

20 A1 Switched socket outlets 900F02

Use of the application program

Product family:	Output
Product type:	Binary output, 1-fold FM devices
Manufacturer:	Siemens
Name:	Function module UP 563 for SCHUKO switched socket outlets, pearl grey
Order no.:	5WG1 563-2AB01
Name:	Function module UP 563 for SCHUKO switched socket outlets, titanium white
Order no.:	5WG1 563-2AB11
Name:	Function module UP 563 for SCHUKO switched socket outlets, anthracite
Order no.:	5WG1 563-2AB21
Name:	Function module UP 563 for SCHUKO switched socket outlets, silver
Order no.:	5WG1 563-2AB71

Functional description

The output of the binary output UP 563 can be assigned parameters using the application program "20 A1 Switched socket outlets 900F02".

The binary output can be parameterised for pure switching functions, as a time switch (staircase lighting timer), for switching with time delays, logic operations and positive drive. It is also possible to set the behaviour on bus voltage failure and recovery.

Functions of the binary output

Switching with On/Off delay (normal mode)

If an On delay has been assigned, the On signal is routed with a delay (to the OR function). If a further On signal is received during the On delay, the period is restarted. In the same way, a specified Off delay causes the Off signal to be routed with a delay. The Off delay is restarted if a further Off signal is received during this period. No changes occur however if an Off signal is received during the On delay or an On signal is received during the Off delay as the delay that is currently active is interrupted. If no time delays have been assigned, then the On/Off signal is routed immediately.

Switching with On/Off delay (time switch)

If an On delay has been assigned, the On signal is routed with a delay. If a further On signal is received during the On delay, the period is restarted. Once the On delay has elapsed, the On signal is routed and the Off delay is started simultaneously. The Off signal is routed once the period specified for the Off delay has elapsed. If a premature Off signal is received during the Off delay, the delay period is interrupted and the Off signal is routed immediately (=switching off prematurely).

OR function

The OR object input and the output of the time function form the two inputs of the OR function. If the OR function is enabled, both the inputs are linked with an OR logic operation and are available at the internal output of the OR function. If the OR function is disabled, the output of the time function is available directly at the internal output of the OR function.

AND function

The AND object input and the output of the OR function form the two inputs of the AND function. If the AND function is enabled, the two inputs are linked with an AND logic operation and are available at the internal output of the AND function. If the AND function is disabled, the output of the OR function is available directly at the internal output of the AND function.

Positive drive

The input of the positive drive object and the output of the AND function form the two inputs of the positive drive. If the positive drive is enabled, the two inputs are linked as follows and are available at the internal output of the positive drive. The positive drive object is a 2 bit object. If bit 1 has the value 0, then the positive drive is regarded as "passive" and the output of the AND function is available directly at the output of the positive drive. This value is simultaneously loaded into bit 0 of the positive drive object so that the status is always contained in bit 0 of this object. If bit 1 of the positive drive object has the value 1, then the positive drive is regarded as "active" and the output of the AND logic operation has no function. In this case, bit 0 of the positive drive object determines the value of the internal output of the positive drive. If the positive drive is disabled, the output of the AND function is available directly at the internal output of the positive drive.

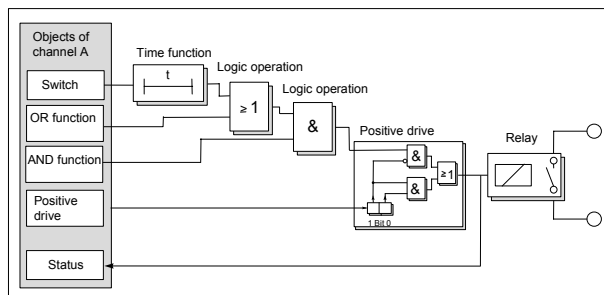
Bit 1	Bit 0	Function
0	0	Disabled positive drive
0	1	Disabled positive drive
1	0	Switch off with positive drive
1	1	Switch on with positive drive

20 A1 Switched socket outlets 900F02**Status object:**

After each switching operation, the status object is updated accordingly and automatically sent. It is possible to disable the automatic sending of the object via parameters so that the relay state is only achieved by scanning this object specifically.

Bus voltage failure / bus voltage recovery

The program always stores all the object values on bus voltage failure. The set position of the relay contact is stored at the same time. On bus voltage recovery, these object values are read back first of all. They are then modified according to the parameters selected. The relay state is then produced from the object values and the corresponding system configuration (logic operations....).

Block diagram of a channel

Maximum number of group addresses: 38

Maximum number of associations: 38

Communication objects

Phys. Addr.		Program		
no.	Function	Object name	Type	
01.01.001		20 A1 switched socket outlets 900F02		
12	On / Off	Switch, Channel A	1 Bit	
14	On / Off	Status, Channel A	1 Bit	
16	OR function	Logic operation, Channel A	1 Bit	
18	AND function	Logic operation, Channel A	1 Bit	
20	On / Off	Positive drive, Channel A	2 Bit	

Note:

The view of the communication objects can be arranged individually i.e. this view may vary depending on the parameter settings.

Obj	Function	Object name	Type	Flags
12	On / Off	Switch, Channel A	1 Bit	CW
The switching telegrams that are relayed via the time function to the relay are received via the group address in this object.				
14	On / Off	Status, Channel A	1 Bit	CRT
The current switching state of the relay is stored in this object. The object value is dependent on the switching telegrams to switching object 12 as well as on the state of the objects for logic operation and positive drive. The parameter settings "normally open contact" and "normally closed contact" for the relay mode do not influence the object value. No telegrams are sent if there is a change in the object value. The switching state can be read out via the ETS program or a visualisation terminal.				
16	OR function	Logic operation, Channel A	1 Bit	CRW
18	AND function	Logic operation, Channel A	1 Bit	CRW
The switching information for the logic operation inputs of the relay is received via the group addresses in these objects. If "no logic operation" is selected in the relevant parameters, these objects have no function and are hidden.				
20	On / Off	Positive drive, Channel A	2 Bit	CRT
The switching telegrams for the positive drive are received via the group address in this object. The positive drive is not active for the object values "0" and "1". The switching state is assigned by the internal output of the AND function. Object value "2" switches off with positive drive while object value "3" switches on with positive drive. This overrides the state that was set by the output of the AND function. Disabling the positive drive via a telegram with the value "0" or "1" causes the relay to be operated in the state that was defined by the output of the AND function.				

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Normal mode, Relay parameter

Note:

The view of the parameters can be arranged individually.

Relay	Relay 2
Operating mode	Normal mode
Relay mode	normally open contact
On / Off delay	enabled
Base for Off delay	Time base 130 ms
Factor for Off delay (5-127)	5
Base for On delay	Time base 130 ms
Factor for On delay (5-127)	5
Logic operation OR (Prio. 3)	no logic operation
Logic operation AND (priority 2)	no logic operation
Positive drive (priority 1)	no positive drive

Parameters	Settings
Operating mode	Normal mode Time switch
The function of the relay is set via this parameter. The parameter window "Relay" changes depending on the function that is selected here and the relevant parameters are displayed with default settings.	
Relay mode	normally open contact normally closed contact
This parameter defines the behaviour of the relay contact. "normally open contact": Off telegram = contact open, On telegram = contact closed. "normally closed contact": Off telegram = contact closed, On telegram = contact open.	
On / Off delay	enabled disabled
The On/Off delay can be disabled (not used) or enabled via this parameter. If "disabled" is selected, the parameters that are used for setting the time delays are no longer displayed.	
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

Parameters	Settings
Factor for Off delay (5-127)	5
The time for the "Off delay" is set here. This 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.	
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 (5-127)	5
The time for the "On delay" is set here. This 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.	
Logic operation OR (Prio. 3)	no logic operation OR function
This parameter defines whether a logic operation should be carried out with the OR function object at the output of the time function.	
Logic operation AND (priority 2)	no logic operation AND function
This parameter defines whether a logic operation should be carried out with the AND function object at the output of the OR function.	
Positive drive (priority 1)	no positive drive Positive drive
Using this parameter, channel A can be controlled via a positive drive object. The positive drive input and the output of the AND function form the two inputs of the positive drive. If the positive drive is enabled, the two inputs are linked and are available at the internal output of the positive drive.	

20 A1 Switched socket outlets 900F02**Normal mode, Relay 2 parameters**

Relay	Relay 2
Behaviour on bus voltage failure	contact opens
Initialization value for switch/OR/AND/positive drive object	0 / 0 / 0 / 00
Status	transmit on change of object value

Parameters	Settings
Behaviour on bus voltage failure	no action contact opens contact closes
The behaviour of the relay contact on bus voltage failure can be set here. "no action": The relay contact maintains its current switching state on bus voltage failure. "contact closes": The relay contact is closed on bus voltage failure. This reaction is not dependent on the relay mode that has been selected (normally open or normally closed contact). "contact opens": The relay contact is opened on bus voltage failure. This reaction is not dependent on the relay mode that has been selected (normally open or normally closed contact).	
Initialization value for switch/OR/AND/positive drive object	0 / 0 / 0 / 00 1 / 1 / 1 / 00 1 / 0 / 1 / 00 1 / 0 / 1 / 10 1 / 0 / 1 / 11 1 / 0 / 0 / 00 0 / 1 / 1 / 00 0 / 0 / 1 / 10 0 / 0 / 1 / 11 as before bus voltage failure
This parameter specifies the initialization values of the objects. The first value (on the left) corresponds to the object value for switching, the second is the object value for the OR function, the third is for the AND function and the final value corresponds to the object value for positive drive.	
Status	transmit on change of object value using read request
This parameter defines the behaviour of the status object. (It controls the "transmission flag" of the object parameters). "transmit on change of object value": If the object value of the internal positive drive has changed, a corresponding telegram is sent. "using read request": The status object only sends the status after a read request.	

Time switch, Relay parameters

Relay	Relay 2
Operating mode	Time switch
Relay mode	normally open contact
Base for Off delay	Time base 130 ms
Factor for Off delay (5-127)	5
Base for On delay	Time base 130 ms
Factor for On delay (0-127)	0
Logic operation OR (Prio. 3)	no logic operation
Logic operation AND (priority 2)	no logic operation
Positive drive (priority 1)	no positive drive
Behaviour on bus voltage failure	contact opens

Parameters	Settings
Operating mode	Normal mode Time switch
The function of the channel is set via this parameter. The parameter window "Relay" changes depending on the function that is selected here and the relevant parameters are displayed with default settings.	
Relay mode	normally open contact normally closed contact
This parameter defines the behaviour of the relay contact. "normally open contact": Off telegram = contact open, On telegram = contact closed. "normally closed contact": Off telegram = contact closed, On telegram = contact open.	
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

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Parameters	Settings
Factor for Off delay (5-127)	5
The time for the "Off delay" is set here. This 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.	
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
The time for the "On delay" is set here. This 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.	
Logic operation OR (Prio. 3)	no logic operation OR function
This parameter defines whether a logic operation should be carried out with the OR function object at the output of the time function.	
Logic operation AND (priority 2)	no logic operation AND function
This parameter defines whether a logic operation should be carried out with the AND function object at the output of the OR function.	
Positive drive (priority 1)	no positive drive Positive drive
Using this parameter, the relay can be controlled via a positive drive object. The positive drive input and the output of the AND function form the two inputs of the positive drive. If the positive drive is enabled, the two inputs are linked and are available at the internal output of the positive drive.	

Parameters	Settings
Behaviour on bus voltage failure	no action contact opens contact closes
The behaviour of the relay contact on bus voltage failure can be set here. "no action": The relay contact maintains its current switching state on bus voltage failure. "contact closes": The relay contact is closed on bus voltage failure. This reaction is not dependent on the relay mode that has been selected (normally open or normally closed contact). "contact opens": The relay contact is opened on bus voltage failure. This reaction is not dependent on the relay mode that has been selected (normally open or normally closed contact).	

Relay 2

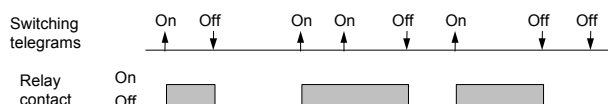
Relay	Relay 2
Initialization value for switch/OR/AND/positive drive object	0 / 0 / 0 / 00
Status	transmit on change of object value

Parameters	Settings
Initialization value for switch/OR/AND/positive drive object	0 / 0 / 0 / 00 1 / 1 / 1 / 00 1 / 0 / 1 / 00 1 / 0 / 1 / 10 1 / 0 / 1 / 11 1 / 0 / 0 / 00 0 / 1 / 1 / 00 0 / 0 / 1 / 10 0 / 0 / 1 / 11 as before bus voltage failure
This parameter specifies the initialization values of the objects. The first value (on the left) corresponds to the object value for switching, the second is the object value for the OR function, the third is for the AND function and the final value corresponds to the object value for positive drive.	
Status	transmit on change of object value using read request
This parameter defines the behaviour of the status object. (It controls the "transmission flag" of the object parameters). "transmit on change of object value": If the object value of the internal positive drive has changed, a corresponding telegram is sent. "using read request": The status object only sends the status after a read request.	

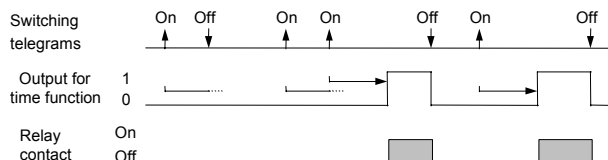
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Timing diagrams: Examples for a channel

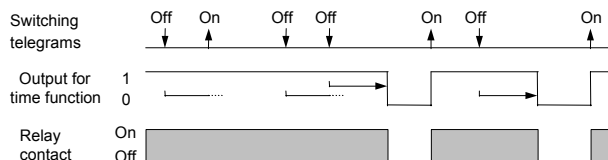
1. Switching without time delays, without logic operation, without positive drive



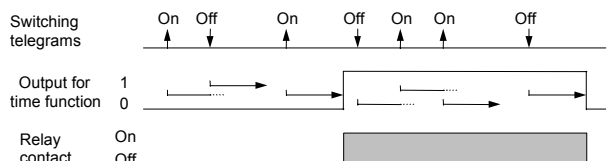
2. Switching with On delay, without logic operation



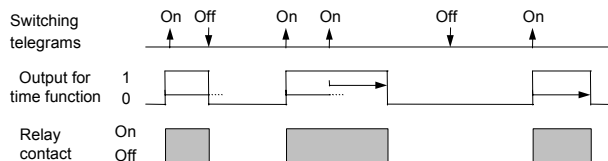
3. Switching with Off delay, without logic operation



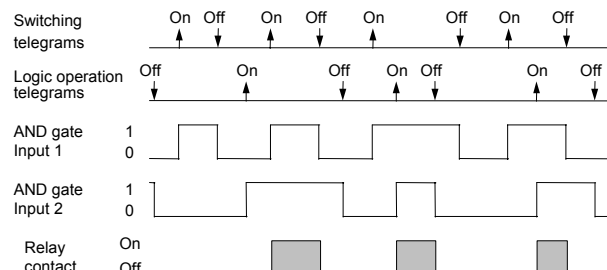
4. Switching with On and Off delay, without logic operation



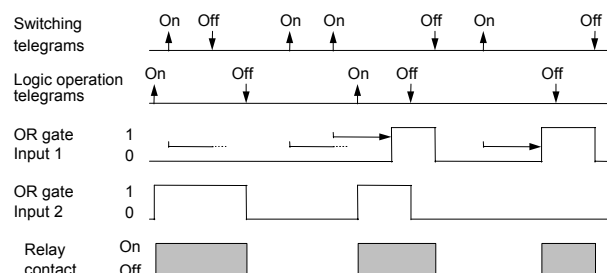
5. Switching with time switch function, without logic operation



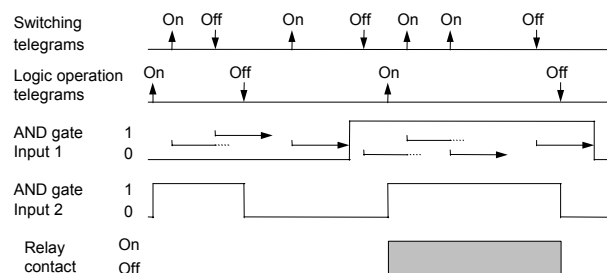
6. Switching with AND function, without time delays



7. Switching with OR function and On delay

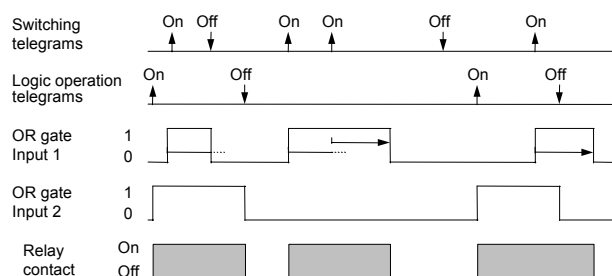


8. Switching with AND function, with On and Off delay

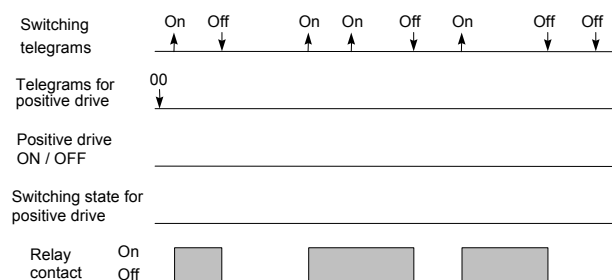


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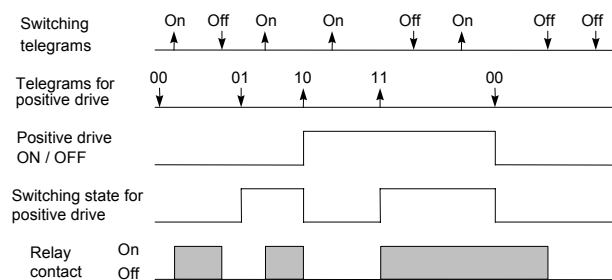
9. Switching with OR function and time switch function



10. Switching without positive drive



11. Switching with positive drive



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Space for notes