25 S16 Binary input device 980D01

Use of the application program

Product family: Input
Product type: Binary input device, 16 fold
Manufacturer: Siemens

Name: Binary input device N 262E11
(16x floating contacts)
Order no.: 5WG1 262-1EB11

Name: Binary input device N 263E11
(16x AC 12...230 V / DC 12...115 V)
Order no.: 5WG1 263-1EB11

Name: Binary input device N 264E11
(8x AC/DC 12...230 V + 8x floating contacts)
Order no.: 5WG1 264-1EB11

Functional description

The binary input devices N 262E11, N 263E11, N 264E11 are 6 module units wide DIN rail mounted devices in N-System dimensions with 16 inputs. They enable both statuses (contact is closed or open resp. voltage is applied or not) and changes in status (contact becomes closed ore opened resp. voltage is incoming or outgoing) to be recorded. They can therefore be used, for example, to monitor voltages (whether mains voltage is present), to record switching and operating states (whether a miniature circuit-breaker or a residual-current circuit-breaker has been released, a plant is switched on or off, a malfunction or an alarm is being signalled), to record a change of status (whether a switch or a pushbutton was activated, whether it was activated for a shorter or longer period, whether the contact became closed or opened or whether the voltage was switched on or off due to the activation) and to record and count pulses with a minimum closed-time of a contact resp. a minimum voltage on-time of 70 ms and a max. pulse succession of up to 5 pulses per second, without or with monitoring of the number of pulses counted until a predetermined threshold has been reached or exceeded.
At each input a red LED shows (LED = ON) whether the connected contact is closed or a voltage is applied. The devices have an integrated 230 V power supply in order to supply the electronics. This power supply enables signal statuses to be displayed on the inputs even when there is no bus voltage present.
Note:
A device is without function after the application program has been "unloaded" with the ETS. The status of the inputs is also no longer displayed in this case.

The application program, which can be downloaded with the ETS2 V1.3, supports a multitude of applications and enables one of the following functions to be assigned to every input:
- Switching status / binary value transmission
- Switching, edge-triggered
- Switching, short / long operation
- 1-button dimming
- 1-button solar protection control
- 1-button group control (sequence control)
- 1-bit Scene control
- 8-bit Scene control
- 8-bit value, edge-triggered
- 8-bit value, short / long operation
- 16-bit floating point value, edge-triggered
- 16-bit floating point value, short / long operation
- 8-bit pulse counting without threshold check
- 8-bit pulse counting with threshold check
- 16-bit pulse counting without threshold check
- 16-bit pulse counting with threshold check
- 32-bit pulse counting without threshold check
- 32-bit pulse counting with threshold check.

Using the ETS, one of the following functions can be allocated to one input pair, i.e. to two neighbouring inputs:
- 2-button dimming with stop telegram
- 2-button solar protection control.

Channel pre-adjustment

With the binary input devices the desired function can be assigned to two channels (inputs) per parameter window at a time. Whereas most of the functions occupy only one input and therefore another function can be assigned to each input where necessary, the 2-button functions "dimming with stop telegram" and "solar protection control" occupy two inputs each. A pre-setting should therefore first be made per input pair, via the "Channel pre-adjustment A – h" parameter window, as to whether a function is to be assignable to the inputs separately or jointly.

Blocking / releasing of inputs

An input may be blocked via an object if required and subsequently released again. If an input is blocked (blocking object = 1), then neither are signal changes transmitted at this input, nor is the signal status sent cyclically, as the case may be. This function can be used, for example, to stop switching and dimming or solar protection operation via a defined button or pair of buttons for a time.
Using the "Blocking objects channel A-H" and "Blocking objects channel a – h" parameter windows, a blocking object can be supplemented at each channel (input) or channel pair (input pair), except at inputs to which the "pulse counting" function has been assigned.

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Cyclical sending

As far as possible, only status or value modifications should be transmitted, since cyclical sending, especially with a short cycle time, leads to heavy telegram interchange that may delay the sending of events. If cyclical sending is required, then this should be effected with an as long as possible cycle time.

An additional cyclical sending can only then be configured if the "Send switching status, Binary value" function has been assigned to an input. In this connection, an adjustment can be made as to whether and when the input value is to be sent cyclically: only when there is an ON signal present, only when an OFF signal is present, or always. The cycle time applying jointly for all channels with the "Send switching status, Binary value" function can also be set on the "General" parameter window.

Debounce time

A fixed debounce time of 20 ms is taken into account at all inputs so that the user does not have to parametrize debounce times.

Behaviour at mains voltage failure / recovery

Since the electronics are supplied from the mains, a mains voltage failure leads to functional failure of the device. An adjustment can therefore be made at an input with the "Send switching status, binary value" function in the event of mains voltage recovery as to whether the voltage level should first be queried and sent at the input. No action is taken in the event of mains voltage recovery at inputs to which another function is assigned.

Delivery status

In the delivery status, the "Send switching status, binary value" function is assigned to all channels (inputs) with the following parameter pre-adjustment:
Reaction to rising edge: send "On",
Reaction to falling edge: send "Off".

Communication objects

Note:

Which objects are visible and linkable to group addresses is defined via the functions assigned to the inputs. The following view is an example only. These objects are therefore also not explained in the following, but only in conjunction with the explanation of the functions that can be assigned to an input.

	no	Object name	Function	Type	C	R	W	T
	01.01.001	Binary input device N 263E11	25 S16 Binary input device	980D01		Siemens		
	0	Channel A/B, Switching	On / Off / Toggle	1 Bit	✓		✓	✓
	1	Channel A/B, Dimming	Brighter / Darker	4 Bit	✓			✓
	7	Channel A/B	disable / enable	1 Bit	✓	✓	✓	✓
	8	Channel C/D, Solar protection	Up / Down	1 Bit	✓			✓
	9	Channel C/D, Slats	Stop / Open / Close	1 Bit	✓			✓
	15	Channel A/B, Switching	disable / enable	1 Bit	✓	✓	✓	✓
	16	Channel E, Switching status / Bina...	On / Off	1 Bit	✓	✓		
	20	Channel F, Switching	On / Off / Toggle	1 Bit	✓		✓	✓
	24	Channel G, Switching	On / Off / Toggle	1 Bit	✓		✓	✓
	28	Channel H, Switching	Toggle	1 Bit	✓		✓	✓
	29	Channel H, Dimming	Brighter / Darker	4 Bit	✓		✓	✓
	32	Channel a, Solar protection	Up / Down	1 Bit	✓		✓	✓
	33	Channel a, Slats	Stop / Open / Close	1 Bit	✓		✓	✓
	36	Channel b, Switching cluster 1	On / Off	1 Bit	✓			✓
	37	Channel b, Switching cluster 2	On / Off	1 Bit	✓			✓
	40	Channel c, Scene 1/2	Recall	1 Bit	✓			✓
	44	Channel d, 8-bit Scene	Recall / Store	1 Byte	✓			✓
	48	Channel e, 8-bit Value	Send value	1 Byte	✓			✓
	52	Channel f, 8-bit Value	Send value	1 Byte	✓			✓
	56	Channel g, 16-bit FP-Value	Send value	2 Byte	✓			✓
	60	Channel h, 16-bit FP-Value	Send value	2 Byte	✓			✓

Maximum number of group addresses: 97
Maximum number of assignments: 97

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Parameters

Parameter window „General"

Parameter	Settings
Long push button action min.	0.3; 0.4; **0.5**; 0.6; 0.8; 1.0; 1.2; 1.5; 2.0; 2.5; 3.0; 4.0; 5.0; 6.0; 7.0 seconds
This parameter establishes the time limit for distinguishing between short and long push button action. If a push button is held down for longer than the default time, the software will recognize this as a long push button action.	
Extra long push button action min.	1.0; 2.0; **3.0**; 4.0; 5.0; 6.0; 7.0 seconds
This parameter establishes the time limit for recognizing extra long push button action. This extra long push button action is required in order to initiate the storing of a scene. Extra long push button action is designed to avoid immediate storage of the scene assigned to the push button in the event of unintentional longer push button action than a "short push button action".	
Limitation of the number of telegrams	**disabled** enabled
The number of telegrams sent per time unit can be restricted in order to ensure, for example, that switching telegrams are not continually generated by a defective switching contact. "disabled": The number of telegrams per time unit is not restricted. "enabled": The number of sent telegrams per time unit is restricted. The parameter window changes and the "Max. number of telegrams in 17 s" parameter appears, via which the number of telegrams within 17 s can be adjusted.	
Max. number of telegrams in 17 s	30, 60, 100, **127**
Depending on the setting, a maximum of 30, 60, 100 or 127 telegrams can be sent within 17 seconds.	
Cycle time in minutes (1...255)	**255**
Here, the cycle time in minutes according to which the current input status is sent to the bus, is adjusted jointly for all channels on which cyclical transmission is enabled. Note: The cycle time should be chosen as high as possible in order to keep bus load due to the cyclical transmission as low as possible.	

Parameter window „Channel pre-adjustment A-h"

Parameter	Settings
Function of channels A + B	**separately adjustable** jointly adjustable (Dimming, Solar protection)
An adjustment is made via this parameter as to whether the two adjacent inputs (channels) are to be "separately adjustable", so that another function can be assigned to each input if necessary, or whether both inputs are to be "jointly adjustable" since the push buttons attached to them belong together functionally and are intended either for switching and dimming the lighting or for sun protection control.	

Note: Function pre-adjustment for all channels takes place as for channels A + B.

Parameter window „Blocking objects channel A-H"

Parameter	Settings
Channel A + B: Insert blocking object	**No** Yes
An adjustment is made via this parameter as to whether the channel or the two functionally corresponding channels can be blocked via an additional blocking object or not. If a channel (or two functionally corresponding channels) become blocked (blocking object=1), then status changes at this input (these inputs) are no longer transmitted. In the event that cyclical sending of the input status has been enabled this, too, will not be effected as long as the input (inputs) remain(s) blocked.	

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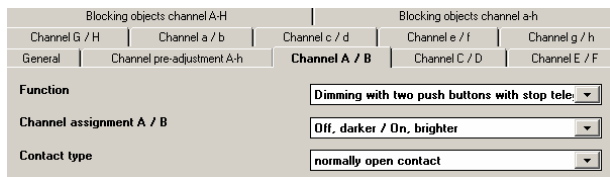Update: http://www.siemens.com/gamma

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<u>Note</u>: The insertion of blocking objects is effected at all other channels on this window and on the "Blocking objects channel a-h" parameter window as described above. Inputs to which the "Pulse counting" function has been assigned cannot have blocking objects assigned to them.

Parameter windows „Channel A / B"... „Channel g / h"

Parameter windows Channel A / B to Channel g / h are used to assign their respective function and the corresponding communication objects to the channels (inputs) as well as to adjust the corresponding parameters, where necessary. The two functions that are jointly assigned to two inputs are explained firstly in the following.

Dimming with two push buttons with stop telegram

Blocking objects channel A-H			Blocking objects channel a-h	
Channel G / H	Channel a / b	Channel c / d	Channel e / f	Channel g / h
General	Channel pre-adjustment A-h	**Channel A / B**	Channel C / D	Channel E / F

Function	Dimming with two push buttons with stop tele ▼
Channel assignment A / B	Off, darker / On, brighter ▼
Contact type	normally open contact ▼

Using the push button pair attached to the two channel inputs, the light can be switched on or off by a short push button action, while a long push button action brightens or dims. An adjustment can be made as to which push button (or channel) switches off and darkens and which one switches on and brightens.
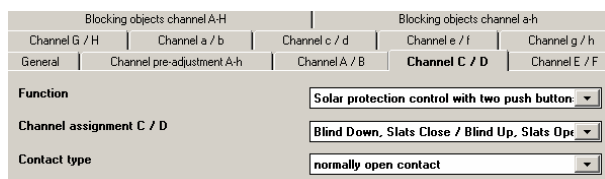
"Dimming with two push buttons with stop telegram" is used to send a "100% brighter" or "100% darker" dimming telegram as soon as a long push button action has been recognized, while releasing the push button sends a stop telegram.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x / y, Switching	On / Off / Toggle	1 Bit	CWT
ON or OFF switching telegrams are sent via the group address linked with this object. Adjustment via the "Channel assignment x / y" parameter defines which of the two channels the ON or OFF function is assigned to on short push button action, or whether the TOGGLE function is assigned to both.				
n	Channel x / y, Dimming	Brighter / Darker	4 Bit	CT
Dimming telegrams are sent via the group address linked with this object. Together with the assignment for switching on and off, adjustment via the "Channel assignment x / y" parameter defines which of the two channels generates a telegram for brighter / darker dimming on long push button action.				

Parameter	Settings
Channel assignment x / y	**Off, darker / On, brighter** On, brighter / Off, darker Toggle, darker / Toggle, brighter Toggle, brighter / Toggle, darker
Adjustment via this parameter defines which push button / channel is to be used to switch off and darken and which is to be used to switch on and brighten, or whether switching on both channels is to take place via a TOGGLE function.	
Contact type	**normally open contact** normally closed contact
The contact type of the two push buttons attached to the channel is adjusted here. "normally open contact": the contact for push buttons used is closed when activated, open when not activated. "normally closed contact": the contact for push buttons used is open when activated, closed when not activated.	

Solar protection control with two push buttons

Blocking objects channel A-H			Blocking objects channel a-h	
Channel G / H	Channel a / b	Channel c / d	Channel e / f	Channel g / h
General	Channel pre-adjustment A-h	Channel A / B	**Channel C / D**	Channel E / F

Function	Solar protection control with two push button ▼
Channel assignment C / D	Blind Down, Slats Close / Blind Up, Slats Ope ▼
Contact type	normally open contact ▼

Using one push button pair, the solar protection can be lowered or raised to the respective final position with a long push button action, while a short push button action ends the movement or adjusts the slats by one step. An adjustment can be made to define which push button (or channel) is used to lower the solar protection and close the slats by one step where necessary, and which is used to raise the solar protection and open the slats by one step where necessary.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x / y, Solar protection	Up / Down	1 Bit	CT
The movement commands Up / Down are sent via the group address linked with this object in order to raise / lower the solar protection. Adjustment via the "Channel assignment x / y" parameter defines which of the two channels generates an Up or Down telegram on long push button action.				

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Obj	Object name	Function	Type	Flags
n	Channel x / y, Slats	Stop / Open / Close	1 Bit	CT

The commands "Stop" or "Slats open / close" are sent via the group address linked with this object. A short push button action always produces a command to stop the movement or to adjust the slats by one step. Together with the assignment for lowering and raising the solar protection, adjustment via the "Channel assignment x / y" parameter defines which of the two channels generates an Open or Close telegram on short push button action.

Parameter	Settings
Channel assignment x / y	**Blind down, Slats close / Blind up, Slats open** Blind up, Slats open / Blind down, Slats close

Adjustment via this parameter defines which channel is to lower the solar protection and close the slats and which channel is to raise the solar protection and open the slats.

Parameter	Settings
Contact type	**normally open contact** normally closed contact

The contact type of the two push buttons attached to the channel is adjusted here.

"normally open contact": the contact for push buttons used is closed when activated, open when not activated.

"normally closed contact": the contact for push buttons used is open when activated, closed when not activated.

The following functions are assigned to only one input in each case and may therefore differ from input to input.

Send switching status, Binary value

This function is used, for example, to query and transmit the switching status of a signalling contact or the voltage level present at a channel input. Adjustment via this parameter defines which binary value is to be sent after a status change, whether the switching status / binary value is to be sent cyclically in addition and whether the current switching status / binary value is to be sent automatically even after bus or mains voltage recovery.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, Switching status / Binary value	On / Off	1 Bit	CRT

The switching status / binary value is sent via the group address linked with this object.

Parameter	Settings
Reaction on rising edge	**no reaction** On Off

Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after a rising edge in the signal status at the channel (input). The rising edge corresponds to a change in the signal status at the input from logical "0" to "1".

"no reaction": An edge change at the input does not change the object value and also does not lead to the sending of a telegram.

"On": In the event of a rising edge the switching value "ON" (binary value „1") is transferred into the communication object and sent.

"Off": In the event of a rising edge the switching value "OFF" (binary value „0") is transferred into the communication object and sent.

Parameter	Settings
Reaction on falling edge	**no reaction** On Off

Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after a falling edge in the signal status at the channel (input). The falling edge corresponds to a change in the signal status at the input from logical "1" to "0".

"no reaction": An edge change at the input does not change the object value and also does not lead to the sending of a telegram.

"On": In the event of a falling edge the switching value "ON" (binary value „1") is transferred into the communication object and sent.

"Off": In the event of a falling edge the switching value "OFF" (binary value „0") is transferred into the communication object and sent.

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Parameter	Settings
Send cyclically if	**disabled** On level at input Off level at input On and Off level at input
Adjustment via this parameter defines whether the communication object corresponding to the channel is not to be sent cyclically (disabled) or whether, in addition to spontaneous sending in the event of a status change, it is to be sent cyclically provided that an On level ($U_{in} \geq 9$ V = log. 1) is present at the input, provided that an Off signal ($U_{in} \leq 2$ V = log. 0) is present at the input – or whether it is always to be sent cyclically.	
Send actual binary value after mains / bus voltage recovery	**No** Yes
Here an adjustment is made to define whether the current contact or binary value status is to be sent or not following mains / bus voltage recovery.	

Switch Edge

(Illustration: see previous parameter window)

This function is used, for binary inputs to which a switch or a push button is attached, to send a switching telegram (ON, OFF or TOGGLE) as a reaction to a rising and / or falling signal edge at this input (i.e. a telegram is sent each time the push button is pressed and / or released).

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, Switching	On / Off / Toggle	1 Bit	CWT
Switching telegrams are sent via the group address linked with this object.				

Parameter	Settings
Reaction on rising edge	**no reaction** On Off Toggle
Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after a rising edge in the signal status at the channel (input). The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". "no reaction": An edge change at the input does not change the object value and also does not lead to the sending of a telegram. "On": In the event of a rising edge the switching value "ON" (binary value „1") is transferred into the communication object and sent. "Off": In the event of a rising edge the switching value "OFF" (binary value „0") is transferred into the communication object and sent. "Toggle": In the event of a rising edge, the switching value stored in the communication object is inverted and the new value is sent.	
Reaction on falling edge	**no reaction** On Off Toggle
Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after a falling edge in the signal status at the channel (input). The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "no reaction": An edge change at the input does not change the object value and also does not lead to the sending of a telegram. "On": In the event of a falling edge the switching value "ON" (binary value „1") is transferred into the communication object and sent. "Off": In the event of a falling edge the switching value "OFF" (binary value „0") is transferred into the communication object and sent. "Toggle": In the event of a rising edge, the switching value stored in the communication object is inverted and the new value is sent.	

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Switch Short / Long

This function is used, for binary inputs to which a switch or a push button is attached, to send a switching telegram (ON, OFF or TOGGLE) as a reaction to a short or long push button action.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, Switching	On / Off / Toggle	1 Bit	CWT
Switching telegrams are sent via the group address linked with this object.				

Parameter	Settings
Reaction on short pressing	**no reaction** On Off Toggle
Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after short pressing of the push button attached to the channel (input). "no reaction": A short push button action does not change the object value and also does not lead to the sending of a telegram. "On": After a short push button action, the switching value "ON" is transferred into the communication object and sent. "Off": After a short push button action, the switching value "OFF" is transferred into the communication object and sent. "Toggle": After a short push button action, the switching value stored in the communication object is inverted and the new value is sent.	

Parameter	Settings
Reaction on long pressing	**no reaction** On Off Toggle
Here an adjustment is made to define which switching value is written into the storage cell of the communication object and sent after long pressing of the push button attached to the channel (input). The "General" parameter window can be used to adjust the definition of "long" push button action. "no reaction": A long push button action does not change the object value and also does not lead to the sending of a telegram. "On": After a long push button action, the switching value "ON" is transferred into the communication object and sent. "Off": After a long push button action, the switching value "OFF" is transferred into the communication object and sent. "Toggle": After a long push button action, the switching value stored in the communication object is inverted and the new value is sent.	

Contact type	**normally open contact** normally closed contact
The contact type of the push button attached to the channel is adjusted here. "normally open contact": the contact of the push button used is closed when activated, open when not activated. "normally closed contact": the contact of the push button used is open when activated, closed when not activated.	

Dimming with one push button

(Illustration: see previous parameter window)

The channel can be used for 1-button dimming. A distinction is made between short and long push button action.
- TOGGLE switching (short push button action)
When the push button is pressed briefly the value currently stored in the switching object (TOGGLE switching) is inverted and then sent. An ON or OFF telegram is only generated when the push button is released (= falling edge).
- Dim brighter / darker (long push button action)
With the long push button action (the duration can be adjusted via the "General" parameter window), the light becomes brighter or darker depending on the object value and the last controlled dimming direction. If the dimming actuator had been switched off, then a long push button action switches it on and brightens. If the dimming actuator was switched on by a short push button action, then it is dimmed darker by the first long push button action. If the dimming actuator is at a dimming value between 0 and 100%, the dimming direction last activated is inverted and then dimmed in the new direction. A long push button action sends the command "100 % dimming" via the dimming object, while releasing the push button (= falling edge) sends the command "Stop". If a stop command is received before the 100% value is reached, the dimming process is finished and maintained at the brightness obtained.

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The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, Switching	Toggle	1 Bit	CWT
Switching telegrams are sent to the dimming actuator via the group address linked with this object. In the process, a short push button action produces an ON or OFF telegram, while the last controlled switching direction is reversed respectively.					
m	Channel x, Dimming	Brighter / Darker	4 Bit	CWT
The dimming telegrams are sent to the dimming actuator via the group address linked with this object. In the process, a long push button action produces a "100 % dimming" telegram. A stop command is sent when the push button is released. Since the last controlled dimming direction is reversed in the process, dimming in the opposite direction is effected on the next long push button action.					

Parameter	Settings
Contact type	normally open contact normally closed contact
The contact type of the push button attached to the channel is adjusted here. "normally open contact": the contact of the push button used is closed when activated, open when not activated. "normally closed contact": the contact of the push button used is open when activated, closed when not activated.	

Solar protection control with one push button

The channel can be used for 1-button solar protection control. A distinction is made between short and long push button action.

Solar protection Up / Down (long push button action)
Depending on the last movement direction stored in the "Solar protection Open / Close" object, using the long push button action (the duration can be adjusted via the "General" parameter window) this direction is inverted and the solar protection lowered or raised until the respective final position has been reached and the drive is disconnected via the limit switch.
If a stop command is received before a final position is reached and the limit switch is activated, the movement is terminated immediately, the position arrived at is maintained and the last movement direction is stored.

Stop or Slats Open / Close (short push button action)
A short push button action sends a telegram that stops the drive when the solar protection is in motion; when the solar protection is not in motion the telegram leads to a brief movement in the opposite direction to the previous one stored in the movement object. In closed Venetian blinds, for example, this would lead to the slats opening by one step. The STOP or Slats OPEN or CLOSE telegram is only generated when the push button is released (= falling edge). Each further push button action sends another "Slats Open / Close" telegram, while the direction of movement remains unchanged. The software of the solar protection actuator defines whether and how a number of successive "Slats Open / Close" telegrams are interpreted and executed.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, Solar protection	Up / Down	1 Bit	CWT
The movement commands Up / Down are sent via the group address linked with this object in order to raise / lower the solar protection. In the process, a long push button action always produces a movement command in the direction opposing the last direction of movement.					
n	Channel x, Slats	Stop / Open / Close	1 Bit	CWT
The commands "STOP" or "Slats OPEN / CLOSE" are sent via the group address linked with this object. In the process, a short push button action always produces a command to stop the movement or adjust the slats by one step in the direction opposing the last direction of movement.					

Parameter	Settings
Contact type	normally open contact normally closed contact
The contact type of the push button attached to the channel is adjusted here. "normally open contact": the contact of the push button used is closed when activated, open when not activated. "normally closed contact": the contact of the push button used is open when activated, closed when not activated.	

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Switching sequence control with one push button

(Illustration: see previous parameter window)

The "Switching sequence control with one push button" function enables, for example, the bulbs of one luminary with two or three groups of bulbs to be switched on and off successively, as a group, by pressing a single push button several times. The number of groups that can be switched is adjusted via a parameter. The switching sequence is predetermined and cannot be modified by the user. If these same groups are controlled by several push buttons with switching sequence control, then this occurs from every push button independently from the other push buttons, i.e. every push button only notes which switching command combination it last sent and sends what is, for it, the next subsequent switching order combination.

The following objects are inserted automatically if 3 switching sequence groups are chosen (for 2 switching sequence groups only the first two objects are inserted):

Obj	Object name	Function	Type	Flags
m	Switching sequence group 1	On / Off	1 Bit	CT
n	Switching sequence group 2	On / Off	1 Bit	CT
o	Switching sequence group 3	On / Off	1 Bit	CT
Switching telegrams are sent via the group addresses linked with these objects.				

Parameter	Settings
Number of switching-sequence groups	**2** 3
The number of groups that can be switched is adjusted via this parameter.	
„2": 2 groups are controlled via 2 switching command telegrams per push button activation in such a way that the following switching sequence can be seen (0= group switched off, 1= group switched on): 00-01-11-10-00	
„3": 3 groups are controlled via 3 switching command telegrams per push button activation in such a way that the following switching sequence can be seen (0= group switched off, 1= group switched on): 000-001-010-011-111-110-101-100-000	
Contact type	**normally open contact** normally closed contact
The contact type of the push button attached to the channel is adjusted here.	
"normally open contact": the contact of the push button used is closed when activated, open when not activated.	
"normally closed contact": the contact of the push button used is open when activated, closed when not activated.	

1-bit Scene control

Using the "1-bit Scene control" function it is possible for the user, without changing the project planning using the ETS, to re-program a scene component for 1-bit scene control, i.e. to assign different brightness values or switching statuses to the individual groups of the respective scene. Using one button, a short push button action recalls a scene and a long push button action stores a scene, while one communication object is used to store the scene and a second one is used to recall a stored scene. In this connection it can be configured whether a telegram with the value "0" is used to store or recall Scene 1 and a telegram with the value "1" is used to store or recall Scene 2.

Before a scene is stored the actuators concerned must be adjusted to the desired brightness values or switching statuses using the push buttons / sensors provided for the purpose. When a "Store" telegram is received, the addressed scene controllers are prompted to query the currently set values and statuses with the actuators integrated into the scene and store them in the corresponding scene.

Moreover it can be configured whether the push button is only to be used to recall a scene (storage disabled) or whether it is also possible to initiate the storage of a scene via the push button. In order not to inadvertently initiate scene storage by pressing the push button only a little "longer" than a short push button action, scene storage can only be initiated by an "extra long" push button action.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, Scene 1/2	Recall	1 Bit	CT
The telegrams to recall Scene 1 or Scene 2 are sent via the group address linked with this object. When the telegram is received, the scene controller for 1-bit scene control sends, for example, the stored switching statuses and brightness values of Scene 1 or Scene 2, respectively, via the group objects to the addressed switching / dimming actuators.				

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Obj	Object name	Function	Type	Flags
n	Channel x, Scene 1/2	Store	1 Bit	CT

The telegrams to store Scene 1 or Scene 2, respectively, are sent via the group address linked with this object to the corresponding scene controller with 1-bit scene control.

Parameter	Settings
Scene number	1 2

This parameter determines which scene is to be stored / recalled.

„1": On short push button action, Scene 1 is recalled from the addressed scene controllers via a telegram with the value "0". On long push button action, the addressed scene controllers are prompted to query the currently set values and statuses with the actuators integrated into the scene and store them under the scene with the number 1.

„2": Scene 2 is stored and recalled on this setting.

Store scene	disabled with extra long push button action

This parameter determines whether a scene can only be recalled or can also be stored.

"disabled": Pressing the button means that the scene can be recalled only.

"with extra long push button action" Storage of a scene can also be initiated via an extra long push button action. The duration required for this is adjusted on the "General" parameter window.

Contact type	normally open contact normally closed contact

The contact type of the push button attached to the channel is adjusted here.

"normally open contact": the contact of the push button used is closed when activated, open when not activated.

"normally closed contact": the contact of the push button used is open when activated, closed when not activated.

8-bit Scene control

(Illustration: see previous parameter window)

Using the 8-bit Scene control it is possible for the user himself, without changing the project planning using the ETS, to reprogram scene controllers for 8-bit scene control or actuators with integrated 8-bit scene control, i.e. to assign current values or switching statuses to the respective scene. Using one button, the scene with the configured number (1...64) can be recalled via a short push button action, while a long push button action stores the scene. At the same time, both the command to store a scene and the command to recall a stored scene, together with the number of the desired scene, are transmitted via a single communication object.

Before a scene is stored, the actuators integrated into the scene must be adjusted to the desired values or statuses using the push buttons / sensors provided for the purpose. When a telegram is received, the addressed scene controllers / actuators with integrated scene control are prompted to query the currently set values and statuses with the actuators integrated into the scene and to store them in the corresponding scene.

Moreover it can be configured whether the push button is only to be used to recall a scene (storage disabled) or whether it is also possible to initiate the storage of a scene via the push button. In order not to inadvertently initiate scene storage by pressing the push button only a little "longer" than a short push button action, scene storage can only be initiated by an "extra long" push button action.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 8-bit Scene	Recall / Store	8 Bit	CT

The telegrams to recall and store the scene with the configured number (1...64) are sent via the group address linked with this object.

Parameter	Settings
Scene number (1...64)	1

This parameter determines which scene (1...64) is to be stored or recalled.

Store scene	disabled with extra long push button action

This parameter determines whether a scene can only be recalled or can also be stored.

"disabled": Pressing the button means that the scene can be recalled only.

"with extra long push button action" Storage of a scene can also be initiated via an extra long push button action. The duration required for this is adjusted on the "General" parameter window.

Contact type	normally open contact normally closed contact

The contact type of the push button attached to the channel is adjusted here.

"normally open contact": the contact of the push button used is closed when activated, open when not activated.

"normally closed contact": the contact of the push button used is open when activated, closed when not activated.

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8-bit Value Edge

This function is used to send 8-bit integer values (EIS 6) ranging from 0...255. An adjustment can be made as to whether a value telegram is sent as a reaction to a rising and / or falling signal edge on the channel (input) (i.e. on pressing and / or releasing a button, for example). Using this function, for example, a dimming value can be assigned to a button in order to dim the corresponding lights to the configured value with one push button action; or different values can be assigned to several buttons, for example, in order to be able control the revolutions of a fan.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, 8-bit Value	Send value	8 Bit	CT
The configured 8-bit integer value (EIS 6) is sent via the group address linked with this object.				

Parameter	Settings
Value on rising edge	no sending send
Here an adjustment is made as to whether or not the configured 8–bit value is to be written into the storage cell of the communication object and sent after a rising edge in the signal status at the input. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1".	
Value on rising edge (0...255)	0
Here an adjustment is made to define which value (0...255) is written into the storage cell of the communication object and sent after a rising edge in the signal status at the input. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1".	

Parameter	Settings
Value on falling edge	no sending send
Here an adjustment is made as to whether or not the 8–bit value is to be written into the storage cell of the communication object and sent after a falling edge in the signal status at the input. The falling edge corresponds to a change in the signal status at the input from logical "1" to "0".	
Value on falling edge (0...255)	0
Here an adjustment is made to define which value (0...255) is written into the storage cell of the communication object and sent after a falling edge in the signal status at the input. The falling edge corresponds to a change in the signal status at the input from logical "1" to "0".	

8-bit Value Short / Long

(Illustration: see previous parameter window)

This function is used to send 8-bit integer values (EIS 6) ranging from 0...255. An adjustment can be made as to whether a value telegram is sent as a reaction to short and / or long push button action.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, 8-bit Value	Send value	8 Bit	CT
The configured 8-bit integer value (EIS 6) is sent via the group address linked with this object.				

Parameter	Settings
Value on short pressing	no sending send
Here an adjustment is made as to whether or not the configured 8–bit value is to be written into the storage cell of the communication object and sent after short pressing of the push button attached to the input.	
Value on short pressing (0...255)	0
Here an adjustment is made to define which value (0...255) is written into the storage cell of the communication object and sent after short pressing of the push button attached to the input.	
Value on long pressing	no sending send
Here an adjustment is made as to whether or not the configured 8–bit value is to be written into the storage cell of the communication object and sent after long pressing of the push button attached to the input.	

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Parameter	Settings
Value on long pressing (0...255)	0
Here an adjustment is made to define which value (0...255) is written into the storage cell of the communication object and sent after long pressing of the push button attached to the input.	

16-bit Floating point value Edge

The function is used to send 16-bit floating point values (FP values as EIS 5) ranging from -320.0...+320.0, with one decimal place. In the process, the exponent of the 16-bit FP value is fixed at the value "4". An adjustment can be made as to whether a value telegram is to be sent as a reaction to a rising and / or falling signal edge on the channel input (i.e. when a push button is pressed and / or released).
Using this function it is possible, for example, to switch between a day and a night setpoint for room temperature control via one switch.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, 16-bit FP-Value	Send value	16 Bit	CT
The configured 16-bit floating point value (EIS 5) is sent via the group address linked with this object.				

Parameter	Settings
Value on rising edge	no sending send
Here an adjustment is made as to whether the configured 16–bit FP value is to be written into the storage cell of the communication object and sent after a rising edge in the signal status at the input. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1".	

Parameter	Settings
Value on rising edge (1/10) (-3200...+3200)	0
Here an adjustment is made to define which FP value (-320.0...+320.0) is written into the storage cell of the communication object and sent after a rising edge in the signal status at the input. The FP value to be sent should be entered (where necessary with a plus/minus sign) as tenfold the desired FP value (i.e. including decimal place, but excluding point). The rising edge corresponds to a change in the signal status at the input from logical "0" to "1".	
Value on falling edge	no sending send
Here an adjustment is made as to whether the configured 16–bit FP value is to be written into the storage cell of the communication object and sent after a falling edge in the signal status at the input. The falling edge corresponds to a change in the signal status at the input from logical "1" to "0".	
Value on falling edge (1/10) (-3200...+3200)	0
Here an adjustment is made to define which FP value (-320.0...+320.0) is written into the storage cell of the communication object and sent after a falling edge in the signal status at the input. The FP value to be sent should be entered (where necessary with a plus/minus sign) as tenfold the desired FP value (i.e. including decimal place, but excluding point). The falling edge corresponds to a change in the signal status at the input from logical "1" to "0".	

16-bit Floating point value Short / Long

(Illustration: see previous parameter window)

The function is used to send 16-bit floating point values (FP values as EIS 5) ranging from -320.0...+320.0, with one decimal place. In the process, the exponent of the 16-bit FP value is fixed at the value "4". An adjustment can be made as to whether a value telegram is to be sent as a reaction to short and / or long push button action.

The following object is inserted automatically:

Obj	Object name	Function	Type	Flags
n	Channel x, 16-bit FP-Value	Send value	16 Bit	CT
The configured 16-bit floating point value (EIS 5) is sent via the group address linked with this object.				

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Parameter	Settings
Value on short pressing	no sending
	send
Here an adjustment is made as to whether or not the configured 16–bit FP value is to be written into the storage cell of the communication object and sent after short pressing of the push button attached to the input.	
Value on short pressing (1/10) (-3200...+3200)	0
Here an adjustment is made to define which FP value (-320.0..+320.0) is written into the storage cell of the communication object and sent after short pressing of the push button attached to the input. The FP value to be sent should be entered (where necessary with a plus/minus sign) as tenfold the desired FP value (i.e. including decimal place, but excluding point).	
Value on long pressing	no sending
	send
Here an adjustment is made as to whether or not the configured 16–bit FP value is to be written into the storage cell of the communication object and sent after long pressing of the push button attached to the input.	
Value on long pressing (1/10) (-3200...+3200)	0
Here an adjustment is made to define which FP value (-320.0..+320.0) is written into the storage cell of the communication object and sent after long pressing of the push button attached to the input. The FP value to be sent should be entered (where necessary with a plus/minus sign) as tenfold the desired FP value (i.e. including decimal place, but excluding point).	

8-bit Pulse counting without threshold check

For binary inputs, this function enables the counting and saving of pulses as 8-bit counter value. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. Adjustments can be made via parameters as to whether the counter status should be incre-

mented on rising or falling signal edge, and which value the counter must have changed by in order for the new counter value status to be sent automatically.

In the event of power supply failure to the electronics (power outage) the counter value is permanently stored in a memory protected against data loss in the event of voltage failure. The counter value is transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 8-bit Counter value	Pulse counting	1 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				

Parameter	Settings
Increment counter after	rising edge
	falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a falling edge.	
Send counter value on change by (1...255)	255
An adjustment is made via this parameter to define which value the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	

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8-bit Pulse counting with threshold check

(Illustration: see previous parameter window)

This function enables the counting and saving on binary inputs of pulses as 8-bit counter value with threshold check. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. In addition, a check can be made on whether the counter status has already reached or exceeded a threshold value. If the threshold is exceeded, a logical 1 is sent immediately via the "Channel x, Upper limit violation" communication object. The threshold can either be set as a parameter or queried and modified via a communication object by telegram. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. If the threshold is again fallen short of due to the changed threshold or a counter reset, then a logical 0 is sent immediately via the "Channel x, Upper limit violation" communication object. Adjustments can be made via parameters as to whether the counter value status should be increased on rising or falling signal edge and which value the counter must have changed by in order for the new counter value status to be sent automatically. It can also be defined whether the threshold is a value that is adjustable as a parameter, or whether it can be queried and modified via the bus.

In the event of power supply failure to the electronics (power outage) both the counter value and the threshold (if this can be changed via a communication object) are permanently stored in a memory protected against data loss in the event of voltage failure. They are transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 8-bit Counter value	Pulse counting	1 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				

Obj	Object name	Function	Type	Flags
o	Channel x, Upper limit violation	Report	1 Bit	CRT
Upper limit violation = On is sent if				
- the counter value is > threshold,				
- a modified counter value is sent and there is a threshold overrun,				
- a threshold is set that is < counter value.				
Upper limit violation = Off is sent if				
- the counter value is reset,				
- after bus or mains voltage recovery together with the first sending of a counter value, if there is then no threshold overrun,				
- a threshold is set that is > counter value.				
In the event of counter overrun with persistent threshold overrun, "Threshold overrun = ON" will continue to be sent together with the counter value which is now below threshold until the counter is either reset to "0" or a new threshold that is bigger than the current counter value is set.				
p	Channel x, 8-bit Threshold	Read / Write	1 Byte	CRWT
The current threshold can be queried or overwritten by a new threshold via the group address linked with this object.				

Parameter	Settings
Increment counter after	**rising edge** falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a falling edge.	
Send counter value on change by (1...255)	**255**
An adjustment is made via this parameter to define which value the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	

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Parameter	Settings
Threshold	**to be set by parameter** adjustable via object
Using this parameter, an adjustment is made as to whether the threshold is predetermined as a parameter or is queried and modifiable via a communication object. The data type of the threshold always corresponds to that of the counter value. "to be set by parameter": The threshold is set as a parameter. "adjustable via object": A communication object via which the threshold can be queried and modified is supplemented.	
Threshold (1...255)	**255**
The threshold is adjusted via this parameter.	

16-bit Pulse counting without threshold check

For binary inputs, this function enables the counting and saving of pulses as 16-bit counter value. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. Adjustments can be made via parameters as to whether the counter status should be incremented on rising or falling signal edge, and which value the counter must have changed by in order for the new counter value status to be sent automatically.

In the event of power supply failure to the electronics (power outage) the counter value is permanently stored in a memory protected against data loss in the event of voltage failure. The counter value is transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 16-bit Counter value	Pulse counting	2 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				

Parameter	Settings
Increment counter after	**rising edge** falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a falling edge.	
Send counter value on change by (1...255)	**255**
An adjustment is made via this parameter to define which value the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	

16-bit Pulse counting with threshold check

(Illustration: see previous parameter window)

This function enables the counting and saving on binary inputs of pulses as 16-bit counter value with threshold check. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. In addition, a check can be made on whether the counter status has already reached or exceeded a threshold value. If the threshold is exceeded, a logical 1 is sent immediately via the "Channel x, Upper limit violation" communication object. The threshold can either be set as a parameter or queried and modified via a communication object by telegram. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. If the threshold is again fallen short of due to the changed threshold or a counter reset, then a logical 0 is sent immediately via the "Channel x, Upper limit violation" communication object. Adjustments can be made via parameters as to whether the counter value status should be increased on rising or falling signal edge and which value the counter must have changed by in order for the new counter

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value status to be sent automatically. It can also be defined whether the threshold is a value that is adjustable as a parameter, or whether it can be queried and modified via the bus.

In the event of power supply failure to the electronics (power outage) both the counter value and the threshold (if this can be changed via a communication object) are permanently stored in a memory protected against data loss in the event of voltage failure. They are transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 16-bit Counter value	Pulse counting	2 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				
o	Channel x, Upper limit violation	Report	1 Bit	CRT
Upper limit violation = On is sent if - the counter value is > threshold, - a modified counter value is sent and there is a threshold overrun, - a threshold is set that is < counter value. Upper limit violation = Off is sent if - the counter value is reset, - after bus or mains voltage recovery together with the first sending of a counter value, if there is then no threshold overrun, - a threshold is set that is > counter value. In the event of counter overrun with persistent threshold overrun, "Threshold overrun = ON" will continue to be sent together with the counter value which is now below threshold until the counter is either reset to "0" or a new threshold that is bigger than the current counter value is set.				
p	Channel x, 16-bit Threshold	Read / Write	2 Byte	CRWT
The current threshold can be queried or overwritten by a new threshold via the group address linked with this object.				

Parameter	Settings
Increment counter after	**rising edge** falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a falling edge.	
Send counter value on change by (1...255)	**255**
An adjustment is made via this parameter to define which value the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	
Threshold	**to be set by parameter** adjustable via object
Using this parameter, an adjustment is made as to whether the threshold is predetermined as a parameter or is queried and modifiable via a communication object. The data type of the threshold always corresponds to that of the counter value. "to be set by parameter": The threshold is set as a parameter. "adjustable via object": A communication object via which the threshold can be queried and modified is supplemented.	
Threshold (1...65.535)	**65535**
The threshold is adjusted via this parameter.	

32-bit Pulse counting without threshold check

For binary inputs, this function enables the counting and saving of pulses as 32-bit counter value. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. Adjustments can be made via parameters as to whether the counter status should be incremented on rising or falling signal edge, and which value the

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counter must have changed by in order for the new counter value status to be sent automatically.

In the event of power supply failure to the electronics (power outage) the counter value is permanently stored in a memory protected against data loss in the event of voltage failure. The counter value is transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 32-bit Counter value	Pulse counting	4 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				

Parameter	Settings
Increment counter after	**rising edge** falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a falling edge.	
Send counter value on change by (1...255)	**255**
An adjustment is made via this parameter to define which value the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	

32-bit Pulse counting with threshold check

(Illustration: see previous parameter window)

This function enables the counting and saving on binary inputs of pulses as 32-bit counter value with threshold check. The counter value stored in the counter value object can be sent on request and after modification by a configurable differential value. In addition, a check can be made on whether the counter status has already reached or exceeded a threshold value. If the threshold is exceeded, a logical 1 is sent immediately via the "Channel x, Upper limit violation" communication object. The threshold can either be set as a parameter or queried and modified via a communication object by telegram. Where required, the counter value can be reset to value 0 by telegram via an additional 1-bit communication object. If the threshold is again fallen short of due to the changed threshold or a counter reset, then a logical 0 is sent immediately via the "Channel x, Upper limit violation" communication object. Adjustments can be made via parameters as to whether the counter value status should be increased on rising or falling signal edge and which value the counter must have changed by in order for the new counter value status to be sent automatically. It can also be defined whether the threshold is a value that is adjustable as a parameter, or whether it can be queried and modified via the bus.

In the event of power supply failure to the electronics (power outage) both the counter value and the threshold (if this can be changed via a communication object) are permanently stored in a memory protected against data loss in the event of voltage failure. They are transferred from this memory into the working memory on mains voltage recovery. Counting continues in the event of bus voltage failure for as long as the device is supplied with mains voltage. Counting is only resumed after mains voltage recovery when the bus voltage is also present.

The following objects are inserted automatically:

Obj	Object name	Function	Type	Flags
m	Channel x, 32-bit Counter value	Pulse counting	4 Byte	CRT
The telegrams with the counter value status are sent via the group address linked with this object.				
n	Channel x, Counter value reset	Reset	1 Bit	CWT
If a telegram linked with this object is received, then the counter value is reset to value 0. The binary value (0 or 1) transmitted with the telegram is irrelevant for the reset function.				

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Technical manual

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Obj	Object name	Function	Type	Flags
o	Channel x, Upper limit violation	Report	1 Bit	CRT
Upper limit violation = On is sent if - the counter value is > threshold, - a modified counter value is sent and there is a threshold overrun, - a threshold is set that is < counter value. Upper limit violation = Off is sent if - the counter value is reset, - after bus or mains voltage recovery together with the first sending of a counter value, if there is then no threshold overrun, - a threshold is set that is > counter value. In the event of counter overrun with persistent threshold o-verrun, "Threshold overrun = ON" will continue to be sent to-gether with the counter value which is now below threshold until the counter is either reset to "0" or a new threshold that is bigger than the current counter value is set.				
p	Channel x, 32-bit Threshold	Read / Write	4 Byte	CRWT
The current threshold can be queried or overwritten by a new threshold via the group address linked with this object.				

Parameter	Settings
Increment counter after	**rising edge** falling edge
Here an adjustment is made as to whether the counter status is to be increased by value 1 in the event of a rising or falling signal edge. The rising edge corresponds to a change in the signal status at the input from logical "0" to "1". The falling edge corresponds to a change in the signal status at the input from logical "1" to "0". "rising edge": The counter status is increased by 1 after a rising edge. "falling edge": The counter status is increased by 1 after a fal-ling edge.	
Send counter value on change by (1...255)	**255**
An adjustment is made via this parameter to define which va-lue the counter value must have changed by in order for it to be sent automatically. The counter status can be queried at any time via the bus, irrespectively of the value set here.	

Parameter	Settings
Threshold	**to be set by parameter** adjustable via object
Using this parameter, an adjustment is made as to whether the threshold is predetermined as a parameter or is queried and modifiable via a communication object. The data type of the threshold always corresponds to that of the counter value. "to be set by parameter": The threshold is set as a parameter. "adjustable via object": A communication object via which the threshold can be queried and modified is supplemented.	
Threshold (1...4.296.067.294)	**4296067294**
The threshold is adjusted via this parameter.	