20 A4 Shutter 540E03

Use of the application program

Product family: Shutter
Product type: Switch
Manufacturer: Siemens

Name: Shutter switch N 522/02
Order no.: 5WG1 522-1AB02

Functional description

Area of application
The shutter switch N 522/02 is designed for the control of four drive mechanisms for shutters, awnings or blinds and for louvre adjustment, whereby only one drive may be connected per actuator channel. A.C.-operated drives (motors) with electromechanical limit switches or integrated electronics for end position disconnection can be connected to the outputs of the shutter switch N 522/02. It is not permitted to connect drives with electromechanical limit switches in parallel to one output or to operate both types of drives at one output, as the response of the drive's limit switches is queried by the shutter switch and used to synchronise the travel time to the limit positions. When using drives with integrated electronics for end position disconnection, there is no automatic adaptation of the travel time to the limit positions. Timed operation is used for these drives. The travel time of these motors should be measured as accurately as possible in this case and set in the application program. If a relay for the group control of several drives is connected to a channel of the N 522/02, it should be treated in the same way as a drive with integrated electronics for end position disconnection.

Control via positioning commands
The application program 20 A4 Shutter 540E03 should only be used in connection with the shutter switch N 522/02. Both shutter movement and louvre adjustment can be carried out via switching commands "Up/Down" and via positioning commands (with positioning data defined in percentages). This enables automatic and accurate shutter movement into any position as well as louvre adjustment into a defined position using standard A.C. drives. If required, once a shutter has been moved into the lower limit position and the limit switch has been addressed, the louvres can be automatically rotated into a pre-set intermediate position e.g. to let more daylight into the room.
The current position of the shutter and its louvres can be transferred as percentage values in the range 0 – 100% (0% = shutter or louvres fully open, 100% = shutter or louvres fully closed) via two status objects per channel, either in response to a query or automatically once a new position has been reached.

Operating modes and communication objects
In the application program 20 A4 Shutter 540E03, it can be set whether a distinction is made between two operating modes (automatic mode / manual mode) or whether only one operating mode (manual mode) is active. Apart from the two objects "Safety" and "Shutter / roller blind central, Channel A-D" which are always available, the type and number of the usable communication objects depends on the selected operating mode.
In the event of a wind or rain alarm, all the shutters are moved to the upper limit position via the "Safety" object and movement into other positions is blocked until the alarm is deactivated. The simultaneous movement into the upper or lower limit position is started for all four channels via the object "Shutter / roller blind central, Channel A-D".
In pure manual mode, 4 objects are available per channel for controlling the shutter and its louvres as well as 2 further objects for reporting the current positions of the shutter and louvres.
In automatic/manual mode, a special object is available for switching all four channels together from manual to automatic mode and vice versa (e.g. due to a primary central control). Both the shutter and louvres can be moved into any position for two channels together (A+B or C+D) via automatic mode commands (with positioning data 0...100%). In addition, one object is available per actuator channel for switching the channel to manual mode or automatic mode. There are also two 1 bit objects available for controlling the shutter and louvres as well as 2 further objects for reporting the current positions of the shutter and louvres.
If manual shutter movement or louvre adjustment is carried out in automatic mode via a shutter switch, the channel automatically switches from automatic mode to manual mode. In manual mode, all automatic mode commands are no longer carried out for the channel that has been set to manual mode. This ensures that the occupant of the room can continually position his blind as he requires. This position can only be modified again by a primary automatic control when the sun is no longer shining and when all shutters will be moved automatically to their final upper position.
The receipt of a central "Up/Down" command for opening and closing all the shutters always leads first to switching all channels of the actuator to automatic mode.

20 A4 Shutter 540E03

Communication objects

Phys.Adr.		Produkt		
	Nr.	Objektname	Funktion	Typ
	01.01.001	Shutter switch N 522/02		
	0	Safety	Safety	1 Bit
	1	Shutter / roller blind central, Channel A-D	Up / Down	1 Bit
	2	Manual mode / automatic mode, central	Off / On	1 Bit
	3	Shutter/roller blind position, automatic mode, A/B	8-bit Value	1 Byte
	4	Louvres position automatic mode, Channel A/B	8-bit Value	1 Byte
	5	Shutter/roller blind position, automatic mode, C/D	8-bit Value	1 Byte
	6	Louvres position automatic mode, Channel C/D	8-bit Value	1 Byte
	7	Manual mode / automatic mode, Channel A	Off / On	1 Bit
	8	Shutter manual mode, Channel A	Up / Down	1 Bit
	9	Louvres manual mode, Channel A	Open / Closed	1 Bit
	10	Status shutter position, Channel A	8-bit Value	1 Byte
	11	Status louvres position, Channel A	8-bit Value	1 Byte
	12	Manual mode / automatic mode, Channel B	Off / On	1 Bit
	13	Shutter manual mode, Channel B	Up / Down	1 Bit
	14	Louvres manual mode, Channel B	Open / Closed	1 Bit
	15	Status shutter position, Channel B	8-bit Value	1 Byte
	16	Status louvres position, Channel B	8-bit Value	1 Byte
	17	Manual mode / automatic mode, Channel C	Off / On	1 Bit
	18	Shutter manual mode, Channel C	Up / Down	1 Bit
	19	Louvres manual mode, Channel C	Open / Closed	1 Bit
	20	Status shutter position, Channel C	8-bit Value	1 Byte
	21	Status louvres position, Channel C	8-bit Value	1 Byte
	22	Manual mode / automatic mode, Channel D	Off / On	1 Bit
	23	Shutter manual mode, Channel D	Up / Down	1 Bit
	24	Louvres manual mode, Channel D	Open / Closed	1 Bit
	25	Status shutter position, Channel D	8-bit Value	1 Byte
	26	Status louvres position, Channel D	8-bit Value	1 Byte

Picture 1. Communication objects with distinction between “Automatic / manual mode”

Obj	Object name	Function	Type	Flags
0	Safety	Safety	1 Bit	CWTU
This object can be linked with a safety address e.g. from a wind, rain or ice detector which sends a logic “0” in the idle state and a logic “1” in the event of an alarm. If the “Safety” parameter is “enabled”, the shutter switch moves the shutter in the event of a wind alarm into the position defined via the parameter “Safety position” and locks further operation of the shutter until the wind alarm is deactivated. The same process occurs if the parameter “Monitoring time for safety” has been enabled and no telegrams have been received during the set period. In both cases, telegrams for shutter movement and louvre adjustment as well as the operation of the buttons in the actuator are ignored until a logic “0” is received for the safety object. When a safety alarm is active, there is also no automatic switching from automatic mode to manual mode or vice versa which would otherwise be triggered by the receipt of movement commands at the objects 1, 8, 9, 13, 14, 18, 19, 23 and 24.				

Obj	Object name	Function	Type	Flags
1	Shutter / roller blind central, Channel A-D	Up / Down	1 Bit	CWTU
If a telegram is received at this object, all the channels of the shutter switch are first automatically switched to “Automatic mode” before moving all the shutters/roller blinds. If a logic “0” is received, the shutters/roller blinds are raised (opened). If a logic “1” is received, they are lowered (closed). If the shutters are moved via this object into the lower limit position, the louvres are then automatically moved into the position preset via the parameter “Louvres adjustment after shutter down in percent”.				
2	Manual mode / automatic mode, central	Off / On	1 Bit	CWTU
One variable per channel is available internally for the operating mode (manual mode / automatic mode) in the application program (4 variables in total). All the channels can be switched simultaneously via this object between “Automatic mode” and “Manual mode”. Object values: 0 = Manual mode 1 = Automatic mode				
3	Shutter/roller blind position, automatic mode, A/B	8-bit Value	1 Byte	CWTU
With this object, the shutters of channel A and B are moved into any position during automatic mode. If a channel is set to “Manual mode”, the movement command for this channel is not carried out. Shutter positions can be transferred with this object as EIS 6 values in the range between 0 and 255. The following values apply: 0 Invalid value (ignored) 1 (=0%) Shutter fully raised 255 (=100%) Shutter fully lowered As soon as the shutter position preset via this object has been reached, the louvre position which was last set via object 4 (“Louvres position, automatic mode”) is automatically restored. If the shutter is moved into an intermediate position for the first time after supply voltage recovery, it is first moved to the limit switch which is nearest to the preset shutter position. The louvres will then remain fully opened until a positioning command for louvre adjustment is received. The motor is switched off if the shutter adjustment has been finished or a limit switch has been reached. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of both channels is transmitted on the bus.				

20 A4 Shutter 540E03

Obj	Object name	Function	Type	Flags
4	Louvres position, automatic mode, Channel A/B	8-bit Value	1 Byte	CWTU

With this object, the louvres of channel A and B can be moved into any position during automatic mode. If one of the two channels is set to “Manual mode”, the movement command for this channel is not carried out.

Using louvre adjustment, slight deviations in the height of the shutter can be produced. If the current louvre position is invalid (value = 0, e.g. after bus voltage recovery), the louvre does not move. The louvre position becomes valid as soon as one of the limit switches has been reached.

Louvre positions can be transferred with this object as EIS 6 values in the range between 0 and 255. The following values apply:

0		Invalid value (ignored)
1	(=0%)	Louvres fully open
255	(=100%)	Louvres fully closed

The motor is switched off as soon as the louvre adjustment has been finished or a limit switch has been addressed. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of both channels is transmitted on the bus.

Obj	Object name	Function	Type	Flags
5	Shutter/roller blind position, automatic mode, Channel C/D	8-bit Value	1 Byte	CWTU

With this object, the shutters of channel C and D are moved into any position during automatic mode. If a channel is set to “Manual mode”, the movement command for this channel is not carried out.

Shutter positions can be transferred with this object as EIS 6 values in the range between 0 and 255. The following values apply:

0		Invalid value (ignored)
1	(=0%)	Shutter fully raised
255	(=100%)	Shutter fully lowered

As soon as the shutter position preset via the object has been reached, the louvre position which was last set via object 6 (“Louvres position, automatic mode”) is automatically restored.

If the shutter is moved into an intermediate position for the first time after supply voltage recovery, it is first moved to the limit switch which is nearest to the preset shutter position. The louvres remain fully opened until a positioning command for louvre adjustment is received.

The motor is switched off if the shutter adjustment has been finished or a limit switch has been reached. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of both channels is transmitted on the bus.

Obj	Object name	Function	Type	Flags
6	Louvres position, automatic mode, Channel C/D	8-bit Value	1 Byte	CWTU

With this object, the louvres of channel C and D can be moved into any position during automatic mode. If one of the two channels is set to “Manual mode”, the movement command for this channel is not carried out.

Using louvre adjustment, slight deviations in the height of the shutter can be produced. If the current louvre position is invalid (value = 0, e.g. after bus voltage recovery), the louvre does not move. The louvre position becomes valid as soon as one of the limit switches has been reached.

Louvre positions can be transferred with this object as EIS 6 values in the range between 0 and 255. The following values apply:

0		Invalid value (ignored)
1	(=0%)	Louvres fully open
255	(=100%)	Louvres fully closed

The motor is switched off as soon as the louvre adjustment has been finished or a limit switch has been addressed. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of both channels is transmitted on the bus.

Obj	Object name	Function	Type	Flags
7, 12, 17, 22	Manual mode / automatic mode, Channel A (7), B (12), C (17), D (22)	Off / On	1 Bit	CRWTU

One variable per channel is available internally for the operating mode (manual mode / automatic mode) in the control system (4 variables in total). The corresponding channels can toggle via these objects between “Automatic mode” and “Manual mode”. The object value of these objects is updated when the operating mode of the channel is changed (automatic mode or manual mode) and can be read out via the bus.

Object values: 0 = Manual mode
1 = Automatic mode

Obj	Object name	Function	Type	Flags
8, 13, 18, 23	Shutter manual mode, Channel A (8), B (13), C (18), D (23)	Up / Down	1 Bit	CWTU

Shutter movement “Up/Down” (EIS 7) for the respective channel is initiated with this object. If a telegram with this object is received, the operating mode of the channel is first switched to manual mode.

On receipt of a logic “0”, the shutter is raised while a logic “1” lowers the shutter. If the shutter moves to the lower limit position (Down) via this object, the louvre position set in the parameter “Louvres adjustment after shutter down in percent” is automatically rotated to.

20 A4 Shutter 540E03

Obj	Object name	Function	Type	Flags
9, 14, 19, 24	Louvres manual mode, Channel A (9), B (14), C (19), D (24)	Open / Closed	1 Bit	CWTU
This EIS 7 object is used for louvre adjustment of the corresponding channel (STEP) or to stop a shutter during movement. If a telegram with this object is received, the operating state of the channels is first switched to manual mode. The value set in the parameter "Louvres adjustment per step in percent" is converted internally into an adjustment period referring to the total travel time of the louvres. During louvre adjustment, the drive motor of the shutter is always controlled for the duration of the adjustment time i.e. a louvre adjustment can lead to a slight movement of the shutter if the louvre adjustment range is exceeded. The motor is switched off as soon as the louvre adjustment has been finished or a limit switch has been reached. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of the channel is transmitted on the bus. According to EIS 7, shutter movement can be stopped via the STEP command for louvre adjustment. The object value of both status objects is likewise updated with this STEP command and if set in the parameters, the object value of both status objects (shutter and louvres) of the channel is transmitted on the bus.				
10, 15, 20, 25	Status shutter position, Channel A (10), B (15), C (20), D (25)	8-bit Value	1 Byte	KLÜA
Using the group address that is linked with this object, it is possible to send or query the status of the shutter position for the corresponding channel. The following values apply: 0 Unknown shutter position 1 (=0%) Shutter is fully open (UP) 255 (=100%) Shutter is fully closed (DOWN) An unknown shutter position occurs after a supply voltage recovery. The shutter position becomes valid when the shutter has reached one of the limit positions.				
11, 16, 21, 26	Status louvres position, Channel A (11), B (16), C (21), D (26)	8-bit Value	1 Byte	KLÜA
Using the group address that is linked with this object, it is possible to send or query the status of the louvre position for the corresponding channel. The following values apply: 0 Unknown louvre position 1 (=0%) Louvres are fully open (OPEN) 255 (=100%) Louvres are fully closed (CLOSED) An unknown louvre position occurs after a supply voltage recovery. The louvre position becomes valid when the shutter has reached one of the limit positions.				

Maximum number of group addresses: 40
Maximum number of associations: 65

Phys.Adr.	Produkt		
Nr.	Objektname	Funktion	Typ
01.01.001	Shutter switch N 522/02		
0	Safety	Safety	1 Bit
1	Shutter / roller blind central, Channel A-D	Up / Down	1 Bit
2	Shutter, Channel A	Up / Down	1 Bit
3	Louvres, Channel A	Open / Closed	1 Bit
4	Shutter position, Channel A	8-bit Value	1 Byte
5	Louvres position, Channel A	8-bit Value	1 Byte
6	Status shutter position, Channel A	8-bit Value	1 Byte
7	Status louvres position, Channel A	8-bit Value	1 Byte
8	Shutter, Channel B	Up / Down	1 Bit
9	Louvres, Channel B	Open / Closed	1 Bit
10	Shutter position, Channel B	8-bit Value	1 Byte
11	Louvres position, Channel B	8-bit Value	1 Byte
12	Status shutter position, Channel B	8-bit Value	1 Byte
13	Status louvres position, Channel B	8-bit Value	1 Byte
14	Shutter, Channel C	Up / Down	1 Bit
15	Louvres, Channel C	Open / Closed	1 Bit
16	Shutter position, Channel C	8-bit Value	1 Byte
17	Louvres position, Channel C	8-bit Value	1 Byte
18	Status shutter position, Channel C	8-bit Value	1 Byte
19	Status louvres position, Channel C	8-bit Value	1 Byte
20	Shutter, Channel D	Up / Down	1 Bit
21	Louvres, Channel D	Open / Closed	1 Bit
22	Shutter position, Channel D	8-bit Value	1 Byte
23	Louvres position, Channel D	8-bit Value	1 Byte
24	Status shutter position, Channel D	8-bit Value	1 Byte
25	Status louvres position, Channel D	8-bit Value	1 Byte

Diagram 2. Communication objects with "Manual mode" only

Obj	Object name	Function	Type	Flags
0	Safety	Safety	1 Bit	CWTU
This object can be linked with a safety alarm e.g. from a wind, rain or ice sensor. A wind sensor has to send a logic "0" in the idle state and a logic "1" in the event of a wind alarm. If the "Safety" parameter is "enabled", the shutter switch moves the shutter in the event of a wind alarm into the position defined via the parameter "Safety position" and locks further operation of the shutter until the wind alarm is deactivated. The same process occurs if the parameter "Monitoring time for safety" has been enabled and no telegrams have been received during the set period. In both cases, telegrams for shutter movement and louvre adjustment as well as the operation of the buttons in the actuator are ignored until a logic "0" is received for the safety object.				

20 A4 Shutter 540E03

Obj	Object name	Function	Type	Flags
1	Shutter / roller blind central, Channel A-D	Up / Down	1 Bit	CWTU
If a telegram is received at this object, all the shutters/roller blinds are moved simultaneously into the corresponding limit position. If a logic “0” is received, the shutters/roller blinds are raised (opened). If a logic “1” is received, they are lowered (closed). If the shutters are moved via this object into the lower limit position, the louvres are then automatically moved into the preset positions via the parameter “Louvres adjustment after shutter down in percent”.				
2, 8, 14, 20	Shutter, Channel A (2), B (8), C (14), D (20)	Up / Down	1 Bit	CWTU
Shutter movement “Up/Down” (EIS 7) for the respective channel is initiated with this object. On receipt of a logic “0”, the shutter is raised while a logic “1” lowers the shutter. If the shutter moves to the lower limit position (Down) via this object, the louvre position set in the parameter “Louvres adjustment after shutter down in percent” is automatically selected.				
3, 9, 15, 21	Louvres, Channel A (3), B (9), C (15), D (21)	Open / Closed	1 Bit	CWTU
This EIS 7 object is used for louvre adjustment of the corresponding channel (STEP) or to stop a shutter during movement. The value set in the parameter “Louvres adjustment per step in percent” is converted internally into an adjustment period referring to the total travel time of the louvres. During louvre adjustment, the drive motor of the shutter is always controlled for the duration of the adjustment time i.e. a louvre adjustment can lead to a slight movement of the shutter if the louvre adjustment range is exceeded. The motor is switched off as soon as the louvre adjustment has been finished or a limit switch has been reached. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of the channel is transmitted on the bus. According to EIS 7, shutter movement can be stopped via the STEP command for louvre adjustment. The object value of both status objects is likewise updated with this STEP command and if set in the parameters, the object value of both status objects (shutter and louvres) of the channel is transmitted on the bus.				

Obj	Object name	Function	Type	Flags
4, 10, 16, 22	Shutter position, Channel A (4), B (10), C (16), D (22)	8-bit Value	1 Byte	CWTU
With this object, the shutter of the corresponding channel is moved into any position. Shutter positions can be transferred as EIS 6 values in the range between 0 and 255. The following values apply: 0 — Invalid value (ignored) 1 (=0%) — Shutter fully raised 255 (=100%) — Shutter fully lowered As soon as the shutter position preset via the object has been reached, the louvre position which was last set via the relevant object 5, 11, 17 or 23 (“Louvres position”) is automatically restored. If the shutter is moved into an intermediate position for the first time after supply voltage recovery, it is first moved to the limit switch which is nearest to the preset shutter position. The louvres remain fully opened until a positioning command for louvre adjustment is received. The motor is switched off if the shutter adjustment has been finished or a limit switch has been reached. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of the corresponding channel is transmitted on the bus.				
5, 11, 17, 23	Louvres position, Channel A (5), B (11), C (17), D (23)	8-bit Value	1 Byte	CWTU
With these objects, the louvres of the corresponding channel can be moved into any position. Using louvre adjustment, slight deviations in the height of the shutter can be produced. If the current louvre position is invalid (value = 0, e.g. after bus voltage recovery), the louvre does not move. The louvre position becomes valid as soon as one of the limit switches has been reached. Louvre positions can be transferred with these objects as EIS 6 values in the range between 0 and 255. The following values apply: 0 — Invalid value (ignored) 1 (=0%) — Louvres fully open 255 (=100%) — Louvres fully closed The motor is switched off as soon as the louvre adjustment has been finished or a limit switch has been addressed. The object value of both status objects (shutter and louvres) is updated and if set in the parameters, the object value of the status objects of the corresponding channel is transmitted on the bus.				

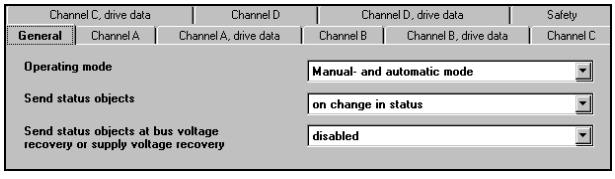
20 A4 Shutter 540E03

Obj	Object name	Function	Type	Flags
6, 12, 18, 24	Status shutter position, Channel A (6), B (12), C (18), D (24)	8-bit Value	1 Byte	CRTU
Using the group address that is linked with this object, it is possible to send or query the status of the shutter position for the corresponding channel. The following values apply: 0 Unknown shutter position 1 (=0%) Shutter is fully open (UP) 255 (=100%) Shutter is fully closed (DOWN) An unknown shutter position occurs after a supply voltage recovery. The shutter position becomes valid when the shutter has reached one of the limit positions.				
7, 13, 19, 25	Status louvres position, Channel A (7), B (13),C (19), D (25)	8-bit Value	1 Byte	CRTU
Using the group address that is linked with this object, it is possible to send or query the status of the louvre position for the respective channel. The following values apply: 0 Unknown louvre position 1 (=0%) Louvres are fully open (OPEN) 255 (=100%) Louvres are fully closed (CLOSED) An unknown louvre position occurs after a supply voltage recovery. The louvre position becomes valid when the shutter has reached one of the limit positions.				

Maximum number of group addresses: 40
Maximum number of associations: 65

Parameters

General

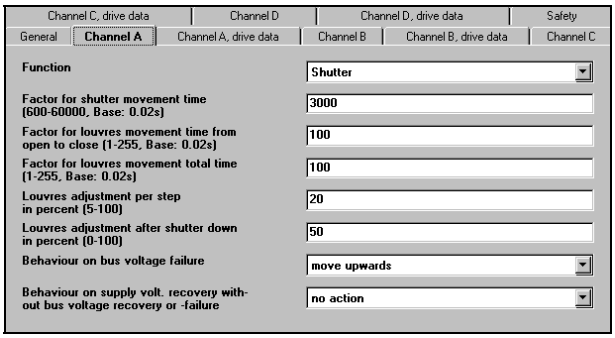


Note

The settings printed in **bold** correspond to the factory settings (default values).

Parameters	Settings
Operating mode	**Manual and automatic mode** Manual mode
This parameter determines whether the actuator should manage both manual mode and automatic modes or whether it is only controlled in manual mode (if “Manual mode” only is selected, the communication objects required for automatic mode are no longer displayed. The associations of the communication objects are also modified).	
Send status objects	**using read request only** on change of status
It can be set via this parameter whether the status objects for the shutter and louvre position of all the channels can only be read out (“using read request only”) or whether the corresponding value should be sent automatically when a new position is reached (“on change of status”). If “on change of status” is selected, the additional parameter “Send status objects at bus voltage recovery or supply voltage recovery” is displayed.	
Send status objects at bus voltage recovery or supply voltage recovery	**disabled** enabled
It can be set via this parameter whether the transmission of the status objects for the shutter and louvre position of all the channels should be enabled or disabled after bus voltage recovery or supply voltage recovery.	

Channel A (B, C, D)



Parameters	Settings
Function	**Shutter** Roller blind
This parameter determines whether a shutter or roller blind drive is connected to a channel. If a roller blind drive is connected, the communication objects and parameters which are required to operate louvres are no longer displayed. The multiple sending of stop commands is also ignored and hereby the stepwise adjustment of a roller blind or awning is prevented.	

20 A4 Shutter 540E03

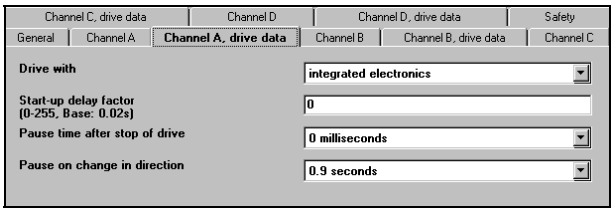
Parameters	Settings
Factor for shutter movement time (600-60000, Base: 0.02s)	600...60,000 (**3,000**) (=12 sec....20 min.; **60 s**)
This parameter determines the total time required by the shutter to travel from the upper to the lower limit position. This travel time serves as a basis for determining the position and for travelling to intermediate positions. It should therefore be entered as accurately as possible as a multiple of 0.02 s.	
Factor for louvres movement time from open to close (1-255, Base: 0.02s)	1...255 (**100**) (0.02 s...5.1 s; **2 s**)
This parameter defines the time required for the louvres to move from the closed position (vertical louvres) to the open position with horizontal louvres. This travel time serves as a basis for determining the position and for travelling to intermediate louvre positions. It should therefore be entered as accurately as possible as a multiple of 0.02 s.	
Factor for louvres movement total time (1-255, Base: 0.02s)	1...255 (**100**) (0,02s...5,1s; **2s**)
It is a prerequisite that the shutter is lowered with closed louvres and raised with open louvres. This parameter defines the travel time required by the louvres to move from the closed position to the position in which the transition from louvre adjustment to shutter movement is initiated. This parameter is particularly necessary for shutters which adjust the louvres beyond the horizontal position before moving the shutter upwards. This travel time serves as a basis for determining the position and for travelling to intermediate positions. It should therefore be entered as accurately as possible as a multiple of 0.02 s. In the case of a shutter which is raised with horizontal louvres, the time in this parameter must be identical to the time set for “Factor for louvres movement time from open to close”.	
Louvres adjustment per step in percent (5-100)	5...100 (**20**)
The set value is converted into a step adjustment period referring to the “Factor for louvres movement time from open to close”. After a louvre adjustment command (STEP command), the drive motor of the shutter is controlled for the duration of the step adjustment time. If a limit position for the louvres has already been reached, a further STEP command in the same direction leads to a slight movement of the shutter.	
Louvres adjustment after shutter down in percent (0-100):	0...100 (**50**)
Once the shutter has been moved to the lower limit position via one of the corresponding objects, the louvres are rotated from the vertical position to the position set in this parameter. 0% = Louvres fully open 100% = Louvres fully closed	

Parameters	Settings
Behaviour on bus voltage failure	no action **move upwards** move downwards
This parameter defines which limit position the shutter should travel to after supply voltage recovery with a failure in bus communication (e.g. failure of the bus voltage) or whether the shutter should maintain its current position.	
Behaviour on supply voltage recovery without bus voltage recovery or failure	**no action** move upwards move downwards
This parameter defines which limit position the shutter should travel to after supply voltage recovery without a failure in bus communication (e.g. failure of the bus voltage) or whether the shutter should maintain its current position.	

Note

See Channel A for explanations and settings for the parameters of Channel B, C and D.

Channel A (B, C, D), drive data

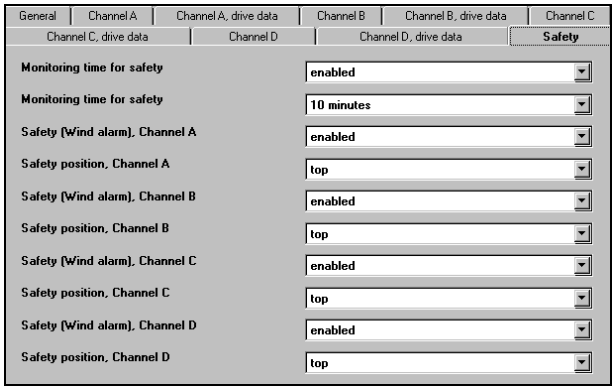


Parameters	Settings
Drive with	**mechanical limit switches** integrated electronics
This parameter determines which type of drive is connected. If “integrated electronics” is selected, the parameters “Start-up delay factor” and “Pause time after stop of drive” are displayed.	
Start-up delay factor (0-250, Base: 0.02s)	0...250 (**0**)
Drives with integrated electronics have start-up delays that are conditional on the circuit. The start-up delay is set via this parameter.	

20 A4 Shutter 540E03

Parameters	Settings
Pause time after stop of drive	**0**, 100, 200, 500, 800 milliseconds 1.0 seconds 1.2 seconds 1.5 seconds 1.8 seconds 2.0 seconds 3.0 seconds 4.0 seconds 5.0 seconds
In the case of drives with integrated electronics, a pause is required each time the shutter movement has finished so that the start-up delay remains constant. The pause is set via this parameter.	
Pause on change in direction	0.6 seconds **0.9 seconds** 1.2 seconds
The pause on change in direction of a drive is set via this parameter.	

Safety



Parameters	Settings
Monitoring time for safety	enabled **disabled**
This parameter determines whether the cyclical receiving of telegrams should be monitored with the safety object. If “enabled” is selected, the additional parameter “Monitoring time for safety” is displayed.	
Monitoring time for safety	1 minute 5 minutes **10 minutes** 30 minutes
If the parameter “Monitoring time for safety” is set to “enabled”, the maximum intervals for receiving telegrams with a logic “0” via the safety object can be set via this parameter.	

Parameters	Settings
Safety (Wind alarm), Channel A-D	enabled **disabled**
This parameter determines whether the safety object and the safety function are active for this channel.	
Safety position, Channel A-D	**top** bottom
The limit position for the shutter in the event of a safety alarm can be set via this parameter.	