



The dimming actuator is a DIN rail mounted device for insertion in a distribution board. The connection to the EIB is established via a bus connecting terminal.

It has two independent channels. They can dim different luminaires (load types) as the dimmer has both a phase-aligned and phase-controlled dimming function available.

Using automatic load detection, the device is able to set its output to various loads. It then adopts the operating mode of phase-aligned dimmer or phase-controlled dimmer.

## Technical Data

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### Power supply

### Operating and display elements

- EIB

24 V DC, via the bus line

- LED (red) and push button

for assigning the physical address

### Outputs

- Dimming outputs

2

- Output voltage

230 V AC, dimmed via phase alignment or phase control

- Max. output capacity

(up to 45°C ambient temperature)

300 W (VA) per output

- Min. output capacity

500 W (VA), only one output is connected

- Max. leakage loss

40 W (VA) per output

- Load circuits

5 W

- Phase connection

2 screw terminals each

### Connections

- Wire range

2 terminals for the connection of phase and neutral conductor

- EIB

2 terminals for looping through

0.2 - 2.5 mm<sup>2</sup>

1 bus connecting terminal (included with supply)

### Type of protection

- IP 20, EN 60 529

### Protection class

- II

### Ambient temperature range

- Operation

- 5 °C ... 45 °C

- Storage

-25 °C ... 55 °C

- Transport

-25 °C ... 70 °C

### Design

- Modular installation device, proM

### Housing, colour

- Plastic housing, grey

### Mounting

- on 35 mm mounting rail, DIN EN 50022

### Dimensions

- 90 x 72 x 64 mm (H x W x D)

### Mounting depth/width

- 68 mm / 4 modules at 18 mm

### Weight

- 0.250 kg

### Certification

- EIB-certified

### CE norm

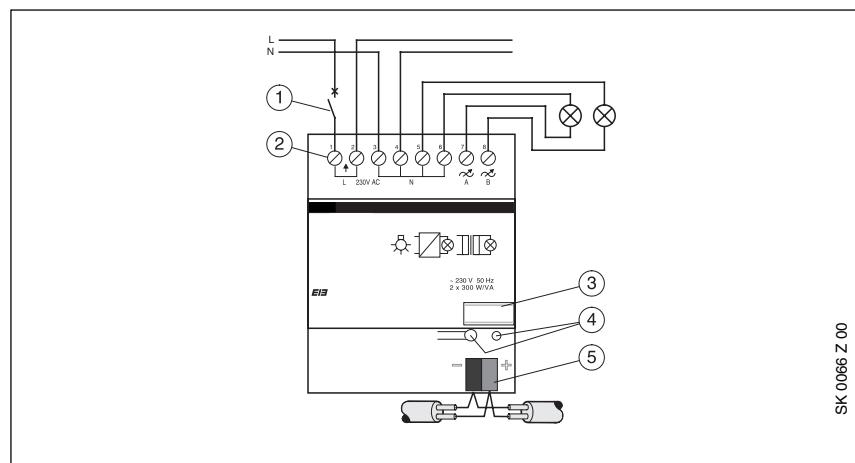
- in accordance with the EMC guideline and the low voltage guideline

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Application programs	Number of communication objects	Max. number of group addresses	Max. number of associations
Dim Stairc.fct. Slave /1	16	43	43

## Circuit diagram

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1 Back-up fuse, 10 A  
2 Supply terminals  
3 Labelling fields

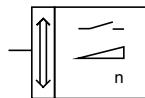
4 Programming LED, push button  
5 Bus connecting terminal

## Note

Both outputs A and B can operate different load types. The mixed operation of inductive and capacitive loads on the same output is however not permitted.

If the device does not function during the commissioning phase, the bus terminal on the dimmer should be removed and reinserted. The device then carries out a new load test.

**Caution:** Prior to programming, service release B of ETS2 V1.1 or higher must be installed on the commissioning PC. If this is not taken into account, the device cannot function and can no longer be programmed.

**Dim Stairc.fct Slave /1**

The application program makes the same parameters and communication objects available to the two outputs.

Different communication objects are displayed depending on the setting in the parameters.

With the two parameters "Lower dimming threshold ..." and "Upper dimming threshold ...", it is possible to limit the setting range. It is thus possible to adapt the dimming actuator to a wide variety of luminaires.

**Selection in ETS2**

- ABB
  - └ Illumination
    - └ Dimmer

The dimmer has a "soft start" function to protect the lamps when they are switched on. The setting "switch on softly" means that no sudden changes in the brightness can be carried out at the outputs.

The dimming actuator carries out an initialisation phase of approx. 3 s after a reset or after commissioning. This is followed by the automatic load detection during which the actuator checks the loads that are connected to the outputs. The outputs are tripped briefly. This causes the lamps to flicker in most cases. After the detection, the dimming actuator selects phase-controlled or phase-aligned dimming as the operating mode.

**Switch**

The dimmer is switched on via the 1 bit communication object "Switch / status". Depending on the setting in the parameter "Switch on via object ... with", the dimmer is either switched on with the "last brightness value" or a "predefined brightness value". The predefined value can be set between 0.4% (value "0") and 100% (value "255").

It is possible to specify the behaviour of the dimmer when it switches on and off. The starting values can be dimmed on or switched on softly. On receipt of an "Off" telegram, the dimmer can immediately switch the channel off or select "dimming off" or "soft off".

**Dim**

With the 4 bit communication object "Relative dimming", the dimming actuator can be dimmed relatively in accordance with EIS 2.

The period for passing the dimming range from minimum to maximum brightness is specified with the parameter "Time duration for passing the dimming range". The factor is set at 2 by default. With a fixed base (approx. 2 s), a total dimming time of approx. 4 s is produced.

If the actuator is switched off, it can be dimmed on via the 4 bit object, provided that the parameter "If dimming UP output switches" is set to "on". If "not on" is selected, the actuator can only be switched on via the 1 bit or 1 byte object. It can also be parameterised whether the output should be switched off or not when it reaches its lower dimming threshold. If it should also be switched off via the 4 bit object, the parameter "If dimming DOWN and value  $\leq$  lower dimming threshold output switches" should be set to "off".

**Brightness value**

With the 1 byte communication object "Brightness value / status", it is possible to preselect one of 256 brightness values in a range between 0 and 255. These values can be switched on softly or dimmed on.

In a similar way to relative dimming, the setting range can be limited with the two parameters "Lower dimming threshold ..." and "Upper dimming threshold ...".

It can also be indicated whether the output should be switched off on receipt of a telegram when the brightness value = 0.

It can also be set whether it should be switched on with a brightness value  $\geq 1$ .

**Status**

The dimming actuator sends its current status via the 1 bit object "Switch / status". The status report is carried out if it is switched on or off via one of its objects. This also happens if it is switched on via its 1 bit object. The sending of the status is used for example to update status LEDs on switch sensors. In this case, it should be ensured that the transmit flag has been set and that the parameter "After switching ON/OFF object ... transmits" has been set to "its status".

The 1 byte communication object “Brightness value / status” can also be used to send the current status. A change in the brightness value is sent if the parameter “After dimming object ... transmits” has been set to “the current brightness value”.

If the slave function has been switched on, the status objects are not sent.

#### Staircase lighting

The channels of the dimming actuator can be assigned a staircase lighting function. The ETS2 program makes the 1 bit object “Switch / status” available as well as an additional 1 bit object “Permanent ON”.

If a telegram with the value “1” is received at the switch object, the dimming actuator activates its output for the staircase lighting period. The period is defined in the parameters with a base and a factor:

$$\text{Duration of staircase lighting} = \text{Base} * \text{Factor}$$

If a further “On” signal is received during this period, the time is restarted.

Once the staircase lighting time has elapsed, the dimming down time switches on. This means that the staircase lighting is not switched off immediately but is slowly dimmed down to a brightness value of 20%. There is thus sufficient time to reach the next light switch. The duration of the dimming down time is specified with the parameter “Time for dimming DOWN after enlightenment”. The base for this period is preset at 2 s. If a brightness value of 20% is reached, the actuator switches off the output.

The object “Permanent ON” is available to keep the staircase lighting activated. If a telegram with the value “1” is received, the dimming actuator switches its output on continually. This function represents the “Permanent ON button” of a conventional staircase lighting timer.

It is also possible to send the status during the staircase lighting time if required.

#### Slave

The slave function enables the integration of a dimmer into a constant lighting control system in connection with the lighting controller LR/S 2.2.1.

To make the slave objects available, it is necessary to activate the slave function via the parameters for the respective output.

This function can be switched on or off via the bus using the object “Slave activation/deactivation”. A telegram with the value “1” switches the function on while the value “0” switches it off again.

If the slave function is enabled, the dimmer can only be controlled via the object “Brightness value of slave”. It can be set whether it is switched off with the object value “0”.

The status report is not carried out via the switch object. The brightness objects 4 and 5 are only updated when the slave function is disabled.

#### Preset

Presets designate predefined brightness values. Brightness values can be recalled on receipt of a telegram at the 1 bit communication object “Preset ...”. It is thus possible to create fixed lightscenes without a great deal of effort or expense.

The preset objects can be hidden or displayed via the parameter settings. 2 preset objects, each with a brightness value, are available for each channel.

The corresponding brightness value can be dimmed on or switched on softly with the object value “1”, depending on the setting in the parameters “Brightness values” and “Switch on values”.

## Bus voltage failure/recovery

On bus voltage failure, the dimming actuator switches off all the outputs. The current brightness values are stored beforehand in the memory of the dimming actuator.

It is possible to set the behaviour on bus voltage recovery. It is possible to switch on with the last brightness value or a predefined brightness value.

If the bus voltage does not have a back-up supply, the initialisation phase is carried out after bus voltage recovery or after a reset. This is followed by the automatic load detection.

If the mains voltage fails, the following situations may occur:

- The bus voltage has a back-up supply:  
The previous brightness value is immediately selected on mains recovery.
- The mains failure is shorter than 10 s:  
After mains recovery, the dimmer restores the previous brightness value and the operating mode (phase alignment or phase control) remains unchanged.
- The mains failure lasts longer than 10 s:  
After mains recovery, the dimmer carries out a reset with automatic load detection.

The error objects are updated in conjunction with the load detection.

## Error report/code

In the event of an error, the actuator sends detailed information about its operating state via the communication objects "Error report" and "Error code".

As soon as the 1 bit object "Error report" has modified its value to "1", this means that an error has occurred. The 1 byte object "Error code" provides exact information about the type of error. Each bit in the error code stands for a different type of error. Eight different errors can thus be determined:

Bit 0 :	Non-permissible load during load detection at output A
Bit 1 :	Non-permissible load during load detection at output B
Bit 3 :	Low voltage at the 230 V power supply
Bit 4 :	Excess load or low load during operation at output A
Bit 5 :	Excess load or low load during operation at output B
Bit 6 :	Excess temperature in device ( $T > 70^{\circ}\text{C}$ )
Bit 7 :	Critical temperature overload in device ( $T > 90^{\circ}\text{C}$ )

**Communication objects**

No.	Type	Object name	Function
0	1 bit	Output A	Switch
1	1 bit	Output B	Switch
2	4 bit	Output A	Relative dimming
3	4 bit	Output B	Relative dimming
4	1 byte	Output A	Brightness value
5	1 byte	Output B	Brightness value
14	1 bit	General	Error report
15	1 byte	General	Error code

**Communication objects**  
with activated status function

No.	Type	Object name	Function
0	1 bit	Output A	Switch / status
1	1 bit	Output B	Switch / status
2	4 bit	Output A	Relative dimming
3	4 bit	Output B	Relative dimming
4	1 byte	Output A	Brightness value / status
5	1 byte	Output B	Brightness value / status

**7****Communication objects**  
with activated staircase lighting  
function

No.	Type	Object name	Function
...			
6	1 bit	Output A	Permanent ON
7	1 bit	Output B	Permanent ON
...			

**Communication objects**  
with activated presets

No.	Type	Object name	Function
...			
8	1 bit	Output A	Preset 1
9	1 bit	Output B	Preset 1
10	1 bit	Output A	Preset 2
11	1 bit	Output B	Preset 2
...			

**Communication objects**  
with activated slave function

No.	Type	Object name	Function
...			
12	1 byte	Output A	Brightness value of slave
13	1 byte	Output B	Brightness value of slave
14	1 bit	Output A	Slave activation/deactivation
15	1 bit	Output B	Slave activation/deactivation
...			

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**Parameters**

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

Separate for both outputs:

- Output is **deactivated**  
**activated**

Only if output is activated:

- After switching ON/OFF object ... transmits **not its status**  
its status

Only if status is sent:

- Status report after telegram to object ... **send always**  
transmit only after changing

- After dimming object ... transmits **not the current brightness value**  
the current brightness value

- Staircase lighting is **deactivated**  
**activated**

Only if staircase lighting is activated:

- Duration of staircase lighting: Base **1.0 s / 2.1 s / ... / 1.1 min / ... / 1.2 h**
- Duration of staircase lighting: Factor **5**

- Time for dimming DOWN after enlightenment **60**

- Time for passing from 100%...0% Duration = Entry \* 2 s **<--- NOTE**

Range of possible entries 1...255

- Brightness value for staircase lighting 52...255 corresponds to 20%...100%

- Staircase lighting after bus recovery **switched off**  
**switched on**

- Brightness value at permanent-on 52...255 corresponds to 20%...100%

- In combination with centralised lighting control output works **not as slave**  
as slave

Only if output is operated as a slave:

- At bus voltage recovery slave function is **not activated**  
**activated**

Dimming general:

- Time duration for passing the dimming range (0...100%) **2**

- Duration = Entry \* 2 s **<--- NOTE**

- Range of possible entries 1...255

- At bus voltage recovery dimmer is **switched off**  
**switched on**

Only if dimmer is switched on:

- Switch on with **last brightness value**  
predefined brightness value

Only if value is predefined:

- Brightness value 1...255 corresponds to 0.4%...100% **255**

- Switch on via object ... with **last brightness value**  
**predefined brightness value**

Only if value is predefined:

- Brightness value 1...255 corresponds to 0.4%...100% **255**

- Switch on values

- Brightness values **dimming on**  
switch on softly

- Switch off mode **dimming on**  
switch on softly

- Brightness values **switch off**  
dimming off

- Switch off mode **soft off**

**Parameters**

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

## Dimming:

## Relative dimming

- Lower dimming threshold **51**  
1...127 corresponds to 0.4%...49.8%
- Upper dimming threshold **255**  
128...255 corresponds to 50.2%...100%
- If dimming DOWN and value < lower dimming threshold output switches **not off**  
off
- If dimming UP output switches **not on**  
on

## Brightness value

- Lower dimming threshold **51**  
1...127 corresponds to 0.4%...49.8%
- Upper dimming threshold **255**  
128...255 corresponds to 50.2%...100%
- Brightness value = 0 switches output **not off**  
off
- Brightness value >= 1 switches output **not on**  
on

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## Preset:

## Separate for both presets:

- Activate preset ... via bus telegram **no**  
yes
- Only if "yes" is selected:
  - Brightness values **dimming on**  
switch on softly
  - Brightness value at object value 0 **100**  
1...255 corresponds to 0.4%...100%
  - Brightness value at object value 1 **255**  
1...255 corresponds to 0.4%...100%