

12 A1 Binary 510D01

Product family: Output
Product type: Binary output, 1-fold
Manufacturer: Siemens

Name: Load switch UP 511
Order no.: 5WG1 511-2AB01

Functional description

Using the application program "12 A1 Binary 510D01", it is possible to define On and Off delays, staircase lighting function (time switch), status response of the relay, behaviour on bus voltage failure and recovery, behaviour as a normally closed/normally open contact and logic operations.

The switch actuator is an intelligent relay with bus capability. It has a switchable output and enables the switching of luminaires and other loads.

Functions of the relay

Switch

Binary bus telegrams (EIS 1 telegrams) are converted into switching states (relay opened/relay closed) via the "Switch" object. The application changes the value of the "Switch" object during operation. It is not possible to read out the status of the relay via the "Switch" object. It should always be possible to read back the status via the "Status" object. The switching characteristic of the normal switching function can be modified by activation of functions with a higher priority (see "Higher-order functions").

Relay mode (normally closed / normally open contact)

It is possible to set the operation mode of the relay via the parameter "Relay mode" on the "General inputs" parameter page. The relay can either be used as a "normally closed contact" or a "normally open contact". The relay in the switch actuator UP 511 has a normally open contact. This contact can be operated logically (via software) as a normally closed contact. The relay position is thereby inverted. After bus voltage recovery, the relay is closed when the function of "normally closed contact" is selected. A "1" status telegram is produced, provided that no other closing operation (e.g. due to a higher-order function, security function or behaviour on bus voltage recovery) switches the output to the open position.

The fixed relay positions (open, closed) within the other functions are controlled directly. This behaviour is identical to that of the "normally closed contact" and "normally open contact" functions. The fixed relay position for the "normally closed contact" function is not inverted.

Note:

When the relay mode switches between normally closed and normally open contact, parameter settings and linked group addresses are reset to the basic settings. For this reason, the relay mode should be defined first.

Time functions

On / Off delay

The switching is carried out with a time delay. It is possible to set On and Off delays separately. Delays between approx. 2.6 seconds to 152 hours can be assigned. The delay period is calculated by multiplying a base value with a factor. On and Off delays can be set accordingly for switching operations. The set periods can be defined via parameters as "not retriggerable" or "retriggerable". If a time delay is active and set to "retriggerable", the delay period is restarted on receipt of a new telegram ("Switch" object). If "not retriggerable" is selected, the relay closes immediately once the time has elapsed.

If the output of the actuator is forced into a new switch position by a higher-order function (positive drive, blocking function, logic operation) during a delay period, the relay switches into this position immediately. The delay period is deleted i.e. when the higher-order switch function is deactivated, the time period that has already started does not continue.

On delay / time switch mode

If the "normally open contact" function is selected, the device switches off automatically again after a period defined between 2.6 seconds and 152 hours, after it has been switched on via the "Switch" object.

The delay period is calculated by multiplying a base value with a factor. If a "1" telegram is received before the device is switched off, the interval is restarted (retriggerable). If the time switch mode is selected, an On delay can also be activated (see timing diagram for On delay). It can be set whether the receipt of a "0" telegram switches the device off prematurely or whether the "0" telegram is ignored and the staircase lighting timer continues (with/without manual Off function). If the output of the actuator is forced into a new switch position by a higher-order function (positive drive, blocking function, logic operation, security function) during a delay period, the relay switches into this position immediately. The delay period is deleted i.e. when the higher-order switch function is removed, the time period that has already started does not continue. If the "closed" relay position is triggered in the "normally open contact" mode once the higher-order function has finished, the staircase lighting timer starts. In the "normally open contact" mode, the staircase lighting function is activated with the setting "opened".

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Oscillator (blinking)

The relay opens and closes automatically with the astable oscillator. The duration of the On and Off periods can be set separately. The periods are calculated by multiplying a base value with a factor. The oscillator can be switched on and off via the bus with the help of a higher-order function (see "Higher-order functions").

Note

Attention should be paid to any heat development at the relay contacts due to rapid switching of the loads.

This function does not exist in the "normally closed contact" relay mode. The "Switch" object is not available when the oscillator is switched on. Control is carried out by the higher-order function.

Inverted time switch mode / Off delay:

Once it has been opened (normally open contact) with a "0" telegram via the "Switch" object, the relay closes automatically again after a period defined between 2.6 seconds and 152 hours, after it has been switched on via the "Switch" object. The period is calculated by multiplying a base value with a factor. If a further "0" telegram is received before the relay closes, the timer period is restarted (retriggerable). If a "1" telegram is received while the staircase timer is running, it can be set whether the relay should only close once the remainder of the period has elapsed (without manual On function) or immediately (manual On function). This behaviour is exactly the opposite to that of a staircase lighting timer. If the inverted time switch mode is selected, it is also possible to activate an Off delay (see timing diagram for Off delay).

If the output of the actuator is forced into a new switch position by a higher-order function (positive drive, blocking function, logic operation) during a delay period, the relay switches into this position immediately. The delay period is deleted i.e. when the higher-order switch function is removed, the time period that has already started does not continue. The staircase timer starts once the higher-order function has finished, if the "closed" relay position is triggered in the "normally closed contact" mode.

In the "normally open contact" mode, the staircase lighting function is activated with the setting "opened".

Status message

The switching state of the output as regards logic operations and time delays can be sent via a separate communication object to a display element (e.g. status LED). This means that after each switching operation, the status of the relay is available as a telegram on the bus.

The value of the "Status" object always reflects the current relay state. The value is "1" if the relay is closed and "0" when the relay is open, regardless of the normally closed/normally open contact function. On bus voltage recovery, a "1" status telegram is sent via the "Status" object after 17 seconds if the relay is closed. A "0" telegram is not generated however if the contact is open.

Higher-order functions

Logic operations (AND/OR logic function), positive drive and a blocking function can be selected via the "Function" parameter. It is only possible to select either one or none of these three functions. The higher-order function has the highest priority after behaviour on bus voltage failure and takes precedence over the other switchable functions in the switching characteristic of the actuator.

Logic operations:

With this functionality, the "Switch" object can be logically linked with the "Logic operation" object. Either an AND or OR function can be set. It is defined via a parameter whether the logic function should be activated immediately or on receipt of the first telegram to the "Logic operation" object.

The logic function has the next highest priority after behaviour on bus voltage failure. The actuator will therefore always be set according to the logic result of the higher-order function and not according to the status of the functions with a lower priority.

For example, if the OR function is set to "active at once" (the "Logic operation" object is immediately set to "1" after initialisation), the actuator remains switched on after a reset until a "0" telegram has been received at the "Logic operation" object. If behaviour on bus voltage recovery has been assigned, it is only carried out once the logic operation has finished.

AND function

If the "Logic operation" object is set to "1", switching operations can be carried out as usual via the address of the "Switch" object. Any specified delay intervals and time switch periods are observed. If the relay is opened via the "Logic operation" object, it has an immediate effect (object with a high priority). Any Off delays are no longer carried out.

If the "Logic operation" object is then reset to "1" by a telegram, the device is switched immediately even if there is an active On delay. The behaviour of an activated staircase lighting timer can be taken from the table "Behaviour on bus voltage recovery".

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The characteristic of the logic function can deviate from the normal AND function via the parameter "Relay state after a transition from 0 to 1 of the logic operation object". In the default setting "preferring to logic operation", the AND function is carried out as required. The relay state can also be set to a fixed switch position (open/closed) when the value of the "Logic operation" object changes from 0 to 1. This is a deviation from the AND function.

Example:

A closing lock-out can be implemented with an AND function. This means that it is not possible to switch the device on via the "Switch" object while the value of the "Logic operation" object is set at "0". If the value of the "Switch" object is set to "1", the device is automatically switched on (closed) when the value of the "Logic operation" object changes from "0" to "1". If the automatic closing of the relay is not required however, the switch contact can be opened by selecting "contact opens" in the parameter "Relay state after a transition of 0 to 1 of the logic operation object".

The logic operation does not become active until the "Logic operation" object of the switch actuator has received a telegram for the first time.

For example, when a closing lock-out is implemented by an AND function after a reset, it is possible to carry out switching operations via the "Switch" object. The logic operation (closing lock-out) is only activated on receipt of the first telegram at the "Logic operation" object.

The parameter setting "Logic function active at once" causes the "Logic operation" object to be set to "0". After a reset, the actuator will not switch the output to the "normally open contact" mode and these settings until a "1" telegram has been received at the "Logic operation" object.

OR function

It is possible to carry out switching operations as usual via the address of the "Switch" object provided that the "Logic operation" object is set to "0". Any assigned delay periods are observed. Closing the relay via a "1" telegram to the "Logic operation" object has an immediate effect (object with a high priority). A time delay is no longer carried out.

If the value of the "Logic operation" object is then reset to the value "0", the actuator likewise switches to the required state without a delay. The behaviour of an activated staircase lighting timer can be taken from the table "Behaviour on bus voltage recovery".

The characteristic of the logic function can deviate from the normal OR function via the parameter "Relay state after a transition from 1 to 0 of the logic operation object". In the default setting "preferring to logic operation", the OR function is carried out as required. The relay state can also be set to a fixed switch position (open/closed) when the value of the "Logic operation" object changes from 1 to 0.

Example:

An opening lock-out or a central On function (e.g. light for cleaning the building) can be implemented with an OR function. If the value of the "Switch" object is also locally set to "1", the relay remains closed when the lock-out has been removed (change of the value of the "Logic operation" object from 1 to 0). This characteristic can be changed with the setting "contact opens" in the parameter "Relay state after a transition of 1 to 0 of the logic operation object" and by switching off the output.

The relay can only be closed via the "Switch" object if a "0" telegram has been received via the "Logic operation" object. This logic operation also has no time delay.

Note:

The parameter setting "Logic function active at once" causes the "Logic operation" object to be set to the value "1". After a reset, the actuator will immediately switch the output to the "normally open contact" mode and these settings. The OR function is only reset by a "0" telegram to the "Logic operation" object.

Positive drive

This signifies the conversion of 2 bit telegrams into high-priority switching states (relay open / relay closed). The positive drive function is activated if the 2 bit "Positive drive" object receives a telegram whose first bit (bit 1) indicates the value "1". In this case, the switch actuator switches to the mode that has been defined by the second bit (bit 2) of the telegram. When operated as a normally open contact, a "1" causes the relay to close while the relay is opened when operated as a normally closed contact. When operated as a normally open contact, a "0" causes the relay to open while the relay is closed when operated as a normally closed contact. Using a parameter, it is possible to set the behaviour of the respective channel when the positive drive is removed (first bit (bit 1) is set to "0"). The actuator can be switched on or off or follow the current state of the switching object.

The positive drive function is carried out without a time delay. The behaviour of an activated staircase lighting timer can be taken from the table "Behaviour on bus voltage recovery".

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Blocking function

With the aid of the "Blocking" object, the switch actuator can be switched off functionally when the blocking function is assigned. When the blocking function is activated, telegrams are no longer converted via the "Switch" object into switching commands for the relay. The blocking function can be triggered by an On or Off telegram (On active or Off active). With the parameter "Default position", it is possible to define whether the blocking function is only activated once a blocking telegram has been received via the "Blocking" object or immediately after a reset. With the parameter "Relay state after blocking" (no change / contact opens / contact closes), the output is switched to a defined position after blocking. Telegrams to the "Switch" object are received and stored. Once the blocking function is deactivated, this switching characteristic can be assigned to the relay with the setting "preferring to switch object" or a fixed state can be selected (contact opens/contact closes).

Blocking function with switching delay / staircase lighting timer

When the blocking function is activated, it always switches without a delay in the required direction. When it is deactivated, the actuator likewise switches immediately to the required state. The behaviour of an activated staircase lighting timer can be taken from the table "Behaviour on bus voltage recovery".

Behaviour on bus voltage recovery

On bus voltage recovery, the relay can assume the assigned state. In the setting "as before bus voltage failure", the stored status object value is restored (see "Behaviour on bus voltage failure"). If a time switch mode has been assigned, it is started depending on the following table.

Function	Parameter setting	Relay on voltage recovery
Switch	contact opens	open
On/Off delay	contact opens	open
Time switch mode (normally open contact)	contact opens	open
Time switch mode (normally closed contact)	contact opens	start time switch mode
Inverted time switch mode (normally open contact)	contact opens	start time switch mode
Inverted time switch mode (normally closed contact)	contact opens	open
Switch	contact closes	closed
On/Off delay	contact closes	closed
Time switch mode (normally open contact)	contact closes	start time switch mode
Time switch mode (normally closed contact)	contact closes	closed
Inverted time switch mode (normally open contact)	contact closes	closed
Inverted time switch mode (normally closed contact)	contact closes	start time switch mode
Switch	as before bus voltage failure	as before reset stored relay state
On/Off delay	as before bus voltage failure	as before reset stored relay state (without delay)
Time switch mode	as before bus voltage failure	The relay state that was stored before the reset behaves as in the parameter setting (contact opens/contact closes)

Note:

Relay states that have been retrieved by functions with a higher priority (higher-order function and security function) have priority over the behaviour on bus voltage recovery. They have however the same function as described in the table.

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Security function

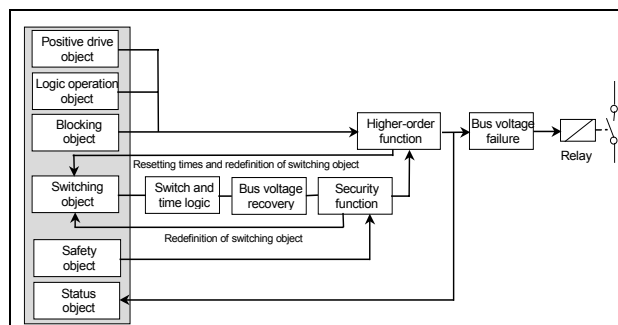
The security function monitors the communication between a sensor and the switch actuator. When the security function is enabled, telegrams are expected from the sensor (e.g. binary input BE) at cyclical intervals within the set monitoring time. The monitoring time is calculated by multiplying a base value with a factor. If the device does not receive any telegrams from the sensor within this period, the actuator switches to the set safety position (contact opened, contact closed or last safety object value). The sensor must be able to send telegrams cyclically with a cyclic interval that is shorter than the monitoring time. In addition to the cyclical monitoring function, the safety position can be activated by defined telegram values.

If the security function is interrupted by a higher-order function (logic operation, blocking function, positive drive), the monitoring time is not deleted but continues for the remainder of the period once the higher-order function has been deactivated. If the actuator receives a telegram at the "Safety" object while a higher-order function is active, it does not evaluate the telegram until the higher-order function has been removed.

Note:

After a reset, the security function is **immediately** activated and the actuator switches into the safety position.

Before the first switching operation can be carried out via the "Switch" object, the monitoring time must be started (telegram to the "Safety" object). If however a higher-order function is selected with the setting "active at once", the security function can be deactivated until telegrams reach the "Safety" object via the bus and the security function is operating normally.



Maximum number of group addresses: 22
Maximum number of associations: 22

Assigning parameters to the relays

Switch

Communication objects

Phys. Addr.		Program		
no.	Function	Object name	Type	
01.01.003		12 A1 Binary 510D01		
0	On / Off	Status	1 Bit	
1	On / Off	Switch	1 Bit	
---	---	---	---	

Obj	Function	Object name	Type	Flags
0	On / Off	Status	1 Bit	CRT
The current switching state of the channel is stored in this object. The object value is dependent on the switching telegrams to the "Switch" object and on the status of the "Logic operation" and "Positive drive" objects. No telegrams are sent when there is a change in the object value. The switching state can be read out via the ETS or via a visualisation unit.				
1	On / Off	Switch	1 Bit	CW
The switching output of the relay is addressed via this object. The application changes the value of the "Switch" object during operation. Reading out the "Switch" object via the bus does not reproduce the relay state. The status should always be read back via the "Status" object.				

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Parameters



General Inputs	Security function	Time functions
Function	None	
Relay mode	normally open contact	
Status message	On	
Behaviour on bus voltage failure	contact opens	
Behaviour on bus voltage recovery	contact opens	
Limit number of telegrams	30 telegrams per 17 sec	

Parameters	Settings
Function	None Logic operations Positive drive Blocking function
In the case of the higher-order functions, it is possible to select logic operations, positive drive, blocking function or no function. The higher-order function has the highest priority after the behaviour on bus voltage failure and takes precedence over the other switchable functions in the switching characteristic of the actuator.	
Relay mode	normally open contact normally closed contact
The operating mode of the relay can be set here. The relay can be used either as a "normally open contact" or a "normally closed contact".	
Status message	On Off
The current switching state of the channel is stored in this object. The object value is dependent on the switching telegrams to the "Switch" object and on the status of the "Logic operation" and "Positive drive" objects. No telegrams are sent when there is a change in the object value. The switching state can be read out via the ETS or via a visualisation unit.	
Behaviour on bus voltage failure	contact opens contact closes no action
The behaviour of the relay contact on bus voltage failure is set here. "no action": On failure of the bus voltage, the relay contact maintains its current switching state. "contact closes": On bus voltage failure, the relay is closed with the parameter setting "Relay mode: normally open contact" and opened with the setting "Relay mode: normally closed contact". "contact opens": On bus voltage failure, the relay is opened with the parameter setting "Relay mode: normally open contact" and closed with the setting "Relay mode: normally closed contact".	

Parameters	Settings
Behaviour on bus voltage recovery	contact opens contact closes as before bus voltage failure
The behaviour of the relay contact on bus voltage recovery can be set here. The settings only refer to the "Switch" object. "as before bus voltage failure": The behaviour on bus voltage recovery is influenced by the parameters "Logic operation" and "Default position". If no logic operations are active, the relay contact maintains its current switching state. "contact closes": The parameter "Behaviour on bus voltage recovery" influences the behaviour on recovery of the voltage. If no logic operation is active, the relay contact is closed in the parameter setting "Relay mode: normally open contact" and opened in the setting "Relay mode: normally closed contact". "contact opens": The parameters "Logic operation" and "Default position" influence the behaviour on recovery of the voltage. If no logic operation is active, the relay contact is opened with the parameter setting "Relay mode: normally open contact" and closed with the setting "Relay mode: normally closed contact".	
Limit number of telegrams	30 telegrams per 17 sec. 60 telegrams per 17 sec. 100 telegrams per 17 sec. 127 telegrams per 17 sec.
The number of telegrams that are sent can be set in this parameter.	

Security function

Communication objects

Phys. Addr.		Program	
no.	Function	Object name	Type
 01.01.003		12 A1 Binary 510D01	
--- ---	---	---	---
 3	On / Off	Safety	1 Bit
--- ---	---	---	---

Obj	Function	Object name	Type	Flags
3	On / Off	Safety	1 Bit	CW
The security function monitors the communication between the sensor and switch actuator. The security function can be switched on and off via the parameter.				

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Parameters

General Inputs	Security function	Time functions
Security function	On	
Start security position by	On telegr. or missing cyclical Off telegrams	
Safety position	contact opened	
Base for monitoring time	4.2 seconds	
Factor for monitoring time (5-127)	72	

Parameters	Settings
Security function	On Off
The security function can be switched on and off via this parameter.	
Start security position by	On telegr. or missing cyclical Off telegrams Off telegr. or missing cyclical On telegrams missing cyclical On or Off telegrams
The security function monitors the communication between a sensor and the switch actuator. It is possible to select here how the safety position is triggered: The options are: "On telegr. or missing cyclical Off telegrams" "Off telegr. or missing cyclical On telegrams" "missing cyclical On or Off telegrams" It can be set via this parameter when the safety position is triggered.	
Safety position	contact closed contact opened preferring to last security object value
If the device does not receive any telegrams from the sensor within the set monitoring time, the actuator switches to the set safety position. It is possible to choose between "contact opened", "contact closed" and "preferring to last security object value".	
Base for monitoring time	1.0 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

Parameters	Settings
Factor for monitoring time (5 – 127)	72
The monitoring time is set in these parameters. The time 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.	

Time functions

Parameters

General Inputs	Security function	Time functions
Time functions		On / Off delay
On delay		On
Base for On delay		520 milliseconds
Factor for On delay (5-127)		10
On delay is		not retriggerable
Off delay		On
Base for Off delay		520 milliseconds
Factor for Off delay (5-127)		10
Off delay is		not retriggerable

Parameters	Settings
Time functions	none On / Off delay Time switch mode Oscillator (blinking) Inverted time switch mode
Via this parameter, it is possible to select the time functions "On / Off delay", "Time switch mode", "Oscillator (blinking)", "Inverted time switch mode" and no time function. If "none" is selected, the parameters for setting the delay periods are no longer displayed.	
On delay	On Off
The "On delay" can be switched on and off via this parameter. If the function is disabled, the parameters for setting the delay periods are no longer displayed.	

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Parameters	Settings
Base for On delay	520 milliseconds 1.0 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
Factor for On delay (5-127)	10 The period for the "On delay" is set here. The time 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.
On delay is	retriggerable not retriggerable If a "1" telegram is received before switching off, the period is restarted (retriggerable). If a "0" telegram is received before switching off, the period is not restarted (not retriggerable). In this parameter, the "On delay" can be set to "retriggerable" or "not retriggerable".
Off delay	Off On The "Off delay" can be switched on and off via this parameter. If the function is disabled, the parameters for setting the delay periods are no longer displayed.
Base for Off delay	520 milliseconds 1.0 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

Parameters	Settings
Factor for Off delay (5-127)	10 The period for the "Off delay" is set here. The time 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	retriggerable not retriggerable If a "1" telegram is received before switching off, the period is restarted (retriggerable). If a "0" telegram is received before switching off, the period is not restarted (not retriggerable). In this parameter, the "Off delay" can be set to "retriggerable" or "not retriggerable".

Phys. Addr.		Program	
no.	Function	Object name	Type
01.01.003		12 A1 Binary 510D01	
0	On / Off	Status	1 Bit
1	On / Off	Switch	1 Bit
2	On / Off	Blocking/Logic operation	1 Bit
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Obj	Function	Object name	Type	Flags
0	On / Off	Status	1 Bit	CRT
The current switching state of the channel is stored in this object. The object value is dependent on the switching telegrams to the "Switch" object and on the status of the "Logic operation" and "Positive drive" objects. No telegrams are sent when there is a change in the object value. The switching state can be read out via the ETS or via a visualisation unit.				
1	On / Off	Switch	1 Bit	KS
The switching output of the relay is addressed via this object. The application changes the value of the "Switch" object during operation. Reading out the "Switch" object via the bus does not reproduce the relay state. The status should always be read back via the "Status" object.				
2	On / Off	Blocking/Logic operation	1 Bit	KS
This object enables the "Switch" object can be logically linked with the "Logical operation" object.				

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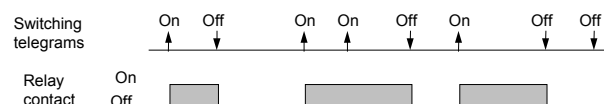
General Inputs	Security function	Time functions
Function	None	
Status message	On	
Behaviour on bus voltage failure	contact opens	
Behaviour on bus voltage recovery	contact opens	

Parameters	Settings
Function	None Logic operations Positive drive Blocking function
In the case of the higher-order functions, it is possible to select logic operations, positive drive, blocking function or no function. The higher-order function has the highest priority after the behaviour on bus voltage failure and takes precedence over the other switchable functions of the actuator.	
Status message	On Off
The current switching state of the channel is stored in this object. The object value is dependent on the switching telegrams to the "Switch" object and on the status of the "Logic operation" and "Positive drive" objects. No telegrams are sent when there is a change in the object value. The switching state can be read out via the ETS or via a visualisation unit.	
Behaviour on bus voltage failure	contact opens contact closes no action
The behaviour of the relay contact on bus voltage failure is set here. "no action": On failure of the bus voltage, the relay contact maintains its current switching state. "contact closes": On bus voltage failure, the relay is closed with the parameter setting "Relay mode: normally open contact" and opened with the setting "Relay mode: normally closed contact". "contact opens": On bus voltage failure, the relay is opened with the parameter setting "Relay mode: normally open contact" and closed with the setting "Relay mode: normally closed contact".	

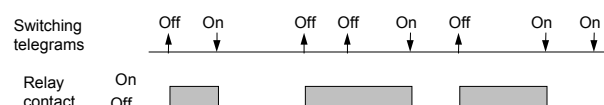
Parameters	Settings
Behaviour on bus voltage recovery	contact opens contact closes as before bus voltage failure
The behaviour of the relay contact on bus voltage recovery can be set here. The settings only refer to the "Switch" object. "as before bus voltage failure": The behaviour on bus voltage recovery is influenced by the parameters "Logic operation" and "Default position". If no logic operations are active, the relay contact maintains its current switching state. "contact closes": The parameter "Behaviour on bus voltage recovery" influences the behaviour on recovery of the voltage. If no logic operation is active, the relay contact is closed in the parameter setting "Relay mode: normally open contact" and opened in the setting "Relay mode: normally closed contact". "contact opens": The parameters "Logic operation" and "Default position" influence the behaviour on recovery of the voltage. If no logic operation is active, the relay contact is opened with the parameter setting "Relay mode: normally open contact" and closed with the setting "Relay mode: normally closed contact".	

Timing diagrams: Examples for the relay

1. Switch (normally open contact)



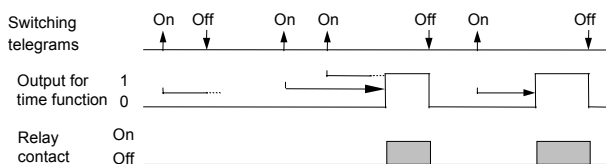
2. Switch (normally closed contact)



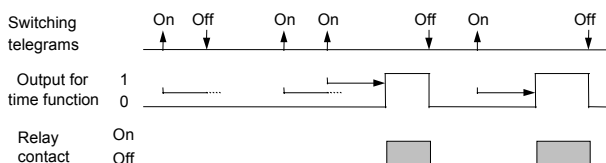
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Timing diagrams: Examples for a channel

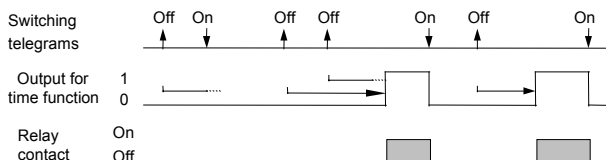
1. Switching with non-retriggerable On delay (normally open contact)



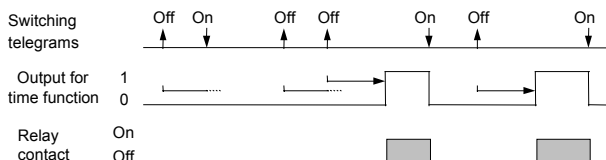
2. Switching with retriggerable On delay (normally open contact)



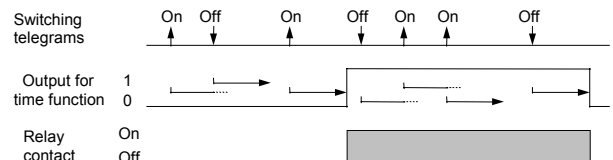
3. Switching with non-retriggerable Off delay (normally open contact)



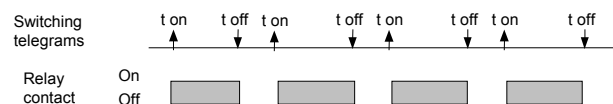
4. Switching with retriggerable Off delay (normally open contact)



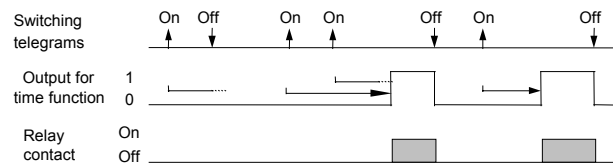
5. Staircase lighting function without manual Off function (normally open contact)



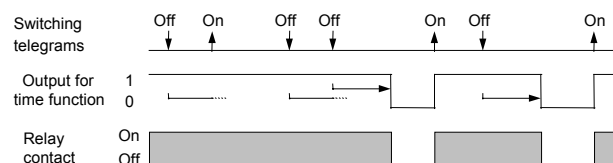
6. Astable oscillator (blinking)



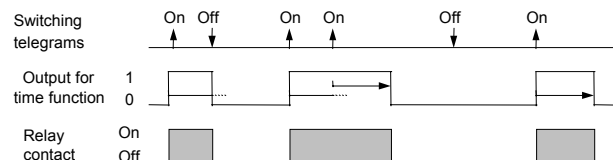
7. Switching with non-retriggerable Off delay (normally open contact)



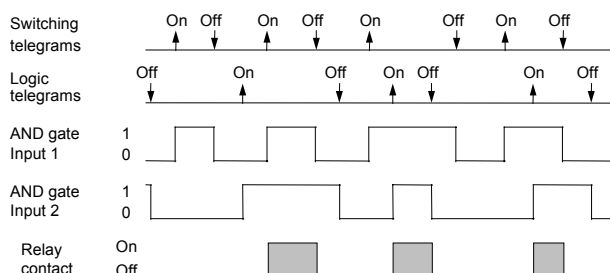
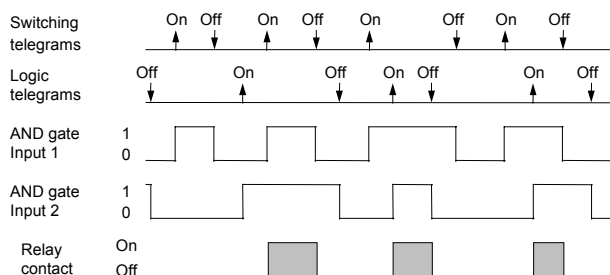
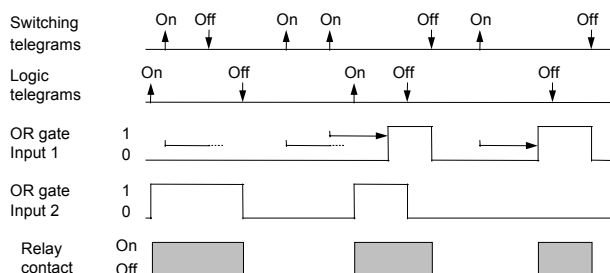
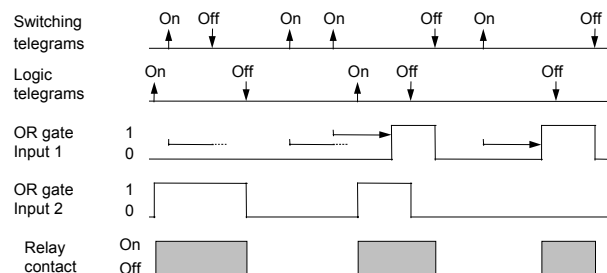
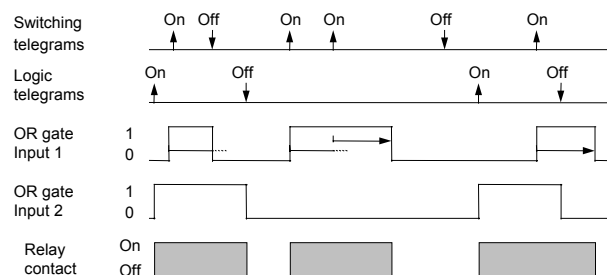
8. Switching with retriggerable Off delay (normally open contact)



9. Status reply with On and Off delay



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10. AND function; logic function active after logic telegram has been received; behaviour follows logic result**11. AND function; logic function active at once****12. OR function; logic function active after logic telegram has been received; behaviour follows logic result****13. OR function; logic function active at once; behaviour follows logic result****14. Switching with OR function and time switch function**

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Space for notes