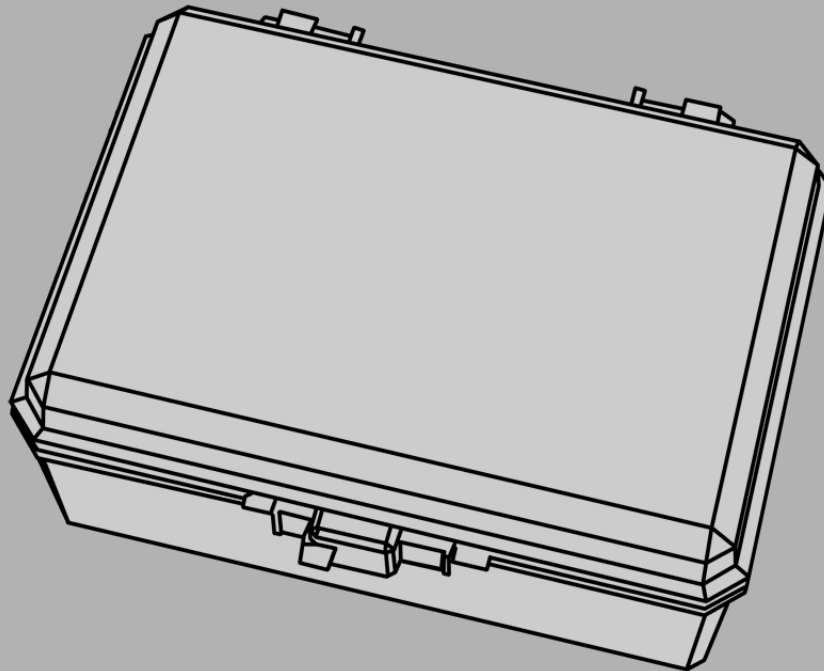


INSTRUCTIONMANUAL



Helios 24V 36W Electronic Box

Product Group:	Sliding Windows & Shutters
Version:	1.3
Language:	English
Orig. Language:	German
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 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.

1.2 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.

1.3 References 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.



1.4 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, colored yellow
- WARNING, colored orange
- DANGER, colored 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 36W 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 products 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 36W motor control box. Instruction manuals for the installation of the mechanical part of the sliding 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 window 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 cm³ (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 36 W. It is internally connected to the motor control device.

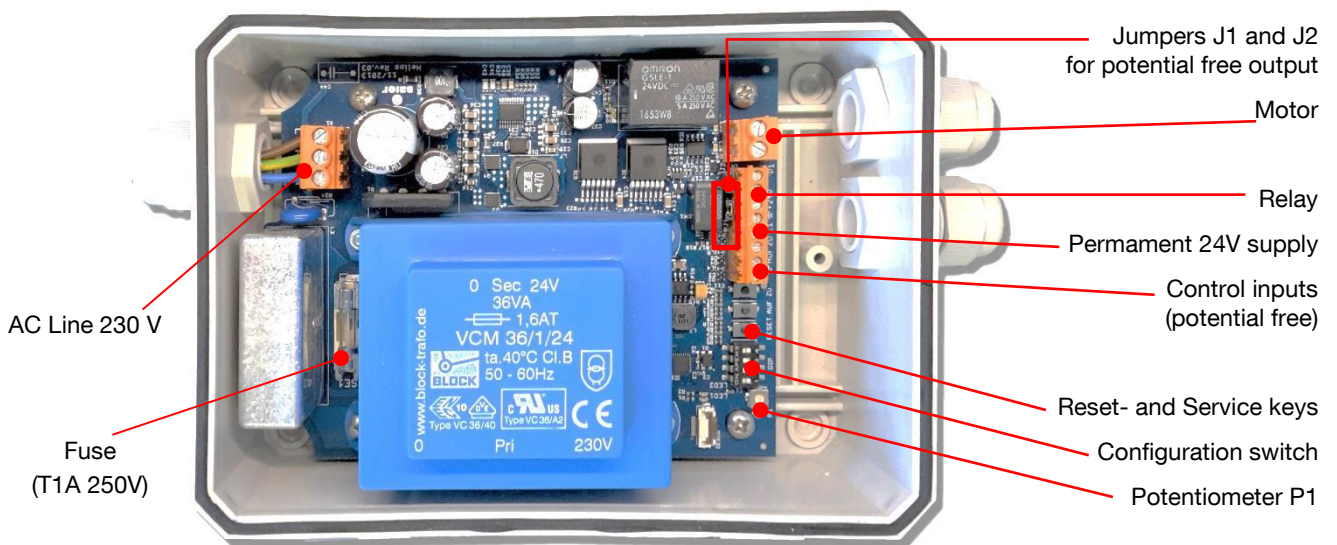
Power supply unit

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 a potentiometer, to set up its operation mode. A reset key and service LEDs allow easy initial operation.

Set up and status display





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 1, 2 and 3) 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.

3.3 Features

Power operated shutdown

The control device monitors 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.

Low speed at the end

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.

Permanent 24V DC output

The motor control device provides a permanent 24 V DC output for supplying external components (e.g. motion detector). Its maximum current rating is 200 mA.

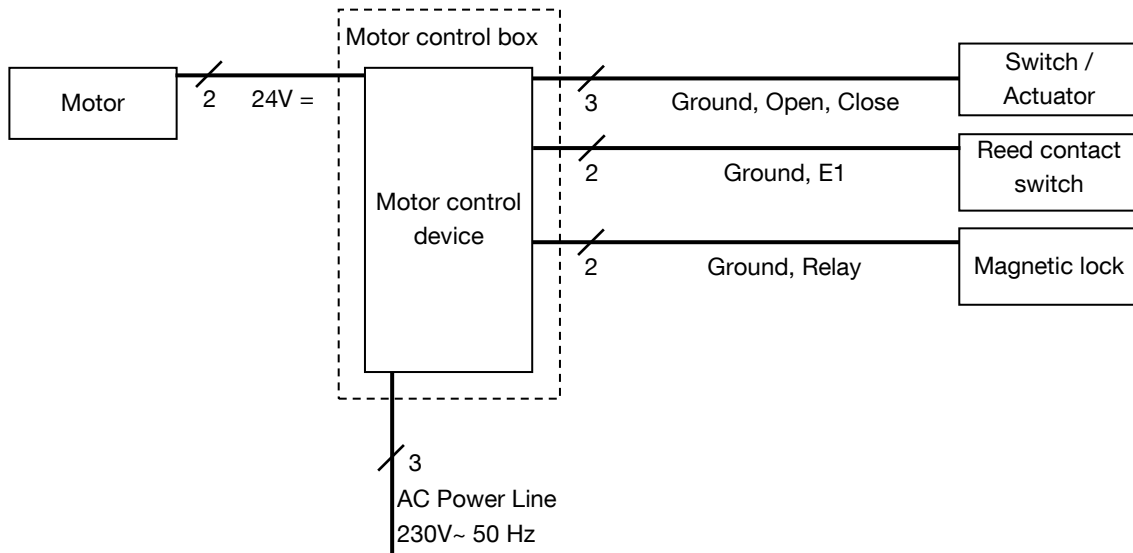
Configurable inputs and outputs

For enhanced functionality, an additional potential free input and a relay output are provided. These are programmed for operation with a reed contact switch as feedback device and to operate a magnetic lock. For other configurations and implementation of special functions, please contact the manufacturer.



4 Wiring

4.1 Wire diagram



4.2 Wire requirements

The following specifications are minimum requirements.

Wire	Wire type
Between motor and control device	Motor supply (24V =) up to 20 m (60 ft): 2 x 0,75 mm ² (18 AWG) 20 to 50 m (60..160 ft): 2 x 1,00 mm ² (17 AWG)
Between switch/actuator and control device	Ground, Open, Close up to 50 m (160 ft): 3 x 0,25 mm ² (22 AWG)
Appliances, configurable I/O	Dependent on requirements up to 50 m (160 ft):

Table 1 – Wire types



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.

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

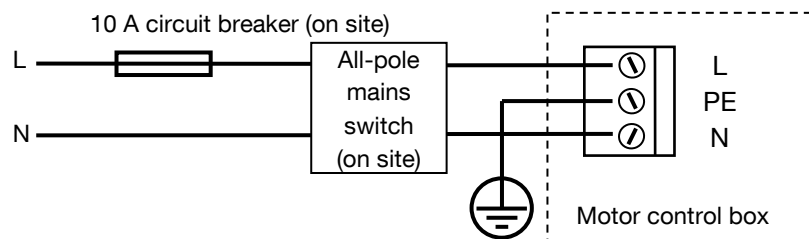
The wires of 230 V AC and 24 V DC must be not allowed to cross each other.

- If necessary, insulate wires with shrink tubing.

5.2.1 Safety precautions

- The motor control box is designed for non-portable 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



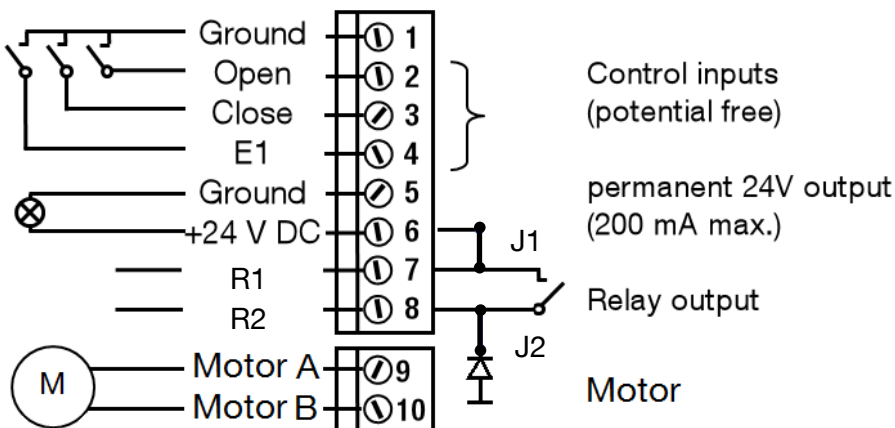
Wrong installation

Damage of motor control box or external components.

- Observe polarity of connections.
- Terminals 1, 2, 3, 4 are potential free.
- Jumpers J1 and J2 are connected by default.
For potential free relay output, J1 and J2 have to be removed.

- 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 9 and 10)
Polarity determines direction of operation.
- Connect potential free on-site actuator (terminals 1, 2, 3).
- Connect appliances dependent on requirements.
- ✓ Motor control box connected successfully.

Carrying out electrical connections



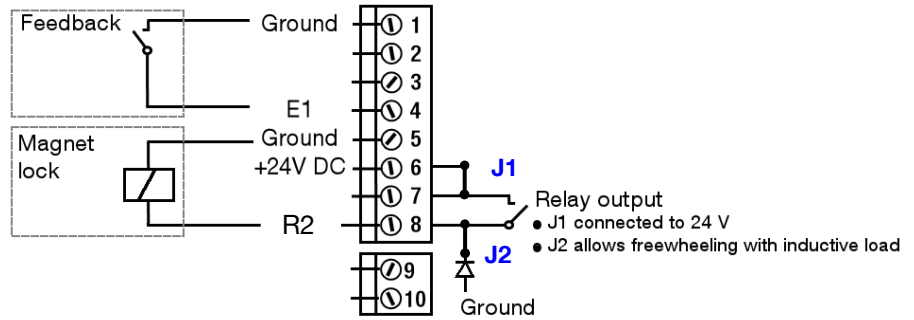
Motor control box terminals



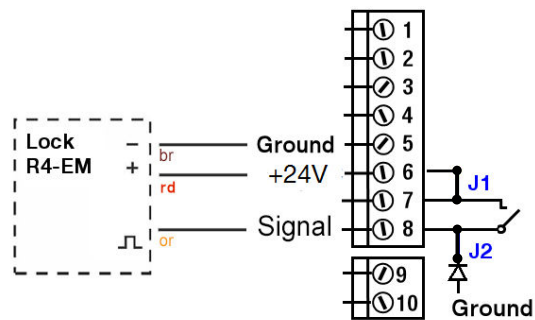
5 Mounting and electrical connection

5.3.1 Exemplary connection of on-site actuators

Feedback switch and magnet lock



Snap lock R4-EM





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.

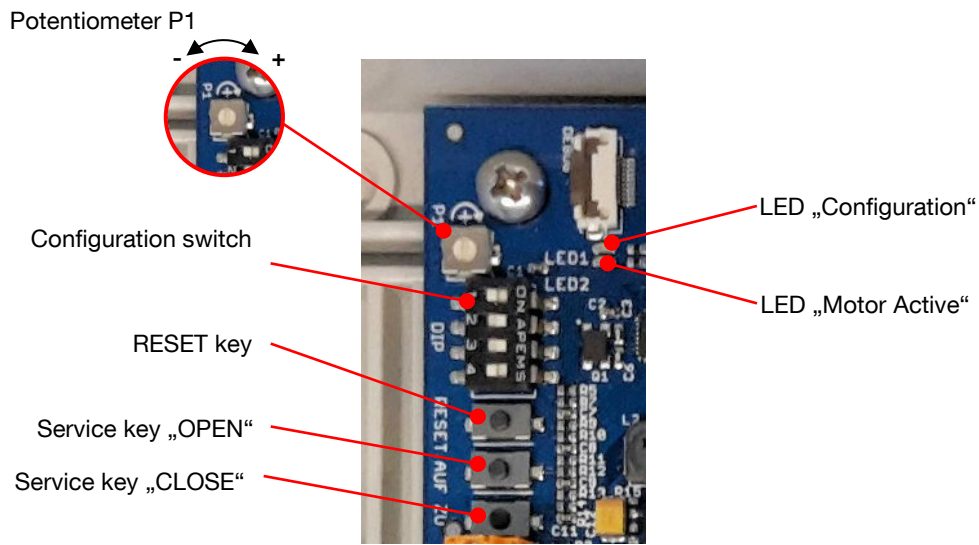


Fig. 2
Service elements



6 Initial operation

6.1 Configuration

The configuration of the motor control box is set via the potentiometer P1, 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.

Changing the configuration

- Set up desired configuration, according to chapter 6.1.2
- Do initial operation.
 - Refer to chapter 6.2
- ✓ Configuration is set during initial operation.

6.1.1 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.

Increase tolerance

When the drive stops early

- Turn potentiometer P1 clockwise
- ✓ Drive switches off later

Decrease tolerance

When the drive does not stop

- Turn potentiometer P1 counterclockwise
- ✓ Drive switches off sooner



Hint

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



6.1.2 Configuration switch

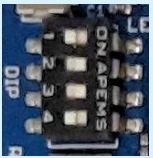
OFF	ON	Switch	Description	OFF	ON
		1	Operation mode	Semi automatic	Dead man's control
		2	Speed	Normal	Reduced
		3	Closing speed	Reduced	Same as opening speed
		4	Feedback input	N/A	Activated

Table 2 – Configuration switch

- Switch 1: Operation mode
When dead man's control is activated the drive will only operate, as long as an input signal is permanently applied.
- Switch 2: Speed
The maximum speed of the drive is reduced, when this switch is set to ON.
- Switch 3: 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 4: Feedback contact
A feedback contact (e.g. Reed relay) must be connected to input E1, to signal the closed state of the window.
When the "feedback contact" function is activated, the actuator moves in the opposite direction during closing if an obstacle is detected or the signal is not triggered on closing.



Hint

A change in configuration requires a new initial operation.
The motor control box changes automatically to configuration mode, when the settings of the configuration switch are changed.



6 Initial operation

6.2 Steps during initial operation

WARNING



Moving parts




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

- Keep area clear during initial operation.

Prepare control device

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

Perform reset

- 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.

- 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 9 and 10), 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 LED lights up during motor activity.
- ✓ Drive starts to move on its own.
- ✓ Door opens and closes slowly, then opens and closes with higher speed.
- ✓ LEDs go out.

Check function

- 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.



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)

- 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
OR
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.

**Bring control device
back into normal
operation**



Hint

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



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6

Notes



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