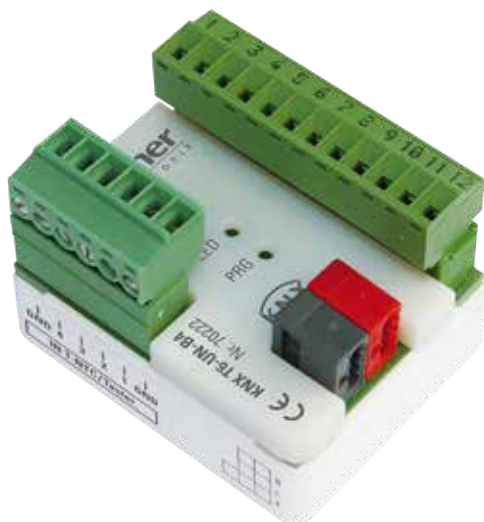


# KNX T6-UN-B4

## Temperature Evaluation Unit

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Item number 70222



|                                                             |           |
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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 **Temperature evaluation unit KNX T6-UN-B4** has six inputs for T-100 or T-130 temperature sensors and four analogue/digital inputs, which can for example be used for buttons or T-NTC temperature sensors. The temperature measurement values for all inputs can be processed with external measurement values to provide a combined value (total temperature, average temperature).

The **KNX T6-UN-B4** provides six switched outputs with adjustable threshold values. Six PI controllers control the heating and cooling (one- or two-stage). Logic gates can be used to set up additional operations.

## Functions:

- **6 temperature inputs for T-100 or T-130 sensors**
- **4 analogue/binary inputs**, for example for buttons or T-NTC temperature sensors
- **Combined value calculation** for all connected temperature sensors (proportion of internal measurement value and external value can be set as a percentage)
- **6 switched outputs** with variable thresholds (thresholds are set optionally by parameters or via communication objects)
- **6 PI controllers for heating and cooling** (one- or two-stage).
- **4 AND and 4 OR logic gates** with 4 for each input. 16 logic inputs (in the form of communication 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

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.

## 1.1. Deliverables

- Temperature evaluation unit

### Optional accessories:

(not included in the deliverables):

- T-100 (no. 30517) or T-130 (no. 30518) temperature sensors for temperature inputs
- T-NTC temperature sensor (no. 30516) for analogue/binary inputs

## 1.2. Technical data

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Housing                              | Plastic                              |
| Colour                               | white                                |
| Assembly                             | Installation                         |
| Protection category                  | IP 20                                |
| Dimensions of evaluation electronics | approx. 38 × 47 × 32 (W × H × D, mm) |

|                       |                                             |
|-----------------------|---------------------------------------------|
| Weight                | approx. 40 g                                |
| Ambient temperature   | Operation -30...+70°C, storage -55...+125°C |
| Ambient humidity      | max. 95% RH, avoid condensation             |
| Operating voltage     | KNX bus voltage                             |
| Bus current           | max. 8 mA                                   |
| Data output           | KNX +/- bus connector terminal              |
| BCU type              | Integrated microcontroller                  |
| PEI type              | 0                                           |
| Group addresses       | max. 1024                                   |
| Assignments           | max. 1024                                   |
| Communication objects | 333                                         |
| Inputs                | 6x temperature sensor<br>4x analogue/binary |

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 position

The evaluation electronics of the sensor is installed in a socket. When selecting an installation location for the measuring sensor, please ensure that the measurement results are affected as little as possible by external influences. Possible sources of interference include:

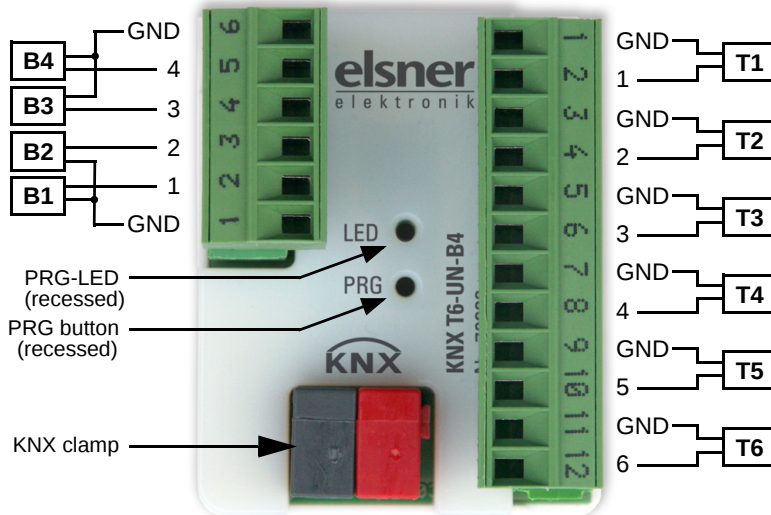
- Direct sunlight
- Drafts from windows and doors
- Warming or cooling of the building structure on which the sensor is mounted, e.g. due to sunlight, heating or cold water pipes
- Connection lines which lead from warmer or colder areas to the sensor

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).

## 2.3. Connection

### B: Analogue/binary inputs (Buttons, T-NTC sensors)

### T: Temperature inputs (T-100, T-130 sensors)



The cables of the T-100, T-130 and T-NTC temperature sensors can be extended to a maximum of 10 m.

## 2.4. Notes on mounting and commissioning

---

Never expose the device to water (e.g. rain) or dust. This can damage the electronics. You must not exceed a relative humidity of 95%. Avoid condensation.

After the bus voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.



## 3. Transfer protocol

### Units:

*Temperatures in degrees Celsius*

### 3.1. List of all communications 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 |
| 11  | Temperature sensor 1 measured value          | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 12  | Temperature sensor 1 external measured value | Input    | -WCT  | [9.1] DPT_Value_Temp | 2 bytes |
| 13  | Temperature sensor 1 overall measured value  | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 14  | Temperature sensor 1 fault                   | Output   | R-CT  | [1.1] DPT_Switch     | 1 bit   |
| 21  | Temperature sensor 2 measured value          | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 22  | Temperature sensor 2 external measured value | Input    | -WCT  | [9.1] DPT_Value_Temp | 2 bytes |
| 23  | Temperature sensor 2 overall measured value  | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 24  | Temperature sensor 2 fault                   | Output   | R-CT  | [1.1] DPT_Switch     | 1 bit   |
| 31  | Temperature sensor 3 measured value          | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 32  | Temperature sensor 3 external measured value | Input    | -WCT  | [9.1] DPT_Value_Temp | 2 bytes |
| 33  | Temperature sensor 3 overall measured value  | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 34  | Temperature sensor 3 fault                   | Output   | R-CT  | [1.1] DPT_Switch     | 1 bit   |
| 41  | Temperature sensor 4 measured value          | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 42  | Temperature sensor 4 external measured value | Input    | -WCT  | [9.1] DPT_Value_Temp | 2 bytes |
| 43  | Temperature sensor 4 overall measured value  | Output   | R-CT  | [9.1] DPT_Value_Temp | 2 bytes |
| 44  | Temperature sensor 4 fault                   | Output   | R-CT  | [1.1] DPT_Switch     | 1 bit   |

| No. | Text                                           | Function     | Flags | DPT type                          | Size    |
|-----|------------------------------------------------|--------------|-------|-----------------------------------|---------|
| 51  | Temperature sensor 5 measured value            | Output       | R-CT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 52  | Temperature sensor 5 external measured value   | Input        | -WCT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 53  | Temperature sensor 5 overall measured value    | Output       | R-CT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 54  | Temperature sensor 5 fault                     | Output       | R-CT  | [1.1] DPT_Switch                  | 1 bit   |
| 61  | Temperature sensor 6 measured value            | Output       | R-CT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 62  | Temperature sensor 6 external measured value   | Input        | -WCT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 63  | Temperature sensor 6 overall measured value    | Output       | R-CT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 64  | Temperature sensor 6 fault                     | Output       | R-CT  | [1.1] DPT_Switch                  | 1 bit   |
|     |                                                |              |       |                                   |         |
| 81  | Threshold value 1: Measured value              | Input        | -WC-  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 82  | Threshold value 1: Absolute value              | Input/Output | RWCT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 83  | Threshold value 1: (1:+   0:-)                 | Input        | -WC-  | [1.1] DPT_Switch                  | 1 bit   |
| 84  | Threshold value 1: Switching delay from 0 to 1 | Input        | -WC-  | [7] 7.xxx[7.5] DPT_-TimePeriodSec | 2 bytes |
| 85  | Threshold value 1: Switching delay from 1 to 0 | Input        | -WC-  | [7] 7.xxx[7.5] DPT_-TimePeriodSec | 2 bytes |
| 86  | Threshold value 1: Switching output            | Output       | R-CT  | [1.1] DPT_Switch                  | 1 bit   |
| 87  | Threshold value 1: Switching output block      | Input        | -WC-  | [1.1] DPT_Switch                  | 1 bit   |
| 101 | Threshold value 2: Measured value              | Input        | -WC-  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 102 | Threshold value 2: Absolute value              | Input/Output | RWCT  | [9.1] DPT_Val-ue_Temp             | 2 bytes |
| 103 | Threshold value 2: (1:+   0:-)                 | Input        | -WC-  | [1.1] DPT_Switch                  | 1 bit   |
| 104 | Threshold value 2: Switching delay from 0 to 1 | Input        | -WC-  | [7] 7.xxx[7.5] DPT_-TimePeriodSec | 2 bytes |
| 105 | Threshold value 2: Switching delay from 1 to 0 | Input        | -WC-  | [7] 7.xxx[7.5] DPT_-TimePeriodSec | 2 bytes |
| 106 | Threshold value 2: Switching output            | Output       | R-CT  | [1.1] DPT_Switch                  | 1 bit   |
| 107 | Threshold value 2: Switching output block      | Input        | -WC-  | [1.1] DPT_Switch                  | 1 bit   |
| 121 | Threshold value 3: Measured value              | Input        | -WC-  | [9.1] DPT_Val-ue_Temp             | 2 bytes |

| No. | Text                                              | Function         | Flags | DPT type                             | Size    |
|-----|---------------------------------------------------|------------------|-------|--------------------------------------|---------|
| 122 | Threshold value 3:<br>Absolute value              | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 123 | Threshold value 3: (1:+   0:-)                    | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 124 | Threshold value 3:<br>Switching delay from 0 to 1 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 125 | Threshold value 3:<br>Switching delay from 1 to 0 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 126 | Threshold value 3:<br>Switching output            | Output           | R-CT  | [1.1] DPT_Switch                     | 1 bit   |
| 127 | Threshold value 3:<br>Switching output block      | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 141 | Threshold value 4:<br>Measured value              | Input            | -WC-  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 142 | Threshold value 4:<br>Absolute value              | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 143 | Threshold value 4: (1:+   0:-)                    | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 144 | Threshold value 4:<br>Switching delay from 0 to 1 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 145 | Threshold value 4:<br>Switching delay from 1 to 0 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 146 | Threshold value 4:<br>Switching output            | Output           | R-CT  | [1.1] DPT_Switch                     | 1 bit   |
| 147 | Threshold value 4:<br>Switching output block      | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 161 | Threshold value 5:<br>Measured value              | Input            | -WC-  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 162 | Threshold value 5:<br>Absolute value              | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 163 | Threshold value 5: (1:+   0:-)                    | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 164 | Threshold value 5:<br>Switching delay from 0 to 1 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 165 | Threshold value 5:<br>Switching delay from 1 to 0 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |
| 166 | Threshold value 5:<br>Switching output            | Output           | R-CT  | [1.1] DPT_Switch                     | 1 bit   |
| 167 | Threshold value 5:<br>Switching output block      | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 181 | Threshold value 6:<br>Measured value              | Input            | -WC-  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 182 | Threshold value 6:<br>Absolute value              | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp            | 2 bytes |
| 183 | Threshold value 6: (1:+   0:-)                    | Input            | -WC-  | [1.1] DPT_Switch                     | 1 bit   |
| 184 | Threshold value 6:<br>Switching delay from 0 to 1 | Input            | -WC-  | [7] 7.xxx[7.5] DPT_<br>TimePeriodSec | 2 bytes |

| No. | Text                                                     | Function         | Flags | DPT type                              | Size    |
|-----|----------------------------------------------------------|------------------|-------|---------------------------------------|---------|
| 185 | Threshold value 6:<br>Switching delay from 1 to 0        | Input            | -WC-  | [7] 7.xxx[7.5] DPT_-<br>TimePeriodSec | 2 bytes |
| 186 | Threshold value 6:<br>Switching output                   | Output           | R-CT  | [1.1] DPT_Switch                      | 1 bit   |
| 187 | Threshold value 6:<br>Switching output block             | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
|     |                                                          |                  |       |                                       |         |
| 201 | Temp. contr.1: Measured<br>value                         | Input            | -WCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 202 | Temp. contr.1: HVAC mode<br>(priority 1)                 | Input            | -WC-  | [20.102] DPT_HVAC-<br>Mode            | 1 byte  |
| 203 | Temp. contr.1: HVAC mode<br>(priority 2)                 | Input            | -WC-  | [20.102] DPT_HVAC-<br>Mode            | 1 byte  |
| 205 | Temp. contr.1: Mode frost/<br>heat protection activation | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 206 | Temp. contr.1: Block                                     | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 207 | Temp. contr.1: Current<br>setpoint                       | Output           | R-CT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 208 | Temp. contr.1: Switching<br>object (heating / cooling)   | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 209 | Temp. contr.1: Setpoint<br>comfort heating               | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 210 | Temp. contr.1: Setpoint<br>comfort heating (1:+   0: -)  | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 211 | Temp. contr.1: Setpoint<br>comfort cooling               | Input<br>output  | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 212 | Temp. contr.1: Setpoint<br>comfort cooling (1:+   0: -)  | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 213 | Temp. contr.1: Setpoint<br>standby heating               | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 214 | Temp. contr.1: Setpoint<br>standby heating (1:+   0: -)  | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 215 | Temp. contr.1: Setpoint<br>standby cooling               | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 216 | Temp. contr.1: Setpoint<br>standby cooling (1:+   0: -)  | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 217 | Temp. contr.1: Setpoint<br>eco heating                   | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 218 | Temp. contr.1: Setpoint,<br>eco heating (1:+   0: -)     | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |
| 219 | Temp. contr.1: Setpoint<br>eco cooling                   | Input/<br>Output | RWCT  | [9.1] DPT_Val-<br>ue_Temp             | 2 bytes |
| 220 | Temp. contr.1: Setpoint,<br>eco cooling (1:+   0: -)     | Input            | -WC-  | [1.1] DPT_Switch                      | 1 bit   |

| No. | Text                                                 | Function     | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|--------------|-------|----------------------------------|---------|
| 221 | Temp. contr.1: Control variable stage 1              | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 222 | Temp. contr.1: Control variable stage 2              | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 223 | Temp. contr.1: Control variable cooling level 1      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 224 | Temp. contr.1: Control variable cooling level 2      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 225 | Temp. contr.1: Status heating level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 226 | Temp. contr.1: Status heating level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 227 | Temp. contr.1: Status cooling level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 228 | Temp. contr.1: Status cooling level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 229 | Temp. contr.1: Comfort extension time                | Input        | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |
| 230 | Temp. contr.1: Comfort extension status              | Input/Output | RWCT  | [1.1] DPT_Switch                 | 1 bit   |
| 241 | Temp. contr.2: Measured value                        | Input        | -WCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 242 | Temp. contr.2: HVAC mode (priority 1)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 243 | Temp. contr.2: HVAC mode (priority 2)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 245 | Temp. contr.2: Mode frost/heat protection activation | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 246 | Temp. contr.2: Block                                 | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 247 | Temp. contr.2: Current setpoint                      | Output       | R-CT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 248 | Temp. contr.2: Switching object (heating / cooling)  | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 249 | Temp. contr.2: Setpoint comfort heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 250 | Temp. contr.2: Setpoint comfort heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 251 | Temp. contr.2: Setpoint comfort cooling              | Input/output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 252 | Temp. contr.2: Setpoint comfort cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |

| No. | Text                                                 | Function     | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|--------------|-------|----------------------------------|---------|
| 253 | Temp. contr.2: Setpoint standby heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 254 | Temp. contr.2: Setpoint standby heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 255 | Temp. contr.2: Setpoint standby cooling              | Input/Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 256 | Temp. contr.2: Setpoint standby cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 257 | Temp. contr.2: Setpoint eco heating                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 258 | Temp. contr.2: Setpoint, eco heating (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 259 | Temp. contr.2: Setpoint eco cooling                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 260 | Temp. contr.2: Setpoint, eco cooling (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 261 | Temp. contr.2: Control variable stage 1              | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 262 | Temp. contr.2: Control variable stage 2              | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 263 | Temp. contr.2: Control variable cooling level 1      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 264 | Temp. contr.2: Control variable cooling level 2      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 265 | Temp. contr.2: Status heating level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 266 | Temp. contr.2: Status heating level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 267 | Temp. contr.2: Status cooling level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 268 | Temp. contr.2: Status cooling level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 269 | Temp. contr.2: Comfort extension time                | Input        | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |
| 270 | Temp. contr.2: Comfort extension status              | Input/Output | RWCT  | [1.1] DPT_Switch                 | 1 bit   |
| 281 | Temp. contr.3: Measured value                        | Input        | -WCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 282 | Temp. contr.3: HVAC mode (priority 1)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |

| No. | Text                                                 | Function     | Flags | DPT type               | Size    |
|-----|------------------------------------------------------|--------------|-------|------------------------|---------|
| 283 | Temp. contr.3: HVAC mode (priority 2)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode | 1 byte  |
| 285 | Temp. contr.3: Mode frost/heat protection activation | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 286 | Temp. contr.3: Block                                 | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 287 | Temp. contr.3: Current setpoint                      | Output       | R-CT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 288 | Temp. contr.3: Switching object (heating / cooling)  | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 289 | Temp. contr.3: Setpoint comfort heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 290 | Temp. contr.3: Setpoint comfort heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 291 | Temp. contr.3: Setpoint comfort cooling              | Input output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 292 | Temp. contr.3: Setpoint comfort cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 293 | Temp. contr.3: Setpoint standby heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 294 | Temp. contr.3: Setpoint standby heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 295 | Temp. contr.3: Setpoint standby cooling              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 296 | Temp. contr.3: Setpoint standby cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 297 | Temp. contr.3: Setpoint eco heating                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 298 | Temp. contr.3: Setpoint, eco heating (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 299 | Temp. contr.3: Setpoint eco cooling                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 300 | Temp. contr.3: Setpoint, eco cooling (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 301 | Temp. contr.3: Control variable stage 1              | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |
| 302 | Temp. contr.3: Control variable stage 2              | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |
| 303 | Temp. contr.3: Control variable cooling level 1      | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |
| 304 | Temp. contr.3: Control variable cooling level 2      | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |
| 305 | Temp. contr.3: Status heating level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch       | 1 bit   |

| No. | Text                                                 | Function         | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|------------------|-------|----------------------------------|---------|
| 306 | Temp. contr.3: Status heating level 2 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 307 | Temp. contr.3: Status cooling level 1 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 308 | Temp. contr.3: Status cooling level 2 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 309 | Temp. contr.3: Comfort extension time                | Input            | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |
| 310 | Temp. contr.3: Comfort extension status              | Input/<br>Output | RWCT  | [1.1] DPT_Switch                 | 1 bit   |
| 321 | Temp. contr.4: Measured value                        | Input            | -WCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 322 | Temp. contr.4: HVAC mode (priority 1)                | Input            | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 323 | Temp. contr.4: HVAC mode (priority 2)                | Input            | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 325 | Temp. contr.4: Mode frost/heat protection activation | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 326 | Temp. contr.4: Block                                 | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 327 | Temp. contr.4: Current setpoint                      | Output           | R-CT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 328 | Temp. contr.4: Switching object (heating / cooling)  | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 329 | Temp. contr.4: Setpoint comfort heating              | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 330 | Temp. contr.4: Setpoint comfort heating (1:+   0: -) | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 331 | Temp. contr.4: Setpoint comfort cooling              | Input<br>output  | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 332 | Temp. contr.4: Setpoint comfort cooling (1:+   0: -) | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 333 | Temp. contr.4: Setpoint standby heating              | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 334 | Temp. contr.4: Setpoint standby heating (1:+   0: -) | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 335 | Temp. contr.4: Setpoint standby cooling              | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 336 | Temp. contr.4: Setpoint standby cooling (1:+   0: -) | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 337 | Temp. contr.4: Setpoint eco heating                  | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |

| No. | Text                                                 | Function         | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|------------------|-------|----------------------------------|---------|
| 338 | Temp. contr.4: Setpoint, eco heating (1:+   0: -)    | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 339 | Temp. contr.4: Setpoint eco cooling                  | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 340 | Temp. contr.4: Setpoint, eco cooling (1:+   0: -)    | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 341 | Temp. contr.4: Control variable stage 1              | Output           | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 342 | Temp. contr.4: Control variable stage 2              | Output           | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 343 | Temp. contr.4: Control variable cooling level 1      | Output           | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 344 | Temp. contr.4: Control variable cooling level 2      | Output           | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 345 | Temp. contr.4: Status heating level 1 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 346 | Temp. contr.4: Status heating level 2 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 347 | Temp. contr.4: Status cooling level 1 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 348 | Temp. contr.4: Status cooling level 2 (1=ON   0=OFF) | Output           | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 349 | Temp. contr.4: Comfort extension time                | Input            | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |
| 350 | Temp. contr.4: Comfort extension status              | Input/<br>Output | RWCT  | [1.1] DPT_Switch                 | 1 bit   |
| 361 | Temp. contr.5: Measured value                        | Input            | -WCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 362 | Temp. contr.5: HVAC mode (priority 1)                | Input            | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 363 | Temp. contr.5: HVAC mode (priority 2)                | Input            | -WC-  | [20.102] DPT_HVAC-Mode           | 1 byte  |
| 365 | Temp. contr.5: Mode frost/heat protection activation | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 366 | Temp. contr.5: Block                                 | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 367 | Temp. contr.5: Current setpoint                      | Output           | R-CT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 368 | Temp. contr.5: Switching object (heating / cooling)  | Input            | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 369 | Temp. contr.5: Setpoint comfort heating              | Input/<br>Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |

| No. | Text                                                 | Function      | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|---------------|-------|----------------------------------|---------|
| 370 | Temp. contr.5: Setpoint comfort heating (1:+   0: -) | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 371 | Temp. contr.5: Setpoint comfort cooling              | Input output  | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 372 | Temp. contr.5: Setpoint comfort cooling (1:+   0: -) | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 373 | Temp. contr.5: Setpoint standby heating              | Input/ Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 374 | Temp. contr.5: Setpoint standby heating (1:+   0: -) | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 375 | Temp. contr.5: Setpoint standby cooling              | Input/ Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 376 | Temp. contr.5: Setpoint standby cooling (1:+   0: -) | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 377 | Temp. contr.5: Setpoint eco heating                  | Input/ Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 378 | Temp. contr.5: Setpoint, eco heating (1:+   0: -)    | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 379 | Temp. contr.5: Setpoint eco cooling                  | Input/ Output | RWCT  | [9.1] DPT_Value_Temp             | 2 bytes |
| 380 | Temp. contr.5: Setpoint, eco cooling (1:+   0: -)    | Input         | -WC-  | [1.1] DPT_Switch                 | 1 bit   |
| 381 | Temp. contr.5: Control variable stage 1              | Output        | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 382 | Temp. contr.5: Control variable stage 2              | Output        | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 383 | Temp. contr.5: Control variable cooling level 1      | Output        | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 384 | Temp. contr.5: Control variable cooling level 2      | Output        | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 385 | Temp. contr.5: Status heating level 1 (1=ON   0=OFF) | Output        | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 386 | Temp. contr.5: Status heating level 2 (1=ON   0=OFF) | Output        | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 387 | Temp. contr.5: Status cooling level 1 (1=ON   0=OFF) | Output        | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 388 | Temp. contr.5: Status cooling level 2 (1=ON   0=OFF) | Output        | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 389 | Temp. contr.5: Comfort extension time                | Input         | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |

| No. | Text                                                 | Function     | Flags | DPT type               | Size    |
|-----|------------------------------------------------------|--------------|-------|------------------------|---------|
| 390 | Temp. contr.5: Comfort extension status              | Input/Output | RWCT  | [1.1] DPT_Switch       | 1 bit   |
| 401 | Temp. contr.6: Measured value                        | Input        | -WCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 402 | Temp. contr.6: HVAC mode (priority 1)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode | 1 byte  |
| 403 | Temp. contr.6: HVAC mode (priority 2)                | Input        | -WC-  | [20.102] DPT_HVAC-Mode | 1 byte  |
| 405 | Temp. contr.6: Mode frost/heat protection activation | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 406 | Temp. contr.6: Block                                 | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 407 | Temp. contr.6: Current setpoint                      | Output       | R-CT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 408 | Temp. contr.6: Switching object (heating / cooling)  | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 409 | Temp. contr.6: Setpoint comfort heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 410 | Temp. contr.6: Setpoint comfort heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 411 | Temp. contr.6: Setpoint comfort cooling              | Input output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 412 | Temp. contr.6: Setpoint comfort cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 413 | Temp. contr.6: Setpoint standby heating              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 414 | Temp. contr.6: Setpoint standby heating (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 415 | Temp. contr.6: Setpoint standby cooling              | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 416 | Temp. contr.6: Setpoint standby cooling (1:+   0: -) | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 417 | Temp. contr.6: Setpoint eco heating                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 418 | Temp. contr.6: Setpoint, eco heating (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 419 | Temp. contr.6: Setpoint eco cooling                  | Input/Output | RWCT  | [9.1] DPT_Value_Temp   | 2 bytes |
| 420 | Temp. contr.6: Setpoint, eco cooling (1:+   0: -)    | Input        | -WC-  | [1.1] DPT_Switch       | 1 bit   |
| 421 | Temp. contr.6: Control variable stage 1              | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |
| 422 | Temp. contr.6: Control variable stage 2              | Output       | R-CT  | [5.1] DPT_Scaling      | 1 byte  |

| No. | Text                                                 | Function     | Flags | DPT type                         | Size    |
|-----|------------------------------------------------------|--------------|-------|----------------------------------|---------|
| 423 | Temp. contr.6: Control variable cooling level 1      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 424 | Temp. contr.6: Control variable cooling level 2      | Output       | R-CT  | [5.1] DPT_Scaling                | 1 byte  |
| 425 | Temp. contr.6: Status heating level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 426 | Temp. contr.6: Status heating level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 427 | Temp. contr.6: Status cooling level 1 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 428 | Temp. contr.6: Status cooling level 2 (1=ON   0=OFF) | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 429 | Temp. contr.6: Comfort extension time                | Input        | RWCT  | [7] 7.xxx[7.5] DPT_TimePeriodSec | 2 bytes |
| 430 | Temp. contr.6: Comfort extension status              | Input/Output | RWCT  | [1.1] DPT_Switch                 | 1 bit   |
|     |                                                      |              |       |                                  |         |
| 451 | Push-button 1 long-term                              | Output       | R-CT  | [1.8] DPT_UpDown                 | 1 bit   |
| 452 | Push-button 1 short-term                             | Output       | R-CT  | [1.10] DPT_Start                 | 1 bit   |
| 453 | Push-button 1 switching                              | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 454 | Push button 1 dimming                                | Input/Output | RWCT  | [3.7] DPT_Control_Dimming        | 4 bit   |
| 455 | Push-button 1 encoder 8 bit                          | Output       | R-CT  | [5] 5.xxx                        | 1 byte  |
| 456 | Push-button 1 encoder 16 bit                         | Output       | R-CT  | [9] 9.xxx                        | 2 bytes |
| 457 | Button 1 scenario activation                         | Output       | R-CT  | [5] 5.xxx                        | 1 byte  |
| 461 | Push-button 2 long-term                              | Output       | R-CT  | [1.8] DPT_UpDown                 | 1 bit   |
| 462 | Push-button 2 short-term                             | Output       | R-CT  | [1.10] DPT_Start                 | 1 bit   |
| 463 | Push-button 2 switching                              | Output       | R-CT  | [1.1] DPT_Switch                 | 1 bit   |
| 464 | Push button 2 dimming                                | Input/Output | RWCT  | [3.7] DPT_Control_Dimming        | 4 bit   |
| 465 | Push-button 2 encoder 8 bit                          | Output       | R-CT  | [5] 5.xxx                        | 1 byte  |
| 466 | Push-button 2 encoder 16 bit                         | Output       | R-CT  | [9] 9.xxx                        | 2 bytes |
| 467 | Button 2 scenario activation                         | Output       | R-CT  | [5] 5.xxx                        | 1 byte  |
| 471 | Push-button 3 long-term                              | Output       | R-CT  | [1.8] DPT_UpDown                 | 1 bit   |

| No. | Text                                                | Function         | Flags | DPT type                  | Size    |
|-----|-----------------------------------------------------|------------------|-------|---------------------------|---------|
| 472 | Push-button 3 short-term                            | Output           | R-CT  | [1.10] DPT_Start          | 1 bit   |
| 473 | Push-button 3 switching                             | Output           | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 474 | Push button 3 dimming                               | Input/<br>Output | RWCT  | [3.7] DPT_Control_Dimming | 4 bit   |
| 475 | Push-button 3 encoder<br>8 bit                      | Output           | R-CT  | [5] 5.xxx                 | 1 byte  |
| 476 | Push-button 3 encoder<br>16 bit                     | Output           | R-CT  | [9] 9.xxx                 | 2 bytes |
| 477 | Button 3 scenario<br>activation                     | Output           | R-CT  | [5] 5.xxx                 | 1 byte  |
| 481 | Push-button 4 long-term                             | Output           | R-CT  | [1.8] DPT_UpDown          | 1 bit   |
| 482 | Push-button 4 short-term                            | Output           | R-CT  | [1.10] DPT_Start          | 1 bit   |
| 483 | Push-button 4 switching                             | Output           | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 484 | Push button 4 dimming                               | Input/<br>Output | RWCT  | [3.7] DPT_Control_Dimming | 4 bit   |
| 485 | Push-button 4 encoder<br>8 bit                      | Output           | R-CT  | [5] 5.xxx                 | 1 byte  |
| 486 | Push-button 4 encoder<br>16 bit                     | Output           | R-CT  | [9] 9.xxx                 | 2 bytes |
| 487 | Button 4 scenario<br>activation                     | Output           | R-CT  | [5] 5.xxx                 | 1 byte  |
|     |                                                     |                  |       |                           |         |
| 501 | NTC temperature sensor 1<br>measured value          | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 502 | NTC temperature sensor 1<br>external measured value | Input            | -WCT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 503 | NTC temperature sensor 1<br>overall measured value  | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 504 | NTC Temperature sensor 1<br>fault                   | Output           | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 505 | NTC temperature sensor 2<br>measured value          | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 506 | NTC temperature sensor 2<br>external measured value | Input            | -WCT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 507 | NTC temperature sensor 2<br>overall measured value  | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 508 | NTC Temperature sensor 2<br>fault                   | Output           | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 509 | NTC temperature sensor 3<br>measured value          | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 510 | NTC temperature sensor 3<br>external measured value | Input            | -WCT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 511 | NTC temperature sensor 3<br>overall measured value  | Output           | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |

| No. | Text                                             | Function | Flags | DPT type                  | Size    |
|-----|--------------------------------------------------|----------|-------|---------------------------|---------|
| 512 | NTC Temperature sensor 3 fault                   | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
| 513 | NTC temperature sensor 4 measured value          | Output   | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 514 | NTC temperature sensor 4 external measured value | Input    | -WCT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 515 | NTC temperature sensor 4 overall measured value  | Output   | R-CT  | [9.1] DPT_Value_Temp      | 2 bytes |
| 516 | NTC Temperature sensor 4 fault                   | Output   | R-CT  | [1.1] DPT_Switch          | 1 bit   |
|     |                                                  |          |       |                           |         |
| 531 | Logic input 1                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 532 | Logic input 2                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 533 | Logic input 3                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 534 | Logic input 4                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 535 | Logic input 5                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 536 | Logic input 6                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 537 | Logic input 7                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 538 | Logic input 8                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 539 | Logic input 9                                    | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 540 | Logic input 10                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 541 | Logic input 11                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 542 | Logic input 12                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 543 | Logic input 13                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 544 | Logic input 14                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 545 | Logic input 15                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
| 546 | Logic input 16                                   | Input    | -WC-  | [1.2] DPT_Bool            | 1 bit   |
|     |                                                  |          |       |                           |         |
| 561 | AND logic 1: 1-bit switching output              | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit   |
| 562 | AND logic 1: 8-bit output A                      | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 563 | AND logic 1: 8-bit output B                      | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 564 | AND logic 1: Block                               | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit   |
| 565 | AND logic 2: 1-bit switching output              | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit   |
| 566 | AND logic 2: 8-bit output A                      | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 567 | AND logic 2: 8-bit output B                      | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte  |
| 568 | AND logic 2: Block                               | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit   |

| No. | Text                                | Function | Flags | DPT type                  | Size   |
|-----|-------------------------------------|----------|-------|---------------------------|--------|
| 569 | AND logic 3: 1-bit switching output | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 570 | AND logic 3: 8-bit output A         | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 571 | AND logic 3: 8-bit output B         | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 572 | AND logic 3: Block                  | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |
| 573 | AND logic 4: 1-bit switching output | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 574 | AND logic 4: 8-bit output A         | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 575 | AND logic 4: 8-bit output B         | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 576 | AND logic 4: Block                  | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |
| 577 | OR logic 1: 1-bit switching output  | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 578 | OR logic 1: 8-bit output A          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 579 | OR logic 1: 8-bit output B          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 580 | OR logic 1: Block                   | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |
| 581 | OR logic 2: 1-bit switching output  | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 582 | OR logic 2: 8-bit output A          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 583 | OR logic 2: 8-bit output B          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 584 | OR logic 2: Block                   | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |
| 585 | OR logic 3: 1-bit switching output  | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 586 | OR logic 3: 8-bit output A          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 587 | OR logic 3: 8-bit output B          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 588 | OR logic 3: Block                   | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |
| 589 | OR logic 4: 1-bit switching output  | Output   | R-CT  | [1.2] DPT_Bool            | 1 bit  |
| 590 | OR logic 4: 8-bit output A          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 591 | OR logic 4: 8-bit output B          | Output   | R-CT  | [5.10] DPT_Value_1_Ucount | 1 byte |
| 592 | OR logic 4: Block                   | Input    | -WC-  | [1.1] DPT_Switch          | 1 bit  |

## 4. Parameter setting

### 4.1. 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. The "Software version" communications object is sent once after 5 seconds.

### 4.2. General settings

Set basic characteristics of data transfer.

|                                                     |                                                                                                                                                                            |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Send delay after reset and programming for:         |                                                                                                                                                                            |
| Measured values, threshold values, switching output | 5 s • ... • 2 h                                                                                                                                                            |
| Temperature controller outputs                      | 5 s • 10 s • ... • 2 h                                                                                                                                                     |
| Switch interfaces and logic                         | 5 s • 10 s • ... • 2 h                                                                                                                                                     |
| Maximum telegram rate                               | <ul style="list-style-type: none"> <li>• 1 message per second</li> <li>• ...</li> <li>• 10 messages per second</li> <li>• ...</li> <li>• 20 messages per second</li> </ul> |

### 4.3. Temperature measured values

Activate the measured values that you want to use here. The **Temperature evaluation unit KNX T6-UN-B4** provides six measured values for temperature.

|                                 |                 |
|---------------------------------|-----------------|
| Use measured values 1/2/3/4/5/6 | Yes • <u>No</u> |
|---------------------------------|-----------------|

#### 4.3.1. Measured value 1...6

Choose whether a **Malfunction object** should be transmitted.

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

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.

|                                              |                                                                                                                                    |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Use external measured value                  | Yes • No                                                                                                                           |
| Ext. Reading proportion of the total reading | 5% • 10% • ... • <u>50%</u> • ... • 100%                                                                                           |
| Send behaviour                               | <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>0.5°C</u> • ... • 5.0°C                                                                                           |
| Send cycle<br>(if sent periodically)         | <u>5 s</u> • ... • 2 h                                                                                                             |

**Note:** If an external portion is used, all of the following settings are related to the overall reading!

## 4.4. Threshold value

Activate the threshold values that you want to use here. The **Temperature evaluation unit KNX T6-UN-B4** provides six threshold values for temperature.

|                                  |          |
|----------------------------------|----------|
| Use threshold values 1/2/3/4/5/6 | Yes • No |
|----------------------------------|----------|

### 4.4.1. Threshold values 1...6

#### Threshold value

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

##### **Threshold value setpoint using parameter:**

Set the threshold values and hysteresis directly.

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| Threshold value setpoint using         | <b>Parameter</b> • Communications objects |
| Threshold value in 0.1°C               | -300 ... 800; <u>200</u>                  |
| Hysteresis of the threshold value in % | 0 ... 50; <u>20</u>                       |

##### **Threshold value setpoint using a communications object:**

Beforehand, enter how the threshold value will 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 1st communication of 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 this is retained in the event of a power supply failure and will be available once the power supply is restored.

|                                                             |                                                                                                                                                              |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Threshold value setpoint using                              | Parameter • <b>Communications objects</b>                                                                                                                    |
| The last communicated value should be retained              | <ul style="list-style-type: none"> <li>• <u>never</u></li> <li>• after restoration of power</li> <li>• after restoration of power and Programming</li> </ul> |
| Start threshold value in 0.1°C valid till 1st 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 change                                    | <u>Absolute value</u> • Increase/decrease                                                                                                                    |
| Increment in 0.1<br>(upon increase/decrease change)         | 1...10000; <u>10</u>                                                                                                                                         |
| Hysteresis of the threshold value in %                      | 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 + hysteresis above = 0</u></li> <li>• TV below = 0   TV + hysteresis 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 is set via objects: 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 is set via objects: 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. 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>• <u>At value 1: block   At value 0: release</u></li> <li>• <u>At value 0: block   At value 1: release</u></li> </ul> |
| Blocking object value before 1st 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 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 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                                                                                |

## 4.5. Temperature control

Activate the regulators that you want to use here. The **Temperature evaluation unit KNX T6-UN-B4** provides six PI regulators for temperature.

|                                  |                 |
|----------------------------------|-----------------|
| Use regulator values 1/2/3/4/5/6 | Yes • <u>No</u> |
|----------------------------------|-----------------|

### 4.5.1. Control 1...6

For an adequate regulation of the indoor 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 set point 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 are used to activate comfort mode or frost/heat protection mode. The comfort object then blocks the eco/standby object, and frost/heat protection objects have 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 block of the temperature control by the blocking object.

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

Determine when the current settings of the controls are to be transmitted to the bus. Periodic transmission is safer if a message does not reach a recipient. You may also set up periodical monitoring by the actuator with this setting.

|                                                  |                                                                                                            |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Send actuating variables                         | <ul style="list-style-type: none"> <li>• <u>on change</u></li> <li>• on change and periodically</li> </ul> |
| cycle<br><i>for periodical transmission only</i> | 5 s • ... • <u>5 min</u> • ... • 2 h                                                                       |

The status object shows the current status of the output variable (0 = OFF, >0 = ON) and may, for example, be used for visualisations or to switch off the heating pump as soon as the heating is 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><i>for periodical transmission only</i> | 5 s • ... • <u>5 min</u> • ... • 2 h                                                                                                                                                                                                                 |

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

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

#### 4.5.2. General set point values

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

If you are using the controls 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 set point value is listed for the other modes (e. g., 2°C less for standby mode).

|                                                                                               |                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Setting the nominal values                                                                    | <ul style="list-style-type: none"> <li>• <u>separate</u> with switching object</li> <li>• separate without switching object</li> <li>• with comfort set point as a basis</li> </ul> |
| Behaviour of the switching object at value<br><i>only if switching object is used</i>         | <ul style="list-style-type: none"> <li>• <u>0 = Heating   1 = Cooling</u></li> <li>• 1 = Heating   0 = Cooling</li> </ul>                                                           |
| Switching object value<br>before 1st communication<br><i>only if switching object is used</i> | <u>0</u> • 1                                                                                                                                                                        |

The grades for the set point changes is predefined. Modifications may only remain active temporarily (do not save) or remain saved even after voltage recovery (and programming). This also applies to a comfort extension.

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

|                                                      |                                                                                                                                                                                     |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saving set point value(s) and comfort extension time | <ul style="list-style-type: none"> <li>• not</li> <li>• <u>after voltage recovery</u></li> <li>• after voltage recovery and programming (do not use for first start-up!)</li> </ul> |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

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

## Set point Comfort

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

|                                                                                                                                               |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Initial heating/cooling set point (in 0.1 °C)<br>valid till 1st communication<br><i>not upon saving the set point value after programming</i> | -300...800; <u>210</u> |
| Min. object value heating/cooling (in 0.1 °C)                                                                                                 | -300...800; <u>160</u> |
| Max. object value heating/cooling (in 0.1 °C)                                                                                                 | -300...800; <u>280</u> |

If the comfort set point is used as the basis, a dead zone is determined for the control mode "heating *and* cooling" to avoid direct switching from heating to cooling.

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

## Set point for standby

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

### ***If set point values are entered separately:***

A starting set point value is defined as well as a temperature range in which the nominal value may be modified.

|                                                                               |                        |
|-------------------------------------------------------------------------------|------------------------|
| Initial heating/cooling set point (in 0.1 °C)<br>valid till 1st communication | -300...800; <u>210</u> |
| Min. object value heating/cooling (in 0.1 °C)                                 | -300...800; <u>160</u> |
| Max. object value heating/cooling (in 0.1 °C)                                 | -300...800; <u>280</u> |

**If the comfort set point value is used as a basis:**

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

|                                                              |                    |
|--------------------------------------------------------------|--------------------|
| Reduce nominal heating value (in 0.1°C)<br>for heating       | 0...200; <u>30</u> |
| Increase nominal cooling value\r\n (in 0.1°C)<br>for cooling | 0...200; <u>30</u> |

**Eco set point**

Eco mode is usually used for night mode.

**If set point values are entered separately:**

A starting set point value is defined as well as a temperature range in which the nominal value may be modified.

|                                                                               |                        |
|-------------------------------------------------------------------------------|------------------------|
| Initial heating/cooling set point (in 0.1 °C)<br>valid till 1st communication | -300...800; <u>210</u> |
| Min. object value heating/cooling (in 0.1 °C)                                 | -300...800; <u>160</u> |
| Max. object value heating/cooling (in 0.1 °C)                                 | -300...800; <u>280</u> |

**If the comfort set point value is used as a basis:**

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

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

**Set point values for frost/heat protection (building protection)**

The building protection mode is used during longer absences. Set points 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.

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Nominal value frost protection\r\n (in 0,1°C) | -300...800; <u>70</u>                     |
| Nominal value heat protection (in 0,1°C)      | -300...800; <u>350</u>                    |
| Activation delay                              | no • 5 s • ... • <u>5 min</u> • ... • 2 h |

**General variables**

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

|                                                                       |                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For heating and cooling                                               | <ul style="list-style-type: none"> <li>• <u>separate variables are used</u></li> <li>• common variables are used for Level 1</li> <li>• common variables are used for Level 2</li> <li>• common variables are used for Level 1+2</li> </ul> |
| Control type<br><i>only for level 2</i>                               | <ul style="list-style-type: none"> <li>• 2-point control</li> <li>• PI control</li> </ul>                                                                                                                                                   |
| Regulating variable of the 2nd Stage is on<br><i>only for level 2</i> | <ul style="list-style-type: none"> <li>• <u>1-bit object</u></li> <li>• 8-bit object</li> </ul>                                                                                                                                             |

### 4.5.3. Heating control level 1/2

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

On the 1st level, heating is controlled by a PI control which allows to either enter control parameters or select predetermined applications.

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

On level 2, the set point deviation between the two levels must furthermore be determined, i. e. the lowest set point value from which the 2nd level is then added (when values exceed this set point).

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

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

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

|                   |                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------|
| Control type      | • <b>PI control</b>                                                                                              |
| Set control using | <ul style="list-style-type: none"> <li>• <b>Controller parameter</b></li> <li>• provided applications</li> </ul> |

Determine the deviation from the set point value which reaches maximum variable value, i. e. the point at which maximum heating power is activated.

The reset time shows how quickly the controls react to deviations from the set point value. In case of a short reset time, the controls react with a fast increase of the varia-

ble. In case of a long reset time, the controls react somewhat more gently and needs longer until the necessary variable for the set point deviation is reached.

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

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

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

Upon release, the control variable follows the rule again.

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

In case of a common 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>                                                                                                                                    |
| Set control using                                                             | <ul style="list-style-type: none"> <li>• Controller parameter</li> <li>• <b>provided 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 set point/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 determine what should be transmitted when the control is blocked. Set a value greater 0 (=OFF) to receive a basic heating level, e.g. for floor heating.

Upon release, the control variable follows the rule again.

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

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

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

The 2-point-rule 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. Then determine whether a 1 bit object (on/off) or an 8 bit object (on with percentage/off) should be used.

|                                               |                                                |
|-----------------------------------------------|------------------------------------------------|
| Hysteresis (in 0.1°C)                         | 0...100; <u>20</u>                             |
| Actuating variable is a                       | • <u>1-bit object</u><br>• <u>8-bit object</u> |
| Value (in %)<br><i>only for 8 bit objects</i> | 0... <u>100</u>                                |

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

Upon release, the control variable follows the rule again.

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

**4.5.4. Cooling control level 1/2**

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

On the 1st level, cooling is controlled by a PI control which allows to either enter control parameters or select predetermined applications.

On the 2nd level (therefore only in case of a 2 level cooling), cooling is controlled via a PI or a 2-point-control.

On level 2, the set point deviation between the two levels must furthermore be determined, i. e. the highest set point value from which the 2nd level is then added (when values exceed this set point).

|                                                                                      |                                   |
|--------------------------------------------------------------------------------------|-----------------------------------|
| Set point difference between levels 1 and 2<br>(in 0.1°C)<br><i>only for level 2</i> | 0...100; <u>40</u>                |
| Control type<br><i>only for level 2 and if no common variables are used</i>          | • 2-point control<br>• PI control |

**PI control with control parameters:**

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

|              |                     |
|--------------|---------------------|
| Control type | • <b>PI control</b> |
|--------------|---------------------|

|                   |                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------|
| Set control using | <ul style="list-style-type: none"> <li>• <b>Controller parameter</b></li> <li>• provided applications</li> </ul> |
|-------------------|------------------------------------------------------------------------------------------------------------------|

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

The reset time shows how quickly the controls react to deviations from the set point value. In case of a short reset time, the controls react with a fast increase of the variable. In case of a long reset time, the controls react somewhat more gently and needs longer until the necessary variable for the set point deviation is reached.

You should set the time appropriate to the cooling system at this point (note manufacturer instructions).

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

Now determine what should be transmitted when the control is blocked.

Upon release, the control variable follows the rule again.

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

In case of a common 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>                                                                                              |
| Set control using                                                             | <ul style="list-style-type: none"> <li>• Controller parameter</li> <li>• <b>provided applications</b></li> </ul> |
| Application                                                                   | • Cooling ceiling                                                                                                |
| Maximum control variable is reached at set point/actual difference of (in °C) | Cooling ceiling: 5                                                                                               |
| Reset time (in min.)                                                          | Cooling ceiling: 30                                                                                              |

Now determine what should be transmitted when the control is blocked.

Upon release, the control variable follows the rule again.

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

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

The 2-point-rule 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. Then determine whether a 1 bit object (on/off) or an 8 bit object (on with percentage/off) should be used.

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Hysteresis (in 0.1°C)                         | 0...100; <u>20</u>                      |
| Actuating variable is a                       | • <u>1-bit object</u><br>• 8-bit object |
| Value (in %)<br><i>only for 8 bit objects</i> | 0... <u>100</u>                         |

Now determine what should be transmitted when the control is blocked.  
Upon release, the control variable follows the rule again.

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

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

## 4.6. Interfaces

Activate the interfaces (inputs) that you want to use here. The **Temperature evaluation unit KNX T6-UN-B4** provides four interfaces.

|                                  |                 |
|----------------------------------|-----------------|
| Use regulator values 1/2/3/4/5/6 | Yes • <u>No</u> |
|----------------------------------|-----------------|

### 4.6.1. Interface 1...4

The interface inputs can be configured as switches, drive controller, dimmer, for transmitting values and for the scenario recall. Alternatively a T-NTC sensor can be connected, so that further measured temperature values can be handed over to the bus.

|          |                                                                                                                                                                                                                                                                                                                   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function | <ul style="list-style-type: none"> <li>• <u>Switch</u></li> <li>• Changeover switch</li> <li>• Shutter</li> <li>• Roller blind</li> <li>• Awning</li> <li>• Window</li> <li>• Dimmer</li> <li>• 8-bit encoder</li> <li>• 16-bit encoder</li> <li>• Scenario recall</li> <li>• Temperature sensor (NTC)</li> </ul> |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Input as switch:**

If a button with switch function is assigned to the input, select the bus function "Switch" and specify which value is sent when pressing/releasing the button and when it will be sent.

| Bus function                                    | <b>Switch</b>                                                                                                                                                                                                                                 |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Command when pressing the button                | <ul style="list-style-type: none"> <li>• <u>send 0</u></li> <li>• <u>send 1</u></li> <li>• do not send telegram</li> </ul>                                                                                                                    |
| Command when releasing the button               | <ul style="list-style-type: none"> <li>• <u>send 0</u></li> <li>• send 1</li> <li>• do not send telegram</li> </ul>                                                                                                                           |
| Send value                                      | <ul style="list-style-type: none"> <li>• <u>no change</u></li> <li>• for change to 1</li> <li>• for change to 0</li> <li>• for change and cyclical</li> <li>• for change to 1 and cyclical</li> <li>• for change to 0 and cyclical</li> </ul> |
| Send all values<br>(only if sent as "cyclical") | <u>5 s</u> ... 2 h                                                                                                                                                                                                                            |

**Input as selector switch:Input as selector switch:**

If a button with switch function is assigned to the input, select the bus function "Selector switch" and specify if the button should switch when pressed/released.

| Bus function                      | <b>Selector switch</b>                                                                                     |
|-----------------------------------|------------------------------------------------------------------------------------------------------------|
| Command when pressing the button  | <ul style="list-style-type: none"> <li>• <u>selector switch</u></li> <li>• do not send telegram</li> </ul> |
| Command when releasing the button | <ul style="list-style-type: none"> <li>• selector switch</li> <li>• <u>do not send telegram</u></li> </ul> |

**Input to shutter, blinds, awning or window control:Input to shutter, blinds, awning or window control:**

If the input to the drive control is used via the bus, select the bus function "shutter", "awning", "blinds" or "window" and specify the button function and control mode.

| Bus function    | <b>Shutter / blinds / awning / window</b>                                                                                                      |                                               |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Button function | <u>Up</u> • Down<br><u>Up</u> • Down • Up/<br>Down<br><u>On</u> • Off • On/Off<br><u>Open</u> • Closed •<br>Open/Closed                        | (shutter)<br>(blinds)<br>(awning)<br>(window) |
| Control mode*   | <ul style="list-style-type: none"> <li>• Standard</li> <li>• Standard inverted</li> <li>• Comfort mode</li> <li>• Dead man's switch</li> </ul> |                                               |

**\*A detailed description of the setting options for the individual control modes can be found in chapter Control modes for drive control, Seite 40.**

#### **Input as dimmer:**

If the input is used as a dimmer, select the bus function "Dimmer" and specify the button function, time interval (switching/dimming) and if requested, the repeat interval for a long button press.

|                                                                                       |                                               |
|---------------------------------------------------------------------------------------|-----------------------------------------------|
| Bus function                                                                          | <b>Dimmer</b>                                 |
| Button function                                                                       | <u>b</u> righter • darker • brighter/darker   |
| Time between switching and dimming in 0.1 seconds                                     | 1...50; <u>5</u>                              |
| Repeat the dimm command                                                               | <u>n</u> o • yes                              |
| Repeat the dimm command for a long button press<br>(only if dimm command is repeated) | every 0.1 s • every 2 sec; <u>every 1 sec</u> |
| Dim by<br>(only if dimm command is repeated)                                          | 1,50% • 3% • <u>6 %</u> • 12,50% • 25% • 50%  |

#### **Input 8 bit encoder:Input 8 bit encoder:**

If the input is to be used as an 8bit encoder, select the "8 bit encoder" bus function and specify which value will be sent.

|              |                      |
|--------------|----------------------|
| Bus function | <b>8 bit encoder</b> |
| Value        | <u>0</u> ...255      |

#### **Input 16 bit encoder:Input 16 bit encoder:**

If the input is to be used as a 16bit encoder, select the "16 bit encoder" bus function and specify which value will be sent.

|              |                              |
|--------------|------------------------------|
| Bus function | <b>16 bit encoder</b>        |
| Value in 0.1 | -6707600...6707600; <u>0</u> |

#### **Input for scenario control:**

If scenarios are recalled and stored with the input, select the bus function "Recall scenario" and define the storage, time difference (recall/storage) and the scenario number.

|                                                                                              |                                           |
|----------------------------------------------------------------------------------------------|-------------------------------------------|
| Bus function                                                                                 | <b>Scenarios</b>                          |
| Scenario no.                                                                                 | <u>0</u> ...127                           |
| Scenario function                                                                            | • Activate<br>• <u>A</u> ctivate and save |
| Press key for longer than (in 01 s)<br>Scenario saving<br>(only when "and save" is selected) | 1... <u>50</u>                            |

### Input for temperature sensor T-NTC:

If a T-NTC temperature sensor is connected to the input, select the bus function "Temperature sensor (NTC)" and set the following parameters for the measured value.

Choose whether a **Malfunction object** should be transmitted.

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

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.

|                                              |                                                                                                                              |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Use external measured value                  | Yes • <u>No</u>                                                                                                              |
| Ext. Reading proportion of the total reading | 5% • 10% • ... • <u>50%</u> • ... • 100%                                                                                     |
| Send behaviour                               | <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>0.5°C</u> • ... • 5.0°C                                                                                     |
| Send cycle<br>(if sent periodically)         | <u>5 s</u> • ... • 2 h                                                                                                       |

**Note:** If an external portion is used, all of the following settings are related to the overall reading!

## 4.6.2. Control modes for drive control

If inputs are being used as switches to operate shades or windows, then various control modes can be set.

|              |                                                                                                                                        |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Control mode | <ul style="list-style-type: none"> <li>Standard</li> <li>Standard inverted</li> <li>Comfort mode</li> <li>Dead man's switch</li> </ul> |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|

### Standard:

If briefly operated, the drive will move incrementally or stops. If operated longer, the drive will move up to the end position. The time difference between "short" and "long" is set individually.

|                                                                               |                   |
|-------------------------------------------------------------------------------|-------------------|
| Control mode                                                                  | <b>Standard</b>   |
| Behavior during button operation:<br>short = stop/increment long = Up or Down |                   |
| Time between short and long<br>in 0.1 seconds                                 | 1...50; <u>10</u> |

**Standard inverted:**

When pushed shortly, the drive moves up to the end position. When pushed for longer, the drive moves incrementally or stops. The time difference between "short" and "long" and the repeat interval is set individually.

| Control mode                                                             | Standard inverted                               |
|--------------------------------------------------------------------------|-------------------------------------------------|
| Behavior during button operation:<br>short = Up or Down long = Stop/Step |                                                 |
| Time between short and long<br>in 0.1 seconds                            | 1...50; <u>10</u>                               |
| Repeat the step command<br>for a long button press                       | every 0.1 s • every 2 sec; <u>every 0.5 sec</u> |

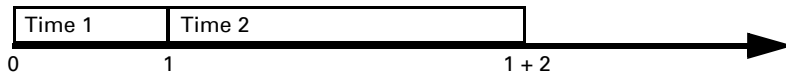
**Comfort mode:**

In the **comfort mode** pushing the button briefly, a bit longer and long will trigger different responses of the drive. The time intervals are set individually.

By pushing the button (shorter than adjustable time 1) the drive will be positioned (resp. stopped) incrementally.

If the drive is to be moved a bit farther, then a little longer push is needed (longer than time 1 but shorter than time 1+2). The drive stops immediately when releasing the button.

If the drive must be moved independently into the end position, the button is released only after times 1 and 2 have expired. The move can be stopped by briefly pushing.

**III. 1***Time interval comfort mode diagram*

*Point in time 0:*

*Push of button, start of time 1*

*Release before time 1 expired:*

*step (or stop if drive is moving)*

*Point in time 1:*

*End of time 1, start of time 2*

*Moving command*

*Release after time 1 expired*

*but before time 2 expires:*

*Stop*

*Release after time 1 + 2 expired:*

*Move into end position*

| Control mode                                                                                                                                                                                                                          | Comfort mode |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Behavior during button operation:<br>Button is pushed and<br>released before time 1 expired = stop/step<br>held longer than time 1 = Up or Down<br>released between time 1 and 1-2 = stop<br>released after time 1 + 2 = no more stop |              |

|        |                              |
|--------|------------------------------|
| Time 1 | 0.0s ... • 2 s; <u>0.4 s</u> |
| Time 2 | 0 s • 2 s; <u>2 s</u>        |

### **Dead man's switch:**

The drive moves as soon as the button is pushed and stops as soon as the button is released.

|                                                                                                        |                          |
|--------------------------------------------------------------------------------------------------------|--------------------------|
| Control mode                                                                                           | <b>Dead man's switch</b> |
| Behavior during button operation:<br>Push button = Up or Down command<br>Release button = Stop command |                          |

## **4.7. Logic**

Activate the logic inputs and assign object values up to 1st communication. Then, activate the required logic outputs.

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

### **AND logic**

|                     |                            |
|---------------------|----------------------------|
| Logic 1 / 2 / 3 / 4 | <u>not active</u> • active |
|---------------------|----------------------------|

### **OR logic**

|                     |                            |
|---------------------|----------------------------|
| Logic 1 / 2 / 3 / 4 | <u>not active</u> • active |
|---------------------|----------------------------|

#### **4.7.1. AND and/or OR logic 1 / 2 / 3 / 4**

AND- and OR logic gates provide the same setting options. Assign the inputs to a switching event and set the send behaviour.

|                         |                                                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. / 2. / 3. / 4. Input | <ul style="list-style-type: none"> <li>• <u>do not use</u></li> <li>• all switching events which are available to the sensor (see <i>AND logic connection inputs</i>, Page 44)"</li> </ul> |
| Logic output sends      | • <u>one 1-bit object</u> • two 8-bit objects                                                                                                                                              |

If the logic output sends one 1-bit object:

|                             |                         |
|-----------------------------|-------------------------|
| Logic output sends          | <b>one 1 bit object</b> |
| if logic = 1 → object value | <u>1</u> • 0            |
| if logic = 0 → object value | <u>0</u> • 1            |

If the logic output sends two 8-bit objects:

|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Logic output sends                                       | <b>two 8 bit objects</b>                                                                                                                                                                                                                                                                                                                                                                                                        |
| Type of objects                                          | <ul style="list-style-type: none"> <li>• Value (0 ... 255)</li> <li>• Percent (0% ... 100%)</li> <li>• Angle (0°... 360°)</li> <li>• Scenario load (0 ... 127)</li> </ul>                                                                                                                                                                                                                                                       |
| If logic = 1 → Object A value                            | Setting dependent on "type of object"                                                                                                                                                                                                                                                                                                                                                                                           |
| If logic = 0 → Object A value                            | Setting dependent on "type of object"                                                                                                                                                                                                                                                                                                                                                                                           |
| If logic = 1 → Object B value                            | Setting dependent on "type of object"                                                                                                                                                                                                                                                                                                                                                                                           |
| If logic = 0 → Object B value                            | Setting dependent on "type of object"                                                                                                                                                                                                                                                                                                                                                                                           |
| Send behaviour                                           | <ul style="list-style-type: none"> <li>• <u>on change of logic</u></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 + receipt of object</li> <li>• on change of logic + receipt of object and periodically</li> </ul> |
| Send cycle<br>(is only sent if periodically is selected) | <u>5 s</u> • 10 s • 30 s • 1 min • ... • 2 h                                                                                                                                                                                                                                                                                                                                                                                    |

## Block

Logic outputs can also be blocked using objects.

|                                                |                                                                                                                                                       |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 1st communication | <u>0</u> • 1                                                                                                                                          |
| Behaviour of the switching output              |                                                                                                                                                       |
| On block                                       | <ul style="list-style-type: none"> <li>• do not send message</li> <li>• send value for logic = 0</li> <li>• send value for logic = 1</li> </ul>       |

Behaviour on release of the switching output is dependent on send behaviour

|                                             |                                                                                                                        |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Value of the parameter<br>"Send behaviour": | Settings options<br>"Behaviour of the switching output on release":                                                    |
| on change of logic                          | <ul style="list-style-type: none"> <li>• do not send message</li> <li>• send value for current logic status</li> </ul> |
| on change of logic to 1                     | <ul style="list-style-type: none"> <li>• do not send message</li> <li>• if logic = 1 → send value for 1</li> </ul>     |
| on change of logic to 0                     | <ul style="list-style-type: none"> <li>• do not send message</li> <li>• if logic = 0 → send value for 0</li> </ul>     |
| on change of logic and periodically         | send value for current logic status<br>(no selection)                                                                  |

|                                                           |                                                                                                           |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| on change of logic to 1 and periodically                  | if logic = 1 → send value for 1<br>(no selection)                                                         |
| on change of logic to 0 and periodically                  | if logic = 0 → send value for 0<br>(no selection)                                                         |
| on change of logic and receipt of object                  | <ul style="list-style-type: none"> <li>• do not send message</li> <li>• Status object/s send/s</li> </ul> |
| on change of logic and receipt of object and periodically | send value for current logic status<br>(no selection)                                                     |

### 4.7.2. 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

### 4.7.3. 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:

- Switching output AND logic 1
- Switching output AND logic 1 inverted
- Switching output AND logic 2
- Switching output AND logic 2 inverted
- Switching output AND logic 3
- Switching output AND logic 3 inverted
- Switching output AND logic 4
- Switching output AND logic 4 inverted

