20 A1 Switch-Dim-Actuator 905001

Use of the application program

Product family: Lighting
Product type: Dimmer
Manufacturer: Siemens

Name: Switch/dim actuator N 525/02
Order no.:   5WG1 525-1AB02

Functional description

The switch/dim actuator UP 525/02 offers the following functions with the application program "20 A1 Switch/dim actuator 905001":

Switching on/off
On receipt of an "On" telegram, it can be specified via the parameters whether an assigned brightness value is set or the value that was selected before the dimmer was switched off. If the initial value lies below the set minimum value, the minimum value is set; if the value lies above the maximum value, the maximum value is set. It can be defined via parameters whether the dimmer dims or jumps to this new value. "Off" telegrams always switch the dimmer off. Depending on the parameter settings, the switching telegrams activate ON/OFF delays or overshoot times.

Dimming
The "Dimming time" can be adjusted. Once the step width has been received, the actuator starts to modify the brightness in the given direction at a selectable speed. Should a stop command be received before the end of the dimming process, the process is interrupted and the achieved brightness value is maintained. Dimming telegrams always have an immediate effect on the dimmer output. Any active delay periods are interrupted. If the dimmer has not been switched off, the overshoot time is restarted in time switch mode. It can be set via parameters whether the dimmer can be switched on or off via dimming.

Send dimming status (8 bit)

Object no. 2 and object no. 5 set the dimmer to a defined value. It can be selected whether the dimmer jumps or dims to this value. If the object receives the value 0, the dimmer switches off. Values smaller than the minimum value, with the exception of 0, and values larger than the maximum value are rejected; they also have no influence on delay times or the overshoot time.

Should the dimmer be switched off, it can be determined via a parameter, whether the dimmer accepts the received value and switches on immediately (ON delays are taken into consideration) or only accepts the received value after an "On" command. The set initial value is then invalid.
If an ON delay is selected, the dimmer sets the received brightness value once the period has elapsed.

Value status
Object no. 6 is an 8 bit status object. It contains the current analogue value of the dimmer status. It can be sent and/or read automatically.

In addition, the software has a mechanism for the automatic sending of the status, whereby this mechanism dynamically limits the sending frequency.

Function of the sending mechanism:

- The status is only sent if the new value differs from the last sent value.
- On receipt of a switching signal where the dimmer has jumped to the value, the signal is **always** sent immediately.
- On receipt of a switching signal where the dimmer has dimmed to the value, the first signal is **always** sent after a delay of approx. 2 seconds.
- On receipt of a dimming signal, the first signal is sent after a delay of approx. 2 seconds (at least), as in most cases the brightness is still being modified during this time.
- On receipt of a value signal, where the dimmer has jumped to the value, the signal is sent immediately. (Exception: a dimmed brightness change has occurred immediately beforehand, which triggers the dynamic sending mechanism).
- On receipt of a value signal where the dimmer has dimmed to the value, the first signal is sent after a delay of approx. 2 seconds (at least).
- The next transmission period is calculated after each signal (exception: receipt of the switching signal). The intervals between the periods are therefore continually 1 second (dynamically) longer, should there be constant changes in the brightness value. The maximum interval can be set (2 to 15 seconds). If there is no change in the brightness value by the next calculated interval, no signals are sent and the interval between the transmission periods is therefore reset (min. 2 seconds).

ON/OFF status
A parameter is used to determine whether the switching state should be sent. If it is to be sent, it can also be specified whether it is sent via the switching object or another object (additional status object).

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3.4.1.4.1/1

20 A1 Switch-Dim-Actuator 905001

Brightness limits

The application program has two options for limiting the brightness value.

A maximum and minimum brightness value can be set via the first limit. When dimming up, the required brightness value can only accept the set maximum value as an upper limit. When dimming down, the brightness value can only accept the minimum value as a lower limit. When a value signal is received, this value can only be accepted if it lies between the minimum and maximum value.

A dimming range can be specified with the second limit. If the parameters for the first limit are set for example to maximum value = 100% and minimum value = 0%, the maximum brightness can be limited via the second limit to 80% (e.g. min = 10%, max = 80%).

The receipt of a value signal: 255 (100%) then corresponds to 80% brightness while the value signal: 230 (90%) corresponds to 73% brightness etc. This second limit is mainly used as a hardware adaptation, whereby the maximum possible control range is limited, as well as the minimum background brightness without restricting the object values.

Bus voltage failure

On bus voltage failure, the program always stores the current actual value so that it is available on bus voltage recovery. The dimmer can either be switched on or off or not switched.

Bus voltage recovery

It is possible to set the brightness value via parameters that is selected on bus voltage recovery.

Maximum number of group addresses: 38
Maximum number of associations: 38

Note

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

Communication objects

Phys.Addr.		Program		
no.	**Function**		**Object name**	**Type**
01.01.002		20 A1 Switch-Dim-Actuator 905001		
0	On / Off, State		Dimming On / Off, Channel A	1 Bit
1	Brighter / Darker		Dimming, Channel A	4 Bit
2	8-bit Value		Value, Channel A	1 Byte
---	---		---	---

Obj	Function	Object name	Type	Flags
0	On / Off, State	Dimming On / Off, Channel A	1 Bit	CRWT
The switching output of the switch/dim actuator is addressed via this object.				
1	Brighter / Darker	Dimming, Channel A	4 Bit	CW
The dimming telegram is received via this object.				
2	8-bit Value	Value, Channel A	1 Byte	CW
A brightness value is received via this object.				

20 A1 Switch-Dim Actuator 905001

Parameters

General

Note:

The function and parameters of channels A-D are identical.

Parameters	Settings
Type **(device dependent offset down/up)**	A- (0/0) B- (0/1) C- (0/2) D- (0/3) E- (0/4) F- (0/5) **G- (1/0) Siemens EVG** H- (1/1) I- (1/2) • • • U- (4/1) V- (4/2) W- (5/0) Helvar EVG X- (5/1)
This parameter is used to adapt the output voltage of the switch/dim actuator to the control range of the electronic ballast (offset). Type A (0/0) for example denotes a full control voltage range; Type B (1/0) denotes a range from 10% to 100%; Type C (1/1) from 10% to 90%; Type I (4/0) from 40% to 100%, or Type J (4/1) from 40% to 90%. The lowest voltage always corresponds to background brightness while the highest voltage always corresponds to full brightness which the dimmer can represent with this type. The internal control range of 0 to 100% is therefore transformed to the control voltage range.	
Control voltage in Off state	0% or 100% (device-dependent) **Background brightness**
The control voltage in the "Off" state can be defined in this parameter.	

Parameters	Settings
Minimum dimming value	**0%**, 0.5% (Background brightness), 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 60%, 70%
The minimum dimming value of the first limit can be defined via this parameter. When dimming down, the brightness value can only accept this dimming value as a minimum value.	
Maximum dimming value	**100%**, 95%, 90%, 85%, 80%, 75%, 70%, 65%, 60%, 55%, 50%, 40%, 30%
The maximum dimming value of the first limit can be defined via this parameter. When dimming up, the brightness value can only accept this dimming value as a maximum value.	
Send switch status via	**separate status object** On / Off object read request of separate status object read request of On / Off object
The sending object for the switch status is defined with this parameter.	
Send dimming status via	**if object value changes** on read request
This object serves as a sending object for the current status (brightness value) of the switch/dim actuator. It can be read out via the bus (e.g. for visualisation) or sent automatically in the event of a change.	
Max. disable time for sending the status of dimming value	2 seconds 3 seconds 4 seconds 5 seconds 7 seconds **10 seconds** 15 seconds
The maximum disable time for the dynamic sending of the value status is determined with this parameter. When using brightness control devices or several dimmers, the selected value should be as high as possible (10 / 15 seconds), as the bus load can otherwise be too high.	
On bus voltage delay	switch off switch on **no switching**
This parameter defines the behaviour on bus voltage failure. Only the relay can be triggered; it is not possible to set a specific brightness value.	

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3.4.1.4.1/3

20 A1 Switch-Dim-Actuator 905001

Parameters	Settings
Behaviour on bus voltage recovery	**as before bus voltage failure** maximum dimming value minimum dimming value 100% 90% 80% 70% 60% 50% 40% 30% 20% 10% switch off
This parameter defines the behaviour of the output on bus voltage recovery.	

Dimming unit A: General

Parameters	Settings
Factor for dimming time (5-255) (for 1/256 of maximum brightness)	**30**
Base for dimming time (for 1/256 of maximum brightness)	**Time base 0.5 ms** Time base 8.0 ms Time base 130 ms Time base 2.1 seconds Time base 33 seconds
The dimming time is set using the two parameters "Base" and "Factor" (dimming time = factor x base). It determines in which period the dimming is carried out by 1/256.	
Switching on possible by dimming	**enabled** disabled
This parameter must be enabled to allow the dimmer to be switched on by dimming when it has been switched off.	
Switching off possible by dimming	enabled **disabled**
If the brightness is dimmed down to the minimum value while the dimmer is switched on, it is possible to define in this parameter whether the switch/dim actuator switches off the lighting.	

Parameters	Settings
On value (limited by minimum/maximum dimming value)	**100%**, 95%, 90%, 85%, 80%, 75%, 70%, 65%, 60%, 55%, 50%, 40%, 30%, 20%, 10%, last value
This parameter indicates the initial value on receipt of a switching signal ("On"). The specified value is limited by the program to the range between the minimum and maximum dimming value.	
On value / Off value	**jumping** dimming
This parameter determines whether the switch/dim actuator immediately accepts the brightness value received via a dimming value telegram on the bus (jumping) or regulates the new value according to a gradient defined by the dimming time (dimming).	
8-bit dimming value	**accept immediately** only accept on On
This parameter defines whether the switch/dim actuator, when it has been switched off, carries out a dimming value telegram that it receives via the bus (accept immediately) or stores the dimming value and dims to this value when it receives the next "On" telegram.	
8-bit dimming value	**jumping** dimming
This parameter defines whether the switch/dim actuator immediately accepts the brightness value received via a value telegram on the bus (jumping) or regulates the new value according to a gradient specified by the dimming time.	

Dimming unit A: Operating mode

Normal mode

Parameters	Settings
Operating mode	**Normal mode** Time switch
This parameter enables toggling between normal operation and time switch mode.	

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3.4.1.4.1/4

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20 A1 Switch-Dim Actuator 905001

Parameters	Settings
On delay	**enabled** disabled
This parameter determines whether an ON delay should be set. The ON delay not only causes the dimmer to switch on with a delay when it has been switched off but also causes the new brightness value to be set with a delay when the dimmer is switched on.	
On delay enabled for	**Switch on and value telegrams** only switch on telegrams only value telegrams
This parameter makes it possible to select which telegrams are subject to the ON delay (delayed dimming value setting) and which telegrams are routed immediately.	
Factor for On delay (5- 127)	127
Base for On delay	**130 ms** 260 ms 520 ms 1 sec 2.1 seconds 4.2 seconds 8.4 seconds 17 seconds 34 seconds 1.1 minutes 2.2 minutes 4.5 minutes 9 minutes 18 minutes 35 minutes 1.2 hours
The time for the ON delay is set here. The period is calculated from the selected base multiplied by the factor that is entered here. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is selected here also simultaneously specifies the maximum timing error.	
Off delay	disabled single stage **two stage**
This parameter defines whether an OFF delay should be set. The OFF delay can be selected as single stage i.e. the dimmer is switched off once the period has elapsed or two stage i.e. an intermediate value is set once the first stage has elapsed and the dimmer is switched off after the second stage. The OFF delay causes switching off with a delay.	
Off delay enabled for	**Switch off and value=0% telegrams** only switch off telegrams only value=0% telegrams
This parameter makes it possible to select which telegrams are subject to the OFF delay and which telegrams are routed immediately.	

Parameters	Settings
Factor for Off delay first stage (5- 127)	127
Base for Off delay first stage	**130 ms** 260 ms 520 ms 1 seconds 2.1 seconds 4.2 seconds 8.4 seconds 17 seconds 34 seconds 1.1 minutes 2.2 minutes 4.5 minutes 9 minutes 18 minutes 35 minutes 1.2 hours
The time for the OFF delay is set here. The period is calculated from the selected base multiplied by the factor that is entered here. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is selected here also simultaneously specifies the maximum timing error.	
Factor for Off delay second stage (5- 127)	127
When the period whose factor is specified in this parameter has elapsed, the dimmer is switched off.	

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3.4.1.4.1/5

20 A1 Switch-Dim-Actuator 905001

Dimming unit A: Operating mode 2

Normal mode

General	Dimming unit A: General	Dimming unit A: Operating mode
Dimming unit A: Operating mode 2		Dimming unit B: General

Base for On delay second stage	Time base 130 ms
Dimming value after first stage of off delay	50 % (limited by min./max. dimming value)

Parameters	Settings
Base for On delay second stage	**130 ms** 260 ms 520 ms 1 seconds 2.1 seconds 4.2 seconds 8.4 seconds 17 seconds 34 seconds 1.1 minutes 2.2 minutes 4.5 minutes 9 minutes 18 minutes 35 minutes 1.2 hours
When the period that is specified here has elapsed, the dimmer is switched off. The period is calculated from the selected base multiplied by the factor that is entered here. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is selected here also simultaneously specifies the maximum timing error.	
Dimming value after first stage of Off delay	**switch off** **minimum dimming value** 0,5%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, **50%**, 55% 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95% (limited by min./max. dimming value)
This parameter specifies the intermediate value which is set when the first stage has elapsed. The selected value is limited by the program to the range between the minimum and maximum dimming value. It is only set if it is darker than the current brightness value.	

Dimming unit A: Operating mode

Time switch

General	Dimming unit A: General	Dimming unit A: Operating mode	Dimming unit B: General

Operating mode	Time switch
Overshoot time	single stage
Factor for overshoot time (0-127)	127
Base for overshoot time	Time base 130 ms

Parameters	Settings
Operating mode	Normal mode **Time switch**
This parameter enables toggling between normal operation and time switch mode.	
Overshoot time	**single stage** two stage
This parameter specifies whether the overshoot time is carried out as single stage i.e. the dimmer is switched off once the period has elapsed or two stage i.e. an intermediate value is set after the first stage and the dimmer is switched off once the second stage has elapsed.	
Factor for overshoot time (5- 127)	**127**
Base for overshoot time	**130 ms** 260 ms 520 ms 1 seconds 2.1 seconds 4.2 seconds 8.4 seconds 17 seconds 34 seconds 1.1 minutes 2.2 minutes 4.5 minutes 9 minutes 18 minutes 35 minutes 1.2 hours
When the period that is specified here has elapsed, the dimmer is switched off. The period is calculated from the selected base multiplied by the factor that is entered here. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is selected here also simultaneously specifies the maximum timing error.	

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3.4.1.4.1/6

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20 A1 Switch-Dim Actuator 905001

Dimming unit B: General

General	Dimming unit A: General	Dimming unit A: Operating mode	**Dimming unit B: General**
Configuration für dimming unit B		disabled	▾

Parameters	Settings
Configuration for dimming unit B	**disabled**
	same configuration, other dimming time
	with separate configuration
A second dimming speed or configuration can be set with this parameter. If the same configuration as dimming unit A is selected, the output can be operated with a second dimming speed (dimming time for 1/256 of maximum brightness). In addition, there is the possibility of entering a completely separate configuration. This configuration can be assigned as for dimming unit A.	

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3.4.1.4.1/7

20 A1 Switch-Dim-Actuator 905001

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