

Technical Manual



MDT Energy Meter

EZ-0320.01

EZ-0363.01

Further Documents:

Datasheet:

https://www.mdt.de/EN_Downloads_Datasheets.html

Assembly and Operation Instructions:

https://www.mdt.de/EN_Downloads_Instructions.html

Solution Proposals for MDT products:

https://www.mdt.de/EN_Downloads_Solutions.html

Functional overview:

<https://www.mdt.de/en/for-professionals/downloads/functional-overview.html>

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2 Overview

2.1 Overview devices

The description refers to the following devices (order number in bold):

- **EZ-0320.01 Energy Meter 3-channel 20 A, direct measurement, 4SU MDRC, 230/400 V AC, 50 Hz**
 - Industrial version, direct current measurement up to 20 A
 - 3-phase bidirectional meter for active energy
 - Separate recording of energy consumption and fed-in energy
 - Main and intermediate counter

- **EZ-0363.01 Energy Meter 3-channel 63 A, transformer measurement, 4SU MDRC, 230/400 V AC, 50 Hz**
 - Industrial version, transformer measurement up to 63 A
 - 3-phase bidirectional meter for active energy
 - Separate recording of energy consumption and fed-in energy
 - Main and intermediate counter

2.2 Special functions

Power measurement

The active power can be recorded in watts or kilowatts per channel and total and can be output via object. The measured active power is the basis for monitoring load exceedances and load undercuts, which can be further processed as 1-bit status objects. In addition to the active power, the output of the reactive power, apparent power and the power factor $\cos \Phi$ can be activated.

Current measurement

The current value can be output per channel in milliamperes or amperes. Current exceedances and undercuts can be monitored. The thresholds, hysteresis and minimum duration of the exceedances/undercuts are adjustable.

Voltage measurement

The voltage is output per channel as a 4-byte object. Exceedances and undercuts of a voltage value can be monitored. The thresholds, hysteresis and minimum duration of the exceedances/undercuts are adjustable.

Energy and cost meter/Yield meter

The balancing main and intermediate meters can be activated by channel - separately for consumption and generation - and can be set extensively. To determine costs and yields, the electricity and feed-in rates can either be entered as fixed values in euros or cents or transmitted as variable values via object (day and night rates). Switching between the day and night rates can be done via object or by time.

Events

Up to two events can be activated in each meter. An event is triggered as soon as a selected condition is met. The condition can be a reached value of a (main) meter, certain costs of a (main) meter, a time, or an interval. The triggered event then performs functions such as sending and/or resetting a meter reading.

Long Frame Support

The MDT Energy Meter supports "Long Frames" (longer telegrams). These contain more user data per telegram, which significantly reduces the programming time with the ETS.

2.4 Structure & Handling

The following picture shows the structure of the device:

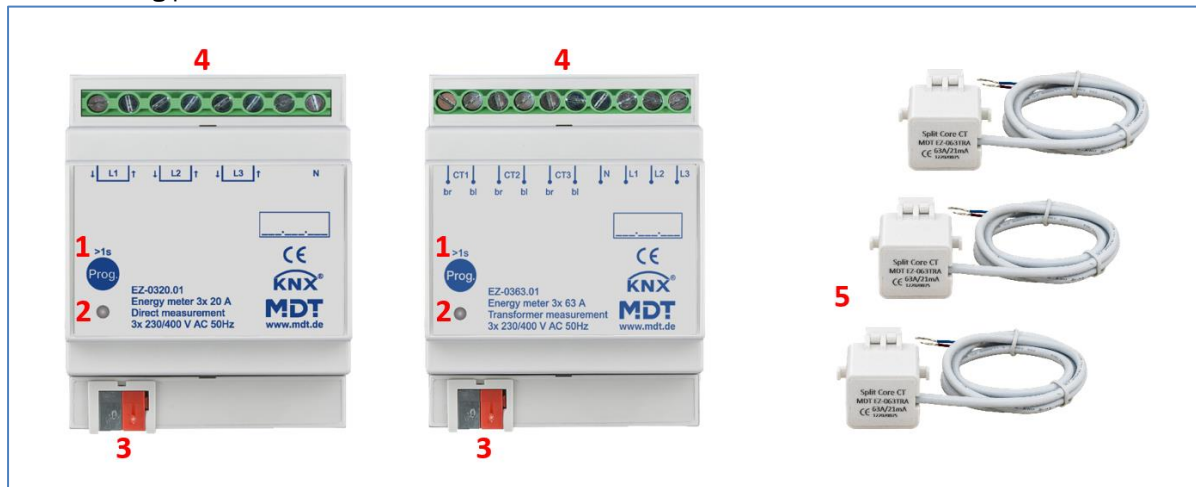


Figure 3: Structure & Handling

- | | |
|-----------------------------|--|
| 1 – Programming button | 4 – Connection terminals |
| 2 – Programming-LED | 5 – Current transformer (for EZ-0363.01) |
| 3 – Bus connection terminal | |

2.5 Commissioning

After wiring the unit, the physical address is assigned, and the application is programmed:

- (1) Connect the interface with the bus, e.g. MDT USB Interface.
- (2) Connect mains voltage.
- (3) Switch on bus voltage.
- (4) Press the programming button at the device >1s (red programming LED lights).
- (5) Loading of the physical address out of the ETS-Software by using the interface (red LED goes off as soon as this process was completed successfully).
- (6) Loading of the application, with requested parameterization.
- (7) If the device is enabled you can test the requested functions (also possible by using the ETS-Software).

3 Communication objects

3.1 Standard settings of the communication objects

Standard settings – Central objects								
No.	Name	Object function	Length	C	R	W	T	U
0	Central function	Operation	1 Bit	X	X		X	
1	Central function	Day = 1 / Night = 0	1 Bit	X		X	X	X
1	Central function	Day = 0 / Night = 1	1 Bit	X		X	X	X
2	Central function	Time	3 Byte	X		X	X	X
3	Central function	Voltage error	1 Bit	X			X	
4	Dummy							

Table 1: Communication objects – Central objects

Standard settings – Total consumption								
No.	Name	Object function	Length	C	R	W	T	U
5	Total consumption	Active power (W)	4 Byte	X	X		X	
5	Total consumption	Active power (kW)	2 Byte	X	X		X	
6	Dummy							
7	Dummy							
8	Dummy							
9	Total consumption	Load undercut	1 Bit	X	X		X	
10	Total consumption	Load exceedance 1	1 Bit	X	X		X	
11	Total consumption	Load exceedance 2	1 Bit	X	X		X	
12	Total consumption	Load exceedance 3	1 Bit	X	X		X	
13	Total consumption: Intermediate meter	Active energy (Wh)	4 Byte	X	X		X	
13	Total consumption: Intermediate meter	Active energy (kWh)	4 Byte	X	X		X	
14	Total consumption: Intermediate meter	Costs in Euro - Output	2 Byte	X	X		X	
14	Total consumption: Intermediate meter	Costs in Euro - Output	4 Byte	X	X		X	
14	Total consumption: Intermediate meter	Costs in Cent - Output	2 Byte	X	X		X	
14	Total consumption: Intermediate meter	Costs in Cent - Output	4 Byte	X	X		X	
15	Total consumption: Intermediate meter	Meter reading Day	4 Byte	X	X	X	X	

16	Total consumption: Intermediate meter	Meter reading Night	4 Byte	X	X	X	X	
17	Total consumption: Intermediate meter	Reset	1 Bit	X		X		
18	Total consumption: Main meter	Active energy (kWh)	4 Byte	X	X		X	
19	Total consumption: Main meter	Costs in Euro - Output	2 Byte	X	X		X	
19	Total consumption: Main meter	Costs in Euro - Output	4 Byte	X	X		X	
19	Total consumption: Main meter	Costs in Cent - Output	2 Byte	X	X		X	
19	Total consumption: Main meter	Costs in Cent - Output	4 Byte	X	X		X	
20	Total consumption: Main meter	Meter reading Day	4 Byte	X	X	X	X	
21	Total consumption: Main meter	Meter reading Night	4 Byte	X	X	X	X	
22	Total consumption: Main meter	Reset	1 Bit	X		X		
23	Total consumption	Event A	1 Bit	X			X	
24	Total consumption	Event B	1 Bit	X			X	
25	Consumption: Electricity price Day	Electricity rate in Euro - Input	2 Byte	X		X		
25	Consumption: Electricity price Day	Electricity rate in Euro - Input	4 Byte	X		X		
25	Consumption: Electricity price Day	Electricity rate in Cent - Input	2 Byte	X		X		
25	Consumption: Electricity price Day	Electricity rate in Cent - Input	4 Byte	X		X		
26	Consumption: Electricity price Night	Electricity rate in Euro - Input	2 Byte	X		X		
26	Consumption: Electricity price Night	Electricity rate in Euro - Input	4 Byte	X		X		
26	Consumption: Electricity price Night	Electricity rate in Cent - Input	2 Byte	X		X		
26	Consumption: Electricity price Night	Electricity rate in Cent - Input	4 Byte	X		X		
27	Consumption: Actual electricity price	Electricity rate in Euro - Output	2 Byte	X	X		X	
27	Consumption: Actual electricity price	Electricity rate in Euro - Output	4 Byte	X	X		X	
27	Consumption: Actual electricity price	Electricity rate in Cent - Output	2 Byte	X	X		X	
27	Consumption: Actual electricity price	Electricity rate in Cent - Output	4 Byte	X	X		X	

Table 2: Communication objects – Total consumption

Standard settings – Total generated								
No.	Name	Object function	Length	C	R	W	T	U
29	Total generated	Active power (W)	4 Byte	X	X		X	
29	Total generated	Active power (kW)	2 Byte	X	X		X	
30	Total generated	Load undercut	1 Bit	X	X		X	
31	Total generated	Load exceedance 1	1 Bit	X	X		X	
32	Total generated	Load exceedance 2	1 Bit	X	X		X	
33	Total generated	Load exceedance 3	1 Bit	X	X		X	
34	Total generated: Intermediate meter	Active energy (Wh)	4 Byte	X	X		X	
34	Total generated: Intermediate meter	Active energy (kWh)	4 Byte	X	X		X	
35	Total generated: Intermediate meter	Actual yield in Euro	2 Byte	X	X		X	
35	Total generated: Intermediate meter	Actual yield in Euro	4 Byte	X	X		X	
35	Total generated: Intermediate meter	Actual yield in Cent	2 Byte	X	X		X	
35	Total generated: Intermediate meter	Actual yield in Cent	4 Byte	X	X		X	
36	Total generated: Intermediate meter	Meter reading Day	4 Byte	X	X	X	X	
37	Total generated: Intermediate meter	Meter reading Night	4 Byte	X	X	X	X	
38	Total generated: Intermediate meter	Reset	1 Bit	X		X		
39	Total generated: Main meter	Active energy (kWh)	4 Byte	X	X		X	
40	Total generated: Main meter	Actual yield in Euro	2 Byte	X	X		X	
40	Total generated: Main meter	Actual yield in Euro	4 Byte	X	X		X	
40	Total generated: Main meter	Actual yield in Cent	2 Byte	X	X		X	
40	Total generated: Main meter	Actual yield in Cent	4 Byte	X	X		X	
41	Total generated: Main meter	Meter reading Day	4 Byte	X	X	X	X	
42	Total generated: Main meter	Meter reading Night	4 Byte	X	X	X	X	
43	Total generated: Main meter	Reset	1 Bit	X		X		
44	Total generated	Event A	1 Bit	X			X	
45	Total generated	Event B	1 Bit	X			X	
46	Generation: Yield Day	Power supply rate in Euro - Input	2 Byte	X		X		
46	Generation: Yield Day	Power supply rate in Euro - Input	4 Byte	X		X		
46	Generation: Yield Day	Power supply rate in Cent - Input	2 Byte	X		X		
46	Generation: Yield Day	Power supply rate in Cent - Input	4 Byte	X		X		
47	Generation: Yield Night	Power supply rate in Euro - Input	2 Byte	X		X		
47	Generation: Yield Night	Power supply rate in Euro - Input	4 Byte	X		X		
47	Generation: Yield Night	Power supply rate in Cent - Input	2 Byte	X		X		
47	Generation: Yield Night	Power supply rate in Cent - Input	4 Byte	X		X		

48	Generation: Actual yield price	Power supply rate in Euro - Output	2 Byte	X	X		X	
48	Generation: Actual yield price	Power supply rate in Euro - Output	4 Byte	X	X		X	
48	Generation: Actual yield price	Power supply rate in Cent - Output	2 Byte	X	X		X	
48	Generation: Actual yield price	Power supply rate in Cent - Output	4 Byte	X	X		X	

Table 3: Communication objects – Total generated

Standard settings – Consumption L1 ... L3								
No.	Name	Object function	Length	C	R	W	T	U
50	Consumption L1	Active power (W)	4 Byte	X	X		X	
50	Consumption L1	Active power (kW)	2 Byte	X	X		X	
51	Consumption L1	Current value (A)	4 Byte	X	X		X	
51	Consumption L1	Current value (mA)	2 Byte	X	X		X	
52	Consumption L1	Voltage value (V)	4 Byte	X	X		X	
53	Consumption L1	Reactive power (W)	4 Byte	X	X		X	
53	Consumption L1	Reactive power (kW)	2 Byte	X	X		X	
54	Consumption L1	Apparent power (W)	4 Byte	X	X		X	
54	Consumption L1	Apparent power (kW)	2 Byte	X	X		X	
55	Consumption L1	Power factor cos Phi	4 Byte	X	X		X	
56	Consumption L1	Load undercut	1 Bit	X	X		X	
57	Consumption L1	Load exceedance	1 Bit	X	X		X	
58	Consumption L1	Current undercut	1 Bit	X	X		X	
59	Consumption L1	Current exceedance	1 Bit	X	X		X	
60	Consumption L1	Voltage undercut	1 Bit	X	X		X	
61	Consumption L1	Voltage exceedance	1 Bit	X	X		X	
62	Consumption L1: Intermediate meter	Active energy (Wh)	4 Byte	X	X		X	
62	Consumption L1: Intermediate meter	Active energy (kWh)	4 Byte	X	X		X	
63	Consumption L1: Intermediate meter	Costs in Euro - Output	2 Byte	X	X		X	
63	Consumption L1: Intermediate meter	Costs in Euro - Output	4 Byte	X	X		X	
63	Consumption L1: Intermediate meter	Costs in Cent - Output	2 Byte	X	X		X	
63	Consumption L1: Intermediate meter	Costs in Cent - Output	4 Byte	X	X		X	
64	Consumption L1: Intermediate meter	Meter reading Day	4 Byte	X	X	X	X	
65	Consumption L1: Intermediate meter	Meter reading Night	4 Byte	X	X	X	X	
66	Consumption L1: Intermediate meter	Reset	1 Bit	X		X		
67	Consumption L1: Main meter	Active energy (kWh)	4 Byte	X	X		X	
68	Consumption L1: Main meter	Costs in Euro - Output	2 Byte	X	X		X	
68	Consumption L1: Main meter	Costs in Euro - Output	4 Byte	X	X		X	
68	Consumption L1: Main meter	Costs in Cent - Output	2 Byte	X	X		X	
68	Consumption L1: Main meter	Costs in Cent - Output	4 Byte	X	X		X	
69	Consumption L1: Main meter	Meter reading Day	4 Byte	X	X	X	X	

70	Consumption L1: Main meter	Meter reading Night	4 Byte	X	X	X	X	
71	Consumption L1: Main meter	Reset	1 Bit	X		X		
72	Consumption L1: Meter	Event A	1 Bit	X			X	
73	Consumption L1: Meter	Event B	1 Bit	X			X	
74	Dummy							
75	Dummy							
+25	next L							

Table 4: Communication objects – Consumption L1 ... L3

Standard settings – Generation L1 ... L3								
No.	Name	Object function	Length	C	R	W	T	U
125	Generation L1	Active power (W)	4 Byte	X	X		X	
125	Generation L1	Active power (kW)	2 Byte	X	X		X	
126	Generation L1	Current value (A)	4 Byte	X	X		X	
126	Generation L1	Current value (mA)	2 Byte	X	X		X	
127	Dummy							
128	Dummy							
129	Dummy							
130	Dummy							
131	Generation L1	Load undercut	1 Bit	X	X		X	
132	Generation L1	Load exceedance	1 Bit	X	X		X	
133	Generation L1	Current undercut	1 Bit	X	X		X	
134	Generation L1	Current exceedance	1 Bit	X	X		X	
135	Dummy							
136	Dummy							
137	Generation L1: Intermediate meter	Active energy (Wh)	4 Byte	X	X		X	
137	Generation L1: Intermediate meter	Active energy (kWh)	4 Byte	X	X		X	
138	Generation L1: Intermediate meter	Actual yield in Euro	2 Byte	X	X		X	
138	Generation L1: Intermediate meter	Actual yield in Euro	4 Byte	X	X		X	
138	Generation L1: Intermediate meter	Actual yield in Cent	2 Byte	X	X		X	
138	Generation L1: Intermediate meter	Actual yield in Cent	4 Byte	X	X		X	
139	Generation L1: Intermediate meter	Meter reading Day	4 Byte	X	X	X	X	
140	Generation L1: Intermediate meter	Meter reading Night	4 Byte	X	X	X	X	
141	Generation L1: Intermediate meter	Reset	1 Bit	X		X		
142	Generation L1: Main meter	Active energy (kWh)	4 Byte	X	X		X	
143	Generation L1: Main meter	Actual yield in Euro	2 Byte	X	X		X	
143	Generation L1: Main meter	Actual yield in Euro	4 Byte	X	X		X	
143	Generation L1: Main meter	Actual yield in Cent	2 Byte	X	X		X	
143	Generation L1: Main meter	Actual yield in Cent	4 Byte	X	X		X	
144	Generation L1: Main meter	Meter reading Day	4 Byte	X	X	X	X	
145	Generation L1: Main meter	Meter reading Night	4 Byte	X	X	X	X	

146	Generation L1: Main meter	Reset	1 Bit	X		X		
147	Generation L1: Meter	Event A	1 Bit	X			X	
148	Generation L1: Meter	Event B	1 Bit	X			X	
149	Dummy							
150	Dummy							
+25	next L							

Table 5: Communication objects – Generation L1 ... L3

The table above shows the preset default settings. The priority of the individual communications objects and the flags can be adjusted by the user as required. The flags assign the communication objects their respective tasks in programming, where C stands for communication, R for read, W for write, T for transmit and U for update.

4 Reference ETS-Parameter

4.1 General settings

The following picture shows the menu for the general settings (here for EZ-0363.01):

Startup time	5	s
Send "Operation" cyclically	10 min	
Value for Day/Night	<input checked="" type="radio"/> Day = 1 / Night = 0 <input type="radio"/> Day = 0 / Night = 1	
Behaviour after bus power return:		
Day/Night object	<input type="radio"/> no request <input checked="" type="radio"/> request	
Time object	<input type="radio"/> no request <input checked="" type="radio"/> request	
<hr/>		
Current direction L1	<input checked="" type="radio"/> normal <input type="radio"/> inverted	
Current direction L2	<input checked="" type="radio"/> normal <input type="radio"/> inverted	
Current direction L3	<input checked="" type="radio"/> normal <input type="radio"/> inverted	
<hr/>		
Meter "Consumption": Change "Day" <-> "Night" controlled by	<input checked="" type="radio"/> "Day/Night" object <input type="radio"/> time	
Meter "Generation": Change "Day" <-> "Night" controlled by	<input checked="" type="radio"/> "Day/Night" object <input type="radio"/> time	
<hr/>		
Meter "Consumption": Behaviour after programming	no reset	
Meter "Generation": Behaviour after programming	no reset	
Cost meter	<input type="radio"/> not active <input checked="" type="radio"/> active	
Cost meter "Consumption"		
Calculate costs via	a fixed value (Day)	
Electricity rate "Day"	0.22	€/kWh
DPT for object "Actual electricity price"	4 Byte floating value [Cent]	
DPT for costs at intermediate and main meter	4 Byte floating value [Cent]	
Cost meter "Generation"		
Calculate yield via	a variable value (Day)	
DPT for objects "Yield Day" and "Actual yield price"	4 Byte floating value [Cent]	
DPT for costs at intermediate and main meter	4 Byte floating value [Cent]	

Figure 4: General settings

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Startup time	2 ... 240 s [5 s]	Sets the time between restart and functional start-up of the device.
Send „Operation“ cyclically	not active, 1 min – 24 h [10 min]	Activation of a cyclic "in operation" telegram.
Value for Day/Night	<ul style="list-style-type: none"> ▪ Day = 1 / Night = 0 ▪ Day = 0 / Night = 1 	Sets the polarity for the "Day/Night" object.
Behaviour after bus power return: Day/Night object Time object	<ul style="list-style-type: none"> ▪ no request ▪ request 	Setting whether the objects for "Time" and "Day/Night" are automatically requested after bus voltage recovery.
Connection terminal – channel L1/L2/L3	<ul style="list-style-type: none"> ▪ normal ▪ inverted 	Setting whether the current direction input is to be reversed. Only for EZ-0320.01
Current direction L1/L2/L3	<ul style="list-style-type: none"> ▪ normal ▪ inverted 	Setting whether the current direction input is to be reversed. Only for EZ-0363.01
Meter “Consumption”: Meter „Generation”: Change „Day“ <-> „Night“ controlled by	<ul style="list-style-type: none"> ▪ „Day/Night“ object ▪ time 	Selection of how the switchover between "Day" and "Night" is to be carried out.
Time in hours switching from „Day“ to „Night“	0 ... 23 h [0]	Setting of the respective switching time in hours and minutes when to switch between "Day" and "Night". Only when "time" is selected
Time in minutes switching from „Day“ to „Night“	0 ... 59 min [0]	
Time in hours switching from “Night“ to „Day“	0 ... 23 h [0]	
Time in minutes switching from “Night“ to „Day“	0 ... 59 min [0]	
Meter “Consumption”: Meter „Generation”: Behaviour after programming	<ul style="list-style-type: none"> ▪ no reset ▪ reset intermediate meter ▪ reset main and intermediate meter 	Selection of whether the meters are to be reset after reprogramming the unit.
Cost meter	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activation of the cost meters for "Consumption" and "Generation".
Cost meter „Consumption“ (visible if parameter "Cost meter" has been activated)		
Calculate costs via	<ul style="list-style-type: none"> ▪ a fixed value (Day) ▪ two fixed values (Day /Night) ▪ a variable value (Day) ▪ two variable values (Day /Night) 	Setting of how the costs for consumption are to be calculated.
Electricity rate „Day“	0,000 ... 10,000 €/kWh [0,22]	Setting the tariff for „Day”. Only for "fixed" values.
Electricity rate „Night“	0,000 ... 10,000 €/kWh [0,18]	Setting the tariff for „Night”. Only for "two fixed" values.

DPT for object „Actual electricity price“	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for "fixed" values.
DPT for object „Electricity price Day“ and „ Actual electricity price “	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for „one variable value“.
DPT for object „Electricity price Day/Night“ and „ Actual electricity price “	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for „two variable values“.
DPT for costs at intermediate and main meter	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type.
Cost meter „Generation“ (visible if parameter "Cost meter" has been activated)		
Calculate yield via	<ul style="list-style-type: none"> ▪ a fixed value (Day) ▪ two fixed values (Day /Night) ▪ a variable value (Day) ▪ two variable values (Day /Night) 	Setting of how the yield for the generation is to be calculated.
Power supply rate „Day“	0,000 ... 10,000 €/KWh [0,22]	Setting the tariff for „Day“. Only for "fixed" values.
Power supply rate „Night“	0,000 ... 10,000 €/KWh [0,18]	Setting the tariff for „Night“. Only for "two fixed" values.
DPT for object „Actual yield price“	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for "fixed" values.
DPT for object „Yield Day“ and „Actual yield price“	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for „one variable value“.
DPT for object „Yield Day/Night“ and „Actual yield price“	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type. Only for „two variable values“.
DPT for costs at intermediate and main meter	<ul style="list-style-type: none"> ▪ 4Byte Floating [Cent] ▪ 2Byte Floating [Cent] ▪ 4Byte Floating [Euro] ▪ 2Byte Floating [Euro] 	Specifying the datapoint type.

Table 6: General settings

Startup time

This time defines when the unit "boots up" after a restart (reset, reprogramming, bus voltage recovery). This can be important if, for example, a bus reset is carried out. If there are many units on a line, all units would start at the same time and load the bus. With a variable time, the units can thus start differently.

„Operation“

"In operation" is used to show on the bus that the unit is "alive". If activated, an ON telegram is sent cyclically.

Day/Night switchover

By activating the "Day/Night" object, the polarity for Day/Night can be defined in the following. Regardless of this polarity, the unit always starts in "Day"-mode after reprogramming. Furthermore, it can be defined whether the object is to be actively queried after a bus voltage recovery.

Behaviour after bus power return

It can be set whether the objects for Day/Night and/or Time are to be actively queried after bus voltage recovery.

Connection terminal channel L1 / L2 / L3 (only for EZ-0320.01)

If the lines have been incorrectly mounted at the terminals, the current direction can be reversed with this parameter.

Current direction L1 / L2 / L3 (only for EZ-0363.01)

Depending on the mounting of the current transformer on the line, the current direction can be reversed with this parameter.

Meter „Consumption“/“Generation“

Here you can set whether the changeover from "Day" to "Night" operation or from "Night" to "Day" operation should take place at a fixed time (in hours and minutes) or whether the changeover is only controlled via the "Day/Night" object.

On the other hand, it can be defined whether the meters are to be reset after programming or whether the meter readings remain with the previous status.

Cost meter „Consumption“

When calculating costs via fixed values, the corresponding tariff for "Day" respectively "Day" and "Night" is set in the ETS. When calculating via variable values, the tariffs are entered via objects. The currently valid electricity price is output via object 27 - "Consumption: current electricity price". The datapoint type for input and output can be defined via parameters.

Cost meter “Generation“

When calculating the yield via fixed values, the corresponding tariff for "Day" respectively "Day" and "Night" is set in the ETS. When calculating via variable values, the tariffs are entered via objects. The currently valid yield price is output via object 48 - "Generation: current yield price". The datapoint type for input and output can be defined via parameters.

Important:

The **central object 3 - "Voltage error"** is permanently displayed. It only sends an alarm if the voltage measurement is "active" in at least one menu "Consumption L1", "Consumption L2" or "Consumption L3"!

The table shows the general communications objects:

Number	Name/Object function	Length	Usage
0	Central function – Operation	1 Bit	Sending a cyclic "In operation" telegram
1	Central function – Day = 1 / Night = 0, Day = 0 / Night = 1	1 Bit	Input of the value, whether "Day" or "Night"
2	Central function – Time	3 Byte	Receiving the time
3	Central function – Voltage error	1 Bit	Sending an alarm
25	Consumption: Electricity price Day – Electricity rate in Cent/Euro - Input		Receive the current electricity price. DPT depending on parameter selection
26	Consumption: Electricity price Night – Electricity rate in Cent/Euro - Input		Receive the current electricity price. DPT depending on parameter selection
27	Consumption: Actual electricity price – Electricity rate in Cent/Euro - Output		Sending the current electricity price. DPT depending on parameter selection
46	Generation: Yield Day – Power supply rate in Cent/Euro - Input		Receive the current yield price for Day. DPT depending on parameter selection
47	Generation: Yield Night – Power supply rate in Cent/Euro - Input		Receive the current yield price for Night. DPT depending on parameter selection
48	Generation: Actual yield price – Power supply rate in Cent/Euro - Output		Sending the current yield price. DPT depending on parameter selection

Table 7: Communication objects – General settings

4.2 Total consumption

4.2.1 Power measurement

The following settings are available for this menu:

Active power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of load exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for switching threshold 1	100 ▼ W
Hysteresis	10 ▼ %
Value when exceeded	value "1" ▼
Value on withdrawal of exceedance	value "0" ▼
Minimum time of exceedance	0 ▼ s
Send cyclically every ...	not active ▼
Switching threshold 2	<input checked="" type="radio"/> not active <input type="radio"/> active
Switching threshold 3	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Monitoring of load undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for switching threshold	10 ▼ W
Hysteresis	10 ▼ %
Value when undercut	value "1" ▼
Value on withdrawal of undercut	value "0" ▼
Minimum time of undercutting	0 ▼ s
Send cyclically every ...	not active ▼

Figure 5: Settings – Total consumption: Power measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Active power	<ul style="list-style-type: none"> not active active 	Activation of the menu for active power.
Object selection	<ul style="list-style-type: none"> 4 Byte floating value in W (DPT 14.056) 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the active power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of load exceedance	<ul style="list-style-type: none"> not active active 	Activation of the function.
Note: When the function is activated, the parameters for switching threshold 1 are automatically displayed. Switching threshold 2 and 3 must be activated separately.		
Value for switching threshold 1	10 ... 15000 W [100 W]	Setting range for threshold 1. For EZ-0320.01
Value for switching threshold 1	10 ... 43000 W [100 W]	Setting range for threshold 1. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshoot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Switching threshold 2	<ul style="list-style-type: none"> not active active 	Activation of switching threshold 2.
Switching threshold 3	<ul style="list-style-type: none"> not active active 	Activation of switching threshold 3.
Note: When switching thresholds 2 and 3 are activated, the same parameters are displayed as for switching threshold 1. Only the default values differ: Value for switching threshold 2 [500 W]; value for switching threshold 3 [800 W].		
Monitoring of load undercut	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for switching threshold	10 ... 15000 W [10 W]	Setting range for the threshold. For EZ-0320.01
Value for switching threshold	10 ... 43000 W [10 W]	Setting range for the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.

Value when undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 8: Settings – Total consumption: Power measurement

The active power measurement enables the output of the real active power by simultaneous measurement of current and voltage. The output value is therefore no longer a "theoretical" power at nominal voltage, but the actual power.

Monitoring of load exceedance

3 switching thresholds can be defined at which certain actions are carried out after the condition is fulfilled. Switching threshold 1 is always active after activation of the monitoring. Switching threshold 2 and/or switching threshold 3 can be activated individually.

The "**Value for switching threshold**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 W as follows:

Switch-on point = 100 W; reset when the load falls below 90 W (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a load exceedance value of 100 W means that a value above 100 W must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the power must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a load exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "value on withdrawal of exceedance"!

Monitoring of load undercut

The "**Value for switching threshold**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a load undercut value of 100 W as follows:

Switch-on point = 100 W; reset when 110 W is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long an undercut must be measured before the action is triggered. For example, a minimum time of 10 s for a load undercut value of 100 W means that a value below 100 W must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the power must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercut**" triggers a defined action, which is executed when a load undercut has been exceeded again.

Important: After reset/reprogramming, the value for undercut must be undercut again in order to send the "Value on withdrawal of undercut"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
5	Total consumption – Active power	2 Byte 4 Byte	Output of the measured active power. DPT according to "Object selection".
9	Total consumption – Load undercut	1 Bit	Reporting a load undercut
10	Total consumption – Load exceedance 1	1 Bit	Reporting a load exceedance for switching threshold 1
11	Total consumption – Load exceedance 2	1 Bit	Reporting a load exceedance for switching threshold 2
12	Total consumption – Load exceedance 3	1 Bit	Reporting a load exceedance for switching threshold 3

Table 9: Communication objects – Total consumption: Power measurement

4.2.2 Energy and cost meter

Important:

To use the cost meter, the parameter "Cost meter" in "General settings" must be activated!

The following settings are available:

Meter: Consumption	<input type="radio"/> not active <input checked="" type="radio"/> active
Main meter	
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	1 kWh
Send meter reading cyclically every ...	30 min
Cost meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send actual costs every ...	10 €
Send cyclically every ...	not active
Intermediate meter	
Object selection	<input checked="" type="radio"/> Value in Wh (DPT 13.010) <input type="radio"/> Value in kWh (DPT 13.013)
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	10 Wh
Send meter reading cyclically every ...	30 min
Cost meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send actual costs every ...	10 €
Send cyclically every ...	not active
Activate Event A with	not active
Activate Event B with	not active

Figure 6: Settings – Total consumption: Energy and cost meter

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Meter: Consumption	<ul style="list-style-type: none"> not active active 	Activation of the meter. If "not active", no parameters appear in the following!
Main meter (is automatically active after activating "Meter: Consumption")		
Send meter reading by change	<ul style="list-style-type: none"> not active active 	Setting whether the meter reading should be sent when changed.
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting for which change the meter reading is to be sent.
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Intermediate meter		
Intermediate meter	<ul style="list-style-type: none"> not active active 	Activation of the intermediate meter.
Object selection	<ul style="list-style-type: none"> Value in Wh (DPT 13.010) Value in kWh (DPT 13.013) 	Selection of the datapoint type for the intermediate meter.
Send meter reading by change	<ul style="list-style-type: none"> not active active 	Setting whether the meter reading is to be sent when changed.
Send meter reading every ...	10 – 50000 Wh [10 Wh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.010“
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.013“
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Cost meter (Settings are the same for main and intermediate meter)		
Cost meter	<ul style="list-style-type: none"> not active active 	Activation of the cost meter. Only visible if "Cost meter" is active in "General settings"!
Send by change	<ul style="list-style-type: none"> not active active 	Setting whether the cost reading should be sent when it is changed.
Send actual costs every ...	1 ... 255 € [10 €]	Setting for which change the cost reading is to be sent.
Send cyclically every ...	not active, 1 min – 24 h	Setting whether and at what interval the cost reading is to be sent cyclically.
Event A / Event B		
Activate Event A/B with	<ul style="list-style-type: none"> not active final value: intermediate meter final value: main meter final value: costs intermediate meter final value: costs main meter time interval 	Determination of the action with which an event is to be activated.

Final value	1 ... 4294967295 kWh/Wh [200]	Value from which the event is to be activated. Visible when "Final value ..." is selected. DPT for main meter is "kWh". DPT for intermediate meter depends on the "Object selection" parameter.
Final value	1 ... 4294967295 € [200]	Value from which the event is to be activated. Visible when selecting "Final value: Costs ...".
Hours	0 ... 23 [0]	Set - the time at which the event is to be activated. - the interval at which the event is to be activated. If "time" or "interval" is selected
Minutes	0 ... 59 [0]	
Day	<ul style="list-style-type: none"> ▪ every day ▪ Monday ▪ Tuesday ▪ Wednesday ▪ Thursday ▪ Friday ▪ Saturday ▪ Sunday ▪ every working day ▪ every weekend day 	Setting on which day(s) the event is to be activated. Visible when "Time" is selected.
Object „Event A“ / “Event B” sends	<ul style="list-style-type: none"> ▪ OFF ▪ ON 	Value to be sent when the condition for activating the event is fulfilled.
All values of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	Settings for which additional actions are to be carried out when the condition for activating the event is fulfilled. The number of possible actions depends on the selection "Activate event X with".
Costs of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset intermediate meter	<ul style="list-style-type: none"> • not active ▪ active 	
All values of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Costs of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset main meter	<ul style="list-style-type: none"> • not active ▪ active 	

Table 10: Settings – Total consumption: Energy and cost meter

Main meter / Intermediate meter

The main meter always works with the datapoint type 13.013 (kWh). For the intermediate meter, the datapoint type can be set with the "**Object selection**" (Wh or kWh).

The setting "**Send meter reading by change**" can be used to set at which change the meter sends its actual meter reading. If the setting is "not active", the meter does not send a value, no matter how big the change is.

The setting "**Send meter reading cyclically every ...**" can be used to set the intervals at which the device sends its actual measured value. The cyclical sending function can be activated or deactivated independently of the setting "Send meter reading by change". Values are also sent if the meter has not recorded a change. If both parameters are deactivated, no value is ever sent.

Cost meter

The settings for sending the cost reading correspond to the settings as for the main and intermediate meter.

Event A / Event B

Two different events can be triggered if certain conditions are met. This is done via 1-bit objects.

- **final value: intermediate/main meter**
Event is activated with a fixed value.
- **final value: costs intermediate/main meter**
Event is activated when a certain cost level is reached.
- **time**
Event is executed recurrently at a certain time. In addition to hours and minutes, it is also possible to set whether the event is to be activated on certain days.
- **interval**
Event is activated recurrently at a defined interval (in hours and minutes).
Important: The starting point and subsequent cyclical transmission repetition is always after reprogramming or when the bus voltage returns.

In addition to sending the object (Event A or Event B), other actions can be performed. These can be activated individually as required.

The associated communication objects are (Name is "Total consumption" in each case):

Number	Name/Object function	Length	Usage
13	Intermediate meter – Active energy	4 Byte	Sending the meter reading. DPT depending on parameter setting
14	Intermediate meter – Costs in Cent - Output	4 Byte	Sending the actual costs
15	Intermediate meter – Meter reading Day	4 Byte	Sending the meter reading
16	Intermediate meter – Meter reading Night	4 Byte	Sending the meter reading
17	Intermediate meter – Reset	1 Bit	Resetting the intermediate meter
18	Main meter – Active energy	4 Byte	Sending the meter reading.
19	Main meter – Costs in Cent - Output	4 Byte	Sending the actual costs
20	Main meter – Meter reading Day	4 Byte	Sending the meter reading
21	Main meter – Meter reading Night	4 Byte	Sending the meter reading
22	Main meter – Reset	1 Bit	Resetting the main meter
23	Event A	1 Bit	Sending the value of Event A
24	Event B	1 Bit	Sending the value of Event B

Table 11: Communication objects – Total consumption: Energy and cost meter

4.3 Total generated

4.3.1 Power measurement

The following settings are available:

Active power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of load exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for switching threshold 1	100 ▼ W
Hysteresis	10 ▼ %
Value when exceeded	value "1" ▼
Value on withdrawal of exceedance	value "0" ▼
Minimum time of exceedance	0 ▼ s
Send cyclically every ...	not active ▼
<hr/>	
Switching threshold 2	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Switching threshold 3	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Monitoring of load undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for switching threshold	10 ▼ W
Hysteresis	10 ▼ %
Value when undercut	value "1" ▼
Value on withdrawal of undercut	value "0" ▼
Minimum time of undercutting	0 ▼ s
Send cyclically every ...	not active ▼

Figure 7: Settings – Total generated: Power measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Active power	<ul style="list-style-type: none"> not active active 	Activation of the menu for active power.
Object selection	<ul style="list-style-type: none"> 4 Byte floating value in W (DPT 14.056) 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the active power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of load exceedance	<ul style="list-style-type: none"> not active active 	Activation of the function.
Note: When the function is activated, the parameters for switching threshold 1 are automatically displayed. Switching threshold 2 and 3 must be activated separately.		
Value for switching threshold 1	10 ... 15000 W [100 W]	Setting range for threshold 1. For EZ-0320.01
Value for switching threshold 1	10 ... 43000 W [100 W]	Setting range for threshold 1. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshoot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Switching threshold 2	<ul style="list-style-type: none"> not active active 	Activation of switching threshold 2.
Switching threshold 3	<ul style="list-style-type: none"> not active active 	Activation of switching threshold 3.
Note: When switching thresholds 2 and 3 are activated, the same parameters are displayed as for switching threshold 1. Only the default values differ: Value for switching threshold 2 [500 W]; value for switching threshold 3 [800 W].		
Monitoring of load undercut	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for switching threshold	10 ... 15000 W [10 W]	Setting range for the threshold. For EZ-0320.01
Value for switching threshold	10 ... 43000 W [10 W]	Setting range for the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.

Value when undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 12: Settings – Total generated: Power measurement

The active power measurement enables the output of the real active power by simultaneous measurement of current and voltage. The output value is therefore no longer a "theoretical" power at nominal voltage, but the actual power.

Monitoring of load exceedance

3 switching thresholds can be defined at which certain actions are carried out after the condition is fulfilled. Switching threshold 1 is always active after activation of the monitoring. Switching threshold 2 and/or switching threshold 3 can be activated individually.

The "**Value for switching threshold**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 W as follows:

Switch-on point = 100 W; reset when the load falls below 90 W (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a load exceedance value of 100 W means that a value above 100 W must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So, if an exceedance is measured, the power must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a load exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "value on withdrawal of exceedance"!

Monitoring of load undercut

The "**Value for switching threshold**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a load undercut value of 100 W as follows:

Switch-on point = 100 W; reset when 110 W is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long an undercut must be measured before the action is triggered. For example, a minimum time of 10 s for a load undercut value of 100 W means that a value below 100 W must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So, if an undercut is measured, the power must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercut**" triggers a defined action, which is executed when a load undercut has been exceeded again.

Important: After reset/reprogramming, the value for undercut must be undercut again in order to send the "Value on withdrawal of undercut"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
29	Total generated – Active power	2 Byte 4 Byte	Output of the measured active power. DPT according to "Object selection".
30	Total generated – Load undercut	1 Bit	Reporting a load undercut
31	Total generated – Load exceedance 1	1 Bit	Reporting a load exceedance for switching threshold 1
32	Total generated – Load exceedance 2	1 Bit	Reporting a load exceedance for switching threshold 2
33	Total generated – Load exceedance 3	1 Bit	Reporting a load exceedance for switching threshold 3

Table 13: Communication objects – Total generated: Power measurement

4.3.2 Energy and yield meter

Important:

To use the yield meter, the parameter "Cost meter" in "General settings" must be activated!

The following settings are available:

Meter "Generation"	<input type="radio"/> not active <input checked="" type="radio"/> active
Main meter	
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	1 kWh
Send meter reading cyclically every ...	30 min
Yield meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send yield every ...	10 €
Send cyclically every ...	not active
Intermediate meter	
	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> Value in Wh (DPT 13.010) <input type="radio"/> Value in kWh (DPT 13.013)
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	10 Wh
Send meter reading cyclically every ...	30 min
Yield meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send yield every ...	10 €
Send cyclically every ...	not active
Activate Event A with	not active
Activate Event B with	not active

Figure 8: Settings – Total generated: Energy and yield meter

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Meter "Generation"	<ul style="list-style-type: none"> not active active 	Activation of the meter. If "not active", no parameters appear in the following!
Main meter (is automatically active after activating "Meter: Consumption")		
Send meter reading by change	<ul style="list-style-type: none"> not active active 	Setting whether the meter reading should be sent when changed.
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting for which change the meter reading is to be sent.
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Intermediate meter		
Intermediate meter	<ul style="list-style-type: none"> not active active 	Activation of the intermediate meter.
Object selection	<ul style="list-style-type: none"> Value in Wh (DPT 13.010) Value in kWh (DPT 13.013) 	Selection of the datapoint type for the intermediate meter.
Send meter reading by change	<ul style="list-style-type: none"> not active active 	Setting whether the meter reading is to be sent when changed.
Send meter reading every ...	10 – 50000 Wh [10 Wh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.010“
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.013“
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Yield meter (Settings are the same for main and intermediate meter)		
Yield meter	<ul style="list-style-type: none"> not active active 	Activation of the yield meter. Only visible if "Cost meter" is active in "General settings"!
Send by change	<ul style="list-style-type: none"> not active active 	Setting whether the yield should be sent when it is changed.
Send yield every ...	1 ... 255 € [10 €]	Setting at which change the yield is to be sent.
Send cyclically every ...	not active , 1 min – 24 h	Setting whether and at what interval the yield is to be sent cyclically.
Event A / Event B		
Activate Event A/B with	<ul style="list-style-type: none"> not active final value: intermediate meter final value: main meter final value: costs intermediate meter final value: costs main meter time interval 	Determination of the action with which an event is to be activated.

Final value	1 ... 4294967295 kWh/Wh [200]	Value from which the event is to be activated. Visible when "Final value ..." is selected. DPT for main meter is "kWh". DPT for intermediate meter depends on the "Object selection" parameter.
Final value	1 ... 4294967295 € [200]	Value from which the event is to be activated. Visible when selecting "Final value: Costs ...".
Hours	0 ... 23 [0]	Set - the time at which the event is to be activated. - the interval at which the event is to be activated. If "time" or "interval" is selected
Minutes	0 ... 59 [0]	
Day	<ul style="list-style-type: none"> ▪ every day ▪ Monday ▪ Tuesday ▪ Wednesday ▪ Thursday ▪ Friday ▪ Saturday ▪ Sunday ▪ every working day ▪ every weekend day 	Setting on which day(s) the event is to be activated. Visible when "Time" is selected.
Object „Event A“ / “Event B” sends	<ul style="list-style-type: none"> ▪ OFF ▪ ON 	Value to be sent when the condition for activating the event is fulfilled.
All values of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	Settings for which additional actions are to be carried out when the condition for activating the event is fulfilled. The number of possible actions depends on the selection "Activate event X with".
Costs of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of intermediate meter	<ul style="list-style-type: none"> • not active ▪ active 	
All values of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Costs of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of main meter	<ul style="list-style-type: none"> • not active ▪ active 	

Table 14: Settings – Total generated: Energy and yield meter

Main meter / Intermediate meter

The main meter always works with the datapoint type 13.013 (kWh). For the intermediate meter, the datapoint type can be set with the "**Object selection**" (Wh or kWh).

The setting "**Send meter reading by change**" can be used to set at which change the meter sends its actual meter reading. If the setting is "not active", the meter does not send a value, no matter how big the change is.

The setting "**Send meter reading cyclically every ...**" can be used to set the intervals at which the device sends its actual measured value. The cyclical sending function can be activated or deactivated independently of the setting "Send meter reading by change". Values are also sent if the meter has not recorded a change. If both parameters are deactivated, no value is ever sent.

Yield meter

The settings for sending the yield correspond to the settings as for the main and intermediate meter.

Event A / Event B

Two different events can be triggered if certain conditions are met. This is done via 1-bit objects.

- **final value: intermediate/main meter**
Event is activated with a fixed value.
- **final value: costs intermediate/main meter**
Event is activated when a certain cost level is reached.
- **time**
Event is executed recurrently at a certain time. In addition to hours and minutes, it is also possible to set whether the event is to be activated on certain days.
- **interval**
Event is activated recurrently at a defined interval (in hours and minutes).
Important: The starting point and subsequent cyclical transmission repetition is always after reprogramming or when the bus voltage returns.

In addition to sending the object (Event A or Event B), other actions can be performed. These can be activated individually as required.

The associated communication objects are (Name is "Total generated" in each case):

Number	Name/Object function	Length	Usage
34	Intermediate meter – Active energy	4 Byte	Sending the meter reading. DPT depending on parameter setting
35	Intermediate meter – Actual yield in Cent - Output	4 Byte	Sending the actual yield
36	Intermediate meter – Meter reading Day	4 Byte	Sending the meter reading
37	Intermediate meter – Meter reading Night	4 Byte	Sending the meter reading
38	Intermediate meter – Reset	1 Bit	Resetting the intermediate meter
39	Main meter – Active energy	4 Byte	Sending the meter reading.
40	Main meter – Actual yield in Cent - Output	4 Byte	Sending the actual yield
41	Main meter – Meter reading Day	4 Byte	Sending the meter reading
42	Main meter – Meter reading Night	4 Byte	Sending the meter reading
43	Main meter – Reset	1 Bit	Resetting the main meter
44	Event A	1 Bit	Sending the value of Event A
45	Event B	1 Bit	Sending the value of Event B

Table 15: Communication objects – Total generated: Energy and yield meter

4.4 Consumption L1 ... L3

The chapter is described using the example of "Consumption L1". "Consumption L2" and "Consumption L3" behave accordingly.

4.4.1 Power measurement

The following settings are available for this menu:

Active power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of load exceedance	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Monitoring of load undercut	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Reactive power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Apparent power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Power factor cos Phi	<input type="radio"/> not active <input checked="" type="radio"/> active
Send value by change	10% ▼
Send cyclically every ...	10 min ▼

Figure 9: Settings – Consumption L1 ... L3: Power measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Active power	<ul style="list-style-type: none"> not active active 	Activation of the menu for active power.
Object selection	<ul style="list-style-type: none"> 4 Byte floating value in W (DPT 14.056) 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the active power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of load exceedance		
Monitoring of load exceedance	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for load exceedance	0 ... 4600 W [100 W]	Setting range for the threshold. For EZ-0320.01
Value for load exceedance	0 ... 15000 W [100 W]	Setting range for the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Monitoring of load undercut		
Monitoring of load undercut	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for load undercut	1 ... 4600 W [5 W]	Setting range for the threshold. For EZ-0320.01 and EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Reactive power / Apparent power / Power factor cos Phi		
Reactive power	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Object selection	<ul style="list-style-type: none"> • 4 Byte floating value in W (DPT 14.056) • 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the reactive power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Apparent power	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Object selection	<ul style="list-style-type: none"> • 4 Byte floating value in W (DPT 14.056) • 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the apparent power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Power factor cos Phi	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.

Table 16: Settings – Consumption L1 ... L3: Power measurement

Active power

The "**Object selection**" determines whether the values are to be output in "W" or "KW". With "**Send value by change**" it can be set at which change (in %) the corresponding value is to be sent on the bus. "**Send cyclically**" determines the constant intervals at which the current value is to be sent.

Monitoring of load exceedance

The "**Value for load exceedance**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 W as follows:

Switch-on point = 100 W; reset when the load falls below 90 W (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a load exceedance value of 100 W means that a value above 100 W must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the power must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a load exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

Monitoring of load undercut

The "**Value for load undercut**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a load undercut value of 100 W as follows:

Switch-on point = 100 W; reset when 110 W is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long an undercut must be measured before the action is triggered. For example, a minimum time of 10 s for a load undercut value of 100 W means that a value below 100 W must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the power must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercut**" triggers a defined action, which is executed when a load undercut has been exceeded again.

Important: After reset/reprogramming, the value for undercut must be undercut again in order to send the "Value on withdrawal of undercut"!

Reactive power / Apparent power / Power factor cos Phi

In addition to the active power, the calculated values of the reactive power, the apparent power and the power factor cos Phi can also be output. For the reactive and apparent power, the "**Object selection**" can be used to determine whether the values are to be output in "W" or "KW". With "**Send value by change**" it can be set at which change (in %) the corresponding value is to be sent on the bus. "**Send cyclically**" defines the constant intervals at which an actual value is to be sent.

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
50	Consumption L1 – Active power	2 Byte 4 Byte	Output of the measured active power. DPT according to "Object selection"
53	Consumption L1 – Reactive power	2 Byte 4 Byte	Output of the measured reactive power. DPT according to "Object selection"
54	Consumption L1 – Apparent power	2 Byte 4 Byte	Output of the measured apparent power. DPT according to "Object selection"
55	Consumption L1 – Power factor cos Phi	4 Byte	Output of the measured power factor
56	Consumption L1 – Load undercut	1 Bit	Reporting a load undercut
57	Consumption L1 – Load exceedance	1 Bit	Reporting a load exceedance

Table 17: Communication objects – Consumption L1 ... L3: Power measurement

4.4.2 Current measurement

The following settings are available for this menu:

Current measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	Value in mA (DPT 7.012) ▼
Send value by change	not active ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of current exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for current exceedance	300 ▲▼ mA
Hysteresis	10 ▲▼ %
Value when exceeded	value "1" ▼
Value on withdrawal of exceedance	value "0" ▼
Minimum time of exceedance	0 ▲▼ s
Send cyclically every ...	not active ▼
<hr/>	
Monitoring of current undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for current undercut	100 ▲▼ mA
Hysteresis	10 ▲▼ %
Value when undercut	value "1" ▼
Value on withdrawal of undercut	value "0" ▼
Minimum time of undercutting	0 ▲▼ s
Send cyclically every ...	not active ▼

Figure 10: Settings – Consumption L1 ... L3: Current measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Current measurement	<ul style="list-style-type: none"> not active active 	Activation of the menu for the current measurement.
Object selection	<ul style="list-style-type: none"> Value in mA (DPT 7.012) Floating value in mA (DPT 9.021) Floating value in A (DPT 14.019) 	Setting the datapoint type for the current measurement.

Send value by change	not active 5 – 75 %	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of current exceedance		
Monitoring of current exceedance	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Value for current exceedance	3 ... 20000 mA [300 mA]	Setting range of the threshold. For EZ-0320.01
Value for current exceedance	3 ... 63000 mA [300 mA]	Setting range of the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshoot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Monitoring of current undercut		
Monitoring of current undercut	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Value for current undercut	3 ... 20000 mA [100 mA]	Setting range of the threshold. For EZ-0320.01
Value for current undercut	3 ... 63000 mA [100 mA]	Setting range of the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 18: Settings – Consumption L1 ... L3: Current measurement

Current measurement

The "**Object selection**" determines whether the values are to be output in "A" or "mA". With "**Send value by change**" it can be set at which change (in %) the corresponding value is to be sent on the bus. "**Send cyclically**" determines the constant intervals at which the current value is to be sent.

Monitoring of current exceedance

The "**Value for current exceedance**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 mA as follows:

Switch-on point = 100 mA; reset when the load falls below 90 mA (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a current exceedance value of 100 mA means that a value above 100 mA must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the current must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a current exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

Monitoring of current undercut

The "**Value for current undercut**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a current undercut value of 100 mA as follows:

Switch-on point = 100 mA; reset when 110 mA is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long undercutting must be measured before the action is triggered. For example, a minimum time of 10 s for a current undercut value of 100 mA means that a value below 100 mA must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the current must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercutting**" triggers a defined action, which is carried out when a current undercut has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
51	Consumption L1 – Current value (mA), Current value (A)	2 Byte 4 Byte	Output of the measured current value. DPT according to "Object selection"
58	Consumption L1 – Current undercut	1 Bit	Reporting a current undercut
59	Consumption L1 – Current exceedance	1 Bit	Reporting a current exceedance

Table 19: Communication objects – Consumption L1 ... L3: Current measurement

4.4.3 Voltage measurement

The following settings are available for this menu:

Voltage measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Send value by change	not active
Send cyclically every ...	10 min
<hr/>	
Monitoring of voltage exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for voltage exceedance	260 <input type="range"/> V
Hysteresis	10 <input type="text"/> %
Value when exceeded	value "1"
Value on withdrawal of exceedance	value "0"
Minimum time of exceedance	0 <input type="text"/> s
Send cyclically every ...	not active
<hr/>	
Monitoring of voltage undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for voltage undercut	200 <input type="range"/> V
Hysteresis	10 <input type="text"/> %
Value when undercut	value "1"
Value on withdrawal of undercut	value "0"
Minimum time of undercutting	0 <input type="text"/> s
Send cyclically every ...	not active

Figure 11: Settings – Consumption L1 ... L3: Voltage measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Voltage measurement	<ul style="list-style-type: none"> not active active 	Activation of the menu for voltage measurement
Send value by change	not active 5 – 75 %	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of voltage exceedance		
Monitoring of voltage exceedance	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for voltage exceedance	180 ... 300 V [260 V]	Setting range for threshold. For EZ-0320.01 and EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshoot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Monitoring of voltage undercut		
Monitoring of voltage undercut	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for voltage undercut	180 ... 300 V [200 V]	Setting range for threshold. For EZ-0320.01 and EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 20: Settings – Consumption L1 ... L3: Voltage measurement

Voltage measurement

Use "**Send value by change**" to set the change (in %) at which the corresponding value is to be sent to the bus. "**Send cyclically every**" defines the constant intervals at which the current value is to be sent.

Monitoring of voltage exceedance

The "**Value for voltage exceedance**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 200 V as follows:

Switch-on point = 200 V; reset when the load falls below 180 V (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a voltage exceedance value of 200 V means that a value above 200 V must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the power must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a voltage exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

Monitoring of voltage undercut

The "**Value for voltage undercut**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a voltage undercut value of 200 V as follows:

Switch-on point = 200 V; reset when 220 V is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long undercutting must be measured before the action is triggered. For example, a minimum time of 10 s for a voltage undercut value of 200 V means that a value below 200 V must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the voltage must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercut**" triggers a defined action, which is executed when a voltage undercut has been exceeded again.

Important: After reset/reprogramming, the value for undercut must be undercut again in order to send the "Value on withdrawal of undercut"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
52	Consumption L1 – Voltage value (V)	4 Byte	Output of the measured voltage value
60	Consumption L1 – Voltage undercut	1 Bit	Reporting a voltage undercut
61	Consumption L1 – Voltage exceedance	1 Bit	Reporting a voltage exceedance

Table 21: Communication objects – Consumption L1 ... L3: Voltage measurement

4.4.4 Energy and cost meter

Important:

To use the cost meter, the parameter "Cost meter" in "General settings" must be activated!

The following settings are available:

Main and intermediate meter	<input type="radio"/> not active <input checked="" type="radio"/> active
Main meter	
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	1 kWh
Send meter reading cyclically every ...	30 min
Cost meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send actual costs every ...	100 €
Send cyclically every ...	not active
Intermediate meter	
Object selection	<input checked="" type="radio"/> Value in Wh (DPT 13.010) <input type="radio"/> Value in kWh (DPT 13.013)
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	10 Wh
Send meter reading cyclically every ...	not active
Cost meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send actual costs every ...	10 €
Send cyclically every ...	not active
Activate Event A with	not active
Activate Event B with	not active

Figure 12: Settings – Consumption L1 ... L3: Energy and cost meter

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Main and intermediate meter	<ul style="list-style-type: none"> • not active • active 	Activation of the meters. If "not active", no parameters appear in the following!
Main meter (is automatically active after activating "Main and intermediate meter")		
Send meter reading by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the meter reading should be sent when changed.
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting for which change the meter reading is to be sent.
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Intermediate meter		
Intermediate meter	<ul style="list-style-type: none"> • not active • active 	Activation of the intermediate meter.
Object selection	<ul style="list-style-type: none"> • Value in Wh (DPT 13.010) • Value in kWh (DPT 13.013) 	Selection of the datapoint type for the intermediate meter.
Send meter reading by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the meter reading is to be sent when changed.
Send meter reading every ...	10 – 50000 Wh [10 Wh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.010“
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.013“
Send meter reading cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the meter reading is to be sent cyclically.
Cost meter (Settings are the same for main and intermediate meter)		
Cost meter	<ul style="list-style-type: none"> • not active • active 	Activation of the cost meter. Only visible if "Cost meter" is active in "General settings"!
Send by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the cost reading should be sent when it is changed.
Send actual costs every ...	1 ... 255 € [10 €]	Setting for which change the cost reading is to be sent.
Send cyclically every ...	not active , 1 min – 24 h	Setting whether and at what interval the cost reading is to be sent cyclically.
Event A / Event B		
Activate Event A/B with	<ul style="list-style-type: none"> • not active • final value: intermediate meter • final value: main meter • final value: costs intermediate meter • final value: costs main meter • time • interval 	Determination of the action with which an event is to be activated.

Final value	1 ... 4294967295 kWh/Wh [200]	Value from which the event is to be activated. Visible when "Final value ..." is selected. DPT for main meter is "kWh". DPT for intermediate meter depends on the "Object selection" parameter.
Final value	1 ... 4294967295 € [200]	Value from which the event is to be activated. Visible when selecting "Final value: Costs ...".
Hours	0 ... 23 [0]	Set - the time at which the event is to be activated. - the interval at which the event is to be activated. If "time" or "interval" is selected
Minutes	0 ... 59 [0]	
Day	<ul style="list-style-type: none"> ▪ every day ▪ Monday ▪ Tuesday ▪ Wednesday ▪ Thursday ▪ Friday ▪ Saturday ▪ Sunday ▪ every working day ▪ every weekend day 	Setting on which day(s) the event is to be activated. Visible when "Time" is selected.
Object „Event A“ / “Event B” sends	<ul style="list-style-type: none"> ▪ OFF ▪ ON 	Value to be sent when the condition for activating the event is fulfilled.
All values of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	Settings for which additional actions are to be carried out when the condition for activating the event is fulfilled. The number of possible actions depends on the selection "Activate event X with".
Costs of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of intermediate meter	<ul style="list-style-type: none"> • not active ▪ active 	
All values of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Costs of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of main meter	<ul style="list-style-type: none"> • not active ▪ active 	

Table 22: Settings – Consumption L1 ... L3: Energy and cost meter

Main meter / Intermediate meter

The main meter always works with the datapoint type 13.013 (kWh). For the intermediate meter, the datapoint type can be set with the "**Object selection**" (Wh or kWh).

The setting "**Send meter reading by change**" can be used to set at which change the meter sends its actual meter reading. If the setting is "not active", the meter does not send a value, no matter how big the change is.

The setting "**Send meter reading cyclically every ...**" can be used to set the intervals at which the meter sends its actual measured value. The cyclical sending function can be activated or deactivated independently of the setting "Send meter reading by change". Values are also sent if the meter has not recorded a change. If both parameters are deactivated, no value is ever sent.

Cost meter

The settings for sending the cost reading correspond to the settings as for the main and intermediate meter.

Event A / Event B

Two different events can be triggered if certain conditions are met. This is done via 1-bit objects.

- **final value: intermediate/main meter**
Event is activated with a fixed value.
- **final value: costs intermediate/main meter**
Event is activated when a certain cost level is reached.
- **time**
Event is executed recurrently at a certain time. In addition to hours and minutes, it is also possible to set whether the event is to be activated on certain days.
- **interval**
Event is activated recurrently at a defined interval (in hours and minutes).
Important: The starting point and subsequent cyclical transmission repetition is always after reprogramming or when the bus voltage returns.

In addition to sending the object (Event A or Event B), other actions can be performed. These can be activated individually as required.

The associated communication objects are (Name in each case is "Consumption L1"):

Number	Name/Object function	Length	Usage
62	Intermediate meter – Active energy	4 Byte	Sending the meter reading. DPT depending on parameter setting
63	Intermediate meter – Costs in Cent - Output	4 Byte	Sending the actual costs
64	Intermediate meter – Meter reading Day	4 Byte	Sending the meter reading
65	Intermediate meter – Meter reading Night	4 Byte	Sending the meter reading
66	Intermediate meter – Reset	1 Bit	Resetting the intermediate meter
67	Main meter – Active energy	4 Byte	Sending the meter reading.
68	Main meter – Costs in Cent - Output	4 Byte	Sending the actual costs
69	Main meter – Meter reading Day	4 Byte	Sending the meter reading
70	Main meter – Meter reading Night	4 Byte	Sending the meter reading
71	Main meter – Reset	1 Bit	Resetting the main meter
72	Meter – Event A	1 Bit	Sending the value of Event A
73	Meter – Event B	1 Bit	Sending the value of Event B
+ 25	next channel		

Table 23: Communication objects – Consumption L1 ... L3: Energy and cost meter

4.5 Generation L1 ... L3

The chapter is described using the example of "Generation L1".
"Generation L2" and "Generation L3" behave accordingly.

4.5.1 Power measurement

The following settings are available:

Active power	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	<input checked="" type="radio"/> 4 Byte floating value in W (DPT 14.056) <input type="radio"/> 2 Byte floating value in kW (DPT 9.024)
Send value by change	10% ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of load exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for load exceedance	100 ▲▼ W
Hysteresis	10 ▲▼ %
Value when exceeded	value "1" ▼
Value on withdrawal of exceedance	value "0" ▼
Minimum time of exceedance	0 ▲▼ s
Send cyclically every ...	not active ▼
<hr/>	
Monitoring of load undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for load undercut	5 ▲▼ W
Hysteresis	10 ▲▼ %
Value when undercut	value "1" ▼
Value on withdrawal of undercut	value "0" ▼
Minimum time of undercutting	0 ▲▼ s
Send cyclically every ...	not active ▼

Figure 13: Settings – Generation L1 ... L3: Power measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Active power	<ul style="list-style-type: none"> not active active 	Activation of the menu for active power.
Object selection	<ul style="list-style-type: none"> 4 Byte floating value in W (DPT 14.056) 2 Byte floating value in kW (DPT 9.024) 	Setting of the datapoint type for the active power.
Send value by change	not active, 5 – 75 % [10 %]	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of load exceedance		
Monitoring of load exceedance	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for load exceedance	0 ... 4600 W [100 W]	Setting range for the threshold. For EZ-0320.01
Value for load exceedance	0 ... 15000 W [100 W]	Setting range for the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value (exceedance) must be passed.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Monitoring of load undercut		
Monitoring of load undercut	<ul style="list-style-type: none"> not active active 	Activation of the function.
Value for load undercut	1 ... 4600 W [5 W]	Setting range for the threshold. For EZ-0320.01 and EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> not active value „1“ value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 24: Settings – Generation L1 ... L3: Power measurement

Active power

The "**Object selection**" determines whether the values are to be output in "W" or "KW". With "**Send value by change**" it can be set at which change (in %) the corresponding value is to be sent on the bus. "**Send cyclically**" determines the constant intervals at which the current value is to be sent.

Monitoring of load exceedance

The "**Value for load exceedance**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 W as follows:

Switch-on point = 100 W; reset when the load falls below 90 W (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a load exceedance value of 100 W means that a value above 100 W must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the power must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a load exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

Monitoring of load undercut

The "**Value for load undercut**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a load undercut value of 100 W as follows:

Switch-on point = 100 W; reset when 110 W is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long an undercut must be measured before the action is triggered. For example, a minimum time of 10 s for a load undercut value of 100 W means that a value below 100 W must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the power must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercut**" triggers a defined action, which is executed when a load undercut has been exceeded again.

Important: After reset/reprogramming, the value for undercut must be undercut again in order to send the "Value on withdrawal of undercut"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
125	Generation L1 – Active power	2 Byte 4 Byte	Output of the measured active power. DPT according to "Object selection"
131	Generation L1 – Load undercut	1 Bit	Reporting a load undercut
132	Generation L1 – Load exceedance	1 Bit	Reporting a load exceedance

Table 25: Communication objects – Generation L1 ... L3: Power measurement

4.5.2 Current measurement

The following settings are available for this menu:

Current measurement	<input type="radio"/> not active <input checked="" type="radio"/> active
Object selection	Value in mA (DPT 7.012) ▼
Send value by change	not active ▼
Send cyclically every ...	10 min ▼
<hr/>	
Monitoring of current exceedance	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for current exceedance	300 ▲▼ mA
Hysteresis	10 ▲▼ %
Value when exceeded	value "1" ▼
Value on withdrawal of exceedance	value "0" ▼
Minimum time of exceedance	0 ▲▼ s
Send cyclically every ...	not active ▼
<hr/>	
Monitoring of current undercut	<input type="radio"/> not active <input checked="" type="radio"/> active
Value for current undercut	100 ▲▼ mA
Hysteresis	10 ▲▼ %
Value when undercut	value "1" ▼
Value on withdrawal of undercut	value "0" ▼
Minimum time of undercutting	0 ▲▼ s
Send cyclically every ...	not active ▼

Figure 14: Settings – Generation L1 ... L3: Current measurement

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Current measurement	<ul style="list-style-type: none"> not active active 	Activation of the menu for the current measurement.
Object selection	<ul style="list-style-type: none"> Value in mA (DPT 7.012) Floating value in mA (DPT 9.021) Floating value in A (DPT 14.019) 	Setting the datapoint type for the current measurement.

Send value by change	not active 5 – 75 %	Setting whether and at which change the value is sent.
Send cyclically every ...	not active, 1 min – 24 h [10 min]	Setting whether and at what interval the value is to be sent cyclically.
Monitoring of current exceedance		
Monitoring of current exceedance	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Value for current exceedance	3 ... 20000 mA [300 mA]	Setting range of the threshold. For EZ-0320.01
Value for current exceedance	3 ... 63000 mA [300 mA]	Setting range of the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when exceeded	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent when the switching threshold is exceeded.
Value on withdrawal of exceedance	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value that is to be sent if the value falls below the exceedance in the following.
Minimum time of exceedance	0 ... 30000 s [0 s]	Setting of the minimum time by which the value for exceedance must be overshoot.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.
Monitoring of current undercut		
Monitoring of current undercut	<ul style="list-style-type: none"> • not active • active 	Activation of the function.
Value for current undercut	3 ... 20000 mA [100 mA]	Setting range of the threshold. For EZ-0320.01
Value for current undercut	3 ... 63000 mA [100 mA]	Setting range of the threshold. For EZ-0363.01
Hysteresis	10 ... 100 % [10 %]	Setting range for the hysteresis.
Value when undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent when the switching threshold is undercut.
Value on withdrawal of undercut	<ul style="list-style-type: none"> • not active • value „1“ • value „0“ 	Value to be sent if the undercut is subsequently exceeded.
Minimum time of undercutting	0 ... 30000 s [0 s]	Setting of the time by which the value must at least fall below the value for undercut.
Send cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the actual values are to be sent cyclically.

Table 26: Settings – Generation L1 ... L3: Current measurement

Current measurement

The "**Object selection**" determines whether the values are to be output in "A" or "mA". With "**Send value by change**" it can be set at which change (in %) the corresponding value is to be sent on the bus. "**Send cyclically**" determines the constant intervals at which the current value is to be sent.

Monitoring of current exceedance

The "**Value for current exceedance**" describes the value above which the selected action "**Value when exceeded**" is to be carried out.

With the "**Hysteresis**", the switch-off threshold can be shifted. This threshold is calculated with a hysteresis of 10% for a load exceedance value of 100 mA as follows:

Switch-on point = 100 mA; reset when the load falls below 90 mA (switch-on value minus hysteresis).

The "**Minimum time of exceedance**" indicates how long an exceedance must be measured before the action is triggered. For example, a minimum time of 10 s for a current exceedance value of 100 mA means that a value above 100 mA must be measured for 10 s before the exceedance action is triggered. The minimum time for exceedance works together with the hysteresis. So if an exceedance is measured, the current must fall below the set value minus hysteresis to stop the dwell time.

The "**Value on withdrawal of exceedance**" triggers a defined action, which is carried out when a current exceedance has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

Monitoring of current undercut

The "**Value for current undercut**" describes the value below which the selected action "**Value when undercut**" is to be carried out.

The "**Hysteresis**" can be used to shift the switch-off threshold. This threshold is calculated with a hysteresis of 10% for a current undercut value of 100 mA as follows:

Switch-on point = 100 mA; reset when 110 mA is exceeded (switch-on value plus hysteresis).

The "**Minimum time of undercutting**" indicates how long undercutting must be measured before the action is triggered. For example, a minimum time of 10 s for a current undercut value of 100 mA means that a value below 100 mA must be measured for 10 s before the undercut action is triggered. The minimum time for undercut works together with the hysteresis. So if an undercut is measured, the current must rise above the set value plus hysteresis to stop the dwell time.

The "**Value on withdrawal of undercutting**" triggers a defined action, which is carried out when a current undercut has fallen below again.

Important: After reset/reprogramming, the value for the switching threshold must be exceeded again in order to send the "Value on withdrawal of exceedance"!

The following table shows the available communication objects:

Number	Name/Object function	Length	Usage
126	Generation L1 – Current value (mA), Current value (A)	2 Byte 4 Byte	Output of the measured current value. DPT according to "Object selection"
133	Generation L1 – Current undercut	1 Bit	Reporting a current undercut
134	Generation L1 – Current exceedance	1 Bit	Reporting a current exceedance

Table 27: Communication objects – Generation L1 ... L3: Current measurement

4.5.3 Energy and yield meter

Important:

To use the yield meter, the parameter "Cost meter" in "General settings" must be activated!

The following settings are available:

Main and intermediate meter	<input type="radio"/> not active <input checked="" type="radio"/> active
Main meter	
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	1 kWh
Send meter reading cyclically every ...	30 min
Yield meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send yield every ...	100 €
Send cyclically every ...	not active
Intermediate meter	
Object selection	<input checked="" type="radio"/> Value in Wh (DPT 13.010) <input type="radio"/> Value in kWh (DPT 13.013)
Send meter reading by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send meter reading every ...	10 Wh
Send meter reading cyclically every ...	30 min
Yield meter	
Send by change	<input type="radio"/> not active <input checked="" type="radio"/> active
Send yield every ...	10 €
Send cyclically every ...	not active
Activate Event A with	not active
Activate Event B with	not active

Figure 15: Settings – Generation L1 ... L3: Energy and yield meter

The table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Main and intermediate meter	<ul style="list-style-type: none"> • not active • active 	Activation of the meters. If "not active", no parameters appear in the following!
Main meter (is automatically active after activating "Main and intermediate meter")		
Send meter reading by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the meter reading should be sent when changed.
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting for which change the meter reading is to be sent.
Send meter reading cyclically every ...	not active, 1 min – 24 h [30 min]	Setting whether and at what interval the meter reading is to be sent cyclically.
Intermediate meter		
Intermediate meter	<ul style="list-style-type: none"> • not active • active 	Activation of the intermediate meter.
Object selection	<ul style="list-style-type: none"> • Value in Wh (DPT 13.010) • Value in kWh (DPT 13.013) 	Selection of the datapoint type for the intermediate meter.
Send meter reading by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the meter reading is to be sent when changed.
Send meter reading every ...	10 – 50000 Wh [10 Wh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.010“
Send meter reading every ...	1 – 500 kWh [1 kWh]	Setting at which change the meter reading is to be sent. With object selection „DPT 13.013“
Send meter reading cyclically every ...	not active 1 min – 24 h	Setting whether and at what interval the meter reading is to be sent cyclically.
Yield meter (Settings are the same for main and intermediate meter)		
Yield meter	<ul style="list-style-type: none"> • not active • active 	Activation of the yield meter. Only visible if "Cost meter" is active in "General settings"!
Send by change	<ul style="list-style-type: none"> • not active • active 	Setting whether the yield should be sent when it is changed.
Send yield every ...	1 ... 255 € [10 €]	Setting for which change the yield is to be sent.
Send cyclically every ...	not active , 1 min – 24 h	Setting whether and at what interval the yield is to be sent cyclically.
Event A / Event B		
Activate Event A/B with	<ul style="list-style-type: none"> • not active • final value: intermediate meter • final value: main meter • final value: costs intermediate meter • final value: costs main meter • time • interval 	Determination of the action with which an event is to be activated.

Final value	1 ... 4294967295 kWh/Wh [200]	Value from which the event is to be activated. Visible when "Final value ..." is selected. DPT for main meter is "kWh". DPT for intermediate meter depends on the "Object selection" parameter.
Final value	1 ... 4294967295 € [200]	Value from which the event is to be activated. Visible when selecting "Final value: Costs ...".
Hours	0 ... 23 [0]	Set - the time at which the event is to be activated. - the interval at which the event is to be activated. If "time" or "interval" is selected
Minutes	0 ... 59 [0]	
Day	<ul style="list-style-type: none"> ▪ every day ▪ Monday ▪ Tuesday ▪ Wednesday ▪ Thursday ▪ Friday ▪ Saturday ▪ Sunday ▪ every working day ▪ every weekend day 	Setting on which day(s) the event is to be activated. Visible when "Time" is selected.
Object „Event A“ / “Event B” sends	<ul style="list-style-type: none"> ▪ OFF ▪ ON 	Value to be sent when the condition for activating the event is fulfilled.
All values of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	Settings for which additional actions are to be carried out when the condition for activating the event is fulfilled. The number of possible actions depends on the selection "Activate event X with".
Costs of intermediate meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of intermediate meter	<ul style="list-style-type: none"> • not active ▪ active 	
All values of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Costs of main meter	<ul style="list-style-type: none"> ▪ do not send ▪ send 	
Reset of main meter	<ul style="list-style-type: none"> • not active ▪ active 	

Table 28: Settings – Generation L1 ... L3: Energy and yield meter

Main meter / Intermediate meter

The main meter always works with the datapoint type 13.013 (kWh). For the intermediate meter, the datapoint type can be set with the "**Object selection**" (Wh or kWh).

The setting "**Send meter reading by change**" can be used to set at which change the meter sends its actual meter reading. If the setting is "not active", the meter does not send a value, no matter how big the change is.

The setting "**Send meter reading cyclically every ...**" can be used to set the intervals at which the meter sends its actual measured value. The cyclical sending function can be activated or deactivated independently of the setting "Send meter reading by change". Values are also sent if the meter has not recorded a change. If both parameters are deactivated, no value is ever sent.

Yield meter

The settings for sending the yield are the same as for the main and intermediate meters.

Event A / Event B

Two different events can be triggered if certain conditions are met. This is done via 1-bit objects.

- **final value: intermediate/main meter**
Event is activated with a fixed value.
- **final value: costs intermediate/main meter**
Event is activated when a certain cost level is reached.
- **time**
Event is executed recurrently at a certain time. In addition to hours and minutes, it is also possible to set whether the event is to be activated on certain days.
- **interval**
Event is activated recurrently at a defined interval (in hours and minutes).
Important: The starting point and subsequent cyclical transmission repetition is always after reprogramming or when the bus voltage returns.

In addition to sending the object (Event A or Event B), other actions can be performed. These can be activated individually as required (see table above).

The associated communication objects are (Name in each case is "Generation L1"):

Number	Name/Object function	Length	Usage
137	Intermediate meter – Active energy	4 Byte	Sending the meter reading. DPT depending on parameter setting
138	Intermediate meter – Actual yield in Cent	4 Byte	Sending the actual yield
139	Intermediate meter – Meter reading Day	4 Byte	Sending the meter reading
140	Intermediate meter – Meter reading Night	4 Byte	Sending the meter reading
141	Intermediate meter – Reset	1 Bit	Resetting the intermediate meter
142	Main meter – Active energy	4 Byte	Sending the meter reading.
143	Main meter – Actual yield in Cent	4 Byte	Sending the actual yield
144	Main meter – Meter reading Day	4 Byte	Sending the meter reading
145	Main meter – Meter reading Night	4 Byte	Sending the meter reading
146	Main meter – Reset	1 Bit	Resetting the main meter
147	Meter – Event A	1 Bit	Sending the value of Event A
148	Meter – Event B	1 Bit	Sending the value of Event B
+ 25	next channel		

Table 29: Communication objects – Generation L1 ... L3: Energy and yield meter

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6 Appendix

6.1 Statutory requirements

The devices described above must not be used in conjunction with devices which directly or indirectly serve human, health, or life-safety purposes. Furthermore, the devices described must not be used if their use may cause danger to people, animals, or property.

Do not leave the packaging material carelessly lying around. Plastic foils/ bags etc. can become a dangerous toy for children.

6.2 Disposal

Do not dispose of the old devices in the household waste. The device contains electrical components that must be disposed of as electronic waste. The housing is made of recyclable plastic.

6.3 Assembly



Danger to life from electric current!

The device may only be installed and connected by qualified electricians. Observe the country-specific regulations and the applicable KNX guidelines

The units are approved for operation in the EU and bear the CE mark. Use in the USA and Canada is not permitted!

Before starting work on the unit, always disconnect it from the power supply via the upstream fuses. After installation, all live terminals and connections must be completely closed by the control panel cover so that they cannot be touched. It must not be possible to open the control panel cover without tools!

6.4 History

V1.0 First Version of Technical Manual

DB V1.0

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