

# TAPKO

TECHNOLOGIES GMBH



## TIO4-Sec

4-fold Secure Binary Input with LED Output

**Technical & Application Description**

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# 1 Product Description

The TIO4-Sec Contact Interface is a 4-fold KNX input/output module to operate KNX devices via classical conventional switches and push buttons. The input functionality is suitable for sensing NO/NC floating contacts of push-buttons, conventional switches and contact sensors. Four channels are available to process binary signals from up to four different sources. Each channel can separately be switched to output functionality, to supply low-power electric consumers like status LEDs.

Designed for KNX-enabling of conventional switches and push buttons, TIO4-Sec provides a 3.3 V sensing voltage for contact scanning. All usual KNX input functions like switching, dimming, shutters, blinds control, counter and scenes can be used in the common way. Connected LEDs' lighting is separately configurable for each channel. Blinking can be set. To control brightness, three operating modes are available, constant indication, night/day operation and object control. As there is an object available with that the output level of each channel can be set, it is possible to have LED brightness continually be changed via the bus.

Due to its small housing with a diagonal of 50 mm, TIO4-Sec finds enough room in a flush-mounted box (Ø 60 mm) behind the switch. The I/O connecting cable pairs of 28 cm can be extended up to 10 m when twisted.

## 1.1 Front Panel

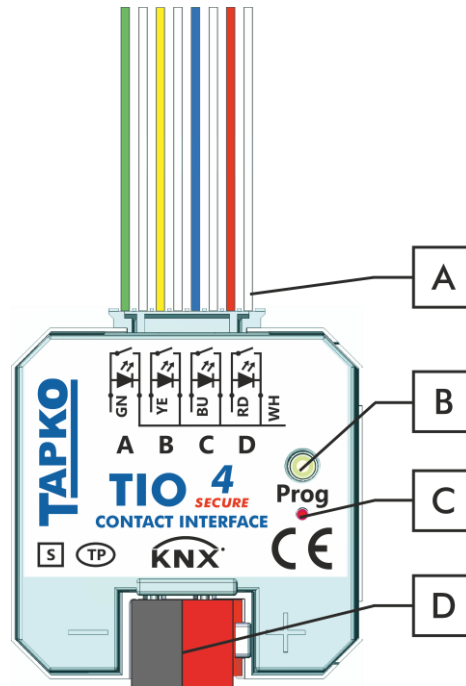


Figure 1: Front View

Table 1: Front Panel Elements

Buttons / Connectors / LEDs	
A	Input/Output
B	Programming Button
C	Programming LED
D	KNX TP Connector

## 1.2 LED Indication

Following table gives a description of the LED indication.

Table 2: LED Indication

Element	LED	Color	Explanation / Range
C	Programming LED	red	Programming Mode active
		< off >	Programming Mode not active

### 1.3 Commissioning

**Please note for commissioning with default settings:**

- Individual Address is 15.15.255
- Activation of Secure Commissioning requires the Device Certificate
- Activation of Secure Commissioning requires a minimum ETS version (see also Security functions)

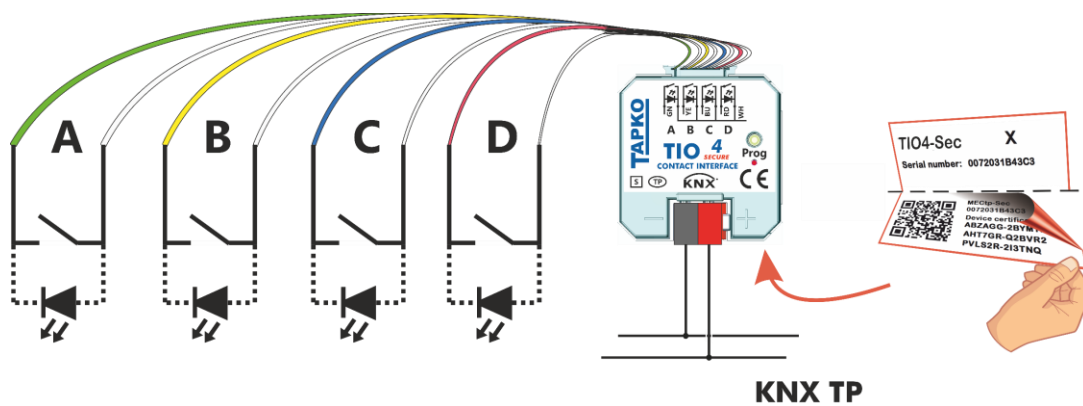


Figure 2: Connection Scheme



To start a secured configuration download, Secure Commissioning must be activated in the ETS project before. Without activation, TIO4-Sec is working as plain device (without supporting KNX Secure).



Please also read chapter 1.5 Important Notes before putting the device into operation.

## 1.4 Secure Commissioning

Before the secured download of a configuration setting and/or the Individual Address can start, the individual Device Certificate of TIO4-Sec must have been added to the ETS project. To be able to add it, the ETS project must be password-protected.



A secured download is only possible after activation of Secure Commissioning.



Activation of Secure Commissioning demands the individual Device Certificate.



Device Certificates can only be added to a password-protected ETS project.

When no project password is set, Secure Commissioning cannot be activated. ETS projects with having Secure Commissioning and/or IP Security set to active always require pre-setting a project password. Having no project password set on activation, the ETS then asks to type it in.

Figure 3: Set Project Password



The individual Device Certificate always is enclosed with a KNX Secure product. To keep the product fully configurable by the user, it is important to make sure the Device Certificate cannot be lost (please note chapter 1.6 Safekeeping of Device Certificate).



## 1.5 Important Notes

It is recommended to participate the standardized courses of a KNX-certified training center before installing, programming, and commissioning a KNX system. Here, the participant gains the necessary knowledge and skills, also required for troubleshooting, by practical exercises.

**Please read this chapter carefully before first use and installation:**

### 1.5.1 Installation and Commissioning

- In the case of damage (at storage, transport) no repairs may be carried out by unauthorized persons
- After connection to the KNX bus system, the device works with its default settings
- **Warning: Do not connect to 230 V. The device is supplied by the KNX bus and does not require any additional external power supply**
- The device may only be installed and put into operation by a qualified electrician or authorized person
- For planning and construction of electric installations the appropriate specifications, guidelines and regulations in force of the respective country have to be complied
- For configuring, use the ETS (or ETS Inside)

### 1.5.2 Mounting and Safety

- The device must not be mounted in a box together with 230 V devices and/or 230 V cables
- Combinations of a push button device connected to both the TIO4-Sec and a 230 V device (or sockets) at the same time are not allowed
- Ensure that there is a safety separation (SELV) between connected signal cables (including extensions) and other current and voltage carrying devices and cables
- When connecting the TIO4-Sec, ensure that it can be isolated
- Prevailing safety and accident prevention rules must be heeded
- Connect the KNX bus line as for common KNX bus connections with a KNX bus cable, to be stripped and plugged into a KNX TP connector
- Do not damage electrical insulations during connecting
- The housing must not be opened
- Installation only in dry locations

### 1.5.3 Maintenance

- Accessibility of the device for operation and visual inspection must be provided
- The housing must not be opened
- Protect the device from moisture, dirt and damage
- The device needs no maintenance
- If necessary, the device can be cleaned with a dry cloth

## 1.6 Safekeeping of Device Certificate

The Device Certificate can be found on a label that is adhered on the backside of the housing. To avoid unwanted access, the label consists of two parts. The upper part must remain on the housing, for identifying the device. The lower one is the tear-off part. This part contains the Device Certificate and should be removed from the device for keeping the information at a safe place after commissioning.

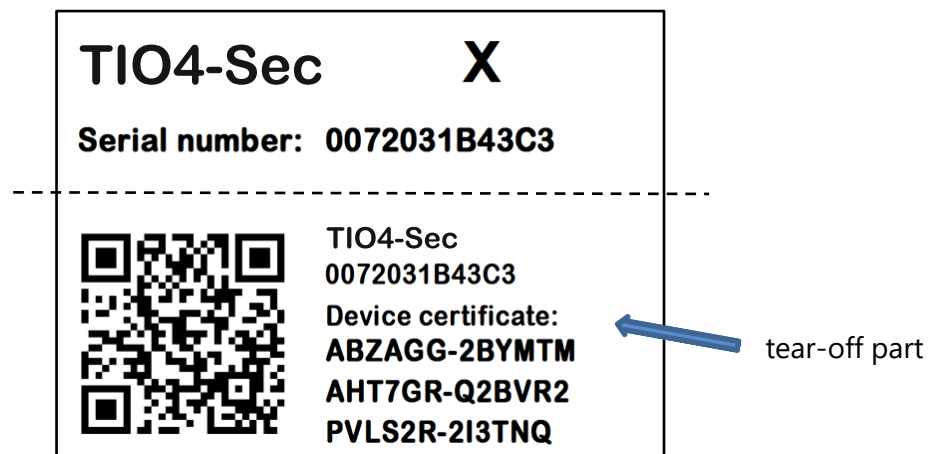


Figure 4: Device Certificate Label

After adding the Device Certificate to the Device Certificate list in ETS, the tear-off part of the Device Certificate label can be archived at a safe place. The Device Certificate list only needs to contain the certificates of the KNX Secure devices that are used within the ETS project. ETS then automatically uses the correct certificates for programming the relevant devices.

For clear identification of the device after removing the tear-off part, the serial number is printed on both label parts, on the one that was removed and the fixed one that stays on the housing.



When the tear-off part that contains the Device Certificate is lost, only the password-protected ETS project contains the Device Certificate.



Be aware, when the Device Certificate is completely lost, meaning the tear-off part is unavailable and the project password (that contained the certificate) is lost, too, a Secure device cannot be set to active secure mode anymore! Consequently, Security cannot be activated within a new ETS project. In this case, to reprogram a Secure device with active secure mode, a Reset has to be carried out and the Secure device can only be used unsecured, as "plain" device, from then.

## 1.7 Feature Summary

- Suitable for potential-free contacts.
- Contact scanning of window contacts, door contacts etc.
- KNX-enabling of classical conventional switches and push-buttons.
- Input channels can be switched to output functionality for supplying status-LEDs.
- Every output channel is separately configurable, meaning every connected LED's indication can be set different.
- LED lighting can be set to constant, single flash, slow blinking, or fast blinking.
- LEDs' brightness can be set to fixed value, day/night operation, or receive value via object.
- Suitable for flush mounting, due to small dimensions.
- Low current consumption.
- Supplied by the bus line.
- NO or NC contact operation.
- Sensor inputs for up to 4 independent devices with potential-free floating contacts such as conventional switches, push-buttons or window contacts.
- KNX binary input applications like one-button shutter (for sun protection), one-button dimming and two-button shutter/dimming, switch (short/long), send value (percent, angle, temperature, 2-bit, 8-bit, 16-bit), impulse counter, scene.
- Detection of short and long button press.
- Interlock function.
- Push-button for programming the Individual Address.

## 2 KNX Secure

KNX devices that support KNX Secure are able to use a special protection basing on telegram encryption. Also, access to the device for configuring is protected and limited to the user that knows its Device Certificate. The Device Certificate is a device-specific protection code that is enclosed with the device on delivery.

To make use of the KNX Secure protection, every KNX Secure device supports a secure mode. When its secure mode is on, commissioning, configuring and runtime communication run in an encrypted manner so that the device is shielded against intruder attack and unwanted manipulation. For activation, the Device Certificate is necessary (see chapter 1.4 *Secure Commissioning*). Only when secure mode is active, the KNX Secure device is able to read and send encrypted telegrams. When secure mode is off, the Secure device behaves like a common KNX device without KNX Secure support (also called plain KNX device). KNX Secure devices in secure mode and plain devices can't be combined by the same group object, but it is possible to have a mixed installation consisting of secured devices and plain devices.



Mixing unsecure and secure communication on the same group address is impossible. Also, a mix of KNX IP Secure couplers in secure mode and plain KNX IP Secure couplers cannot be configured when IP Backbone Security is on.

Encrypted KNX telegrams that are processed by secured devices can be distinguished between telegrams for KNX IP Secure and telegrams for KNX Data Secure:

- KNX IP Secure can only be applied upon the KNX IP medium. KNX Secure telegrams are sent as encrypted IP Secure frames (no matter if KNX Data Secure is used or not).
- KNX Data Secure can be applied on any KNX communication medium. End-to-end communication, better say group communication for one or more certain group objects is encrypted. Due to an individual security key, only end devices having identical Group Addresses can encrypt/decrypt the telegrams of their secured group.

For programming a KNX Secure device, ETS must know its FDSK (Factory Default Setup Key) and its serial number. But it is not necessary entering FDSK or serial number. ETS retrieves this information from the Device Certificate, a device-specific 36-character code containing both serial number and FDSK. Serial number and FDSK cannot be modified. After adding a KNX Secure device plus Device Certificate to the ETS project, ETS automatically sets the project-specific Tool Key that is used for programming from then.

## 3 Operational Description

In network installations, TIO4-Sec is used as KNX binary input to sense potential-free contacts and when necessary, for supplying LEDs. It can be used in plain mode, without activation of Security, and in ETS projects where Security is set to active. After connecting to KNX TP, TIO4-Sec operates with its default settings. To supply LEDs, input channels can be switched to separately configurable output channels. An LED that is connected to such output channel can illuminate a switch, but is especially suitable to indicate a KNX status. Setting the correct Individual Address is necessary for proper functioning within the installation.

### 3.1 Push Button Input / LED Output Application

TIO4-Sec provides four binary input channels for contact scanning. They can be used as single channels and pairwise combined for two-button functions. For all functions the contact type can be set (NO or NC) and a locking function ("Interlock") is available. Also, differing between long and short button press can throughout be configured (counter function excluded).

Combining two channels (A/B or C/D) enables the two-button functions "Dimming" and "Shutter". In single channel mode, following functions can be assigned to a single channel:

- Switch (toggle, status, short/long)
- Scene (1-bit scene, 8-bit scene with and without long button press saving function)
- Counter (8-bit, 16-bit, 32-bit)
- Send value: Percent, Angle, Temperature, 2-bit, 8-bit, 16-bit
- One-button dimming
- One-button shutter

To reset an input channel's counter, a telegram containing "0" or "1" must be received by the corresponding communication object „Counter reset“.

When using a channel as output channel, parameters for configuring LED lighting become available. LED activation can be chosen to have initialization by reception of a 0 or a 1. For supplying low-current LEDs, the maximum power consumption at a channel's output can be limited to a low level. To configure LED indication and set lighting, options constant lighting, single flash indication, slow blinking, and fast blinking are available. After having set the kind of lighting, the intensity of indication can be configured to either a fixed value, to have different values for night and day, or to receive the value constantly via an object from the bus. Switching between night and day value is also to be accomplished via an object (obj. 29).

### 3.2 Adding Device Certificate

The Device Certificate can be found printed on a label on the backside of the housing. Every KNX Secure device uses its own Device Certificate. Entering this Device Certificate in ETS is mandatory before activating or using KNX Security functions.



Please also follow the advice on handling the tear-off part of the backside label in chapter 1.6 Safekeeping of Device Certificate.

The Device Certificate can be entered manually and by taking a webcam picture of the QR code that is additionally contained on the tear-off part of the Device Certificate label.



Figure 5: Tear-off Part of the Device Certificate Side Label

After opening the project, the Device Certificate list can be edited. In the Security tab under Project Overview Device Certificates can be added and deleted.

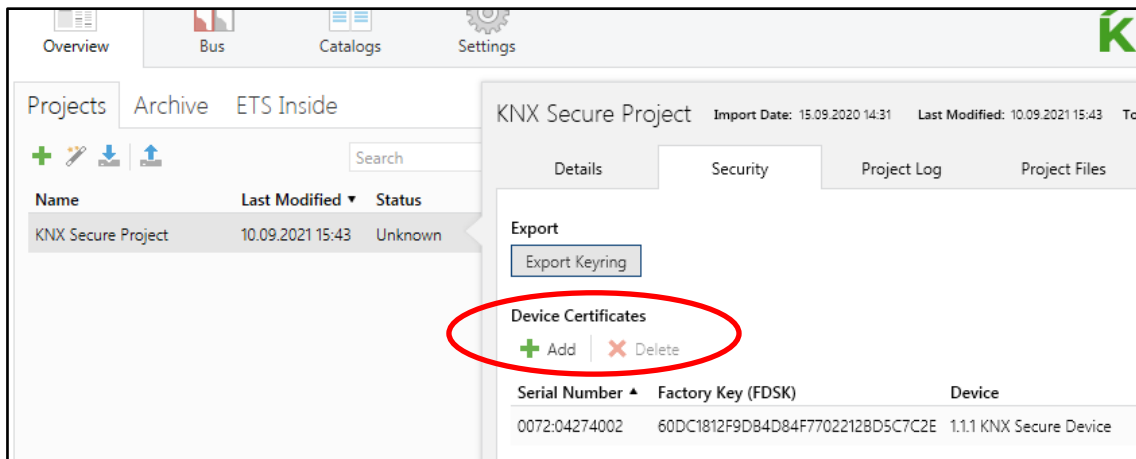


Figure 6: Device Certificate List

When the Device Certificate list doesn't contain the Device Certificate of a certain Secure device, on starting the Secure download into this device following window appears. Then, the QR code must be scanned, or alternatively, the 36-character code of the Device Certificate must be entered manually to continue.

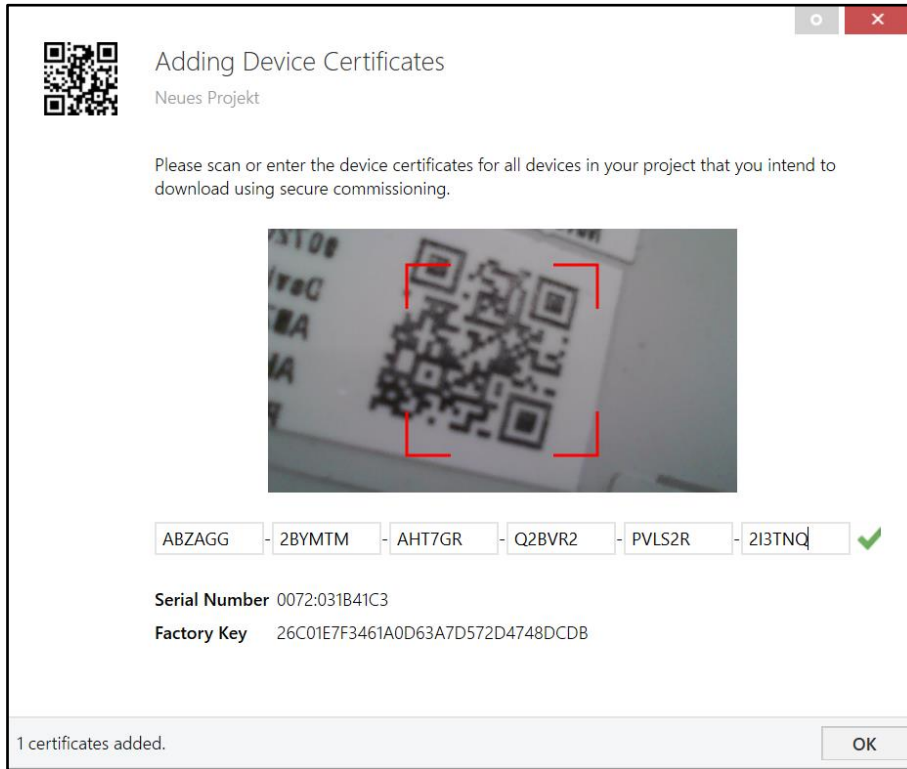


Figure 7: Adding Device Certificate

### 3.3 Programming

#### 3.3.1 Programming of Individual Address (and Application)

The Individual Address (IA) can be assigned to TIO4-Sec by setting the desired address in the properties window of ETS. After downloading it into the device, TIO4-Sec can be addressed and identified by its new Individual Address.

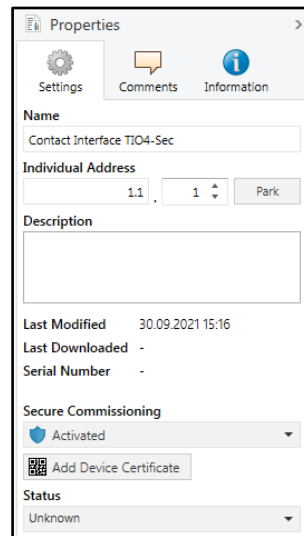


Figure 8: ETS Properties Window

To download the Individual Address into the device, Programming Mode must be active. Successive pressing the Programming Button switches Programming Mode on and off. LED (C) lighting red indicates Programming Mode is on. Once the download is started in ETS, the Programming Button has to be pressed. After that, the new Individual Address becomes stored in the memory of the device.



To program devices of a line different to which the device used as ETS Current Interface is connected, a correct topology is mandatory.



The device is supplied with the Individual Address 15.15.255 (Factory Default Setting). It is recommended not to use this address for normal operation and to assign a different address when commissioning.



## 4 ETS Database Parameters

### 4.1 General

Channels can be used as single channels and pairwise combined for functions “Dimming” and “Shutter”. Switching channels to LED output functionality can also be done here. LED output functionality is available only for single channels.

Figure 9: General Tab Parameters

Table 3: General Tab Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Debounce time	10 ms; 30 ms; 60 ms; 120 ms <b>[30 ms]</b>	Setting the debouncing time prevents unwanted multiple operation of the inputs e.g. due to bouncing of the contact. This applies to all four channels.
Channel function A/B	not active single channels Dimming Shutter <b>[not active]</b>	Configuration of channels A/B.
Channel function C/D	not active single channels Dimming Shutter <b>[not active]</b>	Configuration of channels C/D.
Channel function A...D	inactive Input Output <b>[inactive]</b>	When Channel function of combined channels is switched to single channel use, a single channel can be configured as Input channel or Output channel.

## 4.2 Input Channels A, B, C, D

When a channel pair is set to single channels and the single Channel function to Input, following KNX binary input functions become available.

### 4.2.1 Switch

1.1.1 4-fold Secure Binary Input with LED Output > Input channel A

General	Input function	Switch
Input channel A	Subfunction	switch on rising edge
Input channel B	Value rising edge	<input type="radio"/> off <input checked="" type="radio"/> on
Input channel C	Contact type	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
Input channel D	Interlock	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Figure 10: Input channel A: Switch Parameters

Table 4: Input channel A: Switch Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'Switch' are described in this table).
Sub function	switch on rising edge toggle on rising edge send status switch on short/long button press <b>[switch on rising edge]</b>	Defines the sub function on which the object value is changed.
Value rising edge	off on <b>[on]</b>	The here defined value will be sent to the object on a rising edge; available for "switch on rising edge".
Value falling edge	off on <b>[off]</b>	The here defined value will be sent to the object on a falling edge; available for "send status".
Send cyclic	disabled if value = 1 if value = 0 if contact is opened or closed <b>[disabled]</b>	If enabled, the parameterized object value will be sent cyclically; available for "send status".
Cyclic sending period [s]	1...3000 <b>[10]</b>	Time interval for "Send cyclic".

ETS Parameter	Settings [Default Parameter]	Comment
Value for short press	nothing off on toggle <b>[off]</b>	The here defined action is executed after a short button press; available for "switch on short/long button press".
Value for long press	nothing off on toggle <b>[on]</b>	The here defined action is executed after a long button press; available for "switch on short/long button press".
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Duration that the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent; available for "Switch short/long".
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.2.2 Scene

For storing 8-bit scenes, there are 64 scene numbers available. For storing 1-bit scenes, there are 2 scene numbers available. When saving function is enabled, a long button press can be used to store an 8-bit scene.

1.1.1 4-fold Secure Binary Input with LED Output > Input channel A

General	Input function	Scene
Input channel A	Scene	saving function is on
Input channel B	Scene number	Scene 1
Input channel C	Long button press starts at ...	2.0 s
Input channel D	Contact type	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
	Interlock	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Figure 11: Input channel A: Scene Parameters

Table 5: Input channel A: Scene Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'Scene' are described in this table).
Scene	saving function is off saving function is on 1-bit scene <b>[saving function is off]</b>	Sets the saving option for an 8-bit scene or sets the 1-bit scene.
Scene number	Scene 1...64 <b>[Scene 1]</b>	One of the 64 possible 8-bit scenes can be recalled; available for "without saving function" and "saving function".
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Duration that the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent; available for "with saving function".
Scene	Scene 1 Scene 2 <b>[Scene 1]</b>	One of 2 possible 1-bit scenes can be recalled; available for "1-bit".

ETS Parameter	Settings [Default Parameter]	Comment
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.2.3 Counter

1.1.1 4-fold Secure Binary Input with LED Output > Input channel A

General	Input function	Counter
Input channel A	Count edge	rising edge
Input channel B	Counter type	8-bit
Input channel C	Counter limit active	<input type="radio"/> no <input checked="" type="radio"/> yes
Input channel D	Counter limit value	50
	Sending difference	5
	Write value via KNX	<input type="radio"/> disabled <input checked="" type="radio"/> enabled
	Contact type	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
	Interlock	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Figure 12: Input channel A: Counter Parameters

Table 6: Input channel A: Counter Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'Counter' are described in this table).
Count edge	rising edge falling edge both edges <b>[rising edge]</b>	Defines on which edge(s) the counter is increasing.
Counter type	8-bit 16-bit 32-bit <b>[8-bit]</b>	Counters to be set according to the application's requirement.
Counter limit active	no yes <b>[no]</b>	Must be set to "yes", when a counter limit is needed.
Counter limit value	<del>8-bit:</del> 1...255 <b>[50]</b> <del>16-bit:</del> 1...65535 <b>[200]</b> <del>32-bit:</del> 1...2147483647 <b>[500]</b>	Sets the counter limit value; available if "Counter limit active" is set to "yes".

ETS Parameter	Settings [Default Parameter]	Comment
Sending difference	<u>8-bit:</u> 1...255 <b>[5]</b> <u>16-bit:</u> 1...65535 <b>[100]</b> <u>32-bit:</u> 1...65535 <b>[250]</b>	Object is sent when the sending difference is reached.
Write value via KNX	disabled enabled <b>[enabled]</b>	Must be enabled for setting the counter value via object.
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

#### 4.2.4 Send value

1.1.1 4-fold Secure Binary Input with LED Output > Input channel A

General	Input function	Send value
Input channel A	Send value	on both edges
Input channel B	Value type	Percent
Input channel C	Value rising edge	0 %
Input channel D	Value falling edge	0 %
	Contact type	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
	Interlock	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Figure 13: Input channel A: Send value Parameters

Table 7: Input channel A: Send value Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'Send value' are described in this table).
Send value	on rising edge on both edges on short/long button press on long button press <b>[on rising edge]</b>	Defines on which event(s) the object value is sent.
Value type	Percent Angle Temperature 2-bit value (forced operation) 8-bit value 16-bit value <b>[Percent]</b>	Sets the type of value.
Value rising edge	<u>Percent:</u> 0 % ...100 % <b>[0 %]</b> <u>Angle:</u> 0°; 5°; 10° ...360° <b>[0°]</b>	Sets value; available for "on rising edge" and "on both edges".
Value falling edge	<u>Temperature</u> (x 100/°C): -27300...32000 <b>[0]</b>	
Value for short press	<u>2-bit:</u> ON, activate forced OFF, activate forced deactivate forced <b>[deactivate forced]</b>	Sets value; available for "on short/long button press".
Value for long press	<u>8-bit:</u> 0...255 <b>[0]</b> <u>16-bit:</u> 0...65535 <b>[0]</b>	Sets value; available for "on short/long button press" and "on long button press".



ETS Parameter	Settings [Default Parameter]	Comment
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Time the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent; available for "on short/long button press" and "on long button press".
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.2.5 One-button dimming

A long button press affects the communication object "Dimming" which is responsible for the dimming progress. A short keystroke affects the switching object "Dimming on/off". Dimming direction is toggled by every button press. One-button dimming is a start & stop dimming. This means a command for darker or brighter is sent until the button is released. After release, dimming stops.

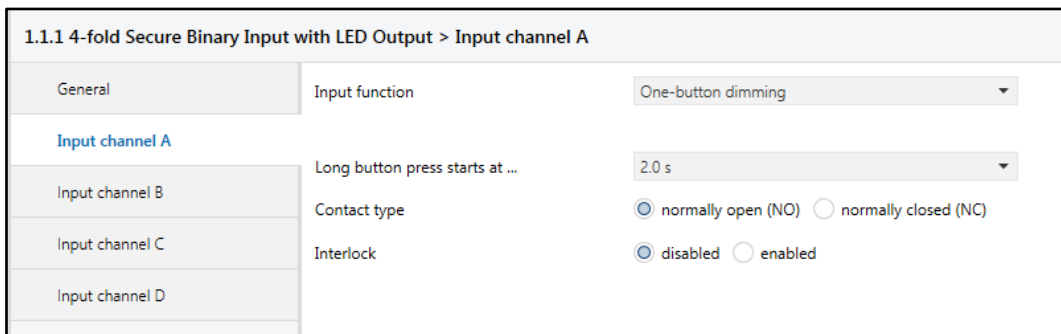


Figure 14: Input channel A: One-button dimming Parameters

Table 8: Input channel A: One-button dimming Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'One-button dimming' are described in this table).
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Time the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent.
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.2.6 One-button shutter

A long button press affects the communication object "Shutter up/down" which is responsible for starting the up down movement of the shutter or blind. Movement direction is toggled by every button press. The one-button shutter is a start & stop movement function meaning a move up or move down command is sent on activation. A short button press affects the switching object "Blinds open/close" for stopping the movement and/or adjusting the blinds.

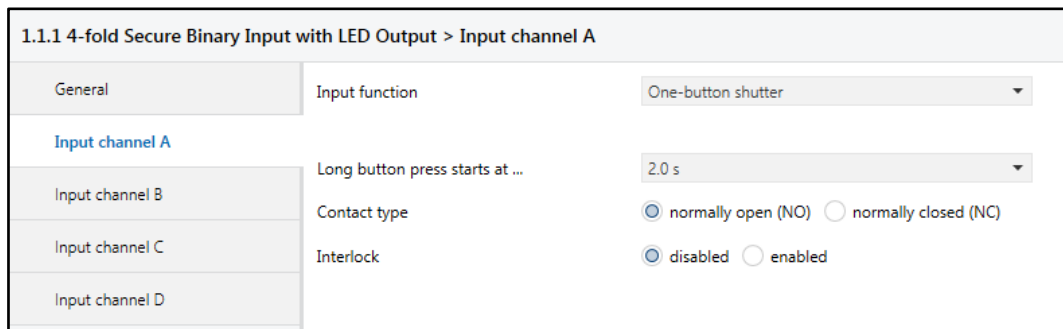


Figure 15: Input channel A: One-button shutter Parameters

Table 9: Input channel A: One-button shutter Parameter Settings

ETS Parameter	Settings [Default Parameter]	Comment
Input function	Switch Scene Counter Send value One-button dimming One-button shutter <b>[Switch]</b>	Functions that can be set for each channel (parameters for 'One-button shutter' are described in this table).
Contact type	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Time the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent.
Contact type	normally open (NO) normally closed (NC) <b>[normally open]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.3 Output Channels A, B, C, D

For channel pairs set to single channels and a single channel set to Output functionality, LED output parameters appear for configuring activation, consumption, lighting and intensity. LED intensity can have a constant value, different values for night and day, or be set by object 28.

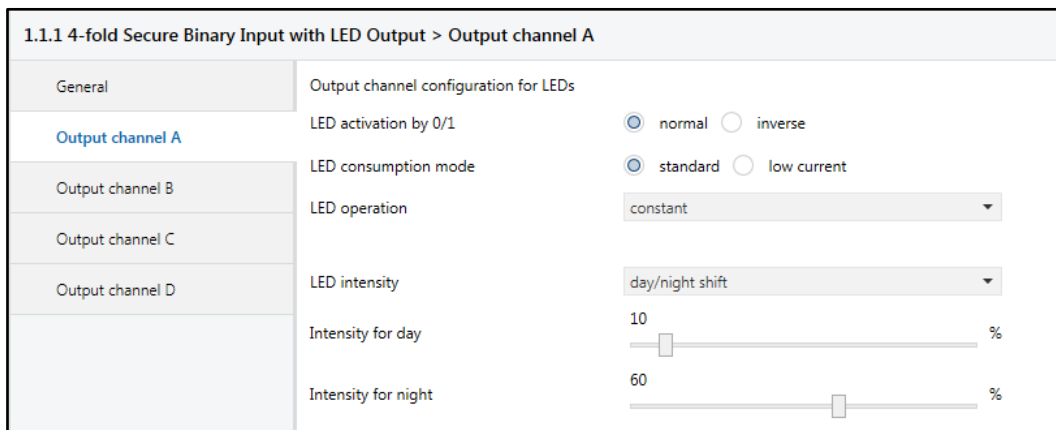


Figure 16: Output channel A: LED operation

Table 10: Output channel A: LED operation Settings

ETS Parameter	Settings [Default Parameter]	Comment
LED activation by 0/1	normal inverted <b>[normal]</b>	Activation can be configured normal with 1, or inverted with 0.
LED consumption mode	standard low current <b>[standard]</b>	For low-current LEDs, the output power can be set to a limited value.
LED operation	constant single flash fast blinking slow blinking <b>[constant]</b>	LED indication can be configured by setting the blinking/lighting.
LED intensity	fixed value day/night shift configure by object <b>[fixed value]</b>	Intensity can be set either to a fixed value, or to different values for day and night, or can be set by receiving the value via an object from the bus.
Fixed value	0...100 % <b>[10 %]</b>	Sets the intensity value; available for "fixed value".
Intensity for day	0...100 % <b>[10 %]</b>	Sets the day intensity value for day/night shift. For day, obj. 29 must be 0.
Intensity for night	0...100 % <b>[60 %]</b>	Sets the night intensity value for day/night shift. For night, obj. 29 must be 1.
Intensity before object reception	0...100 % <b>[25 %]</b>	When intensity is received only via object from the bus, this value is present after a device startup and after a bus line reset.

## 4.4 Channels A/B, C/D

Combined input channels enable two-button functions “Dimming” and “Shutter”. According to the setting in the “General” tab, either two-button dimming or two-button shutter is active. In comparison with one-button functions, assignment of buttons is different here. For example, one button is for driving shutters up, and the other one is for driving them down.

### 4.4.1 Two-button dimming

Figure 17: Input channels A/B Tab Parameters (same applies to Channels C/D)

Table 11: Input channels A/B Tab Parameter Settings (same applies to Channels C/D)

ETS Parameter	Settings [Default Parameter]	Comment
Contact type of- Input channel A	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Contact type of- Input channel B	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Dimming function A/B	brighter/darker darker/brighter <b>[brighter/darker]</b>	Defines the inputs for dimming up and dimming down. <u>brighter/darker:</u> <ul style="list-style-type: none"> <li>• Input A dims up and switches to on.</li> <li>• Input B dims down and switches to off.</li> </ul> <u>darker/brighter:</u> <ul style="list-style-type: none"> <li>• Input A dims down and switches to off.</li> <li>• Input B dims up and switches to on.</li> </ul>
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Time the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

### 4.4.2 Two-button shutter

1.1.1 4-fold Secure Binary Input with LED Output > Input channel A/B

General	Contact type of Input channel A	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
Input channel A/B	Contact type of Input channel B	<input checked="" type="radio"/> normally open (NO) <input type="radio"/> normally closed (NC)
Input channel C/D	Shutter function A/B	<input checked="" type="radio"/> up / down <input type="radio"/> down / up
	Long button press starts at ...	2.0 s
	Interlock	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Figure 18: Input channels A/B Tab Parameters (same applies to Channels C/D)

Table 12: Input channels A/B Tab Parameter Settings (same applies to Channels C/D)

ETS Parameter	Settings [Default Parameter]	Comment
Contact type of- Input channel A	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Contact type of- Input channel B	normally open (NO) normally closed (NC) <b>[normally open (NO)]</b>	Defines the contact type at the input, NO or NC. If NO is selected, the input is logic high after the contact is closed.
Shutter function A/B	up/down down/up <b>[up/down]</b>	Defines the inputs for moving the shutter up and for moving the shutter down. <u>up/down:</u> <ul style="list-style-type: none"> <li>• Channel A moves the shutter up.</li> <li>• Channel B moves the shutter down.</li> </ul> <u>down/up:</u> <ul style="list-style-type: none"> <li>• Channel A moves the shutter down.</li> <li>• Channel B moves the shutter up.</li> </ul>
Long button press starts at ...	0.3 s; 0.5 s; 0.7 s; 1.0 s; 1.5 s; ... 4.0 s; 5.0 s; 6.0 s; ... 10.0 s; 15.0 s; 20.0 s; 30.0 s <b>[2.0 s]</b>	Time the input needs to be logical high to start the long operation. If the input is logical high for a shorter time, only the command for short operation will be sent.
Interlock	disabled enabled <b>[disabled]</b>	If Interlock is active, changes at the Input are not considered until the Interlock is deactivated again.

## 5 Communication Objects

Table 13: Communication Object Overview

No.	Name	Function	Description	Length	DPT	C	R	W	T	U
1	Switch	Input A	This object is used to switch on/off, to toggle or to "send status".	1 bit	DPT1	X	X		X	
1	Switch short	Input A	This object is used to switch on/off on a short button press.	1 bit	DPT1	X	X		X	
1	Counter reset	Input A	This object is used to reset the counter on receiving a telegram with "0" or "1".	1 bit	DPT1	X		X		X
1	Send value	Input A	This object is used to send a predefined value on a (short) button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
1	Dimming on/off	Input A	This object is used to switch on/off a dimmable light source (One-button dimming).	1 bit	DPT1	X	X		X	
1	Shutter up/down	Input A	This object is used to move shutters up or down (One-button shutter).	1 bit	DPT1	X	X		X	
1	Dimming on/off	Input A/B	This object is used to switch on/off a dimmable light source (Two-button dimming).	1 bit	DPT1	X	X		X	
1	Shutter up/down	Input A/B	This object is used to move shutters up or down (Two-button shutter).	1 bit	DPT1	X			X	
2	Toggle status	Input A	This object is used to toggle on a long button press (Switch and One-button dimming).	1 bit	DPT1	X		X		X
2	Counter limit	Input A	This object is used to set the counter limit availability.	1 bit	DPT1	X	X		X	X
3	Switch long	Input A	This object is used to switch on/off on a long button press.	1 bit	DPT1	X	X		X	
3	Scene	Input A	This object is used to recall or learn the configured 8-bit scene (1-64).	1 byte	DPT18	X	X		X	
3	1-bit Scene	Input A	This object is used to recall or learn the configured 1-bit scene (1 or 2).	1 bit	DPT1	X	X		X	
3	Send value long	Input A	This object is used to send a predefined value on a long button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
3	Dimming	Input A	This object is used to dim brighter or darker (One-button dimming).	4 bit	DPT3	X	X		X	

No.	Name	Function	Description	Length	DPT	C	R	W	T	U
3	Blinds step/stop	Input A	This object is used to stop movement and adjust blinds (One-button shutter).	1 bit	DPT1	X	X		X	
3	Dimming	Input A/B	This object is used to dim brighter or darker (Two-button dimming).	4 bit	DPT3	X			X	
3	Blinds step/stop	Input A/B	This object is used to close or open blinds (Two-button shutter).	1 bit	DPT1	X			X	
4	Toggle status long	Input A	This object is used to toggle on a long button press (Switch).	1 bit	DPT1	X		X		X
4	Counter	Input A	This object is used as counter (8-bit, 16-bit or 32-bit) for rising edge, falling edge or both edges.	1 byte, 2 bytes, 4 bytes	DPT5, DPT7, DPT12	X	X	X	X	X
5	Interlock	Input A	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X	X	
5	Interlock	Input A/B	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X		X
6	Switch on/off	Output A	This object is used to switch the LED on/off.	1 bit	DPT1	X		X		X
7	Output power	Output A	With this object, intensity of LED lighting can be set.	1 byte	DPT5	X		X		X
8	Switch	Input B	This object is used to switch on/off, to toggle or to "send status".	1 bit	DPT1	X	X		X	
8	Switch short	Input B	This object is used to switch on/off on a short button press.	1 bit	DPT1	X	X		X	
8	Counter reset	Input B	This object is used to reset the counter on receiving a telegram with "0" or "1".	1 bit	DPT1	X		X		X
8	Send value	Input B	This object is used to send a predefined value on a (short) button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
8	Dimming on/off	Input B	This object is used to switch on/off a dimmable light source (One-button dimming).	1 bit	DPT1	X	X		X	
8	Shutter up/down	Input B	This object is used to move shutters up or down (One-button shutter).	1 bit	DPT1	X	X		X	
9	Toggle status	Input B	This object is used to toggle on a long button press (Switch and One-button dimming).	1 bit	DPT1	X		X		X
9	Counter limit	Input B	This object is used to set the counter limit availability.	1 bit	DPT1	X	X		X	X



No.	Name	Function	Description	Length	DPT	C	R	W	T	U
10	Switch long	Input B	This object is used to switch on/off on a long button press.	1 bit	DPT1	X	X		X	
10	Scene	Input B	This object is used to recall or learn the configured 8-bit scene (1-64).	1 byte	DPT18	X	X		X	
10	1-bit Scene	Input B	This object is used to recall or learn the configured 1-bit scene (1 or 2).	1 bit	DPT1	X	X		X	
10	Send value long	Input B	This object is used to send a predefined value on a long button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
10	Dimming	Input B	This object is used to dim brighter or darker (One-button dimming).	4 bit	DPT3	X	X		X	
10	Blinds step/stop	Input B	This object is used to stop movement and adjust blinds (One-button shutter).	1 bit	DPT1	X	X		X	
11	Toggle status long	Input B	This object is used to toggle on a long button press (Switch).	1 bit	DPT1	X		X		X
11	Counter	Input B	This object is used as counter (8-bit, 16-bit or 32-bit) for rising edge, falling edge or both edges.	1 byte, 2 bytes, 4 bytes	DPT5, DPT7, DPT12	X	X	X	X	X
12	Interlock	Input B	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X	X	
13	Switch on/off	Output B	This object is used to switch the LED on/off.	1 bit	DPT1	X		X		X
14	Output power	Output B	With this object, intensity of LED lighting can be set.	1 byte	DPT5	X		X		X
15	Switch	Input C	This object is used to switch on/off, to toggle or to "send status".	1 bit	DPT1	X	X		X	
15	Switch short	Input C	This object is used to switch on/off on a short button press.	1 bit	DPT1	X	X		X	
15	Counter reset	Input C	This object is used to reset the counter on receiving a telegram with "0" or "1".	1 bit	DPT1	X		X		X
15	Send value	Input C	This object is used to send a predefined value on a (short) button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
15	Dimming on/off	Input C	This object is used to switch on/off a dimmable light source (One-button dimming).	1 bit	DPT1	X	X		X	

No.	Name	Function	Description	Length	DPT	C	R	W	T	U
15	Shutter up/down	Input C	This object is used to move shutters up or down (One-button shutter).	1 bit	DPT1	X	X		X	
15	Dimming on/off	Input C/D	This object is used to switch on/off a dimmable light source (Two-button dimming).	1 bit	DPT1	X	X		X	
15	Shutter up/down	Input C/D	This object is used to move shutters up or down (Two-button shutter).	1 bit	DPT1	X			X	
16	Toggle status	Input C	This object is used to toggle on a long button press (Switch and One-button dimming).	1 bit	DPT1	X		X		X
16	Counter limit	Input C	This object is used to set the counter limit availability.	1 bit	DPT1	X	X		X	X
17	Switch long	Input C	This object is used to switch on/off on a long button press.	1 bit	DPT1	X	X		X	
17	Scene	Input C	This object is used to recall or learn the configured 8-bit scene (1-64).	1 byte	DPT18	X	X		X	
17	1-bit Scene	Input C	This object is used to recall or learn the configured 1-bit scene (1 or 2).	1 bit	DPT1	X	X		X	
17	Send value long	Input C	This object is used to send a predefined value on a long button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
17	Dimming	Input C	This object is used to dim brighter or darker (One-button dimming).	4 bit	DPT3	X	X		X	
17	Blinds step/stop	Input C	This object is used to stop movement and adjust blinds (One-button shutter).	1 bit	DPT1	X	X		X	
17	Dimming	Input C/D	This object is used to dim brighter or darker (Two-button dimming).	4 bit	DPT3	X			X	
17	Blinds step/stop	Input C/D	This object is used to close or open blinds (Two-button shutter).	1 bit	DPT1	X			X	
18	Toggle status long	Input C	This object is used to toggle on a long button press (Switch).	1 bit	DPT1	X		X		X
18	Counter	Input C	This object is used as counter (8-bit, 16-bit or 32-bit) for rising edge, falling edge or both edges.	1 byte, 2 bytes, 4 bytes	DPT5, DPT7, DPT12	X	X	X	X	X
19	Interlock	Input C	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X	X	
19	Interlock	Input C/D	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X		X

No.	Name	Function	Description	Length	DPT	C	R	W	T	U
20	Switch on/off	Output C	This object is used to switch the LED on/off.	1 bit	DPT1	X		X		X
21	Output power	Output C	With this object, intensity of LED lighting can be set.	1 byte	DPT5	X		X		X
22	Switch	Input D	This object is used to switch on/off, to toggle or to "send status".	1 bit	DPT1	X	X		X	
22	Switch short	Input D	This object is used to switch on/off on a short button press.	1 bit	DPT1	X	X		X	
22	Counter reset	Input D	This object is used to reset the counter on receiving a telegram with "0" or "1".	1 bit	DPT1	X		X		X
22	Send value	Input D	This object is used to send a predefined value on a (short) button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
22	Dimming on/off	Input D	This object is used to switch on/off a dimmable light source (One-button dimming).	1 bit	DPT1	X	X		X	
22	Shutter up/down	Input D	This object is used to move shutters up or down (One-button shutter).	1 bit	DPT1	X	X		X	
23	Toggle status	Input D	This object is used to toggle on a long button press (Switch and One-button dimming).	1 bit	DPT1	X		X		X
23	Counter limit	Input D	This object is used to set the counter limit availability.	1 bit	DPT1	X	X		X	X
24	Switch long	Input D	This object is used to switch on/off on a long button press.	1 bit	DPT1	X	X		X	
24	Scene	Input D	This object is used to recall or learn the configured 8-bit scene (1-64).	1 byte	DPT18	X	X		X	
24	1-bit Scene	Input D	This object is used to recall or learn the configured 1-bit scene (1 or 2).	1 bit	DPT1	X	X		X	
24	Send value long	Input D	This object is used to send a predefined value on a long button press.	2 bit, 1 byte, 2 bytes	DPT2, DPT5, DPT6, DPT7, DPT9	X	X		X	
24	Dimming	Input D	This object is used to dim brighter or darker (One-button dimming).	4 bit	DPT3	X	X		X	
24	Blinds step/stop	Input D	This object is used to stop movement and adjust blinds (One-button shutter).	1 bit	DPT1	X	X		X	
25	Toggle status long	Input D	This object is used to toggle on a long button press (Switch).	1 bit	DPT1	X		X		X

No.	Name	Function	Description	Length	DPT	C	R	W	T	U
25	Counter	Input D	This object is used as counter (8-bit, 16-bit or 32-bit) for rising edge, falling edge or both edges.	1 byte, 2 bytes, 4 bytes	DPT5, DPT7, DPT12	X	X	X	X	X
26	Interlock	Input D	This object is used to lock/unlock functioning on receiving the value 1.	1 bit	DPT1	X		X	X	
27	Switch on/off	Output D	This object is used to switch the LED on/off.	1 bit	DPT1	X		X		X
28	Output power	Output D	With this object, intensity of LED lighting can be set.	1 byte	DPT5	X		X		X
29	Day/night shift	LED Output	For operating LEDs with day/night shift, this object is used to switch between the intensity values for day and night.	1 bit	DPT1	X		X	X	X

## 6 Glossary

ACK	An ACK is a positive IACK frame. If the sender detects an ACK, then the sender's data has been received correctly, meaning the data has been successfully transmitted to the receiver.
Acknowledgement frames	Acknowledgment on the KNX Link Layer is also called Immediate ACK (IACK) in KNX jargon, presumably to differentiate it from other ack methods on the upper layers. Regarding sender and receiver, IACK frames are used to confirm to the sender the transmitted data was received correctly by the receiver (ACK) or not (BUSY/NACK). Also, a receiver cannot respond by sending back an IACK when a frame is damaged or incorrectly addressed (missing IACK). The IACK confirmation is a mechanism within a KNX TP line or segment. For communication across different lines or segments, the couplers connecting the lines generate the relevant IACKs.
BUSY	A BUSY is a negative IACK frame. If the sender detects a BUSY, then the receiver was not able to process the received frame. Thereafter, the sender waits for a short time period and retries to send the frame.
Communication Object	same as Group Object
Data Point Type (DPT)	Standardized data format for transmitting values via KNX. The complete list of DPTs is available at KNX Association.
Extended Frames format	An extended frame has a maximum APDU length of 254 octets and a maximum length of 263 octets (incl. checksum).
Filtering	Filtering of telegrams by couplers can be accomplished according to the topology via Individual Addresses (Physical Telegrams) and according to filter tables for group communication via Group Addresses (Group Telegrams).
Group Address	Group addresses are used to link group communication objects.

Group Communication Object	Group communication objects contain the datapoints which are transmitted via runtime communication. One or more group addresses are assigned to one group communication object. One of these assigned group addresses is the sending group address (to send the group communication object value to the bus). The remaining assigned group addresses, if available, then receive the value.
Group Object	same as Group Communication Object. A data point in KNX can be called shortly a 'Group Object' or just 'Object'.
Group Telegram	Group-oriented telegrams are named Group Telegrams. Filtering of Group Telegrams by couplers is accomplished according to their built-in filter tables for group communication.
IACK	see Acknowledgement frames
Individual Address	The Individual Address of a device defines the location of the device within the topology.
Long Telegrams	Long telegrams or long frames are telegrams having an APDU length that exceeds 15 octets. Long telegrams use the extended frame format.
NACK	A NACK is a negative IACK frame. When the sender detects a NACK, then the sender's data has not been received correctly by at least one device meaning it has not been successfully transmitted to one or more receivers. Thereafter, the sender waits for a short time period and retries to send the frame.
Physical Address	same as Individual Address
Physical Telegram	Individually addressed telegrams are named Physical Telegrams.
Repetition of telegrams	When there is no positive IACK on the regarded TP line (e.g. NACK, BUSY, missing IACK), couplers usually repeat messages up to three times. For all MEC couplers, the number of repetitions on TP is configurable.

Security functions	For using ETS Security functions, a minimum ETS version is necessary. Security functions have been available since ETS version 5.7.2 (ETS Inside 1.4.0).
Short Telegrams	Short telegrams or short frames are telegrams having an APDU length that is not exceeding 15 octets. Short telegrams use the standard frame format.
Standard Frame format	A standard frame has a maximum APDU length of 15 octets and a maximum length of 23 octets (incl. checksum).

## 7 Technical

### 7.1 State of Delivery

Table 14: Factory Default Setting

<b>General</b>	
Individual Address	15.15.255

<b>General settings</b>	
Debounce time	30 ms
Channel function A/B	not active
Channel function C/D	not active



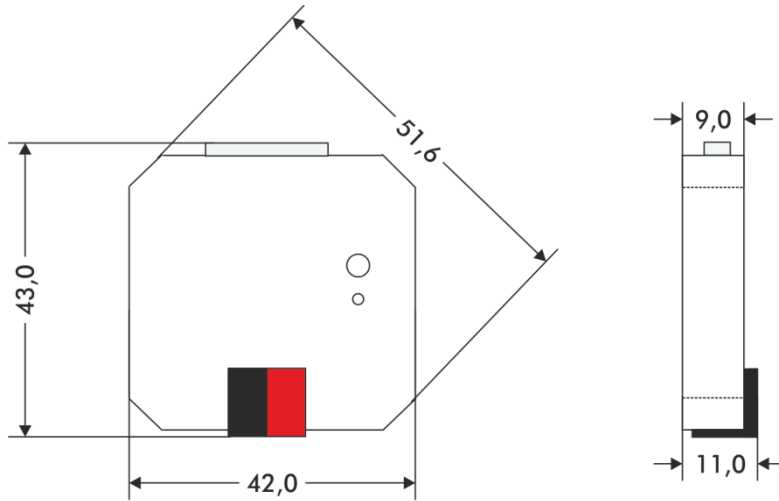
## 7.2 Datasheet

<b>Marking/Design</b>	TIO4-Sec
<b>Current consumption</b>	< 10 mA
<b>Connections</b>	KNX TP line: KNX TP connector (red/black), screwless, for single-core cable Ø 0.6...0.8 mm
	In/Out cables: 4 pairs, 28 cm length, 0.22 mm <sup>2</sup> , Ø 0.56 mm
<b>LED Display elements</b>	Programming LED
<b>Control elements</b>	Programming Button
<b>Protection type</b>	IP20 according to IEC60529
<b>Pollution degree</b>	2 according to IEC60664-1
<b>Protection class</b>	III according to IEC61140
<b>Overvoltage category</b>	III according to IEC60664-1
<b>Approbation</b>	KNX-certified according to ISO/IEC14543-3
<b>CE Marking</b>	In compliance with directives 2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS)
<b>Standards</b>	EN50491-2, EN IEC 63000, EN IEC 61000-6-2, EN IEC 61000-6-3, EN IEC 63044-5-1, EN IEC 63044-5-2, EN IEC 63044-5-3
<b>Voltage supply</b>	KNX: 21...30V DC (SELV)
<b>Housing colour</b>	Plastic PA66 housing, grey
<b>Housing dimensions</b>	H = 43 mm, W = 42 mm, D = 11 mm
<b>Flush mounting</b>	Box of Ø 60 mm x 40 mm
<b>Weight</b>	22 g
<b>Operating temperature</b>	-5...45 °C
<b>Storage temperature</b>	-25...70 °C
<b>Ambient humidity</b>	5...93 %, non-condensing
<b>Binary input channels</b>	4 (potential-free contacts)
<b>Input sensing voltage</b>	3.3 V
<b>Input sensing current</b>	0.3 mA (100 mA short-time)

### 7.3 Drawings



Dimensions shown here are specified in mm.



Dimensions in mm  
Tolerance: +/- 0.5 mm

Figure 19: Dimension Drawings

## 8 FAQ

- **I lost the Device Certificate. What can I do?**

Take an ETS project where it is contained and open the Project Certificates Report.

- **I opened a new project in ETS and added the Device Certificate. But the download to the secure TIO4-Sec doesn't work.**

Use Commissioning Password and Authentication Code from your former project.

- **I lost the Device Certificate and the password for the project where it was contained. What can I do?**

Contact the manufacturer and ask for support.

# TIO4-Sec

Application:

4-fold Secure Binary Input with LED Output

Doctype:

Technical & Application Description

Release Number / Release Date:

R1-0 / October 2022

TAD is intended for:

(x = 0,1,2, ... and y = a,b,c, ...)

Firmware	2.2.x
Databases	R1-1y
ETS version	ETS5.7.3 and higher

Weblink to actual ETS Database:

<https://www.tapko.de/tio4-sec>

Contact:

[sales@tapko.de](mailto:sales@tapko.de)

Telephone:

+49 941 30747-0