DUGITAL INPUT/OUTPUT MODULE

UCS

User Manual:

UCS-06.06

UCS-08.08

UCS-24.00 (only inputs)

Application Program: ver. 1.0
User Manual: ver. 1.0

module-electronic.ru

CONTENT

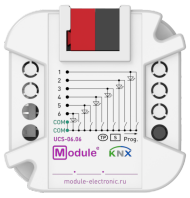
1 BASIC INFORMATION

The digital input / output module is designed to convert the input action (button, switch, relay, sensor output, etc.) into control telegrams of the KNX bus, as well as to display the status of telegrams using a low-power indicator (for example, an LED).

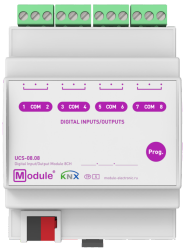
The module is available in three versions:

- UCS-06.06 (6 peer universal input/output channels, designed for installation in a junction box);
- UCS-08.08 (8 peer universal input/output channels, designed for installation on a DIN rail);
- UCS-24.00 (24 peer input channels, galvanically isolated from the KNX bus, designed for installation on a DIN rail).

- independent channels working as digital input or LED output (UCS-24.00 only inputs)
- Input polarity setting (NO or NC)
- Pulse counter function
- Long / short press setting for a button
- Control of curtains / blinds, scenes, dimmer
- Saving settings during a KNX power failure
- Power supply via KNX bus



UCS-06.06



UCS-08.08

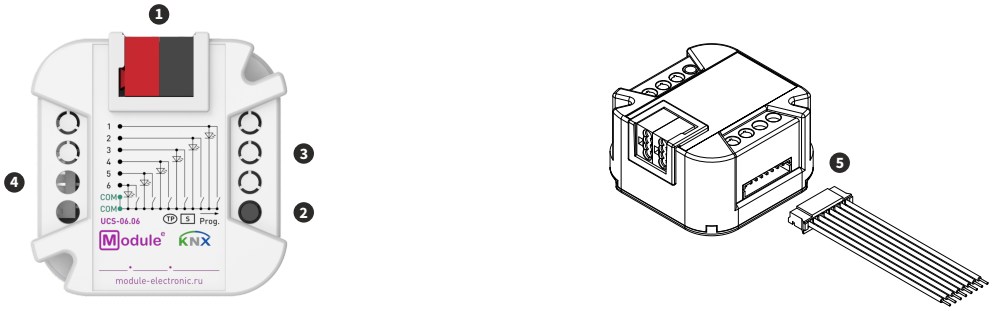
UCS-24.00

1.1 SPECIFICATIONS

Device model	UCS-06.06	UCS-08.08	UCS-24.00
Universal channels			
Number of inputs/outputs	6	8	24 (only inputs)
Number of common inputs/outputs (COM)	2	4	12 (only inputs)
Input/output current	2mA		
Input/output voltage	3,3W		
Maximum cable length	30 meters		
Connection type	8-wire connector with cable (25cm)	Screw terminals	Screw terminals
Wire cross-section	up to 1mm²	0,5-2mm²	0,5-2mm²
KNX interface			
Specification	TP-256		
Available application software	ETS 5		
KNX connector	4-wire EIB connector (PUSH WIRE spring clips) for standard cable TP1 0,8мм Ø		
Power supply	via KNX bus		
Consumption on the KNX bus (29V DC)	< 5mA < 150mW	< 5mA < 150mW	< 15mA < 450mW
Operation temperature	0°C .. + 45°C		
Operation humidity	от 5 до 95% (no condensation)		
Degree of protection	IP 20, clean environment		
Mounting type	In a socket box or junction box	DIN rail 35mm	DIN rail 35mm
Dimensions	44 x 44 x 25mm	71,3 x 100,4 x 62mm (4TE)	142,3 x 110,2 x 62mm (4TE)
Weight	28g	110g	205g

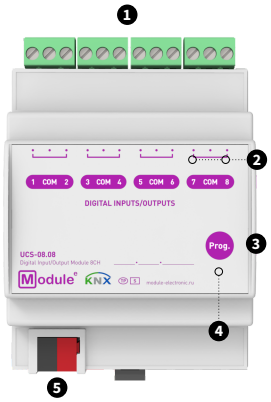
1.2 APPEARANCE

Appearance of the digital input/output module UCS-06.06



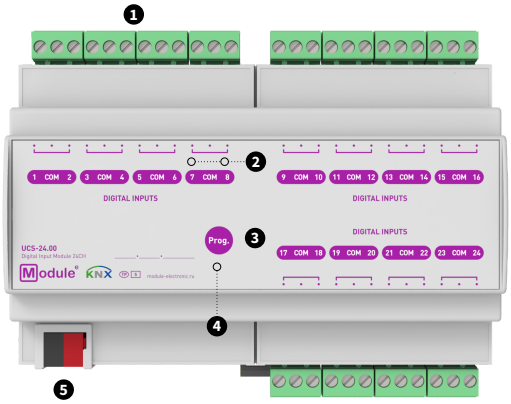
1. KNX connector 2. Programming button
3. Programming LED
4. 8-wire connector 5. 8-wire connection cable

Appearance of the digital input/output module UCS-08.08

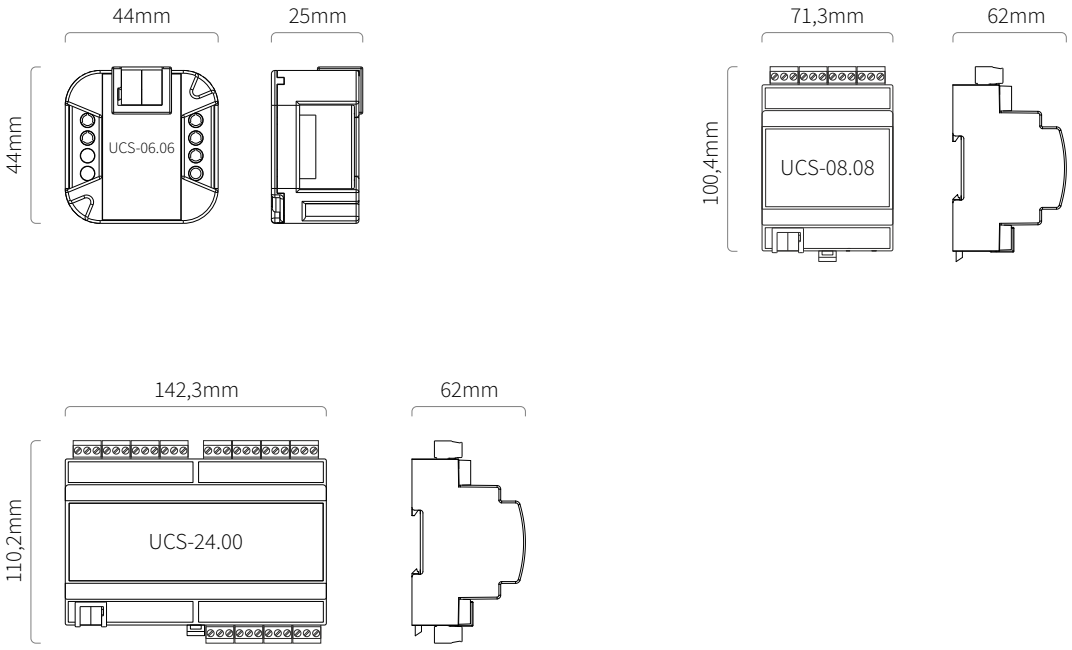


1. Inputs/outputs 2. Inputs/outputs status indicator LED 3. Programming button
4. Programming LED 5. KNX connector

Appearance of the digital input module UCS-24.00



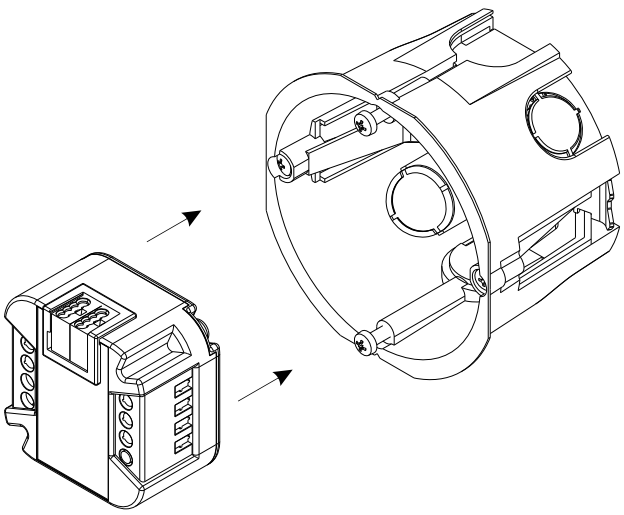
1. Inputs 2. Inputs status indicator LED 3. Programming button
4. Programming LED 5. KNX connector



1.3 INSTALLATION AND CONNECTION

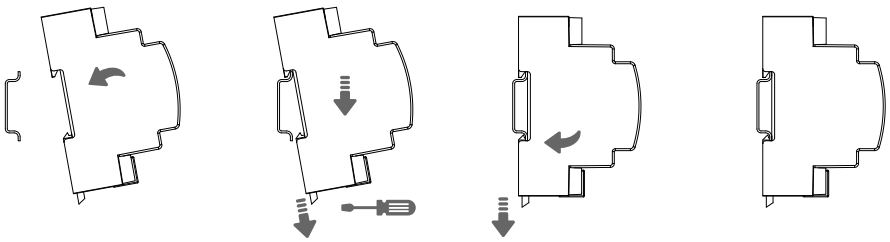
INSTALLATION UCS-06.06

ATTENTION! When choosing a socket or junction box
be sure to consider the dimensions of the device

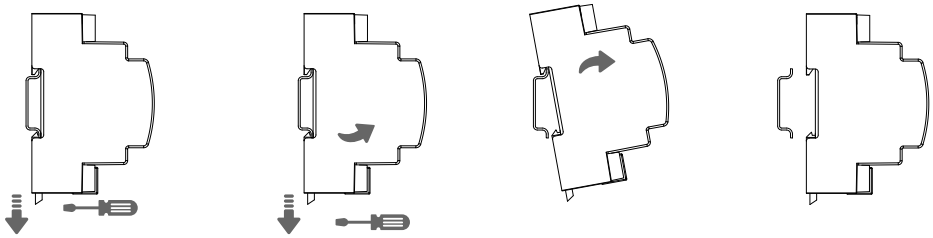


INSTALLATION UCS-08.08, UCS-24.00

Attaching to DIN rail

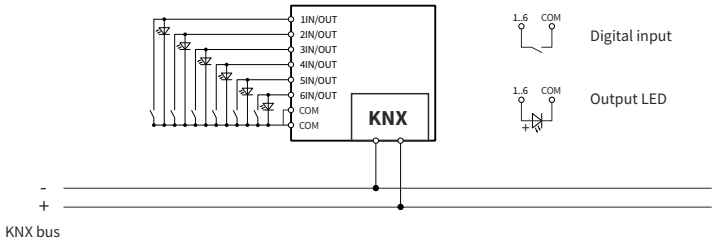


Removing from DIN rail

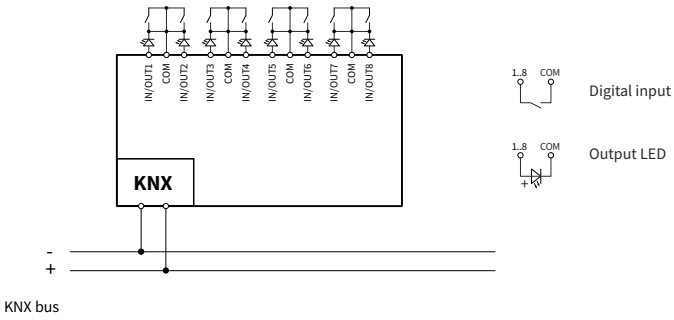


WIRING DIAGRAMS

Wiring diagrams UCS-06.06



Wiring diagrams UCS-08.08



Wiring diagrams UCS-24.00

ATTENTION! Installation and connection of the device to the mains must only be carried out by qualified personnel! Be sure to turn off the power before installing or removing the device! The design of the device meets the requirements of electrical safety according to GOST 12.2.007.0-75.

2 HOW TO CHOOSE A DEVICE VERSION

The option menu allows to select one of three device models.

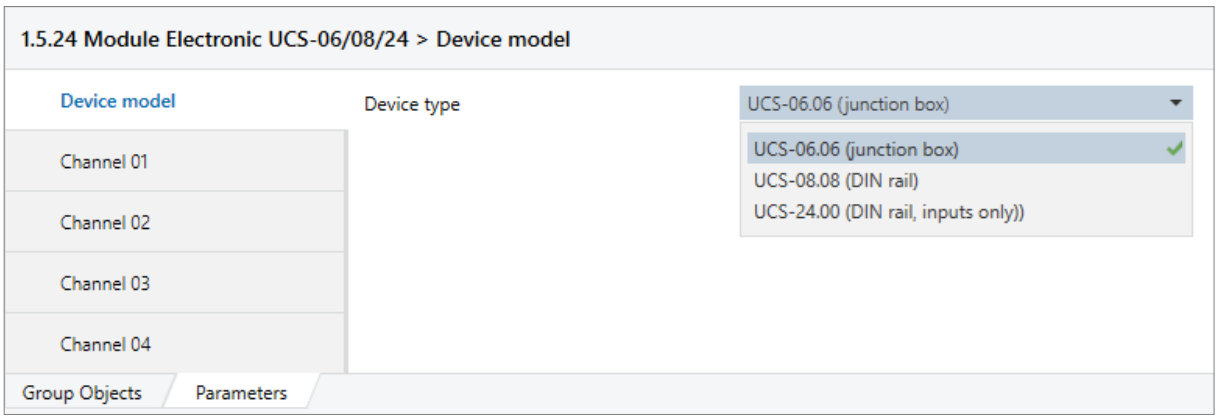


Figure 1. Tab «Device model»

Depending on the selected version, the corresponding number of tabs for each of the channels available in the selected version is displayed in the settings menu.

3 SETTINGS

The device settings menu consists of individual tabs for each channel. The set of the settings depends on the selected channel operating mode.

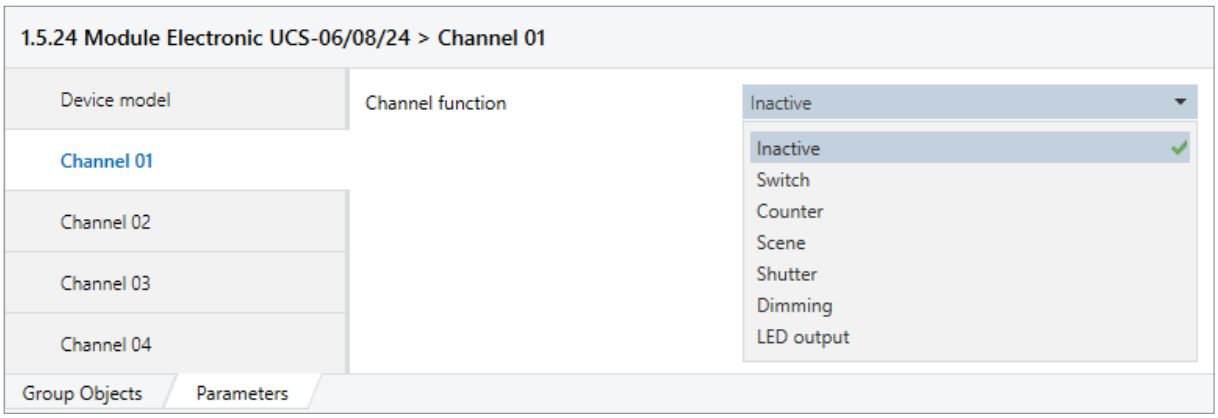


Figure 2. Tab «Channel 01» in the «Inactive» mode

3.1 CHANNEL FUNCTION

The parameter sets the channel function. Available variations:

Parameter value	Channel function
Inactive	Channel is off
Switch	Control of various devices by the device input events
Counter	Input event counter
Scene	Scene control
Shutter	Blind/Jalousie control
Dimming	Dimmer control
LED output	Status indication

Table 1. Channel function selection

If «Inactive» is selected, this channel is turned off, its input is not interrogated, communication objects associated with it are not available.

If the operating mode is selected, this channel is on, and the remaining settings for the operating mode appear on the tab.

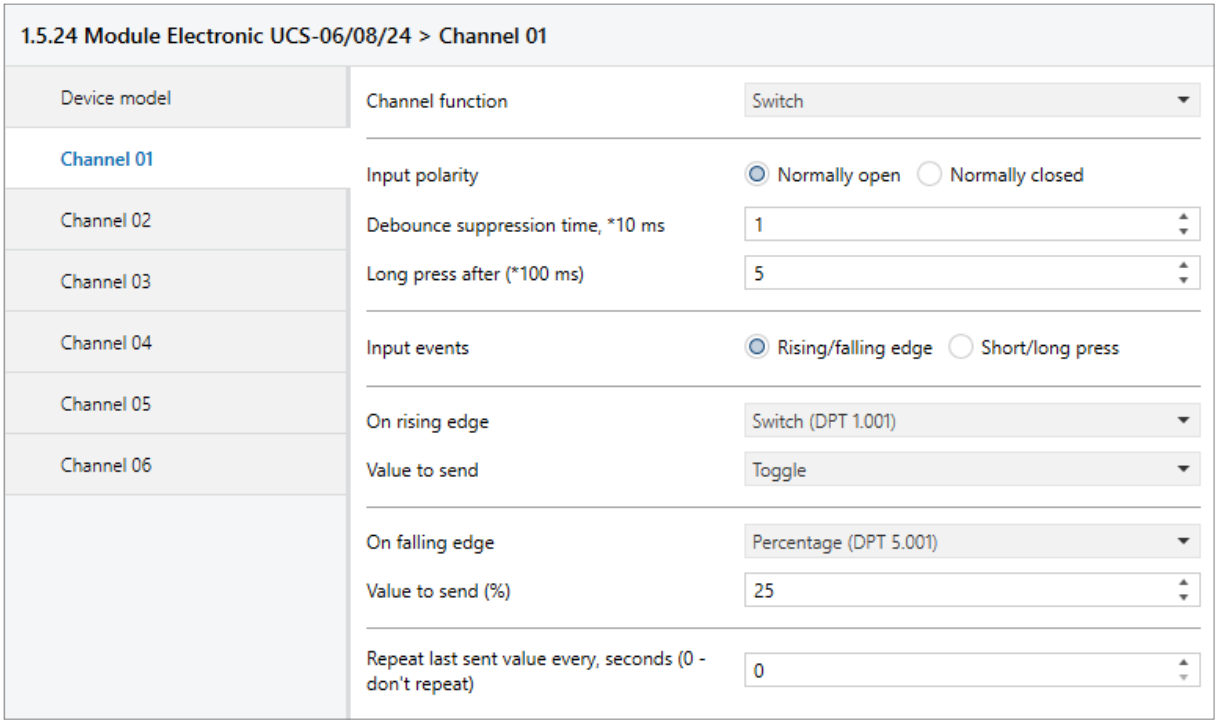


Figure 3. Tab «Channel 01» in the «Switch» mode

3.2 INPUT POLARITY

The parameter allows to select the input polarity: «Normally open» or «Normally closed».

3.3 DEBOUNCE SUPPRESSION TIME

The parameter allows to select the characteristic time of debounce suppression of the device connected to the input. If the parameter value is zero, debounce suppression is not performed.

3.4 LONG PRESS AFTER

The parameter allows to set the time for long pressing (closing) of the input. If the input is closed for a time shorter than that specified by the parameter, the device perceives pressing as «short». If the input is closed for a longer time, the device perceives pressing as «long».

3.5 INPUT EVENS

The parameter allows to choose which input events the device will respond to: «Rising/falling edge» or «Short/long press».

3.6 ON RISING EDGE/ON FALLING EDGE/ ON SHORT PRESS/ON LONG PRESS

The parameter allows to set the response of the device to a particular input event.
Drop-down list. Available values:

- «None»: the device does not respond to this event;

- «Switch (DPT 1.001)»: in response to this event, the device sends a 1-bit telegram of DPT 1.001 «On/Off» type to the KNX bus; when this value is selected, the communication object «Switch (on/off)» becomes active; if the option «Toggle» is selected in parameter 3.7 «Value to send», the input communication object «Toggle value» also becomes active, and each time a corresponding event is detected at the input, the device will send a value opposite to that obtained through the input communication object; if a multicast address is not tied to the input communication object, the next time the device will send the value opposite to the one sent the previous time;

- «Percentage (5.001)»: in response to this event, the device sends a 1-byte telegram of the DPT 5.001 «Percentage (0..100%)» type to the bus; when this value is selected, the «Percentage» communication object becomes active;

- «Temperature (9.001)»: in response to this event, the device sends a 2-byte telegram of the DPT 9.001 «Temperature (°C)» type to the bus; when this value is selected, the «Temperature» communication object becomes active.

3.7 VALUE TO SEND

The parameter allows to set the value sent when a certain input event occurs (depending on the selected parameter 3.6, «On»/«Off»/«Toggle», value in percent or temperature in degrees).

3.8 REPEAT LAST SENT VALUE EVERY

The parameter allows to set the periodic repeat of the last sent value by timer. The value is indicated in seconds.

The range of possible values is 0...255.

If the parameter is 0, periodic sending of telegrams is not performed.

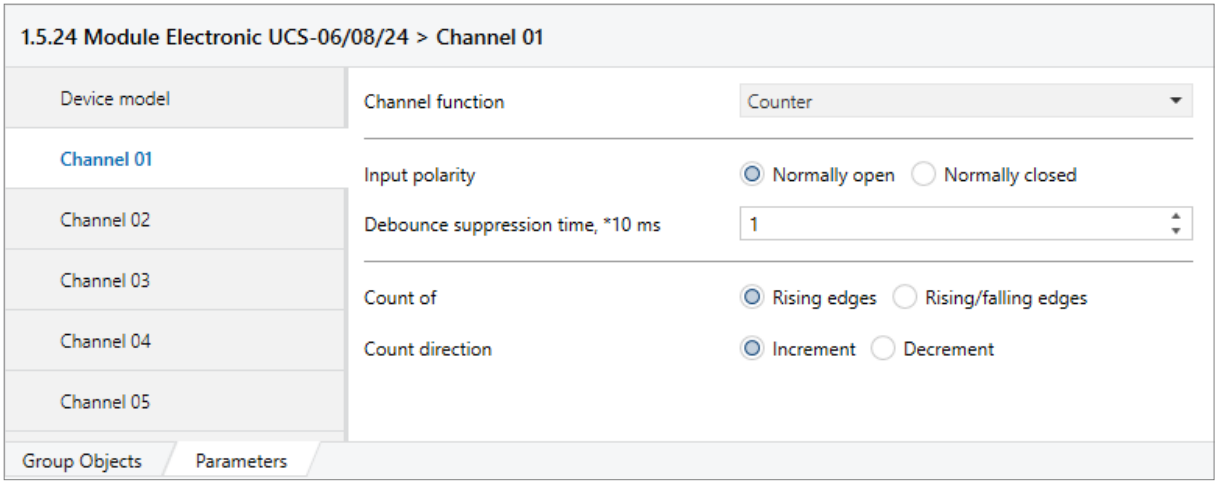


Figure 4. Tab «Channel 01» in the «Counter» mode

When the «Counter» mode is selected, the communication object «Counter» of 7.001 «Pulses» type (2-byte unsigned value) becomes active.

This object is both readable and writeable. When an incoming telegram arrives at this communication object, the received value is stored by the device, and further calculation continues from this value.

3.9 COUNT OF

The parameter allows to choose which input events are to be counted: only closing («Rising edges») or closing and opening («Rising/falling edges»).

3.10 COUNT DIRECTION

The parameter allows to select the counting direction: «Increment» or «Decrement» of the counter value when an input event occurs.

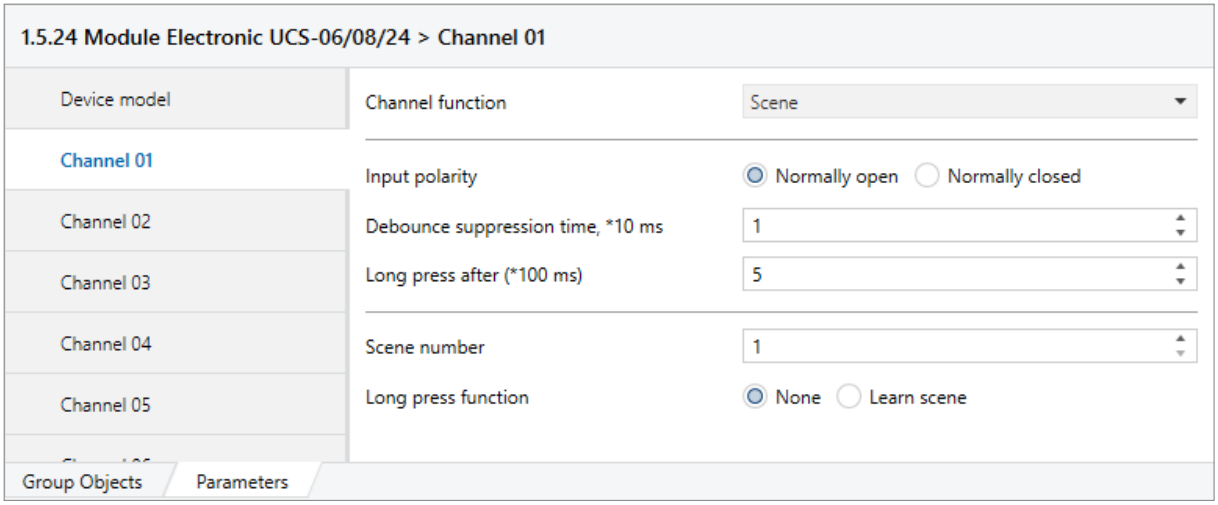


Figure 5. Tab «Channel 01» in the «Scene» mode

When the «Scene» mode is selected, the communication object «Scene» of 18.001 «Scene control» type becomes active.

3.11 SCENE NUMBER

The parameter allows to select the scene number. With a short press on the input, the device sends a scene activation telegram with the specified number.

3.12 LONG PRESS FUNCTION

The parameter allows to set the response of the device to a long press on the input: do not respond («None») or send a telegram to learn the scene with the selected number («Learn scene»).

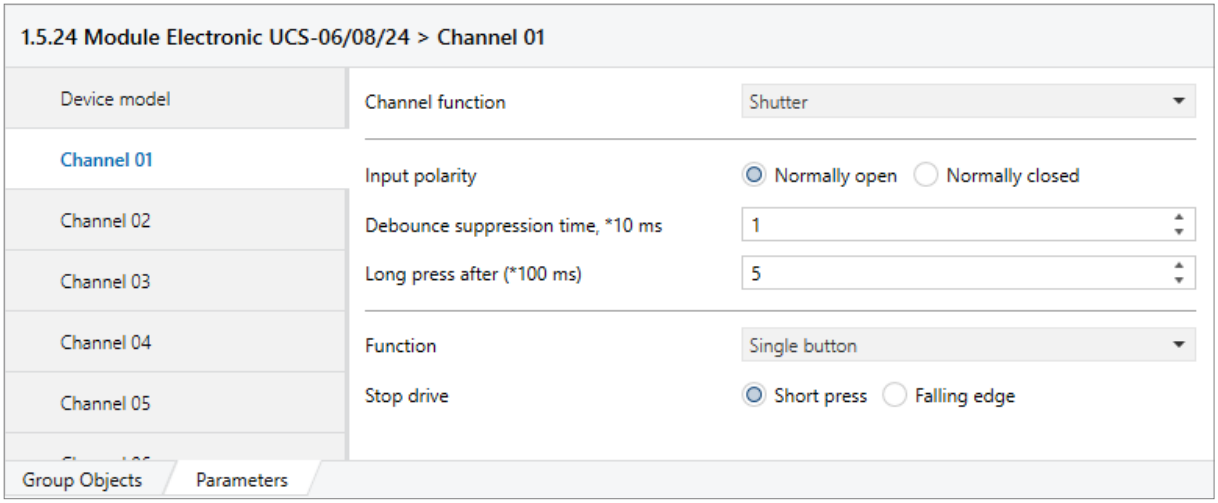


Figure 6. Tab «Channel 01» in the «Shutter» mode

When the «Shutter» mode is selected, the communication objects «Move Up/Down» of 1.008 «Up/Down» type and «Stop/Step Up/Down» of 1.007 «Step» type become active.

3.13 FUNCTION

The parameter allows to select the input destination:

- «Move/step up»: the channel controls the movement of the shutters up;

- «Move/step down»: the channel controls the movement of the shutters down;

- «Single button»: the channel controls alternately the movement of the shutters up and down, the direction of movement with the next press is opposite to the previous one.

3.14 STOP DRIVE

The parameter allows to select the control mode:

- «Short press»: with a long press, a telegram is sent to the communication object «Move», and with a short press, it is sent to the object «Stop/Step»; this mode is intended for controlling objects with lamellae (jalousie, etc.);

- «Falling edge»: when the input is closed, a telegram is sent to the «Move» communication object, when opened, to the «Stop/Step» object; this mode is designed to control objects without lamellae (blinds, etc.).

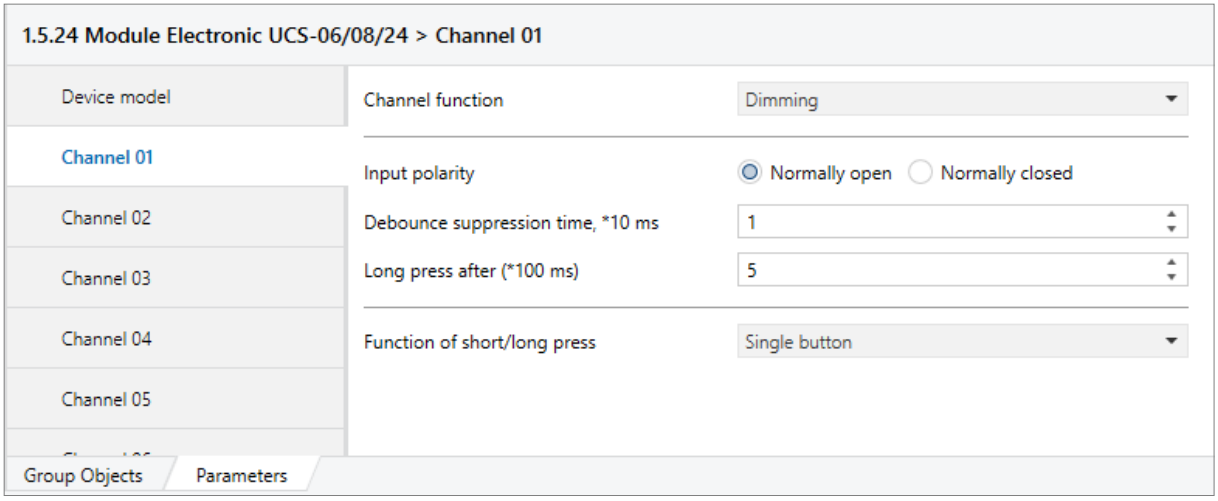


Figure 7. Tab «Channel 01» in the «Dimming» mode

When the «Dimming» mode is selected, the communication objects «Brighter/Darker» of 3.007 «Dimming control» type and «Switch (on/off)» of 1.001 «Switch» type become active.

3.15 FUNCTION

The parameter allows to select the input destination:

- «ON/Brighter»: the channel controls turning on the light and increasing its brightness; with a short press, the device sends a telegram to the «Switch (on/off)» communication object; with a long press, it sends a brightness increasing telegram to the «Brighter/Darker» object; when released, it sends a telegram of stopping the brightness change to the «Brighter/Darker» object;

- «OFF/Darker»: the channel controls turning off the light and reducing its brightness; with a short press, the device sends a telegram to the «Switch (on/off)» communication object: with a long press, it sends a brightness decreasing telegram to the «Brighter/Darker» object; when released, it sends a telegram of stopping the brightness change to the «Brighter/Darker» object;

- «Single button»: the channel controls the brightness increasing and decreasing alternately; in this mode, the input communication object «Toggle value» becomes active, and each time a corresponding event is detected at the input, the device will send the value opposite to that received via the input communication object; for correct operation, it is recommended to bind this input object to the output object of the dimmer status.

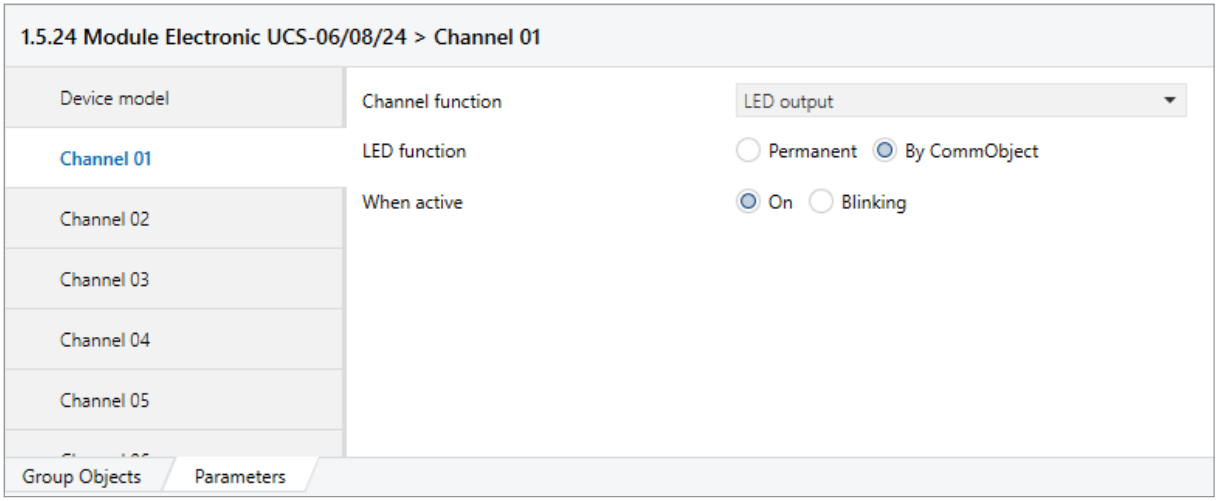


Figure 8. Tab «Channel 01» in the «LED output» mode (UCS-06 and UCS-08 only)

When the status indication mode is selected, the channel switches to output. The output can be used to connect a low-power indicator (for example, LED).

3.16 LED FUNCTION

The parameter allows to select the indicator operating mode:

- «Permanent»: the indicator is always active;

- «By CommObject»: in this mode, the «Switch (on/off)» communication object of 1.001 «Switch» type becomes active; the output monitors the telegrams arriving on this object (the channel is active when the telegram «On» is received, and inactive when the telegram «Off» is received).

3.17 WHEN ACTIVE

The parameter allows to select the output behavior when the channel is active:

- «On»: the output is on, when the channel is active; the output is off, when the channel is inactive;

- «Blinking»: when the channel is active, the output blinks at a frequency of 1 Hz, and when the channel is inactive, it is turned off.

4 COMMUNICATION OBJECTS

Depending on the settings, the device activates and supports up to 9 independent CommObjects per channel.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
1	Channel 01	Switch (on/off)			1 bit	C	R	W	T	U	switch	Low
25	Channel 01	Toggle value			1 bit	C	-	W	-	U	switch	Low
49	Channel 01	Percentage			1 byte	C	R	-	T	-	percentage (0..100%)	Low
73	Channel 01	Temperature			2 bytes	C	R	-	T	-	temperature (°C)	Low
97	Channel 01	Counter			2 bytes	C	R	W	T	U	pulses	Low
121	Channel 01	Scene			1 byte	C	R	-	T	-	scene control	Low
145	Channel 01	Move Up/Down			1 bit	C	R	-	T	-	up/down	Low
169	Channel 01	Stop/Step Up/Down			1 bit	C	R	-	T	-	step	Low
193	Channel 01	Brighter/Darker			4 bit	C	R	-	T	-	dimming control	Low

Figure 9. Communication objects

4.1 SWITCH (ON/OFF)

Active in «Switch» and «Dimming» modes. Allows to send on/off telegrams to the controlled device.

Also active in «LED output» mode. In this mode, it allows to control the device indication output.

The object is writable and readable.

The data format is DPT 1.001 (1-bit «On/Off» value).

4.2 TOGGLE VALUE

It is active in the «Switch» -> «Toggle» and «Dimming» -> «Single button» modes. It shall be bound to the output status communication object of the controlled device. It allows to configure the alternate turning on/off of the controlled device.

The object is write-only.

The data format is DPT 1.001 (1-bit «On/Off» value).

4.3 PERCENTAGE

Active in «Switch» -> «Percentage» mode. It allows to send telegrams with percentage values to the controlled device.

The object is read-only.

The data format is DPT 5.001 (1 byte, «0» = 0%, «255» = 100%).

4.4 TEMPERATURE

Active in «Switch» -> «Temperature» mode. Allows to send telegrams with temperature values to the controlled device.

The object is read-only.

The data format is DPT 9.001 (2 bytes, floating point, value in hundredths of °C).

4.5 COUNTER

Active in «Counter» mode. Allows to count the number of pulses at the device input and send it to the controlled device.

The object is writable and readable.

When writing to this object, the recorded value is remembered by the device, and further counting starts from the recorded value.

The data format is DPT 7.001 (2 bytes, unsigned integer).

4.6 SCENE

Active in «Scene» mode. Allows to send telegrams of activation/study of the scene.

The object is read-only.

The data format is DPT 18.001 (1 byte, a special scene control format).

4.7 MOVE UP/DOWN

Active in «Shutter» mode. Allows to send telegrams on moving shutter drives up/down.

The object is read-only.

The data format is DPT 1.008 (1-bit «Move up/Move down» value).

4.8 STOP/STEP UP/DOWN

Active in «Shutter» mode. Allows to send telegrams of stopping the movement of shutter drives, as well as short up/down movements (typically, it is used to control the inclination angle of lamellae in the drives with lamellae (jalousie, etc.).

The object is read-only.

The data format is DPT 1.007 (1-bit «Step up/Step down» value).

4.9 BRIGHTER/DARKER

Active in «Dimming» mode. Allows to send telegrams for changing the brightness of lamps controlled by a dimmer.

The object is read-only.

The data format is DPT 3.007 (4-bit value, special brightness control format).

5 DESCRIPTION OF BEHAVIOR OF THE DEVICE AFTER PROGRAMMING

After the initial loading of the software application the device is in the following state:

- all channels are inactive (parameters 3.1 «Channel function» of all channels: in the «Inactive» position);

- all settings: default values.

6 DESCRIPTION OF BEHAVIOR OF THE DEVICE AFTER LOSS AND RETURN OF BUS VOLTAGE

In case of loss of communication with the KNX bus (when the voltage in the bus drops below the permissible level), the device stores the status of the counters and the feedback communication objects of all channels in non-volatile memory.

After communication with the KNX bus is restored (after the bus voltage returns to the allowable range), all stored values are restored.