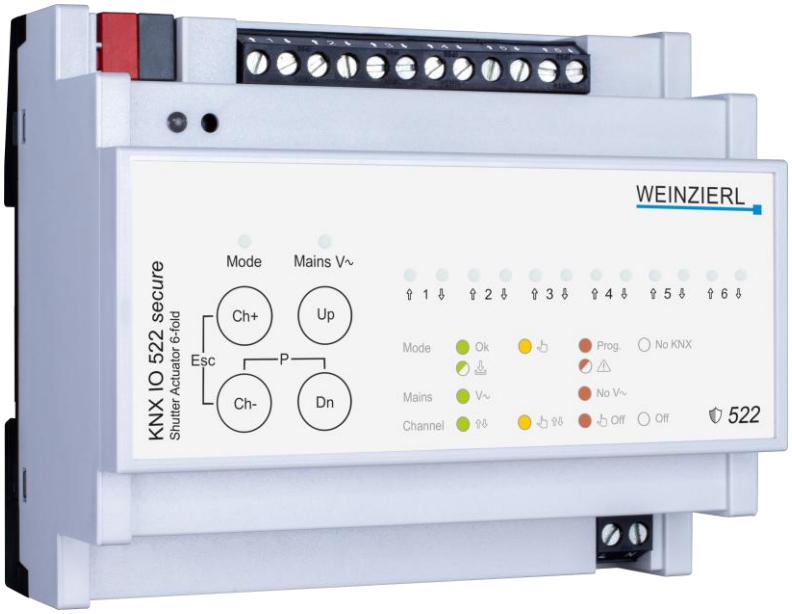
Shutter actuator

KNX IO 522 *secure*

Operating and installation instructions



(Art. # 5496)

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Inhalt

1 Application

The KNX shutter actuator KNX IO 522 *secure* offers 6 channels for controlling blinds, shutters or other drives with mains voltage. The outputs per channel are electro-mechanically interlocked to prevent motor damage.

The device also offers extensive functions for optimised control of blinds, shutters or window openers. Positions can be approached with time calculation. The device also offers independent logic and time functions.

Further features:

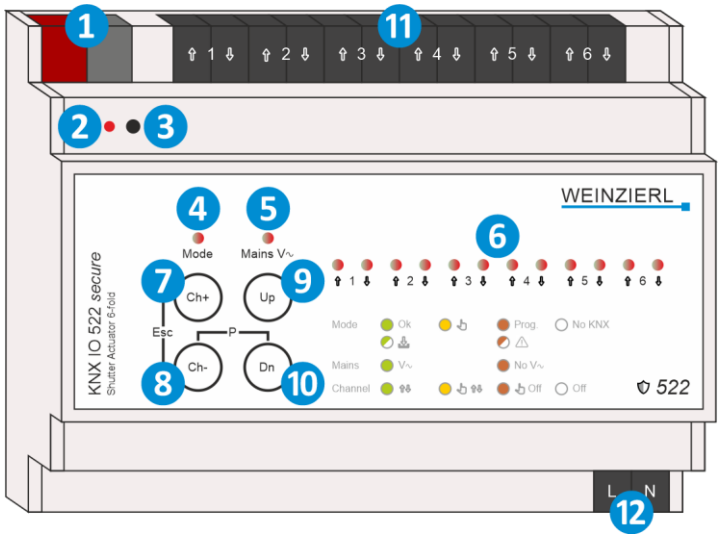
- Central feed-in with mains monitoring
- Manual operation with multiple selection, even without KNX bus
- Direct control with the ETS

Four push buttons and 14 LEDs allow a local operation and a visualization of the device state.

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

2 Installation and commissioning

The KNX IO 522 *secure* is designed for installation on a DIN rail (35 mm) with a width of 1 unit (18 mm). It features the following controls and displays:



1. KNX bus connection
2. Programming LED (red)
3. KNX programming button
4. LED Mode (multicolor)
5. LED Mains V~ (multicolor)
6. LED Ch 1 – 6 Up/Down (multicolor)
7. Button Ch+
8. Button Ch-
9. Button Up
10. Button Dn
11. Screw terminals
12. Mains voltage connection

If there is no bus or mains voltage, the device has no (or limited) function.

2.1 KNX programming mode

KNX programming mode is switched on or off using the recessed KNX programming button 3 or by pressing buttons (P) 8 and 10 simultaneously.

When programming mode is active, the programming LED 2 and LED Mode 4 light up red.

The operation/display of the programming mode on the front can be disabled/enabled in the general parameters in the ETS®.

2.2 Manual operation and status display

The Mode LED 4 lights up green if KNX bus voltage is present and the Mains V~ LED 5 lights up green if mains voltage is present.

Briefly pressing the Ch+ 7 or Ch- 8 button switches to manual operation. The active channel is indicated by the numbered LEDs 6 in red (Off) or orange (Up/Down). The selected channel can be opened with the Up button 9 and closed with the Down button 10. If the button is held down, the system moves up/down as long as the button is held down. To exit manual operation, the Ch+ 7 and Ch- 8 buttons must be pressed simultaneously.

By holding the Ch+ 7 or Ch- 8 button, several channels can be added to or removed from the selection. This allows several channels to be open and closed simultaneously using the Up 9 and Down 10 buttons. The active channels are indicated by the numbered LEDs 6 in red (Off) or orange (On). Briefly pressing the Ch+ 7 and/or Ch- 8 button cancels the selection.

Summary of the states of the mode LED:

Behavior	Meaning
LED off	KNX bus not connected
LED lights up green	The device works in normal operating mode KNX bus is connected
LED lights up red	Programming mode is active
LED lights up orange	Manual operation is active
LED flashes red for 3 seconds	Programming mode cannot be activated KNX bus is not connected
LED flashes red	The device is not loaded correctly e.g. after canceling a download
LED flashes green	The device is currently in the ETS download

Summary of the states of the Mains LED:

Behavior	Meaning
LED lights up green	The device works in normal operating mode and Mains voltage is present
LED lights up red	Mains voltage is not present
LED flashes red for 3 seconds	Manual operation cannot be started because Mains voltage is not present

Summary of the states of the channel LEDs:

Behavior	Meaning
LED off	Channel is switched off
LED lights up green	Channel is opening/closing
LED lights up red	Channel is switched off and is selected in manual operation
LED lights up orange	Channel is opening/closing and is selected in manual operation

Attention: If no mains voltage is present, the channel is displayed as switched off despite the relay being closed.

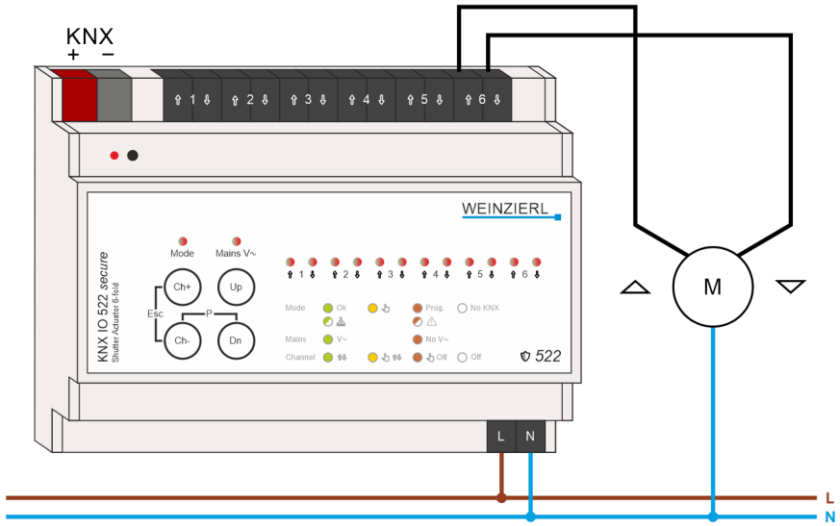
3 Reset to factory settings

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

- Disconnect the mains voltage connection (12) from the appliance.
- Disconnect the KNX bus connection (1) from the device.
- Press and hold the KNX programming button (3).
- Restore KNX bus connection (1) to the device.
- Press and hold the KNX programming button (3) for at least another 6 seconds.
- All LEDs ((4), (5), (6)) flash briefly to indicate that the factory settings have been reset successfully.

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 Connection diagram



4.1 Anschlussbelegung

Anschluss	Symbol	Beschreibung
1	Ch 1 Up	Anschluss Kanal 1 Ausgang als Aufwärtsfahrt
2	Ch 1 Down	Anschluss Kanal 1 Ausgang als Abwärtsfahrt
3	Ch 2 Up	Anschluss Kanal 2 Ausgang als Aufwärtsfahrt
4	Ch 2 Down	Anschluss Kanal 2 Ausgang als Abwärtsfahrt
5	Ch 3 Up	Anschluss Kanal 3 Ausgang als Aufwärtsfahrt
6	Ch 3 Down	Anschluss Kanal 3 Ausgang als Abwärtsfahrt
7	Ch 4 Up	Anschluss Kanal 4 Ausgang als Aufwärtsfahrt
8	Ch 4 Down	Anschluss Kanal 4 Ausgang als Abwärtsfahrt
9	Ch 5 Up	Anschluss Kanal 5 Ausgang als Aufwärtsfahrt
10	Ch 5 Down	Anschluss Kanal 5 Ausgang als Abwärtsfahrt
11	Ch 6	Anschluss Kanal 6

	Up	Ausgang als Aufwärtsfahrt
12	Ch 6 Down	Anschluss Kanal 6 Ausgang als Abwärtsfahrt
KNX	+	Positiver Anschluss für KNX Bus
KNX	-	Masse-Anschluss für KNX Bus

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.

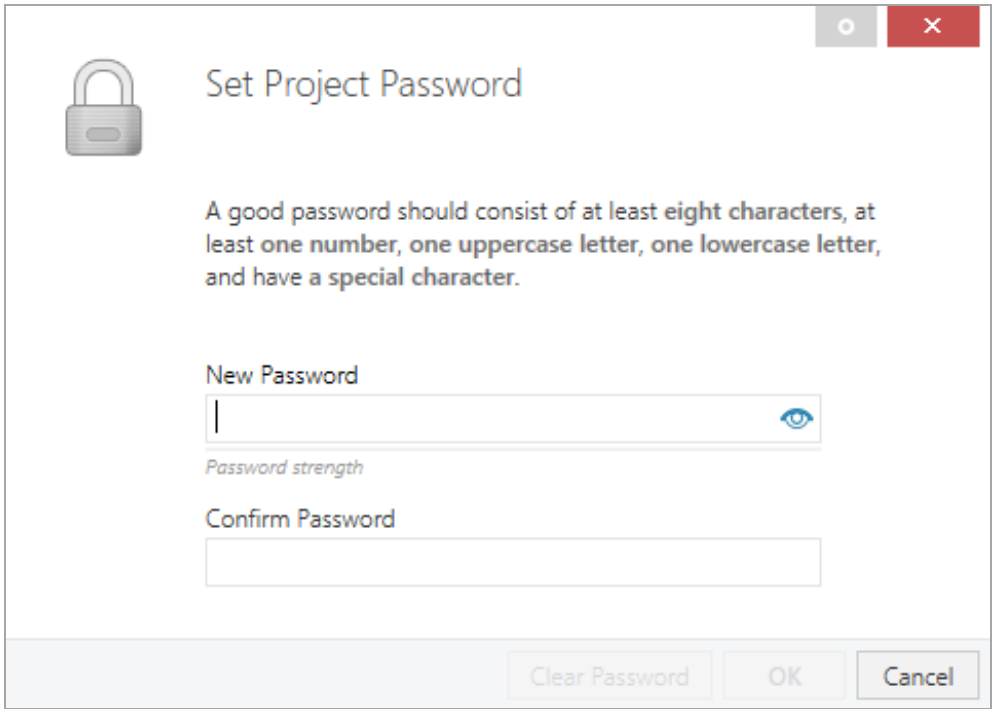
6 ETS database

The ETS5 database (for ETS 5.7 or newer) can be downloaded from the product website of the KNX IO 512 *secure* (www.weinzierl.de) or from the ETS online catalogue.

The KNX IO 512 *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.

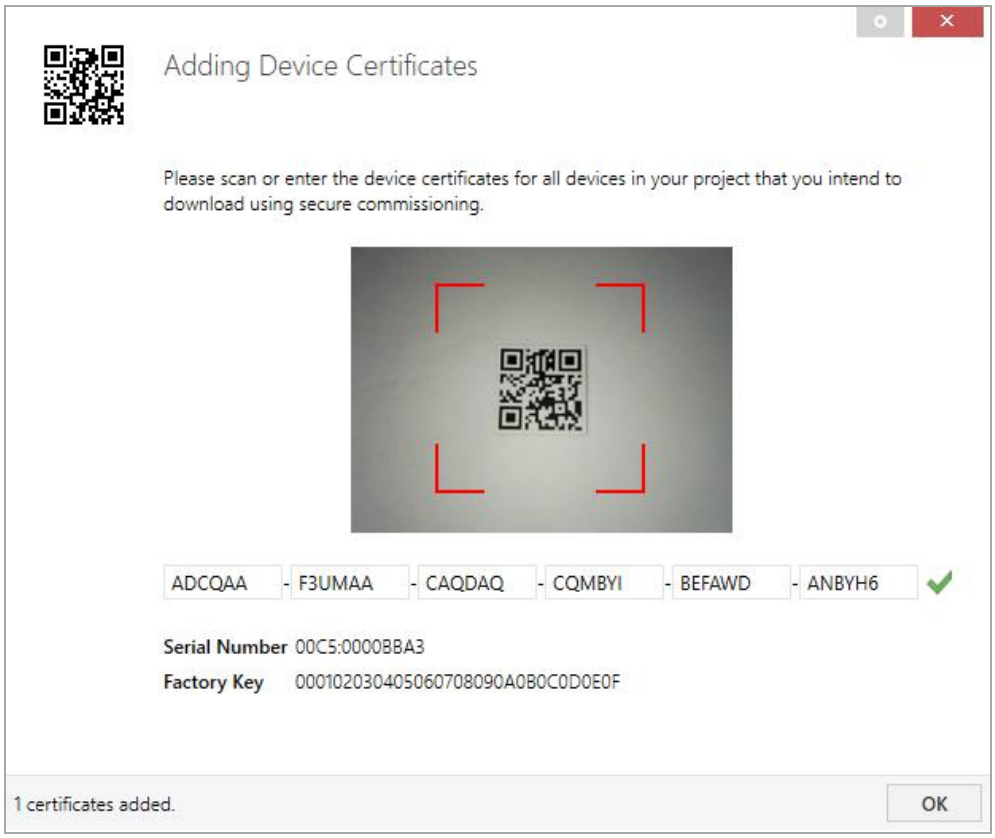
6.1 Secure commissioning

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



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).



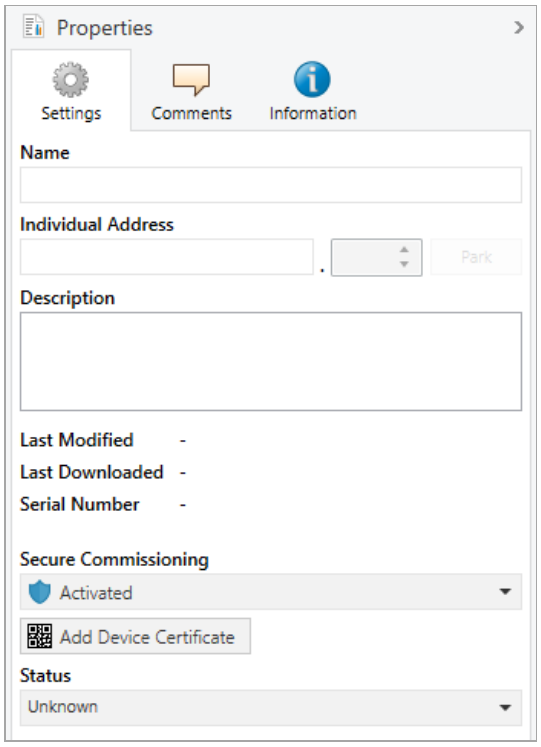
The certificate is printed as text on the device. It can also be scanned from the printed QR code via a webcam.

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.

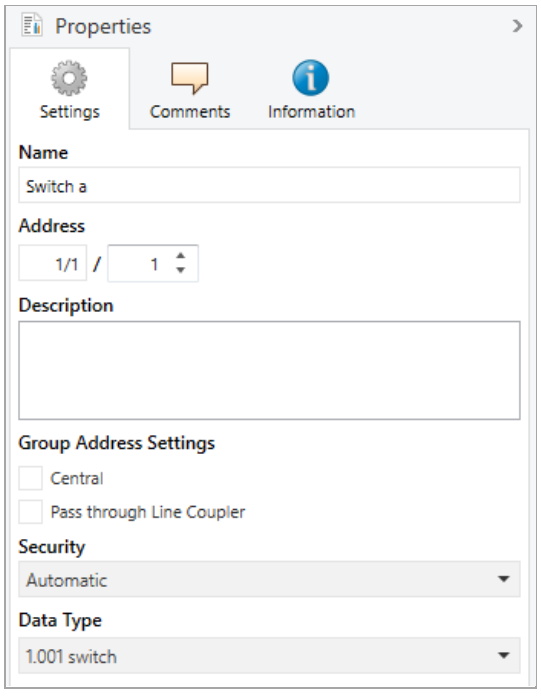
The serial number in the certificate enables the ETS to assign the correct key to a device during a download.

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



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:



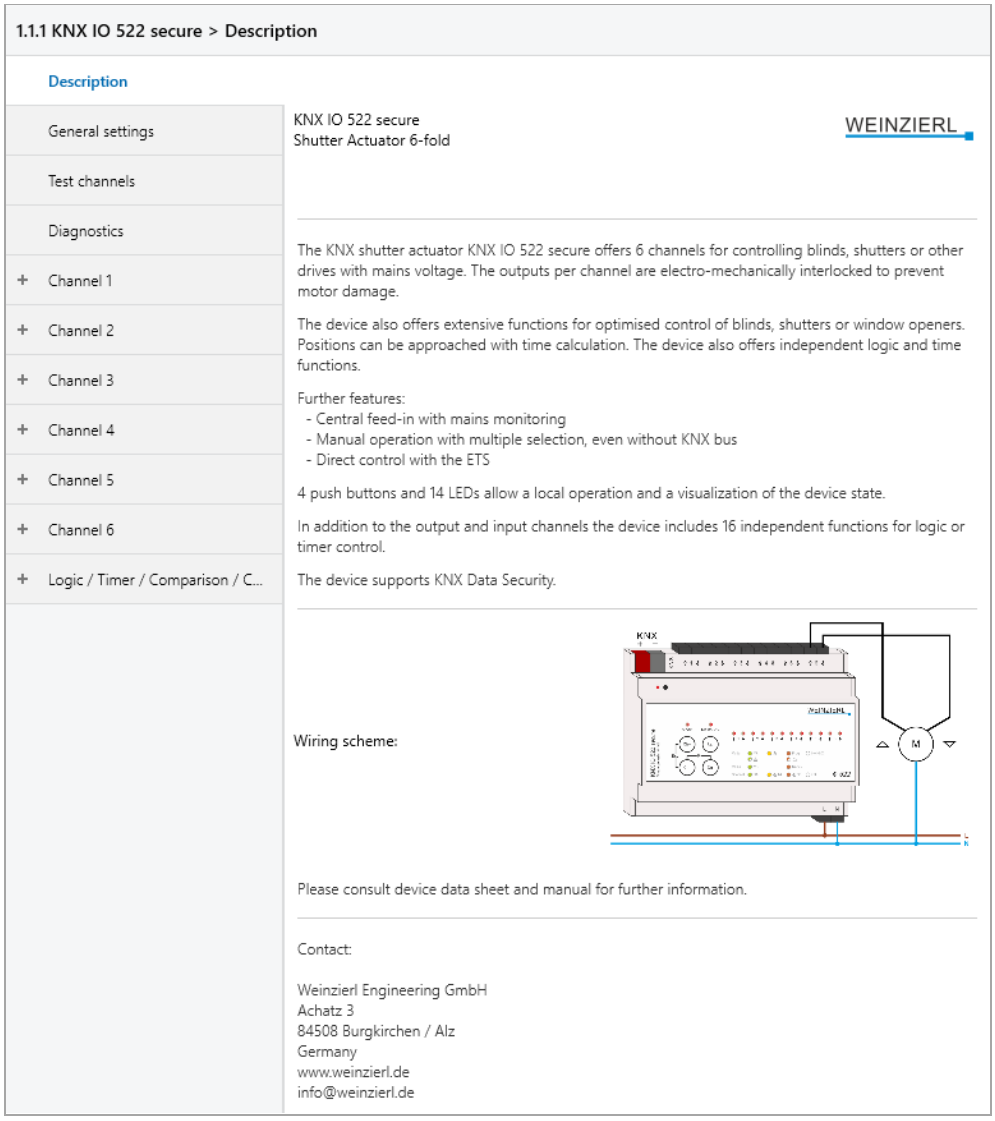
The setting “Automatic” activates encryption if both objects to be connected can communicate encrypted. Otherwise encrypted communication between the objects is not possible.

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

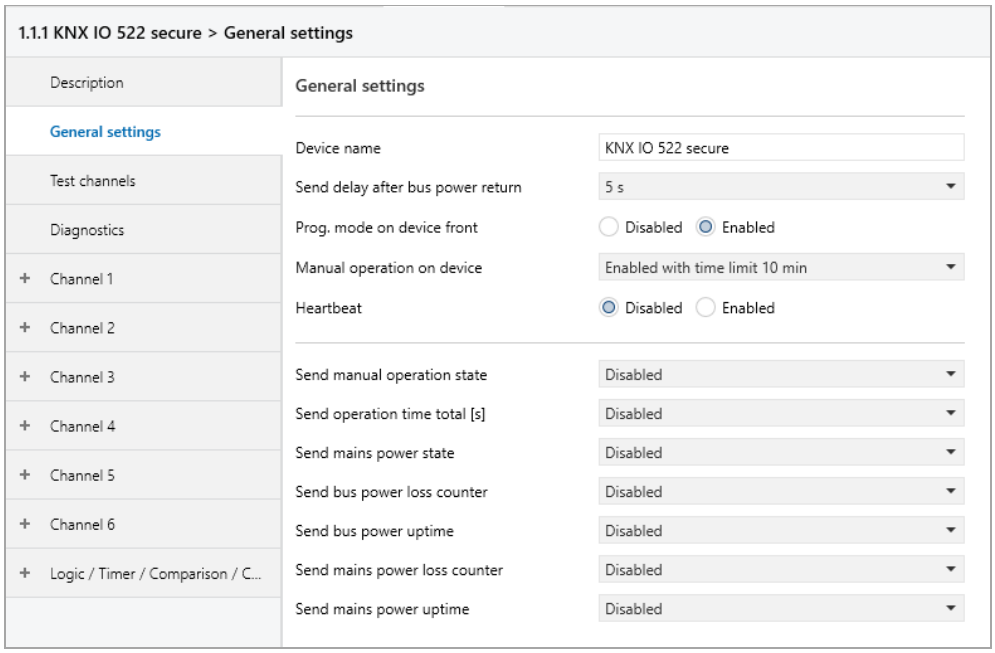
A separate key is automatically generated by the ETS for each secured group address. These keys can also be checked in the ETS panel Reports – Project Security. To enable all devices to communicate with a secure group address, the keys must be known to all. Therefore a download must be made into all 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 corresponding wiring scheme.

6.4 General settings



Device name *(30 characters)*

Any name can be assigned to the KNX IO 512 secure. The device name should be meaningful, e.g. “Living room”. This helps clarity in 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, t he device allows activating the programming mode on the device front without opening the switchboard cover. Programming mode can be enabled and disabled by pressing buttons 8 and 10 simultaneously.

This function can be enabled and disabled via the parameter “Prog. Mode on device front” parameter to switch it on and off. The recessed programming button 3 (next to the programming LED 2) is always enabled and is not affected by this parameter.

Manual operation on the device

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

The device is in normal operating mode when manual operation is not active. In manual operation mode, received switching telegrams are ignored. When manual operation is ended (after the time limit has expired or manually), the last status of the outputs is retained until a switching telegram is received again. The following configuration options are available:

- Disabled
- Enabled with a time limit of 1 min.
- Enabled with a time limit of 10 min.
- Enabled with a time limit of 30 minutes.
- Enabled without time limit

Heartbeat

Sends values cyclically to the KNX bus to indicate that the device is currently ready for operation. The cycle time can be selected between 1 minute and 24 hours.

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

Send manual operation state

This parameter can be used to query and output the current status of manual operation via a group object entry.

The following options are available:

- Disabled
  Status objects are deactivated and hidden
- Only read
  Send status objects only for read requests
- On change
  Send status objects on value change
- Cyclic and on change
  Send status objects cyclically and on value change

Output

This parameter can be used to invert the value sent at the output:

- Not inverted
- Inverted

Group object	Type KNX	Size	Direction
GO 2 Manual operation – State	1.001	1 bit	To KNX

Send operation data

This parameter can be used to query and output the total operating time of all channels via group object entries.

The choice is yours:

- Disabled
  The output of the total operating time is disabled and the group object entries are hidden.
- Total operating time
  Outputs the total operating time for a group object entry in which at least one channel was switched on.

Send operation time total

The operation time indicates how long at least one channel has been operating. This parameter determines the sending behavior of the status objects.

The choice is yours:

- Only on read
  Send status objects only for read requests
- Only read
  Send status objects only for read requests
- On change
  Send status objects on value change (Delta)
- Cyclic
  Send status objects cyclically
- Cyclic and on change
  Send status objects cyclically and on value change (Delta)

Value change (Delta) *(with Send operation time total = “On change” OR “Cyclic and on change”)*
This parameter sets the value change. Values range from 1 minute to 7 days.

Cycle time *(with Send operation time total = “Cyclic” OR “Cyclic and on change”)*

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time**.** Values range from 1 minute to 7 days.

Group object	Type KNX	Size	Direction
GO 3 Total operation time in s – State	13.100	4 byte	To KNX
GO 4 Operation time totals – Reset	1.015	1 bit	From KNX

Send mains power state

This parameter can be used to query and output the current mains voltage status via a group object entry.

The choice is yours:

- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Only on change
  Send status objects on value change
- Cyclic and on change
  Status objects send cyclically and on value change

Output

This parameter can be used to invert the value sent at the output:

- Not invented
- Invested

Cycle time

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time.

Group object	Type KNX	Size	Direction
GO 5 Mains power – State	1.001	1 bit	To KNX

Send bus voltage failure counter

This parameter can be used to query and output the current number of bus voltage failures via a group object entry.

The choice is yours:

- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Only on change
  Send status objects on value change
- Cyclic and on change
  Status objects send cyclically and on value change

Cycle time

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time.

Group object	Type KNX	Size	Direction

GO 6 Bus power loss counter – State	13.001	4 byte	To KNX

Send bus voltage availability

This parameter can be used to query and output the total time during which the bus voltage was available via a group object entry.

The choice is yours:

- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Cyclic
  Send status objects cyclically

Cycle time

If the Send value is configured with “Cyclic”, this parameter appears to set the cycle time.

Group object	Type KNX	Size	Direction
GO 7 Bus power uptime in s – State	13.100	4 byte	To KNX

Send mains voltage failure counter

This parameter can be used to query and output the current number of mains voltage failures via a group object entry.

The choice is yours:

- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Only on change
  Send status objects on value change
- Cyclic and on change
  Status objects send cyclically and on value change

Group object	Type KNX	Size	Direction
GO 8 Mains power loss counter – State	13.001	4 byte	To KNX

Cycle time

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time.

Send mains voltage failure counter

This parameter can be used to query and output the total time during which the bus voltage was available via a group object entry.

The choice is yours:

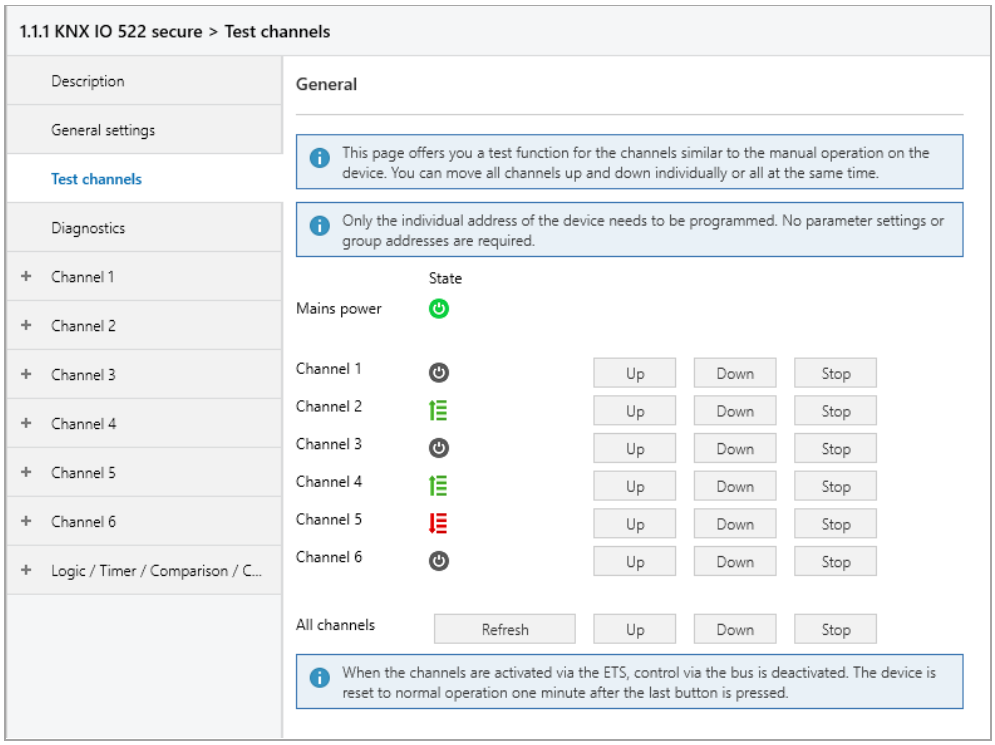
- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Cyclic
  Send status objects cyclically

Cycle time

If the Send value is configured with “Cyclic”, this parameter appears to set the cycle time.

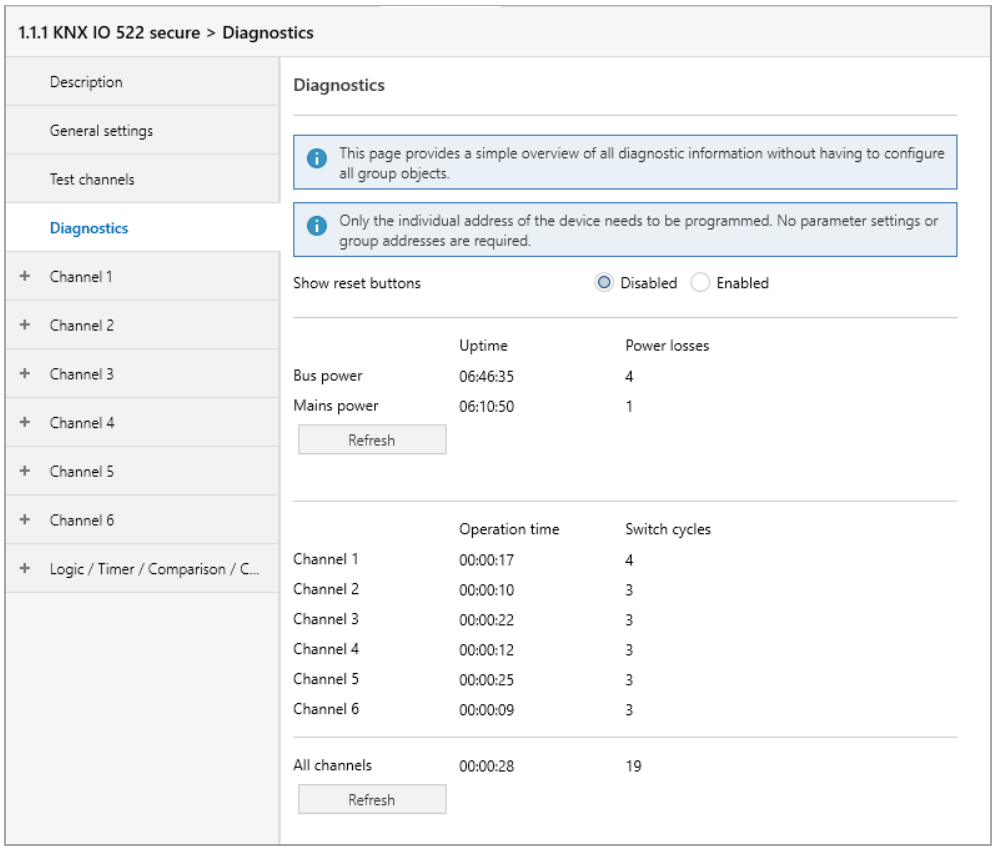
Group object	Type KNX	Size	Direction
GO 9 Mains power uptime in s – State	13.100	4 byte	To KNX

6.5 Test channels



This parameter page enables the channels to be switched on and off manually directly in the ETS without having to physically operate the device. The current status of each actuator and the mains voltage is also displayed. The display is updated when switching via the on/off buttons in the ETS or via the “Refresh” button. Only the physical address needs to be programmed to activate this function.

6.6 Diagnostics

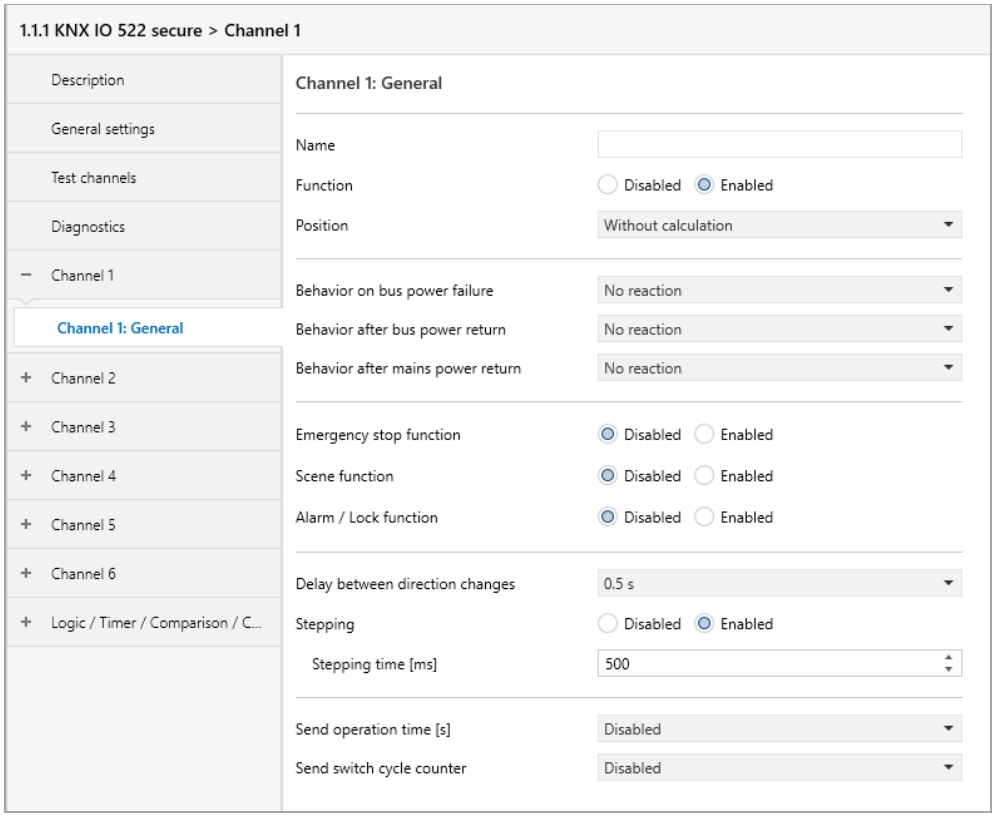


This parameter page enables the display of diagnostic data directly in the ETS without having to read out group objects. The availability and the number of power failures of the BUS and mains voltage are displayed. For each channel, the operating time and the number of switching cycles as well as the aggregated values for all channels are displayed. The display is updated using the "Refresh" buttons. To activate the function, only the physical address needs to be programmed.

Show reset buttons

This parameter activates buttons for resetting the diagnostic data of the channels.

6.7 Channel 1 - 12: General



Name *(30 characters)*

Any name can be assigned to the channel. However, this should be unique and meaningful, as this makes it easier to work with the associated group objects later on, as the assigned name is displayed there as a designation. If no name is assigned, the group objects are labeled “Channel 1 - 6: ... ”.

Function *(with Function = „Enabled“)*

The channel can be enabled or disabled here.

Group object	Type KNX	Size	Direction
GO 10 Channel 1 – 6: Fehrbefehl start – Auf/Ab	1.008	1 Byte	From KNX
GO 11 Channel 1 – 6: Fahrbefehl stop - Schritt / Stop	1.007	1 Bit	From KNX

Position *(with Function = „Enabled“)*

This device is designed for three different use cases.

- Without calculation
- Calculation for blinds with slats
- Calculation for shutter

Each one of them can be selected via this parameter. The first is a general drive without any position calculation. The second and third functions differ in how the device calculates the estimated position of the hangings / slats.

Since there is no direct feedback from the drive about the actual position, any position calculation can only be an approximation.

Send state *(with Position != "Without Calculation")*

This parameter determines the sending behavior of the status objects.

The choice is yours:

- Disabled
- Only on read
  Send status objects only for read requests
- On change and at the end
  Send status objects on value change and after drive is finished
- Cyclic and on change
  Send status objects cyclically and on value change and after drive is finished

Value change for state *(with Send state = "*On change and at the end*" OR "*Cyclic and on change"*)*

This parameter determines the minimum change for sending the status objects.

The choice is yours:

- 1 – 50 %
  Send status after value changed by percentage and after drive is finished
- Only at the end
  Send only after drive is finished

Time for cyclic state *(with Send state = "Cyclic" OR "Cyclic and on change")*

If the Send value is configured with "Cyclic and on change", this parameter appears to set the cycle time**.** Values range from 10 s to 24 h.

Behavior on bus power loss *(with Function = „Enabled")*

The behavior that is maintained at the output during the bus voltage failure can be configured here.

The choice is yours:

- No reaction
- Switch on
- Switch off

Behavior after bus power return *(with Function = „Enabled“)*

The behavior of the output after bus voltage recovery can be configured here.

The choice is yours:

- No reaction
- Switch on
- Switch off
- Status as before bus voltage failure

Behavior after mains power return *(with Function = „Enabled“)*

The behavior of the output after mains voltage recovery can be configured here.

The choice is yours:

- No reaction
- Switch on
- Status as before mains voltage failure

Priority is given to the power failure that was first detected by the device.

Emergency stop function

Enables or disables the emergency stop function. If enabled a stop telegram during reference drives or alarm / locking drives will stop the drive immediately and put the device in emergency stop state. This state can be left by sending any value to the Drive start Up / Dn group object. This allows the device to stop the drive under any circumstances in case of an emergency.

At the end of the emergency stop the last action will be continued

Scene function *(with Function = „Enabled“)*

The scene function can be enabled or disabled here. If this function is enabled, the respective group object appears, as well as the parameter page “Channel 1 - 12: Scene function” for further configuration of scenes 1 - 16.

Group object	Type KNX	Size	Direction
GO 16 Channel 1 - 6: Scene - Active / Lrn.	18.001	1 byte	From KNX

Alarm / Lock function *(with Function = „Enabled“)*

The device provides a lock down / alarm state. During this drive commands from the bus are ignored and it is possible to specify an action which should be performed on entering and / or leaving this state. For more details see the Channel 1 – 6: Alarm / Lock function

Automatic mode *(with Position != "Without Calculation")*

Only available if position calculation is set to blind or shutter mode.
Provides an additional set of group objects to change the positions of the blinds / slats. Those group objects will be disabled if an new drive command is received by any of the other group objects.

Group object	Type KNX	Size	Direction
GO 23 Actuator A: Automatic mode	1.001	1 Bit	From KNX
GO 24 Actuator A: Autom. blind position – Set position	5.001	1 Byte	From KNX
GO 25 Actuator A: : Autom. slats position – Set position *	5.001	1 Byte	From KNX

** Only for blind drives*

To enable the automatic group objects after such an event two ways are provided. Enable via a fallback time. After this time the automatic mode will be enabled automatically. Or secondly via a group object. Sending 1 enables the automatic mode, sending a 0 disables the automatic mode.

Time out for manual mode *(bei Automatikbetrieb = „Aktiviert")*

After this time the automatic mode will be enabled again.

Delay between direction changes *(with Function = „Enabled")*

To protect the drive against abrupt direction changes, which may cause damage to the drive, a minimum time between output commands in opposite directions can be set here.

Stepping *(with Function = „Enabled")*

Enable / disable stepping functionality

Stepping time *(with Stepping = „Enabled")*

Only available if stepping is active. After receiving a step command via the group object, this parameter determines the interval length for the drive in the given direction. Eg. if set to 500 ms, a step up command will cause the up relay to switch on for 500 ms.'

Send operation time

The operating time indicates how long the channel has been in operation. This parameter determines the sending behavior of the operation data.

The choice is yours:

- Only on read
  Send status objects only for read requests
- Only read
  Send status objects only for read requests
- On change
  Send status objects on value change (Delta)
- Cyclic
  Send status objects cyclically
- Cyclic and on change
  Send status objects cyclically and on value change (Delta)

Value change (Delta) *(with Send operation time = “On change” OR “Cyclic and on change”)*
This parameter sets the value change. Values range from 1 minute to 7 days.

Cycle time *(with Send operation time = “Cyclic” OR “Cyclic and on change”)*

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time**.** Values range from 1 minute to 7 days.

Group object	Type KNX	Size	Direction
GO 26 Channel 1 – 6: Operation time in s – State	13.100	4 byte	To KNX
GO 27 Channel 1 – 6: Operation time – Reset	1.015	1 bit	From KNX

Send switching cycle counter

This parameter can be used to query and output the current number of switching cycles via a group object entry.

The choice is yours:

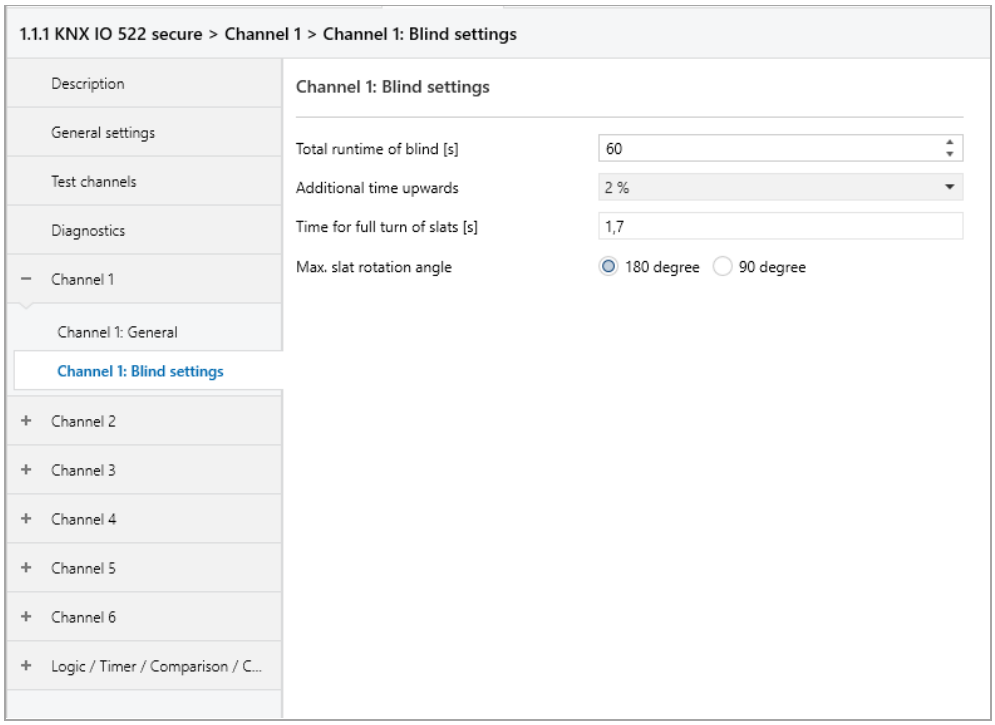
- Disabled
  Status objects are disabled and hidden
- Only on read
  Send status objects only for read requests
- Only on change
  Send status objects on value change
- Cyclic and on change
  Status objects send cyclically and on value change

Cycle time

If the Send value is configured with “Cyclic and on change”, this parameter appears to set the cycle time.

Group object	Type KNX	Size	Direction
GO 28 Channel 1 – 6: Switch cycle counter – State	13.100	4 byte	To KNX

6.8 Channel 1 – 6: Blind settings



Only visible if position calculation is set to Calculation for blind with slats.

Total runtime of blind [s]

The time the drive needs to move the hanging from the top to the bottom position. Normally this is determined by measurement.

Additional time upwards

The movement speed upward and downward is for some drives not equal. So this parameter allows adjusting for differences.

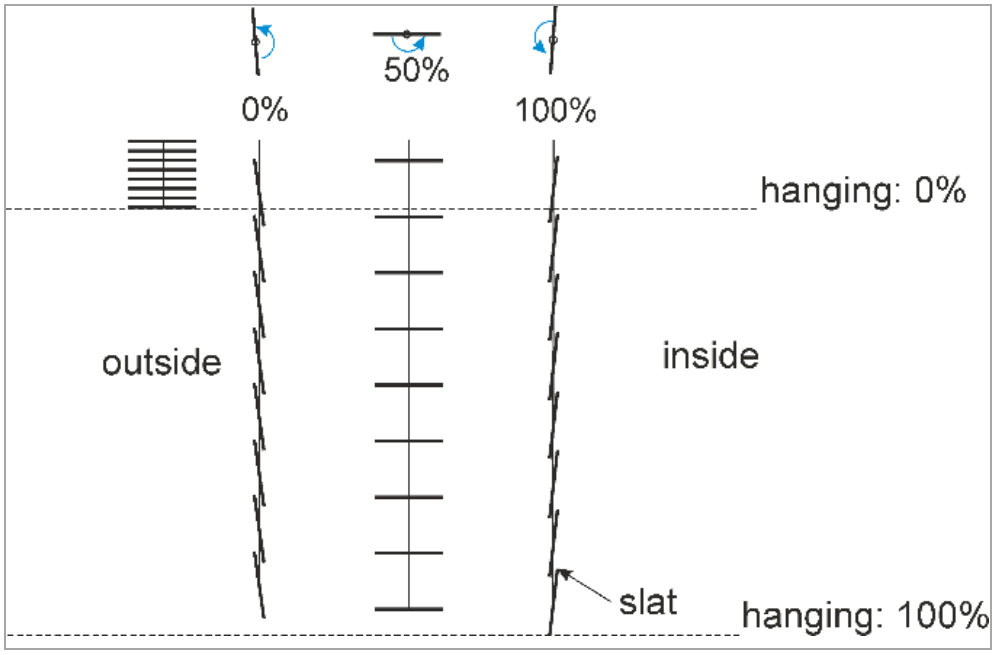
Time for full turn of slats [s]

The time the slats need from one endpoint to the other. This parameter is a float value.

Group object	Type KNX	Size	Direction
GO 12 Channel 1 – 6: Blind position - Set position	5.001	1 Byte	From KNX
GO 13 Channel 1 – 6: Slats position - Set position	5.001	1 Byte	From KNX
GO 14 Channel 1 – 6: Blind position - State	5.001	1 Byte	To KNX
GO 15 Channel 1 – 6: Slats position - State	5.001	1 Byte	To KNX

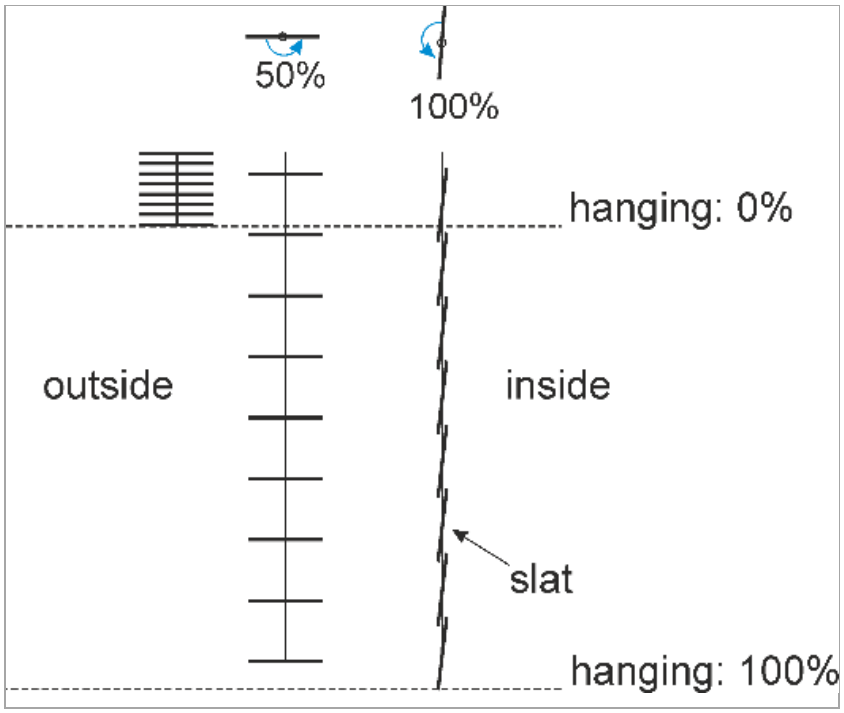
Max. slats rotation angle

For blinds with the following positions, choose 180 degree.



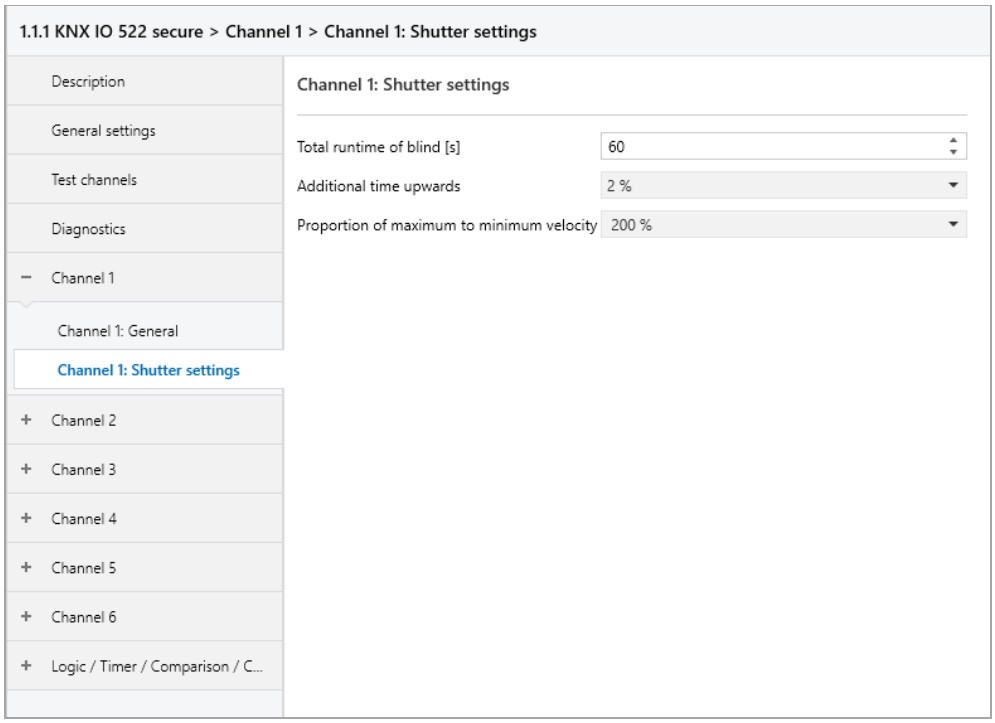
Positions of blind and slats 180°

For drives with only horizontal and closing movement choose 90 degree:



Positions of blind and slats 90°

6.9 Channel 1 – 6: Shutter settings



Only visible if position calculation is set to Calculation for shutter

Total runtime of blind [s]

The time the drive needs to move the hanging from the top to the bottom position. Normally this is determined by measurement.

Additional time upwards

The movement speed upward and downward is for some drives not equal. So this parameter allows adjusting for differences.

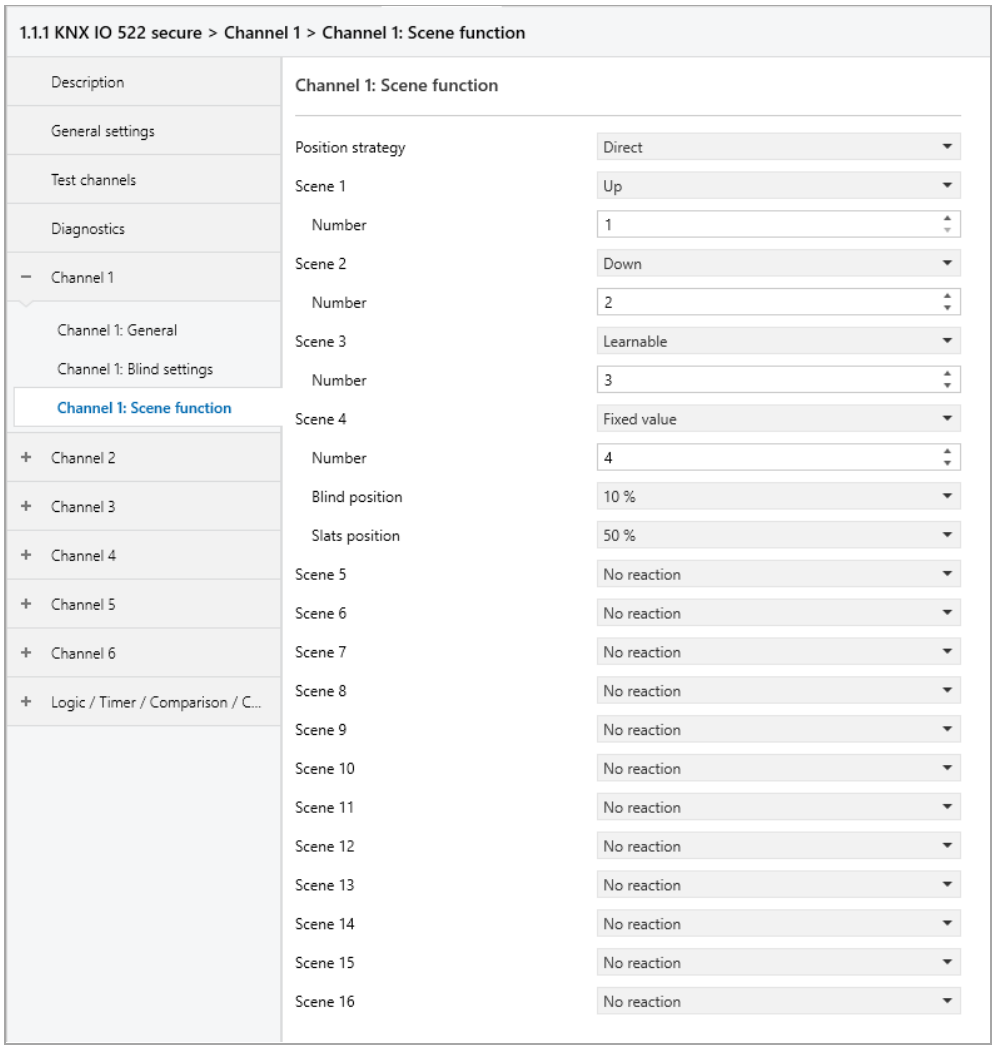
Proportion of maximum to minimum velocity

To account for the fact that most shutter drives will not provide a constant speed this parameter can be used. In most cases the drive will speed up during movement from bottom to top position due to the increased diameter of the windings.

So if the speed on the bottom is twice the speed on the top the appropriate value for this parameter would be 200 %.

Group object	Type KNX	Size	Direction
GO 12 Channel 1 – 6: Blind position - Set position	5.001	1 Byte	From KNX
GO 14 Channel 1 – 6: Blind position - State	5.001	1 Byte	To KNX

6.10 Channel 1 – 6: Scene function



Position strategy

If any type of position calculation is enabled (See **Fehler! Verweisquelle konnte nicht gefunden werden.** parameter) this parameter will become visible.

- Direct
  Moves direct to target position
- Indirect using top endpoint
  Moves first to top endpoint and then to target position
- Indirect using bottom endpoint
  Moves first to bottom endpoint and then to target position
- Indirect using nearest endpoint
  Move first to endpoint that is closest to the target position and then to the target position afterward

Scene 1 - 16

For each scene a scene number [1-64] is selectable. Receiving this number on the scene group object will trigger the chosen reaction for that scene. In all position calculation modes the three basic options are available.

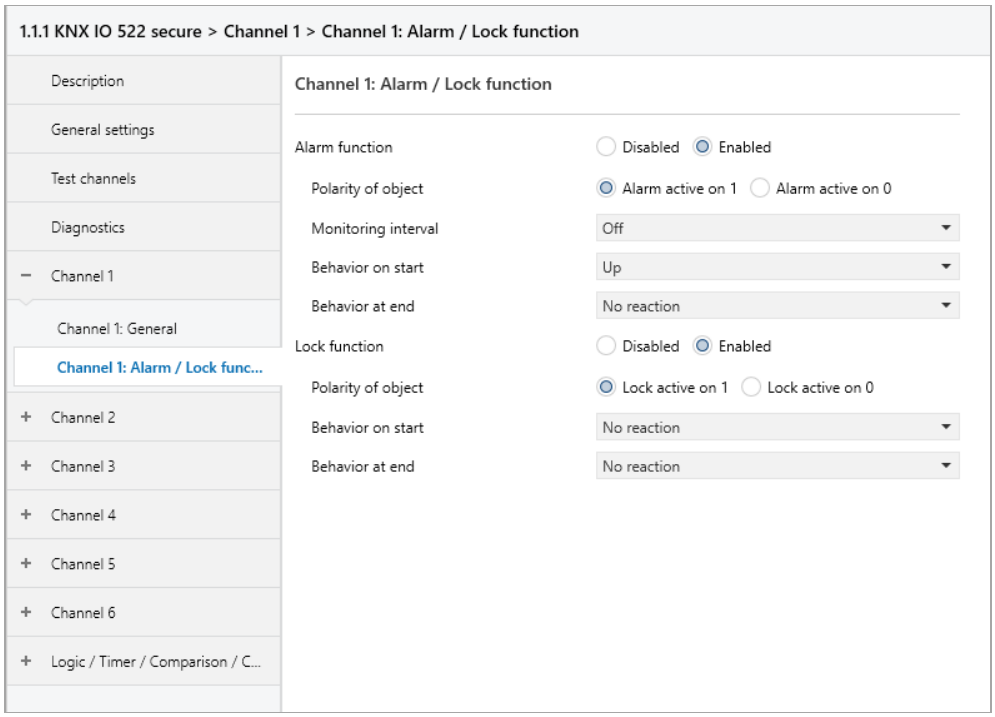
- No reaction
- Up
  Does not use endpoints of indirect position strategy. Only moves up
- Down
  Does not use endpoints of indirect position strategy. Only moves down

Additionally two more options appear for blind and shutter mode.

- Learnable
  The current position may be set as new target position by sending a DPT18 value with set control bit to the scene group object
- Fixed value
  The target position is directly selectable in the ETS database

Group object	Type KNX	Size	Direction
GO 16 Actuator A: Scene – Activ./Lrn.	18.001	1 Byte	From KNX

6.11 Channel 1 – 6: Alarm / Lock function



This page provides options to enable or disable the security and lock function separately.

Alarm function

Meant for protecting the hanging against e.g. wind damage or ensuring a certain position in case of a fire alarm. This function moves the hanging to a given position and puts the device in an alarm state in which any other commands, except emergency stop commands, from the KNX bus will be ignored.

Polarity of object

Select whether a 1 value or 0 value sent to the alarm object will trigger the alarm.

Monitoring interval

Not receiving any value during this period of time on the alarm group object will cause the device to raise the alarm and switch into alarm state. Every time a telegram is received the interval will start again.

Behavior on start

At the beginning of the alarm the device allows for different reactions.

- No Reaction
- Up (move to topmost position)
- Down (move to bottom position)
- Stop any current movement

Behavior at end

Whilst ending the alarm these options are available

- No Reaction
- Up
- Down
- State before function
  At the beginning of the alarm the current position will be stored and restored if the alarm ends
- State without function
  The device processes all incoming telegrams during the alarm state and at the end of the function the last one will be performed. If no telegram is received during that state the last position before the state will be restored.

The last two options are only available if the position calculation in enabled.

Group object	Type KNX	Size	Direction
GO 17 Actuator A: Alarm - Activate	1.005	1 Bit	From KNX

Lock function

Similar to the alarm function this allows locking the device. Whilst locked any telegram received via the normal move command group objects and scene commands are ignored. This function has a slightly lower priority than the alarm function. Therefore during an alarm locking doesn't change anything. But during locking a newly raised alarm will result in the desired reaction for entering the alarm state.

Enabling this function adds four additional group objects with priority function. A locked device will ignore the "normal" move command objects but still reacts to prioritized commands.

Example for 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 push buttons, which are accessible to unauthorized persons, in order to prevent unmeant movement of the blind, during the lecture or concert. Nevertheless the blinds can still be operated by use of the priority object without canceling the lock.

Polarity of object

Select whether a 1 or 0 value sent to the locking group object will trigger the locking state.

Behavior on start

At the beginning of the locking the device can provide serveral reactions.

- No Reaction
- Up (move to topmost position)
- Down (move to bottom position)
- Stop any current movement

Behavior at end

Whilst ending the locking state these options are available

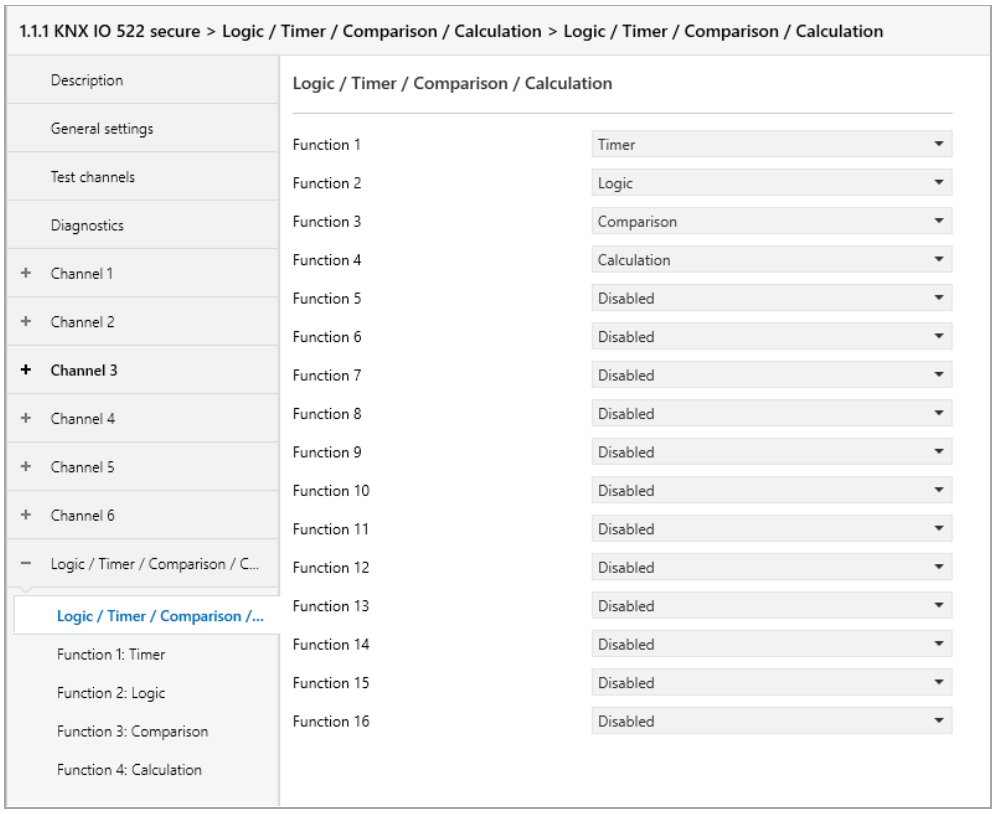
- No Reaction
- Up
- Down
- State before function
  At the beginning of the locking the current position will be stored and restored if the locking ends
- State without function
  The device processes all incoming telegrams during the locking state and after the last one will be performed. If no telegram is received during that state the last position before will be restored.

The last two options are only available if the position calculation in enabled.

Group object	Type KNX	Size	Direction
GO 18 Actuator A: Lock - Activate	1.001	1Bit	From KNX
GO 19 Actuator A: Prior. drive start -Up / Dn	1.008	1 Bit	From KNX
GO 20 Actuator A: Prior. drive stop - Step / Stop	1.007	1 Bit	From KNX
GO 21 Actuator A: Prior. blind position – Set position	5.001	1 Byte	From KNX
GO 22 Actuator A: Prior. slats position – Set position *	5.001	1 Byte	From KNX

** Only for blind drives*

6.12 Logic / Timer / Comparison / Calculation



Function 1 - 16

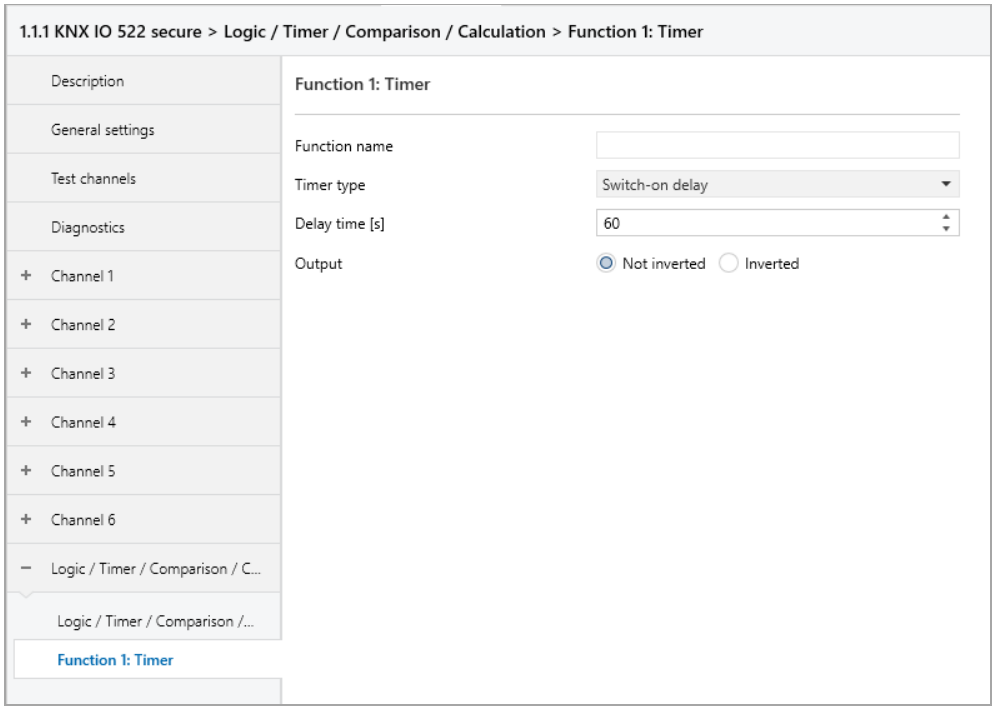
These parameters contain the functions timer and logic, whereby all 16 functions are identical.

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.
- Compare
- Parameters and group objects for compare are available.
- Calculation
  Parameters and group objects for calculation 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.

6.12.1 Function 1 - 16: Timer



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

The type of time switch can be selected here:

- 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 switch-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]

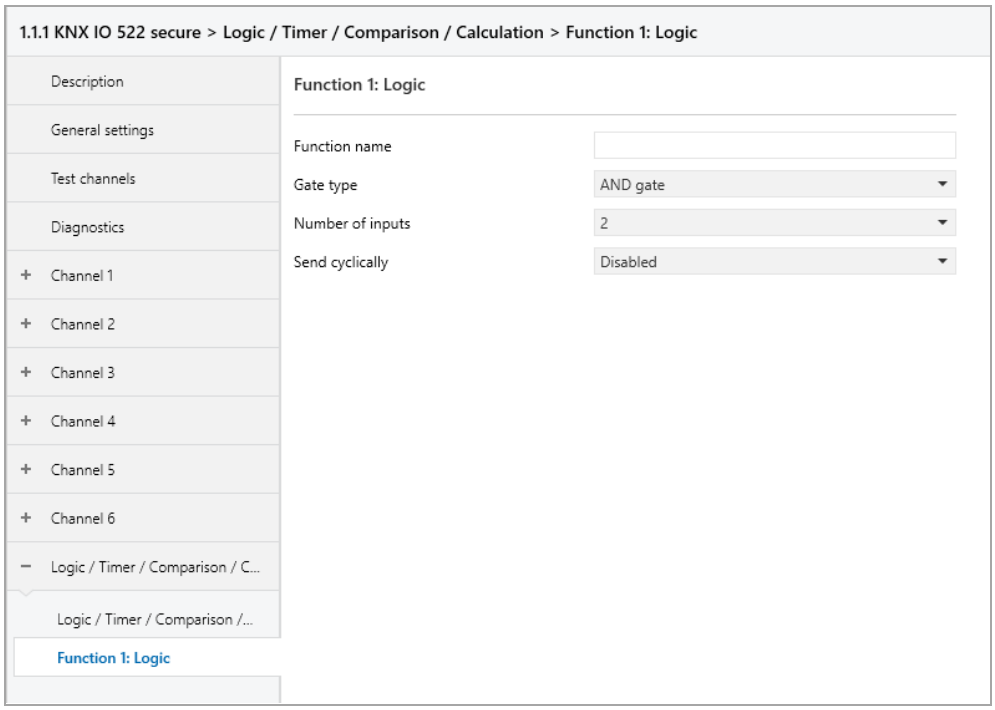
This parameter defines the delay when sending at the output.

Output

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

- Not inverted
- Inverted

6.12.2 Function 1 - 16: Logic



Function name *(10 characters)*

The function name can be freely selected.

It is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects later, as the assigned name is displayed there as a designation.

Gate type

This parameter defines the type of logic gate:

- And gate
  The output is triggered ON (1), if all inputs are switched ON (1).
- OR gate
  The output is triggered ON (1), if at least one input is switched ON (1).
- XOR gate
  The output is triggered ON (1), if an odd number of inputs is switched ON (1).
- NAND gate
  The output is triggered ON (1), if at least one inputs is switched OFF (0).
- NOR gate
  The output is triggered ON (1), if all inputs are switched OFF (0).

- XNOR gate
  The output is triggered ON (1), if an even number of inputs is switched ON (1).

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
Logic – Gate input C – Input	1.002	1 Bit	From KNX
Logic – Gate input D – Input	1.002	1 Bit	From KNX

The output sends when a telegram is received at an input. The condition 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
  The input is inverted at the output, ON (1) becomes OFF (0) and OFF (0) becomes EIN (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 at the input.

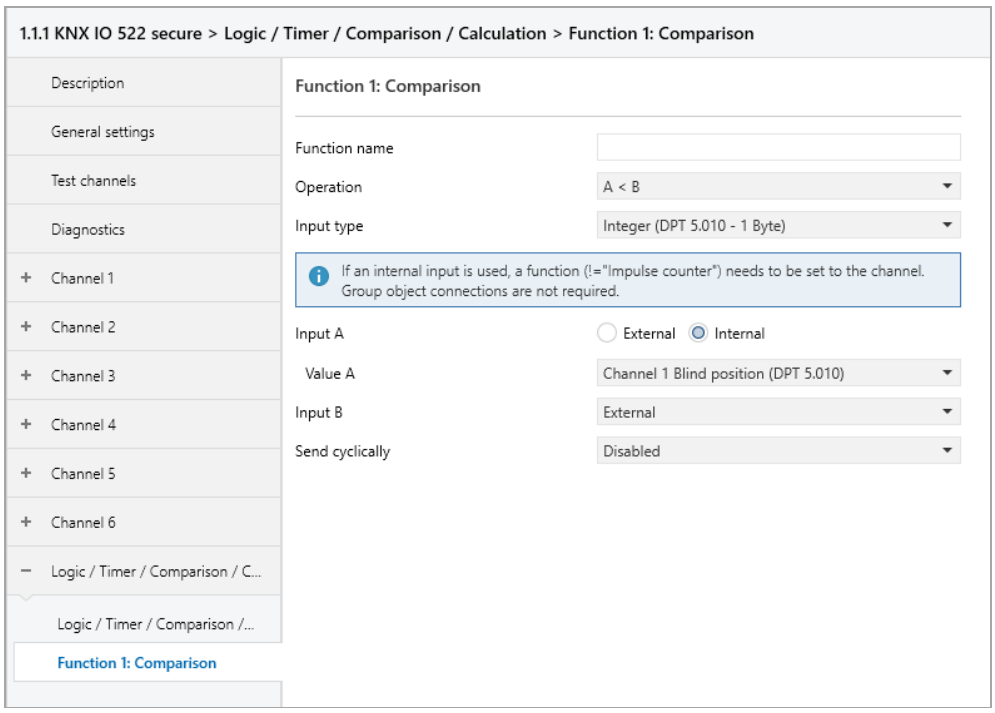
Number of inputs

This parameter defines the number of inputs for the logic gate.

Send cyclical

This parameter specifies whether the result is sent cyclically and at what interval.

6.12.3 Function 1 – 16: Compare



Function name *(10 Characters)*

The function name can be freely selected.

It is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects later, as the assigned name is displayed there as a description.

Operation

This parameter defines the type of comparison operation used to compare the values of input A and B:

- A < B
  Input A is less than input B
- A = B
  Input A is equal to input B
- A > B
  Input A is higher than input B

Input type

This parameter defines the type of inputs:

- Percent (DPT 5.001 - 1 Byte)
  Value range: 0 (≙ 0) - 100% (≙ 255)
- Integer (DPT 5.010 - 1 Byte)
  Wertebereich: 0 - 255
- Integer (DPT 7.001 - 2 Byte)
  Value range: 0 - 65535
- Integer (DPT 12.001 - 4 Bytes)
  Value range: 0 - 4294967295
- Float (DPT 9.001 - 2 Bytes)
  Value range: -671088.64 - +670433.28
- Float (DPT 14.001 - 4 Bytes)
  Value range: -3.4E+38 - +3.4E+38

Input A

This parameter specifies whether the input is to be filled via an external (from the bus) or internal value (from the device).

Value A *(with Input A = “Internal”)*

This parameter defines the internal value that is used as an input.

The control value (DPT 5.010) of the channel can only be used as the value for the input if the channel is configured as a valve actuator and Send value is enabled.

Input B

This parameter specifies whether the input is to be filled via an external (from the bus), static (from the ETS) or internal value (from the device).

Value B *(with Input B = “Internal” **OR** Input B = “Static”)*

This parameter defines the static or internal value that is used as an input.

The control value (DPT 5.010) of the channel can only be used as the value for the input if the channel is configured as a valve actuator and Send value is enabled.

For a combination of internal and external inputs, both should have an equivalent type. Otherwise, a new calculation function with the “Convert value” operation may help.

Send cyclical

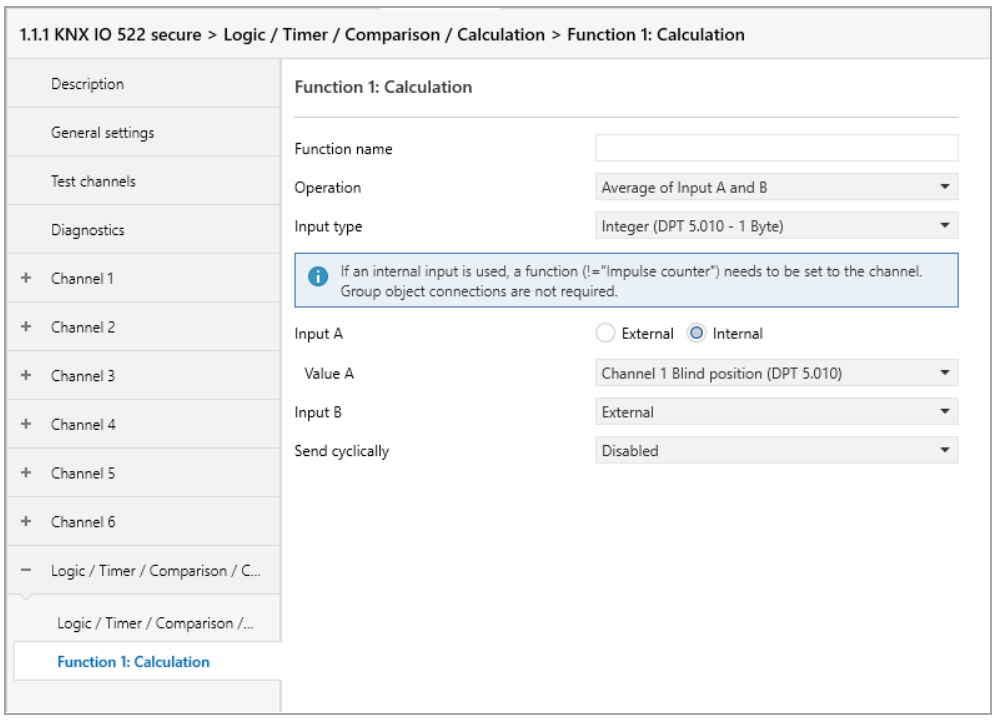
This parameter specifies whether the result is sent cyclically and at what interval.

Group object	Type KNX	Size	Direction
Logic – Comparison – ... Byte input A*	5.001, 5.010, 7.001, 12.001, 9.001, 14.001**	1 Byte, 2 Byte, 4 Byte	From KNX
Logic – Comparison – ... Byte input B*	5.001, 5.010, 7.001, 12.001, 9.001, 14.001**	1 Byte, 2 Byte, 4 Byte	From KNX
Logic – Comparison – Output	1.002	1 Bit	To KNX

** Only for „Input A“/ “Input B” parameter = External*
*** Type KNX determined by “Input type” parameter*

The output sends when a telegram is received at an input. The condition 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.

6.12.4 Function 1 – 16: Calculation



Function name *(10 Characters)*

The function name can be freely selected.

It is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects later, as the assigned name is displayed there as a description.

Operation

This parameter defines the type of comparison operation:

- Average value of input A and B
  (input A + input B) / 2
- Convert value
  Convert input A to another type
- Limit value
  Limit input A

Input type *(with Input A != "Internal"* ***OR*** *for Input B != "Internal")*

This parameter defines the type of input:

- Percent (DPT 5.001 - 1 Byte)
  Value range: 0 (≙ 0) - 100% (≙ 255)
- Integer (DPT 5.010 - 1 Byte)
  Value range: 0 - 255
- Integer (DPT 7.001 - 2 Bytes)
  Value range: 0 - 65535
- Integer (DPT 12.001 - 4 Bytes)
  Value range: 0 - 4294967295
- Floating point number (DPT 9.001 - 2 Bytes)
  Value range: -671088.64 - +670433.28
- Floating point number (DPT 14.001 - 4 Bytes)
  Value range: -3.4E+38 - +3.4E+38

Input A

This parameter specifies whether the input is to be filled via an external (from the bus) or internal value (from the device).

Value A *(with Input = "Internal")*

This parameter defines the internal value that is used as the input.

The control value (DPT 5.010) of the channel can only be used as the value for the input if the channel is configured as a valve actuator and Send value is enabled.

Input B *(with Operation = "Average value of input A and B")*

This parameter specifies whether the input is to be filled via an external (from the bus), static (from the ETS) or internal value (from the device).

Value B *(with Input B = "Internal"* ***OR*** *Input B "Static")*

This parameter defines the static or internal value that is used as an input.

The control value (DPT 5.010) of the channel can only be used as the value for the input if the channel is configured as a valve actuator and Send value is enabled.

For a combination of internal and external inputs, both should have an equivalent type. Otherwise, a new calculation function with the "Convert value" operation may help.

Correction *(with Operation = "Convert value")*

This parameter specifies whether the value is to be added with an offset or multiplied by a factor.

Offset *(with Correction = "Offset"* ***AND*** *for output type != "Binary (DPT 1.002 - 1 Byte)")*

This parameter defines the offset that is added to the input.

Factor *(with Correction = "Factor"* ***AND*** *for output type != "Binary (DPT 1.002 - 1 Byte)")*

This parameter defines the factor by which the input is multiplied.

Send 1 on *(with Operation = "Convert value"* ***AND*** *for output type = "Binary (DPT 1.002 - 1 Byte)")*

This parameter specifies whether 1 is sent at input A lower or higher than the threshold value.

Threshold value *(with Operation = "Convert value"* ***AND*** *for output type = "Binary (DPT 1.002 - 1 Byte)")*

This parameter defines the threshold value to which the input is compared.

Limit (min.) *(with Operation = "Limit value")*

This parameter defines the lower limit with which the output is limited.

Limit (Max.) *(with Operation = "Limit value")*

This parameter defines the upper limit with which the output is limited.

Output type *(with Operation = "Convert value")*

This parameter defines the type of input:

- Binary (DPT 1.002 - 1 Byte)
  Value range: 0 - 1
- Percent (DPT 5.001 - 1 Byte)
  Value range: 0 (≙ 0) - 100% (≙ 255)
- Integer (DPT 5.010 - 1 Byte)
  Value range: 0 - 255
- Integer (DPT 7.001 - 2 Bytes)
  Value range: 0 - 65535
- Integer (DPT 12.001 - 4 Bytes)
  Value range: 0 - 4294967295
- Floating point number (DPT 9.001 - 2 Bytes)
  Value range: -671088.64 - +670433.28
- Floating point number (DPT 14.001 - 4 Bytes)
  Value range: -3.4E+38 - +3.4E+38

Send cyclical

This parameter specifies whether the result is sent cyclically and at what interval.

Group object	Type KNX	Size	Direction
Logic – Calculation – … Byte Input A*	5.001, 5.010, 7.001, 12.001, 9.001, 14.001**	1 Byte, 2 Byte, 4 Byte	Von KNX
Logic – Calculation – … Byte Input B*	5.001, 5.010, 7.001, 12.001, 9.001, 14.001**	1 Byte, 2 Byte, 4 Byte	Von KNX
Logic – Calculation – … Output	1.002, 5.001, 5.010, 7.001, 12.001, 9.001, 14.001***	1 Bit, 1 Byte, 2 Byte, 4 Byte	Nach KNX

** Only for "Input A"/"Input B" parameter = External*
*** Type KNX determined by "Input type" parameter*
**** Type KNX is determined by the types of the inputs. With the Operation "Convert value", the output type can be freely chosen.*

The output sends when a telegram is received at an input. The condition 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.

WARNING

- The appliance may only be installed and put into operation by an authorized electrician.
- The applicable safety and accident prevention regulations must be observed.
- The appliance must not be opened.
- When planning and installing electrical systems, the relevant guidelines, regulations and provisions of the respective country must be observed.
- This appliance is permanently connected, therefore an easily accessible disconnecting device must be installed outside the appliance.
- The connection requires a 16 A fuse for external overcurrent protection.
- The power specifications are located on the side of the product.

Product database for ETS 6
www.weinzierl.de/en/products/522/ets6/

Data sheet
www.weinzierl.de/en/products/522/datasheet

CE declaration
www.weinzierl.de/en/products/522/ce-declaration

Tender text
www.weinzierl.de/en/products/522/tender-text

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2026-05-04