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ESYLUX

User manual

CU-DIN DRY 4-Z KNX
EC10430381

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1 Description

The ESYLUX KNX/EIB CU-DIN DRY 4-Z KNX uses the KNX/EIB BUS to communicate with other KNX devices. The database must be downloaded from the ESYLUX-Webpage to the device using ETS3.0E, ETS4 or ETS5, and this document describes how to use the product. Our products are manufactured according to EMC, electrical safety and environmental conditions.
The dry contact module is used to control loads, such as:

- **switch control**
- **dimming control**
- **shutter control**
- **flexible control**
- **scene control**
- **sequence control**
- **percentage control**
- **threshold control**
- **string control**
- **forced control**
- **PWM output**
- **5 logic control**
- **counting control**
- **5 logic control**
- **combination control**
- **LED status indicator**
- **alarm control**
- **heating control**
- **0-10V dimming**
- **other equipment**

Note: Use this product only as intended (as described in the user instructions). Do not make any changes or alterations as this will render any warrantees null and void. You should check the device for damage immediately after unpacking it. If there is any damage, you should not install the device under any circumstances.
If you suspect that safe operation of the device cannot be guaranteed, you should turn the device off immediately and make sure that it cannot be operated unintentionally.

2 Safety instructions

- **Work on the 230 V power system must be carried out by authorized personnel only, with due regard to the applicable installation regulations.**
- **Switch off the power supply before installing the system.**
- **The 21 – 30 V ⎓ KNX bus voltage cannot be used as 24 V ⎓ DC operating or auxiliary voltage.**
- **Please observe the installation instructions for the SELV protective measure.**

3 Product function

The CU-DIN DRY 4-Z KNX is one of the products in the ESYLUX KNX/EIB series. It includes 4-channel signal input and 4-channel signal output. The signal input channel can receive signals from the temperature sensor and dry contacts. It offers 4-channel output DC 0-10V for the dimming signal or 4-channel drive for the LED status.
This module includes functions such as temperature collection, dry contact input, logic output, 0-10V dimming, sensor, LED driver function and control function including relay control, dimming control, curtain control, scene control, etc. in a logic control process where each logic combines with 4-signal input channels.

The CU-DIN DRY 4-Z KNX has three work modes:

- Sensor controller
- Logic controller
- Dimming controller

- **Sensor controller**

Switch controller Switch/Dimming controller; Shutter controller; Flexible controller; Scene controller; Sequence switch; Percentage controller; Threshold controller; String (14 bytes) controller; Forced position controller; Counter controller; Combination controller.

- **Logic controller**

Dry contact sensor; Temperature sensor; Block A; Object output 1 - 10.

- A1 Switching
- A2 Alarm
- A3 Shutter
- A4 Scene
- A5 Sequence
- A6 Percentage
- A7 Threshold
- A8 Threshold
- A9 String (14 bytes)
- A10 String (14 bytes)

- **Dimming controller**

Input A function; Dry contact sensor;Temperature sensor; 0-10 V ballast dimming; Staircase lighting; Flashing; Scene; Threshold; Heating.

4 Hardware

The technical properties of the ESYLUX KNX/EIB CU-DIN DRY 4-Z KNX are described in the following sections.

4.1 Technical data

Power supply	
• Operating voltage (supply by the bus)	21–30 V ⎓
• Current consumption EIB/KNX (operate)	<25 mA

Input sensors	Switch/Temperature sensor
• Temperature sensor choice	CA-DIN TP for DRY 2.5 m

NOTE: You must use the special temperature sensor supplied by ESYLUX. The sensor type is CA-DIN TP for DRY 2.5m

Output/Input nominal values	
• Device type	CU-DIN DRY 4-Z KNX
• Number of output pins	4
• Number of output pins	4

Connections	
• EIB/KNX	Bus connection terminal 0.6 - 0.8 mm Ø, single core

Operation and display
• Blue LED and push button indicates entering programming mode.

Temperature range	
• Operation	0°C to +45° C
• Storage	-40°C to +55° C
• Transport	-25°C to +70° C
Environmental conditions	
Humidity	max. 93% Non-condensing

Appearance design	
• Dimensions (H x W x D)	50 x 50 x 14
• Weight (kg)	0.03

• Installation	Flush-mounted-junction-box

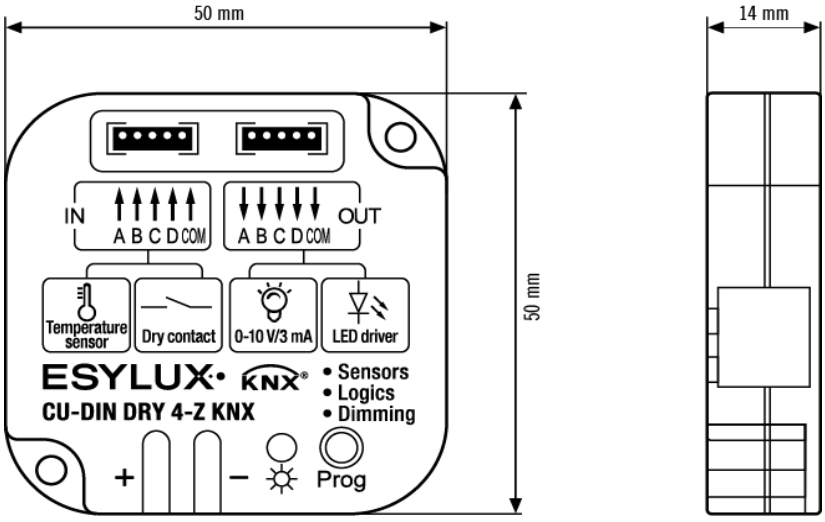
CE Mark in accordance with	
• EMC Standard	2004/1008/EC
• LVD Standard	2006/95/EC
• RoHS	2011/65/EU

Loads	
• Dimmable ballast	0-10V ⎓

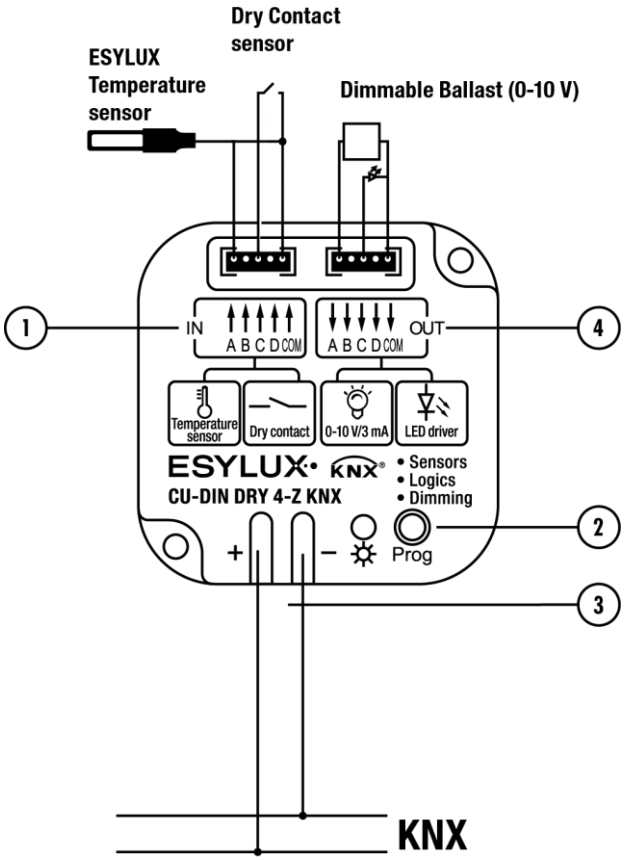
Application table			
• Dry contact functions	Sensor controller	Logic controller	Dimming controller
• Max. number of communication objects	130	150	122
• Max. number of group addresses	254	254	254
• Max. number of associations	254	254	254

NOTE: Programming requires the KNX/EIB Software Tool ETS.

4.2 Dimensional drawings



4.3 Wiring diagram



1 Input pins, from left to right: A, B, C, D, COM
2 Programming button & programming LED
3 KNX/EIB
4 Output pin, contact to dimmable ballast or LED.

NOTE:
a) Dimensions of the space to be provided for each dry contact.

b) Dimensions and position of the means for supporting and fixing the switch within this space
c) Minimum clearance between the various parts of the switch and the surrounding parts where fitted
d) Minimum dimensions of ventilation opening, if needed, and their correct arrangement.

4.5 Maintenance and warnings

- Please read this user manual carefully before any operation.
- Do not operate close to interfering devices.
- The site should be well ventilated with a good cooling environment.
- Pay attention to damp proofing, quakeproofing and dustproofing.
- Avoid contact with rain, other liquids or caustic gas.
- Please contact professional maintenance staff or the ESYLUX service centre for repairs.
- Remove dust regularly and do not wipe the unit with volatile liquids such as alcohol, petrol, etc.
- In case of contact with damp or liquid, turn off immediately.
- Check the circuitry and other related circuits or cables regularly, and replace inadequate circuitry promptly.
- The installation location should be well-ventilated, with no moisture, movement or dust.

5 Software

The ESYLUX KNX/EIB CU-DIN DRY 4-Z KNX database can be downloaded from the ESYLUX-Webpage. All parameters and interfaces are described in the following paragraph.
The device is connected to both a temperature sensor and dry contact, and can simultaneously send a variety of data items at one time which can handle many different types of KNX equipment.
The following paragraph describes the output and input settings in detail.

5.1 functions – Overview

The following table provides an overview of the functions and and certain parameters of the switch actuators:

Sensor controller	
General	**Heartbeat telegram**
• Switch controller	**x**
• Switch/Dimming controller	**x**
• Shutter controller	**x**
• Flexible controller	**x**
• Scene controller	**x**
• Sequence controller	**x**
• Percentage controller	**x**
• Threshold controller	**x**
• String (14 bytes) controller	**x**
• Forced position controller	**x**
• Counter controller	**x**
• Combination controller	**x**
Logic controller	
• Switching	**x**
• Alarm	**x**
• Shutter	**x**
• Scene	**x**
• Sequence	**x**
• Percentage	**x**
• Threshold	**x**
• String (14 bytes)	**x**
Dimming controller	
• Scene no. 1-64	**x**

• Sequence	x
• Staircase light	x
• Flashing	x
• Scene	x
• Threshold	x
• Heating	x
• 1 bit/1 byte PWM control	x

Table 1: Database application overview.

NOTE: Each function and mode can only be used separately.

5.2 "General" function parameter

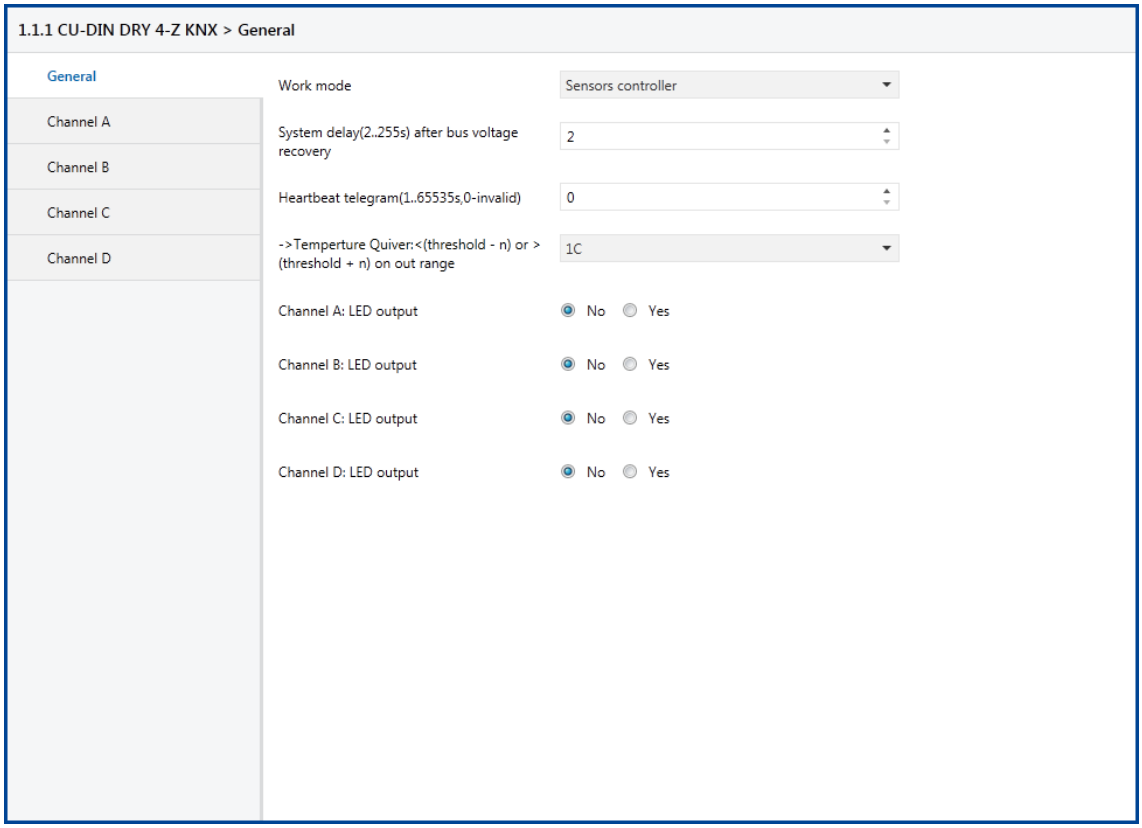


Fig 1: "General" parameters window

The work mode can be set using the parameters in the general window.

- **Work mode**

Options: **Sensor controller**

Logic controller
Dimming controller

The CU-DIN DRY 4-Z KNX has three work modes. Further details regarding these three modes are provided below.

5.2.1 "Sensor controller" work mode

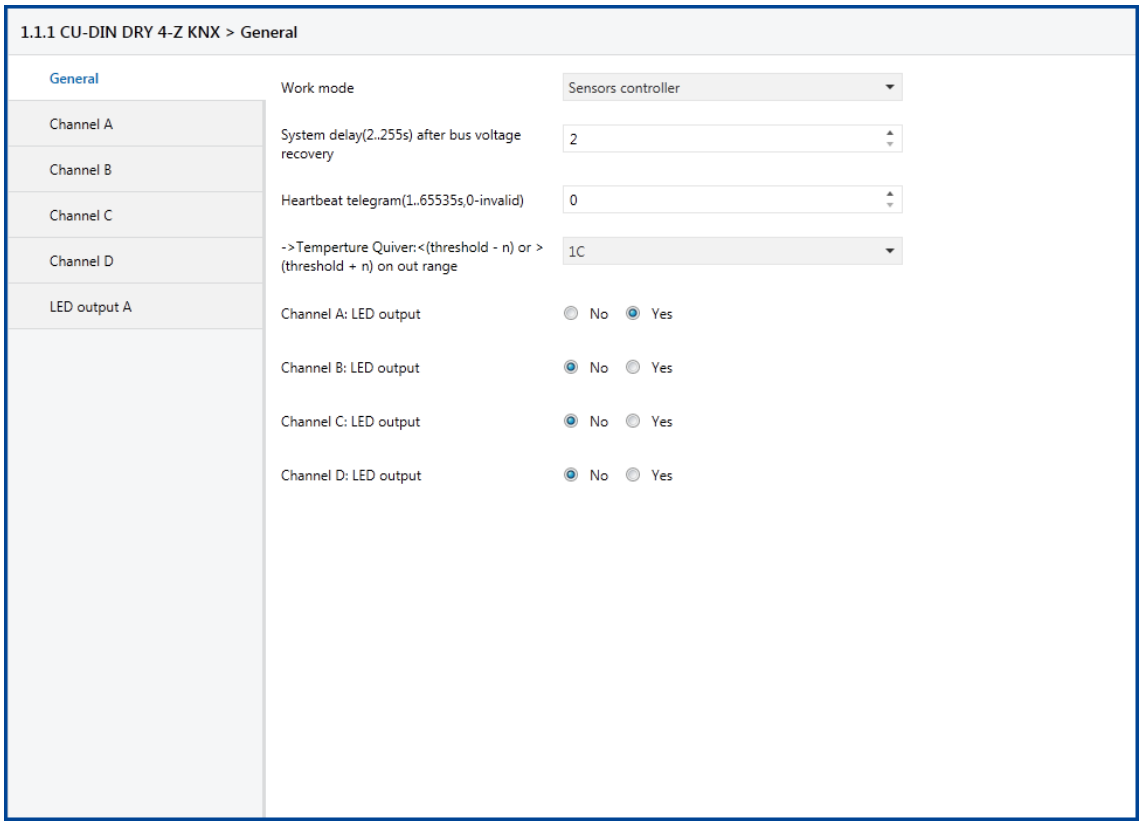


Fig 2: "Sensor controller" parameter window

- **System delay (2-255 s) following bus voltage recovery**

The device experiences a delay for 2-255 s after powering on. The default value is 2 seconds. The min. value is 2 seconds and the max. value is 255 seconds.
Options: **2-255 s**
When the power is on and once the delay has timed out, the device begins working.

- **Heartbeat telegram (1-65535 s, 0 - invalid)**

The range of the parameter is 0 to 65535 s. 0 as the parameter value disables the function, other parameter values enable this function.
Options: **0-65535 s**

If the parameter is set to non-zero, the device will send telegram data cyclically when it times out. It alternates between sending the values 0 and 1. The user decides whether or not to use this function.

- **Temperature Quiver: < (threshold – n) or > (threshold +n) on out range**

If the temperature changes within the effective range, the status does not change.
When the temperature change is greater than n, the status will change. The quiver range is between threshold – n and threshold or between threshold and threshold +n.
Options: **0-10°C**

- **Channel A: LED output**

The module has four output channels: channel A, channel B, channel C and channel D.
Options: **NO**
YES
If YES is selected, the "LED output A" setting page appears. This page shows how to set the LED parameter. The Channel B, C and D outputs are the same as channel A.

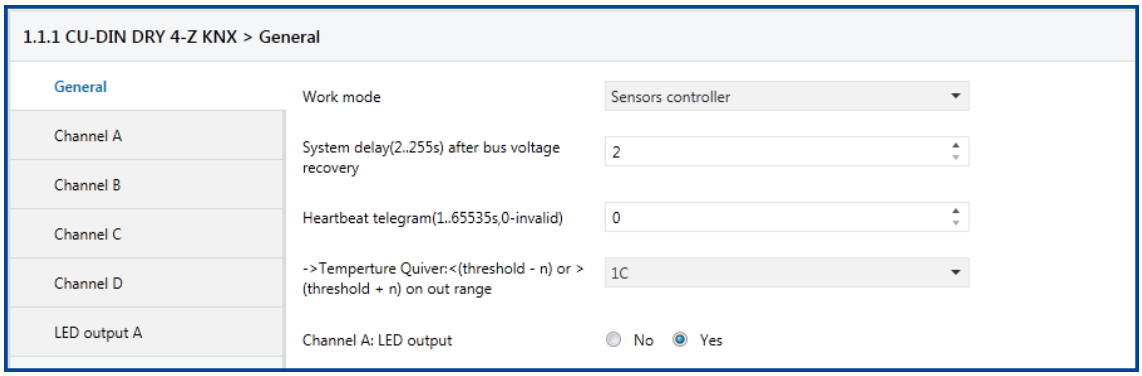


Fig 2.1: "LED output A" parameter window

5.2.1.1 "LED output A" parameter window

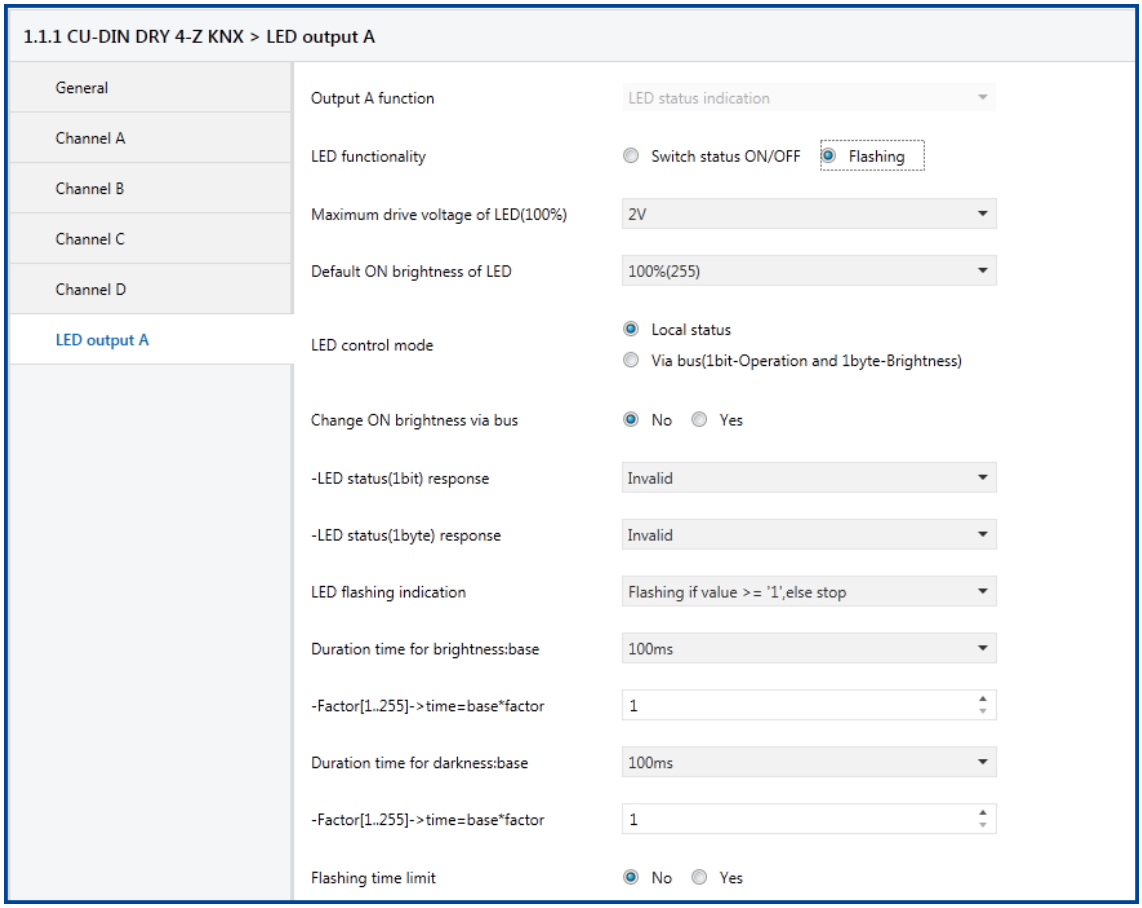


Fig 3: "LED output A" parameter window

The CU-DIN DRY module's LED output has two functions.

- **LED functionality**

Options: **Switch state ON/OFF**
Flashing

Switch state ON/OFF: The LEDs show the current state of the connected switch.

Flashing: LED is flashing.

- **Select "Switch state ON/OFF"**

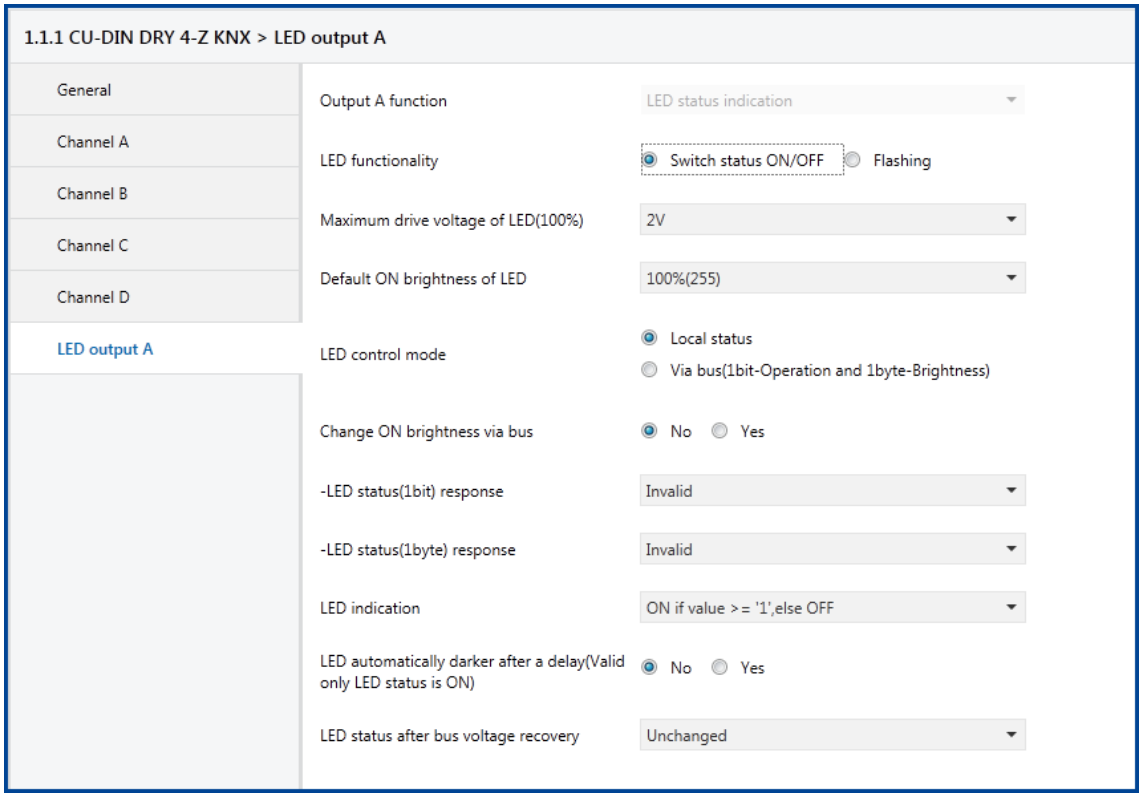


Fig 4: "Switch state ON/OFF" parameter window

- **Maximum LED drive voltage (100%)**

Sets the LED drive voltage. The range is 1V to 10V.
Options: **1V-10V**

- **Default LED ON brightness**

Sets the default LED brightness. The range is 10% to 100%.
Options: **10% - 100% (255)**

- **LED control mode**

Sets the LED control mode.
Options: **Local status**
Via bus (1 bit - operation and 1 byte - brightness) Local status: LED controlled by local status.
Via bus: LED controlled by telegram via the bus.

- **Change the brightness via the bus**

Enables changing the brightness via the bus system.
Options: **NO**
YES

NO: cannot change the brightness via the bus.
YES: can change the brightness via the bus.

- **LED status (1 bit) response**

Sets the LED status response.
Options: **Invalid**
1 bit always response
1 bit only changed
1 bit always response: it always responds.
1 bit only changed: it responds when the status is changed.

- **LED status (1 byte) response**

Options: **Invalid**
1 byte always response
1 byte only changed
1 byte always response: it always responds.
1 byte only changed: it responds only when the status is changed.

- **LED indication**

Options: **ON if value≥"1", else OFF**
ON if value is "0", else OFF
Always ON
Always OFF
ON if value≥"1", else OFF: the value≥"1", LED is ON, else LED is OFF.
ON if value is "0", else OFF: the value is 0, LED is ON, else LED is OFF.
Always ON: LED is always ON.
Always OFF: LED is always OFF.

- **LED automatically darken delay time: base**

Sets the base delay time.
Options: **100 ms, 1 sec, 1 min 1 hour**

- **Factor(1-255)->time = base*factor**

Options: **1-255**
Sets the delay time; this time is option value*base. After this time, the LED automatically darkens to the set value.

- **LED State following bus voltage recovery**

Options: **OFF**
ON
Sets the LED state following bus voltage recovery.

- **Select "Flashing"**

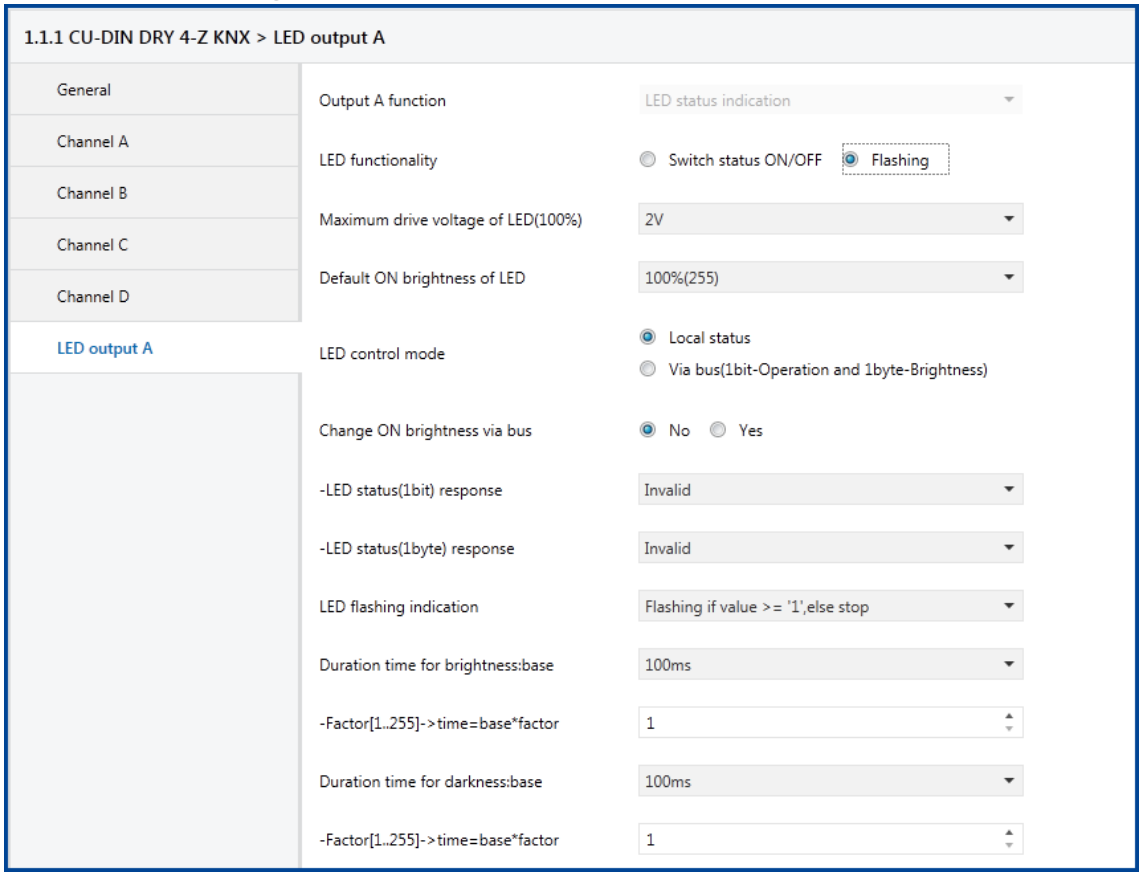


Fig 5: "Flashing" parameter window

LED is flashing. The flashing parameters are set as follows.

- **Maximum LED drive voltage (100%)**

Sets the LED drive voltage. The range is 1V to 10V.
Options: **1V-10V**

- **Default LED ON brightness**

Sets the default LED brightness. The range is 10% to 100%.
Options: **10% - 100% (255)**

- **LED control mode**

Sets the LED control mode.
Options: **Local status**
Via bus (1 bit - operation and 1 byte - brightness)
Local status: LED controlled by local status.
Via bus: LED controlled by telegram via the bus.

- **Change the brightness via the bus**

Enables changing the brightness via the bus.
Options: **NO**
YES
NO: cannot change the brightness via the bus.
YES: can change the brightness via the bus.

- **LED status (1 bit) response Sets the LED status response.**

Options: **Invalid**
1 bit always response
1 bit only changed
1 bit always response: it always responds.
1 bit only changed: it responds when the status is changed.

- **LED status (1 byte) response**

Options: **Invalid**
1 byte always response
1 byte only changed
1 byte always response: it always responds.
1 byte only changed: it responds only when the status is changed.

- **LED indication**

Options: **Flashing if value≥"1", else stop**
Flashing if value is "0", else stop
Always flashing
Flashing if value≥"1", else OFF: value≥"1", LED is flashing, else LED is not flashing.
Flashing if value is "0", else OFF: the value is 0, LED is flashing, else LED is OFF.
Always flashing: LED is always flashing.

- **Brightness duration: base**

Sets the base delay time.
Options: **100 ms, 1 sec, 1 min 1 hour**

- **Factor(1-255)->time = base*factor**

Options: **1-255**
Sets the delay time; this time is option value*base. After this time, the LED automatically reaches the set brightness value.

- **Darkness duration: base**

Sets the base delay time.

Options: **100 ms, 1 sec, 1 min 1 hour**

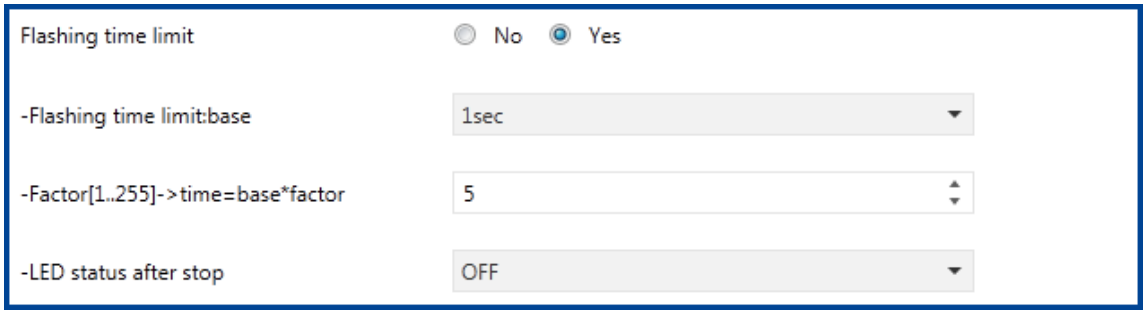
- **Factor(1-255)->time = base*factor**

Options: **1-255**

Sets the delay time; this time is option value*base. After this time, the LED automatically darkens to the set value.

- **Flashing time limit**

Sets the flashing duration; after this time the LED will stop flashing



- **LED State following bus voltage recovery**

Options: **OFF**
ON

Sets the LED state following bus voltage recovery.

5.2.1.2 "Channel A" parameter window

Using channel N as an input pin, there are two possible input methods:
Dry contact sensor and Temperature sensor.

5.2.1.2.1 "Dry contact sensor" parameter window

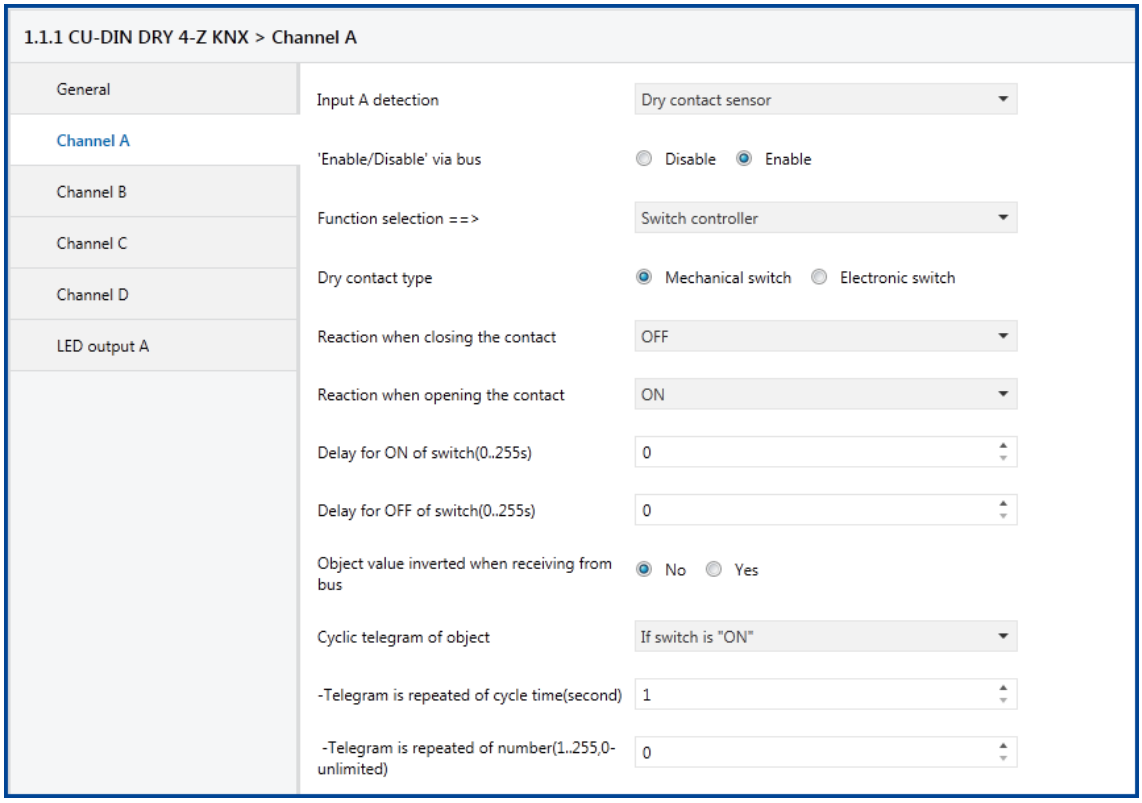


Fig 6: "Dry contract sensor" parameter window

With input A being a dry contact sensor, the following settings must be completed.

- **Enable/Disable via bus**

Enables input A.
Options: **Enable**
Disable
Enable: enables input A. When this is selected, input A has certain functions.
Disable: disables input A.

- **Function selection**

Options: **Switch controller**
Switch/Dimming controller
Shutter controller
Flexible controller
Scene controller
Sequence controller
Percentage controller

Threshold controller
String (14 bytes) controller
Forced position controller
Counter controller
Combination controller

When different functions are selected, the parameter settings are also different.

- **Select "Switch controller"**

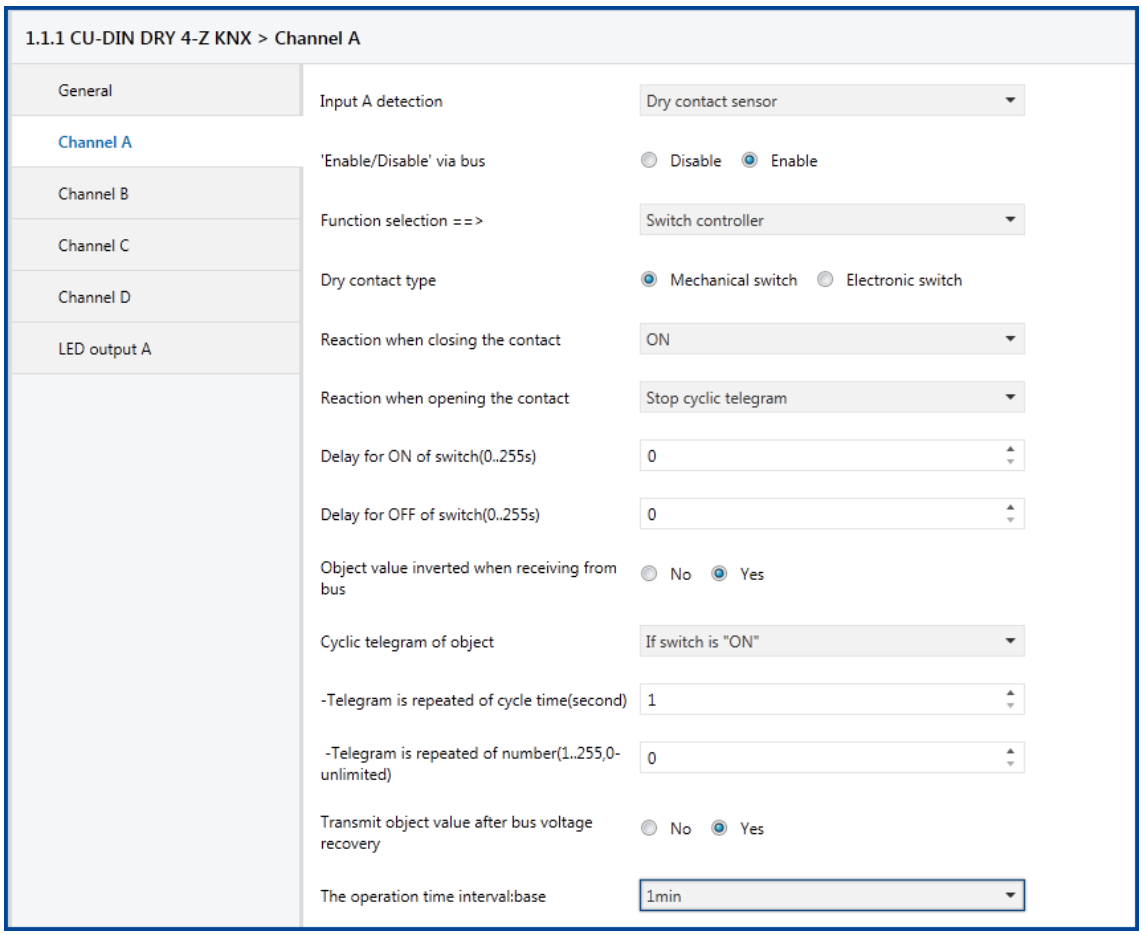


Fig 7: "Switch controller" parameter window

There are two types of dry contact.
With input A as a dry contact, the function is switch controller.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

- **The follow setting is for the mechanical switch type of dry sensor.**

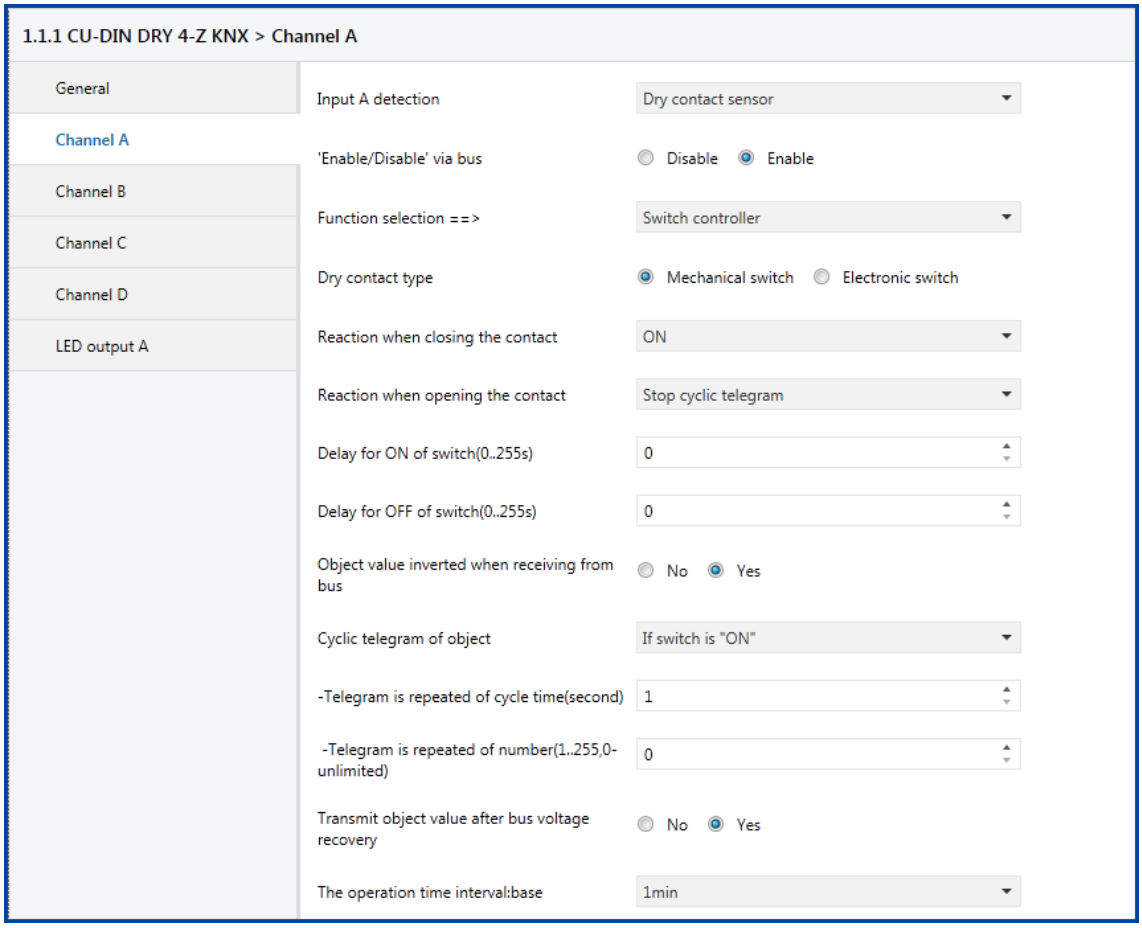


Fig 7.1: "Mechanical switch" parameter window

- **Reaction when the contact is closed**

Options: **Unchanged**
ON
OFF
Toggle
Stop cyclic telegram

When closing the dry contact a target variable is sent. 1 is ON, 0 is OFF.
Unchanged: it will send the same value as last time.
ON: it will send the value as 1.
OFF: it will send the value as 0.
Toggle: the dry contact is closed, the previous value is inverted and sent.
Stop cyclic telegram: this is mainly used for the following cycle settings

- **Reaction when the contact is opened**

Options: **Unchanged**
ON
OFF
Toggle
Stop cyclic telegram

When opening the dry contact a target variable is sent. 1 is ON, 0 is OFF.
The setting is the same as for closing.

- **Delay when switch ON (0-255 s)**
- **Delay when switch OFF (0-255 s) Options: (0-255 s)**

Sets the delay time for switch ON and OFF.
The range is 0-255 s.

- **Object value inverted when receiving from bus**

Options: **NO**
YES

NO: when receiving the value from the bus it is not inverted.
YES: when receiving the value from the bus it is inverted.

- **Cyclic telegram of object**

Options: NO
If switch is ON
If switch is OFF
Always transmission

NO: there is no cyclic function.
If switch is ON: If switch is OFF
Always transmission:

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **The follow setting is for the electronic switch type of dry sensor.**

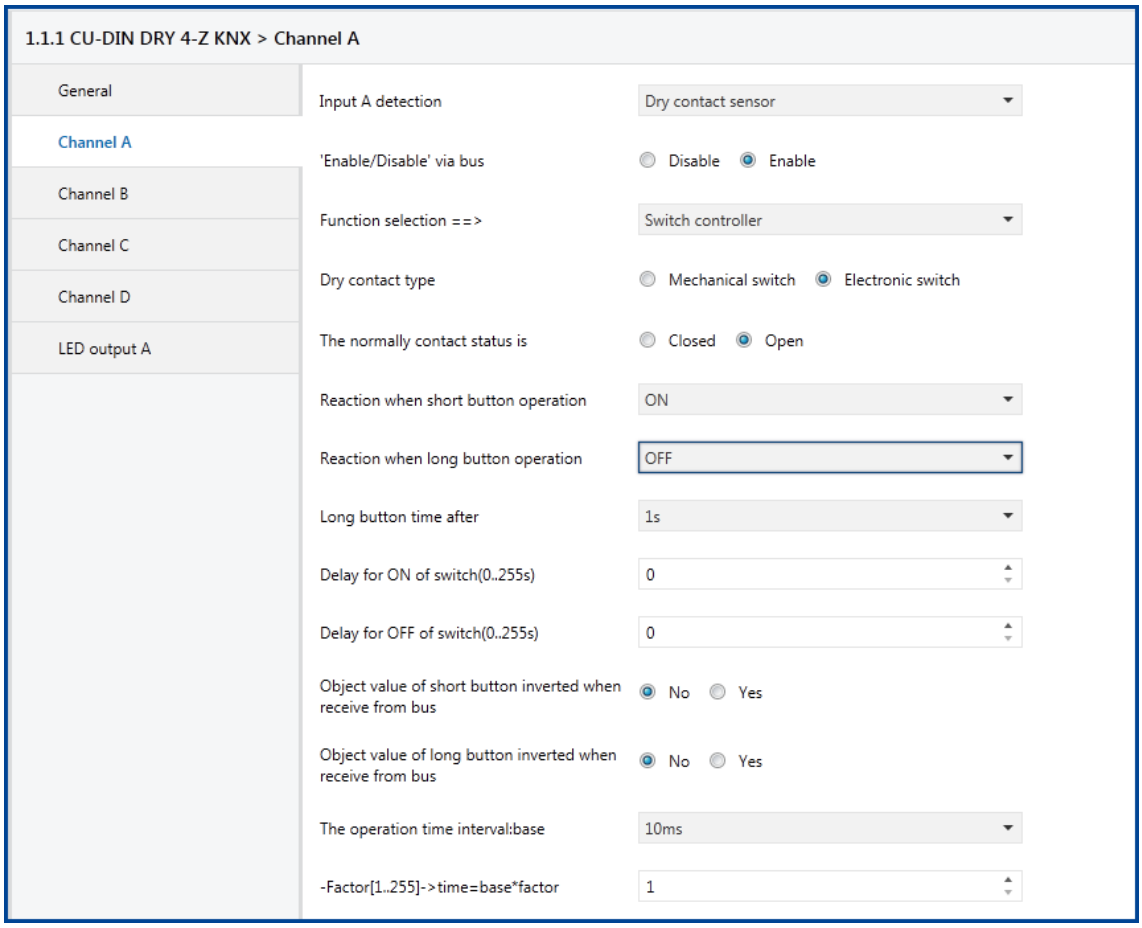


Fig 7.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open

- **Reaction to short button operation**
- **Reaction to long button operation**

Options: **Invalid**
Unchanged
ON
OFF
Toggle

These two parameters concern the reaction when buttons are operated.

- **Delay when switch ON (0-255 s)**
- **Delay when switch OFF (0-255 s) Options: 0-255 s**

Sets the delay time for switch ON and OFF.
The range is 0-255 s.

- **Object value inverted when receiving from bus**

Options: **NO**
YES

NO: when receiving the value from the bus it is not inverted.
YES: when receiving the value from the bus it is inverted.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Switch/Dimming controller"**

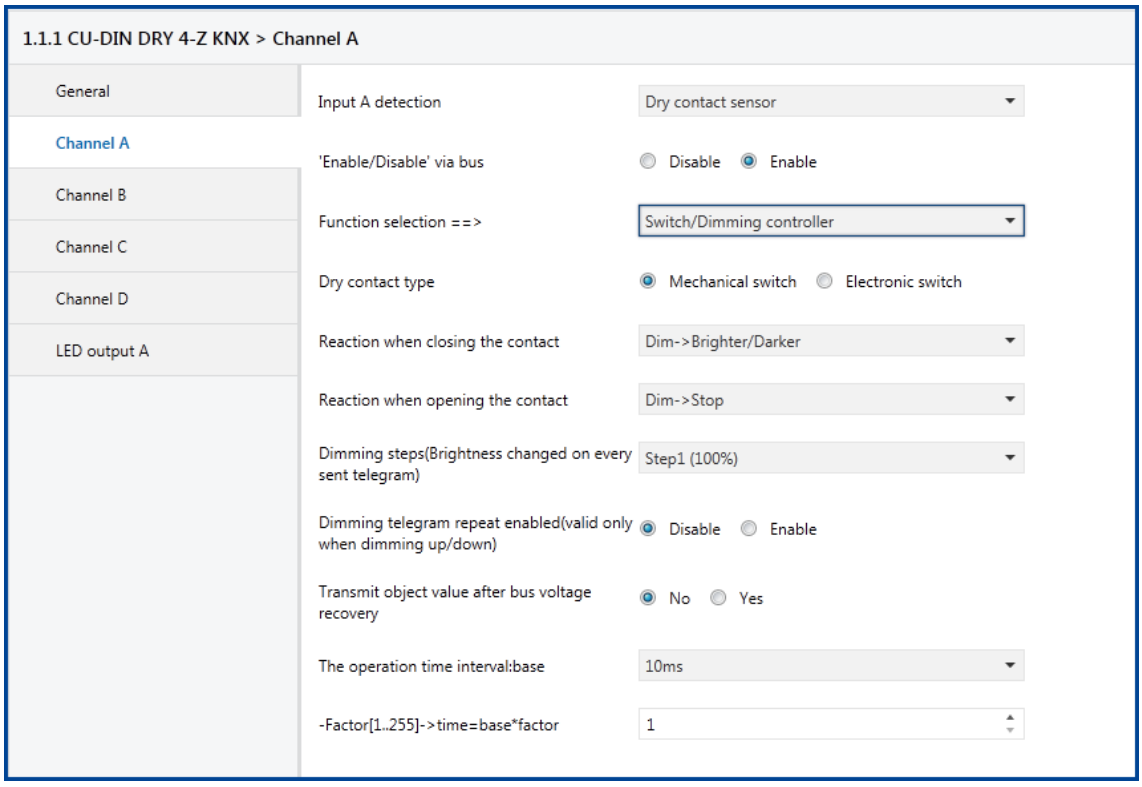


Fig 8: "Switch/Dimming controller" parameter window
With input A as a dry contact and function “switch controller”.

- **Dry contact type**

Options: **Mechanical switch**

Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

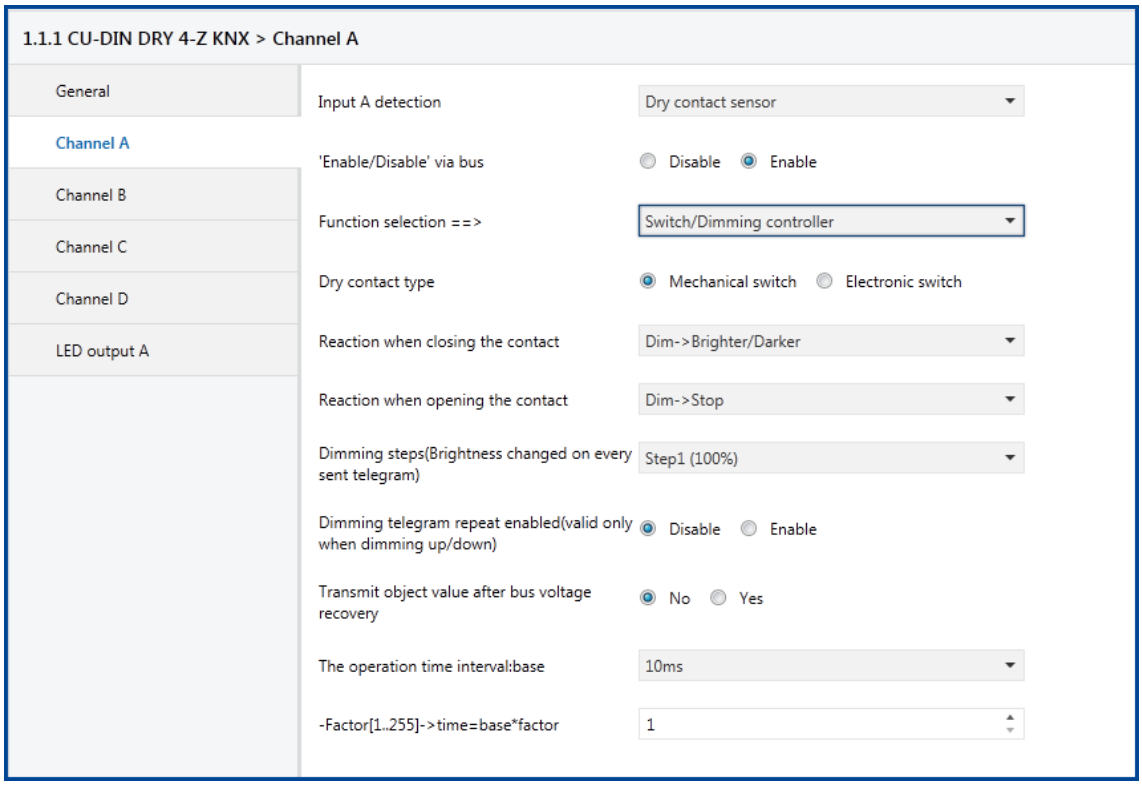


Fig 8.1: "Mechanical switch" parameter window

- **Reaction when the contact is closed:**

Sets the function when the dry contact is closed.

Options: **Invalid**
Dim->Brighter
Dim->Darker
Dim->Brighter/Darker
Dim->Stop

Invalid: the dry contact is invalid.

Dim->Brighter: increases the brightness when the dry contact is closed.

Dim->Darker: decreases the brightness when the dry contact is closed.

Dim->Brighter/Darker: increases/decreases the brightness when the dry contact is closed.

Dim->Stop: stops when the dry contact is closed.

- **Reaction when the contact is opened:**

Sets the function when the dry contact is opened; the setting is the same as for when the contact is closed.

- **Dimming steps (Brightness changed with each telegram sent):**

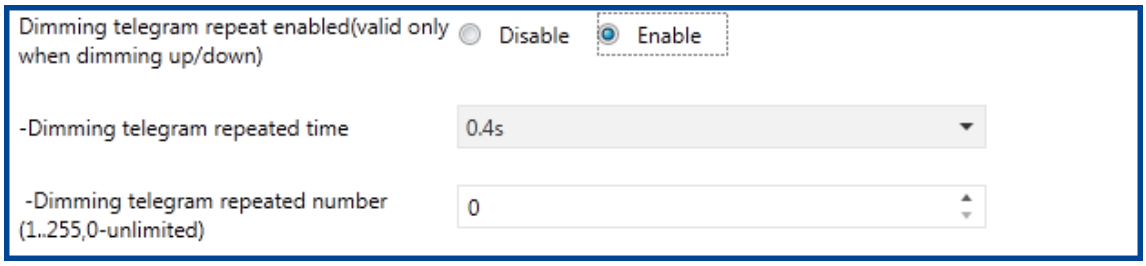
Options: **Step 1 (100%)**
Step 2 (50%)
Step 3 (25%)
to
Step 7 (1.56%)

Sets the brightness value for each change.

- **Dimming telegram repeat enabled (valid only when dimming up/down):**

Options: **Disable**
Enable

Whether or not to repeat the receiving telegram.
Disable: receiving telegram not repeated.
Enable: receiving telegram repeated when dimming up/down. When enable is selected, the following parameters are available.



- Dimming telegram repeat time

Options: **0.2 s-60 s**

Dimming telegram repeat number (1-255, 0 - unlimited) Options: 0-255

- Transmit object value following bus voltage recovery

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

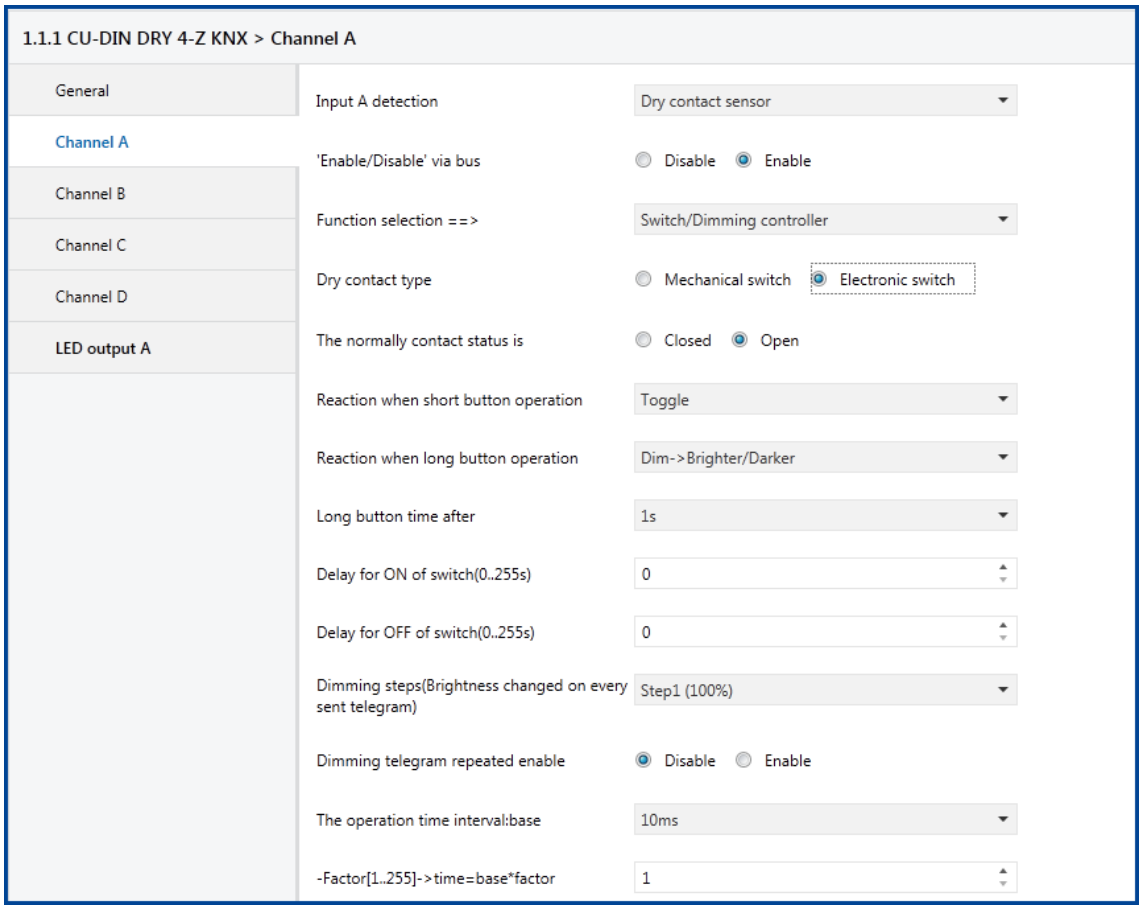


Fig 8.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Reaction to short button operation**
- **Reaction to long button operation**

Options: **Invalid**
Unchanged
ON

OFF
Toggle

- **Reaction to long button operation**

Options: **Invalid**

- **Delay when switch ON (0-255 s)**
- **Delay when switch OFF (0-255 s)**

Options: **0-255 s**
Sets the delay time for switch ON and OFF.
The range is 0-255 s.

- **Object value inverted when receiving from bus**

Options: **NO**
YES
NO: when receiving the value from the bus it is not inverted.
YES: when receiving the value from the bus it is inverted.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Shutter controller"**

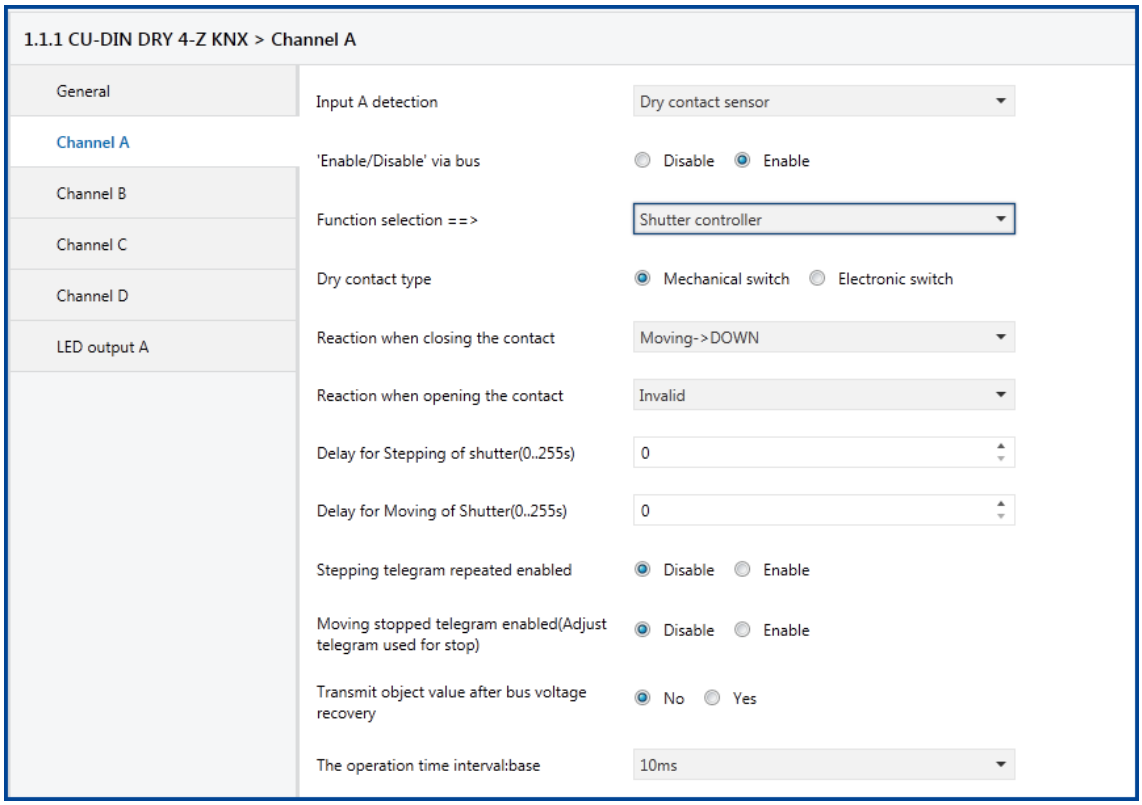


Fig 9: "Shutter controller" parameter window
With input A as a dry contact and function “shutter controller”.

- **Dry contact type**

Options: Mechanical switch
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

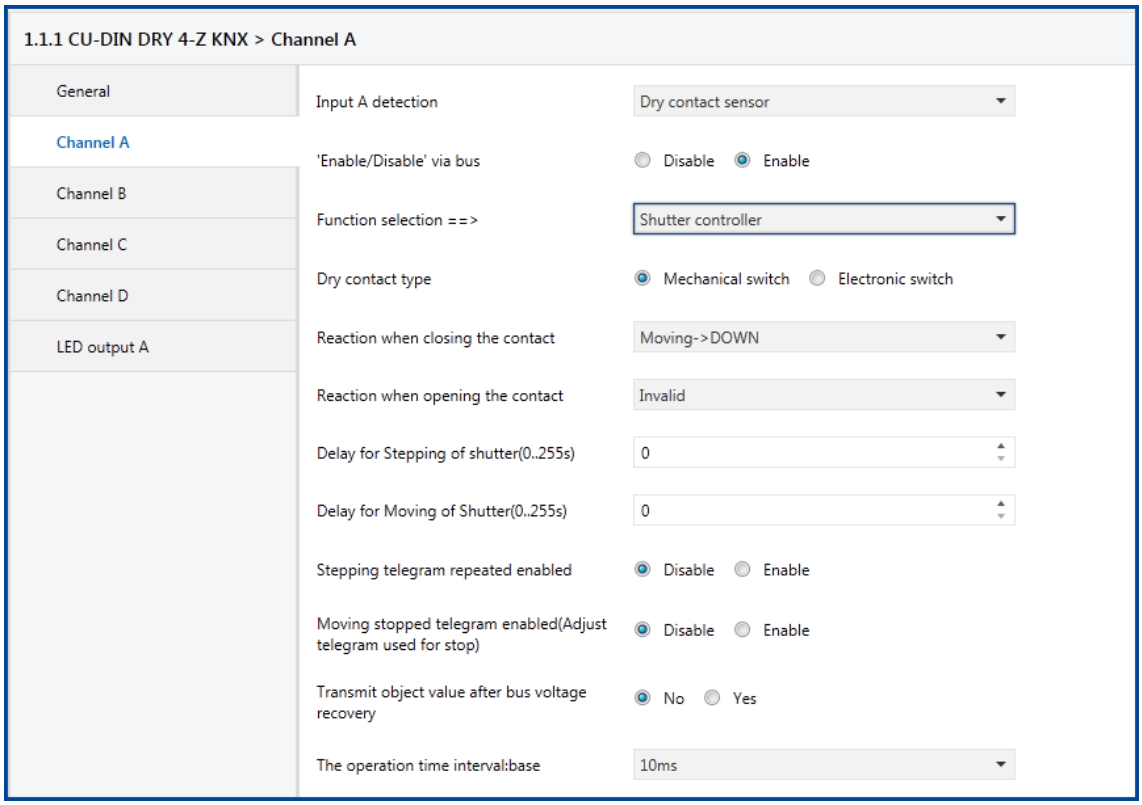


Fig 9.1: "Mechanical switch" parameter window

- **Reaction when the contact is closed:**
- **Reaction when the contact is opened:**

Sets the function when the dry contact is opened/closed.

Options: **Invalid**
Stepping->Increase
Stepping->Decrease
Stepping->Toggle
Stepping->Repeat telegram stopped
Moving->UP
Moving->DOWN
Moving->Toggle

Invalid: invalid when the dry contact is opened/closed.
Stepping->Increase: increases when the dry contact is closed. Stepping->Decrease: decreases when the dry contact is closed.
Stepping->Toggle: toggles when the dry contact is closed.
Stepping->Repeat telegram stopped: repeat telegram stopped when the dry contact is closed.
Moving->UP: up when the dry contact is closed.
Moving->Down: down when the dry contact is closed.

Moving->Toggle: toggles when the dry contact is closed.

When opening the dry contact, the setting is the same as for closing the contact.

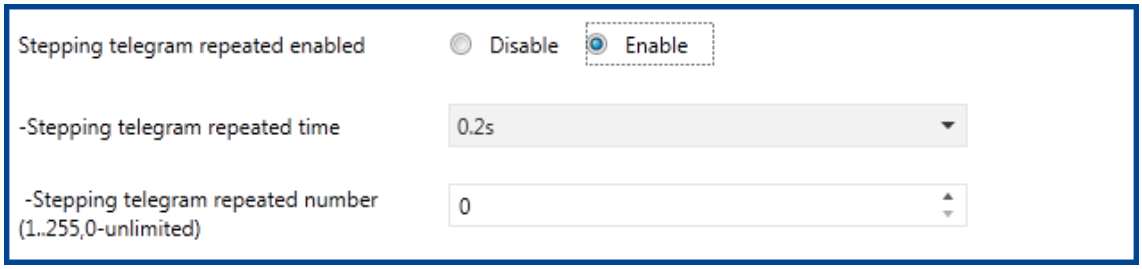
- **Shutter stepping delay (0-255 s)**
- **Shutter movement delay (0-255 s) Options: 0-255 s**

Sets the delay time for shutter stepping/movement.

- **Stepping telegram repeat number (1-255, 0 - unlimited)**

Options: **Disable**
Enable

Whether or not to repeat stepping the received telegram.
Disable: received stepping telegram not repeated.
Enable: received stepping telegram repeated.
When enable is selected, the following parameters are available.



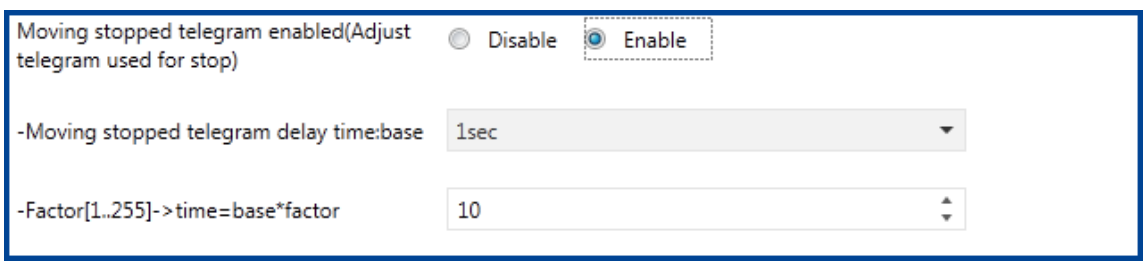
- Stepping telegram repeat time

Options: **0.2 s-60 s**
Sets the time for the stepping telegram repeat.

- Stepping telegram repeat number (1-255, 0 - unlimited) Options: 0-255

- **Moving stopped telegram enabled (Adjust telegram used for stop)**

Options: **Disable**
Enable



- Moving stopped telegram enabled (Adjust telegram used for stop)

Options: **100 ms, 1 sec, 1 min, 1 hour**

- Factor (1-255)->time=base*factor

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery. NO: do not transmit the object value following bus voltage recovery. YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

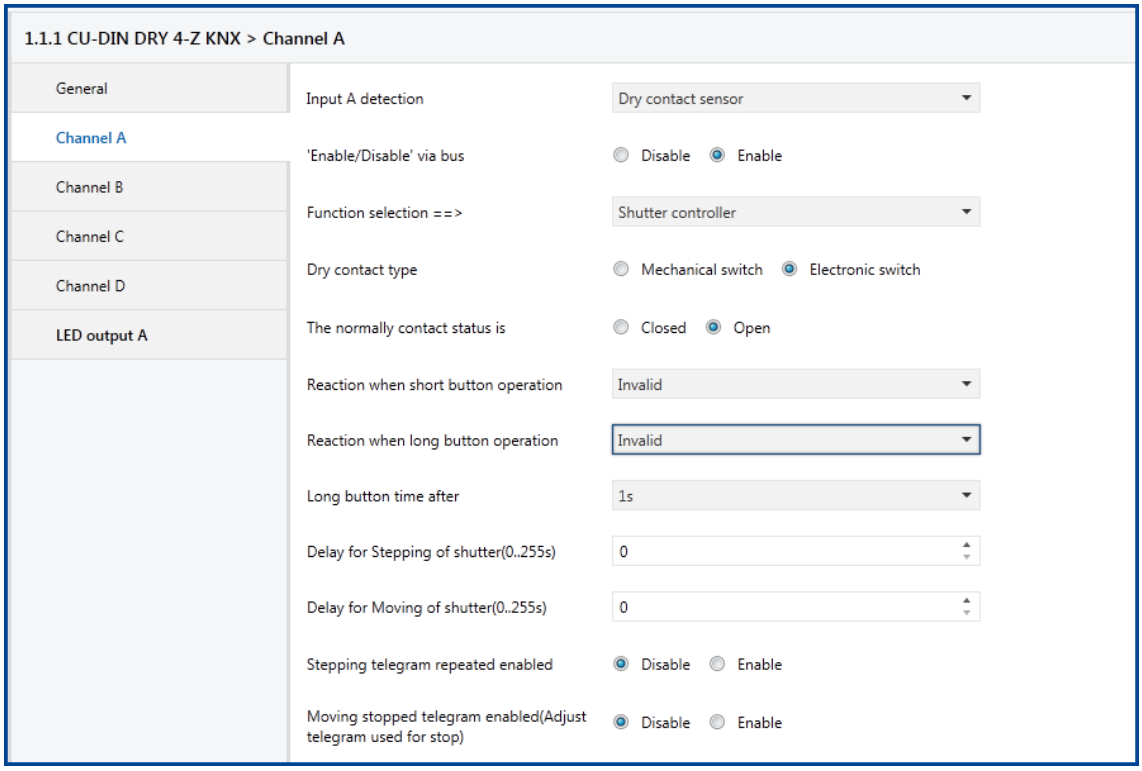


Fig 9.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Reaction to short button operation**

Sets the function of short operation of the dry contact.
Options: **Invalid**
Stepping->Increase/STOP
Stepping->Decrease/STOP
Stepping->Toggle/STOP
Moving->UP
Moving->DOWN
Moving->Toggle

Invalid: if short operation is used, the dry contact is invalid.
Stepping->Increase/Stop: if short operation of the dry contact is used the function is “increase/stops”.

Stepping->Decrease/Stop: if short operation of the dry contact is used the function
decreases/stops.
Stepping->Toggle/Stop: the function is “toggle/stop” if short operation of the dry contact is used.
Moving->UP: moves up if short operation of the dry contact is used.
Moving->Down: moves down if short operation of the dry contact is used.
Moving->Toggle: the function toggles if short operation of the dry contact is used.

- **Reaction to long button operation**

Sets the function of long operation of the dry contact.
Options: **Invalid**
Stepping->Increase/STOP
Stepping->Decrease/STOP
Stepping->Toggle/STOP
Moving->UP
Moving->DOWN
Moving->Toggle
Press: Moving->UP, Release: Call short button
Press: Moving->DOWN, Release: Call short button
Press: Moving->Toggle, Release: Call short button
Invalid: if long operation is used, the dry contact is invalid.
Stepping->Increase/Stop: the function is “increase/stop” if long operation of the dry contact is used.
Stepping->Decrease/Stop: if long operation of the dry contact is used the function is “decrease/stop”.
Stepping->Toggle/Stop: if long operation of the dry contact is used the function is “toggle/stop”.
Moving->UP: moves up if long operation of the dry contact is used.
Moving->Down: moves down if long operation of the dry contact is used.
Moving->Toggle: the function is “toggle” if long operation of the dry contact is used. **Press: Moving->UP, Release: Call short button:** Press the dry contact to move up, release the dry contact to send the value of the short button.
Press: Moving->DOWN, Release: Call short button: Press the dry contact to move down, release the dry contact to send the value of the short button.
Press: Moving->Toggle, Release: Call short button: Press the dry contact to toggle, release the dry contact to send the value of the short button.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Shutter stepping delay (0-255 s)**
- **Shutter movement delay (0-255 s)**

Options: **0-255 s**

Sets the delay time for shutter stepping/movement.
The range is 0-255 s.

- **Object value inverted when receiving from bus**

Options: **NO**
YES

NO: when receiving the value from the bus it is not inverted.
YES: when receiving the value from the bus it is inverted.

- **Operation time interval: base**

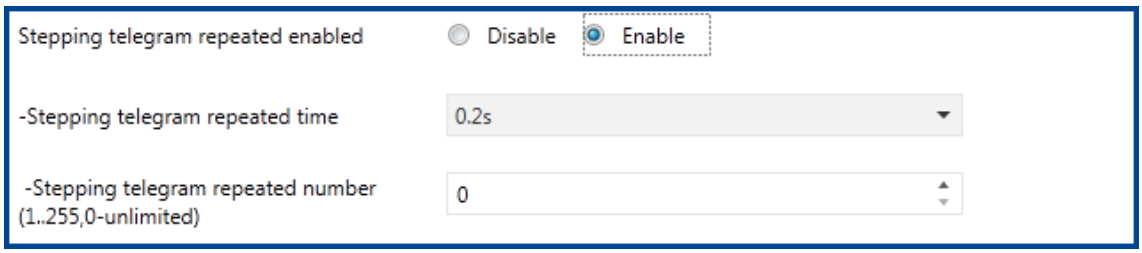
Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor

- **Delay when switch ON (0-255 s)**
- **Delay when switch OFF (0-255 s)**

Options: **0-255s**
Sets the delay time for switch ON and OFF.
The range is 0-255 s.

- **Stepping telegram repeated enabled**

Options: **Disable**
Enable
Enables the stepping telegram repeat.
Disable: stepping telegram not repeated.
Enable: stepping telegram repeated.



- Stepping telegram repeat time

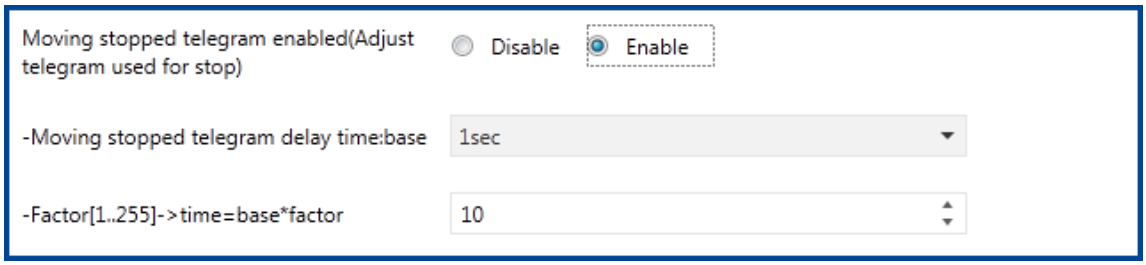
Options: **0.2 s-60 s**
Sets the time for the stepping telegram repeat.

- Stepping telegram repeat number (1-255, 0 - unlimited)

Options: **0-255**

- **Moving stopped telegram enabled (Adjust telegram used for stop)**

Options: **Disable**
Enable



- Moving stopped telegram enabled (Adjust telegram used for stop)

Options: **100 ms, 1 sec, 1 min, 1 hour**

- Factor (1-255)->time=base*factor

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**

Factor (1-255)->time=base*factor

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Flexible controller"**

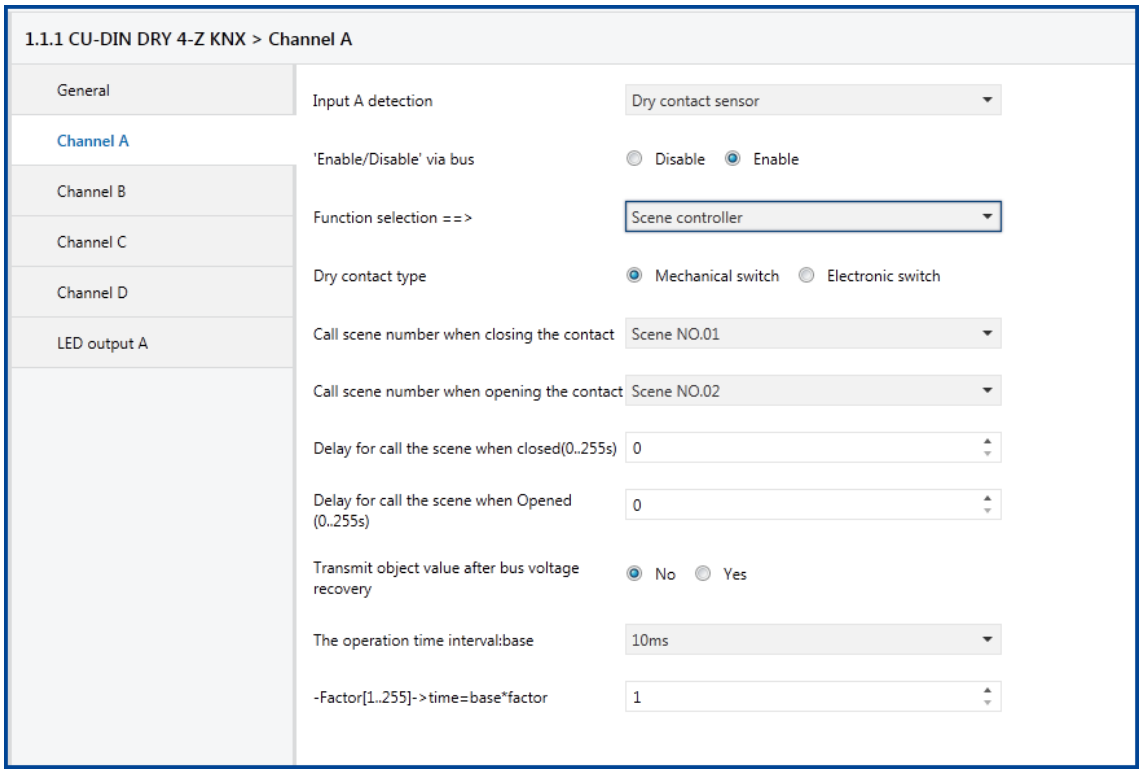


Fig 10: "Flexible controller" parameter window
With input A as a dry contact, and function “flexible controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

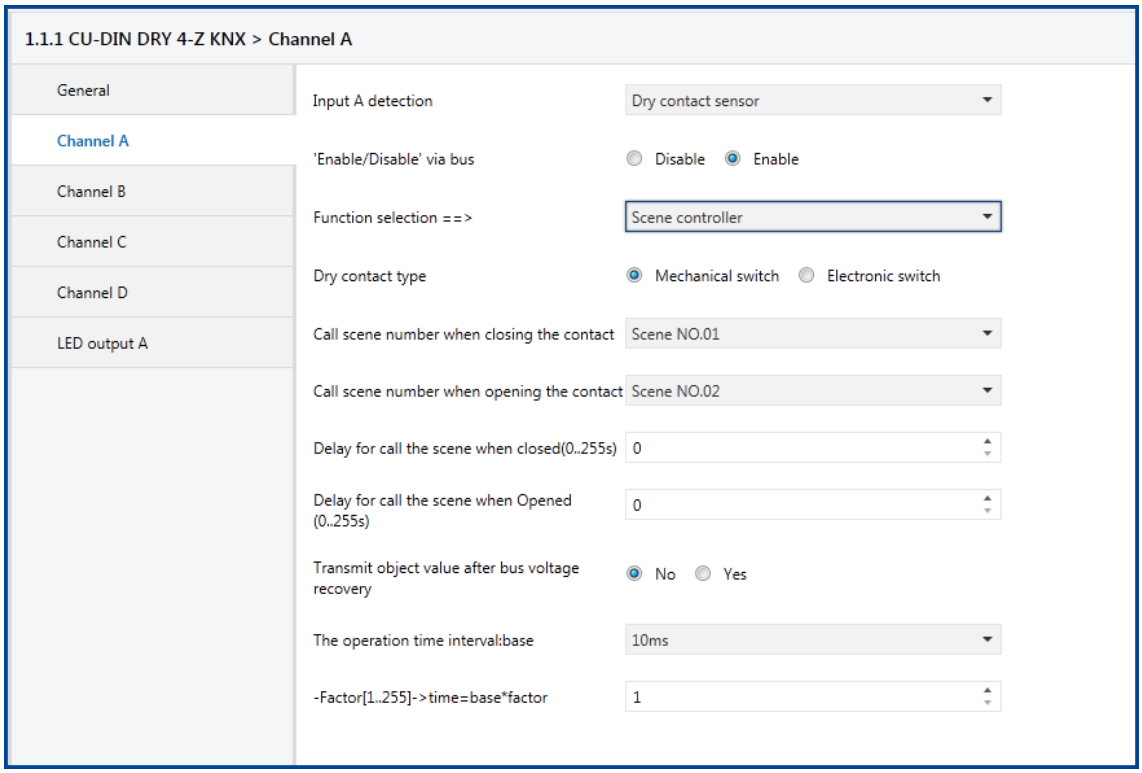


Fig 10.1: "Mechanical switch" parameter window

- **Flexible button operation:**

Sets the function when the dry contact is operated.

Options: **Invalid Close="toggle"**
Open="toggle"
Close="ON"
Open="ON"
Close="ON", Open="ON"
Close="OFF"
Open="OFF"
Close="OFF", Open="OFF"
Close="ON", Open="OFF"
Close="OFF", Open="ON"

Invalid: the dry contact is invalid.
Toggle: the dry contact function toggles.
Press="ON": Press the dry contact, the function is ON.
Press="ON", Release="ON": Press/release the dry contact, the function is on.
Press="OFF": Press the dry contact, the function is OFF.
Release="OFF": Release the dry contact, the function is off.
Press="OFF", Release="OFF": Press/release the dry contact, the function is off.

Press="ON", Release="OFF": Press the dry contact, the function is ON, release the dry contact, the function is off.
Press="OFF", Release="ON": Press/release the dry contact, the function is off.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

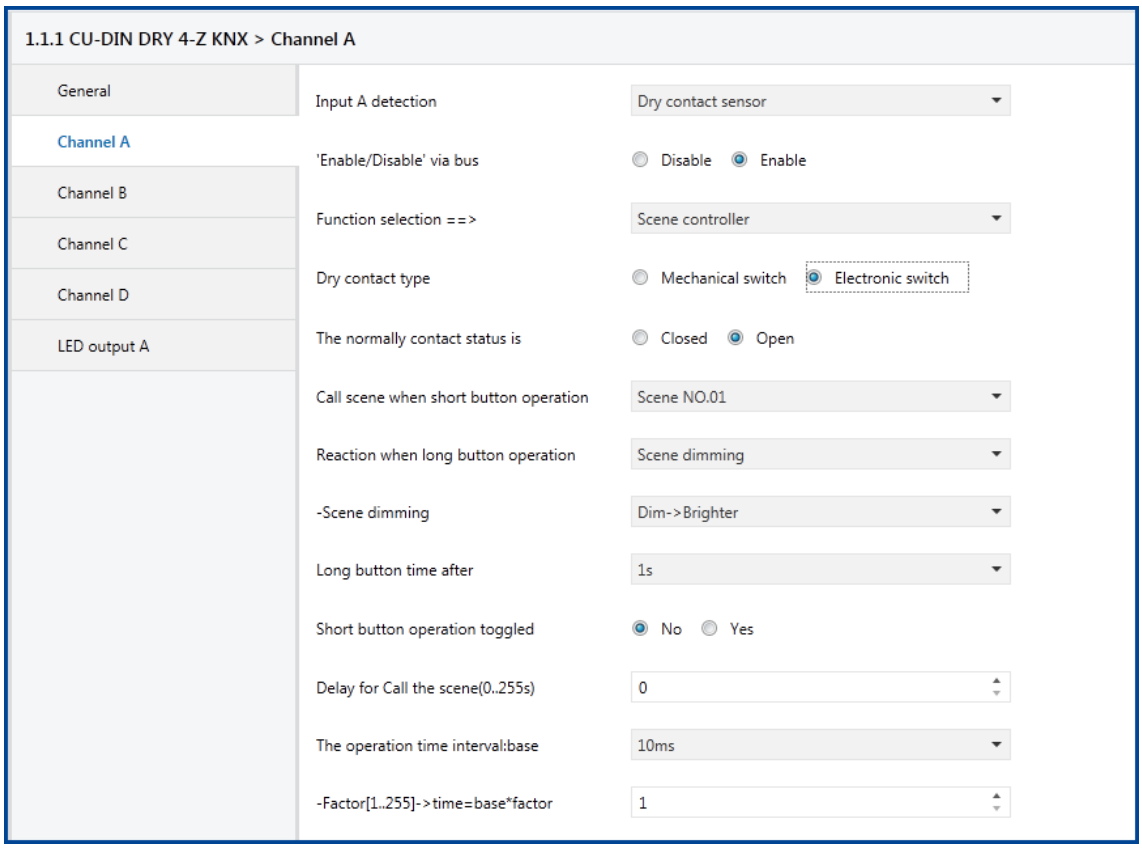


Fig 10.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Flexible button operation**

Sets the function of short operation of the dry contact.
Options: **Invalid Press="toggle"**
Release="toggle"
Press="ON"
Release="ON"
Press ="ON", Release="ON"
Press="OFF"
Release="OFF"
Press="OFF", Release="OFF"
Press="ON", Release="OFF"

Press="OFF", Release="ON"

Invalid: the dry contact is invalid.
Press=Toggle: press, the dry contact function toggles.
Release="toggle": release, the dry contact function toggles.
Press="ON": Press the dry contact, the function is ON.
Press="ON", Release="ON": Press/release the dry contact, the function is on.
Press="OFF": Press the dry contact, the function is OFF.
Release="OFF": Release the dry contact, the function is off.
Press="OFF", Release="OFF": Press/release the dry contact, the function is off.
Press="ON", Release="OFF": Press the dry contact, the function is ON, release the dry contact, the function is off.
Press="OFF", Release="ON": Press/release the dry contact, the function is off.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Scene controller"**

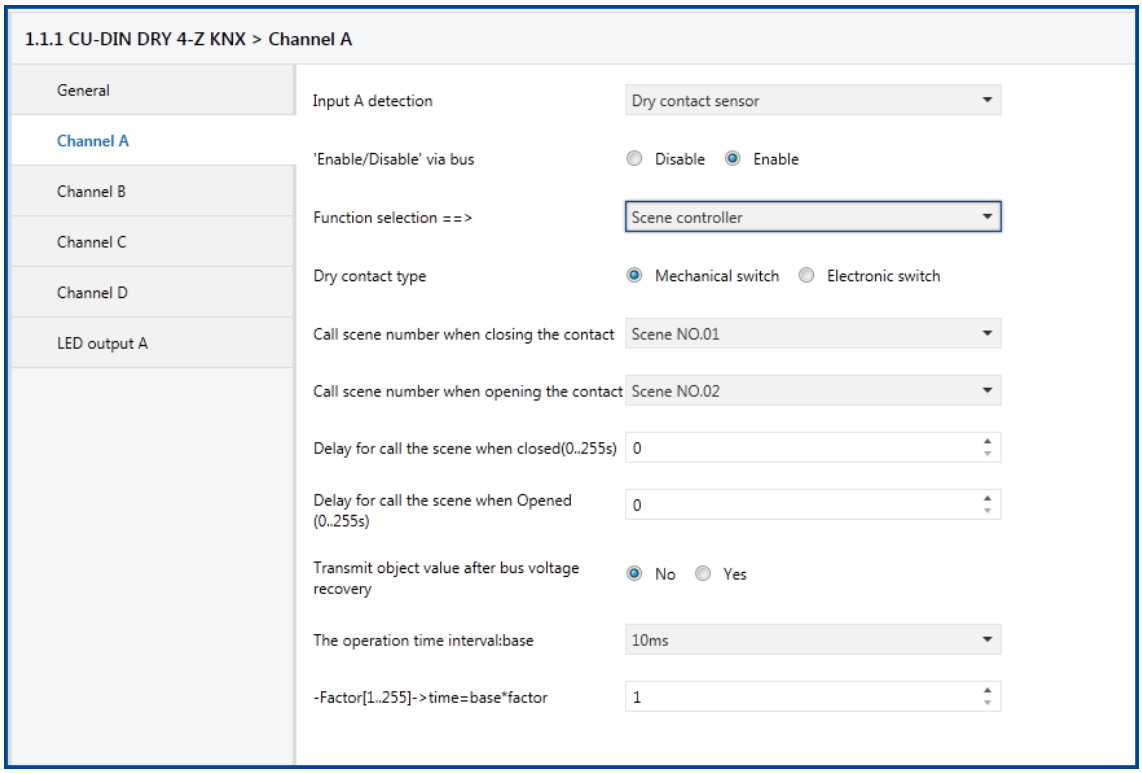


Fig 11: "Scene controller" parameter window

With input A as a dry contact, and function “scene controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

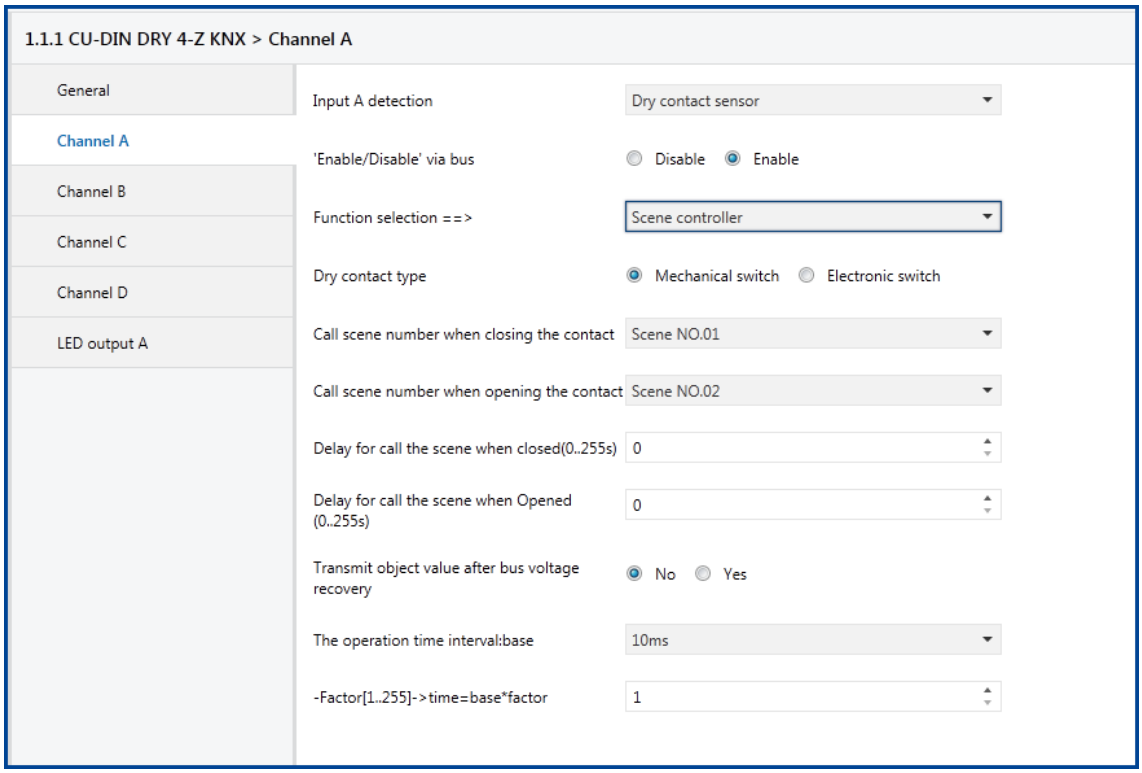


Fig 11.1: "Mechanical switch" parameter window

- **Call scene number for when the contact is closed:**
- **Call scene number for when the contact is opened:**

Options: **Scene No. 01**
Scene No. 02
to
Scene No. 64

Call the scene number for when the dry contact is opened/closed. The range is scene 1 to scene 64.

- **Delay in calling the scene when the contact is closed (0-255 s):**

Options: **0-255 s**

Sets the delay time after the dry contact is closed for the scene to be called. The range is 0-255 s.

- **Delay in calling the scene when the contact is opened (0-255 s):**

Options: **0-255 s**

Sets the delay time after the dry contact is opened for the scene to be called. The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

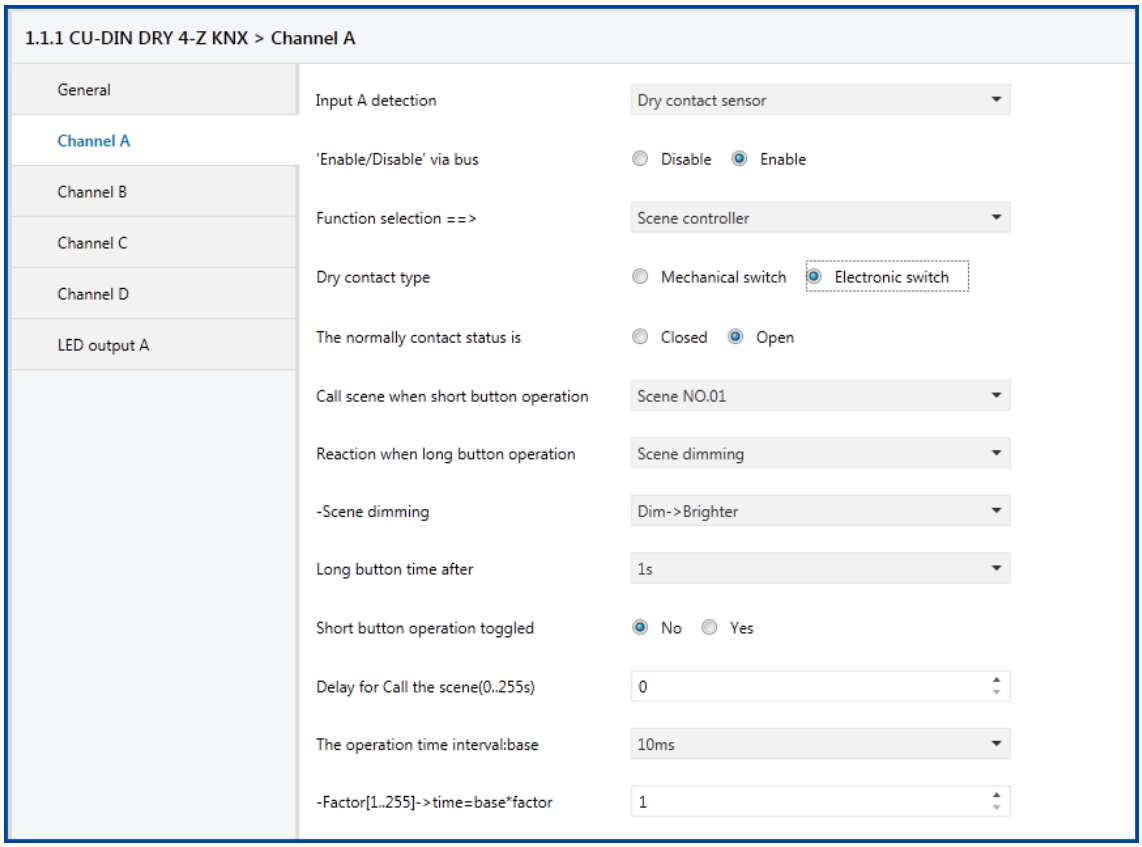


Fig 11.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Call scene following short button operation**

Options: **Scene No. 01**
Scene No. 02
to
Scene No. 64

Calls the scene number following short operation of the dry contact. The range is scene 1 to scene 64.

- **Reaction to long button operation**

Sets the dry contact functions during long button operation.
Options: **Scene dimming Scene saving Dimming and saving**

- **Scene dimming**

Options: **Dim->Brighter**
Dim->Darker
Dim->Brighter/Darker

Dim->Brighter: long button operation increases light brightness.
Dim->Darker: long button operation decreases light brightness
Dim->Brighter/Darker: long button operation increases/decreases light brightness.

- **Scene saving**

Saves the scene; the scene number is 1-64

- **Dimming and Saving**

Dimming and saving together.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Toggle with short button operation**

Options: **NO**
YES

- **Toggle between scenes with short operation**

Options: **Scene No. 01**
Scene No. 02
to
Scene No. 64

- **Delay in calling the scene when the contact is opened (0-255 s):**

Options: **0-255 s**
Sets the delay time after the dry contact is opened for the scene to be called. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Sequence controller"**

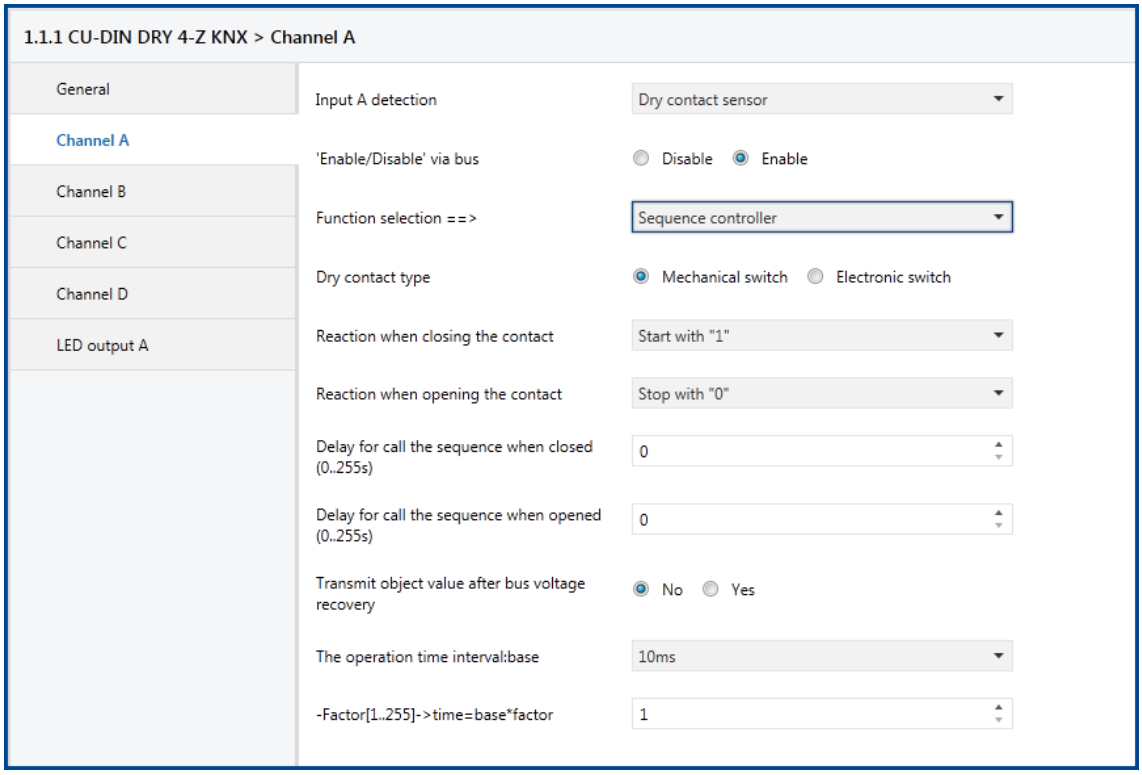


Fig 12: "Sequence controller" parameter window

With input A as a dry contact, and function “sequence controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

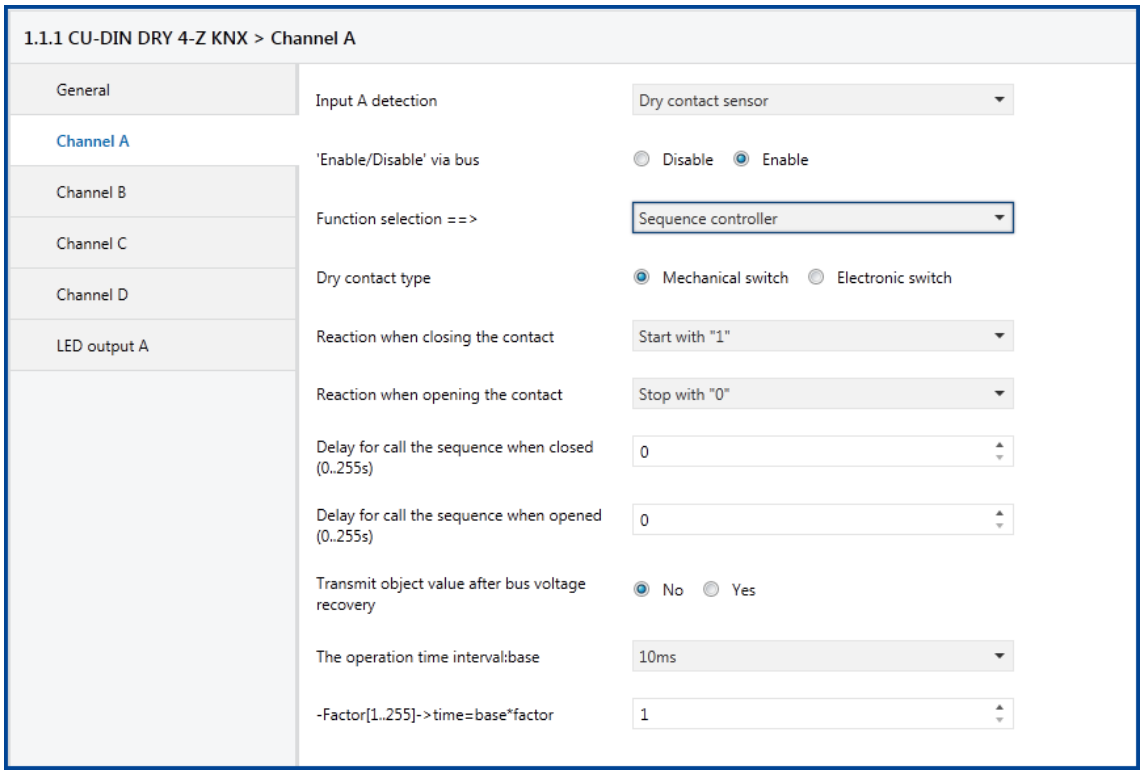


Fig 12.1: "Mechanical switch" parameter window

- **Reaction when the contact is closed**
- **Reaction when the contact is opened**

Sets the function of the dry contact when opening/closing it.

Options: **Invalid**
Toggle
"1" to start
"0" to stop

Invalid: the dry contact is invalid.
Toggle: when opening/closing the dry contact, the function toggles.
"1" to start: starts with telegram value 1.
"0" to stop: stops with telegram value 0.

- **Delay in calling the sequence when the contact is closed (0-255 s):**

Options: **0-255 s**
Sets the delay time after the dry contact is closed for the sequence to be called. The range is 0-255 s.

- **Delay in calling the sequence when the contact is opened (0-255 s):**

Options: **0-255 s**
Sets the delay time after the dry contact is opened for the sequence to be called.

The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

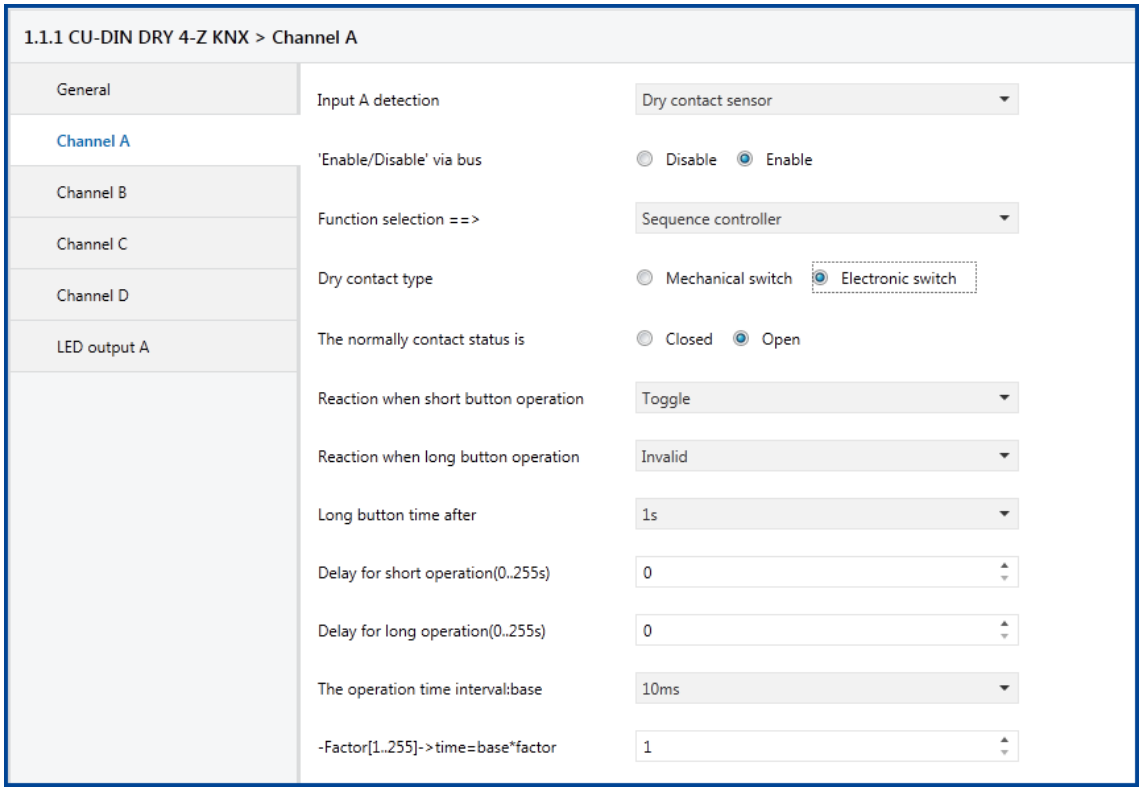


Fig 12.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Reaction to short button operation**
- **Reaction to long button operation**

Sets the function of the dry contact for short/long button operation.
Options: **Invalid**
Toggle
"1" to start
"0" to stop
Invalid: the dry contact is invalid.
Toggle: the function toggles if long/short operation of the dry contact is used.
"1" to start: starts with telegram value 1.
"0" to stop: stops with telegram value 0.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s): Options: 0-255 s**

Sets the delay time after operating the dry contact. The range is
0-255 s.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: 1-255
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "percentage controller"**

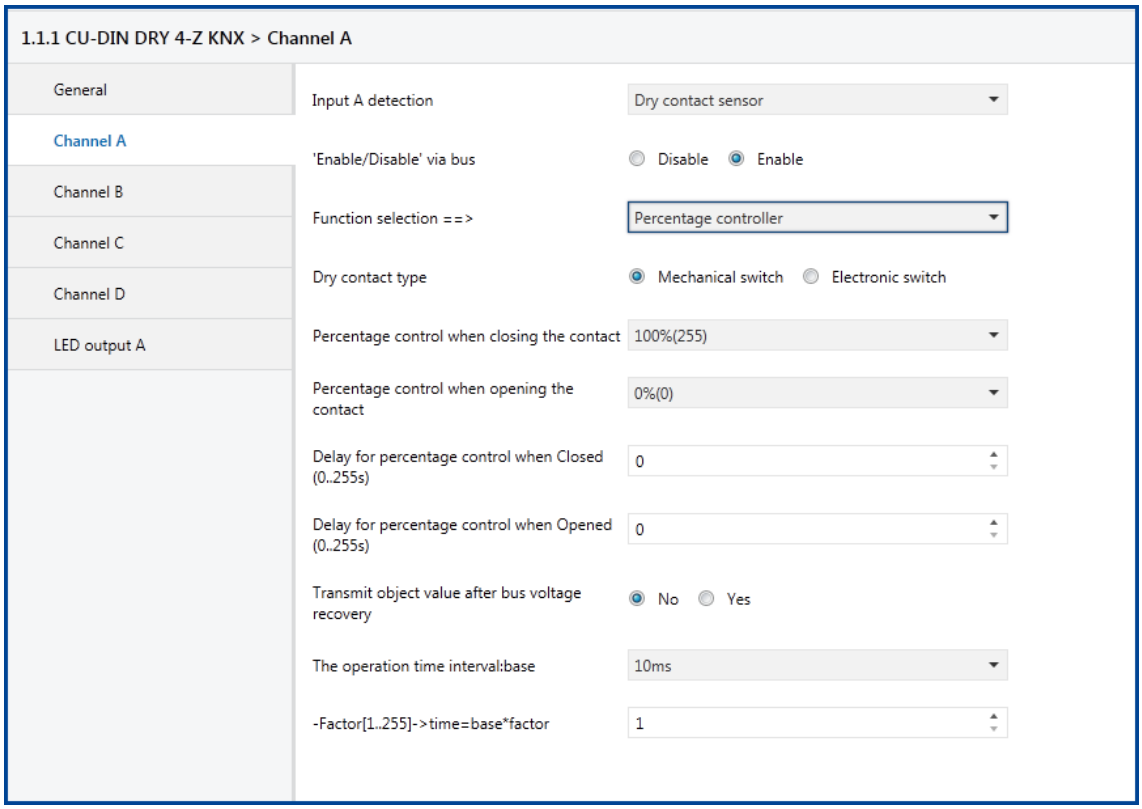


Fig 13: "Percentage controller" parameter window

With input A as a dry contact, and the function “percentage controller”.

- **Dry contact type**

Options: Mechanical switch
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

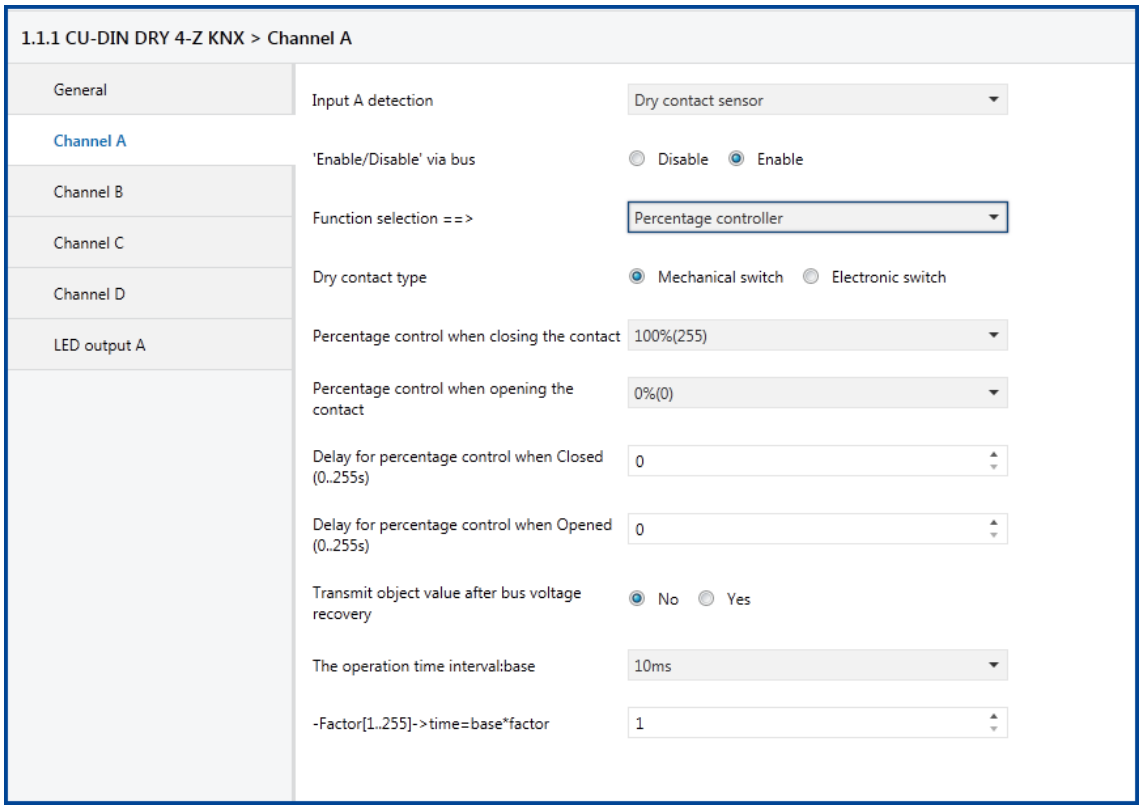


Fig 13.1: "Mechanical switch" parameter window

- **Percentage control when the contact is closed**
- **Percentage control when the contact is opened**

Sets the light level when the dry contact is opened/closed.

Options: **invalid**
0% (0) - 100% (255)

Invalid: the dry contact is invalid.
0% (0) - 100% (255): light brightness.

- **Delay for percentage control when the contact is closed (0-255 s):**

Options: **0-255 s**

Sets the delay time the dry contact was closed. The range is 0-255 s.

- **Delay in calling the sequence when the contact is opened (0-255 s):**

Options: **0-255 s**

Sets the delay time after opening the dry contact. The range is 0-255 s.

Transmit object value following bus voltage recovery

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

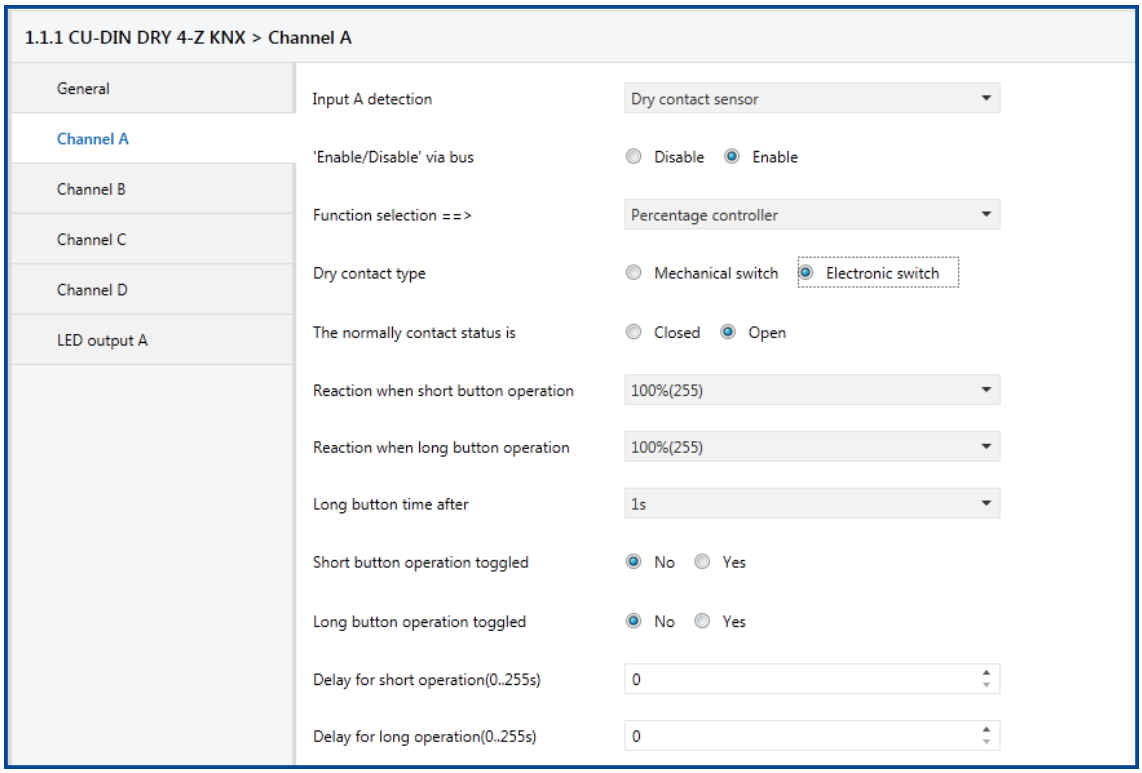


Fig 13.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open
Sets the dry contact status when not operating.

Close: the contact status is closed.
Open: the contact status is open.

- **Reaction to short button operation**
- **Reaction to long button operation**

Options: **Invalid**
0% (0) - 100% (255)
Invalid: the dry contact is invalid.
0% (0) - 100% (255): light brightness.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Toggle with short button operation:**

Options: **NO**
YES

- **Toggled brightness of the short operation**

Options: **0% (0) - 100% (255)**

- **Toggle with long button operation:**

Options: **NO**
YES

- **Toggled brightness of the long operation**

Options: **0% (0) - 100% (255)**

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s):**

Options: **0-255 s**
Sets the delay time after operating the dry contact. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Threshold controller"**

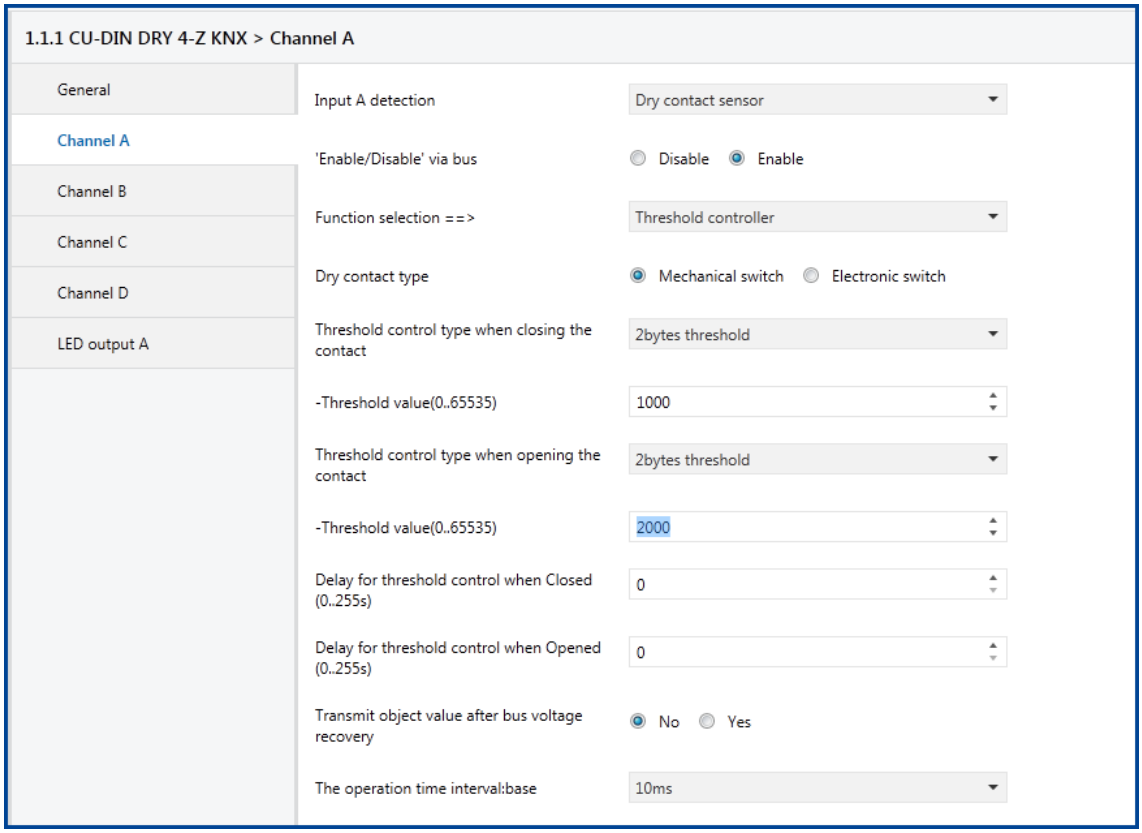


Fig 14: "Threshold controller" parameter window

With input A as a dry contact, and the function “threshold controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

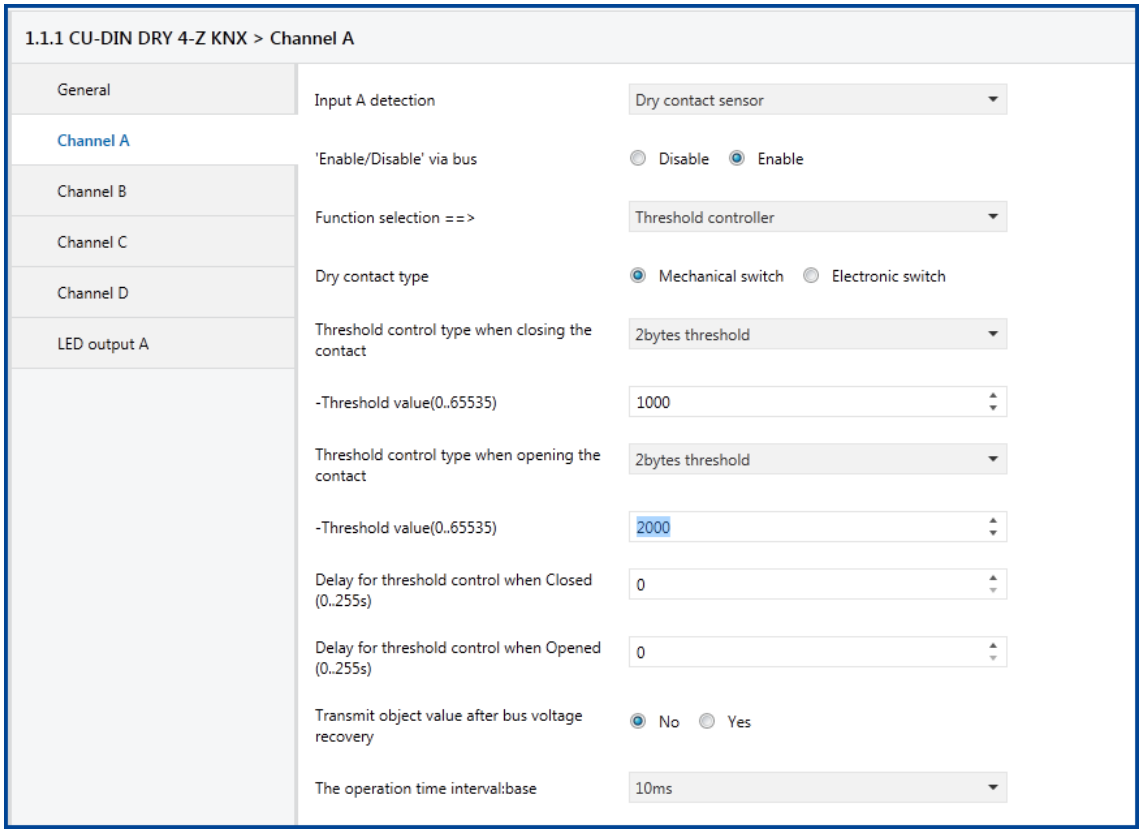


Fig 14.1: "Mechanical switch" parameter window

- **Threshold control type when the contact is closed**
- **Threshold control type when the contact is opened**

Sets the threshold control type when the dry contact is opened/closed.

Options: **Invalid**
1 byte threshold
2 bytes threshold

Invalid: the dry contact is invalid.
1 byte threshold: the threshold type is 1 byte. The threshold is 0-255.
2 byte threshold: the threshold type is 2 bytes. The threshold is 0-65535.

- **Delay for threshold control when the contact is closed (0-255 s):**

Options: **0-255 s**

Sets the delay time after closing the dry contact. The range is 0-255 s.

- **Delay for threshold control when the contact is opened (0-255 s):**

Options: **0-255 s**

Sets the delay time after opening the dry contact. The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

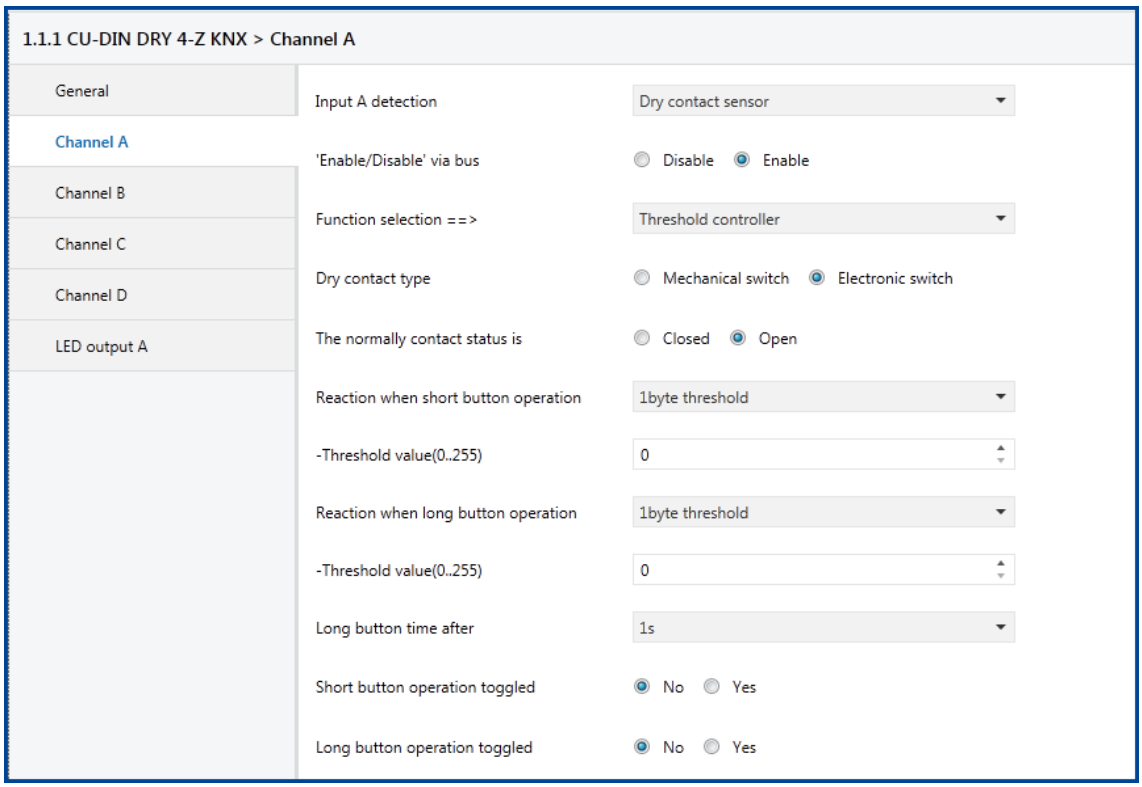


Fig 14.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**

Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Reaction to short button operation**
- **Reaction to long button operation**

Sets the function of short operation of the dry contact.
Options: **invalid**
1 byte threshold
2 byte threshold
Invalid: the dry contact is invalid.
1 byte threshold: the threshold type is 1 byte. The threshold is 0-255.
2 byte threshold: the threshold type is 2 bytes. The threshold is 0-65535.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Toggle with short button operation:**

Options: **NO**
YES

- **Toggle threshold (0-65535) of the short operation**

Options: **0-65535**

- **Toggle with long button operation:**

Options: **NO**
YES

- **Toggle threshold (0-255) of the long operation**

Options: **0-255**

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s):**

Options: **0-255 s**
Sets the delay time after operating the dry contact. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms**
100 ms

1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval for repeating dry contact operation, the time is base*factor.

- **Select "String (14 bytes) controller"**

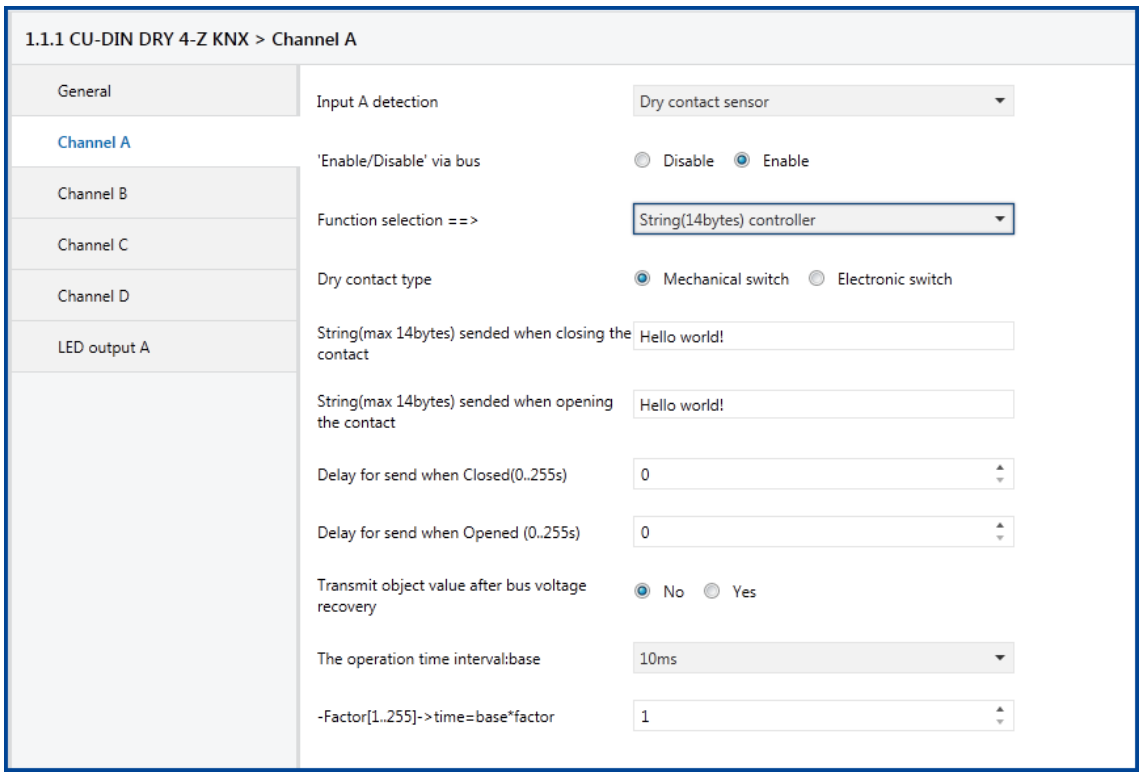


Fig 15: "String (14 bytes) controller" parameter window

With input A as a dry contact, and the function is “string (14 bytes) controller”.

- **Dry contact type**

Options: Mechanical switch
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

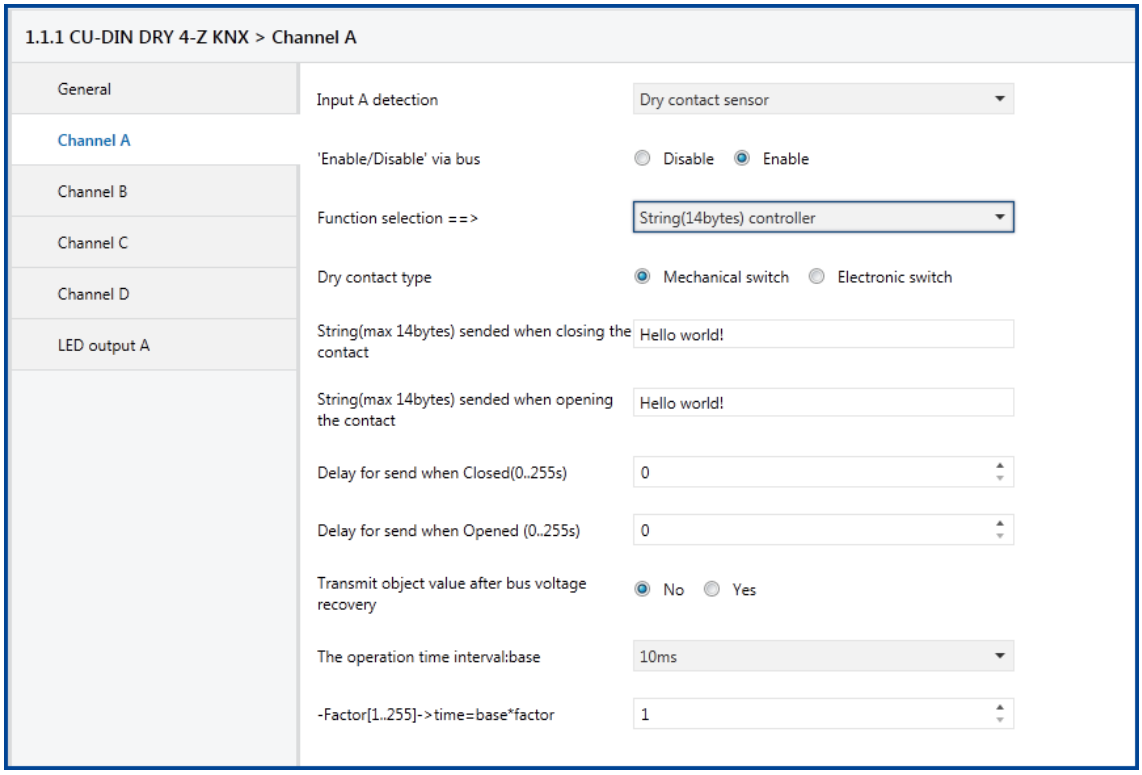


Fig 15.1: "Mechanical switch" parameter window

- **String (max. 14 bytes) sent when the contact is closed**
- **String (max. 14 bytes) sent when the contact is opened**

Sets the string sent when the dry contact is opened or closed. The string max. length is 14 bytes

- **Delay before sending when dry contact is closed (0-255 s):**
- **Delay before sending when dry contact is opened (0-255 s):**

Options: **0-255 s**

Sets the delay time after the dry contact is opened/closed. The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

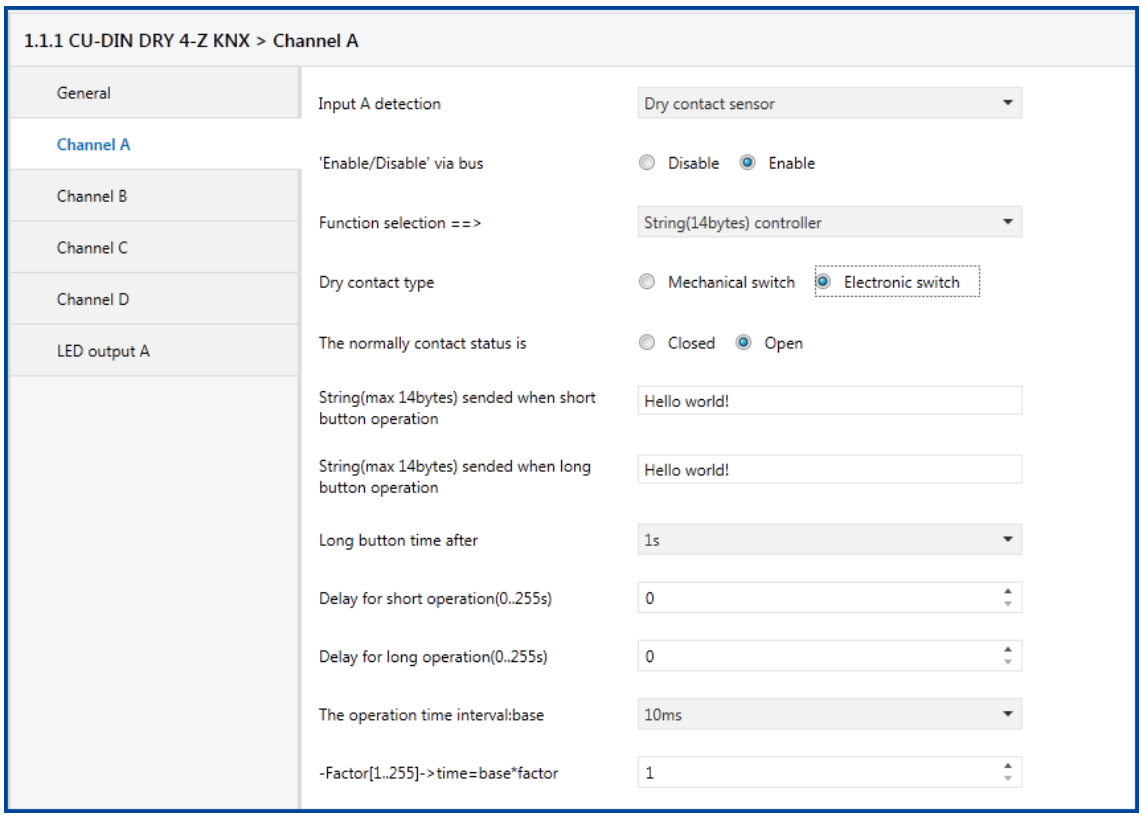


Fig 15.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **String (max. 14 bytes) sent following long button operation**

Sets the string sent following short/long operation of the dry contact. The string max. length is 14 bytes

- **Length of long button press**

Options: **0.2 s-60 s**

Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s): Options: 0-255 s**

Sets the delay time after operating the dry contact. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Forced position controller"**

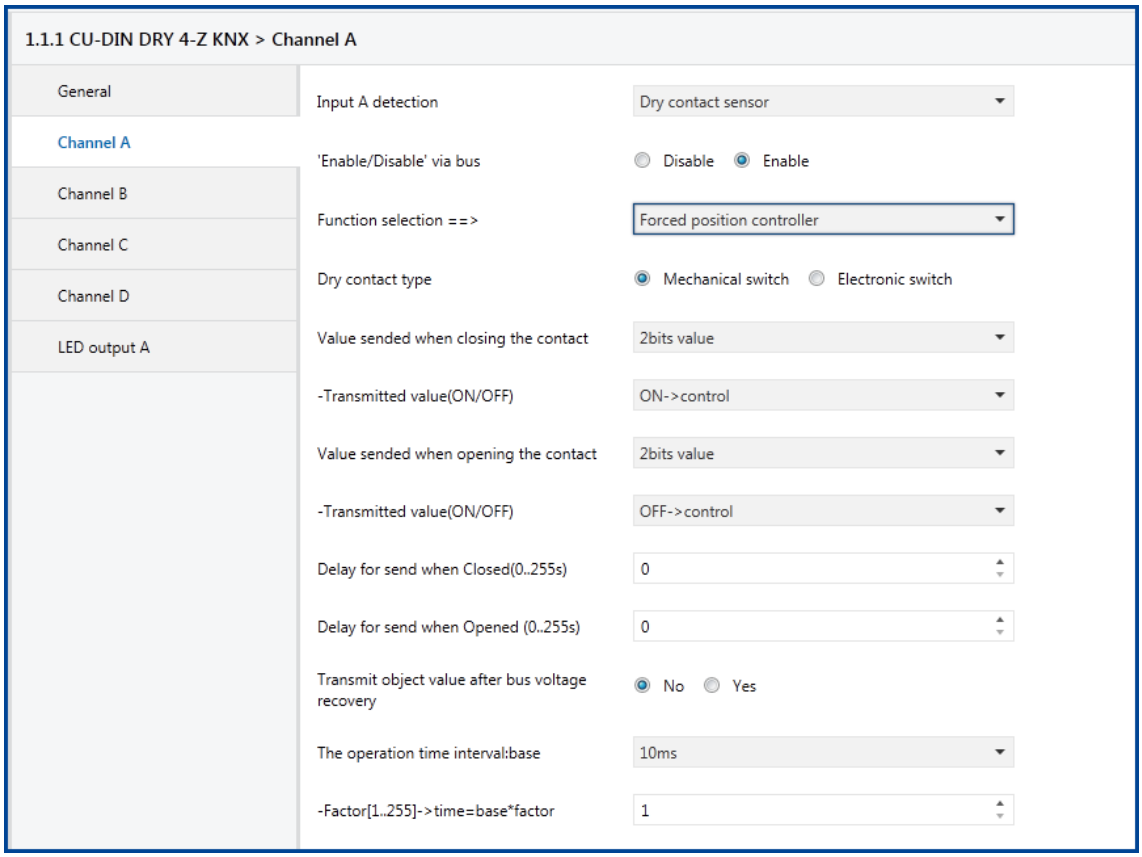


Fig 16: "Forced position controller" parameter window
With input A as a dry contact, and the function “position controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

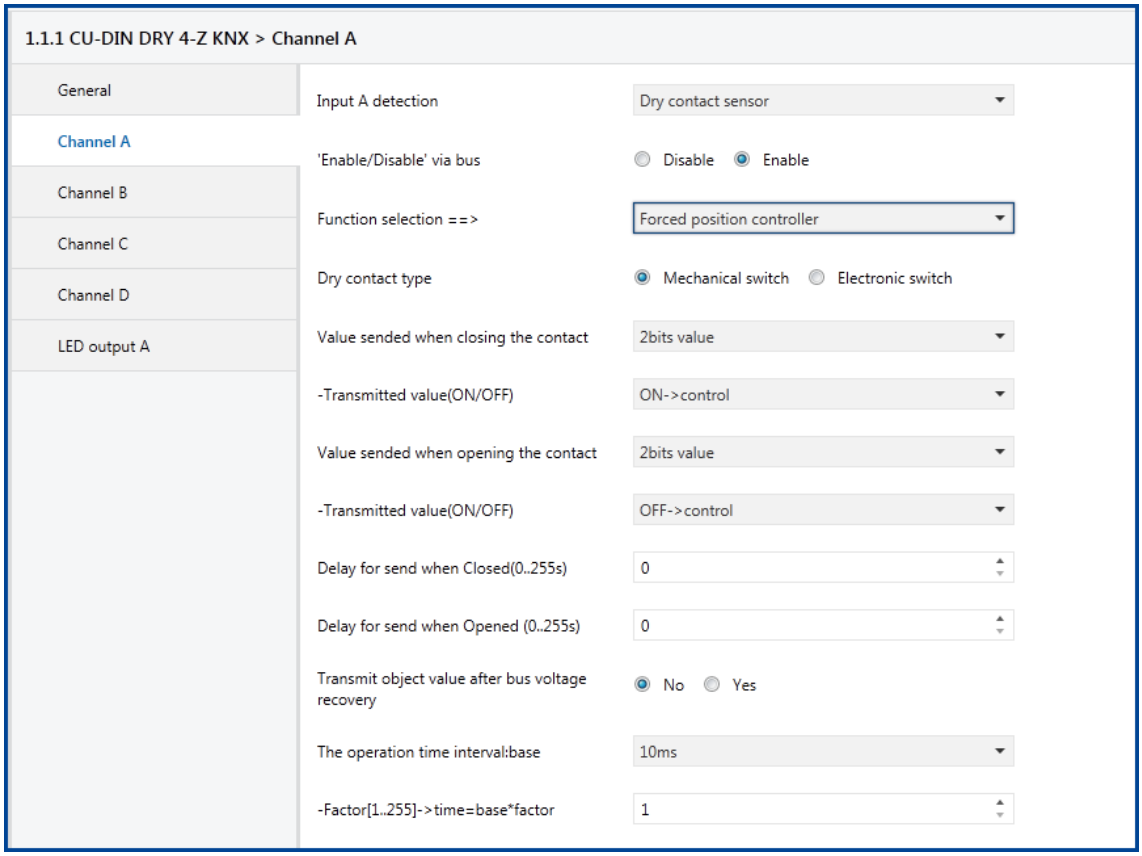


Fig 16.1: "Mechanical switch" parameter window

- **Value sent when the contact is closed**
- **Value sent when the contact is opened**

Sets the value sent when the dry contact is opened/closed.

Options: **Invalid**
2 bit value
1 byte value (0-255)
2 byte value (-32768-32767)
2 byte value (0-65535)
2 byte value (float)
4 byte value (0-2147483647)

Invalid: the dry contact is invalid.

2 bit value: 2 bit value sent when the dry contact is opened/closed.

- Transmitted value (ON/OFF)

Options: **ON->control**
OFF->control
NO control

2 byte value (-32768-32767): -32768-32767 sent when the dry contact is opened/closed.
2 byte value (0-65535): 2 byte value (0-65535) sent when the dry contact is opened/closed.
2 byte value (float): -100-100 value sent when the dry contact is opened/closed.
4 byte value (0-2147483647): 0-2147483647 sent when the dry contact is opened/closed.

- **Delay before sending when dry contact is closed (0-255 s):**
- **Delay before sending when dry contact is opened (0-255 s):**

Options: **0-255 s**
Sets the delay time after the dry contact is opened/closed. The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES
Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electronic switch**

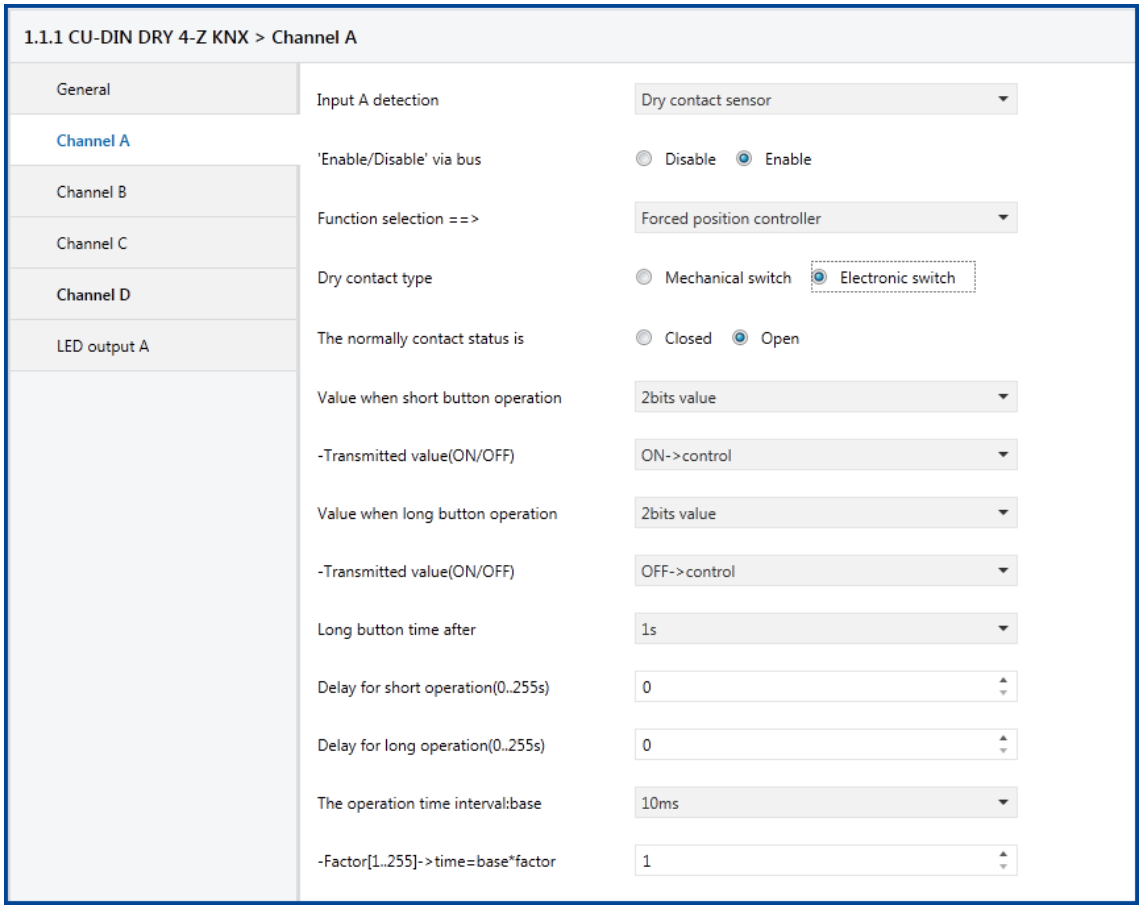


Fig 16.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Value for short button operation**
- **Value for long button operation**

Sets the value sent for short/long operation of the dry contact.
Options: **Invalid**
2 bit value
1 byte value (0-255)
2 byte value (-32768-32767)
2 byte value (0-65535)

2 byte value (float)
4 byte value (0-2147483647)

Invalid: the dry contact is invalid.
2 bit value: 2 bit value sent when the dry contact is opened/closed.

- Transmitted value (ON/OFF)

Options: **ON->control**
OFF->control
NO control

2 byte value (-32768-32767): -32768-32767 sent when the dry contact is opened/closed.
2 byte value (0-65535): 2 byte value (0-65535) sent when the dry contact is opened/closed.
2 byte value (float): -100-100 value sent when the dry contact is opened/closed.
4 byte value (0-2147483647): 0-2147483647 sent when the dry contact is opened/closed.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s):**

Options: **0-255 s**
Sets the delay after operating the dry contact. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Select "Counter controller"**

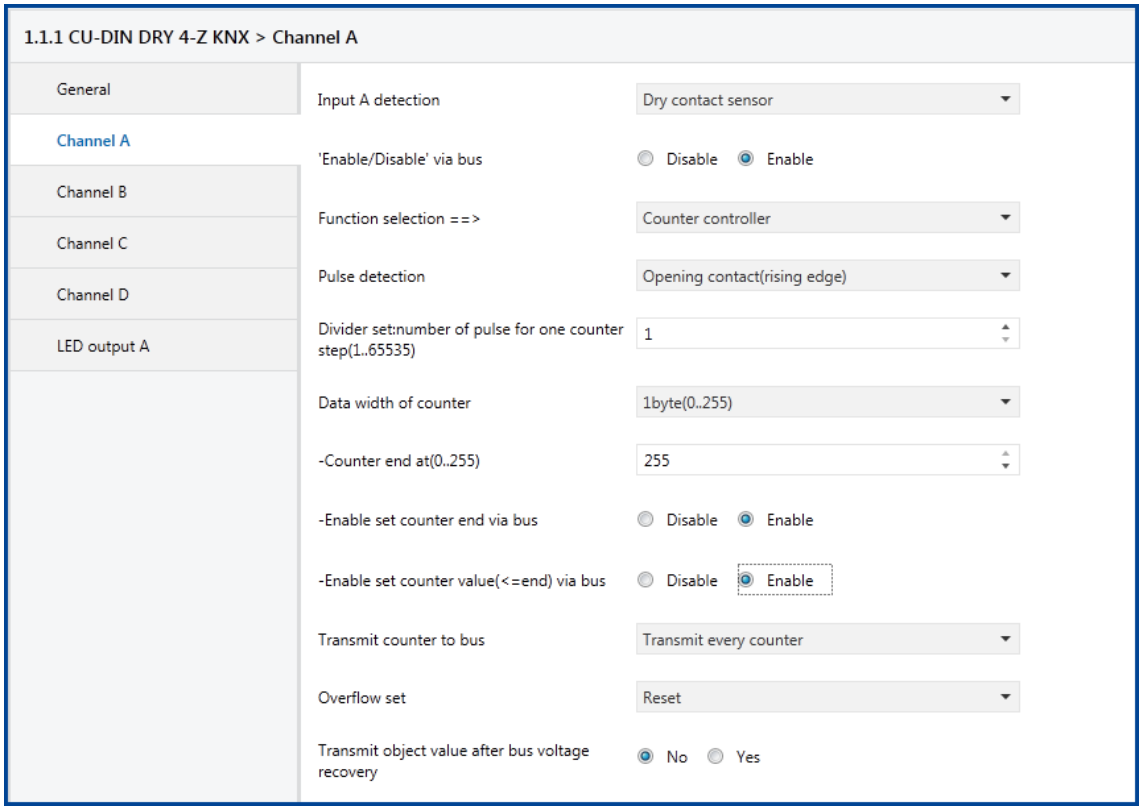


Fig 17: "Counter controller" parameter window
With input A as a dry contact, and the function “counter controller”.

- **Pulse detection**

Options: **Close contact (falling edge)**
Open contact (rising edge)
Closing (falling edge) and Opening (rising edge)

Close contact (falling edge): when the falling edge is counted.
Open contact (rising edge): when the rising edge is counted.
Closing (falling edge) and Opening (rising edge): falling edge and rising edge are both counted.

- **Divider set: number of pulses for one counter step (1-65535)**

Options: **1-65535**
Sets the number of pulses counted; the range is 1-65535.

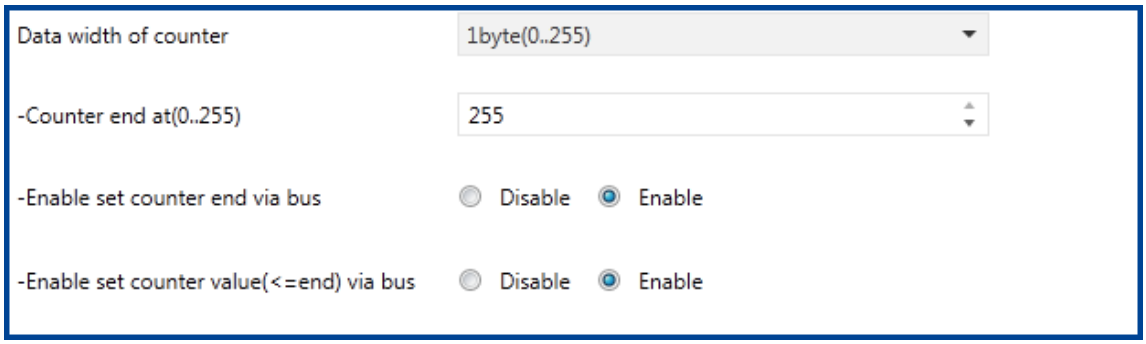
- **Data width of counter**

Options: **1 byte (0-255)**
2 bytes (0-65535)
4 bytes (0-2147483647)
Sets the width of the counter.

1 byte (0-255): the width of the counter is 0-255.

2 bytes (0-65535): the width of counter is 0-65535.
4 bytes (0-2147483647): the width of the counter is 0-2147483647.

When the data width of the counter is 1 byte:



- Counter end (0-255)

Sets the length of a count down. The counter end is 0-255.
2 bytes counter end is 0-65535.
4 bytes counter end is 0-2147483647.

- Enable setting the counter end via the bus

Whether or not the counter end can be set via the bus.
Options: **Enable**
Disable
Enable: enables setting the counter end via the bus.
Disable: disables setting the counter end via the bus.

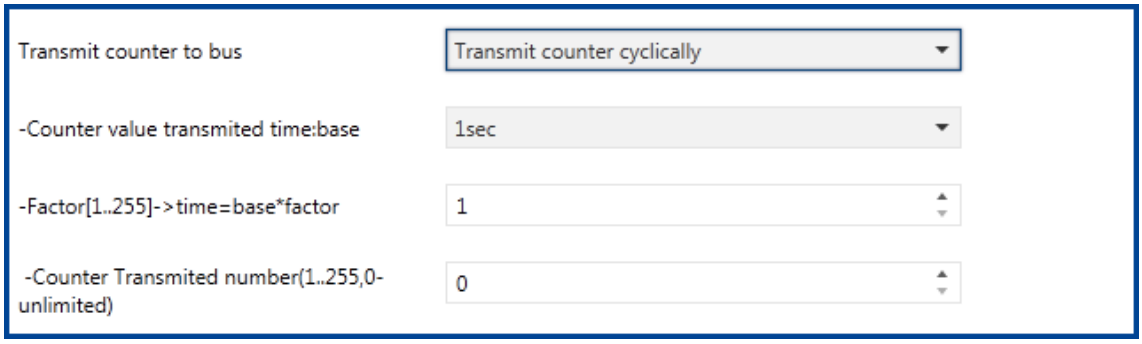
- Enable setting the counter value (≤ end) via the bus Whether or not the counter start can be set via the bus.

Options: **Enable**
Disable
Enable: enables setting the counter start via the bus.
Disable: disables setting the counter start via the bus.

- **Transmit counter to bus**

Options: **Do not transmit**
Transmit every counter
Transmit counter cyclically
Do not transmit: no counter is transmitted.
Transmit every counter: every counter is transmitted.

Transmit counter cyclically:



- Counter value transmission time: base
- Factor(1-255)->time=base*factor

These two parameters set the counter time value transmitted. The time is base*factor.

- Counter Transmitted number (1-255, 0 - unlimited)

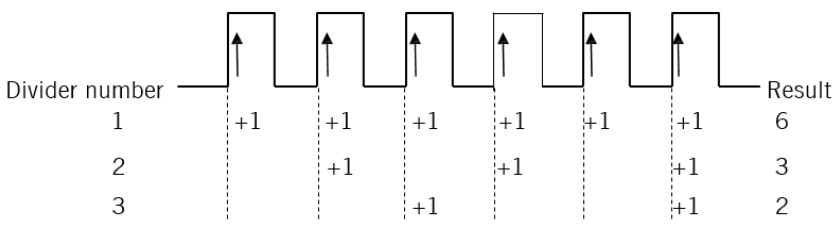
- **Set overflow:** **Reset**
  Reset and Alarm
  Stop
  Stop and Alarm

Reset: setting the overflow will reset the counter.
Reset and Alarm: setting the overflow will reset the counter and alarm.
Stop: setting the overflow will stop the counter.
Stop and Alarm: setting the overflow will stop and alarm.

- **Transmit object value following bus voltage recovery**
- Operation time interval: **Base**
  Options: 10 ms
  100 ms
  1 sec
  1 min
  1 hour
- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.



- **Select "Combination controller"**

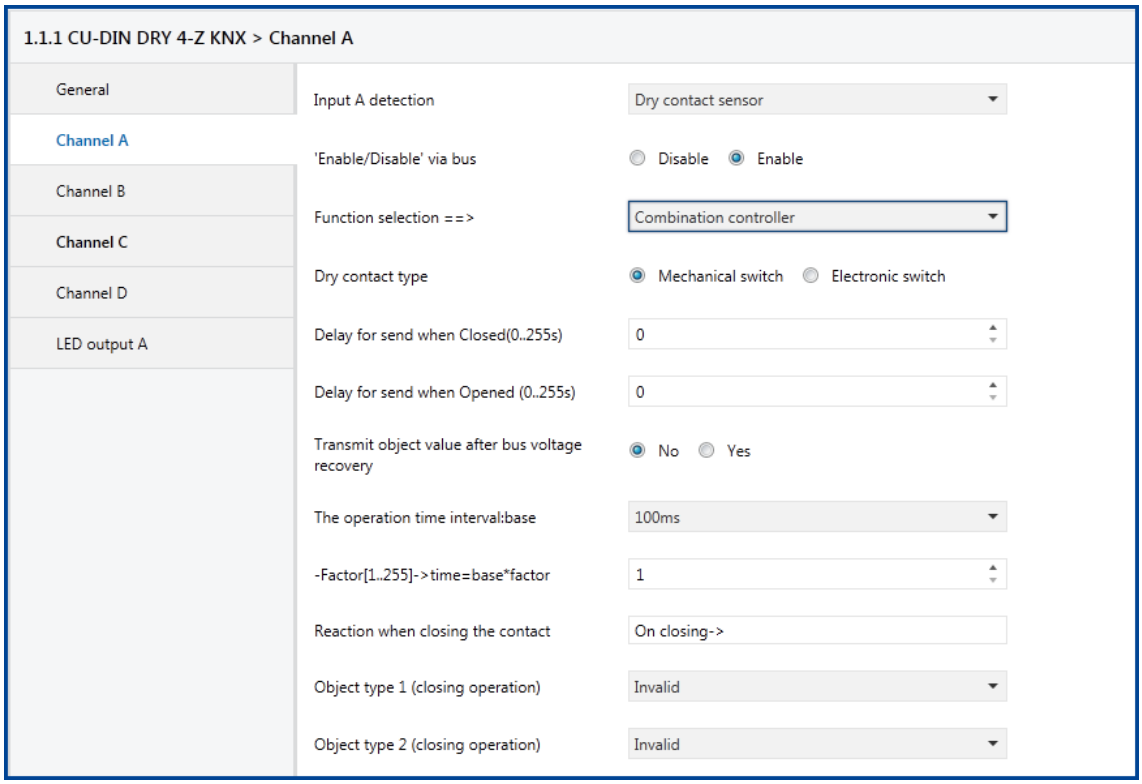


Fig 18: "Combination controller" parameter window

With input A as a dry contact, and the function is “combination controller”.

- **Dry contact type**

Options: **Mechanical switch**
Electronic switch

There are two types of dry contact; the settings are detailed as follows.

- **Mechanical switch**

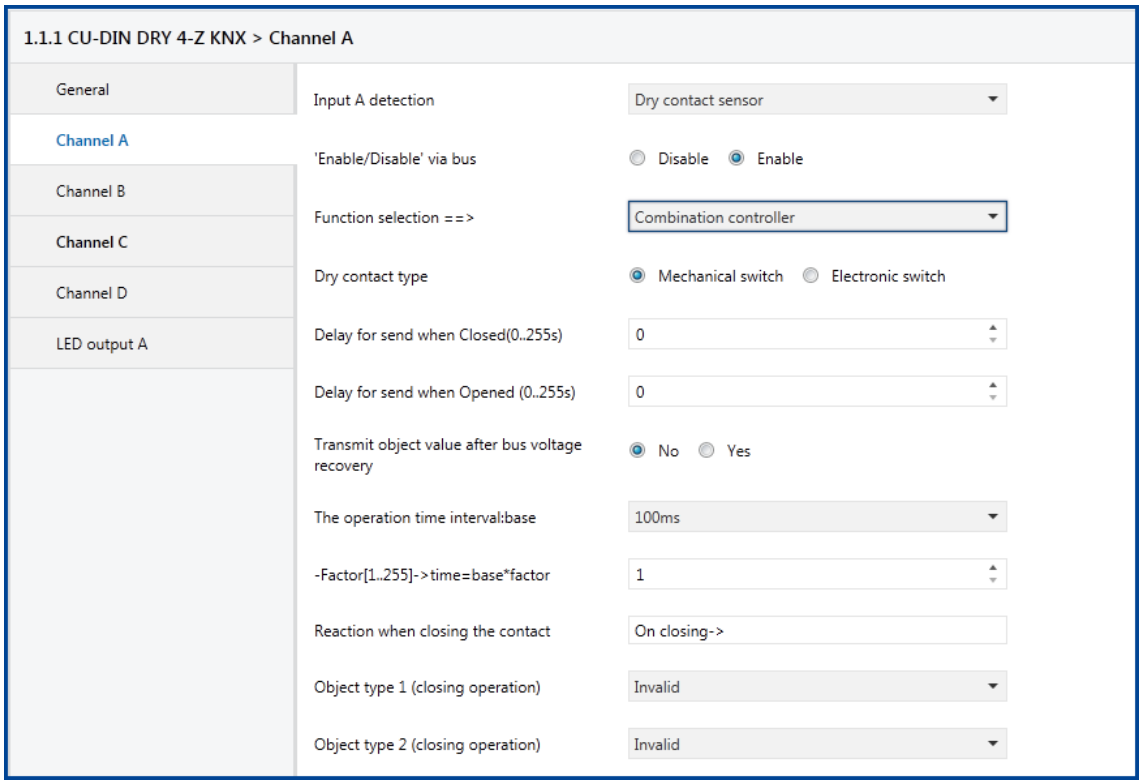


Fig 18.1: "Mechanical switch" parameter window

- **Delay before sending when dry contact is closed (0-255 s):**
- **Delay before sending when dry contact is opened (0-255 s):**

Options: **0-255 s**

Sets the delay time after the dry contact is opened/closed. The range is 0-255 s.

- **Transmit object value following bus voltage recovery**

Options: **NO**
YES

Whether or not to transmit the object value following bus voltage recovery.
NO: do not transmit the object value following bus voltage recovery.
YES: transmit the object value following bus voltage recovery.

- **Operation time interval: base**

Options: **10 ms**
100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Reaction when the contact is closed: ON closing**
- Object type 1 (closing operation)
- Object type 1 (closing operation)
  to
- Object type 10 (closing operation)

Options: **Invalid**
Switch controller
Shutter controller
Scene controller
Sequence controller
Percentage controller
Threshold controller
14 byte value controller (string)

In this mode, closing the dry contact can control several objects. If some of these items are set, and when the dry contact is closed, several control telegrams can be sent simultaneously.

- **Electronic switch**

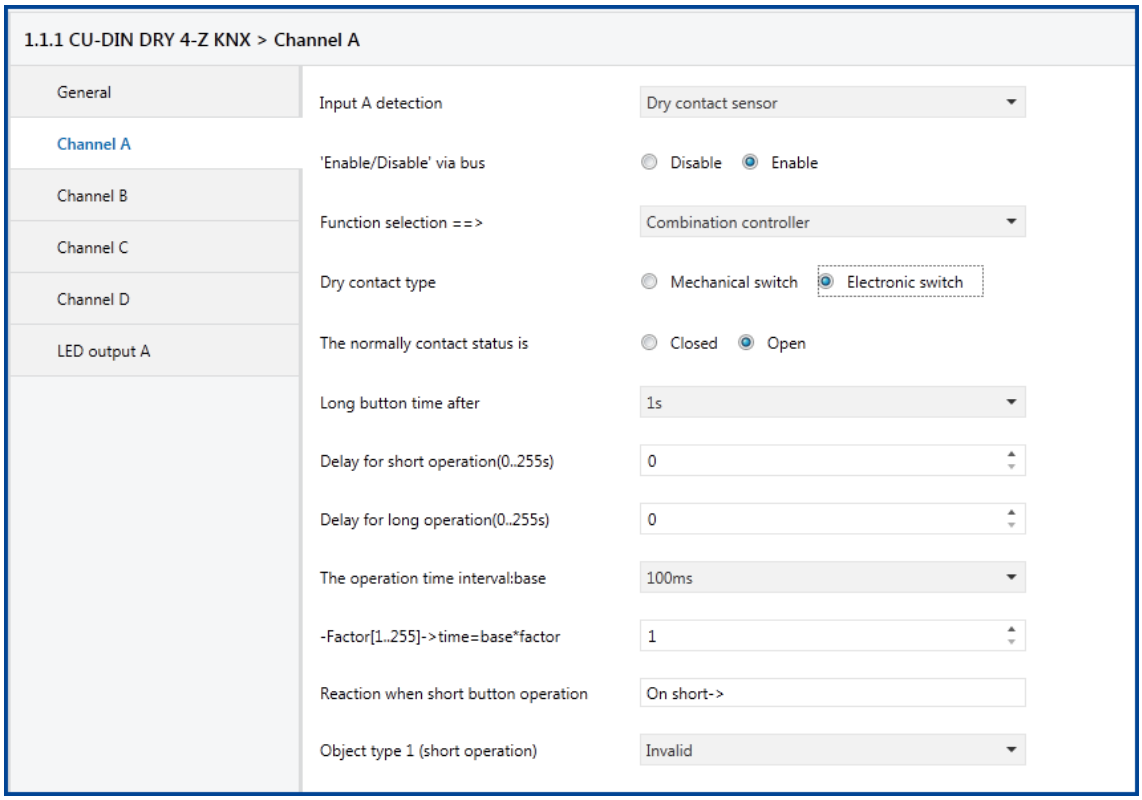


Fig 18.2: "Electronic switch" parameter window

- **Normal contact status is**

Options: **Close**
Open

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

- **Length of long button press**

Options: **0.2 s-60 s**

Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Delay following short push (0-255 s):**
- **Delay following long push (0-255 s):**

Options: **0-255 s**

Sets the delay after operating the dry contact. The range is 0-255 s.

- **Operation time interval: base**

Options: **10 ms**

100 ms
1 sec
1 min
1 hour

- **Factor (1-255) ->time=base*factor**

Options: **1-255**

These two parameters set the time interval for repeating dry contact operation, the time is base*factor.

Reaction to short button operation: ON short

- Object type 1 (short operation)
- Object type 1 (short operation)
  to
- Object type 10 (short operation)

Options: **Invalid**
Switch controller
Shutter controller
Scene controller
Sequence controller
Percentage controller
Threshold controller
14 byte value controller (string)

In this mode, short button operation of the dry contact can control several objects. If some of these items are set, and during short button operation of the dry contact, several control telegrams can be sent simultaneously.

5.2.2 "Logic controller" work mode

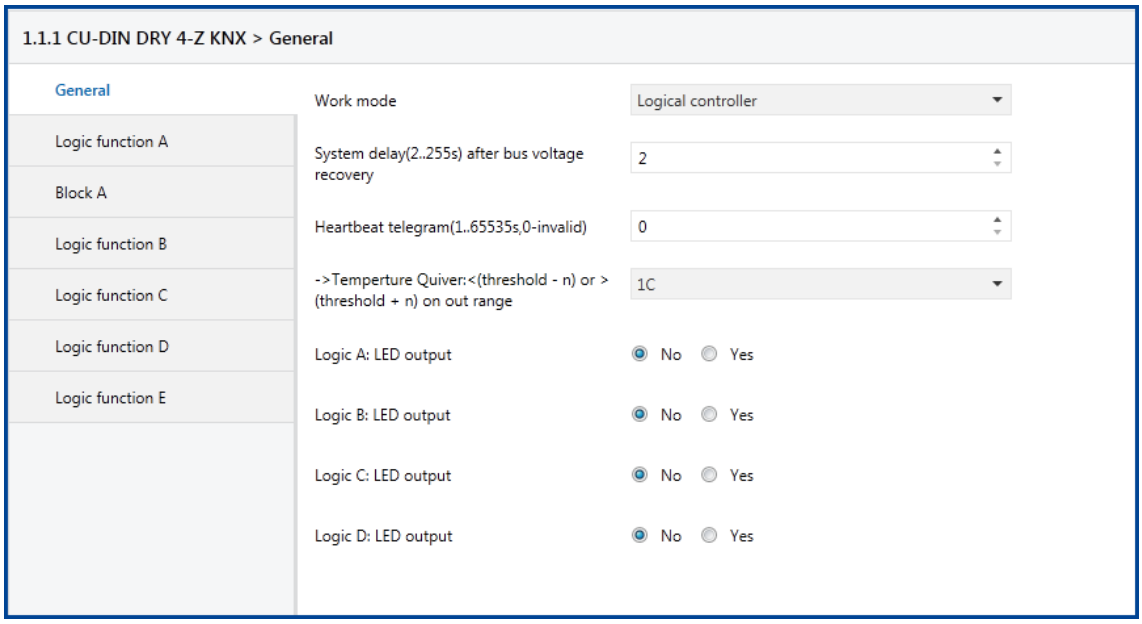


Fig 19: "Logic controller" parameter window

- **System delay (2-255s) following bus voltage recovery**

The device experiences a delay for 2-255 s after powering on. The default value is 2 seconds. The min. value is 2 seconds and the max. value is 255 seconds.
Options: **2-255 s**

- **Heartbeat telegram (1-65535s, 0 - invalid)**

The range of the parameter is 0 to 65535 s. 0 as the parameter value disables the function, other parameter values enable this function.
Options: **0–65,535 s**

When the parameter is set to non-zero, the device will send telegram data cyclically on timeout. It alternates between sending the values 0 and 1.
The user decides whether or not to use this function.

- **Temperature Quiver: < (threshold – n) or > (threshold +n) on out range**

If the temperature changes within the effective range, the status does not change.
When the temperature changes are greater than **n**, the status will change. The quiver range is between threshold – n and threshold, or between threshold and threshold +n.
Options: **0-10°C**

- **Channel A: LED output (0-2V)**

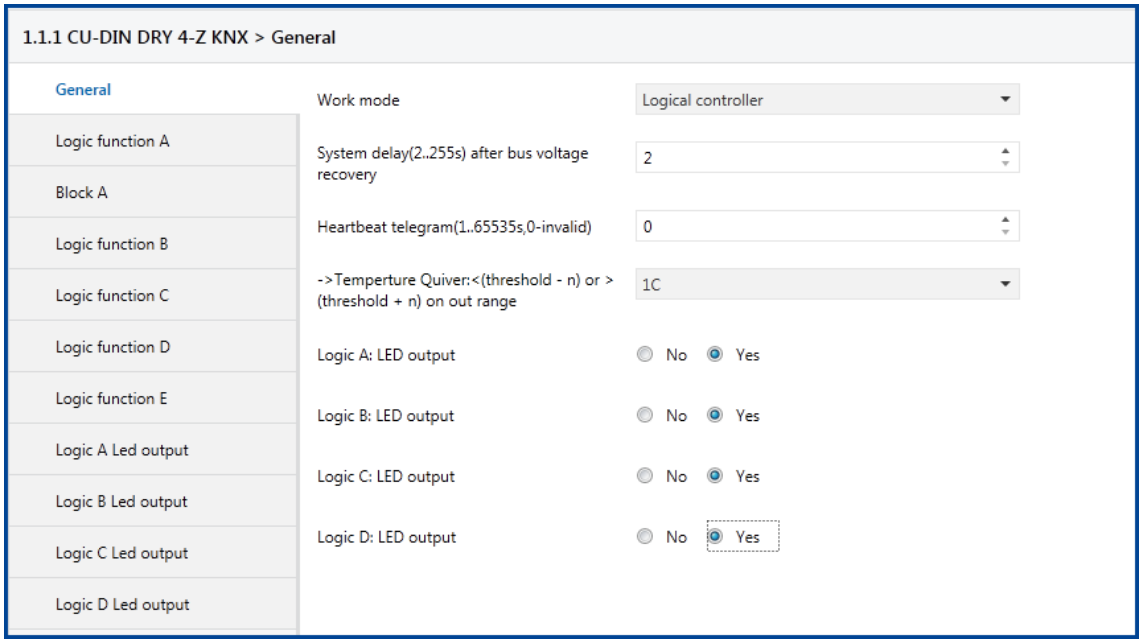
LED output setting.

Options: **NO**
YES

NO: output A is invalid.

YES: status of output A is shown. The settings are as follows.

5.2.2.1 Logic A LED output



- **The settings of outputs A, B, C and D are the same.**

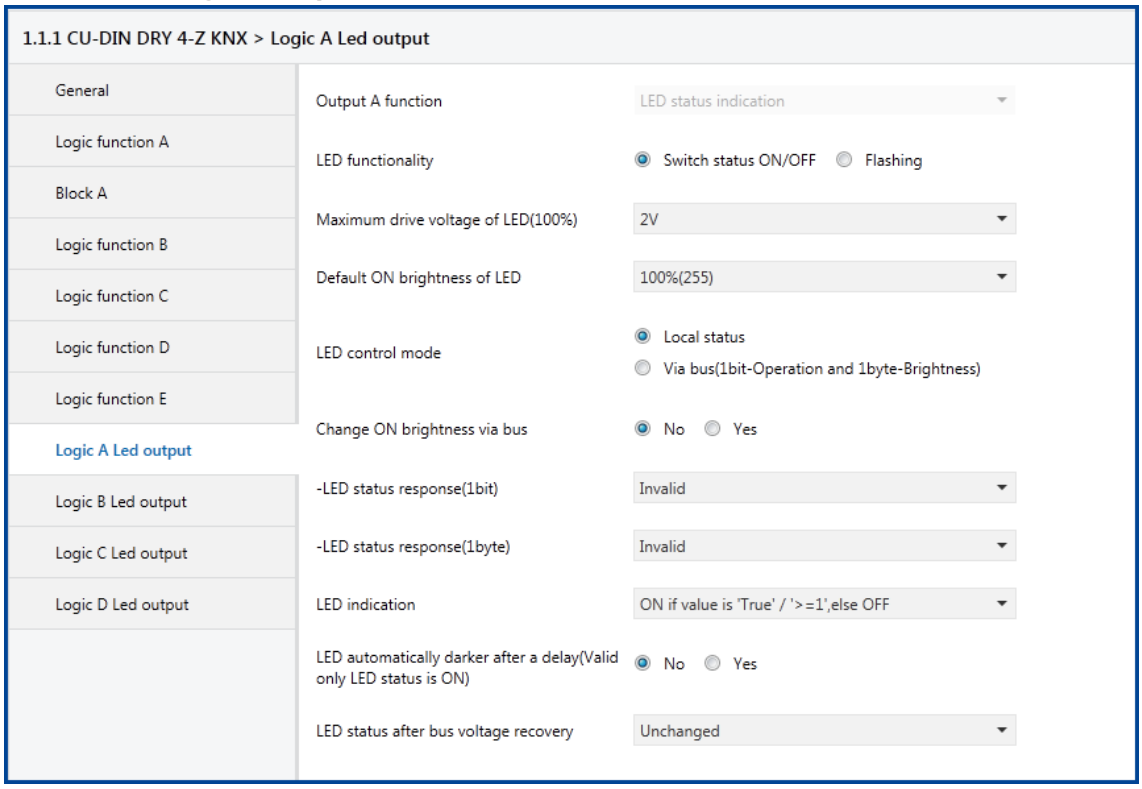


Fig 20: "Logic A LED output" parameter window

Output A function: LED status indication

- **LED functionality**

Sets the function depending on output A's status. There are two functions: switch status
ON/OFF and flashing.
Options: Switch status ON/OFF
Flashing
Switch status ON/OFF: the function is the status of input A.
Flashing: output A is flashing.

The settings are detailed as follows.

- **Switch status ON/OFF:**

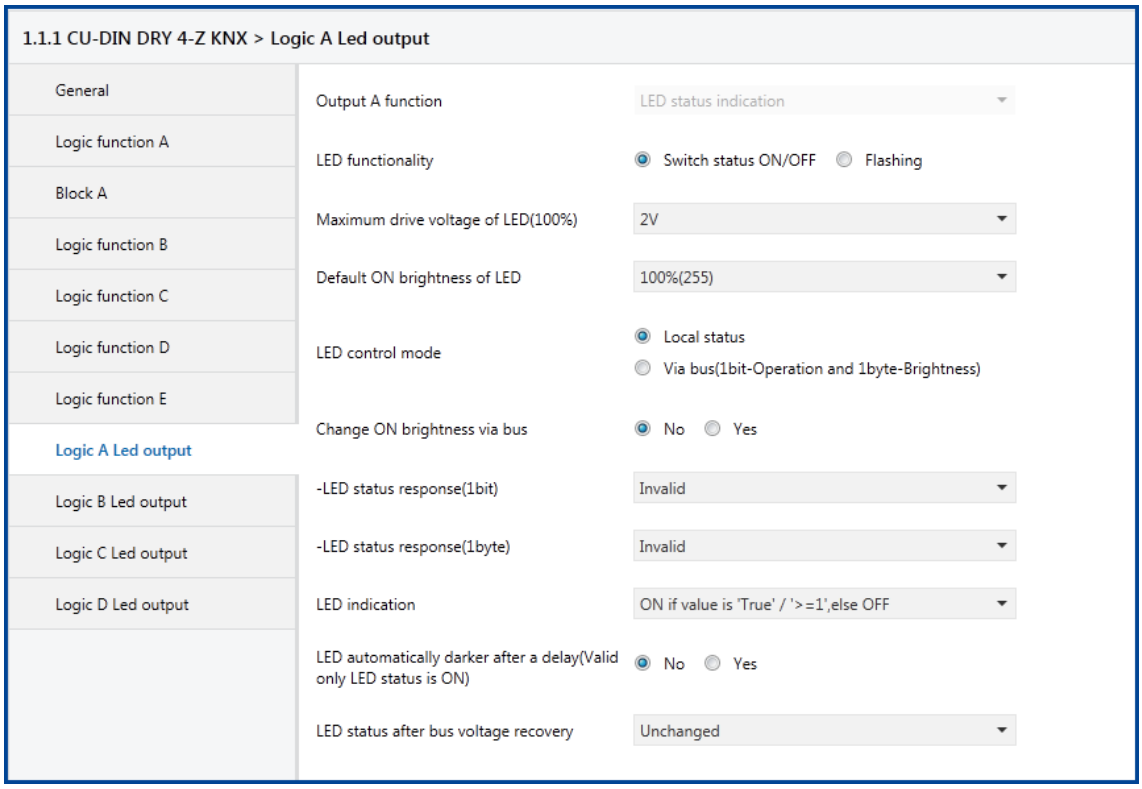


Fig 21: "Switch state ON/OFF" parameter window

- **Maximum LED drive voltage (100%)**

Sets the LED maximum drive voltage. The range is 1V to 10V.
Options: **1V-10V**

- **Default LED ON brightness**

Sets the default LED brightness. The range is 10% to 100%.
Options**:** **10% - 100% (255)**

- **LED control mode**

Sets the LED control mode.
Options: **Local status**
Via bus (1 bit - operation and 1 byte - brightness)
Local status: LED controlled by local status.
Via bus: LED controlled by telegram via the bus.

- **Change the brightness via the bus**

Enables changing the brightness via the bus.
Options: **NO**
YES
NO: cannot change the brightness via the bus.

YES: can change the brightness via the bus.

- **LED status (1 bit) response**

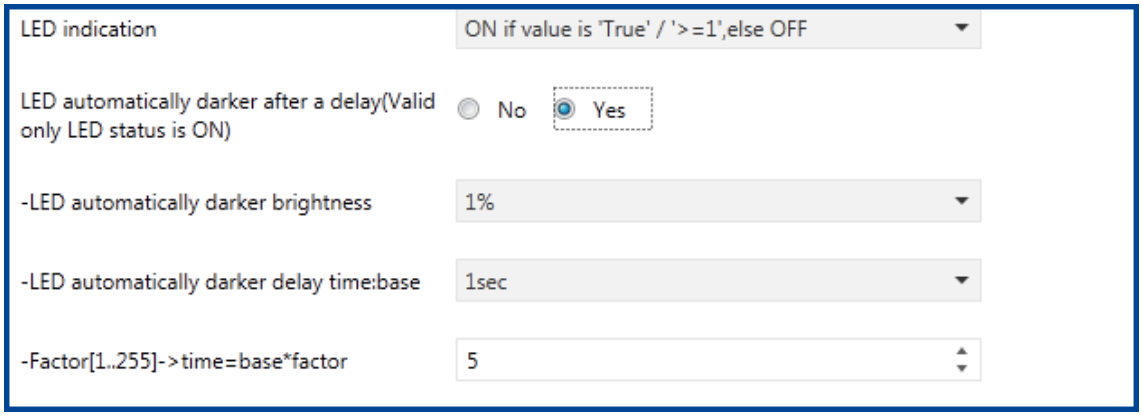
Sets the LED status response.
Options: **Invalid**
1 bit always response
1 bit only changed
1 bit always response: it always responds.
1 bit only changed: it responds when the status is changed.

- **LED status (1 byte) response**

Options: **Invalid**
1 byte always response
1 byte only changed
1 byte always response: it always responds.
1 byte only changed: it responds only when the status is changed.

- **LED indication**

Options: **ON if value≥"1", else OFF**
ON if value is "0", else
OFF Always ON
Always OFF
ON if value≥"1", else OFF: if value≥"1", LED is ON, else LED is OFF.
ON if value is "0", else OFF: if value is 0, LED is ON, else LED is OFF.
Always ON: LED is always ON.
Always OFF: LED is always OFF.



- **LED automatically darken delay time: base**

Sets the base delay time.
Options: **100 ms, 1 sec, 1 min 1 hour**

- **Factor(1-255)->time = base*factor**

Options: **1-255**

Sets the delay time; this time is option value*base. After this time, the LED utomatically darkens to the set value.

- **LED State following bus voltage recovery**

Options: **Unchanged**
OFF
ON

Sets the LED state following bus voltage recovery.

- **Select "Flashing"**

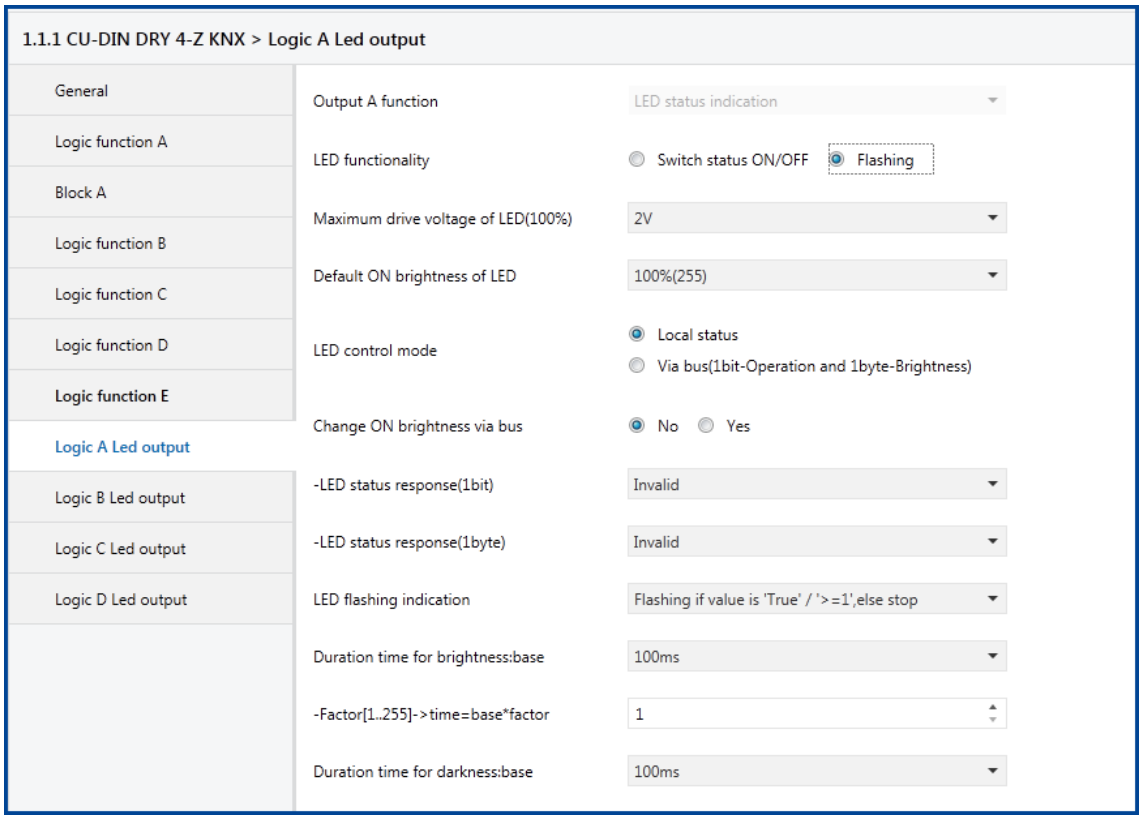


Fig 22: "Flashing" parameter window

LED is flashing. The flashing parameters are set as follows.

- **Maximum LED drive voltage (100%)**

Sets the LED maximum drive voltage. The range is 1V to 10V.

Options: **1V-10V**

- **Default LED ON brightness**

Sets the default LED brightness. The range is 10% to 100%.

Options: **10% - 100% (255)**

- **LED control mode**

Sets the LED control mode.
Options: **Local status**
Via bus (1 bit - operation and 1 byte - brightness)
Local status: LED controlled by local status.
Via bus: LED controlled by telegram via the bus.

- **Change the brightness via the bus**

Enables changing the brightness via the bus.
Options: **NO**
YES
NO: cannot change the brightness via the bus.
YES: can change the brightness via the bus.

- **LED status (1 bit) response**

Sets the LED status response.
Options: **Invalid**
1 bit always response
1 bit only changed
1 bit always response: it always responds.
1 bit only changed: it responds when the status is changed.

- **LED status (1 byte) response**

Options: **Invalid**
1 byte always response
1 byte only changed
1 byte always response: it always responds.
1 byte only changed: it responds only when the status is changed.

- **LED indication**

Options: **Flashing if value≥"1", else stop**
Flashing if value is "0", else stop
Always flashing
Flashing if value≥"1", else OFF: value≥"1", LED is flashing, else LED is not flashing.
Flashing if value is "0", else OFF: the value is 0, LED is flashing, else LED is OFF.
Always flashing: LED is always flashing.

- **Brightness duration: base**

Sets the base delay time.
Options: **100 ms, 1 sec, 1 min 1 hour**

- **Factor(1-255)->time = base*factor**

Options: **1-255**
Sets the delay time; this time is option value*base. After this time, the LED automatically reaches the set brightness value.

- **Darkness duration: base**

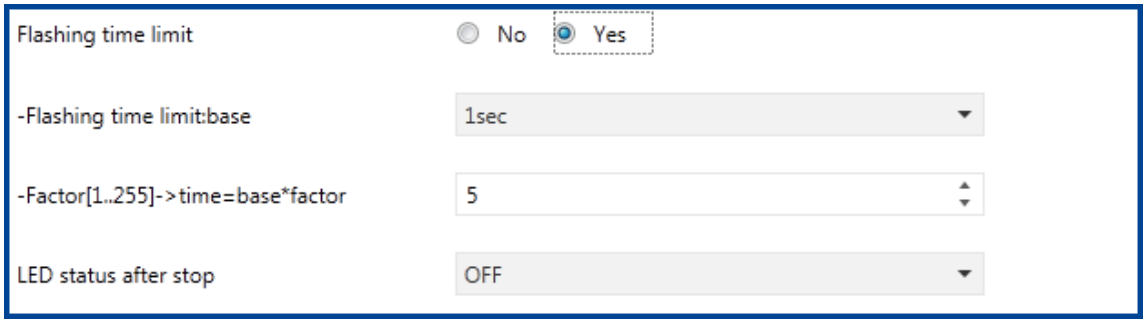
Sets the base delay time.
Options: **100 ms, 1 sec, 1 min 1 hour**

- **Factor(1-255)->time = base*factor**

Options: **1-255**
Sets the delay time; this time is option value*base. After this time, the LED automatically darkens to the set value.

- **Flashing time limit**

Sets the flashing duration; after this time the LED will stop flashing



- **LED following bus voltage recovery**

Options: **OFF**
ON
Sets the LED following bus voltage recovery.

5.2.2.2 Logic function A

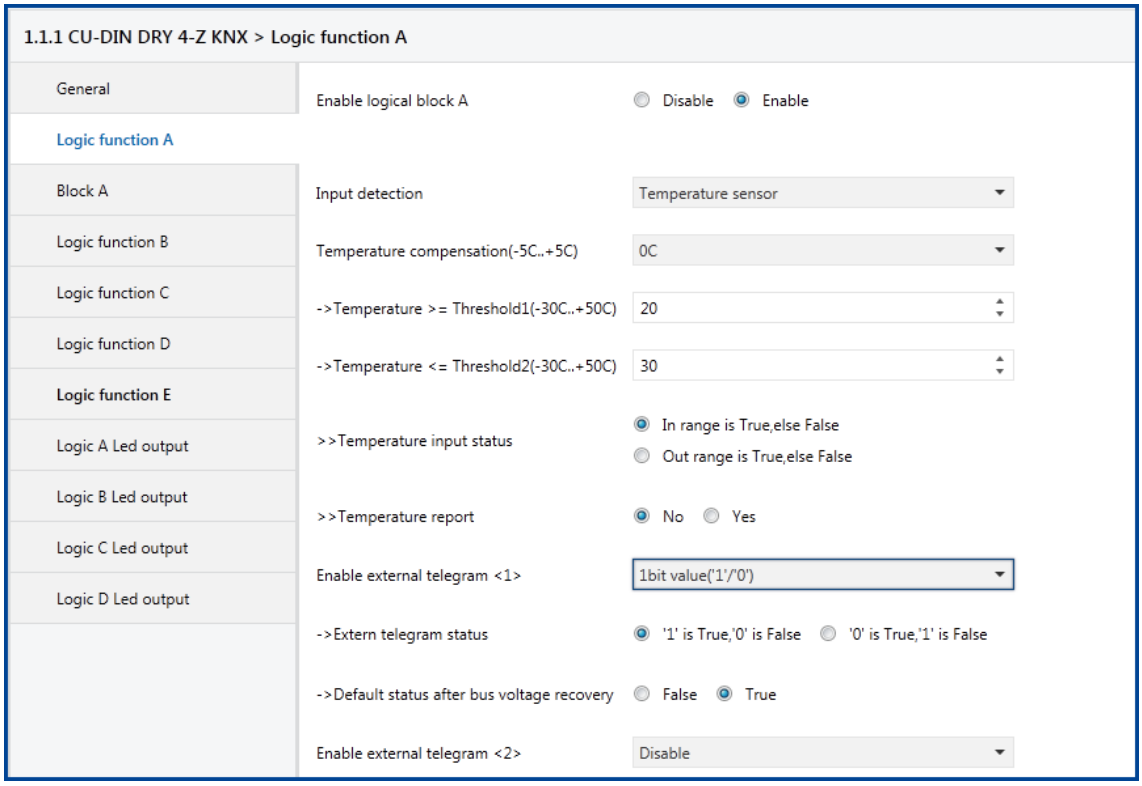


Fig 23: "Logic function A" parameter window

This window sets the logic A parameters. There are 6 logic conditions at most.

- **Enable logic block A**

Options: **Disable**
Enable

Disable: the logic block A is invalid.
Enable: you can set logic block A's function.

- **Input detection**

"Input A" as a logic condition.
Options: **Disable**
Dry contact sensor
Temperature sensor

Disable: "input A" is not a logic condition.
Dry contact sensor: input A's work mode is dry contact sensor.
Temperature sensor: input A's work mode is temperature sensor.
Temperature compensation (-5C-+5C)

- **When input detection is dry contact sensor**

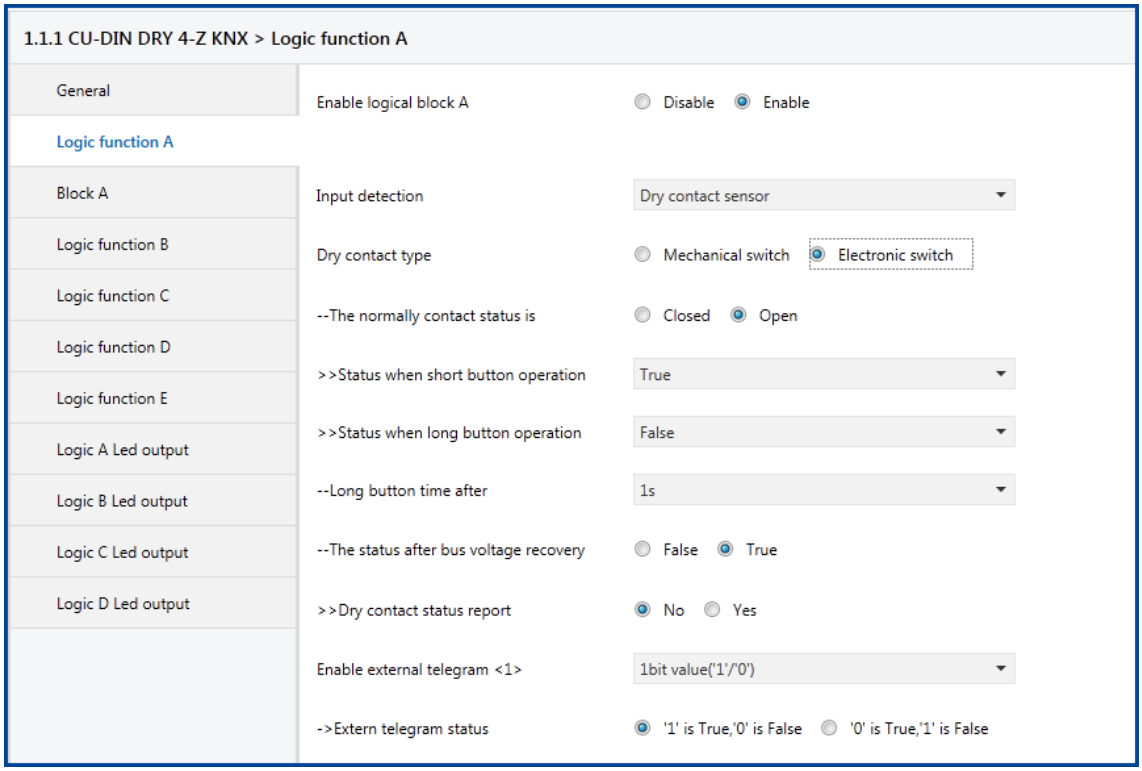
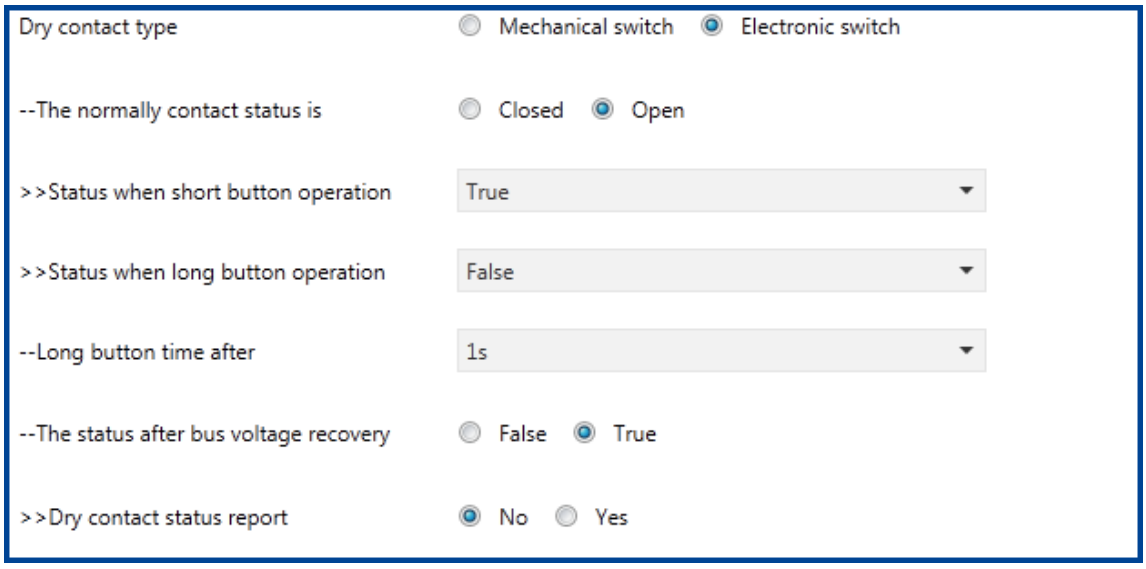


Fig 23.1: "Input detection is dry contact sensor" parameter window

- **Dry contact type: Electronic switch**

Mechanical switch

When the dry contact sensor is an electronic switch, the parameters must be set as follows.



- Normal contact status is

Options: **Open**
Closed

Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open.

Status for short button operation
Status for long button operation

Options: **Invalid**
True
False
Toggle

These two parameters concern the logic conclusion when buttons are operated.

- **Length of long button press**

Options**:** **0.2 s-60 s**

Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Status following bus voltage recovery**

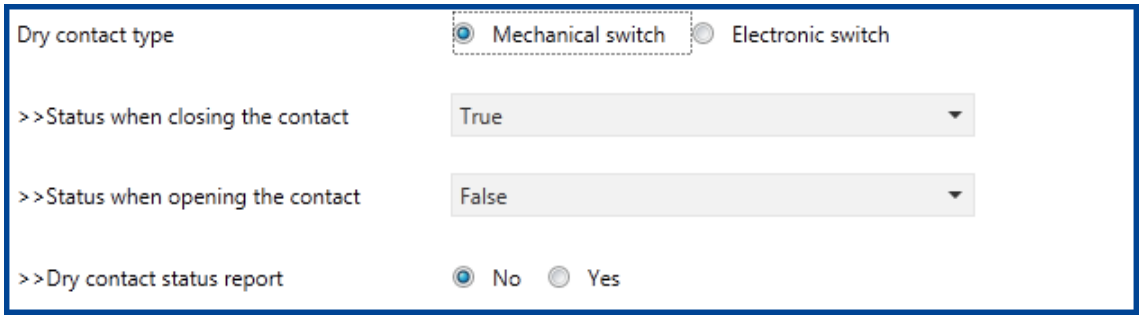
Options: **Invalid**
True
False
Toggle

Sets the logic conclusion following bus voltage recovery.

- **Dry contact status report**

Options: **NO**
YES

Whether or not to report the status of the dry contact.
When the dry contact sensor is a mechanical switch, the parameters must be set as follows.



- **Status when the contact is closed**
- **Status when the contact is opened**

Options: **Invalid**
True
False
Toggle

These two parameters concern the logic conclusion when buttons are operated.

- **Dry contact status report**

Options: **NO**
YES

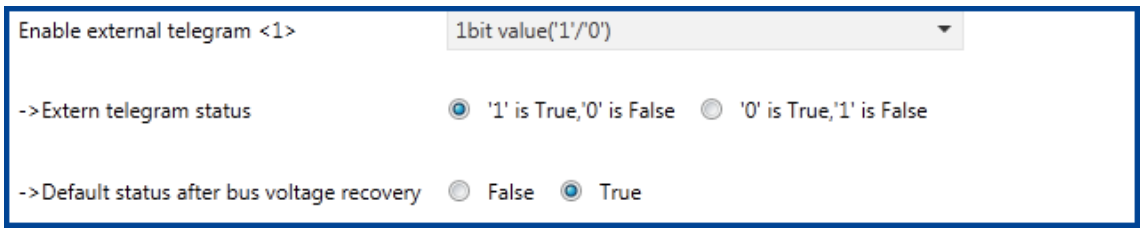
Whether or not to report the status of the dry contact

- **Enable external telegram<1>:**

External telegram <1> as a logic condition.

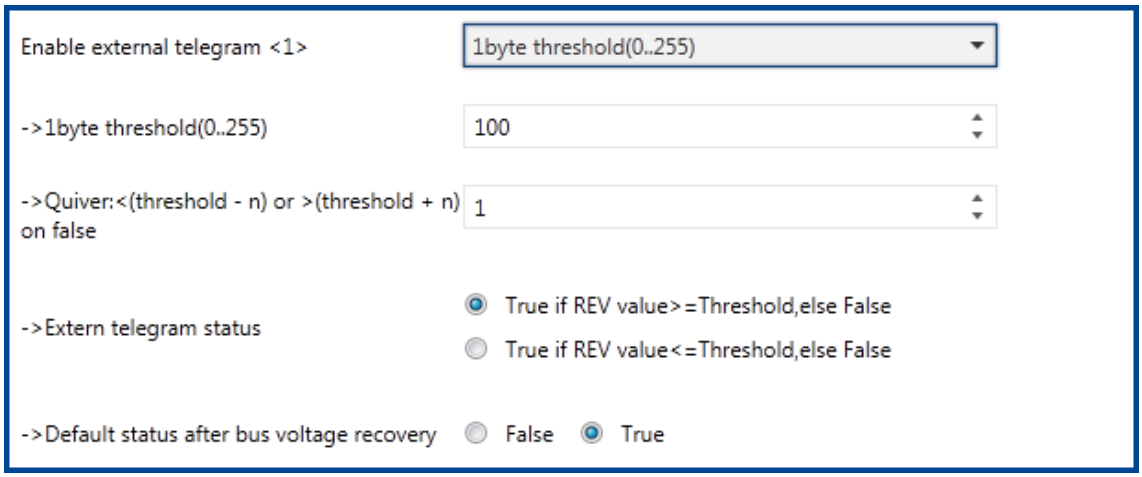
Options: **Disable**
1 bit value ("1"/"0")
1 byte threshold (0-255)
2 byte threshold (0-65535)
2 byte float threshold (-50-50)
4 byte threshold (0-2147483647)

Disable: External telegram <1> is invalid.
1 bit value ("1"/"0"): when the external telegram has a 1 bit value, the logic is true or false.



- Default status following bus voltage recovery: sets the status as true or false following voltage recovery.

2 byte threshold (0-65535): the external telegram threshold is 2 bytes, the settings are as follows.



- **1 byte threshold (0-255): set the threshold, the range is 0-255.**
- External telegram status:

Options: **True if REV value ≥ threshold, else False**
True if REV value ≤ threshold, else False

True if REV value ≥ threshold, else False: when the external telegram value ≥ threshold, the logic is true, else it is false.

True if REV value ≤ threshold, else False: when the external telegram value ≤ threshold, the logic is true, else it is false.

- Default status following bus voltage recovery: sets the status as true or false following voltage recovery.

2 byte threshold (0-65535)
2 byte float threshold (-50-50)
4 byte threshold (0-2147483647)
The settings for these three external telegram types are same as the above settings.

- **Enable external telegram<2>**
- **Enable external telegram<3>**
- **Enable external telegram<4>**
- **Enable external telegram<5>**

The settings are same as for "Enable external telegram<1>".

- **Logic relation of Block A**

Options: **AND**
OR

- **Result of logic A inverted**

Whether or not the results of the logic should be inverted

Options: **NO**
YES

5.2.2.3 Block A

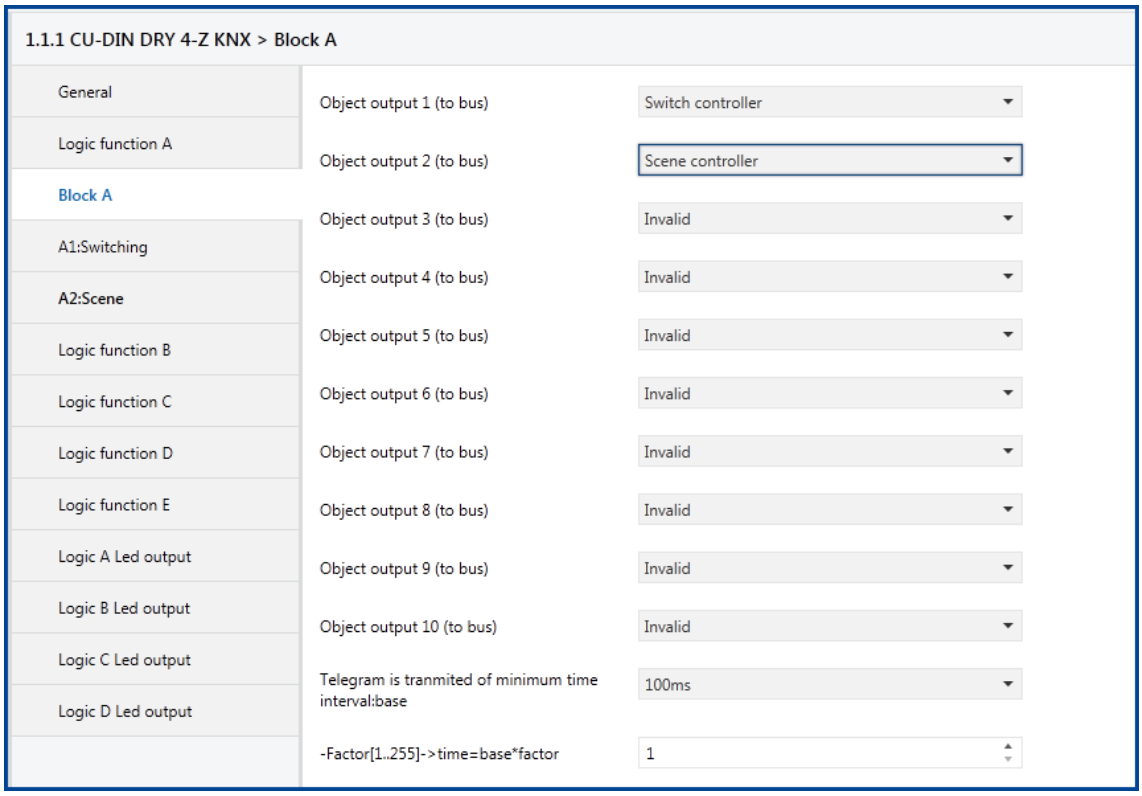


Fig 24: "Block A" parameter window

This parameter window sets the target type when logic A is true.

- **Object output 1 (to bus)**

Options: **Invalid**
Switch controller
Alarm controller
Shutter controller
Scene controller
Sequence controller
Percentage controller
Threshold controller
String (14 bytes) controller

There are nine kinds of target type; the settings are detailed as follows. The default is invalid.

- **Switch controller**

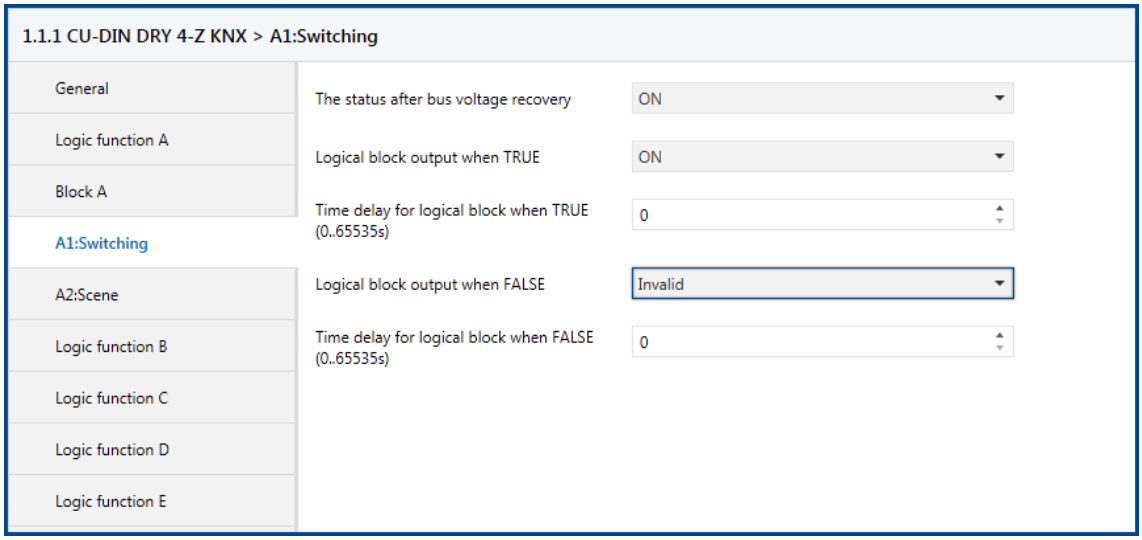


Fig 24.1: "A1:Switching" parameter window

- **Status following bus voltage recovery:**

Options: **Invalid**
ON
OFF
Recovery

In the event of power on and bus voltage recovery, this function will be executed. Four options will be available as follows:
Recovery: Following bus voltage recovery, the channel switch position will revert to its state at the previous power-down.
ON: The channel position will switch ON following bus voltage recovery.
OFF: The channel position will switch OFF following bus voltage recovery.
Recovery: The channel switch position returns to its status before bus voltage recovery.

- **Logic block output when true:**

Options: **Invalid**
ON
OFF
Toggle

- **Alarm**

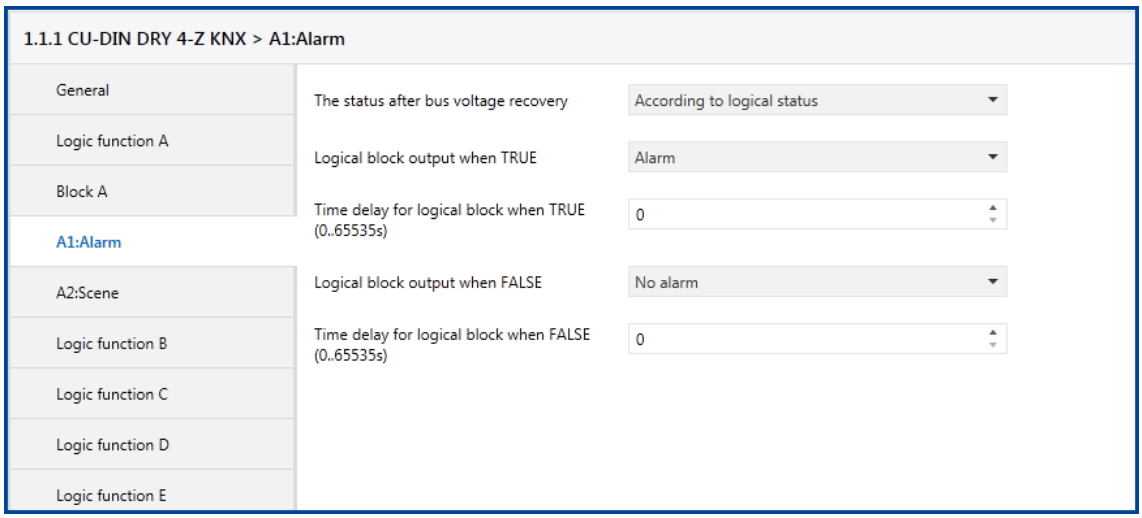


Fig 24.2: "A1: Alarm" parameter window

- **Status following bus voltage recovery:**

Options: **Invalid**
Alarm
No alarm
Recovery
According to logic status

- **Logic block output when TRUE:**

Options: **Invalid**
Alarm
No alarm
Toggle

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

Logic block output when FALSE:

Options: **Invalid**
Alarm
No alarm
Toggle

- **Time delay for logic block when FALSE (0-65535):**

Options: **0-65535**

- **Shutter controller**

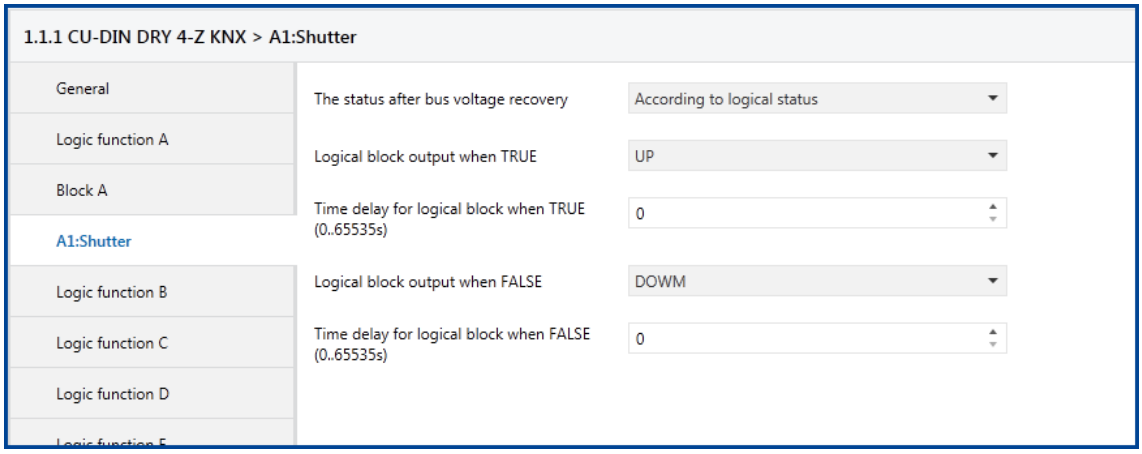


Fig 24.3: "A1: Shutter" parameter window

- **Status following bus voltage recovery:**

Options: In**valid**
UP
DOWN
Recovery
According to logic status

- **Logic block output when TRUE:**

Options: **Invalid**
Toggle
UP
DOWN

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

- **Logic block output when FALSE:**

Options: **Invalid**
Toggle
UP
DOWN

- **Time delay for logic block when FALSE (0-65535):**

Options: **0-65535**

- **Scene**

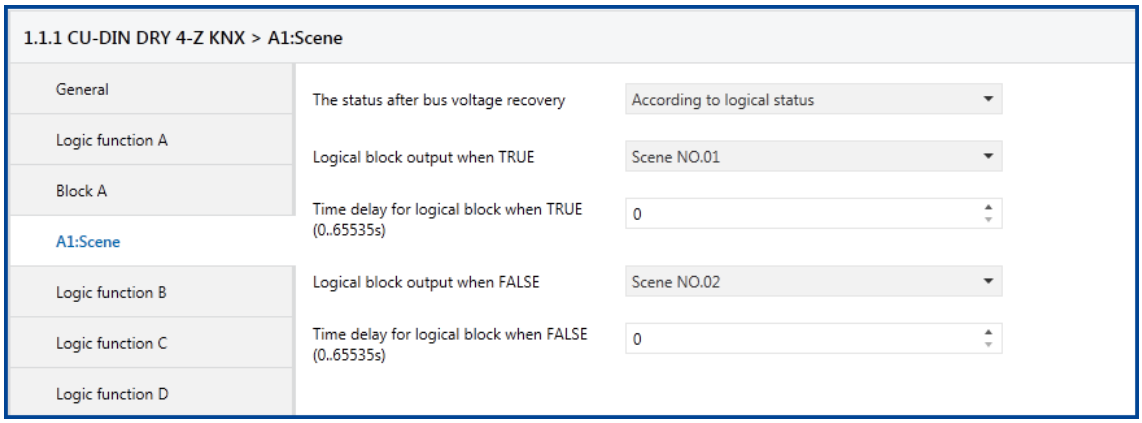


Fig 24.4: "A1: Scene" parameter window

- **Status following bus voltage recovery:**

Options: Invalid
Defined scene
Recovery
According to logic status

- **Logic block output when TRUE:**

Options: **Invalid**
Scene No. 01
to
Scene 64

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

- **Logic block output when FALSE:**

Options: **Invalid**
Scene No. 01
to
Scene 64

Time delay for logic block when FALSE (0-65535):

Options: **0-65535**

- **Sequence**

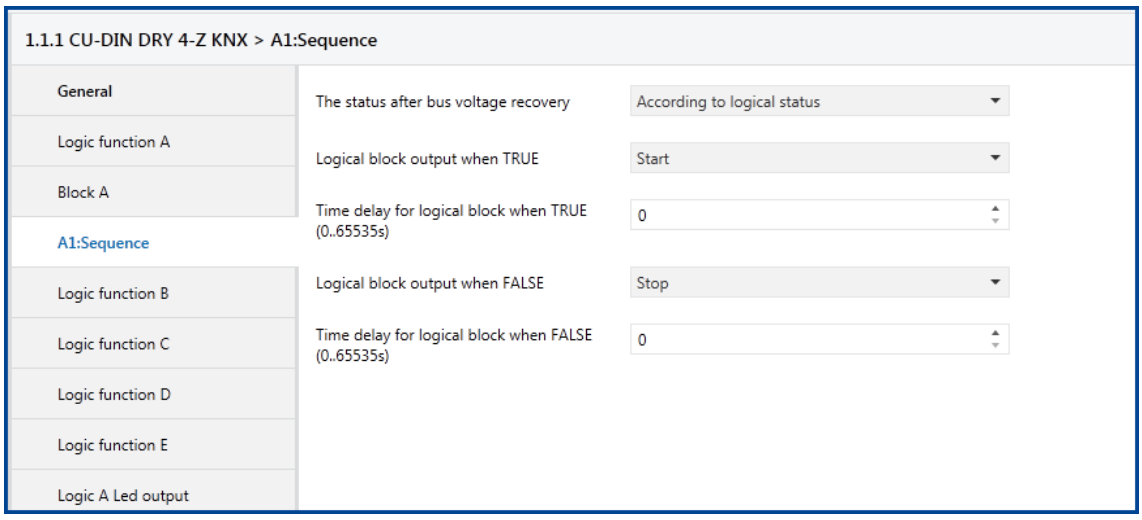


Fig 24.5: "A1: Sequence" parameter window

- **Status following bus voltage recovery:**

Options: **Invalid**
Start
Stop
Recovery
According to logic status

Logic block output when TRUE:

Options: **Invalid**
Toggle
Start
Stop

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

- **Logic block output when FALSE:**

Options: **Invalid**
Toggle
Start
Stop

- **Time delay for logic block when FALSE (0-65535):**

Options: **0-65535**

- **Percentage**

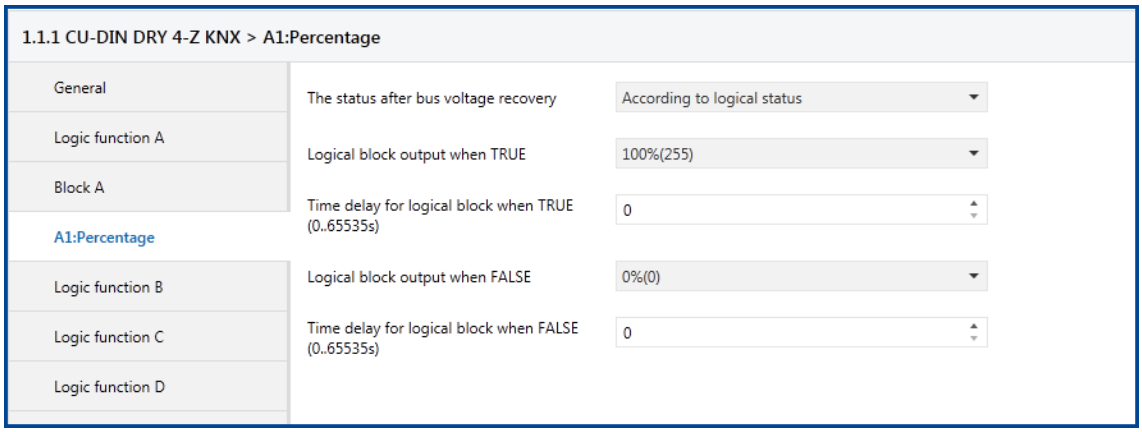


Fig 24.6: "A1: Percentage" parameter window

- **Status following bus voltage recovery:**

Options: **Invalid**
Defined percentage
Recovery
According to logic status

- **Logic block output when TRUE:**

Options: **Invalid**
0%(0)-100%(255)

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

- **Logic block output when FALSE:**

Options: **Invalid**
0%(0)-100%(255)

Time delay for logic block when FALSE (0-65535):

Options: **0-65535**

- **Threshold**

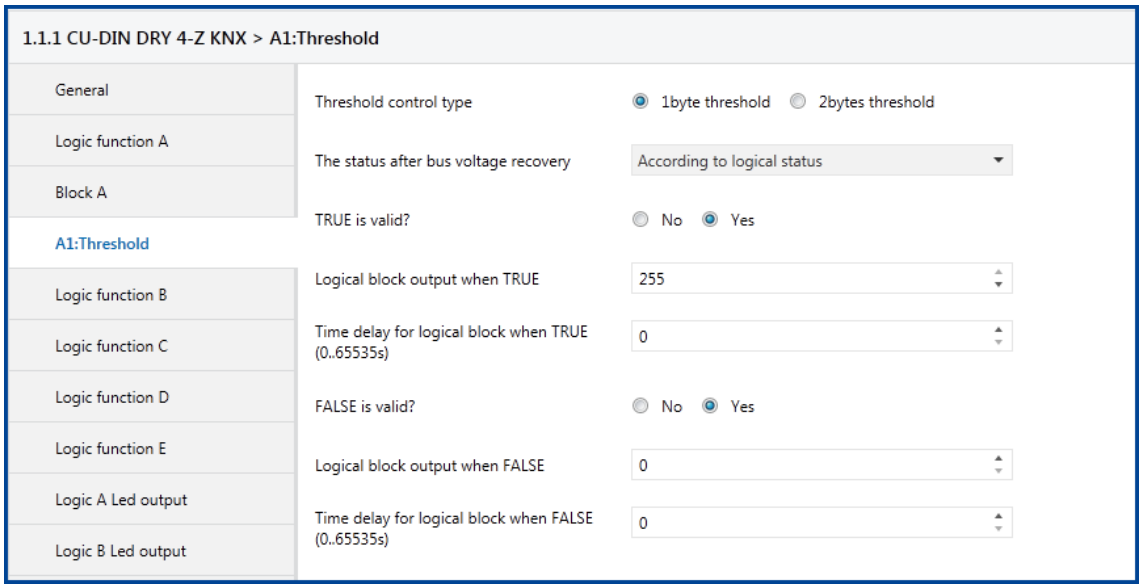


Fig 24.7: "A1: Threshold" parameter window

- **Threshold control type:**

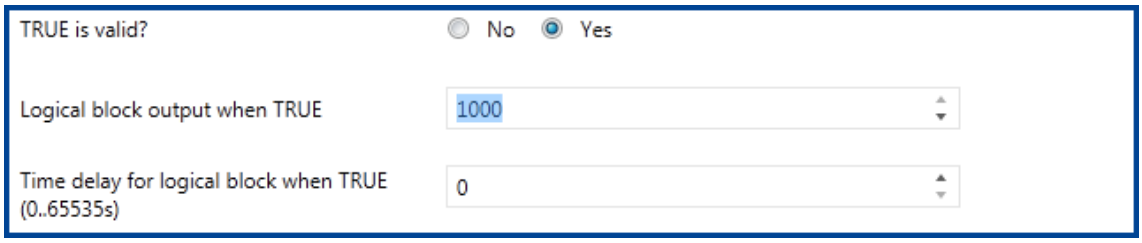
Options: **1 byte threshold**
2 byte threshold

- **Status following bus voltage recovery:**

Options: **Invalid**
Defined threshold
Recovery
According to logic status

- **TRUE is valid?**

Options: **NO**
YES



- **Block output when TRUE:**

Options: **Invalid**
Toggle
Start

Stop

- **Time delay for logic block when TRUE (0-65535):**

Options: **0-65535**

- **Logic block output when FALSE:**

Options: **Invalid**
Toggle
Start
Stop

- **Time delay for logic block when FALSE (0-65535):**

Options: **0-65535**

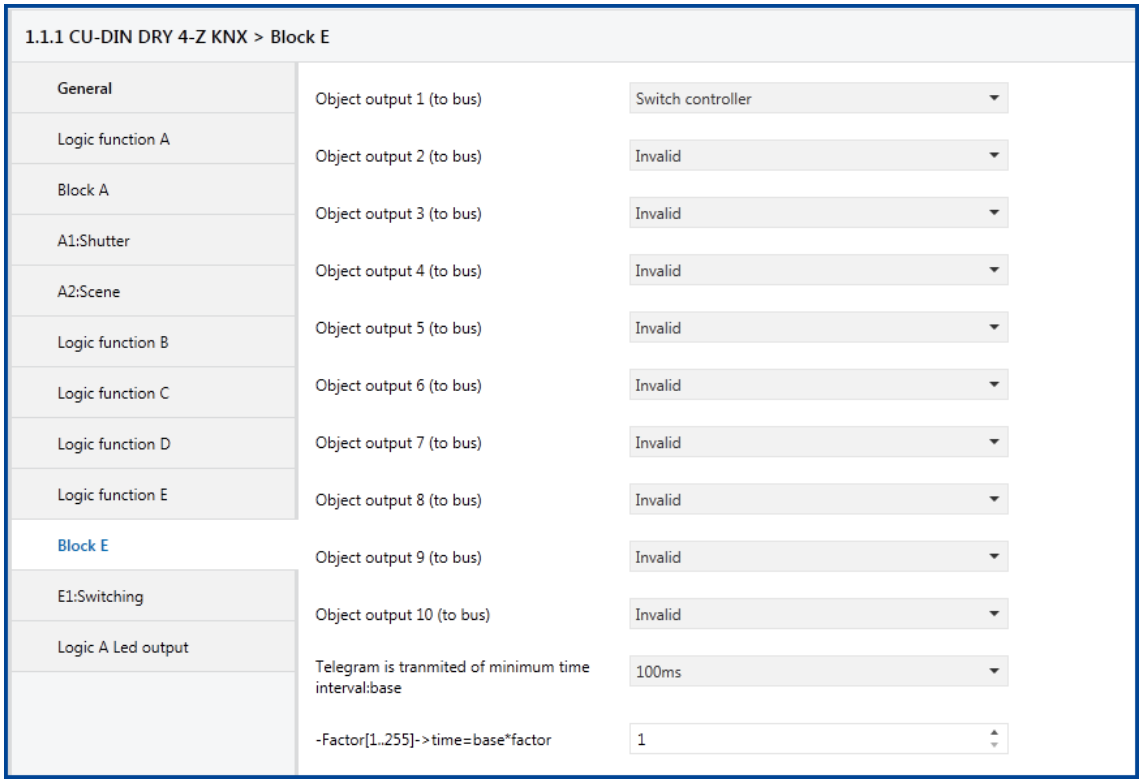


Fig 25: "Block E" parameter window

5.2.3 "Dimming controller" work mode

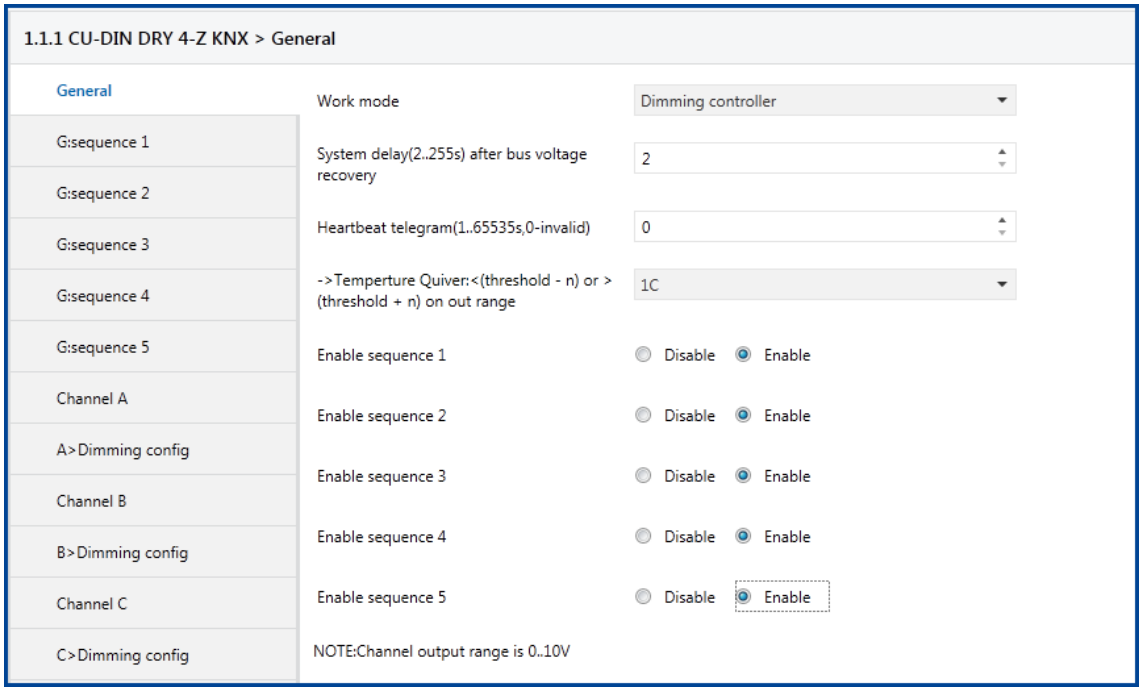


Fig 26: "Dimming controller" parameter windows

- **System delay (2-255s) following bus voltage recovery**

The device experiences a delay for 2-255 s after powering on. The default value is 2 seconds. The min. value is 2 seconds and the max. value is 255 seconds.
Options: **2-255 s**

- **Heartbeat telegram (1-65535s, 0 - invalid)**

The range of the parameter is 0 to 65535 s. 0 as the parameter value disables the function, other parameter values enable this function.
Options: **0-65535 s**

When the parameter is set to non-zero, the device will send telegram data cyclically on time-out. It alternates between sending the values 0 and 1.
The user decides whether or not to use this function.

- **Temperature Quiver: < (threshold – n) or > (threshold +n) on out range**

If the temperature changes within the effective range, the status does not change.
When the temperature changes are greater than **n**, the status will change. The quiver range is between threshold – n and threshold, or between threshold and threshold +n.
Options: **0-10°C**

- **Enable sequence 1**

Options: Disable
Enable

Sets enabling sequence 1. If Enable is selected, the following parameters must be set.

5.2.3.1 G : Sequence 1

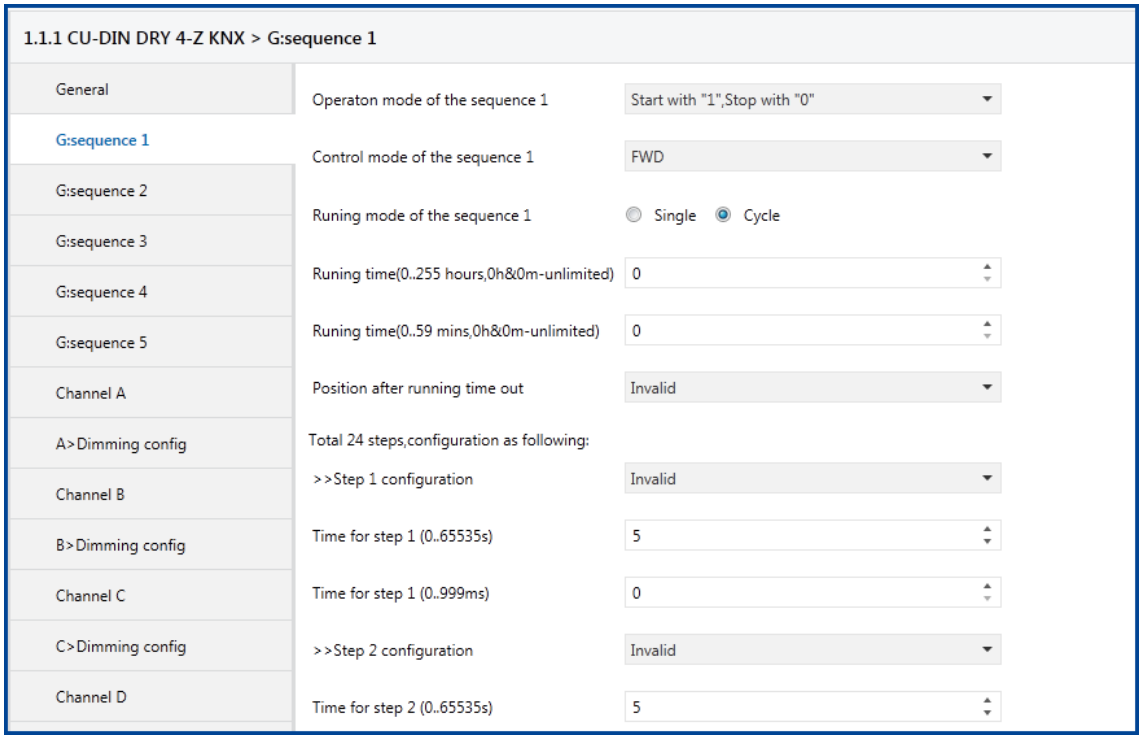


Fig 27: "G: sequence 1" parameter windows

- **Sequence 1 operating mode**

Sets the operating mode.

Options: **"1" to start, "0" to stop**
"0" to start, "1" to stop
"1/0" to start, cannot stop

"1" to start, "0" to stop: When "1" is received, sequence 1 runs. When "0" is received, sequence 1 stops.

"0" to start, "1" to stop: When "0" is received, sequence 1 runs,
When "1" is received, sequence 1 stops.

"1/0" to start, cannot stop: When "1" or "0" is received, sequence 1 runs.

- **Sequence 1 control mode**

Sets the control mode.

Options: **FWD**

REW
Random

FWD: Forward mode
REW: Reverse mode
RANDOM: Random mode

- **Sequence 1 running mode**

Sets the running mode
Options: **Single**
Cycle
Single: Run only once.
Cycle: Cycle run.

- **Running time (0-255 hours , 0 h & 0 m - unlimited)**

Sets the sequence running time.
Options: **0-255**

- **Running time (0-59 mins, 0 h & 0 m - unlimited)**

Sets the sequence running time. The longest time is 59 mins.
Options: **0-59**

Note: Unlimited when time is set to 0 hours & 0 mins.

- **Position after time-out**

If the sequence is running in Cycle mode and the run time is greater than zero, the sequence will return to the set position after timing out.

Total 24 steps, configuration as follows:

- **Step 1 configuration**

Options: **Invalid**
Scene No. 01
to
Scene No. 64

- **Time for step 1 (0-65535 s)**

Sets the time for the step. The longest time is 65535 s.

- **Time for step 1 (0-999 ms)**

Sets the time for the step. The longest time is 999 ms. Setting the other steps is same as for step 1.

5.2.3.2 Channel A

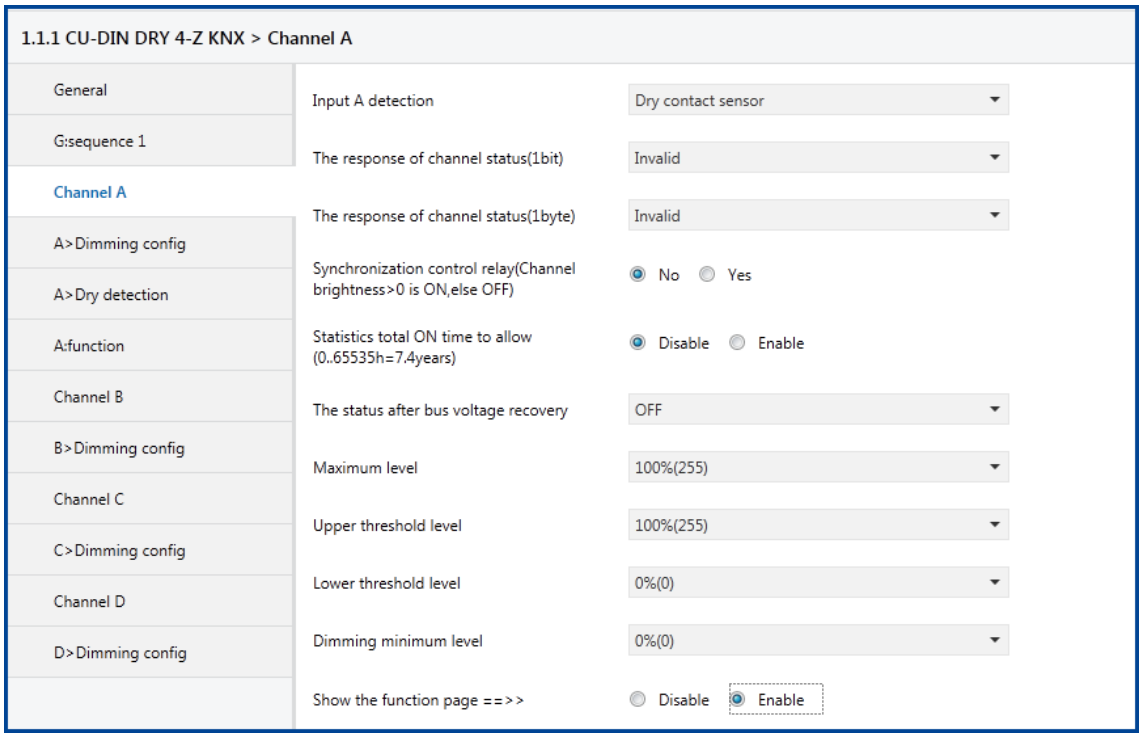


Fig 28: "Channel A" parameter window

- **Input A detection**

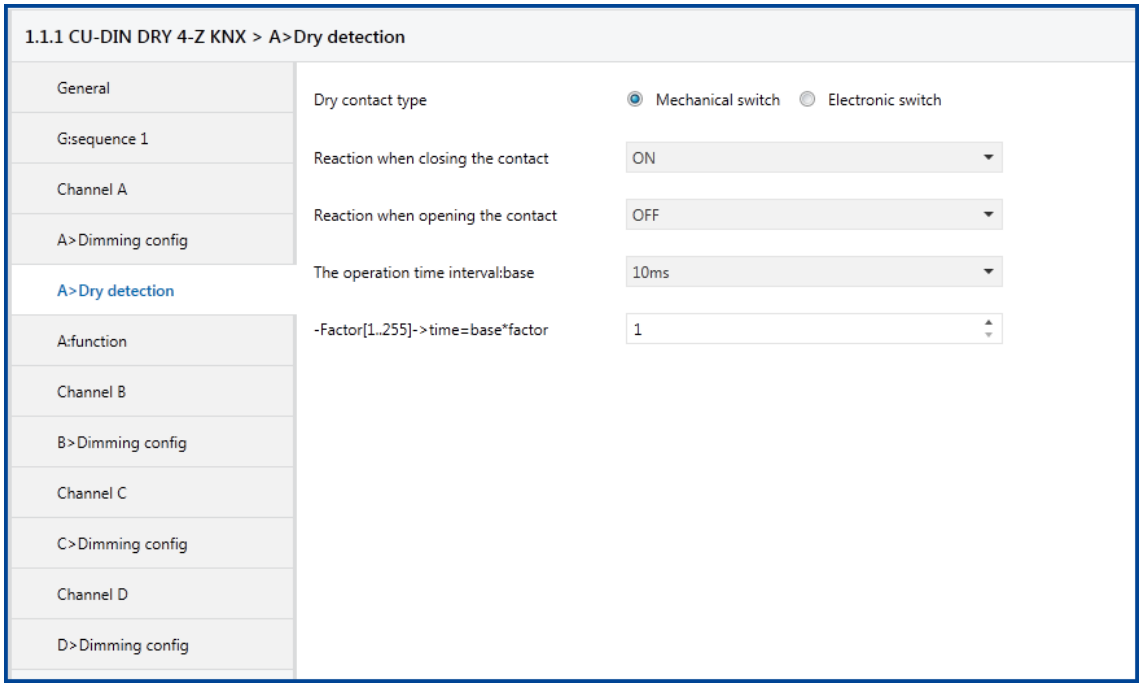
Sets the input A detection type.

Options: **No detection**
Dry contact sensor
Temperature sensor

No detection: input A is invalid.

Dry contact sensor: input A is a dry contact sensor.

If this type is selected, the settings below will appear.



- **Dry contact type:**

Options: **Mechanical switch.**
Electronic switch

Mechanical switch

- **Reaction when the contact is closed**
- **Reaction when the contact is opened**

Options: **Unchanged**
ON OFF Toggle
Dim->Brighter
Dim->Darker
Dim->Brighter/Darker
Dim->Stop

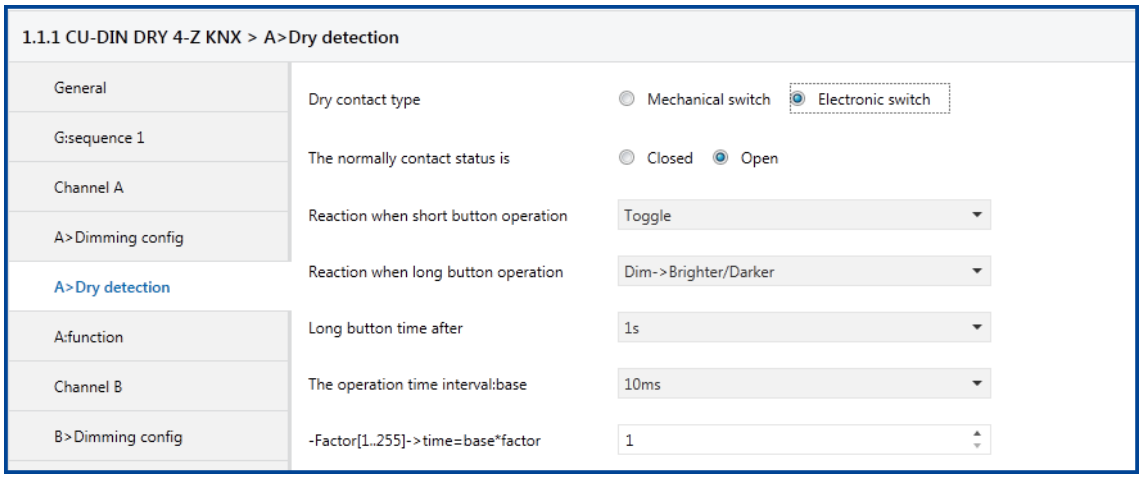
Invalid: the dry contact is invalid.
Dim->Brighter: increases the brightness when the dry contact is operated.
Dim->Darker: decreases the brightness when the dry contact is operated.
Dim->Brighter/Darker: increases/decreases the brightness when the dry contact is operated.
Dim->Stop: stops when the dry contact is closed.

- **Operation time interval: base**

Factor (1-255) ->time=base*factor
These two parameters set the time interval for repeating dry contact operation, the time is base*factor.

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Electric switch**



The dry contact type is electronic switch

- **Normal contact status is**

Options: Close
Open
Sets the dry contact status when not operating.
Close: the contact status is closed.
Open: the contact status is open

- **Reaction to short button operation**
- **Reaction to long button operation**

Options: **Invalid**
Unchanged
ON
OFF
Toggle

These two parameters concern the reaction when buttons are operated.

- **Length of long button press**

Options: **0.2 s-60 s**
Sets the time to be defined as a long button press. The range is 0.2 s to 60 s.

- **Operation time interval: base**

Options: **10 ms, 100 ms, 1 sec, 1 min, 1 hour**
Factor (1-255)->time=base*factor
These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Channel status response (1 bit)**

Options: **Invalid**
1 bit always response
1 bit only changed
1 bit always response: it always responds. If the channel is ON, the response is 1 If the dimmer is OFF, the response is 0
1 bit only changed: It will respond when the dimmer state is changed

- **Channel status response (1 byte)**

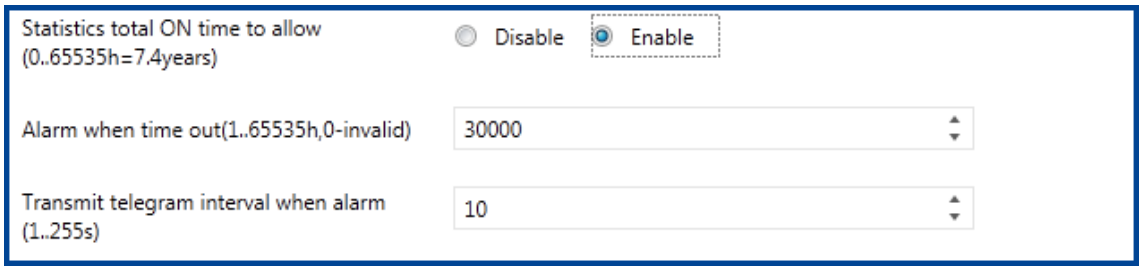
Options: **Invalid**
1 byte always response
1 byte only changed
1 byte always response: It always responds with the light level value.
1 byte only changed: It will respond when the light value is changed.

Synchronization control relay (Channel brightness>0 is ON, else OFF)
Options: **NO**
YES

- **Statistics total ON time to be allowed (0-65535 h = 7.4 years)**

This function is used to calculate the total ON time for output channel. The maximum time is 65535 h. This function is very useful as you can find out the channel work status using this function.
Options: **Disable**
Enable
Disable: Don't time.

Enable: Statistics time.



- **Alarm when times out (1-65535 h, 0 - invalid)**

When the device's operating time reaches the set value the alarm will be triggered.
The value range is 1-65535 h, 0 is invalid.

Transmit telegram interval when alarm is triggered
Sets the alarm time interval.

- **Status following bus voltage recovery**

Sets the status of restore mode after power on for each channel.
Options: **OFF**
Defined brightness value
Last brightness value
Off: After powering on and the channel's status is off.
Defined brightness value: After powering on and the channel's status is the defined brightness value
Last brightness value: After power on and the channel's status is the defined brightness value

- **Brightness value**

Sets the brightness value.

- **Maximum level**

Sets the maximum level.
Options: **0%(0) - 100%(255)**

- **Upper threshold level**

Sets the upper threshold level.
Options: **0%(0) - 100%(255)**

- **Lower threshold level**

Sets the lower threshold level.
Options: **0%(0) - 100%(255)**

- **Minimum dimming level**

Sets the minimum dimming level.
Options: **0%(0) - 100%(255)**

- **Show the function page== >>**

Sets enable/disable and shows the function page.
Options: **Disable**

Enable

Disable: Don't show the dimmer function page.
Enable: Show the function page for setting the dimmer function.

5.2.3.3 Dimming configuration

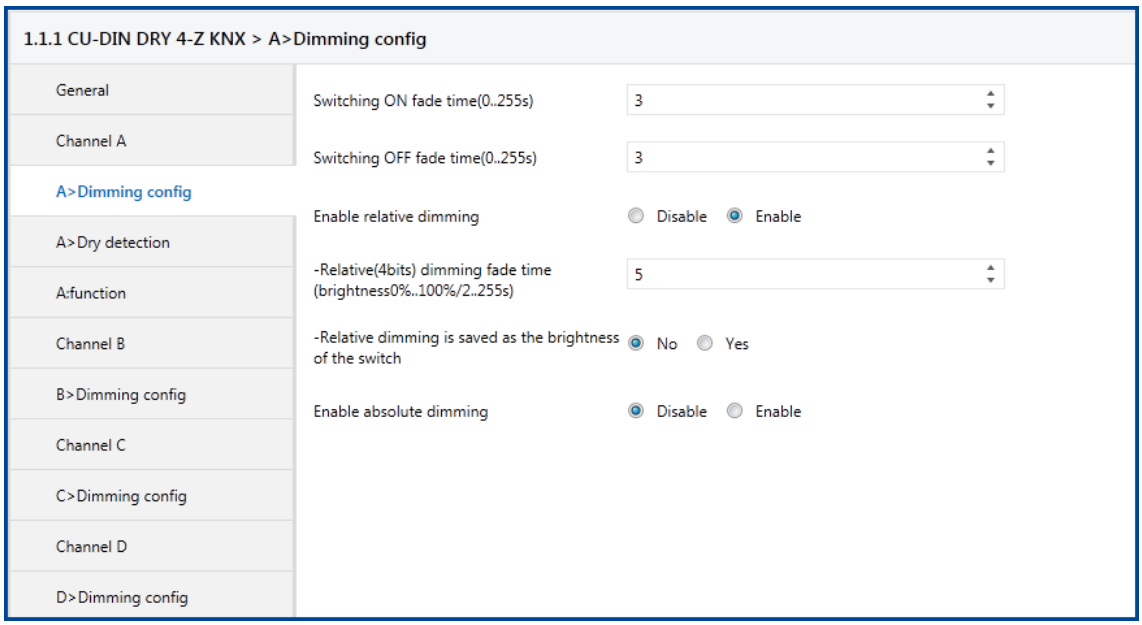


Fig 29: "Dimming config" parameter window

- **Switching ON fade time (0-255 s)**

Sets the time for switching ON.
NOTE: brightness 0% - 100%/0-255 s

- **Switching OFF fade time (0-255 s)**

Sets the time for switching OFF.
Note: brightness 0% - 100%/0-255 s

- **Enable relative dimming**

Options: **Disable**
Enable
Disable: Don't allow relative dimming
Enable: Allow relative dimming

NOTE: Relative dimming fade time (brightness 0% - 100%/0-255 s), the data length is 4 bits

- **Enable absolute dimming**

Options: **Disable**
Enable

Disable: Don't allow absolute dimming
Enable: Allow absolute dimming

NOTE: Absolute dimming fade time (brightness 0% - 100%/0 - 255 s), the data length is 1 byte

5.2.3.4 A: function

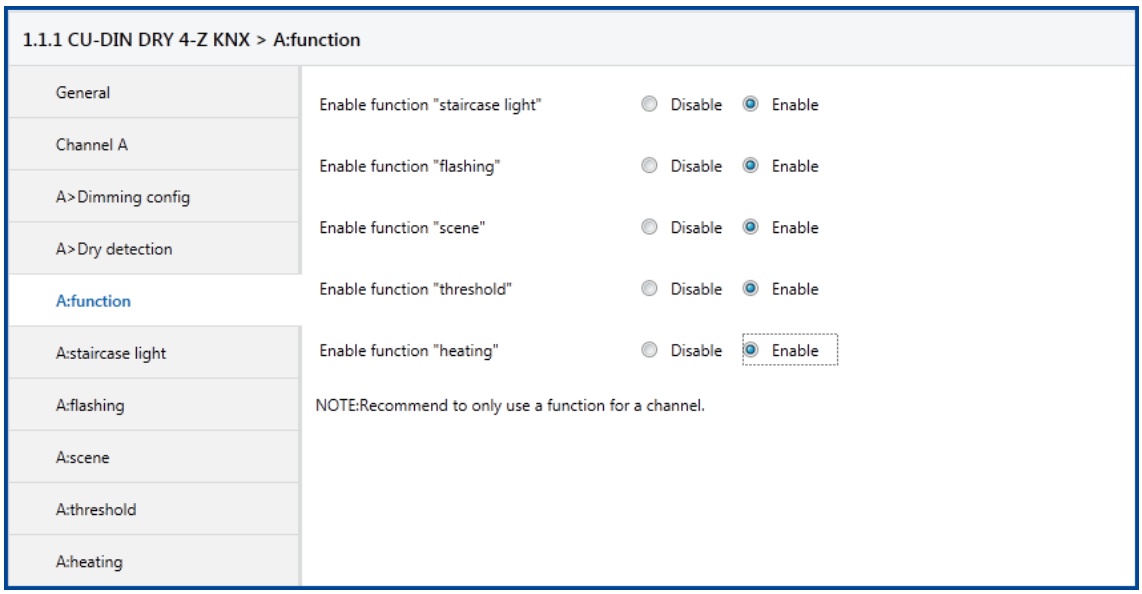


Fig 30: "A:function" parameter window

The window for enabling the functions below.

- **Enable "staircase light" function**
- **Enable "flashing" function**
- **Enable "scene" function**
- **Enable "threshold" function**
- **Enable "heating" function**
- **A: "staircase light" function**

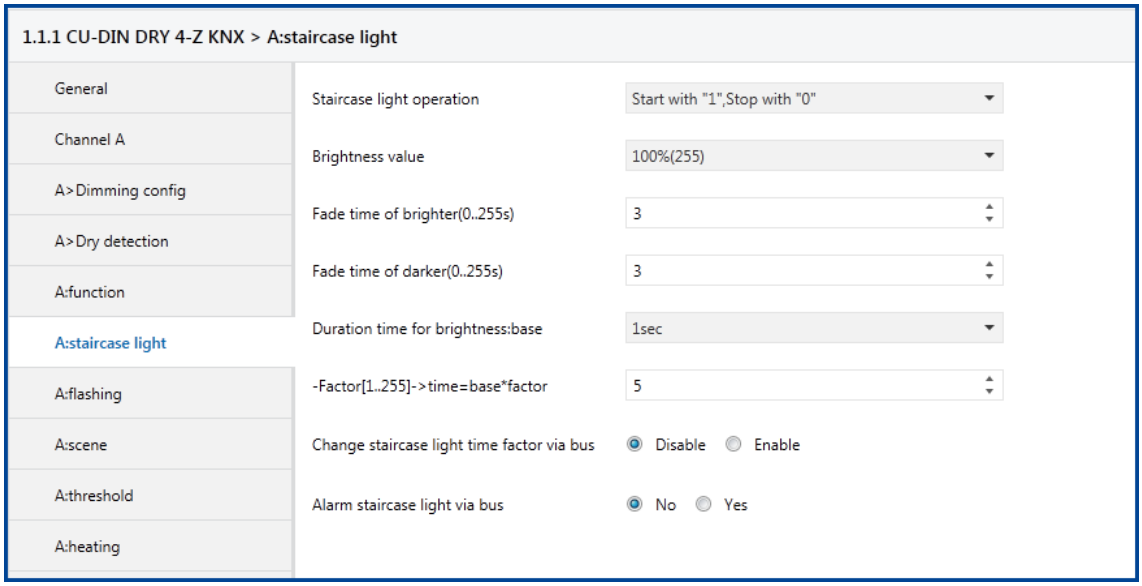


Fig 30.1: "Staircase light" parameter windows

For staircase applications

- **Staircase lighting operation**

Options: **"1" to start, "0" to stop**
"1" to start, "0" invalid
"1/0" to start, cannot stop

"1" to start, "0" to stop: When data 1 is received and the staircase light starts running automatically, stop with time-out or stop with 0.
"1" to start, "0" invalid: When data 1 is received and the staircase light starts running automatically, 0 is invalid.
"1/0" to start, cannot stop: When data 1/0 is received and the staircase light starts running automatically, cannot stop.

- **Brightness value**

Sets the brightness value of the staircase light.

- **Brighter fade time: (0-255 s)**

Fade time in the brighter state in seconds.

- **Darker fade time: (0-255 s)**

Fade time in the darker state in seconds.

- **Brightness duration: base Duration of the brightness state in minutes.**

Options: **1 sec, 1 min, 1 hour**

- Factor(1-255)->time=base*factor

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Change staircase lighting time via bus**

Options: **Disable**
Enable

Disable: Cannot change the staircase lighting delay off time via the bus; it can only be set via the database.
Enable: Allow the user to modify the staircase lighting delay off time via the bus.

- **Alarm staircase lighting via bus**

Options: **NO**
YES

NO: Disable alarm.
YES: Allow alarm via bus by the user.

- **A: "Flashing" function**

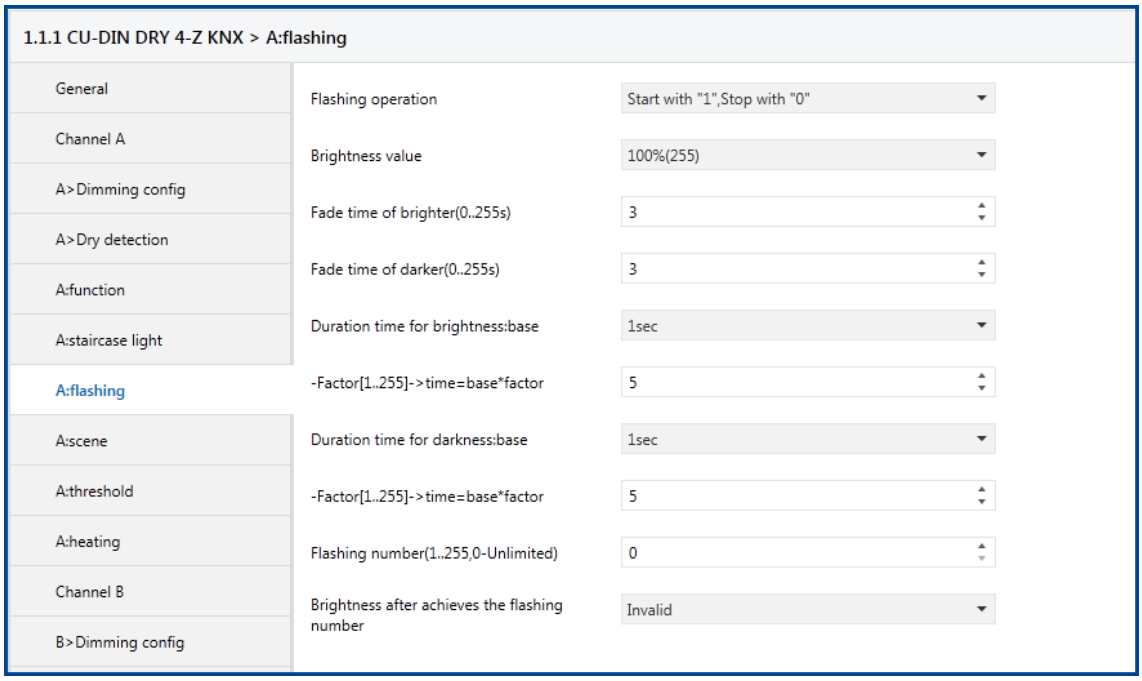


Fig 30.2: "Flashing" parameter window
Flashing between ON and OFF in this mode.

- **Flashing operation**

This function has three control modes.
Options: **"1" to start, "0" to stop**
"1" to start, invalid with"0"

"1/0" to start, cannot stop

"1" to start, "0" to stop: Start flashing with 1 and stop flashing with 0.
"1" to start, invalid with "0": Start flashing with 1 and invalid with 0.
"1/0" to start, cannot stop: Start flashing with 1 or 0, cannot stop.

- **Brightness value** : **0% - 100%**

Sets the brightness value.

- **Brighter fade time: (0-255 s)**

Fade time in the brighter state in seconds.

- **Darker fade time: (0-255 s)**

Fade time in the darker state in seconds.

- **Brightness duration: base**

Duration of the brightness state in minutes.
Options**:** **1 sec, 1 min, 1 hour**

- Factor(1-255)->time=base*factor

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Darkness duration: base**

Duration of the darkness state in minutes.
Options: **1 sec, 1 min, 1 hour**

- Factor(1-255)->time=base*factor

These two parameters set the time interval of repeat dry contact operation; the time is base*factor.

- **Darkness duration: (0-255 mins)**

Duration of the darkness state in minutes.

- **Flashing number (0-.255, 0 - Unlimited)**

Flashing, range between 0 and 255. 0 is unlimited.

- **Brightness once flashing number achieved**

Sets the brightness after achieving the flashing number. The range is 0%(0) - 100% (255).

- **A: "Scene" function**

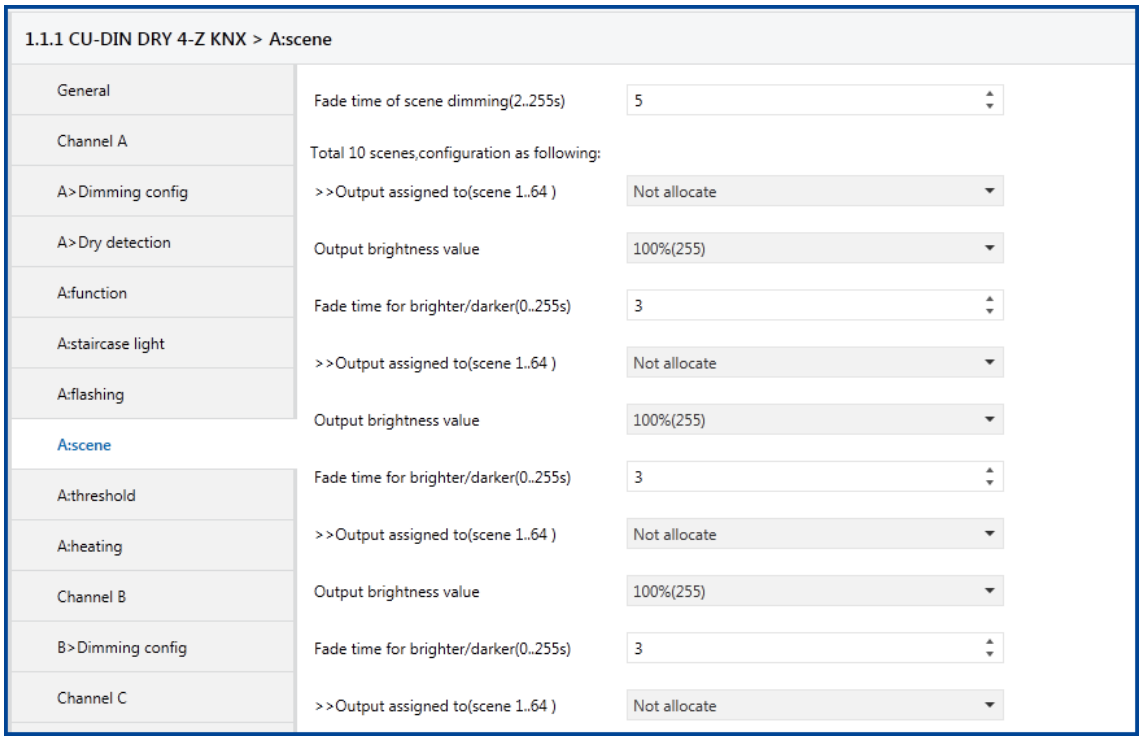


Fig 30.3: "Scene" parameter window

- **Scene dimming fade time: (0-255 s)**

Fade time in the brighter state in seconds.

Total 10 scenes, configuration as follows, with the setting as per below. Each scene is the same as the following:

- **Output assigned to (scene 1-.64)**

Allocate the scene.

- **Output brightness value**

Sets the output brightness value 0%-100%

- **Brighter/darker fade time (0-255 s)**

Sets the brighter or darker time.

- **A: "Threshold" function**

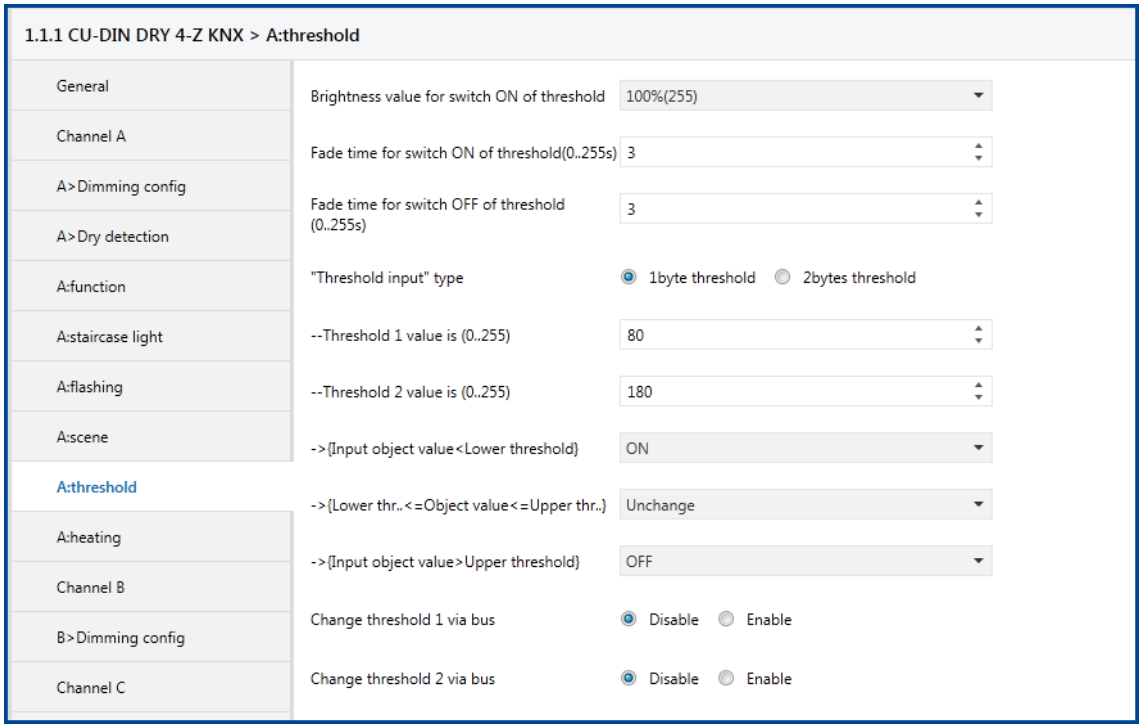


Fig 30.4: "Threshold" parameter window

- **Brightness value for switching threshold ON**

Configures the brightness for switching ON

- **Fade time for switching threshold ON (0-255 s)**

Configures the time for switching ON

- **Fade time for switching threshold OFF (0-255 s)**

Configures the time for switching OFF

- **Threshold input type**

Options: **1 byte threshold**
2 byte threshold

Sets the threshold input type.

- **Threshold 1 value is (0-255)**

Sets the threshold 1 value between 0 and 255. Default is 80.

- **Threshold 2 value is (0-255)**

Sets the threshold 2 value between 0 and 255. Default is 180.

- **Input object value<Lower threshold**

If the value of the receiving telegram from the bus is lower than the minimum threshold value, the switch will be activated according to the below options (ON or OFF or Unchange)

Options: **Unchange**
ON
OFF

Unchange: The channel switch position is set to unchange.
ON: The channel switch position is set to ON.
OFF: The channel switch position is set to OFF

- **Lower threshold≤Input value≤Upper threshold**

If the value of the receiving telegram from the bus is between the lower threshold and upper threshold, the switch will be activated according to the below options (ON or OFF or no action)

Options: **Unchange**
ON
OFF

Unchange: The channel switch position is set to unchange.
ON: The channel switch position is set to ON.
OFF: The channel switch position is set to OFF

- **Input value > Upper threshold**

If the value of the receiving telegram from the bus is more than the upper threshold value, the switch will be activated according to the below options (ON or OFF or no action)

Options: **Unchange**
ON
OFF

Unchange: The channel switch position is set to unchange.
ON: The channel switch position is set to ON.
OFF: The channel switch position is set to OFF

- **Change threshold 1 via bus**

Options: **Disable**
Enable

Disable: Do not allow changing the threshold 1 value via the bus.
Enable: Allow changing the threshold 1 value via the bus.

- **Change threshold 2 via bus**

Options: **Disable**
Enable

Disable: Do not allow changing the threshold 2 value via the bus.

Enable: Allow changing the threshold 2 value via the bus.

- **A: "Heating" function**

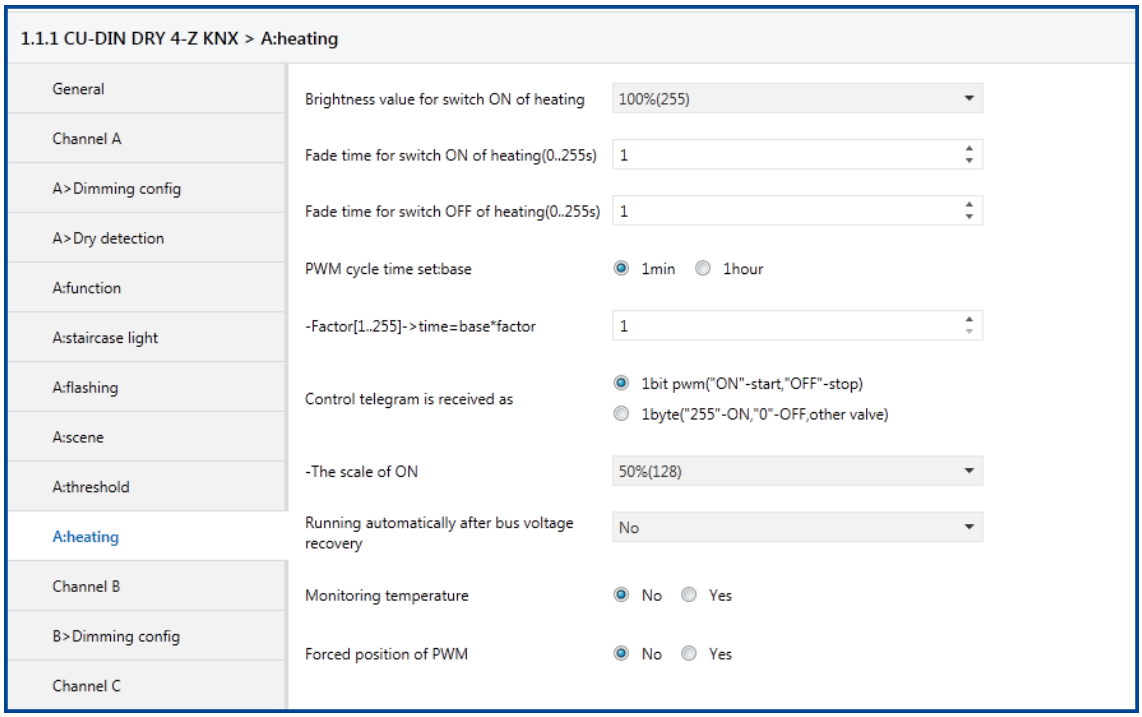


Fig 30.5: "Heating" parameter window

- **Brightness value for switching heating ON**

Configures the brightness for switching ON

- **Fade time for switching heating ON (0-255 s)**

Configures the time for switching ON

- **Fade time for switching heating OFF (0-255 s)**

Configures the time for switching **OFF**

PWM cycle time set: base

Options: **1 sec, 1 min, 1 hour**

- Factor(1-255)->time=base*factor

These two parameters set the PWM cycle time of repeat dry contact operation; the time is base*factor.

- **Control telegram**

Type of control can be 1 bit or 1 byte.

Options: **1 bit PWM (1-start/0-stop)**

1 byte (255-switch ON/0-switch OFF/other valve)

1 bit PWM (1-start/0-stop): The PWM is switched ON by receiving telegram value "1", and stopped with "0".
1 byte (255 - ON/0 - OFF/other value): Switching ON is always when telegram value "255" is received, then switches OFF when "0" is received. The PWM runs and the PWM pulse width is set according to the telegram value received (1 to 254).

- **The scale of ON**

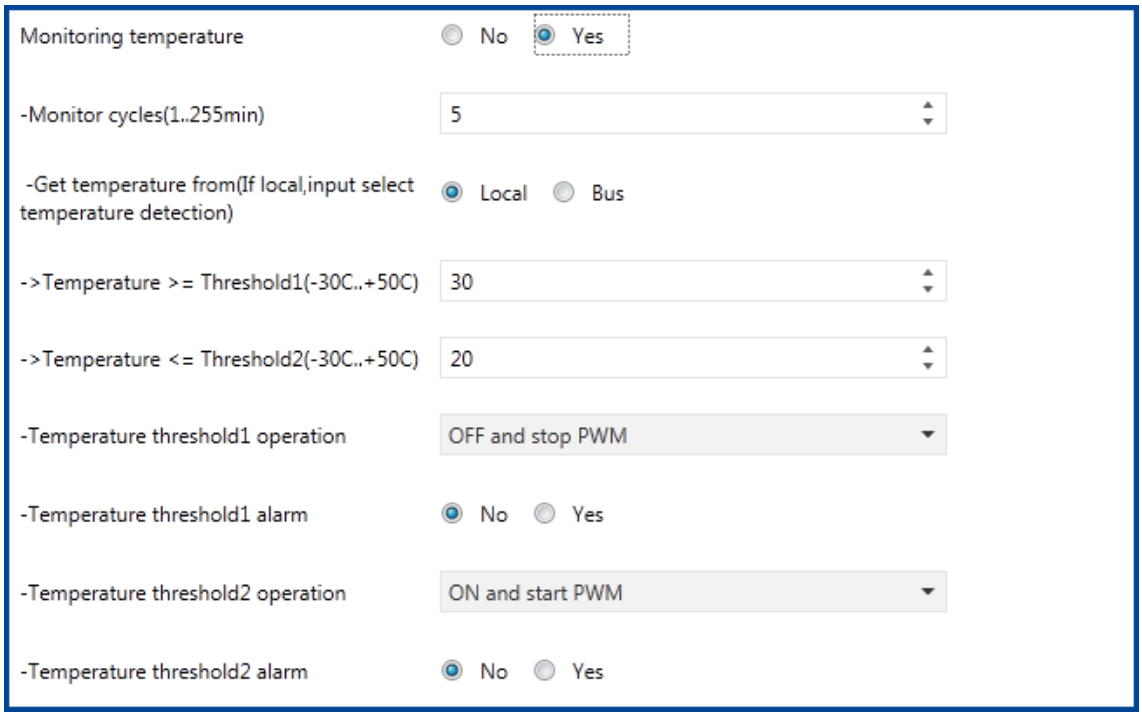
This parameter sets the value of the PWM (pulse width).
Options: **0%(OFF)**
10% (26)
20% (51)
30% (77)
40% (102)
50% (128)
60% (153)
70% (179)
80% (204)
90% (230)
100% (ON)

- **Running automatically following bus voltage recovery**

The PWM runs automatically when set to YES. The PWM runs manually when set to NO.
Options: **NO**
YES
YES: PWM runs automatically at power on.
NO: PWM runs manually.

- **Monitoring temperature**

The temperature is monitored by setting to YES. The temperature is not monitored when set to NO.
Options: **NO**
YES



- **Forced position of PWM**

Options: **NO**
YES

6 Communication objects description

This section introduces the communication objects. The objects are shown by enabling the function.

6.1 Sensor controller

6.1.1 "General" objects and enabling input A

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low

No.	Object name	Function	Flags	Data type
0	General	Heartbeat telegram	C T	DPT 1.003 1 bit

This communication object is always active and valid. Invert the telegram value sent to the bus in the next frame, e.g. the last telegram value is "1", the next telegram value is "0".

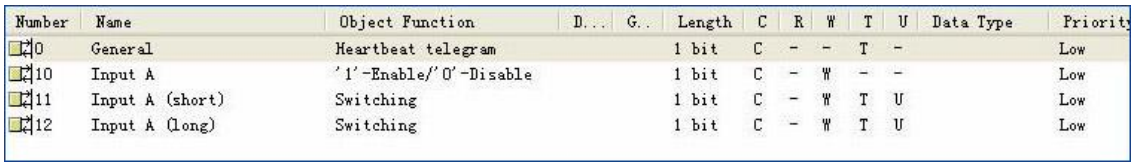
10	Input A	1-Enable/0-Disable	C W	DPT 1.003 1 bit

This communication object sets whether input A is enabled. When the received telegram value is 1, the input function is enabled. When the received telegram value is “0”, the function is disabled.

6.1.2 Dry contact sensor

NOTE: Input A has 12 types of functions and dry contact has two work types. This manual takes Electronic switch as an example.

- **"Switch controller" objects**

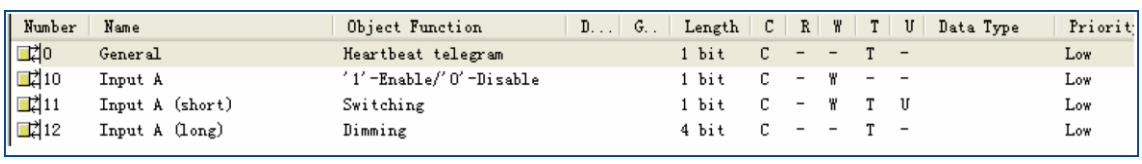


Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Switching			1 bit	C	-	W	T	U		Low
12	Input A (long)	Switching			1 bit	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Switching	C W T U	DPT 1.001 1 bit
12	Input A (long)	Switching	C W T U	DPT 1.001 1 bit

These communication objects are used for switch control. When dry contact A is operated, a value is sent to the BUS and controls the switch.

- **"Switch/Dimming controller" objects**



Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Switching			1 bit	C	-	W	T	U		Low
12	Input A (long)	Dimming			4 bit	C	-	-	T	-		Low

No.	Object name	Function	Flags	Data type

11	Input A (short)	Switching	C W T U	DPT 1.001 1 bit
12	Input A (long)	Dimming	C T	DPT 3.007 4 bit

These communication objects are used for switch control and relative dimming control. When dry contact A is operated, a value is sent to the BUS and controls the switch and relative dimming.

- **"Shutter controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Adjust for shutter(Inc)			1 bit	C	-	W	T	U		Low
12	Input A (long)	Move for shutter(Toggle)			1 bit	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Adjust for shutter (inc)	C W T U	DPT 1.007 1 bit
12	Input A (long)	Move for shutter (toggle)	C W T U	DPT 1.007 1 bit

These communication objects are used for shutter control. When the dry contact is closed or opened, a value is sent to the BUS and controls the shutter.

- **"Flexible controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A	Flexible			1 bit	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A	Flexible	C W T U	DPT 1.001 1 bit

This communication object is used for flexible control. When controlled the dry contact sends the value "1" or "0" to the BUS.

- **"Scene controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Call scene			1 Byte	C	-	W	T	U		Low
12	Input A (long)	Scene dimming			4 bit	C	-	-	T	-		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Call scene	C W T U	DPT 18.001 1 byte
12	Input A (long)	Scene dimming	C T	DPT 3.007 4 bit

This communication object is used for scene control. When short or long operation is used the dry contact calls the scene or the scene is dimmed.

- **"Sequence controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Sequence			1 bit	C	-	W	T	U		Low
12	Input A (long)	Sequence			1 bit	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Sequence	C W T U	DPT 1.010 1 bit
12	Input A (long)	Sequence		

This communication object is used for sequence control. When short or long operation of the dry contact is used, a value is sent to the BUS and controls the sequence.

- **"Percentage controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Percentage			1 Byte	C	-	W	T	U		Low
12	Input A (long)	Percentage			1 Byte	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type

11	Input A (short)	Percentage	C W T U	DPT 5.001 1 byte
12	Input A (long)	Percentage		
This communication object is used for percentage control. When short or long operation of the dry contact is used, a value is sent to the BUS.				

- **"Threshold controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priorit
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	Threshold(1byte)			1 Byte	C	-	W	T	U		Low
12	Input A (long)	Threshold(1byte)			1 Byte	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Threshold (1 byte)	C W T U	DPT 5.004 1 byte
12	Input A (long)	Threshold (1 byte)	C W T U	DPT 7.001 1 byte
This communication object is used for threshold control. When short or long operation of the dry contact is used, a value is sent to the BUS according to the “threshold” settings.				

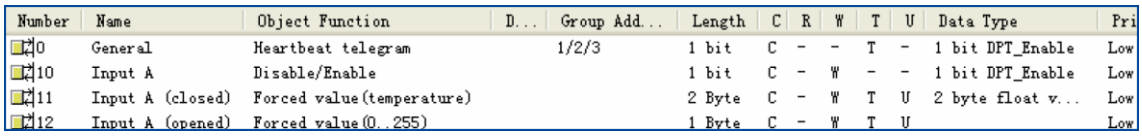
- **"String (14 bytes) controller" objects**

Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priorit
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A (short)	String(14bytes) value			14 Byte	C	-	-	T	-		Low
12	Input A (long)	String(14bytes) value			14 Byte	C	-	-	T	-		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	String (14 bytes) value	C T	DPT 16.000 14 bytes
12	Input A (long)	String (14 bytes) value	C T	DPT 16.000 14 bytes

This communication object is used for string control. When short or long operation of the dry contact is used, a value is sent to the BUS.

- **"Forced position controller" objects**

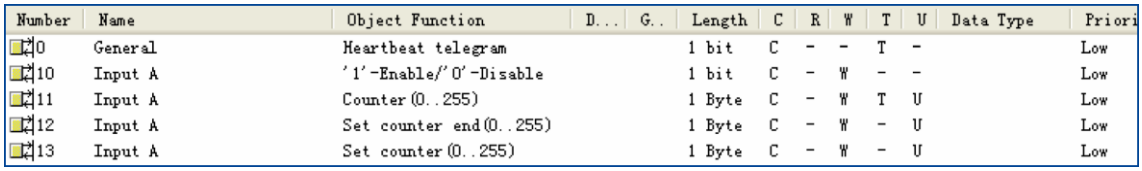


Number	Name	Object Function	D...	Group Add...	Length	C	R	W	T	U	Data Type	Pri
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Disable/Enable			1 bit	C	-	W	-	-	1 bit DPT_Enable	Low
11	Input A (closed)	Forced value(temperature)			2 Byte	C	-	W	T	U	2 byte float v...	Low
12	Input A (opened)	Forced value(0..255)			1 Byte	C	-	W	T	U		Low

No.	Object name	Function	Flags	Data type
11	Input A (short)	Forced value (temperature)	C W T U	DPT 5.004 2 bytes
12	Input A (long)	Forced value (0-255)	C W T U	DPT 7.001 1 byte

This communication object is used for forced value control. When short or long operation of the dry contact is used, a value is sent to the BUS according to “forced position” settings.

- **"Counter controller" objects**



Number	Name	Object Function	D...	G..	Length	C	R	W	T	U	Data Type	Priori
0	General	Heartbeat telegram			1 bit	C	-	-	T	-		Low
10	Input A	'1'-Enable/'0'-Disable			1 bit	C	-	W	-	-		Low
11	Input A	Counter(0..255)			1 Byte	C	-	W	T	U		Low
12	Input A	Set counter end(0..255)			1 Byte	C	-	W	-	U		Low
13	Input A	Set counter(0..255)			1 Byte	C	-	W	-	U		Low

No.	Object name	Function	Flags	Data type
11	Input A	Counter (0-255)	C W T U	DPT 5.004 1 byte
12	Input A	Set counter end (0-255)	C W U	DPT 5.004 1 byte
13	Input A	Set counter (0-255)	C W U	DPT 5.004 1 byte

This communication object is used for sending the pulse counter.

- **"Combination controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priority
10	Input A	Disable/Enable			1 bit	C	-	W	-	-	1 bit DPT_Enable	Low
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
11	Input A (closed)	COMB OBJ1 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
12	Input A (closed)	COMB OBJ2 shutter			1 bit	C	-	-	T	-	1 bit DPT_UpDown	Low
13	Input A (closed)	COMB OBJ3 scene			1 Byte	C	-	-	T	-		Low
14	Input A (closed)	COMB OBJ4 sequence			1 bit	C	-	-	T	-	1 bit DPT_Start	Low
15	Input A (closed)	COMB OBJ5 percentage			1 Byte	C	-	-	T	-	8 bit unsigned...	Low
16	Input A (closed)	COMB OBJ6 threshol...			1 Byte	C	-	-	T	-		Low
17	Input A (closed)	COMB OBJ7 String(1...			14 Byte	C	-	-	T	-	Character string	Low
18	Input A (closed)	COMB OBJ8 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
19	Input A (closed)	COMB OBJ9 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
20	Input A (closed)	COMB OBJ10 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
21	Input A (opened)	COMB OBJ1 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
22	Input A (opened)	COMB OBJ2 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
23	Input A (opened)	COMB OBJ3 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
24	Input A (opened)	COMB OBJ4 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
25	Input A (opened)	COMB OBJ5 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
26	Input A (opened)	COMB OBJ6 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
27	Input A (opened)	COMB OBJ7 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
28	Input A (opened)	COMB OBJ8 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
29	Input A (opened)	COMB OBJ9 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
30	Input A (opened)	COMB OBJ10 switching			1 bit	C	-	-	T	-	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11 ...	Input A (short)	COMB OBJ 1 switching	C T	DPT 1.001 1 bit
		COMB OBJ 1 shutter	C T	DPT 1.008 1 bit
20		COMB OBJ 1 scene	C T	DPT 18.001 1 byte
		COMB OBJ 1 sequence	C T	DPT 1.010 1 bit
		COMB OBJ 1 percentage	C T	DPT 5.001 1 byte
		COMB OBJ 1 Threshold (0-255)	C T	DPT 5.004 1 byte
		COMB OBJ 1 Threshold (0-65535)	C T	DPT 7.001 2 byte
		COMB OBJ 1 String (14 bytes)	C T	DPT 16.000 14 byte

These communication objects are used for combination control. They include the switch, shutter, scene, sequence, percentage, threshold and string (14 bytes) controller. When short operation of the dry contact is used, a value is sent to the BUS and other devices are controlled.

21 ... 30	Input A (long)	COMB OBJ 1 switching	C T	DPT 1.001 1 bit
		COMB OBJ 1 shutter	C T	DPT 1.008 1 bit
		COMB OBJ 1 scene	C T	DPT 18.001 1 byte
		COMB OBJ 1 sequence	C T	DPT 1.010 1 bit
		COMB OBJ 1 percentage		DPT 5.001 1 byte
		COMB OBJ 1 Threshold (0-255)	C T	DPT 5.004 1 byte
		COMB OBJ 1 Threshold (0-65535)	C T	DPT 7.001 2 bytes
		COMB OBJ 1 String (14 bytes)	C T	DPT 16.000 14 bytes

These communication objects are used for combination control. They include the switch, shutter, scene, sequence, percentage, threshold and string (14 bytes) controller. When long operation of the dry contact is used, a value is sent to the BUS and other devices are controlled.

6.1.3 Temperature sensor

- **"Switch controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priori
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Switching			1 bit	C	-	W	T	U	1 bit DPT_Switch	Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced switching			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Switching	C W T U	DPT 1.001 1 bit
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced switching	C W U	DPT 9.001 1 bit
These communication objects are used for switch control. When the dry contact is operated, it controls the switch or changes the temperature threshold.				

- **"Alarm controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Alarm			1 bit	C	-	W	T	U		Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced alarm			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Alarm	C W T U	DPT 1.005 1 bit
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced alarm	C W U	DPT 1.001 1 bit

These communication objects are used for alarm control. When the dry contact is operated, it controls the alarm or changes the temperature threshold.

- **"Shutter controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priori
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Move for shutter			1 bit	C	-	W	T	U	1 bit DPT_UpDown	Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced move			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Move for shutter	C W T U	DPT 1.008 1 bit
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced move	C W U	DPT 1.001 1 bit

These communication objects are used for shutter control. When the dry contact is operated, it moves the shutter or changes the temperature threshold.

- **"Scene controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Prior
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Call scene			1 Byte	C	-	W	T	U		Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced scene			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Call scene	C W T U	DPT 18.001 1 bit
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced scene	C W U	DPT 1.001 1 bit

These communication objects are used for scene control. When the dry contact is operated, it calls the scene or changes the temperature threshold.

- **"Sequence controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priori
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Sequence			1 bit	C	-	W	T	U	1 bit DPT_Start	Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced sequence			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Sequence	C W T U	DPT 1.010 1 bit
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced sequence	C W U	DPT 1.001 1 bit

These communication objects are used for sequence control. When the dry contact is operated, it controls the sequence or changes the temperature threshold.

- **"Percentage controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priorit
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Percentage			1 Byte	C	-	W	T	U	8 bit unsigned...	Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced percentage			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Percentage	C W T U	DPT 5.001 1 byte
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes

14	Input A	Forced percentage	C W U	DPT 1.001 1 bit

These communication objects are used for percentage control. When the dry contact is operated, it controls following the percentage or changes the temperature threshold.

- **"Threshold controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priorit
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A...	Threshold value(1byte)			1 Byte	C	-	W	T	U		Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced threshold value			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	Threshold value (1 byte)	C W T U	DPT 5.001 1 byte
12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced threshold value	C W U	DPT 1.001 1 bit

These communication objects are used for threshold value control. When the dry contact is operated, it controls the threshold or changes the temperature threshold.

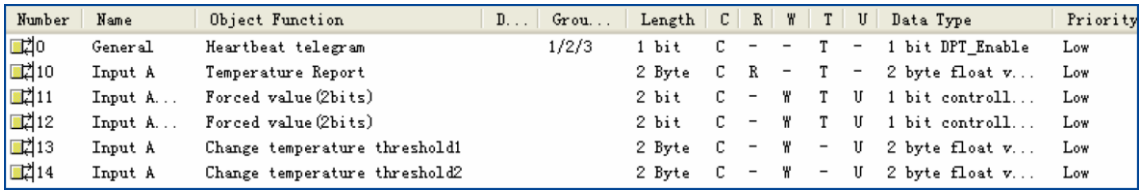
- **"String (14 bytes) controller" objects**

Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	String(14bytes) value			14 Byte	C	-	-	T	-	Character stri...	Low
12	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Forced string			1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11	Input A	String (14 bytes) value	C W T U	DPT 16.000 1 byte

12 **13**	Input A	Change temperature threshold 1/2	C W U	DPT 9.001 2 bytes
14	Input A	Forced string	C W U	DPT 1.001 1 bit
These communication objects are used for string control. When the dry contact is operated, it controls the string or changes the temperature threshold.				

- **"Forced position controller" objects**



Number	Name	Object Function	D...	Grou...	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram		1/2/3	1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report			2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A...	Forced value(2bits)			2 bit	C	-	W	T	U	1 bit controll...	Low
12	Input A...	Forced value(2bits)			2 bit	C	-	W	T	U	1 bit controll...	Low
13	Input A	Change temperature threshold1			2 Byte	C	-	W	-	U	2 byte float v...	Low
14	Input A	Change temperature threshold2			2 Byte	C	-	W	-	U	2 byte float v...	Low

No.	Object name	Function	Flags	Data type
11	Input A (in range/TEMP THR 1)/ (out	Forced value (2 bits)	C W U	DPT 2.001 2 bit
12	(In range/TEMP THR 1)			
13 **14**	Input A	Change temperature threshold 1/2	C W U	DPT 1.001 1 bit
These communication objects are used for scene control. When the dry contact is operated, it calls the scene or changes the temperature threshold.				

- **"Combination controller" objects**

Number	Name	Object Function	D...	Length	C	R	W	T	U	Data Type	Pri
0	General	Heartbeat telegram		1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Input A	Temperature Report		2 Byte	C	R	-	T	-	2 byte float v...	Low
11	Input A	Change temperature thres...		2 Byte	C	-	W	-	U	2 byte float v...	Low
12	Input A	Change temperature thres...		2 Byte	C	-	W	-	U	2 byte float v...	Low
13	Input A (in range/TEMP THR1)	COMB OBJ1 switching		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
14	Input A (in range/TEMP THR1)	COMB OBJ2 alarm		1 bit	C	-	-	T	-		Low
15	Input A (in range/TEMP THR1)	COMB OBJ3 switching		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
16	Input A (in range/TEMP THR1)	COMB OBJ4 scene		1 Byte	C	-	-	T	-		Low
17	Input A (in range/TEMP THR1)	COMB OBJ5 sequence		1 bit	C	-	-	T	-	1 bit DPT_Start	Low
18	Input A (in range/TEMP THR1)	COMB OBJ6 threshold(0..255)		1 Byte	C	-	-	T	-		Low
19	Input A (in range/TEMP THR1)	COMB OBJ7 String(14bytes)		14 Byte	C	-	-	T	-	Character string	Low
20	Input A (in range/TEMP THR1)	COMB OBJ8 shutter		1 bit	C	-	-	T	-	1 bit DPT_UpDown	Low
21	Input A (in range/TEMP THR1)	COMB OBJ9 switching		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
22	Input A (in range/TEMP THR1)	COMB OBJ10 scene		1 Byte	C	-	-	T	-		Low
23	Input A (out range/TEMP THR2)	COMB OBJ1 switching		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
24	Input A (out range/TEMP THR2)	COMB OBJ2 alarm		1 bit	C	-	-	T	-		Low
25	Input A (out range/TEMP THR2)	COMB OBJ3 shutter		1 bit	C	-	-	T	-	1 bit DPT_UpDown	Low
26	Input A (out range/TEMP THR2)	COMB OBJ4 scene		1 Byte	C	-	-	T	-		Low
27	Input A (out range/TEMP THR2)	COMB OBJ5 sequence		1 bit	C	-	-	T	-	1 bit DPT_Start	Low
28	Input A (out range/TEMP THR2)	COMB OBJ6 sequence		1 bit	C	-	-	T	-	1 bit DPT_Start	Low
29	Input A (out range/TEMP THR2)	COMB OBJ7 percentage		1 Byte	C	-	-	T	-	8 bit unsigned...	Low
30	Input A (out range/TEMP THR2)	COMB OBJ8 threshold(0..255)		1 Byte	C	-	-	T	-		Low
31	Input A (out range/TEMP THR2)	COMB OBJ9 String(14bytes)		14 Byte	C	-	-	T	-	Character stri...	Low
32	Input A (out range/TEMP THR2)	COMB OBJ10 switching		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
11 **12**	Input A	Change temperature thres. 1/2	C W U	DPT 9.001 2 byte
13 **...** **22**	Input A (in range/TEMP THR 1)	COMB OBJ 1 switching	C T	DPT 1.001 1 bit
		COMB OBJ 1 alarm	C T	DPT 1.005 1 bit
		COMB OBJ 1 shutter	C T	DPT 1.008 1 bit
		COMB OBJ 1 scene	C T	DPT 18.001 1 byte
		COMB OBJ 1 sequence	C T	DPT 1.010 1 bit
		COMB OBJ 1 percentage	C T	DPT 5.001 1 byte

		COMB OBJ 1 Threshold (0-255)	C T	DPT 5.004 1 byte
		COMB OBJ 1 Threshold (0-65535)	C T	DPT 7.001 2 byte
		COMB OBJ 1 String (14 bytes)	C T	DPT 16.000 14 bytes
These communication objects area used for combination control. They include the switch, shutter, scene, sequence, percentage, threshold and string (14 bytes) controller. When the dry contact is operated, a value is sent to the BUS and other devices are controlled.				
21 ... 30	Input A (out range/TEMP THR 2)	COMB OBJ 1 switching	C T	DPT 1.001 1 bit
		COMB OBJ 1 alarm	C T	DPT 1.005 1 bit
		COMB OBJ 1 shutter	C T	DPT 1.008 1 bit
		COMB OBJ 1 scene	C T	DPT 18.001 1 byte
		COMB OBJ 1 sequence	C T	DPT 1.010 1 bit
		COMB OBJ 1 percentage	C T	DPT 5.001 1 byte
		COMB OBJ 1 Threshold (0-255)	C T	DPT 5.004 1 byte
		COMB OBJ 1 Threshold (0-65535)	C T	DPT 7.001 2 bytes

These communication objects area used for combination control. They include the switch, shutter, scene, sequence, percentage, threshold and string (14 bytes) controller. When the dry contact is operated, a value is sent to the BUS and other devices are controlled.

6.2 Logic controller

6.2.1 Logic function A and block A

Number	Name	Object Function	D..	Length	C	R	W	T	U	Data Type	Pri
0	General	Heartbeat telegram		1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Logic A	Dry contact status report		1 bit	C	R	-	T	-	1 bit DPT_Bool	Low
11	Logic A	Extern telegram <1> (4bytes)		4 Byte	C	-	W	-	U	4 byte unsigne...	Low
12	Logic A	Extern telegram <2> (1byte)		1 Byte	C	-	W	-	U		Low
13	Logic A	Extern telegram <3> (1bit)		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
14	Logic A	Extern telegram <4> (1bit)		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
15	Logic A	Extern telegram <5> (1bit)		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
16	Logic A:1	Switching		1 bit	C	-	W	T	U	1 bit DPT_Switch	Low
17	Logic A:2	Alarm		1 bit	C	-	W	T	U		Low
18	Logic A:3	Shutter		1 bit	C	-	W	T	U	1 bit DPT_UpDown	Low
19	Logic A:4	Shutter		1 bit	C	-	W	T	U	1 bit DPT_UpDown	Low
20	Logic A:5	Scene		1 Byte	C	-	W	T	U		Low
21	Logic A:6	Sequence		1 bit	C	-	W	T	U	1 bit DPT_Start	Low
22	Logic A:7	Sequence		1 bit	C	-	W	T	U	1 bit DPT_Start	Low
23	Logic A:8	Percentage(0%..100%)		1 Byte	C	-	W	T	U	8 bit unsigned...	Low
24	Logic A:9	Threshold(0..255)		1 Byte	C	-	W	T	U		Low
25	Logic A:10	String(14bytes)		14 Byte	C	-	-	T	-	Character string	Low
136	Logic E:1	Switching		1 bit	C	-	W	T	U	1 bit DPT_Switch	Low

No.	Object name	Function	Flags	Data type
10	Logic A	Dry contact status report	C R T	DPT 1.002 1 bit

This communication object is used for the dry contact status report. When the dry contact is operated, the status is sent to the KNX/EIB bus.

11 **...** **15**	Logic A	External telegram<1> - External telegram<5>	C W U	DPT 9.001 2 byte

These communication objects are logic conditions. These conditions are sent from the KNX/EIB bus, for example panels or other devices. There are 5 external telegrams.

16 **...** **25**	Logic A:1 ... Logic A:10	Switch controller	C W T U	DPT 1.001 1 bit
		Alarm controller	C W T U	DPT 1.005 1 bit
		Shutter controller	C W T U	DPT 1.008 1 bit
		Scene controller	C W T U	DPT 18.001 1 byte
		Sequence controller	C W T U	DPT 1.010 1 bit
		Percentage (0%-100%)	C W T U	DPT 5.001 1 byte
		Threshold (0-255)	C W T U	DPT 5.004 1 byte
		String (14 bytes)	C W T U	DPT 7.001 2 bytes
When logic A is chosen, it controls these objects. Logic A 1 to logic A 10 contain switch, alarm, shutter, scene, sequence, percentage, string (14 bytes). Logic B, logic C and logic D are the same as logic A.				
136	Logic E:1	Switch	C W T U	DPT 1.001 1 bit
		Alarm	C W T U	DPT 1.005 1 bit
		Shutter	C W T U	DPT 1.008 1 bit
		Scene	C W T U	DPT 18.001 1 byte

		Sequence	C W T U	DPT 1.010 1 bit
		Percentage (0%-100%)	C W T U	DPT 5.001 1 byte
		Threshold (0-255)	C W T U	DPT 5.004 1 byte
		Threshold (0-65535)	C W T U	DPT 7.001 1 byte
		String (14 bytes)	C W T U	DPT 16.000 14 bytes
Logic E's status is controlled by logic A, logic B, logic C and logic D's output.				

6.3 Dimming controller

6.3.1 "Flashing" objects

Number	Name	Object Function	D..	Length	C	R	W	T	U	Data Type	Priority
0	General	Heartbeat telegram		1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
5	General	Sequence 1		1 bit	C	-	W	-	U	1 bit DPT_Start	Low
6	General	Sequence 2		1 bit	C	-	W	-	U	1 bit DPT_Start	Low
7	General	Sequence 3		1 bit	C	-	W	-	U	1 bit DPT_Start	Low
8	General	Sequence 4		1 bit	C	-	W	-	U	1 bit DPT_Start	Low
9	General	Sequence 5		1 bit	C	-	W	-	U	1 bit DPT_Start	Low

No.	Object name	Function	Flags	Data type
5 **...** **9**	General	Sequence 1 ... Sequence 5	C W U	DPT 1.010 1 bit
These communication objects implement sequence control. The sequence is controlled when the value is received by other devices via the KNX/EIB Bus.				

6.3.2 "Output A" objects

Number	Name	Object Function	D..	Length	C	R	W	T	U	Data Type	Prior
0	General	Heartbeat telegram		1 bit	C	-	-	T	-	1 bit DPT_Enable	Low
10	Output A	Channel output		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
13	Output A	Response status(1bit)		1 bit	C	R	-	T	-	1 bit DPT_Switch	Low
14	Output A	Response status(1byte)		1 Byte	C	R	-	T	-	8 bit unsigned...	Low
15	Output A	SYNC control relay		1 bit	C	-	-	T	-	1 bit DPT_Switch	Low
17	Output A	R/W total ON time		2 Byte	C	R	W	T	U		Low
18	Output A	Alarm when total ON time out		1 bit	C	R	-	T	-		Low
19	Output A	Staircase light		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
20	Output A	Change staircase light factor		1 Byte	C	-	W	-	U		Low
21	Output A	Alarm staircase light		1 bit	C	R	-	T	-		Low
22	Output A	Flashing		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
23	Output A	Scene(8bit)		1 Byte	C	-	W	-	U		Low
24	Output A	Scene dimming(4bit)		4 bit	C	-	W	-	U	3 bit controll...	Low
25	Output A	Threshold input		1 Byte	C	-	W	-	U		Low
26	Output A	Change threshold 1		1 Byte	C	-	W	-	U		Low
27	Output A	Change threshold 2		1 Byte	C	-	W	-	U		Low
28	Output A (PWM)	Heat with 1bit control		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low
31	Output A (PWM)	TEMP threshold2 alarm		1 bit	C	R	-	T	-		Low
32	Output A (PWM)	Forced position		1 bit	C	-	W	-	U	1 bit DPT_Switch	Low

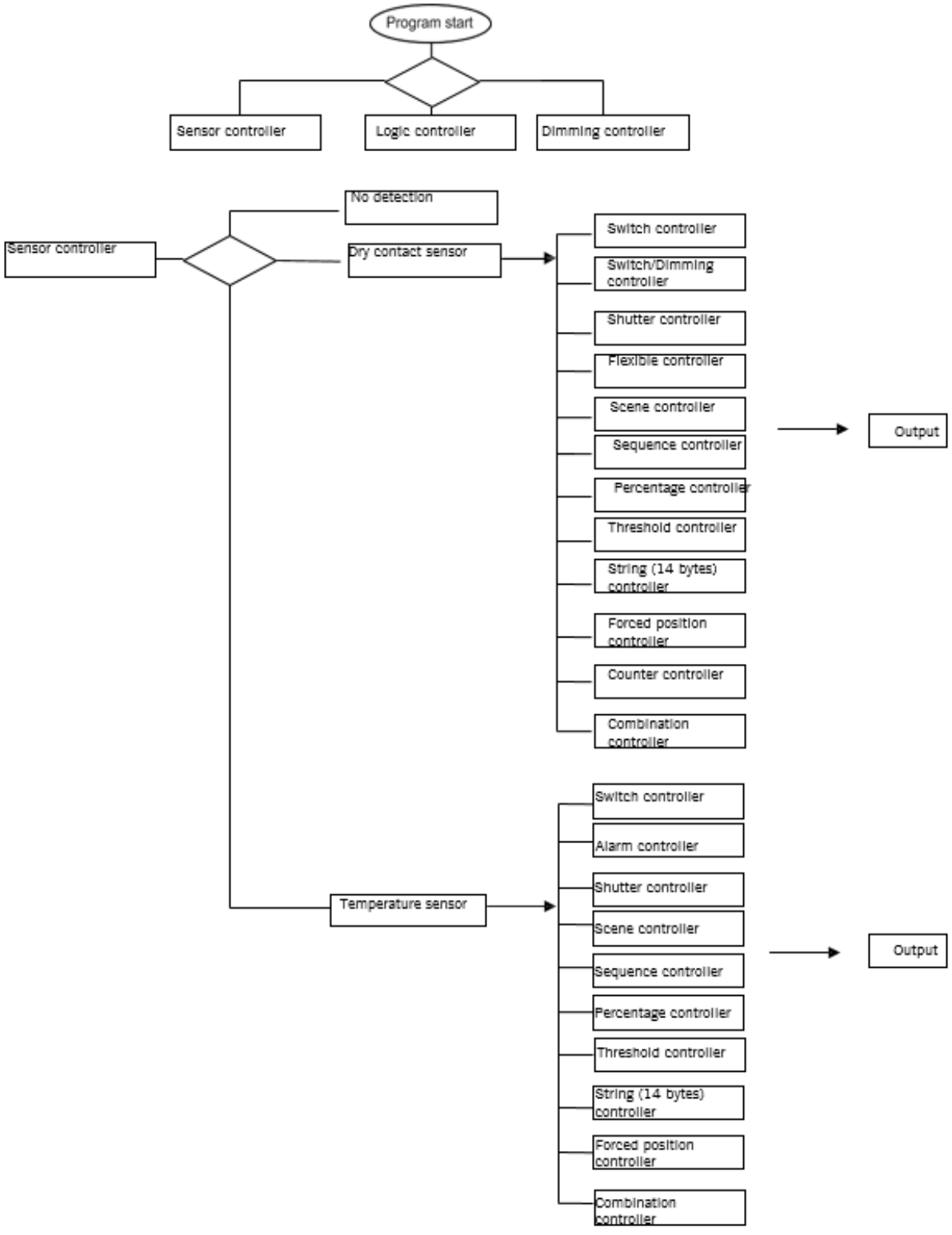
No.	Object ame	Function	Flags	Data type
10	Output A	Output channel	C W U	DPT 1.001 1 bit
This communication object implements channel output A control. Output A is controlled when the value is received by other devices via the KNX/EIB Bus.				
13	Output A	Response status (1 bit)	C R T	DPT 1.001 1 bit
... 27		Response status (1 byte)	C R T	DPT 5.001 1 byte
		SYNC control relay	C T	DPT 1.001 1 bit
		Temperature report	C R T	DPT 9.001 2 bytes
		R/W total ON time	C R W T U	DPT 7.007 1 bit
		Alarm when total ON time out	C R T	DPT 1.005 1 bit

		Staircase light	C W U	DPT 1.001 1 bit
		Change staircase light factor	C W U	DPT 5.004 1 byte
		Alarm staircase light	C R T	DPT 1.005 1 bit
		Flashing	C W U	DPT 1.001 1 bit
		Scene (8 bit)	C W U	DPT 18.001 1 byte
		Scene dimming (4 bit)	C W U	DPT 3.007 4 bit
		Threshold input	C W U	DPT 5.004 1 byte
		Change threshold 1	C W U	DPT 5.004 1 byte
		Change threshold 1	C W U	DPT 5.004 1 byte
This communication object implements channel output A function control. Output A is controlled when the value is received by other devices via the KNX/EIB Bus.				
28 ... 32	Output A (PWM)	Heat with 1 bit control	C W U	DPT 1.001 1 bit
		TEMP threshold 2 alarm	C R T	DPT 1.005 1 bit
		Forced position	C W U	DPT 1.001 1 bit
These communication objects are used for combination control.				

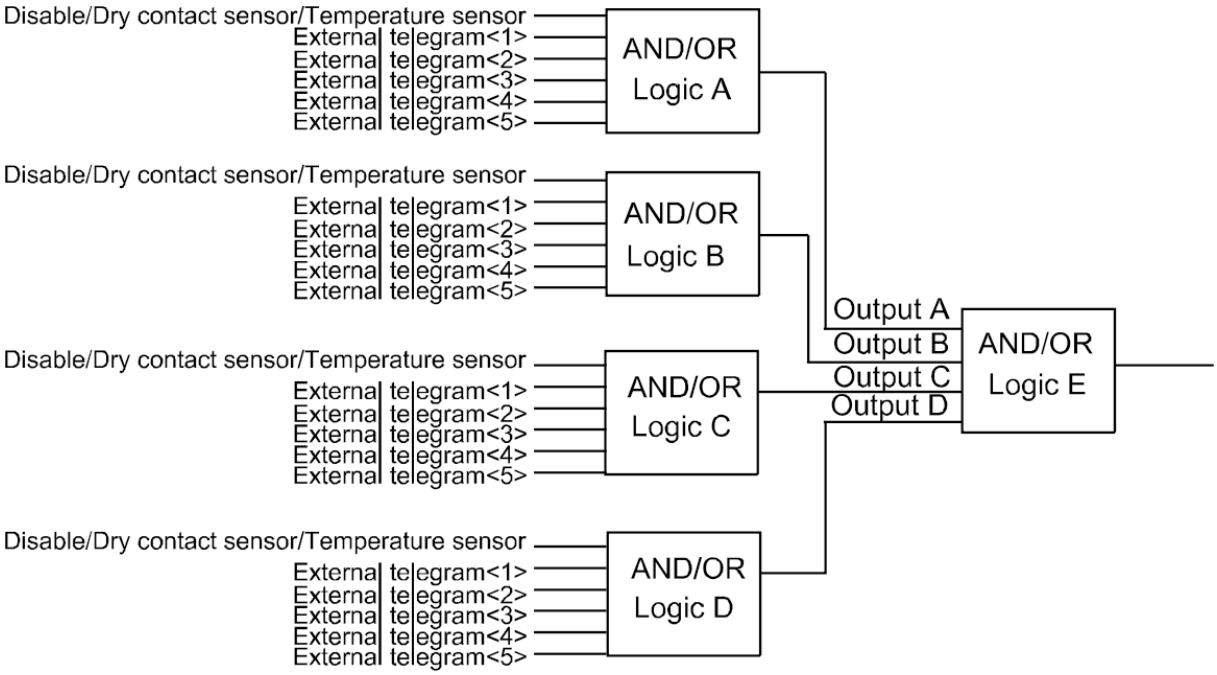
NOTE: The settings for outputs B, C and D are all the same as for output A.

7 Application

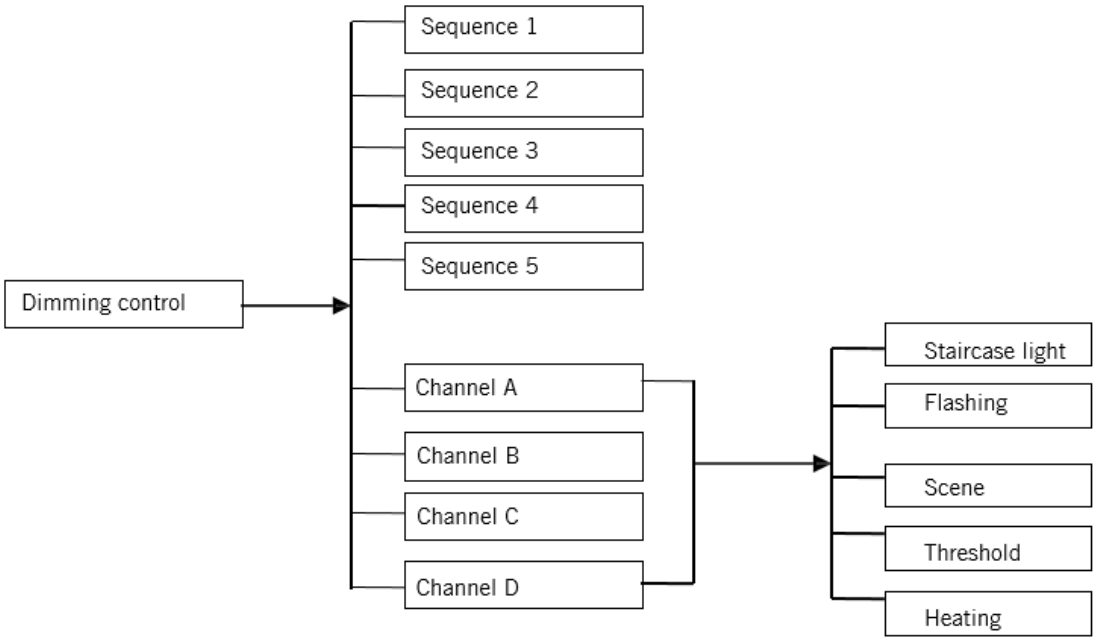
7.1 Sensor control



7.2 Logic control



7.3 Dimming control



8 Product disposal

This device must not be disposed of as unsorted household waste. Used devices must be disposed of correctly. Contact your local town council for more information.

9 ESYLUX manufacturer´s guarantee

ESYLUX products are tested in accordance with applicable regulations and manufactured with the utmost care. The guarantor, ESYLUX Deutschland GmbH, Postfach 1840, D-22908 Ahrensburg, Germany (for Germany) or the relevant ESYLUX distributor in your country (visit www.esylux.com for a complete overview) provides a guarantee against manufacturing/material defects in ESYLUX devices for a period of three years from the date of manufacture. This guarantee is independent of your legal rights with respect to the seller of the device.
The guarantee does not apply to natural wear and tear, changes/interference caused by environmental factors or damage in transit, nor to damage caused as a result of failure to follow the user or maintenance instructions and/or as a result of improper installation. Any illuminants or batteries supplied with the device are not covered by the guarantee.
The guarantee can only be honoured if the device is sent back with the invoice/receipt, unchanged, packed and with sufficient postage to the guarantor, along with a brief description of the fault, as soon as a defect has been identified. If the guarantee claim proves justified, the guarantor will, within a reasonable period, either repair the device or replace it. The guarantee does not cover further claims; in particular, the guarantor will not be liable for damages resulting from the device's defectiveness. If the claim is unfounded (e.g. because the guarantee has expired or the fault is not covered by the guarantee), then the guarantor may attempt to repair the device for you for a fee, keeping costs to a minimum.