

**Translation of original operating instruction
MCU-04X-Box AC**



1 General information

1.1 Notice

This document is part of the product. Keep this operating instruction for future references.

1.2 Scope of delivery

Check the delivery according to the delivery note.

Product designation

Art.-Nr.	Description
0108019.XXX	MCU-04X.Box AC
01200002	Connection set push button inputs
01200003	Connection set supply/ motor outputs
	Operating instruction

1.3 Product description

The motor control unit is designed for the control of 230 V_{AC} drives with 2 end switches for blinds, awnings, large louvre blades, roller shutters, windows, light domes, etc. in a KNX bus system.

The device has 4 motor outputs and inputs for the connection of 4 conventional blind switches or 8 potential-free contacts.

Each channel can be controlled individually via the KNX bus and operating states, position and fault messages for the connected drives/ blinds can be transmitted.

1.4 Limitations of liability

All information and notes in this operating instruction has been compiled in consideration of the applicable standards and regulations, the state of the art as well as our many years of knowledge and experiences.

The manufacturer assumes no liability for damages and operational malfunction due to

- disregarding this operating instruction
- improper use
- faulty connection
- non-use of original spare parts and accessories

1.5 Disposal

The disposal of this product in normal household waste is forbidden within the European Union.

Dispose of the device via the municipal collection points.

The packaging materials used are recyclable. Dispose of packaging materials that are no longer required according to local regulations.

1.6 Copyright

This documentation is protected by copyright.

All rights reserved, including those of photomechanical reproduction, copying and distribution by means of special procedures (e.g. data processing, data carriers, and data networks), even in parts. Subject to technical changes and alterations in content.

1.7 Manufacturer/ Customer service

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2 Safety

2.1 Intended use

The motor control units are intended to control drives for blinds, awnings, large louvre blades, roller shutters, windows, light domes, etc. within the specified limits.

Any other use or extended use is considered to be improper.

2.2 Foreseeable misuse

Any use for a purpose other than the above mentioned purpose is improper. The risk of improper use or misuse is borne solely by the operator.

All types of claims due to damage arising from improper use are excluded.

2.3 Personnel's qualification

Improper use can cause considerable personal injury and material damage!

All tasks for installation, connection and commissioning must be carried out exclusively by a qualified electrician.

A qualified electrician is able to carry out work on electrical installations due to her/ his professional training, knowledge, and experience as well as knowledge of the relevant standards and regulations. She/ he can identify and avoid possible dangers.

The qualified electrician is trained for the specific place of employment in which she/ he is working and is aware of the relevant standards and regulations.

2.4 Basic safety instructions

	⚠ DANGER
	<p>Danger of life! There is a risk of life when touching live parts.</p> <ul style="list-style-type: none"> ▶ All tasks must be carried out exclusively by qualified personnel. ▶ Disconnect all power supplies before starting work.

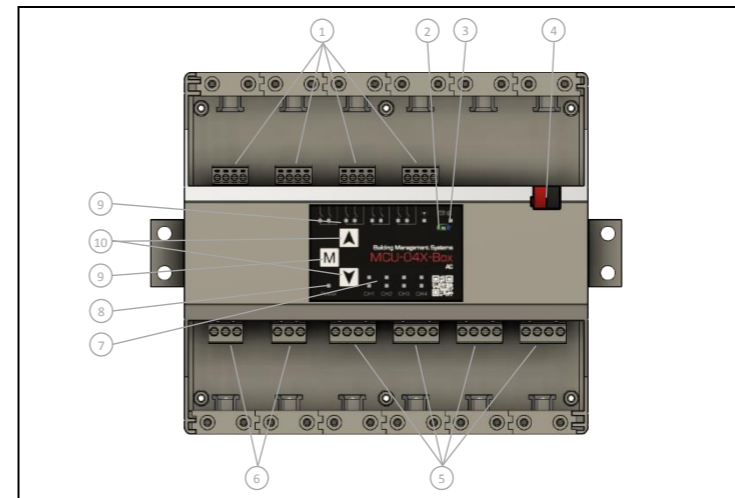
	CAUTION
	<p>Material damage! Incorrect wiring and configuration of the device can lead to damage up to total failure.</p> <ul style="list-style-type: none"> ▶ Ensure that the supply voltage corresponds to the specifications from the technical data for the device. ▶ Ensure that all external devices like push buttons and motors are connected correctly according to the wiring diagrams. ▶ Refer to technical documentation of the motor manufacturer for notes on required settings such as relays switching times. ▶ Refer to the software-helpfile for details on the configuration.

2.5 Signage

Symbol	Meaning
	General warning
	Electrostatic discharge
	CE label

3 Design and function

3.1 Complete overview



Location of control and display elements

- 1 Push button local operation (UP/ DOWN/ +/-)
- 2 Programming button
- 3 Programming LED
- 4 KNX bus connector
- 5 Motor connection terminals (UP/ DOWN/ N/ PE)
- 6 Connection terminal supply voltage (L/ N/ PE)
- 7 Status display motor output
- 8 Status display ready for operation
- 9 Test button M
- 10 Test buttons (UP/ DOWN)
- 11 Status display local operation

3.2 Control and display elements

Status display ready for operation

- lights continuously "GREEN" when the device is ready for operation
- flashes when supply voltage is missing

Programming button

- activates/ deactivates the programming mode

Programming LED

- lights continuously "RED" when the programming mode is activated
- flashes when KNX bus voltage is missing

Test button M

- used to select a motor output for direct operation via the test buttons UP/ DOWN (test mode) – if a motor output is in test mode, the corresponding status LED lights continuously "GREEN"
- by briefly pressing the M button all 4 channels are switched to the test mode
- each additional operation switches through the individual channels 1, 2, 3, 4
- after 6 operations all channels are in normal mode again
- additionally the M button can be used to reset the device (for further information see chapter [troubleshooting](#))

Test buttons UP/ DOWN

- to control the motor outputs in test mode
- short key press (< 0,4s) > step/ stop
- long key press (> 0,4s) > movement command end position
- additionally the test buttons UP/ DOWN can be used to re-learn the motor runtimes (for further information see chapter [troubleshooting](#))

Status display motor output

- LED off = channel is in normal-/ automatic mode
- "GREEN" LED flashes = automatic lock is active (for further information see software-helpfile)
- "GREEN" LED lights continuously = channel is in test mode/ control via test buttons is activated
- "RED" LED flashes = security lock is active (for further information see software-helpfile)
- "RED" LED lights continuously > motor error (for further information see chapter [troubleshooting](#))

Status display local operation

- the corresponding LED (UP/ DOWN) lights "GREEN" as long as the button of the local operation is pressed

3.3 Local operation

The local operation can be installed as push button or switch.

If no adjustments have been made in the ETS configuration, the functionality is according to the following table

Function	Control
"Upper end position"	• long key press "UP" (> 0.4s)
"Lower end position"	• long key press "DOWN" (> 0.4s)
"Shading position"	• long key press "DOWN" (> 0.4s) immediately followed by • short key press "DOWN" (< 0.4s)
"STOP"	• short key press in opposite direction of current movement (< 0.4s)
"Move slats"	• short key press when stationary (< 0.4s)

4 Installation

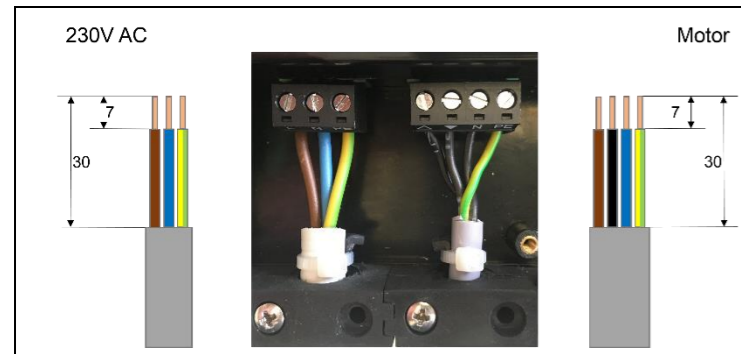
4.1 Mounting

To mount the device proceed as follows

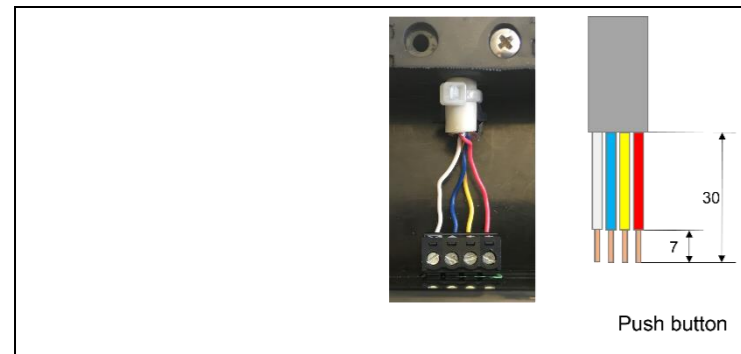
- fasten the housing on a flat, non-flammable surface with the appropriate fastening material such as screws, dowels, cable ties (hole spacing 196 x 17.5mm)
- loosen the 6 Phillips screws (M3x16) and remove the cover
- connect plugs according to chapter [electrical connection](#)
- insert the cable in the cable grommet (using the reduction if necessary) and fix it to the strain relief strap with a cable tie
- plug in the plug at the appropriate position
- Insert the cable grommet into the housing and screw tight on the open side with a Phillips screw (M3x16).
- Equip free cable grommets with blind plugs and also screw tight on the open side with a Phillips screw (M3x16).
- Put the cover on and tighten it with the 6 Phillips screws

4.2 Electrical connection

Overview



Pin assignment supply voltage / motor



Pin assignment local operation

Supply voltage

Connect supply voltage to the motor control unit as follows

Power	
L	Phase 230V _{AC}
N	Neutral conductor
PE	Protective conductor

Motor

Connect motors as follows

Motor connection terminals	Destination
△ / ▼ / N/ PE	Motor 1
△ / ▼ / N/ PE	Motor 2
△ / ▼ / N/ PE	Motor 3
△ / ▼ / N/ PE	Motor 4

NOTICE	
	If the direction of rotation is incorrect (test via test buttons) adjust the motor connection.

KNX bus

Connect the KNX bus connector to the KNX bus.

Local operation

Several push buttons can be connected to one local operation input.

NOTICE	
	It is possible to connect one push button to several local operation inputs. This push button may only be connected within a device.

Local operation inputs	Destination
△	Push button "UP"
▼	Push button "DOWN"
++	Push button

4.3 Configuration

The configuration of the motor control unit is done via ETS from version 5.0 of KNX-Association.

NOTICE	
	For details about the configuration software see documentation of KNX-Association.

Requirements

- supply voltage and KNX bus voltage must be present

Approach

- connect PC/Laptop to the KNX bus via programming interface
- set the motor control unit to programming mode by pushing the programming button
- ↔ the programming LED lights continuously "RED"
- download the physical address and the application program

4.4 Commissioning/ Test run

For commissioning of the motor control unit proceed as follows

- check the condition of the device and the tight attachment of the terminals and connections
- switch on the supply voltage
- check supply voltage and status display on the device
- check function and direction of rotation by means of test buttons – if the direction of rotation, is incorrect adjust the motor connection check the local operation – if the function is reversed, correct the local operation connection
- move blinds, awnings, large louvre blades, roller shutters, windows, light domes, etc. into a safe end position
- mount all protective covers
- maintain system documentation and, if necessary, affix labels and/ or signs

5 Operation

5.1 Manual operation

The manual operation is done via the local operation inputs of the motor control unit by means of push buttons or switches (see chapter [local operation](#)) and/ or via the KNX system (see software-helpfile).

5.2 Automatic operation

Automatic operation is performed according to the parameters specified in the ETS configuration. The control commands received via the KNX bus are considered.

6 Troubleshooting

NOTICE	
	If the listed troubleshooting procedures do not lead to the desired result, contact the customer service.

Fault	Rectification
motor error status LED for the corresponding motor lights continuously "RED"	<ul style="list-style-type: none"> • check motor connection, motor cable, and motor
device does not communicate via KNX	<ul style="list-style-type: none"> • check supply voltage (LED ready for operation must light continuously "GREEN") • check KNX bus voltage (programming LED can be switched on and off via the programming button)

Fault	Rectification
no local/ manual commands are executed	<ul style="list-style-type: none"> • check whether the corresponding output is in test mode (status LED for the output lights continuously "GREEN") – press the M key several times to exit the test mode (all status LEDs of the outputs do not light continuously "GREEN") • check whether a security lock is active (status LED for the output flashes "RED") – the triggering and reset conditions for a security lock are defined in the ETS configuration by the system integrator • check local operation inputs and/ or KNX communication
no central/ automatic commands are executed	<ul style="list-style-type: none"> • check whether the corresponding output is in test mode (status LED for the output lights continuously "GREEN") – press the M key several times to exit the test mode (all status LEDs of the outputs do not light continuously "GREEN") • check whether a security lock is active (status LED for the output flashes "RED") – the triggering and reset conditions for a security lock are defined in the ETS configuration by the system integrator • check whether an automatic lock is active (status LED for the output flashes "GREEN") – the triggering and reset conditions for an automatic lock are defined in the ETS configuration by the system integrator • check KNX communication

Re-learn motor runtimes

If runtimes have been learned incorrectly, or if the runtimes have changed considerably (e.g. by a motor change), the stored runtimes can be deleted and re-learned.

- switch motor output to test mode by pressing test button M (status LED of the output is permanently "GREEN")
- press test buttons "UP" and "DOWN" simultaneously for at least 5s
- ↔ the runtimes will be re-learned during the next position movement

Reset the device to the factory setting

A reset must be carried out for resetting the device to the factory setting.

NOTICE	
	The reset will clear the entire configuration.

- press test button M (on the main or on the extension module) for at least 10s (all status displays of the motor outputs flash alternately "RED" and "GREEN")
- press test button M again within 10s and keep it pressed for at least 10 more seconds (all status LEDs of the motor outputs light continuously "RED")
- press test button M again within 10s and keep it pressed for at least 10 more seconds (the device is reset to factory settings)
- ↔ the restart of the device is shown by flashing the status LEDs of inputs and motor outputs

7 Technical data

General		
Operating environment	Dry rooms (free of condensation) +5° to +45°C pollution index 2	
Mounting	surface mounting (suspended ceiling/ raised floor)	
Dimensions (W x H x D)	210 x 165 x 37	mm
Weight	500	g
Binary inputs	8	
Motor outputs	4	

NOTICE	
	The connection and the wiring of the local operation units and the KNX bus must be carried out according to the current SELV requirements.

Connection data		
Supply voltage	230 ± 10 %	V _{AC}
	50	Hz
Connection	3-pin connector (2fold/ bridged)	
Cable	3 wires	
	single or fine wire	
Wire cross-section	0.5 ... 2.5	mm ²
Terminal tightening torque	0.5	Nm
Fuse protection	10	A
Electrical protection	IP 20 (only with plugged connectors)	
Electrical protection class	II	

Motor connection (Outputs)		
Motor type	230	V _{AC}
	max. 2.5	A
	2 end switches	
Connection	4-pin connector	
Cable	4 wires	
	single or fine wire	
Wire cross-section	0.5 ... 2.5	mm ²
Terminal tightening torque	0.5	Nm

Local operation (Inputs)		
Voltage	8	V _{DC}
Current	2	mA
Connection	4-pin connector	
Cable	4 wires	
	Single or fine wire	
Wire cross-section	0.5 ... 1.5	mm ²
Terminal tightening torque	0.2	Nm
Cable length max.	100	m
Operation via	Push button or switch potential-free contact	

KNX		
Bus connector	∅ 0.5 ... 0.8	mm
	single wire	
Bus cable	according to KNX standard	