

# Vari KNX 3L-TH-D GPS

## Combined Outdoor Sensor

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Item number 70390



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Installation, inspection, commissioning and troubleshooting of the device must only be carried out by a competent electrician.

This manual is amended periodically and will be brought into line with new software releases. The change status (software version and date) can be found in the contents footer. If you have a device with a later software version, please check **www.elsner-elektronik.de** in the menu area "Service" to find out whether a more up-to-date version of the manual is available.

## Clarification of signs used in this manual



Safety advice.



Safety advice for working on electrical connections, components, etc.

### **DANGER!**

... indicates an immediately hazardous situation which will lead to death or severe injuries if it is not avoided.

### **WARNING!**

... indicates a potentially hazardous situation which may lead to death or severe injuries if it is not avoided.

### **CAUTION!**

... indicates a potentially hazardous situation which may lead to trivial or minor injuries if it is not avoided.



**ATTENTION!** ... indicates a situation which may lead to damage to property if it is not avoided.

### ETS

In the ETS tables, the parameter default settings are marked by underlining.

# 1. Description

The **Sensor Vari KNX 3L-TH-D GPS** for the KNX building bus system records brightness, temperature, air humidity and air pressure outside. The device also receives the GPS signal for time and location and uses it to compute the position of the sun (azimuth and elevation).

All measurement values can be used for the control of limit-dependent switching outputs. States can be linked via AND logic gates and OR logic gates. Multi-function modules change input data as required by means of calculations, querying a condition, or converting the data point type. In addition, an integrated control variable comparator can compare and output variables that were received via communication objects.

Integrated PI-controllers control ventilation (according to humidity) and heating/cooling (according to temperature). The **Vari KNX 3L-TH-D GPS** can output a warning to the bus as soon as the comfort field (as per DIN 1946) is exited.

The compact housing of the **Vari KNX 3L-TH-D GPS** accommodates the sensors, evaluation circuits and bus-coupling electronics.

## Functions:

- **Brightness measurement:** The current light intensity is measured by three sensors. Of the three measurement values, the maximum value or a calculated mixed value can be output optionally.
- **GPS receiver,** outputting the current time and location coordinates. The **Sensor Vari KNX 3L-TH-D GPS** also computes the position of the sun (azimuth and elevation)
- **Temperature and humidity measurement** (relative, absolute), in each case with **Mixed value calculation**. The share of internal measurement value and external value can be set as a percentage.  
In addition the bus output will indicate whether the values are inside the **comfort field** (DIN 1946). The **dewpoint** will be calculated
- **Air pressure measurement:** Output of the value as normal pressure and optionally as barometric pressure
- **Switching outputs** for all measured and computed values. Threshold values can be adjusted per parameter or via communication objects
- **PI-controller for heating** (one or two-stage) and **cooling** (one or two-stage) according to temperature. Regulation according to separate setpoints or basic setpoint temperature
- **PI controller for humidity** according to humidity: Ventilate/Air (one-stage) or Ventilate (one or two-stage)
- **Weekly and calendar time switch:** All time switching outputs can be used as communication objects.  
The **weekly time switch** has 24 periods. Each period can be configured either as an output or as an input. If the period is an output, then the switching time is set per parameter or per communication object.  
The **calendar time switch** has 4 periods. Two on/off switching operations, which are executed daily, can be set for each period

- **8 AND and 8 OR logic gates**, each with 4 inputs. All switching events as well as 16 logic inputs (in the form of communications objects) can be used as inputs for the logic gates. The output of each gate can be configured optionally as 1-bit or 2 x 8-bit
- **8 multi-function modules** (computers) for changing the input data by calculations, by querying a condition or by converting the data point type
- **4 control variable comparators** to output minimum, maximum or average values. 5 inputs each for values received via communication objects
- **Summer compensation** for cooling systems. A characteristic curve matches the target temperature in the room to the external temperature and sets the minimum and maximum target temperature values

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik website on **[www.elsner-elektronik.de](http://www.elsner-elektronik.de)** in the "Service" menu.

### 1.0.1. Scope of delivery

- Sensor
- Stainless steel installation band for pole installation
- 4x50 mm stainless steel Roundhead screws and 6x30 mm dowels for wall mounting. Use fixing materials that are suitable for the base!

## 1.1. Technical specification

|                        |  |
|------------------------|--|
| Housing                | Plastic  |
| Colour                 | White / Translucent  |
| Assembly               | Surface mount  |
| Protection category    | IP 44  |
| Dimensions             | approx. 65 × 80 × 30 (W × H × D, mm)                           |
| Weight                 | approx. 60 g   |
| Ambient temperature    | Operation -25...+80°C, Storage -40...+85°C, avoid condensation |
| Operating voltage      | KNX bus voltage  |
| Bus current            | max. 20 mA   |
| Data output            | KNX +/- bus connector terminal                                 |
| BCU type               | Integrated micro controller                                    |
| PEI type               | 0  |
| Group addresses        | max. 2000  |
| Assignments            | max. 2000  |
| Communication objects: | 603  |
| Temperature sensor:    |  |
| Measurement range      | -25°C ... +80°C  |
| Resolution             | 0.1°C  |

|                    |   |
|--------------------|---|
| Accuracy           | ±0,8°C at -25...-10°C<br>±0,5°C at -10...+65°C<br>±0,6°C at +65...+80°C   |
| Humidity sensor:   |   |
| Measurement range  | 0% RH ... 100% RH   |
| Resolution         | 0.1% RH   |
| Accuracy           | ±7,5% RH at 0...10% RH<br>±4,5% RH at 10...90% RH<br>±7,5% RH at 90...100% RH   |
| Pressure sensor:   |   |
| Measurement range  | 300 mbar ... 1100 mbar  |
| Resolution         | 0.1 mbar  |
| Accuracy           | ±4 mbar   |
| Brightness sensor: |   |
| Measurement range  | 0 lux ... 150,000 lux   |
| Resolution         | 1 lux at 0...255 lux<br>6 lux at 256...2,645 lux<br>96 lux at 2,646...128,256 lux<br>762 lux at 128,257...150,000 lux |
| Accuracy           | ±15% of the measurement value at 35 lux ... 150,000 lux   |

The product conforms with the provisions of EU directives.

## 2. Installation and start-up

### 2.1. Installation notes



Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.



#### **CAUTION!** **Live voltage!**

There are unprotected live components inside the device.

- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for its intended purpose. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

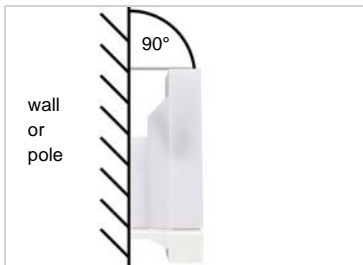
The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

## 2.2. Installation location

Due to the GPS receiver, the **Sensor Vari KNX 3L-TH-D GPS** must be installed outside.

The device should be protected from condensation. For critical applications in which the formation of condensation is expected, please consult Elsner Elektronik about special solutions.



*Fig. 1*

*The device must be attached to a vertical wall (or a pole).*



*Fig. 2*

*The device must be mounted in the horizontal (transverse) direction.*

Select an installation position on the building where the sensors can measure sunshine without any obstructions. The weather station should not be shaded by structures or, for example, trees. Ensure no shadow is thrown on the device by an extended awning.



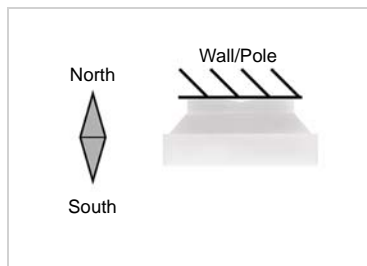


Fig. 3

*For installation in the northern hemisphere, the device must be aligned to face south.*

*For installation in the southern hemisphere, the device must be aligned to face north.*

Temperature measurements can also be distorted by external influences such as warming or cooling of the building structure on which the sensor is mounted (sunlight, heating or cold water pipes). Temperature variations from such sources of interference must be corrected in the ETS in order to ensure the specified accuracy of the sensor (temperature offset).

Magnetic fields, transmitters and interference fields from electrical consumers (e.g. fluorescent lamps, neon signs, switch mode power supplies etc.) can block or interfere with the reception of the GPS signal.

## 2.3. Device design

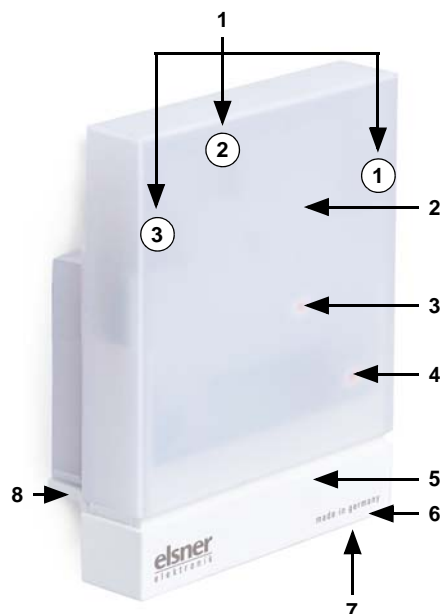


Fig. 4

- 1 Position of the brightness sensors 1-3. With alignment of the device to the south  
Sensor 1 = East  
Sensor 2 = South  
Sensor 3 = West
- 2 Semi-transparent cover (GPS receiver and pressure sensor below)
- 3 Position of the Signal LED (under the cover). LED is freely controlled via two objects
- 4 Position of the programming LED (under the cover)
- 5 Lower part of housing
- 6 Temperature and humidity sensor
- 7 Programming key on the bottom of the housing (recessed), see Addressing the device, page 13
- 8 Wall/Pole holder

## 2.4. Installing the device



### ATTENTION!

Even a few drops of water can damage the device electronics.

- Do not open the device if water (e.g. rain) can get into it.

### 2.4.1. Preparation for installation



Fig. 5

The cover and lower part of the housing are connected together. Pull both parts apart in a straight line.

### 2.4.2. Fitting the lower part of the housing with mounting

Now, first of all, assemble the lower part of the housing with the integrated mounting for wall or pole installation.

#### Wall installation

Use fixing materials (dowels, screws) that are suitable for the base.



Fig. 6

The device is installed with two screws. Break off the two longitudinal holes in the housing.



Fig. 7 a+b

- a) If the power lead is to be hidden when installed, it must emerge from the wall in the vicinity of the rear of the housing (marked area).



- b) If the power lead is to be surface-mounted, the cable guide is broken off. The lead is then fed into the device from the bottom of the housing.

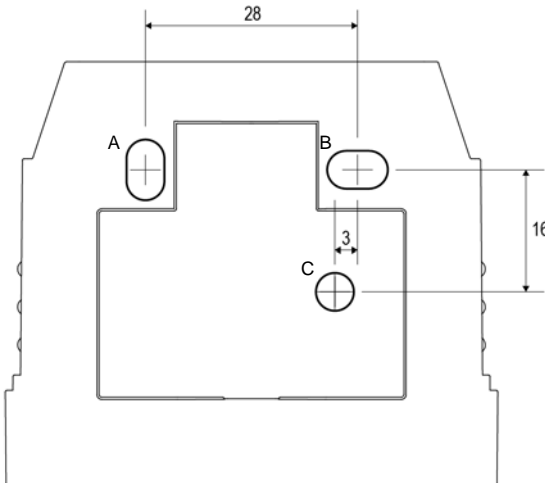


**Fig. 8**  
Feed the power lead through the rubber gasket.

### Drilling plan

**ATTENTION!** The print out of the data sheet doesn't have original size!

A separate, dimensionally correct drilling plan is included ex works and this can be used as a template.



**Fig. 9**  
Dimensions in mm. Variations are possible for technical reasons

A/B 2x longitudinal holes  
8 mm x 5 mm

C Position of the cable  
outlet (rubber gasket)  
in the housing

### Pole installation

The device is installed on the pole with the enclosed stainless steel mounting band.



Fig. 10

Feed the mounting band through the eyelets in the lower part of the housing.

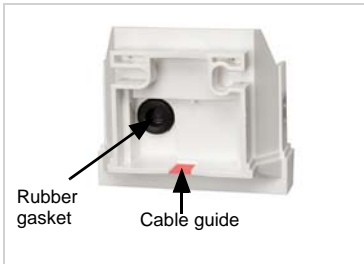


Fig. 11

Break the cable guide off.

Feed the power lead through the rubber gasket.

### 2.4.3. Connection

The connector is in the lower part of the housing.

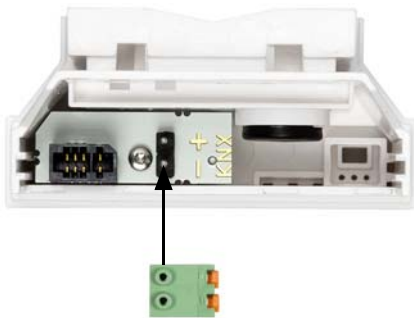
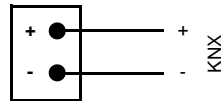


Fig. 12

Connect the device to the KNX bus via the pluggable terminal (+/-).



### 2.4.4. Completing the installation



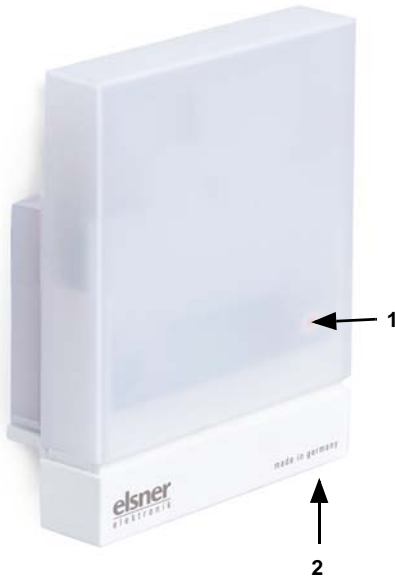
*Fig. 13*

*Put the cover on the lower part. This also makes the plug-in connection between the board in the cover and the socket in the lower part.*

## 3. Addressing the device

The device is delivered ex works with the bus address 15.15.250. You can program a different address in the ETS by overwriting the address 15.15.250 or by teaching the device via the programming button.

The programming button can be reached through the opening on the underside of the housing; it is recessed by approx. 8 mm. Use a thin object to reach the button, e.g. a 1.5 mm<sup>2</sup> wire.



*Fig. 14 a+b*

- 1 Programming LED (under the semi-transparent cover)
- 2 Programming button for teaching the device



## 4. Maintenance

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**WARNING!****Risk of injury due to automatically moved components!**

The automatic control may cause parts of the system to start up and pose a danger to humans.

- Always disconnect the system from the mains power before maintenance or cleaning.
- 

The device should be regularly checked twice a year for soiling and cleaned if required. If there is major soiling, the function of the sensor may be compromised.

---

**ATTENTION**

The device may be damaged if water penetrates the housing.

- Do not clean with high pressure cleaners or steam jets.
-

## 5. Transfer protocol

### Units:

*Temperatures in degrees Celsius*

*Brightness in Lux*

*Air pressure in Pascal*

*Azimuth and elevation in degrees*

*Air humidity in %*

*Absolute air humidity in g/kg and/or g/m<sup>3</sup>*

*Variables in %*

### 5.1. List of all communication objects

#### Abbreviation flags:

*C* Communication

*R* Read

*W* Write

*T* Transfer

*U* Update

| No. | Text                                     | Function | Flags | DPT type                  | Size    |
|-----|--|----------|-------|---------------------------|---------|
| 1   | Software version                         | Output   | R-CT  | [217.1] DPT_Version       | 2 bytes |
| 21  | Signal LED object 1s cycle               | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit   |
| 22  | Signal LED object 4s cycle               | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit   |
| 24  | GPS malfunction (0 : OK   1: NOK)        | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit   |
| 25  | Date / time                              | Output   | RWCT  | [19.1] DPT_Date-Time      | 8 bytes |
| 26  | Date                                     | Output   | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 27  | Time                                     | Output   | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 28  | Date and time query                      | Input    | -WC-  | [1.017] DPT_Trigger       | 1 bit   |
| 30  | Location: Northern latitude [°]          | Output   | R-CT  | [14.7] DPT_Value_AngleDeg | 4 bytes |
| 31  | Location: Eastern longitude [°]          | Output   | R-CT  | [14.7] DPT_Value_AngleDeg | 4 bytes |
| 41  | Temperature sensor: Malfunction          | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 42  | Temperature sensor: External measurement | Input    | -WCT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 43  | Temperature sensor: Measured value       | Output   | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |

| No. | Text   | Function     | Flags | DPT type                | Size    |
|-----|--|--------------|-------|-------------------------|---------|
| 44  | Temperature sensor: Total measurement                | Output       | R-CT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 45  | Temperature sensor: Min./Max. measurement query      | Input        | -WC-  | [1.017] DPT_Trigger     | 1 bit   |
| 46  | Temperature sensor: Minimum measurement              | Output       | R-CT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 47  | Temperature sensor: Maximum measurement              | Output       | R-CT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 48  | Temperature sensor: Min./Max. measurement reset      | Input        | -WC-  | [1.017] DPT_Trigger     | 1 bit   |
| 51  | Temp. threshold value 1: Absolute value              | Input/Output | RWCT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 52  | Temp. threshold value 1: (1:+   0:-)                 | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 53  | Temp. threshold value 1: Switching delay from 0 to 1 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 54  | Temp. threshold value 1: Switching delay from 1 to 0 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 55  | Temp. threshold value 1: Switching output            | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 56  | Temp. threshold value 1: Switching output block      | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 58  | Temp. threshold value 2: Absolute value              | Input/Output | RWCT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 59  | Temp. threshold value 2: (1:+   0:-)                 | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 60  | Temp. threshold value 2: Switching delay from 0 to 1 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 61  | Temp. threshold value 2: Switching delay from 1 to 0 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 62  | Temp. threshold value 2: Switching output            | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 63  | Temp. threshold value 2: Switching output block      | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 65  | Temp. threshold value 3: Absolute value              | Input/Output | RWCT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 66  | Temp. threshold value 3: (1:+   0:-)                 | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 67  | Temp. threshold value 3: Switching delay from 0 to 1 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 68  | Temp. threshold value 3: Switching delay from 1 to 0 | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 69  | Temp. threshold value 3: Switching output            | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 70  | Temp. threshold value 3: Switching output block      | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |



| No. | Text  | Function     | Flags | DPT type                | Size    |
|-----|---|--------------|-------|-------------------------|---------|
| 72  | Temp. threshold value 4: Absolute value                       | Input/Output | RWCT  | [9.1] DPT_Value_Temp    | 2 bytes |
| 73  | Temp. threshold value 4: (1:+   0:-)                          | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 74  | Temp. threshold value 4: Switching delay from 0 to 1          | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 75  | Temp. threshold value 4: Switching delay from 1 to 0          | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 76  | Temp. threshold value 4: Switching output                     | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 77  | Temp. threshold value 4: Switching output block               | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
|     |   |              |       |                         |         |
| 95  | Brightness measured value sensor 1                            | Output       | R-CT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 96  | Brightness measured value sensor 2                            | Output       | R-CT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 97  | Brightness measured value sensor 3                            | Output       | R-CT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 98  | Total brightness measured value                               | Output       | R-CT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 101 | Brightness sensor 1 threshold value 1: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 102 | Brightness sensor 1 threshold value 1: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 103 | Brightness sensor 1 threshold value 1: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 104 | Brightness sensor 1 threshold value 1: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 105 | Brightness sensor 1 threshold value 1: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 106 | Brightness sensor 1 threshold value 1: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 108 | Brightness sensor 1 threshold value 2: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 109 | Brightness sensor 1 threshold value 2: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 110 | Brightness sensor 1 threshold value 2: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 111 | Brightness sensor 1 threshold value 2: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 112 | Brightness sensor 1 threshold value 2: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |

| No. | Text  | Function     | Flags | DPT type                | Size    |
|-----|---|--------------|-------|-------------------------|---------|
| 113 | Brightness sensor 1 threshold value 2: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 115 | Brightness sensor 1 threshold value 3: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 116 | Brightness sensor 1 threshold value 3: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 117 | Brightness sensor 1 threshold value 3: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 118 | Brightness sensor 1 threshold value 3: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 119 | Brightness sensor 1 threshold value 3: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 120 | Brightness sensor 1 threshold value 3: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 122 | Brightness sensor 1 threshold value 4: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 123 | Brightness sensor 1 threshold value 4: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 124 | Brightness sensor 1 threshold value 4: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 125 | Brightness sensor 1 threshold value 4: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 126 | Brightness sensor 1 threshold value 4: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 127 | Brightness sensor 1 threshold value 4: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 129 | Brightness sensor 2 threshold value 1: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 130 | Brightness sensor 2 threshold value 1: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 131 | Brightness sensor 2 threshold value 1: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 132 | Brightness sensor 2 threshold value 1: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 133 | Brightness sensor 2 threshold value 1: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 134 | Brightness sensor 2 threshold value 1: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 136 | Brightness sensor 2 threshold value 2: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 137 | Brightness sensor 2 threshold value 2: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |

| No. | Text  | Function         | Flags | DPT type                 | Size    |
|-----|---|------------------|-------|--------------------------|---------|
| 138 | Brightness sensor 2 threshold value 2: Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 139 | Brightness sensor 2 threshold value 2: Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 140 | Brightness sensor 2 threshold value 2: Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 141 | Brightness sensor 2 threshold value 2: Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 143 | Brightness sensor 2 threshold value 3: Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 144 | Brightness sensor 2 threshold value 3: (1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 145 | Brightness sensor 2 threshold value 3: Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 146 | Brightness sensor 2 threshold value 3: Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 147 | Brightness sensor 2 threshold value 3: Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 148 | Brightness sensor 2 threshold value 3: Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 150 | Brightness sensor 2 threshold value 4: Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 151 | Brightness sensor 2 threshold value 4: (1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 152 | Brightness sensor 2 threshold value 4: Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 153 | Brightness sensor 2 threshold value 4: Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 154 | Brightness sensor 2 threshold value 4: Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 155 | Brightness sensor 2 threshold value 4: Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 157 | Brightness sensor 3 threshold value 1: Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 158 | Brightness sensor 3 threshold value 1: (1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 159 | Brightness sensor 3 threshold value 1: Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 160 | Brightness sensor 3 threshold value 1: Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 161 | Brightness sensor 3 threshold value 1: Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |

| No. | Text  | Function     | Flags | DPT type                | Size    |
|-----|---|--------------|-------|-------------------------|---------|
| 162 | Brightness sensor 3 threshold value 1: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 164 | Brightness sensor 3 threshold value 2: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 165 | Brightness sensor 3 threshold value 2: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 166 | Brightness sensor 3 threshold value 2: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 167 | Brightness sensor 3 threshold value 2: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 168 | Brightness sensor 3 threshold value 2: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 169 | Brightness sensor 3 threshold value 2: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 171 | Brightness sensor 3 threshold value 3: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 172 | Brightness sensor 3 threshold value 3: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 173 | Brightness sensor 3 threshold value 3: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 174 | Brightness sensor 3 threshold value 3: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 175 | Brightness sensor 3 threshold value 3: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 176 | Brightness sensor 3 threshold value 3: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 178 | Brightness sensor 3 threshold value 4: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 179 | Brightness sensor 3 threshold value 4: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 180 | Brightness sensor 3 threshold value 4: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 181 | Brightness sensor 3 threshold value 4: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 182 | Brightness sensor 3 threshold value 4: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 183 | Brightness sensor 3 threshold value 4: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 185 | Total brightness threshold value 1: Absolute value            | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 186 | Total brightness threshold value 1: (1:+   0:-)               | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |

| No. | Text  | Function         | Flags | DPT type                 | Size    |
|-----|---|------------------|-------|--------------------------|---------|
| 187 | Total brightness threshold value 1:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 188 | Total brightness threshold value 1:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 189 | Total brightness threshold value 1:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 190 | Total brightness threshold value 1:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 192 | Total brightness threshold value 2:<br>Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 193 | Total brightness threshold value 2:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 194 | Total brightness threshold value 2:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 195 | Total brightness threshold value 2:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 196 | Total brightness threshold value 2:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 197 | Total brightness threshold value 2:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 199 | Total brightness threshold value 3:<br>Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 200 | Total brightness threshold value 3:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 201 | Total brightness threshold value 3:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 202 | Total brightness threshold value 3:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 203 | Total brightness threshold value 3:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 204 | Total brightness threshold value 3:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 206 | Total brightness threshold value 4:<br>Absolute value         | Input/<br>Output | RWCT  | [9.4] DPT_Value_Lux      | 2 bytes |
| 207 | Total brightness threshold value 4:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 208 | Total brightness threshold value 4:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 209 | Total brightness threshold value 4:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec | 2 bytes |
| 210 | Total brightness threshold value 4:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch         | 1 bit   |

| No. | Text  | Function     | Flags | DPT type                | Size    |
|-----|---|--------------|-------|-------------------------|---------|
| 211 | Total brightness threshold value 4: Switching output block    | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 213 | Twilight brightness threshold value 1: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 214 | Twilight brightness threshold value 1: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 215 | Twilight brightness threshold 1: delay from 0 to 1            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 216 | Twilight brightness threshold 1: delay from 1 to 0            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 217 | Twilight brightness threshold value 1: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 218 | Twilight brightness threshold value 1: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 220 | Twilight brightness threshold value 2: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 221 | Twilight brightness threshold value 2: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 222 | Twilight brightness threshold 2: delay from 0 to 1            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 223 | Twilight brightness threshold 2: delay from 1 to 0            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 224 | Twilight brightness threshold value 2: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 225 | Twilight brightness threshold value 2: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 227 | Twilight brightness threshold value 3: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 228 | Twilight brightness threshold value 3: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 229 | Twilight brightness threshold 3: delay from 0 to 1            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 230 | Twilight brightness threshold 3: delay from 1 to 0            | Input        | -WC-  | [7.5] DPT_TimePeriodSec | 2 bytes |
| 231 | Twilight brightness threshold value 3: Switching output       | Output       | R-CT  | [1.1] DPT_Switch        | 1 bit   |
| 232 | Twilight brightness threshold value 3: Switching output block | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |
| 234 | Twilight brightness threshold value 4: Absolute value         | Input/Output | RWCT  | [9.4] DPT_Value_Lux     | 2 bytes |
| 235 | Twilight brightness threshold value 4: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch        | 1 bit   |

| No. | Text  | Function     | Flags | DPT type                   | Size    |
|-----|---|--------------|-------|----------------------------|---------|
| 236 | Twilight brightness threshold 4: delay from 0 to 1            | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 237 | Twilight brightness threshold 4: delay from 1 to 0            | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 238 | Twilight brightness threshold value 4: Switching output       | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 239 | Twilight brightness threshold value 4: Switching output block | Input        | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 251 | Night: Switching output                                       | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 252 | Night: Switching delay on night                               | Input        | -WC-  | [7,005] DPT_-TimePeriodSec | 2 bytes |
| 253 | Night: Switching delay on day                                 | Input        | -WC-  | [7,005] DPT_-TimePeriodSec | 2 bytes |
| 261 | Sun position: Azimuth   | Output       | R-CT  | [14.7] DPT_Value_AngleDeg  | 4 bytes |
| 262 | Sun position: Elevation                                       | Output       | R-CT  | [14.7] DPT_Value_AngleDeg  | 4 bytes |
| 263 | Sun position: Azimuth   | Output       | R-CT  | [9] 9.xxx                  | 2 bytes |
| 264 | Sun position: Elevation                                       | Output       | R-CT  | [9] 9.xxx                  | 2 bytes |
| 311 | Humidity sensor: Malfunction                                  | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 314 | Humidity sensor: External measurement                         | Input        | -WCT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 315 | Humidity sensor: Measured value                               | Output       | R-CT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 316 | Humidity sensor: Total measurement                            | Output       | R-CT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 317 | Humidity sensor: Min./Max. measurement query                  | Input        | -WC-  | [1.017] DPT_Trigger        | 1 bit   |
| 318 | Humidity sensor: Minimum measurement                          | Output       | R-CT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 319 | Humidity sensor: Maximum measurement                          | Output       | R-CT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 320 | Humidity sensor: Min./Max. measurement reset                  | Input        | -WC-  | [1.017] DPT_Trigger        | 1 bit   |
| 331 | Humidity threshold value 1: Absolute value                    | Input/Output | RWCT  | [9.7] DPT_Value_Humidity   | 2 bytes |
| 332 | Humidity threshold value 1: (1:+   0:-)                       | Input        | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 333 | Humidity threshold value 1: Delay from 0 to 1                 | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 334 | Humidity threshold value 1: Delay from 1 to 0                 | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |

| No. | Text   | Function     | Flags | DPT type                 | Size    |
|-----|--|--------------|-------|--------------------------|---------|
| 335 | Humidity threshold value 1: Switching output       | Output       | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 336 | Humidity threshold value 1: Switching output block | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 337 | Humidity threshold value 2: Absolute value         | Input/Output | RWCT  | [9.7] DPT_Value_Humidity | 2 bytes |
| 338 | Humidity threshold value 2: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 339 | Humidity threshold value 2: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 340 | Humidity threshold value 2: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 341 | Humidity threshold value 2: Switching output       | Output       | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 342 | Humidity threshold value 2: Switching output block | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 343 | Humidity threshold value 3: Absolute value         | Input/Output | RWCT  | [9.7] DPT_Value_Humidity | 2 bytes |
| 344 | Humidity threshold value 3: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 345 | Humidity threshold value 3: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 346 | Humidity threshold value 3: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 347 | Humidity threshold value 3: Switching output       | Output       | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 348 | Humidity threshold value 3: Switching output block | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 349 | Humidity threshold value 4: Absolute value         | Input/Output | RWCT  | [9.7] DPT_Value_Humidity | 2 bytes |
| 350 | Humidity threshold value 4: (1:+   0:-)            | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
| 351 | Humidity threshold value 4: Delay from 0 to 1      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 352 | Humidity threshold value 4: Delay from 1 to 0      | Input        | -WC-  | [7.5] DPT_TimePeriodSec  | 2 bytes |
| 353 | Humidity threshold value 4: Switching output       | Output       | R-CT  | [1.1] DPT_Switch         | 1 bit   |
| 354 | Humidity threshold value 4: Switching output block | Input        | -WC-  | [1.1] DPT_Switch         | 1 bit   |
|     |  |              |       |                          |         |
| 381 | Dewpoint: Measured value                           | Output       | R-CT  | [9.1] DPT_Value_Temp     | 2 bytes |
| 382 | Coolant temp.: Threshold value                     | Output       | R-CT  | [9.1] DPT_Value_Temp     | 2 bytes |



| No. | Text   | Function     | Flags | DPT type                   | Size     |
|-----|--|--------------|-------|----------------------------|----------|
| 383 | Coolant temp.: Actual value                                    | Input        | RWCT  | [9.1] DPT_Value_Temp       | 2 bytes  |
| 384 | Coolant temp.: Offset change (1:+   0:-)                       | Input        | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 385 | Coolant temp.: Current offset                                  | Output       | R-CT  | [9.1] DPT_Value_Temp       | 2 bytes  |
| 386 | Coolant temp.: Switching delay from 0 to 1                     | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes  |
| 387 | Coolant temp.: Switching delay from 1 to 0                     | Input        | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes  |
| 388 | Coolant temp.: Switching output                                | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 389 | Coolant temp.: Switching output block                          | Input        | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 391 | Absolute humidity [g/kg]                                       | Output       | R-CT  | [14.5] DPT_Value_Amplitude | 4 bytes  |
| 392 | Absolute humidity [g/m³]                                       | Output       | R-CT  | [14.17] DPT_Value_Density  | 4 bytes  |
| 394 | Ambient climate status:<br>1 = comfortable   0 = uncomfortable | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 395 | Ambient climate status: Text                                   | Output       | R-CT  | [16.0] DPT_String_ASCII    | 14 bytes |
|     |  |              |       |                            |          |
| 401 | Air pressure sensor: Malfunction                               | Output       | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 402 | Air pressure sensor: Normal measurement [Pa]                   | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 403 | Air pressure sensor: Barometric measurement [Pa]               | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 404 | Air pressure sensor: Min./Max. measurement query               | Input        | -WC-  | [1.017] DPT_Trigger        | 1 bit    |
| 405 | Air pressure sensor: Min. normal measurement [Pa]              | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 406 | Air pressure sensor: Min. barometric measurement [Pa]          | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 407 | Air pressure sensor: Max. normal measurement [Pa]              | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 408 | Air pressure sensor: Max. barometric measurement [Pa]          | Output       | R-CT  | [14.58] DPT_Value_Pressure | 4 bytes  |
| 409 | Air pressure sensor: Min./Max. measurement reset               | Input        | -WC-  | [1.017] DPT_Trigger        | 1 bit    |
| 410 | Air pressure sensor: Pressure range text                       | Output       | R-CT  | [16.0] DPT_String_ASCII    | 14 bytes |
| 411 | Air pressure threshold value 1: Absolute value                 | Input/Output | RWCT  | [14.58] DPT_Value_Pressure | 4 bytes  |

| No. | Text  | Function         | Flags | DPT type                   | Size    |
|-----|---|------------------|-------|----------------------------|---------|
| 412 | Air pressure threshold value 1:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 413 | Air pressure threshold value 1:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 414 | Air pressure threshold value 1:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 415 | Air pressure threshold value 1:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 416 | Air pressure threshold value 1:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 417 | Air pressure threshold value 2:<br>Absolute value         | Input/<br>Output | RWCT  | [14.58] DPT_Value_Pressure | 4 bytes |
| 418 | Air pressure threshold value 2:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 419 | Air pressure threshold value 2:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 420 | Air pressure threshold value 2:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 421 | Air pressure threshold value 2:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 422 | Air pressure threshold value 2:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 423 | Air pressure threshold value 3:<br>Absolute value         | Input/<br>Output | RWCT  | [14.58] DPT_Value_Pressure | 4 bytes |
| 424 | Air pressure threshold value 3:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 425 | Air pressure threshold value 3:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 426 | Air pressure threshold value 3:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 427 | Air pressure threshold value 3:<br>Switching output       | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 428 | Air pressure threshold value 3:<br>Switching output block | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 429 | Air pressure threshold value 4:<br>Absolute value         | Input/<br>Output | RWCT  | [14.58] DPT_Value_Pressure | 4 bytes |
| 430 | Air pressure threshold value 4:<br>(1:+   0:-)            | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
| 431 | Air pressure threshold value 4:<br>Delay from 0 to 1      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
| 432 | Air pressure threshold value 4:<br>Delay from 1 to 0      | Input            | -WC-  | [7.5] DPT_Time-PeriodSec   | 2 bytes |

| No. | Text  | Function     | Flags | DPT type               | Size    |
|-----|---|--------------|-------|------------------------|---------|
| 433 | Air pressure threshold value 4: Switching output        | Output       | R-CT  | [1.1] DPT_Switch       | 1 bit   |
| 434 | Air pressure threshold value 4: Switching output block  | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 481 | Temp. controller: HVAC mode (priority 1)                | Input        | -WC-  | [20.102] DPT_H-VACMode | 1 byte  |
| 482 | Temp. controller: HVAC mode (priority 2)                | Input        | RWCT  | [20.102] DPT_H-VACMode | 1 byte  |
| 483 | Temp. controller: Mode frost/heat protection activation | Input        | RWCT  | [1.1] DPT_Switch       | 1 bit   |
| 484 | Temp. controller: Block (1 = Blocking)                  | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 485 | Temp. controller: Current setpoint                      | Output       | R-CT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 486 | Temp. controller: Switching (0: Heating   1: Cooling)   | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 487 | Temp. controller: Setpoint comfort heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 488 | Temp. controller: Setpoint comfort heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 489 | Temp. controller: Setpoint comfort cooling              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 490 | Temp. controller: Setpoint comfort cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 491 | Temp. controller: Basic setpoint shift 16 bit           | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 492 | Temp. controller: Setpoint standby heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 493 | Temp. controller: Setpoint standby heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 494 | Temp. controller: Setpoint standby cooling              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 495 | Temp. controller: Setpoint standby cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 496 | Temp. controller: Setpoint eco heating                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 497 | Temp. controller: Setpoint, eco heating (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 498 | Temp. controller: Setpoint eco cooling                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 499 | Temp. controller: Setpoint, eco cooling (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |

| No. | Text  | Function         | Flags | DPT type                   | Size    |
|-----|---|------------------|-------|----------------------------|---------|
| 500 | Temp. controller: Heating control variable (1. level)                   | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 501 | Temp. controller: Heating control variable (2nd level)                  | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 502 | Temp. controller: Control variable, cooling (1st level)                 | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 503 | Temp. controller: Control variable cooling (2nd level)                  | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 504 | Temp. controller: Variable for 4/6-way valve                            | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 505 | Temp. controller: Status heating level 1 (1:ON   0:OFF)                 | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 506 | Temp. controller: Status heating level 2 (1:ON   0:OFF)                 | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 507 | Temp. controller: Status cooling level 1 (1:ON   0:OFF)                 | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 508 | Temp. controller: Status cooling level 2 (1:ON   0:OFF)                 | Output           | R-CT  | [1.1] DPT_Switch           | 1 bit   |
| 509 | Temp. controller: Comfort extension status                              | Input/<br>Output | RWCT  | [1.1] DPT_Switch           | 1 bit   |
| 510 | Temp. controller: Comfort extension time                                | Input            | RWCT  | [7.5] DPT_Time-PeriodSec   | 2 bytes |
|     |   |                  |       |                            |         |
| 515 | European Summer Time: Outside temperature                               | Input            | -WCT  | [9.1] DPT_Value_Temp       | 2 bytes |
| 516 | European Summer Time: Setpoint value                                    | Output           | R-CT  | [9.1] DPT_Value_Temp       | 2 bytes |
| 517 | European Summer Time: Block (1 = Blocking)                              | Input            | -WC-  | [1.1] DPT_Switch           | 1 bit   |
|     |   |                  |       |                            |         |
| 521 | Humidity controller: Block (1: block)                                   | Input            | -WC-  | [1.2] DPT_Bool             | 1 bit   |
| 522 | Humidity controller: Setpoint value                                     | Input/<br>Output | RWCT  | [9.007] DPT_Value_Humidity | 2 bytes |
| 523 | Humidity controller: Setpoint value (1:+   0:-)                         | Input            | -WC-  | [1.2] DPT_Bool             | 1 bit   |
| 524 | Humidity controller: Control variable dehumidification                  | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 525 | Humidity controller: Control variable dehumidification of the 2nd level | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |
| 526 | Humidity controller: Control variable humidification                    | Output           | R-CT  | [5.1] DPT_Scaling          | 1 byte  |

| No.  | Text  | Function | Flags | DPT type          | Size   |
|------|---|----------|-------|-------------------|--------|
| 527  | Humidity controller: Dehumidification status (1:ON   0:OFF)   | Output   | R-CT  | [1.1] DPT_Switch  | 1 bit  |
| 528  | Humidity controller: Dehumidification 2 status (1:ON   0:OFF) | Output   | R-CT  | [1.1] DPT_Switch  | 1 bit  |
| 529  | Humidity controller: Humidification status (1:ON   0:OFF)     | Output   | R-CT  | [1.1] DPT_Switch  | 1 bit  |
|      |   |          |       |                   |        |
| 1111 | Control variable Comparator 1: Input 1                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1112 | Control variable Comparator 1: Input 2                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1113 | Control variable Comparator 1: Input 3                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1114 | Control variable Comparator 1: Input 4                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1115 | Control variable Comparator 1: Input 5                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1116 | Control variable Comparator 1: Output                         | Output   | R-CT  | [5.1] DPT_Scaling | 1 byte |
| 1117 | Control variable Comparator 1: Block (1: block)               | Output   | -WC-  | [1.2] DPT_Bool    | 1 bit  |
| 1118 | Control variable Comparator 2: Input 1                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1119 | Control variable Comparator 2: Input 2                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1120 | Control variable Comparator 2: Input 3                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1121 | Control variable Comparator 2: Input 4                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1122 | Control variable Comparator 2: Input 5                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1123 | Control variable Comparator 2: Output                         | Output   | R-CT  | [5.1] DPT_Scaling | 1 byte |
| 1124 | Control variable Comparator 2: Block (1: block)               | Output   | -WC-  | [1.2] DPT_Bool    | 1 bit  |
| 1125 | Control variable Comparator 3: Input 1                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1126 | Control variable Comparator 3: Input 2                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |
| 1127 | Control variable Comparator 3: Input 3                        | Input    | -WC-  | [5.1] DPT_Scaling | 1 byte |

| No.  | Text  | Function | Flags | DPT type                | Size     |
|------|---|----------|-------|-------------------------|----------|
| 1128 | Control variable Comparator 3: Input 4          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1129 | Control variable Comparator 3: Input 5          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1130 | Control variable Comparator 3: Output           | Output   | R-CT  | [5.1] DPT_Scaling       | 1 byte   |
| 1131 | Control variable Comparator 3: Block (1: block) | Output   | -WC-  | [1.2] DPT_Bool          | 1 bit    |
| 1132 | Control variable Comparator 4: Input 1          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1133 | Control variable Comparator 4: Input 2          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1134 | Control variable Comparator 4: Input 3          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1135 | Control variable Comparator 4: Input 4          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1136 | Control variable Comparator 4: Input 5          | Input    | -WC-  | [5.1] DPT_Scaling       | 1 byte   |
| 1137 | Control variable Comparator 4: Output           | Output   | R-CT  | [5.1] DPT_Scaling       | 1 byte   |
| 1138 | Control variable Comparator 4: Block (1: block) | Output   | -WC-  | [1.2] DPT_Bool          | 1 bit    |
|      |   |          |       |                         |          |
| 1141 | Computer 1: Input I1                            | Input    | RWCT  |                         | 4 bytes  |
| 1142 | Computer 1: Input I2                            | Input    | RWCT  |                         | 4 bytes  |
| 1143 | Computer 1: Input I3                            | Input    | RWCT  |                         | 4 bytes  |
| 1144 | Computer 1: Output O1                           | Output   | R-CT  |                         | 4 bytes  |
| 1145 | Computer 1: Output O2                           | Output   | R-CT  |                         | 4 bytes  |
| 1146 | Computer 1: Condition text                      | Output   | R-CT  | [16.0] DPT_String_ASCII | 14 bytes |
| 1147 | Computer 1: Monitoring status                   | Output   | R-CT  | [1.1] DPT_Switch        | 1 bit    |
| 1148 | Computer 1: Block (1: block)                    | Input    | -WC-  | [1.1] DPT_Switch        | 1 bit    |
| 1149 | Computer 2: Input I1                            | Input    | RWCT  |                         | 4 bytes  |
| 1150 | Computer 2: Input I2                            | Input    | RWCT  |                         | 4 bytes  |
| 1151 | Computer 2: Input I3                            | Input    | RWCT  |                         | 4 bytes  |
| 1152 | Computer 2: Output O1                           | Output   | R-CT  |                         | 4 bytes  |
| 1153 | Computer 2: Output O2                           | Output   | R-CT  |                         | 4 bytes  |
| 1154 | Computer 2: Condition text                      | Output   | R-CT  | [16.0] DPT_String_ASCII | 14 bytes |
| 1155 | Computer 2: Monitoring status                   | Output   | R-CT  | [1.1] DPT_Switch        | 1 bit    |
| 1156 | Computer 2: Block (1: block)                    | Input    | -WC-  | [1.1] DPT_Switch        | 1 bit    |
| 1157 | Computer 3: Input I1                            | Input    | RWCT  |                         | 4 bytes  |

| No.  | Text                          | Function | Flags | DPT type                   | Size     |
|------|-------------------------------|----------|-------|----------------------------|----------|
| 1158 | Computer 3: Input I2          | Input    | RWCT  |                            | 4 bytes  |
| 1159 | Computer 3: Input I3          | Input    | RWCT  |                            | 4 bytes  |
| 1160 | Computer 3: Output O1         | Output   | R-CT  |                            | 4 bytes  |
| 1161 | Computer 3: Output O2         | Output   | R-CT  |                            | 4 bytes  |
| 1162 | Computer 3: Condition text    | Output   | R-CT  | [16.0]<br>DPT_String_ASCII | 14 bytes |
| 1163 | Computer 3: Monitoring status | Output   | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 1164 | Computer 3: Block (1: block)  | Input    | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 1165 | Computer 4: Input I1          | Input    | RWCT  |                            | 4 bytes  |
| 1166 | Computer 4: Input I2          | Input    | RWCT  |                            | 4 bytes  |
| 1167 | Computer 4: Input I3          | Input    | RWCT  |                            | 4 bytes  |
| 1168 | Computer 4: Output O1         | Output   | R-CT  |                            | 4 bytes  |
| 1169 | Computer 4: Output O2         | Output   | R-CT  |                            | 4 bytes  |
| 1170 | Computer 4: Condition text    | Output   | R-CT  | [16.0]<br>DPT_String_ASCII | 14 bytes |
| 1171 | Computer 4: Monitoring status | Output   | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 1172 | Computer 4: Block (1: block)  | Input    | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 1173 | Computer 5: Input I1          | Input    | RWCT  |                            | 4 bytes  |
| 1174 | Computer 5: Input I2          | Input    | RWCT  |                            | 4 bytes  |
| 1175 | Computer 5: Input I3          | Input    | RWCT  |                            | 4 bytes  |
| 1176 | Computer 5: Output O1         | Output   | R-CT  |                            | 4 bytes  |
| 1177 | Computer 5: Output O2         | Output   | R-CT  |                            | 4 bytes  |
| 1178 | Computer 5: Condition text    | Output   | R-CT  | [16.0]<br>DPT_String_ASCII | 14 bytes |
| 1179 | Computer 5: Monitoring status | Output   | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 1180 | Computer 5: Block (1: block)  | Input    | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 1181 | Computer 6: Input I1          | Input    | RWCT  |                            | 4 bytes  |
| 1182 | Computer 6: Input I2          | Input    | RWCT  |                            | 4 bytes  |
| 1183 | Computer 6: Input I3          | Input    | RWCT  |                            | 4 bytes  |
| 1184 | Computer 6: Output O1         | Output   | R-CT  |                            | 4 bytes  |
| 1185 | Computer 6: Output O2         | Output   | R-CT  |                            | 4 bytes  |
| 1186 | Computer 6: Condition text    | Output   | R-CT  | [16.0]<br>DPT_String_ASCII | 14 bytes |
| 1187 | Computer 6: Monitoring status | Output   | R-CT  | [1.1] DPT_Switch           | 1 bit    |
| 1188 | Computer 6: Block (1: block)  | Input    | -WC-  | [1.1] DPT_Switch           | 1 bit    |
| 1189 | Computer 7: Input I1          | Input    | RWCT  |                            | 4 bytes  |
| 1190 | Computer 7: Input I2          | Input    | RWCT  |                            | 4 bytes  |
| 1191 | Computer 7: Input I3          | Input    | RWCT  |                            | 4 bytes  |
| 1192 | Computer 7: Output O1         | Output   | R-CT  |                            | 4 bytes  |
| 1193 | Computer 7: Output O2         | Output   | R-CT  |                            | 4 bytes  |

| No.  | Text                                    | Function | Flags | DPT type                  | Size     |
|------|---|----------|-------|---------------------------|----------|
| 1194 | Computer 7: Condition text              | Output   | R-CT  | [16.0] DPT_String_ASCII   | 14 bytes |
| 1195 | Computer 7: Monitoring status           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit    |
| 1196 | Computer 7: Block (1: block)            | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit    |
| 1197 | Computer 8: Input I1                    | Input    | RWCT  |                           | 4 bytes  |
| 1198 | Computer 8: Input I2                    | Input    | RWCT  |                           | 4 bytes  |
| 1199 | Computer 8: Input I3                    | Input    | RWCT  |                           | 4 bytes  |
| 1200 | Computer 8: Output O1                   | Output   | R-CT  |                           | 4 bytes  |
| 1201 | Computer 8: Output O2                   | Output   | R-CT  |                           | 4 bytes  |
| 1202 | Computer 8: Condition text              | Output   | R-CT  | [16.0] DPT_String_ASCII   | 14 bytes |
| 1203 | Computer 8: Monitoring status           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit    |
| 1204 | Computer 8: Block (1: block)            | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit    |
|      |   |          |       |                           |          |
| 1211 | Weekly timer period 1: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1212 | Weekly timer period 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1213 | Weekly timer period 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit    |
| 1214 | Weekly timer period 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte   |
| 1215 | Weekly timer period 2: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1216 | Weekly timer period 2: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1217 | Weekly timer period 2: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit    |
| 1218 | Weekly timer period 2: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte   |
| 1219 | Weekly timer period 3: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1220 | Weekly timer period 3: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1221 | Weekly timer period 3: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit    |
| 1222 | Weekly timer period 3: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte   |
| 1223 | Weekly timer period 4: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |
| 1224 | Weekly timer period 4: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes  |



| No.  | Text                                    | Function | Flags | DPT type                  | Size    |
|------|---|----------|-------|---------------------------|---------|
| 1225 | Weekly timer period 4: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1226 | Weekly timer period 4: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1227 | Weekly timer period 5: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1228 | Weekly timer period 5: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1229 | Weekly timer period 5: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1230 | Weekly timer period 5: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1231 | Weekly timer period 6: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1232 | Weekly timer period 6: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1233 | Weekly timer period 6: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1234 | Weekly timer period 6: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1235 | Weekly timer period 7: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1236 | Weekly timer period 7: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1237 | Weekly timer period 7: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1238 | Weekly timer period 7: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1239 | Weekly timer period 8: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1240 | Weekly timer period 8: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1241 | Weekly timer period 8: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1242 | Weekly timer period 8: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1243 | Weekly timer period 9: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1244 | Weekly timer period 9: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1245 | Weekly timer period 9: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |

| No.  | Text                                     | Function | Flags | DPT type                  | Size    |
|------|--|----------|-------|---------------------------|---------|
| 1246 | Weekly timer period 9: 8 bit output      | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1247 | Weekly timer period 10: Switch-on time   | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1248 | Weekly timer period 10: Switch-off time  | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1249 | Weekly timer period 10: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1250 | Weekly timer period 10: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1251 | Weekly timer period 11: Switch-on time   | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1252 | Weekly timer period 11: Switch-off time  | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1253 | Weekly timer period 11: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1254 | Weekly timer period 11: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1255 | Weekly timer period 12: Switch-on time   | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1256 | Weekly timer period 12: Switch-off time  | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1257 | Weekly timer period 12: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1258 | Weekly timer period 12: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1259 | Weekly timer period 13: Switch-on time   | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1260 | Weekly timer period 13: Switch-off time  | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1261 | Weekly timer period 13: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1262 | Weekly timer period 13: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1263 | Weekly timer period 14: Switch-on time   | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1264 | Weekly timer period 14: Switch-off time  | Input    | RWCT  | [10.1] DPT_TimeOfDay      | 3 bytes |
| 1265 | Weekly timer period 14: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1266 | Weekly timer period 14: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |

| No.  | Text                                     | Function | Flags | DPT type                  | Size    |
|------|--|----------|-------|---------------------------|---------|
| 1267 | Weekly timer period 15: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1268 | Weekly timer period 15: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1269 | Weekly timer period 15: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1270 | Weekly timer period 15: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1271 | Weekly timer period 16: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1272 | Weekly timer period 16: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1273 | Weekly timer period 16: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1274 | Weekly timer period 16: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1275 | Weekly timer period 17: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1276 | Weekly timer period 17: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1277 | Weekly timer period 17: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1278 | Weekly timer period 17: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1279 | Weekly timer period 18: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1280 | Weekly timer period 18: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1281 | Weekly timer period 18: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1282 | Weekly timer period 18: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1283 | Weekly timer period 19: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1284 | Weekly timer period 19: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1285 | Weekly timer period 19: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1286 | Weekly timer period 19: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1287 | Weekly timer period 20: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |

| No.  | Text   | Function | Flags | DPT type                  | Size    |
|------|--|----------|-------|---------------------------|---------|
| 1288 | Weekly timer period 20: Switch-off time            | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1289 | Weekly timer period 20: Switching output           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1290 | Weekly timer period 20: 8 bit output               | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1291 | Weekly timer period 21: Switch-on time             | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1292 | Weekly timer period 21: Switch-off time            | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1293 | Weekly timer period 21: Switching output           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1294 | Weekly timer period 21: 8 bit output               | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1295 | Weekly timer period 22: Switch-on time             | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1296 | Weekly timer period 22: Switch-off time            | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1297 | Weekly timer period 22: Switching output           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1298 | Weekly timer period 22: 8 bit output               | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1299 | Weekly timer period 23: Switch-on time             | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1300 | Weekly timer period 23: Switch-off time            | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1301 | Weekly timer period 23: Switching output           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1302 | Weekly timer period 23: 8 bit output               | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1303 | Weekly timer period 24: Switch-on time             | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1304 | Weekly timer period 24: Switch-off time            | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1305 | Weekly timer period 24: Switching output           | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1306 | Weekly timer period 24: 8 bit output               | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
|      |  |          |       |                           |         |
| 1331 | Calendar timer period 1: Start date                | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1332 | Calendar timer period 1: End date                  | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1333 | Calendar timer period 1 sequence 1: Switch-on time | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |

| No.  | Text   | Function | Flags | DPT type                  | Size    |
|------|--|----------|-------|---------------------------|---------|
| 1334 | Calendar timer period 1 sequence 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1335 | Calendar timer period 1 sequence 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1336 | Calendar timer period 1 sequence 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1337 | Calendar timer period 2 sequence 1: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1338 | Calendar timer period 2 sequence 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1339 | Calendar timer period 2 sequence 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1340 | Calendar timer period 2 sequence 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1341 | Calendar timer period 2: Start date                  | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1342 | Calendar timer period 2: End date                    | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1343 | Calendar timer period 2 sequence 1: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1344 | Calendar timer period 2 sequence 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1345 | Calendar timer period 2 sequence 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1346 | Calendar timer period 2 sequence 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1347 | Calendar timer period 2 sequence 2: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1348 | Calendar timer period 2 sequence 2: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1349 | Calendar timer period 2 sequence 2: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1350 | Calendar timer period 2 sequence 2: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1351 | Calendar timer period 3: Start date                  | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1352 | Calendar timer period 3: End date                    | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1353 | Calendar timer period 3 sequence 1: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1354 | Calendar timer period 3 sequence 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1355 | Calendar timer period 3 sequence 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1356 | Calendar timer period 3 sequence 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |

| No.  | Text   | Function | Flags | DPT type                  | Size    |
|------|--|----------|-------|---------------------------|---------|
| 1357 | Calendar timer period 3 sequence 2: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1358 | Calendar timer period 3 sequence 2: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1359 | Calendar timer period 3 sequence 2: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1360 | Calendar timer period 3 sequence 2: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1361 | Calendar timer period 4: Start date                  | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1362 | Calendar timer period 4: End date                    | Input    | RWCT  | [11.1] DPT_Date           | 3 bytes |
| 1363 | Calendar timer period 4 sequence 1: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1364 | Calendar timer period 4 sequence 1: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1365 | Calendar timer period 4 sequence 1: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1366 | Calendar timer period 4 sequence 1: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 1367 | Calendar timer period 4 sequence 2: Switch-on time   | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1368 | Calendar timer period 4 sequence 2: Switch-off time  | Input    | RWCT  | [10.1] DPT_-TimeOfDay     | 3 bytes |
| 1369 | Calendar timer period 4 sequence 2: Switching output | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 1370 | Calendar timer period 4 sequence 2: 8 bit output     | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
|      |  |          |       |                           |         |
| 1391 | Logic input 1  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1392 | Logic input 2  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1393 | Logic input 3  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1394 | Logic input 4  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1395 | Logic input 5  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1396 | Logic input 6  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1397 | Logic input 7  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1398 | Logic input 8  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1399 | Logic input 9  | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1400 | Logic input 10                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1401 | Logic input 11                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1402 | Logic input 12                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1403 | Logic input 13                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1404 | Logic input 14                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 1405 | Logic input 15                                       | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |

| No.  | Text                                | Function | Flags | DPT type         | Size   |
|------|-------------------------------------|----------|-------|------------------|--------|
| 1406 | Logic input 16                      | Input    | -WC-  | [1.2] DPT_Bool   | 1 bit  |
| 1411 | AND logic 1: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1412 | AND logic 1: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1413 | AND logic 1: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1414 | AND logic 1: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1415 | AND logic 2: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1416 | AND logic 2: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1417 | AND logic 2: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1418 | AND logic 2: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1419 | AND logic 3: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1420 | AND logic 3: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1421 | AND logic 3: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1422 | AND logic 3: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1423 | AND logic 4: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1424 | AND logic 4: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1425 | AND logic 4: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1426 | AND logic 4: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1427 | AND logic 5: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1428 | AND logic 5: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1429 | AND logic 5: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1430 | AND logic 5: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1431 | AND logic 6: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1432 | AND logic 6: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1433 | AND logic 6: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1434 | AND logic 6: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1435 | AND logic 7: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1436 | AND logic 7: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1437 | AND logic 7: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1438 | AND logic 7: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1439 | AND logic 8: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1440 | AND logic 8: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1441 | AND logic 8: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1442 | AND logic 8: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1443 | OR logic 1: 1 bit switching output  | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1444 | OR logic 1: 8 bit output A          | Output   | R-CT  |                  | 1 byte |
| 1445 | OR logic 1: 8 bit output B          | Output   | R-CT  |                  | 1 byte |
| 1446 | OR logic 1: Block                   | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1447 | OR logic 2: 1 bit switching output  | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1448 | OR logic 2: 8 bit output A          | Output   | R-CT  |                  | 1 byte |
| 1449 | OR logic 2: 8 bit output B          | Output   | R-CT  |                  | 1 byte |

| No.  | Text                               | Function | Flags | DPT type         | Size   |
|------|------------------------------------|----------|-------|------------------|--------|
| 1450 | OR logic 2: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1451 | OR logic 3: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1452 | OR logic 3: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1453 | OR logic 3: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1454 | OR logic 3: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1455 | OR logic 4: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1456 | OR logic 4: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1457 | OR logic 4: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1458 | OR logic 4: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1459 | OR logic 5: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1460 | OR logic 5: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1461 | OR logic 5: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1462 | OR logic 5: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1463 | OR logic 6: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1464 | OR logic 6: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1465 | OR logic 6: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1466 | OR logic 6: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1467 | OR logic 7: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1468 | OR logic 7: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1469 | OR logic 7: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1470 | OR logic 7: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |
| 1471 | OR logic 8: 1 bit switching output | Output   | R-CT  | [1.2] DPT_Bool   | 1 bit  |
| 1472 | OR logic 8: 8 bit output A         | Output   | R-CT  |                  | 1 byte |
| 1473 | OR logic 8: 8 bit output B         | Output   | R-CT  |                  | 1 byte |
| 1474 | OR logic 8: Block                  | Input    | -WC-  | [1.1] DPT_Switch | 1 bit  |



## 6. Parameter setting

### 6.1. Behaviour on power failure/ restoration of power

#### ***Behaviour following a failure of the bus power supply:***

The device sends nothing.

#### ***Behaviour on bus restoration of power and following programming or reset:***

The device sends all outputs according to their send behaviour set in the parameters with the delays established in the "General settings" parameter block.

#### 6.1.1. Storage of threshold values

For threshold values that are specified via a communication object, a starting value must be entered for the first commissioning. It is valid until the first communication of a new threshold value.

After this, a threshold value once set per parameter or via a communication object is retained until a new threshold value is sent via a communication object. The last threshold value set by communication object is saved in the device, so that it is retained during a power outage and is available once again when power is restored.

#### 6.1.2. Malfunction objects

Malfunction objects are sent after every reset and, additionally, after changes (i.e. at the beginning and end of a malfunction).

#### 6.1.3. General settings

Set basic characteristics of data transfer. A different transmission delay prevents an overload of the bus shortly after the reset.

| Transmission delay after reset/restoration of bus for: |   |
|--|---|
| Measured values  | <u>5</u> ... 300 seconds                                  |
| Threshold values and switching outputs                 | <u>5</u> ... 300 seconds                                  |
| Controller objects                                     | <u>5</u> ... 300 seconds                                  |
| Comparator and computer objects                        | <u>5</u> ... 300 seconds                                  |
| Time switch objects                                    | <u>5</u> ... 300 seconds                                  |
| Logic objects  | <u>5</u> ... 300 seconds                                  |
| Maximum telegram quota                                 | 1 • 2 • 5 • <u>10</u> • 20 • 50 <u>Telegrams per sec.</u> |

Set the function of the signal LED. Via the input objects "Signal LED object 1s/4s cycle", the LED can visualise two different types of information flashing slowly or quickly. If both objects receive a 1, it flashes in the prioritised cycle.

|   |  |
|---|--|
| Function of the signal LED                                      | <ul style="list-style-type: none"> <li>• <u>always OFF</u></li> <li>• flashes if a signal LED object receives a 1</li> </ul> |
| The following has priority<br>(if the signal LED is being used) | <ul style="list-style-type: none"> <li>• <u>Signal LED object 1s cycle</u></li> <li>• Signal LED object 4s cycle</li> </ul>  |

## 6.2. GPS

Set whether the time and date are to be sent as separate objects or as one common object. Specify whether the time and date are to be set by the GPS signal or objects.

If time and date are **set by the GPS-Signal**, the data is available as soon as a valid GPS signal is received.

If time and date are **set by two objects**, then only a maximum of 10 seconds may elapse between receiving the date and receiving the time. Furthermore, a change of date may not occur between receiving both objects. The objects must be received by the device on the same day.

The device has an integrated real-time clock. Therefore, time keeps on running internally and can be sent to the bus, even when no GPS coverage is available or no time object has been received for some time. The internal clock can show a time drift of up to  $\pm 6$  seconds per day.

|                                      |   |
|--------------------------------------|---|
| Object type date and time            | <ul style="list-style-type: none"> <li>• <u>two separate objects</u></li> <li>• a common object</li> </ul>  |
| Date and time will be set by         | <ul style="list-style-type: none"> <li>• <u>GPS signal and not sent</u></li> <li>• GPS signal and sent periodically</li> <li>• GPS signal and sent on request</li> <li>• GPS signal and sent on request + periodically</li> <li>• object(s) and not sent</li> </ul> |
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>1 min</u>   |

Set what happens in the event of a GPS malfunction. Please note, that after return of auxiliary voltage, it can take up to 10 minutes before the GPS signal is received.

|  |   |
|--|---|
| If there is no reception, GPS fault is ... recognised after the last reception | 20 min • <u>30 min</u> • 1 h • 1.5 h • 2 h  |
| GPS fault object sends<br>(1: malfunction  0: no malfunction)                  | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• on change</li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |

|                                      |                          |
|--------------------------------------|--------------------------|
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>10 s</u> |
|--------------------------------------|--------------------------|

## 6.3. Location

The location data is required in order to be able to calculate the **position of the sun** with the help of the date and time.

The **location** is received via GPS or entered manually (selection of the nearest town or by entering coordinates). Also when using the GPS signal coordinates can be entered manually for the initial commissioning. This data is used as long as no GPS reception exists. For this you select the option "Input (only valid until the first GPS reception)".

|   |  |   |
|---|--|---|
| Location is determined by   | <ul style="list-style-type: none"> <li>• input</li> <li>• input (only valid until the first GPS reception)</li> <li>• <u>GPS reception</u></li> </ul>  |   |
| Location input using<br>(if input selected)                                     | <ul style="list-style-type: none"> <li>• <u>Town</u></li> <li>• Coordinates</li> </ul>   |   |
| Country<br>(if input by town is selected)                                       | <ul style="list-style-type: none"> <li>• Belgium</li> <li>• Denmark</li> <li>• <u>Germany</u></li> <li>• France</li> <li>• Great Britain</li> <li>• Italy</li> </ul>   | <ul style="list-style-type: none"> <li>• Liechtenstein</li> <li>• Luxembourg</li> <li>• Netherlands</li> <li>• Austria</li> <li>• Switzerland</li> <li>• USA</li> </ul> |
| Town<br>(if input by town is selected)  | 6 towns in Belgium<br>1 town in Denmark<br>48 towns in Germany; <u>Stuttgart</u><br>23 towns in France<br>4 towns in Great Britain<br>10 towns in Italy<br>1 town in Liechtenstein<br>1 town in Luxembourg<br>2 towns in the Netherlands<br>4 towns in Austria<br>4 towns in Switzerland<br>2 towns in the USA |   |
| E. longitude [degrees, -180...+180]<br>(if input by coordinates is selected)    | <u>0</u><br>[negative values mean "western longitude"]   |   |
| E. longitude [minutes, -59...+59]<br>(if input by coordinates is selected)      | <u>0</u><br>[negative values mean "western longitude"]   |   |
| Northern latitude [Degrees, -90...+90]<br>(if input by coordinates is selected) | 0<br>[negative values mean "southern latitude"]  |   |
| Northern latitude [minutes, -59...+59]<br>(if input by coordinates is selected) | <u>0</u><br>[negative values mean "southern latitude"]   |   |

The location-**height** above sea level is used to calculate the normal air pressure (see also chapter *Information on air pressure*, page 62).

The height is received via GPS or entered manually. When using the GPS signal, a height can be entered manually for the initial commissioning. This data is used as long as there is no GPS reception. Select the option "Input (only valid until the first GPS reception)".

|                                  |  |
|----------------------------------|--|
| Height is determined by          | <ul style="list-style-type: none"> <li>• Input</li> <li>• input (valid until the first GPS reception)</li> <li>• <u>GPS reception</u></li> </ul> |
| Height above sea level in metres | -1000 ... 10000; <u>200</u>  |

In order to be able to output the **local time**, the time zone (difference to world time (Coordinated Universal Time)) and the summer time rules must be defined. Specify the hours and minutes after winter time (standard time).

|  |   |
|--|---|
| Time zone (relative to GMT):   |   |
| Prefix   | <ul style="list-style-type: none"> <li>• <u>positive (+)</u></li> <li>• negative (-)</li> </ul>                                 |
| Hours  | 0 ... 13; <u>1</u>  |
| Minutes  | 0 ... 59; <u>0</u>  |
| Summertime rule  | <ul style="list-style-type: none"> <li>• <u>Europe</u></li> <li>• <u>USA</u></li> <li>• user-defined</li> <li>• none</li> </ul> |
| All the following times are to be entered as winter time = standard time                             |   |
| Start of Summer Time:  |   |
| on   | <ul style="list-style-type: none"> <li>• Monday ... <u>Sunday</u></li> <li>• Date</li> </ul>                                    |
| From (day)<br>(for Europe or USA summer time rules)<br>(Day)<br>(For user defined summer time rules) | 1 ... 31; <u>25</u>   |
| (Month)  | 1 ... 12; <u>3</u>  |
| (Hour)   | 0 ... 23; <u>2</u>  |
| (minutes)  | <u>0</u> ... 59   |
| End of Summer Time:  |   |
| on   | <ul style="list-style-type: none"> <li>• Monday ... <u>Sunday</u></li> <li>• Date</li> </ul>                                    |
| From (day)<br>(for Europe or USA summer time rules)<br>(Day)<br>(For user defined summer time rules) | 1 ... 31; <u>25</u>   |
| (Month)  | 1 ... 12; <u>10</u>   |
| (hour)   | 0 ... 23; <u>2</u>  |
| (minutes)  | <u>0</u> ... 59   |

|             |                      |
|-------------|----------------------|
| Time shift: |                      |
| hours       | -12 ... 12; <u>1</u> |
| minutes     | <u>0</u> ... 59      |

The standard coordinates can be transmitted from the device to the bus and thus be used in other applications, no matter whether they have been received via GPS or specified manually.

|                  |   |
|------------------|---|
| Send coordinates | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| on change of     | 0.5° • 1° • <u>2°</u> • 5° • 10°  |
| Send cycle       | 5 s ... 2 h; <u>5 min</u>   |

## 6.4. Temperature Measurement

Select, whether a **malfunction object** is to be sent if the sensor is faulty.

|                        |                 |
|------------------------|-----------------|
| Use malfunction object | <u>No</u> • Yes |
|------------------------|-----------------|

Use **Offsets** to adjust the readings to be sent.

|                 |                    |
|-----------------|--------------------|
| Offset in 0.1°C | -50...50; <u>0</u> |
|-----------------|--------------------|

The unit can calculate a **mixed value** from its own reading and an external value. Set the mixed value calculation if desired. If an external portion is used, all of the following settings (threshold values, etc.) are related to the overall reading.

|   |   |
|---|---|
| Use external measured value                           | <u>No</u> • Yes   |
| Ext. Reading proportion of the total reading          | 5% • 10% • ... • <u>50%</u> • ... • 100%  |
| Sending pattern for internal and total measured value | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| At and above change of<br>(if sent on change)         | 0.1°C • 0.2°C • <u>0.5°C</u> • ... • 5.0°C  |
| Send cycle<br>(if sent periodically)                  | 5 s • <u>10 s</u> • ... • 2 h   |

The **minimum and maximum readings** can be saved and sent to the bus. Use the "Reset temperature min/max. value" objects to reset the values to the current readings. The values are not retained after a reset.

|                               |                 |
|-------------------------------|-----------------|
| Use minimum and maximum value | <u>No</u> • Yes |
|-------------------------------|-----------------|

## 6.5. Temperature threshold values

Activate the required temperature threshold values. The menus for setting of the threshold values are displayed.

|                             |                 |
|-----------------------------|-----------------|
| Use threshold value 1/2/3/4 | Yes • <u>No</u> |
|-----------------------------|-----------------|

### 6.5.1. Threshold values 1-4

#### Threshold value

Set, in which cases **threshold values and delay times** received via objects are to be retained. The parameter is only taken into consideration if the setting via object is activated below. Please note that the setting "After power supply restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first communication (setting via objects is ignored).

|   |  |
|---|--|
| Maintain the threshold values and delays received via communication objects | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
| .   |  |

Set the threshold value directly in the application program using parameters, or define them via the bus using a communication object.

#### **Threshold value setting using parameters:**

Set the threshold values and hysteresis directly.

|                               |  |
|-------------------------------|--|
| Threshold value setting using | <b>Parameter</b> • Communication objects |
| Threshold value in 0.1°C      | -300 ... 800; <u>200</u>                 |

#### **Threshold value setting using a communication object:**

Define, how the threshold value is to be received from the bus. Basically, a new value can be received, or simply a command to increase or decrease.

During initial commissioning, a threshold value must be defined, which will be valid until the first communication with a new threshold value. For units which have already been taken into service, the last communicated threshold value can be used. Basically, a temperature range is given in which the threshold value can be changed (object value limit).

A set threshold value will be retained until a new value or a change is transferred. The current value is saved in EEPROM, so that it is retained in the event of a power supply failure and will be available once the power supply is restored.

|   |   |
|---|---|
| Threshold value setting using                                     | Parameter • <b>Communication objects</b>  |
| Start threshold value in 0.1°C<br>valid until first communication | -300 ... 800; <u>200</u>                  |
| Object value limit (min) in 0.1°C                                 | <u>-300</u> ...800                        |
| Object value limit (max) in 0.1°C                                 | -300... <u>800</u>                        |
| Type of threshold value change                                    | <u>Absolute value</u> • Increase/decrease |
| Increment<br>(upon increase/decrease change)                      | <u>0.1°C</u> • ... • 5°C                  |

Set the **hysteresis** independent of the type of threshold value specification.

|  |                        |
|--|------------------------|
| Hysteresis setting                     | in % • <u>absolute</u> |
| Hysteresis in 0.1°                     | 0...1100; <u>50</u>    |
| Hysteresis in % of the threshold value | 0 ... 50; <u>20</u>    |

## Switching output

Set the behaviour of the switching output when a threshold value is exceeded/under-cut. The output switching delay can be set using objects or directly as a parameter.

|  |  |
|--|--|
| When the following conditions apply, the output is<br>(TV = Threshold value)                       | <ul style="list-style-type: none"> <li>• TV above = 1   TV - hyst. below = 0</li> <li>• TV above = 0   TV - hyst. below = 1</li> <li>• <u>TV below = 1</u>   TV + hyst. above = 0</li> <li>• TV below = 0   TV + hyst. above = 1</li> </ul>          |
| Delays can be set via objects<br>(in seconds)  | <u>No</u> • Yes  |
| Switching delay from 0 to 1<br>(If delay can be set via objects:<br>valid until 1st communication) | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h   |
| Switching delay from 1 to 0<br>(If delay can be set via objects:<br>valid until 1st communication) | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h   |
| Switching output sends   | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(is only sent if periodically is selected)  | <u>5 s</u> • 10 s • 30 s ... • 2 h   |

## Block

The switching output can be blocked using an object.

|                            |                 |
|----------------------------|-----------------|
| Use switching output block | <u>No</u> • Yes |
|----------------------------|-----------------|

If the block is activated, define specifications here for the behaviour of the output when blocked.

|  |  |
|--|--|
| Analysis of the blocking object                  | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first communication | <u>0</u> • 1   |
| Behaviour of the switching output                |  |
| On block   | <ul style="list-style-type: none"> <li>• <u>Do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                             |
| On release<br>(with 2 seconds release delay)     | [Dependent on the "Switching output sends" setting]  |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|  |   |
|--|---|
| Switching output sends on change                       | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• Send switching output status</li> </ul>     |
| Switching output sends on change to 1                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 1 → send 1</li> </ul> |
| Switching output sends on change to 0                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 0 → send 0</li> </ul> |
| Switching output sends on change and periodically      | Send switching output status  |
| Switching output sends on change to 1 and periodically | if switching output = 1 → send 1  |
| Switching output sends on change to 0 and periodically | if switching output = 0 → send 0  |

## 6.6. Brightness measurement value

### Sensor 1-3

Give the brightness sensors 1-3 a nomenclature and set the transmission behaviour for the measurement values.

|   |   |
|---|---|
| Sensor nomenclature                             | S1 [Free text]  |
| Send pattern                                    | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| at and above change in %<br>(if sent on change) | 1 ... 100; <u>20</u>  |
| Send cycle<br>(if sent periodically)            | <u>5 s</u> ... 2 h  |



## Total measurement

Select the type of the total measurement and set the transmission behaviour for the total measurement.

|   |   |
|---|---|
| Type of total measured value  | <ul style="list-style-type: none"> <li>• Mixed value from all 3 sensors</li> <li>• <u>Maximum value of the 3 sensors</u></li> </ul>                 |
| Sensor 1-3 share in %<br>(if total measured value is a mixed value) | 0...100; <u>33</u>  |
| Send pattern  | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• On change</li> <li>• on change and periodically</li> </ul> |
| at and above change in %<br>(if sent on change)                     | 1 ... 100; <u>20</u>  |
| Send cycle<br>(if sent periodically)                                | <u>5 s</u> ... 2 h  |

## 6.7. Brightness threshold values sensor 1-3 and total brightness threshold values

Activate the required brightness threshold values at the individual sensors and at the total threshold value (in each case a maximum of four). The menus for setting the threshold values are displayed.

|                         |                 |
|-------------------------|-----------------|
| Threshold value 1/2/3/4 | <u>No</u> • Yes |
|-------------------------|-----------------|

### 6.7.1. Threshold values 1-4

#### Threshold value

Set, in which cases threshold values and delay times received are to be kept per object. The parameter is only taken into consideration if the specification/ setting by object is activated further down. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|   |  |
|---|--|
| Maintain the threshold values and delays received via communication objects | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|---|--|

Select whether the threshold value is to be specified per parameter or via a communication object.

|                                |  |
|--------------------------------|--|
| Threshold value setpoint using | <u>Parameter</u> • Communications object |
|--------------------------------|--|

When the **threshold value per parameter** is specified, then the value is set.

|                         |                               |
|-------------------------|-------------------------------|
| Threshold value in kLux | 1000 ... 150000; <u>60000</u> |
|-------------------------|-------------------------------|

When the **threshold value per communication object** is specified, the starting value, object value limit and type of change to the threshold value are then set.

|  |   |
|--|---|
| Start threshold value in Lux<br>valid until first call | 1000 ... 150000; <u>60000</u>             |
| Object value limit (min.) in Lux                       | <u>1000</u> ... 150000                    |
| Object value limit (max.) in Lux                       | 1000 ... <u>150000</u>                    |
| Type of threshold change                               | <u>Absolute value</u> • Increase/decrease |
| Increment in Lux<br>(upon increase/decrease change)    | 1000 • <u>2000</u> • 5000 • 10000 • 20000 |

With both of the methods for specifying the threshold values the hysteresis is set.

|  |                            |
|--|----------------------------|
| Hysteresis setting   | in % • <u>absolute</u>     |
| Hysteresis in % of the threshold value<br>(for setting in %) | 0 ... 100; <u>50</u>       |
| Hysteresis in Lux<br>(for absolute setting)                  | 0 ... 150000; <u>30000</u> |

## Switching output

Define which value the output transmits if the threshold value is exceeded or undercut.  
Set the delay for the switching and in which cases the switch output transmits.

|  |  |
|--|--|
| When the following conditions apply, the output is<br>(LV = Threshold value) | <ul style="list-style-type: none"> <li>• <u>GW above = 1</u>   GW - Hyst. below = <u>0</u></li> <li>• GW above = 0   GW - Hyst. below = 1</li> <li>• GW below = 1   GW + Hyst. above = 0</li> <li>• GW below = 0   GW + Hyst. above = 1</li> </ul>   |
| Delays can be set via objects<br>(in seconds)                                | <u>No</u> • Yes  |
| Delay from 0 to 1  | <u>none</u> • 1 s ... 2 h  |
| Delay from 1 to 0  | <u>none</u> • 1 s ... 2 h  |
| Switching output sends   | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(if sent periodically)  | <u>5 s</u> ... 2 h   |

## Block

If necessary, activate the switching output block and set what a 1 or 0 at the block entry means and what happens in the event of a block.

|   |  |
|---|--|
| Use switching output block                            | <u>No</u> • Yes  |
| Analysis of the blocking object                       | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first call               | <u>0</u> • 1   |
| Action when locking                                   | <ul style="list-style-type: none"> <li>• <u>Do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                             |
| Action upon release<br>(with 2 seconds release delay) | [Dependent on the "Switching output sends" setting]  |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|  |   |
|--|---|
| Switching output sends on change                       | do not send message •<br>Status object/s send/s           |
| Switching output sends on change to 1                  | do not send message •<br>If switching output = 1 → send 1 |
| Switching output sends on change to 0                  | do not send message •<br>If switching output = 0 → send 0 |
| Switching output sends on change and periodically      | Send switching output status                              |
| Switching output sends on change to 1 and periodically | If switching output = 1 → send 1                          |
| Switching output sends on change to 0 and periodically | If switching output = 0 → send 0                          |

## 6.8. Twilight brightness threshold values

Activate the twilight threshold values required (maximum four). The menus for setting the threshold values are displayed.

|                         |                 |
|-------------------------|-----------------|
| Threshold value 1/2/3/4 | <u>No</u> • Yes |
|-------------------------|-----------------|

The reading of the brightness sensor 2 is relevant for the twilight threshold values. The use of the total value of the brightness for the twilight threshold values is not possible.

### 6.8.1. Threshold values 1-4

#### Threshold value

Set, in which cases threshold values and delay times received are to be kept per object. The parameter is only taken into consideration if the specification/ setting by object is activated further down. Please note that the setting "After power restoration and pro-

gramming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|   |   |
|---|---|
| Maintain the threshold values and delays received via communication objects | <ul style="list-style-type: none"> <li>• never</li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|   |   |

Select whether the threshold value is to be specified per parameter or via a communication object.

|                                |  |
|--------------------------------|--|
| Threshold value setpoint using | <u>Parameter</u> • Communications object |
|--------------------------------|--|

When the **threshold value per parameter** is specified, then the value is set.

|                         |                       |
|-------------------------|-----------------------|
| Threshold value in kLux | 1 ... 1000; <u>10</u> |
|-------------------------|-----------------------|

When the **threshold value per communication object** is specified, the starting value, object value limit and type of change to the threshold value are then set.

|   |   |
|---|---|
| Start threshold value in Lux valid until first call | 1 ... 1000; <u>10</u>                     |
| Object value limit (min.) in Lux                    | <u>1</u> ... 1000                         |
| Object value limit (max.) in Lux                    | 1 ... <u>1000</u>                         |
| Type of threshold change                            | <u>Absolute value</u> • Increase/decrease |
| Increment in Lux<br>(upon increase/decrease change) | 1000 • <u>2000</u> • 5000 • 10000 • 20000 |

With both of the methods for specifying the threshold values the hysteresis is set.

|  |                        |
|--|------------------------|
| Hysteresis setting   | in % • <u>absolute</u> |
| Hysteresis in % of the threshold value<br>(for setting in %) | 0 ... 100; <u>50</u>   |
| Hysteresis in Lux<br>(for absolute setting)                  | 0 ... 1000; <u>5</u>   |

## Switching output

Define which value the output transmits if the threshold value is exceeded or undercut. Set the delay for the switching and in which cases the switch output transmits.

|   |   |
|---|---|
| When the following conditions apply, the output is (LV = Threshold value) | <ul style="list-style-type: none"> <li>• <u>GW above = 1</u>   GW - Hyst. below = 0</li> <li>• GW above = 0   GW - Hyst. below = 1</li> <li>• GW below = 1   GW + Hyst. above = 0</li> <li>• GW below = 0   GW + Hyst. above = 1</li> </ul> |
| Delays can be set via objects<br>(in seconds)                             | <u>No</u> • Yes   |
| Delay from 0 to 1   | <u>none</u> • 1 s ... 2 h   |
| Delay from 1 to 0   | <u>none</u> • 1 s ... 2 h   |

|                                 |   |
|---------------------------------|---|
| Switching output sends          | <ul style="list-style-type: none"> <li>• on change</li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(if sent periodically) | <u>5</u> s ... 2 h  |

## Block

If necessary, activate the switching output block and set what a 1 or 0 at the block entry means and what happens in the event of a block.

|   |  |
|---|--|
| Use switching output block                            | <u>No</u> • Yes  |
| Analysis of the blocking object                       | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first call               | <u>0</u> • 1   |
| Action when locking                                   | <ul style="list-style-type: none"> <li>• <u>do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                             |
| Action upon release<br>(with 2 seconds release delay) | [Dependent on the "Switching output sends" setting]  |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|  |   |
|--|---|
| Switching output sends on change                       | do not send message •<br>status object/s send/s           |
| Switching output sends on change to 1                  | do not send message •<br>if switching output = 1 → send 1 |
| Switching output sends on change to 0                  | do not send message •<br>if switching output = 0 → send 0 |
| Switching output sends on change and periodically      | send switching output status                              |
| Switching output sends on change to 1 and periodically | if switching output = 1 → send 1                          |
| Switching output sends on change to 0 and periodically | if switching output = 0 → send 0                          |

## 6.9. Night

If necessary, activate the night recognition.

|                       |                 |
|-----------------------|-----------------|
| Use night recognition | <u>No</u> • Yes |
|-----------------------|-----------------|

Set, in which cases delay times received are to be kept per object. The parameter is only taken into consideration if the setting by object is activated further down. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|  |   |
|--|---|
| Maintain the delays received via communication objects | <ul style="list-style-type: none"> <li>• never</li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|--|---|

Specify below which brightness the device should recognise "night" and with which hysteresis this is to be outputted.

|                               |                       |
|-------------------------------|-----------------------|
| Night is recognised below Lux | 1 ... 1000; <u>10</u> |
| Hysteresis in Lux             | 0 ... 500; <u>5</u>   |

Set the delay for the switching and in which cases the switch output sends and which value is output at night.

|  |  |
|--|--|
| Delays can be set via objects (in seconds) | <u>No</u> • Yes  |
| Switching delay on night                   | <u>none</u> • 1 s ... 2 h  |
| Switching delay on day                     | <u>none</u> • 1 s ... 2 h  |
| Switching output sends                     | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to night</li> <li>• on change to day</li> <li>• on change and periodically</li> <li>• on change to night and periodically</li> <li>• on change to day and periodically</li> </ul> |
| Send cycle<br>(if sent periodically)       | <u>5 s</u> ... 2 h   |
| Object value at night                      | 0 • <u>1</u>   |

## 6.10. Sun position

Select whether the device should calculate the sun position itself or if the values are received via the bus. The type of object and send pattern are also set.

|   |   |
|---|---|
| Sun position  | <u>is calculated</u> • is received  |
| Object type   | <u>4 Byte floating point</u> • 2 Byte floating point  |
| Send pattern<br>(if the sun position is calculated by the device) | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |

|                                      |  |
|--------------------------------------|--|
| on change of<br>(if sent on change)  | 0.1 degrees • 0.2 degrees • 0.5 degrees •<br><u>1.0 degree</u> • 2.0 degrees • 5.0 degrees |
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>1 min</u>  |

## 6.11. Humidity Measurement

Select, whether a **malfunction object** is to be sent if the sensor is faulty.

|                        |                 |
|------------------------|-----------------|
| Use malfunction object | <u>No</u> • Yes |
|------------------------|-----------------|

Use **Offsets** to adjust the readings to be sent.

|                 |                    |
|-----------------|--------------------|
| Offset in 0.1°C | -50...50; <u>0</u> |
|-----------------|--------------------|

The unit can calculate a **mixed value** from its own reading and an external value. Set the mixed value calculation if desired. If an external portion is used, all of the following settings (threshold values, etc.) are related to the overall reading.

|   |   |
|---|---|
| Use external measured value                           | <u>No</u> • Yes   |
| Ext. Reading proportion of the total reading          | 5% • 10% • ... • <u>50%</u> • ... • 100%  |
| Sending pattern for internal and total measured value | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| At and above change of<br>(if sent on change)         | 0.1% RH • 0.2% RH • 0.5% RH • <u>1.0% RH</u> • ...<br>• 20.0% RH  |
| Send cycle<br>(if sent periodically)                  | 5 s • <u>10 s</u> • ... • 2 h   |

The **minimum and maximum readings** can be saved and sent to the bus. Use the "Reset humidity min/max. value" objects to reset the values to the current readings. The values are not retained after a reset.

|                               |                 |
|-------------------------------|-----------------|
| Use minimum and maximum value | <u>No</u> • Yes |
|-------------------------------|-----------------|

## 6.12. Humidity threshold values

Activate the required air humidity threshold values. The menus for setting the threshold values are displayed.

|                             |                 |
|-----------------------------|-----------------|
| Use threshold value 1/2/3/4 | Yes • <u>No</u> |
|-----------------------------|-----------------|

### 6.12.1. Threshold values 1-4

#### Threshold value

Set, in which cases **threshold values and delay times** received via object are to be retained. The parameter is only taken into consideration if the setting via object is ac-

tivated below. Please note that the setting "After power supply restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first communication (setting via objects is ignored).

|  |  |
|--|--|
| Maintain the threshold values and delays received via communication object | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|--|--|

Set the threshold value directly in the application program using parameters, or define them via the bus using a communication object.

#### **Threshold value setting using parameters:**

Set the threshold values and hysteresis directly.

|                               |  |
|-------------------------------|--|
| Threshold value setting using | <b>Parameter • Communication objects</b> |
| Threshold value in 0.1% RH    | 1 ... 1000; <u>650</u>                   |

#### **Threshold value setting using a communication object:**

Define, how the threshold value is to be received from the bus. Basically, a new value can be received, or simply a command to increase or decrease.

During initial commissioning, a threshold value must be defined, which will be valid until the first communication with a new threshold value. For units which have already been taken into service, the last communicated threshold value can be used. Basically, a humidity range is specified in which the threshold value can be changed (object value limit).

A set threshold value will be retained until a new value or a change is transferred. The current value is saved in EEPROM, so that it is retained in the event of a power supply failure and will be available once the power supply is restored.

|   |   |
|---|---|
| Threshold value setting using                                       | <b>Parameter • Communication objects</b>        |
| Starting threshold value in 0.1% RH valid until first communication | 1 ... 1000; <u>650</u>                          |
| Object value limit (min.) in 0.1%RH                                 | <u>1...1000</u>                                 |
| Object value limit (max.) in 0.1%RH                                 | <u>1...1000</u>                                 |
| Type of threshold value change                                      | <u>Absolute value</u> • Increase/decrease       |
| Increment<br>(upon increase/decrease change)                        | 0.1% RH • ... • <u>2.0% RH</u> • ... • 20.0% RH |

Set the **hysteresis** independent of the type of threshold value specification.

|                    |                        |
|--------------------|------------------------|
| Hysteresis setting | in % • <u>absolute</u> |
|--------------------|------------------------|



|  |                      |
|--|----------------------|
| Hysteresis in 0.1% RH                                | 0...1000; <u>100</u> |
| Hysteresis in %<br>(relative to the threshold value) | 0 ... 50; <u>20</u>  |

## Switching output

Set the behaviour of the switching output when a threshold value is exceeded/undercut. The output switching delay can be set using objects or directly as a parameter.

|  |  |
|--|--|
| When the following conditions apply, the output is<br>(TV = Threshold value)                       | <ul style="list-style-type: none"> <li>• TV above = 1   TV - hyst. below = 0</li> <li>• TV above = 0   TV - hyst. below = 1</li> <li>• <u>TV below = 1   TV + hyst. above = 0</u></li> <li>• TV below = 0   TV + hyst. above = 1</li> </ul>          |
| Delays can be set via objects<br>(in seconds)  | <u>No</u> • Yes  |
| Switching delay from 0 to 1<br>(If delay can be set via objects:<br>valid until 1st communication) | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h   |
| Switching delay from 1 to 0<br>(If delay can be set via objects:<br>valid until 1st communication) | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h   |
| Switching output sends   | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(is only sent if periodically is selected)  | <u>5 s</u> • 10 s • 30 s... • 2 h  |

## Block

The switching output can be blocked using an object.

|                            |                 |
|----------------------------|-----------------|
| Use switching output block | <u>No</u> • Yes |
|----------------------------|-----------------|

If the block is activated, define specifications here for the behaviour of the output when blocked.

|  |   |
|--|---|
| Analysis of the blocking object                  | <ul style="list-style-type: none"> <li>• <u>At value 1: block</u>   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first communication | <u>0</u> • 1  |
| Behaviour of the switching output                |   |
| On block   | <ul style="list-style-type: none"> <li>• <u>Do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                                    |
| On release<br>(with 2 seconds release delay)     | [Dependent on the "Switching output sends" setting]   |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|  |   |
|--|---|
| Switching output sends on change                       | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• Send switching output status</li> </ul>     |
| Switching output sends on change to 1                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 1 → send 1</li> </ul> |
| Switching output sends on change to 0                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 0 → send 0</li> </ul> |
| Switching output sends on change and periodically      | Send switching output status  |
| Switching output sends on change to 1 and periodically | if switching output = 1 → send 1  |
| Switching output sends on change to 0 and periodically | if switching output = 0 → send 0  |

## 6.13. Dewpoint measurement

The **Sensor Vari KNX 3L-TH-D GPS** calculates the dewpoint temperature and can output the value to the bus.

|   |  |
|---|--|
| Sending pattern                               | <ul style="list-style-type: none"> <li>• never</li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| At and above change of<br>(if sent on change) | 0.1°C • 0.2°C • <u>0.5°C</u> • 1.0°C • 2.0°C • 5.0°C   |
| Send cycle<br>(if sent periodically)          | 5 s • <u>10 s</u> • 30 s • 1 min • ... • 2 h   |

Activate monitoring of the coolant temperature if required. The menu for setting the monitoring is displayed.

|   |                 |
|---|-----------------|
| Use monitoring of the coolant temperature | <u>No</u> • Yes |
|---|-----------------|

### 6.13.1. Cooling medium temperature monitoring

A threshold value can be set for the temperature of the coolant, which is based on the current dewpoint temperature (offset/deviation). The switching output of the coolant temperature monitoring system can provide a warning prior to any build-up of condensation in the system, and/or activate appropriate countermeasures.

#### Threshold value

Threshold value = dewpoint temperature + offset

Set, in which cases an **offset** received via object is to be retained. Please note that the setting "After power supply restoration and programming" should not be used for the

initial start-up, as the factory settings are always used until the first communication (setting via objects is ignored).

|   |  |
|---|--|
| Maintain the offset received via communication object | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
| .   |  |

During initial commissioning, an **offset** must be defined which is valid until the first communication of a new offset. For units which have already been taken into service, the last communicated offset can be used.

A set offset will be retained until a new value or a change is transferred. The current value is saved in EEPROM, so that it is retained in the event of a power supply failure and will be available once the power supply is restored.

|   |   |
|---|---|
| Start offset in °C<br>valid until first communication                   | 0...200; <u>30</u>  |
| Increment for offset change   | <u>0.1°C</u> • 0.2°C • 0.3°C • 0.4°C • 0.5°C • 1°C • 2°C • 3°C • 4°C • 5°C  |
| Hysteresis setting  | in % • <u>absolute</u>  |
| Hysteresis of the threshold value in %<br>(for setting in %)            | 0 ... 50; <u>20</u>   |
| Threshold value hysteresis in 0.1°C increments<br>(at absolute setting) | 0 ... 1000; <u>50</u>   |
| Threshold value sends   | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| At and above change of<br>(if sent on change)                           | <u>0.1°C</u> • 0.2°C • 0.5°C • 1.0°C • 2.0°C • 5.0°C  |
| Send cycle<br>(if sent periodically)                                    | 5 s • <u>10 s</u> • 30 s • 1 min • ... • 2 h  |

## Switching output

The output switching delay can be set using objects or directly as a parameter.

|  |   |
|--|---|
| When the following conditions apply, the output is<br>(TV = Threshold value)             | <ul style="list-style-type: none"> <li>• TV above = 1   TV - hyst. below = 0</li> <li>• TV above = 0   TV - hyst. below = 1</li> <li>• <u>TV below = 1</u>   TV + hyst. above = 0</li> <li>• TV below = 0   TV + hyst. above = 1</li> </ul> |
| Delays can be set via objects<br>(in seconds)  | <u>No</u> • Yes   |
| Switching delay from 0 to 1<br>for setting via objects: valid until<br>1st communication | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h  |

|  |  |
|--|--|
| Switching delay from 1 to 0<br><i>for setting via objects: valid until<br/>1st communication</i> | <u>None</u> • 1 s • 2 s • 5 s • 10 s • ... • 2 h   |
| Switching output sends   | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Send cycle<br><i>(is only sent if periodically is selected)</i>                                  | <u>5 s</u> • 10 s • 30 s... • 2 h  |

## Blocking

The switching output can be blocked using an object. Define specifications here for the behaviour of the output when blocked.

|  |  |
|--|--|
| Use switching output block                       | <u>No</u> • Yes  |
| Analysis of the blocking object                  | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first communication | <u>0</u> • 1   |
| Behaviour of the switching output                |  |
| On block   | <ul style="list-style-type: none"> <li>• <u>Do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                             |
| On release<br>(with 2 seconds release delay)     | [Dependent on the "Switching output sends" setting]  |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|  |   |
|--|---|
| Switching output sends on change                       | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• Send switching output status</li> </ul>     |
| Switching output sends on change to 1                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 1 → send 1</li> </ul> |
| Switching output sends on change to 0                  | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• if switching output = 0 → send 0</li> </ul> |
| Switching output sends on change and periodically      | Send switching output status  |
| Switching output sends on change to 1 and periodically | if switching output = 1 → send 1  |
| Switching output sends on change to 0 and periodically | if switching output = 0 → send 0  |

## 6.14. Absolute humidity

The absolute humidity value for the air is detected from the **Vari KNX 3L-TH-D GPS** and can be output to the bus.

|   |   |
|---|---|
| Use measured values                           | <u>No</u> • Yes   |
| Sending pattern                               | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| At and above change of<br>(if sent on change) | 0.1 g • 0.2 g • <u>0.5 g</u> • 1.0 g • 2.0 g • 5.0 g  |
| Send cycle<br>(if sent periodically)          | 5 s • <u>10 s</u> • 30 s... • 2 h   |

## 6.15. Comfort field

The **Sensor Vari KNX 3L-TH-D GPS** can send a message to the bus if the limits of the comfort field are exceeded. In this way, it is for example possible to monitor compliance with DIN 1946 (standard values) or even to define your own comfort field.

|                   |                 |
|-------------------|-----------------|
| Use comfort field | <u>No</u> • Yes |
|-------------------|-----------------|

Specify the **sending pattern**, a **Text** for comfortable and uncomfortable and the magnitude of the **Object value**.

|                                      |   |
|--------------------------------------|---|
| Sending pattern                      | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| Text for comfortable                 | [Free text max. 14 chars.]  |
| Text for uncomfortable               | [Free text max. 14 chars.]  |
| Object value is at                   | <ul style="list-style-type: none"> <li>• <u>comfortable = 1   uncomfortable = 0</u></li> <li>• comfortable = 0   uncomfortable = 1</li> </ul>       |
| Send cycle<br>(if sent periodically) | <u>5 s</u> • <u>10 s</u> • 30 s... • 2 h  |

Define the comfort field by specifying the minimum and maximum values for temperature and humidity. The specified standard values comply with DIN 1946

|  |                        |
|--|------------------------|
| Maximum temperature in °C<br>(Standard 26°C)                 | 25 ... 40; <u>26</u>   |
| Minimum temperature in °C<br>(Standard 20°C)                 | 10 ... 21; <u>20</u>   |
| Maximum relative humidity in %<br>(Standard 65%)             | 52 ... 90; <u>65</u>   |
| Minimum relative humidity in %<br>(Standard 30%)             | 10 ... 43; <u>30</u>   |
| Maximum absolute humidity in 0.1 g/kg<br>(Standard 115 g/kg) | 50 ... 200; <u>115</u> |

Temperature hysteresis: 1°C  
 Relative humidity hysteresis: 2% RH  
 Absolute humidity hysteresis: 2 g/kg

## 6.16. Air pressure measurement

If necessary, activate the air pressure malfunction object. Specify whether the measured value is, in addition, to be outputted as barometric pressure (see below *Information on air pressure*).

|   |                 |
|---|-----------------|
| Use malfunction object                                    | <u>No</u> • Yes |
| Measured value additionally output as barometric pressure | <u>No</u> • Yes |

Define the send pattern and and, if necessary, activate the minimum and maximum value (these values are not retained after a reset).

|                                      |   |
|--------------------------------------|---|
| Send pattern measurement             | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• periodically</li> <li>• on change</li> <li>• on change and periodically</li> </ul> |
| on change of<br>(if sent on change)  | 10 Pa • 20 Pa • 50 Pa • 100 Pa • 200 Pa • 500 Pa  |
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>1 min</u>   |
| Use minimum and maximum value        | <u>No</u> • Yes   |

### Information on air pressure

The unit for air pressure is Pascal (Pa).  
 1 Pa = 0,01 hPa = 0,01 mbar

The air pressure is specified as "normal air pressure" or as "barometric pressure". The normal air pressure is the pressure compensated for height and temperature. The barometric air pressure is the pressure measured directly by the sensor (without compensation).

| Air pressure<br>(in Pa) | Meaning   | Weather tendency |
|-------------------------|-----------|------------------|
| up to 98,000 Pa         | very low  | stormy           |
| 98,000 ... 100,000 Pa   | low       | rainy            |
| 100,000 ... 102,000 Pa  | normal    | changeable       |
| 102,000 ... 104,000 Pa  | high      | sunny            |
| 104,000 Pa:             | very high | very dry         |

## 6.17. Wind threshold values

Activate the wind threshold values required (maximum four) The menus for the further setting of the threshold values are then displayed.

|                         |                 |
|-------------------------|-----------------|
| Threshold value 1/2/3/4 | <u>No</u> • Yes |
|-------------------------|-----------------|

### 6.17.1. Wind threshold values 1-4

#### Threshold value

Set, in which cases threshold values and delay times received are to be kept per object. The parameter is only taken into consideration if the specification/ setting by object is activated further down. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

Select the type of measured value for the calculation of the threshold value (siehe *Information on air pressure*, page 39)

|  |  |
|--|--|
| Maintain the threshold values and delays received via communication object | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
| Type of measurement for threshold value calculation                        | <ul style="list-style-type: none"> <li>• <u>Normal air pressure</u></li> <li>• Barometric pressure</li> </ul>  |

Select whether the threshold value is to be specified per parameter or via a communication object.

|                                |  |
|--------------------------------|--|
| Threshold value setpoint using | <u>Parameter</u> • Communications object |
|--------------------------------|--|

When the **threshold value per parameter** is specified, then the value is set.

|                          |                              |
|--------------------------|------------------------------|
| Threshold value in 10 Pa | 3000 ... 11000; <u>10200</u> |
|--------------------------|------------------------------|

When the **threshold value per communication object** is specified, the starting value, object value limit and type of change to the threshold value are then set.

|   |   |
|---|---|
| Start threshold value in 10 Pa valid until first call | 3000 ... 11000; <u>10200</u>                            |
| Object value limit (min.) in 10 Pa                    | <u>3000</u> ... 11000                                   |
| Object value limit (max.) in 10 Pa                    | 3000 ... <u>11000</u>                                   |
| Type of threshold change                              | <u>Absolute value</u> • Increase/decrease               |
| Step size<br>(upon increase/decrease change)          | 10 Pa • 20 Pa • <u>50 Pa</u> • 100 Pa • 200 Pa • 500 Pa |

With both of the methods for specifying the threshold values the hysteresis is set.

|   |                         |
|---|-------------------------|
| Hysteresis setting  | in % • <u>absolute</u>  |
| Hysteresis in % (relative to threshold value)<br>(for setting in %) | 0 ... 50; <u>20</u>     |
| Hysteresis in 10 Pa<br>(for absolute setting)                       | 0 ... 11000; <u>100</u> |

## Switching output

Define which value the output transmits if the threshold value is exceeded or undercut. Set the delay for the switching and in which cases the switch output transmits.

|   |  |
|---|--|
| When the following conditions apply,<br>the output is<br>(LV = Threshold value) | <ul style="list-style-type: none"> <li>• <u>GW above = 1</u>   GW - Hyst. below = 0</li> <li>• GW above = 0   GW - Hyst. below = 1</li> <li>• GW below = 1   GW + Hyst. above = 0</li> <li>• GW below = 0   GW + Hyst. above = 1</li> </ul>          |
| Delays can be set via objects<br>(in seconds)                                   | <u>No</u> • Yes  |
| Delay from 0 to 1   | <u>none</u> • 1 s ... 2 h  |
| Delay from 1 to 0   | <u>none</u> • 1 s ... 2 h  |
| Switching output sends  | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(if sent periodically)   | <u>5 s</u> ... 2 h   |

## Block

If necessary, activate the switching output block and set what a 1 or 0 at the block entry means and what happens in the event of a block.

|   |   |
|---|---|
| Use switching output block                            | <u>No</u> • Yes   |
| Analysis of the blocking object                       | <ul style="list-style-type: none"> <li>• <u>At value 1: block</u>   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first call               | <u>0</u> • 1  |
| Action when locking                                   | <ul style="list-style-type: none"> <li>• <u>Do not send message</u></li> <li>• send 0</li> <li>• send 1</li> </ul>                                    |
| Action upon release<br>(with 2 seconds release delay) | [Dependent on the "Switching output sends" setting]   |

The behaviour of the switching output on release is dependent on the value of the parameter "Switching output sends" (see "Switching output")

|                                  |   |
|----------------------------------|---|
| Switching output sends on change | do not send message •<br>Status object/s send/s |
|----------------------------------|---|



|  |   |
|--|---|
| Switching output sends on change to 1                  | do not send message •<br>If switching output = 1 → send 1 |
| Switching output sends on change to 0                  | do not send message •<br>If switching output = 0 → send 0 |
| Switching output sends on change and periodically      | Send switching output status                              |
| Switching output sends on change to 1 and periodically | If switching output = 1 → send 1                          |
| Switching output sends on change to 0 and periodically | If switching output = 0 → send 0                          |

## 6.18. Temperature PI control

Activate the control, if you want to use it.

|                |                 |
|----------------|-----------------|
| Use controller | <u>No</u> • Yes |
|----------------|-----------------|

### General control

Set, in which cases **setpoint values and extension time** received via object are to be retained. The parameter is only taken into consideration, if the setting via object is activated below. Please note that the setting "After power supply restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first communication (setting via objects is ignored).

|   |  |
|---|--|
| Maintain the  |  |
| setpoint values and extension times received via communication object | <ul style="list-style-type: none"> <li>• never</li> <li>• <u>after power supply restoration</u></li> <li>• after power supply restoration and programming</li> </ul> |
| .   |  |

For an adequate regulation of the ambient temperature, comfort, standby, eco and building protection modes may be used.

**Comfort** when present,

**Standby** during short absences,

**Eco** as a night-time mode and

**Frost/heat protection** (building protection) during longer absences.

The settings for the temperature control include the setpoint temperatures for the individual modes. Objects are used to determine which mode is to be selected. A change of mode may be triggered manually or automatically (e.g. by a timer, window contact).

The **mode** may be switched with two 8 bit objects of different priority. Objects

„... HVAC mode (Prio 2)“ for switching in everyday operation and

„... HVAC mode (Prio 1)“ for central switching with higher priority.

The objects are coded as follows:

| ID     | Name         | Encoding  | Range     | Use  |
|--------|--------------|---|-----------|------|
| 20.102 | DPT_HVACMode | field1 = HVACMode<br>0 = Auto<br>1 = Comfort<br>2 = Standby<br>3 = Economy<br>4 = Building Protection | [0 ... 4] | HVAC |

Alternatively, you can use three objects, with one object switching between eco and standby mode and the two others activating comfort mode and/or frost/heat protection mode respectively. The comfort object blocks the eco/standby object, and the frost/heat protection object has the highest priority. Objects

„... Mode (1: Eco, 0: Standby)“,

„... comfort activation mode“ and

„... frost/heat protection activation mode“

|                 |   |
|-----------------|---|
| Switch mode via | <ul style="list-style-type: none"> <li>• two 8 bit objects (HVAC Modes)</li> <li>• three 1 bit objects</li> </ul> |
|-----------------|---|

Select the **mode to be activated after reset** (e.g. power failure, reset of the line via the bus) (Default).

Then configure a temperature control **block** via the blocking object.

|   |   |
|---|---|
| Mode after reset                            | <ul style="list-style-type: none"> <li>• Comfort</li> <li>• <u>Standby</u></li> <li>• Eco</li> <li>• Building protection</li> </ul> |
| Behaviour of the blocking object with value | <ul style="list-style-type: none"> <li>• <u>1 = Block   0 = release</u></li> <li>• 0 = block   1 = release</li> </ul>               |
| Value of the blocking object after reset    | <u>0</u> • 1  |

Specify, when the current **control variables** of the controller are to be **sent** to the bus. Periodic sending is safer, in case a message does not reach a recipient. You may also set up periodical monitoring by the actuator with this setting.

|                                 |  |
|---------------------------------|--|
| Send control variable           | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change and periodically</li> </ul> |
| from change (in % absolute)     | 1...10; <u>2</u>   |
| Cycle<br>(if sent periodically) | 5 s • ... • <u>5 min</u> • ... • 2 h   |

The **status object** reports the current status of the control variables (0% = OFF, >0% = ON) and may for example be used for visualisation, or to switch off the heating pump as soon as the heating is switched off.

|                                 |  |
|---------------------------------|--|
| Send status objects             | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Cycle<br>(if sent periodically) | 5 s • ... • <u>5 min</u> • ... • 2 h   |

Then define the **type of control**. Heating and/or cooling may be controlled in two levels.

|                 |  |
|-----------------|--|
| Type of control | <ul style="list-style-type: none"> <li>• <u>Single level heating</u></li> <li>• Dual-level heating</li> <li>• Single-level cooling</li> <li>• Dual-level cooling</li> <li>• Single-level heating + single-level cooling</li> <li>• Dual-level heating + single-level cooling</li> <li>• Dual-level heating + dual-level cooling</li> </ul> |
|-----------------|--|

## General setpoint values

You may enter separate setpoint values for each mode or use the comfort setpoint as a basic value.

If you are using the control for both heating *and* cooling, you may also select the setting "separately with switching object". Systems used for cooling in the summer and for heating in the winter can thus be switched from one to the other.

If you are using the basic value, only the deviation from the comfort setpoint value is listed for the other modes (e.g. 2°C less for standby mode).

|   |   |
|---|---|
| Setting the setpoint values   | <ul style="list-style-type: none"> <li>• <u>with separate setpoint values with Switching object</u></li> <li>• with separate setpoint values without Switching object</li> <li>• with comfort setpoint as a basis with Switching object</li> <li>• with comfort setpoint as a basis without Switching object</li> </ul> |
| Behaviour of the switching object at value<br>(with switching object) | <ul style="list-style-type: none"> <li>• <u>0 = Heating   1 = Cooling</u></li> <li>• 1 = Heating   0 = Cooling</li> </ul>   |
| Value of the switching object after reset<br>(with switching object)  | <u>0</u> • 1  |

The **increment** for the setpoint changes is predefined. Whether the change only remains temporarily active (not saved) or is also retained after power supply restoration

(and programming), is specified in the first section of "General control". This also applies to a comfort extension.

|   |                    |
|---|--------------------|
| Increment for setpoint changes<br>(in 0.1 °C) | 1... 50; <u>10</u> |
|---|--------------------|

The control may be manually reset to comfort mode from eco mode, which is used as night mode. This allows the user to maintain the daily setpoint value for a longer time, e.g. when having guests. The duration of this comfort extension period is set. After the comfort extension time expires, the system returns to eco mode.

|  |                        |
|--|------------------------|
| Comfort extension time in seconds<br>(can only be activated from eco mode) | 1...36000; <u>3600</u> |
|--|------------------------|

## Comfort setpoint

Comfort mode is usually used for daytime mode when people are present. A starting value is defined for the comfort setpoint as well as a temperature range in which the setpoint value may be modified.

|  |                        |
|--|------------------------|
| Starting heating/cooling setpoint (in 0.1 °C)<br>valid until first communication<br>(not upon saving the setpoint value after programming) | -300...800; <u>210</u> |
|--|------------------------|

### If setpoint values are entered separately:

|  |                        |
|--|------------------------|
| Min. object value heating/cooling<br>(in 0.1 °C) | -300...800; <u>160</u> |
| Max. object value heating/cooling<br>(in 0.1 °C) | -300...800; <u>280</u> |

### If the comfort setpoint value is used as a basis:

If the comfort setpoint value is used as a basis, the deviation from this value is set.

|                                  |                        |
|----------------------------------|------------------------|
| Minimum base setpoint (in 0.1°C) | -300...800; <u>160</u> |
| Maximum base setpoint (in 0.1°C) | -300...800; <u>280</u> |
| Reduction by up to (in 0.1°C)    | 0...200; <u>50</u>     |
| Increase by up to (in 0.1°C)     | 0...200; <u>50</u>     |

If the comfort setpoint is used as the basis without a switching object, a dead zone is specified for the control mode "heating *and* cooling" to avoid direct switching from heating to cooling.

|  |                    |
|--|--------------------|
| Dead zone between heating and cooling<br>(only if both heating AND cooling are used) | 1...100; <u>50</u> |
|--|--------------------|

## Standby setpoint

Standby mode is usually used for daytime mode when people are absent.

**If setpoint values are entered separately:**

A starting setpoint value is defined as well as a temperature range in which the setpoint value may be changed.

|  |                        |
|--|------------------------|
| Starting heating/cooling setpoint (in 0.1 °C)<br>valid until first communication | -300...800; <u>210</u> |
| Min. object value heating/cooling<br>(in 0.1 °C)                                 | -300...800; <u>160</u> |
| Max. object value heating/cooling<br>(in 0.1 °C)                                 | -300...800; <u>280</u> |

**If the comfort setpoint value is used as a basis:**

If the comfort setpoint value is used as a basis, the deviation from this value is set.

|   |                    |
|---|--------------------|
| Reduce heating setpoint (in 0.1°C)<br>(for heating)   | 0...200; <u>30</u> |
| Increase cooling setpoint (in 0.1°C)<br>(for cooling) | 0...200; <u>30</u> |

**Eco setpoint**

Eco mode is usually used for night mode.

**If setpoint values are entered separately:**

A starting setpoint value is defined as well as a temperature range in which the setpoint value may be changed.

|  |                        |
|--|------------------------|
| Starting heating/cooling setpoint (in 0.1 °C)<br>valid until first communication | -300...800; <u>210</u> |
| Min. object value heating/cooling<br>(in 0.1 °C)                                 | -300...800; <u>160</u> |
| Max. object value heating/cooling<br>(in 0.1 °C)                                 | -300...800; <u>280</u> |

**If the comfort setpoint value is used as a basis:**

If the comfort setpoint value is used as a basis, the deviation from this value is set.

|   |                    |
|---|--------------------|
| Reduce heating setpoint (in 0.1°C)<br>(for heating)   | 0...200; <u>50</u> |
| Increase cooling setpoint (in 0.1°C)<br>(for cooling) | 0...200; <u>60</u> |

**Setpoint values for frost/heat protection (building protection)**

The building protection mode is used during longer absences. Setpoints for frost protection (heating) and heat protection (cooling) are determined which may not be modified from outside (no access via operating devices etc.). The building protection mode may be activated with delay, which allows you to leave the building before the controls switch to frost/heat protection mode.

|                                      |                       |
|--------------------------------------|-----------------------|
| Setpoint frost protection (in 0.1°C) | -300...800; <u>70</u> |
|--------------------------------------|-----------------------|

|                                     |  |
|-------------------------------------|--|
| Activation delay                    | less than • 5 s • ... • <u>5 min</u> • ... • 2 h |
| Setpoint heat protection (in 0.1°C) | -300...800; <u>350</u>                           |
| Activation delay                    | less than • 5 s • ... • <u>5 min</u> • ... • 2 h |

## General control variables

This setting appears for the control types "Heating *and* Cooling" only. Here, you can decide whether to use a common control variable for heating and cooling. If the 2nd level has a common control variable, you also determine the control mode of the 2nd level here.

|   |   |
|---|---|
| For heating and cooling   | <ul style="list-style-type: none"> <li>• <u>separate control variables are used</u></li> <li>• common control variables are used for Level 1</li> <li>• common control variables are used for Level 2</li> <li>• common control variables are used for Level 1+2</li> </ul> |
| Use control variable for 4/6 way valve<br>(only for common control variable in level 1) | <u>No</u> • Yes   |
| Control type<br>(for level 2 only)  | <ul style="list-style-type: none"> <li>• 2-point-control</li> <li>• PI control</li> </ul>   |
| Control variable of the 2nd Level is on<br>(only for level 3 with 2 point control)      | <ul style="list-style-type: none"> <li>• <u>1 bit object</u></li> <li>• 8 bit object</li> </ul>   |

When using the control variable for a 4/6 way valve, the following applies:

0%...100% heating = 66%...100% control variable

OFF = 50% control variable

0%...100% cooling = 33%...0% control variable

### 6.18.1. Heating control level 1/2

If a heating control mode is configured, one or two setting sections for the heating levels are displayed.

In the first level, heating is controlled by a PI controller which allows to either enter control parameters or select predetermined applications.

In the second level (therefore only in case of 2-stage heating), heating is controlled via a PI or a 2-point-control.

In level 2, the setpoint difference between the two levels must also be specified, i.e. below which setpoint deviation the second level is added.

|   |   |
|---|---|
| Setpoint difference between levels 1 and 2 levels (in 0.1°C)<br>(for level 2) | 0...100; <u>40</u>  |
| Control type<br>(for level 2, no common control variables)                    | <ul style="list-style-type: none"> <li>• 2-point-control</li> <li>• PI control</li> </ul> |

|  |  |
|--|--|
| Control variable is a<br>(for level 2 with 2-point controlling, no common control variables) | <ul style="list-style-type: none"> <li>• 1 bit object</li> <li>• 8 bit object</li> </ul> |
|--|--|

### **PI control with control parameters:**

This setting allows individual input of the parameters for PI control.

|                              |   |
|------------------------------|---|
| Control type                 | • <b>PI control</b>   |
| Setting of the controller by | <ul style="list-style-type: none"> <li>• <b>Controller parameter</b></li> <li>• specified applications</li> </ul> |

Specify the deviation from the setpoint value at which the maximum control variable value is reached, i.e. the point at which maximum heating power is activated.

The reset time shows how quickly the controller responds to deviations from the setpoint value. In case of a short reset time, the control responds with a fast increase of the control variable. In case of a long reset time, the control responds somewhat less urgently and needs longer until the necessary control variable for the setpoint value deviation is reached.

You should set the time appropriate to the heating system at this point (observe manufacturer's instructions).

|  |                    |
|--|--------------------|
| Maximum control variable is reached at setpoint/actual difference of (in °C) | 0... <u>5</u>      |
| Reset time (in min.)   | 1...255; <u>30</u> |

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating.

On release, the control variable follows the rule again.

|  |   |
|--|---|
| When blocked, the control variable shall | <ul style="list-style-type: none"> <li>• <u>not be sent</u></li> <li>• send a specific value</li> </ul> |
| Value (in %)<br>(if a value is sent)     | <u>0</u> ...100   |

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

### **PI control with predetermined application:**

This setting provides fixed parameters for frequent applications.

|                              |  |
|------------------------------|--|
| Control type                 | • <b>PI control</b>  |
| Setting of the controller by | <ul style="list-style-type: none"> <li>• Controller parameter</li> <li>• <b>specified applications</b></li> </ul>                                      |
| Application                  | <ul style="list-style-type: none"> <li>• Warm water heating</li> <li>• Floor heating</li> <li>• Convection unit</li> <li>• Electric heating</li> </ul> |

|  |   |
|--|---|
| Maximum control variable is reached at setpoint/actual difference of (in °C) | Warm water heating: 5<br>Floor heating: 5<br>Convection unit: 4<br>Electric heating: 4        |
| Reset time (in min.)   | Warm water heating: 150<br>Floor heating: 240<br>Convection unit: 90<br>Electric heating: 100 |

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating. On release, the control variable follows the rule again.

|  |  |
|--|--|
| When blocked, the control variable shall | <ul style="list-style-type: none"> <li>• not be sent</li> <li>• send a specific value</li> </ul> |
| Value (in %)<br>(if a value is sent)     | <u>0</u> ...100  |

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

### **2-point-control (only level 2):**

2-point-control is used for systems which are only switched to ON or OFF.

|  |                          |
|--|--------------------------|
| Control type<br>(is determined at a higher level for common control variables) | • <b>2-point-control</b> |
|--|--------------------------|

Enter the hysteresis that prevents frequent on/off switching of temperatures in the threshold range.

|                       |                    |
|-----------------------|--------------------|
| Hysteresis (in 0.1°C) | 0...100; <u>20</u> |
|-----------------------|--------------------|

If separate control variables are used, select whether the control variable of the 2nd level is a 1 bit object (on/off) or an 8 bit object (on with percentage/off).

|                                    |   |
|------------------------------------|---|
| Control variable is a              | <ul style="list-style-type: none"> <li>• <u>1 bit object</u></li> <li>• 8 bit object</li> </ul> |
| Value (in %)<br>(for 8-bit object) | 0... <u>100</u>   |

Now specify what should be sent when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating. On release, the control variable follows the rule again.

|  |  |
|--|--|
| When blocked, the control variable shall | <ul style="list-style-type: none"> <li>• not be sent</li> <li>• send a specific value</li> </ul> |
| Value (in %)<br>only if a value is sent  | <u>0</u> ...100  |



### 6.18.2. Cooling control level 1/2

If a cooling control mode is configured, one or two setting sections for the cooling levels are displayed.

In the first level, cooling is controlled by a PI control in which either control parameters or predetermined applications can be selected.

In the second level (therefore only for 2-level cooling), cooling is controlled via a PI or a 2-point-control.

In level 2, the setpoint difference between the two levels must also be specified, i.e. above which setpoint value deviation the second level is added.

|  |   |
|--|---|
| Setpoint difference between levels 1 and 2 levels (in 0.1°C)<br>(for level 2)                | 0...100; <u>40</u>  |
| Control type<br>(for level 2, no common control variables)                                   | <ul style="list-style-type: none"> <li>• 2-point-control</li> <li>• PI control</li> </ul>       |
| Control variable is a<br>(for level 2 with 2-point controlling, no common control variables) | <ul style="list-style-type: none"> <li>• <u>1 bit object</u></li> <li>• 8 bit object</li> </ul> |

#### **PI control with control parameters:**

This setting allows individual input of the parameters for PI control.

|                              |   |
|------------------------------|---|
| Control type                 | • <b>PI control</b>   |
| Setting of the controller by | <ul style="list-style-type: none"> <li>• <b>Controller parameter</b></li> <li>• specified applications</li> </ul> |

Specify the deviation from the setpoint value which reaches maximum variable value, i.e. the point at which maximum cooling power is activated.

The reset time shows how quickly the controller responds to deviations from the setpoint value. In case of a short reset time, the control responds with a fast increase of the control variable. In case of a long reset time, the control responds somewhat less urgently and needs longer until the necessary control variable for the setpoint value deviation is reached. You should set the time appropriate to the cooling system at this point (observe manufacturer's instructions).

|  |                    |
|--|--------------------|
| Maximum control variable is reached at setpoint/actual difference of (in °C) | 0... <u>5</u>      |
| Reset time (in min.)   | 1...255; <u>30</u> |

Now specify what should be sent when the control is blocked.

On release, the control variable follows the rule again.

|  |   |
|--|---|
| When blocked, the control variable shall | <ul style="list-style-type: none"> <li>• <u>not be sent</u></li> <li>• send a specific value</li> </ul> |
| Value (in %)<br>(if a value is sent)     | <u>0</u> ...100   |

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

**PI control with predetermined application:**

This setting provides fixed parameters for a cooling ceiling

|  |   |
|--|---|
| Control type   | • <b>PI control</b>                                       |
| Setting of the controller by   | • Controller parameter<br>• <b>specified applications</b> |
| Application  | • Cooling ceiling   |
| Maximum control variable is reached at setpoint/actual difference of (in °C) | Cooling ceiling: 5  |
| Reset time (in min.)   | Cooling ceiling: 30                                       |

Now specify what should be sent when the control is blocked.

On release, the control variable follows the rule again.

|  |  |
|--|--|
| When blocked, the control variable shall | • not be sent<br>• send a specific value |
| Value (in %)<br>(if a value is sent)     | <u>0</u> ...100                          |

**2-point-control (only level 2):**

2-point-control is used for systems which are only set to ON or OFF.

|   |                          |
|---|--------------------------|
| Control type<br><i>is determined at a higher level for common variables</i> | • <b>2-point-control</b> |
|---|--------------------------|

Enter the hysteresis that prevents frequent on/off switching of temperatures in the threshold range.

|                       |                    |
|-----------------------|--------------------|
| Hysteresis (in 0.1°C) | 0...100; <u>20</u> |
|-----------------------|--------------------|

If separate control variables are used, select whether the control variable of the 2nd level is a 1 bit object (on/off) or an 8 bit object (on with percentage/off).

|                                    |   |
|------------------------------------|---|
| Control variable is a              | • <u>1 bit object</u><br>• 8 bit object |
| Value (in %)<br>(for 8-bit object) | 0... <u>100</u>                         |

Now specify what should be sent when the control is blocked.

On release, the control variable follows the rule again.

|  |   |
|--|---|
| When blocked, the control variable shall | • <u>not</u> be sent<br>• send a specific value |
| Value (in %)<br>(if a value is sent)     | <u>0</u> ...100                                 |

In case of a common control variable for heating and cooling, 0 is always transmitted as a fixed value.

## 6.19. Summer Compensation

With the summer compensation the target value for the room temperature can automatically be adapted by cooling at higher outdoor temperatures. The objective is to prevent a too great a difference between indoor and outdoor temperature in order to keep the energy consumption low.

Activate the summer compensation.

|                         |                 |
|-------------------------|-----------------|
| Use summer compensation | <u>No</u> • Yes |
|-------------------------|-----------------|

Using the points 1 and 2, define the outdoor temperature range in which the target value for the indoor temperature is to be adapted linearly. Then, specify which indoor temperature target values are to be valid below point1 and above point 2.

### Standard values according to DIN EN 60529

Point 1: External temperature = 20°, Target value = 20°C.

Point 2: External temperature = 32°, Target value = 26°C.

| Characteristic curve description:                  |                        |
|--|------------------------|
| External temperature point 1 (in 0.1°C increments) | 0 ... 500 ; <u>200</u> |
| Outdoor temperature point 2 (in 0.1°C increments)  | 0 ... 500 ; <u>320</u> |
| below point 1<br>the target value is (in 0.1°C)    | 0 ... 500 ; <u>200</u> |
| above point 2<br>the target value is (in 0.1°C)    | 0 ... 500 ; <u>260</u> |

Set the send pattern for the summer compensation.

|                                      |  |
|--------------------------------------|--|
| Send pattern                         | <ul style="list-style-type: none"> <li>• periodically</li> <li>• <u>on change</u></li> <li>• on change and periodically</li> </ul> |
| on change of<br>(if sent on change)  | 0.1°C • <u>0.2°C</u> • 0.5°C • 1°C • 2°C • 5°C   |
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>1 min</u>  |

If necessary, activate the block for the summer compensation and set what a 1 or 0 at the block input means and what happens in the event of a block.

|   |  |
|---|--|
| Use block                               | <u>No</u> • Yes  |
| Analysis of the blocking object         | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first call | <u>0</u> • 1   |
| Action when locking                     | <ul style="list-style-type: none"> <li>• <u>do not send</u></li> <li>• Send value</li> </ul>   |

|  |                       |
|--|-----------------------|
| Value (in increments of 0.1°C)<br>(if a value is sent during blocking) | 0 ... 500; <u>200</u> |
|--|-----------------------|

## 6.20. Humidity PI control

If you activate humidity control, you can use the following settings to define control type, setpoint values, and humidification and dehumidification.

|                      |                 |
|----------------------|-----------------|
| Use humidity control | <u>No</u> • Yes |
|----------------------|-----------------|

### General control

**Sensor Vari KNX 3L-TH-D GPS** can be used to control one- or two-level dehumidification or combined humidification/dehumidification.

|                 |  |
|-----------------|--|
| Type of control | <ul style="list-style-type: none"> <li>• <u>One-level dehumidification</u></li> <li>• Two-level dehumidification</li> <li>• Humidification and dehumidification</li> </ul> |
|-----------------|--|

Configure a block for the humidity control using the blocking object.

|   |   |
|---|---|
| Behaviour of the blocking object with value         | <ul style="list-style-type: none"> <li>• <u>1 = block   0 = release</u></li> <li>• 0 = block   1 = release</li> </ul> |
| Blocking object value<br>before first communication | 0 • <u>1</u>  |

Specify when the current control variables are to be sent to the bus. Periodic sending is safer, in case a message does not reach a recipient. You may also set up periodic monitoring using an actuator with this setting.

|  |  |
|--|--|
| Send control variable                                      | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change and periodically</li> </ul> |
| Send cycle<br>(is only sent if "periodically" is selected) | 5 s • ... • <u>5 min</u> • ... • 2 h   |

The status object shows the current status of the output variable (0 = OFF, >0 = ON) and can for example be used for visualisation.

|  |  |
|--|--|
| Send status object(s)                                      | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change to 1</li> <li>• on change to 0</li> <li>• on change and periodically</li> <li>• on change to 1 and periodically</li> <li>• on change to 0 and periodically</li> </ul> |
| Send cycle<br>(is only sent if "periodically" is selected) | 5 s • ... • <u>5 min</u> • ... • 2 h   |

## Controller setpoint

Set, in which cases **setpoint values** received via object are to be retained. Please note that the setting "After power supply restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first communication (setting via objects is ignored).

|  |  |
|--|--|
| Maintain the                               |  |
| setpoint received via communication object | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|  |  |

During initial commissioning, a **setpoint value** must be defined which is valid until the first communication of a new setpoint value. For units which have already been taken into service, the last communicated setpoint value can be used. Basically, an air humidity range is specified in which the setpoint value can be changed (**object value limit**).

Enter, how the setpoint value will be received from the bus. Basically, a new value can be received, or simply a command to increase or decrease.

A set setpoint value will be retained until a new value or a change is transferred. The current value is saved in EEPROM, so that it is retained in the event of a power supply failure and will be available once the power supply is restored.

|   |   |
|---|---|
| Start setpoint in %<br>valid until first communication<br><i>(not upon saving the setpoint value after programming)</i> | 0 ... 100; <u>50</u>                      |
| Object value limit (min.) in %  | 0...100; <u>30</u>                        |
| Object value limit (max.) in %  | 0...100; <u>70</u>                        |
| Type of setpoint value change   | <u>Absolute value</u> • Increase/decrease |
| Increment<br><i>(upon increase/decrease change)</i>   | 1% • <u>2%</u> • 3% • 5% • 10%            |

In "Humidification and dehumidification" control mode, a dead zone is specified so that no direct changeover switching between humidification and dehumidification is possible.

|  |                   |
|--|-------------------|
| Dead zone between humidification and dehumidification in %<br><i>(only if both humidification and dehumidification are used)</i> | 0...50; <u>10</u> |
|--|-------------------|

Humidification starts, when the relative air humidity is lower or equal to the setpoint value - dead zone value.

## Dehumidification and/or humidification

Depending on the control mode, settings sections for humidification and dehumidification appear (level 1/2 ).

For dual-level dehumidification, the setpoint value difference between the two levels must be defined, i.e. the setpoint value which, when exceeded, triggers the switch-on of 2nd level.

|  |                   |
|--|-------------------|
| setpoint value difference between 1st and 2nd level in %<br>(for level 2 only) | 0...50; <u>10</u> |
|--|-------------------|

Determine the deviation from the setpoint value at which the maximum variable value is reached, i.e. the point at which maximum output is used.

The reset time shows how quickly the controller responds to deviations from the setpoint value. In case of a short reset time, the control responds with a fast increase of the control variable. In case of a long reset time, the control responds somewhat less urgently and needs longer until the necessary control variable for the setpoint value deviation is reached.

You should set the time appropriate for the humidification/dehumidification system at this point (note manufacturer instructions).

|  |                   |
|--|-------------------|
| Maximum control variable is reached at target/actual difference of % | 1...50; <u>5</u>  |
| Reset time in minutes  | 1...255; <u>3</u> |

Now specify what should be sent when the control is blocked.

On release, the control variable follows the rule again.

|  |   |
|--|---|
| When blocked, the control variable shall | <ul style="list-style-type: none"> <li>• <u>not be sent</u></li> <li>• send a specific value</li> </ul> |
| Value in %<br>(if a value is sent)       | <u>0</u> ...100   |

## 6.21. Variable comparator

The integrated variable comparators can output maximum, minimum and average values.

|                        |                 |
|------------------------|-----------------|
| Use comparator 1/2/3/4 | <u>No</u> • Yes |
|------------------------|-----------------|

### 6.21.1. Control variable comparator 1/2/3/4

Determine what the control variable comparator should output, and activate the input objects to be used. Transmission patterns and blocks can also be set.

|   |   |
|---|---|
| Output delivers   | <ul style="list-style-type: none"> <li>• Maximum value</li> <li>• Minimum value</li> <li>• <u>Average value</u></li> </ul>  |
| Use input 1 / 2 / 3 / 4 / 5                               | No • Yes  |
| Output sends  | <ul style="list-style-type: none"> <li>• <u>on change of output</u></li> <li>• on change of output and periodically</li> <li>• when receiving an input object</li> <li>• when receiving an input object and periodically</li> </ul> |
| Send cycle<br>(if sent periodically)                      | 5 s • 10 s • 30 s • ... • <u>5 min</u> • ... • 2 h  |
| At and above change of<br>(if sent on change)             | 1% • 2% • 5% • <u>10%</u> • 20% • 25% • 50%   |
| Analysis of the blocking object                           | <ul style="list-style-type: none"> <li>• <u>at value 1: block   at value 0: release</u></li> <li>• at value 0: block   at value 1: release</li> </ul>   |
| Blocking object value<br>before 1st communication         | 0 • 1   |
| Behaviour of the switching output                         |   |
| On block  | <ul style="list-style-type: none"> <li>• <u>do not send message</u></li> <li>• Send value</li> </ul>  |
| Sent value in %   | 0 ... 100   |
| output sends on release<br>(with 2 seconds release delay) | <ul style="list-style-type: none"> <li>• <u>the current value</u></li> <li>• the current value after receipt of an object</li> </ul>  |

## 6.22. Computer

Activate the multi-functional computer, with which the input data can be changed by calculation, querying a condition or converting the data point type. The menus for setting the computer are displayed.

|                       |                 |
|-----------------------|-----------------|
| Computers 1/2/3/.../8 | <u>No</u> • Yes |
|-----------------------|-----------------|

### 6.22.1. Computers 1-8

Set, in which cases input values received are to be kept per object. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|  |   |
|--|---|
| Maintain the                                       |   |
| input values received via communication<br>objects | <ul style="list-style-type: none"> <li>• never</li> <li>• after power supply restoration</li> <li>• after power supply restoration and programming</li> </ul> |
|  |   |

Select the function set the input mode and starting values for input 1 and input 2.

|  |   |
|--|---|
| Function (I = Input)   | <ul style="list-style-type: none"> <li>• Prerequisite: <math>E1 = E2</math></li> <li>• Prerequisite: <math>E1 &gt; E2</math></li> <li>• Prerequisite: <math>E1 \geq E2</math></li> <li>• Prerequisite: <math>E1 &lt; E2</math></li> <li>• Prerequisite: <math>E1 \leq E2</math></li> <li>• Prerequisite: <math>E1 - E2 \geq E3</math></li> <li>• Prerequisite: <math>E2 - E1 \geq E3</math></li> <li>• Prerequisite: <math>E1 - E2 \text{ amount} \geq E3</math></li> <li>• Calculation: <math>E1 + E2</math></li> <li>• Calculation: <math>E1 - E2</math></li> <li>• Calculation: <math>E2 - E1</math></li> <li>• Calculation: <math>E1 - E2 \text{ Amount}</math></li> <li>• Calculation: <math>\text{Output 1} = E1 \times X + Y</math>  <br/><math>\text{Output 2} = E2 \times X + Y</math>  </li> <li>• Transformation: General</li> </ul> |
| Tolerance for comparison<br>(in the case of prerequisite $E1 = E2$ ) | 0 ... 4,294,967,295   |
| Input type   | [Selection options depending on the function]<br><ul style="list-style-type: none"> <li>• 1 bit</li> <li>• 1 byte (0...255)</li> <li>• 1 byte (0%...100%)</li> <li>• 1 byte (0°...360°)</li> <li>• 2 byte counter without math. symbol</li> <li>• 2 byte counter with math. symbol</li> <li>• 2 byte floating point</li> <li>• 4 byte counter without math. symbol</li> <li>• 4 byte counter with math. symbol</li> <li>• 4 byte floating point</li> </ul>  |
| Starting value $E1 / E2 / E3$  | [Input range depending on the type of input]  |

### Prerequisites

When querying the prerequisites set the output type and output values at different statuses:

|   |   |
|---|---|
| Output type                                       | <ul style="list-style-type: none"> <li>• 1 bit</li> <li>• 1 byte (0...255)</li> <li>• 1 byte (0%...100%)</li> <li>• 1 byte (0°...360°)</li> <li>• 2 byte counter without math. symbol</li> <li>• 2 byte counter with math. symbol</li> <li>• 2 byte floating point</li> <li>• 4 byte counter without math. symbol</li> <li>• 4 byte counter with math. symbol</li> <li>• 4 byte floating point</li> </ul> |
| Output value (if applicable output value A1 / A2) |   |



|   |  |
|---|--|
| if the condition is met                   | <u>0</u> [Input range depending on the type of output] |
| if the condition is not met               | <u>0</u> [Input range depending on the type of output] |
| if the monitoring time period is exceeded | <u>0</u> [Input range depending on the type of output] |
| if blocked                                | <u>0</u> [Input range depending on the type of output] |

Set the output send pattern.

|   |  |
|---|--|
| Output sends  | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change and after reset</li> <li>• on change and periodically</li> <li>• when receiving an input object</li> <li>• when receiving an input object and periodically</li> </ul> |
| Type of change<br>(is only sent if "on change" is selected) | <ul style="list-style-type: none"> <li>• <u>on each change</u></li> <li>• on change to condition met</li> <li>• on change to condition not met</li> </ul>  |
| Send cycle<br>(if sent periodically)                        | 5 s ... 2 h; <u>10 s</u>   |

Set the text to be displayed for conditions met / not met.

|                                  |                            |
|----------------------------------|----------------------------|
| Text if the condition is met     | [Free text max. 14 chars.] |
| Text if the condition is not met | [Free text max. 14 chars.] |

If applicable set the send delays.

|   |                               |
|---|-------------------------------|
| Send delay in the event of change to the condition is met     | <u>none</u> • 1 s • ... • 2 h |
| Send delay in the event of change to the condition is not met | <u>none</u> • 1 s • ... • 2 h |

### **Calculations and transformation**

For calculations and transformations set the output values to the various conditions:

|   |  |
|---|--|
| Output value (if applicable A1 / A2)      |  |
| if the monitoring time period is exceeded | <u>0</u> [Input range depending on the type of output] |
| if blocked                                | <u>0</u> [Input range depending on the type of output] |

Set the output send pattern.

|   |   |
|---|---|
| Output sends  | <ul style="list-style-type: none"> <li>• on change</li> <li>• on change and after reset</li> <li>• on change and periodically</li> <li>• when receiving an input object</li> <li>• when receiving an input object and periodically</li> </ul> |
| on change of<br><i>(only if calculations are transmitted for changes)</i> | 1 ... [Input range depending on the type of input]  |
| Send cycle<br><i>(if sent periodically)</i>                               | 5 s ... 2 h; <u>10 s</u>  |

For **Calculations of the form output 1 =  $E1 \times X + Y$  | output 2 =  $E2 \times X + Y$**  define the variables X and Y. The variables can have a positive or negative sign, 9 digits before and 9 digits after the decimal point.

|   |                          |
|---|--------------------------|
| Formula for output A1: $A1 = E1 \times X + Y$ |                          |
| X   | <u>1.00</u> [free input] |
| Y   | <u>0.00</u> [free input] |
| Formula for output A2: $A2 = E2 \times X + Y$ |                          |
| X   | <u>1.00</u> [free input] |
| Y   | <u>0.00</u> [free input] |

### Further settings for all formulas

If necessary, activate the input monitoring. Set which inputs are to be monitored, at which intervals the inputs are to be monitored and what value the "monitoring status" should have, if the monitoring period is exceeded without feedback.

|   |  |
|---|--|
| Use input monitoring  | <u>No</u> • Yes  |
| Monitoring of   | <ul style="list-style-type: none"> <li>• <u>E1</u></li> <li>• E2</li> <li>• E3</li> <li>• E1 and E2</li> <li>• E1 and E3</li> <li>• E2 and E3</li> <li>• E1 and E2 and E3</li> </ul> [depending on the function] |
| Monitoring period   | 5 s • ... • 2 h; <u>1 min</u>  |
| Value of the object "monitoring status" if period is exceeded | 0 • <u>1</u>   |

If necessary, activate the computer block and set what a 1 or 0 at the block entry means and what happens in the event of a block.

|                                 |  |
|---------------------------------|--|
| Use block                       | <u>No</u> • Yes  |
| Analysis of the blocking object | <ul style="list-style-type: none"> <li>• At value 1: block   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |

|                         |  |
|-------------------------|--|
| Value before first call | <u>0</u> • 1   |
| Output pattern          | • <u>do not send anything</u>  |
| On block                | • send value   |
| On release              | • as send pattern [see above]<br>• <u>send current value immediately</u> |

## 6.23. Weekly timer

The weekly timer in the device allows for 24 periods to be defined.

The respective period objects can be configured as inputs or outputs, i.e. send to the bus (internal timer function, use internal and for other bus members) or be switched from there (timer function via an external device). If several devices are used in the system, the timer settings may be done on one device that sends the period objects as output. The other devices apply the timer-command (input), whereby a better synchronization is achieved.

Activate the required periods for the weekly timer. The menus for setting the timer are loaded.

|                         |                 |
|-------------------------|-----------------|
| Use period 1/2/3/.../24 | <u>No</u> • Yes |
|-------------------------|-----------------|

### 6.23.1. Weekly timer period 1-24

Set whether the period can be set (period object is the output and is sent to the bus) or if the period is received externally via the bus (period object is the input).

|        |  |
|--------|--|
| Period | <ul style="list-style-type: none"> <li>• <u>can be set</u><br/><u>(period object is output)</u></li> <li>• can be switched (time period object is output)</li> </ul> |
|--------|--|

#### ***Period can be set (time period object is output)***

Set whether the switching times are set per object and in which cases the switching times received are to be retained. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|  |  |
|--|--|
| Use objects for switching times                                      | <u>No</u> • Yes  |
| The threshold values and delays received by the communication object |  |
| Switching data should  | <ul style="list-style-type: none"> <li>• <u>not be retained</u></li> <li>• be retained after power restoration</li> <li>• be retained after power restoration and programming</li> </ul> |

Set the switching on and off times and the days of the week for this period. If, for example, 15:35 is set as the switch-off time, the output switches off on the change from 15:35 to 15:36.

|                           |                 |
|---------------------------|-----------------|
| Switch on time (hours)    | <u>0</u> ... 23 |
| Switch on time (minutes)  | <u>0</u> ... 59 |
| Switch-off time (hours)   | <u>0</u> ... 23 |
| Switch-off time (minutes) | <u>0</u> ... 59 |
| Period switches to        |                 |
| Monday ... Sunday         | <u>No</u> • Yes |

Set the send pattern for the week clock switch output and the value of the output.

|  |   |
|--|---|
| Switching output sends                     | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• on change</li> <li>• on change to active</li> <li>• on change to inactive</li> <li>• on change and periodically</li> <li>• on change to active and periodically</li> <li>• on change to inactive and periodically</li> </ul> |
| Send cycle<br>(if sent periodically)       | 5 s ... 2 h; <u>10</u> s  |
| 8-bit output value if<br>Period active     | <u>0</u> ... 255  |
| 8-bit output value if<br>Period not active | <u>0</u> ... 255  |

### ***Period that can be switched externally (time period is the input)***

The time switches are taken over from an external timer switch. Set at which value the period is to be active and define the object value before the first communication.

|   |   |
|---|---|
| Period is active                            | <ul style="list-style-type: none"> <li>• <u>at object value = 1</u></li> <li>• at object value = 0</li> </ul> |
| Object value prior to initial communication | <u>0</u> • 1  |

## **6.24. Calendar timer**

In the device's calendar timer, four periods with two switching sequences can be defined.

Activate the required periods for the calendar timer. The menus for setting the timer are loaded.

|                |                 |
|----------------|-----------------|
| Use period 1   | <u>No</u> • Yes |
| Use ... period | <u>No</u> • Yes |
| Use period 4   | <u>No</u> • Yes |

### 6.24.1. Calendar clock Period 1-4

Set whether the switching date and the switching time are set per object and in which cases the switching dates and times received are to be retained. Please note that the setting "After power restoration and programming" should not be used for the initial start-up, as the factory settings are always used until the first call (setting via objects is ignored).

|   |   |
|---|---|
| Use objects for switching times                             | <u>No</u> • Yes   |
| Maintain the  |   |
| switching data and times received via communication objects | <ul style="list-style-type: none"> <li>• never</li> <li>• after power restoration</li> <li>• after power restoration and programming</li> </ul> |
| .   |   |

Define the period

|                      |  |
|----------------------|--|
| From:                |  |
| Month                | <u>January</u> ... December                                |
| Day                  | <u>1</u> ... 29 / 1 ... 30 / 1 ... 31 (according to month) |
| Up to and including: |  |
| Month                | <u>January</u> ... December                                |
| Day                  | <u>1</u> ... 29 / 1 ... 30 / 1 ... 31 (according to month) |

### Sequence 1 / 2

Define the switching times.

|                                      |  |
|--------------------------------------|--|
| Switch on time (hours)               | <u>0</u> ... 23  |
| Switch on time (minutes)             | <u>0</u> ... 59  |
| Switch-off time (hours)              | <u>0</u> ... 23  |
| Switch-off time (minutes)            | <u>0</u> ... 59  |
| Switching output sends               | <ul style="list-style-type: none"> <li>• never</li> <li>• on change</li> <li>• on change to active</li> <li>• on change to inactive</li> <li>• on change and periodically</li> <li>• on change to active and periodically</li> <li>• on change to inactive and periodically</li> </ul> |
| Send cycle<br>(if sent periodically) | 5 s ... 2 h; <u>10 s</u>   |

Set the send pattern for the switch sequence and the value of the 8-bit output.

|  |   |
|--|---|
| Switching output sends                     | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• on change</li> <li>• on change to active</li> <li>• on change to inactive</li> <li>• on change and periodically</li> <li>• on change to active and periodically</li> <li>• on change to inactive and periodically</li> </ul> |
| Send cycle<br>(if sent periodically)       | 5 s ... 2 h; <u>10 s</u>  |
| 8-bit output value if<br>Period active     | <u>0</u> ... 255  |
| 8-bit output value if<br>Period not active | <u>0</u> ... 255  |

## 6.25. Logic

The device has 16 logic inputs, eight AND and eight OR logic gates.

Activate the logic inputs and assign object values up to first call.

|                                       |                 |
|---------------------------------------|-----------------|
| Use logic inputs                      | Yes • <u>No</u> |
| Object value prior to first call for: |                 |
| - Logic input 1                       | <u>0</u> • 1    |
| - Logic input ...                     | <u>0</u> • 1    |
| - Logic input 16                      | <u>0</u> • 1    |

Activate the required logic outputs.

### AND logic

|               |                            |
|---------------|----------------------------|
| AND logic 1   | <u>not active</u> • active |
| AND logic ... | <u>not active</u> • active |
| AND logic 8   | <u>not active</u> • active |

### OR logic

|              |                            |
|--------------|----------------------------|
| OR logic 1   | <u>not active</u> • active |
| OR logic ... | <u>not active</u> • active |
| OR logic 8   | <u>not active</u> • active |

### 6.25.1. AND logic 1-8 and OR logic outputs 1-8

The same setting options are available for AND and OR logic.

Each logic output may transmit one 1 bit or two 8 bit objects. Determine what the output should send if logic = 1 and = 0.

|                         |  |
|-------------------------|--|
| 1. / 2. / 3. / 4. Input | <ul style="list-style-type: none"> <li>• <u>do not use</u></li> <li>- Logic inputs 1...16</li> <li>- Logic inputs 1...16 inverted</li> <li>• all switching events that the device provides (see <i>Connection inputs of the AND/OR logic</i>)</li> </ul> |
| Output type             | <ul style="list-style-type: none"> <li>• <u>a 1-Bit-object</u></li> <li>• two 8-bit objects</li> </ul>   |

If the **output type is a 1-bit object**, set the output values for the various conditions.

|   |              |
|---|--------------|
| Output value if logic = 1                     | <u>1</u> • 0 |
| Output value if logic = 0                     | 1 • <u>0</u> |
| Output value If block is active               | 1 • <u>0</u> |
| Output value if monitoring period is exceeded | 1 • <u>0</u> |

If the **output type is two 8-bit objects**, set the type of object and the output values for the various conditions.

|  |  |
|--|--|
| Object type  | <ul style="list-style-type: none"> <li>• Value (0...255)</li> <li>• Percent (0...100%)</li> <li>• Angle (0...360°)</li> <li>• Scene call-up (0...127)</li> </ul> |
| Output value object A if logic = 1                     | 0 ... 255 / 100% / 360° / 127; <u>1</u>  |
| Output value object B if logic = 1                     | 0 ... 255 / 100% / 360° / 127; <u>1</u>  |
| Output value object A if logic = 0                     | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |
| Output value object B if logic = 0                     | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |
| Output value object A if block is active               | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |
| Output value object B if block is active               | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |
| Output value object A if monitoring period is exceeded | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |
| Output value object B if monitoring period is exceeded | 0 ... 255 / 100% / 360° / 127; <u>0</u>  |

Set the output send pattern.

|                                      |  |
|--------------------------------------|--|
| Send pattern                         | <ul style="list-style-type: none"> <li>• on change of logic</li> <li>• on change of logic to 1</li> <li>• on change of logic to 0</li> <li>• on change of logic and periodically</li> <li>• on change of logic to 1 and periodically</li> <li>• on change of logic to 0 and periodically</li> <li>• on change of logic+object receipt</li> <li>• on change of logic+object receipt and periodically</li> </ul> |
| Send cycle<br>(if sent periodically) | 5 s • <u>10 s</u> • ... • 2 h  |

## Block

If necessary, activate the block for the logic output and set what a 1 or 0 at the block input means and what happens in the event of a block.

|  |   |
|--|---|
| Use block                                    | <u>No</u> • Yes   |
| Analysis of the blocking object              | <ul style="list-style-type: none"> <li>• <u>At value 1: block</u>   At value 0: release</li> <li>• At value 0: block   At value 1: release</li> </ul> |
| Blocking object value before first call      | <u>0</u> • 1  |
| Output pattern<br>On block                   | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• Transmit block value [see above, Output value if blocking active]</li> </ul>  |
| On release<br>(with 2 seconds release delay) | [send value for current logic status]   |

## Monitoring

If necessary, activate the input monitoring. Set which inputs are to be monitored, at which intervals the inputs are to be monitored and what value the "monitoring status" should have, if the monitoring period is exceeded without a feedback being given.

|   |   |
|---|---|
| Use input monitoring                              | <u>No</u> • Yes   |
| Input monitoring                                  | <ul style="list-style-type: none"> <li>• 1 • 2 • 3 • 4</li> <li>• 1 + 2 • 1 + 3 • 1 + 4 • 2 + 3 • 2 + 4 • 3 + 4</li> <li>• 1 + 2 + 3 • 1 + 2 + 4 • 1 + 3 + 4 • 2 + 3 + 4</li> <li>• <u>1 + 2 + 3 + 4</u></li> </ul> |
| Monitoring period                                 | 5 s • ... • 2 h; <u>1 min</u>   |
| Output behaviour on exceeding the monitoring time | <ul style="list-style-type: none"> <li>• Do not send message</li> <li>• Send value exceeding [= value of the parameter "monitoring period"]</li> </ul>  |

### 6.25.2.AND logic connection inputs

Do not use  
Logic input 1



Logic input 1 inverted  
Logic input 2  
Logic input 2 inverted  
Logic input 3  
Logic input 3 inverted  
Logic input 4  
Logic input 4 inverted  
Logic input 5  
Logic input 5 inverted  
Logic input 6  
Logic input 6 inverted  
Logic input 7  
Logic input 7 inverted  
Logic input 8  
Logic input 8 inverted  
Logic input 9  
Logic input 9 inverted  
Logic input 10  
Logic input 10 inverted  
Logic input 11  
Logic input 11 inverted  
Logic input 12  
Logic input 12 inverted  
Logic input 13  
Logic input 13 inverted  
Logic input 14  
Logic input 14 inverted  
Logic input 15  
Logic input 15 inverted  
Logic input 16  
Logic input 16 inverted  
Temperature sensor malfunction ON  
Temperature sensor malfunction OFF  
Humidity sensor malfunction ON  
Humidity sensor malfunction OFF  
Pressure sensor malfunction ON  
Pressure sensor malfunction OFF  
GPS malfunction ON  
GPS malfunction OFF  
Switching output night  
Switching output night inverted  
Switching output 1 Temperature  
Switching output 1 Temperature inverted  
Switching output 2 Temperature  
Switching output 2 Temperature inverted  
Switching output 3 Temperature  
Switching output 3 Temperature inverted  
Switching output 4 Temperature

Switching output 4 Temperature inverted  
Switching output 1 Brightness sensor 1  
Switching output 1 Brightness sensor 1 inverted  
Switching output 2 Brightness sensor 1  
Switching output 2 Brightness sensor 1 inverted  
Switching output 3 Brightness sensor 1  
Switching output 3 Brightness sensor 1 inverted  
Switching output 4 Brightness sensor 1  
Switching output 4 Brightness sensor 1 inverted  
Switching output 1 Brightness sensor 2  
Switching output 1 Brightness sensor 2 inverted  
Switching output 2 Brightness sensor 2  
Switching output 2 Brightness sensor 2 inverted  
Switching output 3 Brightness sensor 2  
Switching output 3 Brightness sensor 2 inverted  
Switching output 4 Brightness sensor 2  
Switching output 4 Brightness sensor 2 inverted  
Switching output 1 Brightness sensor 3  
Switching output 1 Brightness sensor 3 inverted  
Switching output 2 Brightness sensor 3  
Switching output 2 Brightness sensor 3 inverted  
Switching output 3 Brightness sensor 3  
Switching output 3 Brightness sensor 3 inverted  
Switching output 4 Brightness sensor 3  
Switching output 4 Brightness sensor 3 inverted  
Switching output 1 Total brightness  
Switching output 1 Total brightness inverted  
Switching output 2 Total brightness  
Switching output 2 Total brightness inverted  
Switching output 3 Total brightness  
Switching output 3 Total brightness inverted  
Switching output 4 Total brightness  
Switching output 4 Total brightness inverted  
Switching output 1 Twilight  
Switching output 1 Twilight inverted  
Switching output 2 Twilight  
Switching output 2 Twilight inverted  
Switching output 3 Twilight  
Switching output 3 Twilight inverted  
Switching output 4 Twilight  
Switching output 4 Twilight inverted  
Switching output 1 Humidity  
Switching output 1 Humidity inverted  
Switching output 2 Humidity  
Switching output 2 Humidity inverted  
Switching output 3 Humidity  
Switching output 3 Humidity inverted  
Switching output 4 Humidity

Switching output 4 Humidity inverted  
Switching output coolant temperature  
Switching output coolant temperature inverted  
Ambient climate is comfortable  
Ambient climate is uncomfortable  
Switching output 1 Pressure  
Switching output 1 Pressure inverted  
Switching output 2 Pressure  
Switching output 2 Pressure inverted  
Switching output 3 Pressure  
Switching output 3 Pressure inverted  
Switching output 4 Pressure  
Switching output 4 Pressure inverted  
Comfort temperature controller active  
Comfort temperature controller inactive  
Standby temperature controller active  
Standby temperature controller inactive  
Eco temperature controller active  
Eco temperature controller inactive  
Frost protection temperature controller active  
Frost protection temperature controller inactive  
Heating 1 temperature controller active  
Heating 1 temperature controller inactive  
Heating 2 temperature controller active  
Heating 2 temperature controller inactive  
Cooling 1 temperature controller active  
Cooling 1 temperature controller inactive  
Cooling 2 temperature controller active  
Cooling 2 temperature controller inactive  
Humidity controller dehumidification 1 active  
Humidity controller dehumidification 1 inactive  
Humidity controller dehumidification 2 active  
Humidity controller dehumidification 2 inactive  
Humidity controller humidification active  
Humidity controller humidification 1 inactive  
Weekly timer period 1 active  
Weekly timer period 1 inactive  
Weekly timer period 2 active  
Weekly timer period 2 inactive  
Weekly timer period 3 active  
Weekly timer period 3 inactive  
Weekly timer period 4 active  
Weekly timer period 4 inactive  
Weekly timer period 5 active  
Weekly timer period 5 inactive  
Weekly timer period 6 active  
Weekly timer period 6 inactive  
Weekly timer period 7 active

Weekly timer period 7 inactive  
Weekly timer period 8 active  
Weekly timer period 8 inactive  
Weekly timer period 9 active  
Weekly timer period 9 inactive  
Weekly timer period 10 active  
Weekly timer period 10 inactive  
Weekly timer period 11 active  
Weekly timer period 11 inactive  
Weekly timer period 12 active  
Weekly timer period 12 inactive  
Weekly timer period 13 active  
Weekly timer period 13 inactive  
Weekly timer period 14 active  
Weekly timer period 14 inactive  
Weekly timer period 15 active  
Weekly timer period 15 inactive  
Weekly timer period 16 active  
Weekly timer period 16 inactive  
Weekly timer period 17 active  
Weekly timer period 17 inactive  
Weekly timer period 18 active  
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Weekly timer period 22 active  
Weekly timer period 22 inactive  
Weekly timer period 23 active  
Weekly timer period 23 inactive  
Weekly timer period 24 active  
Weekly timer period 24 inactive  
Calendar timer period 1 sequence 1 active  
Calendar timer period 1 sequence 1 inactive  
Calendar timer period 1 sequence 2 active  
Calendar timer period 1 sequence 2 inactive  
Calendar timer period 2 sequence 1 active  
Calendar timer period 2 sequence 1 inactive  
Calendar timer period 2 sequence 2 active  
Calendar timer period 2 sequence 2 inactive  
Calendar timer period 3 sequence 1 active  
Calendar timer period 3 sequence 1 inactive  
Calendar timer period 3 sequence 2 active  
Calendar timer period 3 sequence 2 inactive  
Calendar timer period 4 sequence 1 active

Calendar timer period 4 sequence 1 inactive

Calendar timer period 4 sequence 2 active

Calendar timer period 4 sequence 2 inactive

### **6.25.3. Connection inputs of the OR logic**

The OR logic connection inputs correspond to those of the AND logic. In addition, the following inputs are available for the OR logic:

AND logic output 1

AND logic output 1 inverted

AND logic output 2

AND logic output 2 inverted

AND logic output 3

AND logic output 3 inverted

AND logic output 4

AND logic output 4 inverted

AND logic output 5

AND logic output 5 inverted

AND logic output 6

AND logic output 6 inverted

AND logic output 7

AND logic output 7 inverted

AND logic output 8

AND logic output 8 inverted

