



**enertex bayern** gmbh  
simulation entwicklung consulting

Manual and Configuration

# KNX PowerSupply 960<sup>2</sup>



## Reference

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## Caution

- Installation and assembly of electrical equipment may only be carried out by qualified electricians.
- When connecting KNX/EIB interfaces, specialist knowledge is required through KNX™ training courses.
- Failure to follow the instructions may result in damage to the unit, fire or other hazards.
- This manual is part of the product and must remain with the end user.
- The manufacturer is not liable for costs or damages incurred by the user or third parties through the use of this device, misuse or malfunctions of the connection, malfunctions of the device or the subscriber devices.

- Opening the housing, other unauthorized changes and/or modifications to the device will void the warranty!
- The manufacturer is not liable for improper use.

## Functional description

The Enertex PowerSupply 960<sup>2</sup> is a KNX power supply unit for supply and monitoring of the EIB / KNX bus.

An EIB / KNX bus line can be connected to the grey / red bus connection terminal. In conjunction with the integrated choke, the power supply guarantees a rated current of 960 mA at the bus.

A peripheral device (30 V DC) or another line can be connected to the unchoked switching power supply output (white / yellow terminal) by connecting an additional EIB / KNX choke. The total rated current (bus + DC Aux) is permanently 1.6 A (note temperature - derating!), briefly 2.1 A.

The integrated bus coupling unit enables the user to read out internally measured current, voltage, power and temperature values.


The LCD display shows the current, voltage and power values on the one hand and the maximum value of the current with associated time and date stamp on the other hand in two lines.

All bus stations can be reset by pressing the RESET button for at least 5s. The device also has a remote reset function. This can be triggered via a communication object.

By pressing the PROG button the device is set to programming mode and can be programmed by means of ETS 4 or higher.

The supplied USB stick with your ETS project data can be plugged into the "USB garage" and stored in the appropriate place.

## Technical data

|   |  |
|---|--|
|  | <p><b>SMPS</b> switching power supply</p> <p><b>SMPS which contain a short-circuit-proof safety transformer</b> (unconditional or conditional) (here: permanently short-circuit-proof)</p>   |
| <p><b>mains voltage supply</b></p>  | <p>Voltage: 230 V AC, 50 Hz</p> <p>Power consumption: max. 56 W</p> <p>Power factor <math>\cos\phi = 0.56</math> (at rated current)</p> <p>Efficiency <math>\eta</math> with <math>I_{N=960}</math> mA: approx. 87 %</p>   |
| <p><b>Outputs</b></p>   | <p>Voltage: 30 V DC SELV</p> <p>Rated current bus: 960 mA continuous</p> <p>Total rated current (Bus + DC Aux)</p> <p style="padding-left: 40px;">permanent: 1.6 A (note temperature - derating!)</p> <p style="padding-left: 40px;">short-term: 2.1 A</p> <p>Power failure bridging time: &gt; 100 ms</p> |
| <p><b>Operating and display elements</b></p>                                      | <p>LCD display</p> <p>LEDs: "PROG", "RESET", "POWER"</p> <p>Push-button: "PROG", "RESET"</p>   |
| <p><b>Interfaces</b></p>  | <p>Mains voltage supply: 3-pin screw terminal, conductor cross-section: 0.34 - 2.0 mm<sup>2</sup> / AWG 24 - 14, stripping length: 6.5 mm</p> <p>EIB / KNX connection: grey / red Connection terminal</p> <p>DC Aux: white / yellow connection terminal</p> <p>"USB - Garage"</p>                          |
| <p><b>Housing</b></p>   | <p>DIN top-hat rail housing for 35 mm mounting rail</p> <p>Width: 6 TE</p> <p>Dimensions: 107.4 x 89.6 x 62.9 mm (L x W x H)</p> <p>Flammability class: V0</p>   |

**Other**

For indoor use only

Only for operation in the control cabinet

Highest ambient temperature  $t_{a} = 45\text{ °C}$

Lowest ambient temperature  $t_{a\text{ min}} = -5\text{ °C}$

Certification: EIB/KNX certified

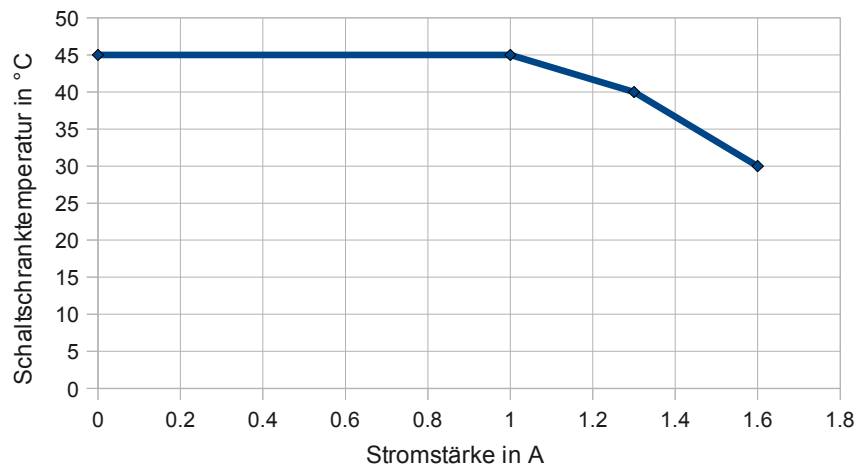
Safety: Tested according to safety guidelines from DIN EN 61558-1

Protection class I

Overvoltage category III

IP number: IP20

EMC: Tested according to EMC guidelines from DIN EN 61204-3

**Temperature - Derating:**

If the power supply is operated above the indicated ambient temperature, the integrated software-side overheating protection is activated. The current strength describes the total load current  $I_{Ges} = I_{Bus} + I_{Aux}$ .

## Connection diagram

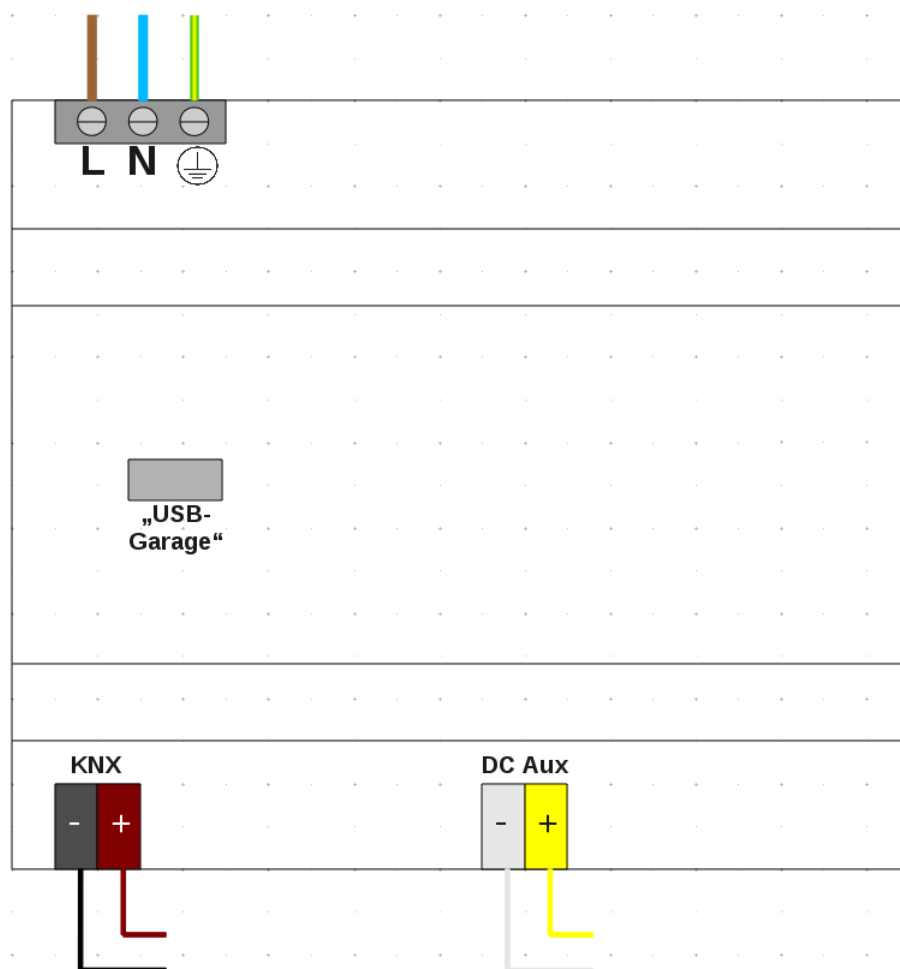


Figure 1: Connections

- The mains voltage is connected to the top left 3-pole screw terminal. Phase, neutral conductor and protective conductor must be connected in the order indicated (also on the device).

The mains cable must be fused with 16 A (or less).

**For safety reasons, the protective conductor must be connected!**

### ATTENTION!

**Electric shock when touching live parts. Electric shock can lead to death. Before working on the device, disconnect the connecting cables and cover live parts in the environment!**

- The EIB / KNX bus is connected to the grey / red terminal at the bottom left. Observe polarity!
- Peripheral devices (30 V DC) or a choke for another EIB / KNX line can be connected to the white / yellow terminal at the bottom right. Observe polarity!
- Customer-specific ETS project data can be stored on the supplied USB stick. It can then be plugged back into the "USB garage", making it easy to find it again at a central location.

## Software description

The power supply unit measures the bus current, the current at the AUX output and the bus voltage and calculates the power output at the bus. The inside temperature of the housing is also measured.

Depending on the parameterisation, the measured values are transmitted cyclically and / or on change or explicit request to the KNX bus.

For some sizes, it is also possible to send a telegram when a limit value is exceeded or not reached.

The measured values are calculated at intervals of one second. The transmission process is distributed over a period of one second in order to reduce the bus load.

In addition, the energy delivered via the Bus Terminal is measured and can be related to different start times (lifetime, switch-on time, last analysis reset).

The energy absorbed by the grid can also be determined and output via an implemented efficiency characteristic curve.

## Function of the time switch

### Description

Up to 8 time switches can be configured, each of which is identical in structure. A maximum of 4 so-called switching times can be parameterised for each of the 8 time switches. The parameters are set in the submenu named switching time 1 ... 4 Here you can set a time and a telegram (or several telegrams) to be sent.

As the following figure shows, a telegram is sent on the bus when the switching time has occurred and the parameterized conditions for date or objects are fulfilled:

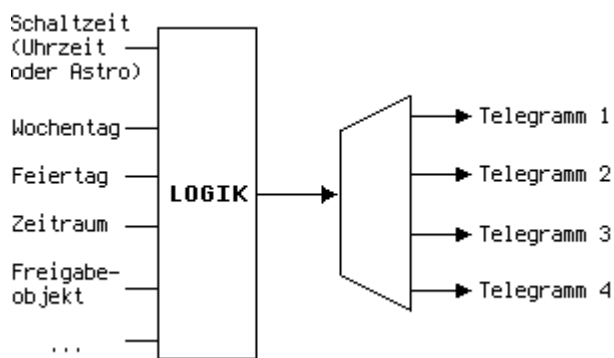


Figure 2: Schematic of the time switch

When a time switch is activated, a telegram with the corresponding communication object is sent to the bus, e.g. "KO-76: Telegram 1". For the communication object, the type and the value to be sent must be pre-parameterized in the ETS. This is done under "Time switch - Configuration". The logic block shown in the figure is valid for the complete time switch, i.e. it is always the same for all 4 switching times of the time switch. It is configured under "Time switch - Config". As inputs for the logic, special weekdays, public holidays, certain periods or one of 3 global release objects (ID KO\_ID - KO\_ID) from the bus can be used.

To use public holidays and periods, these must be defined beforehand under "Define public holidays" or "Define periods".

### Lock objects

Each time switch also has its own blocking object (ID KO\_ID for time switch 1, ID KO\_ID for time switch 2, ..) with which the switching times of the time switch can be deactivated. It applies that



all switching times of the time switch are inactive as long as their blocking object has the value ON. If the disable object equals OFF or if the disable object is not linked, then the time switch is active.

## Example - Roller blind control

The following example describes the often required application of a timer for a roller blind control. Two blinds, one in the bedroom and one in the kitchen, will be raised in the morning and lowered in the evening. Since the blinds are to be lowered in the evening depending on the sunset, the astro function is also used here. In addition, the blinds are to be raised later in the morning on non-working days than on working days.

2 time switches are required for this functionality, as a distinction is made here between working days and non-working days. Therefore, the number of time switches is set to 2 in the "Set time switches" tab.

To move the blinds, depending on the sunset, the astro function must be configured in the "Astro function" tab. The location and time zone shall be indicated there.

Since each time switch must trigger an action in the morning and evening, 2 switching times per time switch are required. The number of switching times is set in the "Timer 1 - Config" tab and in the "Timer 2 - Config" tab.

A clearer structure of the parameterization is obtained by renaming the tabs appropriately. For this purpose, time switch 1 is renamed "Time switch working day" and time switch 2 is renamed "Time switch free day". This is done via the input fields "Designation of the time switch". The switching times 1 and 2 are also renamed "morning" and "evening" respectively. This results in a very clear structure:

The screenshot shows the configuration interface for the Enertex KNX Power Supply 960-V2. The left sidebar contains a navigation menu with the following items: Allgemein, Einstellungen, Zeit, Messwerte, Extremwerte, Energiewerte, Feiertage, Zeiträume, Schaltuhren, and two sub-sections for 'Schaltuhr 1' and 'Schaltuhr 2', each containing 'SchaltuhrArbeitsTag' and 'SchaltuhrFreierTag' with sub-items '1: Morgens' and '2: Abends'. The main area is titled '1.1.1 Enertex KNX Power Supply 960-V2 > ...' and displays the following configuration:

- Bezeichnung für Schaltuhr:** Mehrfachauswahl
- Anzahl der Schaltzeiten:** 2
- Konfiguration möglicher Telegramme:**
  - Telegramm 1:** Bezeichnung: Jalousie; Betriebsart: Langzeitbetrieb (selected); Wertvorgabe: Auf (selected); Bezeichnung für Ausführen-KO: Rollo-SchlafZ-Hoch
  - Telegramm 2:** Bezeichnung: Jalousie; Betriebsart: Langzeitbetrieb (selected); Wertvorgabe: Ab (selected); Bezeichnung für Ausführen-KO: Rollo-SchlafZ-Runter
  - Telegramm 3:** Bezeichnung: Standardwert; Betriebsart: Langzeitbetrieb (selected); Wertvorgabe: Auf (selected); Bezeichnung für Ausführen-KO: Rollo-Küche-Hoch
  - Telegramm 4:** Bezeichnung: Jalousie; Betriebsart: Langzeitbetrieb (selected); Wertvorgabe: Ab (selected); Bezeichnung für Ausführen-KO: Mehrfachauswahl

Figure 3: Predefined telegrams for the time switches

Next, the telegrams that are sent at the switching times are configured. Four different telegrams are required for the described application:

- Telegram 1 with value "Open" for the roller blind in the bedroom
- Telegram 2 with value "Down" for the roller blind in the bedroom

- Telegram 3 with value "Open" for the roller blind in the kitchen
- Telegram 4 with value "Down" for the roller blind in the kitchen

These four telegrams are configured in the "Time switch - Config" tab under "Configuration of possible telegrams". A data type and a value must be specified for each of the four telegrams. As can be seen in Fig. Figure, the shutter long-term operation type is selected for all four telegrams. Telegrams 1 and 2 should be linked to the roller blind in the bedroom, telegrams 3 and 4 to the roller blind in the kitchen. The value "Open" is assigned to telegram 1 and 3. This means that these communication objects are intended for raising the blinds. Telegrams 2 and 4 are used with the value "Down" to lower the blinds. The four communication objects can be named accordingly using the text fields "Designation for KO", which serves the purpose of clarity here. The communication object for telegram 1 is renamed to "Rollo bedroom high". This name immediately shows the function, location and value for the communication object. Since the same telegrams are also required for time switch 2, these can be parameterised together by using the multiple selection with the control key in the ETS.

In the tab "1:Morgens" now the switching time in the morning can be defined. In the example, a fixed time for working days is selected here, whereby the roller blind can also take over an alarm function:

1.1.1 Enertex KNX Power Supply 960-V2 > Schaltuhr 1 > 1: Morgens

|                     |  |         |
|---------------------|--|---------|
| – Allgemein         | Bezeichnung für die Schaltzeit   | Morgens |
| – Einstellungen     | Bezeichnung für Schaltzeit Stunde ändern-KO  |         |
| + Zeit              | Bezeichnung für Schaltzeit Minute ändern-KO  |         |
| + Messwerte         | Schaltzeitpunkt  |         |
| + Extremwerte       |  | Uhrzeit |
| + Energiewerte      | Stunde   | 6       |
| + Feiertage         | Minute   | 30      |
| + Zeiträume         | Sekunde  | 0       |
| + Schaltuhren       | Auswahl zu sendender Telegramme zum Schaltzeitpunkt  |         |
| – Schaltuhr 1       | Folgende vorkonfigurierte Telegramme werden zum Schaltzeitpunkt gesendet   | 1 & 3   |
| SchaltuhrArbeitstag | Hier kann gewählt werden, welche der vier Telegramme zum Schaltzeitpunkt gesendet werden. Unter "Schaltuhr - Konfig" können die 4 möglichen Telegramme mit Datentyp und Wert definiert werden. |         |
|                     | 1: Morgens   |         |
|                     | 2: Abends  |         |

Figure 4: Switching time in the morning

In addition, the telegrams that are to be sent at this switching time must be selected in the lower area. These would be telegrams 1 and 3, whose communication objects were previously renamed "Rollo-SchlafZ-Hoch" and "Rollo-Küche-Hoch".

The second switching time called "2:Evening" is parameterized depending on the sunset:

1.1.1 Enertex KNX Power Supply 960-V2 > Schaltuhr 2 > 2: Abends

|                |  |                         |
|----------------|--|-------------------------|
| - Allgemein    | Bezeichnung für die Schaltzeit   | Abends                  |
| Einstellungen  | Bezeichnung für Schaltzeit Stunde ändern-KO  |                         |
| + Zeit         | Bezeichnung für Schaltzeit Minute ändern-KO  |                         |
| + Messwerte    | Schaltzeitpunkt  | Astro - Sonnenuntergang |
| + Extremwerte  | Offset für Astrozeit (Minuten)   | 30                      |
| + Energiewerte | Auswahl zu sendender Telegramme zum Schaltzeitpunkt  |                         |
| + Feiertage    | Folgende vorkonfigurierte Telegramme werden zum Schaltzeitpunkt gesendet   | 2 & 4                   |
| + Zeiträume    | Hier kann gewählt werden, welche der vier Telegramme zum Schaltzeitpunkt gesendet werden. Unter "Schaltuhr - Konfig" können die 4 möglichen Telegramme mit Datentyp und Wert definiert werden. |                         |
| + Schaltuhren  |  |                         |

Figure 5: Evening switching time

With the offset selected here, the two blinds are lowered 30min after sunset. The assignment to the preconfigured telegrams must also be made here. These would be telegrams 2 and 4, whose communication objects were previously renamed "Rollo-SchlafZ-Runter" and "Rollo-Küche-Runter".

The two switching times for time switch 2 are configured almost identically in the example. Thus one could again use the multiple selection of the ETS for the common parameterization. In the example, however, the switching time "1: morning" for time switch 2, which is only to be active on non-working days, is subsequently changed to 9:30 a.m. so that the "wake-up function" occurs later on non-working days.

The days on which the respective timer is active must also be specified. This happens again in the "Time switch working day" tab. The following figure shows these conditions:

1.1.1 Enertex KNX Power Supply 960-V2 > Schaltuhr 1 > SchaltuhrArbeitsstag

|                       |  |
|-----------------------|--|
| - Allgemein           | Auswahl von Tagen und/oder Bedingungen   |
| Einstellungen         | Schaltzeiten aktiv, <input checked="" type="radio"/> wenn <input type="radio"/> wenn nicht   |
| + Zeit                | Werktag (ohne Samstag)   |
| + Messwerte           | und niemals wenn   |
| + Extremwerte         | Feiertags  |
| + Energiewerte        | und niemals wenn   |
| + Feiertage           | Zeitraum 1   |
| + Zeiträume           | und niemals wenn   |
| + Schaltuhren         | Zeitraum 2   |
| - Schaltuhr 1         | und niemals wenn   |
| SchaltuhrArbeitsstag  | Zeitraum 3   |
| 1: Morgens            | und niemals wenn   |
| 2: Abends             | Globales Freigabe-Objekt 1 ist EIN   |
| Kommunikationsobjekte | Beispiel:<br>"Schaltzeiten aktiv, wenn Zeitraum 1 oder wenn Zeitraum 2 und niemals wenn Wochenende" schaltet alle 4 Schaltzeiten an allen Werktagen im Zeitraum 1 und Zeitraum 2. Weitere Beispiele sind im Handbuch aufgeführt. |
| Kanäle                |  |
| Parameter             |  |

Figure 6: Conditions for time switch 1: Time switch Working day

According to the selected conditions, the two switching times of time switch 1 are active if a working day (Mon-Fri) but no public holiday (public holidays are defined later), no period 1 (defined later as Easter holiday) is active, no period 2 (defined later as Whitsun holiday), no period 3 (defined later as Christmas holiday) and not the "Global release object 1 ON". The "Global enable object 1" is a 1-bit object supplied by the bus. The object could, for example, be used as a "holiday object" and set it at the beginning of a holiday via a button (possibly also via a button on the web server) and delete it again at the end of a holiday. With this parameterisation, the time switch is active on all days when you go to work.

The time switch 2 is now parameterised in the opposite direction, so that it is only active on the days when there is free time. This is done with this parameterization:

1.1.1 Enertex KNX Power Supply 960-V2 > Schaltuhr 2 > SchaltuhrFreierTag

Auswahl von Tagen und/oder Bedingungen

Schaltzeiten aktiv,  wenn  wenn nicht

Wochenende

oder wenn

Feiertags

oder wenn

Zeitraum 1

oder wenn

Zeitraum 2

oder wenn

Zeitraum 3

oder wenn

Globales Freigabe-Objekt 1 ist EIN

Beispiel:  
"Schaltzeiten aktiv, wenn Zeitraum 1 oder wenn Zeitraum 2 und niemals wenn Wochenende"  
schaltet alle 4 Schaltzeiten an allen Werktagen im Zeitraum 1 und Zeitraum 2. Weitere Beispiele sind im Handbuch aufgeführt.

Kommunikationsobjekte Kanäle Parameter

Figure 7: Conditions for time switch 2: Time work-free day

After all, the holidays and periods just used still have to be defined. This is done in the "Define holidays" tab. In the example 5 public holidays are defined, which are renamed for the sake of clarity:

1.1.1 Enertex KNX Power Supply 960-V2 > Feiertage > 4: Kirchweihmontag

Allgemein Bezeichnung des Feiertags Kirchweihmontag

Einstellungen Tag im Monat erste

Zeit Der Montag

Messwerte im August

Extremwerte

Energiewerte

Feiertage

Feiertage festlegen

1: Ostersonntag

2: Christi Himmelfahrt

3: Pfingstsonntag

4: Kirchweihmontag

5: Heilig Abend

Zeiträume

Figure 8: Definition of public holidays

The holidays Easter Monday, Ascension Day and Whit Sunday can be defined with the help of the input option "Easter holiday". The exact date of the Easter holidays for the respective year is independently calculated by the device. As can be seen in Fig. Figure, the Kirchweihmontag is defined via the input option "Day of the month". Christmas Eve, on the other hand, is defined with the "Simple date" input option. The totality of these holidays can now be used as input for the conditions of the two time switches. This is also applied in this example. In addition, the holidays can also be used to define periods of time, such as holidays. This is shown in the next section.

In the "Define time periods" tab, time periods can be defined that can be used for the conditions of the time switches. In the example 3 periods are defined: Easter holidays, Whitsun holidays, Christmas holidays:

1.1.1 Enertex KNX Power Supply 960-V2 > Zeiträume > 1: Osterferien

|                     |                                   |                         |
|---------------------|-----------------------------------|-------------------------|
| Allgemein           | Bezeichnung des Zeitraums         | Osterferien             |
| Einstellungen       | Bezeichnung des Zeitraum aktiv-KO | Osterferien-Aktiv       |
| Zeit                | Erster Tag des Zeitraums          | Abhängig von Feiertag 1 |
| Messwerte           | Tag nach gewähltem Feiertag       | -8                      |
| Extremwerte         | Dauer des Zeitraums               | 14                      |
| Energiewerte        | Anzahl der Tage                   | 14                      |
| Feiertage           |                                   |                         |
| Zeiträume           |                                   |                         |
| Zeiträume festlegen |                                   |                         |
|                     |                                   | 1: Osterferien          |
|                     |                                   | 2: Pfingstferien        |
|                     |                                   | 3: Weihnachtsferien     |
| Schaltuhren         |                                   |                         |

Figure 9: Definition of time periods

As shown in Fig. Figure, the Easter holidays are indicated as a function of Easter Sunday (= Holiday 1). According to the parameterization, the period begins 8 days before Easter Sunday, i.e. on the penultimate Saturday before Easter at 00:00:00. With the duration of 14 days the period ends on the Friday after Easter at 23.59:59 o'clock. The Whitsun holidays shall be indicated in the same manner. During the Christmas holidays you can also use a concrete date to enter the first day. For example, you can set the start day to 23.12. and define the duration of 15 days. Thus the Christmas holidays from 23.12. to 6.1. are fixed.

The parameterization of the example is now complete. To be able to send the telegrams of the two timers to the bus, the eight predefined communication objects must finally be linked with the corresponding group addresses on the bus:

| Objekt *                                    | Gerät                                 | Senden | Datentyp | K | L | S | Ü | A | Produkt             | Applikation    |
|---|---------------------------------------|--------|----------|---|---|---|---|---|---------------------|----------------|
| 76: Rollo-SchlafZ-Hoch - Telegramm senden   | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 77: Rollo-SchlafZ-Runter - Telegramm senden | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 85: Rollo-SchlafZ-Hoch - Telegramm senden   | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 86: Rollo-SchlafZ-Runter - Telegramm senden | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |

Figure 10: Link to the GA RolloActuator Bedroom

| Objekt *                                  | Gerät                                 | Senden | Datentyp | K | L | S | Ü | A | Produkt             | Applikation    |
|---|---------------------------------------|--------|----------|---|---|---|---|---|---------------------|----------------|
| 78: Rollo-Küche-Hoch - Telegramm senden   | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 79: Rollo-Küche-Runter - Telegramm senden | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 87: Rollo-Küche-Hoch - Telegramm senden   | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |
| 88: Rollo-Küche-Runter - Telegramm senden | 1.1.1 Enertex KNX Power Supply 960-V2 | S      | Auf/Ab   | K | - | - | Ü | - | Enertex KNX Powe... | Enertex KNX Po |

Figure 11: Link to the GA RolloActuator kitchen

## Specification

Bus coupling unit: E981.03

KNX type class: 3b

Number of communication objects: 143

Configuration: S-Mode without Plug-In

ETS: Version 4 or higher

## Database file

At <http://www.enertex.de/d-downloads01.html> you will find the current ETS database file as well as the current product description.

## ETS application parameters

Note: Depending on the parameterization, some setting options may not be available. In these cases they are not shown in the ETS.

## General information

### Settings

The following settings can be made under the "General settings" tab:

Figure 12: General Settings

The following settings can be made under the "General settings" tab:

| name                           | choices                                   | Description of the  |
|--------------------------------|---|---|
| Cyclic analysis reset          | Daily / Weekly / Monthly / Yearly / Never | Cycle in which stored extreme values and energy counters are reset. The following reset times apply: <ul style="list-style-type: none"> <li>• Daily: daily at 00:00:00</li> <li>• By Weekly: Monday for at 00:00:00</li> <li>• By Monthly: On 1. early at 00:00:00</li> <li>• By Annual: 1.1. early at 00:00:00</li> </ul>  |
| status output                  | Yes / No                                  | If active, status information in text form (e.g. "_BUS: 453 mA") is cyclically sent to the bus via the communication object "Output status information" (ID KO_ID). If several of the following status values are activated, they are written one after the other to the bus via the same communication object (ID KO_ID). This allows the status values to be displayed one after the other. The text messages are written to the communication object at the distance of the parameter "Status outputs to the bus". |
| Send objects when switching on | Yes / No                                  | If active, the following communication objects are sent after each restart: <ul style="list-style-type: none"> <li>"Last Power Failure - Time"(ID KO_ID)</li> <li>"Last Power Failure Date"(ID KO_ID)</li> <li>"Last device start - time"(ID KO_ID)</li> <li>"Last device start date"(ID KO_ID)</li> <li>"Number of power failures"(ID KO_ID)</li> <li>"Number of restarts"(ID KO_IDThis only applies,)</li> </ul> however, if the respective object was also activated in the "Send objects when switching on" tab.  |

|   |          |  |
|---|----------|--|
| After restart delay all telegrams to be sent by | 0 .. 255 | All telegrams sent from this device after the device restart/ETS download are delayed by this time in seconds. A suitably selected delay relieves the bus after a bus reset. |
|---|----------|--|

### Status outputs

The following settings can be made under the "General status output" tab:

Figure 13: General status output

| name                     | choices   | Description of the   |
|--------------------------|---|--|
| Status output to the bus | only after reset / 10s / 30s / 1min / 5min / 30min / 1h | After this time has elapsed, a new telegram is sent via the communication object "Output status information" (ID KO_IDIf the) auf den Bus gesendet. Dabei wechselt nach jedem Senden der Inhalt des Telegramms beginnend mit der Busspannung. Darauf folgt der Busstrom, AuxStrom, Telegrammrage Letzter Neustart und Interne Uhrzeit. Schließlich beginnt dieser Zyklus von vorne. Ist die Ausgabe eines Wertes nicht aktiviert, dann wird dieser Wert übersprungen.<br>value "only after reset" is selected, then each activated value is only sent after the reset. In this case, the time interval between the telegrams is fixed at 6s. |



| <b>name</b>                      | <b>choices</b>                      | <b>Description of the</b>   |
|----------------------------------|-------------------------------------|---|
| Output bus voltage               | Yes / No                            | Current bus voltage (i.e. value of the "Voltage" communication object (ID KO_ID)) is output in the status output via the "Status Information Output" communication object (ID KO_ID). Output is e.g. with "30.12 V".  |
| Output bus current               | Yes / No                            | Current bus current (i.e. value of the communication object "Current"(ID KO_ID)) is output in the status output via the communication object "Output Status Information"(ID KO_ID). Output takes place e.g. with "347 mA".  |
| Output AuxStrom                  | Yes / No                            | Current current at the AUX output (i.e. value of the communication object "Current AUX"(ID KO_ID)) is output in the status output via the communication object "Output Status Information"(ID KO_ID). Output takes place e.g. with "147 mA".                                      |
| Output telegram rate             | Yes / No                            | Current telegram rate (i.e. value of the communication object "Telegram Rate"(ID KO_ID)) is output in the status output via the communication object "Output Status Information"(ID KO_ID). Output takes place e.g. with "327".   |
| Output last restart (date)       | Yes / No                            | Date of the last restart (i.e. value of the communication object "Switch-on date"(ID KO_ID)) is output in the status output via the communication object "Output status information"(ID KO_ID). Output takes place e.g. with "15.06".   |
| Internal time                    | Yes / No                            | Value of the internal time (i.e. value of the communication object "Clock"(ID KO_ID)) is output in the status output via the communication object "Output Status Information"(ID KO_ID). Output takes place e.g. with "12:34". If the internal clock is invalid, "--:--" is sent. |
| Prefixed text for status output  | Yes / No                            | If active, an additional character string is placed in front of the corresponding status value. E.G. "U_BUS: 30 V". If "No" is selected, the output would only be "30 V". The identifier can be parameterized separately for each status value.                                   |
| Prefixed text with bus voltage   | (max. 7 Zeichen)<br>Default: U_Bus: | String displayed before the value of the bus voltage in the "Status information output" communication object.   |
| Prefixed text for bus current    | (max. 7 Zeichen)<br>Default: I_Bus: | String displayed before the value of the bus current in the "Output status information" communication object.   |
| Prefixed text with AuxStrom      | (max. 7 Zeichen)<br>Default: I_AUX: | String displayed before the value of the AuxStrom in the communication object "Output status information".  |
| Prefixed text with telegram rate | (max. 7 Zeichen)<br>Default: Rate:  | String that is displayed before the value of the telegram rate in the communication object "Output Status Information".   |

| name                            | choices                              | Description of the   |
|---------------------------------|--------------------------------------|--|
| Prefixed text at last restart   | (max. 6 Zeichen)<br>Default: Start:  | String displayed before the value of the last restart in the "Output status information" communication object. |
| Prefixed text for internal time | (max. 6 Zeichen)<br>Standard: Clock: | String displayed before the value of the time in the "Output status information" communication object.         |

### Objects when switching on Send

Under the tab "General objects when switching on Send" the following settings can be made:

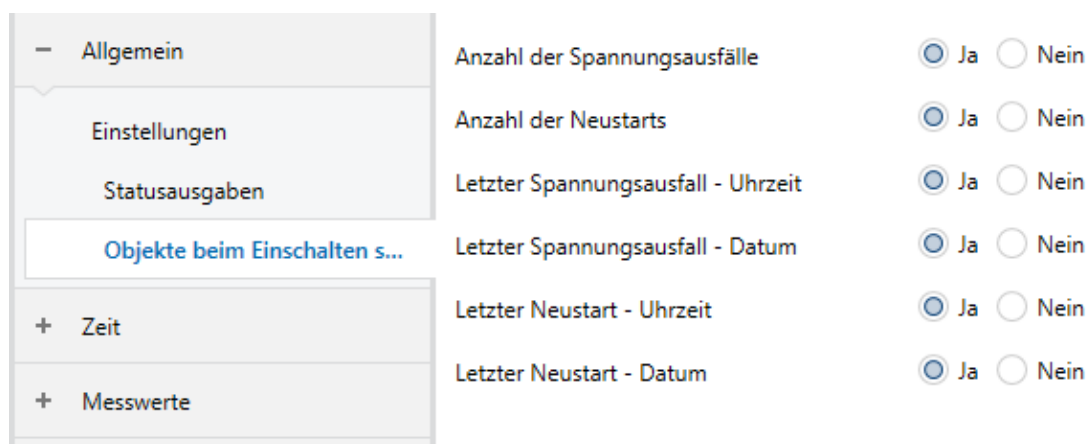


Figure 14: General objects when switching on Send

| name                      | choices  | Description of the  |
|---------------------------|----------|---|
| Number of power failures  | Yes / No | If active, the communication object "Number of power failures" (ID KO_ID) is sent to the bus each time the device is restarted.   |
| Number of restarts        | Yes / No | If active, the communication object "Number of restarts" (ID KO_ID) is sent to the bus each time the device is restarted.   |
| Last power failure - Time | Yes / No | If active, the communication object "Last Power Failure - Time" (ID KO_ID) is sent to the bus at each restart.  |
| Last power failure - Date | Yes / No | If active, the communication object "Last Power Failure Date" (ID KO_ID) is sent to the bus at each restart.  |
| Last restart - Time       | Yes / No | If active, the communication object "Last device start - time" (ID KO_ID) is sent to the bus each time the device is restarted. The time difference between "Last device start - time" (ID KO_ID) and "Last power failure - time" (ID KO_ID) could be used to determine how long the bus was without power. |
| Last restart - Date       | Yes / No | If active, the communication object "Last restart - Date" (ID KO_ID) is sent to the bus at each restart.  |

## Time

### Settings

The following settings can be made under the "Time settings" tab:

|                      |   |   |
|----------------------|---|---|
| + Allgemein          | Funktion  | <input checked="" type="radio"/> Zeitgeber <input type="radio"/> Zeitnehmer |
| - Zeit               | Beschreibung:   |   |
| <b>Einstellungen</b> |   |   |
| + Messwerte          | Nachdem Datum und Uhrzeit einmal gesetzt wurde, ist die interne Quarzuhr synchronisiert. Die beiden Kommunikationsobjekte "Uhrzeit gültig" und "Datum gültig" sind ab diesem Zeitpunkt wahr.  |   |
| + Extremwerte        | Da die interne Quarzuhr mit einem Kondensator gepuffert ist, kann sie Stromausfälle von bis zu 3 Tagen überbrücken. Falls die Energie des Kondensators aufgebraucht ist, dann wird das Datum und die Uhrzeit ungültig.                |   |
| + Energiewerte       | Die Kommunikationsobjekte "Datum gültig" und "Uhrzeit gültig" werden dann wieder falsch bis die Kommunikationsobjekte für Datum und Uhrzeit erneut über den Bus beschrieben werden.   |   |
| + Feiertage          | Die interne Quarzuhr kann auch mit einem anderen Zeitgeber am Bus zyklisch resynchronisiert werden. Dazu muss der andere Zeitgeber so parametrisiert werden, dass er zyklisch auf die Kommunikationsobjekte Datum und Uhrzeit sendet. |   |
| + Zeiträume          |   |   |
| + Schaltuhren        | Interne Uhrzeit/Datum nach Neustart auf den Bus senden nach   | 30 s  |
| + Schaltuhr 1        | Gültigkeit von interner Uhrzeit nach Neustart melden  | <input type="radio"/> Ja <input checked="" type="radio"/> Nein              |
| + Schaltuhr 2        | Gültigkeit von internem Datum nach Neustart melden  | <input type="radio"/> Ja <input checked="" type="radio"/> Nein              |
|                      | Interne Uhrzeit/Datum zyklisch auf den Bus senden   | 12 Std.   |
|                      | Autom. Umstellung zwischen Winter- und Sommerzeit   | <input checked="" type="radio"/> Ja <input type="radio"/> Nein              |

Figure 15: Time - Selection as timer

| name   | choices   | Description of the  |
|--|---|---|
| function   | Zeitgeber / timekeeper  | Here you can select whether the device should set the time for the bus or whether the time should only be accepted by the bus. For further information on the timer function, please refer to the application or the description in the figure above. |
| Send internal time/date to the bus after restart after | sofort / 10 s / 30 s / 60 s / 2 Min / 5 Min / Never           | The time of the internal clock is sent to the communication object "Time" (ID KO_ID) and "Date" (ID KO_ID) after the device is restarted.   |
| Report validity of internal time after restart         | Yes / No  | The communication object "Time valid" (ID KO_ID) is sent after the device is restarted.   |
| Report validity of internal date after restart         | Yes / No  | The communication object "Date valid"(ID KO_ID) is sent after the device is restarted.  |
| Send internal time/date cyclically to the bus          | 15 Min / 30 Min / 1Std. / 3 Std. / 12 Std. / 24 hours / never | In this cycle, the time of the internal clock is sent to the communication object "Time" (ID KO_ID) and "Date" (ID KO_ID).  |
| Automatic changeover between winter and summer time    | Yes / No  | If active, then the automatic time changeover of the internal clock between winter time and summer time takes place.  |

Funktion  Zeitgeber  Zeitnehmer

Uhrzeit nach Busspannungswiederkehr vom Bus anfordern  Ja  Nein

Wert von Kommunikationsobjekt "Uhrzeit anfordern"

Datum nach Busspannungswiederkehr vom Bus anfordern  Ja  Nein

Wert von Kommunikationsobjekt "Datum anfordern"

Figure 16: Time - Selection as timekeeper

| name   | choices  | Description of the  |
|--|----------|---|
| Request time after bus voltage recovery from bus | Yes / No | If active, the communication object "Send time request" (ID KO_ID) is enabled and sent to the bus after the device is started. This object can be used to trigger another bus station, which serves as a timer for the bus, to send its time.       |
| Value of communication object "Request time".    | 0 .. 1   | Specification of the value for the communication object "Request time" (ID KO_ID).  |
| Request date after bus voltage recovery from bus | Yes / No | If active, the communication object "Send date request" (ID KO_ID) is enabled and sent to the bus after the device has been started. This object can be used to trigger another bus station, which serves as a timer for the bus, to send its date. |
| Value of communication object "Request date".    | 0 .. 1   | Specification of the value for the communication object "Request date" (ID KO_ID).  |

## Measured values

### Settings

The following settings can be made under the "Measured value settings" tab:

|   |   |   |
|---|---|---|
| – Allgemein<br>Einstellungen<br>Statusausgaben<br>Objekte beim Einschalten s...             | Messwerte freigeben                                     | <input checked="" type="radio"/> Ja <input type="radio"/> Nein  |
|   | Messwerte zyklisch senden                               | <input checked="" type="radio"/> Ja <input type="radio"/> Nein  |
|   | Messwerte bei Änderung senden                           | <input checked="" type="radio"/> Ja <input type="radio"/> Nein  |
|   | Grenzwerte für Messwerte freigeben                      | <input checked="" type="radio"/> Ja <input type="radio"/> Nein  |
| – Zeit<br>Einstellungen   | Datentyp für Telegrammrate auswählen                    | <input checked="" type="radio"/> Ganzzahl - Telegrammanzahl/Sekunde [Dpt 7.0...]<br><input type="radio"/> Ganzzahl - Buslast in % [Dpt 5.001] |
|   | Datentyp für Spannungen auswählen                       | <input checked="" type="radio"/> Fließkomma - Millivolt [Dpt 9.020]<br><input type="radio"/> Fließkomma - Volt [Dpt 14.027]                   |
| – Messwerte<br><b>Einstellungen</b><br>Zyklisch senden<br>Bei Änderung senden<br>Grenzwerte | Datentyp für Ströme auswählen                           | <input checked="" type="radio"/> Fließkomma - Milliampere [Dpt 9.022]<br><input type="radio"/> Fließkomma - Ampere [Dpt 14.019]               |
|   | Datentyp für Temperaturen auswählen                     | <input checked="" type="radio"/> Fließkomma - °C [Dpt 9.001]<br><input type="radio"/> Fließkomma - °C [Dpt 14.068]                            |
|   | Kommunikationsobjekt<br>"Messwerte anfordern" freigeben | <input checked="" type="radio"/> Ja <input type="radio"/> Nein  |
|   | Wert von Kommunikationsobjekt<br>"Messwerte anfordern"  | <input type="text" value="0"/>  |
| + Extremwerte   |   |   |
| + Energiewerte  |   |   |

Figure 17: Measured values - Settings

| name                                    | choices   | Description of the  |
|---|---|---|
| Release measured values                 | Yes / No  | If active, the following communication objects are released:<br>"Voltage"(ID KO_ID"Current)<br>"(ID KO_ID)<br>"Current AUX"(ID KO_ID)<br>"Total current"(ID KO_ID)<br>"Service"(ID KO_ID)<br>"Temperature"(ID KO_ID)<br>"Current telegram rate"(ID KO_ID)<br>"Average telegram rate"(ID KO_ID)  |
| Send measured values cyclically         | Yes / No  | If active, the measured values can be sent cyclically. Activates the "Send cyclically" tab.   |
| Send measured values on change          | Yes / No  | If active, then the measured values can be sent on change. Activates the "Send on change" tab.  |
| Enable limit values for measured values | Yes / No  | Activates the "Limits" tab.   |
| Select data type for telegram rate      | Ganzzahl - Telegrammanzahl pro Sekunden [Dpt 7,001]<br>/<br>Ganzzahl - Buslast in % [Dpt 5,001] | The data type for the telegram rate can be selected here. The selected data type affects the measured values, extreme values and the limit values of the telegram rate.<br>The unit of the telegram rate is either telegrams per second or bus load in percent, where a bus load of 100% corresponds to a telegram rate of 50 telegrams per second, |

|  |   |   |
|--|---|---|
| Select data type for stresses                            | Fließkomma -<br>Millivolt<br>[Dpt 9,020]<br>/<br>Floating point -<br>Volt [Dpt 14.027]    | The data type for the voltage can be selected here. The selected data type affects measured values, extreme values and voltage limits.<br>The unit of voltage is either millivolt or volt. The data type Dpt_14.027 corresponds to the single-precision format according to IEEE- 754 standard.                       |
| Select data type for streams                             | Fließkomma -<br>Milliampere<br>[Dpt 9,022]<br>/<br>Fließkomma -<br>Ampere<br>[Dpt 14,019] | The data type for the streams can be selected here. The selected data type affects all measured values, extreme values and limit values of the currents.<br>The unit of current is either milliampere or ampere. The data type Dpt_14.019 corresponds to the single-precision format according to IEEE- 754 standard. |
| Select data type for temperatures                        | Floating point -<br>°C [Dpt 9.001]<br>/<br>Floating point -<br>°C [Dpt 14.068]            | The data type for the temperatures can be selected here. The selected data type affects all measured values, extreme values and limit values of the temperatures.<br>The unit of temperature is always °C. The data type Dpt_14.068 corresponds to the single-precision format according to IEEE- 754 standard.       |
| Enable "Request measured values" communication object    | Yes / No  | If active, the communication object "Request measured values" (ID KO_ID) is enabled.  |
| Value of communication object "Request measured values". | 0 / 1 / 0 or 1  | The measured values can be requested via the value of the communication object parameterized here.  |

### Send cyclically

The following settings can be made under the "Send cyclically" tab:

|                               |  |                                     |                            |
|-------------------------------|--|-------------------------------------|----------------------------|
| – Allgemein                   | Zyklisch senden nach                                     | 60                                  | ↑ ↓ Sekunden               |
| Einstellungen                 | Spannung zyklisch senden                                 | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Statusausgaben                | Stromstärke zyklisch senden                              | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Objekte beim Einschalten s... | Stromstärke AUX zyklisch senden                          | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| – Zeit                        | Gesamtstromstärke zyklisch senden                        | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Einstellungen                 | Leistung zyklisch senden                                 | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| – Messwerte                   | Temperatur zyklisch senden                               | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Einstellungen                 | Telegrammrate (aktueller Wert) zyklisch senden           | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Zyklisch senden               | Telegrammrate (Mittelwert seit Neustart) zyklisch senden | <input checked="" type="radio"/> Ja | <input type="radio"/> Nein |
| Bei Änderung senden           |  |                                     |                            |

Figure 18: Measured Values - Cyclic Send

| name   | choices     | Description of the  |
|--|-------------|---|
| Send cyclically after                                    | 0 to 172800 | Zykluszeit in Sekunden, in der die unten aktivierten Messwerte auf den Bus gesendet werden. Wenn eine Zeit größer 0 eingestellt ist, werden die Messgrößen das erste mal beim Neustart des Gerätes gesendet.<br>The value 0 does not transmit cyclically. |
| Send voltage cyclically                                  | Yes / No    | If active, the communication object "Voltage" (ID KO_ID) is sent cyclically.  |
| Send current strength cyclically                         | Yes / No    | If active, the communication object "Current" (ID KO_ID) is sent cyclically.  |
| Send current AUX cyclically                              | Yes / No    | If active, the communication object "Current AUX"(ID KO_ID) is sent cyclically.   |
| Send total current cyclically                            | Yes / No    | If active, the communication object "Total current" (ID KO_ID) is sent cyclically.  |
| Send power cyclically                                    | Yes / No    | If active, the communication object "Power" (ID KO_ID) is sent cyclically.  |
| Send temperature cyclically                              | Yes / No    | If active, the "Temperature" communication object (ID KO_ID) is sent cyclically.  |
| Send telegram rate (current value) cyclically            | Yes / No    | If active, the communication object "Current telegram rate" (ID KO_ID) is sent cyclically.  |
| Send telegram rate (mean value since restart) cyclically | Yes / No    | If active, the communication object "Average telegram rate" (ID KO_ID) is sent cyclically.  |

### Send on change

The following settings can be made under the "Send on change" tab:

1.1.1 Enertex KNX Power Supply 960-V2 > Messwerte > Bei Änderung senden

|                                     |  |  |         |
|-------------------------------------|--|--|---------|
| – Allgemein                         | Senden bei Änderung eines Wertes um                          | 20   | Prozent |
| Einstellungen                       | Spannung bei Änderung senden                                 | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| Statusausgaben                      | Stromstärke bei Änderung senden                              | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| Objekte beim Einschalten s...       | Stromstärke AUX bei Änderung senden                          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| – Zeit                              | Gesamtstromstärke bei Änderung senden                        | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| Einstellungen                       | Leistung bei Änderung senden                                 | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| – Messwerte                         | Temperatur bei Änderung senden                               | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| Einstellungen                       | Telegrammrate (aktueller Wert) bei Änderung senden           | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| Zyklisch senden                     | Telegrammrate (Mittelwert seit Neustart) bei Änderung senden | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |         |
| <a href="#">Bei Änderung senden</a> |  |  |         |

Figure 19: Measured Values - On Change Send

| name   | choices  | Description of the  |
|--|----------|---|
| Send when a value is changed by                            | 0 to 100 | Einstellung des Prozentwertes, bei dessen Änderung die unten aktivierten Messwerte auf den Bus gesendet werden. Wenn ein Wert größer 0 eingestellt ist, werden die Messgrößen das erste mal beim Neustart des Gerätes gesendet. Als Referenzwert für die Änderung in Prozent dient der jeweils zuletzt am Bus gesendete Wert.<br>If the value is 0, it is never sent when the value is changed. |
| Send voltage on change                                     | Yes / No | If active, then the communication object "Voltage" (ID KO_ID) is sent on change.  |
| Send current on change                                     | Yes / No | If active, the communication object "Current" (ID KO_ID) is sent on change.   |
| Send current AUX on change                                 | Yes / No | If active, the communication object "Current AUX"(ID KO_ID) is sent on change.  |
| Send total current on change                               | Yes / No | If active, the communication object "Total current" (ID KO_ID) is sent on change.   |
| Send service on change                                     | Yes / No | If active, the communication object "Service" (ID KO_ID) is sent on change.   |
| Send temperature on change                                 | Yes / No | If active, then the communication object "Temperature" (ID KO_ID) is sent on change.  |
| Send telegram rate on change                               | Yes / No | If active, then the communication object "Current telegram rate" (ID KO_ID) is sent on change.  |
| Send telegram rate (average value since restart) on change | Yes / No | If active, then the communication object "Average telegram rate" (ID KO_ID) is sent on change.  |

## Thresholds

The following settings can be made under the "Limits" tab (Part 1):



|                               |                                   |  |  |
|-------------------------------|-----------------------------------|--|--|
| - Allgemein                   | Spannung                          | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Einstellungen                 | Grenzwert                         |  | 28000 mV   |
| Statusausgaben                | Hysteresebereich um den Grenzwert |  | 100 mV   |
| Objekte beim Einschalten s... |                                   |  |  |
| - Zeit                        | Stromstärke - Bus                 | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Einstellungen                 | Grenzwert                         |  | 960 mA   |
| - Messwerte                   | Hysteresebereich um den Grenzwert |  | 20 mA  |
| Einstellungen                 | Stromstärke - AUX                 | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Zyklisch senden               | Grenzwert                         |  | 0 mA   |
| Bei Änderung senden           | Hysteresebereich um den Grenzwert |  | 0 mA   |
| Grenzwerte                    | Stromstärke - Gesamt              | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| + Extremwerte                 | Grenzwert                         |  | 0 mA   |
| + Energiewerte                | Hysteresebereich um den Grenzwert |  | 0 mA   |
| + Feiertage                   |                                   |  |  |
| + Zeiträume                   |                                   |  |  |
| + Schaltuhren                 |                                   |  |  |

Figure 20: Measured values - Limit values (Part 1)

Continuation of the settings under the "Limits" tab (Part 2):

|                |                                   |  |  |
|----------------|-----------------------------------|--|--|
| + Extremwerte  | Temperatur                        | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| + Energiewerte | Grenzwert                         |  | 60 °C  |
| + Feiertage    | Hysteresebereich um den Grenzwert |  | 2 °C   |
| + Zeiträume    | Telegrammrate                     | Telegramm bei Grenzwertüber-/<br>unterschreitung | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| + Schaltuhren  | Grenzwert                         |  | 0 Telegramme pro Sek.  |
| + Schaltuhr 1  | Hysteresebereich um den Grenzwert |  | 0 Telegramme pro Sek.  |
| + Schaltuhr 2  |                                   |  |  |

Figure 21: Parameter limit values (Part 2)

| name   | choices    | Description of the   |
|--|------------|--|
| (Spannung)<br>Telegram when limit value is exceeded or undershot | Yes / No   | If active, the following communication objects are released: <ul style="list-style-type: none"> <li>"Voltage - Limit "(ID KO_ID)</li> <li>"Voltage limit value above / below"(ID KO_ID)</li> </ul> If the set limit value is exceeded/falls below, the communication object "Voltage limit value exceeded/falls below" (ID KO_ID) is sent. |
| (Spannung)<br>Limit value (mV)                                   | 0 to 35000 | Limit value in millivolts for the bus voltage when the bus voltage exceeds or falls below the limit value, the corresponding communication object is to be sent.   |

|  |           |  |
|--|-----------|--|
| (Spannung)<br>Hysteresis range around the limit value (mV)   | 0 to 2000 | Gesamter Hysteresebereich in Millivolt, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the bus voltage only changes in the hysteresis range around the limit value, no new telegram is output.   |
| (Stromstärke - Bus)<br>Telegram when limit value is exceeded or not reached (bus current strength)     | Yes / No  | If active, the following communication objects are released:<br><ul style="list-style-type: none"> <li>• "Current limit "(ID KO_ID)</li> <li>• "Current limit over/under limit"(ID KO_ID)</li> </ul><br>If the set limit value is exceeded or not reached, the communication object "Current limit value exceeded or not reached" (ID KO_ID) is sent.                    |
| (Stromstärke - Bus)<br>Limit value (mA)  | 0 to 2000 | Limit value in milliamperes for the bus current when the bus current exceeds or falls below the limit value for the corresponding communication object to be sent.   |
| (Stromstärke - Bus)<br>Hysteresis (mA)   | 0 to 255  | Gesamter Hysteresebereich in Milliampere, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the bus current only changes in the hysteresis range around the limit value, no new telegram is output.   |
| (Stromstärke - AUX)<br>Telegram when limit value is exceeded or not reached (current intensity AUX)    | Yes / No  | If active, the following communication objects are released:<br><ul style="list-style-type: none"> <li>• "Current AUX limit"(ID KO_ID)</li> <li>• "Current strength AUX limit value above/below"(ID KO_ID)</li> </ul><br>The communication object "Current AUX limit value over/under" (ID KO_ID) is sent when the set limit value is exceeded or undershot.             |
| (Stromstärke - AUX)<br>Limit value (mA)  | 0 to 2000 | Limit value in milliamperes for the AUX current when the current exceeds or falls below the limit value of the corresponding communication object.   |
| (Stromstärke - AUX)<br>Hysteresis (mA)   | 0 to 255  | Gesamter Hysteresebereich in Milliampere, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the AUX current only changes in the hysteresis range around the limit value, no new telegram is output.   |
| (Stromstärke - Gesamt)<br>Telegram when limit value is exceeded or not reached (current intensity AUX) | Yes / No  | If active, the following communication objects are released:<br><ul style="list-style-type: none"> <li>• "Total current limit "(ID KO_ID)</li> <li>• "Total current limit value above/below"(ID KO_ID)</li> </ul><br>If the set limit value is exceeded or not reached, the communication object "Total current limit value exceeded or not reached" (ID KO_ID) is sent. |

|   |           |   |
|---|-----------|---|
| (Stromstärke - Gesamt)<br>Limit value (mA)  | 0 to 2000 | Limit value in milliamperes for the AUX current when the current exceeds or falls below the limit value of the corresponding communication object.  |
| (Stromstärke - Gesamt)<br>Hysteresis (mA)   | 0 to 255  | Gesamter Hysteresebereich in Milliampere, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the AUX current only changes in the hysteresis range around the limit value, no new telegram is output.  |
| (Temperatur)<br>Telegram when limit value is exceeded / not reached (temperature) | Yes / No  | If active, the following communication objects are released: <ul style="list-style-type: none"> <li>• "Temperature - Limit "(ID KO_ID)</li> <li>• "Temperature limit value above / below"(ID KO_ID)</li> </ul> If the set limit value is exceeded or not reached, the communication object "Temperature limit value exceeded or not reached" (ID KO_ID) is sent.        |
| (Temperatur)<br>Limit value (°C)  | 0 to 100  | Limit value in °C for the temperature when the temperature exceeds/falls below which the corresponding communication object is to be sent.  |
| (Temperatur)<br>Hysteresis (°C)   | 0 to 20   | Gesamter Hysteresebereich in °C, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the temperature only changes in the hysteresis range around the limit value, no new telegram is output.   |
| (Telegrammrate)<br>Telegram at limit value over-/underrun (telegram rate)         | Yes / No  | If active, the following communication objects are released: <ul style="list-style-type: none"> <li>• "Telegram rate limit value "(ID KO_ID)</li> <li>• "Telegram rate limit value over/under"(ID KO_ID)</li> </ul> If the set limit value is exceeded or not reached, the communication object "Telegram rate limit value exceeded or not reached" (ID KO_ID) is sent. |
| (Telegrammrate)<br>limit  | 0 to 2000 | Limit value of the telegram rate in the unit telegrams per second at whose over-/underrun a telegram is to be output.   |
| (Telegrammrate)<br>hysteresis   | 0 to 255  | Gesamter Hysteresebereich in Telegramme pro Sekunde, d.h. Spanne zwischen unterer und oberer Hystereseschwelle.<br>If the telegram rate only changes in the hysteresis range around the limit value, no new telegram is output.   |

## Extreme values

### Settings

The following settings can be made under the "Extreme value settings" tab:

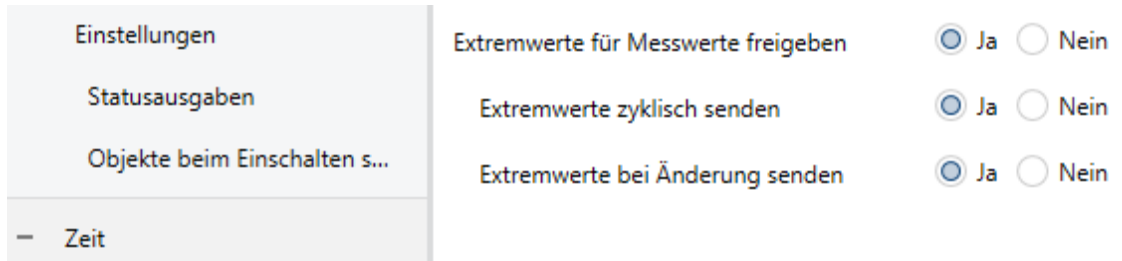


Figure 22: Parameter extreme value settings

| name                                      | choices  | Description of the  |
|---|----------|---|
| Enable extreme values for measured values | Yes / No | If active, the following communication objects are released: <ul style="list-style-type: none"> <li>• "Voltage - Minimum"(ID KO_ID)</li> <li>• "Voltage - Maximum "(ID KO_ID)</li> <li>• "Current - Minimum"(ID KO_ID)</li> <li>• "Current - Maximum"(ID KO_ID)</li> <li>• "Current AUX - Minimum"(ID KO_ID)</li> <li>• "Current AUX - Maximum"(ID KO_ID)</li> <li>• "Total current - minimum"(ID KO_ID)</li> <li>• "Total current - maximum"(ID KO_ID)</li> <li>• "Service - Minimum"(ID KO_ID)</li> <li>• "Power - Maximum"(ID KO_ID)</li> <li>• "Temperature - Minimum"(ID KO_ID)</li> <li>• "Temperature - Maximum"(ID KO_ID)</li> <li>• "Telegram Rate - Maximum"(ID KO_ID)</li> </ul> |
| Send extreme values cyclically            | Yes / No | If active, the extreme values can be sent cyclically. Activates the "Send cyclically" tab.  |
| Send extreme values on change             | Yes / No | Extreme values are sent automatically as soon as they change. Only the extreme value that changes is sent.  |

### Send cyclically

The following settings can be made under the "Extreme value cyclic transmission" tab:

Zyklisch senden nach  Sekunden

|   |  |
|---|--|
| Spannung - Minimum zyklisch senden          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Spannung - Maximum zyklisch senden          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Stromstärke - Minimum zyklisch senden       | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Stromstärke - Maximum zyklisch senden       | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Stromstärke AUX - Minimum zyklisch senden   | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Stromstärke AUX - Maximum zyklisch senden   | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Gesamtstromstärke - Minimum zyklisch senden | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Gesamtstromstärke - Maximum zyklisch senden | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Leistung - Minimum zyklisch senden          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Leistung - Maximum zyklisch senden          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Temperatur - Minimum zyklisch senden        | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Temperatur - Maximum zyklisch senden        | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |
| Telegrammrate - Maximum zyklisch senden     | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |

Figure 23: Parameter Extreme values- Cyclic transmission

| name                                       | choices     | Description of the  |
|--|-------------|---|
| Send cyclically after                      | 0 to 172800 | Zykluszeit in Sekunden, in der die unten aktivierten Extremwerte auf den Bus gesendet werden. Wenn eine Zeit größer 0 eingestellt ist, werden die Messgrößen das erste mal beim Neustart des Gerätes gesendet.<br>The value 0 does not transmit cyclically. |
| Voltage - Send minimum cyclically          | Yes / No    | If active, the communication object Voltage - Minimum (ID KO_ID) is sent cyclically.  |
| Voltage - Send maximum cyclically          | Yes / No    | If active, the communication object Voltage - Maximum (ID KO_ID) is sent cyclically.  |
| Current strength - Send minimum cyclically | Yes / No    | If active, then the communication object Current - Minimum (ID KO_ID) is sent cyclically.   |
| Current strength - Send maximum cyclically | Yes / No    | If active, then the communication object Current - Maximum (ID KO_ID) is sent cyclically.   |
| Amperage AUX - Send minimum cyclically     | Yes / No    | If active, the communication object Current AUX - Minimum (ID KO_ID) is sent cyclically.  |
| Amperage AUX - Send maximum cyclically     | Yes / No    | If active, the communication object Current AUX - Maximum (ID KO_ID) is sent cyclically.  |
| Total current - Send minimum cyclically    | Yes / No    | If active, then the communication object Total current - Minimum (ID KO_ID) is sent cyclically.   |
| Total current - Send maximum cyclically    | Yes / No    | If active, the communication object Total current - maximum (ID KO_ID) is sent cyclically.  |

|   |          |   |
|---|----------|---|
| Power - Send minimum cyclically         | Yes / No | If active, the communication object Power - Minimum(ID KO_ID) is sent cyclically.       |
| Power - Send maximum cyclically         | Yes / No | If active, the communication object Power - Maximum(ID KO_ID) is sent cyclically.       |
| Temperature - Send minimum cyclically   | Yes / No | If active, the communication object Temperature - Minimum(ID KO_ID) is sent cyclically. |
| Temperature - Send maximum cyclically   | Yes / No | If active, the communication object Temperature - Maximum(ID KO_ID) is sent cyclically. |
| Telegram rate - Send maximum cyclically | Yes / No | If active, the communication object Telegram Rate - Max (ID KO_ID) is sent cyclically.  |

## Energy values

### Settings

The following settings can be made under the "Energy value settings" tab:

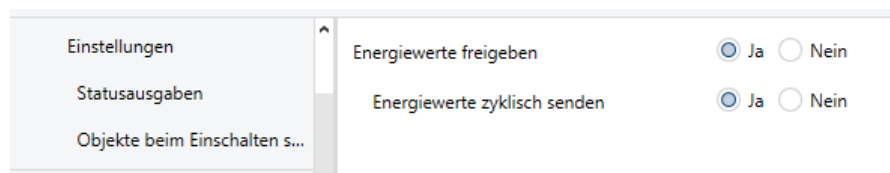


Figure 24: Parameter energy value settings

| name                          | choices  | Description of the  |
|-------------------------------|----------|---|
| Release energy values         | Yes / No | If active, the following communication objects are released: <ul style="list-style-type: none"> <li>• "Released Energy Lifetime"(ID KO_ID)</li> <li>• "Energy delivered since switch-on time"(ID KO_ID)</li> <li>• "Energy delivered since last analysis reset"(ID KO_ID)</li> <li>• "Energy absorbed Lifetime"(ID KO_ID)</li> <li>• "Energy absorbed since switch-on time"(ID KO_ID)</li> <li>• "Energy absorbed since last analysis reset"(ID KO_ID)</li> </ul> |
| Send energy values cyclically | Yes / No | If active, the energy values can be transmitted cyclically. Activates the "Send cyclically" tab.  |

### Send cyclically

The following settings can be made under the "Energy value cyclic transmission" tab:

|                               |  |  |          |
|-------------------------------|--|--|----------|
| Einstellungen                 | Zyklisch senden nach                                     | 60   | Sekunden |
| Statusausgaben                | Abgegebene Energie (Lebenszeit) zyklisch senden          | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| Objekte beim Einschalten s... | Abgegebene Energie (seit Einschalten) zyklisch senden    | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| – Zeit                        | Abgegebene Energie (seit Analysereset) zyklisch senden   | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| Einstellungen                 | Aufgenommene Energie (Lebenszeit) zyklisch senden        | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| – Messwerte                   | Aufgenommene Energie (seit Einschalten) zyklisch senden  | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| Einstellungen                 | Aufgenommene Energie (seit Analysereset) zyklisch senden | <input checked="" type="radio"/> Ja <input type="radio"/> Nein |          |
| Zyklisch senden               |  |  |          |
| Bei Änderung senden           |  |  |          |

Figure 25: Parameter energy values - cyclic transmission

| name   | choices     | Description of the  |
|--|-------------|---|
| Send cyclically after                                    | 0 to 172800 | Zykluszeit in Sekunden, in der die unten aktivierten Energiewerte auf den Bus gesendet werden. Wenn eine Zeit größer 0 eingestellt ist, werden die Messgrößen das erste mal beim Neustart des Gerätes gesendet. The value 0 does not transmit cyclically. |
| Send released energy (lifetime) cyclically               | Yes / No    | If active, then the communication object "Released energy lifetime" (ID KO_ID) is sent cyclically.  |
| Cyclical transmission of energy output (since switch-on) | Yes / No    | If active, the communication object "Released energy since switch-on time" (ID KO_ID) is transmitted cyclically.  |
| Send released energy (since analysis reset) cyclically   | Yes / No    | If active, the communication object "Energy delivered since last analysis reset" (ID KO_ID) is sent cyclically.   |
| Send absorbed energy (lifetime) cyclically               | Yes / No    | If active, then the communication object "Energy received Lifetime" (ID KO_ID) is sent cyclically.  |
| Send absorbed energy (since switching on) cyclically     | Yes / No    | If active, the communication object "Absorbed energy since switch-on time" (ID KO_ID) is transmitted cyclically.  |
| Send absorbed energy (since analysis reset) cyclically   | Yes / No    | If active, the communication object "Energy absorbed since last analysis reset" (ID KO_ID) is sent cyclically.  |

## Holidays

### Set public holidays

The following settings can be made under the "Define Holiday" tab:

|             |                      |   |
|-------------|----------------------|---|
| – Allgemein | Anzahl der Feiertage | 4 |
|-------------|----------------------|---|

Figure 26: Parameter Public Holidays - Define

| name               | choices | Description of the  |
|--------------------|---------|---|
| Number of holidays | 0 to 18 | Number of public holidays that can be parameterized. One new tab will be activated per holiday. |

## Holiday 1..18

The parameters for the tabs Holiday 1..18 are explained exemplarily on Holiday 1.

The following settings can be made under the "Holiday 1" tab:

Illustration 27: Parameter Holiday 1 - With entry option "Day in month"

Figure 28: Holiday 1 parameter - With "Simple date" entry option

Figure 29: Parameter Holiday 1 - For entry option "Easter Holiday"

Figure 30: Parameter Holiday 1 - With entry option "Dependent on Easter" - Figure 31: Parameter Holiday 1 - With entry option "Dependent on Easter".

| name                       | choices  | Description of the  |
|----------------------------|--|---|
| Description of the holiday | String with max. 20 characters                                       | Name displayed in the tab for the holiday 1. This designation serves only for clarity within the ETS application. |
|                            | Tag im Monat / Einfaches Datum / Osterfeiertag / Depending on Easter | Select the input option for the holiday. The selection determines the activation of the next input fields.        |
| The                        | first / second / third / fourth / fifth                              | Only enabled if input option "Day in month" is selected.  |



|                      |   |   |
|----------------------|---|---|
|                      | Monday /<br>Tuesday /<br>Wednesday /<br>Thursday /<br>Friday /<br>Saturday /<br>Sunday  | Only enabled if input option "Day in month" is selected.        |
| in                   | January /<br>February /<br>March / April /<br>May / June /<br>July / August /<br>September /<br>October /<br>November /<br>December /<br>every month                        | Only enabled if input option "Day in month" is selected.        |
| day                  | 1 to 31   | Only enabled if "Simple date" input option is selected.         |
| Month                | 1 to 12   | Only enabled if "Simple date" input option is selected.         |
| Easter holiday       | Aschermittwo<br>ch /<br>Good Friday /<br>Holy Saturday /<br>Easter<br>Sunday /<br>Easter Monday<br>/ Ascension<br>Day / Corpus<br>Christi / Whit<br>Sunday / Whit<br>Monday | Only enabled if entry option "Easter holiday" is selected.      |
| Day to Easter Sunday | -365 to + 365   | Only enabled if input option "Dependent on Easter" is selected. |

## Time periods

### Define periods

The following settings can be made under the "Define time periods" tab:

|                               |   |
|-------------------------------|---|
| - Allgemein                   | Anzahl der Zeiträume <input type="text" value="3"/>   |
| Einstellungen                 | Beschreibung:   |
| Statusausgaben                | Jeder Zeitraum wird definiert durch ein Anfangsdatum, welches den Beginn des Zeitraums darstellt, und eine Anzahl von Tagen, welche das Ende des Zeitraums vorgibt.   |
| Objekte beim Einschalten s... | Der Zeitraum beginnt um 00:00:00 Uhr des Anfangsdatums und endet mit Ablauf des letzten Tages um 23:59:59 Uhr. Wenn sich der aktuelle Tag innerhalb des Zeitraums befindet, so ist der Zeitraum aktiv (d.h. für die Verknüpfung Logisch EIN). |
| + Zeit                        | Eine Anzahl von „1“ bei Tagen bedeutet, dass der Zeitraum nur an einem einzigen Tag aktiv ist.  |
| + Messwerte                   |   |

Figure 32: Parameter Periods - Define

| name | choices | Description of the |
|------|---------|--------------------|
|------|---------|--------------------|

|                   |        |  |
|-------------------|--------|--|
| Number of periods | 0 to 5 | Number of time periods that can be parameterized. One new tab is activated per period. |
|-------------------|--------|--|

## Period 1..5

The parameters for the Period 1..5 tabs are explained using Period 1 as an example.

The following settings can be made under the "Period 1" tab:

The screenshot shows the configuration interface for 'Period 1'. On the left is a sidebar with categories: Allgemein (expanded), Einstellungen, Statusausgaben, and Objekte beim Einschalten s... Below these are expandable sections for Zeit, Messwerte, and Extremwerte. The main area contains the following settings:

- Bezeichnung des Zeitraums: Zeitraum 1
- Bezeichnung des Zeitraum aktiv-KO: Zeitraum 1-Aktiv
- Erster Tag des Zeitraums: Einfaches Datum (selected in a dropdown)
- Tag: 1
- Monat: 1
- Dauer des Zeitraums: 14
- Anzahl der Tage: 14

Figure 33: Parameter Period 1 - For input option "Simple Date"

The screenshot shows the configuration interface for 'Period 1' with the 'Dependent on ..' input option selected. The settings are:

- Bezeichnung des Zeitraums: Zeitraum 2
- Bezeichnung des Zeitraum aktiv-KO: Zeitraum 2-Aktiv
- Erster Tag des Zeitraums: Abhängig von Feiertag 1 (selected in a dropdown)
- Tag nach gewähltem Feiertag: 1
- Dauer des Zeitraums: 14
- Anzahl der Tage: 14

Figure 34: Parameter Period 1 - For input option "Dependent on .." - Period 1

| name                  | choices   | Description of the   |
|-----------------------|---|--|
| Name of the period    | String with max. 20 characters  | Name displayed in the tab for period 1. This designation serves only for clarity within the ETS application.   |
| Name of the period-KO | String with max. 20 characters  | Name for the communication object "Period 1-Active" (ID KO_ID). This designation is only used for clarity in the communication objects within the ETS application. |
|                       | Einfaches Datum /<br>Abhängig von Aschermittwoch /<br>Dependent on ... /<br>Depending on holiday 1 ... 18 | Select the input option for the period. The selection determines the activation of the next input fields.  |
| day                   | 1 to 31   | Nur freigeschalten, wenn Eingabeoption "Einfaches Datum" gewählt. Enter the day on which the period begins.  |

|                            |              |   |
|----------------------------|--------------|---|
| Month                      | 1 to 12      | Nur freigeschalten, wenn Eingabeoption "Einfaches Datum" gewählt.<br>Enter the month in which the period begins.  |
| Day after selected holiday | -365 .. +365 | Nur freigeschalten, wenn Eingabeoption "Abhängig von ..." gewählt.<br>Offset in Tagen zum Starttag des Zeitraums.<br>If -2 is entered, the start day of the period would be the day two days before the selected holiday. |
| Number of days             | 1 .. 65535   | Dauer des Zeitraums in Tagen.<br>If you enter 1, the period would only cover the start day.   |

## Time switches

### Set time switches

The following settings can be made under the tab "Set time switches":

1.1.1 Enertex KNX Power Supply 960-V2 > Schaltuhren > Schaltuhren festlegen

- + Zeit
- + Messwerte
- + Extremwerte
- + Energiewerte
- + Feiertage
- + Zeiträume
- Schaltuhren
- Schaltuhren festlegen
- Astrofunktion
- Schaltuhr 1

Anzahl der Schaltuhren

Beschreibung:

Es können bis zu 8 Schaltuhren konfiguriert werden, die jeweils von der Struktur identisch sind.

Für jede der 8 Schaltuhren können max. 4 sogenannte Schaltzeiten parametrisiert werden. Die Parametrierung erfolgt im Untermenü namens Schaltzeit 1 .. 4. Dort kann je eine Uhrzeit und ein zu sendendes Telegramm (oder auch Mehrere) eingestellt werden.

Wie das folgende Bild zeigt, wird ein Telegramm gesendet, wenn der Schaltzeitpunkt eingetreten ist und die parametrisierten Bedingungen für Datum bzw. für Objekte erfüllt sind:

Figure 35: Set timer-switch clock parameters

| name                    | choices | Description of the   |
|-------------------------|---------|--|
| Number of time switches | 0 to 8  | Number of time periods that can be parameterized. One new tab is activated per period. |

### Astro function

The following settings can be made under the "Timer astro function" tab:

Figure 36: Time switch astro function parameters

| name   | choices                        | Description of the  |
|--|--------------------------------|---|
| Location for astro function                        | Stadttauswahl /<br>koordinaten | Selection of the location for the determination of sunrise and sunset.  |
| city selection                                     | Madrid /<br>.. /<br>Vienna     | Nur freigeschalten, wenn bei "Standort für Astrofunktion" "Stadttauswahl" gewählt ist.<br>Selection of the location on the basis of a city.   |
| Longitude - East (at 0.1°)                         | -1800 .. +1800                 | Only enabled if "Coordinates" is selected for "Location for astro function".<br>An input of the value 37 would correspond to the longitude -3.7 East and thus the longitude of Madrid.    |
| Latitude - North (at 0.1°)                         | -900 .. +900                   | Only enabled if "Coordinates" is selected for "Location for astro function".<br>An input of the value 481 would correspond to the latitude 48.1 north and thus to the latitude of Munich. |
| Time zone with respect to UTC                      | -12 .. 14                      | Zeitzone, in der der Standort liegt.<br>An input of the value 1 would correspond to the time zone of Berlin, Bern, Vienna.  |
| Does summer and winter time exist at the location? | Yes / No                       | If active, the time change between summer and winter time is taken into account when calculating sunrise and sunset.  |

## Timer 1 .. 8

The parameters for the tabs Timer 1..8 are explained using Timer 1 as an example.

### Timer 1 - Config

The following settings can be made under the "Timer 1-Config" tab:

|                       |  |  |
|-----------------------|--|--|
| + Zeit                | Bezeichnung für Schaltuhr              | Schaltuhr 1  |
| + Messwerte           | Anzahl der Schaltzeiten                | 2  |
| + Extremwerte         | Konfiguration möglicher Telegramme     |  |
| + Energiewerte        | Telegramm 1                            | Jalousie   |
| + Feiertage           | Betriebsart                            | <input checked="" type="radio"/> Langzeitbetrieb <input type="radio"/> Kurzzeitbetrieb |
| + Zeiträume           | Wertvorgabe                            | <input checked="" type="radio"/> Auf <input type="radio"/> Ab                          |
| - Schaltuhren         | Bezeichnung für Ausführen-KO           | Rollo-SchlafZ-Hoch   |
| Schaltuhren festlegen | Telegramm 2                            | Keine Aktion   |
| Astrofunktion         | Telegramm 3                            | Keine Aktion   |
| - Schaltuhr 1         | Telegramm 4                            | Keine Aktion   |
| Schaltuhr 1           | Auswahl von Tagen und/oder Bedingungen |  |
| 1: Schaltzeit 1       | Schaltzeiten aktiv,                    | <input checked="" type="radio"/> wenn <input type="radio"/> wenn nicht                 |
| 2: Schaltzeit 1       |  | Werktag (ohne Samstag)   |
| + Schaltuhr 2         |  | und niemals wenn   |
| - Schaltuhr 3         |  | Feiertags  |
| Schaltuhr 3 - Konfig  |  | -  |
| 1: Schaltzeit 1       |  | -  |
|                       |  | -  |
|                       |  | -  |
|                       |  | -  |

Figure 37: Parameter time switch 1-Config

| <b>name</b>                             | <b>choices</b>   | <b>Description of the</b>  |
|---|--|--|
| Designation of the time switch          | String with max. 20 characters   | Name displayed in the tab for period 1. This designation serves only for clarity within the ETS application.   |
| Number of switching times               | 1 to 4   | Number of parameterizable switching times. A new tab is activated for each switching time.   |
| Telegram 1                              | Keine Aktion /<br>Switching /<br>Dimming /<br>Blinds /<br>Value transmitter 1 byte /<br>Value transmitter 2 Byte /<br>Call up scene /<br>Operating mode of the controller /<br>Color RGB /<br>Colour HSV | Datentyp für das Telegramm 1. Je nach Auswahl werden verschiedene Eingabemöglichkeiten für die folgende Wertvorgabe angeboten.<br>The telegrams preset here can be sent from the time switch to the bus at the switching times. Which telegram is sent at which switching time can be set in the tab of the respective switching time. |
| value specification                     |  | Value to be sent for telegram 1. The value depends on the data type selected above.  |
| Bezeichnung for KO                      | String with max. 20 characters   | Designation for the communication object "Time switch telegram 1". This designation is only used for clarity in the communication objects within the ETS application.  |
| Telegram 2                              | see telegram 1   | see telegram 1   |
| value specification                     | see telegram 1   | see telegram 1   |
| Bezeichnung for KO                      | see telegram 1   | see telegram 1   |
| Telegram 3                              | see telegram 1   | see telegram 1   |
| value specification                     | see telegram 1   | see telegram 1   |
| Bezeichnung for KO                      | see telegram 1   | see telegram 1   |
| Telegram 4                              | see telegram 1   | see telegram 1   |
| value specification                     | see telegram 1   | see telegram 1   |
| Bezeichnung for KO                      | see telegram 1   | see telegram 1   |
| Schaltzeiten aktiv, (Logic operation 1) | if /<br>if not   | If "if", the following condition 1 is not negated.<br>If "if not", the following condition is negated.   |

|                     |   |  |
|---------------------|---|--|
| (condition 1)       | Time period 1 / Time period 2 /<br>Time period 3 / Time period 4 /<br>Time period 5 / daily /<br>Weekend / Weekday /<br>Monday / Tuesday /<br>Wednesday / Thursday /<br>Friday / Saturday /<br>Sunday / not Monday /<br>Not Tuesday / Not<br>Wednesday / Not Thursday /<br>nicht Freitag / nicht Samstag<br>/ nicht Sonntag /<br>Holidays / Not Holidays /<br>During Daylight Saving Time<br>/ During Winter Time /<br>Global release object 1 is<br>ON / OFF.<br>Global release object 2 is<br>ON / OFF.<br>Global release object 3 is<br>ON | Condition or day on which the time switch is to switch. If the logic here is fulfilled, then all four switching times of this time switch are applied on this day.   |
| (Logic operation 2) | or if /<br>or if not /<br>and never if  | With "or if" the following condition 2 is not negated and is linked with all other logical OR operations with a logical OR .<br>If "or if not", the following condition 2 is negated and linked with all other logical OR operations with a logical OR .<br>Bei "und niemals wenn" wird die folgende Bedingung von der Gesamtmenge der ODER-Verknüpfungen abgezogen.<br>Beispiel:<br>Bei "Wenn Montag oder wenn Mittwoch und niemals wenn Feiertag oder wenn Freitag" ist die Schaltuhr an den drei Wochentagen Montag, Mittwoch und Freitag abzüglich aller Feiertage aktiv.<br>Logically, all "or if" links are summarized first, and then all "and never if" links are subtracted from the total set of OR links. |
| (condition 2)       | see condition 1   | see condition 1  |
| (Logic operation 3) | see link 1  | see link 1   |
| (condition 3)       | see condition 1   | see condition 1  |
| (Logic operation 4) | see link 1  | see link 1   |
| (condition 4)       | see condition 1   | see condition 1  |
| (Logic operation 5) | see link 1  | see link 1   |
| (condition 5)       | see condition 1   | see condition 1  |
| (Logic operation 6) | see link 1  | see link 1   |
| (condition 6)       | see condition 1   | see condition 1  |

#### Time switch 1 - Switching time 1... 4

The parameters for the tabs Switching time 1..4 are explained using switching time 1 as an example.

The following settings can be made under the tab "Time switch 1 switching time 1":

|  |  |              |
|--|--|--------------|
| + Zeit   | Bezeichnung für die Schaltzeit   | Schaltzeit 1 |
| + Messwerte  | Bezeichnung für Schaltzeit Stunde ändern-KO                              |              |
| + Extremwerte  | Bezeichnung für Schaltzeit Minute ändern-KO                              |              |
| + Energiewerte   | Schaltzeitpunkt  |              |
| + Feiertage  |  | Uhrzeit      |
| + Zeiträume  | Stunde   | 6            |
| - Schaltuhren  | Minute   | 30           |
| Schaltuhren festlegen  |  |              |
| Astrofunktion  |  |              |
| - Schaltuhr 1  | Auswahl zu sendender Telegramme zum Schaltzeitpunkt                      |              |
|  | Folgende vorkonfigurierte Telegramme werden zum Schaltzeitpunkt gesendet | 1            |
| Schaltuhr 1  |  |              |
| Hier kann gewählt werden, welche der vier Telegramme zum Schaltzeitpunkt gesendet werden. Unter "Schaltuhr - Konfig" können die 4 möglichen Telegramme mit Datentyp und Wert definiert werden. |  |              |
| 1: Schaltzeit 1  |  |              |

Figure 38: Parameter time switch 1- switching time 1 with input option time

|                       |  |                       |
|-----------------------|--|-----------------------|
| + Zeit                | Bezeichnung für die Schaltzeit   | Schaltzeit 1          |
| + Messwerte           | Bezeichnung für Schaltzeit Stunde ändern-KO  |                       |
| + Extremwerte         | Bezeichnung für Schaltzeit Minute ändern-KO  |                       |
| + Energiewerte        | Schaltzeitpunkt  |                       |
| + Feiertage           |  | Astro - Sonnenaufgang |
| + Zeiträume           | Offset für Astrozeit (Minuten)   | 0                     |
| - Schaltuhren         | Auswahl zu sendender Telegramme zum Schaltzeitpunkt  |                       |
|                       | Folgende vorkonfigurierte Telegramme werden zum Schaltzeitpunkt gesendet   | 1                     |
| Schaltuhren festlegen |  |                       |
| Astrofunktion         |  |                       |
| - Schaltuhr 1         | Hier kann gewählt werden, welche der vier Telegramme zum Schaltzeitpunkt gesendet werden. Unter "Schaltuhr - Konfig" können die 4 möglichen Telegramme mit Datentyp und Wert definiert werden. |                       |
| Schaltuhr 1           |  |                       |
| 1: Schaltzeit 1       |  |                       |

Figure 39: Parameter time switch 1- switching time 1 with input option Astro

| name  | choices                        | Description of the   |
|---|--------------------------------|--|
| Designation for the switching time              | String with max. 20 characters | Name displayed in the tab for period 1. This designation serves only for clarity within the ETS application.   |
| Designation for "Change switching time hour"-KO | String with max. 20 characters | Designation for the communication object "Timer 1 - Switching time 1 : HH"(ID KO_ID). This designation is only used for clarity in the communication objects within the ETS application. |



|  |   |  |
|--|---|--|
| Designation for "Change switching time minute"-KO                    | String with max. 20 characters  | Designation for the communication object "Timer 1 - Switching time 1 : MM"(ID KO_ID). This designation is only used for clarity in the communication objects within the ETS application.   |
| switching time   | Uhrzeit / Astro - Sonnenaufgang / Astro - Sunset  | Selection of whether a fixed switching time is entered or whether it is applied via the astro function.  |
| hour   | 0 to 23   | Only enabled if "Time" has been selected as the switching time. Hour at which the time switch becomes active.<br>This value can be overwritten by the bus with the communication object "Timer 1 - Switching time 1 : HH"(ID KO_ID). After a restart of the device, however, the original hour parameterized via the ETS is valid again.   |
| minute   | 0 to 59   | Only enabled if "Time" has been selected as the switching time. Hour at which the time switch becomes active.<br>This value can be overwritten by the bus with the communication object "Timer 1 - Switching time 1 : MM"(ID KO_ID). After a restart of the device, however, the original minute parameterized via the ETS is valid again. |
| second   | 0 to 59   | Only enabled if "Time" has been selected as the switching time. Hour at which the time switch becomes active. Second at which the time switch becomes active   |
| Offset für Astrozeit (minutes)                                       | -720 to +720  | Nur freigeschalten, wenn "Astro - Sonnenaufgang" oder "Astro - Sonnenuntergang" als Schaltzeitpunkt ausgewählt wurde.<br>The value can be used to readjust the switching time relative to sunrise or sunset.   |
| The following preconfigured telegrams are sent at the switching time | 1 / 2 / 3 / 4<br>1 & 2 / 1 & 3 / 1 & 4 / 2 & 3 / 2 & 4 / 3 & 4 /<br>1 & 2 & 3 /<br>1 & 2 & 4 /<br>1 & 3 & 4 /<br>2 & 3 & 4 /<br>1 & 2 & 3 & 4 | Auswahl der vorkonfigurierten Telegramme, die zum Schaltzeitpunkt gesendet werden.<br>Up to four telegrams can be sent at the switching time.  |

## Communication objects

### Hints:

- Depending on the parameterization, some objects may not be available.
- Since all devices are subjected to an output test, the operating time and energy counters deviate from zero on delivery.

| ID | Name                         | Object function  | Description  | Length   | Type                         |
|----|------------------------------|------------------|--|----------|------------------------------|
| 1  | Last power failure - Time    | status           | Time at which the bus voltage failed last time. The power failure can have several reasons: Failure of the mains voltage, short circuit on the bus, short circuit on the AUX output, actuation of the reset button or actuation of the remote reset.   | 3 bytes  | [10.001] DPT_TimeOfDay       |
| 2  | Last power failure - Date    | status           | Date on which the bus voltage failed the last time. The power failure can have several reasons: Failure of the mains voltage, short circuit on the bus, short circuit on the AUX output, actuation of the reset button or actuation of the remote reset.   | 3 bytes  | [11.001] DPT_Date            |
| 3  | Last Remote Bus Reset - Time | status           | Time at which the remote reset was last triggered.   | 3 bytes  | [10.001] DPT_TimeOfDay       |
| 4  | Last Remote Bus Reset - Date | status           | Date on which the remote reset was last triggered.   | 3 bytes  | [11.001] DPT_Date            |
| 5  | Last device start - Time     | status           | Time at which the device was last started. Since that time, the device has been running without interruption.  | 3 bytes  | [10.001] DPT_TimeOfDay       |
| 6  | Last device start - Date     | status           | Date on which the device was last started. Since that time, the device has been running without interruption.  | 3 bytes  | [11.001] DPT_Date            |
| 7  | Operating hours Lifetime     | status           | Operating hours of the device. Value cannot be changed / reset by the user.  | 3 bytes  | [10.001] DPT_TimeOfDay       |
| 8  | Operating seconds Lifetime   | status           | Operating seconds of the device. Value cannot be changed / reset by the user.  | 4 bytes  | 13.100] DPT_LongDeltaTimeSec |
| 9  | analysis reset               | triggers         | When transmitting to the object, all stored extreme values and energy counters (except those marked with lifetime) are reset.  | 1 bit    | [1.017] DPT_Trigger          |
| 10 | Remote Bus Reset             | triggers         | When sending to the object, the voltage at the bus and at the AUX output is pulled to bus GND for approx. 4s. This triggers a bus reset as when the reset button on the power supply is pressed.   | 1 bit    | [1.017] DPT_Trigger          |
| 11 | Number of power failures     | status           | Counter in which all power failures on the bus are counted during their lifetime.<br>The power failure can have several reasons: Failure of the mains voltage, short circuit on the bus, short circuit on the AUX output, actuation of the reset button or actuation of the remote reset.<br>Value cannot be changed / reset by the user.  | 2 bytes  | [7.001] DPT_VALUE_2_Ucount   |
| 12 | Number of restarts           | status           | Counter in which all restarts of the device during its lifetime are counted.<br>A restart can have several reasons: Bus voltage failure, "Reset device" function of ETS, programming of ETS application.<br>Value cannot be changed / reset by the user.   | 2 bytes  | [7.001] DPT_VALUE_2_Ucount   |
| 13 | Output Status Information    | text message     | Status message in text form. The format, the content and the sending can be parameterized. When several status values for the status message are parameterised, they are sent one after the other in text form on the bus at a parameterisable time interval. This allows the status messages to be displayed one after the other.   | 14 bytes | 16.1] DPT_String_8859_1      |
| 14 | time                         | Set / query time | Communication object for setting the internal time or for querying the internal time.<br>The internal clock is internally buffered (via supercap capacitor) for approx. 3 days. The internal clock can deviate from the real time by up to 2 minutes per year. Therefore it should be synchronized regularly with an exact clock (e.g. an NTP time server). This is done by writing the exact time into this communication object. As soon as this communication object has been written to at least once, the communication object "Time valid" (ID KO_ID) is set to 1. | 3 bytes  | [10.001] DPT_TimeOfDay       |

| ID | Name                    | Object function  | Description   | Length              | Type                                 |
|----|-------------------------|------------------|---|---------------------|--------------------------------------|
| 15 | date                    | Set / query time | Communication object for setting the internal calendar or for querying the internal calendar.<br>The internal date is internally buffered (via supercapacitor) for approx. 3 days. As soon as this communication object has been written to at least once, the communication object "Date valid" (ID KO_ID) is set to 1.  | 3 bytes             | [11.001] DPT_Date                    |
| 16 | Send time request       | triggers         | Via this communication object, the device can send the command to request the time on the bus. The power supply can be parameterised in such a way that the device sends this communication object to the bus when it is restarted. A timer on the bus must then respond with a telegram to the communication object "Time" (ID KO_ID).   | 1 bit               | [1.017] DPT_Trigger                  |
| 17 | Send date request       | triggers         | Via this communication object, the device can send the command to request the date on the bus. The power supply can be parameterised in such a way that the device sends this communication object to the bus when it is restarted. A timer on the bus must then respond with a telegram to the communication object "Date" (ID KO_ID).   | 1 bit               | [1.017] DPT_Trigger                  |
| 18 | Time valid              | status           | Indicates whether the internal clock is valid. Value 1 stands for valid, value 0 for invalid. The communication object can be sent automatically after each restart via the parameterization. When the device is delivered, the communication object is equal to 0. The clock becomes valid (value = 1) when the communication object "Time" (ID KO_ID) has been written by the bus. After a restart or an ETS programming of the device, the value remains 1. Only if the internal buffer capacitor has been discharged too much due to a power failure lasting several days, the clock becomes invalid again (value = 0). | 1 bit               | 1.2] DPT_Boolean                     |
| 19 | Date valid              | status           | Communication object, specifies whether the internal date is valid. Value 1 stands for valid, value 0 for invalid. The communication object can be sent after each restart via the parameterization. When the device is delivered, the communication object is 0. The date becomes valid (value = 1) if the communication object "Date" (ID KO_ID) has been written by the bus. After a restart or an ETS programming of the device, the value remains 1. Only if the internal buffer capacitor has been discharged too much due to a power failure lasting several days, the date becomes invalid again (value = 0).       | 1 bit               | 1.2] DPT_Boolean                     |
| 20 | Send time               | triggers         | When sending to the object, the power supply unit sends its internal time via the communication object "Time" (ID KO_ID) and its internal date via the communication object "Date" (ID KO_ID).  | 1 bit               | [1.017] DPT_Trigger                  |
| 21 | Request measured values | measurement      | When sending to the object, the power supply unit sends the following measured values:<br>"Voltage"(ID KO_ID), "Current"(ID KO_ID), "Current - AUX"(ID KO_ID), "Total Current"(ID KO_ID), "Power"(ID KO_ID), "Temperature"(ID KO_ID), "Current Telegram Rate"(ID KO_ID), "Average Telegram Rate"(ID KO_ID).<br>The value for the requirements can be parameterized via the ETS.   | 1 bit               | [1.017] DPT_Trigger                  |
| 22 | Voltage                 | measurement      | Aktuelle Busspannung (Einheit: mV bzw. V)<br>Data type depends on parameter "Select data type for voltages".  | 2 Byte bzw. 4 bytes | [9.020] DPT_Value_Volt bzw. [14.027] |
| 23 | current                 | measurement      | Aktuelle Stromstärke am Bus (Einheit: mA bzw. A).<br>Data type depends on parameter "Select data type for streams".   | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019] |
| 24 | Amperage AUX            | measurement      | Aktuelle Stromstärke am Aux-Ausgang (Einheit: mA bzw. A).<br>Data type depends on parameter "Select data type for streams".   | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019] |

| ID | Name   | Object function | Description   | Length                    | Type  |
|----|--|-----------------|---|---------------------------|---|
| 25 | total current                                | measurement     | Aktuelle Gesamtstromstärke (Einheit: mA bzw. A). Data type depends on parameter "Select data type for streams".   | 2 Byte<br>bzw.<br>4 bytes | [9.021]<br>DPT_Valu<br>e_Curr<br>bzw.<br>[14.019]         |
| 26 | power  | measurement     | Current power at the bus (unit: W)  | 4 bytes                   | [9.024]<br>DPT_Pow<br>er                                  |
| 27 | temperature                                  | measurement     | The current data type Gehäuseinnentemperatur (Einheit: °C), depends on the parameter "Select data type for temperatures".   | 2 Byte<br>bzw.<br>4 bytes | [9.001]<br>DPT_Valu<br>e_Temp<br>bzw.<br>[Dpt<br>[14,068] |
| 28 | Current telegram rate (per second)           | measurement     | Current telegram rate (unit: telegrams/second or bus load in %). Data type depends on parameter "Select data type for telegram rate". A bus load of 100% corresponds to a telegram rate of 50 telegrams/second.   | 2 Byte<br>bzw.<br>1 byte  | [7.1]<br>DPT_Valu<br>e_2_Ucou<br>nt<br>bzw.<br>[5.001]    |
| 29 | Average telegram rate (per second)           | measurement     | Average telegram rate since last restart (unit: telegrams/second or bus load in %). Data type depends on parameter "Select data type for telegram rate". A bus load of 100% corresponds to a telegram rate of 50 telegrams/second.  | 2 Byte<br>bzw.<br>1 byte  | [7.1]<br>DPT_Valu<br>e_2_Ucou<br>nt<br>bzw.<br>[5.001]    |
| 30 | Voltage - Limit value                        | Set limit       | Setting the limit value of the voltage (Einheit: mV bzw. V) Data type depends on the parameter "Select data type for voltages".<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again.  | 2 Byte<br>bzw.<br>4 bytes | [9.020]<br>DPT_Valu<br>e_Volt<br>bzw.<br>[14.027]         |
| 31 | Voltage Limit value over-/underrange         | status          | Communication object that is sent with the value 1 or 0 if the limit value of the bus voltage is exceeded or not reached.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 32 | Current strength - Limit value               | Set limit       | The limit value of the bus current can be set via this communication object (Einheit: mA bzw. A). Data type depends on parameter "Select data type for currents".<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again.            | 2 Byte<br>bzw.<br>4 bytes | [9.021]<br>DPT_Valu<br>e_Curr<br>bzw.<br>[14.019]         |
| 33 | Current Limit value above/below limit value  | status          | Communication object that is sent with the value 1 or 0 if the limit value exceeds or falls below the bus current.  | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 34 | Amperage AUX - limit value                   | Set limit       | This communication object can be used to set the current limit value at the AUX output (Einheit: mA bzw. A). Data type depends on parameter "Select data type for currents".<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again. | 2 Byte<br>bzw.<br>4 bytes | [9.021]<br>DPT_Valu<br>e_Curr<br>bzw.<br>[14.019]         |
| 35 | Current strength AUX Limit value above/below | status          | Communication object that is sent with the value 1 or 0 if the current limit value at the AUX output is exceeded or undershot.  | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 36 | Total current - Limit value                  | Set limit       | This communication object can be used to set the limit value of the total current (Einheit: mA bzw. A). Data type depends on the parameter "Select data type for currents".<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again.  | 2 Byte<br>bzw.<br>4 bytes | [9.021]<br>DPT_Valu<br>e_Curr<br>bzw.<br>[14.019]         |

| ID | Name  | Object function | Description  | Length              | Type                                      |
|----|---|-----------------|--|---------------------|---|
| 37 | Total current Limit above/below limit           | status          | Communication object that is sent with the value 1 or 0 if the total current limit value is exceeded or undershot.   | 1 bit               | 1.2] DPT_Boolean                          |
| 38 | Temperature - limit value                       | Set limit       | This communication object can be used to set the temperature limit (unit: °C).<br>Data type depends on parameter "Select data type for temperatures".<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again.   | 2 Byte bzw. 4 bytes | [9.001] DPT_Value_Temp bzw. [Dpt [14.068] |
| 39 | Temperature limit value above/below limit value | status          | Communication object that is sent with the value 1 or 0 if the temperature limit value has been exceeded or undershot.   | 1 bit               | 1.2] DPT_Boolean                          |
| 40 | Telegram rate (per second) - Limit value        | Set limit       | The limit value of the telegram rate for the value of the communication object "Current telegram rate" (ID KO_ID) can be set via this communication object (unit: telegrams/second or bus load in %).<br>Data type depends on parameter "Select data type for telegram rate". A bus load of 100% corresponds to a telegram rate of 50 telegrams/second.<br>If this value is written by the bus, then this limit value is valid instead of the limit value from the ETS parameterization. After a restart of the device, the limit value from the ETS parameterization becomes valid again. | 2 Byte bzw. 1 byte  | [7.1] DPT_Value_2_Ucount bzw. [5.001]     |
| 41 | Telegram rate Limit value above/below           | status          | Communication object that is sent with the value 1 or 0 if the limit value of the telegram rate is exceeded or undershot.  | 1 bit               | 1.2] DPT_Boolean                          |
| 42 | Voltage - Minimum                               | extreme value   | Minimum bus voltage since last restart or last analysis reset (Einheit: mV bzw. V).<br>Data type depends on parameter "Select data type for voltages".   | 2 Byte bzw. 4 bytes | [9.020] DPT_Value_Volt bzw. [14.027]      |
| 43 | Voltage - Maximum                               | extreme value   | Maximum bus voltage since last restart or last analysis reset (Einheit: mV bzw. V).<br>Data type depends on parameter "Select data type for voltages".   | 2 Byte bzw. 4 bytes | [9.020] DPT_Value_Volt bzw. [14.027]      |
| 44 | Current - Minimum                               | extreme value   | Minimum current on the bus since last restart or last analysis reset (Einheit: mA bzw. A).<br>Data type depends on parameter "Select data type for currents".  | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019]      |
| 45 | Amperage - Maximum                              | extreme value   | Maximum current on the bus since last restart or last analysis reset<br>Data type (Einheit: mA bzw. A). depends on parameter "Select data type for currents".  | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019]      |
| 46 | Amperage AUX Min                                | extreme value   | Minimum current at aux since last restart or last analysis reset (Einheit: mA bzw. A).<br>Data type depends on parameter "Select data type for currents".  | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019]      |
| 47 | Amperage AUX Max                                | extreme value   | Maximum current at the aux since last restart or last analysis reset<br>Data type (Einheit: mA bzw. A). depends on parameter "Select data type for currents".  | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019]      |
| 48 | Total current Min                               | extreme value   | Minimum total current since last restart or last analysis reset (Einheit: mA bzw. A).<br>Data type depends on parameter "Select data type for currents".   | 2 Byte bzw. 4 bytes | [9.021] DPT_Value_Curr bzw. [14.019]      |

| ID | Name   | Object function   | Description   | Length                    | Type  |
|----|--|-------------------|---|---------------------------|---|
| 49 | Total current Max                                | extreme value     | Maximum total current since last restart or last analysis reset>Data type (Einheit: mA bzw. A). depends on parameter "Select data type for currents".   | 2 Byte<br>bzw.<br>4 bytes | [9.021]<br>DPT_Valu<br>e_Curr<br>bzw.<br>[14.019]         |
| 50 | Performance - Minimum                            | extreme value     | Minimum power on the bus (unit: W) since last restart or last analysis reset.   | 4 bytes                   | [9.024]<br>DPT_Pow<br>er                                  |
| 51 | Performance - Maximum                            | extreme value     | Maximum power on the bus (unit: W) since last restart or last analysis reset.   | 4 bytes                   | [9.024]<br>DPT_Pow<br>er                                  |
| 52 | Temperature - Minimum                            | extreme value     | Minimum internal housing temperature (unit: °C) since last restart or last analysis reset.<br>Data type depends on parameter "Select data type for temperatures".   | 2 Byte<br>bzw.<br>4 bytes | [9.001]<br>DPT_Valu<br>e_Temp<br>bzw.<br>[Dpt<br>[14,068] |
| 53 | Temperature - Maximum                            | extreme value     | Maximum internal housing temperature (unit: °C) since last restart or last analysis reset.<br>Data type depends on parameter "Select data type for temperatures".   | 2 Byte<br>bzw.<br>4 bytes | [9.001]<br>DPT_Valu<br>e_Temp<br>bzw.<br>[Dpt<br>[14,068] |
| 54 | Telegram rate Max (per second)                   | extreme value     | Maximum telegram rate since last restart or last analysis reset (Unit: telegrams/second or bus load in %). Data type depends on parameter "Select data type for telegram rate". A bus load of 100% corresponds to a telegram rate of 50 telegrams/second. | 2 Byte<br>bzw.<br>1 byte  | [7.1]<br>DPT_Valu<br>e_2_Ucou<br>nt<br>bzw.<br>[5.001]    |
| 55 | Energy Released Lifetime                         | energy counters   | Energy delivered to the bus during its lifetime (unit: Wh). Value cannot be changed / reset by the user.  | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 56 | Energy output since switch-on time               | energy counters   | Energy delivered to the bus since last device restart (unit: Wh).   | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 57 | Energy released since last analysis reset        | energy counters   | Energy delivered to the bus since last analysis reset (unit: Wh).   | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 58 | Energy absorbed Lifetime                         | energy counters   | Energy absorbed by the network during its lifetime (unit: Wh). Value cannot be changed / reset by the user.   | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 59 | Energy absorbed since switch-on time             | energy counters   | Energy absorbed by the network since the last device restart (unit: Wh).  | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 60 | Energy absorbed since last analysis reset        | energy counters   | Energy absorbed by the network since the last analysis reset (unit: Wh).  | 4 bytes                   | [13.010]<br>DPT_Acti<br>veEnergy                          |
| 61 | Summer time active (1=Summer time 0=Winter time) | Status - Calendar | The communication object has the value 1 during summer time and the value 0 during winter time.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 62 | Working day (Mon - Fri) active                   | Status - Calendar | Communication object has the value 1 from Monday morning at 00:00:00 to Friday evening at 23:59:59. Otherwise it has the value 0.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 63 | Holiday active                                   | Status - Calendar | The communication object has the value 1 if it is a parameterized public holiday for the current day, otherwise it has the value 0. The day starts early at 00:00:00 and ends at night at 23:59:59.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 64 | Period 1 active                                  | Status - Calendar | Communication object has the value 1 if the current day lies in the parameterised period 1, otherwise it has the value 0.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |
| 65 | Period 2 active                                  | Status - Calendar | Communication object has the value 1 if the current day lies in the parameterised period 2, otherwise it has the value 0.   | 1 bit                     | 1.2]<br>DPT_Boo<br>l                                      |

| ID | Name                            | Object function       | Description  | Length | Type                       |
|----|---------------------------------|-----------------------|--|--------|----------------------------|
| 66 | Period 3 active                 | Status - Calendar     | Communication object has the value 1 if the current day lies in the parameterised period 3, otherwise it has the value 0.  | 1 bit  | 1.2] DPT_Boolean           |
| 67 | Period 4 active                 | Status - Calendar     | Communication object has the value 1 if the current day lies in the parameterised period 4, otherwise it has the value 0.  | 1 bit  | 1.2] DPT_Boolean           |
| 68 | Period 5 active                 | Status - Calendar     | Communication object has the value 1 if the current day lies in the parameterised period 5, otherwise it has the value 0.  | 1 bit  | 1.2] DPT_Boolean           |
| 69 | Globales Release object 1       | Timer Logic input     | Communication object that can be set via the bus and can be used as input for the conditions/logic of the time switches.   | 1 bit  | 1.2] DPT_Boolean           |
| 70 | Globales Release object 2       | Timer Logic input     | Communication object that can be set via the bus and can be used as input for the conditions/logic of the time switches.   | 1 bit  | 1.2] DPT_Boolean           |
| 71 | Globales Release object 3       | Timer Logic input     | Communication object that can be set via the bus and can be used as input for the conditions/logic of the time switches.   | 1 bit  | 1.2] DPT_Boolean           |
| 72 | Time switch 1 Locking object    | Lock time switch      | Disable object for time switch 1, which can be set via the bus. If the object is 1, then all switching times of time switch 1 are inactive. If 0 or not linked, then the switching times of time switch 1 are active.  | 1 bit  | 1.2] DPT_Boolean           |
| 73 | Timer 1 - Switching time 1 : HH | Change switching time | Changes the hour of switching time 1 of time switch 1 (unit: Std).<br>Wird dieser Wert vom Bus geschrieben, dann ist dieser Wert anstatt der Wert aus der ETS-Parametrierung gültig. Nach einem Neustart des Geräts wird wieder der Wert aus der ETS-Parametrierung gültig.<br>If the switching time has been configured for sunrise or sunset, the change in the switching time via this communication object is ignored.   | 1 byte | [5,010] DPT_Value_1_Ucount |
| 74 | Timer 1 - Switching time 1 : MM | Change switching time | Changes the minute of switching time 1 of time switch 1 (unit: Std).<br>Wird dieser Wert vom Bus geschrieben, dann ist dieser Wert anstatt der Wert aus der ETS-Parametrierung gültig. Nach einem Neustart des Geräts wird wieder der Wert aus der ETS-Parametrierung gültig.<br>If the switching time has been configured for sunrise or sunset, the change in the switching time via this communication object is ignored. | 1 byte | [5,010] DPT_Value_1_Ucount |
| 75 | Timer 1 - Switching time 2 : HH | Change switching time | Changes the hour of switching time 2 of time switch 1 (unit: Std).<br>Wird dieser Wert vom Bus geschrieben, dann ist dieser Wert anstatt der Wert aus der ETS-Parametrierung gültig. Nach einem Neustart des Geräts wird wieder der Wert aus der ETS-Parametrierung gültig.<br>If the switching time has been configured for sunrise or sunset, the change in the switching time via this communication object is ignored.   | 1 byte | [5,010] DPT_Value_1_Ucount |
| 76 | Timer 1 - Switching time 2 : MM | Change switching time | Changes the minute of switching time 2 of time switch 1 (unit: Std).<br>Wird dieser Wert vom Bus geschrieben, dann ist dieser Wert anstatt der Wert aus der ETS-Parametrierung gültig. Nach einem Neustart des Geräts wird wieder der Wert aus der ETS-Parametrierung gültig.<br>If the switching time has been configured for sunrise or sunset, the change in the switching time via this communication object is ignored. | 1 byte | [5,010] DPT_Value_1_Ucount |
| 77 | Time switch 1 - Telegram 1      | Send telegram         | Kommunikationsobjekt, das von der Schaltuhr 1 gesendet werden kann. Das Telegramm wird immer dann gesendet, wenn die entsprechende Schaltzeit eintritt und die Logik der Schaltuhr erfüllt sind.<br>The type of the communication object depends on the parameterized function in the parameter "Configuration of possible telegram". The value to be sent must also be specified there.                                     | 1 byte | konfigurierbar             |

| ID       | Name                       | Object function | Description  | Length  | Type           |
|----------|----------------------------|-----------------|--|---------|----------------|
| 78       | Time switch 1 - Telegram 2 | Send telegram   | Kommunikationsobjekt, das von der Schaltuhr 1 gesendet werden kann. Das Telegramm wird immer dann gesendet, wenn die entsprechende Schaltzeit eintritt und die Logik der Schaltuhr erfüllt sind.<br>The type of the communication object depends on the parameterized function in the parameter "Configuration of possible telegram". The value to be sent must also be specified there. | 3 bytes | konfigurierbar |
| 79       | Time switch 1 - Telegram 3 | Send telegram   | Kommunikationsobjekt, das von der Schaltuhr 1 gesendet werden kann. Das Telegramm wird immer dann gesendet, wenn die entsprechende Schaltzeit eintritt und die Logik der Schaltuhr erfüllt sind.<br>The type of the communication object depends on the parameterized function in the parameter "Configuration of possible telegram". The value to be sent must also be specified there. | 3 bytes | konfigurierbar |
| 80       | Time switch 1 - Telegram 4 | Send telegram   | Kommunikationsobjekt, das von der Schaltuhr 1 gesendet werden kann. Das Telegramm wird immer dann gesendet, wenn die entsprechende Schaltzeit eintritt und die Logik der Schaltuhr erfüllt sind.<br>The type of the communication object depends on the parameterized function in the parameter "Configuration of possible telegram". The value to be sent must also be specified there. | 3 bytes | konfigurierbar |
| 81 - 142 | Timer 2 ...                | time switch     | Kommunikationsobjekte für die Schaltuhren 2 bis 8.<br>For the description, please refer to the objects of time switch 1.   |         |                |



## Änderungsverzeichnis

**1: 28.8.2018, Dipl.-Ing. J. Schuhmann**

- Initialversion

**2: 12.9.2018, Dipl.-Ing. J. Schuhmann**

- Korrekturen