



Troax Power sliding door 8911000x

Motor control installation instructions



Danish
Dansk



Dutch
Nederlands



Finnish
Suomi



French
Français



German
Deutsch



Italian
Italiano



Polish
Polski



Portuguese
Português



Spanish
Español



Swedish
Svenska

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1. General information about these instructions

Together with the installation instructions for the Troax sliding door you have selected, these instructions form a translation of an original operating manual within the meaning of the EC Directive 2006/42/EC. It is aimed at skilled persons for the installation, maintenance, repair and dismantling of sliding door systems in accordance with EN 12635, as well as operators and users of sliding door systems with a Troax motor unit.

This manual contains important information about your product.

- ! Read the entire manual carefully. This will prevent installation errors and hazards.
- ! Observe and follow these instructions, particularly the safety and warning instructions.
- ! Keep these instructions and all other product related instructions in a safe place
- ! Make sure that this manual and all other product-related manuals are always available and can be viewed by the user of the product.
- ! Follow the instructions in this manual step by step.

1.1. Definitions used

Automatic closing

The sliding door closes automatically after the set hold-open time has elapsed.

Sliding door system

Designates the sliding door and the corresponding drive.

Holdup time

Waiting time before the automatic closing of the sliding door from the “open” or “partial opening” end position.

Learning trip

Sliding door travel in direction OPEN or CLOSE, in which the drive learns the following:

- Length of the distance travelled
- Required force for the distance to be covered

Normal operation

Describes a sliding door trip with taught-in distances and forces.

Partial opening

Denotes a partial opening of the sliding door, e.g. to allow passage of persons, but not a passage by forklift through the sliding door.

Release

Short sliding door travel in the opposite direction if a safety device or force limitation responds.

Reverse (up to end position)

Sliding door travel in the opposite direction if a safety device or force limitation responds.

Warning time

Time between the movement command and the start of the sliding door movement.

2. General safety and warning notices

2.1. Warnings used



The general warning symbol according to EN ISO 7010 indicates a danger which can lead to injury or death. In this manual, the general warning symbol is used in conjunction with the following signal words to indicate the severity of the hazard.

DANGER

This warning indicates a hazard that can result in immediate death or serious injury.

WARNING

This warning indicates a hazard that can result in serious injury or death.

CAUTION

This warning indicates a hazard that may result in minor or moderate injury.

ATTENTION

This warning indicates a hazard that may result in damage to or destruction of the product.

SAFETY INSTRUCTION

This signal word indicates instructions that describe how to avoid dangers and minimize risks.

2.2. Safety notices



ATTENTION IMPORTANT SAFETY INFORMATION! These instructions must be read carefully as they contain important information for safety during installation, use, maintenance and dismantling of the system.

In order to minimize residual risks and ensure the safety of persons, it is important to follow these instructions.

These instructions must be handed over to the operator as an integral part of the product. These instructions must always be kept safe and accessible to all users of the sliding door system.

2.3. Proper use

This motor control is designed to be used with a Troax sliding door drive.

Reliable operation is only possible if the unit is carefully installed in accordance with these instructions.

Observe the Troax assembly instructions for the automated sliding door. You can avoid possible hazards within the meaning of EN 13241-1 if the installation complies with the specifications in these instructions.

Sliding doors which are operated with a Troax sliding door drive must comply with the applicable standards.

The sliding door must run evenly so that the safety cut-out can react optimally.

The sliding door must have mechanical end stops in the open and closed position, otherwise it can be pushed out of the guide when the sliding door is in the "emergency release" state.

The Troax automated sliding door is intended for use in indoor industrial environments only.

2.4. Non-approved use

The product may only be used for the purpose intended by the manufacturer. Any other use is considered improper and therefore dangerous. We cannot give any guarantee or warranty for damage caused by other uses or incorrect installation and are not liable for this either.

Changes, additions and/or conversions to the drive or the control system which are not in accordance with the intended purpose may lead to unforeseeable dangers.

2.5. Safety notices regarding skilled persons, who may carry out assembly, operation, maintenance, repair and disassembly.

The sliding door drive may only be installed and commissioned by a skilled person.

In the event of failure or malfunction of the drive, an expert must be directly commissioned with the inspection / repair.

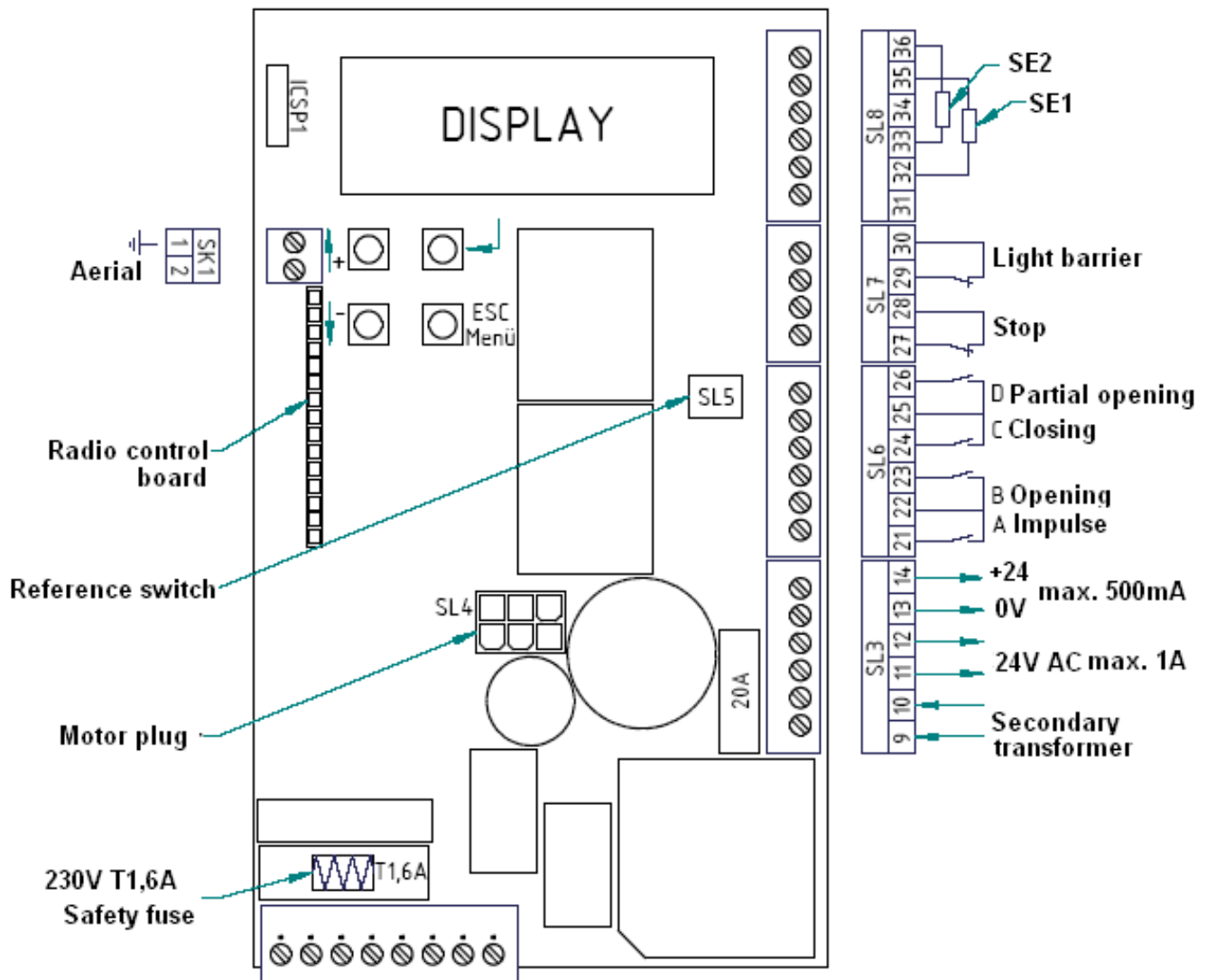
According to EN 12635, a skilled person is a person who has appropriate training, qualified knowledge and practical experience to correctly and safely install, inspect, maintain and repair a sliding door system. This person must also ensure that the applicable national regulations on work safety and regulations for the operation of electrical equipment are observed.

Packaging material should be disposed of in accordance with applicable national regulations.

You will find the relevant safety information and instructions in the relevant chapters of this manual. Please observe and follow these instructions to avoid any residual risks.

NOTE! Inform yourself about the prescribed safety devices based on the EU directives on the safety in use of power-operated sliding doors.

3. Circuit diagram



4. General safety instructions concerning the installation of the motor control

NOTE: Please observe the following notes and instructions for safe installation.

INCORRECT INSTALLATION CAN LEAD TO SERIOUS INJURIES!

The safe and foreseeable functioning of the sliding door system can only be ensured by correct installation by a skilled person in accordance with the instructions belonging to the product.

According to EN 12635, a skilled person is a person who has suitable training, qualified knowledge and practical experience to correctly and safely install, check, maintain and repair a sliding door system.

These installation and operating instructions must be read, understood and observed by the person who installs, operates or maintains the drive.

When carrying out the installation work, the skilled person must comply with all relevant and applicable occupational safety regulations as well as the regulations for the operation of electrical equipment. National regulations on work safety, accident prevention regulations and valid standards of the respective country must be observed and adhered to! During drive installation, possible hazards as defined by EN 13241-1 and EN 12453 must be considered.

5. Installation of the motor control



DANGER

Deadly electric shock from mains voltage possible!

There is a danger of life-threatening / fatal electric shock when in contact with the mains voltage.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Electrical connections must only be carried out by a qualified electrician.
- When laying the power line, the applicable regulations must be observed and complied with (IEC 364-4-41).
- Disconnect the system from the power supply before carrying out any work. Secure the system against unauthorized restarting.
- Ensure that the on-site electrical installation complies with the relevant safety regulations.
- To avoid hazards, a damaged power cord must be replaced by an electrician with an intact power cord.
- Use protective equipment during assembly.
- Reliable operation is only possible if the unit is carefully installed in accordance with these instructions. Switch on the mains voltage only after a second inspection.



ATTENTION

If the instructions are not followed, the controls may be destroyed!

Penetrating moisture or dirt can permanently damage or destroy the controller. Incorrectly connected cables can lead to malfunctions or destruction of the controller.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Mains voltage lines (terminals 1 to 8 of the terminal strip) and control lines (terminals 9 to 36) must be laid in separate cable ducts to avoid interference.
- **NEVER** switch mains voltage to the control inputs (terminals 9 to 36). In case of non-observance, immediate destruction, no warranty!

- Signal lines must not exceed a length of max. 30 m.
- Only suitable for indoor mounting.
- The **ambient temperature** may not be lower than -20°C and not higher than +50°C.
- The **air humidity** must be within 30 - 90 % RH.
- **Electromagnetic fields** at the installation site must be reliably shielded.

After completion of installation, the skilled person shall make sure to complete the CE marking process in accordance with the area of application.

6. Operating elements of the control

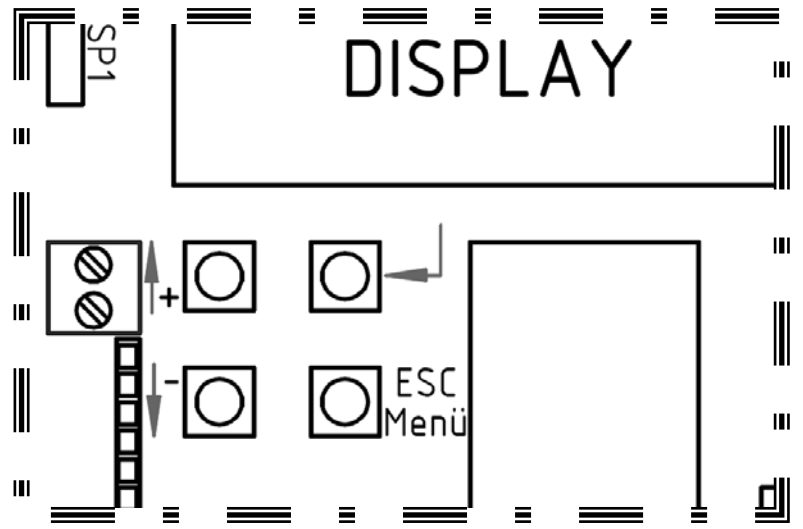
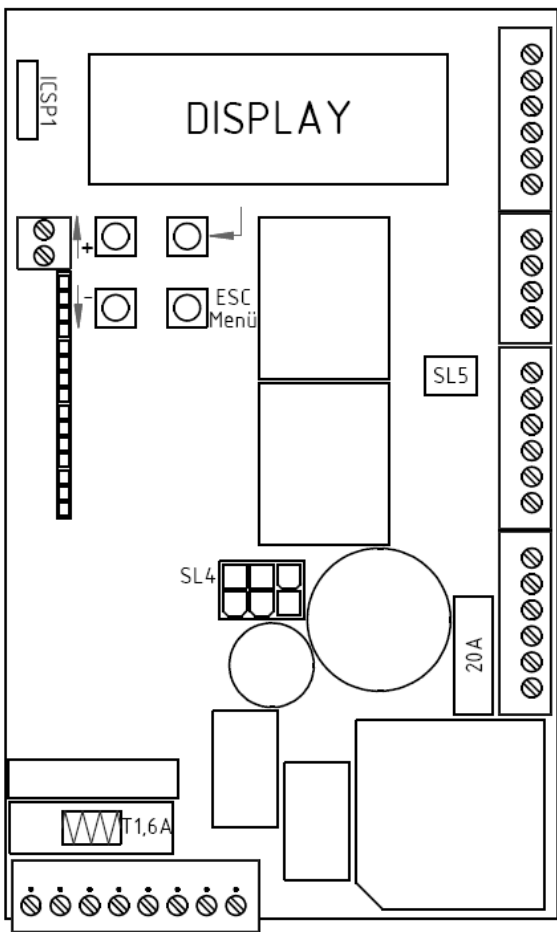
6.1. Display

For easier programming and faster troubleshooting, an illuminated, two-line display is installed as standard in the 47-21-i-20 motor controller.

6.2. Operating buttons

To operate the control 4 buttons are mounted on the circuit board.

Button	Status display (Operation)	Menu
↑+	Start / Stop open-run	Menu option / value + 1
↓-	Start / Stop close-run	Menu option / value – 1
↵ / Return	Impulse (Open – Stop – Close –Stop...)	Confirm menu option / menu value
Escape / Menu	Switch to menu options	Jump back one menu level without saving changes => Operation



7. Connections



DANGER

Deadly electric shock from mains voltage possible!

There is a danger of life-threatening / fatal electric shock when in contact with the mains voltage.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

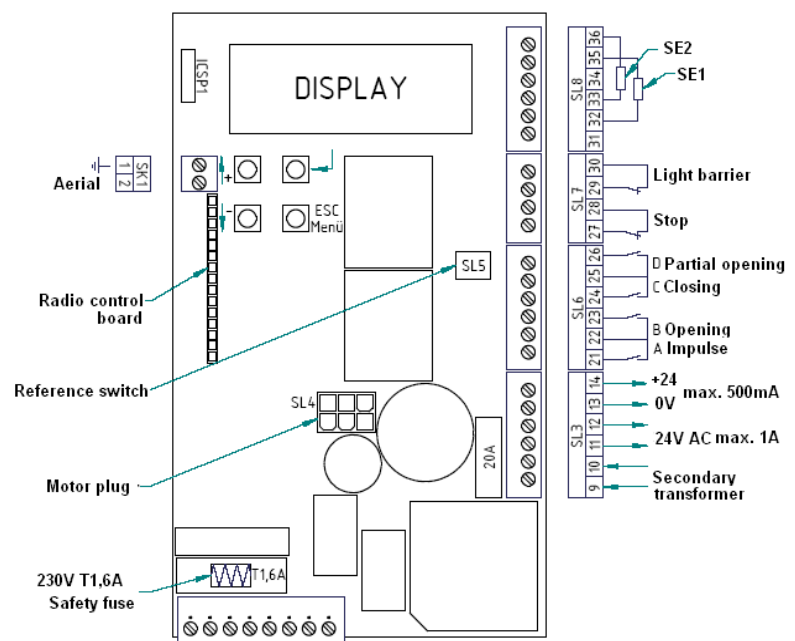
- Disconnect the system from the power supply before carrying out any work. Secure the system against unauthorized restarting!
- Mains voltage can be applied to terminals 1-8!
LIFE-THREATENING DANGER!
- **Never** connect mains voltage to terminals 9 to 36! Non-observance will destroy the control unit and void the warranty!

7.1. Wiring of the connections

For easy wiring, all external connections were routed to a removable terminal block (SL2 - SL8). This makes it very easy to change the control board if necessary.

The mains connection is done with a standard power cable with IEC 60320 C13 cable or a suitable power cable without connector.

7.2. Circuit diagram



A larger version of the circuit diagram can be found on page 9.

7.3. Terminal blocks [detailed connections]

Connector block 3 (SL3) – Low voltage supply for external devices

Terminals 9 & 10: (Input)	Connection of the 24V / 50Hz Secondary side of the transformer (already connected in the factory.) Optional connection of the 24V DC voltage
Terminals 11 & 12: (Output)	Directly connected to terminals 9 & 10 via fuse 20A Output of the power supply 24V DC voltage
Terminals 13 & 14: (Output)	Output current 24V- DC voltage max.500mA (13 = Ground / 14 = +24V)

Connector block 5 (SL5) – Reference switch (for potential-free opening reed contacts)

The reference switch (reed switch) is pre-assembled and plugged onto the SL5 plug contacts.

Alternatively, a limit switch can be connected here (see description of inputs A-D).

Connector block 6 (SL6) – Push button inputs (for potential-free closing contacts)

Terminal 21:	Button input A: Impulse function (common terminal 22)
Terminal 22:	Common terminal of the button inputs A & B
Terminal 23:	Button input B: targeted opening function (common terminal 22)
Terminal 24:	Button input C: targeted closing function (common terminal 25)
Terminal 25:	common terminal of the button inputs C & D
Terminal 26:	Button input D –partial opening function (common terminal 25)

Connector block 7 (SL7) – Safety input Stop & light barrier (for potential-free opening contacts, see 7.6 and 7.7)

Terminals 27 & 28:	Stop-input-Wicket door safety input
Terminals 29 & 30:	Connection of the safety light barrier (for the opening contact of the light barrier)

Connector block 8 (SL8) – Safety inputs for 8,2kΩ safety contact edges or OES-edges (see 7.8 & 7.9)

If 8,2kΩ safety contact edges are used

Terminal 31:	Not used
Terminal 32 & 35:	SE1 – Safety input 1 (Connection of the 8,2kΩ safety contact edges- activated during closing)
Terminal 33 & 36:	SE2 – Safety input 2 (Connection of the 8,2kΩ safety contact edge - activated during opening)
Terminal 34:	Not used

If OES-safety contact edges (optoelectronic safety contact edges) are used

Terminal 31:	OSE + 12Volt max. 150mA
Terminal 32:	OSE 1 optoelectronic safety contact edge 1
Terminal 33:	OSE 2 optoelectronic safety contact edge 2
Terminal 34:	OSE – 0 volt mass
Terminals 35 & 36:	Not used

7.4. Connection of the antenna / radio board

A wire aerial can be connected to the lower terminal of the SK1 (Terminal 2). The length of the wire aerial depends on the frequency and should hang to the side of the control board.

As an alternative to wire aerial, the cable core of a rod antenna can be connected to terminal 2. We recommend mounting the aerial rod as high as possible in order to avoid frequency disruptions caused by the sliding door.

The receiving frequency depends on the 15-pin radio board that can be added as an accessory. The receiving frequency is 868,3 MHz.

(Optionally, it is possible to order boards with other frequencies such as 433,92 MHz, 40,685 MHz and 27,015 MHz.)

7.5. Push button inputs A-D

For the functions impulse, open, close and partial opening, command devices with potential-free closing contacts can be connected to the SL6 plug connector.

As soon as a running direction is blocked by a safety input LS, SE1 or SE2 and the emergency function is activated in the menu, the input for this

running direction switches to the emergency function operating mode. By actuating the command transmitter three times, you can move the motor in the desired running direction in emergency function operation despite the triggered safety. You can activate this emergency function in menu option 27.

Using the menus for inputs A-D, you can set an input for connecting the OPEN limit switch for sliding door type DIN left (CLOSE limit switch for sliding door type DIN right). The connection for the reference switch, SL5, is then automatically the limit switch CLOSED for sliding door type DIN-left (limit switch OPEN for sliding door type DIN-right).

7.6. Light barrier

CAUTION!

External safety devices must be approved for personal protection and are not tested by the control unit! The correct function must be checked at least every 6 months.

Power supply:

The supply voltage can be tapped from the control board:

- Contacts 11 + 12: 24V DC
- Contacts 13 + 14: 24V DC

Terminals 29 & 30 can be used to connect the potential-free opener contact (closed in standby mode) of a light barrier. Several light barriers can also be connected, whose potential-free opener contacts must then be connected in series.

If the operating mode "AUTOMATIC CLOSING" is activated, the closing takes place either immediately after the set time "after LS" or after the set time "Keep open" in the menu "Aut. close".

7.7. Stop input

Terminals 27 & 28 can be used to connect the potential-free opener contact (closed in standby state) of an emergency stop button. Several safety devices can also be connected, whose potential-free NC contacts must then be connected in series.

This safety input acts in all directions of travel of the sliding door. If this input is actuated, the sliding door operator can no longer be moved or stops immediately when moving.

Note: no reversing and no release takes place here.

7.8. 8,2kΩ-safety contact edges

CAUTION!

External safety devices must be approved for personal protection and are not tested by the control unit! The correct function must be checked at least every 6 months.

Between terminals 32 & 35 and between terminals 33 & 36 safety contact strips with a terminating resistor of 8,2kΩ can be connected.

SE1 (close-run) (Safety-input 1 – Terminals 32 & 35)

SE2 (open-run) (Safety input 2 – Terminals 33 & 36)

7.9. Optoelectronic safety contact edges (OES)

CAUTION!

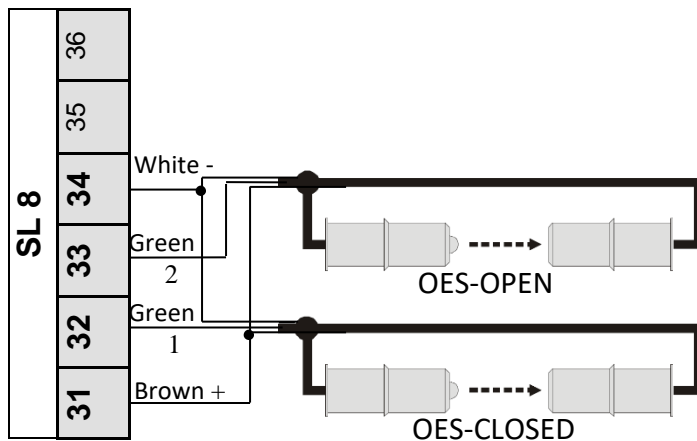
External safety devices must be approved for personal protection and are not tested by the control unit! The correct function must be checked at least every 6 months.

Optoelectronic safety contact strips can be connected between terminals 31 to 34.

The power supply of the OES from DC 12Volt must be connected to terminals 34 = ground and 31 = +12Volt max. 150mA.

The OES1 is connected to terminal 32 and the OES2 to terminal 33.

Connection of two OES safety contact edges:



7.10. Battery operation

ATTENTION

If a battery is connected to terminals 9 & 10, no transformer may be connected!

It is also possible to operate this control with a 24V battery. The supply voltage of this battery must be connected to terminals 9 & 10 (polarity irrelevant).

8. Programming

ATTENTION!

Damage to the controls due to moisture

Penetrating moisture can damage the control unit permanently.

Protect the controller from moisture when opening the housing of the control unit.

8.1. General programming

To operate the controls, operate them with the 4 buttons located on the board (see 6.2.).

You need the keys "top left" and "bottom left" with the character "**↑ +**" and "**↓ -**." to select the menu options and the menu values in the menu options up and down.

You need the key "bottom right" with the inscription

"**Escape/Menu**" to select between the 6 main menu options and to jump back from a menu level WITHOUT saving the possibly changed values.

Main menu options	Explanation
"Status display "	Display of the current motor status (opening / closing / stillstand / premonition) Display of actuated inputs
Menu	Change of all software settings (Menu items 1-28)
Learning runs	Teaching-in / deleting travel paths and forces
Radio level	Teaching-in/ deleting remote controls
Disruption	Readout of the last 10 malfunctions
Last commands	Readout of the last 50 commands

You need the key "top right" with the label " ↵ / **Return**" to confirm the menu options and menu values.

8.2. Configuration of software functions

ATTENTION!

Each time after parameters have been set or changed, new, learning trips (see 8.4 & 8.5) must be carried out!



⚠ WARNING

Risk of injury during door movement!

In the area of the door system, damage or injuries can occur during door movements. The door leaf can collide with persons who are in the movement area of the sliding door and (seriously) injure them. Limbs can be caught by the sliding door and taken along. There is a risk that limbs could be cut off, if they get in between the door leaf mesh and the fixed mesh panel or between the door leaf and fixed post.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Make sure that neither persons nor objects are in the path of the sliding door.
 - The free space between the door leaf and the floor must be selected in such a way that there is no danger of the feet being carried along.
 - If possible, the door should only be operated when there is visual contact with the movement range of the door.
 - Monitor the door movement until the door has reached its end position.
 - During opening and closing of the sliding door, the working area of the sliding door system must not be entered or passed through!
 - Do not stand still in the opened door system!
 - If possible, install an emergency stop command device to be able to trigger an immediate stop in an emergency.
-



 **WARNING**

Risk of injury at the closing edges

During sliding door run, limbs and fingers can be squeezed or crushed between the mesh and at the main closing edge as well as the secondary closing edges! The door leaf can collide with persons who are in the movement range of the gate and injure them (seriously).

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- While the door is moving, do not touch the main or secondary closing edges.
 - Make sure that neither persons nor objects are in the path of the door.
 - If possible, the door should only be operated when there is visual contact with the movement range of the door.
 - Monitor the door movement until the door has reached its end position.
 - During opening and closing of the gate, the working area of the gate system must not be entered or passed through!
 - Do not stand still in the opened door system!
 - If possible, install an emergency stop command device to be able to trigger an immediate stop in an emergency.
-

Press the **"Escape/Menu"** key repeatedly until "Menu" appears on the display. Confirm with the "**↵/ Return**" button.

Now use the "↑ +" or "↓ -" keys to select the function described in the following section and confirm with "↵ / **Return**".

To change the displayed menu value, press the keys "↑ +" or "↓ -". When the desired menu value is displayed, confirm with the "↵ / **Return**".

Follow the following parts of the menu option which you will find further information about.

When you arrive at the next menu option, your changes to the parameters of the previous menu option have been saved.

To exit the menu early WITHOUT saving the changes, press the "**Escape/Menu**" key several times until you are back in the previously selected menu item.

9. Overview/ Information regarding the menu options

9.1. Language

The following languages are available:

GERMAN
ENGLISH
FRENCH
DUTCH
POLISH

9.2. Sliding door type

Pre-programmed configurations for following portal types are available:

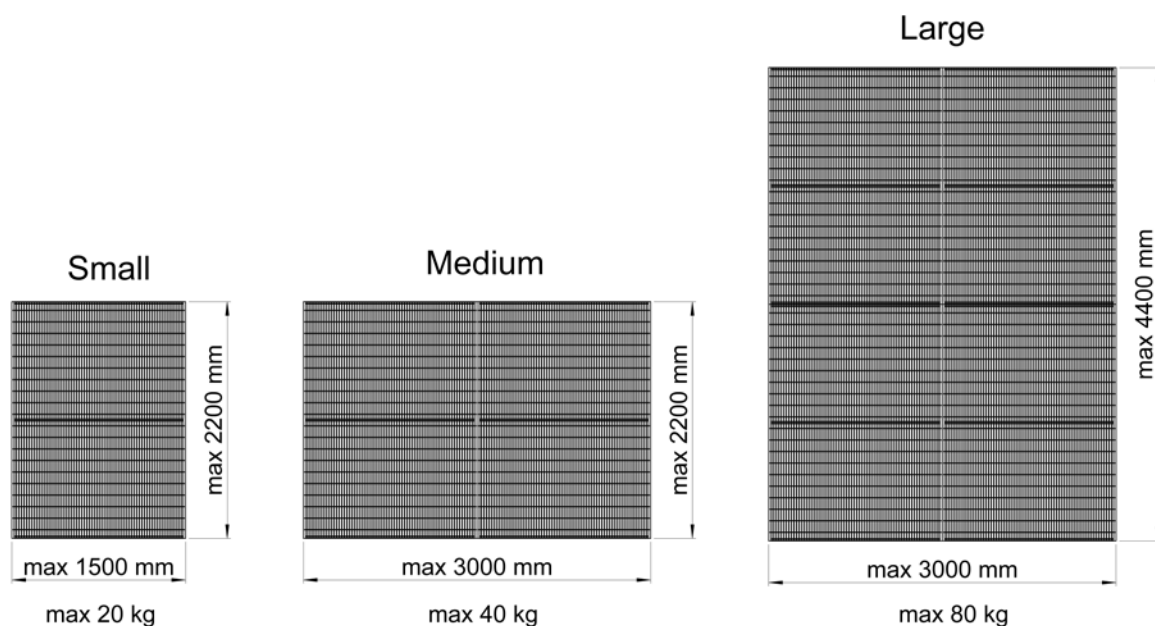
0	Door small l	Sliding door small opens to the left
1	Door medium l	Sliding door medium opens to the left
2	Door big l	Sliding door large opens to the left
3	Door small r	Sliding door small opens to the right
4	Door medium r	Sliding door medium opens to the right
5	Door big r	Sliding door large opens to the right

To decide whether your sliding door system is DIN left or DIN right, please refer to **chapter 10 DIN LEFT & DIN RIGHT** to find out which DIN your sliding door system has.

NOTE: By changing the sliding door type, all menu configurations are set to the default settings.

Sizes and weights in the figure below determines if the gate is to be set as "Small", "Medium" or "Large" in the settings.

	Maximum width (mm)	Maximum height (mm)	Maximum weight (kg)
Small	1500	2200	20
Medium	3000	2200	40
Large	3000	4400	80



9.3. Radio

This menu option allows you to:

Program radio	Program / teach-in new remote controls
Delete radio	Delete individual or all remote-control codes
Radio level	Displays strength of signal from remote controls & displays active remote controls.
Amount acc.	Displays the total number of remote controls connected to the system
System	Displays the programmed radio system (the radio system of the first hand-held transmitter is taken over)

9.4. Sensor

In this menu item, you can select which position detection devices are to be used:

- **Hall-sensors**
- **Hall-sensors with reference switch**

9.5. A Impulse

In this menu item you can determine the mode of action of input A:

- **Impulse (Open – Stop – Close – Stop ...)**
- **Limit switch** (Limit switch OPEN with DIN-Left or limit switch CLOSE with DIN-Right)

9.6. B Opening

In this menu item you can determine the mode of action of input B:

- **Stop panic** (Open-Stop-...)
- **Stop no panic** (Open-Open-...)
- **Deadman** (Press-and-hold travel: the sliding door opens only as long as the respective button is pressed)
- **Limit switch** ((limit switch closed with DIN left or limit switch open with DIN right)

9.7. C Closing

In this menu item you can determine the mode of action of input C:

- **Stop panic** (Close-Stop-...)
- **Stop no panic** (Close-Close-...)
- **Deadman** (Press-and-hold travel: the sliding door closes only as the corresponding button is pushed)
- **Limit switch** (limit switch closed with DIN left or limit switch open with DIN right)

9.8. D Partial-opening (PO)

In this menu item you can determine the mode of action of input D:

- **Stop panic** (PO-Stop-Close-Stop...)
- **Stop no panic** (PO-PO-...)
- **Auto closing OFF** (Automatic closing turned off.)
- **Limit switch** (Limit switch OPEN with DIN-left or limit switch CLOSED with DIN-Right.)

Furthermore, the percentage of the partial opening travel distance (as compared to the total travel distance) must be set here. It must be less than 100%.

If input D is permanently activated and the sliding door is closed from end position OPEN with automatic closing and no limit switch is set, the system only closes up to the partial opening position (personnel entrance).

9.9. Light barrier

This menu item allows you to program the effect of the light barrier after it has been activated:

NO	Effect
OPEN	Stop
OPEN	Disengage (ca. 1 sec)
OPEN	Reverse
CLOSE	Stop
CLOSE	Disengage (ca. 1 sec)
CLOSE	Reverse

9.10. SE1 (closing)

In this menu item you can set whether the controller is to monitor the safety input SE1 (terminal 32) for an **8.2k Ω** resistor (safety contact strip) or for an **OES** strip (optoelectronic safety contact strip).

- **8k2**
- **OES**

Furthermore, the effect of actuating the safety input must be selected (only effective when closing!):

- **NO Effect**
- **Stop**
- **Disengage (ca. 1 sec)**
- **Reverse**

9.11. SE2 (Opening)

In this menu item you can set whether the controller is to monitor the safety input SE2 (terminal 33) for an **8.2k Ω** resistor (safety contact strip) or for an **OES** strip (optoelectronic safety contact strip).

- **8k2**
- **OES**

Furthermore, the effect of actuating the safety input must be selected (only effective when closing!):

- **NO Effect**
- **Stop**
- **Disengage (ca. 1 sec)**
- **Reverse**

9.12. SE-Standby

This menu item allows you to set whether the board cuts off the 12V power supply of the optoelectronic safety edge (Terminals 31 & 34) at sliding door standstill in order to save energy.

(This function is only necessary in battery mode):

- **NO Standby**
- **Standby**

9.13. Stop

This menu item is for informative purposes only(!), you can see whether the stop is open <active> or closed <OK>.

9.14. Warning light

In this menu item, you can set whether and for how long the warning light (terminals 7 & 8) lights up (0-10 seconds) before closing and before Opening, except for setting end position indication.

Warning X-X	Output „flashes“.
Warning XXX	Output permanent signal.
End position	Output is activated as soon as an end position is reached.
End position OPEN	Output activates as soon as an end position Open is reached.
End position CLOSED	Output activates as soon as an end position Closed is reached.

It can be tested with the buttons<+> and <->.

9.15. Light

In this menu item, you can set whether and for how long the light (terminals 5 & 6) will be illuminated after the motor has run. The afterglow duration can be set from 0-99 seconds in increments of seconds, then from 2-10 minutes in increments of minutes.

After glow	0sec-10min (Continue pressing the <+> key for further settings.)
End position	Output activates as soon as an end position is reached.
End position Open	Output activates as soon as the end position Open is reached.
End position Closed	Output activates as soon as the end position Closed is reached.

The light is always on when the motor is operating, except when setting the end position.

It can be tested with the buttons<+> and <->.

9.16. Automatic closing

In this menu item you can set whether and after what time an automatic closing starts. The duration until automatic closing (AC) can be set from 0-99 seconds in increments of seconds, then from 2-10 minutes in increments of minutes. Furthermore, the time until automatic closing can be set from 0 to 20 seconds after the light barrier has been released. If a time is entered here, the control always tries to close the sliding door, when the light barrier's sensing range is free.

Note: Automatic closing can be switched on and off via input D (input D: Auto Close OFF).

9.17. Current stop OPEN



 **CAUTION**

Forces must be maintained!

Forces must not be set randomly. Failure to do so may result in serious injury and/or damage to property.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Make sure that you comply with the applicable standards and forces.
- Use any additional safety devices.

In this menu item you can set the current stop in the open direction (force cut-off used for obstacle detection). You can:

- switch this **<active>** or **<inactive>**,
- select the start-up time, in which it is switched off,
- set an addition value, which is applied to the taught-in values.

9.18. Current stop CLOSED

In this menu item you can set the current stop in the closed direction (force cut-off, which serves to detect obstacles). You can:

- switch this **<active>** or **<inactive>**,
- select the start-up time, in which it is switched off,
- set an addition value, which is applied to the taught-in values.


9.19. Speed

In this menu item you can individually set the speed, at which the sliding door runs "OPEN" or "CLOSED". This is a percentage voltage setting, so the setting is not completely linear.

9.20. Soft start


In this menu item you can set the speed at which the drive always starts; the duration of the soft start can also be set here.

9.21. Soft-run OPENING

 CAUTION!
For safety reasons, a minimum run-out distance of 60cm must be programmed! This corresponds to the percentages given in the table under point 9.22.

In this menu item you can set the speed, at which the drive in the soft stop direction OPEN will run out, and the length of the soft stop can also be set here proportionally.

9.22. Soft run CLOSING

 CAUTION!
For safety reasons, a minimum run-out distance of 60cm must be programmed! This corresponds to the percentages given in the table below.

In this menu item you can set the speed at which the drive in the soft stop direction CLOSE runs out, and the length of the soft stop can also be set here as a percentage.

IS* at the opening in m	1	2	3	4	5	6	7	8	9
Min. length of smooth run	60%	30%	20%	15%	12%	10%	9%	8%	7%

IS* at the opening in m	10	11	12	13	14	15	16	17	>17
Min. length of smooth run	6%	5%	5%	5%	4%	4%	4%	4%	4%

*IS = Intermediate space

9.23. Delete data

This menu item allows you to delete the following data:

1: -----	No deletion
2: Forces	Deletion of memorized forces
3: Distances + Forces	Deletion of memorized end of travel positions and forces
4: Configurations	Deletion of all memorized configurations

9.24. Cycle counter

This menu item is a pure display menu, here you can read the number of runs made so far. This value cannot be deleted or reset.

9.25. Version

This menu item is a pure display menu, here you can see which software version is programmed in the control unit.

9.26. Motor parameter

This menu item is a display menu for the motor parameter.

9.27. Emergency function

In this menu item you can activate or deactivate the emergency function (see section 7.5.: Button inputs A-D). After a RESET of the control, the emergency function is inactive.

9.28. Restart

In this menu item you can activate or deactivate the restart.

If an active command is detected at inputs A-D after the voltage has been switched on, the controls start the motor to assume the desired status / end position. If an additional safety input is detected as active, the start to the end position is not carried out.

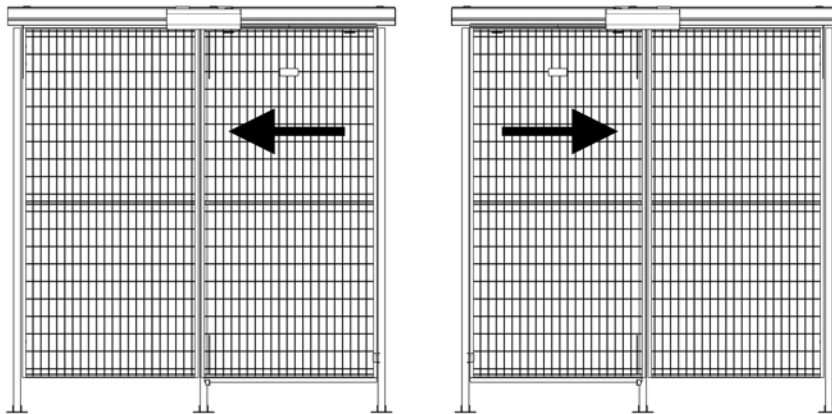
Input A	With automatic closing – Starts opening the sliding door and keeps the sliding door open
Input B	Starts opening in the mode "Open without stop".
Input C	Starts closing in the mode "Close without stop".

After a RESET of the control, the restart is inactive.

10. Settings – DIN Left – DIN Right

Whether the sliding door operator has been installed in "DIN left" or "DIN right" is decisive for the control to know in which direction it runs CLOSED or OPEN (see *point 9.2, sliding door type*). In order to set this correctly, you must know the DIN of your sliding door operator according to the following specification:

Standing outside the door (the side where the motor is mounted): A left door opens to the left. A right door opens to the right. See figure below.



11. Learning runs



WARNING

Risk of injury during door movement!

In the area of the door system, damage or injuries can occur during door movements. The door leaf can collide with persons who are in the movement area of the sliding door and (seriously) injure them. Limbs can be caught by the sliding door and taken along. There is a risk that limbs could be cut off, if they get in between the door leaf mesh and the fixed mesh panel or between the door leaf and fixed post.

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Make sure that neither persons nor objects are in the path of the sliding door.
- The free space between the door leaf and the floor must be selected in such a way that there is no danger of the feet being carried along.
- If possible, the door should only be operated when there is visual contact with the movement range of the door.

- Monitor the door movement until the door has reached its end position.
 - During opening and closing of the sliding door, the working area of the sliding door system must not be entered or passed through!
 - Do not stand still in the opened door system!
 - If possible, install an emergency stop command device to be able to trigger an immediate stop in an emergency.
-



⚠ WARNING

Risk of injury at the closing edges

During sliding door run, limbs and fingers can be squeezed or crushed between the mesh and at the main closing edge as well as the secondary closing edges! The door leaf can collide with persons who are in the movement range of the gate and injure them (seriously).

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- While the door is moving, do not touch the main or secondary closing edges.
- Make sure that neither persons nor objects are in the path of the door.
- If possible, the door should only be operated when there is visual contact with the movement range of the door.
- Monitor the door movement until the door has reached its end position.
- During opening and closing of the gate, the working area of the gate system must not be entered or passed through!
- Do not stand still in the opened door system!
- If possible, install an emergency stop command device to be able to trigger an immediate stop in an emergency.



⚠ WARNING

Risk of injury on the gear rack

During sliding door run, limbs and fingers may be pinched or crushed between the gear wheel and the gear rack!

SAFETY INSTRUCTION FOR HAZARD AVOIDANCE

- Do not touch the gear wheel or gear rack while the gate is moving.
 - If possible, the gate should only be operated when there is visual contact with the movement range of the gate.
 - If possible, install an emergency stop command device so that an immediate stop can be activated in an emergency.
-

11.1. Carrying out learning runs for systems with motor-integrated sensor AND two limit switches

CAUTION!

During all learning trips, the sliding door must not be stopped by light barriers, safety contact strips or anything else or prevented from running normally.

Press the "**Escape/Menu**" key repeatedly until the display shows "Memorizing runs". Confirm this with the "**↵/ Return**" key.

Make sure that the sliding door is not positioned against a mechanical stop. Preferably in the middle between fully open and fully closed.

Press the "**↵/ Return**" key once to start the learning runs.

The door now closes and opens automatically 3 times. Starts with open.

You can stop the learning runs at any time by pressing any button.

Now the display shows "**Memor runen OK?**" If all learning runs were correct, confirm this display with the "**↵/ Return**" key.

If one of the learning runs has been influenced by an irregular procedure (safety device, etc.), select the answer option →No← with the key "**↑ +**", confirm this with "**↵/ Return**" and carry out the steps from "11.1" again.

12. Teaching-in of the radio codes

NOTE: If one of the two systems (12-bit or 18-bit) has been programmed in a system, only radio transmitters with the same bit system can be taught in. To change the system, you must delete all the taught-in radio transmitters.

12.1. Programming

Press the "**Escape/Menu**" key repeatedly until the display shows "**Radio level:**". Confirm with the "**↵/ Return**" key.

Now the display shows "**Learn radio?**", confirm this with the "**↵/ Return**" key.

Now use the "↑ +" and "↓ -" buttons to select the desired radio function (see list below) and confirm with "↵/ Return".

Radio functions: F1: Impulse (Open-Stop-Close-Stop-...)
F2: Open with stop (Open-Stop-...)
F3: Close with Stop (Close-Stop-...)
F4: Stop
F5: Partial opening (Personnel sliding doorway, see menu item 9.8)
F6: Open without stop (Open-Open-...)
F7: Close without stop (Close-Close-...)
F8: Light (switches on the light relay)

Now press the desired remote control button permanently until the second line of the display reads "Detected: °SPXX°FY" lights up. The hand-held transmitter key is now taught-in.

12.2. Delete



You can delete all or only individual remote controls.

Press the "Escape/Menu" key repeatedly until the display shows "Radio level". Confirm with the "↵/ Return" button.

Now use the "↑ +" and "↓ -" keys to select the desired "Delete radio?" function and confirm with "↵/ Return".

Now use the "↑ +" and "↓ -" buttons to select whether you want to delete "0: All" (all remote controls) or only individual hand-held transmitters. Confirm your selection with "↵/ Return".

13. Malfunctions and errors

	 WARNING
	Interventions in a defective sliding door system by unqualified persons can lead to serious injuries!
<p>In case of malfunctions or faulty operation, the power supply must be turned off. Repairs may only be carried out by skilled personnel!</p> <ul style="list-style-type: none"> • Existing errors and / or defects must be corrected immediately and completely! • An attempt by an unqualified person to repair or otherwise interfere with a defective sliding door system may result in serious injury! • Before carrying out any work, disconnect the sliding door system from the power supply and secure the sliding door system against unauthorised reconnection. 	

13.1. Display of malfunctions

To be able to read out the last malfunctions for locating faults, press the **"Escape/Menu"** key repeatedly until the display shows **"Malfunctions"**. Confirm with the **"↵ / Return"** key.

You can see with the buttons **„↑+“** and **„↓-“** the last 10 malfunctions and also how much time has passed since the malfunctioning has been detected.

Message	malfunctioning	Correcting faults
-----	No malfunction	OK
ROM	Data content (µC has to be programmed anew)	Replace the board
RAM	Memory access (µC)	Replace the board
EEPROM	EEProm-access	Replace the board
EEPROMx	EEProm-data	Delete data / replace the board
W-DOG	Watchdog malfunction (Hardware)	Replace the board
Faul HW	Current measurement (Hardware)	Replace the board
Relfaul	Relay for motor controller (Hard-	Replace the board

	ware)	
FETfaul	Transistors for motor controller (Hardware)	Replace the board
SE1-HW	Safety input 1-Self test (Hardware)	Check the connection / Replace the board
SE2-HW	Safety input 2- Self test t (Hardware)	Check the connection / Replace the board
CEL-HW	Light barrier- Self test (Hardware)	Check the connection / Replace the board
Monoimp	No motor impulse or no motor current	Check the connection / Replace the board
Runtime	Safety input 2: active during engine operation	Check the limit switch / check the mechanism
HiVfaul	Overvoltage	Check mains supply or replace the board
LoVfaul	Low voltage	Check mains supply / check the mechanism / replace the board
DirMfaul	The motor turns in the wrong direction	Check mains supply or Replace the board

13.2. Last commands

To be able to read out the last commands for troubleshooting, press the **"Escape/Menu"** key until the display shows **"Last commands"**. Confirm this with the **"↵/ Return"** key.

Now you can read out the last 50 commands which have affected the control with the keys **"↑ +"** and **"↓ -"**, furthermore you are shown the time before which the command was given.

13.3. Status display (motor)

To operate the sliding door using the control keys, press the **"Escape/Menu"** key until the display shows **"Last commands"**. Now press the **"Escape/Menu"** key again.

Now the current status of the motor is shown in the first line of the display. The second line of the display shows you the currently activated/operated inputs.

Z1	Hall sensor 1 actuated in motor (lights up several times during motor run)	
Z2	Hall sensor 2 actuated in motor (lights up several times during motor run)	
REF	Reference switch actuated	
A	Input A impulse closed (actuated)	SL6 Ts 21 & 22
B	Input B-Opening closed (actuated)	SL6 Ts 22 & 23
C	Input C-Closing closed (actuated)	SL6 Ts 24 & 25
D	Input D partial opening closed (actuated)	SL6 Ts 25 & 26
STP	Stop input open (actuated)	SL7 Ts 27 & 28
LS	Light barrier input open (actuated)	SL7 Ts. 29 & 30
SE1	Safety input 1 - none 8,2kΩ detected / OES error	SL8 Ts 32 & 35
SE2	Safety input 2 - none 8,2kΩ detected / OES error	SL8 Ts 33 & 36
E-A	Limit switch open detected	
E-Z	Limit switch Closed Detected	
####	No learning trips carried out yet	
?	End positions / reference positions are searched for after voltage is switched back on.	
*	Hold-up time is running out	

13.4. Troubleshooting instructions

The 47-21-i-20 control unit make troubleshooting much easier for the installer. The display not only shows you the currently activated inputs, but the controls also have a memory, which stores the last 10 malfunctions (software) *see instruction point 13.1.* and the last 50 activations (safety inputs etc.) – *see instruction point 13.2.* incl. time display.

Proceed as follows to read out the currently actuated inputs:

Press the **"Escape/Menu"** key repeatedly until the display shows **"Last commands"**. Now press the **"Escape/Menu"** key again.

Now the current status of the motor is shown in the first line of the display. The second line of the display shows you the currently activated/operated inputs.

Indicator	Significance of the indicator	Potential malfunctioning	Cause & remedy
Z1 & Z2	<p>The contacts of the hall sensors, which are installed in the motor, are active during engine operation. They flash continually in that period.</p> <p>In downtime, it has no importance to know if they are active or not.</p>	<p>If they stopped flashing:</p>	<ul style="list-style-type: none"> ▶ The motor is defective ⇒ Replace the motor ▶ The wire of the hall sensor is damaged ⇒ Repair the wire / replace the motor
REF	<p>The Reed contact which serves as a reference point should shortly flashes by each travel.</p>	<p>It stopped flashing:</p>	<ul style="list-style-type: none"> ▶ Magnet on the gear rack missing ⇒ Fix a new magnet ▶ The Reed contact is defective ⇒ Repair the wire / replace it ▶ The wire of the Reed contact is damaged ⇒ Repair the wire or replace the Reed contact
		<p>It flashes continuously</p>	<ul style="list-style-type: none"> ▶ The Reed contact is not connected ⇒ Connect the Reed contact ▶ The Reed contact is defective ⇒ Replace it
A B C D	<p>The inputs, which are operated with potential-free buttons, flash when they are active.</p>	<p>Though an external button has been pressed, they do not flash no more</p>	<ul style="list-style-type: none"> ▶ The circuit of the button is discontinuous ⇒ Repair the wire / replace it ▶ The button is defective ⇒ Replace the button
		<p>They flash continuously</p>	<ul style="list-style-type: none"> ▶ The wire is damaged ⇒ Repair the wire / replace it ▶ The button is defective ⇒ Replace the button ▶ A commutator has been set up instead of a push-button ⇒ Set up a push-button
STP	<p>The stop input flashes when the terminals 27 &</p>	<p>Though the emergency stop switch has</p>	<ul style="list-style-type: none"> ▶ The wire is damaged ⇒ Repair the wire / replace it



	28 are not interconnected (Emergency stop active)	been activated, the sign does not flash.	<ul style="list-style-type: none"> ▶ Several emergency-stop switches have been connected in parallel ⇒ Connect them in series
		Though the emergency stop switch has not been activated, It flashes continuously	<ul style="list-style-type: none"> ▶ The wire of the emergency stop switch is defective ⇒ Repair the wire / replace it ▶ the opening contact and the closing contact of the emergency stop switch interchanged ⇒ Use a rest contact
LS	The input of the light barrier flashes if the terminals 29 & 30 are inter-connected. (Light barrier active)	Though the light beam has been interrupted, they do not flash.	<ul style="list-style-type: none"> ▶ The wire is pulled ⇒ Repair the wire / replace it ▶ Several light barriers have been connected in parallel ⇒ Connect them in series
		Though the light beam has not been interrupted, they flash continuously.	<ul style="list-style-type: none"> ▶ The wire of the safety contact edge is defective ⇒ Repair the wire / replace it ▶ The opening contact and the closing contact of the safety contact edge have been interchanged ⇒ Use a rest contact
SE 1 SE 2	The safety inputs flash if the safety input 1 (SE1) or the safety input 2 (SE2) has been activated	SE 1 flashes	<ul style="list-style-type: none"> ▶ The safety contact edge is active ⇒ Inactivate it ▶ The safety contact edge is defective ⇒ Replace it ▶ False configuration (Menu item 10) ⇒ 8K2 by default ▶ The wire of the safety contact edge is defective or pulled ⇒ Repair the wire / replace it
		SE 2 flashes	<ul style="list-style-type: none"> ▶ The safety contact edge is active ⇒ Inactivate it ▶ The safety contact edge is defective ⇒ Replace it ▶ False configuration (Menu item 11) ⇒ 8K2 by default

			<p>▶ The wire of the safety contact edge is defective or pulled ⇒ Repair the wire / replace it</p>
F1 to F9	Radio commands which are given by the radio transmitter	Flashes though neither of the remote control has been activated	<p>▶ Another hand transmitter in the immediate vicinity has the same coding (12-bit encoding) ⇒ Use an 18-bit encoding or a different one.</p> <p>▶ An neighbouring hand transmitter has wrongly been taught in ⇒ Delete individual hand transmitters (18-bit encoding)</p>
E-A E-Z	Limit switch OPEN / CLOSED Flashes when the limit switch OPEN / CLOSED is activated	Lights up although the sliding door is not in an end position	<p>- Check limit switch. - Menu Input A-D incorrectly set.</p>
?	End positions not synchronized after power failure		Move the actuator with the magnet over the reference switch or to the end positions.
####	Learning runs not yet carried out.		Carry out learning trips

14. Inspection and maintenance

The sliding door system shall be regularly inspected and serviced by a skilled person in accordance with the below instructions.


14.1. Safety instructions for repairs

	 WARNING
	<p>Unwanted sliding door movements can lead to serious injury or death!</p>
<p>Unintentional sliding door movements can be triggered if the sliding door system is accidentally switched on again by third parties during inspection or maintenance work.</p> <ul style="list-style-type: none"> Therefore, disconnect the door system from the power supply before carrying out any work and secure the door system against unauthorised reconnection. 	

All cleaning, maintenance and repair work must be carried out by skilled personnel. To ensure the performance and operational capability of the system, the necessary maintenance work must be carried out by skilled personnel at regular intervals in accordance with the applicable regulations.

Regular inspections of the safety equipment must be carried out. It is recommended that operators of the sliding door system carry out a visual inspection of all safety functions on a **monthly** basis.

All installation, maintenance and repair work must be documented in writing in the Log Book, see chapter 15.

	⚠ WARNING
	Interventions in a defective sliding door system by unqualified persons can lead to serious injuries!
<p>In case of malfunctions or faulty operation, the power supply must be turned off immediately. Repairs may only be carried out by skilled personnel!</p> <ul style="list-style-type: none">• Existing faults and / or defects must be rectified immediately and completely!• Any attempt by an unqualified person to repair or otherwise intervene in a defective sliding door system can lead to serious injuries!• Before carrying out any work, disconnect the sliding door system from the power supply and secure the sliding door system against unauthorised reconnection.	

16. Declaration for the installation of an incomplete machine

in the sense of Directive 2006/42/EC, Annex II Part 1B

**BelFox Torautomatik GmbH
Forsthaus 4
36148 Kalbach**

We hereby declare that the incomplete machine
**Troax Power sliding door drive
8911000x**

as far as it is possible from the scope of delivery, complies with the basic requirements of the following directives:

**Machinery Directive 2006/42/EC
EMC - Directive (2014/30/EU
Low Voltage Directive (2014/35/EU)
Radio Equipment Directive RED (2014/53/EU)
RoHS (EU Directive 2011/65/EU)**

Applied harmonized standards whose references have been published in the Official Journal of the EU:

**EN ISO 13849-1:2008 Cat.2 / PLc -
Force limitation and evaluation Safety contact edges
DIN EN 60335-1/2, as far as applicable
Safety of electrical equipment/drives for gates
DIN EN 61000-6-3
Electromagnetic compatibility - Emission of interference
DIN EN 61000-6-2
Electromagnetic compatibility - Immunity
DIN EN 60335-2-103
Safety of household and similar electrical appliances
-Part 2: Particular requirements for operators for gates, doors and windows**

Furthermore, we declare that the special technical documentation for this partly completed machinery has been prepared in accordance with Annex VII Part B and we undertake to submit this documentation to the market surveillance authorities via our documentation department upon request.

Commissioning of the partly completed machinery is prohibited until the partly completed machinery has been incorporated into a machine which complies with the provisions of the EC Machinery Directive and for which an EC Declaration of Conformity according to Annex II A is available.

D-36148 Kalbach; 08.10.2021

Signature: 

Name and function: Jens Broßmann, standards and documentation officer,
document manager,
electrical and development engineer

Annex

Requirements of Annex I of 2006/42/EC that have been complied with. The numbers refer to the sections of Annex I: **1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.6, 1.3.2, 1.3.4, 1.3.7, 1.3.9, 1.5.1, 1.5.6, 1.5.11, 1.7.1, 1.7.1.1, 1.7.2, 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2 (partially)**

17. Technical specifications

Power supply:	Prim: 100V-240V AC 50-60 Hz Sec: 24V DC 4200mA +2% / -2%
Power consumption:	Standby 24V 60mA with HF-Module
Output:	Motor 24V DC 24V DC max. 1A 24V DC max. 500mA
Input:	100V-240V AC 24V DC battery Impulse (pot.-free closing) Open (pot.-free closing) Close (pot.-free closing) Partial opening (pot.-free closing) Light barrier (pot.-free opening) Stop (pot.-free opening) Safety input 1 (8,2kΩ / OES) Safety input 2 (8,2kΩ / OES) Reference switch/reed contact (pot.-free opener) Connector for the aerial
Radio:	Multipoint connector with 15 poles for connection with radio
Service temperature:	Environmental temperature electronics -20°C up to +50°C with max. 5.5A motor current with 80s running time. At higher currents the running time is reduced.
Ingress Protection	IP20

The following standards and regulations are observed by this device:

2014/30/EU	EMC directive
55014-1	Electromagnetic interference
55012-2	Electromagnetic immunity
EN 60335-1	Safety of household electrical appliances
2014/35/EU	EU - Low Voltage Directive
2014/53/EU	Radio equipment directive (RED)
EN 12453	Safety in use of power-operated sliding doors, requirements and test methods
EN 12978	Protective equipment for power-operated doors and sliding doors
	Requirements and test methods
2006/42/EG	EU-machine directive
2011/65/EU	RoHS EU-directive

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