-step % control. The standard maximum value is lower for night operation to keep noise from fans etc. low during the night.

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Change for sending in % (only visible with “PI continuous”)	1 ... 10 **(3)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Cyclical sending in minutes	0 ... 60 **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Day Minimum in % (only visible with “PI continuous”)	0 ... 100 **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Day Switch-off value in % (only visible with “2 step %”)	0 ... 100 **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Day Maximum in % (only visible with “PI continuous”)	0 ... 100 **(100)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Day Switch-on value in % (only visible with “2 point %”)	0 ... 100 **(100)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Night Switch-off value in % (only visible with “2 point %”)	(0 ... 100) **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Night Minimum in % (only visible with “PI continuous”)	0 ... 100 **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Night Switch-on value in % (only visible with “2 point %”)	0 ... 100 **(100)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Night Maximum in % (only visible with “PI continuous”)	0 ... 100 **(100)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Send value when locked	deactivated
	activated

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Locking value in % (only visible with “2 point continuous” and “2 point %”)	0 ... 100 **(0)**

HC: Humidity controller Dehumidifying control Control variables Dehumidify	
Locking value (only visible with “2 point switching”)	Switch on
	Switch off

5.4.6 Humidification control

The regulation can be set to be normal or inverse. This means that the regulation starts either at 0% or at 100%.

HC: Controller humidity control	
Operating sense	**normal**
	inverse

The controller types are the same as for the dehumidifying control and are described in section 5.4.5.

HC: Controller humidity control	
Controller type	**PI continuous**
	2-step %
	2-step switching

HC: Controller humidity control	
P-component in % (only visible with “PI continuous”)	1 ... 100 **(20)**

HC: Controller humidity control	
I-component in minutes (only visible with “PI continuous”)	0 ... 255 **(15)**

HC: Controller humidity control	
Hysteresis in % (only visible with “2 step %” and “2 step switching”)	1 ... 20 **(5)**

No.	Name	Function	C	R	W	T	U
126	HC: Output (DPT 5.001)	Humidification	X	-	-	X	-

5.4.6.1 Control variables Humidify

The values for fan control for day and night operation are defined here for both PI control and for 2-step % control. The standard maximum value is lower for night operation to keep noise from fans etc. low during the night.

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Change for sending in % (only visible with “PI continuous”)	1 ... 10 **(3)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Cyclical sending in minutes	0 ... 60 **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Day Minimum in % (only visible with “PI continuous”)	0 ... 100 **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Day Switch-off value in % (only visible with “2 step %”)	0 ... 100 **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Day Maximum in % (only visible with “PI continuous”)	0 ... 100 **(100)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Day Switch-on value in % (only visible with “2 step %”)	0 ... 100 **(100)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Night Switch-off value in % (only visible with “2 step %”)	(0 ... 100) **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Night Minimum in % (only visible with “PI continuous”)	0 ... 100 **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Night Switch-on value in % (only visible with “2 step %”)	0 ... 100 **(100)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Night Maximum in % (only visible with “PI continuous”)	0 ... 100 **(100)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Send value when locked	deactivated
	activated

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Locking value in % (only visible with “PI continuous” and “2 step %”)	0 ... 100 **(0)**

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Locking value (only visible with “2 step switching”)	Switch on
	Switch off

The communication object “Dehumidify” (125) can also be used for humidification. For this purpose, the appropriate setting can be made under “Control variables Humidify” and in the control mode “Dehumidify and humidify”. In this case, the communication object “Humidify” (126) is not required.

HC: Humidity controller Regelung Befeuchten Control variables Humidify	
Use the output for dehumidification	**deactivated**
	activated

6 List of data point types

Air quality								
No.	DPT	Function	Size	C	R	W	T	U
20	AS: Input (DPT 9.008)	Air quality	2 Byte	X	-	X	X	X
21	AS: Output (DPT 9.008)	Air quality	2 Byte	X	-	-	X	-
22	AL1: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
23	AL1: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
24	AL1: Output (DPT 1.001)	Output Limit value 1	1 Bit	X	-	-	X	-
24	AL1: Output (DPT 5.001)	Output Limit value 1	1 Byte	X	-	-	X	-
24	AL1: Output (DPT 5.010)	Output Limit value 1	1 Byte	X	-	-	X	-
24	AL1: Output (DPT 6.010)	Output Limit value 1	1 Byte	X	-	-	X	-
24	AL1: Output (DPT 7.x)	Output Limit value 1	2 Byte	X	-	-	X	-
24	AL1: Output (DPT 8.x)	Output Limit value 1	2 Byte	X	-	-	X	-
24	AL1: Output (DPT 9.x)	Output Limit value 1	2 Byte	X	-	-	X	-
24	AL1: Output (DPT 12.x)	Output Limit value 1	4 Byte	X	-	-	X	-
24	AL1: Output (DPT 13.x)	Output Limit value 1	4 Byte	X	-	-	X	-
24	AL1: Output (DPT 14.x)	Output Limit value 1	4 Byte	X	-	-	X	-
25	AL2: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
26	AL2: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
27	AL2: Output (DPT 1.001)	Output Limit value 2	1 Bit	X	-	-	X	-
27	AL2: Output (DPT 5.001)	Output Limit value 2	1 Byte	X	-	-	X	-
27	AL2: Output (DPT 5.010)	Output Limit value 2	1 Byte	X	-	-	X	-
27	AL2: Output (DPT 6.010)	Output Limit value 2	1 Byte	X	-	-	X	-
27	AL2: Output (DPT 7.x)	Output Limit value 2	2 Byte	X	-	-	X	-
27	AL2: Output (DPT 8.x)	Output Limit value 2	2 Byte	X	-	-	X	-
27	AL2: Output (DPT 9.x)	Output Limit value 2	2 Byte	X	-	-	X	-
27	AL2: Output (DPT 12.x)	Output Limit value 2	4 Byte	X	-	-	X	-
27	AL2: Output (DPT 13.x)	Output Limit value 2	4 Byte	X	-	-	X	-
27	AL2: Output (DPT 14.x)	Output Limit value 2	4 Byte	X	-	-	X	-
28	AL3: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
29	AL3: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
30	AL3: Output (DPT 1.001)	Output Limit value 3	1 Bit	X	-	-	X	-
30	AL3: Output (DPT 5.001)	Output Limit value 3	1 Byte	X	-	-	X	-
30	AL3: Output (DPT 5.010)	Output Limit value 3	1 Byte	X	-	-	X	-
30	AL3: Output (DPT 6.010)	Output Limit value 3	1 Byte	X	-	-	X	-
30	AL3: Output (DPT 7.x)	Output Limit value 3	2 Byte	X	-	-	X	-
30	AL3: Output (DPT 8.x)	Output Limit value 3	2 Byte	X	-	-	X	-
30	AL3: Output (DPT 9.x)	Output Limit value 3	2 Byte	X	-	-	X	-
30	AL3: Output (DPT 12.x)	Output Limit value 3	4 Byte	X	-	-	X	-

Air quality								
No.	DPT	Function	Size	C	R	W	T	U
30	AL3: Output (DPT 13.x)	Output Limit value 3	4 Byte	X	-	-	X	-
30	AL3: Output (DPT 14.x)	Output Limit value 3	4 Byte	X	-	-	X	-
31	AL4: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
32	AL4: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
33	AL4: Output (DPT 1.001)	Output Limit value 4	1 Bit	X	-	-	X	-
33	AL4: Output (DPT 5.001)	Output Limit value 4	1 Byte	X	-	-	X	-
33	AL4: Output (DPT 5.010)	Output Limit value 4	1 Byte	X	-	-	X	-
33	AL4: Output (DPT 6.010)	Output Limit value 4	1 Byte	X	-	-	X	-
33	AL4: Output (DPT 7.x)	Output Limit value 4	2 Byte	X	-	-	X	-
33	AL4: Output (DPT 8.x)	Output Limit value 4	2 Byte	X	-	-	X	-
33	AL4: Output (DPT 9.x)	Output Limit value 4	2 Byte	X	-	-	X	-
33	AL4: Output (DPT 12.x)	Output Limit value 4	4 Byte	X	-	-	X	-
33	AL4: Output (DPT 13.x)	Output Limit value 4	4 Byte	X	-	-	X	-
33	AL4: Output (DPT 14.x)	Output Limit value 4	4 Byte	X	-	-	X	-
39	AR: Input (DPT 1.007)	Set value step (plus/minus)	1 Bit	X	-	X	-	-
40	AR: Input (DPT 9.008)	Set value Absolute	2 Byte	X	-	X	-	-
41	AR: Input (DPT 1.015)	Set value Reset	1 Bit	X	-	X	-	-
42	AR: Input (DPT 1.001)	Lock (priority 1)	1 Bit	X	-	X	-	-
43	AR: Input (DPT 1.001)	Day/night (priority 2)	1 Bit	X	-	X	-	-
44	AR: Output (DPT 9.008)	Set value	2 Byte	X	-	-	X	-
45	AR: Output (DPT 1.001)	Ventilation Stage 1	1 Bit	X	-	-	X	-
45	AR: Output (DPT 1.001)	Ventilation	1 Bit	X	-	-	X	-
45	AR: Output (DPT 5.001)	Ventilation	1 Byte	X	-	-	X	-
46	AR: Output (DPT 1.001)	Ventilation Stage 2	1 Bit	X	-	-	X	-
47	AR: Output (DPT 1.001)	Ventilation Stage 3	1 Bit	X	-	-	X	-
48	AR: Output (DPT 1.001)	Ventilation Stage 4	1 Bit	X	-	-	X	-

Temperature								
No.	DPT	Function	Size	C	R	W	T	U
54	TS: Input (DPT 9.001)	Temperature	2 Byte	X	-	X	X	X
55	TS: Output (DPT 9.001)	Temperature	2 Byte	X	-	-	X	-
56	TL1: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
57	TL1: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
58	TL1: Output (DPT 1.001)	Output Limit value 1	1 Bit	X	-	-	X	-
58	TL1: Output (DPT 5.001)	Output Limit value 1	1 Byte	X	-	-	X	-
58	TL1: Output (DPT 5.010)	Output Limit value 1	1 Byte	X	-	-	X	-
58	TL1: Output (DPT 6.010)	Output Limit value 1	1 Byte	X	-	-	X	-
58	TL1: Output (DPT 7.x)	Output Limit value 1	2 Byte	X	-	-	X	-

Temperature								
No.	DPT	Function	Size	C	R	W	T	U
58	TL1: Output (DPT 8.x)	Output Limit value 1	2 Byte	X	-	-	X	-
58	TL1: Output (DPT 9.x)	Output Limit value 1	2 Byte	X	-	-	X	-
58	TL1: Output (DPT 12.x)	Output Limit value 1	4 Byte	X	-	-	X	-
58	TL1: Output (DPT 13.x)	Output Limit value 1	4 Byte	X	-	-	X	-
58	TL1: Output (DPT 14.x)	Output Limit value 1	4 Byte	X	-	-	X	-
59	TL2: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
60	TL2: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
61	TL2: Output (DPT 1.001)	Output Limit value 2	1 Bit	X	-	-	X	-
61	TL2: Output (DPT 5.001)	Output Limit value 2	1 Byte	X	-	-	X	-
61	TL2: Output (DPT 5.010)	Output Limit value 2	1 Byte	X	-	-	X	-
61	TL2: Output (DPT 6.010)	Output Limit value 2	1 Byte	X	-	-	X	-
61	TL2: Output (DPT 7.x)	Output Limit value 2	2 Byte	X	-	-	X	-
61	TL2: Output (DPT 8.x)	Output Limit value 2	2 Byte	X	-	-	X	-
61	TL2: Output (DPT 9.x)	Output Limit value 2	2 Byte	X	-	-	X	-
61	TL2: Output (DPT 12.x)	Output Limit value 2	4 Byte	X	-	-	X	-
61	TL2: Output (DPT 13.x)	Output Limit value 2	4 Byte	X	-	-	X	-
61	TL2: Output (DPT 14.x)	Output Limit value 2	4 Byte	X	-	-	X	-
62	TL3: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
63	TL3: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
64	TL3: Output (DPT 1.001)	Output Limit value 3	1 Bit	X	-	-	X	-
64	TL3: Output (DPT 5.001)	Output Limit value 3	1 Byte	X	-	-	X	-
64	TL3: Output (DPT 5.010)	Output Limit value 3	1 Byte	X	-	-	X	-
64	TL3: Output (DPT 6.010)	Output Limit value 3	1 Byte	X	-	-	X	-
64	TL3: Output (DPT 7.x)	Output Limit value 3	2 Byte	X	-	-	X	-
64	TL3: Output (DPT 8.x)	Output Limit value 3	2 Byte	X	-	-	X	-
64	TL3: Output (DPT 9.x)	Output Limit value 3	2 Byte	X	-	-	X	-
64	TL3: Output (DPT 12.x)	Output Limit value 3	4 Byte	X	-	-	X	-
64	TL3: Output (DPT 13.x)	Output Limit value 3	4 Byte	X	-	-	X	-
64	TL3: Output (DPT 14.x)	Output Limit value 3	4 Byte	X	-	-	X	-
65	TL4: Input (DPT 9.008)	Limit value	2 Byte	X	-	X	-	-
66	TL4: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
67	TL4: Output (DPT 1.001)	Output Limit value 4	1 Bit	X	-	-	X	-
67	TL4: Output (DPT 5.001)	Output Limit value 4	1 Byte	X	-	-	X	-
67	TL4: Output (DPT 5.010)	Output Limit value 4	1 Byte	X	-	-	X	-
67	TL4: Output (DPT 6.010)	Output Limit value 4	1 Byte	X	-	-	X	-
67	TL4: Output (DPT 7.x)	Output Limit value 4	2 Byte	X	-	-	X	-
67	TL4: Output (DPT 8.x)	Output Limit value 4	2 Byte	X	-	-	X	-
67	TL4: Output (DPT 9.x)	Output Limit value 4	2 Byte	X	-	-	X	-

Temperature								
No.	DPT	Function	Size	C	R	W	T	U
67	TL4: Output (DPT 12.x)	Output Limit value 4	4 Byte	X	-	-	X	-
67	TL4: Output (DPT 13.x)	Output Limit value 4	4 Byte	X	-	-	X	-
67	TL4: Output (DPT 14.x)	Output Limit value 4	4 Byte	X	-	-	X	-
73	TC: Input (DPT 1.007)	Set value Step (Plus/Minus)	1 Bit	X	-	X	-	-
74	TC: Input (DPT 9.001)	Set value Relative	2 Byte	X	-	X	-	-
75	TC: Input (DPT 9.001)	Set value Absolute	2 Byte	X	-	X	-	-
76	TC: Input (DPT 1.015)	Set value Reset	1 Bit	X	-	X	-	-
77	TC: Input (DPT 9.001)	Outdoor temperature	2 Byte	X	-	X	-	-
78	TC: Input (DPT 9.001)	Temperature condensate prevention	2 Byte	X	-	X	-	-
79	TC: Input (DPT 1.001)	Dew point/Lock (Priority 1)	1 Bit	X	-	X	-	-
80	TC: Input (DPT 20.102)	HVAC (Priority 2)	1 Byte	X	-	X	-	-
80	TC: Input (DPT 1.001)	Absence (Priority 2)	1 Bit	X	-	X	-	-
81	TC: Input (DPT 20.102)	HVAC delayed (Priority 3)	1 Byte	X	-	X	-	-
81	TC: Input (DPT 1.001)	Building protection (Priority 3)	1 Bit	X	-	X	-	-
82	TC: Input (DPT 20.102)	HVAC duration (Priority 4)	1 Byte	X	-	X	-	-
82	TC: Input (DPT 1.001)	Comfort extension (Priority 4)	1 Bit	X	-	X	-	-
83	TC: Input (DPT 20.102)	HVAC (Priority 5)	1 Byte	X	-	X	-	-
83	TC: Input (DPT 1.001)	Comfort (Priority 5)	1 Bit	X	-	X	-	-
84	TC: Input (DPT 20.102)	HVAC (Priority 6)	1 Byte	X	-	X	-	-
84	TC: Input (DPT 1.001)	Night (Priority 6)	1 Bit	X	-	X	-	-
85	TC: Input (DPT 1.100)	Switchover heating/cooling	1 Bit	X	-	X	-	-
86	TC: Output (DPT 9.001)	Set value	2 Byte	X	-	-	X	-
87	TC: Output (DPT 1.001)	Bit feedback	1 Bit	X	-	-	X	-
88	TC: Output (DPT 22.101)	RHCC feedback	2 Byte	X	-	-	X	-
89	TC: Output	Byte feedback	1 Byte	X	-	-	X	-
90	TC: Output (DPT 9.001)	Dew point	2 Byte	X	-	-	X	-
91	TC: Output (DPT 1.001)	Heating Stage 1	1 Bit	X	-	-	X	-
91	TC: Output (DPT 5.001)	Heating Stage 1	1 Byte	X	-	-	X	-
92	TC: Output (DPT 1.001)	Heating Stage 2	1 Bit	X	-	-	X	-
92	TC: Output (DPT 5.001)	Heating Stage 2	1 Byte	X	-	-	X	-
93	TC: Output (DPT 1.001)	Cooling Stage 1	1 Bit	X	-	-	X	-
93	TC: Output (DPT 5.001)	Cooling Stage 1	1 Byte	X	-	-	X	-
94	TC: Output (DPT 1.001)	Cooling Stage 2	1 Bit	X	-	-	X	-
94	TC: Output (DPT 5.001)	Cooling Stage 2	1 Byte	X	-	-	X	-

Humidity								
No.	DPT	Function	Size	C	R	W	T	U
98	HS: Input (DPT 5.001)	Humidity	1 Byte	X	-	X	-	X
98	HS: Input (DPT 9.007)	Humidity	2 Byte	X	-	X	-	X
99	HS: Output (DPT 5.001)	Humidity	1 Byte	X	-	-	-	-

Humidity								
No.	DPT	Function	Size	C	R	W	T	U
99	HS: Output (DPT 9.007)	Humidity	2 Byte	X	-	-	-	-
100	HL1: Input (DPT 5.001)	Limit value	1 Byte	X	-	X	-	-
100	HL1: Input (DPT 9.007)	Limit value	2 Byte	X	-	X	-	-
101	HL1: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
102	HL1: Output (DPT 1.001)	Output Limit value 1	1 Bit	X	-	-	X	-
102	HL1: Output (DPT 5.001)	Output Limit value 1	1 Byte	X	-	-	X	-
102	HL1: Output (DPT 5.010)	Output Limit value 1	1 Byte	X	-	-	X	-
102	HL1: Output (DPT 6.010)	Output Limit value 1	1 Byte	X	-	-	X	-
102	HL1: Output (DPT 7.x)	Output Limit value 1	2 Byte	X	-	-	X	-
102	HL1: Output (DPT 8.x)	Output Limit value 1	2 Byte	X	-	-	X	-
102	HL1: Output (DPT 9.x)	Output Limit value 1	2 Byte	X	-	-	X	-
102	HL1: Output (DPT 12.x)	Output Limit value 1	4 Byte	X	-	-	X	-
102	HL1: Output (DPT 13.x)	Output Limit value 1	4 Byte	X	-	-	X	-
102	HL1: Output (DPT 14.x)	Output Limit value 1	4 Byte	X	-	-	X	-
103	HL2: Input (DPT 5.001)	Limit value	1 Byte	X	-	X	-	-
103	HL2: Input (DPT 9.007)	Limit value	2 Byte	X	-	X	-	-
104	HL2: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
105	HL2: Output (DPT 1.001)	Output Limit value 2	1 Bit	X	-	-	X	-
105	HL2: Output (DPT 5.001)	Output Limit value 2	1 Byte	X	-	-	X	-
105	HL2: Output (DPT 5.010)	Output Limit value 2	1 Byte	X	-	-	X	-
105	HL2: Output (DPT 6.010)	Output Limit value 2	1 Byte	X	-	-	X	-
105	HL2: Output (DPT 7.x)	Output Limit value 2	2 Byte	X	-	-	X	-
105	HL2: Output (DPT 8.x)	Output Limit value 2	2 Byte	X	-	-	X	-
105	HL2: Output (DPT 9.x)	Output Limit value 2	2 Byte	X	-	-	X	-
105	HL2: Output (DPT 12.x)	Output Limit value 2	4 Byte	X	-	-	X	-
105	HL2: Output (DPT 13.x)	Output Limit value 2	4 Byte	X	-	-	X	-
105	HL2: Output (DPT 14.x)	Output Limit value 2	4 Byte	X	-	-	X	-
106	HL3: Input (DPT 5.001)	Limit value	1 Byte	X	-	X	-	-
106	HL3: Input (DPT 9.007)	Limit value	2 Byte	X	-	X	-	-
107	HL3: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
108	HL3: Output (DPT 1.001)	Output Limit value 3	1 Bit	X	-	-	X	-
108	HL3: Output (DPT 5.001)	Output Limit value 3	1 Byte	X	-	-	X	-
108	HL3: Output (DPT 5.010)	Output Limit value 3	1 Byte	X	-	-	X	-
108	HL3: Output (DPT 6.010)	Output Limit value 3	1 Byte	X	-	-	X	-
108	HL3: Output (DPT 7.x)	Output Limit value 3	2 Byte	X	-	-	X	-
108	HL3: Output (DPT 8.x)	Output Limit value 3	2 Byte	X	-	-	X	-
108	HL3: Output (DPT 9.x)	Output Limit value 3	2 Byte	X	-	-	X	-
108	HL3: Output (DPT 12.x)	Output Limit value 3	4 Byte	X	-	-	X	-

Humidity								
No.	DPT	Function	Size	C	R	W	T	U
108	HL3: Output (DPT 13.x)	Output Limit value 3	4 Byte	X	-	-	X	-
108	HL3: Output (DPT 14.x)	Output Limit value 3	4 Byte	X	-	-	X	-
109	HL4: Input (DPT 5.001)	Limit value	1 Byte	X	-	X	-	-
109	HL4: Input (DPT 9.007)	Limit value	2 Byte	X	-	X	-	-
110	HL4: Input (DPT 1.001)	Lock	1 Bit	X	-	X	-	-
111	HL4: Output (DPT 1.001)	Output Limit value 4	1 Bit	X	-	-	X	-
111	HL4: Output (DPT 5.001)	Output Limit value 4	1 Byte	X	-	-	X	-
111	HL4: Output (DPT 5.010)	Output Limit value 4	1 Byte	X	-	-	X	-
111	HL4: Output (DPT 6.010)	Output Limit value 4	1 Byte	X	-	-	X	-
111	HL4: Output (DPT 7.x)	Output Limit value 4	2 Byte	X	-	-	X	-
111	HL4: Output (DPT 8.x)	Output Limit value 4	2 Byte	X	-	-	X	-
111	HL4: Output (DPT 9.x)	Output Limit value 4	2 Byte	X	-	-	X	-
111	HL4: Output (DPT 12.x)	Output Limit value 4	4 Byte	X	-	-	X	-
111	HL4: Output (DPT 13.x)	Output Limit value 4	4 Byte	X	-	-	X	-
111	HL4: Output (DPT 14.x)	Output Limit value 4	4 Byte	X	-	-	X	-
117	FR: Input (DPT 1.007)	Set value step (Plus/Minus)	1 Bit	X	-	X	-	-
118	FR: Input (DPT 6.001)	Set value Relative	1 Byte	X	-	X	-	-
119	FR: Input (DPT 5.001)	Set value Absolute	1 Byte	X	-	X	-	-
119	FR: Input (DPT 9.007)	Set value Absolute	2 Byte	X	-	X	-	-
120	FR: Input (DPT 1.015)	Set value Reset	1 Bit	X	-	X	-	-
121	FR: Input (DPT 1.001)	Lock (Priority 1)	1 Bit	X	-	X	-	-
122	FR: Input (DPT 1.001)	Day/Night (Priority 2)	1 Bit	X	-	X	-	-
123	FR: Input (DPT 1.001)	Switchover humidify(0) / dehumidify(1)	1 Bit	X	-	X	-	-
124	FR: Output (DPT 5.001)	Set value	1 Byte	X	-	-	X	-
124	FR: Output (DPT 9.007)	Set value	2 Byte	X	-	-	X	-
125	FR: Output (DPT 1.001)	Dehumidify	1 Bit	X	-	-	X	-
125	FR: Output (DPT 5.001)	Dehumidify	1 Byte	X	-	-	X	-
126	FR: Output (DPT 1.001)	Humidify	1 Bit	X	-	-	X	-
126	FR: Output (DPT 5.001)	Humidify	1 Byte	X	-	-	X	-

93806_Appl_MAN_WS-VOC_HVAC_KNX_en_V3 ■ 24.02.21

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