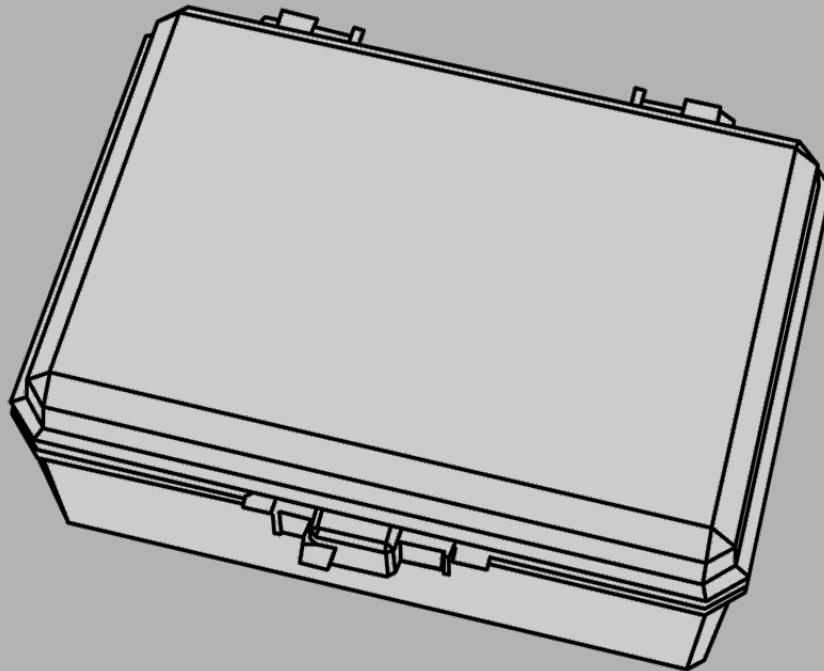


## INSTRUCTIONMANUAL



### 24V 50VA Motor control box

**Product group:** Sliding doors, - windows, - shutters  
**Version:** 1.0  
**Language:** english  
**Orig. Language:** german (deutsch)  
**Document:** -----

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### Document information

Document type: Instruction Manual  
Title: 24V 50VA Motor control box  
Product group: Sliding doors, sliding windows, sliding shutters  
Version: 1.1  
Language: english  
Orig. language: german (deutsch)  
Document: -----

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### Declaration of conformity

This product fulfills the basic requirements of the applicable European Directives. The conformity was detected. The original of the Declaration of conformity is available as a separate document from the manufacturer.

### Technical subjects to change

Our products are always under further development and get improved. The data used for this document represents the state of the product at the time of the creation of this document.

Changings of technical details are excepted. Please use the latest version of the document and contact the manufacturer in case of doubt.



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## 1 About this document

### 1.1.1 Target group

This document addresses qualified personnel only. The mounting must be done by technical educated, trained and qualified personnel. Electrical wirings have to be done by a specialist.

This document has to be made accessible for qualified personnel. Its content must be read, understood and followed.

### 1.1.2 Objective of this document

This document contains important information for mounting and wiring of the product. It has to be read before working with the product. It must be handed out and explained to the operator and kept available all the time as a part of the product.

### 1.1.3 Reference to other documents, guidelines and standards

Additional documents like guidelines, standards and laws for products of this kind, have to be considered.



#### Hint

The fabricator has an increased duty to advise the customer. The relevant guidelines, standards and laws have to be considered.



### 1.1.4 Used symbols



#### Hint

A hint gives important and additional information.

---

### NOTICE

#### Description of type and source of hazards

Warnings, marked with this symbol, are related to safety. Disregard may result in property damage.

- Steps to avoid hazards.

---

### CAUTION



#### Description of type and source of hazards

This symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and/or property damage.

The following levels of warning show the severity and probability of possible hazards, in ascending order.

- CAUTION, coloured yellow
- WARNING, coloured orange
- DANGER, coloured red

- Steps to avoid hazards.

- symbolizes a list with no specific order

#### Lists

1. symbolizes a list or instruction in specific order

- symbolizes an action
  - symbolizes a reference
- ✓ symbolizes the result of the action

#### Instructions



## 2 Safety

### DANGER



#### Electric Shock

Danger to life and health due to electrical shock.

- Electrical connections have to be installed by approved personnel only.
- Switch off power before carrying out work and secure power against being switched on.
- Observe relevant safety instructions.

### 2.1 Requirements for operation



#### Hint

Read the instruction manual before doing any work on the motor control box.

#### 2.1.1 Environmental conditions

The 24V 50VA motor control box is designed for use in dry interior.

### 2.2 Proper use

This product is a motor control device for 24V DC motors of the manufacturer. It is powered by an internal 24V power supply. It allows connection to on-site switches (Ground / Open / Close).

The manufacturer's instructions must be respected, in especially maximum and minimum dimensions and maximum weight of the moving part.

Any other use of this product is considered inappropriate use.

It is not guaranteed, that this product will work in combination with fittings, motors or other electronic devices of other manufacturers.

### 2.3 Behavior in case of an error

In case of an error, the device must be shut down and the manufacturer must be informed.

#### Shut down

- Do not operate device.
- Disconnect device from power supply.
- Inform the manufacturer.



### 3 Functional description

#### 3.1 General description



**Hint**

This document describes the functionality of the 24V 50VA motor control box. Instruction manuals for the installation of the mechanical part of the sliding door, window or shutter are available in separate documents.

The motor control box contains a motor control device, which is designed to drive a 24V DC motor. The motor usually drives a sliding door or a sliding shutter, to which it is connected by a timing belt. The motor control device is controlled by potential free inputs (Ground / Open / Close).

**Motor control device**

The motor control box comes in a splash water protected box, which dimensions are W x H x D 17 x 14 x 8 cm<sup>3</sup> (without wire connectors). The motor control box can be screwed onto planar surfaces.

**Mounting**

The motor control box contains an internal power supply unit, which provides 24 V DC at a maximum power of 50 W. It is internally connected to the motor control device.

**Power supply unit**

For electrical connections, screw terminals are provided. For details, refer to the mounting and connection section.

**Connections**

The motor control device comes with a configuration switch and two potentiometers, to set up its operation mode. A reset key and service LEDs allow easy initial operation.

**Set up and status display**

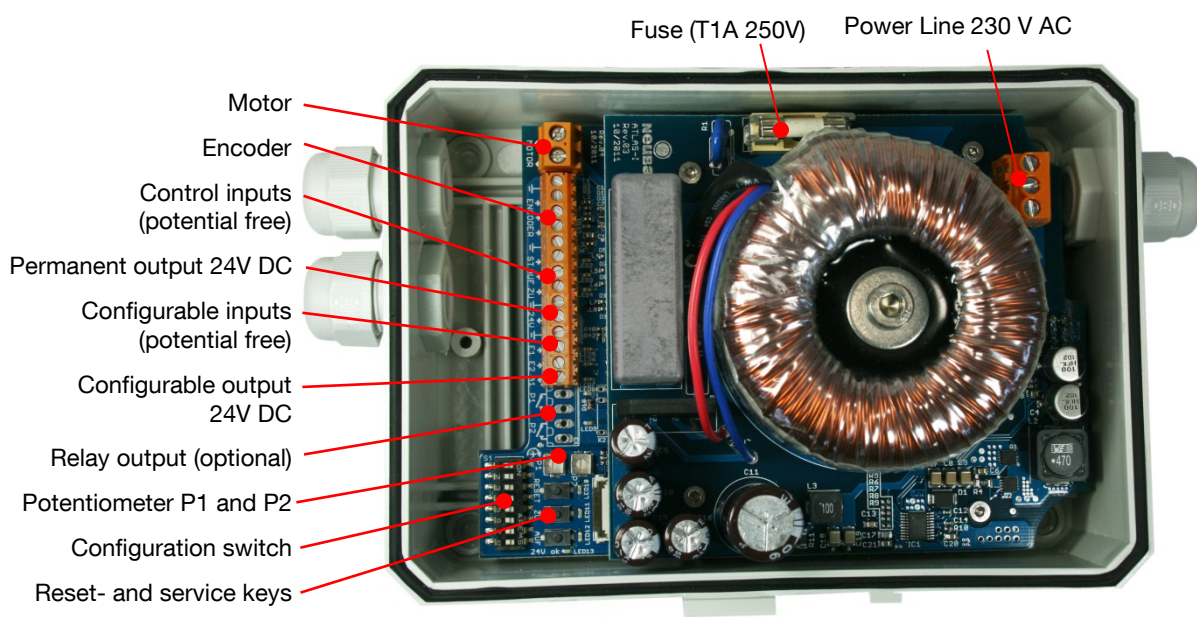


Figure 1 – Motor control box top view



### 3.2 Modes of operation

After installation and initial operation, the motor control device is ready to use.

The door drive starts to move, when the potential free inputs (Terminals 7, 9 and 10) are triggered.

The following modes of operation are possible:

- **Dead man's control:**  
The drive moves in the desired direction, as long as the corresponding input signal is applied and no obstruction is detected. Otherwise it stops instantly.
- **Semi-automatic mode:**  
The drive moves in the desired direction after a trigger impulse on the corresponding input signal. After an opening command, it will stay open until a close command is applied.  
When an obstruction is detected or a stop signal or a command contrary to the driving direction is applied, the drive stops.
- **Automatic mode:**  
Additional to the semi-automatic behavior, the door closes automatically, when a close delay time is over.  
When an obstruction is detected during closing, the drive reverses and remains open for the close delay time again.  
If a command contrary to the driving direction is applied, the drive reverses. On a stop signal, the drive will stop as long as the stop input is active. After the stop signal is released, the drive continues its operation.

### 3.3 Features

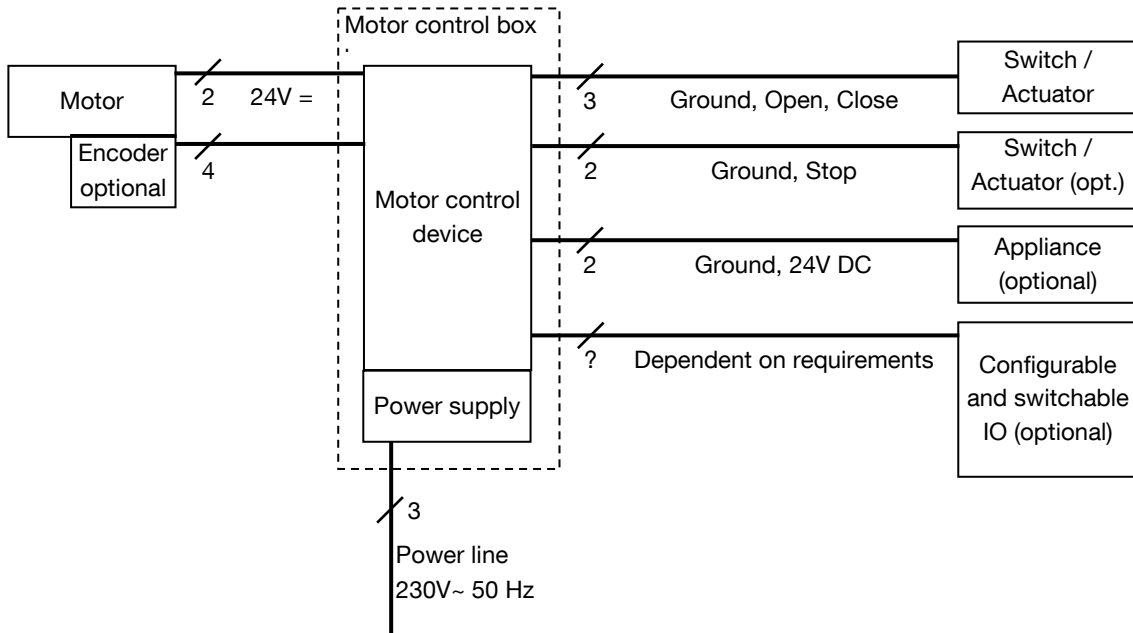
<b>Power operated shutdown</b>	The motor control device supervises the motor current during operation. In case of an obstruction the motor current will raise, which is detected by the motor control device. In this case, the motor control device stops the motor.
<b>Low speed at the end</b>	During initial operation, the control device measures the duration of a normal cycle. A short time before the wing reaches the end, the motor slows down. This reduces mechanical wear and increases safety.
<b>Close delay</b>	In automatic operation mode, a close delay time can be set via the potentiometer P1. The delay time can be set in a range of 5...60 seconds.
<b>Encoder</b>	Some special features need speed measurement, which is provided by using a motor with encoder. The motor control device detects a connected encoder during initial operation and activates the special features.
<b>Permanent 24V DC output</b>	The motor control device provides a permanent 24 V DC output for supplying external components. Its maximum current rating is 250 mA.
<b>Configurable inputs and outputs</b>	For some applications extra I/O may be needed. In this case, the special input and output terminals of the motor control box can be useful. The motor control box provides two configurable inputs, one configurable 24 V DC output and optionally two potential free relay outputs. For configuration of special functions or application examples, please contact the manufacturer.





## 4 Cabling

### 4.1 Cable diagram



### 4.2 Cable requirements

The following specifications are minimum requirements.

Cable	Cable type
Between motor and control device.	Motor supply (24V =) up to 20 m (60 ft): 2 x 0,50 mm <sup>2</sup> (20 AWG) 20 to 50 m (60..160 ft): 2 x 0,75 mm <sup>2</sup> (18 AWG)
	Encoder up to 50 m (160 ft): 4 x 0,25 mm <sup>2</sup> (22 AWG)
Between switch/actuator and control device.	Open, Close up to 50 m (160 ft): 3 x 0,25 mm <sup>2</sup> (22 AWG)
	Stop (optional) up to 50 m (160 ft): 2 x 0,25 mm <sup>2</sup> (22 AWG)
Appliance, configurable IOs	Dependent on requirements up to 50 m (160 ft):

Table 1 – Cable requirements



## 5 Mounting and electrical connection

### 5 Mounting and electrical connection

#### 5.1 Mounting

The motor control box comes in a splash water protected box, which can be screwed onto planar surfaces. Mostly, it is sufficient to put the box at an appropriate place, which is only accessible by qualified personnel.

The motor control box dimensions are W x H x D 17 x 14 x 8 cm<sup>3</sup> (without wire connectors).

#### 5.2 Electric supply requirements

##### DANGER



##### Electric Shock

Danger to life and health due to electrical shock.

- Electrical connections have to be installed by approved personnel only.
- Switch off power before carrying out work and secure power against being switched on.
- Observe relevant safety instructions.



##### Hint

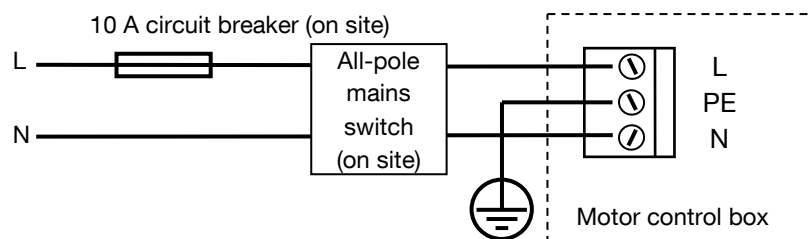
The wires of 230 V AC and 24 V DC must be not allowed to cross each other.

- If necessary, insulate wires with shrink tubing.

##### 5.2.1 Safety precautions

- The motor control box is designed for nonportable applications.
- There must be an all-pole mains switch on site, to disconnect the motor control box from main power.
- A 10 A automatic circuit breaker must be installed in the power path of the motor control box.

##### 5.2.2 Power line connection diagram





### 5.3 Electrical connection

#### ⚠ CAUTION



#### Wrong installation

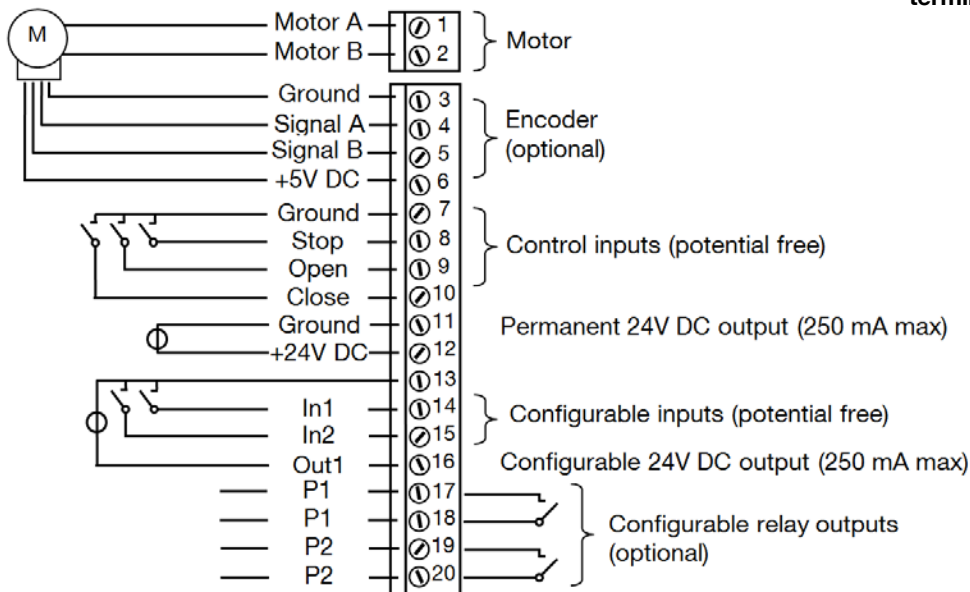
Damage of motor control box or external components.

- Observe polarity of connections.
- Inputs (Terminals 8, 9, 10, 14, 15) are potential free.

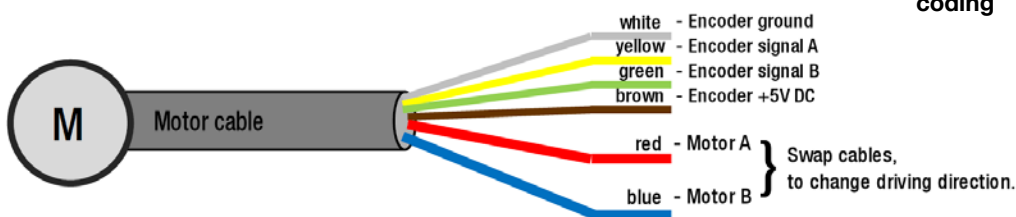
- Disconnect main power and protect against power up.
  - ➔ For safety instructions refer to chapter 2.
- Connect internal power supply to power line.
- Connect motor (terminals 1 and 2)
  - Polarity determines direction of operation.
- Connect encoder (optional, terminals 3, 4, 5, 6).
- Connect potential free on-site actuator (terminals 7, 9, 10).
- Connect appliances dependent on requirements.
- ✓ Motor control box connected successfully.

#### Carrying out electrical connections

#### Motor control box terminals



#### Motor cable color coding

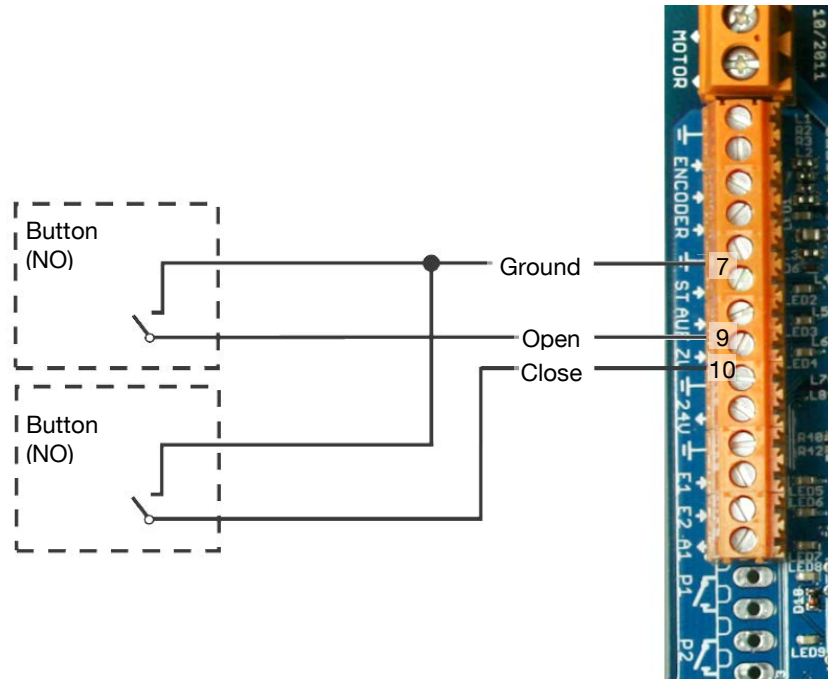




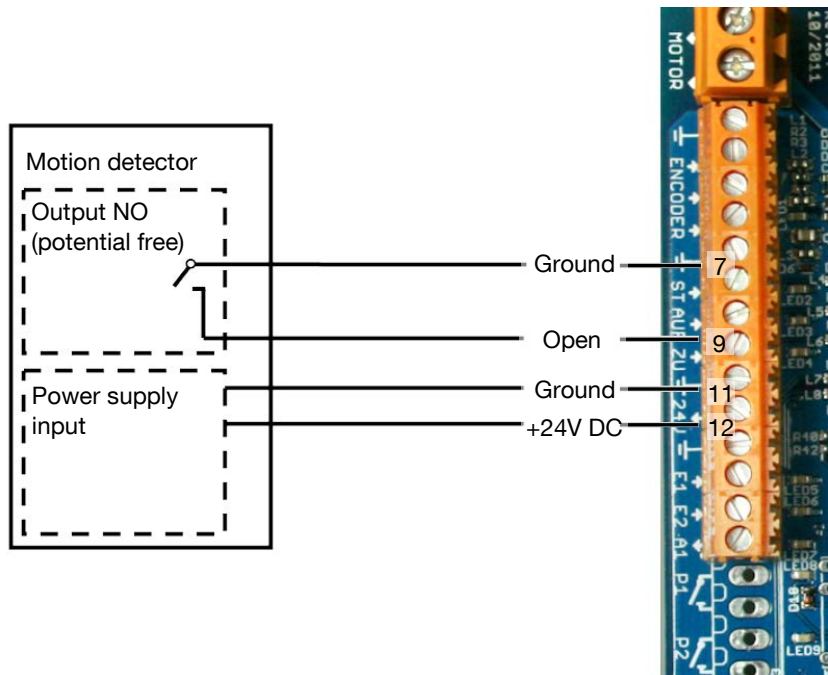
## 5 Mounting and electrical connection

### 5.3.1 Exemplary connection of on-site actuators

#### Push buttons



#### Motion detector



When a motion detector is used, the motor control device must be set to automatic operation mode.



## 6 Initial operation

After installation of the control device, an initial operation must be performed.

The following sections describe the parts of the control device, which are relevant for the initial operation. The following chapters describe step by step, which functions must be set up and how the initial operation is done.

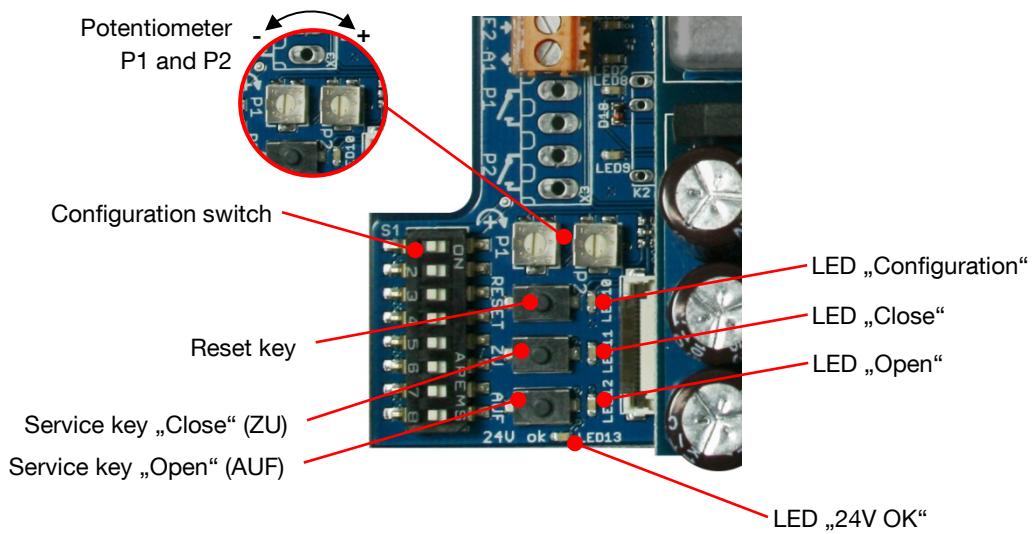


Figure 2  
Service elements



## 6 Initial operation

### 6.1 Configuration

The configuration of the motor control box is set via the potentiometers P1 and P2, the configuration switch and the reset key.

---

#### NOTICE

##### Overtightened potentiometer

Damage of control device may result in malfunction.

Potentiometers have a right and a left stop, which must not be overtightened.

- Adjust potentiometer only with low force and with an appropriate screw driver.
- 



#### Hint

When the motor control box is used without encoder, a change in configuration requires a new initial operation.

#### Changing the configuration

- Set up desired configuration, according to chapter 6.1.3
- Do initial operation.
  - Refer to chapter 6.2
- ✓ Configuration is set during initial operation.



#### Hint

Changes of the automatic close delay or the tolerance of the power operated shutdown are applied instantly.

#### Prolongen automatic closing delay time

- Turn potentiometer 1 (P1) clockwise
- ✓ Door stays open for a longer time.

#### Reduce automatic closing delay time

- Turn potentiometer 1 (P1) counterclockwise
- ✓ Door stays open for a shorter time.

#### 6.1.1 Automatic closing delay time

The automatic closing delay time determines the time the door stays open in automatic operation mode. After the delay time, the door closes automatically. The delay time is set via the potentiometer P1 in a range of 5 to 60 seconds.



### 6.1.2 Tolerance of power operated shutdown

In some cases the drive will not shut down correctly during or after initial operation. Or the drive stops, before it has reached the end position. This particularly happens, when a very heavy or a very lightweight wing is used.

---

#### NOTICE

##### Motor overload

Damage of components by motor overload.

- Check after any change of configuration, if the control device shuts down correctly.
  - Do not set tolerance too high.
- 

When the drive stops early

- Turn potentiometer 2 (P2) clockwise
- ✓ Drive switches off later

**Increase tolerance**

When the drive does not stop

- Turn potentiometer 2 (P2) counterclockwise
- ✓ Drive switches off sooner

**Decrease tolerance**



##### Hint

After a maximum operating time of 5 minutes, the drive switches off in any case.



## 6 Initial operation

### 6.1.3 Configuration Switch

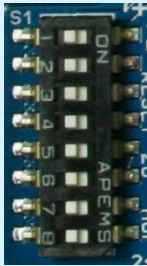
	Switch	Description	OFF	ON
	1	Operation mode	Semi-automatic	Automatic
	2	Dead man's control	-	Enabled (overrides switch #1)
	3	Push & go	-	Enabled
	4	Reaction to obstruction	Reverse	Stop
	5	Closing speed	Reduced speed	Full speed
	6	Low speed mode	-	Enabled
	7	Setting of maximum speed	7 OFF 8 OFF	80 %
	7 ON 8 OFF		90 %	
8	Setting of maximum speed	7 OFF 8 ON	100 %	
7 ON 8 ON		60 %		

Table 2 – Configuration switch

- Switch 1: Operation mode semi-automatic / automatic:  
When semi-automatic mode is set the drive will not close automatically. The potentiometer P1 is without function.  
When automatic mode is set the drive closes automatically.
- Switch 2: Dead man's control:  
When dead man's control is activated the drive will only operate, as long as an input signal is applied. Switch 1 is inactive, when dead man's control is selected.
- Switch 3: Push & Go:  
With push & go enabled the drive starts to move, as soon as the door leaf is pushed manually.
- Switch 4: Reaction on obstruction:  
When reverse is set the drive stops and starts to move in the opposite direction, as soon as an obstruction is detected. Otherwise it will stop until a new command is given. (This is only possible in semi-automatic mode).
- Switch 5: Closing speed:  
By default the closing speed is slower than the opening speed. The closing speed can be set as fast as the opening speed, by setting this switch to ON.
- Switch 6: Low speed mode:  
When enabled, the drive will operate generally in low speed mode. Closing and opening speed are reduced.
- Switch 7: The combination of switches 7 and 8 sets the maximum speed of the drive. (Refer to table 2).





## 6.2 Steps during initial operation

### WARNING



#### Moving door leaf

Danger of injury by squashing, shearing or collision, caused by moving door leaf.

- Keep area clear during initial operation.

- Carry out electrical connections.
  - Refer to chapter 5.3
- Set configuration.
  - Refer to chapter 6.1

#### Prepare control device

- Switch power supply on
- ✓ Control device in delivery status or after power cut:  
Red LED blinks continuously twice with a short break of 1.5 sec.

#### Perform reset



- Press RESET for about 2 seconds.
- ✓ Red LED blinks continuously.



- Check driving direction of motor with control inputs or service keys:  
When pressing OPEN, door has to open and when pressing CLOSE, door has to close.
  - When driving direction is wrong:  
Swap motor cables (terminals 1 and 2), check driving direction again.
- Move door in a middle position by pressing and holding the service keys.
- Press RESET for about 2 seconds
- ✓ Red LED lights up permanently



- ✓ Green LEDs (LED "open" / LED "close") light up during motor activity.
- ✓ Drive starts to move on its own.
- ✓ Door closes, opens and closes again.
- ✓ LEDs go out.

- Test, if door shows desired behavior.
- In case of malfunction check electrical connections and configuration.
  - For electrical connection refer to chapter 5.3.
  - For configuration refer to chapter 6.1.
  - Repeat initial operation, if necessary.
- ✓ Initial operation is completed, when function is correct.

#### Check function



## 6 Initial operation

### 6.3 Behavior after a power cut

When the main power is cut off, the control device will not work. After main power is restored, the control device can return to normal operation without an initial operation (Supposed that an initial operation already took place before)

#### Bring control device back into normal operation

- Restore main power.
- ✓ Control device after power cut:  
Red LED blinks continuously twice with a short break of 1.5 sec.



- Execute desired action:  
Press OPEN to open the door, press CLOSE to close the door.
- ✓ First movement will start with reduced speed.
- Let the door run into the end position.
- ✓ Motor shuts down and red LED stops blinking.
- ✓ Normal operation is restored.



#### Hint

After a power cut, no further initial operation is necessary. The operation parameters are saved permanently during initial operation.



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