



Power Supply System

KNX PS640+

with bus functions



Installation and Adjustment



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Contents

Product description.....	3
Technical data.....	3
Installation and Commissioning.....	4
Installation.....	5
Settings of the device	6
Starting position	6
Line reset.....	7
Data memory	7
Operating data	8
Language.....	9
Transmission protocol.....	9
Abbreviations.....	9
Listing of all communication objects.....	10
Setting of parameters (Software ETS).....	11
General settings.....	11
Messages.....	12
Current threshold value	14

KNX PS640+ from software version 1.01, ETS programme version 1.1
Version: 22/08/2011. Errors excepted. Subject to technical changes.

Product description

The Power Supply System KNX PS640 delivers a 29 V bus voltage for the KNX system and 24 V DC supply voltage for 24 V devices. Special operating conditions such as short circuit, electrical surge, overcharge or excess temperature are recorded and may be read off on the display. The present power discharge is displayed as well. It is possible to reset the connected bus devices directly by means of the key pad.

In addition all functions can be realised via the bus, too, e. g. the transfer of malfunction messages and operating data and a time/period reset. Malfunction messages are stored by the KNX PS640+.

Functions:

- Delivers a **29 V KNX bus voltage** (reduced), output current max. 640 mA, short-circuit proof
- Delivers **24 V DC** (not reduced), output current max. 150 mA
- **Reset** of a line directly on the device
- Record of operating hours, overload, external overvoltage, internal overvoltage, short circuit and excess temperature
- Display of operating data bus voltage, bus current and temperature of the device
- The display may be shown in German, English, Spanish or Dutch
- **Bus connection** for data transfer (e. g. malfunction messages, operating data)
- Possibility for reset and diagnostics via the bus

The **programme file** for KNX software ETS (format VD2) is ready for download on the Elsner Elektronik website at **www.elsner-elektronik.de** in the "Service" menu.

Technical data

Housing:	Plastic material
Colour:	White
Mounting:	Snap-on fitting on mounting rails
Protection category:	IP 20
Dimensions:	approx. 123 x 89 x 61 (W x H x D, mm), 7 width units
Weight:	approx. 370 g
Ambient temperature:	Operation -5...+45 °C, storage -25...+70°C
Ambient air humidity:	max. 95% RH, avoid bedewing
Operating voltage:	230 V AC , 50 Hz
Outputs:	<ul style="list-style-type: none">• KNX bus voltage 29 V (reduced), Output current max. 640 mA, short-circuit proof• 24 V DC (not reduced), Output current max. 150 mA• KNX data
Data output:	KNX +/- bus terminal plug
BCU type:	Own micro controller

PEI type:	0
Group addresses:	max. 200
Allocations:	max. 200
Communication objects:	27

The following standards have been considered for the evaluation of the product in terms of electro magnetic compatibility:

Transient emissions:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26) (threshold category: B)
- EN 50090-2-2:1996-11 + A1:2002-01 (threshold category: B)
- EN 61000-6-3:2001 (threshold category: B)

Interference resistance:

- EN 60730-1:2000 Section EMV (23, 26, H23, H26)
- EN 50090-2-2:1996-11 + A1:2002-01
- EN 61000-6-1:2004

The product has been tested for the above mentioned standards by an accredited EMV laboratory.

Installation and Commissioning

Attention! Mains voltage! The legal national regulations must be complied with.



Installation, inspection, commissioning and troubleshooting of the power supply system must only be carried out by a competent electrician. Disconnect all lines to be assembled, and take safety precautions against accidental switch-on.

The power supply is exclusively intended for appropriate use. With each inappropriate change or non-observance of the instructions for use, any warranty or guarantee claim will be void.

After unpacking the device, check immediately for any mechanical damages. In case of transport damage, this must immediately notified to the supplier.

If damaged, the power supply system must not be put into operation.



If an operation without risk may supposedly not be guaranteed, the plant must be put out of operation and be secured against accidental operation.

The power supply system must only be operated as stationary system, i.e. only in a fitted state and after completion of all installation and start-up works, and only in the environment intended for this purpose.

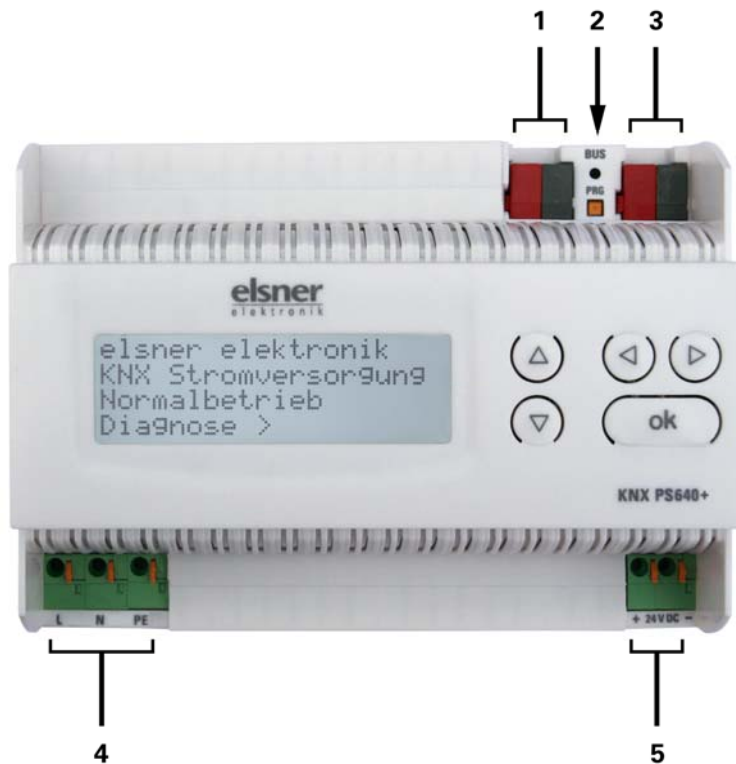
Elsner Elektronik does not assume any liability for changes in standards after publication of this instruction manual.

Installation

Observe the correct installation. Incorrect installation may destroy the power supply system or connected electronic devices.

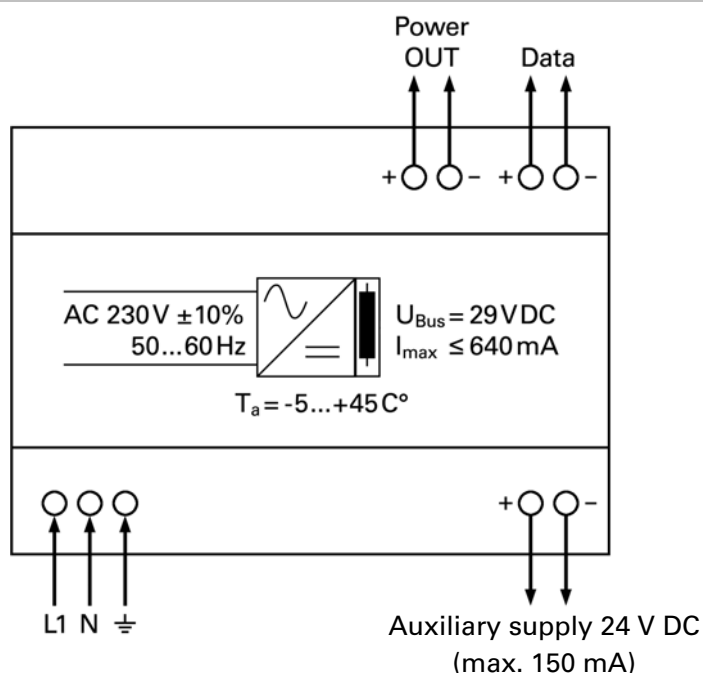
After the auxiliary voltage is applied the device will enter an initialisation phase lasting 5 seconds. During this phase no information can be received via the bus.

Housing

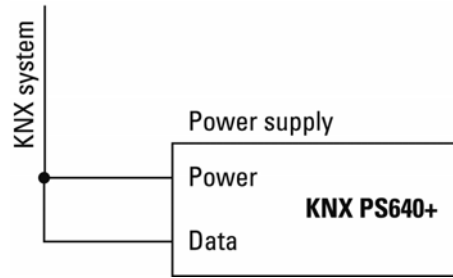


- 1 Bus voltage power OUT (KNX terminal + / -)
 - 2 Programming LED and programming bushbutton
 - 3 Bus data (KNX terminal + / -), connection for line or main line or sector
 - 4 Input operating voltage 230 V AC, L / N / PE
 - 5 Output direct current voltage 24 V DC, + / -
- Connections 4 and 5 are suitable for solid conductors up to 1.5 mm² or conductors with fine wires

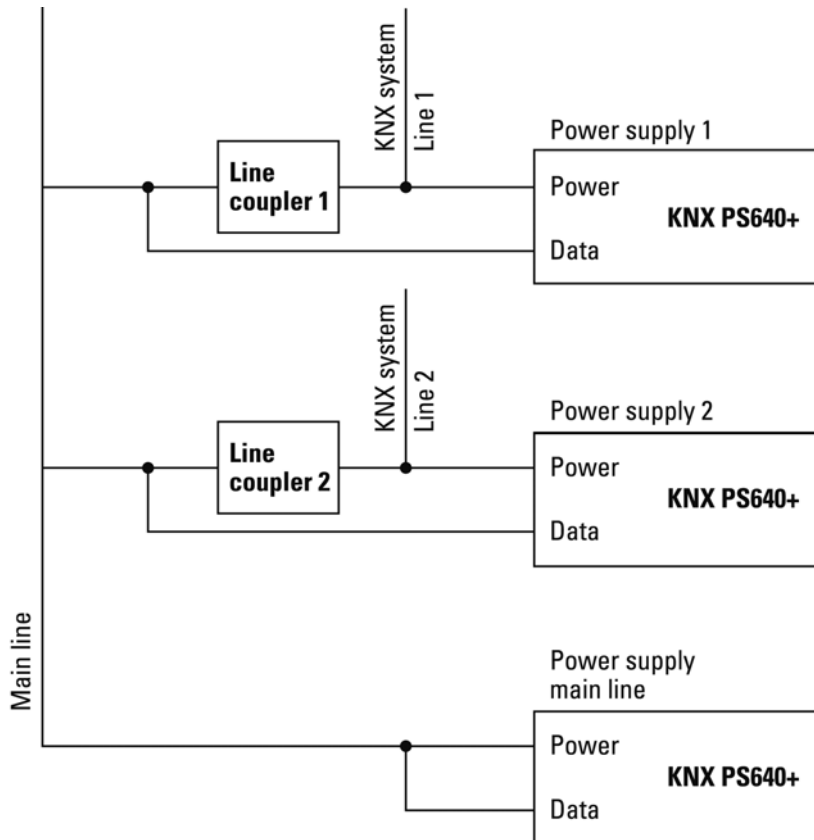
Scheme



Connection example for a KNX system without line coupler



Connection example for a KNX system with line coupler



Settings of the device

Starting position

```
elsner elektronik
KNX Power Supply
Normal Operation
Diagnostics >
```

The following may be read off and set on the display of the Power Supply System KNX PS640+:

- Reset of a line
- Recall of the data memory with operating hours, overcharge, external electrical surge, internal electrical surge, short circuit and excess temperature
- Recall of the operating data bus voltage, bus current and temperature
- Language of display

The display is dimmed after 60 seconds if during this period no key is pressed.

Line reset

```
elsner elektronik
KNX Power Supply
Normal Operation
Diagnostics >
```

In starting position, press key \triangleright once.

```
Line Reset > █
Data Memory >
Operating Data >
Language
```

Press key \triangleright once more in order to get into the sector "Line reset".

```
Reset: Yes █
      No
      30 seconds
Reset not active!
```

Move the cursor (flashing rectangle at right edge) to the desired setting with the keys ∇ or \triangle and confirm with key **ok**.

- Yes:** Reset is activated. The line is switched to neutral and shorted. The basic setting displays: "Reset is active!"
- No:** Reset not activated. The power supply system works in normal operation.
- 30 seconds:** A reset of 30 seconds is started. Afterwards, the line is supplied with voltage as usual. During the reset state, which lasts 30 seconds, the basic setting displays: "Reset active: XX sec" (countdown).

With key \triangleleft , you return to the previous menu level.

Data memory

```
elsner elektronik
KNX Power Supply
Normal Operation
Diagnostics >
```

In starting position, press key \triangleright once.

```
Line Reset >
Data Memory > █
Operating Data >
Language >
```

Move the cursor (flashing rectangle at right edge) to the "Data memory" menu with the keys ∇ and \triangle and confirm with key \triangleright .

```
Hours of Operation > █
Overload >
Ext. Overvoltage >
Int. Overvoltage >
```

```
Short circuit >
Excess Temperat. >
```

Move the cursor to the desired menu with the up and down keys and press key \triangleright .

Operating Hours

```
Runtime: 0 years  
0 day 0 hrs.  
< = Back
```

The operating hours of the power supply system are displayed in years, days and hours.
With key ◀ you return to the previous menu level.

Overload

```
Overload detected  
0 times. Duration:  
0 day, 0 hrs. 0 min  
< = Back
```

The number of overload incidents and the total time in days, hours and minutes are displayed.
With key ◀ you return to the previous menu level.

External Overvoltage

```
External Overvoltage  
was detected  
0 times.  
< = Back
```

The number of external overvoltage incidents is displayed.
With key ◀ you return to the previous menu level.

Internal Overvoltage

```
Internal Overvoltage  
was detected  
0 times.  
< = Back
```

The number of internal overvoltage incidents is displayed.
With key ◀ you return to the previous menu level.

Short Circuit

```
A short at the bus  
was detected  
0 times.  
< = Back
```

The number of short circuit incidents at the bus is displayed.
With key ◀ you return to the previous menu level.

Excess Temperature

```
Excess Temperature  
on the board  
was detected  
0 times!
```

The number of excess temperature incidents on the circuit board of the device is displayed.
With key ◀ you return to the previous menu level.

Operating data

```
elsner elektronik  
KNX Power Supply  
Normal Operation  
Diagnostics >
```

In starting position, press key ▶ once.


```
Line Reset >
Data Memory >
Operating Data > █
Language >
```

Move the cursor (flashing rectangle at right edge) to the "Operating Data" menu with the keys ▾ and △ and confirm with key ▷.

```
Bus Voltage 29.4 V
Bus Current 320 mA
Temperature 42.1°C
```

The current values of

- Bus voltage
- Bus current
- Temperature on the circuit board of the device
- are displayed.

With key ◀ you return to the previous menu level.

Language

```
elsner elektronik
KNX Power Supply
Normal Operation
Diagnostics >
```

In starting position, press key ▷ once.

```
Line Reset >
Data Memory >
Operating Data >
Language > █
```

Move the cursor (flashing rectangle at right edge) to the "Language" menu with the keys ▾ and △ and confirm with the key ▷.

```
Sprache : Deutsch █
Language : English
Idioma : Espanol
Taal : Hollands
```

Move the cursor to the desired language with the up and down keys and press the key **ok**. The display automatically jumps to the previous menu in the desired language.

With key ◀ you get back by one menu level to the basic setting.

Transmission protocol

Abbreviations

Flags:

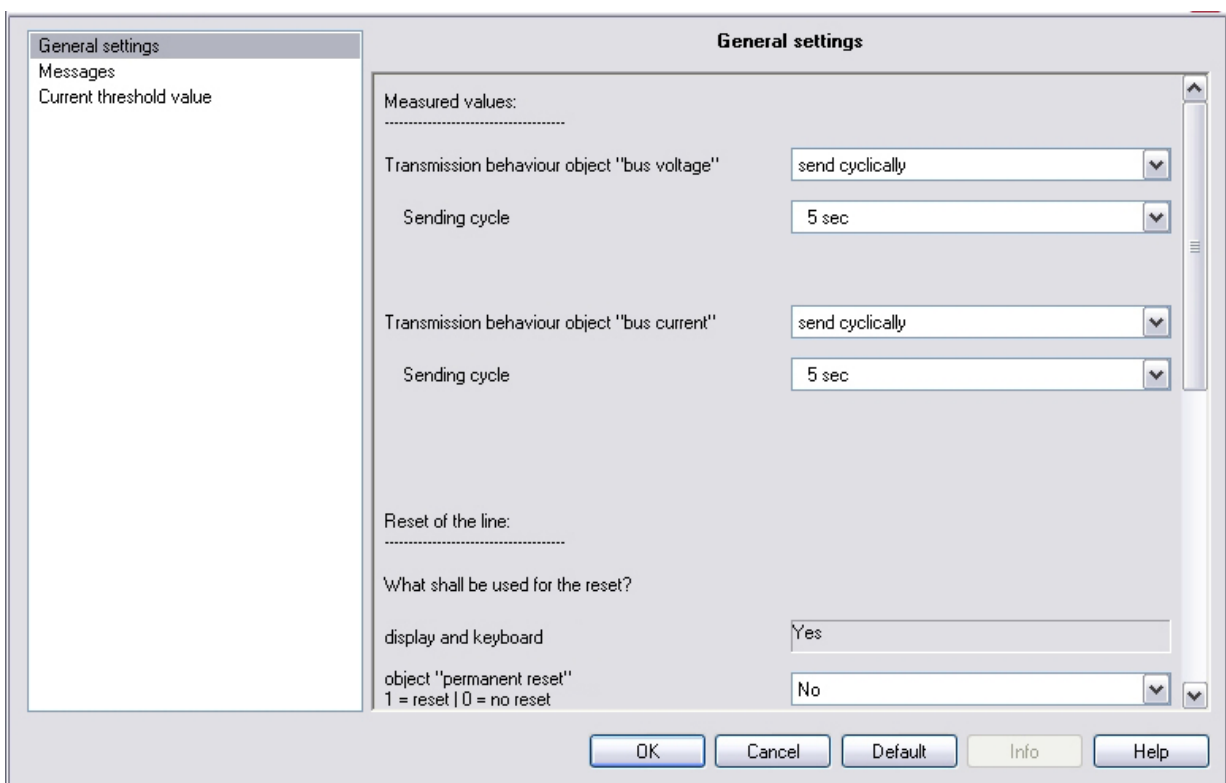
C	Communication
R	Read
W	Write
T	Transmit
U	Update

Listing of all communication objects

No.	Name	Function	EIS type	Flags
0	Bus voltage [V]	Output	14.030	C R T
1	Bus current [mA]	Output	9.021	C R T
2	Permanent reset (1 = active 0 = inactive)	Input	1.003	C R W
3	Time reset (1 = 30 seconds active 0 = inactive)	Input	1.003	C R W
4	Reset status of the line (1 = active 0 = inactive)	Output	1.002	C R T
5	Overload (0 = normal 1 = overload)	Output	1.002	C R T
6	external overvoltage (0 = normal 1 = overvoltage)	Output	1.002	C R T
7	internal overvoltage (0 = normal 1 = overvoltage)	Output	1.002	C R T
8	Short circuit (0 = normal 1 = short circuit)	Output	1.002	C R T
9	Overtemperature (0 = normal 1 = overtemperature)	Output	1.002	C R T
10	System defect (0 = normal 1 = defect)	Output	1.002	C R T
11	1 bit malfunction collection (operation = 0 fault = 1)	Output	1.002	C R T
12	8 bit status collection	Output	5.010	C R T
13	Date	Input	11.001	C R W
14	Time	Input	10.001	C R W
15	Recall error information (1 = No.+1 0 = No.-1)	Input	1.008	C R W
16	Message part 1	Output	16.000	C R T
17	Message part 2	Output	16.000	C R T
18	Message part 3	Output	16.000	C R T
19	Message part 4	Output	16.000	C R T
20	Threshold value: 16 bit value [mA]	Input / Output	9.021	C R W T U
21	Threshold value: 1 = Increment 0 = Decrement	Input	1.008	C R W
22	Threshold value: Increment	Input	1.017	C R W
23	Threshold value: Decrement	Input	1.017	C R W
24	Threshold value: Switching output	Output	1.002	C R T
25	Threshold value: Switching output block	Input	1.003	C R W
26	Software version	readable	217.001	C R

Setting of parameters (Software ETS)

General settings



Measured values:

.....

Transmission behaviour object "bus voltage"	<ul style="list-style-type: none"> • do not send • send cyclically • send in case of change • send in case of change and cyclically
Sending cycle <i>(only if sending "cyclically")</i>	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Change in % <i>(only if sending "in case of change")</i>	1 ... 50

Transmission behaviour object "bus current"	<ul style="list-style-type: none"> • do not send • send cyclically • send in case of change • send in case of change and cyclically
Sending cycle <i>(only if sending "cyclically")</i>	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Change in % <i>(only if sending "in case of change")</i>	1 ... 100

Reset of the linie:

.....

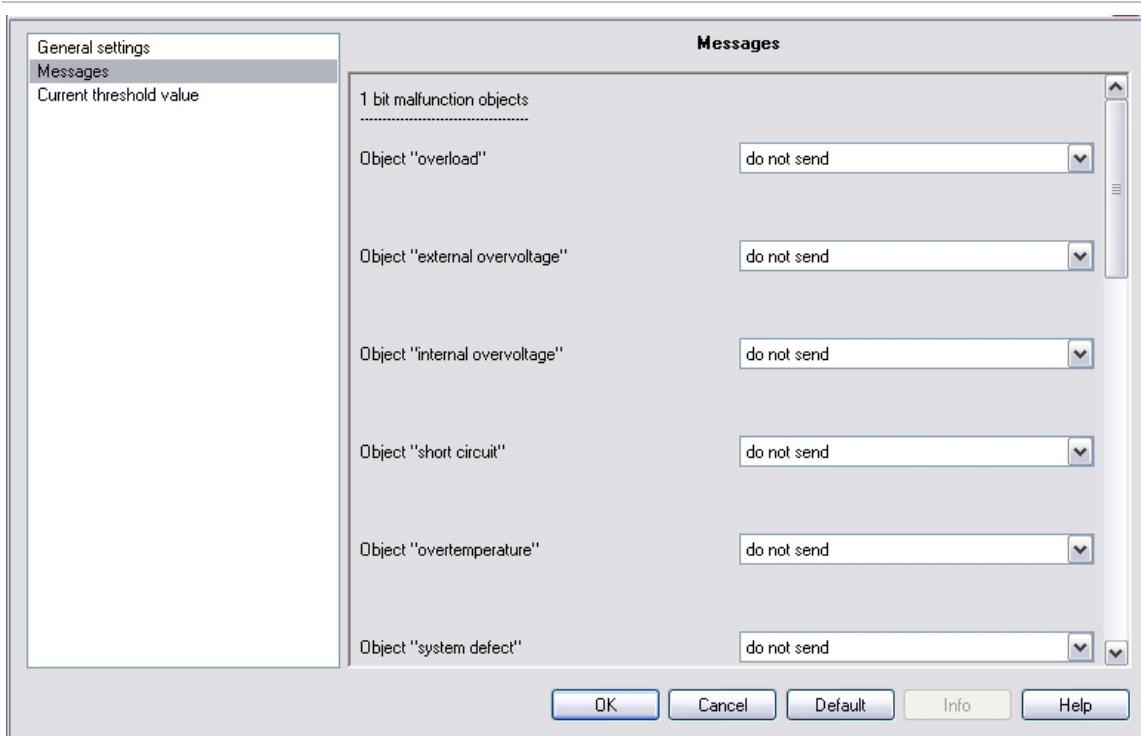
What shall be used for the reset?	
display and keyboard	Yes
object "permanent reset" 1 = reset 0 = no reset	No • Yes
object "time reset" 1 = 30 seconds reset 0 = no reset	No • Yes
Use object "reset status of the line"	No • Yes

Other:

.....

Maximum telegram quota	1 • 2 • 3 • 5 • 10 • 20 Telegrams per second
General sending delay after power up and programming	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

Messages



1 bit malfunction objects:

.....

Object "overload"	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
-------------------	--

Sending cycle (only if sending "cyclically")	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Object "external overvoltage"	[The setting options are similar to object "overload"]
Object "internal overvoltage"	[The setting options are similar to object "overload"]
Object "short circuit"	[The setting options are similar to object "overload"]
Object "overtemperature"	[The setting options are similar to object "overload"]
Object "system defect"	[The setting options are similar to object "overload"]

1 bit malfunction collection:

.....

Object "1 bit malfunction collection"	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
This object results in a disjunction of the 1 bit malfunction objects	
Sending cycle (only if sending "cyclically")	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

8 bit status collection:

.....

Object "8 bit status collection"	<ul style="list-style-type: none"> • do not send • send in case of change • send in case of change and cyclically
Sending cycle (only if sending "cyclically")	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h
Bit 0 = reset status of the line	= value 1
Bit 1 = overload	= value 2
Bit 2 = external overvoltage	= value 4
Bit 3 = internal overvoltage	= value 8
Bit 4 = short circuit	= value 16
Bit 5 = overtemperature	= value 32
Bit 6 = current threshold value exceeded	= value 64
Bit 7 = system defect	= value 128

A combination of error messages is possible. If e.g. value 34 is transferred, then Bit 1 = Overload and Bit 5 = Overtemperature are set.

The value set in the menu "current threshold value" (see next chapter) is used as **current threshold value**. The additional settings for hysteresis etc. are *not* taken into account for the status collection. Bit 6 "current threshold status exceeded" is set, if the

threshold value has been exceeded for 1 minute. The bit is immediately deleted again, if the threshold value is underrun.

Error log:

.....

Use error log	No • Yes
If the error log is used:	
Object "message part 1" sends signal: Error no. (1 = latest error)	
Object "message part 2" sends signal: Error type	
Object "message part 3" sends signal: Date of error start	
Object "message part 4" sends signal: Time of error start	

Current threshold value

Use threshold value	No • Yes
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If the threshold value is used:

Threshold value:

.....

If the threshold value is set by parameter:

Threshold value is set by	Parameter
---------------------------	------------------

Threshold value in mA	0 ... 640
Hysteresis of the threshold value in %	0 ... 50

If the threshold value is set by communication object:

Threshold value is set by	Communication object
The value communicated last shall be maintained	<ul style="list-style-type: none"> • not • after restoration of voltage • after restoration of voltage and programming (Do not use for first commissioning)
Start threshold value in mA valid until 1. communication <i>(only if the value communicated last is "not" maintained or "after restoration of voltage")</i>	0 ... 640
Type of threshold change	<ul style="list-style-type: none"> • Absolute value with a 16 bit com.object • Increment/decrement with one comm. object • Increment/decrement with two comm. objects
Step size in mA <i>(only with "increment/decrement")</i>	1 • 2 • 5 • 10 • 20 • 50 • 100
Hysteresis of the threshold value in %	0 ... 50

Switching output:

.....

Output is at (TV = Threshold value)	<ul style="list-style-type: none"> • TV above = 1 TV – hyst. below = 0 • TV above = 0 TV – hyst. below = 1 • TV below = 1 TV + hyst. above = 0 • TV below = 0 TV + hyst. above = 1
Switching delay from 0 to 1	none • 1 s • 2 s • 5 s • 10 s • ... • 2 h
Switching delay from 1 to 0	none • 1 s • 2 s • 5 s • 10 s • ... • 2 h
Switching output sends	<ul style="list-style-type: none"> • send in case of change • send in case of change to 1 • send in case of change to 0 • send in case of change and cyclically • send in case of change to 1 and cyclically • send in case of change to 0 and cyclically
Send switching output in a cycle of <i>(only if sending "cyclically")</i>	5 sec • 10 sec • 30 sec • 1 min • ... • 2 h

Blocking:

.....

Use block of the switching output	No • Yes
-----------------------------------	----------

If the block of the switching output is used:

Use block of the switching output	Yes
-----------------------------------	------------

Evaluation of the blocking object	<ul style="list-style-type: none"> • if value 1: block if value 0: release • if value 0: block if value 1: release
Value of the blocking object before 1. communication	0 • 1

Behaviour of switching output	
with blocking	<ul style="list-style-type: none"> • do not send telegram • send 0 • send 1

The behaviour with release of the switching output depends on the value of the parameter "Switching output sends ..." (see "Switching output")

<i>Value of parameter "Switching output sends":</i>	<i>Setting options "Behaviour of the switching output with release":</i>
in case of change	<ul style="list-style-type: none"> • do not send telegram • send status of the switching output
in case of change to 1	<ul style="list-style-type: none"> • do not send telegram • if switching output = 1 → send 1
in case of change to 0	<ul style="list-style-type: none"> • do not send telegram • if switching output = 0 → send 0
in case of change and cyclically	send status of the switching output (no selection)
in case of change to 1 and cyclically	if switching output = 1 → send 1 (no selection)
in case of change to 0 and cyclically	if switching output = 0 → send 0 (no selection)