

20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902**Use of the application program**

Product family: Input

Product type: Binary input, 4-fold

Manufacturer: Siemens

Name: Push button interface UP 220/02

Order no.: 5WG1 220-2AB02

Functional description

This application program makes it possible to use conventional push buttons via the push button interface UP 220/02 for the following functions: switching, push button control, sending values, shutter control, dimming with one button, dimming and dimming with cyclical sending.

Each input (A, B, C, D) can be configured for both switching functions and sending values. A switching object is thus assigned to each input. Two inputs per function are required to implement conventional dimming and shutter control functions. This can be the input pairs A/B or C/D. The application program can be parameterised with the following functionality:

Switch (Input A/B/C/D)

Each channel (A/B/C/D) can be configured for switching. An object is assigned to each input. The value of each object is 1 bit (EIS 1). "On" or "Off" telegrams can therefore be generated.

The subsequent parameters determine whether the object value is evaluated or processed further:

- Edge evaluation

Depending on the parameter settings, a corresponding object value is generated after a change in the pulse edge at the input. This type of change can force the object value to be modified. A switching telegram can be enabled.

- Send condition

Depending on the parameter settings, a corresponding object value is sent after a change in the pulse edge at the input. This setting also applies on bus voltage recovery. The sending of an object value is thus initiated by a change in the pulse edge at the input. The object value for the send condition is not evaluated. (A change in the pulse edge at the input can cause the object value to change, whereby this object value is also sent. The sending of the object value is however not controlled by the change in the object value but by the change in the pulse edge).

- Send condition for cyclical sending

It can be set via a further parameter whether the object value is sent cyclically. The cyclical interval is set via an additional parameter. The cyclical sending

is only dependent on the object value. A change in the pulse edge at the input can however generate a change in the object value which then controls the cyclical sending.

- Switch On/Off (short/long push button action):
Each channel (A/B/C/D) can be configured as a switching channel for a short/long push button action. A timer is started with the appearance of a rising edge at the input. If the input drops out before a set period has elapsed, the corresponding signal is sent for the short push button action (On/Off). If the signal is applied at the input for longer than the set period, the corresponding signal for a long push button action (On/Off) is sent.

Send value (Input A, B, C, D)

This function enables 1 byte telegrams to be generated. A value object (8 bit) can be assigned to each input. It is therefore possible for example to set the lighting which is operated by switch/dimming actuators to brightness values between 0 and 100%. When evaluating a rising and falling edge of a push button or conventional brightness sensor, up to 2 values are produced per input. The operating time is not evaluated in this case.

Dimming with one button (Input A, B, C, D)

Each channel (A/B/C/D) can be configured as a dimmer with one button. A distinction is made between a long and short push button action (signal).

- Switch (short push button action)

After a short push button action, the value present in the switching object (=dimming On/Off) is inverted and then sent. An "On" or "Off" telegram is only generated when the push button is released (=falling edge).

- Dimming (long push button action)

After a long push button action (the duration of which can be set), the lighting is dimmed brighter or darker depending on the object value and the last dimming direction. If the dimming actuator was switched off, it is switched on after a long push button action and dimmed brighter. If it was dimmed to 100%, it is dimmed darker after a long push button action. If a dimming value has been set for the dimming actuator between 0 and 100%, the last operated dimming direction is inverted.

After a long push button action, the command "100% dimming" is sent via the dimming object while the command "Stop" is sent when the push button is released (=falling edge). The "Dimming time" can be set. If a stop command is received before the end of the dimming process, the process is interrupted and the achieved brightness value is maintained.

20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902**Dimming (Inputs A/B, C/D)**

It is possible to combine the inputs for the conventional dimming function into the channel pairs A/B and C/D. It is possible to switch on and off with a brief operation of one pair of push buttons while the lighting can be dimmed brighter and darker with a longer push button action. In the function "Toggle", an "On" or "Off" telegram is generated at input A or B (input C or D). The functions "Dimming" (with stop telegram) and "Dimming with cyclical sending" can be set. In the setting "Dimming", a dimming telegram for dimming 100% brighter or darker is sent after a long push button action while a stop telegram is sent when the push button is released. In the setting "Dimming with cyclical sending", dimming telegrams are generated according to an adjustable repetition time until the push button is released. The cyclical sending ends when the push button is released.

Shutter (Inputs A/B, D/C)

It is possible to combine the inputs for the shutter function into the channel pairs A/B and C/D. After a long push button action (the duration of which can be set), the shutter is raised (by input A/C) or lowered (by input B/D). If the push button is pressed again during the shutter movement (short push button action), this is interpreted by the shutter actuator as a stop command and the shutter stops. Otherwise, the louvres are rotated in the corresponding direction after a short push button action.

Maximum number of group addresses: 20
Maximum number of associations: 20

Parameters**General**

General	Input A	Input B	Input C	Input D
Basic function Input A / B	Switch / Dimming with one button / 8-bit Value			
Basic function Input C / D	Switch / Dimming with one button / 8-bit Value			
Long push button action min.	0.5 seconds			
Start-up delay	11...21 seconds (dep. on phys. address)			
Debounce time	10 milliseconds			
Limit number of telegrams	enabled			
Limit number of telegrams	127 telegrams per 17 sec			

The function and parameters of inputs A/B and C/D are identical.

Parameters	Settings
Basic function Input A / B	Switch / Dimming with one button / 8-bit Value Dimming / Shutter
Basic function Input C / D	Switch / Dimming with one button / 8-bit Value Dimming / Shutter

This parameter defines the basic functions of inputs A/B and C/D for one or two channel operation. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly.

Long push button action min.	0.3 seconds 0.4 seconds 0.5 seconds 0.6 seconds 0.8 seconds 1.0 seconds 1.2 seconds 1.5 seconds 2.0 seconds 2.5 seconds 3.0 seconds 4.0 seconds 5.0 seconds 6.0 seconds 7.0 seconds
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This parameter indicates how long the push button must be pressed to distinguish between the sending of a switch or dimming command.

Push button shorter than the set time: A switching telegram is sent.

Push button longer than the set time: Dimming telegrams are sent.

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Parameters	Settings
Start-up delay	11 ... 21 seconds (dep. on phys. address) 5 ... 9 seconds 11 seconds 13 seconds 15 seconds 17 seconds 19 seconds 21 seconds
	This parameter indicates the period after bus voltage recovery which must elapse before the first telegram can be sent on the bus.
	If one or several functions are selected which send an initialisation telegram on bus voltage recovery, this parameter should be left in the default setting.
Debounce time	10 ms 30 ms 50 ms 100 ms
	When a push button is pressed, a brief bounce of the contacts occurs whereby the contact opens and closes several times until it finally remains closed. The duration of the contact bounce depends on the push button that is used.
	A multiple operation of the push button is detected by the rapid scanning of an input via the application software and several switching telegrams are sent. The debounce time prevents this as after the first detection of a change in the status at the input, there is a delay for the set period and the current status is used for further processing.
Limit number of telegrams	disabled enabled
	To prevent a defective push button from generating continuous switching commands, it is possible to limit the number of telegrams that are sent during a certain period.
	Limit number of telegrams is "disabled": The number of telegrams per time period is not limited.
	Limit number of telegrams is "enabled": The number of telegrams that are sent within a period can be limited. The parameter window changes and the additional parameter "Limit number of telegrams" appears where the number can be specified.
Limit number of telegrams	30 telegrams per 17 sec. 60 telegrams per 17 sec. 100 telegrams per 17 sec. 127 telegrams per 17 sec.
	Depending on the setting, a maximum of 30, 60, 100 or 127 telegrams are sent per 17 seconds.

Communication objects

Switch On/Off/Toggle

Phys.Addr.	Program			
	no.	Function	Object name	Type
01.01.001	20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902			
0	On / Off / Toggle	Switch, Input A	1 Bit	
2	On / Off / Toggle	Switch, Input B	1 Bit	
4	On / Off / Toggle	Switch, Input C	1 Bit	
6	On / Off / Toggle	Switch, Input D	1 Bit	

Note:

The view of the objects can be arranged individually i.e. this view may vary.

Obj	Function	Object name	Type	Flags
0	On / Off / Toggle	Switch, Input A	1 Bit	CWT
2	On / Off / Toggle	Switch, Input B	1 Bit	CWT
4	On / Off / Toggle	Switch, Input C	1 Bit	CWT
6	On / Off / Toggle	Switch, Input D	1 Bit	CWT

The switching telegrams of inputs A – D are sent via the group addresses in these objects. It can be set via the corresponding parameters which signal state generates "On" or "Off" telegrams at the individual inputs. If the setting "Toggle" is selected, all the central addresses contained in the actuator should be entered in order to synchronise the sensor.

Parameters

Switch (Input A)

General	Input A	Input B	Input C	Input D
Function	Switch			
Edge evaluation	rising On, falling Off			
Send condition: send on change at input or on bus voltage recovery	rising and falling edge			
Send starting value on bus voltage recovery	Yes			
Value dep. on edge evaluation				
Sending dep. on send condition				
Behaviour on sending: cyclical sending on	On			
Base for cyclical sending	Time base 8.4 sec			
Factor for cyclical sending (5-127)	37			

The parameters of inputs A/B/C/D are identical in the function "Switch".

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Parameters	Settings
Function	Switch Dimming with one button 8-bit Value (rising edge) 8-bit Value (rising and falling edge) Short / Long push button action
	This parameter defines the basic functions of input A. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly.
Edge evaluation	rising On, falling Off rising Off, falling On rising On falling On rising Off falling Off rising Toggle falling Toggle rising Toggle, falling Toggle no evaluation
	Depending on the selected edge evaluation, the corresponding object value is generated. "rising On, falling Off": With the appearance of a rising edge at the input, the object value "On" is produced. If the input drops out, the object value "Off" is generated. The operating time is not evaluated in this case. "rising On": With the appearance of a rising edge at the input, the object value "On" is produced. The operating time is not evaluated. A falling edge is not taken into account. "rising Off": With the appearance of a rising edge at the input, the object value "Off" is produced. The operating time is not evaluated. A falling edge is not taken into account. "rising Toggle": With the appearance of a rising edge at the input, the object value is inverted. The operating time is not evaluated. A falling edge is not taken into account. "rising Toggle, falling Toggle": With the appearance of a rising or falling edge at the input, the object value is inverted. The operating time is not evaluated. "no evaluation": A change in the pulse edge at the input does not modify the object value. The switching state of the communication object can only be changed via the receipt of a bus telegram. It is possible to reverse the edge evaluation by selecting the appropriate function.

Parameters	Settings
Send condition: send on change at input or on bus voltage recovery	rising edge falling edge rising and falling edge no sending
	"rising edge": With the appearance of a rising edge at the input, the object value that has been generated is sent. "falling edge": With the appearance of a falling edge at the input, the object value that has been generated is sent. "rising and falling edge": With the appearance of a rising or falling edge at the input, the object value that has been generated is sent. "no sending": No telegrams are sent after a change in the pulse edge at the input or on bus voltage recovery.
Send starting value on bus voltage recovery Value dep. on edge evaluation Sending dep. on send condition	Yes No
	This parameter enables an initialisation signal at the start of the program. If it is set to "Yes", a signal is issued after the program start which corresponds to the status of the input, just as if it had been switched in this direction. If the parameter is set to "No", no initialisation signal is issued. Caution: The initialisation signal is dependent on the setting for edge evaluation and on the send conditions.
Behaviour on sending: cyclical sending on	no cyclical sending On Off On and Off
	This parameter determines whether the switching value of the communication object should be sent repeatedly on the bus according to the cyclic interval. "no cyclical sending": No telegrams are sent cyclically. "On": The object value is only sent cyclically on the bus if it is set to logic "1". If the status changes from "1" to "0" due to a change in the pulse edge at the input or after receipt of a bus telegram, the cyclical sending stops. "Off": The object value is only sent cyclically on the bus if it is set to logic "0". If the status changes from "0" to "1" due to a change in the pulse edge at the input or after receipt of a bus telegram, the cyclical sending stops. "On and Off": Every object value is sent cyclically on the bus. If the status changes due to a change in the pulse edge at the input or after receipt of a bus telegram, the new value is sent cyclically.

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Parameters	Settings
Base for cyclical sending	Time base 130 ms Time base 260 ms Time base 520 ms Time base 1.0 sec Time base 2.1 sec Time base 4.2 sec Time base 8.4 sec Time base 17 sec Time base 34 sec Time base 1.1 min Time base 2.2 min Time base 4.5 min Time base 9.0 min Time base 18 min Time base 35 min Time base 1.2 hr
Together with the parameter "Factor for cyclical sending (5...127)", this parameter indicates the interval for sending telegrams cyclically.	
Factor for cyclical sending (5...127)	37
Together with the parameter "Base for cyclical sending", this parameter indicates the interval for sending telegrams cyclically. A value of 5...127 is possible (default value = 37). The cyclic time for sending telegrams repeatedly on the bus is set here. The time is calculated from the selected base multiplied by the factor entered here. If "no cyclical sending" is selected, this setting has no function.	
Note: An attempt should always be made to set the required time with the smallest possible base as the base also simultaneously specifies the maximum timing error.	

Switch (Short / Long push button action)

Input A

General	Input A	Input B	Input C	Input D
Function	Short / Long push button action			
Value on short push button action	On			
Value on long push button action	Off			
Contact type	normally open contact			

The parameters of inputs A/B/C/D are identical in the function "Switch (short/long push button action)".

Parameters	Settings
Function	Switch Dimming with one button 8-bit Value (rising edge) 8-bit Value (rising and falling edge) Short / Long push button action
This parameter defines the switch function of input A. Depending on the set function, the parameter window changes and the necessary parameters for input A are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for input A are changed accordingly.	
"Short / Long push button action": A timer is started with the appearance of a rising edge at the input. If the input drops out within the period specified in the parameter "Long push button action min.", the corresponding switching value for short push button actions (On/Off) is sent immediately. If the signal is applied at the input for longer than the set time, the corresponding switching value for a long push button action (On/Off) is sent. The operating time which distinguishes between a short and long push button action is defined in the "General" parameter window.	
Value on short push button action	On Off
This parameter defines the object value after a short push button action at input A.	
Value on long push button action	On Off
This parameter defines the object value after a long push button action at input A.	
Contact type	normally open contact normally closed contact
This parameter defines which contact type is present at the input of the device.	
"normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated. "normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated.	
When assigning parameters to the inputs, it should be noted that when the contact type "normally closed contact" is used, the terms "rising and falling edge" are changed over.	

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Phys.Addr.	Program		
no.	Function	Object name	Type
01.01.001	20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902		
0	8-bit Value	Value, Input A	1 Byte
2	8-bit Value	Value, Input B	1 Byte
4	8-bit Value	Value, Input C	1 Byte
6	8-bit Value	Value, Input D	1 Byte

Note:

The view of the objects can be arranged individually i.e. this view may vary.

Obj	Function	Object name	Type	Flags
0	8-bit Value	Value, Input A	1 Byte	CWT
2	8-bit Value	Value, Input B	1 Byte	CWT
4	8-bit Value	Value, Input C	1 Byte	CWT
6	8-bit Value	Value, Input D	1 Byte	CWT

The value telegrams of inputs A-D are sent via the group addresses in these objects. A value object (8 bit) is therefore assigned to each input. With the appearance of a rising edge at the input, the corresponding value (0...255) is sent immediately.

Send value (rising edge)**Input A**

General	Input A	Input B	Input C	Input D
Function	8-bit Value (rising edge)			
Value on rising edge (0-255)	255			
Contact type	normally open contact			

The parameters of inputs A/B/C/D are identical in the function "Send value (rising edge)".

Parameters	Settings
Function	Switch Dimming with one button 8-bit Value (rising edge) 8-bit Value (rising and falling edge) Short / Long push button action

This parameter defines the basic functions of input A. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly.

Value on rising edge (0...255)	255
This parameter specifies the value which is sent on detection of a rising edge at input A. The value can lie between 0 (0%) and 255 (100%).	
Contact type	normally open contact normally closed contact
This parameter determines which contact type is present at the input of the device. "normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated. "normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated. When assigning parameters to the inputs, it should be noted that when the contact type "normally closed contact" is used, the terms "rising and falling edge" are changed over.	

Send value (rising and falling edge)**Input A**

General	Input A	Input B	Input C	Input D
Function	8-bit Value (rising and falling edge)			
Value on rising edge (0-255)	255			
Contact type	normally open contact			

The parameters of inputs A/B/C/D are identical in the function "Send value (rising and falling edge)".

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Parameters	Settings
Function	Switch Dimming with one button 8-bit Value (rising edge) 8-bit Value (rising and falling edge) Short / Long push button action
This parameter defines the basic functions of input A/B. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly.	
Value on rising edge (0...255)	255
This parameter specifies the value which is sent on detection of a rising edge at input A. The value can lie between 0 (0%) and 255 (100%).	
Value on falling edge (0...255)	0
This parameter specifies the value which is sent on detection of a falling edge at input A. The value can lie between 0 (0%) and 255 (100%).	
Contact type	normally open contact normally closed contact
This parameter determines which contact type is present at the input of the device. "normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated. "normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated. When assigning parameters to the inputs, it should be noted that when the contact type "normally closed contact" is used, the terms "rising and falling edge" are changed over.	

Communication objects

Dimming On/Off

Phys.Addr.	Program		
no.	Function	Object name	Type
01.01.001	20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902		
0	On / Off	Dimming On / Off, Input A / B	1 Bit
1	Brighter / Darker	Dimming, Input A / B	4 Bit
4	On / Off	Dimming On / Off, Input C / D	1 Bit
5	Brighter / Darker	Dimming, Input C / D	4 Bit

Note:

The view of the objects can be arranged individually i.e. this view may vary.

Obj	Function	Object name	Type	Flags
0	On / Off	Dimming On / Off, Input A / B	1 Bit	CWT
The switching telegrams of inputs A and B are sent via the group addresses in these objects. It can be set via a parameter which of the two inputs generates "On" or "Off" telegrams after a short push button action. If the setting "Toggle/Toggle" is selected, all the central addresses contained in the actuator should be entered in order to synchronise the sensor.				
1	Brighter / Darker	Dimming, Input A / B	4 Bit	CWT
The dimming telegrams of inputs A and B are sent via the group address in this object. A long push button action at input A generates "Dim brighter" telegrams while a long push button action at input B produces telegrams for dimming darker.				
4	On / Off	Dimming On / Off, Input C / D	1 Bit	CWT
The switching telegrams of inputs C and D are sent via the group addresses in these objects. It can be set via a parameter which of the two inputs generates "On" or "Off" telegrams after a short push button action. If the setting "Toggle/Toggle" is selected, all the central addresses contained in the actuator should be entered in order to synchronise the sensor.				
5	Brighter / Darker	Dimming, Input C / D	4 Bit	CWT
The dimming telegrams of inputs C and D are sent via the group address in this object. A long push button action at input C generates "Dim brighter" telegrams while a long push button action at input D produces telegrams for dimming darker.				

Dimming with stop telegram

Input A/B

General	Input A / B	Input C / D
Function A / B	Dimming with stop telegram	
Input A / B	On / Off	
Contact type Input A	normally open contact	
Contact type Input B	normally open contact	

The parameters of both input pairs A/B and C/D are identical in the function "Dimming with stop telegram".

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Parameters	Settings
Function A / B	Dimming with stop telegram Shutter Up / Down Dimming with cyclical sending
	This parameter defines the basic functions of input A/B. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly. "Dimming with stop telegram": A short push button action at input A or B generates a switching telegram via object 0. A long push button action at input A generates a "Dim brighter" telegram via object 1. A stop command is sent when the push button is released. Input B behaves according to the opposite dimming direction.
Input A / B	On / Off Toggle / Toggle
	This parameter defines the value which is sent after a brief operation of input A/B. "On / Off": A short push button action at input A generates "Off" telegrams while input B produces "On" telegrams. It is possible to change over the function by reconnecting the inputs. "Toggle / Toggle": A toggle operation takes place after each short push button action at input A or B. This means that the value contained in the switching object is inverted and sent.
Contact type Input A	normally open contact normally closed contact
Contact type Input B	normally open contact normally closed contact
	These parameters define the contact type which is present at input A and input B of the device. "normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated. "normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated.

Dimming with cyclical sending

Input A/B

General	Input A / B	Input C / D
Function A / B	Dimming with cyclical sending	
Input A / B	On / Off	
Long push button action	adjust by 1/8	
Interval for cyclical sending	0.5 seconds	
Contact type Input A	normally open contact	
Contact type Input B	normally open contact	

The parameters of both input pairs A/B and C/D are identical in the function "Dimming with cyclical sending".

Parameters	Settings
Function A / B	Dimming with cyclical sending Shutter Up / Down Dimming with stop telegram
	This parameter defines the basic functions of input A/B. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly. "Dimming with cyclical sending": A short push button action at input A or B generates an "On" or "Off" telegram via object 0. A long push button action at input A generates "Dim brighter" telegrams via object 3 according to the setting "Interval for cyclical sending" until the push button is released. The cyclical sending stops when the push button is released. Input B behaves according to the opposite dimming direction.
Input A / B	On / Off Toggle / Toggle
	This parameter defines the value which is sent after a brief operation of input A/B. "On / Off": A short push button action at input A generates "Off" telegrams while input B produces "On" telegrams. It is possible to change over the function by reconnecting the inputs. "Toggle / Toggle": A toggle operation takes place after each short push button action at input A or B. This means that the value contained in the switching object is inverted and sent.
Long push button action	adjust by 100% adjust by 1/2 adjust by 1/4 adjust by 1/8 adjust by 1/16 adjust by 1/32 adjust by 1/64

This parameter determines the dimming step width of the telegrams after a long push button action.
In the configuration "Dimming with cyclical sending", the dimming step width should be set together with the parameter "Interval for cyclical sending" at the dimming time of the actuator. If the dimming time of 0 to 100% is set for example to 4 seconds in the switch/dimming actuator, an adjustment by 1/8 is selected for a send repetition time of 0.5 seconds. A dimming command to dim 12.5% brighter or darker is thus sent every 0.5 seconds which with 8 x 12.5% and 8 x 0.5 seconds matches the dimming speed in the actuator of 100% in 4 seconds.

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Parameters	Settings
Interval for cyclical sending	0.3 seconds 0.4 seconds 0.5 seconds 0.6 seconds 0.8 seconds 1.0 seconds 1.2 seconds 1.5 seconds 2.0 seconds 2.5 seconds 3.0 seconds 4.0 seconds 5.0 seconds 6.0 seconds 7.0 seconds
Contact type Input A	normally open contact normally closed contact
Contact type Input B	normally open contact normally closed contact
<p>These parameters define the contact type which is present at input A and input B of the device.</p> <p>“normally open contact”: The contact of the push button is closed when it is pressed and open when it is not operated.</p> <p>“normally closed contact”: The contact of the push button is opened when it is pressed and closed when it is not operated.</p>	

Obj	Function	Object name	Type	Flags
0	Toggle	Dimming Toggle, Input A	1 Bit	CWT
<p>The switching telegrams at input A are sent via the group address in this object. A short push button action generates “On” or “Off” telegrams.</p>				
1	Brighter / Darker	Dimming, Input A	4 Bit	CWT
<p>The dimming telegrams at input A are sent via the group address. A long push button action produces a telegram for “100% dimming”. A stop command is sent when the push button is released. Since the last dimming action is inverted, it is possible to set any brightness value.</p>				
2	Toggle	Dimming Toggle, Input B	1 Bit	CWT
<p>The switching telegrams at input B are sent via the group address in this object. A short push button action generates “On” or “Off” telegrams.</p>				
3	Brighter / Darker	Dimming, Input B	4 Bit	CWT
<p>The dimming telegrams at input B are sent via the group address. A long push button action produces a telegram for “100% dimming”. A stop command is sent when the push button is released. Since the last dimming action is inverted, it is possible to set any brightness value.</p>				
4	Toggle	Dimming Toggle, Input C	1 Bit	CWT
<p>The switching telegrams at input C are sent via the group address in this object. A short push button action generates “On” or “Off” telegrams.</p>				
5	Brighter / Darker	Dimming, Input C	4 Bit	CWT
<p>The dimming telegrams at input C are sent via the group address. A long push button action produces a telegram for “100% dimming”. A stop command is sent when the push button is released. Since the last dimming action is inverted, it is possible to set any brightness value.</p>				
6	Toggle	Dimming Toggle, Input D	1 Bit	CWT
<p>The switching telegrams at input D are sent via the group address in this object. A short push button action generates “On” or “Off” telegrams.</p>				
7	Brighter / Darker	Dimming, Input D	4 Bit	CWT
<p>The dimming telegrams at input D are sent via the group address. A long push button action produces a telegram for “100% dimming”. A stop command is sent when the push button is released. Since the last dimming action is inverted, it is possible to set any brightness value.</p>				

Communication objects

Dimming with one button

Phys.Addr.		Program	
no.	Function	Object name	Type
01.01.001	20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902		
0	Toggle	Dimming Toggle, Input A	1 Bit
1	Brighter / Darker	Dimming, Input A	4 Bit
2	Toggle	Dimming Toggle, Input B	1 Bit
3	Brighter / Darker	Dimming, Input B	4 Bit
4	Toggle	Dimming Toggle, Input C	1 Bit
5	Brighter / Darker	Dimming, Input C	4 Bit
6	Toggle	Dimming Toggle, Input D	1 Bit
7	Brighter / Darker	Dimming, Input D	4 Bit

Note:

The view of the objects can be arranged individually i.e. this view may vary.

20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902

Dimming with one button

Input A

General	Input A	Input B	Input C	Input D
Function	Dimming with one button			
Contact type	normally open contact			

The parameters of inputs A/B/C/D are identical in the function "Dimming with one button".

Parameters	Settings
Function	Dimming with one button Switch 8-bit Value (rising edge) 8-bit Value (rising and falling edge) Short / Long push button action
	This parameter defines the basic functions of input A. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly. "Dimming with one button": A short push button action at input A generates an "On" or "Off" telegram. A toggle operation takes place after each push button action at input A. This means that the value contained in the switching object is inverted and then sent. A long push button action at input A (the duration of which can be set) produces a telegram for "100% dimming". A stop command is sent when the push button is released. Since the last dimming action is inverted, any brightness value can be set.
Contact type	normally open contact normally closed contact
	This parameter defines the contact type which is present at the input of the device. "normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated. "normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated.

Communication objects

Shutter

Phys.Addr.	Program			Type
	no.	Function	Object name	
01.01.001	20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902			
0	Open / Closed	Louvres, Input A / B	1 Bit	
1	Up / Down	Shutter, Input A / B	1 Bit	
4	Open / Closed	Louvres, Input C / D	1 Bit	
5	Up / Down	Shutter, Input C / D	1 Bit	

Note:

The view of the objects can be arranged individually i.e. this view may vary.

Obj	Function	Object name	Type	Flags
0	Open / Closed	Louvres, Input A / B	1 Bit	CWT
1	Up / Down	Shutter, Input A / B	1 Bit	CWT
4	Open / Closed	Louvres, Input C / D	1 Bit	CWT
5	Up / Down	Shutter, Input C / D	1 Bit	CWT

The louvre commands of inputs A and B are sent via the group address in this object in the setting "Shutter Up / Down". A short push button action at input A generates telegrams for opening the louvres while telegrams for closing the louvres are produced after a short push button action at input B.

The shutter commands of inputs A and B are sent via the group address in this object in the setting "Shutter Up / Down". A long push button action at input A generates telegrams for raising the shutter while telegrams for lowering the shutter are produced after a long push button action at input B.

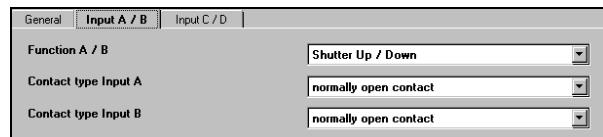
The louvre commands of inputs C and D are sent via the group address in this object in the setting "Shutter Up / Down". A short push button action at input C generates telegrams for opening the louvres while telegrams for closing the louvres are produced after a short push button action at input D.

The shutter commands of inputs C and D are sent via the group address in this object in the setting "Shutter Up / Down". A long push button action at input C generates telegrams for raising the shutter while telegrams for lowering the shutter are produced after a long push button action at input D.

20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902

Shutter Up / Down

Input A/B



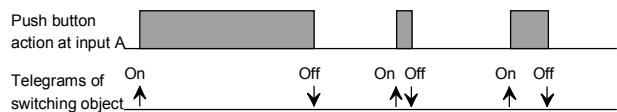
The parameters of both input pairs A/B and C/D are identical in the function "Shutter Up / Down".

Parameters	Settings
Function A / B	Shutter Up / Down Dimming with stop telegram Dimming with cyclical sending
This parameter defines the basic functions of input A/B. Depending on the set function, the parameter window associated with the input changes and the necessary parameters are displayed with their default setting. The objects required for the setting are also shown in the object list and the object types for the respective input are changed accordingly.	
"Shutter Up / Down": After a short push button action, a switching command is sent which adjusts the louvres. The decision as to whether an "Up" or "Down" telegram is sent is dependent on whether input A or B has been pressed. This function can also be used for controlling skylights and security gates in both directions. The "Up" command (EIS 7) corresponds to the "Off" command (EIS 1) while the "Down" command corresponds to the "On" command.	
After a long push button action (the duration of which can be set), the shutter is raised (input A) or lowered (input B). If the push button is pressed again briefly during shutter movement (short push button action), this is interpreted by the shutter actuator as a stop command and the shutter halts. Otherwise, only the louvres are rotated in the corresponding direction after a short push button action.	
Contact type Input A	normally open contact normally closed contact
Contact type Input B	normally open contact normally closed contact
These parameters define the contact type which is present at input A and input B of the device.	
"normally open contact": The contact of the push button is closed when it is pressed and open when it is not operated.	
"normally closed contact": The contact of the push button is opened when it is pressed and closed when it is not operated.	

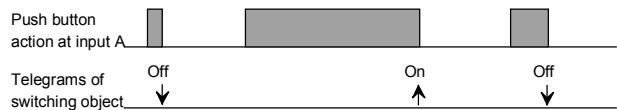
Examples of timing diagrams

1. Configured for: "Switch"

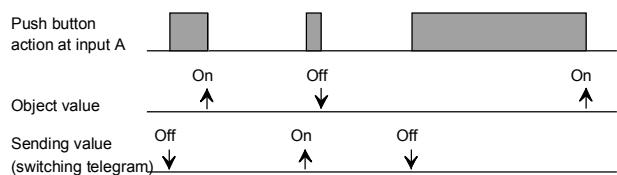
Function of input A: Edge evaluation (rising edge On, falling edge Off)



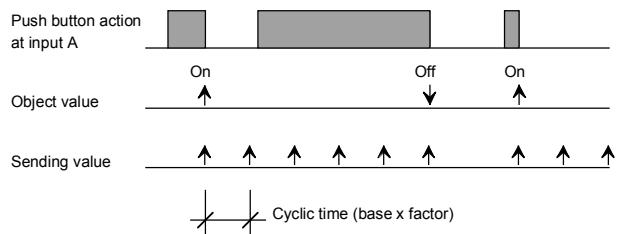
Function of input A: Edge evaluation (falling edge Toggle)



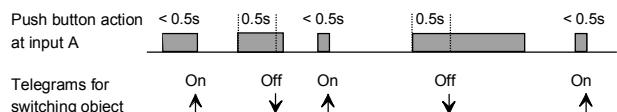
Function of input A: Edge evaluation (falling edge Toggle); send condition (send object value on rising edge)



Function of input A: Edge evaluation (falling edge Toggle); send condition for cyclical sending (cyclical sending for object value = On)



Function of input A: (short/long push button action), short operation On / long operation Off



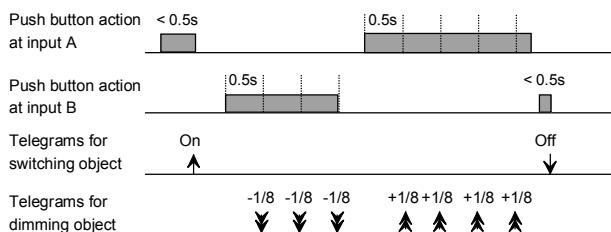
20 S4 On-Off-Toggle/Dim/Shu/Value/Cycl 900902

2. Configured for: "Dimming"

Function of input A/B: Dimming, On/Off



Function of input A/B: Dimming with cyclical sending, On/Off



3. Configured for "Shutter"

Function of input A/B: Shutter Up/Down

