21 A8 Binary, blinking on off 908301

Use of the application program

Product family: Output
Product type: Load switch, 8-fold
Manufacturer: Siemens

Name: Load switch N 512
Order no.: 5WG1 512-1AB01

Name: Load switch N 512
Order no.: 5WG1 512-1CB01

Functional description

The application program “21 A8 Binary, blinking on off 908301” is used for carrying out the switch functions of the 8-fold load switch N 512.
By assigning parameters, it is possible to define for all 8 independently switching channels how often they blink before switching off.
Each channel has a communication object available for switching, logic operation, manual override operation, and status interrogation. Via the positive drive object all channels can be forced on or forced off together.
It is also possible to assign the following parameters for each channel:

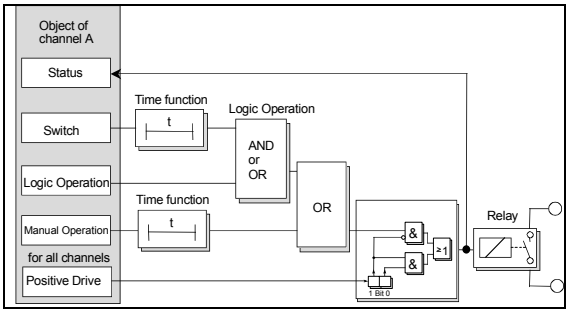
- Logic operation
- Starting value of switching object / logic operation on bus voltage recovery
- On delay
- Off delay
- Timer for manual override operation
- Relay mode: normally open/normally closed contact
- Operating mode: normal mode/time switch
- Send status object: read only / on change in object value.
- Blink warn: active / inactive

Maximum number of group addresses: 48
Maximum number of associations: 48

Note

The application program is functional on load switches N512 with bus coupler version R2.1 or later only.

Block diagram of a channel



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Communication objects

The following communication objects are available.

Phys.Addr.	Description	Program		Order number
no.	Function	Object name	Group addresses	Type
01.01.001		21 A8 binary, blinking on off	908301	5WG1 512-1AB01
0	On / Off	Switch, Channel A		1 Bit
1	On / Off	Switch, Channel B		1 Bit
2	On / Off	Switch, Channel C		1 Bit
3	On / Off	Switch, Channel D		1 Bit
4	On / Off	Switch, Channel E		1 Bit
5	On / Off	Switch, Channel F		1 Bit
6	On / Off	Switch, Channel G		1 Bit
7	On / Off	Switch, Channel H		1 Bit
8	On / Off	Logic operation, Channel A		1 Bit
9	On / Off	Logic operation, Channel B		1 Bit
10	On / Off	Logic operation, Channel C		1 Bit
11	On / Off	Logic operation, Channel D		1 Bit
12	On / Off	Logic operation, Channel E		1 Bit
13	On / Off	Logic operation, Channel F		1 Bit
14	On / Off	Logic operation, Channel G		1 Bit
15	On / Off	Logic operation, Channel H		1 Bit
16	On / Off	Manual control, Channel A		1 Bit
17	On / Off	Manual control, Channel B		1 Bit
18	On / Off	Manual control, Channel C		1 Bit
19	On / Off	Manual control, Channel D		1 Bit
20	On / Off	Manual control, Channel E		1 Bit
21	On / Off	Manual control, Channel F		1 Bit
22	On / Off	Manual control, Channel G		1 Bit
23	On / Off	Manual control, Channel H		1 Bit
24	On / Off	Status, Channel A		1 Bit
25	On / Off	Status, Channel B		1 Bit
26	On / Off	Status, Channel C		1 Bit
27	On / Off	Status, Channel D		1 Bit
28	On / Off	Status, Channel E		1 Bit
29	On / Off	Status, Channel F		1 Bit
30	On / Off	Status, Channel G		1 Bit
31	On / Off	Status, Channel H		1 Bit
32	On / Off	Positive Drive		2 Bit

Note

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

Obj	Function	Object name	Type	Flag
0	On / Off	Switch, Channel A	1 Bit	CWTU
...	…	…	...	...
7	On / Off	Switch, Channel H	1 Bit	CWTU
The switching telegrams that are relayed via the time function to the relay channel are received via the group addresses in this object. If a logic operation is assigned, the result of the time function forms the first value of the logic operation for the channel.				
8	On / Off	Logic Operation, Channel A	1 Bit	CWTU
...	…	…	...	...
15	On / Off	Logic Operation, Channel H	1 Bit	CWTU
The switching information for the second input of the logic operation is received via the group addresses in this object. If the setting “no logic operation” is selected, this object has no function and is not displayed.				
16	On / Off	Manual Operation, Channel A	1 Bit	CWTU
...	…	…	...	...
23	On / Off	Manual Operation, Channel H	1 Bit	CWTU
The manual operation object allows for a time limited or unlimited time manual override of the relay switch status.				
24	On / Off	Status, Channel A	1 Bit	CRTU
...	…	…	...	...
31	On / Off	Status, Channel H	1 Bit	CRTU
The current switching status of the channel is stored in the status object and can be checked by a read request. Parameters can be assigned so that the status is sent automatically after each change in the object value.				
32	On / Off	Positive Drive	2 Bit	CWTU
Forced control of all N512 relay channels. When positive drive is inactive all channels operate independent of each other. When positive drive is active all channels are switched on or off together. When positive drive is deactivated the relay channels take the status determined by the Switch, Logic Operation, and Manual Operation inputs.				

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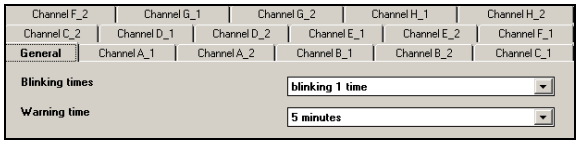
Parameters

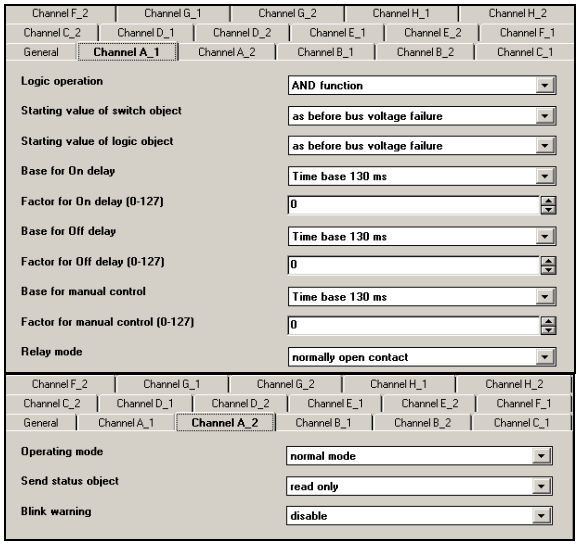
Configuration



Parameters	Settings
Blinking times	**Blinking 1 time** Blinking 2 times Blinking 3 times Blinking 4 times
Warning time	40 seconds 1 minute 2 minutes 3 minutes 4 minutes **5 minutes** 10 minutes
Blink warn can be activated separately for each channel. When blink warn is active the channel turns off briefly on an Off signal and then turns On again. When the warning time expires the channel either blinks again or turns Off. The number of blinking times and the warning time are set with these parameters.	

Parameters of a channel:

The following parameters are available for each channel (A - H).



Parameters	Settings
Logic operation	**no logic operation** OR function AND function
Using this parameter, a logic operation can be carried out between the switching object and the logic object. The telegrams of the switching object reach the first input of the logic operation. They are executed with an On or an Off delay according to the parameters assigned. The second input is linked with the logic object. The logic object is not subject to a time function and therefore the logic operation is carried out immediately. "no logic operation": The telegram information of the switching object is routed to the relay without a logic operation but with a set On or Off delay. The logic object has no function. "OR function": The switching and logic objects are linked with an OR function. "AND function": The switching and logic objects are linked with an AND function.	
Starting value of switch object	**as before bus voltage failure** Off On
The initialisation value of the switching object on bus voltage recovery is defined here. Note: After a download, the pre-assigned option for "as before bus voltage failure" = 0, i.e. "Off".	
Starting value of logic object	**as before bus voltage failure** Off On
The initialisation value of the logic object on bus voltage recovery is defined here. If the setting "no logic operation" is selected in the parameter "Logic operation", this parameter is not visible. Note: After a download, the pre-assigned option for "as before bus voltage failure" = 0, i.e. "Off".	

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Parameters	Settings
Base for On delay	**Time base 130 ms** Time base 260 ms Time base 520 ms Time base 1 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 min Time base 18 min Time base 35 min Time base 1.2 hr
Factor for On delay (0-127)	**0**
These parameters are used to set the time for the On delay. It is calculated from the selected base multiplied by the factor that is entered here. Factor = “0”: There is no active On delay. A logic “1” that is passed to the time function is routed without a delay. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is set here also specifies the maximum timing error.	
Base for Off delay	**Time base 130 ms** Time base 260 ms Time base 520 ms Time base 1 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 min Time base 18 min Time base 35 min Time base 1.2 hr
Factor for Off delay (0-127)	**0**
These parameters are used to set the time for the Off delay. It is calculated from the selected base multiplied by the factor that is entered here. Factor = “0”: There is no active Off delay. A logic “0” that is passed to the time function is routed without a delay. Note: An attempt should always be made to set the required time with the smallest possible base as the base that is set here also specifies the maximum timing error.	

Parameters	Settings
Base for Manual Operation timer	**Time base 130 ms** Time base 260 ms Time base 520 ms Time base 1 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 min Time base 18 min Time base 35 min Time base 1.2 hr
Factor for Manual Operation timer (0-127)	**0**
These parameters are used to set the time for the manual override operation “On” timer. It is calculated from the selected base multiplied by the factor that is entered here. After the timer has expired the output of the manual override timer is automatically set to “Off”. Factor = “0”: There is no active timer. Any manual override operation signal is active indefinitely. Factor <> “0”: When an On (“1) telegram is received via the switching object, it is routed directly to the output. The manual operation timer Off delay starts simultaneously. Each further “1” that is received before the timer has elapsed, resets the timer and restarts it. Once the timer period has elapsed, a “0” is passed to the output of the manual operation timer. An Off (“0”) telegram to the manual operation object removes the Off delay and is immediately routed to the output. (see also “Timing diagrams”). Note: An attempt should always be made to set the required time with the smallest possible base as the base that is set here also specifies the maximum timing error.	
Relay mode	**normally open contact** normally closed contact
This parameter defines the behaviour of the relay contact. If the setting “normally closed contact” is selected, switching off always closes the contact and switching on always opens the contact. “normally open contact”: Off telegram = contact open, On telegram = contact closed. “normally closed contact”: Off telegram = contact closed, On telegram = contact open.	

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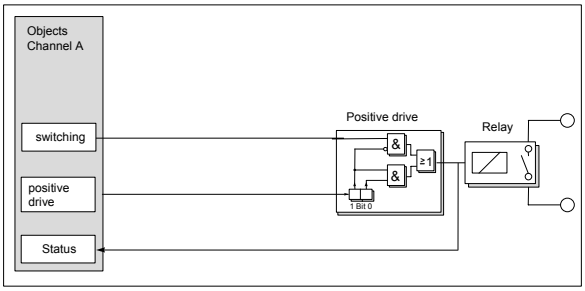
Parameters	Settings
Operating mode	**Normal mode** Time switch
The operating mode of the Off delay is set here: "Normal mode": When an Off telegram is received via the switching object, the set Off delay is started. Each further "0" that is received before the timer has elapsed, resets the delay and restarts it. Once the period has elapsed, the "0" is passed to the output. An On telegram removes the Off delay. "Time switch": When an On telegram is received via the switching object, it is routed to the output. The set Off delay starts simultaneously. Any On delay that has been set is in effect. Each further "1" that is received before the timer has elapsed, resets the delay and restarts it. Once the period has elapsed, the "1" delay is passed to the output. An Off telegram removes the Off delay and is immediately routed to the output. (see also "Timing diagrams").	
Send status object	**read only** on change object value
Depending on the parameter setting, the status object is sent automatically after each change in the object value or only after a read request.	
Blink warning	**disable** enable
This parameter enables or disables the blink warning function for this channel. The number of blink warnings, time between blink warnings and time before switching the channel off is set for all channels identically.	

Positive drive
Actuators with positive drive input allow for overriding of outputs via central control commands.
E.g. when in energy savings or night operation mode switching on of selected lights or loads can be blocked. In the case of night operation mode a switch OFF positive drive telegram may be sent at 20h00 and at 06h00 a switch ON positive drive telegram.

For explanation of positive drive assume a switch actuator with two input objects. The input object switching controls the output dependent on the status of the input positive drive.



The positive drive object is a 2-bit object.
Bit 1 determines, whether positive drive is "active" (= 1) or „passive" (= 0).

If Bit 1 has the value 0, then positive drive is set to be „passive" and the switching input value is directly available at the positive drive output.

If Bit 1 of the positive drive object has the value 1, then the positive drive is set to be "active" and the switching input value is irrelevant for the output value. In this case Bit 0 of the positive drive object determines the output of the positive drive. If positive drive is not activated then the switching input value is directly available at the output of the positive drive.

Bit 1	Bit 0	Function
0	0	Positive drive is not activated
0	1	Positive drive is not activated
1	0	Off with positive drive object value
1	1	On with positive drive object value

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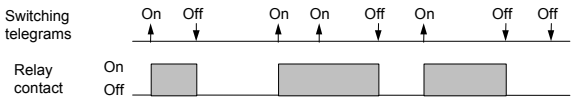
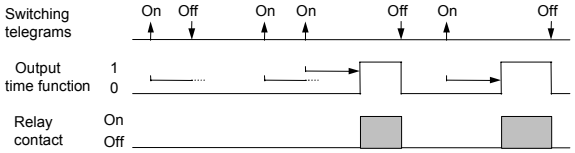
Examples of timing diagrams for channels

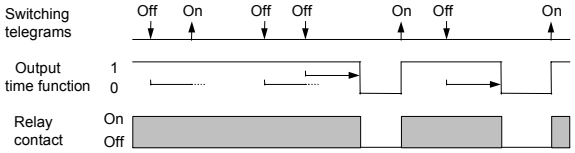
1. Switching without a time delay, no logic operation, relay mode: normally open contact



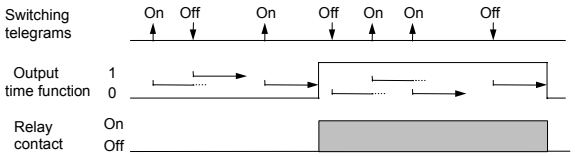
2. Switching with an On delay, no logic operation, relay mode: normally open contact



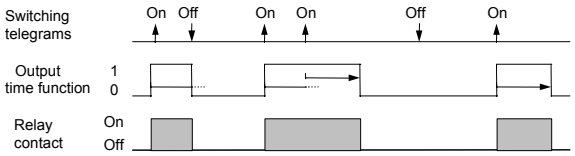
3. Switching with an Off delay, no logic operation, relay mode: normally open contact



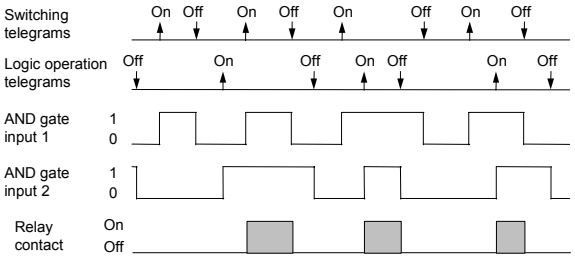
4. Switching with an On and Off delay, no logic operation, relay mode: normally open contact



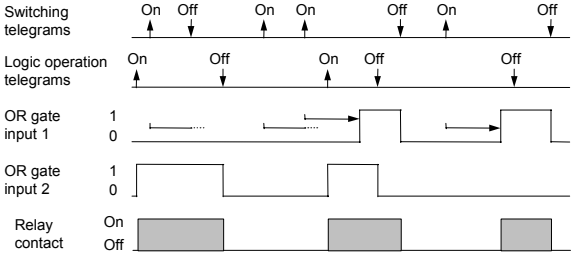
5. Switching with time switch function, no logic operation, no On delay, relay mode: normally open contact



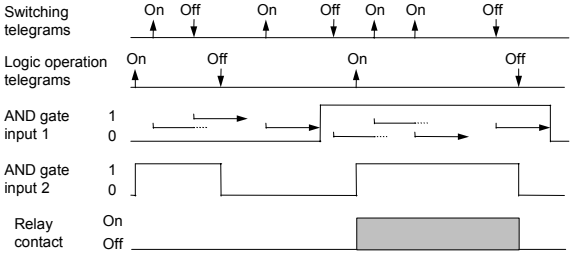
6. Switching with AND function, no time delays, relay mode: normally open contact



7. Switching with OR function, with an On delay, relay mode: normally open contact



8. Switching with AND function, with On and Off delay, relay mode: normally open contact



9. Switching with OR function and time switch function, relay mode: normally open contact