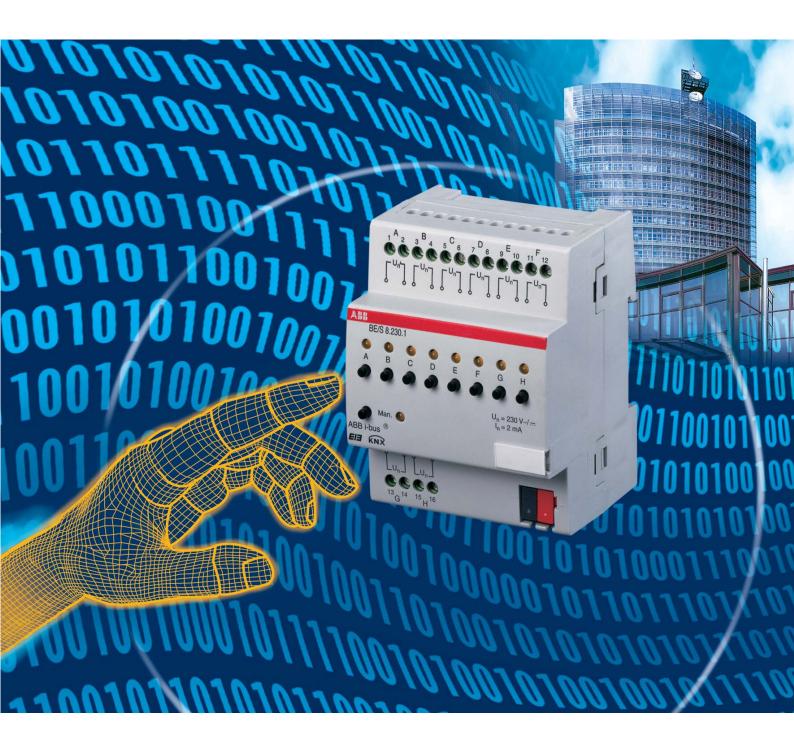
Product Manual

ABB i-bus[®] EIB / KNX Binary Inputs BE/S

Intelligent Installation Systems





This manual describes the function of the Binary Inputs BE/S.

Subject to changes and errors excepted.

Exclusion of liability:

Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this. Any necessary corrections will be inserted in new versions of the manual.

Please inform us of any suggested improvements.

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ABB i-bus® EIB / KNX General

1 General
 The comprehensive range of functions in modern buildings with EIB / KNX should be as easy and as intuitive to operate as possible for the user. At the same time, clear and comfortable operating features are particularly significant for the feeling of well-being within buildings.

The Binary Input fulfils the individual demands in functional buildings as well as in residential buildings. In the same way, system planners are provided with varied application possibilities with regard to the implementation of functions.

This manual provides you with detailed technical information relating to the Binary Inputs, installation, programming and explains the use of the Binary Inputs using examples.

This manual is divided into the following sections:

- Chapter 1
- General Device technology
- Chapter 3
 Co
- Chapter 4

Chapter 2

Commissioning Planning and application Appendix

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1.1	Product and functional overview	The Binary Inputs BE/S are modular installation devices for installation in the distribution board. The connection to the bus is implemented via a bus connection terminal on the front of the device. The assignment of the physical addresses as well as the parameterisation is carried out with ETS2 from version 1.3a or ETS3 from version V1.0.
		The devices feature one manual operation button (9) per channel. The inputs can be operated manually with this button. Connection of conventional push buttons, switches or floating contacts is not necessary during commissioning due to this button. The devices are powered via the ABB i-bus [®] and do not require an additional power supply.
		The Binary Inputs serve as interfaces for operation of EIB / KNX systems via conventional buttons/switches or for coupling of binary signals (signal contacts).
		The binary signals are processed in the application programs <i>Binary 4f 230M/1, Binary 4f 24M/1, Binary 4f 20M/1,</i> <i>Binary 8f 230M/1, Binary 8f 24M/1 and Binary 8f 20M/1.</i>
		The device features comprehensive and clearly arranged functionality and permits usage in the most differing fields of application.
		 The following list provides and overview: Switching and dimming of lighting (also 1 button operation) Operation of blinds and shutters (also 1 button operation) Sending of values e.g. temperature values Control and storing of lightscenes Control of different loads with multiple operation Operation of several loads in a defined switching sequence Counting of pulses and operations Reading out of floating contacts
		Each input can take over any of the functions described above.

2.1 Binary Input with manual operation, 4-fold, 230 V AC/DC, MDRC



Fig. 1: BE/S 4.230.1

2.1.1 Technical data

device for insertion in the distribution board. The device is suitable for reading out 0...265 V AC/DC signals. Inputs A and B are independent of inputs C and D.

The 4-fold Binary Input BE/S 4.230.1 with manual operation is a rail mounted

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Power supply	 Bus voltage Current consumption, bus Power consumption Leakage loss, bus 	21 32 V DC < 10 mA Max. 1.8W Max. 200 mW
Inputs	 Number Permitted voltage range U_n Input current I_n Signal level for 0-signal Sinal level for 1-signal Permitted cable lengths 	4 0265 V AC/DC Max. 2 mA 0120 V AC/DC 180265 V AC/DC ≤ 100 m with 1.5 mm ²
Connections	– EIB / KNX – Inputs	via bus connection terminal, without screws using screw terminals
Connection terminals	 Screw terminals Tightening torque 	0.2 2.5 mm ^{2,} finely stranded 0.2 4.0 mm ² , single-core Max. 0.6 Nm
Operating and display elements	 Programming LED Programming button Channel LED Manual operation button Manual/Automatic LED (Man.) Manual/Automatic button (Man.) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/ automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	– II	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+ 45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 36 x 67.5 mm (H x W x D) 2, 2 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting rails to DIN EN 60 715	to DIN EN 60 715
Mounting position	– as required	
Weight	– 0.1 kg	
Housing/colour	 Plastic housing, grey 	
Approvals	- EIB / KNX to EN 50 090-1, -2 certificate	certificate
CE mark	 in accordance with the EMC guideline and low voltage guideline 	
	Table 1: Technical data BE/S 4 230 1	

Table 1: Technical data BE/S 4.230.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 4f 230M/1	43	254	254

Table 2: Application program BE/S 4.230.1

Note:

The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available in the ETS2 / ETS3 at ABB/Input/Binary Input 4-fold.

2.1.2 Circuit diagram

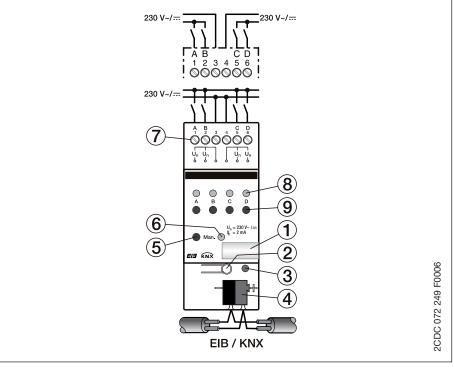


Fig. 2: Circuit diagram of BE/S 4.230.1

- 1 Label carriers
- **2** Programming button
- 3 Programming LED
- 4 Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button

2.1.3 Dimension drawing

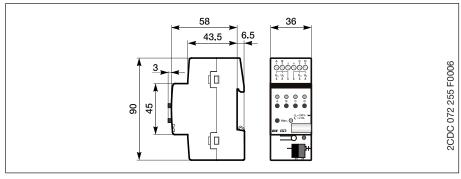


Fig. 3: Dimension drawing BE/S 4.230.1

2.1.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 4.230.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operatio after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specification should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		- The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 4f 230M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, they can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage). The warranty expires if the device is opened.

2.2 Binary Input with manual operation, 4-fold, 24 V AC/DC, MDRC



The 4-fold Binary Input BE/S 4.24.1 with manual operation is a rail mounted device for insertion in the distribution board. The device is suitable for reading out 0...32 V AC/DC signals. Inputs A and B are independent of inputs C and D.

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Fig. 4: BE/S 4.24.1

2.2.1 Technical data

Power supply	 Bus voltage Current consumption, bus Power consumption Leakage loss, bus 	21 32 V DC < 10 mA Max. 600 mW Max. 200 mW
Inputs	 Number Permitted voltage range U_n Input current I_n Signal level for 0-signal Signal level for 1-signal Permitted cable lengths 	4 032 V AC/DC Max. 5 mA 04 V AC/DC 932 V AC/DC ≤ 100 m bei 1.5 mm ²
Connections	– EIB / KNX – Inputs	via screw terminals, without screws via bus connection terminal
Connection terminals	Screw terminalsTightening torque	0.2 2.5 mm ² finely stranded 0.2 4.0 mm ² single core Max. 0.6 Nm
Operating and display elements	 Programming LED Programming button Channel LED Manual operation button Manual/Automatic LED (Man.) Manual/Automatic button (Man.) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	- 11	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+ 45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 36 x 67.5 mm (H x W x D) 2, 2 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting rails	to DIN EN 60 715
Mounting position	– as required	
Weigth	– 0.1 kg	
Housing/colour	- Plastic housing, grey	
Approvals	– EIB / KNX to EN 50 090-1, -2	certificate
CE mark	- in accordance with the EMC guideline and lo	ow voltage guideline

Table 3: Technical data BE/S 4.24.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 4f 24M/1	43	254	254

Table 4: Application program BE/S 4.24.1

Note: The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available available in the ETS2 /ETS3 at ABB/Input/Binary Input 4-fold.

2.2.2 Circuit diagram

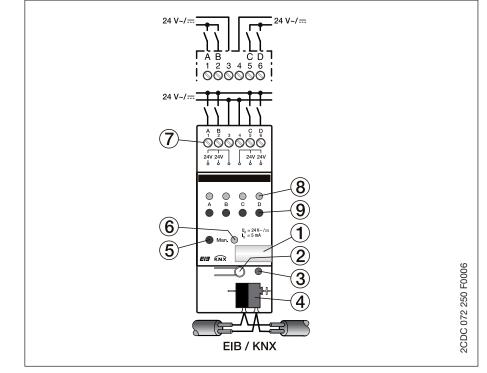


Fig. 5: Circuit diagram of BE/S 4.24.1

- 1 Label carriers
- **2** Programming button
- 3 Programming LED
- **4** Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button



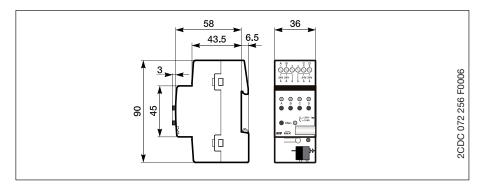


Fig. 6: Circuit diagram of BE/S 4.24.1

2.2.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 4.24.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operation after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		– The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board)!
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 4f 24M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, the devices can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by

unauthorised personnel if damage occurs (e.g. during transport or storage). The warranty expires if the device is opened.

Device technology

2.3 Binary Input with manual operation, 4- fold, contact scanning, MDRC



Fig. 7: BE/S 4.20.1

2.3.1 Technical data

The 4-fold Binary Input BE/S 4.20.1 with manual operation is a rail mounted device for insertion in the distribution board. The device is suitable for reading out of floating contacts. The pulsed polling voltage is generated internally.

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Power supply	– Bus voltage – Current consumption, bus – Leakage loss, bus	21 32 V DC < 10 mA Max. 200 mW
Inputs	 Number Polling voltage U_n Sensing current I_n Sensing current I_n when switching on Permitted cable lengths 	4 32 V, pulsed 0.1 mA Max. 355 mA ≤ 100 m bei 1.5 mm²
Connections	– EIB / KNX – Inputs	via bus connection terminal, without screws using screw terminals
Connection terminals	 Screw terminals Tightening torque 	0.2 2.5 mm ² finely stranded 0.2 4.0 mm ² single-core Max. 0.6 Nm
Operating and display elements	 Programming LED Programming button Channel LED Manual operation button Manual/Automatic LED (Man.) Manual/Automatic button (Man.) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	- II	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+ 45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 36 x 67.5 mm (H x W x D) 2, 2 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting	to DIN EN 60 715
Mounting position	– as required	
Weight	– 0.1 kg	
Housing /colour	- Plastic housing, grey	
Approvals	– EIB / KNX nach EN 50 090-1, -2	Certification
CE mark	 in accordance with the EMC guideline and low voltage guideline 	

Table 5: Technical data BE/S 4.20.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 4f 20M/1	43	254	254

Table 6: Application program BE/S 4.20.1

Note:

The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available in the ETS2 / ETS3 at ABB/Input/Binary Input 4-fold.

2.3.2 Circuit diagram

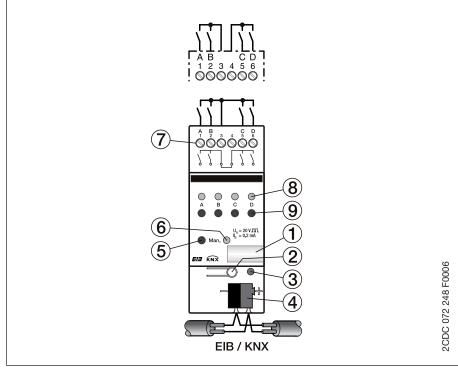


Fig. 8: Circuit diagram BE/S 4.20.1

- 1 Label carriers
- **2** Programming button
- 3 Programming LED
- 4 Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button

Note: An external voltage connection is not permitted in the Binary Input BE/S 4.20.1.

2.3.3 Dimension drawing

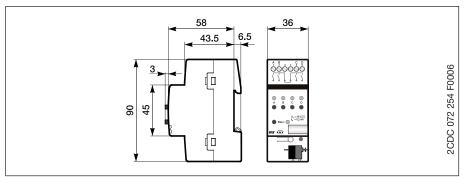


Fig. 9: Dimension Drawing BE/S 4.20.1

2.3.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 4.20.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operation after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		– The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board)!
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 4f 20M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, they can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage). The warranty expires if the device is opened.

2.4 Binary Input with manual operation, 8-fold, 230 V AC/DC, MDRC



Fig. 10: BE/S 8.230.1

2.4.1 Technical data

The 8-fold Binary Input BE/S 8.230.1 with manual operation is a rail mounted device for insertion in the distribution board. The device is suitable for reading out 0...265 V AC/DC signals. The inputs are independent of one another.

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Power supply	 Bus voltage Current consumption, bus Power consumption Leakage loss, bus Max. 	21 32 V DC < 12 mA Max. 4 W 250 mW
Inputs	 Number Permitted voltage range U_n Input current I_n Signal level for 0-signal Signal level for 1-signal Permitted cable lengths 	8 individual 0265 V AC/DC Max. 2 mA 0120 V AC/DC 180265 V AC/DC ≤ 100 m with 1.5 mm ²
Connections	– EIB / KNX – Inputs	without screws via bus connection terminal via screw terminals
Connection terminals	 Screw terminals Tightening torque 	0.2 2.5 mm ² finely stranded 0.2 4.0 mm ² single core Max. 0.6 Nm
Operating and display elements	 Programming LED Programming button Channel LED Manual operation button Manuell/Automatik-LED (Man.) Manual/Automatic button (Man.) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	- 11	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 72 x 67.5 mm (H x W x D) 4, 4 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting rails	to DIN EN 60 715
Mounting position	– as required	
Weight	– 0.2 kg	
Housing/colour	 Plastic housing, grey 	
Approvals	– EIB / KNX to EN 50 090-1, -2	certificate
CE mark	- in accordance with the EMC guideline and lo	w voltage guideline

Table 7: Technical data BE/S 8.230.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 8f 230M/1	83	254	254

Table 8: Application program BE/S 8.230.1

Note: The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available in the ETS2 / ETS3 at ABB/Input/Binary Input 4-fold.

2.4.2 Circuit diagram

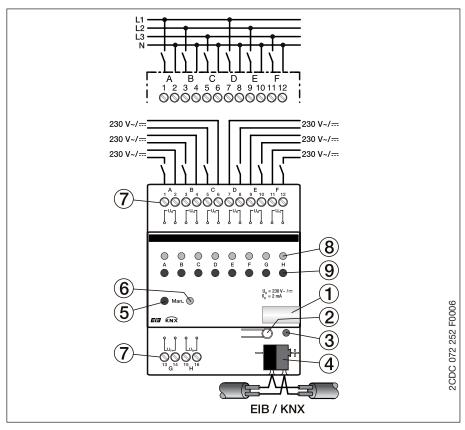
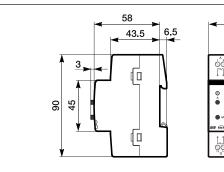
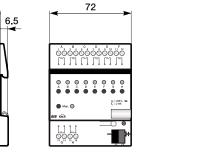


Fig. 11: Circuit diagram of BE/S 8.230.1

- 1 Label carriers
- **2** Programming button
- **3** Programming LED
- 4 Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button







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Fig. 12: Dimension drawing of BE/S 8.230.1

2.4.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 8.230.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operation after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		– The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board)!
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 8f 230M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, they can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage).

The warranty expires if the device is opened.

Device technology

2.5 Binary Input with manual operation, 8-fold, 24 V AC/DC, MDRC



Fig. 13: BE/S 8.24.1

2.5.1 Technical data

The 8-fold Binary Input BE/S 8.24.1 with manual operation is a rail mounted device for insertion in the distribution board. The device is suitable for reading out 0...32 V AC/DC signals. The inputs are independent of one another.

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Power supply	 Bus voltage Current consumption, bus Power consumption Leakage loss, bus 	21 32 V DC < 12 mA Max. 1.1 W Max. 250 W
Inputs	 Number Permitted voltage range U_n Input current I_n Signal level for 0-signal Signal level for 1-signal Permitted cable lengths 	8 individual 032 V AC/DC Max. 5 mA 04 V AC/DC 932 V AC/DC ≤ 100 m with 1.5 mm ²
Connections	– EIB / KNX – Inputs	via bus connection terminal, without screws using screw terminals
Connection terminals	Screw terminalsTightening torque	0.2 2.5 mm² finely stranded 0.2 4.0 mm² single-core max. 0.6 Nm
Operating and display elements	 Programming LED (3) Programming button (2) Channel LED (8) Manual operation button (9) Manual/Automatic LED (Man.) (6) Manual/Automatic button (Man.) (5) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	- 11	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+ 45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 72 x 67.5 mm (H x W x D) 4, 4 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting rail	to DIN EN 60 715
Mounting position	– as required	
Weight	– 0.2 kg	
Housing/colour	 Plastic housing, grey 	
Approvals	– EIB / KNX to EN 50 090-1, -2	Certification
CE mark	- in accordance with the EMC guideline and low voltage guideline	

Table 9: Technical data BE/S 8.24.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 8f 24M/1	83	254	254

Table 10: Application program BE/S 8.24.1

Note:

The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available in the ETS2 / ETS3 at ABB/Input/Binary Input 4-fold.

2.5.2 Circuit diagram

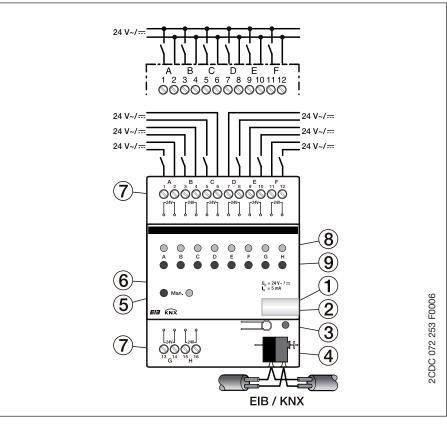


Fig. 14: Circuit diagram of BE/S 8.24.1

- 1 Label carriers
- 2 Programming button
- 3 Programming LED
- 4 Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button

2.5.3 Dimension drawing

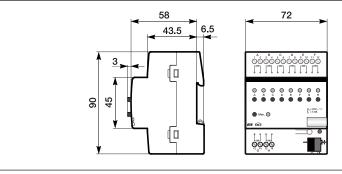


Fig. 15: Dimension drawing of BE/S 8.24.1

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2.5.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 8.24.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operation after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		- The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board)!
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 8f 24M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, they can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage). The warranty expires if the device is opened.

2.6 Binary Input with manual operation, 8-fold, contact scanning, MDRC



Fig. 16: BE/S 8.20.1

2.6.1 Technical data

The 8-fold Binary Input BE/S 8.20.1 with manual operation is a rail mounted device for insertion in the distribution board. The device is suitable for reading out of floating contacts. The pulsed polling voltage is generated internally.

Buttons on the front of the device can be used to simulate the input state. The status of the inputs are displayed by yellow LEDs.

The device is ready for operation after connection to the bus voltage. The Binary Input is parameterised via ETS2 V1.3a or higher. The connection to the bus is established using the front side bus connection terminal.

Power supply	– Bus voltage – Current consumption, – Leakage loss, bus	21 32 V DC < 12 mA Max. 250 mW
Inputs	 Number Polling voltage U_n Sensing current I_n Sensing current I_n when switching on Permitted cable lengths 	8 32 V, pulsed 0.1 mA Max. 355 mA ≤ 100 m with 1.5 mm ²
Connections	– EIB / KNX – Inputs	via bus connection terminal, without screws via screw terminals
Connection terminals	Screw terminalsTightening torque	0.2 2.5 mm² finely stranded 0.2 4.0 mm² single core Max. 0.6 Nm
Operating and display elements	 Programming LED Programming button Channel LED Manual operation button Manual/Automatic LED (Man.) Manual/Automatic button (Man.) 	for assignment of the physical address for assignment of the physical address 1 LED per channel for display of the input state 1 button per channel for changing the input state 1 LED for display of the manual/automatic mode states 1 button for switchover of manual and automatic mode
Enclosure	– IP 20	to DIN EN 60 529
Safety class	- 11	to DIN EN 61 140
Temperature range	– Operation – Storage – Transport	- 5 °C+ 45 °C - 25 °C+ 55 °C - 25 °C+ 70 °C
Environment conditions	– max. humidity	93%, without bedewing
Design	 Modular installation device (MDRC) Dimensions Mounting width in space units Mounting depth 	Modular installation device, Pro <i>M</i> 90 x 72 x 67.5 mm (H x W x D) 4, 4 modules at 18 mm 67.5 mm
Installation	– On 35 mm mounting rails	to DIN EN 60 715
Mounting position	– as reqiuired	
Weight	– 0.2 kg	
Housing/colour	 Plastic housing, grey 	
Approvals	– EIB / KNX to EN 50 090-1, -2	certificate
CE mark	- in accordance with the EMC guideline and low	w voltage guideline

Table 11: Technical data BE/S 8.20.1

Device technology

Application program	Max. number of communication objects	Max. number of group addresses	Max. number of associations
Binary 8f 20M/1	83	254	254

Table 12: Application program BE/S 8.20.1

Note: The programming requires EIB Software Tool ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. The application program is available in the ETS2 / ETS3 at ABB/Input/Binary Input 4-fold.

2.6.2 Circuit diagram

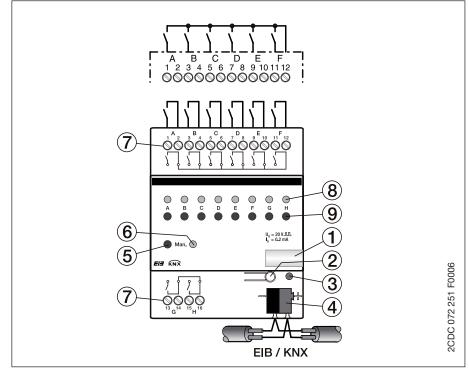


Fig. 17: Circuit diagram of BE/S 8.20.1

- 1 Label carriers
- 2 Programming button
- 3 Programming LED
- 4 Bus connection terminal
- 5 Manual/Automatic button
- 6 Manual/Automatic LED
- 7 Connection terminals
- 8 Channel LED
- 9 Manual operation button

Note: An external voltage connection is not permitted in the Binary Input BE/S 8.20.1.

2.6.3 Dimension drawing

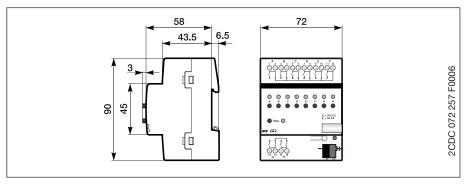


Fig. 18: Dimension drawing of BE/S 8.20.1

2.6.4	Assembly and installation	The Binary Input is a modular installation device for fast installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.
		The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal.
		The device is ready for operation after connection to the bus voltage. Accessibility of the devices for the purpose operation, testing, visual inspection, maintenance and repair must be must be provided (conform to DIN VDE 0100-520).
		Commissioning requirements To put the Binary Input BE/S 8.20.1 into operation, you require a PC with the Engineering Tool Software ETS2 from V1.3a onwards in conjunction with an RS232 interface or a USB interface. The device is ready for operation after connection to the bus voltage.
		The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.
		 The device should be protected from damp, dirt and damage during transport, storage and operation.
		- The device should not be operated outside the specified technical data!
		- The device should only be operated in a closed housing (distribution board)!
		Supplied state The Binary Input is supplied with the physical address 15.15.255. The <i>Binary 8f 20M/1</i> user program is preinstalled. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.
		Assignment of the physical address The assignment and programming of the physical address is carried out in the ETS.
		Cleaning If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, the devices can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.
		Maintenance The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage).

The warranty expires if the device is opened.

3.1 Overview

The user programs **"Binary 4f 230M/1, Binary 4f 24M/1, Binary 4f 20M/1, Binary 8f 230M/1, Binary 8f 24M/1 and Binary 8f 20M/1"** are available for the Binary Inputs. Programming requires ETS2 V1.3a or higher. If ETS3 is used a ".VD3" type file must be imported. A maximum of 10 communication objects per channel, 254 group addresses and 254 associations can be linked.

For switching the lighting or scanning conventional contacts.
Distinction between long and short operation and cyclical sending of the contact state are possible.
Blocking a channel is possible.
The operating mode can be used as a fault signal input.
For switching/dimming the lighting via a one push button or two push button function.
Start-stop dimming and stepwise dimming as well as dimming via a single push button are possible.
For movement/lamella adjustment of a blind or a shutter via a one push button or two push button function.
Eight preset operating responses are possible in total.
For sending values of different data types (e.g. temperature values).
It is possible to send different values or data types after a short/ long operation. The activation/deactivation of the priority control of actuators is also possible.
For recalling and storing the states of several actuator groups.
The actuator groups can be controlled via max. 6 individual objects.
For the operation of several actuator groups in preset sequences.
For triggering various functions depending on the frequency of operation.
A long operation can be also be detected and trigger a function.
For counting input pulses.
Different data types can be set for the counter. An additional differential counter enables the counting of daily values for example.Different count rates can be set.

The following operating modes are available for each channel:

Table 13: Functions of the application program

Note: Every channel of a device can be blocked separately by a communication object.

3.1.1 Conversion

of earlier user programs

With the aid of the conversion it is possible from ETS3 to accept the parameters and group addresses from previous application programs.

Procedure:

- 1. Import the current VD3 file into the ETS3 and append a product with the current application program into the project.
- 2. Click with the right mouse button on the product and select "Convert".

Expand Expand All	
Edit Parameters Change Application Program Download	
Device Info Reset device Unload Delete	
Conversion	
Сору	
Properties	

Fig. 19: Conversion of previous application programs

3. Then follow the instructions

The following application programs can be converted:

Name of the application program	Note
Binary 4f 230M/1.0, Binary 4f 24M/1.0, Binary 4f 20M/1.0,	Complete conversion is possible.
Binary 8f 230M/1.0 Binary 8f 24M/1.0 and Binary 8f 20M/1.0	

Table 14: Functions of the application program

- **Note:** Please note that the standard values can be set after conversion of newly added parameters.
- 4. Then change the existing physical address and delete the old device.

Note:

3.2 Parameters

- 3.2.1 General parameters
- 3.2.1.1 Parameter window "General"

The standard settings for the options are underlined, e.g. Option: yes/<u>no</u>.

General	-	General
Manual operation Enable/disable manual operation Channel LED Channel A, general	Sending delay after bus voltage recovery in s [2255] The sending delay time contains the initialization time of 2s	2 · ·
Channel B, general	Limit number of sent telegrams	no
Channel C, general		
Channel D, general	Send cyclical telegram "In operation"	no
- Channel E, general		
Channel F, general	-1	
	OK C	Cancel Default Info Help

Fig. 20: Parameter window "General"

Send delay [2...255s] after bus voltage recovery Options: 2...255

The sending delay time determines the time between the bus voltage recovery and the point from which telegrams can be sent. An initialisation time of about 2 seconds for the start of the device is included in the delay time for sending.

If communication objects are read out via the bus during the sending delay time (e.g. from the visualisations), these requests are stored and sent after the sending time delay has timed out.

The following communication objects send a telegram after start up of the device when the send delay time has timed out.

- Communication object "In operation - System" sends a 1 bit telegram

A 2 s delay time for sending is included in the initialisation time This parameter serves as a note or remark.

How does the device behave during bus voltage recovery?

After recovery of the bus voltage the system waits until the delay time for sending has timed out before telegrams are sent on the bus.

The following drawing indicates the sequence involved:

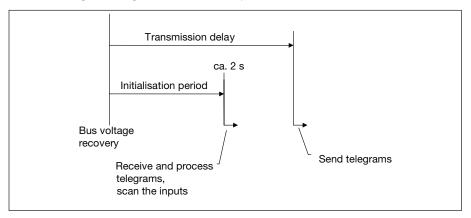


Fig. 21: Behaviour after voltage recovery

The inputs are scanned and the object values are updated accordingly – if possible – as soon as the bus voltage recovers after the initialisation time (approx. 2s). If an input has been actuated, the device will react as if the actuation has commenced at the end of the initialisation time.

The behaviour is dependent on the operating modes of the channel. The following list provides an overview:

Operating modes	Behaviour after voltage recovery (behaviour after the send delay time has timed out)
Switch sensor / fault signal input	If a distinction is made between short and long operation, or if the "TOGGLE" value is set in one of the "Reaction on closing/ opening the contact" parameters, no telegram will be sent on bus voltage recovery.
	Otherwise the behaviour can be set in the parameters.
Switch/dimming sensor	No telegram is sent on the bus.
Shutter sensor	No telegram is sent on the bus.
Switching sequence	No telegram is sent on the bus.
Push button with multiple operation	No telegram is sent on the bus.
Counter	No telegram is sent on the bus.

Table 15: Behaviour after voltage recovery

How does the device behave after programming?

After programming the device behaves as after bus voltage recovery.

In addition the scene values are set with the following characteristics to the initialized values:

- With first programming
- with a change to the operation mode of "Control scene" and
- by the communication object 19

"Channel X scene control - Restore scene to default"

Limit the number of telegrams

Options: yes/no

A telegram limitation is implemented to control the bus load created by the device.

When yes is selected in the *Limit the number of telegrams* parameter the *Max. number of sent ... and Duration of the...* parameters appear.

Max. number of sent telegrams within the observation period Options: 0...20...255

This parameter sets the number of telegrams which can be sent within an observation period.

Duration of the observation period

Options: 50 ms/100 ms/200 ms/500 ms/1 s/2 s/5 s/<u>10 s</u>/30 s/1 min

The duration of the observation period is set with this parameter.

What is a limitation of the telegram rate and an observation period?

A new observation period starts after the end of the previous observation period or – in the event of a bus voltage recovery – after the end of the send delay time. The sent telegrams are counted. As soon as the *Max. number of transmitted telegrams...* has been reached, no further telegrams are sent on the bus until the end of the observation period.

With the start of a new observation period, the telegram counter is reset to zero and the sending of telegrams is permitted again.

Send cyclic "In operation" telegram

Options: yes/no

Option *no* = *Cyclic "In operation" telegram* is not sent Option *yes* = the "In operation – System" communication object appears

With yes selected in the Send cyclic "In operation" telegram, the parameters *Basic* and *Factor* appear.

Basic

Options: 1 s/10 s/<u>1 min</u>/10 min/1 h

Factor [1...255]

Options: 1...<u>60</u>...255

3.2.1.2 Parameter window

"Manual Operation"

Commissioning

General	•	Manual operation	
Manual operation Enable/disable manual operation Channel LED Channel A, general	Manual/automatic button	enabled	•
	Reset from manual operation to automatic operation	automatically and via push button	•
Channel B, general	Time for reset to automatic operation in s [106,000]	300	<u>÷</u>
Channel C, general	Send status of manual operation	no	•
Channel D, general			
Channel E, general	-		
Channel F, general			

Fig. 22: Parameter window "Manual Operation"

How does the manual operation function?

The devices are in "Automatic mode" after connection to the BUS. The Manual/Automatic LED (Man.) is off. Changeover to "manual operation" is possible. The respective "channel LED's" indicate the current input status. The respective "Manual operation buttons" do not have a function.

It is possible to switch between "manual operation" and "automatic operation" by pressing the Manual/Automatic button (Man.). With a long button push (> 1 second) the device changes over to "manual operation". With a short button push (< 1 second) the device changes over to "automatic operation". In the "manual mode" the Manual/Automatic LED (Man.) is yellow. In the "automatic mode" the Manual/Automatic LED (Man.) is off.

"Manual mode" can be blocked using the application program. If the "manual mode" is blocked, the Manual/Automatic LED (Man.) will flash for 3 seconds before manual mode goes off and the device remains in "automatic mode".

Manual / automatic button

Options: enable/block via communications object/enable

The parameter defines if the switchover between the "manual operation" and "automatic operation" operating states is blocked or enabled using the Manual/Automatic button (Man.) on the Binary Input.

If the *enable/block via communications object* is selected, the "block manual operation key" communications object appears.

Telegram value	"0" enable manual operation button
	"1" block manual operation button

Note: The manual operation can automatically overwrite the input states.

How is switchover made between "automatic operation" and "manual operation"?

When switching over from "automatic operation" to the "manual operation", the Manual/Automatic LED (Man.) will flash for 3 seconds in "manual operation" after the Manual/Automatic button (Man.) is pressed. If "manual operation" is enabled via the application program, switchover to "manual operation" occurs and the Manual/Automatic LED (Man.) is on. The respective "channel LED's" indicate the current input status.

The states of the individual channels can be changed by the "manual operation buttons". Telegrams will be sent to the Bus if group addresses are assigned! Any signal changes from the installation system are not taken into consideration. With switchover to the "automatic operation" the respective "channel LED's" will once again indicate their current states. The communication objects are updated and telegrams will be sent if necessary.

Reset from manual operation to automation operation

Options: via button/automatic and via button

This parameter defines how long the Binary Input remains in the "manual operation" state after the "Manual/Automatic button (Man.)" has been pressed.

If the *automatic and via button* option is selected, the Binary Input will remain in "manual operation" until the Manual/Automatic button (Man.) is pressed again or the parameterised *Time for automatic reset [10...6.000s]* has timed out.

If the *via button* option is selected, the Binary Input will remain in "manual operation" until the Manual/Automatic button (Man.) is pressed again.

How is switchover made between "manual operation" and "automatic operation"?

The Manual/Automatic button (Man.) is pressed for 1 s when switching over from "manual operation" to the "automatic operation". The Manual/Automatic LED (Man.) flashes for 3 seconds and switchover of the operating state occurs. Depending on the parameterisation, the operating state can switch back automatically to "automatic operation" after a predefined time has timed out. The device is in "automatic operation" if the Manual/Automatic LED (Man.) is off.

Thereafter, the current input states are scanned, displayed and sent if necessary. The operating state will also change automatically to "automatic operation" if the "manual/automatic operation" is blocked via a telegram. The Manual/Automatic LED (Man.) will also flash for 3 seconds with an automatic change of the operating state. In the "automatic operation" state the manual operation button is not operational for every channel. In the "manual operation" state the input states can be simulated via the manual operation buttons. Changes of incoming input states from the installation system are not passed on. With switchover, the current input states are automatically scanned, displayed and sent if necessary.

If the option *automatic and via button* in the reset from "manual operation" to "automatic operation" parameter is selected, the following parameter will appear.

Time for automatic reset [10...6.000 s] Options: 10...<u>300</u>...6000

For setting the time for automatic reset from the "manual operation" to "automatic operation" state after the last push of a button.

Send manual operation status

Options: yes/no

If the "yes" option is selected, the "Man. operating status" communications object appears.

Telegram value "0" Automatic operation "1" Manual operation

If the yes option is selected in the Send manual operation status parameter, the following note will appear.

Status is always sent after change.

3.2.1.3 Parameter window "Enable/release

Commissioning

Parameter window "Enable/release	General Manual operation	Enable/di	isable manual operation	
manual operation button"	Enable/disable manual operation Channel LED Channel A, general	Channel A, Man. Oper. Button	enable enable	-
	Channel B, general	Channel C, Man. Oper. Button	enable	-
		Channel D, Man. Oper. Button Channel E, Man. Oper. Button	enable enable	-
	Channel C, general	Channel F, Man. Oper. Button Channel G, Man. Oper. Button	enable enable	•
	Channel D, general	Channel H, Man. Oper. Button	enable	•
	Channel E, general			
	Channel F, general			
			Cancel Default Info	Help

Fig. 23: Parameter window "Enable/release manual operation"

Channel A...X manual operation button Options: block/enable

This parameter enables or blocks the operation of the manual operation button. It is set separately for each channel.

Option *block* = manual operation button is blocked Option *enable* = manual operation button is enabled

This inhibits onsite operation to prevent malfunctions.

For safety-relevant systems such as for fault signals the button functions are inhibited using the *block* option.

How is it indicated that a channel is blocked or enabled?

The blocking function is set in the application program. On blocked channels the respective channel LED will not react if the respective manual operation button is pressed!

How does the manual operation button function?

The first time the manual operation button is actuated, closing of the "external contact" is simulated. Nothing happens when the button is released.

The second time the manual operation button is actuated, opening of the "external contact" is simulated. Nothing happens when the button is released.

3.2.1.4 Parameter window "Channel LED display"

General	•	Channel LED	
Manual operation Enable/disable manual operation Shannel LED	Channel A, LED	normal	-
Channel A, general	Channel B, LED	normal	
	Channel C, LED	normal	
Channel B, general	Channel D, LED	normal	<u>*</u>
Channel C, general	Channel E, LED	normal	<u>*</u>
	Channel F, LED	normal	<u>×</u>
Channel D, general	Channel G, LED	normal	<u>*</u>
, and by general	Channel H, LED	normal	<u>•</u>
Channel E, general			
Channel F, general	-		
		K Cancel Default I	To Help

Fig. 24: Parameter window "Channel LED display"

Channel A...X LED display

Options: <u>normal</u>/inverting

This parameter is used to represent the LED display as a normal or inverted function. It is set separately for each channel.

Option normal

Contact is closed	=> signal is present	=> LED on
Contact is open	=> no signal	=> LED off
ed		
Contact is closed	=> signal is present	=> LED off
Contact is open	=> no signal	=> LED on
	Contact is open ed Contact is closed	Contact is open=> no signaled=> signal is present

It is thus possible to match LED display to the input status for closed and opened contacts.

For example, normally closed (NC, break) and normally opened (NO, make) contacts can be used for fault signals.

Commissioning

3.2.1.5 Communication objects "General"

Number	Object Function	Name	Length	C	R	W	Т	U
⊒‡lo	Blocking man. operation button	Channel AD	1 bit	С	-	W	-	-
⊒‡1	Status of manual operation	Channel A…D	1 bit	С	R	-	Т	-
⊒‡2	Disable	System	1 bit	С	R	-	Т	-

Fig. 25: Communication objects "General"

No.	Function			Object name	Data type	Flags
0	Block manual/automatic button		Channel AX	EIS 1, 1 bit DTP 1.002	C, W	
				elease Manual/Automatic b lock Manual Automatic but		

The "manual operation" of the Binary Inputs is blocked or enabled via this communication object. If the value "0" is contained in this communication object, the Binary Input will be converted to "manual operation" via the manual operation button (Man.) on the device. During this setting the channel states on the input terminals will not be passed on.

If the value "1" is contained in this communication object, the Binary Input will be operated exclusively via the bus.

1	Status of manual opera- tion	Channel AX	EIS 1, 1 bit DTP 1.003	C, R, T				
e e		nanual operation						
On this communication object the Binary Input sends information regarding whether the "manual operation" or the "automatic operation" is active. The status is sent after a change.								
2	In operation	System	EIS1, 1 bit DTP 1.003	C, R, T				

					DTP 1.003		
	Telegra	m value	"0" s	vstem not in operation			
			"1" s	ystem in operation			
This communication object is only active if "yes" has been selected for the parameter <i>cyclic "In operation" telegram</i> . As long as the communication object is activated, it will cyclically send (adjustable via Basic and Factor) an "In operation" telegram.							
	3	not assign	ed				

Table 16: Communication objects 0 to 9 "General"

... 9

3.2.1.6 Parameter window "Channel A, general"

The parameters for "Channel A" are described in the following. The explanations also apply for "Channels B...X".

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.

General	3		Channel A, ger	neral		
Manual operation Enable/disable manual operation Channel LED	Operating mode		nor	ne		•
Channel A, general						
Channel B, general						
Channel C, general						
Channel D, general						
Channel F, general						
		OK	Cancel	Default	Info	Help

Fig. 26: Parameter window "Channel A, general"

Operating mode

Options:	none
	Switch sensor / fault signal input
	Switch/dimming sensor Shutter sensor
	Value / forced operation
	Control scene
	Switching sequence
	Push button with multiple operation
	Counter

The channel operating mode is set with this parameter.

Commissioning

3.2.2 Operating mode switch sensor/ fault signal input The "switch sensor operating mode" is described in the following.

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.

3.2.2.1 Parameter window "Channel A, general"

General	-	L	nannel A	, gene	ai		
Manual operation Enable/disable manual operation Channel LED		Operating mode		Switc	h sensor / fa	ult monitoring inp	iut 💌
Channel A, general Channel A, switch sensor		Debounce time		50ms			•
Channel B, general		Distinction between long and short operation Activate minimum signal time		no			•
Channel C, general							
Channel D, general							
Channel E, general		Scan input after download, bus reset and bus voltage recovery		no			•
Channel F, general	-						
		OK	Cance		Default	Info	Help

Fig. 27: Parameter window "Channel A, general" switch sensor operating mode

Debounce time

Options: 10 ms/20 ms/30 ms/<u>50 ms</u>/70 ms/100 ms/150 ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time TD starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

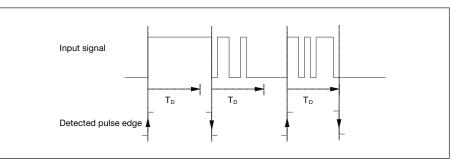


Fig. 28: Debounce time from input signal to detected edge

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Commissioning

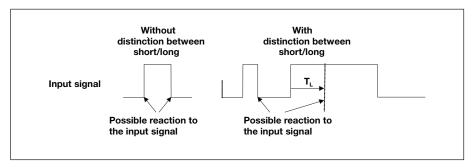
Distinction between long and short operation

Options: yes/no

This parameter defines whether the input distinguishes between a short and long operation.

If "yes" is selected, there is a delay after opening/closing the contact to determine whether there is a short or long operation. Only then is a possible reaction triggered.

The following diagram illustrates the function:



 T_{L} is the period after which a push button action is recognised as a long operation.

Fig. 29: Distinction between short/long operation for "Switch sensor" function

The following parameters are visible in the parameter window "Channel A, general" if the option *no* has been selected with the parameter *Distinction between long and short operation.*

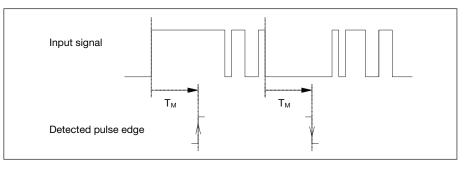
Activate minimum signal time

Options: yes/no

What is minumum signal time?

This function differs from the debounce time by the fact that the telegram is sent only after the minumum signal time has timed out. The functions in detail:

If an edge is detected at the input, the minumum signal time commences. No telegram is sent on the bus during this time. The signal at the input is monitored within the minumum signal time. If a further edge is detected at the input during the minumum signal time, this is interpreted as a renewed actuation and the minumum signal time restarts if necessary. If the input signal has not changed during the minumum signal time, an edge is detected and a telegram is sent on the bus if necessary.



The following example illustrates this:

Fig. 30: Minimum signal time from input signal to detected edge

Since only two pulse edges remain stable for the duration of the minimum signal time T_M , only these pulse edges are recognised as valid.

Scan input after download, bus reset and bus voltage recovery Options: yes/no

Option *yes* = object value is scanned after download, bus reset and bus voltage recovery.

Option *no* = object value is not scanned after download, bus reset and bus voltage recovery.

If the option yes is selected in the parameter *Scan input after download, bus reset and bus voltage recovery after download*, the following parameters become visible.

Inactive wait state after bus voltage recovery [0...30.000s, 0=inactive] Options: <u>0</u>...30.000

This parameter is used to set the waiting time after bus voltage recovery. The state at the input terminals is detected after this time has timed out. The input reacts as if the state at the input terminals has just been set/not set.

Note: The inactive wait state does <u>not</u> add to the adjustable delay time for sending. It can be set in the "General" parameter window.

If the option yes is selected with the parameter *Activate minimum signal time*, the following parameters are visible.

After rising edge: time base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...255

After falling edge: time base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...25

Commissioning

The following parameters are visible in the parameter window "Channel A, general" if the option *yes* has been selected with the parameter *Distinction between long and short operation*.

General	-	Channel A, general	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Switch sensor / fault monitoring input	•
Channel A, general Channel A, switch sensor	Debounce time	50ms	•
Channel B, general	Distinction between long and short operation Connected contact type	jves normally open	•
Channel C, general	Long operation after time base Factor [1255]	1s [10	-
Channel D, general			
Channel E, general			
Channel F, general	-		
	OK	Cancel Default Info	Help

Fig. 31: Parameter window "Channel A, general" switch sensor operating mode

Connected contact type

Options: normally open/ normally closed

Option *normally open* = input normally open when actuated. Option *normally closed* = input normally closed when actuated.

Long operation after... time base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Defines the period T_L after which an operation is interpreted as "long". (T_L = time base x factor)

Factor [1...255]

Options: 1...<u>10</u>...255

3.2.2.2 Parameter window "Channel A, switch sensor"

The following parameters are visible in the parameter window "Channel A, switch sensor" if the option *no* has been selected with the parameter *Distinction between long and short operation*.

General Manual operation	C C	hannel A, switch sensor	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, switch sensor	Reaction on closing the contact (rising edge) Reaction on opening the contact (falling edge)		•
Channel B, general	Cyclical sending of object "Switch"	no	×
Channel C, general			
Channel D. general			
- Channel E, general			
Channel F, general			
	OK	Cancel Default	Info Help

Fig. 32: Parameter window "Channel A, switch sensor" operating mode

Reaction when closing the contact (rising edge) Options: <u>ON</u>/

<u>ON/</u> OFF/ TOGGLE/ no reaction/ stop cyclic sending

Reaction when opening the contact (falling edge)

Options: ON/ <u>OFF</u> TOGGLE/ no reaction/ stop cyclic sending

For each edge it is possible to set if the object value is to be switched *ON, OFF* or *TOGGLE*, or if *no reaction* should occur.

Commissioning

If the option *yes* is selected in the parameter *Cyclical sending of object "Switch"* is selected, the following parameter appears.

Cyclical sending of object "Switch"

Options: <u>no</u>/

if "switch" = ON/ if "switch" = OFF/ always

Option if "Switch" = ON = object value is sent cyclically Option if "Switch" = OFF = object value is sent cyclically Option always = communication object "Switch" is sent cyclically

What is cyclic sending?

Cyclic sending enables the communication object "Switch" to send automatically at a fixed interval.

If cyclical sending is only carried out for a specific object value (ON or OFF), this condition refers to the value of the communication object. It is therefore possible in principle to start the cyclical sending by sending a value to the communication object "Switch. As this reaction is generally unwanted, the "write" flag and "update" flag of the communication object have to be deleted in the setting to ensure that it cannot by changed via the bus. If however this functionality is required, the flags must be set accordingly.

When the "Switch" object changes and after bus voltage recovery (once the transmission delay has elapsed), the object value is sent immediately on the bus and the transmission cycle time restarts.

The next two parameters are only visible if the options *ON*, *OFF* or *always* in the *cyclical sending of object "Switch"* have been selected.

Telegram is repeated every ... ("sending cycle time"): base Options: <u>1 s</u>/10 s/1 min/10 min/1 h

The cycle time for sending describes the interval between two cyclically sent telegrams.

Cycle time for sending = time base x factor.

Factor [1...255] Options: 1...<u>30</u>...255

3.2.2.3 Parameter window "Channel A, switch sensor"

The following parameters are visible in the parameter window "Channel A, switch sensor" if the option *yes* has been selected with the parameter *Distinction between long and short operation.*

General	- Ch	annel A, switch sensor	
Manual operation Enable/disable manual operation Channel LED Channel A, general	Reaction on short operation Reaction on long operation		•
Channel A, switch sensor	Reaction on long operation	IOH	-
Channel B, general	Number of objects for short/long operation	1 communication object	-
Channel C, general			
Channel D, general			
- Channel E. general			
Channel F, general	-		
	OK	Cancel Default Info	Help

Fig. 33: Parameter window "Channel A, switch sensor" operating mode

"Reaction on short operation"

Options:

<u>ON</u>/ OFF/ TOGGLE/ no reaction

"Reaction on long operation"

Options: ON/ <u>OFF</u>/ TOGGLE/ no reaction

For every operation (short or long) it is set if the object value is *ON*, *OFF* or *TOGGLE*, or if *no reaction* should be occur. The object value is updated as soon as it has been determined if a short or long operation has occurred.

"Number of objects for short/long operation"

Options: <u>1 communication object</u>/ 2 communication objects

In order to differentiate between long and short operation, a further communication object can be released by the option 2 *communication objects*. This communication object reacts exclusively to long operations.

3.2.3 Operating mode fault signal input

The "fault signal input" operating mode is described in the following.

Note: The options need to be adjusted in the standard setting for the fault signal input operting mode. The options for the fault signal input must be listed individually. Furthermore, only the parameters which are relevant for an

optimum fault signal input are described.

All other parameters are described in the "switch sensor" operating mode.

3.2.3.1 Parameter window "Channel A, general"

Switch sensor / fault monitoring input	-
	_
50ms	*
no	•
no	•
no	•
	no no

Fig. 34: Parameter window "Channel A, general" fault signal input operating mode

Debounce time

Options: 10ms/20ms/30ms/50ms/70ms/100ms/150ms

Fault signal option: 50ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

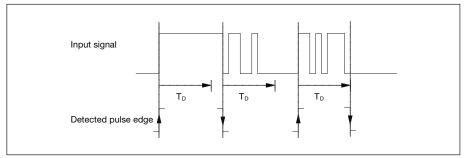


Fig. 35: Debounce time of the input signal on the edge to be recognised

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_{D} .

Distinction between long and short operation

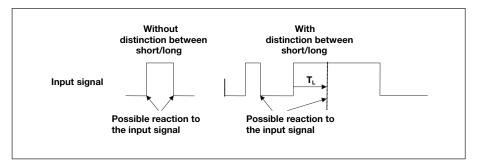
Options: yes/<u>no</u>

Fault signal option: no

This parameter defines whether the input distinguishes between a short and long operation.

If yes is selected, there is a delay after opening/closing the contact to determine whether there is a short or long operation. Only then is a possible reaction triggered.

The following diagram illustrates the function:



 $T_{\rm L}$ is the period after which a push button action is recognised as a long operation.

Fig. 36: Distinction between short/long operation for "Switch sensor" function

Note: If it is not possible to detect the debounce time of the fault signal contacts being monitored, the reaction of the input signal must be tested with the "no" position.

The following parameters are visible in the parameter window "Channel A, general" if the option no has been selected with the parameter *Distinction between long and short operation*.

Activate minimum signal time

Options: yes/no

Fault signal option: yes

The minumum signal time defines the time for which a fault signal must be present so that a reaction is possible or sent.

What is minumum signal time?

This function differs from the debounce time by the fact that the telegram is sent only after the minumum signal time has timed out. The functions in detail:

If an edge is detected at the input, the minumum signal time commences. No telegram is sent on the bus during this time. The signal at the input is monitored within the minumum signal time. If a further edge is detected at the input during the minumum signal time, this is interpreted as a renewed actuation and the minumum signal time starts if necessary.

If the input signal has not changed during the minumum signal time an edge is detected and a telegram is sent on the bus if necessary.

The following example illustrates this:

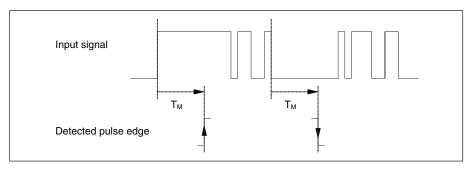


Fig. 37: Minumum signal time of the input signal on the edge to be recognised

Since only two pulse edges remain stable for the duration of the minimum signal time T_M , only these pulse edges are recognised as valid.

Scan input after download, bus reset and bus voltage recovery Options: yes/no

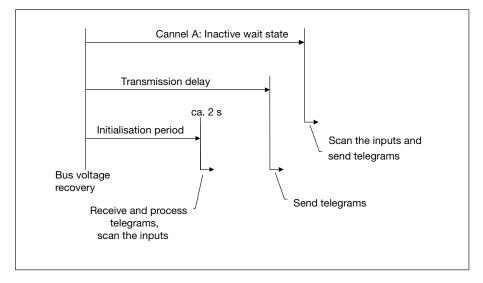
Fault signal option: yes

Option yes = object value is scanned after download, bus reset and bus voltage recovery. Option no = object value is not scanned after download, bus reset and bus voltage recovery.

If the option *yes* is selected in the parameter *Scan input after download, bus reset and bus voltage recovery after download*, the following parameter becomes visible.

Inactive wait state after bus voltage recovery [0...30.000s, 0=inactive] Options: 0...30.000

This parameter is used to set the waiting time after bus voltage recovery.



The following drawing indicates the sequence involved:

Fig. 38: Behaviour after voltage recovery with inactive wait state

The inputs are scanned and the object values are updated accordingly – if possible – as soon as the bus voltage recovers after the initialisation time (approx. 2s). If an input has been actuated, the device will react as if the actuation has commenced at the end of the initialisation time.

The state at the input terminals is detected after this time has timed out. The input reacts as if the state at the input terminals has just been set/not set.

Note: The inactive wait state should be smaller than the transmission delay time. The inactive wait state does <u>not</u> add to the adjustable delay time for sending.

Commissioning

If the option yes is selected with the parameter *Activate minimum signal time*, the following parameters are visible.

Note: Depending on the system type, it is recommendede to set a minimum signal time, for example, of 2s. With the evaluation, for example, of coupling switches, generator switches or incoming circuit-breakers from switchgear systems, a minumum signal time of less than 100 ms may be required.

After rising edge: time base

Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Fault signal option: 1s

After rising edge corresponds to a "normally opened" function.

Factor [1...255] Options: 1...<u>10</u>...255

Fault signal option: 2

After falling edge: time base Options: 100ms/<u>1s</u>/10s/1min/10min/1 h

Fault signal option: 1s

After falling edge corresponds to a "normally closed" function.

Factor [1...255] Options: 1...<u>10</u>...255

Fault signal option: 2

Note: It is absolutely essential to match the switching times with the user. Depending on the system, even lower signal times (switching times) may be required.

3.2.3.2 Parameter window "Channel A, switch sensor" for a fault signal input

If the option *no* has been selected with the parameter *Distinction between long and short operation* the following parameters are visible in the parameter window"Channel A, switch sensor".

General	Ch Ch	nannel A, switch sensor	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, switch sensor	Reaction on closing the contact (rising edge) Reaction on opening the contact (falling edge)	ON	•
Channel B, general	Cyclical sending of object "Switch"	no	•
Channel C. general			
Channel D, general			
Channel E, general			
Channel F., general	- I		
	OK	Cancel Default	info <u>H</u> elp

Fig. 39: Parameter window "Channel A, switch sensor" operating mode for a fault signal input

Reaction when closing the contact (rising edge)

ON/ OFF/ TOGGLE/ no reaction/ stop cyclic sending

Options:

Options:

Fault signal option: Adjustable to suit

Reaction when opening the contact (falling edge)

ON/ <u>OFF</u>/ TOGGLE/ no reaction/

stop cyclic sending

Fault signal option: Adjustable to suit

For each edge it is possible to set if the object value is to be switched *ON, OFF* or *TOGGLE* or if *no reaction* should occur.

Commissioning

Options:

If the option *yes* is selected in the parameter *Cyclical sending of object "Switch"* is selected, the following parameter appears.

Cyclical sending of object "Switch"

<u>no</u>/ if "Switch" = ON if "Switch" = OFF/ always

Fault signal option: always

Option *if* "Switch" = ON = object value is sent cyclically Option *if* "Switch" = OFF = object value is sent cyclically Option *always* = communication object "Switch" is sent cyclically

What is cyclic sending?

Cyclic sending enables the communication object "Switch" to send automatically at a fixed interval.

If cyclical sending is only carried out for a specific object value (ON or OFF), this condition refers to the value of the communication object. It is therefore possible in principle to start the cyclical sending by sending a value to the communication object "Switch". As this reaction is generally unwanted, the "write" flag and "update" flag of the communication object have to be deleted in the setting to ensure that it cannot by changed via the bus. If however this functionality is required, the flags must be set accordingly.

When the "Switch" object changes and after bus voltage recovery (once the transmission delay has elapsed), the object value is sent immediately on the bus and the transmission cycle time restarts.

The next two parameters are only visible if the options *ON*, *OFF* or *always* in the *cyclical sending of object "Switch"* have been selected.

Telegram is repeated every ... ("sending cycle time"): time base Options: <u>1 s</u>/10 s/1 min/10 min/1 h

Fault signal option: 1 s

The cycle time for sending describes the interval between two cyclically sent telegrams.

Cycle time for sending = time base x factor.

Factor [1...255] Options: 1...<u>30</u>...255

Fault signal option: 30

Commissioning

3.2.3.3	Communication	objects
	"Channel A"	

Number	Object Function	Name	Length	С	R	W	Т	U
■【10	Blocking	Channel A, switch	1 bit	С	-	W	-	-
⊒‡ 11	Switch	Channel A, switch	1 bit	С	-	W	Т	-
⊒ ‡ 12	Switch - long	Channel A, switch	1 bit	С	-	-	Т	-

Fig. 40: Communication object "Channel A" switch sensor operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A, switch sensor	EIS 1, 1 bit DTP 1.003	C, W
Telegram value "0" "1"		enable Channel A block Channel B		

Via the "Block" communication object the channel connection can be blocked or released. A telegram is sent to the bus if a blocked channel is released.With activated "Blocked" communication object the inputs and the "manual operation" are blocked.

Note: There is generally no reaction when a channel is blocked but

- with all operating modes waiting for a long button push or minimum signal duration is aborted
- with the Switch/dimming sensor and Shutter sensor mode cyclic sending is interrupted
- with the Control scene mode saving ends
- during the blocking of a channel,
- a signal change on the terminals or with manual operation is ignored
- communication objects are still updated and sent if necessary

If a channel is enabled a change of the signal states (compared to blocking) leads to immediate processing, e.g.

start the minimum actuation or detection of a long/short button push
 communication objects are sent if necessary

11	Switch		Channel A, switch sensor	EIS1, 1 bit DTP 1.001	C, W, T
Telegram value		"O" "1"	OFF ON		

In accordance with the parameter setting, this communication object can be switched by actuation of the ON, OFF or TOGGLE input. With TOGGLE the previous value e.g. "1" is switched directly to the value "0". The communication object can send cyclically, e.g. monitoring the life signs of the sensor. It is important to ensure that the communication object can be written to externally. Thus, cyclical send is interrupted or not possible.

12	Switch long	Channel A, switch sensor	EIS1, 1 bit DTP 1.001	С, Т
Telegra	m value "0" "1"	No Yes		

This communication object is only visible if the parameter *Distinction between long and short operation = yes*, and the parameter *Number of objects for short/long operation* = *2 communication objects*. This additional communication object is assigned to the long operation. The communication object Channel A, switch sensor – Switch now no longer reacts to a long operation.

13	not assigned		
 19			

Table 17: Communication objects 10 to 19 "Channel A" switch sensor operating mode

Commissioning

3.2.3.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20 29	Analogue 1019 Channel A switch sensor	Channel B		
29	switch sensor			
30	Analogue 1019	Channel C		
	Channel A			
39	switch sensor			
40	Analogue 1019	Channel D		
	Channel A			
49	switch sensor			
50	Analogue 1019	Channel E		
	Channel A			
 59	switch sensor			
60	Analogue 1019	Channel F		
	Channel A			
69	switch sensor			
70	A	01		
	Analogue 1019 Channel A	Channel G		
 79	switch sensor			
19	Switch Sensor			
80	Analogue 1019	Channel H		
	Channel A			
89	switch sensor			

Table 18: Communication objects 20 to 89 "Channel B to H" switch sensor operating mode

Commissioning

3.2.4 Operating mode switch/dimming sensor

The operating mode allows the operation of dimmable lighting.

- **Note:** The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.
- 3.2.4.1 Parameter window "Channel A, general"

General _		Cł	annel A, ge	neral		
Manual operation Enable/disable manual operation Channel LED	Operating mode		Sv	vitch/dim sensor		•
Channel A., general Channel A., switch/dim sensor	Debounce time		50	ims		•
Channel B, general	Connected contact type		no	rmally open		•
Channel C, general						
Channel D, general						
— Channel E, general						
Channel F, general						
		OK	Cancel	Default	Info	Help

Fig. 41: Parameter window "Channel A, general" switch/dimming sensor operating mode

Debounce time

Options: 10ms/20ms/30ms/<u>50ms</u>/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time TD starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

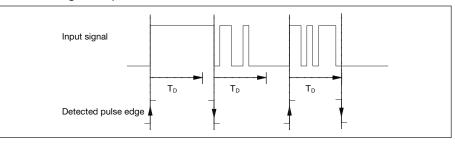


Fig. 42: Debounce time of the input signal on the edge to be recognised

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_{D} .

Connected contact type

Options: <u>normally open</u>/ normally closed

Here you set if the input contact is an normally closed (break) or normally open (make) contact.

3.2.4.2 Parameter window "Channel A, switch/ dimming sensor"

ty	Distance in the later	
<i>3</i>	Dimming and switching	-
er	0.5s	•
operation	TOGGLE	•
operation	Dim BRIGHTER/DARKER	•
	Start-stop-dimming	•
	operation	operation TOGGLE

Fig. 43: Parameter window "Channel A, switch/dimming sensor" operating mode

Dimming function

Options: <u>Dimming and switching</u>/ Only dimming

This parameter is used to define if the lighting can be dimmed (*Only dimming*) or if addition switching is also permitted (*Dimming and switching*). In this case a long operation actuated dimming and a short operation actuates switching.

How does 1 button dimming function?

Switching and dimming functions can be fully controlled via a single push button. Each dim actuation is sent alternately with a BRIGHTER or DARKER dim telegram.

If the communication object "Switch" = 0, a BRIGHTER telegram is sent at all times. In order to evaluate the switch feedback of the actuator, the "Write" flag of the communication object "Switch" is set.

Object value "Switch"	Value of the last dimming telegram	Reaction to the dimming operation (dimming telegram sent)
OFF	DARKER	BRIGHTER
OFF	BRIGHTER	BRIGHTER
ON	DARKER	BRIGHTER
ON	BRIGHTER	DARKER

The following table illustrates the function in detail:

Table 19: Dimming function "1 button dimming"

The advantage of the "Only dimming" function is that no distinction is made between short and long actuation. The dim command is issued immediately on actuation. It is not necessary to wait for a long actuation.

How does 2 button dimming function?

If "**2 button dimming**" is required, the function of the individual button must be set (e.g. "ON" or "Dim BRIGHTER") with the parameters "Reaction to long or short operation".

The user thus has complete freedom to choose which push buttons are combined with one another in order to dim a group of luminaries, or which function the individual push button has in this case.

Furthermore, 2 button dimming requires 2 channels, e.g. Channel A with short operation for switch on and long operation for dim brighter. Channel B with short operation for switch off and long operation for dim darker.

If the option *Switching and dimming* is selected with the *Dimming functionality*, the parameters *long operation,..., Reaction on short...* and *Reaction on long...* are visible in the parameter window "Channel A, switch/dimming sensor".

Long operation after...

Options: 0.3s/0.4s/<u>0.5s</u>/0.6s/0.8s/1 s/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

Defines the period T_{L} after which an operation is interpreted as "long".

Reaction on short operation

Options: ON/ OFF/ <u>TOGGLE</u>/ no reaction

A short operation changes the value of the communication object "Telegram switch". This parameter sets if the communication object "Telegram switch" TOGGLEs with short operation (typically: 1 button dimming) or only switches ON or OFF (typically: 2 button dimming).

Reaction on long operation

Options: Dim BRIGHTER/ Dim DARKER/ <u>Dim BRIGHTER/DARKER</u>

A long operation changes the value of the communication object "Telegram Dimming". With this parameter you determine if the communication object "Dimming" sends a BRIGHTER or DARKER telegram with long operation. With 1 button dimming the parameter "Dim BRIGHTER/DARKER" must be set. In this case the dim command which is the opposite to the last dim command is set.

Commissioning

The following parameters are visible in the parameter window if the option *Only dimming* is selected in the *Dimming function* instead of *Reaction on short operation* and *Reaction on long operation*.

Reaction on operation

Options: Dim BRIGHTER/ Dim DARKER/ <u>Dim BRIGHTER/DARKER</u>

With this parameter you determine if the communication object "Dimming" sends a BRIGHTER or DARKER telegram with long operation. With 1 button dimming the parameter "Dim BRIGHTER/DARKER" must be set. In this case the dim command opposite to the last dim command is set.

Dimming mode

Options: <u>Start-stop-dimming</u>/ Dimming steps

Normal *Start-stop-dimming* starts the dimming mode with a brighter or darker telegram and ends the dimming mode with a Start-stop-dimming telegram.

Dec.	Hex.	Binary	Dim command
0	0	0000	Stop
1	1	0001	100 % darker
8	8	1000	Stop
9	9	1001	100 % brighter

4-Bit dimming command:

Table 20: 4 bit dim command for start-stop dimming

A table with further 4-Bit-Values can be found in the Appendix.

With *Dimming steps* the dimming telegram is sent cyclically during a long operation. The stop telegram ends the dimming process at the end of operation.

The next two parameters are only visible if the *Dimming steps* option is set in the *Dimming mode* parameter.

Brightness change on every sent telegram

Options: 100 %/50 %/25 %/12.5 %/6.25/<u>3.13 %</u>/1.56 %

This parameter is set to change the brightness (in percent) which is cyclically sent with every Dim telegram.

Cycle time for sending: Telegram is repeated every ...

Options: 0.3s/0.4s/0.5s/0.6s/0.8s/1 s/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

The dimming telegram is sent cyclically during a long operation. The cycle time for sending corresponds with the time interval between two telegrams during cyclical sending.

Commissioning

3.2.4.3 Communication objects "Channel A"

Number	Object Function	Name	Length	С	R	W	Т	U
⊒⊉10	Blocking	Channel A, switch	1 bit	С	-	W	-	-
⊒‡11	Switch	Channel A, switch	1 bit	С	-	W	Т	-
12	Dimming	Channel A, switch	4 bit	С	-	-	Т	-

Fig. 44: Communication object "Channel A" switch/dimming sensor operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A, switch/dimming sensor	EIS 1, 1bit DTP 1.003	C, W
Telegra	m value "0" "1"	enable Channel A block Channel A		

Via the "Block" communication object the channel connection can be blocked or released. A telegram is sent to the bus if a blocked channel is released. With activated "Blocked" communication object the inputs and the "manual operation" are blocked.

- Note: There is generally no reaction when a channel is blocked but
 - with all operating modes waiting for a long button push or minimum signal
 - duration is aborted
 - with the Switch/dimming sensor and Shutter sensor mode cyclic sending is interrupted
 - with the Control scene mode saving ends

during the blocking of a channel,

- a signal change on the terminals or with manual operation is ignored
- communication objects are still updated and sent if necessary

If a channel is enabled a change of the signal states (compared to blocking) leads to immediate processing, e.g.

start the minimum actuation or detection of a long/short button push
 communication objects are sent if necessary

11	Switch			EIS1, 1bit DTP 1.001	C, W, T
Telegra	m value	"0" "1"	OFF ON		

This communication object is only visible if the "Dimming and switching" value has been set in the Dimming function parameter.

The object value can be switched to ON, OFF or TOGGLE in accordance with the parameter with a short operation. With TOGGLE the previous value e.g. "1" is switched directly to the value "0". During dimming the communication object should be connected to the switch feedback of the dimming actuator as a non-sending group address. (Update of the switching state).

12	Dimming	Channel A, switch/dimming sensor	EIS2, 4bit DTP 3.007	С, Т
is sent	• •	ne effect that a "BRIGHTER" ect on the bus. A Stop comm ed.		
13 19	not assigned			

Table 21: Communication objects 10 to 19 "Channel A" switch/dimming sensor operating mode

3.2.4.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20 29	Analogue 1019 Channel A Switch/dimming sensor	Channel B		
30 	Analogue 1019 Channel A	Channel C		
39	Switch/dimming sensor			
		1		
40	Analogue 1019 Channel A	Channel D		
49	Switch/dimming sensor			
50	Analogue 1019	Channel E		
 59	Channel A Switch/dimming sensor			
60	Analogue 1019	Channel F		
	Channel A			
69	Switch/dimming sensor			
70	A	01		
70	Analogue 1019 Channel A	Channel G		
79	Switch/dimming sensor			
				·
80	Analogue 1019	Channel H		
	Channel A			
89	Switch/dimming sensor			

Table 22: Communication objects 20 to 89 "Channel B to H" switch/dimming sensor operating mode

Commissioning

3.2.5 Shutter sensor mode

The function enables the operation of blinds and shutters with push buttons or switches.

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.

3.2.5.1 Parameter window "Channel A, general"

General		Channel A, general	
Manual operation Enable/disable manual operation			
Channel LED	Operating mode	Shutter sensor	<u> </u>
Channel A, general	Debounce time	50ms	
Channel A, shutter sensor	Debounce time	Journs	<u> </u>
	Connected contact type	normally closed	•
Channel B, general		Insurant career	_
Channel C, general			
Channel D, general			
Channel E, general			
Channel F, general	1		
	OK	Cancel Default	Info Help

Fig. 45: Parameter window "Channel A, general" shutter sensor operating mode

Debounce time

Options: 10ms/20ms/30ms/<u>50ms</u>/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time TD starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

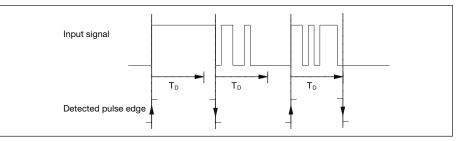


Fig. 46: Debounce time from input signal to detected edge

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time TD.

Connected contact type

Options: <u>normally open</u>/ normally closed

Here you set if the input contact is an normally closed (break) or normally open (make) contact.

3.2.5.2 Parameter window "Channel A, shutter sensor"

General 🖉] Channel A	A, shutter sensor	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, shutter sensor	Operating functionality of blind Short operation: STOP / Jamella UP/DOWN	2 push buttons, short = louvre, long = moving	
	Long operation: move UP/DDW/N Long operation after	0.5s	
Channel B, general	Reaction on short operation	STOP / lamella UP	
hannel C, general	Reaction on long operation	Move UP	
hannel D, general			
Channel F, general			

Fig. 47: Parameter window "Channel A, shutter sensor" operating mode

Shutter operating function

Commissioning

Options:	1 push button, (short = stepping, long = moving)/
	1 push button, (short = moving, long = stepping)/
	1 push button, (moving/stopping only)/
	1 switch, moving only/
	2 push buttons. (short = louvre. long = moving)/

- 2 switches, moving only /
- 2 push buttons, moving/stopping only/
- 2 push buttons, louvre adjustment only

Commissioning

i ne tollowing tab	bles provide and overview of the shutter operating function
1 push button, (sho	ort = stepping, long = moving)
Short operation	Stop/lamella adjustment; Opposite direction to the last movement command* To return to lamella adjustment, the blind must be raised or lowered briefly.
Long operation	Alternately "MOVE UP" or "MOVE DOWN
1 push button, sho	rt = moving, long = stepping
Short operation	Alternately "MOVE UP" or "MOVE DOWN
Long operation	STOP/lamella adjustment (cyclical sending); Opposite direction to the last movement or stepping command*
1 push button, mov	/ing / stopping only
On operation	The following commands are sent in sequence: \rightarrow "MOVE UP" \rightarrow "STOP / lamella UP" \rightarrow "MOVE DOWN" \rightarrow "STOP / lamella DOWN" \rightarrow *
1 switch, moving o	nly
Start of operation	Alternately "MOVE UP" or "MOVE DOWN
End of operation	STOP / lamella adj. *
2 push button, star	ndard (short = stepping, long = moving)
Short operation	"STOP/lamella UP" or " DOWN" (programmable)
Long operation	"MOVE UP" or "MOVE DOWN" (programmable)
2 switches, moving	g only
Start of operation	"MOVE UP" or "MOVE DOWN" (programmable)
End of operation	"STOP/lamella UP" or " DOWN" (programmable)
2 push buttons, mo	oving / stopping only
On operation	The following commands are sent in sequence: \rightarrow "MOVE UP" \rightarrow "STOP / lamella UP" \rightarrow or \rightarrow "MOVE DOWN" \rightarrow "STOP / lamella UP" \rightarrow
2 puch buttons lou	uvre adjustment only
2 push buttons, lot	

1 toble ida d a vio f the chutte tina functio The followin

23: Various shutter operating functions

* Note: If the actuator signals the limit position, the communication object can be synchronised in 1 button operation. If the actuator is in the limit position (see objects "Upper limit position" or "Lower limit position"), the direction of movement is preselected. In "1 push button/switch operation", the last direction of movement is determined via the last update of the communication object "Shutter UP/DOWN".

Commissioning

Differing parameters appear depending on the selection you have made in the parameter Operating functionality of blind. All parameters are described in the following.

Long operation after...

Options: 0.3s/0.4s/<u>0.5s</u>/0.6s/0.8s/1 s/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

Defines the period T_L after which an operation is interpreted as "long".

Telegram "STOP/lamella adj." is repeated every...

Options: 0.3s/0.4s/<u>0.5s</u>/0.6s/0.8s/1 s/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

The interval between two "lamella" telegrams is set here.

Reaction on short operation

Options: <u>STOP / lamella UP</u>/ STOP / lamella DOWN

Reaction on long operation

Options: <u>Move UP</u>/

Move DOWN

It can be set whether the input triggers commands for movement upwards ("UP") or downwards ("DOWN").

Reaction on operation

Options: <u>Move UP</u>/ Move DOWN

It can be set whether the input triggers commands for movement upwards ("Move UP") or downwards ("Move DOWN").

Commissioning

3.2.5.3 Communication objects "Channel A"

Number	Object Function	Name	Length	C	R	W	Т	U
⊒⊒[10	Blocking	Channel A, shutter sensor	1 bit	С	-	W	-	-
⊒⊈]11	Shutter UP/DOWN	Channel A, shutter sensor	1 bit	С	-	W	Т	-
∐ ‡ 12	STOP / lamella adj.	Channel A, shutter sensor	1 bit	С	-	-	Т	-
⊒⊈]13	Upper limit position	Channel A, shutter sensor	1 bit	С	-	W	-	-
⊒⊈14	Lower limit position	Channel A, shutter sensor	1 bit	С	-	W	-	-

Fig. 48: Communication objects "Channel A" shutter sensor operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A Shutter sensor	EIS 1, 1 bit DTP 1.003	C, W
Telegra	am value "0" "1"	Release Channel A Disable Channel A		
A teleç	gram is sent to the bus if a	object the channel connection a blocked channel is released ts and the "manual operation"	I. With activated "Blo	
Note:	 with all operating me duration is aborted 	eaction when a channel is blo odes waiting for a long buttor ming sensor and Shutter sen ne mode saving ends	n push or minimum si	•
	e	a channel, he terminals or with manual c acts are still updated and seni		
	to immediate processi – start the minimum a	a change of the signal states ng, e.g. ctuation or detection of a long ects are sent if necessary		ng) leads
11	Shutter UP/DOWN	Channel A Shutter sensor	EIS7, 1 bit DTP 1.008	C, W, T
The de		ds a shutter motion comman- nent commands of other sens		
12	Stopp/STOP / lamella adjustment	Channel A Shutter sensor	EIS7, 1 bit DTP 1.007	C, T
-	am value "0" "1"	Stop/lamella UP Stop/lamella DOWN ds a stop command or lamell	le adjustment	
13	Upper limit position	Channel A Shutter sensor	EIS1, 1 bit DTP 1.002	C, W
Telegra	am value "0" "1"	no upper end limit at upper end limit		
	s communication object, osition ("shutter open").	the shutter actuator reports v	vhether or not it is in t	the upper
Note:	The communica	ation object is import and for	1 button operation.	
14	Lower limit position	Channel A Shutter sensor	EIS1, 1 bit DTP 1.002	C, W
Telegra	am value "0" "1"	no lower end limit at lower end limit		
		the shutter actuator reports v	vhether or not it is in t	the lower
	osition ("shutter closed").			
	,	ation object is important for 1	button operation.	
limit p	,		button operation.	

Table 24: Communication objects 10 to 19 "Channel A" shutter sensor operating mode

Commissioning

3.2.5.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20 29	Analogue 1019 Channel A Shutter sensor	Channel B		
29	Shutter sensor			
30	Analogue 1019	Channel C		
	Channel A			
39	Shutter sensor			
40	Analogue 1019 Channel A	Channel D		
 49	Shutter sensor			
50	Analogue 1019	Channel E		
	Channel A			
59	Shutter sensor			
60	Anglemus 10, 10	Channel F		
60	Analogue 1019 Channel A			
 69	Shutter sensor			
09	Sindler Selisor			
70	Analogue 1019	Channel G		
	Channel A			
79	Shutter sensor			
80	Analogue 1019 Channel A	Channel H		
	Channel A Shutter sensor			
89	Snutter sensor			

Table 25: Communication objects 20 to 89 "Channel B to H" shutter sensor operating mode

Commissioning

3.2.6 Operating mode Value/forced operation

The function permits the values of any data types to be sent.

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.

3.2.6.1 Parameter window "Channel A, general"

General	Cha	annel A, general	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Value / forced operation	•
Channel A., general Channel A., value/forced op. value 1	Debounce time	50ms	٠
Channel A, value/forced op. value 2 Channel B, general	Distinction between long and short operation	no	•
	Activate minimum signal time	no	•
Channel C. general			
Channel D. general			
Channel E. general	Scan input after download, bus reset and bus voltage recovery	no	•
Channel F, general			
	ОК	Cancel Default Info	Help

Fig. 49: Parameter window "Channel A, general" value/forced operation operating mode

Debounce time

Options: 10ms/20ms/30ms/<u>50ms</u>/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

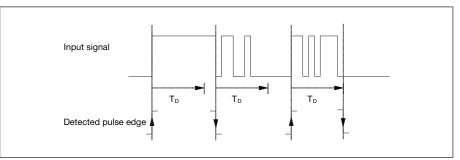


Fig. 50: Debounce time from input signal to detected edge

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Commissioning

Distinction between long and short operation

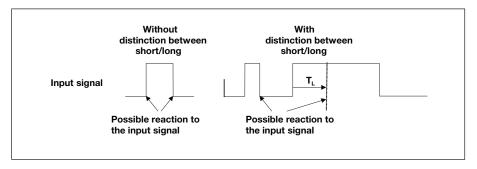
Options: yes/no

This parameter defines whether the input distinguishes between a short and long operation.

If yes is selected, there is a delay after opening/closing the contact to determine whether there is a short or long operation. Only then is a possible reaction triggered.

Note: When there is a distinction between a short and long operation, 2 objects are visible per channel. One communication object only sends after a short operation while the other communication object only sends after a long operation.

The following diagram illustrates the function:



 T_L is the period after which a push button action is recognised as a long operation.

Fig. 51: Distinction between short/long operation for "Value/forced operation" function

The following parameters are visible in the parameter window "Channel A, general" if the option *no* has been selected with the parameter *Distinction between short/long operation*.

Activate minimum signal time

Options: yes/no

What is minumum signal time?

This function differs from the debounce time by the fact that the telegram is sent only after the minumum signal time has timed out. The functions in detail:

If an edge is detected at the input, the minumum signal time commences. No telegram is sent on the bus during this time. The signal at the input is monitored within the minumum signal time. If a further edge is detected at the input during the minumum signal time, this is interpreted as a renewed actuation and the minumum signal time starts if necessary. If the input signal has not changed during the minumum signal time an edge is detected and a telegram is sent on the bus if necessary.

The following example illustrates this:

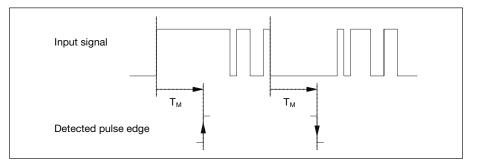


Fig. 52: Minumum signal time of the input signal on the edge to be recognised

Since only two pulse edges remain stable for the duration of the minimum signal time T_M , only these pulse edges are recognised as valid

Scan input after download, bus reset and bus voltage recovery Options: yes/no

Option yes = object value is scanned after download, bus reset and bus voltage recovery.

Option no = object value is not scanned after download, bus reset and bus voltage recovery.

Commissioning

If the option *yes* is selected in the parameter *Scan input after download*, *bus reset and bus voltage recovery* after download, the following parameter becomes visible.

Inactive wait state after bus voltage recovery [0...30.000s, 0=inactive]

Options: <u>0</u>...30.000

This parameter is used to set the waiting time after bus voltage recovery. The state at the input terminals is detected after this time has timed out. The input reacts as if the state at the input terminals has just been set/not set.

Note: The inactive wait state does <u>not</u> add to the adjustable delay time for sending. It can be set in the "General" parameter window.

If the option <u>yes</u> is selected with the parameter *Activate minimum signal time*, the following parameters are visible.

After rising edge: base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...255

After falling edge: time base

Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...255

The following parameters are visible in the parameter window "Channel A, general" if the option *yes* has been selected with the parameter *Distinction between short/long operation*.

General	-	Channel A, general	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, value/forced op. value 1	Operating mode Debounce time	Value / forced operation	•
Channel A, value/forced op. value 1 Channel A, value/forced op. value 2 Channel B, general	Distinction between long and short operation	yes.	•
Channel C, general	Connected contact type Long operation after time base	normally closed	•
	Factor [1255]	10	
Channel D, general			
Channel E, general			
Channel F. general			
2	OK	Cancel Default Info	Help

Fig. 53: Parameter window "Channel A, general" value/forced operation operating mode

Connected contact type

Options: <u>normally open</u>/ normally closed

Option normally open = input normally open when actuated Option normally closed = input normally closed when actuated

Long operation after... time base

Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Defines the period $T_{\rm L}$ after which an operation is interpreted as "long". ($T_{\rm L}$ = time base x factor)

Factor [1...255] Options: 1...<u>10</u>...255

Commissioning

3.2.6.2 **Parameter window** Channel A, value/forced op. value 1 General . "Channel A, value/ Manual operation Enable/disable manual operation Value 1 (rising edge / short operation) 1-byte-value [0...255] forced operation value X" Channel LED Channel A, general 0 sent value [0...255] Channel A, value/forced op. value 1 Channel A, value/forced op. value 2 Channel B, general Channel C, general Channel D, general Channel E, general Channel F, general -OK. Cancel Default

Fig. 54: Parameter window "Channel A, value/forced operation value 1" operating mode

Value X (with rising edge or with short operation)

Options: no sending/

- 1-Bit-values [0/1]/
- 2-Bit-values (forced operation)/
- 1-Byte-values [-128...127]/
- 1-Byte-values [0...255]/
- 1-Byte-values (8 bit scene)/
- 2-Byte-values [-32.768...32.767]/
- 2-Byte-values [0...65.565]/
- 2-Byte-values [EIB floating point]/
- 3-Byte-values [time]/
- 4-Byte-values [-2.147.483.648...2.147.483.647]/
- 4-Byte-values [0...4.294.967.295]

This parameter serves to define the data type which is sent when the contact is actuated.

Depending on the selection made for parameter value X (with rising edge or with short operation), different parameters appear. All parameters are described in the following.

sent value [X] Options: <u>0</u>/1 -128...<u>0</u>...127 <u>0</u>...255

-32.768...<u>0</u>...32.767 <u>0</u>...65,535 -100.00...<u>20.00</u>...100.00 -2.147.483.648...<u>0</u>...2.147.483.647 <u>0</u>...4.294.967.295

This parameter defines the value which is sent with the operation. The value range depends on the data type set for the value X. *

÷

Help

sent value

Options: ON, activate forced position/ OFF, activate forced operation/ <u>Disable forced operation</u>

This parameter defines the value which is sent with the operation. The forced operation function is explained in the following table:

Bit 1	Bit 0	Access	Description
0	0	Free	Switch object of the switch actuator is released by the Binary Input.The assigned sensor can control the switch actuator via the switch object. The Binary Input does not control the switch actuator. Bit "0" of the value of the priority object is not evaluated.
0	1	Free	The priority object sends a telegram with the group address of the priority object and the status of the switch object with every change of the state.
1	0	Off	Switch object of the switch actuator is blocked by the Binary Input.The assigned sensor can not control the switch actuator via the switch object. The Binary Input controls the switch actuator via the priority object. The switch actuator is switched off. Bit "0" of the value of the priority object is evaluated.
1	1	On	Switch object of the switch actuator is blocked by the Binary Input.The assigned sensor can not control the switch actuator via the switch object. The Binary Input controls the switch actuator via the priority object. The switch actuator is switched on.

Table 26: Operating mode value/forced operation priority object

8 bit scene

Options: <u>Scene no.1</u>...Scene no.64

This parameter defines the scene which is sent with the operation.

Store/recall scene

Options: <u>recall</u>/storing

This parameter defines if the scene is to be recalled or stored.

Hour [0...23] Options: <u>0</u>...23

Minute [0...59] Options: <u>0</u>...59

Second [0...59] Options: <u>0</u>...59

With these parameters the hours, minutes and seconds which should be sent during actuation are set.

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3.2.6.3 Communication objects "Channel A"

Number	Object Function	Name	Length	С	R	W	Т	U
	Blocking	Channel A, value/forced op.	1 bit	С	-	W	-	-
	Value 1, unsigned	Channel A, value/forced op.	1 Byte	С	-	-	Т	-
■幕12	Value 2, unsigned	Channel A, value/forced op.	1 Byte	С	-	-	Т	-

Fig. 55: Communication objects "Channel A" value/forced operation operating mode

telegram is se nication object Note: Ther - wi or - wi durir - a s - cc If a c imm - sta - cc If a c imm - sta - cc If a c imm - sta - cc If a c imm - sta - cc 11 Value This commun closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt 4-Byt 4-Byt [-2.14		Object name	Data type	Flags
Via the "Block telegram is se nication object Note: Ther – wi or – wi durir – a s – cc If a c imm – sta – cc In Bit- 2-Bit- 1-Byt 1-Byt 2-	. "?"	Channel A, value/forced operation	EIS 1, 1 bit DPT 1.003	C, W
telegram is se nication object Note: Ther - wi or - wi durir - a s - cc If a c imm - sta - cc If a c imm - sta - cc If a c imm - sta - cc If a c imm - sta - cc 11 Value This commun closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt 4-Byt [-2.14 12 See c	value "0" "1"	enable Channel A block Channel A		
- wi or - wi ru - wi ru - wi durir - a s - cc If a c immu- - sta - cc If a c immu- sta - cc If a c immu- - sta - cc If a c immu- - sta - cc InBit- 2-Bit- 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt [-2.14 12 See c	s sent to the bus if a bloc	ect the channel connection ked channel is released. Wi manual operation" are bloc	th activated "Blocke	
- cc If a c imm - sta - cc 11 Value This commun closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 4-Byt 4-Byt [-2.14 12 See c	with all operating mode on is aborted	0	oush or minimum sig	
immu - sta - cc 11 Value This commun closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt (-2.14) 12 See c	a signal change on the t	terminals or with manual op are still updated and sent if	0	
This commun closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt [-2.14 12 See c	nmediate processing, e.g	ation or detection of a long/		ng) leads to
closing the cc 1-Bit- 2-Bit- 1-Byt 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 4-Byt (-2.14) 12 See c	lue 1, X	Channel A, value/forced operation	EIS variable DPT variable	С, Т
2-Bit- 1-Byt 1-Byt 2-Byt 2-Byt 2-Byt 3-Byt 4-Byt [-2.14 12 See c		a value to the bus with short data type can be freely set i		ening or
	Bit-values [0/1] Bit-values [03] Byte-values [-128127] Byte-values [0255] Byte values 8 bit scene Byte-values [-32.76832 Byte-values [065.535] Byte-values [EIB floating Byte-values [time]	EIS 10 point] EIS 5 EIS 3 67.295] EIS 11 EIS 11	DPT 1.001 switch DPT 2.001 forced DPT 6.010 value DPT 5.010 value DPT 18.001 bright position value DPT 7.001 value DPT 8.001 value DPT 9.001 temper DPT 10.001 time DPT 12.001 value	operation ness/
00,00	Byte-values [04.294.96 Byte-values 147.483.6482.147.48			
	Byte-values 04.294.96 Byte-values			
13 not a: 	Byte-values [04.294.96 Byte-values 147.483.6482.147.48 e communication ject 11			

Table 27: Communication objects 10 to 19 "Channel A" value/forced operation operating mode

When there is a distinction between a short and long operation, 2 objects are visible per channel. One communication object only sends after a short operation while the other communication object only sends after a long operation.

Note: As standard the "Write" flag with the value objects (except for 1-bit objects) is deleted. Thus, the object value can not be modified via the bus. If this function is required, the "Write" flag must be set in the ETS. The object value is overwritten with the parameterised value on bus voltage recovery.

3.2.6.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20	Analogue 1019	Channel B		
	Channel A			
29	Value/forced operation			
30	Analogue 1019	Channel C		
	Channel A			
39	Value/forced operation			
40	Analogue 1019	Channel D		
	Channel A			
49	Value/forced operation			
50	Analogue 1019	Channel E		
	Channel A			
59	Value/forced operation			
60	Analogue 1019	Channel F		
	Channel A			
69	Value/forced operation			
70	Analogue 1019	Channel G		
	Channel A			
79	Value/forced operation			
80	Analogue 1019	Channel H		
	Channel A			
89	Value/forced operation			

Table 28: Communication objects 20 to 89 "Channel B to H" value/forced operation operating mode

3.2.7	Control scene operating mode	This operating mode enables the recall and saving of states of multiple operating modeactuator groups. An actuator group comprises several communication objects that are linked with the same group address. It can consist of e.g. switch actuators (1-bit values) or dimming actuators (1-byte values)
		(1-byte values).

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>

Store scene

The scene is simply adapted by saving the current actuator values.

The communication object "Store scene indication" sends the value "1". The values of the affected communication objects are scanned via the bus. The scene is only stored when all scans are answered. The communication object "Store scene indication" sends the value "0".

3.2.7.1 Parameter window "Channel A, general"

General Annual operation	-	Channel A, general	
Enable/disable manual operation Channel LED	Operating mode	Control scene	•
Channel A. general Channel A, scene part 1	Debounce time	50ms	•
Channel A, scene part 2	Connected contact type	normally closed	•
Channel B, general	Store scene	no	<u>.</u>
Channel C. general			
Channel D, general			
- Channel E, general	-		
Channel F, general	•		
-	ОК	Cancel Default Info	Help

Fig. 56: Parameter window "Channel A, general" control scene operating mode

Debounce time

Options: 10ms/20ms/30ms/50ms/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

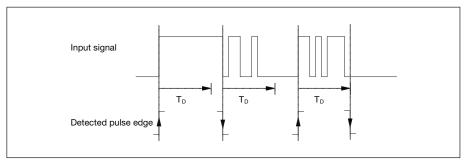


Fig. 57: Debounce time from input signall to detected edge

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Connected contact type

Options: <u>normally open</u>/ normally closed

Option *normally open* = input normally open when actuated Option *normally closed* = input normally closed when actuated

Commissioning

Store scene

Options:

<u>no</u>/ on long operation/ object value = 1 / on long operation and object value = 1

This parameter determines the manner in which storing of the current scene is initiated and which function the "Store scene" communication object has. This is dependent on the scene control.

Option *on long operation* = The scene is stored as soon as an operation is detected and ends as soon as the button is released.

Option *object value* = 1 = If the "Store scene" communication object receives the value "1", storing is activated. If the "Store scene" communication object receives the value "0", storing is ended.

Option *on long operation and object value* = 1= As soon as a long operation is detected and the "Enable storing" communication object has the value "1", storing is activated. Storing is ended as soon as the "Enable storing" communication object has the value "0" or the button is released.

Note: If storing has not been successful when ending, the "Store scene indication" communication object sends the value "0".

If the object *on long operation* and *on long operation and object value* = 1 has been selected in the *Store scene* the following parameter appears.

Long operation after...

Options: 0.3s/0.4s/0.5s/0.6s/0.8s/1 s/1.2s/1.5s/2s/<u>3s</u>/4s/ 5s/6s/7s/8s/9s/10s

Defines the period T_L after which an operation is interpreted as "long".

3.2.7.2 Parameter window "Channel A, scene part X"

General	-	Channel A, scene part 1	
Manual operation Enable/disable manual operation Channel LED	Actuator group A: type	1-bit-value (ON/OFF)	•
Channel A, general Dhannel A, scene part 1	Preset value	ON	
Channel A, scene part 2	Store via the bus	no	•
Channel B, general	Actuator group B: type	1-bit-value (ON/OFF)	•
Channel C, general	Preset value	ON	-
channel C, general	Store via the bus	no	•
Channel D, general	Actuator group C: type	1-bit-value (ON/OFF)	•
ananie 2 general	Preset value	ON	•
Channel E, general	Store via the bus	no	•
Channel F, general	-1		
Channel F, general	•]	Cancel Default I Info	Help

Fig. 58: Parameter window "Channel A, scene part 1" operating mode

Actuator group X: type

Options: <u>1-Bit-values [on/off]</u>/ 1-Byte-values [0...100 %]/ 1-Byte-values [0...255]/ 2-Byte-values [temperature]

Variuos data types can be selected for each of the 6 actuator groups A...F. Depending on the value which has been selected for the actuator groups, various options are visible in the *preset value* parameters.

Preset value

Options:	<u>ON/OFF</u>
	0 %/ <u>10 %</u> /20 %/30 %/40 %/50 %/60 %/70 %/80 %/ 90 %/100 %
	<u>0</u> 255
	-100.00 <u>20.00</u> 100.00

A value is preset for each actuator group A...F with these parameters.

Note: If a scene has been stored and the preset values are to be used after a download, the "Reset to preset value" communication object must be activated.

Store via the bus

Options: yes/<u>no</u>

This parameter sets if the scene is to be stored via the bus. If reading a communication object is not possible, the setting should remain set to *no* (see Store scene).

Commissioning

3.2.7.3 Communication objects "Channel A"

Number	Object Function	Name	Length	C	R	W	Т	U
民 10	Blocking	Channel A, scene control	1 bit	С	-	W	-	-
L 11	Actuator group A [on/off]	Channel A, scene control	1 bit	С	-	W	Т	U
【12	Actuator group B [on/off]	Channel A, scene control	1 bit	С	-	W	т	U
【13	Actuator group C [on/off]	Channel A, scene control	1 bit	С	-	W	Т	U
【14	Actuator group D [on/off]	Channel A, scene control	1 bit	C	-	W	Т	U
LA 15	Actuator group E [on/off]	Channel A, scene control	1 bit	С	-	W	Т	U
1 6	Actuator group F [on/off]	Channel A, scene control	1 bit	С	-	W	т	U
L 18	Store scene indication	Channel A, scene control	1 bit	С	-	-	Т	-
L 19	Restore scene to default	Channel A, scene control	1 bit	С	-	W	-	-

Fig. 59: Communication objects "Channel A" scene control operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A, scene control	EIS 1, 1 bit DPT 1.003	C, W
Telegra	am value "0" "1"	enable Channel A block Channel A		
A teleg	"Block" communication obj ram is sent to the bus if a bl unication object the inputs a	ocked channel is released. V	Vith activated "Bloc	
Note:	 with all operating mode duration is aborted 	tion when a channel is block s waiting for a long button p g sensor and Shutter senso mode saving ends	ush or minimum sig	
	0 0	hannel, terminals or with manual ope are still updated and sent if	0	
	to immediate processing,	ation or detection of a long/s	·	ng) leads
11	Actuator group A [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This co	mmunication object sends th	he following values to the bus	to suit the setting o	f the scene.
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 e] EIS 5	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 tempera	tage value r value
12	Actuator group B [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This co	mmunication object sends th	he following values to the bus	to suit the setting o	f the scene.
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 EIS 6	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 tempera	tage value r value
13	Actuator group C [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This co	mmunication object sends th	ne following values to the bus	to suit the setting o	f the scene.
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 EIS 5	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 tempera	tage value r value

Table 27: Communication objects 10 to 13 "Channel A" scene control operating mode

Commissioning

No.	Function	Object name	Data type	Flags
14	Actautor group D [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This c	ommunication object sends th	e following values to the bus	to suit the setting o	f the scene
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 EIS 5	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 tempera	tage value r value
15	Actautor group E [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This c	ommunication object sends th	e following values to the bus	to suit the setting o	f the scene
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 EIS 5	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 tempera	tage value r value
16	Actautor group F [variable]	Channel A, scene control	EIS variable DPT variable	C, W, T
This c	ommunication object sends th	e following values to the bus	to suit the setting o	f the scene
	1-Bit-values [ON/OFF] 1-Byte-values [0100] 1-Byte-values [0255] 2-Byte-values [temperature	EIS 1 EIS 6 EIS 6 EIS 5	DPT 1.001 switch DPT 5.001 percen DPT 5.010 counte PT 9.001 temperat	tage value r value
17	Store scene	Channel A, scene control	EIS 1, 1bit DPT 1.003	C, W
be set	communication object only ap t in the "Store scene" parame scene via the bus. The function	ter. This communication obj	ect is used to initiat	
17	Enable storing	Channel A, scene control	EIS 1, 1bit DPT 1.003	C, W
= 1". ⁻ used f	communication object only ap This option can be set in the " to initiate storing of the scene scene.	Store scene" parameter. Th	is communication o	bject is
18	Store scene indication	Channel A, scene control	EIS 1, 1bit DPT 1.003	С, Т
	communication object is used unction depends on the type c		sceney e.g. on a LE	D.
19	Restore scene to default	Channel A, scene control	EIS 1, 1bit DPT 1.003	C, R, W, ⁻

Table 30: Communication objects 14 to 19 "Channel A" scene control operating mode

3.2.7.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20	Analogue 1019	Channel B		
	Channel A			
29	Control scene			
30	Analogue 1019	Channel C		
	Channel A			
39	Control scene			
40	Analogue 1019 Channel A	Channel D		
	•			
49	Control scene			
50	Analogue 1019	Channel E		
	Channel A			
59	Control scene			
60	Analogue 1019	Channel F		
	Channel A			
69	Control scene			
70	Analogue 1019	Channel G		
	Channel A	Glianner G		
 79	Control scene			
19	Control Scene			
80	Apploque 10 10	Channel H		
00	Analogue 1019 Channel A			
	••••••			
89	Control scene			

Table 31: Communication objects 20 to 89 "Channel B to H" control scene operating mode

Commissioning

3.2.8 Switching sequence mode The "Switching sequence" function enables up to five switch objects to be modified in a defined sequence by actuation of just a single input. Thus, up to to five actuators or actuator groups can be switched in a defined sequence.

Note: The standard settings for the options are underlined, e.g. option: yes/no

3.2.8.1 Parameter window "Channel A, general"

General		Channel A, general	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Switching sequences	•
Channel A, general Channel A, switching sequence	Debounce time	50ms	•
Channel B, general	Connected contact type Activate minimum signal time	normally closed	× •
Channel C, general			
Channel D, general			
Channel E, general	-		
Channel F, general			
	OK	Cancel Default Info	<u>H</u> elp

Fig. 60: Parameter window "Channel A, general" switching sequence operating mode

Debounce time

Options: 10ms/20ms/30ms/<u>50ms</u>/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

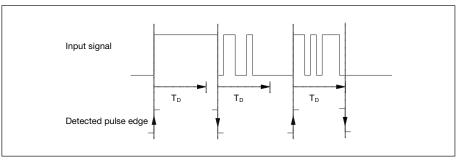


Fig. 61: Debounce time of the input signal on the edge to be recognised

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Commissioning

Connected contact type

Options: normally open/ normally closed

Option *normally open* = input normally open when actuated Option *normally closed* = input normally closed when actuated

Activate minimum signal time yes/<u>no</u>

Options:

What is minumum signal time?

This function differs from the debounce time by the fact that the telegram is sent only after the minumum signal time has timed out. The functions in detail:

If an edge is detected at the input, the minumum signal time commences. No telegram is sent on the bus during this time. The signal at the input is monitored within the minumum signal time. If a further edge is detected at the input during the minumum signal time, this is interpreted as a renewed actuation and the minumum signal time starts if necessary. If the input signal has not changed during the minumum signal time an edge is detected and a telegram is sent on the bus if necessary.

The following example illustrates this:

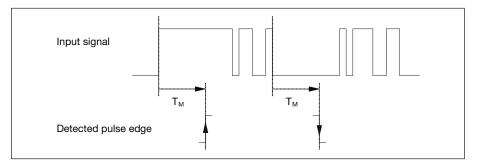


Fig. 62: Minimum signal time of the input signal on the edge to be recognised

Since only two pulse edges remain stable for the duration of the minimum signal time T_M , only these pulse edges are recognised as valid.

If the option yes is selected with the parameter Activate minimum signal time, the following parameters are visible.

Start of operation: time base

Options: 100ms/1s/10s/1 min/10min/1 h

Factor [1...255] Options: 1....<u>10</u>....255

On end of operation: time base Options: 100ms/<u>1s</u>/10s/1min/10min/1h

Factor [1...255] Options: 1...<u>10</u>...255

3.2.8.2 Parameter window "Channel A, switching sequence"

General	Char	nnel A, switching sequence	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, switching sequence	Number of levels Type of switching sequence (example: 3 levels)	3 <=000-001-000-010-000-100=> (sequence	• 5) •
Channel B, general	Direction on operation	upwards	•
Channel C, general			
Channel D, general			
- Channel E, general	-		
Channel F, general			
-	ОК	Cancel Default Info	Help

Fig. 63: Parameter window "Channel A, switching sequence" operating mode

Number of levels

Options: 2/3/4/5

The number of stages (max. 5) has the same meaning as the number of communication objects: The communication objects "Value 1" to "Value 5" are enabled accordingly.

Type of switching sequence with a 3 stage example

Options: =>000-001-011-111 (sequence 1)/ Gray code (sequence 2)/ <=000-001-011-111-001=> (sequence 3)/ <=000-001-011-111-000=> (sequence 4)/ <=000-001-000-010-000-100-000=> (sequence 5)/

The switching sequence relates to the states of the three communication objects (0 = OFF, 1 = ON).

The type of switching sequence can be selected here. Each sequence has different communication objects for each switching level.

The "Switching sequence" function enables up to five objects (1 bit) to be switched on or off in a defined sequence. The sequence is switched one level further after each operation.

Switching sequence 000-001-011-111 (sequence 1)

With this sequence a further communication object is switched on with each actuation. If all the communication objects are switched on, all further operations are ignored. At least two inputs are therefore required, one of which switches up a level and the other which switches down a level in the sequence.

Note: The communication objects of the inputs must have the same group address.

Switching sequence		Value of the communication objects			
Input operation number Binary code		"Switch3"	"Switch2"	"Switch1"	
0	000	OFF	OFF	OFF	
1	001	OFF	OFF	ON	
2	011	OFF	ON	ON	
3	111	ON	ON	ON	

Table 32: Switching sequence 1

Switching sequence Gray code (sequence 2)

This switching sequence runs through all the combinations of the communication objects in succession. Only the value of one communication object is changed between two switching levels. A clear application of this switching sequence is e.g. the switching of two groups of luminaries in the sequence $00 - 01 - 11 - 10 - 00 \dots$

You can find a 'Gray code table' in the appendix.

Switching sequence <=000-001-011-111-011-001=> (sequence 3)

With this sequence a further communication object is switched on each actuation. When all the communication objects are switched on, they are switched off again one after the other, starting with the last object that was switched on.

Switching sequence		Value of the communication objects			
Input operation number	Binary code	"Switch3"	"Switch2"	"Switch1"	
0	000	OFF	OFF	OFF	
1	001	OFF	OFF	ON	
2	011	OFF	ON	ON	
3	111	ON	ON	ON	
4	011	OFF	ON	ON	
5	001	OFF	OFF	ON	

Table 33: Switching sequence 3

Switching sequence <=000-001-011-111-000=> (sequence 4)

With this sequence a further communication object is switched on after each actuation. If all the communication objects are switched on, they are all switched off at once.

Switching sequence		Value of the communication objects			
Input operation number	Binary code	"Switch3"	"Switch2"	"Switch1"	
0	000	OFF	OFF	OFF	
1	001	OFF	OFF	ON	
2	011	OFF	ON	ON	
3	111	ON	ON	ON	

Table 34: Switching sequence 4

Switching sequence <=000-001-000-010-000-100-000=> (sequence 5) This switching sequence switches a communication object on and then off again when operated. Thereafter, further communication objects are switched on or off.

Switching sequence		Value of the communication objects			
Input operation number Binary code		"Switch3"	"Switch2"	"Switch1"	
0	000	OFF	OFF	OFF	
1	001	OFF	OFF	ON	
2	000	OFF	OFF	OFF	
3	010	OFF	ON	OFF	
4	000	OFF	OFF	OFF	
5	100	ON	OFF	OFF	

Table 35: Switching sequence 5

Further options

The switching level can be modified both via the operation of the input and via the communication object "Level increment/decrement". This object is used for example to switch upwards or downwards with two or more inputs.

Note: The current switching level is always produced from the status of the communication objects. If e.g. a communication object is modified by another device, the current switching level can also be changed as a result.

Direction on operation

Options: <u>upwards</u>/downwards

With this parameter you can set a button to switch upwards or downwards.

Commissioning

3.2.8.3 Communication objects "Channel A"

Number	Object Function	Name	Length	С	R	W	Т	U
■【10	Blocking	Channel A, switching sequence	1 bit	С	-	W	-	-
	Value 1	Channel A, switching sequence	1 bit	С	-	W	Т	-
□ ‡12	Value 2	Channel A, switching sequence	1 bit	С	-	W	Т	-
⊒‡13	Value 3	Channel A, switching sequence	1 bit	С	-	W	Т	-
	Value 4	Channel A, switching sequence	1 bit	С	-	W	Т	-
⊒⊒[15	Value 5	Channel A, switching sequence	1 bit	С	-	W	Т	-
	Level increment/decrement	Channel A, switching sequence	1 bit	С	-	W	-	-
三式17	Number of operation	Channel A, switching sequence	1 Byte	С	-	W	Т	-

Fig. 64: Communication object "Channel A" switching sequence operating mode

No.	Function	Object name	Data type	Flags			
10	Block	Channel A, switching sequence	EIS 1, 1 bit DTP 1.003	C, W			
Telegra		ble Channel A ble Channel A					
A teleg	ram is sent to the bus if a bl	ect the channel connection ocked channel is released. V nd the "manual operation" a	Vith activated "Bloc				
Note:	 with all operating mode duration is aborted 	tion when a channel is block s waiting for a long button p g sensor and Shutter sensor mode saving ends	ush or minimum sig				
	 during the blocking of a channel, a signal change on the terminals or with manual operation is ignored communication objects are still updated and sent if necessary 						
	(compared to before the b	the change leads to a chang lock) to immediate processi ation or detection of a long/s are sent if necessary.	ng, e.g.	2S			
11	Value 1	Channel A, switching sequence	EIS1, 1 bit DTP 1.001	C, W, T			
		communication objects is se ication objects set the values		0			
12	Value 2	Channel A, switching sequence	EIS1, 1 bit DTP 1.001	C, W, T			
		communication objects is se ication objects set the values		0			
13	Value 3	Channel A, switching sequence	EIS1, 1 bit DTP 1.001	C, W, T			
		communication objects is se ication objects set the values		0			
14	Value 4	Channel A, switching sequence	EIS1, 1 bit DTP 1.001	C, W, T			
		communication objects is se ication objects set the values					
15	Value 5	Channel A, switching sequence	EIS1, 1 bit DTP 1.001	C, W, T			
		communication objects is se ication objects set the values		-			

Table 36: Communication objects 10 to 15 "Channel A" switching sequence operating mode

Commissioning

No.	Function	Object name	Data type	Flags
16	Level increment/ decrement	Channel A, switching sequence	EIS 1, 1 bit DPT 1.001	C, W
Telegra		rement level ement level		
	U	communication object, the e. If a "0" telegram is receive		-
17	Number of operation	Channel A, switching sequence	EIS 6,1 byte DPT 5.010	C, W, T
sequer	-	es the number of operations n of multiple Binary Inputs the group address.	•	0
Note:	•	nsure that the number of cor ts are equal (e.g. 3 stages).	nmunication object	s in the
18	not assigned			

Table 37: Communication objects 16 to 19 "Channel A" switching sequence operating mode

3.2.8.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20	Analogue 1019 Channel A	Channel B		
29	Switching sequence			
29	Switching sequence			
30	Analogue 1019	Channel C		
	Channel A			
39	Switching sequence			
40	Analogue 1019	Channel D		
	Channel A			
 49	Switching sequence			
43	Switching Sequence			
50	Analogue 1019	Channel E		
	Channel A			
59	Switching sequence			
60	Analogue 1019	Channel F		
	Channel A			
69	Switching sequence			
70	Analogue 1019	Channel G		
	Channel A			
79	Switching sequence			
	A			
80	Analogue 1019	Channel H		
	Channel A			
89	Switching sequence			

Table 38: Communication objects 20 to 89 "Channel B to H" switching sequence operating mode

3.2.9 Operating mode multiple operation If the input is operated on multiple occasions within a defined period, a defined object value can be modified by the number of operations. In this manner for example, different lightscenes are possible by multiple pushes of a button.

Note: The standard settings for the options are underlined, e.g. option: yes/no.

3.2.9.1 **Parameter window** Channel A, general General . "Channel A, general" Manual operation Enable/disable manual operation ٠ Operating mode Multiple operation Channel LED Channel A, general 50ms ٠ Debounce time Channel A, multiple operation normally closed ٠ Connected contact type Channel B, general Additional communication object for long operation no * Channel C, general Channel D, general Channel E, general Channel F, general -**DK** Cancel Default Help

Fig. 65: Parameter window "Channel A, general" multiple operation operating mode

Debounce time

Options: 10ms/20ms/30ms/<u>50ms</u>/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this

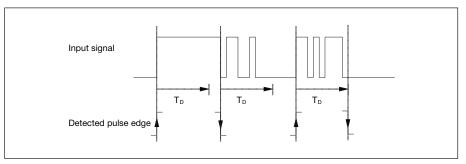


Fig. 66: Debounce time from input signal to detected edge

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Connected contact type

Options: <u>normally open/normally closed</u>

Option *normally open* = input normally open when actuated Option *normally closed* = input normally closed when actuated

Additional communication object for long operation Options: yes/no

A further function is performed with longer operation of the input via the "Long operation" communication object. If one or more short operations are performed within the maximum time of a long operation, the short operations are ignored.

If the option yes is selected in the parameter Additional communication object for long operation, the following parameters are visible.

Long operation after...

Options: 0.3s/0.4s/0.5s/0.6s/0.8s/1 s/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

Defines the period T_L after which an operation is interpreted as "long".

Commissioning

3.2.9.2 Parameter window "Channel A, multiple operation"

General _	Channel	A, multiple operation	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, multiple operation	Max. number of operations { = number of communication objects} sent value {object "fold operation"}	3-fold TOGGLE	•
Channel B, general	Send value on every operation Maximum time between two operations	no 1s	•
Channel C, general			
Channel D, general			
- Channel E, general	-		
Channel F, general	+		
-	OK	Cancel Default	Help

Fig. 67: Parameter window "Channel A, multiple operation" operating mode

Max. number of operations (= number of communication objects) Options: single/

2-fold/ <u>3-fold</u>/ 4-fold

The maximum number of operations possible is set here. This number is equal to the "x-fold operation" of communication objects. If the actual number of operations is greater than the set maximum value, the input reacts as if the number of operations is equal to the maximum value set here.

sent value (object "...-fold operation")

Options:	ON/
	OFF/
	TOGGLE

This parameter sets which object value is to be sent. The settings *ON*, *OFF* and *TOGGLE* are possible. With *TOGGLE* the current object value is inverted.

Send value on every operation

Options: yes/no

Option *yes* = the respective object value is updated and sent with each operation.

Example With 3-fold operation the communication objects 1-fold operation (after the 1st operation), 2-fold operation (after the 2nd operation) and 3-fold operation (after the 3rd operation) are sent.

Maximum time between two operations

Options: 0.3s/0.4s/0.5s/0.6s/0.8s/<u>1s</u>/1.2s/1.5s/2s/3s/4s/ 5s/6s/7s/8s/9s/10s

This parameter sets the maximum allowed interval between two operations. After operation the time entered here must time out. If no further operations occur within this time, the "Long operation" communication object is sent and the count is reinitiated with the next operation.

If the option *yes* is selected in the parameter Additional communication object for long operation, the following parameters appear.

sent value (communication object "Long operation")

ON/ OFF/

Options:

TOGGLE

A further function is performed with longer operation of the input via the "Long operation" communication object. If one or more short operations are performed within the maximum time of a long operation, the short operations are ignored.

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3.2.9.3 Communication objects "Channel A"

Number	Object Function	Name	Length	C	R	W	Т	U
■2 10	Blocking	Channel A, multiple operation	1 bit	С	-	W	-	-
⊒⊈11	1-fold operation	Channel A, multiple operation	1 bit	C	-	W	Т	-
■【12	2-fold operation	Channel A, multiple operation	1 bit	С	-	W	Т	-
⊒‡]13	3-fold operation	Channel A, multiple operation	1 bit	C	-	W	Т	-
⊒‡14	4-fold operation	Channel A, multiple operation	1 bit	С	-	W	Т	-
∐ ‡ 15	Long operation	Channel A, multiple operation	1 bit	С	-	-	Т	-

Fig. 68: Communication object "Channel A" multiple operation operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A multiple operation	EIS 1, 1 bit DTP 1.003	C, W
Telegi	ram value "0" "1"	Enable Channel A Disable Channel A		
A tele	gram is sent to the bus if a	bject the channel connectior blocked channel is released. and the "manual operation"	With activated "Blo	
Note:	 with all operating mod duration is aborted 	action when a channel is bloc des waiting for a long button ning sensor and Shutter sens	push or minimum s	0
	during the blocking of a – a signal change on th	°,	0	cessary
	(compared to before the	el the change leads to a char block) to immediate process tuation or detection of a long ts are sent if necessary	sing, e.g.	tes
11	1-fold operation	Channel A, multiple operation	EIS1, 1 bit DTP 1.001	C, W, T
		put the respective communic legram value is adjustable in		to suit
12	2-fold operation	Channel A, multiple operation	EIS1, 1 bit DTP 1.001	C, W, T
		put the respective communic legram value is adjustable in		to suit
13	3-fold operation	Channel A, multiple operation	EIS1, 1 bit DTP 1.001	C, W, T
After	multiple operations at an in	-	DTP 1.001 ation object is sent	
After	multiple operations at an in	multiple operation	DTP 1.001 ation object is sent	
After the nutries of	multiple operations at an in umber of operations. The te 4-fold operation multiple operations at an in	multiple operation put the respective communic legram value is adjustable in Channel A,	DTP 1.001 ation object is sent the parameters. EIS1, 1 bit DTP 1.001 ation object is sent	to suit
After the nutries of	multiple operations at an in umber of operations. The te 4-fold operation multiple operations at an in	multiple operation put the respective communic legram value is adjustable in Channel A, multiple operation put the respective communic	DTP 1.001 ation object is sent the parameters. EIS1, 1 bit DTP 1.001 ation object is sent	to suit
After in the number of the num	multiple operations at an in umber of operations. The te 4-fold operation multiple operations at an in er of operations. The telegr Long operation communication object is on ing operation" value is set to	multiple operation put the respective communic legram value is adjustable in Channel A, multiple operation put the respective communic am value is adjustable in the Channel A, multiple operation put the respective communic am value is adjustable in the Channel A,	DTP 1.001 ation object is sent the parameters. EIS1, 1 bit DTP 1.001 ation object is sent parameters. EIS1, 1 bit DTP 1.001 ation object is sent parameters. EIS1, 1 bit DTP 1.001 Iditional communications been detected, 1	to suit C, W, T to suit the C, W, T c, W, T ation object
After in the number of the num	multiple operations at an in umber of operations. The te 4-fold operation multiple operations at an in er of operations. The telegr Long operation communication object is on an operation" value is set to nunication object is sent. Th	multiple operation put the respective communic legram value is adjustable in Channel A, multiple operation put the respective communic am value is adjustable in the Channel A, multiple operation put the respective communic am value is adjustable in the Channel A, multiple operation ly visible if the parameter "Ac o yes. After a long operation h	DTP 1.001 ation object is sent the parameters. EIS1, 1 bit DTP 1.001 ation object is sent parameters. EIS1, 1 bit DTP 1.001 ation object is sent parameters. EIS1, 1 bit DTP 1.001 Iditional communications been detected, 1	to suit C, W, T to suit the C, W, T c, W, T ation object

Table 39: Communication objects 10 to 19 "Channel A" multiple operation operating mode

3.2.9.4 Communication objects "Channel B to H"

No.	Function	Object name	Data type	Flags
20	Analogue 1019 Channel A,	Channel B		
29	with multiple operation			
30	Analogue 1019	Channel C		
 39	Channel A, with multiple operation			
40	Analogue 1019	Channel D		
 49	Channel A, with multiple operation			
50 59	Analogue 1019 Channel A, with multiple operation	Channel E		
60 	Analogue 1019 Channel A,	Channel F		
69	with multiple operation			
70	Analogue 1019	Channel G		
 79	Channel A, with multiple operation			
80	Analogue 1019	Channel H		
 89	Channel A, with multiple operation			

Table 40: Communication objects 20 to 89 "Channel B to H" multiple operation operating mode

3.2.10 Counter operating mode The device can be used to count input pulse edges in the counter mode. In addition to a normal counter a differential counter can also be used if required. Both are operated via the counter pulses but count independently of each other.

Note: The standard settings for the options are underlined, e.g. option: yes/<u>no</u>.

The pulse counting function is used to count input pulses.

3.2.10.1 Counting pulses

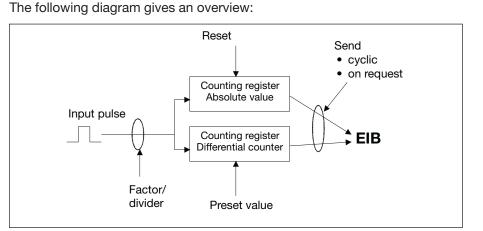


Fig. 69: Pulse counting function

In addition to the absolute counter, it is also possible to enable a differential counter which measures differential values (comparable to a daily mileage counter). The starting point of the differential counter can be selected at will.

To be able to adapt the count rate, the number of input pulses per count pulse can be set. Moreover, a counter state change can be set per count pulse. Both counter values can either be sent cyclically on the bus or on request.

An overrun value can be defined for the differential counter. A telegram is sent if an overrun occurs.

- **Note:** The maximum counting frequency may not exceed 5Hz. The minimum pulse duration is 50ms. The max. capacitive load at the input is 22nF.
- **Note:** The device can be connected to the S0 pulse outputs of electronic energy meters from type ABB only. The correct polarity must be observed.

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3.2.10.2 Behaviour of the counter levels after a download

The counter levels are not erased after a download.

3.2.10.3 Behaviour of the counter levels after bus voltage failure

3.2.10.4 Peculiarities between the main counter and

differential counter

The counter levels are stored after a bus voltage failure. The counter states can be sent after bus voltage recovery.

Description	Main counter	Differential counter
Adjustable data type	yes	yes
Start value is the lower limit value, if counter is incremented	yes	yes
Start value is the upper limit value, if counter is decremented	yes	yes
The communication object "MC: limit value reached" sends a "1", as soon as the count pulse has exceeded the lower or upper limit value.	yes	yes
If "continue circular counting" is set, the counter is set to the start value and a possible overrun of the start value is simply added.	not adjustable	yes
If "stop until reset" is set, this and the following counter pulses are ignored until the differential counter is reset by the "DC: reset" communication object.	not adjustable	yes
Counter increments/decrements	adjustable	adjustable
Limit value 1 preset to zero	yes	adjustable
Circular counting	yes	adjustable
Reset of the counter	no	yes

Table 41: Peculiarities between the main counter and differential counter

3.2.10.5 Parameter window "Channel A, general"

General	-	Channel A, general	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Counter	•
Channel A, general Channel A, main counter	Debounce time	50ms	*
	Enable differential counter	no	*
Channel B, general	Activate minimum signal time	no	•
Channel C, general			
ihannel D, general			
- Dannel E, general	Cyclical sending every in s [130,000]	120	<u>*</u>
hannel F, general	-		
	ОК	Cancel Default	Info Help

Fig. 70: Parameter window "Channel A, general" counter operating mode

Debounce time

Options: 10ms/20ms/30ms/50ms/70ms/100ms/150ms

Debouncing prevents unwanted multiple operation of the input, e.g. due to bouncing of the contact.

What is debounce time?

If a pulse edge is detected at the input, the input reacts to it immediately (e.g. by sending a telegram). The debounce time T_D starts simultaneously. The signal at the input is not evaluated within the debounce period.

The following example illustrates this:

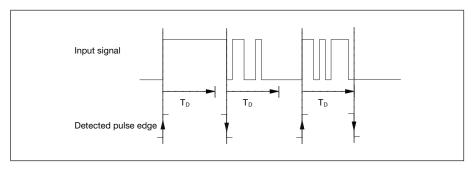


Fig. 71: Debounce time of the input signal on the edge to be recognised

Once a pulse edge has been detected at the input, further edges are ignored for the duration of the debounce time T_D .

Enable differential counter

Options: yes/no

If this parameter is set to "yes" the "differential counter" parameter window is also visible.

Activate minimum signal time

Options: yes/no

What is minumum signal time?

This function differs from the debounce time by the fact that the telegram is sent only after the minumum signal time has timed out. The functions in detail:

If an edge is detected at the input, the minumum signal time commences. No telegram is sent on the bus during this time. The signal at the input is monitored within the minumum signal time. If a further edge is detected at the input during the minumum signal time, this is interpreted as a renewed actuation and the minumum signal time starts if necessary. If the input signal has not changed during the minumum signal time an edge is detected and a telegram is sent on the bus if necessary.

The following example illustrates this:

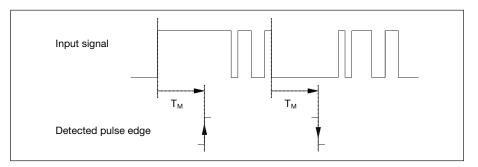


Fig. 72: Minimum signal time of the input signal on the edge to be recognised

Since only two pulse edges remain stable for the duration of the minimum signal time T_M , only these pulse edges are recognised as valid.

Cyclical sending every ...in s [1...30.000]

Options: 1...<u>120</u>...30.000

This parameter is used to set the time for cyclical sending.

If the option *yes* is selected with the parameter *Activate minimum signal time*, the following parameters are visible.

After rising edge: time base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...255

After falling edge: time base Options: 100ms/<u>1s</u>/10s/1 min/10min/1 h

Factor [1...255] Options: 1...<u>10</u>...255

3.2.10.6 Parameter window "Channel A, main counter"

Channel A, main counter General . Manual operation Enable/disable manual operation Channel LED Data type 32-bit [-2.147.483.648 ... 2.147.483.647] ٠ Channel A, general Limit value 1 [0] 0 hannel A Limit value 2 [-2,147,400,000...2,147,400,000] 2147400000 + Channel B, general Mode of counting +1 on rising edge (standard) * Channel C. general Channel D, general Send counter values on download, bus reset and bus voltage recovery no • no ٠ Send counter values on change Channel E, general Send counter values cyclically no ٠ Channel F, general -OK Cancel Default Help

Fig. 73: Parameter window "Channel A, main counter" counter operating mode

Data type

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Options: 8-bit [-128...127]/ 8-bit [0...255]/ 16-bit [-32.768...32.767]/ 16-bit [0...65.535] 32-bit [-2.147.485.648...2.147.483.647]

The data type of the counter is selected with this parameter.

Limit value 1 [0] preset to 0

The limit value 1 is preset for every data type to 0

Limit value	e 2 [X]	
Options:	<u>127</u>	[-128127]
	<u>255</u>	[0255]
	<u>32.767</u>	[-32.76832.767]
	<u>65.565</u>	[065.535]
	2.147.400.000	[-2.147.400.0002.147.400.000]

This parameter is dependent on the *Data type* parameter.Varying limit values are preset which depend on the *Data type* selected. This input field can be freely edited.

Note: If the actual value falls below the lower limit value (only possible with a decrementing counter), the counter is set to the value of the higher limit value and the decrement pulse count is continued from this value = continuous circular counting. If the preset or entered upper limit value is exceeded, the counter is set to zero and the pulse count is continued from zero (= lower limit value) = continuous circular counting.

Note:	It is important to ensure that both limit values are set to different values. If identical end limit values are entered the behaviour of the counter cannot be defined. The limit values can be set as required, i.e. Limit value 1 can be > or < Limit value 2. The application program automatically looks for the largest limit value from both set limits and commences to count up or down to suit the counting direction.
Mode of co Options:	p unting <u>+1 on rising edge (standard)</u> / adapt
	f counting of the counter is set with this parameter. edge (standard) = with a rising edge the counter value ted by one.
	<i>adapt</i> has been selected with the <i>mode of counting</i> parameter, g three parameters appear.
Create inpu Options:	It pulse <u>only on rising edge</u> / only on falling edge/ on both edges
This parame	eter sets how the input pulse is generated.
Option only	<i>on rising edge</i> = the pulse is only generated with a rising edge <i>on falling edge</i> = the pulse is only generated with a falling edge <i>oth edges</i> = the pulse is generated with a rising and a falling edge
Number of Options:	input pulses for one counter step [110.000] 110.000
•	eter sets the number of input pulses required to generate ulse for the main and differential counter.
Example	The counter states are incremented by 1 after 10 input pulses.
Change of o Options:	counter for every counter step [-10.00010.000] -10.000 <u>1</u> 10.000
This parame each counte	eter is used to set the level of change on the counter state with er pulse.
	try e.g. –1, defines a decrementing counter, e.g. 2000 ry e.g. 10, defines an incrementing counter, e.g. 10200

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Send counter values on download bus reset and bus voltage recovery Options: yes/no

If "yes" is set here, the device sends the communication object "Counter value" on the bus after bus voltage recovery (after the send delay time has timed out).

Send counter values on change

Options: yes/no

This parameter is used to select if a change of the counter state is to be sent.

Send counter values cyclically Options: yes/no

This parameter is used to determine if the counter values are to be sent cyclically on the bus.

3.2.10.7 Parameter window "Channel A, differential counter" If the option *yes* is selected with the *Enable differential counter* parameter, the following parameters are visible.

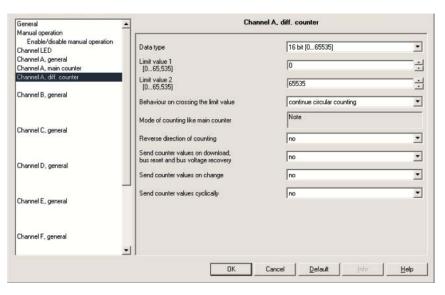


Fig. 74: Parameter window "Channel A, differential counter" counter operating mode

Data type	
Options:	8-bit [-128127]/
	8-bit [0255]/
	16-bit [-32.76832.767]/
	16-bit [065.535]
	32-bit [-2.147.485.6482.147.483.647]

The data type of the differential counter is selected with this parameter.

Limit value	1 [X]	
Options:	0	[-128127]
	0	[0255]
	0	[-32.76832.767]
	0	[065.535]
	0	[-2.147.400.0002.147.400.000]
Limit value Options:	2 [X] <u>127</u> <u>255</u> <u>32.767</u> <u>65.565</u> <u>2.147.400.000</u>	[-128127] [0255] [-32.76832.767] [065.535] [-2.147.400.0002.147.400.000]

This parameter is dependent on the *Data type* parameter; varying limit values are preset which depend on the *Data type* selected. This input field can be freely edited.

Note:	If the actual value falls below the lower limit value (only possible with a decrementing counter), the differential counter is set to the value of the higher limit value and the decrement pulse count is continued from this value = continuous circular counting.
	If the preset or entered upper limit value is exceeded, the differential counter is set to zero and the pulse count is continued from zero (= lower limit value) = continuous circular counting.

Note: It is important to ensure that both limit values are set to different values. If identical end limit values are entered the behaviour of the counter cannot be defined.

The limit values can be set as required, i.e. Limit value 1 can be > or < Limit value 2. The application program automatically looks for the largest limit value from both set limits and commences to count up or down to suit the counting direction.

Behaviour on crossing the limit value

Options: <u>continue circular counting</u>/ stop until reset

This parameter sets the reaction when a limit value is reached. Option *continue circular counting* = counter continues circular counting If the actual value falls below the lower limit value (only possible with a decrementing counter) the counter is set to the value of the higher limit value and the decrement pulse count is continued from this value.

If the value exceeds the upper limit value, the counter is set to the lower limit value and the pulse count is continued.

Option stop until reset = the counter stops and waits for a reset

Note: Continuous circular counting continues after a reset.

Mode of counting like main counter

This parameter serves as a note or remark. The direction of counting of the differential counter is identical to the main counter.

Reverse direction of counting

Options: yes/no

This parameter is used to reverse the direction of the count of the differential counter with respect to the main counter.

Send counter values on download bus reset and bus voltage recovery Options: yes/no

If yes is set here, the device sends the "DC: counter value" communication object after bus voltage recovery (after the delay time for sending has timed out) to the bus.

Send counter values on change

Options: yes/no

This parameter is used to select if a change of the counter state is to be sent.

Send counter values cyclically

Options: yes/no

This parameter is used to determine if the counter values are to be sent cyclically on the bus.

3.2.10.8 Communication objects "Channel A, main counter"

•				
Comr	nıs	SIO	nın	q

Number	Object Function	Name	Length	C	R	W	Т	U
耳(10	Blocking	Channel A, counter	1 bit	С	-	W	-	-
🖳 11	MC: counter value	Channel A, counter	4 Byte	С	-	-	Т	-
I Z 13	Request counter value	Channel A, counter	1 bit	С	-	W	-	-
I Z 14	MC: limit value reached	Channel A, counter	1 bit	С	-	-	Т	-

Fig. 75: Communication objects "Channel A, main counter" counter operating mode

No.	Function	Object name	Data type	Flags
10	Block	Channel A, main counter	EIS 1, 1 bit DPT 1.003	C, W
Telegra	am value "0" "1"	enable Channel A block Channel A		
A teleo	gram is sent to the bus if a b	ject the channel connection of locked channel is released. V and the "manual operation" a	Vith activated "Bloo	
Note:	 with all operating mode duration is aborted with the Switch/dimmir is interrupted 	tion when a channel is block es waiting for a long button p ng sensor and Shutter sensor	ush or minimum si	-
	 with the Control scene 	e e		
	 communication objects 	terminals or with manual ope s are still updated and sent if	necessary	
	to immediate processing,	change of the signal states (c e.g. ation or detection of a long/s		ng) leaus
	 – start the minimum actu – communication objects 			
11			1	C, W, T
11 The co	communication objects MC: Counter value	s are sent if necessary	EIS variable DPT variable	
	communication objects MC: Counter value	ter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 EIS 11	EIS variable DPT variable	ject. er value er value er value er value
The cc	 communication objects MC: Counter value ounter level of the main counter 1-Byte-values [0255] 1-Byte-values [-128+12 2-Byte-values [0+65.533 2-Byte-values [-32.768+4 4-Byte-values 	ter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 EIS 11	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte	ject. er value er value er value er value
	 communication objects MC: Counter value punter level of the main count 1-Byte-values [0255] 1-Byte-values [-128+12 2-Byte-values [0+65.532 2-Byte-values [-32.768+4-Byte-values [-2.147.483.6482.147.48 	ter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 EIS 11	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 counte	ject. er value er value er value er value
The cc 12 13	 communication objects MC: Counter value unter level of the main counter level of th	s are sent if necessary Channel A, main counter Iter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 EIS 11 33.647]	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 counte EIS 1, 1 bit DTP 1.003	ject. er value er value er value er value ter value
The co 12 13 Telegra	- communication objects MC: Counter value Uniter level of the main counter level of the main cou	s are sent if necessary Channel A, main counter itter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 BIS 11 BIS 11 33.647] Channel A, main counter do not request counter value	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 counte DPT 13.001 counte DPT 13.001 counte	ject. er value er value er value er value ter value
The co 12 13 Telegra	- communication objects MC: Counter value Uniter level of the main counter level of the main cou	s are sent if necessary Channel A, main counter itter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 B3.647] EIS counter Channel A, main counter do not request counter value	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 counte DPT 13.001 counte DPT 13.001 counte	ject. er value er value er value er value ter value
The cc 12 13 Telegra The cc 14	– communication objects MC: Counter value unter level of the main coun 1-Byte-values [0255] 1-Byte-values [-128+12 2-Byte-values [-128+12 2-Byte-values [-32.768+ 4-Byte-values [-2.147.483.6482.147.48 not assigned Request counter value am value "0" "1" ounter value can be requeste MC: Limit value	S are sent if necessary Channel A, main counter Iter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 B3.647] EIS counter value do not request counter value counter value ed via the communication obj counter value	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 count EIS 1, 1 bit DTP 1.003 Je ect EIS1, 1 bit	ject. er value er value er value ter value C, W
The cc 12 13 Telegra The cc 14 Telegra	– communication objects MC: Counter value unter level of the main coun 1-Byte-values [0255] 1-Byte-values [-128+12 2-Byte-values [-128+12 2-Byte-values [-32.768+ 4-Byte-values [-2.147.483.6482.147.48 not assigned Request counter value am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value can be requested am value "0" "1" ounter value "1"	S are sent if necessary Channel A, main counter Iter (MC) can be read via the EIS 6 7] EIS 14 5] EIS 10 -32.767] EIS 10 EIS 11 EIS 11 33.647] Channel A, main counter do not request counter value ed via the communication obj Channel A, main counter EIS 10 EIS 10 EIS 11	EIS variable DPT variable communication ob DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 counte DPT 13.001 counte DPT 13.001 counte EIS 1, 1 bit DTP 1.003	ject. er value er value er value ter value C, W

Table 42: Communication objects 13 to 19 "Channel A, main counter" counter operating mode

3.2.10.9 Communication objects "Channel B to H main counter"

No.	Function	Object name	Data type	Flags
20	Analogue 1019	Channel B		
	Channel A			
29	Counter			
30	Analogue 1019	Channel C		
	Channel A			
39	Counter			
40	Analogue 1019	Channel D		
	Channel A			
49	Counter			
50	Analogue 1019	Channel E		
	Channel A			
59	Counter			
60	Analogue 1019	Channel F		
	Channel A			
69	Counter			
70	Anglerius 10, 10	Channel G		
	Analogue 1019 Channel A	Channel G		
 79	Counter			
19	Counter			
80	Analagua 10, 10	Channel H		
00	Analogue 1019			
	Channel A			
89	Counter			

Table 43: Communication objects 20 to 89 "Channel B to H main counter" counter operating mode

Commissioning

3.2.10.10 Communication objects "Channel A main and differential counter"

Number	Object Function	Name	Length	С	R	W	T	U
I	Blocking	Channel A, counter	1 bit	С	-	W	-	-
⊒⊈11	MC: counter value	Channel A, counter	4 Byte	C	-	-	Т	-
I Z 12	DC: counter value	Channel A, counter	2 Byte	C	-	-	Т	-
🖳 13	Request counter value	Channel A, counter	1 bit	C	-	W	-	-
🖳 🖓 14	MC; limit value exceeded	Channel A, counter	1 bit	C	-	-	Т	-
_]15	DC: limit value exceeded	Channel A, counter	1 bit	C	-	-	Т	-
耳(16	DC: reverse direction	Channel A, counter	1 bit	C	-	W	-	-
耳(17	DC: reset	Channel A, counter	1 bit	C	-	W	-	-
⊒ ‡ 18	DC: stop	Channel A, counter	1 bit	С	-	W	-	-

Fig. 76: Communication objects "Channel A main and differential counter" counter operating mode

	Function	Object name	Data type	Flags
10	Block	Channel A, main counter	EIS 1, 1 bit DPT 1.003	C, W
Telegra	am value "0" "1"	enabled Channel A block Channel A		
A teleç	e "Block" communication obj gram is sent to the bus if a blo unication object the inputs a	ocked channel is released. V	Vith activated "Bloc	
Note:	 with all operating mode duration is aborted 	tion when a channel is block s waiting for a long button p g sensor and Shutter sensor node saving ends	ush or minimum sig	
	0	nannel, erminals or with manual ope are still updated and sent if	0	
	to immediate processing,	ation or detection of a long/s		ng) leads
11	MC: counter value	Channel A, main counter	EIS variable DPT variable	C, W, T
The co	ounter level of the main count	er (MC) can be read via the	communication obj	ject.
The co	Dunter level of the main count 1-Byte-values [0255] 1-Byte-values [-128+127 2-Byte-values [0+65.535 2-Byte-values [-32.768+ 4-Byte-values [-2.147.483.6482.147.48	EIS 6 [] EIS 14] EIS 10 32.767] EIS 10 EIS 11	communication obj DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 count	r value r value r value r value
The co	1-Byte-values [0255] 1-Byte-values [-128+127 2-Byte-values [0+65.535 2-Byte-values [-32.768+3 4-Byte-values	EIS 6 [] EIS 14] EIS 10 32.767] EIS 10 EIS 11	DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte	r value r value r value r value
12	1-Byte-values [0255] 1-Byte-values [-128+127 2-Byte-values [0+65.535 2-Byte-values [-32.768+ 4-Byte-values [-2.147.483.6482.147.48	EIS 6] EIS 14] EIS 10 32.767] EIS 10 EIS 11 3.647] Channel A, main counter	DPT 5.010 counte DPT 6.010 counte DPT 8.001 counte DPT 7.001 counte DPT 13.001 count EIS variable DPT variable	r value r value r value r value er value er value C, W, T

Table 44: Communication objects 10 to 12 "Channel A main and differential counter" counter operating mode

Commissioning

No.	Function		Object name	Data type	Flags	
13	Request	counter value	Channel A, main counter	EIS 1, 1 bit DTP 1.003	C, W	
Telegra	am value	"O" "1"	Do not request counter value	ae		
The co	ounter value	can be requeste	d via the communication obj	ect.		
14	MC: Limit exceeded		Channel A, main counter	EIS1, 1 bit DTP 1.002	C, W	
Telegram value "0" "1"		•	limit value not exceeded limit value exceeded			
This co exceed		on object indicat	es if the limit value of the ma	in counter (MC) has	s been	
15	DC: Limit		Channel A, main counter	EIS1, 1 bit DTP 1.002	С, Т	
Telegram value "0" "1"		•	limit value not exceeded limit value exceeded			
	ommunicati as been exc		es if the limit value of the diff	erential (temporary)	counter	
16	DC: rever	se direction	Channel A, main counter	EIS1, 1 bit DTP 1.002	C, R, W, T	
Telegram value "0" "1"		0	do not reverse direction of count reverse direction of count			
The co object	0	ction of the differ	ential counter (DC) can be re	ad via the commun	ication	
17	DC: reset		Channel A, main counter	EIS1, 1 bit	C, R, W, T	
				DTP 1.002		
Telegra	am value	"0" "1"	do not reset temporary (diff reset temporary (diff) count) counter	,,.	
U		"1") counter er		
Ū		"1"	reset temporary (diff) count) counter er his communication		
The dif	fferential co	"1"	reset temporary (diff) count e reset to the start value via th) counter er his communication EIS1, 1 bit DTP 1.002	object	
The dif 18 Telegra	fferential con DC: stop am value	"1" unter (DC) can be "0" "1"	reset temporary (diff) count e reset to the start value via th Channel A, main counter do not stop temporary (diff)) counter er his communication EIS1, 1 bit DTP 1.002 counter er	object	

Table 45: Communication objects 13 to 19 "Channel A main and differential counter" counter operating mode

3.2.10.11 Communication objects "Channel B to H main and differential counter"

No.	Function	Object name	Data type	Flags
20	Analogue 1019	Channel B		
	Channel A			
29	Counter			
30	Analogue 1019	Channel C		
	Channel A			
39	Counter			
40	Analogue 1019	Channel D		
	Channel A			
49	Counter			
50	Analogue 1019	Channel E		
	Channel A			
59	Counter			
60	Analogue 1019	Channel F		
	Channel A			
69	Counter			
70	Analogue 1019	Channel G		
	Channel A			
79	Counter			
	•	·		
80	Analogue 1019	Channel H		
	Channel A			
89	Counter			

Table 46: Communication objects 20 to 89 "Channel B to H main and differential counter" counter operating mode

Planning and application

- 4 Planing and In this section you will find some tips and application examples for practical use of the Binary Inputs.
- 4.1 Operation with central function (light switching)
 1 button operation
 The lighting is switched on or off with short operation of a button. A long operation switches off the lighting centrally.

Linking the group addresses:

Push button 1		Lamp 1
Binary Input BE/S (Telegram)		Switch Actuator SA/S (Telegram)
Switch	1/1/1 1/1/3	► 1/1/1 Switch 1/1/3
Switch long	1/1/3	•
Push button 2		Lamp 2
Binary Input BE/S (Telegram)		Switch Actuator SA/S (Telegram)
Switch	1/1/2 1/1/3	► 1/1/2 Switch 1/1/3
Switch long	1/1/3	

Fig. 77: 2 button operation with central function

Parameter settings for button 1 and button 2:

General	Ch	annel A, general		Chan	nel A, switch sensor	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Switch sensor / fault monitoring input	•	Reaction on short operation	TOGGLE	•
Channel A, general Channel A, switch sensor	Debounce time	50ms	•	Reaction on long operation	OFF	•
	Distinction between long and short operation	yes	•	Number of objects for short/long operation	2 communication objects	•
Channel B, general	Connected contact type	normally closed	•			
Channel C, general	Long operation after time base	100ms	•			
Channel C, general	Factor [1255]	5	_ ÷			
Channel D, general						
Channel E, general						
Channel F, general						
	ОК	Cancel Default Info	Help	ОК	Cancel Default	<u>H</u> elp

Fig. 78: 1 button operation with general funktion

4.2 Fault signal input Two incoming circuit-breakers, a coupling switch and a generator switch have to be monitored in a switchgear system. The Binary Input should send a cyclical "In operation" telegram every 10 s. The interactive waiting time and the delay time for sending should be set to 17 s respectively. The manual operation should be released/blocked via a communication object. The switchover between both operating states should occur automatically after 300 s and via button operation. The individual manual operation buttons should be without function. The respective channel LEDs should not provide inverted representation. When the contacts are closed, an ON and OFF telegram should be sent every 30 s.

Incoming circuit-breaker:	minimum signal time 100 ms
Coupling switch:	minimum signal time 100 ms
Generator switch:	minimum signal time 100 ms

Parameter settings:

General		General	
Manual operation Enable/disable manual operation Channel LED Channel A, general Channel A, switch sensor	Sending delay after bus voltage recovery in a [2255] The sending delay time contains the initialization time of 2s	17 Note	
Channel B, general	Limit number of sent telegrams	no	•
Channel C, general			
Channel D, general	Send cyclical telegram "In operation" Base	ves 10s	•
– Channel E, general	Factor [1255]	[1	:
Channel F, general	4		
-	OK.	Cancel Default Info	<u>H</u> elp

Fig. 79: Parameter window "General" fault signal input

General	Manual operation						
Manual operation Enable/disable manual operation Channel LED Channel A, general	Manual/automatic button	enable/disable via communication object					
Channel A, switch sensor Channel B, general	Reset from manual operation to automatic operation Time for reset to automatic operation in s [106,000]	automatically and via push button					
Channel C, general	Send status of manual operation	no 💌					
Channel D, general							
- Channel E, general							
Channel F, general	-						
	ОК	Cancel Default Info Help					

Fig. 80: Parameter window "Manual Operation" fault signal input

Planning and application

General Manual operation	Enable/d	isable manual operation	
Enable/disable manual operation Channel LED	n Channel A, Man. Oper. Button	enable	•
Channel A, general Channel A, switch sensor	Channel B, Man. Oper. Button	disable	•
	Channel C, Man. Oper. Button	enable	
Channel B, general	Channel D, Man. Oper. Button	enable	•
Theread Comments	Channel E, Man. Oper. Button	enable	•
Channel C, general	Channel F, Man. Oper. Button	enable	•
Channel D, general	Channel G, Man. Oper. Button	enable	•
ananina oʻ, gunarar	Channel H, Man. Oper. Button	enable	<u>•</u>
Channel E, general			
Channel F, general			
		Cancel Default	nto Help

Fig. 81: Parameter window Fault signal input "Enable/release manual operation button"

General Manual operation	-	CI	hannel LED	
Enable/disable manual operation Channel LED	Channel A, LED		normal	•
Channel A, general Channel A, switch sensor	Channel B, LED		normal	•
	Channel C, LED		normal	•
Channel B, general	Channel D, LED		normal	•
	Channel E, LED		normal	•
Channel C, general	Channel F, LED		normal	•
Channel D. general	Channel G, LED		normal	•
Charline D, general	Channel H, LED		normal	•
Channel E, general				
Channel F, general	-			
		OK	Cancel Default	[nfo Help

Fig. 82: Parameter window Fault signal input "Channel LED display"

Planning and application

ieneral	▲ Cha	annel A, general	
Aanual operation Enable/disable manual operation Channel LED	Operating mode	Switch sensor / fault monitoring input	•
hannel A. general Thannel A. switch sensor	Debounce time	50ms	•
	Distinction between long and short operation	no	*
Channel B, general	Activate minimum signal time	yes	•
	After rising edge: time base	100ms	•
hannel C, general	Factor [1255]	2	÷
terral D. annual	After falling edge: time base	100ms	•
hannel D, general	Factor [1255]	2	÷
hannel E, general	Scan input after download, bus reset and bus voltage recovery	lyes	*
nannei E., general	Inactive wait state after bus voltage recovery [030,000s, 0=inactive]	17	
hannel F, general			
	<u>_</u>		

Channel A parameter settings also apply for the Channels B, C and D.

Fig. 83: Parameter window "Channel A, general" fault signal input

General _	L Chan	nel A, switch sensor	
Manual operation			
Enable/disable manual operation Channel LED	Reaction on closing the contact (rising edge)	ON	-
Channel A, general			
Channel A, switch sensor	Reaction on opening the contact (falling edge)	OFF	•
	Cyclical sending of object "Switch"	always	•
Channel B, general	Telegram is repeated every ("sending cycle time"): base	1\$	•
Channel C, general	Factor [1255]	30	<u>.</u>
Channel D, general			
- Channel E, general	-		
Channel F, general	-1		
-	ОК	Cancel Default Info	Help

Fig. 84: Parameter window "Channel A, switch sensor" fault signal input

Planning and application

4.3 Operation of lighting (dim lighting)

1 button operation

Short operation switches the lighting on or off, a long operation alternately dims the lighting brighter or darker (opposite to the last dim process). Both buttons operate the same luminaries.

Linking the group addresses:

Push button 1 Lamp 1 **Dimming Actuator Binary Input** BE/S (Telegram) UD/S (Telegram) Switch 1/1/1 1/1/2 Switch / Status 1/1/2 1/1/1 1/1/3 Relativ dimming Dimming 1/1/3 Push button 2 Binary Input BE/S (Telegram) Switch 1/1/1 1/1/2 Dimming 1/1/3

Fig. 85: 2 button operation of lighting (dim lighting)

Parameter settings for button 1 and button 2:

General Annual operation		Channel A, general		Chann	el A, switch/dim sensor	
Enable/disable manual operation Channel LED	Operating mode	Switch/dim sensor	•	Dimming functionality	Dimming and switching	•
Channel A, general Channel A, switch/dim sensor	Debounce time	50ms	*	Long operation after	0.5:	•
	Connected contact type	normally closed	•	Reaction on short operation	TOGGLE	•
Channel B, general				Reaction on long operation	Dim BRIGHTER/DARKER	•
Channel C, general				Dimming mode	Start-stop-dimming	•
Channel D, general						
Channel E, general						
Channel F, general						
	OK	Cancel Default Info	<u>H</u> elp	OK	Cancel Default Info	Help

Fig. 86: 1 button operation of lighting (dim lighting)

2 button operation

The same group address link is also suitable for 2 button dimming. Modification of the parameters:

"Reaction on short operation" = "ON" or "OFF" "Reaction on long operation" = "Dim BRIGHTER" or "Dim DARKER"

Planning and application

4.4 Operation of shutter

1 button operation

Button 1 and button 2 operate shutter 1 from different locations. With short operation the shutter moves (in the opposite direction to the last movement), a long operation adjusts the position of the lamella.

Linking the group addresses:

Push button 1				Shut	ter 1
Binary Input BE/S (Telegram)					t er Actuator (Telegram)
Shutter Up/Down	1/1/1	►	->	1/1/1	Move shutter Up/Down
Stop/lamella adj.	1/1/2		->	1/1/2	Lamella adj. /Stop Up/Down
Upper limit position	1/1/3	H	◄	1/1/3	Status upper position*
Lower limit position	1/1/4	$\left\ \cdot \right\ $	-	1/1/4	Status lower position*
Push button 2					
Push button 2 Binary Input BE/S (Telegram)					
Binary Input	1/1/1	₽			
Binary Input BE/S (Telegram)	1/1/1	▲⊥▲⊥			
Binary Input BE/S (Telegram) Shutter Up/Down	C	▲⊥▲⊥			

Fig. 87: 2 button operation of shutters

* The Binary Input receives feedback via the communication objects "Upper limit position" or "Lower limit position" indicating if the shutter actuator is in its end limit position. If this is not possible, 2 button operation is recommended.

Parameter settings for button 1 and button 2:

General Annual operation	Cha	nnel A, general		Chann	el A, shutter sensor	
Enable/disable manual operation Channel LED	Operating mode	Shutter sensor	•	Operating functionality of blind	1 push button, short = mo	oving, long = stepping 💌
Channel A; general Channel A, shutter sensor	Debounce time	30ms	•	Long operation: Lamella Short operation: Move UP/DOWN	Note	
	Connected contact type	normally closed	•	Long operation after	0.5s	-
Channel B, general				"Telegr. STOP/lamella adj." is repeated every	0.4s	-
Channel C, general						
Lhannei D, general						
Channel E, general						
Channel F, general						
	ОК	Cancel Default Info	Help	ОК	Cancel Default	Info Help

Fig. 88: 1 button operation of shutters

Planning and application

2 button operation

Button 1 and button 2 operate shutter 1 from a single location. With long operation the shutter moves down (button 1) or up (button 2). With short operation the lamella closes (button 1) or opens (button 2) by a step.

Linking the group addresses:

Push button 1	(downwards)
---------------	-------------

Binary Input BE/S (Telegram)		
Shutter Up/Down	1/1/1	
Stop/Lamella adj.	1/1/2	
Upper limit position	1/1/3	-
Lower limit position	1/1/4	

	Shutter 1					
	Shutter Actuator JA/S (Telegram)					
•	1/1/1	Move shutter Up/Down				
	1/1/2	Lamella adj. /Stop Up/Down				
←	1/1/3	Status upper position				
-	1/1/4	Status lower position				

Push button 2 (upwards)

Binary Input BE/S (Telegram)	
Shutter Up/Down	1/1/1
Stop/Lamella adj.	1/1/2
Upper limit position	1/1/3
Lower limit position	1/1/4

Abb. 89: 2-Taster-Bedienung von Jalousie Taster 1 und 2

Parameter settings for button 1 and button 2:

General Manual operation	-	Channel A, shutter sensor			Channel	A, shutter sensor	
Enable/disable manual operation Channel LED Channel A, general Channel A, shutter sensor		Operating functionality of blind Short operation: STOP / Jamella UP/DDWN Long operation: move UP/DDWN	2 push buttons, short = louvre, lon Note	g = moving 💌	Operating functionality of blind Short operation: STOP / lamella UP/D0WN Long operation: move UP/D0WN	2 push buttons, short = louvre, long	-moving 💌
Channel B, general		Long operation after Reaction on short operation	0.5s STOP / Iamella UP	•	Long operation after Reaction on short operation	0.5s STOP / Iamelia UP	•
Channel C, general		Reaction on long operation	Move DOWN	•	Reaction on long operation	Move UP	•
Channel D, general							
Channel E, general							
Channel F, general	•			Ja			
		OK Ca	ncel Default Info		ОК	Cancel Default Info	Help

Fig. 90: 2 button operation of shutters

4.5 Scene control Scene via 6 separate objects

Button 1 and button 2 control shutter 1 and light 1. Short operation calls up the scene. With each operation the current shutter setting and the brightness value are saved. Both buttons save different scene values.

Linking the group addresses:

Push button 1		Shutter 1
Binary Input BE/S (Telegram)		Shutter Actuator JA/S (Telegram)
Value actuator group A	1/1/1	1/1/1 Move to position 0255
Value actuator group B	1/1/2	1/1/2 Adjust lamella 0255
Value actuator group C	1/1/3	-
Push button 2		Lamp 1
Binary Input BE/S (Telegram)		Dimmind Actuator UD/S (Telegram)
Value actuator group A	1/1/1	1/1/3 Brightness value/status
Value actuator group A Value actuator group B	1/1/1 1/1/2	I/1/3 Brightness value/status

Fig. 91: 2 button operation with central function

General		Channel A, general	
Manual operation Enable/disable manual operation Channel LED Channel A. general	Operating mode	Control scene	-
Channel A, scene part 1	Debounce time	50ms	•
Channel A, scene part 2	Connected contact type	normally closed	<u>•</u>
Channel B, general	Store scene	on long operation	•
Channel C, general	Long operation after	38	<u>•</u>
Channel D, general			
Channel E. general	-		
Channel F. general			

OK

<u>D</u>efault

Help

Cancel

Fig. 92: Control scene

(switching of luminaries)

4.6

Switching sequence Switching on/off in succession

Button 1 and button 2 control a light with three independent power circuits, Light 1, Light 2 and Light 3. Button 1 switches on in succession when actuated (Sequence: Light 1> Light 2 >Light 3). Button 2 switches off in succession when actuated (Sequence: Light 3> Light 2 >Light 1).

Linking the group addresses:

Push button 1		Lamp 1
Binary Input BE/S (Telegram)		Switch Actuator SA/S (Telegram)
Value 1	1/1/1	1/1/1 Switch
Value 2	1/1/2	
Value 3	1/1/3	Lamp 2
Level increment/decrement	1/1/4	Switch Actuator SA/S (Telegram)
Push button 2		1/1/2 Switch
Binary Input BE/S (Telegram)		Lamp 3
Switch	1/1/4	Switch Actuator SA/S (Telegram)
		1/1/3 Switch

Fig. 93: Switching sequence (switching of illumination with 2 buttons)

Parameter settings for button 1:

General 🔺		Channel A, general		Chann	el A, switching sequence	
Enable/disable manual operation Channel LED	Operating mode	Switching sequences	•	Number of levels	3	•
Channel A. general Channel A, switching sequence	Debounce time	50ms	•	Type of switching sequence (example: 3 levels)	=>000-001-011-111 (sequence 1)	•
	Connected contact type	normally closed		Direction on operation	upwards	•
Channel B, general	Activate minimum signal time	no	•			
Channel C. general						
Channel D. general						
-						
Channel E, general						
Dhannel F, general	1					
	ОК	Cancel Default Info	<u>Help</u>	ОК	Cancel Default Info	Help

Fig. 94: Switching sequence (switching of luminaires)

Button 2 must be set so that the "Switch" communication object sends a "0" with each button button operation.

Planning and application

Switch all possibilities ("Gray code")

Button 1 controls a light with two independent circuits - Light 1 and Light 2. After operation all possibilities are switched through in the following sequence:

	Light 1	Light 2
Output state	OFF	OFF
1st operation	ON	OFF
2nd operation	ON	ON
3rd operation	OFF	ON
4th operation	OFF	OFF
(and so further)		

Table 48: Multiple operation with Gray code

Linking the group addresses:

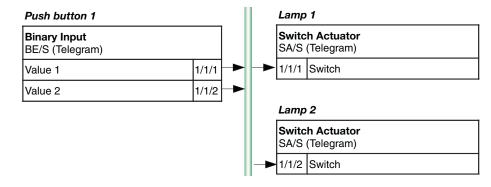


Fig. 95: Switching sequence (switching of illumination with a button)

Parameter settings for button 1:

General 🔺		Channel A, general		Chann	el A, switching sequence	
Enable/disable manual operation Channel LED	Operating mode	Switching sequences		Number of levels	2	•
Channel A, general Channel A, switching sequence	Debounce time	50ms	•	Type of switching sequence (example: 3 levels)	Gray code (sequence 2)	•
	Connected contact type	normally closed	<u> </u>			JO
Channel B, general	Activate minimum signal time	no	•	Direction on operation	upwards	•
Channel C, general						
Channel D, general						
Channel E, general	-					
Channel F, general	1					
	OK	Cancel Default Info	Help	ОК	Cancel Default Info	Help

Fig. 96: Switching sequence (switching of illumination) with "Gray code"

4.7 Multiple button operation (switching of luminaires) Button 1 and button 2 control light 1, light 2 and light 3. With a single button operation Light 1 is switched over, with double button operation Light 2 is switched over and with triple button operation Light 3 is switched over. With a long button push Light 1, Light 2 and Light 3 are switched off.

Linking the group addresses:

Push button 1		Lamp 1
Binary Input BE/S (Telegram)		Switch Actuator SA/S (Telegram)
Operation 1-fold	1/1/1 1/1/4	1/1/1 Switch 1/1/4
Operation 2-fold	1/1/2 1/1/4	Lamp 2
Operation 3-fold	1/1/3 1/1/4	Switch Actuator SA/S (Telegram)
Operation long	1/1/4	1/1/2 Switch
Push button 2		
Binary Input BE/S (Telegram)		Lamp 3 Switch Actuator
Operation 1-fold	1/1/1 1/1/4	SA/S (Telegram)
Operation 2-fold	1/1/2	1/1/4
Operation 3-fold	1/1/3 1/1/4	
Operation long	1/1/4	

Fig. 97: Multiple button operation (switching of illumination with 2 buttons)

Parameter settings for button 1 and button 2:

General		hannel A, general		Channel	A, multiple operation	
Manual operation Enable/disable manual operation Channel LED	Operating mode	Multiple operation	•	Max. number of operations (= number of communication objects)	3-fold	•
Channel A, general Channel A, multiple operation	Debounce time	50ms	¥	sent value (object "fold operation")	TOGGLE	•
	Connected contact type	normally closed	•	Send value on every operation	no	•
Channel B, general	Additional communication object for long operation	yes	•	Maximum time between two operations	1:	•
Channel C, general	Long operation after	0.5:	•	sent value (object "Telegr. operation long")	OFF	-
Channel D, general						
Channel F, general						
	ОК	Cancel Default Info	<u>H</u> elp	ОК	Cancel Default Info	<u>H</u> elp

Fig. 98: Multiple button operation (switching of luminaries)

4.8 Counting power values

Input 1 is connected to the S0 pulse output of an energy consumption meter from ABB (100 pulses/kWh). The 4-Byte counter value is represented in the bus in Wh units. It is sent on the bus every 30 seconds and after each change of 100 Wh.

Input 1

Binary Input BE/S (Telegram)		
Counter value 4 bytes	1/1/1	
Request counter value	1/1/2	<
Different counter overflow	1/1/2	

Fig. 99: Counting values

Parameter settings for button1:

General Manual operation		Channel A, general		Char	nel A, main counter	
Enable/disable manual operation Channel LED	Operating mode	Counter	·	Data type	32-bit [-2.147.483.648 2.147.483.647]	•
Channel A. general Channel A, main counter	Debounce time	50ms	•	Limit value 1 [0]	0	
	Enable differential counter	no	•	Limit value 2 [-2,147,400,0002,147,400,000]	0	_:
Channel B, general	Activate minimum signal time	no	•	Mode of counting	adapt	•
				Create input pulse	only on rising edge	•
Channel C, general				Number of input pulses for one counter step [110,000]	1	
Channel D, general				Change of counter for every counter step [-10,00010,000]	10	_ ::
Channel D, general				Send counter values on download, bus reset and bus voltage recovery	no	•
Channel E, general	Cyclical sending every in s [130,000]	120	<u>.</u>	Send counter values on change	yes	•
Critalina C, general				Send counter values cyclically	yes	•
Channel F, general	J					
	OK	Cancel Default Info		OK	Cancel Default Info I	Help

Fig. 100: Counting of power values

100 pulses per kWh mean 1 pulse per 10 Wh. The counter is therefore incremented by a value of 10 with each pulse (factor = 10).

The differential counter overruns every 100 Wh. With each overrun the communication object "Differential counter overrun" is sent with the value "1". This is received by the "Request counter value" communication object and the current counter state is sent on the bus.

Appendix

A Appendix

A.1 Scope of delivery The Binary Inputs are supplied with the following parts. Please check the items received using the following list.

- 1 pc. BE/S x.x.1, Binary Input, xfold, MDRC
- 1 pc. Installation and operating instructions
- 1 pc. Bus connection terminal (red/black)

A.2 4-Bit dimming command The following table describes the 4 bit dimming command:

Dec.	Hex.	Binary	Dim command
0	0	0000	STOP
1	1	0001	100 % DARKER
2	2	0010	50 % DARKER
3	3	0011	25 % DARKER
4	4	0100	12.5 % DARKER
5	5	0101	6.25 % DARKER
6	6	0110	3.13 % DARKER
7	7	0111	1.56 % DARKER
8	8	1000	STOP
9	9	1001	100 % BRIGHTER
10	А	1010	50 % BRIGHTER
11	В	1011	25 % BRIGHTER
12	С	1100	12.5 % BRIGHTER
13	D	1101	6.25 % BRIGHTER
14	E	1110	3.13 % BRIGHTER
15	F	1111	1.56 % BRIGHTER

Table 48: 4-Bit dimming command

Appendix

A.3 Gray code The switching sequence is characterised by the fact that only one value is changed between two levels. The transition to the next level therefore only requires the sending of a single telegram.

The following table describes the gray code when using 5 objects:

0 00000 OFF ON I 3 00010 OFF OFF OFF OFF ON ON I 4 00110 OFF OFF OFF ON ON I 5 00111 OFF OFF OFF ON ON ON I 6 00101 OFF OFF ON ON OFF I 7 00100 OFF ON ON ON OFF I I I I I OFF ON ON OFF I	
1 00001 OFF OFF OFF OFF OFF OFF OFF ON I 2 00011 OFF OFF OFF OFF ON I 3 00010 OFF OFF OFF OFF ON I 4 00110 OFF OFF OFF ON ON I 5 00111 OFF OFF ON ON ON I 6 00101 OFF OFF ON ON OFF I 7 00100 OFF OFF ON ON OFF I 8 01100 OFF ON ON ON OFF I 10 01111 OFF ON ON ON ON I 11 0110 OFF ON OFF ON ON I 12 01010 OFF ON OFF ON OFF <th>"Value1"</th>	"Value1"
200011OFFOFFOFFONI300010OFFOFFOFFONONI400110OFFOFFONONI500111OFFOFFONONI600101OFFOFFONOFFI700100OFFOFFONOFFI801100OFFONONOFFI901101OFFONONOFFI1001111OFFONONONI1101110OFFONONONI1201010OFFONOFFONI1301011OFFONOFFONI1401001OFFONOFFOFFI1501000OFFONOFFOFFI1611000ONONOFFONI191101ONONOFFONI2011110ONONONONI2111111ONONONOFFI2311100ONOFFONOFFI2410100ONOFFONOFFI2510101ONOFFONOFFI2610111ONOFFONOFFI2610111ONOFFO	OFF
3 00010 OFF OFF OFF ON I 4 00110 OFF OFF ON ON I 5 00111 OFF OFF ON ON I 6 00101 OFF OFF ON OFF I 7 00100 OFF OFF ON OFF I 8 01100 OFF OFF ON OFF I 9 01101 OFF ON ON OFF I 10 01111 OFF ON ON ON ON I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON OFF ON OFF ON I 13 01011 OFF ON OFF ON OFF I 14 01000 OFF ON OFF OFF I	ON
4 00110 OFF OFF ON ON I 5 00111 OFF OFF ON ON I 6 00101 OFF OFF ON OFF I 7 00100 OFF OFF ON OFF I 8 01100 OFF ON ON OFF I 9 01101 OFF ON ON OFF I 10 01111 OFF ON ON ON ON I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON OFF ON I I 13 01011 OFF ON OFF ON I I 14 01000 OFF ON OFF OFF I I 15 01000 OFF ON OFF OFF I	ON
5 00111 OFF OFF ON ON OR 6 00101 OFF OFF ON OFF 7 7 00100 OFF OFF ON OFF 7 8 01100 OFF ON ON OFF 7 9 01101 OFF ON ON OFF 7 10 01111 OFF ON ON ON OFF 7 10 01111 OFF ON ON ON ON 1 11 01110 OFF ON ON ON ON 1 12 01010 OFF ON OFF ON 1	OFF
6 00101 OFF OFF ON OFF OFF 7 00100 OFF OFF ON ON OFF I 8 01100 OFF ON ON OFF I 9 01101 OFF ON ON OFF I 10 01111 OFF ON ON ON OFF I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON ON OFF ON ON I 13 01011 OFF ON OFF ON OFF ON I 14 01001 OFF ON OFF OFF I <	OFF
7 00100 OFF OFF ON OFF I 8 01100 OFF ON ON OFF I 9 01101 OFF ON ON OFF I 10 01111 OFF ON ON OFF I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON ON OFF ON I I 13 01011 OFF ON OFF ON OFF ON I 14 01001 OFF ON OFF OFF I	ON
8 01100 OFF ON ON OFF O 9 01101 OFF ON ON OFF I 10 01111 OFF ON ON ON OFF I 11 01110 OFF ON ON ON ON I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON OFF ON I I 13 01011 OFF ON OFF ON I I 14 01001 OFF ON OFF OFF I I 14 01000 OFF ON OFF OFF I <td>ON</td>	ON
9 01101 OFF ON ON OFF ON 10 01111 OFF ON ON ON ON ON I 11 01110 OFF ON ON ON ON I 12 01010 OFF ON OFF ON I I 13 01011 OFF ON OFF ON I I 14 01001 OFF ON OFF ON I I 15 01000 OFF ON OFF OFF I I 16 11000 ON ON OFF OFF I I 17 11001 ON ON OFF ON I I 19 11010 ON ON OFF ON I I 21 11110 ON ON ON ON OFF I 23 1	OFF
10 01111 OFF ON ON <th< td=""><td>OFF</td></th<>	OFF
11 01110 OFF ON ON ON ON I 12 01010 OFF ON OFF ON OFF ON I 13 01011 OFF ON OFF ON I I 14 01001 OFF ON OFF OFF ON I 15 01000 OFF ON OFF OFF I I 16 11000 ON ON OFF OFF I I 17 11001 ON ON OFF ON OFF I 18 11011 ON ON OFF ON I I 20 11110 ON ON ON ON ON I 21 11111 ON ON ON ON ON I 22 11100 ON ON ON OFF I I I <td< td=""><td>ON</td></td<>	ON
12 01010 OFF ON OFF ON I 13 01011 OFF ON OFF ON I	ON
13 01011 OFF ON OFF ON OFF 14 01001 OFF ON OFF OFF OFF OFF 15 01000 OFF ON OFF OFF OFF OFF 16 11000 ON ON OFF OFF OFF OFF OFF 17 11001 ON ON OFF ON OFF ON OFF ON OFF ON OFF ON OF	OFF
14 01001 OFF ON OFF OFF OFF 15 01000 OFF ON OFF OFF OFF OFF 16 11000 ON ON OFF OFF OFF OFF 16 11000 ON ON OFF OFF OFF OFF 17 11001 ON ON OFF ON OFF OFF ON OFF ON OFF ON OFF ON ON OFF ON ON <td< td=""><td>OFF</td></td<>	OFF
15 01000 OFF ON OFF OFF OFF 16 11000 ON ON OFF OFF OFF OFF 17 11001 ON ON OFF OFF OFF OFF 18 11011 ON ON OFF ON OFF ON OFF 19 11010 ON ON OFF ON ON OFF ON ON OPF ON ON ON OFF ON ON OPF ON ON OPF ON OFF ON	ON
16 11000 ON ON OFF OFF OFF 17 11001 ON ON OFF OFF OFF OFF 18 11011 ON ON OFF ON OFF ON OFF 19 11010 ON ON OFF ON ON OFF ON	ON
17 11001 ON ON OFF OFF 18 11011 ON ON OFF ON Image: Second Secon	OFF
18 11011 ON ON OFF ON ON 19 11010 ON ON OFF ON Image: Constraint of the state of	OFF
19 11010 ON ON OFF ON ON 20 11110 ON <	ON
20 11110 ON OFF ON ON <td>ON</td>	ON
21 11111 ON OFF ON	OFF
22 11101 ON ON ON OFF 23 11100 ON ON ON OFF 9 24 10100 ON OFF ON OFF 9 25 10101 ON OFF ON OFF 9 26 10111 ON OFF ON ON 9	OFF
23 11100 ON ON ON OFF OFF 24 10100 ON OFF ON OFF O 25 10101 ON OFF ON OFF O 26 10111 ON OFF ON ON O	ON
24 10100 ON OFF ON OFF 25 10101 ON OFF ON OFF 9 26 10111 ON OFF ON ON 9	ON
25 10101 ON OFF ON OFF 26 10111 ON OFF ON ON Image: Constraint of the second s	OFF
26 10111 ON OFF ON ON	OFF
	ON
27 10110 ON OFE ON ON	ON
	OFF
28 10010 ON OFF OFF ON	OFF
29 10011 ON OFF OFF ON	ON
30 10001 ON OFF OFF OFF	ON
31 10000 ON OFF OFF OFF	OFF

Table 49: Gray code

Appendix

A.4 8-bit-scene key table

Bit- no		7	6	5	4	3	2	1	0		
110											
	_									ber	
ne	B Hexadecimal	Becall/store	ber							Scene number	È.
valı	dec	III/st	lefir							le n	e (S)
8 bit value	lexa	leca	lot	Sce	ne					Cen	tore
0 0	00	0	O Not defined	000	0	0	0	0	0	თ 1	P Recall (R Store (S)
1 2	01 02	0	0 0	0 0	0	0	0	0	1 0	2	
3	03	0	0	0	0	0	0	1	1	4	A A A A
4 5	04 05	0	0	0	0	0	1	0	0	5 6	A
6	06	0	0	0	0	0	1	1	0	7	A
7 8	07 08	0	0	0	0	0	1	1	1 0	8 9	A A A A
9	09	0	0	0	0	1	0	0	1	10	Â
10 11	0A 0B	0	0	0	0	1	0	1	0	11 12	A
12	0C	0	0	0	0	1	1	0	0	13	Â
13 14	0D 0E	0	0	0	0	1	1	0	1 0	14 15	A A A
15	0F	0	0	0	0	1	1	1	1	16	A
16 17	10 11	0	0	0	1	0	0	0	0	17 18	A
18	12	0	0	0	1	0	0	1	0	19	A A
19 20	13 14	0	0	0	1	0	0	1 0	1 0	20 21	A A
21	15	0	0	0	1	0	1	0	1	22	A
22 23	16 17	0	0	0	1	0	1	1	0	23 24	A A
24	18	0	0	0	1	1	0	0	0	25	A A A
25 26	19 1A	0	0	0 0	1	1	0	0	1 0	26 27	A
27	1B	0	0	0	1	1	0	1	1	28	A A A
28 29	1C 1D	0	0	0	1 1	1	1	0	0	29 30	A
30	1E	0	0	0	1	1	1	1	0	31	A A
31 32	1F 20	0	0	0 1	1 0	1 0	1 0	1 0	1 0	32 33	A A
33	20	0	0	1	0	0	0	0	1	34	
34 35	22 23	0	0	1	0	0	0	1	0	35 36	A A
36	24	0	0	1	0	0	0	0	0	37	
37	25 26	0	0	1	0	0	1	0	1	38	A
38 39	20	0	0	1	0	0	1	1	0	39 40	A
40	28 29	0	0	1	0	1	0	0	0	41	AA
41 42	29 2A	0	0	1	0	1	0	0	1	42 43	AA
43	2B	0	0	1	0	1	0	1	1	44	A
44 45	2C 2D	0	0	1	0	1	1	0	0	45 46	A A
46	2E	0	0	1	0	1	1	1	0	47	A
47 48	2F 30	0	0	1	0	1	1	1 0	1 0	48 49	A A
49	31	0	0	1	1	0	0	0	1	50	A
50 51	32 33	0	0	1	1	0	0	1	0	51 52	A
52	34	0	0	1	1	0	1	0	0	53	A
53 54	35 36	0	0	1	1	0	1	0	1 0	54 55	A
55 56	37 38	0	0	1 1	1	0	1 0	1	1 0	56 57	A
57	39	0	0	1	1	1	0	0	1	58	Α
58 59	3A 3B	0	0	1	1	1	0	1	0	59 60	A
60	3C	0	0	1	1	1	1	0	0	61	Α
61 62	3D 3E	0	0	1	1	1	1	0	1 0	62 63	A
63	3F	0	0	1	1	1	1	1	1	64	Α
128 129	80 81	1	0	0	0	0	0	0	0	1	S S
130	82	1	0	0	0	0	0	1	0	3	S
131 132	83 84	1	0	0	0	0	0	1	1	4	S S
133	85	1	0	0	0	0	1	0	1	6	S
134 135	86 87	1	0	0	0	0	1	1	0	7	S S
136	88	1	0	0	0	1	0	0	0	9	S
137 138	89 8A	1	0	0	0	1	0	0	1 0	10 11	S S
139	8B	1	0	0	0	1	0	1	1	12	S
140 141	8C 8D	1	0	0	0	1	1	0	0	13 14	S S
142	8E	1	0	0	0	1	1	1	0	15	S
143	8F	1	0	0	0	1	1	1	1	16	S

144	90	1	0	0	1	0	0	0	0	17	S
145	91	1	Ō	Ō	1	Ō	Ō	Ō	1	18	Š
146	92	1	ō	ō	1	õ	ŏ	1	Ö	19	S
147	93	1	Ő	Ō	1	Õ	ŏ	1	1	20	Š
148	94	1	0	0	1	0	1	0	0	21	Š
149	95	1	0	0	1	0	1	0	1	22	s
150	96	1	0	0	1	0	1	1	0	23	S
151	97	1	0	0	1	0	1	1	1	23	S
151	97	1	0	0	1	1	0	0	0	24	S
153	99	1	0	0	1	1	0	0	1	26	S S
154	9A	1	0	0	1	1	0	1	0	27	5
155	9B	1	0	0	1	1	0	1	1	28	S
156	90	1	0	0	1	1	1	0	0	29	S
157	9D	1	0	0	1	1	1	0	1	30	S
158	9E	1	0	0	1	1	1	1	0	31	S
159	9F	1	0	0	1	1	1	1	1	32	S
160	A0	1	0	1	0	0	0	0	0	33	S
161	A1	1	0	1	0	0	0	0	1	34	S
162	A2	1	0	1	0	0	0	1	0	35	S
163	A3	1	0	1	0	0	0	1	1	36	S
164	A4	1	0	1	0	0	1	0	0	37	S
165	A5	1	0	1	0	0	1	0	1	38	S
166	A6	1	0	1	0	0	1	1	0	39	S
167	A7	1	0	1	0	0	1	1	1	40	S
168	A8	1	0	1	0	1	0	0	0	41	
169	A9	1	Ō	1	Ō	1	ŏ	Ō	1	42	S S
170	AA	1	Ō	1	Ō	1	ŏ	1	Ō	43	Š
171	AB	1	Ő	1	ŏ	1	ŏ	1	1	44	š
172	AC	1	Ő	1	Ō	1	1	0	0	45	Š
173	AD	1	0	1	0	1	1	0	1	46	s
174	AE	1	0	1	0	1	1	1	0	47	s
175	AF	1	0	1	0	1	1	1	1	48	S
175	B0	1	0	1	1	0	0	0	0	40	S
	<u>В0</u> В1	1	0			0	0	0	1	49 50	S
177						-	-				S
178	B2	1	0	1	1	0	0	1	0	51	
179	B3	1	0	1	1	0	0	1	1	52	S
180	B4	1	0	1	1	0	1	0	0	53	S
181	B5	1	0	1	1	0	1	0	1	54	S
182	B6	1	0	1	1	0	1	1	0	55	S
183	B7	1	0	1	1	0	1	1	1	56	S
184	B 8	1	0	1	1	1	0	0	0	57	S
185	B9	1	0	1	1	1	0	0	1	58	S
186	BA	1	0	1	1	1	0	1	0	59	S
187	BB	1	0	1	1	1	0	1	1	60	S
188	BC	1	0	1	1	1	1	0	0	61	S
189	BD	1	Õ	1	1	1	1	Ō	1	62	Š
190	BE	1	Ō	1	1	1	1	1	Ō	63	S
191	BF	1	Ō	1	1	1	1	1	1	64	Š
101										•	<u> </u>

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A.8 Ordering information

Designation	Ordering information Short description	Order No.	bbn 40 16779 EAN	Price group	Weight 1 pc. in kg	Pack unit [Pc.]
Binary Input, 4-fold, 230 V AC/DC, MDRC	BE/S 4.230.1	2CDG 110 051 R0011	63044 3	26	0.1	1
Binary Input, 4-fold, 24 V AC/DC, MDRC	BE/S 4.24.1	2CDG 110 052 R0011	63045 0	26	0.1	1
Binary Input, 4-fold, 20 V, MDRC, contact scanning	BE/S 4.20.1	2CDG 110 053 R0011	63037 5	26	0.1	1
Binary Input, 8-fold, 230 V AC/DC, MDRC	BE/S 8.230.1	2CDG 110 054 R0011	63041 2	26	0.2	1
Binary Input, 8-fold, 24 V AC/DC, MDRC	BE/S 8.24.1	2CDG 110 055 R0011	63042 9	26	0.2	1
Binary Input, 8-fold, 20 V, MDRC, contact scanning	BE/S 8.20.1	2CDG 110 056 R0011	63043 6	26	0.2	1

Table 50: Ordering details, Binary Inputs, xfold, MDRC

Appendix

A.9 Notes

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