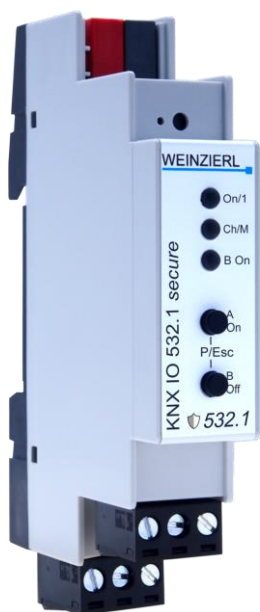


Combined dimming/switching actuator with 1 LED dimming PWM output and 1 switching output

KNX IO 532.1 *secure*

Operation and installation manual



(Art. # 5503)

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1 Application

The KNX IO 532.1 *secure* is a compact combined dimming/switching actuator with 1 PWM dimming output for LEDs and 1 bi-stable relay output.

The dimming actuator can be used e.g. for LED panels or stripes. Besides controlling the dimmer by switching, rel. dimming and dimming value, several optional functions are integrated, including scenes, automatic, slumber function or staircase light.

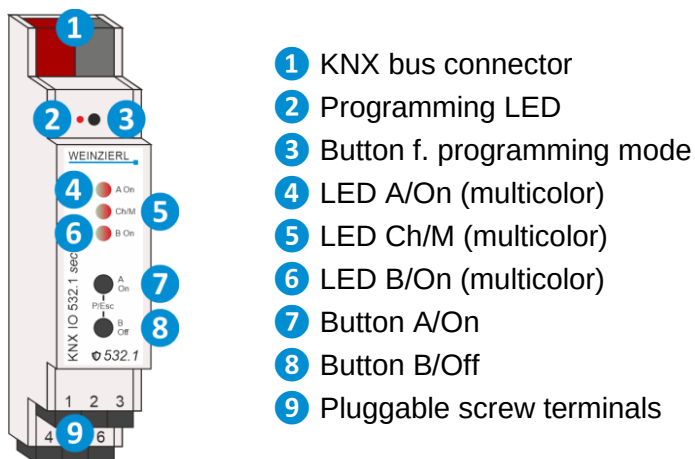
The switching actuator provides the function for universal outputs including scene control, timer, staircase lighting and heating valves (PWM for thermoelectric valve drives).

Two push buttons and three LEDs allow a local operation and a visualization of the device state.

In addition to the output channels the device includes 16 independent functions for logic or timer control.

2 Installation and connection

The KNX IO 532.1 *secure* is designed for installation on a DIN rail (35 mm) with a width of 1 units (18 mm). An installation-friendly design with pluggable screw terminals helps to reduce the cost of commissioning. It features the following controls and displays:



This device is powered by the KNX bus. An external power supply is not necessary.



If the bus voltage is missing, the device is without function.

2.1 KNX programming mode

The KNX programming mode is activated/deactivated either by pressing the recessed KNX programming button **3** or by simultaneously pressing the buttons (P/Esc) **7** and **8**.

When the programming mode is active, the programming LED **2** and the LED Mode **5** light up red.

The operation/visualization of the programming mode on the front can be activated/deactivated in the ETS® on page general settings.

2.2 Manual operation and status display

The LED Ch/M **5** lights up or flashes if the device is successfully powered by the KNX bus.

Pressing button A **7** long switches to manual operation of the dimming actuator channel (channel A). This is indicated by cyclic, one-time flashing of the LED Ch/M **5** in orange.

Pressing button B **8** long switches to manual operation of the switching actuator channel (channel B). This is indicated by cyclic, two-time flashing of the LED Ch/M **5** in orange.

In manual operation, the respective channel can be switched on by pressing the button On **7** and switched off by pressing button Off **8** short. In addition, the dimming actuator can be dimmed brighter with long button press on **7** and darker with long button press on **8**.

The manual operation mode can be exit by pressing the buttons (Esc) **7** and **8** simultaneously.

Summary of the states of LED Ch/M **5**:

LED Status	Meaning
LED lights green	Device is working in standard operation mode.
LED lights red	Programming mode is active.
LED flashes 1x orange	Programming mode is not active. Manual operation is active. Switching/dimming of dimming actuator (channel A) possible.
LED flashes 2x orange	Programming mode is not active. Manual operation is active. Switching of switching actuator (channel B) possible.
LED flashes red	Programming mode is not active. Manual operation is not active. The device is not properly loaded, e.g. after an interrupted ETS download.
LED flashes green	The device is currently loaded by the ETS.

LED A **4** indicates the status of the dimming actuator. It lights up when the channel is switched on and is off when the channel is switched off. Similarly, LED B **6** indicates the status of the switching actuator (channel B).

Summary of the states of LED A **4**:

LED Status	Meaning
LED lights red	Error condition: No auxiliary voltage is connected to the device.
LED flashes red	Error condition: Overheating, Overload or Overcurrent
LED lights green	No error condition is active. Dimmer A is switched on.
LED is off	No error condition is active. Dimmer A is switched off.
LED flashes orange	Device is locked: Higher current limit must be unlocked.

Summary of the states of LED B **6**:

LED Status	Meaning
LED lights green	Actuator B is switched on.
LED is off	Actuator B is switched off.

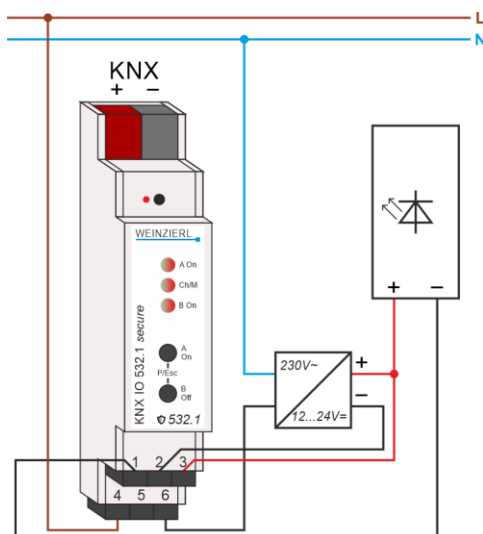
3 Reset to factory default settings

It is possible to reset the device to its factory default settings.

- Disconnect the KNX bus connector **1** from the device.
- Press the KNX programming button **3** and keep it pressed down.
- Reconnect the KNX bus connector **1** to the device.
- Keep the KNX programming button **3** pressed for at least another 6 seconds.
- A short flashing of all LEDs (**2 4 5 6**) visualizes the successful reset of the device to factory default settings.

In the factory default settings, the device has the physical address 15.15.255 and no group addresses are connected. Also, KNX Data Security is disabled and the initial key (FDSK) must be used for secure commissioning.

4 Wiring scheme



4.1 Pluggable screw terminals

Channel A is on the upper terminal and channel B on the lower terminal:

Ch A	Ch A 12..24V	
Out -	-	+
Ch B	Ch B	Ch B
Out	!Out	Cm

Upper terminal

The upper pluggable screw terminals 9 are used to control e.g. LED panels or stripes.

The +12/24V connection of the used power supply unit is connected to the right terminal at the upper screw terminals (12..24V +), at the same time with the anode of the consumer. The ground connection of the power supply unit is connected to the middle terminal (12..24V -). The cathode of the consumer is connected to the left terminal (Ch A Out -).

Lower terminal

The lower pluggable screw terminals 9 are used for the switching actuator, the left terminal pin Ch B Out is used as closer. The central terminal pin Ch B !Out serves as opener. On the right terminal pins Ch B Cm the common pin is contacted e.g. the voltage to be switched.

4.2 Pin assignment

Connection	Icon	Description
1	Ch A Out -	Channel A: Ground connection for consumer
2	Ch A 12..24V -	Channel A: Ground connection for power supply
3	Ch A 12..24V +	Channel A: Positive connection for power supply and consumer
4	Ch B Out	Channel B: Output serves as closer
5	Ch B !Out	Channel B: Output serves as opener
6	Ch B Cm	Channel B : Common connection e.g. the voltage to be switched
KNX	+	Positive connection for KNX bus
KNX	-	Ground connection for KNX bus

4.3 Operating parameters of dimmer channel

Power dissipation

The dimming of luminaires is not possible without a certain power loss in the dimmer. This power dissipation leads to a heating of the device and depends on several factors. In addition to the output of the connected lamps, the current dimming value is also taken into account. Thus, the loss with the luminaire switched off is almost zero except for the leakage current. Even at 100%, the power loss is relatively low and can be traced back to the contact resistance of the output.

Between 0 and 100% the switching losses caused by the PWM are added. Overall, there is a maximum power loss in the upper dimming range.

The rated power of 144W refers to the maximum permitted ambient temperature for free installation. If there are other devices next to the dimming actuator that emit heat, the power that can be connected is reduced. Alternatively, the devices can also be mounted at a small distance (approx. $\frac{1}{2}$ TE = 9 mm). Suitable spacers for the top-hat rail are available on the market for this purpose.

Safety shutdown

The dimming actuator has an electronic fuse for overcurrent and overtemperature. In both error cases, the output is switched off and can be switched on again via a command if the error is no longer present.

In addition, the device is also equipped with fuses against overcurrent and overtemperature. This fuse stage protects connected devices and surrounding materials against severe damage, but leads to failure of the dimming actuator and can no longer be reset.

5 KNX Security

The KNX standard was extended by KNX Security to protect KNX installations from unauthorized access. KNX Security reliably prevents the monitoring of communication as well as the manipulation of the system.

The specification for KNX Security distinguishes between KNX IP Security and KNX Data Security. KNX IP Security protects the communication over IP while on KNX TP the communication remains unencrypted. Thus, KNX IP Security can also be used in existing KNX systems and with non-secure KNX TP devices.

KNX Data Security describes the encryption on telegram level. This means that the telegrams on the twisted pair bus or via RF (radio frequency) are also encrypted.



Encrypted telegrams are longer than the previously used unencrypted ones. For secure programming via the bus, it is therefore necessary that the interface used (e.g. USB) and any intermediate line couplers support the so called KNX Long Frames.

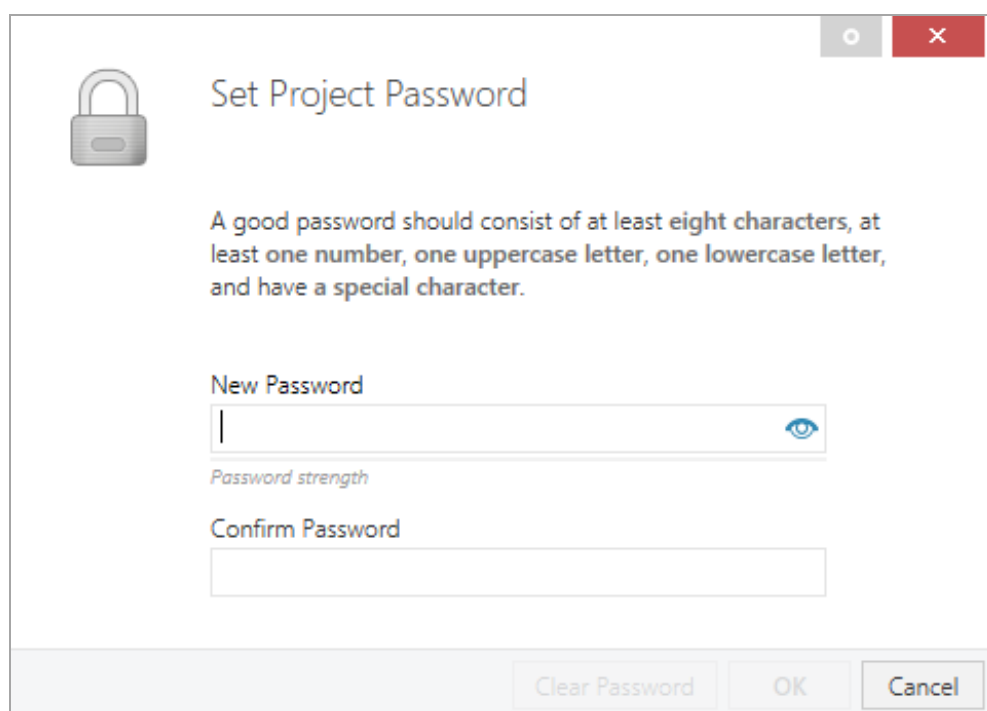
6 ETS database

The ETS 5 database (for ETS 5.7 or newer) can be downloaded from the product website of the KNX IO 532.1 *secure* (www.weinzierl.de) or from the ETS online catalogue.

The KNX IO 532.1 *secure* supports KNX Data Security to protect the device against unauthorized access from the KNX bus. If the device is programmed via the KNX bus, this is done with encrypted telegrams.

6.1 Secure commissioning

If the first product is inserted into a project with KNX Security, the ETS prompts you to enter a project password.



Set Project Password

A good password should consist of at least eight characters, at least one number, one uppercase letter, one lowercase letter, and have a special character.

New Password

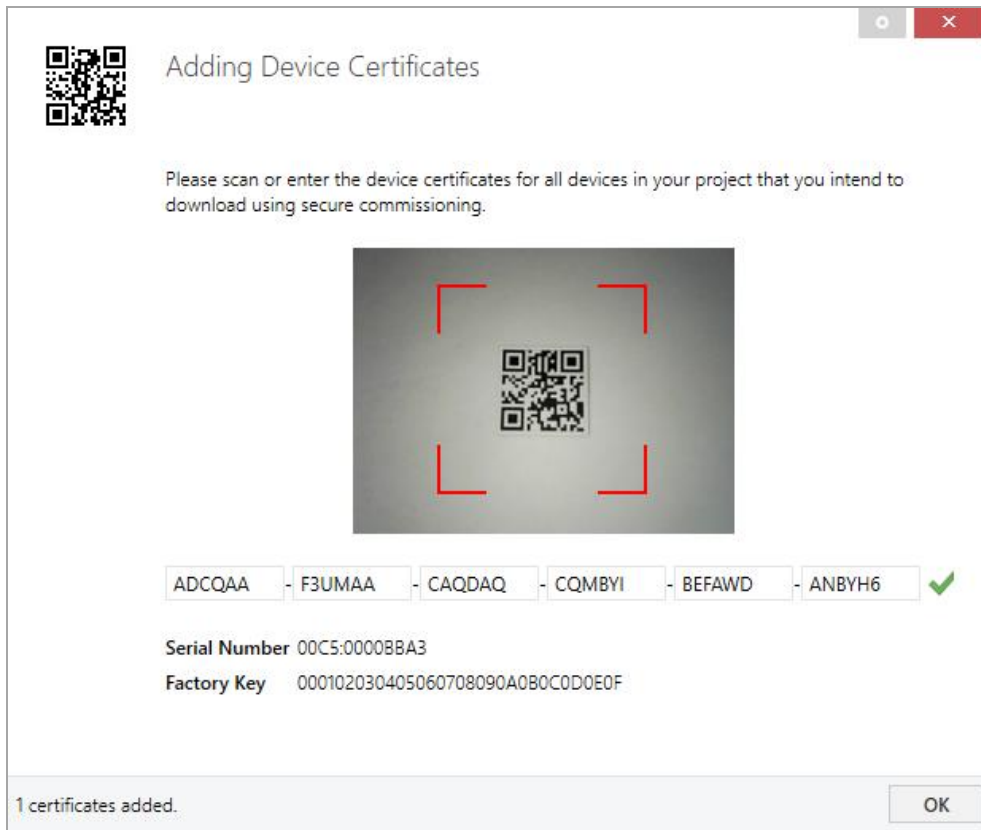
Password strength

Confirm Password

Clear Password OK Cancel

This password protects the ETS project from unauthorized access. This password is not a key that is used for KNX communication. The entry of the password can be bypassed with "Cancel", but this is not recommended for security reasons.

ETS requires a device certificate for each device with KNX Security that is created in the ETS. This certificate contains the serial number of the device as well as an initial key (FDSK = Factory Default Setup Key).



The certificate is printed as text on the device. It can also be scanned from the printed QR code via a webcam.

The list of all device certificates can be managed in the ETS panel Reports – Project Security.

This initial key is required to safely put a device into operation from the start. Even if the ETS download is recorded by a third party, the third party has no access to the secured devices afterwards. During the first secure download, the initial key is replaced by the ETS with a new key that is generated individually for each device. This prevents persons or devices who may know the initial key from accessing the device. The initial key is reactivated after a reset to factory default settings.

The serial number in the certificate enables the ETS to assign the correct key to a device during a download.

In the ETS project in the properties of the device, secure commissioning can be activated and the device certificate can be added:

Properties

Settings | Comments | Information

Name

Individual Address

Description

Last Modified -
Last Downloaded -
Serial Number -

Secure Commissioning
 Activated

Status
 Unknown

6.2 Secure group communication

Each object of the device can communicate either encrypted or unencrypted. The encryption is set under "Security" in the properties of the used group address:

Properties

Settings | Comments | Information

Name
 Switch a

Address
 1/1 / 1

Description

Group Address Settings
☐ Central
☐ Pass through Line Coupler

Security
 Automatic

Data Type
 1,001 switch

The setting "Automatic" activates encryption if both objects to be connected can communicate encrypted. Otherwise encrypted communication between the objects is not possible.

In the overview of communication objects in the ETS project, secured objects can be recognized by a shield symbol:

	Security	Number ^	Name	Object Function	Description	Group Address
		11	Button A0: Object a	Switch	Switch a	1/1/1
		12	Button A0: Object b	Switch	Switch b	1/1/2
		21	Button A1: Object a	Switch	Switch a	1/1/1
		22	Button A1: Object b	Switch	Switch b	1/1/2

A separate key is automatically generated by the ETS for each secured group address. These keys can also be checked in the ETS panel Reports – Project Security. To enable all devices to communicate with a secure group address, the keys must be known to all. Therefore a download must be made into all devices that use this group address when a key is created or changed. A key is changed by the ETS e.g. when the encryption of a group address is switched off and on again.

6.3 Description

This page shows the device description and the associated wiring scheme.

1.1.1 KNX IO 532.1 secure > Description

Description

General settings

Diagnostics

+ Channel A: Dimmer

+ Channel B: Actuator

KNX IO 532.1 secure

KNX dimming actuator 1-fold PWM with relay

WEINZIERL

The KNX IO 532.1 secure is a compact combined dimming/switching actuator with 1 PWM dimming output for LEDs and 1 bistable relay output.

The dimming actuator can be used e.g. for LED panels or stripes. Besides controlling the dimmer by switching, rel. dimming and dimming value, several optional functions are integrated, including scenes, automatic, slumber function or staircase light.

The switching actuator provides the function for universal outputs including scene control, timer, staircase lighting and heating valves (PWM for thermoelectric valve drives).

Two push buttons and three LEDs allow a local operation and a visualization of the device state.

In addition to the output channels the device includes 16 independent functions for logic or timer control.

The device supports KNX Data Security.

Wiring scheme:

Please consult device data sheet and manual for further information.

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6.4 General settings

1.1.1 KNX IO 532.1 secure > General settings	
Description	General settings
General settings	Device name KNX IO 532.1 secure Send delay after bus power return 5 s Prog. mode on device front ☐ Disabled ☒ Enabled Manual operation on device Enabled with time limit 10 min Heartbeat ☒ Disabled ☐ Enabled Alarm objects for error conditions ☒ Disabled ☐ Enabled PWM frequency ☐ 480 Hz ☒ 600 Hz Additional functions Logic / Timer ☒ Disabled ☐ Enabled
Diagnostics	
+ Channel A: Dimmer	
+ Channel B: Actuator	

Device name (30 Characters)

An arbitrary name can be assigned for the KNX IO 532 (1D1O). The device name should be meaningful, e.g. „Living Room“. This helps the clarity of the ETS project.

Send delay after bus power return

A send delay of telegrams after the return of the bus voltage can be set via this parameter. In this case, telegrams from the device are sent to the KNX bus in a delayed manner by the set time. This results in a reduction of the bus load at a bus power return. Other functions such as receiving telegrams of switching operations of the actuator are not affected by this parameter.

Prog. mode on device front

In addition to the normal programming button ③ the device allows activating the programming mode on the device front without opening the switchboard cover. The programming mode can be activated and deactivated via pressing simultaneously both buttons ⑦ and ⑧.

This feature can be enabled and disabled via the parameter “Prog. mode on device front”. The recessed programming button ③ (next to the Programming LED ②) is always enabled and not influenced by this parameter.

Manual operation on device

This parameter is used to configure the manual operation on the device. The manual operation mode can be disabled or activated (with or without time limitation). The time limit defines the duration until the automatic return from the manual operation mode back into the normal operating mode.

The device is in normal operating mode when the manual control is not active. In the manual operating mode, received switching telegrams are ignored. When the manual operation mode is terminated (after expiry of the time limit or manually), the last state of the outputs remains, until a new switching telegram is received again.

The following options are selectable:

- Disabled
- Enabled with time limit 1 min
- Enabled with time limit 10 min
- Enabled with time limit 30 min
- Enabled without time limit

Heartbeat

Cyclic sending of values to the KNX-Bus, to indicate that the device is operational. For the Cycle time values between 1 min and 24h are selectable.

Group object	Type KNX	Size	Direction
GO 1 Heartbeat - Trigger	1.001	1 Bit	To KNX

Alarm objects for error conditions

With this parameter, the following objects for the visualization of error states become visible:

Group object	Type KNX	Size	Direction
GO 2 Alarm - Overload	1.001	1 Bit	To KNX
GO 3 Alarm - Overtemperature	1.001	1 Bit	To KNX
GO 4 Alarm - No supply voltage	1.001	1 Bit	To KNX

If an error condition is detected, the dimmer output switches off and an ON telegram is sent via the respective object. The output is disabled for the duration of the error state, if it is resolved, the respective object sends an OFF telegram, and the dimmer can be used normally again.

Overload is triggered from a load of 8A, overtemperature from a measured temperature of 85°C in the load section. If no value is received by the load section for longer than 3 seconds, the error state "No supply voltage" is triggered.

PWM frequency

Here can be switched between 480Hz and 600Hz PWM frequency.

6.5 Diagnostics

1.1.1 KNX IO 532.1 secure > Diagnostics

Description

General settings

Diagnostics

+ Channel A: Dimmer

+ Channel B: Actuator

Diagnostics

i

This page provides diagnostic information.
Only the individual address has to be programmed.

Supply voltage

Overtemperature

Temperature [°C]

29,58

Timestamp

2025-04-23 / 13:16:09

Channel A

State

Brightness

Dimmer

70 %

70

%

Set value

Off

Channel B

State

Switch cycles

Actuator

3

On

Off

Refresh

For diagnostic purposes, the controller data can be read during runtime using the "Refresh" button.

Following general information is available:

- **Supply voltage:** Shows if supply power is connected
- **Overtemperature:** Indicates whether an overtemperature (> 85 °C) has been triggered.
- **Temperature [°C]:** Shows measured temperature
- **Timestamp:** Shows timestamp of last refresh

Channel A: Dimmer

Following information/function is available:

- **State:** Shows if dimmer is active and the current brightness
- **Brightness:** Brightness for dimmer
- **Set value:** Sets the selected "Brightness" to dimmer
- **Off:** Turn off dimmer

Channel B: Actuator

Following information/function is available:

- **State:** Shows if actuator is active
- **On/Off:** Switches actuator

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6.6 Dimmer A: General

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: General	
Description	Dimmer A: General
General settings	Name Dimmer A
Diagnostics	Function Dimmer
Channel A: Dimmer	Send state Cyclic and on change
Dimmer A: General	Time for cyclic state 6 hour
Dimmer A: Dimmer	Behavior on bus power loss ☐ No reaction ☒ Dimm to value
Dimmer A: Dimming curve	Dimming value 100 %
Dimmer A: Sequencer	Behavior after bus power return Dimm to value
Channel B: Actuator	Dimming value 100 %
	Scene function ☒ Disabled ☐ Enabled
	Automatic mode ☒ Disabled ☐ Enabled
	Slumber function ☒ Disabled ☐ Enabled
	Lock function ☒ Disabled ☐ Enabled

Name (30 Characters)

An arbitrary name can be assigned for the channel. However, this should be clear and meaningful, this makes it easier to work with the associated group objects, because the given name is displayed there as a label. If no name is assigned, the group objects are named „Dimmer A“.

Function

This parameter defines the functionality of the actuator, the following options are selectable:

- Disabled
- Dimmer

When this functionality is selected, scene function, automatic mode, slumber and lock function are available. In the "Dimmer" function, objects for switching on/off, relative dimming, dimmer control via dimming and RGB value can be configured. The parameter page "Dimmer A: Dimmer" is displayed.
- Staircase function

The parameter page "Dimmer A: Staircase function" is displayed. Only the lock function is available here.

When a function is selected, the following parameters appear:

Send state

This parameter defines the behavior of the state objects:

- Disabled
State objects are deactivated and not displayed.
- Only on read
State objects send only on request.
- On change
The switch object sends an OFF telegram when the output value changes to 0%, an ON telegram when the output value changes from 0% to a value greater than 0%. The value object transmits with a time interval of at least 1 second if the value at the output has changed by at least 1% or if a dimming process has been completed.
- Cyclic and on change
State objects send cyclically and on value change.

Group object	Type KNX	Size	Direction
GO 16 Dimmer A: Dimming output - State On/Off	1.001	1 Bit	To KNX
GO 17 Dimmer A: Dimming output - State value	5.001	1 Byte	To KNX

Time for cyclic state

With this parameter, the cycle time can be set, when "Cyclic and on change" is selected for sending state.

Behavior on bus power failure

The behavior of the output in the event of bus power failure can be configured here.

The following options are selectable:

- No reaction
- Dim to value
A parameter for adjusting the value appears.

Behavior after bus power return

Here the behavior of the output after bus power return can be configured. This behavior will be set after every device restart (e.g. also on restart after ETS download).

The following options are selectable:

- No reaction
- Dim to value
A parameter for adjusting the value appears.
- State like before bus power failure

Scene function

The scene function can be activated or deactivated here; it is only available in the "Dimmer" operating mode. If this function is activated, the parameter page "Dimmer A: Scene function" appears for further configuration of scenes 1-16. The further functionality is explained in section G.

Automatic mode

Automatic mode is only available in the "Dimmer" function. If this mode is selected, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 19 Dimmer A: Automatic Mode - Activate	1.001	1 Bit	From/To KNX
GO 20 Dimmer A: Autom. dimming abs. - Set value	5.001	1 Byte	From KNX

When using automatic mode, the dimmer can be controlled via object 20, e.g. for light control or daylight-dependent basic lighting.

In automatic mode, the dimmer can be manually overridden by dimming on/off, dimming rel., dimming value, scene, slumber function or sequencer. During manual override, values of object 20 are ignored, each manual override restarts the fallback time.

After the fallback time set in the parameter has elapsed, the values received on object 20 are processed again.

Via object 19, the automatic can be switched on or off at any time, it also serves as a state object for automatic mode.

Slumber function

The slumber function is only available in the "Dimmer" operating mode. The slumber function offers 2 different fade times each for switching on and off via object. If this function is activated, a new parameter page appears, which is explained in section H.

Lock function

The lock function can be activated or deactivated here.

This function is available in both "Dimmer" and "Staircase function" operating modes. If this function is activated, a new parameter page appears for further configuration, which is explained in Section I in more detail.

6.7 Dimmer A: Dimmer

6.7.1 Object Dimming on/off

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Dimmer

Description	Dimmer A: Dimmer	
General settings	Object Dimming on/off ☐ Disabled ☒ Enabled	
Diagnostics	Behavior on ON telegram (when dimmer is off) Dimm to fix value	
Channel A: Dimmer	Behavior on ON telegram (when dimmer is on) Dimm to fix value	
Dimmer A: General	Dimming value on ON telegram 100 %	
Dimmer A: Dimmer	Fade time on ON telegram (related to 100%) 00:00:00 hh:mm:ss	
Dimmer A: Dimming curve	Behavior on OFF telegram ☐ No reaction ☒ Dimm to fix value	
Dimmer A: Sequencer	Dimming value on OFF telegram 0 %	
Channel B: Actuator	Behavior on 2nd OFF telegram ☒ No reaction ☐ Switch off	
	Fade time on OFF telegram (related to 100%) 00:00:00 hh:mm:ss	
	Day/night switching Switch on day/night telegram	
	Dimming value on ON telegram (night) 50 %	
	Dimming value on OFF telegram (night) 0 %	
	Fade time for day/night switching (related to 100%) 00:00:04 hh:mm:ss	
	Object Dimming rel. ☒ Disabled ☐ Enabled	
	Object Dimming value ☒ Disabled ☐ Enabled	
	Object RGB value ☒ Disabled ☐ Enabled	

For switching the dimmers, the following object is available, if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 11 Dimmer A: Dimming on/off - Switch	1.001	1 Bit	From KNX

Behavior on ON telegram (when dimmer is off)

If the dimmer is switched off, this parameter can be used to configure the behavior when switching on via object 11.

It is available:

- No reaction
- Dim to fix value
- Dim to last value before switching off

Behavior on ON telegram (when dimmer is on)

If the dimmer is already switched on, this parameter can be used to configure the behavior for a new ON telegram via object 11.

It is available:

- No reaction
- Dim to fix value
- Dim to fix value if higher than actual

Dimming value on ON telegram

This value is activated by ON telegram via object 11 with suitable parameterization.

Fade time on ON telegram

This fade time is active when an ON telegram is received. The period refers to a complete dimming process of 0-100%.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer when an OFF telegram is sent via object 11.

It is available:

- No reaction
- Dim to fix value

Dimming value on OFF telegram

This value is activated by OFF telegram via object 11 with suitable parameterization.

Behavior on 2. OFF telegram

This parameter describes the behavior of the dimmer when a 2. OFF telegram is received via object 11.

It is available:

- No reaction
- Switch off

The 2. OFF telegram must follow the 1. OFF telegram within 1 second in order to be evaluated. If the current brightness is equal to or lower than the parameterized brightness for OFF telegram, the device is already switched off by the 1. OFF telegram.

Fade time on OFF telegram

This fade time is active when an OFF telegram is received. The period refers to a complete dimming process of 0-100%.

Day/night switching

When using this function, the following objects are visible for switching between day/night mode:

Group object	Type KNX	Size	Direction
GO 15 Dimmer A: Day/Night - Switch	1.001	1 Bit	From KNX

Day mode is triggered with an ON telegram on object 15, night mode with an OFF telegram. After a restart, the device is in day mode.

In addition, it can be determined when the values become active after receiving a telegram on these objects, it is available:

- Disabled
- Switch on day/night telegram
Immediately after reception of day/night switching, it is dimmed to the active value according to the last switch-on/switch-off received via object 11.
- Switch on next on/off telegram
The currently active value is not used until the next switch on/off telegram via object 11.

There is a separate switch-on and switch-off value for night mode in the parameters, in day mode the always visible values are used.

Dimming value on ON telegram (night)

If the dimmer is in night mode, this value is activated by ON telegram via object 11 and suitable parameterization.

Dimming value on OFF telegram (night)

If the dimmer is in night mode, this value is activated by OFF telegram via object 11 and suitable parameterization.

Fade time for day/night switching

This fade time is only active if switching on day/night telegram is used. If switching on next on/off telegram is used, the regular fade time of the respective on or off telegram is active. The period refers to a complete dimming process of 0-100%.

6.7.2 Object Dimming rel.

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Dimmer

Description	Dimmer A: Dimmer	
General settings	Object Dimming on/off ☒ Disabled ☐ Enabled	
Diagnostics		
Channel A: Dimmer	Object Dimming rel. ☐ Disabled ☒ Enabled	
Dimmer A: General	Minimal dimming value while dimming with object 0 %	
Dimmer A: Dimmer	Maximal dimming value while dimming with object 100 %	
Dimmer A: Dimming curve	Fade time while dimming brighter with object (related to 100%) 00:00:04 hh:mm:ss	
Dimmer A: Sequencer	Fade time while dimming darker with object (related to 100%) 00:00:04 hh:mm:ss	
Channel B: Actuator	Object Dimming value ☒ Disabled ☐ Enabled	
	Object RGB value ☒ Disabled ☐ Enabled	

The following object is available for dimming using relative dimming commands, if activated via parameters:

Group object	Type KNX	Size	Direction
GO 12 Dimmer A: Dimming rel. - Brighter/Darker	3.007	4 Bit	From KNX

Minimal dimming value while dimming with object

This parameter can be used to set which minimum dimming value can be achieved via relative dimming. If the current dimming value is below the minimum value, the brightness cannot be reduced via object 12.

Maximal dimming value while dimming with object

This parameter can be used to set which maximum dimming value can be achieved via relative dimming. If the current dimming value is above the maximum value, the brightness cannot be increased via object 12.

Fade time while dimming brighter with object

This fade time is active when the brightness is increased by relative dimming with object 12. The period refers to a complete dimming process of 0-100%.

Fade time while dimming darker with object

This fade time is active when the brightness is decreased by relative dimming with object 12. The period refers to a complete dimming process of 0-100%.

6.7.3 Object Dimming value

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Dimmer

Description	Dimmer A: Dimmer	
General settings	Object Dimming on/off ☒ Disabled ☐ Enabled	
Diagnostics	Object Dimming rel. ☒ Disabled ☐ Enabled	
Channel A: Dimmer	Object Dimming value ☐ Disabled ☒ Enabled	
Dimmer A: General	Minimal dimming value for changing dimming value by object 10 %	
Dimmer A: Dimmer	Switch off dimmer with telegram value 0% ☐ Disabled ☒ Enabled	
Dimmer A: Dimming curve	Maximal dimming value for changing dimming value by object 100 %	
Dimmer A: Sequencer	Fade time while dimming brighter with object (related to 100%) 00:00:04 hh:mm:ss	
Channel B: Actuator	Fade time while dimming darker with object (related to 100%) 00:00:04 hh:mm:ss	
	Object RGB value ☒ Disabled ☐ Enabled	

The following object is used to control the dimmer via dimming value if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 13 Dimmer A: Dimming abs. - Set value	5.001	1 Byte	From KNX

Minimal dimming value for changing dimming value with object

This parameter can be used to configure which minimum dimming value can be reached via object 13. If a value below the minimum value is received, the dimmer is controlled with the minimum value. If a value >0% is set here, the following parameter is also visible:

Switch off dimmer with telegram value 0%

Here it is to select whether the dimmer is switched off when a value of 0% is received.

Minimal dimming value for changing dimming value with object

This parameter can be used to configure which maximum dimming value can be reached via object 13. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

Fade time while dimming brighter with object

This fade time is active when the brightness is increased by relative dimming with object 13. The period refers to a complete dimming process of 0-100%.

Fade time while dimming darker with object

This fade time is active when the brightness is decreased by relative dimming with object 13. The period refers to a complete dimming process of 0-100%.

6.7.4 Object RGB value

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Dimmer	
Description	Dimmer A: Dimmer
General settings	Object Dimming on/off ☒ Disabled ☐ Enabled
Diagnostics	
Channel A: Dimmer	Object Dimming rel. ☒ Disabled ☐ Enabled
Dimmer A: General	Object Dimming value ☒ Disabled ☐ Enabled
Dimmer A: Dimmer	Object RGB value ☐ Disabled ☒ Enabled
Dimmer A: Dimming curve	RGB value usage Use brightness (max. value of red, green, blue) ▼
Dimmer A: Sequencer	Minimal value for changing color by object 0 ▲▼
	Maximal value for changing color by object 255 ▲▼
	Fade time while dimming brighter with object (related to 100%) 00:00:04 hh:mm:ss
	Fade time while dimming darker with object (related to 100%) 00:00:04 hh:mm:ss
Channel B: Actuator	

To control the dimmer via RGB color value, the following object is available, if activated via parameter:

Group object	Type KNX	Size	Direction
GO 14 Dimmer A: RGB color value - Set value	232.600	3 Byte	From KNX

RGB value usage

Here it is set how a received RGB color value is to be processed:

- Use red part
The 1. byte of the RGB value (red) is used to control the brightness of the dimmer.
- Use green part
The 2. byte of the RGB value (green) is used to control the brightness of the dimmer.
- Use blue part
The 3. byte of the RGB value (blue) is used to control the brightness of the dimmer.
- Use white (min. value of red, green, blue)
The smallest value of the 3 bytes is used to control the brightness of the dimmer.
- Use brightness (max. value of red, green, blue)
The largest value of the 3 bytes is used to control the brightness of the dimmer.

Minimal value for changing color by object

This parameter can be used to configure which minimum dimming value can be set via object 14. If a value below the minimum value is received, the dimmer is controlled with the minimal value.

Maximal value for changing color by object

This parameter can be used to configure which maximum dimming value can be set via object 14. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

Fade time while dimming brighter with object

This dimming time is active when the brightness is increased by values received via object 14. The time period refers to a complete dimming process of 0-100%.

Fade time while dimming darker with object

This dimming time is active when the brightness is decreased by values received via object 14. The time period refers to a complete dimming process of 0-100%.

6.8 Dimmer A: Staircase function

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Staircase function

Description	Dimmer A: Dimming curve	
General settings		
Diagnostics		
Channel A: Dimmer		
Dimmer A: General		
Dimmer A: Staircase function		
Dimmer A: Dimming curve		
Dimmer A: Sequencer		
Channel B: Actuator		
	Dimming value on switching on staircase function (day)	100 %
	Dimming value on switching on staircase function (night)	50 %
	Fade time for switching on (related to 100%)	00:00:01 hh:mm:ss
	Delay time of staircase function	10 min
	Reaction on ON telegram	☐ Switch on ☒ Switch to switch-off delay
	Delay time retriggerable	☐ Disabled ☒ Enabled
	Orientation light after delay time	30 s
	Dimming value while orientation light	20
	Fade time for orientation light (related to 100%)	00:00:10 hh:mm:ss
	Reaction on OFF telegram	Ignore
	Dimming value on switching off staircase function (day)	0 %
	Dimming value on switching off staircase function (night)	10 %
	Fade time for switching off (related to 100%)	00:01:00 hh:mm:ss

This parameter page can be used to implement a staircase function with optional orientation light. The staircase function can be overridden by the lock function. It has the following objects:

Group object	Type KNX	Size	Direction
GO 11 Dimmer A: Staircase function - Trigger	1.010	1 Bit	From KNX
GO 15 Dimmer A: Day/Night - Switch	1.001	1 Bit	From KNX

Day mode is triggered with an ON telegram on object 15, night mode with an OFF telegram. After a restart, the device is in day mode.

Dimming value on switching on the staircase function (day)

This value is used in day mode when the staircase function is switched on via ON telegram to object 11.

Dimming value on switching on the staircase function (night)

This value is used in night operation when the staircase function is switched on via ON telegram to object 11.

Fade time for switching on

This dimming time is active when the staircase function is switched on via ON telegram to object 11. The period refers to a complete dimming process of 0-100%.

Delay time for staircase function

After the delay time has elapsed, the dimmer is dimmed to the switch-off or orientation light value depending on the parameter setting.

Reaction on ON telegram

This parameter determines the behavior after switching on the staircase function via ON telegram on object 11: When "Switch on" is set, the channel remains switched on after ON telegram until the follow-up time is started via OFF telegram. In the setting "Switch to delay time", the channel enters the delay time immediately after the ON telegram.

Delay time retriggerable

If it is set that the delay time is started with ON telegram, this parameter determines whether only the 1. ON telegram on object 11 starts the delay time, or also any further.

If it is set that the delay time is started with OFF telegram, this parameter determines whether only the 1. OFF telegram on object 11 starts the delay time, or also any other if the staircase function is already in the delay time.

Orientation light after delay time

This parameter can be used to set whether the dimmer dims to switch-off value or to orientation light at the end of the delay time, as well as the duration of the orientation light.

It is available:

- Disabled
- 1 s
- 2 s
- 5 s
- 10 s
- 30 s
- 1 min
- 2 min
- 5 min
- 10 min
- 20 min
- 30 min
- 1 h
- 2 h
- Without time limit

Dimming value while orientation light

This value is dimmed to at the end of the delay time when orientation light is used.

Fade time for orientation light

This fade time is active when the staircase function dims to orientation light. The period refers to a complete dimming process of 0-100%.

Reaction on OFF telegram

Here it can be set how the staircase function behaves in the event of an OFF telegram. The following options are available:

- Ignore
No reaction of the channel on OFF telegram
- Switch off
Switch to switch-off value from the parameters
- Switch to switch-off delay
The delay time is started with OFF telegram.
- Switch to orientation light
The orientation light phase is started with OFF telegram.
- Switch to orientation light/switch off
With 1. OFF telegram the orientation light phase is started, with 2. OFF telegram it is dimmed to switch-off value.

Dimming value on switching off the staircase function (day)

This value is dimmed to in day mode if the staircase function is switched off after the delay time or via OFF telegram on object 11.

Dimming value on switching off the staircase function (night)

This value is dimmed to in night mode if the staircase function is switched off after the delay time or via OFF telegram on object 11.

Fade time for switching off

This fade time is active when the staircase function dims to the switch-off value. The period refers to a complete dimming process of 0-100%.

6.9 Dimmer A: Dimming curve

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Dimming curve				
Description	Dimmer A: Dimming curve			
General settings	Dimming curve Linear			
Diagnostics				
- Channel A: Dimmer	Dimmer A: General	Dimming output at 0%	0	%
	Dimmer A: Staircase function	Dimming output at 10%	10	%
		Dimming output at 20%	20	%
	Dimmer A: Dimming curve	Dimming output at 30%	30	%
		Dimming output at 40%	40	%
		Dimming output at 50%	50	%
		Dimming output at 60%	60	%
		Dimming output at 70%	70	%
		Dimming output at 80%	80	%
	+ Channel B: Actuator	Dimming output at 90%	90	%
Dimming output at 100%		100	%	
	Adjustment of channel	100		

This parameter page is used for fine adjustment of the dimmer to different light sources.



All parameters on this page only affect the PWM value of the output, not the dimming or output status value.

Dimming curve

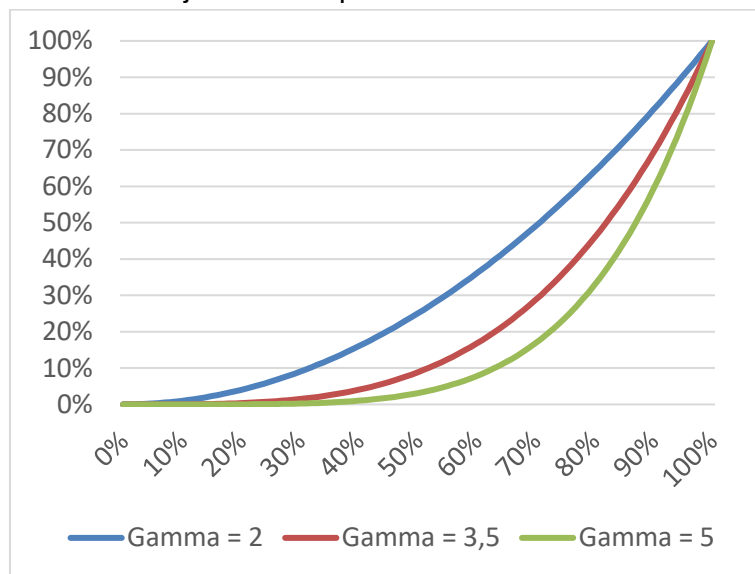
Here it can be specified which PWM values are output by the dimming outputs when the dimming channel has reached a certain dimming value. The following options are available:

- Linear
- Logarithmic
- User defined
- Gamma

Gamma correction according to the formula:

$$\text{PWM value} = \text{Dimming value}^{\text{Gamma}}$$

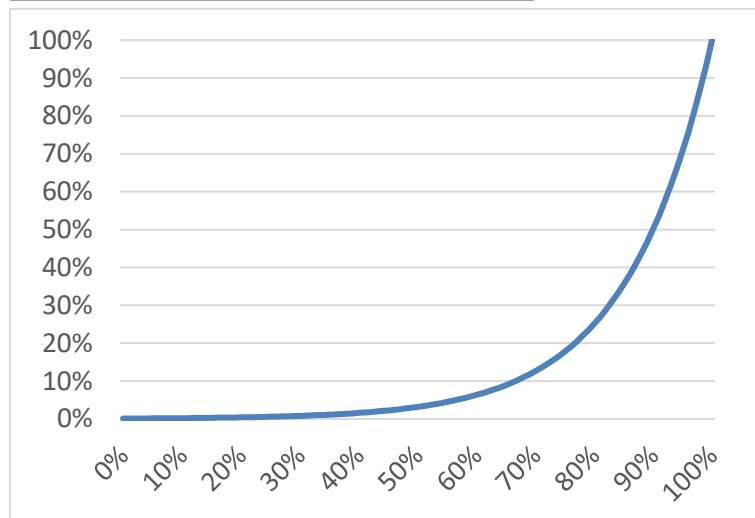
Gamma is adjustable via parameter from 1.00 to 5.00.



- DALI

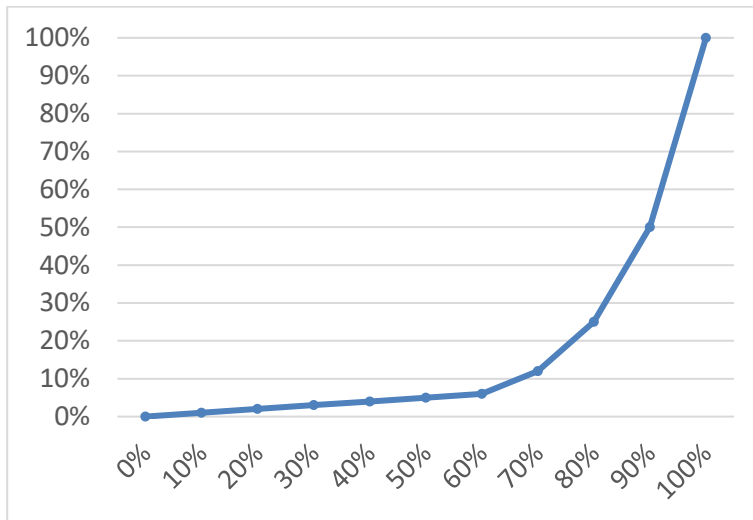
Function based on DALI with the formula:

$$\text{PWM value} = 10^{3 \cdot (\text{Dimming value} - 1)}$$



Dimming output at x%

For the "Linear", "Logarithmic" and "User defined" dimming curves, these values determine the PWM values of a dimming output at the specified dimming value. Values between the specified points are calculated and output linearly. As an example, a dimming output with dimming curve "Logarithmic" behaves according to the following graph:



The output values are fixed for the "Linear" and "Logarithmic" dimming curves, and can be freely configured for the "Userdefined" curves.



If a dimming value of 0% is reached, the channel always switches off.

Adjustment of channel

The PWM value of the calculated value by the dimming curve is additionally scaled with this value.

6.10 Dimmer A: Scene function

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Scene function

Description	Dimmer A: Scene function	
General settings	Fade time on activation of scene (related to 100%) 00:00:04 hh:mm:ss	
Diagnostics		
- Channel A: Dimmer		
Dimmer A: General		
Dimmer A: Dimmer		
Dimmer A: Dimming curve		
Dimmer A: Scene function		
Dimmer A: Sequencer		
+ Channel B: Actuator		
	Scene 1	Dimming value
	Number	1
	Dimming value	10 %
	Scene 2	Learnable
	Number	2
	Scene 3	Dimming value
	Number	3
	Dimming value	30 %
	Scene 4	Learnable
	Number	4
	Scene 5	No reaction
	Scene 6	No reaction
	Scene 7	No reaction
	Scene 8	No reaction
	Scene 9	No reaction
	Scene 10	No reaction
	Scene 11	No reaction
	Scene 12	No reaction
	Scene 13	No reaction
	Scene 14	No reaction
	Scene 15	No reaction
	Scene 16	No reaction

If the scene function is activated, the following group objects appear:

Group object	Type KNX	Size	Direction
GO 18 Dimmer A: Scene - Activ./Lrn.	18.001	1 Byte	From KNX

Fade time on activation of scene

Here the period can be set in which the received scene is dimmed to. The period refers to a complete dimming process of 0-100%.

Scene 1-16

These parameters can be used to configure the reaction of the channel when the respective scene is received.

It is available:

- No reaction
- Dimming value
The output is switched to the set dimming value if the scene of the corresponding number was received.
- Learnable
With the help of a scene control telegram, the current state at the output for the respective scene can be saved here. Thus the scene can be adapted by the user without ETS download.

Number

With this parameter any scene number between 1 and 64 can be assigned to the scene. No scene numbers may be assigned twice.

6.11 Dimmer A: Slumber function

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Slumber function

Description	Dimmer A: Slumber function		
General settings			
Diagnostics			
Channel A: Dimmer			
Dimmer A: General			
Dimmer A: Dimmer			
Dimmer A: Dimming curve			
Dimmer A: Slumber function			
Dimmer A: Sequencer			
Channel B: Actuator			

Target value while switching on slumber function	100	%
Target value while switching off slumber function	0	%
Fade time on 1. ON telegram (1. button press, related to 100%)	01:00:00	hh:mm:ss
Fade time on 2. ON telegram (2. button press, related to 100%)	00:00:01	hh:mm:ss
Fade time on 1. OFF telegram (1. button press, related to 100%)	01:00:00	hh:mm:ss
Fade time on 2. OFF telegram (2. button press, related to 100%)	00:00:01	hh:mm:ss

If the slumber function is active, the following objects are visible:

Group object	Type KNX	Size	Direction
GO 21 Dimmer A: Slumber function - Trigger	1.001	1 Bit	From KNX

Target value while switching on the slumber function

This value is reached by the channel after completion of the dimming process after receiving an ON telegram via object 21.

Target value while switching off the slumber function

This value is reached by the channel after completion of the dimming process after receiving an OFF telegram via object 21.

Fade time on 1. ON telegram (1. button press)

This fade time is used to dim to the target value for switching on after the 1. button press. The period refers to a complete dimming process of 0-100%.

Fade time on 2. ON telegram (2. button press)

This fade time is used to dim to the target value for switching on after the 2. button press. The period refers to a complete dimming process of 0-100%.

Fade time on 1. OFF telegram (1. button press)

This fade time is used to dim to the target value for switching off after the 1. button press. The period refers to a complete dimming process of 0-100%.

Fade time on 2. OFF telegram (2. button press)

This fade time is used to dim to the target value for switching off after the 2. button press. The period refers to a complete dimming process of 0-100%.

6.12 Dimmer A: Lock function

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Lock function

Description	Dimmer A: Lock function	
General settings	Polarity of object ☒ Lock active on 1 ☐ Lock active on 0	
Diagnostics	Behavior on start ☐ No reaction ☒ Dimm to value	
Channel A: Dimmer	Dimming value	100 %
Dimmer A: General	Behavior at end	Dimm to value
Dimmer A: Dimmer	Dimming value	10 %
Dimmer A: Dimming curve		
Dimmer A: Lock function		
Dimmer A: Sequencer		
Channel B: Actuator		

If the lock function is activated, the following objects are active:

Group object	Type KNX	Size	Direction
GO 22 Dimmer A: Lock - Activate	1.001	1 Bit	From KNX
GO 23 Dimmer A: Prior. dimming on/off - Switch	1.001	1 Bit	From KNX
GO 24 Dimmer A: Prior. dimming rel. - Brighter/Darker	3.007	4 Bit	From KNX
GO 25 Dimmer A: Prior. dimming abs. - Set value	5.001	1 Byte	From KNX

If the lock was activated by object 22, other received telegrams for dimmer, automatic mode, slumber, scene function and sequencer are not executed.

In addition to the lock object, 3 priority objects become visible when the lock function is activated, with which the dimmer can be controlled independently of the lock. This makes it possible to set an initial state without affecting other functions.

Example of the priority objects:

In the case of events in public buildings or in restaurants, the normal operation can be set into an inoperative state by the lock group object. Thus it is possible to lock during the lecture or concert, switches that are accessible to unauthorized persons, in order to prevent unmeant switching. Nevertheless, the individual lamps can controlled by use of the priority object without canceling the lock.

Polarity of object

This parameter defines, if the lock should be activated by receiving a 1 or by receiving a 0.

The following options are selectable:

- Lock active on 1
- Lock active on 0

Behavior on start

This parameter configures, which state the output should set, if the lock activates.

The following options are selectable:

- No reaction
- Dim to value
A parameter for adjusting the value appears.

This output state can still be changed by the priority object.

Behavior at end

This parameter defines, which state the output should set, if the lock deactivates.

The following options are selectable:

- No reaction
- Dim to value
A parameter for adjusting the value appears.
- State before lock
This restores the original state before the lock was activated. Telegrams received during the lock are ignored.
- State without lock
Here the state of the last received telegram is restored. This takes into account the received telegrams during the lock. Thus, when the lock is deactivated, the last received telegram is set.

6.13 Dimmer A: Sequencer

1.1.1 KNX IO 532.1 secure > Channel A: Dimmer > Dimmer A: Sequencer

Description	Dimmer A: Sequencer	
General settings	Steps of sequencer	3
Diagnostics	Resume sequence after man. operation	Only by object
Channel A: Dimmer	Step after man. operation	Active step
Dimmer A: General	Polarity of object "Sequence on/off"	☐ Switch on with 0 ☒ Switch on with 1
Dimmer A: Dimmer	Behaviour on switching on	No reaction
Dimmer A: Dimming curve	Behaviour on switching off	Complete actual step
Dimmer A: Sequencer	Step 1:	Step 1
Channel B: Actuator	Start by time	☐ Disabled ☒ Start by time of day
	Start time	00:00:01 hh:mm:ss
	Start by ON/OFF telegram	☒ Disabled ☐ Enabled
	Start by scene number	☒ Disabled ☐ Enabled
	Action	Brightness
	Brightness	100 %
	Fade time (related to 100%)	00:00:00 hh:mm:ss
	Step 2:	Step 2
	Start by time	Start after last trigger
	Start time	00:00:01 hh:mm:ss
	Start by ON/OFF telegram	☒ Disabled ☐ Enabled
	Start by scene number	☒ Disabled ☐ Enabled
	Action	Start loop
	Start loop at	Step 1
	Limitation of loops	☒ Unlimited ☐ Limited
	Step 3:	Step 3
	Start by time	Start after last trigger
	Start time	00:00:01 hh:mm:ss
	Start by ON/OFF telegram	☒ Disabled ☐ Enabled
	Start by scene number	☐ Disabled ☒ Enabled
	Start scene	3
	Action	Send scene number
	Scene number to send	3

The sequencer can be used to create complex sequence programs consisting of up to 32 individual steps for the dimmer channel. The individual steps can be activated under the following starting conditions:

- At a fixed time of day
- After a waiting time from a previous step has elapsed
- By on/off telegram
- When receiving a parameterized scene number

When a step is activated, a value can be dimmed to or a scene number can be sent, and a step or a whole sequence of steps can be repeated cyclically.

The following objects are available for the general control of the sequencer:

Group object	Type KNX	Size	Direction
GO 33 Dimmer A: Sequence suspend - Suspend/Resume	1.001	1 Bit	From KNX
GO 34 Dimmer A: Sequence on/off - Switch	1.001	1 Bit	From KNX

The following parameters determine the general behavior of the sequencer:

Steps of sequencer

Number of steps (0...32) to be used

Resume sequence after man. operation

An activated sequence can always be interrupted or continued via object 33 an ON telegram interrupts the sequence, and with an OFF telegram it is continued.

A sequence is also interrupted after manual operation, i.e. after commands for dimmer, automatic mode, slumber or scene function.

In addition, this parameter determines how an interrupted sequence can still be continued:

- Only by object
The sequence can only be continued by object 33.
- After off-time
The sequence is continued after the set off-time.
- On next activated step
The sequence is continued with the next activated step, the next step can be activated by object or time-controlled.

Off-time

Only visible if the sequence is to be continued after off-time, with this parameter the off-time can be configured.

Step after man. operation

This step is executed when resuming after manual operation, the function of the set step is always executed, regardless of its otherwise set starting conditions.

Polarity of object "Sequence on/off"

This parameter can be used to set the telegram value with which the sequence can be switched on and off via object 34. If the sequence is switched off, any further activation of a step is disabled.

Behavior on switching on

Here it is determined how the sequencer behaves when switched on by object 34:

- No reaction
No function is executed, the sequencer waits for steps to be activated.
- Step x
The function of the step is executed (independent of the other set start conditions of the step), the sequence is then continued according to its configuration from this step onwards.

Switching on also reactivates a sequence interrupted by manual operation.

Behavior on switching off

Here it is determined how the sequencer behaves when switched off by object 34:

- Complete actual step
If the sequencer is in a dimming process, it is completed.
- Step x
The function of the step is executed (independent of the other set start conditions of the step).
- Stop immediately
If the sequencer is in a dimming process, it is stopped.

Apart from the set behavior when switching off, any further activation of a step after switching off is disabled until the sequencer is switched on again by object 34.

Step 1-32:

Step 2:	Step 2
Start by time	Start after last trigger ▼
Start time	00:00:01 hh:mm:ss
Start by ON/OFF telegram	☒ Disabled ☐ Enabled
Start by scene number	☒ Disabled ☐ Enabled
Action	Start loop ▼
Start loop at	Step 1
Limitation of loops	☒ Unlimited ☐ Limited

When a step is activated, its parameters for configuration appear.

In the text box at the top right with the content "Step x", you can enter your own name for the step. This designation serves for better orientation of the user and has no influence on the function of the step.

Start by time

This parameter is used to configure a temporal start condition of the step.

- Disabled
Start condition not used
- Start at a fixed time of day
Here the time of day at which the step should start can be entered. When using this start condition, the current time must have been received via the following object:

Group object	Type KNX	Size	Direction
GO 5 Time of Day - Set	10.001	3 Byte	From KNX



If no valid time was received by object 5, all start conditions at fixed times of day are not active.



The time is continuously updated by the device through its internal timers, but component tolerances always result in a deviation from the actual time. Therefore, the current time should be sent to the device by a precise timer at least twice a day in order to keep the deviation as small as possible.

- Start after last trigger
Here you can specify the time interval to wait after the previous activation before executing the step. This start condition is not available for step 1.

Start time

Here either the time day or the waiting time can be specified for the execution of the current step, if a timed start condition is used.

Start by ON/OFF telegram

When using this start condition, a separate object is available for each step:

Group object	Type KNX	Size	Direction
GO 35-66 Dimmer A: Sequence Step x on/off - Switch	1.001	1 Bit	From KNX

An ON telegram to one of these objects activates the respective step, the sequence is then continued according to its configuration from this step onwards.

An OFF telegram also activates this step, but resets the sequence at the same time.

Start by scene number

When using this start condition, the following object becomes visible:

Group object	Type KNX	Size	Direction
GO 31 Dimmer A: Sequence scene - Activate step	18.001	1 Byte	From KNX

A telegram with the set scene on this object activates the respective step, the sequence is then continued according to its configuration from this step onwards.

All steps with this start condition are controlled by this object.

Action

When the step is activated, the configured function is executed, the following functions are available for selection:

- **None**
No function is executed, for example this can be used to implement a switch-on delay for a sequence.
- **Start loop**
The sequence continues from the selected step. Parameters for the initial step of the loop and the number of loops become visible.
- **Send scene number**

When using this function, the following object becomes visible:

Group object	Type KNX	Size	Direction
GO 5 Time of Day - Set	10.001	3 Byte	From KNX

A parameter for the scene number to be sent becomes visible. When the step is activated, this scene number is sent via the object.

All steps send the scene number via this object, if this function is used for the respective step.

- **Brightness**
Parameters for brightness and fade time become visible. When this step is activated, the dimmer dims from the current brightness value to the specified brightness with the parameterized fade time. This time is related to a complete dimming process of 0-100%.

6.14 Actuator B: General

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: General

Description	Actuator B: General	
General settings	Name	
Diagnostics	Function	Universal output
+ Channel A: Dimmer	Scene function	☒ Disabled ☐ Enabled
- Channel B: Actuator	Send state	Cyclic and on change
Actuator B: General	Time for cyclic state	6 hour
	Behavior on bus power failure	No reaction
	Behavior after bus power return	State like before bus power failure
	Lock function	☒ Disabled ☐ Enabled

Name (30 Characters)

An arbitrary name can be assigned for the channel. However, this should be clear and meaningful, this makes it easier to work with the associated group objects, because the given name is displayed there as a label. If no name is assigned, the group objects are named "Actuator B: ..".

Function

This parameter defines the functionality of the actuator.

The following options are selectable:

- Disabled
- Switch dimmer
- Universal output
- On/Off delay
- Staircase function
- Valve actuator (PWM for thermal servo)

If the actuator is not “Disabled”, the following parameters are displayed:

Behavior after bus power return

The behavior which is held at the output during the bus power failure can be configured here.

The following options are selectable:

- No reaction
- Switch on
- Switch off

Behavior after bus power return

Here the behavior of the output after bus power return can be configured. This behavior will be set after every device restart (e.g. also on restart after ETS download).

The following options are selectable:

- No reaction
- Switch on
- Switch off
- State like before bus power failure

Send state

This parameter defines the behavior of the state objects:

- Disabled
State objects are deactivated and not displayed
- Only on read
State objects send only on request
- On change
State objects send on value change
- Cyclic and on change
State objects send cyclically and on value change

Group object	Type KNX	Size	Direction
GO 78 Actuator B: Output - State	1.001	1 Bit	To KNX
GO 79 Actuator B: Valve actuator (PWM) - State*	5.001	1 Byte	To KNX

* if valve actuator was selected

Time for cyclic state

Is selected state object "Cyclic and on change", in this parameter the cycle time can be set.

Lock function

With this parameter the lock function can be enabled. If this functionality is activated, the associated group objects as well as the parameter page "Actuator B: Lock function" are displayed for further configuration. If the lock has been activated via the group object "Lock", the received switching telegrams are not executed.

In addition to the lock object, there is also a priority object, which can be switched independently of the lock. Thus, it is possible to set an output state without affecting other functions.

Group object	Type KNX	Size	Direction
GO 75 Actuator B: Lock - Activate	1.001	1 Bit	From KNX
GO 76 Actuator B: Prior. output - Switch	1.001	1 Bit	From KNX

Example of the priority object:

In the case of events in public buildings or in restaurants, the normal operation can be set into an inoperative state by the lock group object. Thus it is possible to lock during the lecture or concert, switches that are accessible to unauthorized persons, in order to prevent unmeant switching. Nevertheless, the individual lamps can controlled by use of the priority object without canceling the lock.

6.15 Actuator B: Lock function

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: Lock function

Description	Actuator B: Lock function	
General settings	Polarity of object ☒ Lock active on 1 ☐ Lock active on 0	
Diagnostics	Behavior on start	Switch on ▼
+ Channel A: Dimmer	Behavior at end	State before lock ▼
- Channel B: Actuator		
Actuator B: General		
Actuator B: Lock function		

Polarity of object

The following options are selectable:

- Lock active on 1
- Lock active on 0

Behavior on start

This parameter configures, which state the output should set, if the lock activates.

The following options are selectable:

- No reaction
- Switch on
- Switch off

This output state can still be changed by the priority object.

Behavior at end

This parameter defines, which state the output should set, if the lock deactivates.

The following options are selectable:

- No reaction
- Switch on
- Switch off
- State before lock
This restores the original state before the lock was activated. Switching telegrams received during the lock are ignored.
- State without lock
Here the state of the last received switching telegram is restored. This takes into account the received switching telegrams during the lock. Thus, when the lock is deactivated, the last received switching telegram is set.

Function (Switch dimmer)

In this operating mode, for example a dimmer power supply is switched automatically. With a dimming value of 0% the relay switches off, with a dimming value >0% it switches on. The following parameter is also available:

Delay before switching off the relay

To avoid frequent switching off, a delay time before switching off can be defined here.

Function (Universal output)

If the universal output is selected on the parameter page "Actuator B: General", the actuator can be used as a switching output. A parameter for the scene function is also displayed.

Group object	Type KNX	Size	Direction
GO 71 Actuator A: Output - Switch	1.001	1 Bit	From KNX

Scene function

With this parameter the scene function can be enabled or disabled. If this functionality is enabled, the respective group object as well as the parameter page "Actuator B: Scene function" are displayed for further configuration of scenes 1-16.

Group object	Type KNX	Size	Direction
GO 72 Actuator A: Scene - Activ./Lrn.	18.001	1 Bit	From KNX

6.16 Actuator B: Scene function

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: Scene function

Description	Actuator B: Scene function	
General settings		
Diagnostics		
+ Channel A: Dimmer		
- Channel B: Actuator		
Actuator B: General		
Actuator B: Scene function		
	Scene 1	Switch on
	Number	1
	Scene 2	Switch off
	Number	2
	Scene 3	Learnable
	Number	3
	Scene 4	No reaction
	Scene 5	No reaction
	Scene 6	No reaction
	Scene 7	No reaction
	Scene 8	No reaction
	Scene 9	No reaction
	Scene 10	No reaction
	Scene 11	No reaction
	Scene 12	No reaction
	Scene 13	No reaction
	Scene 14	No reaction
	Scene 15	No reaction
	Scene 16	No reaction

Scene 1-16

These parameters can be used to configure the state, which is set at the output when the respective scene is executed.

The following options are selectable:

- No reaction
- Switch on
- Switch off
- Learnable

By using a scene control telegram, the current state at the output can be saved for the respective scene. This allows the user to customize the scene without ETS download.

Number

This parameter sets any scene number between 1 and 64 to the scene. There must not configured any scene numbers twice.

Function (On/Off delay)

If the ON/OFF delay is selected on the parameter page "Actuator B: General", delayed switching times can be configured. The "Actuator B: On/Off Delay" parameter page is displayed for this purpose.

Group object	Type KNX	Size	Direction
GO 71 Actuator B: Output - Switch	1.001	1 Bit	From KNX

6.17 Actuator B: On/Off delay

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: On/Off delay

Description	Actuator B: On/Off delay	
General settings	On delay time	1 s
Diagnostics	Retriggerable	☐ Disabled ☒ Enabled
+ Channel A: Dimmer	Off delay time	5 s
- Channel B: Actuator	Retriggerable	☐ Disabled ☒ Enabled
Actuator B: General		
Actuator B: On/Off delay		

On delay time

The duration of the switch-on delay is configured in this parameter.

Input -----1-----0-----

Output -----| -T-1-----0-----

Off delay time

The duration of the switch-off delay is configured in this parameter.

Input -----1-----0-----

Output -----1-----| -T-0-----

Retriggerable

If these parameters are activated, the respective delay time is restarted upon receipt of the corresponding switching signal.

Function (Staircase function)

If the staircase function is selected on the parameter page "Actuator B: General", a group object for the staircase function appears in addition to the normal switching object. Via the additional parameter page "Actuator B: Staircase function" this function can be configured.

Group object	Type KNX	Size	Direction
GO 71 Actuator B: Output - Switch	1.001	1 Bit	From KNX
GO 73 Actuator B: Staircase function - Trigger	1.010	1 Bit	From KNX

6.18 Actuator B: Staircase function

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: Staircase function	
Description	Actuator B: Staircase function
General settings	Switch off time 10 min
Diagnostics	Retriggerable ☐ Disabled ☒ Enabled
+ Channel A: Dimmer	Reaction on 'OFF' telegram ☒ Switch off ☐ Ignore
- Channel B: Actuator	Time for warning before switch off 20 s
Actuator B: General	Time of interrupt 500 ms
Actuator B: Staircase function	

Switch off time

The time for which the output is activated after an ON telegram (object of the staircase function) has been received, can set in this parameter.

Input -----1-----0-----

Output -----1-T-0-----

Retriggerable

This parameter can be used to set whether the follow-up time is to be restarted when an ON telegram is received on the object of the staircase function.

Reaction on 'OFF' telegram

This parameter can be used to set whether an OFF telegram on the object of the staircase function should be processed or ignored.

Time for warning before switch off

The time between pre-warning and deactivation is configured, or the pre-warning is deactivated with this parameter. If the pre-warning time is longer than the actual follow-up time, no pre-warning is carried out.

Time of interrupt

The pre-warning is indicated by a brief interruption (switch off -> switch on). The duration of this interrupt is configured in this parameter.



LED lamps often have a long follow-up time, in which the lamp still lights even though it is already switched off. With such lamps longer interrupt times must be set to generate a "visible" interruption.

Function (Valve actuator)

The function valve actuator is foreseen to control thermoelectric valve drives which are used for floor heating but also for radiators. It maps the continuous position (0% - 100%) to an ongoing On/Off sequence called PWM (pulse width modulation) signal.

If the valve actuator is selected on the parameter page "Actuator B: General", a group object for the valve actuator appears instead of the normal switching object. This allows the current PWM at the output to be set via KNX (0% - 100%). An additional parameter page "Actuator B: Valve actuator" appears for the configuration of the valve actuator.

The received control value is saved automatically by the device, to continue faultless after a possible bus power loss.

Group object	Type KNX	Size	Direction
GO 74 Actuator B: Valve actuator (PWM) - Control value	5.001	1 Byte	From KNX

6.19 Actuator B: Valve actuator

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: Valve actuator

Description	Actuator B: Valve actuator	
General settings	Cyclic time (PWM)	15 min
Diagnostics	Maximum control value (PWM)	100 %
+ Channel A: Dimmer	Stuck protection	☐ Disabled ☒ Enabled
- Channel B: Actuator	Execution time	5 min
Actuator B: General	Monitoring interval	7 day
Actuator B: Valve actuator	Protection on missing control value	☐ Disabled ☒ Enabled
	Protection control value (PWM)	10 %
	Monitoring interval	2 hour

Cyclic time (PWM)

The cyclic time of the PWM, which is used to control a servo drive, is configured with this parameter. One cycle involves a time range in which the output is switched on and one in which the output is switched off. The cyclic time corresponds to the period between two rising edges (state change at the output from OFF to ON). The longer the flow of the heating circuit (tube / pipe length), the higher the cyclic time should be set.



Typical thermal servos require several minutes for a 100% valve change.

Maximum control value (PWM)

This parameter can be used to limit the maximum control value. The control value is expressed in percent and defines the period during which the output is switched on in one cycle.

Example:

Cyclic time = 10 Min.

Maximum control value (PWM) = 80 %

Maximal output state = ON - 8 min / OFF - 2 min

Stuck protection

With the stuck protection, it is intended to prevent the valve from being damaged by corrosion or calcification, that it can no longer be moved. In case stuck protection is enabled, this is only triggered if the value is permanently 0 % or 100 %. On every other control value the servo already moves, so there is no need for a stuck protection.

Control value 0% → Open servo for the set time

Control value 100% → Close servo for the set time

In case the valve is not allowed to open, the stuck protection must be disabled.

Execution time

If the stuck protection is activated, this parameter is used to set the duration of the state change.

Monitoring interval

If the stuck protection is activated, this parameter sets the monitoring interval. If the state of the output remains unchanged for this time, the lock protection is triggered.

Protection on missing control value

This parameter enables the protection function on missing control value telegrams. This is necessary in order to prevent unwanted and uncontrolled overheating or cooling down of the room, when the control value is missing.

Protection takes effect, as soon as no telegrams are received from the controller over a longer period of time. As soon as this extended telegram pause has occurred, it can be assumed that the corresponding controller has failed or the connection between the controller and the valve actuator has been interrupted.

Protection control value (PWM)

If the protection on missing control value is enabled, this parameter sets a protection control value. This configured PWM value will set the output, if the protection is active.

As soon as telegrams from the controller are received again, the protection control value (PWM) is overwritten by the received value. The protection does not react again, until the waiting time in the set monitoring interval is exceeded between individual telegrams.

Monitoring interval

If the protection on missing control value is enabled, this parameter sets the monitoring interval. If no further telegram is received by the device during this time, the protection function takes effect.

Lock function (with valve actuator)

With this parameter the lock function can be disabled or enabled. If this functionality is activated, the associated group objects as well as the parameter page "Actuator 1: Lock function" are displayed for further configuration. If the lock has been activated via the group object "Lock", the received switching telegrams are not executed.

In addition to the lock object, there is also a priority object, which can be used to set a control value independently of the lock. Thus, it is possible to set an output PWM without affecting other functions.

When the lock is ended, the last received value (not priority object) is represented as PWM at the output.

Group object	Type KNX	Size	Direction
GO 75 Actuator B: Lock - Activate	1.001	1 Bit	From KNX
GO 77 Actuator B: Prior. valve actuator (PWM) - Control value	5.001	1 Byte	From KNX

6.20 Actuator B: Lock function

1.1.1 KNX IO 532.1 secure > Channel B: Actuator > Actuator B: Lock function

Description	Actuator B: Lock function
General settings	Polarity of object ☒ Lock active on 1 ☐ Lock active on 0
Diagnostics	Behavior on start ☐ No reaction ☒ Value
+ Channel A: Dimmer	Control value (PWM) 50 %
- Channel B: Actuator	
Actuator B: General	
Actuator B: Valve actuator	
Actuator B: Lock function	

Polarity of object

This parameter defines, if the lock should be activated by receiving a 1 or by receiving a 0.

The following options are selectable:

- Lock active on 1
- Lock active on 0

Behavior on start

This parameter defines, which behavior the output should represent, if the lock activates.

The following options are selectable:

- No reaction
The PWM value remains as to begin of the lock function.
- Value
When the lock is activated, a defined PWM value is represented on the output.

Control value (PWM)

If a defined PWM value should be set to the output when the lock is activated, this value can be set with this parameter.

6.21 Logic / Timer

1.1.1 KNX IO 532.1 secure > Logic / Timer		
Description	Logic / Timer	
General settings	Function 1	Timer
Diagnostics	Function 2	Timer
+ Channel A: Dimmer	Function 3	Logic
+ Channel B: Actuator	Function 4	Logic
- Logic / Timer	Function 5	Disabled
	Function 6	Disabled
Logic / Timer	Function 7	Disabled
Function 1: Timer	Function 8	Disabled
Function 2: Timer	Function 9	Disabled
Function 3: Logic	Function 10	Disabled
Function 4: Logic	Function 11	Disabled
	Function 12	Disabled
	Function 13	Disabled
	Function 14	Disabled
	Function 15	Disabled
	Function 16	Disabled

Function 1 .. 16

These parameters contain the functions timer and logic, whereby all 16 functions are identical.

The following options are available:

- Disabled
No parameters and group objects for timer and logic.
- Timer
Parameters and group objects for timer are available.
- Logic
Parameters and group objects for logic are available.



The functions for timer and logic can be linked to one another by means of the associated group objects. This also allows to create complex structures. For this purpose, the output of a function is set to the same group address as the input of the next function.

6.21.1 Function 1 – 16: Timer

1.1.1 KNX IO 532.1 secure > Logic / Timer > Function 1: Timer

Description	Function 1: Timer	
General settings	Function name	
Diagnostics	Timer type Switch-on delay ▾	
+ Channel A: Dimmer	Delay time [s] 60 ▴ ▾	
+ Channel B: Actuator	Output ☒ Not inverted ☐ Inverted	
– Logic / Timer		
Logic / Timer		
Function 1: Timer		
Function 2: Timer		
Function 3: Logic		
Function 4: Logic		

Function name (10 characters)

The function name can be chosen freely.

The name is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects, because the given name is displayed there as a label.

Timer type

Here the type of the timer can be set:

- Switch-on delay

The ON telegram (1) received on the input is delayed on the output.

Input: --1-----0-----

Output: -- | -T-1-----0-----

Group object	Type KNX	Size	Direction
Timer – Switch-on delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-on delayed – Output	1.002	1 Bit	To KNX

- Switch-off delay

The OFF telegram (0) received on the input is delayed on the output.

Input: --1-----0-----

Output: --1----- | -T-0--

Group object	Type KNX	Size	Direction
Timer – Switch-off delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-off delayed – Output	1.002	1 Bit	To KNX

- Switch-on and -off delay

The ON/OFF telegram (1/0) received on the input is delayed on the output.

Input: --1-----0-----

Output: -- | -T-1----- | -T-0--

Group object	Type KNX	Size	Direction
Timer – Switch-on/off delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-on/off delayed – Output	1.002	1 Bit	To KNX

- Impulse (staircase)

The ON telegram (1) received on the input is sent on the output. After a delay the output sends the OFF telegram (0).

Input: --1-----0-----

Output: --1-T-0-----

Group object	Type KNX	Size	Direction
Timer – Impulse (staircase) – Input	1.002	1 Bit	From KNX
Timer – Impulse (staircase) – Output	1.002	1 Bit	To KNX



Each timer can be stopped by sending the opposite value to its input group object. For example: An already started switch-on timer can be stopped by sending OFF (0) to its input group object.

Delay [s]

This parameter defines the delay when sending at the output.

Output

Via this parameter the sent value on the output can be inverted:

- Not inverted
- Inverted

6.21.2 Function 1 – 16: Logic

1.1.1 KNX IO 532.1 secure > Logic / Timer > Function 3: Logic	
Description	Function 3: Logic
General settings	Function name
Diagnostics	Gate type AND gate ▼
+ Channel A: Dimmer	
+ Channel B: Actuator	
– Logic / Timer	
Logic / Timer	
Function 1: Timer	
Function 2: Timer	
Function 3: Logic	
Function 4: Logic	

Function name (10 characters)

The function name can be chosen freely.

The name is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects, because the given name is displayed there as a label.

Gate type

This parameter defines the type of the logic gate:

- **And gate**
The output is triggered ON (1), if both inputs are switched ON (1).
- **OR gate**
The output is triggered ON (1), if one or both inputs are switched ON (1).
- **XOR gate**
The output is triggered ON (1), if the two inputs are not equal.
- **NAND gate**
The output is triggered ON (1), if one or both inputs are switched OFF (0).
- **NOR gate**
The output is triggered ON (1), if both inputs are switched OFF (0).

- XNOR gate

The output is triggered ON (1), if both inputs are equal.

Group object	Type KNX	Size	Direction
Logic – Gate input A – Input	1.002	1 Bit	From KNX
Logic – Gate input B – Input	1.002	1 Bit	From KNX
Logic – Gate output – Output	1.002	1 Bit	To KNX



The output transmits when a telegram is received on one of the inputs. A precondition for this is that both inputs are valid (have received at least one telegram). The output sends a 1 if the respective condition is fulfilled, otherwise a 0.

- INVERTER

Input ON (1) is converted into output OFF (0). Input OFF (0) is converted into output ON (1).

Group object	Type KNX	Size	Direction
Logic – Gate input – Input	1.002	1 Bit	From KNX
Logic – Gate output – Output	1.002	1 Bit	To KNX



The output transmits when a telegram is received on the input.



WARNING

- The device must be mounted and commissioned by an authorized electrician.
- The prevailing safety rules must be heeded.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- The device is a permanently connected equipment: A readily accessible disconnect device shall be incorporated external to the equipment.
- The installation requires a 16 A fuse for external overcurrent protection.
- The power rating is indicated on the side of the product.



Product database for ETS 5/6

www.weinzierl.de/en/products/532.1/ets6

Data sheet

www.weinzierl.de/en/products/532.1/datasheet

CE Declaration

www.weinzierl.de/en/products/532.1/ce-declaration

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