ABB i-bus® EIB

Switch Actuator, 8-fold, 16 A, C-Load, MDRC AT/S 8.16.5, GH Q631 0047 R0111

The 8-fold switch actuator is a DIN rail mounted device for insertion in the distribution board. It is connected to the EIB via a bus terminal.

Using eight floating contacts, it switches eight groups of electrical consumer devices that are independent of each other. It is particularly suitable for switching loads with high switch-on peaks, e.g. shunt compensated fluorescent lamps.

The device does not require an additional power supply.

In case of bus voltage failure the actuator can switch on the load circuit (e.g. as working or emergency lighting).

The output states are displayed at the front. Manual operation is also possible at any time, even without bus voltage.

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Technical Data

Power supply	– EIB	24 VDC, via the Bus line
Outputs	– 8 floating contacts	
	– Switching voltage	230 V AC / 400 V AC
	– Switching current at 230 V AC	max. 16 A / AC1, 10 A / AC3
	– Switching current at 400 V AC	max. 10 A / AC1, 6 A / AC3
	– Switching current at, 5 V AC / DC	min. 480 mA
	– Switching current at, 10 V AC / DC	min. 240 mA
	– Switching current at 24 V AC / DC	min. 100 mA
	– Max. switch-on-current	max. 500 A
	– Power of capacitor	max. 200 µF
	– Basic time delay on single operation	typically 20 ms per relay
	– Time delay on switching operation	
	1 contact	typically 1 s
	2 contacts concurrent	typically 2 s
	n contacts concurrent	typically n x 1 s
	8 contacte concurrent	typically 8 s
	– Contact life	
	mechanical contact endurance	min. 5 x 10^6
	electric contact endurance at 230 V AC 16 A / AC1	min. 10^5
	electric contact endurance under fluorescent lanp load ,C = 200 µF	min. 3 x 10^4 (according to VDE 0632 Teil 1)
Operation and display elements	– red LED and push button	for assigning the physical address
	– 8 switch position indicators	also used for manual operation
Connections	– Load circuit	two screw terminals each, Wire range: 0,2 … 2,5 mm^2 finely-stranded 0,2 … 4,0 mm^2 single-core
	– EIB	Bus terminal (included with supply)
Type of protection	– IP 20, EN 60 529	
Ambient temperature range	– Operation	- 5 °C … 45 °C
	– Storage	-25 °C … 55 °C
	– Transport	-25 °C … 70 °C
Design	– Modular installation device, pro*M*	
Housing, colour	– Plastic housing, grey	
Mounting	– on 35 mm mounting rail, DIN EN 50022	
Dimensions	– 90 x 144 x 64 mm (H x W x D)	
Mounting depth/width	– 68 mm / 8 modules at 18 mm	
Weight	– 0,6 kg	
Certification	– EIB-certified	
CE norm	– in accordance with the EMC guidence and the low voltage guidelinie	

Anwendungsprogramme	Anzahl Kommunikationsobjekte	max. Anzahl Gruppenadressen	max. Anzahl Zuordnungen
Switch Logic Status Time /5	24	35	36

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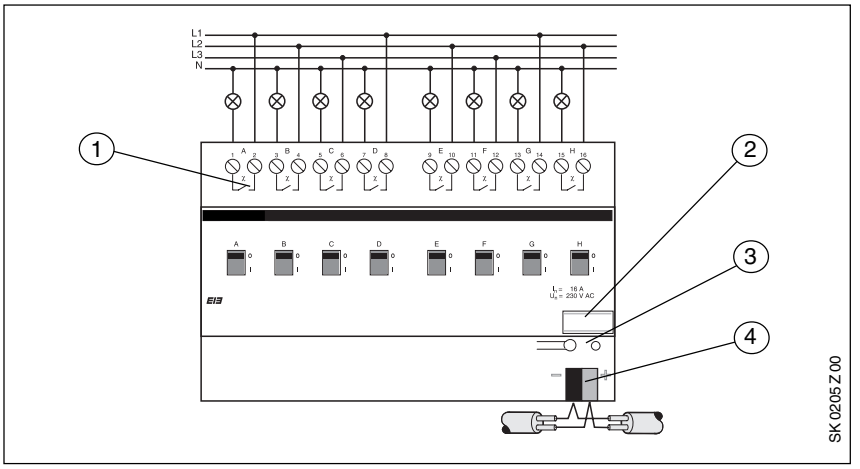
Wiring diagramm



1 Connecting terminals for Outputs A … H
2 Marker tags
3 Programming push button and LED
4 Bus terminal

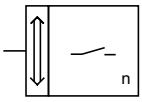
Note

Caution: Prior to programming, service release A of ETS2 V1.1 or higher must be installed on the commissioning-PC. If this is not carried out, the device cannot function and can no longer be programmed.

In order to avoid the danger of electric shock due to feedback from various external conductors, an all-pole disconnection must be complied with.

The basic time delay is extended if the outputs are switched several times in succession.

Switch Logic Status Time /5



Selection in ETS2

– ABB
  └Output
    └Binary output, 8-fold

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The application program makes the same number of parameters and communication objects available for each output. Depending on the settings selected in the individual parameters, various communication objects and parameters are displayed or hidden.

Switch

In the default setting, the actuator switches the relay on when it receives a telegram with the value “1” and switches it off on receipt of a telegram with the value “0”. If the parameter “Switching mode” is set to “normally closed contact”, the actuator switches the relay on when it receives a telegram with the value “0” and switches it off on receipt of a telegram with the value “1”.

Status

The individual outputs can send their status on the bus. The parameter “Operation mode” must be set to “switch with active status feedback“ in order to do so. In this mode, the current output status is sent via a further communication object “Output ... / Status telegr.”. Depending on the setting selected in the parameter “Send status feedback”, this object can always send its status on the bus or only if the value changes.

In the setting “always”, if the “Switch” object receives a telegram that does not cause a change at the output, the status object continues to send, regardless of its status. This status signal is also sent even if the same status has previously been sent. In the setting “only if value changes”, the output status is only sent after a change in the output value.

It is also possible to invert the status response. As a result, a “0” is sent after switching on while a “1” is sent after switching off.

Logic

A logic AND or a logic OR function can be selected with the parameter “Logical connection”. In both cases, ETS2 displays an additional communication object for the output. The actuator then links the values of communication objects 0 and 8 for output A and objects 1 and 9 for output B etc. and switches the relay according to the result.

The parameter “Invert object no. ...” is available to implement for example a logic AND or logic OR function with an inverted input.

Normally all communication objects have the value “0” after bus voltage recovery. If a logical connection has been assigned, it is possible to specify a definite value using the parameters “Value of object no. 8/.../no. 15 at bus voltage recovery”. The logical connection is evaluated immediately after bus voltage recovery.

Time

A time function can be assigned separately to each output. The parameter “Time function” must therefore be activated. In case a time function is assigned, it is possible to choose between a staircase lighting function and an ON/OFF delay. If a logical connection has already been assigned, only an ON and/or OFF delay can be assigned.

The time for the staircase lighting function and the ON/OFF delay is calculated using a base and factor. The smallest possible base and the largest possible factor should be selected when setting these two values.

The following applies for both time function: after the receipt of each telegram that triggers a time function, the respective time function is restarted.

Staircase lighting function

The staircase lighting function is activated by a telegram with the value “1” at the “Switch” communication object. After the set time, the output is automatically switched off again.

In addition, it is possible to activate or deactivate the staircase lighting function via the communication object “Operation mode”. The parameter “Staircase lighting function can be activated/deactivated by object no. …” must be set to “yes” so that the communication object “Operation mode” can be enabled. If a “0” is sent to this object, the staircase lighting function is activated. If a “1” is sent, it is deactivated.

If the staircase lighting function is activated and a “1” is sent to the “Operation mode” object, the staircase lighting function remains active until the set period has elapsed. It is then deactivated and the actuator output can be switched on permanently with a “1” to the “Switch” communication object or permanently switched off with a “0”.

If the output is switched on and a “0” is sent to the “Operation mode” object, the staircase lighting function switches on and the output is switched off after the preset time.

With the parameter “Invert object no. ...”, it is also possible to invert the “Operation mode” object. In this case, the staircase lighting function switches on with a “1” and switches off again with a “0”.

ON/OFF delay

If the type of the time function is set to “switch ON/OFF delay”, the output switches on with the set ON delay after the receipt of a “1” at the “Switch” communication object. If a “0” is received at the “Switch” object, the output switches off with the set delay.

If a logical connection has been assigned, the ON delay only becomes active once the logical condition has been met. The OFF delay is only active when the logical condition is no longer being met.

Default

The default position of the relay contact on bus voltage failure and recovery can be set separately for each output. The two parameters “Preferred position at ...” are available for this purpose. This setting refers to the relay contact and is independent of the setting “normally opened contact” or “normally closed contact” that has been selected for the switching mode.

Bus voltage failure/recovery

There is the possibility with the general parameter “Inactive waiting time after bus voltage recovery” to set the period after which the execution or sending of incoming telegrams shall be triggered again after bus voltage recovery.

The behaviour after bus voltage recovery can be set separately for each output with the parameter “Value of obj. no. ... at bus voltage recovery”. Directly after bus voltage recovery, the individual outputs assume the set default positions of the contacts.

During the inactive waiting time, incoming telegrams are registered but not evaluated. Once the waiting time has elapsed, the objects assume the value that has been defined in the parameters “Value of obj. no. ... at bus voltage recovery”. If however this parameter has been set to “read value via EIB”, the actuator sends a read telegram and then assumes the value of the response telegram.

If the parameter “Preferred position after inactive waiting time” is set at “depending on obj. no. …”, the output contact is switched according to the value of object no. … . If the parameter “Preferred position after inactive waiting time” is set at “unchanged”, the output contact remains in the position that has been set for bus voltage recovery until new telegrams are received via the EIB.

After the programming of the device the default position of the outputs is open (switched off). In the following inactive waiting time the devices behave as after bus voltage recovery.

Communication objects

No.	Type	Object name	Function
0	1 bit	Output A	Switch
1	1 bit	Output B	Switch
2	1 bit	Output C	Switch
3	1 bit	Output D	Switch
4	1 bit	Output E	Switch
5	1 bit	Output F	Switch
6	1 bit	Output G	Switch
7	1 bit	Output H	Switch

Communication objects
with status response

No.	Type	Object name	Function
…			
16	1 bit	Output A	Status telegr.
17	1 bit	Output B	Status telegr.
18	1 bit	Output C	Status telegr.
19	1 bit	Output D	Status telegr.
20	1 bit	Output E	Status telegr.
21	1 bit	Output F	Status telegr.
22	1 bit	Output G	Status telegr.
23	1 bit	Output H	Status telegr.

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Communication objects
with inverted status response

No.	Type	Object name	Function
…			
16	1 bit	Output A	Invert status telegr.
17	1 bit	Output B	Invert status telegr.
18	1 bit	Output C	Invert status telegr.
19	1 bit	Output D	Invert status telegr.
20	1 bit	Output E	Invert status telegr.
21	1 bit	Output F	Invert status telegr.
22	1 bit	Output G	Invert status telegr.
23	1 bit	Output H	Invert status telegr.

Communication objects
with logical OR connection

No.	Type	Object name	Function
0	1 bit	Output A	Logical OR connection
1	1 bit	Output B	Logical OR connection
2	1 bit	Output C	Logical OR connection
3	1 bit	Output D	Logical OR connection
4	1 bit	Output E	Logical OR connection
5	1 bit	Output F	Logical OR connection
6	1 bit	Output G	Logical OR connection
7	1 bit	Output H	Logical OR connection
8	1 bit	Output A	Logical OR connection
9	1 bit	Output B	Logical OR connection
10	1 bit	Output C	Logical OR connection
11	1 bit	Output D	Logical OR connection
12	1 bit	Output E	Logical OR connection
13	1 bit	Output F	Logical OR connection
14	1 bit	Output G	Logical OR connection
15	1 bit	Output H	Logical OR connection

Communication objects
with logical AND connection

No.	Type	Object name	Function
0	1 bit	Output A	Logical AND connection
1	1 bit	Output B	Logical AND connection
2	1 bit	Output C	Logical AND connection
3	1 bit	Output D	Logical AND connection
4	1 bit	Output E	Logical AND connection
5	1 bit	Output F	Logical AND connection
6	1 bit	Output G	Logical AND connection
7	1 bit	Output H	Logical AND connection
8	1 bit	Output A	Logical AND connection
9	1 bit	Output B	Logical AND connection
10	1 bit	Output C	Logical AND connection
11	1 bit	Output D	Logical AND connection
12	1 bit	Output E	Logical AND connection
13	1 bit	Output F	Logical AND connection
14	1 bit	Output G	Logical AND connection
15	1 bit	Output H	Logical AND connection

Communication objects
with inverted logical connection

No.	Type	Object name	Function
…			
8	1 bit	Output A	Invert logical ... connection
9	1 bit	Output B	Invert logical ... connection
10	1 bit	Output C	Invert logical ... connection
11	1 bit	Output D	Invert logical ... connection
12	1 bit	Output E	Invert logical ... connection
13	1 bit	Output F	Invert logical ... connection
14	1 bit	Output G	Invert logical ... connection
15	1 bit	Output H	Invert logical ... connection

Communication objects
with activation/deactivation of staircase lighting function

No.	Type	Object name	Function
…			
8	1 bit	Output A	Operation mode
9	1 bit	Output B	Operation mode
10	1 bit	Output C	Operation mode
11	1 bit	Output D	Operation mode
12	1 bit	Output E	Operation mode
13	1 bit	Output F	Operation mode
14	1 bit	Output G	Operation mode
15	1 bit	Output H	Operation mode

Communication objects
with inverted activation/deactivation of staircase lighting function

No.	Type	Object name	Function
…			
8	1 bit	Output A	Invert operation mode
9	1 bit	Output B	Invert operation mode
10	1 bit	Output C	Invert operation mode
11	1 bit	Output D	Invert operation mode
12	1 bit	Output E	Invert operation mode
13	1 bit	Output F	Invert operation mode
14	1 bit	Output G	Invert operation mode
15	1 bit	Output H	Invert operation mode

Parameters
The default setting for the values is **printed in bold type.**

General:	
– Inactive waiting time after bus voltage recovery:	**5 s** / 10 s / 15 s / ... / 60 s
– At bus voltage recovery, during this time, no telegrams will be sent and incoming telegrams will not be executed	
Separate for each output (Output A is used here as an example):	
– Switching mode	**normally opened contact** normally closed contact
– Operation mode	**switch** switch with active status feedback
only if status response is selected:	
– Invert status feedback	yes **no**
– Send status feedback	always **only if value changes**
– Logical connection	**no logical connection** logical OR connection logical AND connection
only if logical connection is assigned:	
– Invert object no. 8	yes **no**
– Value of obj. no. 8 at bus voltage recovery	read value via ABB i-bus EIB **logic 0** logic 1
– Value of obj. no. 0 at bus voltage recovery	read value via ABB i-bus EIB **logic 0** logic 1
– Preferred position at bus voltage failure	contact opened contact closed **contact unchanged**
– Preferred position at bus voltage recovery	contact opened contact closed **contact unchanged**
– Preferred position after inactive waiting time	**unchanged** depending on obj. no. 0

Parameters
The default setting for the values is **printed in bold type.**

Output A - time	
– Time function	**deactivated** activated
Note: If a logical function is chosen, no staircase lighting function is available.	
only if time function is activated:	
– Type of time function	**staircase lighting** switch ON/OFF delay
only for staircase lighting function:	
– Time base	**130 ms** / 260 ms / ... / 35 min / 1.2 h
– Factor for duration of staircase lighting (5...127)	**5**
– Staircase lighting function can be activated/deactivated by object no. 8	yes **no**
only if “yes” is selected:	
– Invert obj. no. 8	yes **no**
– Value of obj. no. 8 at bus voltage recovery	read value via ABB i-bus EIB **logic 0** logic 1
only for ON/OFF delay:	
– Time base	**130 ms** / 260 ms / ... / 35 min / 1.2 h
– Factor for switch ON delay (0…127)	**0**
– Factor for switch OFF delay (0…127)	**0**