ABB i-bus® EIB

Light Controller/Switch/Dim Actuator, 2-fold, 16 A, MDRC LR/S 2.2.1, GH Q631 0036 R0111

The light controller/switch dim actuator is a DIN rail mounted device for insertion in the distribution board. It is connected to the EIB via a bus connecting terminal.

It is used to switch and dim luminaires with electronic ballast devices with 0 to 10 V control inputs. It has two independent channels.

The device operates passively i.e. its 0 to 10 V output functions like a controlled resistor. The controlled electronic ballast supplies the control voltage.

When combined with the light sensor, the device can be used as a 2-fold light controller for constant light control in offices.

The device does not require an additional power supply. One relay contact per channel is used for switching the lighting circuit on or off.

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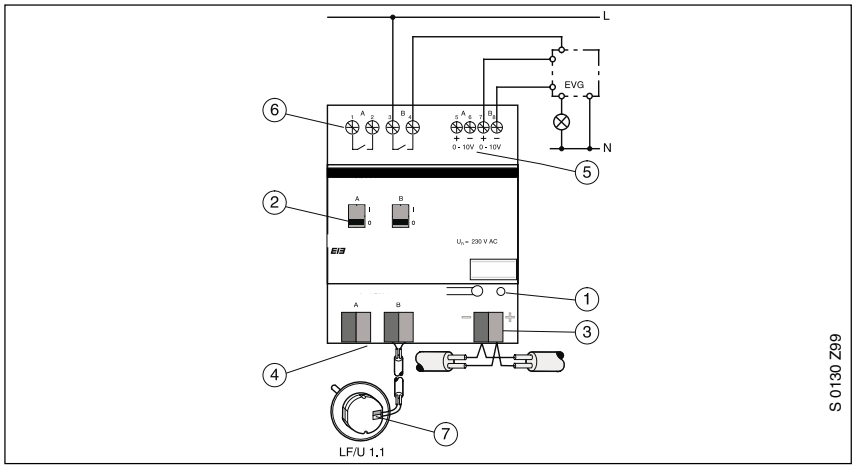
Technical data

Power supply	– EIB	24 VDC, via the bus line
Operating and display elements	– Red LED and push button	for assigning the physical address
	– 2 position indicators (also used for manual operation)	ON/OFF
Inputs	– Signal input	2, for light sensor LF/U 1.1
	– Operating range of controller	typ. 200 … 1200 lux
Outputs	– Signal output	2, passive 0 … 10 V DC for el. ballast
	– Load capability	< 30 mA
	– Cable length	max. 100 m
Load circuit	– Switching voltage	230 V AC
	– Switching capacity	16 A/AC 1; 10 A/AC 3
Connections	– Signal 0 … 10 V	2 x 2 screw terminals
	– Relay contacts	2 x 2 screw terminals
	– Wire range	0.5 - 2.5 mm^2 single core 0.5 - 2.5 mm^2 finely-stranded
	– EIB	1 bus connecting terminal, red/black
	– Light sensor	2 connecting terminals, white/yellow
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, pro*M*	
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	– 0.190 kg	
Certification	– EIB-certified	
CE norm	– in accordance with the EMC guideline and the low voltage guideline	

Application programs	Number of communication objects	Max. number of group addresses	Max. number of associations
Dim Switch Control /1	8	18	18
Dim Switch Control /2	8	18	18
Dim Switch Control Limits /1	8	18	18
Dim Switch Slave /1	14	30	30

Circuit diagram



1 Programming LED and push button
2 Position indicators
3 Bus terminal
4 Connection for light sensor
5 0 … 10 V signal for electr. ballast
6 Load circuit
7 Light sensor

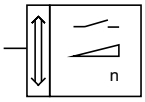
Note

When calculating and planning the artificial lighting of rooms, it is necessary to observe the technical requirements for office lighting in DIN 5035, the 7/3 guideline for working and business premises as well as other guidelines.

The lighting engineer uses his expert knowledge to ensure that the lighting fulfils these requirements.

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.

Dim Switch Control /1



Selection in ETS2

– ABB
  └Illumination
    └Dimmer

The application program makes the same number of parameters and communication objects available for the two outputs.

The display of the communication objects is dependent on the parameter settings.

The relay contact can be selected as a normally open or normally closed contact for various applications.

Control

If the function “closed loop control and dimmer” is selected in the general parameters, the actuator can be used as a light controller. The current brightness value is conveyed via the input of the light sensor.

In the operation mode “closed loop control and dimmer”, there are further parameters and a 1 bit communication object available. It can be set via the parameters whether the controller uses the respective brightness value of its own channel as the actual value or uses the smallest brightness value of channels A and B.

The closed loop control can be carried out in two ways:
1. The brightness setpoint is set once and may not be changed by the user.
2. The brightness setpoint may be changed temporarily by the user. To do so, the parameter “After changing the setpoint by dimming UP/DOWN” must be set to “the new setpoint is used”. This new brightness setpoint is maintained until the next switching command is sent.

To avoid disruptive fluctuations in the brightness level, the closed loop control (deviation between setpoint and actual value) can last several minutes.

Setting the light controller

The light controller is set by carrying out the following steps:
– Darken the room.
– Change the light intensity by dimming up or down until the room reaches the required brightness.
– Send a telegram with the value “1” to the “Set setpoint” object e.g. via a separate switch sensor.
– The brightness value that is measured via the light sensor is accepted as the new setpoint.
– The lighting becomes significantly darker to indicate that the setting process has been successful and then slowly sets itself to the new brightness setpoint.

Further dimmers can be controlled via the 1 byte object. To do so, the parameter “Via object ..., the output value for the closed loop control is” should be set to “sent”. The light controller/switch dim actuator then sends its value via this object. Phase controlled or phase aligned dimmers can therefore be included in the closed loop control.

To ensure that the bus load remains low when sending out telegrams to other dimmers, the reaction to extreme changes in the brightness level is made considerably slower.

The control response on bus voltage recovery can be set. The controller can be regulated to a new brightness state or the closed loop control can be switched off.

Dim

With the 4 bit communication object, the light controller/switch dim actuator can be relatively dimmed in accordance with EIS.

The duration for passing the dimming range from minimum to maximum brightness can be defined in the parameters. It is by default set at approx. 4 s.

The setting range is limited with the two parameters “Lower dimming threshold ...” and “Upper dimming threshold”. It is therefore possible to adapt the light controller/switch dim actuator to a wide variety of luminaires.

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If the light controller/switch dim actuator is switched off, it can be dimmed on via a telegram to the 4 bit object, provided that the parameter “If dimming UP, the relay switches” is set to “ON”. In the setting “not ON”, the actuator can only be switched on by the 1 bit or 1 byte object. In addition, it can also be set whether the dimmer should be switched off or not when it falls below its lower dimming threshold. If it should be switched off via the 4 bit object, the parameter “If dimming DOWN and value <= lower threshold, the relay switches” should be set to “OFF”.

If switching on with a dimming telegram, it should be ensured that the starting value of the 0-10 V output is at least as high as the minimum brightness value of the luminaire. The initial value can be set using the parameter “Starting value for 0 ... 10 V output”.

Brightness value

With the 1 byte communication object, it is possible to directly preselect one of 256 brightness values in a range from 0 to 255. It is possible to dim or jump to these values.

In addition, it can further be indicated whether a telegram with the brightness value = 0 should switch the relay off or not. It can also be set whether it is switched on with a brightness value ≥ 1.

Switch

The dimmer is switched on with a preset brightness value via the 1 bit communication object. This value is defined in the parameters.

If the light controller/switch dim actuator is switched on via one of its objects, it will send its status via its
1 bit object. This also happens if it is switched on via its 1 bit object. The sending of the status serves for example to update status LEDs on switch sensors. In this case, it should be ensured that the communication flag has been set and that the parameter “After switching ON/OFF by relative/absolute dimming or controlling, obj. ...” is set to “sends its status”.

The switching state at the output can be set on bus voltage failure and recovery. It can be switched on or off or remain unchanged. In the default setting, it remains unchanged.

On bus voltage failure, the 0 ... 10 V output becomes high-resistant. It is thus guaranteed that the electronic ballast device dims the lamp to its maximum brightness value.

Communication objects
for dimming mode

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

Communication objects
for dimming and closed loop control

No.	Type	Object name	Function
...			
6	1 bit	Channel A	Set setpoint
7	1 bit	Channel B	Set setpoint

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

Separate for both channels:	
General:	
Channel is	**deactivated** activated
only if channel is activated:	
Function	dimmer **closed loop control and dimmer**

Parameters
for “dimmer” function only

For dimmer function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
– Starting value for 0 ... 10 V output 0 ... 51 corresponds to 0 ... 20 %	**25**
Dimmer general:	
– Brightness values	**dimming to value** jumping to value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
– At bus voltage recovery, dimmer is	**switched OFF** switched ON
only if dimmer is switched on:	
– Brightness value 1 ... 255 corresponds to 0.4 ... 100 %	**128**
– Switch ON via object ... with brightness value 1 ... 255 corresponds to 0.4 ... 100%	**127**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**255**
– If dimming down and value <= lower threshold, the relay switches	**not OFF** OFF
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– On telegram to obj. ... with brightness value = 0, the relay switches	**OFF** not OFF
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**

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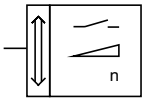
Parameters
for “closed loop control and dimmer” function

For closed loop control and dimmer function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
– Starting value for 0 ... 10 V output 0 ... 51 corresponds to 0 ... 20 %	**25**
Closed loop controller:	
– As actual value is used	**sensor value of the own channel** lower sensor value of channels 1 & 2
– Via object ..., the output value for the closed loop control is	**not sent** sent
only if output value is sent:	
– Channel A operates as master and is able to control via object ... other dimmers	**<--- NOTE**
– After bus voltage recovery the closed loop control is	**switched OFF** switched ON
– After changing the setpoint by dimming UP/DOWN	the new setpoint is used **the closed loop control is deactivated**
– If actual value > setpoint and control output = 0 (too bright), then	**the relay not switched off** the relay switched off
Dimmer general:	
– Brightness values	**dim to value** jump to value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**255**
– If dimming DOWN and value < = lower threshold, the relay switches	**not OFF** OFF
if value <= lower dimming threshold:	
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– Brightness values	**dim to value** jump to value
– On telegram to obj. ... with brightness value = 0, the relay switches	**OFF** not OFF
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**

Dim Switch Control /2



Selection in ETS2

– ABB
  └Illumination
    └Dimmer

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

The display of the communication objects is dependent on the parameter settings.

The relay contact can be selected as a normally open or normally closed contact for various applications.

Control

If the function “closed loop control and dimmer” is set in the general parameters, the actuator can be used as a light controller. The current brightness value is determined via the input of the light sensor.

In the operation mode “closed loop control and dimmer”, there are further parameters and a 1 bit communication object available. It can be set via the parameters whether the controller uses the respective brightness value of its own channel as the actual value or uses the smallest brightness value of channels A and B.

The closed loop control can be carried out in two ways:

1. The brightness value is set once and may not be changed by the user.
2. The brightness setpoint may be changed temporarily by the user. To do so, the parameter “After changing the setpoint by dimming UP/DOWN” must be set to “the new setpoint is used”. This new brightness setpoint is maintained until the next switching command is sent.

Once it has received an “On” telegram via the switching object, the light controller switches on for the first time and then adjusts to the setpoint value.

To avoid disruptive fluctuations in the brightness level, the closed loop control (deviation between setpoint and actual value) can last several minutes.

If the daylight becomes so bright that artificial light is no longer required, the closed loop control can disconnect the relay and thus the connected luminaires.

To do so, the parameter “If actual value > setpoint and control output = 0” must be set to “the relay switched off”. If the amount of daylight should decrease, the relay can be reconnected if required. This parameter must then be set accordingly.

Setting the light controller

The light controller is set by carrying out the following steps:

– Darken the room.
– Change the light intensity by dimming up or down until the room reaches the required brightness.
– Send a telegram with the value “1” to the “Set setpoint” object e.g. via a separate switch sensor.
– The brightness value that is measured via the light sensor is accepted as the new setpoint.
– The lighting becomes significantly darker to indicate that the setting process has been successful and then slowly sets itself to the new brightness setpoint.

Further dimmers can be controlled via the 1 byte object. To do so, the parameter “Via object ..., the output value for the closed loop control is” should be set to “sent”. The light controller/switch dim actuator then sends its value via this object. Phase-controlled or phase-aligned dimmers can therefore be included in the closed loop control.

To ensure that the bus load remains low when sending out telegrams to other dimmers, the reaction to extreme changes in the brightness level is made considerably slower.

The control response on bus voltage recovery can be set. The controller can be regulated to a new brightness state or the closed loop control can be switched off.

Dim

With the 4 bit communication object, the light controller/switch dim actuator can be relatively dimmed in accordance with EIS.

The duration for passing the dimming range from minimum to maximum brightness can be defined in the parameters. It is set by default at approx. 4 s.

The setting range is limited with the two parameters “Lower dimming threshold ...” and “Upper dimming threshold ...”. It is therefore possible to adapt the light controller/switch dim actuator to a wide variety of luminaires.

If the light controller/switch dim actuator is switched off, it can be dimmed on via a telegram to the 4 bit object, provided that the parameter “If dimming UP, the relay switches” is set to “ON”. In the setting “not ON”, the actuator can only be switched on by the 1 bit or 1 byte object. In addition, it can also be set whether the dimmer should be switched off or not when it falls below its lower dimming threshold. If it should be switched off via the 4 bit object, the parameter “If dimming DOWN and value <= lower threshold, the relay switches” should be set to “OFF”.

If switching on with a dimming telegram, it should be ensured that the starting value of the 0-10 V output is at least as high as the minimum brightness value of the luminaire. The initial value can be set using the parameter “Starting value for 0...10 V output ....”.

Brightness value

With the 1 byte communication object, it is possible to directly preselect one of 256 brightness values in a range from 0 to 255. It is possible to dim or jump to these values.

In addition, it can further be indicated whether a telegram with the brightness value = 0 should switch the relay off or not. It can also be set whether it is switched on with a brightness value ≥ 1.

Switch

The dimmer is switched on with a preset brightness value via the 1 bit communication object. This value is defined in the parameters. In closed loop control mode, the initial brightness depends on the level of brightness in the room.

If the light controller/switch dim actuator is switched on via one of its objects, it will send its status via its 1 bit object. This also happens if it is switched on via its 1 bit object. The sending of the status serves for example to update status LEDs on switch sensors. In this case, it should be ensured that the communication flag has been set and that the parameter “After switching ON/OFF by relative/absolute dimming or controlling, obj. ...” is set to “sends its status”.

The switching state at the output can be set on bus voltage failure and recovery. It can be switched on or off or remained unchanged. In the default setting, it remains unchanged.

On bus voltage failure, the 0…10 V output becomes high-resistant. It is thus guaranteed that the electronic ballast device dims the lamp to its maximum brightness value.

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Communication objects
for dimming mode

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

Communication objects
for dimming and closed loop control

No.	Type	Object name	Function
...			
6	1 bit	Channel A	Set setpoint
7	1 bit	Channel B	Set setpoint

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

Separate for both channels:	
General:	
Channel is	**deactivated** activated
Only if channel is activated:	
Function	dimmer **closed loop control and dimmer**

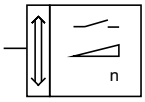
Parameters
for “dimmer” function only

For dimmer function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Switch ON via object ... with brightness value 1 ... 255 corresponds to 0.4 ... 100%	**127**
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
– Starting value for 0 ... 10 V output 0 ... 51 corresponds to 0 ... 20%	**25**
Dimmer general:	
– Brightness values	**dimming to value** jumping to value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
– At bus voltage recovery, dimmer is	**switched OFF** switched ON
Only if dimmer is switched on:	
– Brightness value 1 ... 255 corresponds to 0.4 ... 100%	**128**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**.255**
– If dimming DOWN and value <= lower threshold, the relay switches	**not OFF** OFF
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– On telegram to obj. ... with brightness value = 0, the relay switches	not OFF **OFF**
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**

Parameters
for “closed loop control and dimmer” function

For closed loop control and dimmer function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Switch ON via object ... with brightness value 1 ... 255 corresponds to 0.4 ... 100%	**127**
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
– Starting value for 0 ... 10 V output 0 ... 51 corresponds to 0 ... 20%	**25**
Closed loop controller:	
– As actual value is used	**sensor value of the own channel** lower sensor value of channels 1 + 2
– Via object ..., the output value for the closed loop control is	**not sent** sent
Only if output value is sent:	
– Channel A operates as master and is able to control via object ... other dimmers	**<--- NOTE**
– After bus voltage recovery the closed loop control is	**switched OFF** switched ON
– After changing the setpoint by dimming UP/DOWN	the new setpoint is used **the closed loop control is deactivated**
– If actual value > setpoint and control output = 0 (too bright), then	**the relay not switched off** the relay switched off
Only if relay is switched off:	
– If actual value < setpoint and control output = 0 (too dark), then	**the relay not switched on** the relay switched on
Dimmer general:	
– Brightness values	**dim to value** jump to value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**255**
– If dimming DOWN and value <= lower threshold, the relay switches	**not OFF** OFF
If value <= lower dimming threshold:	
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– Brightness values	**dim to value** jump to value
– On telegram to obj. ... with brightness value = 0, the relay switches	not OFF **OFF**
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**

Dim Switch Control Limits /1



Selection in ETS2

– ABB
  └Illumination
    └Dimmer

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

The display of the communication objects is dependent on the parameter settings.

Switch

In dimming mode, the dimmer is switched on with a preset brightness value via the 1 bit communication object. This value is defined in the parameters. In control mode, the initial brightness value is dependent on the brightness level in the room.

If the light controller/switch dim actuator is switched on via one of its objects, it will send its status via its 1 bit object. This also happens if it is switched on via its 1 bit object. The sending of the status serves for example to update status LEDs on switch sensors. In this case, it should be ensured that the communication flag has been set and that the parameter “After switching ON/OFF by relative/absolute dimming or controlling, obj. ...” is set to “sends its status”.

The relay contact can be selected as a normally open or normally closed contact for various applications.

The switching state at the output can be set on bus voltage failure and recovery.

On bus voltage failure, the 0…10 V output becomes high-resistant. It is thus guaranteed that the electronic ballast devices dims the lamp to its maximum brightness value.

Dim

With the 4 bit communication object, the light controller/switch dim actuator can be relatively dimmed in accordance with EIS2.

The duration for passing the dimming range from minimum to maximum brightness can be defined in the parameters. It is set by default at approx. 4 s.

The behaviour of the dimmer after bus voltage recovery can be set. If the dimmer should switch on after bus voltage recovery, it is also possible to set the brightness value that it switches on with.

The setting range is limited with the two parameters “Lower dimming threshold ...” and “Upper dimming threshold...”. The light controller/switch dim actuator can therefore be adapted to a wide variety of luminaires.

If the light controller/switch dim actuator is switched off, it can be dimmed on via a telegram to the 4 bit object, provided that the parameter “If dimming UP, the relay switches” is set to “ON”. In the setting “not ON”, the actuator can only be switched on by the 1 bit or 1 byte object. In addition, it can also be set whether the dimmer should be switched off or not when it falls below its lower dimming threshold. If it should be switched off via the 4 bit object, the parameter “If dimming DOWN and value <= lower threshold, the relay switches” should be set to “OFF”.

Brightness value

With the 1 byte communication object, it is possible to directly preselect one of 256 brightness values in a range of 0 to 255. It is possible to jump or dim to these values.

In addition, it can further be indicated whether a telegram with the brightness value = 0 should switch the relay off or not. It can also be set whether it is switched on with a brightness value ≥ 1.

Control

If the function “closed loop control and dimmer” is selected in the general parameters, the actuator can be used as a light controller. The current brightness value is determined via the input of the light sensor.

In the operating mode “closed loop control and dimmer”, there are further parameters and a 1 bit communication object available. It can be set via the parameters whether the controller uses the respective brightness value of its own channel as the actual value or uses the smallest brightness value of channels A and B.

The closed loop control can be carried out in two ways:

1. The brightness setpoint is set once and may not be changed by the user. If the parameter “After changing the setpoint by dimming UP/DOWN” is set to “the closed loop control is deactivated”, the closed loop control is used again after the next “On” command.
2. The brightness setpoint may be changed temporarily by the user. To do so, the parameter “After changing the setpoint by dimming UP/DOWN” must be set to “the new setpoint is used”. This new brightness setpoint is maintained until the next switching command is sent.

Once it has received an “On” telegram via the switching object, the light controller switches on for the first time and then adjusts to the setpoint value.

If the parameter “After bus voltage recovery the closed loop control is” is set to “switched ON”, the light controller is switched on after bus voltage recovery and the closed loop control is activated.

To avoid disruptive fluctuations in the brightness level, the closed loop controller (deviation between setpoint and actual value) can last several minutes.

If the daylight becomes so bright that artificial light is no longer required, the closed loop control can disconnect the relay and thus the connected luminaires. To do so, the parameter “If actual value > setpoint and control output = 0” must be set to “the relay switched off”. If the amount of daylight should decrease, the relay can be reconnected. The parameter must then be set accordingly.

Limits

The setting range is limited with the two parameters “Lower closed loop control threshold ...” and “Upper closed loop control threshold ...”. The light controller/switch dim actuator can thus be adapted to a wide variety of luminaires. If e.g. a lamp should change its luminous colour below a brightness value of 70% to the extent that the room occupant finds its unpleasant, 179 (corresponds to 70%) must be entered as the lower limit.

Setting the light controller

The light controller is set by carrying out the following steps:

– Darken the room.
– Change the light intensity by dimming up or down until the room reaches the required brightness.
– Send a telegram with the value “1” to the “Set setpoint” object e.g. via a separate switch sensor.
– The brightness value that is measured via the light sensor is accepted as the new setpoint.
– The lighting becomes significantly darker to indicate that the setting process has been successful and then slowly sets itself to the new brightness setpoint.

Further dimmers can be controlled via the 1 byte object. To do so, the parameter “Via object ..., the output value for the closed loop control is” should be set to “sent”. The light controller/switch dim actuator then sends its value via this object. Phase-controlled or phase-aligned dimmers can therefore be included in the closed loop control.

To ensure that the bus load remains low when sending out telegrams to other dimmers, the reaction to extreme changes in the brightness level is made considerably slower.

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Communication objects
for dimming mode

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

Communication objects
for dimming and closed loop control

No.	Type	Object name	Function
...			
6	1 bit	Channel A	Set setpoint
7	1 bit	Channel B	Set setpoint

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

Separate for both channels	
General:	
Channel is	**deactivated** activated
Only if channel is activated:	
Function	dimmer **closed loop control and dimmer**

7

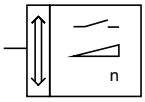
Parameters
for dimmer function only

For “dimmer” function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Switch ON via object ... with brightness value 1 ... 255 corresponds to 0.4 ... 100%	**127**
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
Dimmer general:	
– Brightness values	**dim to value** jump to value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
– At bus voltage recovery, dimmer is	**switched OFF** switched ON
Only if dimmer is switched on:	
– Brightness value 1 ... 255 corresponds to 0.4 ... 100%	**128**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**255**
– If dimming DOWN and value <= lower threshold, the relay switches	**not OFF** OFF
If value <= lower dimming threshold:	
– If dimming UP, the relay switches	**not ON** ON

Parameters
for closed loop control and dimmer function

Brightness value:	
– On telegram to obj. ... with brightness value = 0, the relay switches	not OFF **OFF**
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**
For closed loop control and dimmer function:	
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Switch ON via object ... with brightness value 1 ... 255 corresponds to 0.4 ... 100%	**127**
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
Channel A (B): Closed loop controller:	
– As actual value is used	**sensor value of the own channel** Sensor value of channel B (A) lower sensor value of channels 1+ 2
– Via object ..., the output value for the closed loop control	**not sent** sent
Only if output value is sent:	
– Channel A (B) operates as master and is able to control via object 4 (5) other dimmers	**<--- NOTE**
– After bus voltage recovery the closed loop control is	**switched OFF** switched ON
– After changing the setpoint by dimming UP/DOWN	the new setpoint is used **the closed loop control is deactivated**
– Lower closed loop control threshold 0 ... 250 corresponds to 0 ... 98%	**200**
– Upper closed loop control threshold 5 ... 255 corresponds to 2 ... 100%	**255**
Only if lower threshold = 0:	
– If actual value > setpoint and control output = 0 (too bright), then	**the relay is not switched off** the relay is switched off
Only if relay is switched off:	
– If actual value < setpoint and control output = 0 (too dark), then	**the relay is not switched on** the relay is switched on
Dimmer general:	
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 2 ... 255	**< --- NOTE**
Relative dimming:	
– Lower dimming threshold 1 ... 127 corresponds to 0.4 ... 49.8%	**51**
– Upper dimming threshold 128 ... 255 corresponds to 50.2% ... 100%	**255**
– If dimming DOWN and value <= lower threshold, the relay switches	**not OFF** OFF
If value <= lower dimming threshold	
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– Brightness values	**dimming to value** jumping to value
– On telegram to obj. ... with brightness value = 0, the relay switches	not OFF **OFF**
– On telegram to obj. ... with brightness value >= 1, the relay switches	not ON **ON**

Dim Switch Slave /1



Selection in ETS2

– ABB
  └Illumination
    └Dimmer

The application program makes the same number of parameters and communication objects available for the two outputs.

The display of the communication objects is dependent on the parameter settings.

The relay contact can be selected as a normally open or normally closed contact for various applications.

Dim

With the 4 bit communication object, the light controller/switch dim actuator can be relatively dimmed in accordance with EIS2.

The duration for passing the dimming range from minimum to maximum brightness can be defined in the parameters. It is by default set at approx. 4 s.

The setting range is limited with the two parameters “Lower dimming threshold ...” and “Upper dimming threshold...”. It is therefore possible to adapt the light controller/switch dim actuator to a wide variety of luminaires.

If the actuator is switched off, it can be dimmed on via a telegram to the 4 bit object, provided that the parameter “If dimming UP, the relay switches” is set to “ON”. In the setting “not ON”, the actuator can only be switched on by the 1 bit or 1 byte object. In addition, it can also be set whether the dimmer should be switched off or not when it falls below its lower dimming threshold. If it should be switched off via the 4 bit object, the parameter “If dimming DOWN and value ≤ lower threshold, the relay switches” should be set to “OFF”.

Brightness value

With the 1 byte communication object, it is possible to directly preselect one of 256 brightness values in a range from 0 to 255. It is possible to dim or jump to these values.

The setting range is limited with the two parameters “Lower dimming threshold ...” and “Upper dimming threshold ...”.

In addition, it can further be indicated whether a telegram with the brightness value = 0 should switch the relay off or not.

It can also be set whether it is switched on with a brightness value ≥ 1.

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Switch

The dimmer is switched on with a preset brightness value via the 1 bit communication object. This value is defined in the parameters. It is also possible to define the behaviour of the dimmer when switching on and off. The dimmer can jump or dim to the brightness values.

If the light controller/switch dim actuator is switched on via one of its objects, it will sends its status via its 1 bit object. This also happens if it is switched on via its 1 bit object. The sending of the status serves for example to update status LEDs on switch sensors. In this case, it should be ensured that the communication flag has been set and that the parameter “After switching ON/OFF by relative/absolute dimming or controlling, obj. ...” is set to “sends its status”.

The switching state at the output on bus voltage failure and recovery can also be set. It can be switched on or off or remain unchanged. In the default setting, it remains unchanged.

On bus voltage failure, the 0 ... 10 V output becomes high-resistant. It is thus guaranteed that the electronic ballast device dims the lamp to its maximum brightness value.

Slave

The slave function must be activated for the respective channel to make the slave objects available.

This function can be switched on or off via the bus using the object “Activate/ deactivate slave”.

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

There is no status response via the switching object. The brightness objects 4 and 5 are only updated once the slave function has been disabled.

Preset

Presets are preselected options that are used for example for lightscenes.

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

With the object value 1, it is possible to dim or jump to the corresponding brightness value depending on the parameter setting for “Go to brightness values/switch ON values”.

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Communication objects
for activated channel

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

Communication objects
for activated channel with slave function

No.	Type	Object name	Function
...			
6	1 byte	Channel A	Brightness value slave
7	1 byte	Channel B	Brightness value slave
8	1 bit	Channel A	Activate/deactivate slave
9	1 bit	Channel B	Activate/deactivate slave

Communication objects
for activated channel with preset

No.	Type	Object name	Function
...			
10	1 bit	Channel A	Preset 1
11	1 bit	Channel B	Preset 1
12	1 bit	Channel A	Preset 2
13	1 bit	Channel B	Preset 2

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

Separate for both channels:	
General:	
Channel is	**deactivated** activated
only if channel is activated	
– Channel has	**no slave function** slave function
– After switching ON/OFF by relative/ absolute dimming or controlling, obj. ...	**does not send its status** sends its status
– Relay functions as	**normally opened contact** normally closed contact
– Preferred position of relay at bus voltage failure	**contact unchanged** contact opened contact closed
Dimmer general:	
– After dimming, object ...	**does not send the actual bright. value** sends the actual brightness value
– Time duration for passing the dimming range (0 ... 100%)	**2**
Duration = Entry * 2s Range of possible entries 1 ... 255	**< --- NOTE**
– At bus voltage recovery, dimmer is	**switched off** switched on
only if dimmer is switched on:	
– Brightness value 1 ... 255 corresponds to 0.4 ... 100 %	**128**
– Switch ON via object ... with	**last brightness value** preset brightness value
– Brightness value 1 ... 255 corresponds to 0.4 ... 100%	**255**
– Go to brightness values/switch ON values by	**dim to** jump to
– Switch OFF behaviour	**dim OFF** switch OFF

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

Relative dimming:	
– Lower dimming threshold 0 ... 254 corresponds to 0.4 ... 99.6%	**51**
– Upper dimming threshold 1 ... 255 corresponds to 0.4% ... 100%	**255**
– If dimming DOWN and value <= lower threshold, the relay switches	**not OFF** OFF
– If dimming UP, the relay switches	**not ON** ON
Brightness value:	
– Lower dimming threshold 0 ... 254 corresponds to 0.4 ... 99.6%	**51**
– Upper dimming threshold 1 ... 255 corresponds to 0.4% ... 100%	**255**
– On telegram to obj. ... with brightn. value = 0, the relay switches	**OFF** not OFF
– On telegram to obj. ... with brightn. value >= 1, the relay switches	not ON **ON**
Preset:	
– Activation of the preset via bus telegram	yes **no**
only if preset is activated:	
– Brightness value 1 … 255 corresponds to 0.4% … 100%	**127**
only for slave function:	
– After bus voltage recovery, the slave function is	**not activated** activated
– On telegram to obj. ... with brightness value = 0, the relay switches	**not OFF** OFF

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