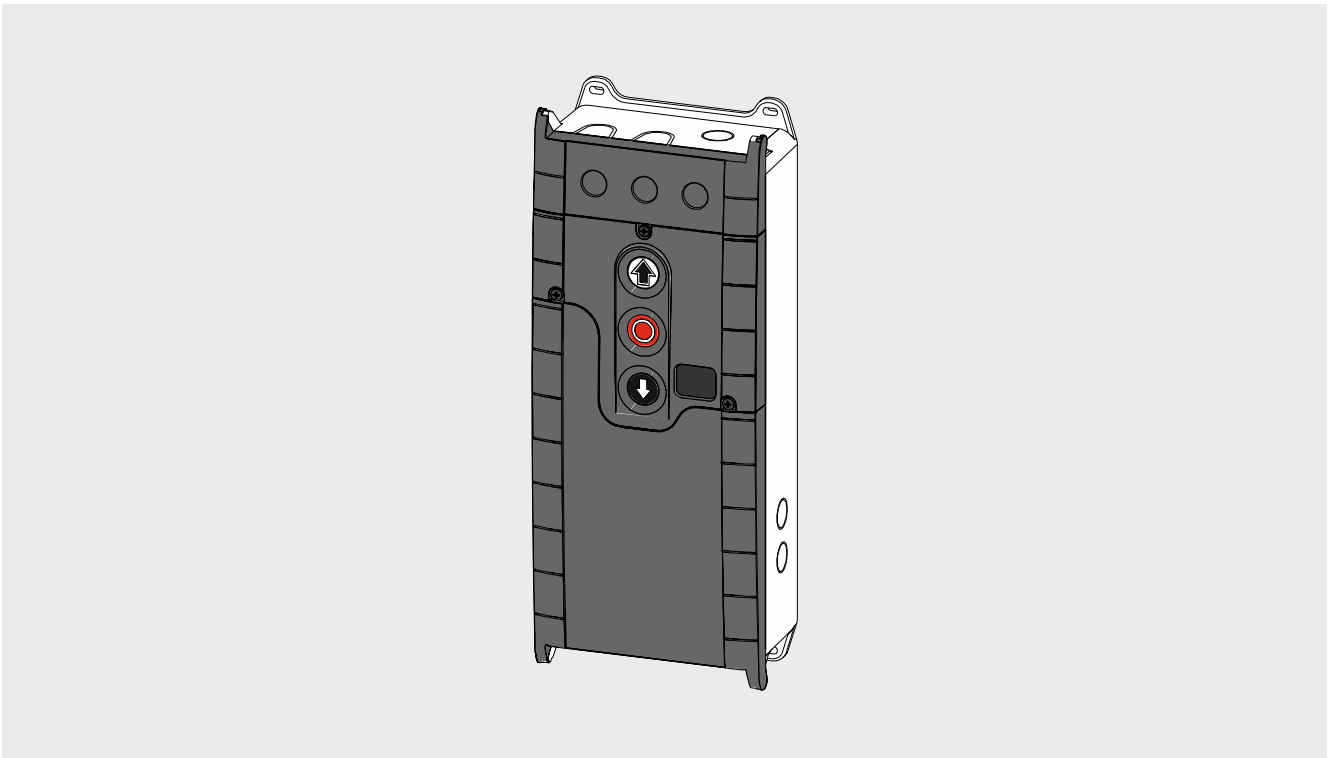




# Installation Instructions

## Door control - TS 959



0000000 0000 51000959 00002

-en-

51000959.00002

Status: a / 05.2023

## GfA-Stick, GfA+ App and fault guide

The GfA-Stick is available for setting and servicing works on the door. Together with the GfA+ App, the tool enables reading and display of important data from GfA door controls TS 959, TS 970 and TS 971 via smartphone or tablet PC. This data includes, for example:

- Serial number, software version, cycle counter reading
- Connected hardware (e.g. sensor)
- Current programming
- Display of the last 128 events on the door
- Fault memory with fault guide for remedy

The data can be managed conveniently via the GfA-Portal.  
The GfA-Portal can be reached via the GfA website:

[www.gfa-elektromaten.com](http://www.gfa-elektromaten.com)

Save time when testing, servicing and repairing the door. Use the GfA-Stick and GfA+ App.

Do you also need the fault guide from the App as a PDF document? You can also find this on the GfA website - in the download area.



GfA-Stick Part No.: 20003696



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# 1 Safety-relevant chapter

## Explanation of symbols

The following symbols are used in these installation instructions:

### DANGER

**Safety note:** Non-compliance will result in death or severe injury.

### WARNING

**Safety note:** Non-compliance can result in death or severe injury.

### CAUTION

**Safety note:** Non-compliance can result in injury.

### NOTICE

**Note:** Non-compliance can result in material damage and impairment of product functionality.

### i NOTE

**Note:** Points out useful additional information.

## Intended use

The door control is intended for installation in a force-actuated door with GfA limit switch system.

The drive unit must be protected against moisture and aggressive environmental conditions (such as corrosive substances). The drive units are only suitable for indoor use. Appropriate protective measures must be taken for outdoor installation. The drive unit is not intended for hazardous areas. The values specified in the technical data of the drive unit must not be exceeded. The safe operation can only be ensured if used as specified.

## Target audience of these installation instructions

As a user or operator, contact the manufacturer for your door system. These installation instructions are geared towards qualified persons trained in the handling of door systems. Expert knowledge, relevant skills and practical experience are what set apart qualified persons. They are capable of safely carrying out the tasks involving installation, maintenance and modernisation according to the instructions.

A trained electrician must carry out the electrical installation. Trained electricians meet the following requirements:

- They are familiar with the applicable safety and accident prevention regulations.
- They recognise hazards relating to electricity and the door control and take safety precautions.

## Safe operation

The safe operation of the product can only be ensured if it is used as specified. Follow the installation instructions. Observe all specifications, especially warnings, when installing the product in the overall system. GfA is not liable for damage resulting from non-observance of the installation instructions. The resulting overall system must be reassessed for its safety in accordance with applicable standards and directives (e.g. CE marking). These installation instructions refer only to a part of the overall system and are not sufficient as the sole instructions for the overall system. The installer of the system must prepare the instructions for the overall system. We recommend entering the danger area of the system only when the drive unit is at a standstill.

## General safety instructions

### **⚠ WARNING**

**Failure to follow these installation instructions may result in severe injury or death.**

- Please read these instructions before using the product.
- Keep these instructions handy.
- Include these instructions when passing on the product to third parties.

### **⚠ WARNING**

**Danger from improper use of the product!**

- Do not let children operate the product unsupervised or use as a toy.

### **⚠ WARNING**

**Danger to life from incorrect installation!**

Work carried out improperly may result in death or severe injury from electrical current or falling parts

- Allow only competent people to carry out the work.
- Disconnect all cables from the power supply.
- Observe valid regulations and standards.
- Use suitable tools.

## 2 Storage

Store the product in the original packaging.

Note the following environmental conditions for storage:

- Closed, dry, dark and vibration-free rooms
- Temperatures between +5 °C and +40 °C
- Relative humidity less than 93 %, non-condensing
- Dust protected
- Protected against corrosion (e.g. protection against saltwater)
- Protected against chemicals

## 3 Transport

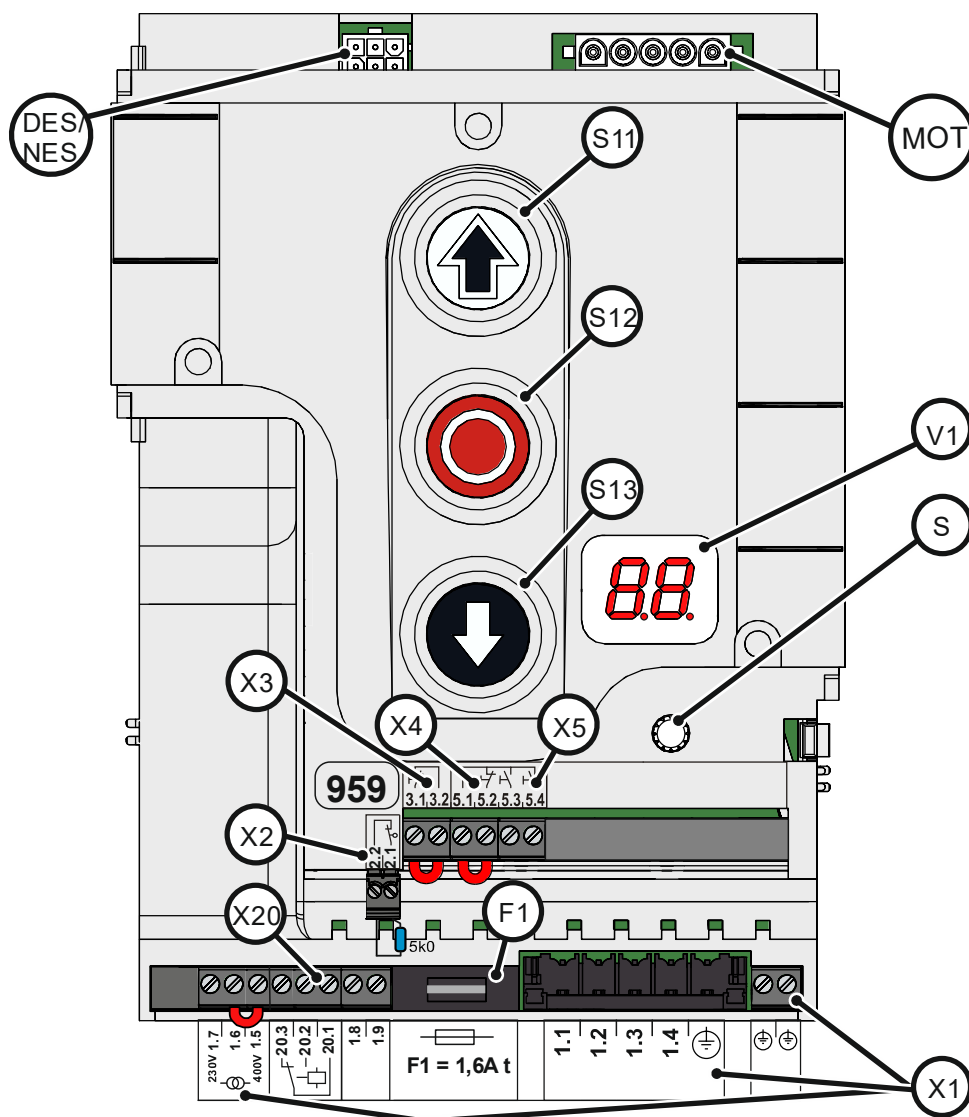
Avoid bumps, impacts and vibrations during transport. Do not throw the product.

## 4 Product overview

### Technical data

Designation		Expression
Dimensions (B x H x T)		155 x 386 x 90
Weight		2 kg
Operating frequency		50 Hz / 60 Hz
Supply voltage		1 N~220-230 V, PE 3 N~220-400 V, PE 3~220-400 V, PE
Output power for drive unit, maximum		3 kW
Temperature range	Operation	-10 °C - +50 °C
	Storing	0 °C - +50 °C
Air humidity, non-condensing		max. 93 %
Power consumption door control		4 W
Protection class	Housing	IP65
	with CEE connection kit	See the IP protection class of the connection kit
Protection per phase, on-site		10 A - 16 A
External mains supply: X1.8 / X1.9		1 N~230 V
Protection via F1 micro-fuse		1,6 A time-lag
Relay contact		1 potential-free changeover contact
Loading of relay contacts	ohmic	230 V AC, 1 A
	inductive	24 V DC, 0,4 A
Control inputs		24 V DC, typ. 10 mA
Compatible GfA - limit switch		Mechanical limit switch (NES) Digital limit switch (DES)

## Overview display TS 959

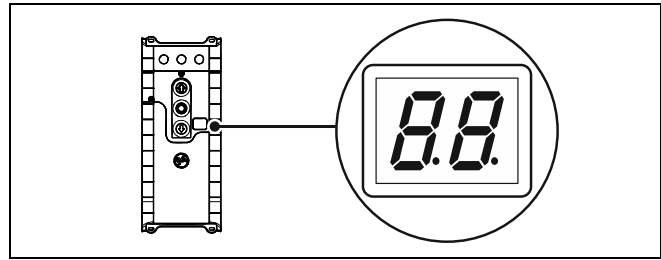


DES/ NES	DES or NES limit switch socket	MOT	Motor socket
S	Selector switch	V1	Display
S11	OPEN push-button	X1	Mains supply
S12	STOP push-button	X2	Door safety switch
S13	CLOSE push-button	X3	Emergency STOP control device
F1	Micro-fuse 1.6 A time-lag	X5	Control device, external three push-button
		X20	Potential-free relay contact

## Status displays of the door control

The display of the door control consists of a double-digit seven-segment-display. The display can show symbols, letters, or numbers.

The figure shows the display when all segments are illuminated.



### **i** NOTE

An *E* alternating with a number on the door control stands for a movement command.

An *F* alternating with a number on the door control stands for a fault indication. See Chapter : Fault indication.

## Status display during initial operation

These symbols appear only while the final limit positions are set.

Display	Description
''.	Changing output rotating direction is active.
''''	Changing output rotating direction is completed.
'''' .	Flashing: Teaching in final limit position OPEN.
''''	Flashing: Teaching in final limit position CLOSE.

## Status displays during operation

Display	Description
.	Standby. A movement command or pressing a pushbutton exits the standby mode.
C.5	Preset maintenance cycle counter has been reached. See menu item B.5/B.6.
8.8.	Display does not light up. Indicates a short circuit or overload of the 24V DC supply voltage.
7.7 .	Flashing: Door is opening.
4.4	Flashing: Door is closing.
7.7	Door is stationary between two final limit positions.
7.7	Door is in final limit position OPEN.
4.4 .	Door is in programmed intermediate open.
4.4	Door is in final limit position CLOSE.
8.8	Non-flashing: programming disabled.



### Movement command display

The movement commands appear on the display when the door control receives OPEN, CLOSE or STOP commands.

Display	Description
E.	Display alternates between E. and number:
1.1	OPEN command received.
1.2	STOP command received.
1.3	CLOSE command received.

## 5 Mechanical installation

### NOTICE

#### Damage to components due to extreme environmental conditions!

Extreme environmental conditions (humidity, chemical substances) at the installation site may damage the product.

- Install the product indoors only. Installed outdoors, the product must be enclosed to provide the same conditions as in an indoor environment. Ensure that the installed connection cables are protected.
- Protect the product from moisture.
- Maintain the temperature range and the maximum humidity during operation.

### ⚠ WARNING

#### Danger of shearing, crushing or being drawn in!

In operating mode hold-to-run, people or objects in the path are not detected.

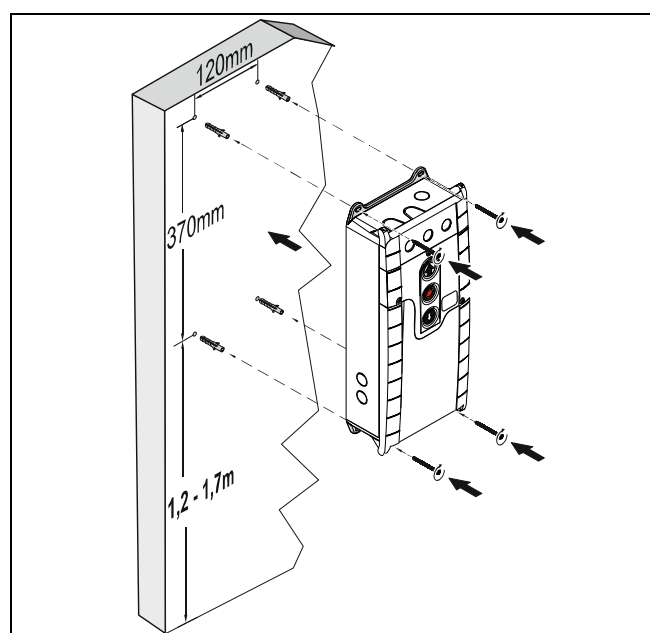
The operation of the door without a line of sight leads to dangerous situations for other people.

- Mount the door control in a position with a clear view of the door.
- Operate the door in operating mode hold-to-run with a clear view of the door.

### Mounting

The permissible loads on walls, mountings, connection and transmission elements must not be exceeded.

- Mount the door control through the 4 elongated holes.



## 6 Electrical installation

### ⚠ WARNING

#### Danger to life from electric shock!

Improper wiring may result in severe or fatal injury from electrical current.

- Allow only qualified electricians to carry out the work.
- Disconnect all cables from the power supply.
- Secure the mains disconnecter against plugging in or switching it on again.
- Observe valid regulations and standards.
- Use suitable tools.

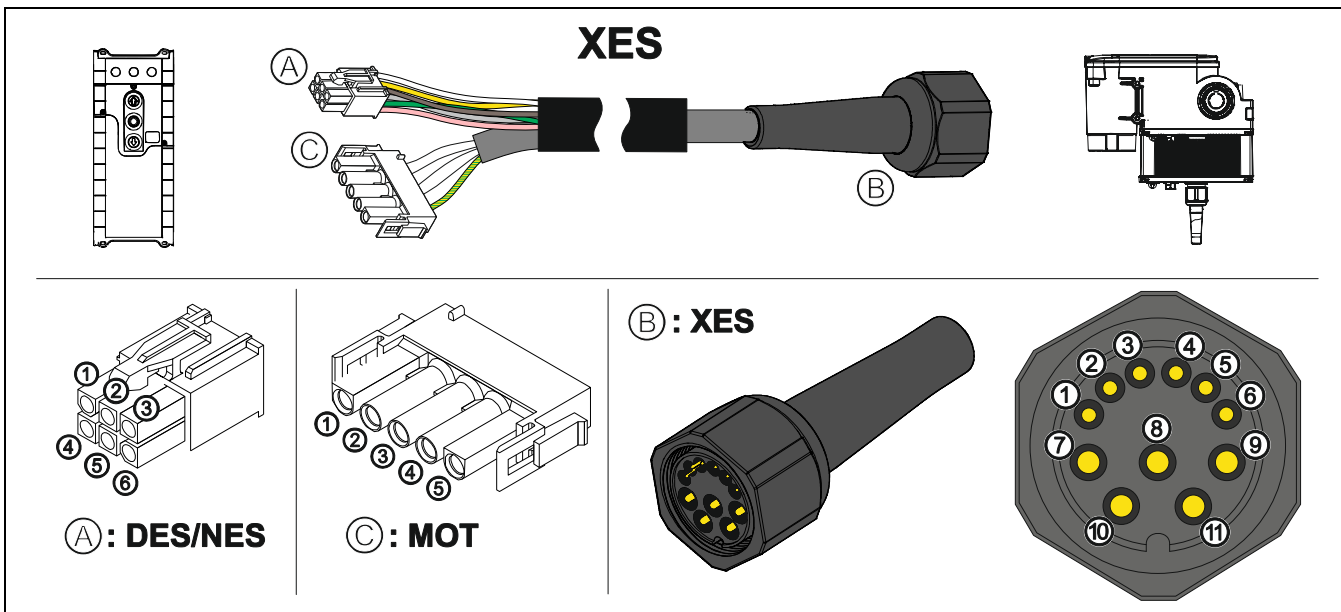
### ⚠ WARNING

#### Mortal danger due to inadequate fuse!

Without the correct on-site backup fuse and mains disconnecter, there is a risk of fatal or severe injury from electrical current.

- Carry out the connection to the indoor installation using an all-pole disconnecter unit of  $\geq 10$  A as per EN 12453 (e.g. CEE plug connection, main switch).
- Use a Type B residual current circuit breaker for a drive unit with a 3-phase frequency inverter.

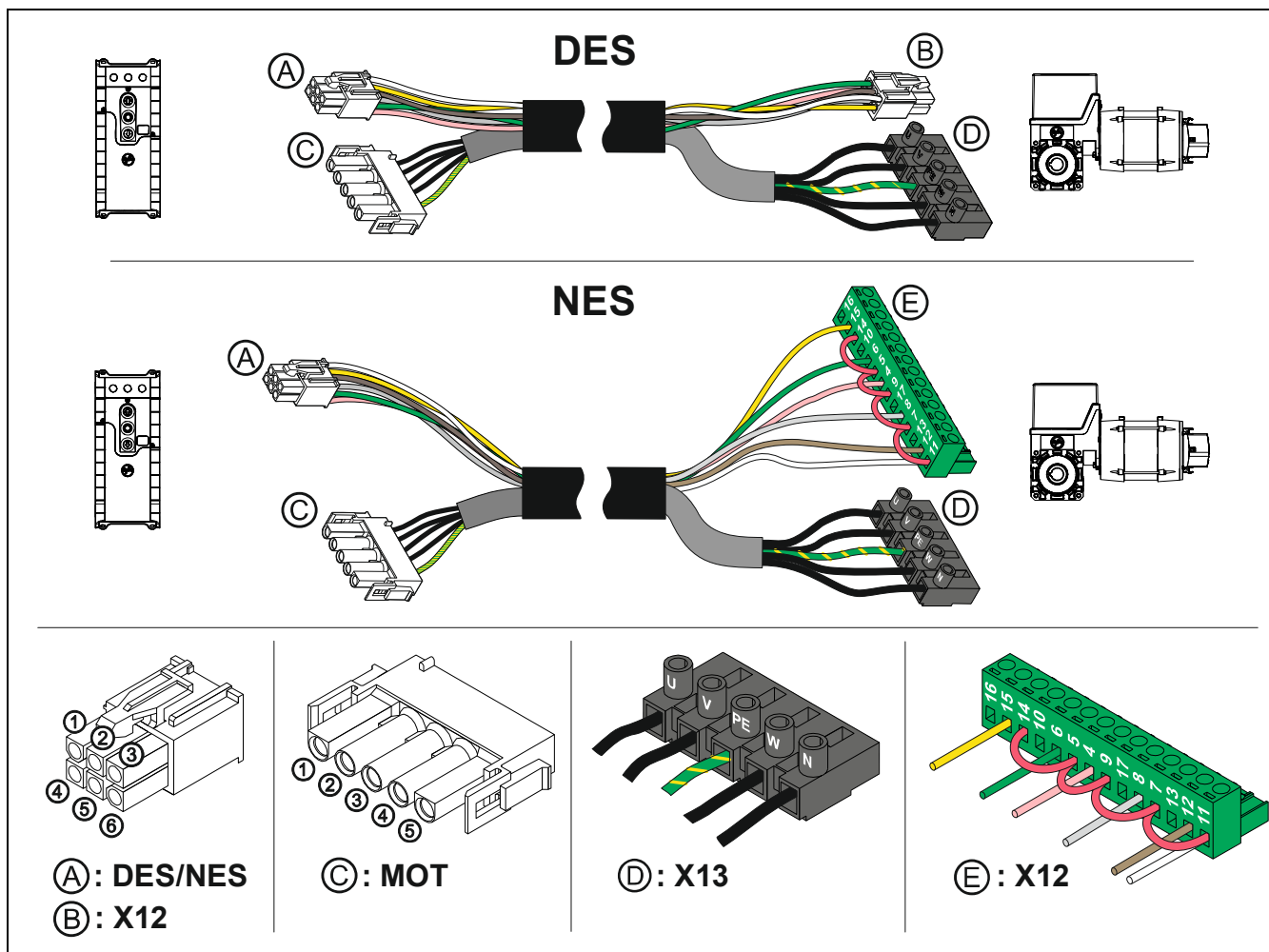
### Overview connection cable XES



Ⓐ DES ↔		Ⓑ XES	
Pin	Core	Pin	Description
①	5/ws	①	Safety circuit +24 V
②	6/br	②	Channel B (RS485)
③	7/gn	③	Ground
④	8/ge	④	Channel A (RS485)
⑤	9/gr	⑤	Safety circuit
⑥	10/rs	⑥	Supply voltage 8 V DC

Ⓒ MOT ↔		Ⓑ XES	
Pin	Core	Kl.	Description
⑦	3	W	Phase W
⑧	2	V	Phase V
⑨	1	U	Phase U
⑩	4	N	Neutral conductor (N)
⑪	PE	PE	

## Overview connection cable DES/NES



A DES ↔ B X12	
Pin	Core
①	5/ws
②	6/br
③	7/gn
④	8/ge
⑤	9/gr
⑥	10/rs

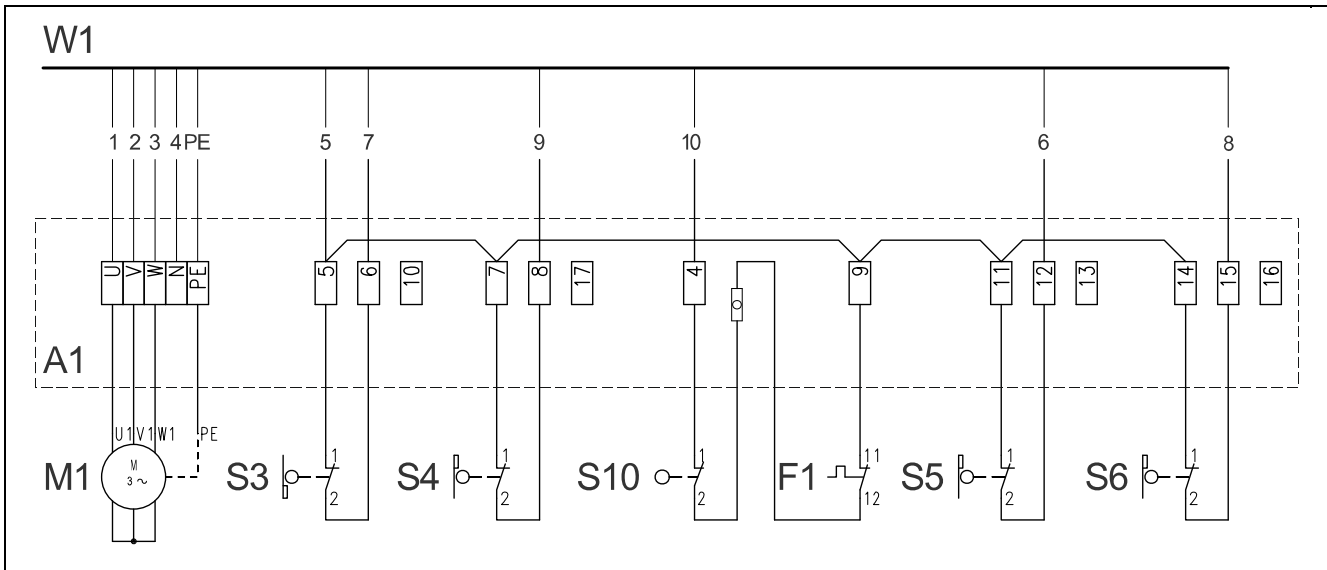
  

Pin	Description
①	Safety circuit +24 V
②	Channel B (RS485)
③	Ground
④	Channel A (RS485)
⑤	Safety circuit
⑥	Supply voltage 8 V DC

C MOT ↔ D X13			
Pin	Core	Kl.	Description
①	3	W	Phase W
②	2	V	Phase V
③	1	U	Phase U
④	4	N	Neutral conductor (N)
⑤	PE	PE	

A NES ↔ E X12			
Pin	Core	Kl.	Description
①	5/ws	11	Limit switch common +24 V, wire link to: 7, 9, 5, 14v
②	6/br	12	S5 Auxiliary limit switch
③	7/gn	6	S3 OPEN limit switch
④	8/ge	15	S6 Auxiliary limit switch
⑤	9/gr	8	S4 CLOSE limit switch
⑥	10/rs	4	Safety circuit

## Limit switch configuration, single limit switches



<b>W1</b>	Connection cable
<b>A1</b>	Terminal box
<b>F1</b>	Thermal contact
<b>M1</b>	Motor
<b>S10</b>	Emergency manual operation

<b>S3</b>	OPEN limit switch
<b>S4</b>	CLOSE limit switch
<b>S5</b>	Auxiliary limit switch
<b>S6</b>	Auxiliary limit switch

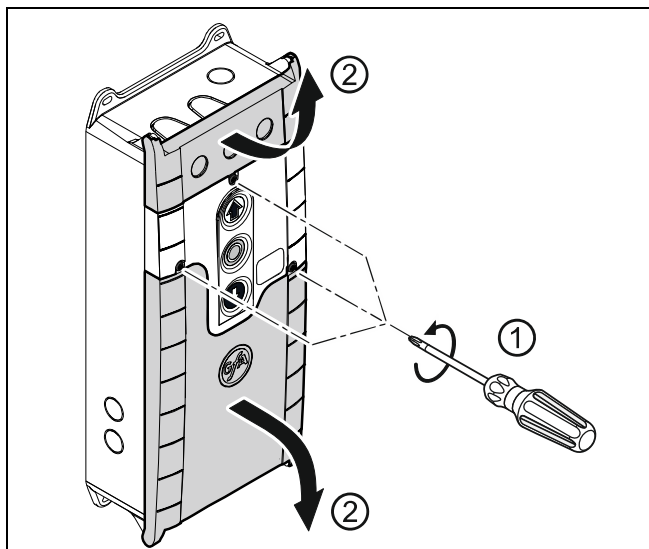
## Connecting door control and drive unit

### NOTICE

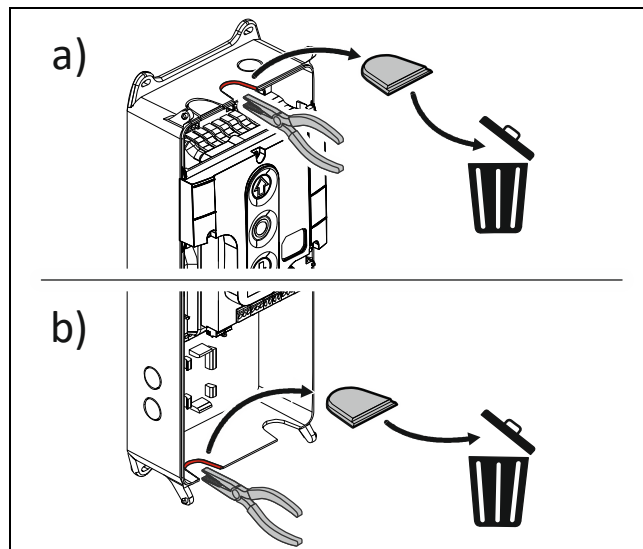
#### Damage to the product due to work carried out improperly

- Use proper tools to prevent damage and leakage.
- We recommend wiring the door control from below.

1. Remove the covers.



2. Open the cable entries at the top or bottom.

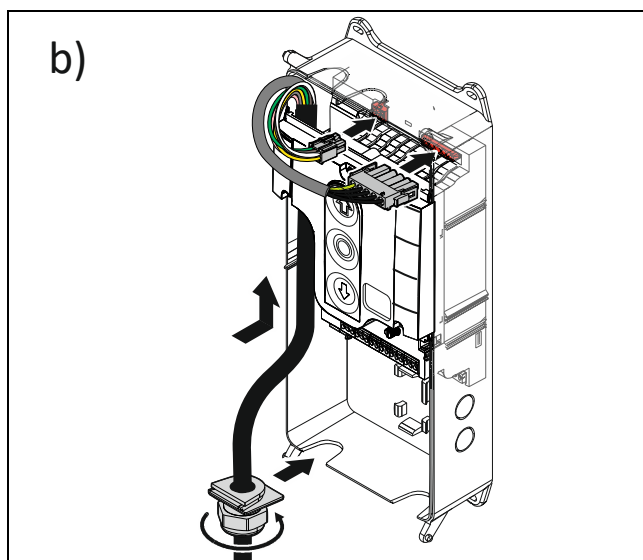
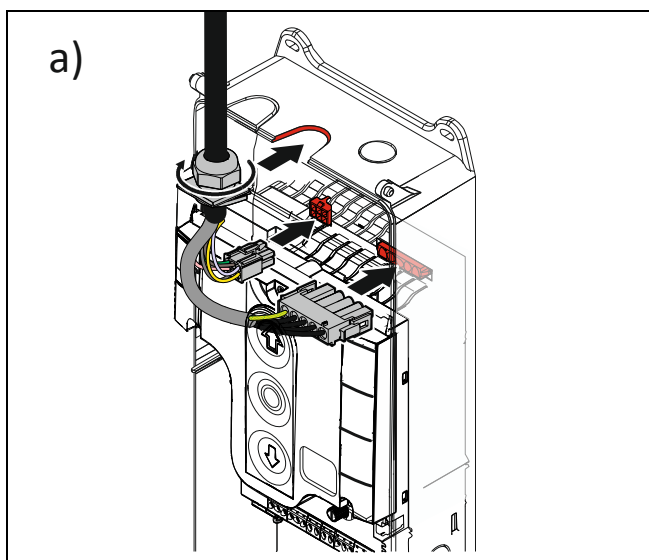


3 a) Connection cable at the top:

- Run the connection cable through the housing and insert the plugs.
- Tighten the cable gland.

3 b) Connection line at the bottom:

- Run the connection cable through the housing and insert the plugs.
- Tighten the cable gland.



### NOTICE

#### Damage due to moisture or penetrating foreign bodies

- Check that all cable glands are tight.
- Seal open and unused cable entries with blanking plugs. This will prevent moisture or foreign bodies such as insects from penetrating.

## Mains supply

Before connecting, check whether a clockwise rotating field is present at the installation site. If not, create a clockwise rotating field.

<p><b>3-phase with neutral</b> 3~, N, PE 220–400 V / 50-60 Hz</p>	<p><b>3-phase without neutral</b> 3~, PE 220–400 V / 50-60 Hz</p>	<p><b>1-phase symmetrical</b> 1~, N, PE, sym. 220– 230V / 50-60 Hz</p>	<p><b>1-phase asymmetrical</b> 1~, N, PE, asymmetrical 220–230 V / 50-60 Hz</p>

=  
SI 25.15 WS, SI 45.7 WS

## Position of the transformer bridge

The door control can be operated with different mains voltages (see figures below).

- Ensure the correct position of the transformer bridge according to the mains voltage on site.

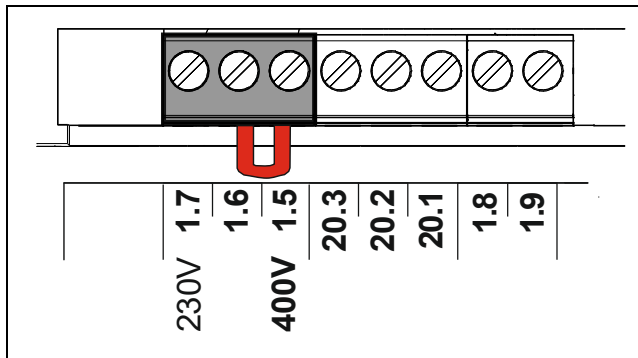
### NOTICE

#### Damaging or destroying the product

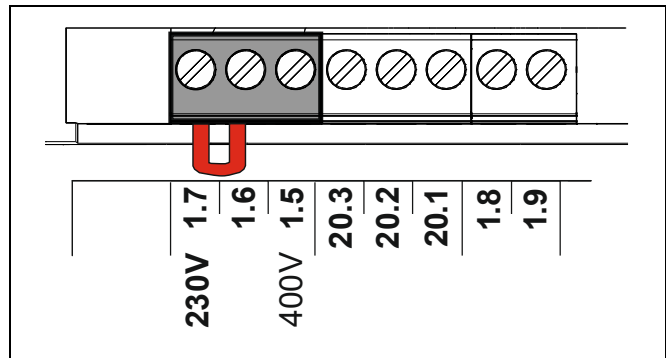
The door control is always factory-set to the highest voltage.

- Install the bridge as shown below.

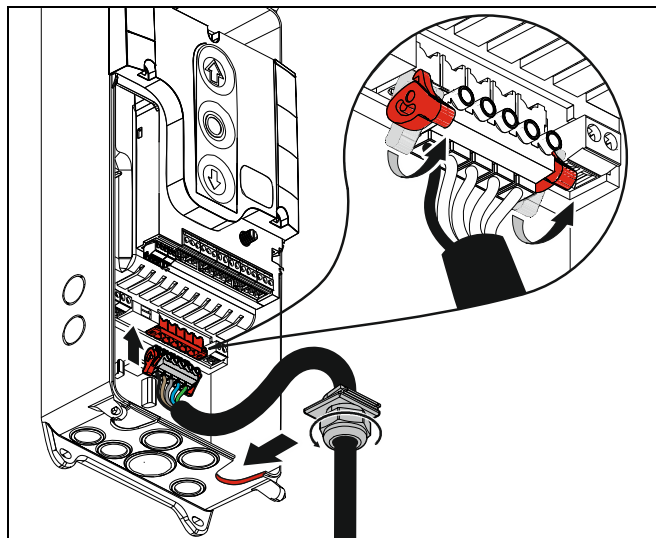
#### 3 ~ 400 V



#### 1 ~ 230 V / 3 ~ 230 V



- Run the connection cable through the housing and insert the plugs.
- Tighten the cable gland.



**NOTICE**

**Damage due to moisture or penetrating foreign bodies**

- Check that all cable glands are tight.
- Seal open and unused cable entries with blanking plugs. This will prevent moisture or foreign bodies such as insects from penetrating.

## 7 Connecting external devices

### **⚠ WARNING**

#### **Danger to life from electric shock!**

Improper wiring may result in severe or fatal injury from electrical current.

- Allow only qualified electricians to carry out the work.
- Disconnect all cables from the power supply.
- Secure the mains disconnecter against plugging in or switching it on again.
- Observe valid regulations and standards.
- Use suitable tools.
- Check the insulation of cables and make sure that cables outdoors are protected.

### **i NOTE**

The inputs of the following safety devices of the control are rated Performance Level c (PLc):

- Slack-rope switch
- Pass-door switch
- Safety edge
- Limit switch system
- Safety circuit of the drive unit
- Emergency STOP control device

### **i NOTE**

Connect only sensors that comply with the current EN 12453 and are suitable for Performance Level c.

### **X1 - Mains supply / supply of external devices**

#### **Mains supply of the door control.**

Note the chapter "Electrical installation / mains supply".

### **i NOTE**

#### **Supply of external devices**

External devices can only be supplied with power over terminals X1/1.8 and X1/1.9 when the door control is connected symmetrically to supply networks with 3 N~ 400 V or 1 N~ 230 V.

- Fuse protection by F1, micro fuse 1.6 A slow blow.



## X2 - Door safety switch

You can connect a door safety switch for a pass door or slack-rope switch to terminals X2.1/2.2. The door safety switches are connected to a safety circuit with Performance Level c (PLc) according to ISO 13849-1. The safety circuit requires an overall terminal resistance of 5k $\Omega$  for line cross-circuit monitoring.

Examples of door safety switches are shown below. Connect your product accordingly.

Mount the product according to the manufacturer's instructions.

### **i NOTE**

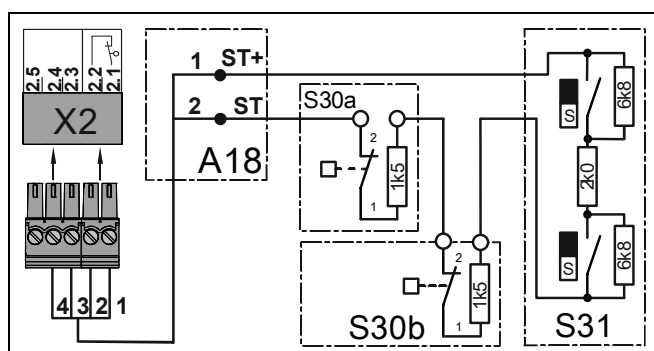
- When activated while the door is moving, the door stops and fault indication *F l.2* appears.
- When the switch fails, fault indication *F l.7* is displayed.
- In the case of a line cross-circuit, fault indication *F l.B* is displayed.

### Slack-rope switch / electronic pass-door switch

The evaluation of the door control provides for the connection of two slack-rope switches.

Resistance for line cross-circuit monitoring when using slack rope switches: 1k $\Omega$

Resistance for line cross-circuit monitoring when using electronic pass-door switches: 2k $\Omega$



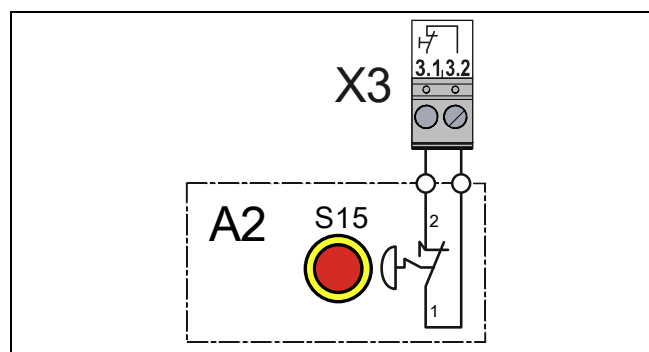
<b>A18</b>	Connection socket
<b>ST+</b>	Voltage supply (12 V)
<b>ST</b>	Input for door safety switch
<b>S30a/b</b>	Slack-rope switch (NC contact)
<b>S31</b>	Electronic pass-door switch

## X3 - Emergency Stop

The emergency STOP control device is connected to a safety circuit with Performance Level c (PLc) according to ISO 13849-1.

Alternatively you can connect an emergency STOP control device as per EN 13850 or an evaluation unit for an anti-trap safety device.

- Install the product according to the manufacturer's instructions.



### **i NOTE**

In the case of a drive unit with a frequency inverter, the door control can only be operated again 30 seconds after the emergency stop switch has been unlocked. Meanwhile, the gate control display flashes.

### **i NOTE**

When activating the emergency stop switch fault indication *F l.4* appears.

## X5 - External control device

You can connect an external control device for operating the door to terminals X5.1 to X5.4.

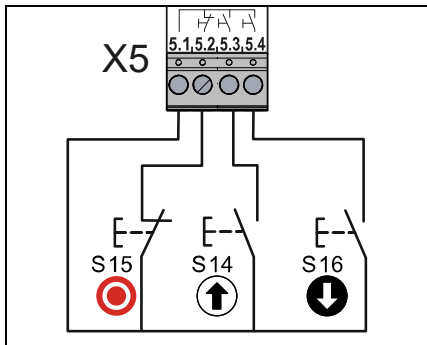
- Install the product according to the manufacturer's instructions. Several examples of control devices are shown.

### ⚠ WARNING

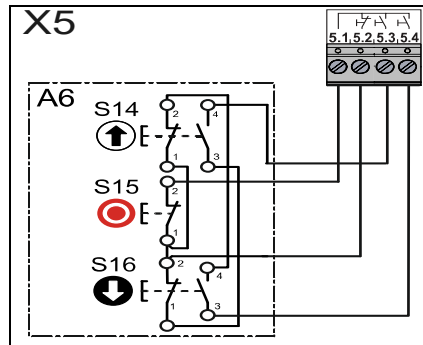
#### Danger due to unattended door movement!

The safety devices are deactivated in operating mode hold-to-run. People or objects in the movement path are not detected.

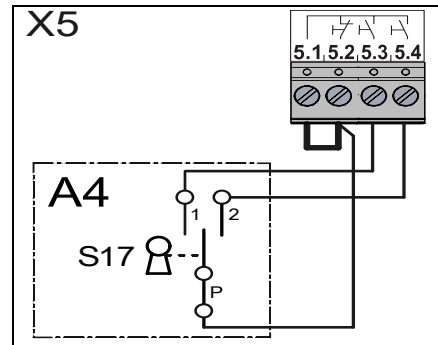
- Install and operate the control device only with a clear view of the door.



Triple pushbutton



Triple pushbutton with command interlock



Key pushbutton

### i NOTE

If you connect a control device without a STOP button to terminals X5, you need to install a jumper between X5.1/X5.2.

## X20 - Relay contact for traffic lights, light curtain or magnetic brake

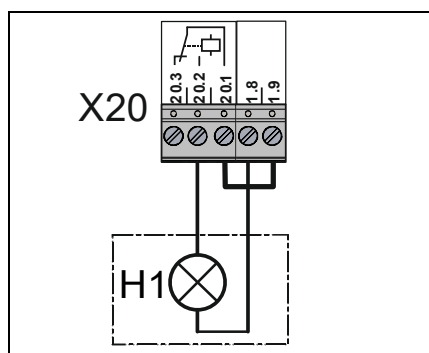
You can connect more external devices, such as traffic lights, to terminals X20.1-X20.3. X20 are potential-free relay contacts.

- Install the product according to the manufacturer's instructions.
- Connect the product as shown. You can connect traffic lights to terminals X20.1/ X20.2.
- Activate the product after completion of the electrical installation with menu items P 2.7.

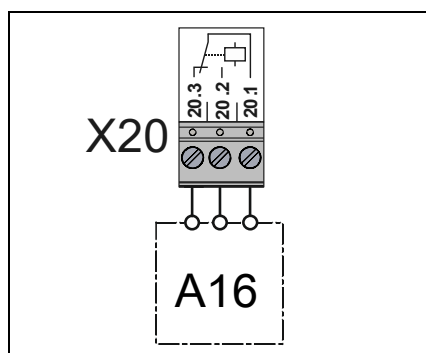
### NOTICE

#### Damage to components!

The maximum current at 230 V AC is 1 A and at 24 V DC 0.4 A. Exceeding these values may lead to the malfunctioning of the devices.



Traffic light



External devices

### i NOTE

We recommend the use of LED trafficlights with 230 V.

## 8 Setting the final limit positions

The following explains how to set the final limit positions of the door at the initial commissioning.

### **i** NOTE

You can correct the final limit positions later with menu items *P 1.1 - P 1.4*.

### Setting the final limit positions - DES (digital limit switch)

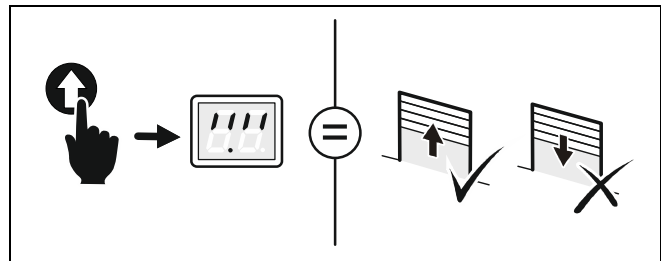
If you have already connected a safety edge, the pre-limit is automatically set with the final limit positions.

#### 1. Turn on power:

- Turn on the power using the main switch for the following steps.

#### 2. Checking the output rotating direction:

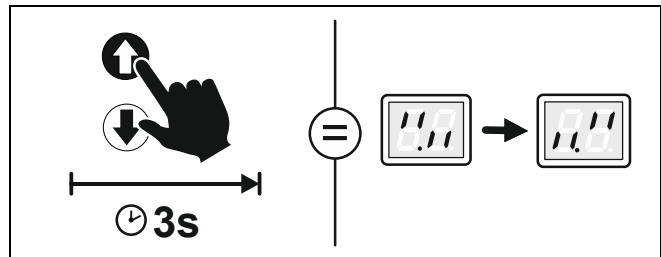
- Press the OPEN button.
- If the door moves upwards, the output rotating direction is correct. Proceed with step 4.
- If the door moves downwards, change the output rotating direction. Proceed with step 3.



#### 3. Changing the output rotating direction:

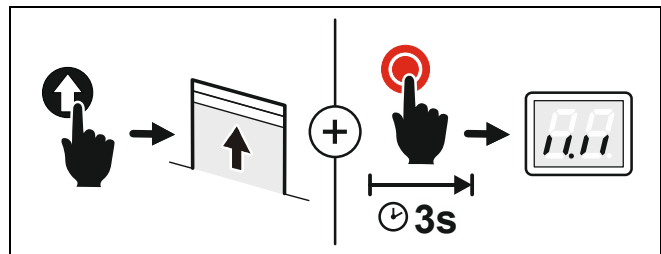
Carry out this step only if the door moves downwards after step 1.

- Press the OPEN and CLOSE buttons simultaneously for 3 seconds.
- The display changes as shown in the figure.



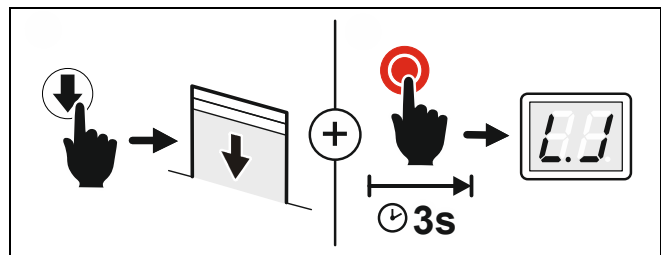
#### 4. Setting the final limit position OPEN:

- Press the OPEN button until the door has reached the desired position. Press the button for at least 1 second.
- Save the final limit position OPEN by pressing the STOP button for 3 seconds.
- The display changes as shown in the figure.



#### 5. Setting the final limit position CLOSE:

- Press the CLOSE button until the door has reached the desired position. Press the Button for at least one second.
- Save the final limit position CLOSE by pressing the STOP button for 3 seconds.
- The display changes as shown in the figure.



Setting the final limit position is complete. You can now operate the door in hold-to-run mode and program the door control.

### Setting the final limit positions - NES (mechanical limit switches)

Please refer to the ELEKTROMATEN manual to set the final limit positions using mechanical limit switches.

## 9 Programming

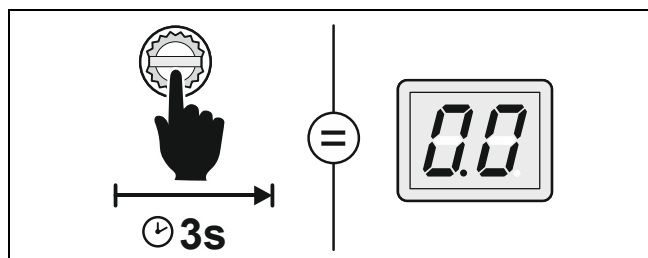
### **i** NOTE

Before you can start programming, you must have set the final limit positions.

### Programming the door control

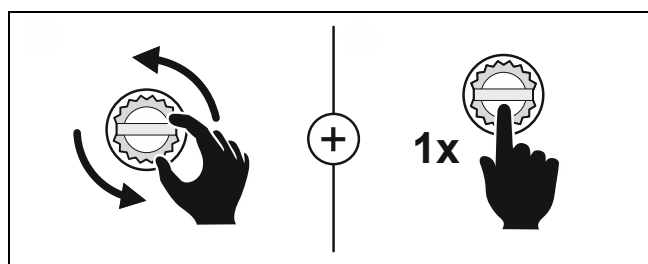
#### 1. Start programming:

- Press the selector switch for 3 seconds. The display changes to 0.0.



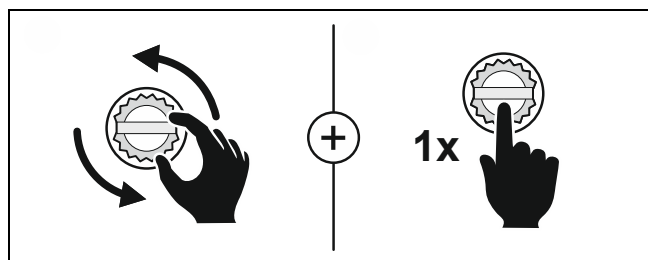
#### 2. Select the menu item:

- Turn the selector switch to the desired menu item.
- Press the selector switch once to confirm the selection. This will take you to the options.



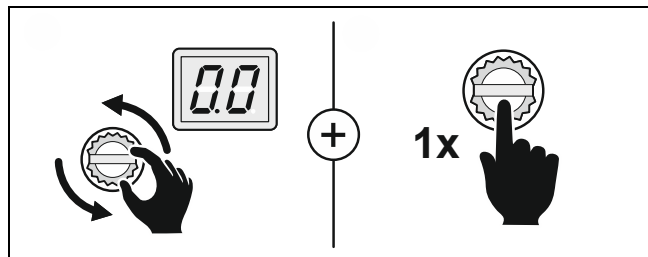
#### 3. Selecting options:

- Turn the selector switch to the desired option.
- Press the selector switch once to save the selection. You will leave the options at the same time.



#### 4. Terminate programming:

- Turn the selector switch to 0.0.
- Press the selector switch once to exit programming.



### Explanation of the programming tables

1	0.3	2	Auswahl Sicherheitseinrichtungen
3	.1		Spiralkabel oder WSD
4	.2		Lichtgitter (nur für Lichtgitter mit OSE-Ausgang)
5	.3		Parallelbetrieb von Lichtgitter und WSD (Betrieb einer Sicherheitsschaltleiste an WSD nicht)

- Number of the menu item
- Name of the menu item
- Symbol for the factory setting
- Number of the option
- Name / description of the option

## Menu items:

### P 0.1 - Operating mode

With this menu item, you select the operating mode for moving the door during OPEN operation and CLOSE operation.

#### ⚠ WARNING

##### Danger due to unattended door movement!

The safety devices are deactivated in operating mode hold-to-run. People or objects in the movement path are not detected.

- Operate the door only with a clear view of the door.

0.1	Operating mode
▶ .1	No safety device on door: hold-to-run OPEN/CLOSE
.2	No safety device on door: self-hold OPEN and hold-to-run CLOSE
.5	Hold-to-run fully CLOSE function No safety device on door: self-hold OPEN and hold-to-run CLOSE In the travel direction CLOSE, the CLOSE button must be held down until the pre-limit switch (S5 on NES) is passed. Otherwise, the door moves back to final limit position OPEN.

### P 0.2 - Output rotating direction

Use this menu item to change the output rotation direction of the door drive unit.

0.2	Output rotating direction
	Select the options with the <b>OPEN</b> or <b>CLOSE</b> button
.0	Maintaining the output rotation direction. Exit the menu item by pressing the selector switch.
.1	Changing the output rotating direction. Save and exit the menu item by pressing the <b>STOP</b> button for <b>3 seconds</b> .

### P 1.1 / 1.2 - Coarse correction of final limit position

Use these menu items to modify the final limit positions of the door that have been already set.

1.1	Coarse correction of final limit position OPEN (DES)
1.2	Coarse correction of final limit position CLOSE (DES)
	<ul style="list-style-type: none"> <li>▪ Move to the desired door position using the <b>OPEN</b> or <b>CLOSE</b> button.</li> <li>▪ Save the door position by pressing the <b>STOP</b> button once.</li> </ul>

#### ⚠ WARNING

##### Danger due to unattended door movement!

The safety devices are deactivated while adjusting.

- Block the door for pedestrians and vehicles.

### P 1.3 – 1.4 - Fine correction of final limit positions

Use this menu item to modify the final limit positions of the door that have been already set. No door movement takes place during fine correction. Proceed step by step.

1.3	Fine correction of final limit position OPEN (DES)
1.4	Fine correction of final limit position CLOSE (DES)
-.9	Correction in direction of final limit position CLOSE
-.9	Correction in direction of final limit position OPEN

### P 1.7 - Switching position of relay X20

You only have to teach-in this switching position if you want to use the options 1/1.2 or 1.1 of menu item 2.7. With this menu item you can set the door position in which relay X20 switches. To use this function, you must set menu item P 2.7 and connect a device to X20. This menu item is only available in combination with an ELEKTROMATEN with a digital limit switch.

#### **⚠ WARNING**

##### **Danger due to unattended door movement!**

The safety devices are deactivated while adjusting.

- Block the door for pedestrians and vehicles.

1.7	Setting the switching position of relay X20
	<ul style="list-style-type: none"> <li>▪ Move to the desired door position using the OPEN or CLOSE button.</li> <li>▪ Save the door position by pressing the STOP button once.</li> </ul>

## P 2.7 - Relay functions of X20

Use menu item 2.7 to control the function of X20. X20 is a potential-free relay contact.

<b>2.7</b>	<b>Relay functions of X20</b>
▶.0	Deactivated
.1	Impulse of 1 second during OPEN operation at switching position. Switching position requires teach-in with !.7
.2	Permanent contact from switching position. Switching position requires teach-in with !.7
.5	Flashing light: permanent contact during door movement. In final limit position OPEN: lights up for 3 seconds. In final limit position CLOSE: lights up for 3 seconds.
.6	Flashing light: permanent contact during door movement. In final limit position OPEN: lights up for 3 seconds. In final limit position CLOSE: off.
1.3	Clearance dock leveller Active only in final limit position OPEN

## P 3.1 - Force monitoring of sectional doors

Activate this menu item only if you operate a sectional door with counter-balancing and digital limit switch (DES). Force monitoring detects whether the door also lifts people. Force monitoring is active from an opening width of approx. 0,05 m to 2 m. Slowly advancing changes, such as decreasing spring tension, are compensated automatically.

During force monitoring, the door control measures the speed of the door movement. If the current door movement is slower than the previous one by more than the percentage specified, force monitoring triggers and stops the door. Afterwards, the operating mode hold-to-run is active and error message *F 4!* appears. In the case of severe temperature changes or high wind loads, force monitoring may trigger unintentionally.

### ⚠ WARNING

#### Danger to life and risk of serious injuries by entanglement

This function is only a supplement to safety measures against entanglement.

- Install a pull-in protection

<b>3.1</b>	<b>Force monitoring of sectional doors (DES)</b>
▶.0	Deactivated
.2 - 1.0	Selectable is a speed difference from 2% to 10%.

### Teaching-in of the function

- After exiting programming, you need to move the door once in self-hold to final limit position OPEN and final limit position CLOSED.

### i NOTE

You cannot select force monitoring in combination with operating mode hold-to-run.



### P 3.3 - Travel time monitoring

This function is only available for ELEKTROMATEN with mechanical limit switches. The set travel time is automatically compared with the time measured between the final limit positions. When exceeding the running time, fault indication F 5.5 appears. The fault indication is reset by closing the door.

<b>3.3</b>	<b>Travel time monitoring</b>
<b>.0</b>	Off
<b>.1 - 9.0</b>	1 to 90 seconds ▶ Factory setting to 90 seconds

#### **i NOTE**

Recommended setting: travel time + 7 seconds

### P 8.5 - Setting the maintenance cycle counter

With these menu items, you set a reminder for the maintenance of the door. The maintenance cycle can be set between 1,000 and 99,000 cycles. The counter decreases by 1 every time the door reaches the final limit position OPEN. When the counter reaches the value 0, the setting from menu item 8.5 is activated.

<b>8.5</b>	<b>Setting the maintenance cycle counter</b>
<b>▶.0</b>	Deactivated.
<b>.1 - 9.9</b>	Activated. Counting down from .1 = 1,000 cycles to 9.9 = 99,000 cycles.

### P 8.6 - Response after expiry of the maintenance cycle counter

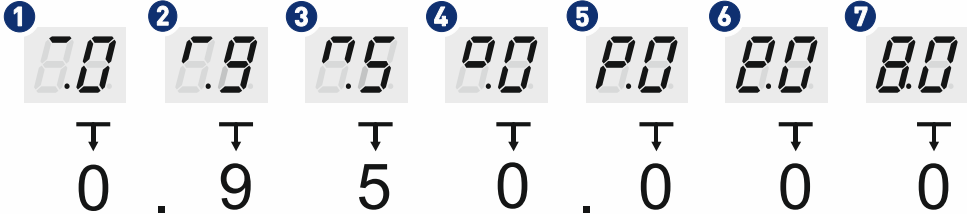
<b>8.6</b>	<b>Response after expiry of the maintenance cycle counter</b>
<b>▶.1</b>	Display shows E.5 alternating with the value specified in 8.5
<b>.2</b>	Operating mode change to hold-to-run. Display shows E.5. alternating with the value specified in 8.5.
<b>.3</b>	Operating mode change to hold-to-run. Display shows C.S. alternating with the value specified in 8.5. Option: Press the STOP button for 3 seconds to ignore the message for 500 cycles.
<b>.4</b>	Display shows E.5. alternating with the value specified in 8.5. Relay contact X21 switches.

#### **i NOTE**

You can delete the response from menu item 8.6 by setting a new value with menu item 8.5.

### P 9.1 - Readout of cycle counter

With this menu item, you can read out the cycle counter of the door control. The counter increases by 1 every time the door reaches the final limit position OPEN. It is not possible to reset the cycle counter.

<b>9.1</b>	<b>Readout of cycle counter</b>
<p>After selecting the menu item, the display changes 7 times to show a 7-digit number. The left side of the two-digit display shows a symbol for the current position of cycle counter. The right side shows the number of the current position. The example below shows 950.000 cycles.</p>	
	

### P 9.2 - Readout of fault indications

With this menu item, you can read out the last 6 fault indications of the door control. After selecting the menu item, the display changes and shows the last six fault indications. First an *F* is shown, then the number of the fault indication. The first fault indication displayed is the most recent.

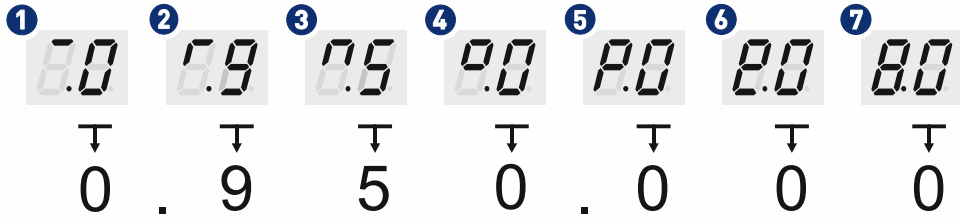
<b>9.2</b>	<b>Readout of fault indications</b>
<p>The display changes and shows the last 6 fault indications.</p>	

**i NOTE**

An error that occurs several times in a row is only saved once as long as no other error has occurred in the meantime.

### P 9.3 - Readout of the cycle counter since last programming change

This menu item shows the number of cycles the door has run since the last programming change. The counter increases by 1 every time the door reaches the final limit position OPEN.

<b>9.3</b>	<b>Readout of the cycle counter since last programming change</b>
	After selecting the menu item, the display changes 7 times to show a 7-digit number. The left side of the two-digit display shows a symbol for the current position of cycle counter. The right side shows the number of the current position. The example below shows 950.000 cycles.
	
▶ .1	Cycle counter of the last change in programming
.2	Number of activations of slack-rope, pass-door and crash switch

### P 9.4 - Readout software version

This menu item displays the software version of the door control. For drive units with GfA frequency inverter, the software version of the motor is shown as well.

<b>9.4</b>	<b>Readout software version</b>
	The display changes and shows the number of the software version.

### P 9.5 - Reset to factory settings / use of GfA-Stick

Activate the GfA-Stick with option .0. The GfA-Stick (part no. 20003696) allows readout of faults, operations, and programming by using the GfA App. With option .1, you delete all set menu items and reset the door control to factory setting.

<b>9.5</b>	<b>Reset to factory settings / use of GfA-Stick</b>
.0	Activate GfA-Stick.
.1	Reset to factory settings. <ul style="list-style-type: none"> <li>▪ Press the OPEN Button once to select menu item . 1.</li> <li>▪ Confirm your selection by pressing the STOP Button for 3 seconds.</li> </ul>

## 10 Fault correction

### **i** NOTE

You can find detailed information on faults and how to rectify them in our fault guide for door controls.

- Download the fault guide from the GfA-Portal.
- Start the fault guide using the GfA+ app.

### Fault indications

#### Door control is off / display is dark

	Possible causes	Fault correction
Display is dark / door control is without function	No input function	Measure the input voltage.
	Overload	Check whether too many electrical loads are connected to the control circuit (24 V).
	Short circuit	Check whether a faulty device is connected to the control circuit (24 V).
	Water damage	Check if water has entered the control box.
	A different defect	Disconnect all lines (delivery status). Replace the door control if the display stays dark.

#### Fault in the safety circuit

	Cause of the fault	Fault correction
<b>F.</b>	Display alternates between <i>F</i> and number	
<b>1.2</b>	Slack-rope switch / pass-door contact is open.	<p>Check the connecting cables for breaks.</p> <p>Check whether the spiral cable or WSD door module is connected correctly.</p> <p>Slack-rope switch: check if the ropes are taut.</p> <p>Check the DIP switch position in the door leaf box.</p> <p>Measure the slack-rope switch / pass-door contact.</p>

	Cause of the fault	Fault correction
<b>F.</b>	Display alternates between F and number	
<b>1.3</b>	<p>Safety circuit is open.</p> <p>Emergency manual operation is activated.</p> <p>Thermal protection of the motor has tripped.</p> <p>The restart protection has tripped.</p>	<p>Check the door drive unit for overload or stalling</p> <p><b>WARNING! Danger of the door dropping!</b> Do not release stalling when using a door drive unit with a safety brake! Stalling may indicate a catch incident. Replace the door drive unit.</p> <p>Allow the door drive unit to cool.</p> <p>Check manual emergency operation.</p> <p>Check plugs and terminals for firm seating.</p> <p>Doors with separate safety brake: check the safety brakes.</p>
<b>1.4</b>	The emergency stop button is pressed.	<p>Check Emergency stop switch.</p> <p>Check connection cable for disconnection.</p>
<b>1.7</b>	Slack-rope / or pass-door contact is faulty.	<p>Open and close pass door.</p> <p>Check the pass-door installation.</p> <p>Set the switching distance to &lt;4 mm.</p> <p>Check the DIP switch position in the door leaf box.</p> <p>Check the resistance and wiring of the spiral cable.</p> <p>Check the control voltage for overload.</p>
<b>1.8</b>	Line cross-circuit in the slack-rope / pass-door circuit	<p>Check the DIP switch position in the door leaf box.</p> <p>Check whether the 5K0 resistor is installed in the door leaf box.</p> <p>Check whether the 5K0 resistor in the door leaf box is connected in series.</p> <p>Check the wiring of the spiral cable.</p>

	Cause of the fault	Fault correction
<b>F.</b>	Display alternates between <i>F</i> and number	
<b>3.1</b>	The contact of the emergency manual operation is open or faulty.	Check if the emergency manual operation is activated. Measure the contact of the emergency manual operation electrically.
	The connection cable is faulty.	Check the connection cable for damage. Check plugs for firm seating.
	The thermal contact was activated. The restart protection has tripped.	The drive unit experiences an overload. Check the condition of the door (damage, spring fracture, etc.). <b>Warning! Danger of the door dropping!</b> Stalling may indicate a triggered safety brake. Take appropriate measures. Allow the drive unit to cool. If there is no continuity after cooling, the thermal contact is defective.
	An emergency limit switch has been reached or actuated.	Check whether the drive unit was moved into the emergency limit switch range with the emergency manual operation. Check whether the overrun of the drive unit is too long.
	The limit switch system has been changed from DES to NES.	Check whether the limit switch system has been changed. Reset the door control.
<b>3.2</b>	The emergency limit switch range CLOSE has been reached.	Check whether the drive unit was moved into the emergency limit switch range with the emergency manual operation. Check whether the overrun of the drive unit is too long.
<b>3.5</b>	No limit switch detected (Note: active at initial operation)	Check the connection cable visually and electrically. Check all plugs for firm seating. For TS 970 and TS 959: check the position of the transformer bridge (terminals X 1.5 to X 1.7). Note the supply voltage on site and the chapter "Electrical installation". For TS 970 and TS 971 with NES: Unlock the EMERGENCY STOP command device. Insert a wire link between terminals X 3.1 and X 3.2.
<b>3.6</b>	Incorrect detection of the limit switch system. The limit switch system was changed from DES to NES without resetting the door control.	Check whether the limit switch system has been changed. Reset the door control.

### Internal faults of the door control / force monitoring

	Cause of the fault	Fault correction
<b>F.</b>	Display alternates between <i>F</i> and number	
<b>3.7</b>	Internal plausibility error. The mains supply of the door control is incorrect. The voltage fluctuates.	Measure the input voltage. Check the fuses of the supply line. Establish a stable power supply. Measure the voltage under load. Measure the voltage at the motor connector. Establish a stable power supply. Check the connection cable and the plug for firm seating.
<b>4.1</b>	Force monitoring triggered.	Check the door mechanism for damage. Check whether a wind load acts on the door. Check the spring tension.
<b>5.0</b>	Fault of the controller.	Switch the door control off and on. Replace the door control if necessary.
<b>5.1</b>	ROM fault.	Switch the door control off and on. Replace the door control if necessary.
<b>5.2</b>	CPU fault.	Switch the door control off and on. Replace the door control if necessary.
<b>5.3</b>	RAM fault.	Switch the door control off and on. Replace the door control if necessary.
<b>5.4</b>	Internal fault. Fault 3.7 was detected five times in a row.	See fault 3.7. Switch the door control off and on. Replace the door control if necessary.

### Faults when setting the final limit positions

	Cause of the fault	Fault correction
<b>F.</b>	Display alternates between <i>F</i> and number	
<b>8.1</b>	When setting the final limit positions, the travel distance was smaller than the smallest possible.	When resetting the final limit positions, move the door for at least one second before storing the position. Reset door control to factory setting (P 9.5). <b>Notice! All settings will be lost!</b>

## 11 Maintenance

### WARNING

#### Danger to life from electric shock!

Improper maintenance may result in fatal injury from electrical current.

- Disconnect all cables from the power supply.
- Only allow competent personnel or electricians to carry out the maintenance.
- Secure the mains disconnecter against being switched on or plugged in again.

The electronic components of the door control are maintenance-free. Carry out the following maintenance operations at least once a year:

Component	Procedure
Housing	Use a dry cloth to remove dust and light dirt.
Connecting cables	Check the connecting cables for firm seating and possible damage (e.g. to the insulation). Replace damaged cables.
Fasteners	Check the fasteners for firm seating and damage. Replace damaged parts.
Gaskets	Replace any porous gaskets.
Cable glands	Check the cable glands for firm seating and leak-tightness. Replace damaged cable glands.

## 12 Disposal

### Dispose of packaging

Dispose of the packaging material properly according to the local legal regulations or recycle it.

### Dispose of old devices

Dispose of old devices properly according to local legal regulations. Return old devices to the return and collection systems available. You can also return GfA products free of charge. Please apply enough postage to the package and mark it as "old devices".

### NOTICE

#### Environmental damage!

The gearbox contains oil.

- Ensure proper disposal according to local legal regulations.

### i NOTE



Old devices marked with the adjacent symbol must not be disposed of with unsorted municipal waste.



## Declaration of incorporation

within the meaning of Machinery Directive 2006/42/EC  
for partly completed machinery, Appendix II Part B



## Declaration of conformity

within the meaning of EMC Directive 2014/30/EU  
within the meaning of RoHS Directive 2011/65/EU

GfA ELEKTROMATEN GmbH & Co. KG  
Wiesenstraße 81 · 40549 Düsseldorf  
Germany

We,  
**GfA ELEKTROMATEN GmbH & Co. KG**  
declare under our sole responsibility that the  
following product complies with the above  
directives and is only intended for installation in a  
door system.

Door control  
TS959

We undertake to transmit in response to a  
reasoned request by the appropriate regulatory  
authorities the special documents on the partly  
completed machinery.

This product must only be put into operation  
when it has been determined that the complete  
machine/system in which it has been installed  
complies with the provisions of the abovementioned  
directives.

Authorised representative to compile the  
technical documents is the undersigned.

Düsseldorf, 01.05.2023

**Stephan Kleine**  
CEO

Signature

The following requirements from Appendix I of  
the Machinery Directive 2006/42/EC are met:

1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.2, 1.2.3, 1.2.4.2,  
1.2.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.9,  
1.5.1, 1.5.2, 1.5.4, 1.5.5, 1.5.6, 1.5.7, 1.5.8,  
1.5.9, 1.5.10, 1.5.11, 1.5.13, 1.6.1, 1.6.2, 1.6.4,  
1.7.1.1, 1.7.1.2, 1.7.2, 1.7.3, 1.7.4.3.

Standards applied:

### **EN 12453:2017+A1:2021**

Industrial, commercial and garage doors and  
gates - Safety in use of power operated doors -  
Requirements

### **EN 12978:2003+A1:2009**

Industrial, commercial and garage doors and  
gates - Safety devices for power operated doors  
and gates - Requirements and test methods

### **EN 60335-2-103:2015**

Household and similar electrical appliances -  
Safety - Part 2-103: Particular requirements for  
drives for gates, doors and windows

### **EN 61000-6-2:2005**

Electromagnetic compatibility (EMC) Part 6-2  
Generic standards – Immunity standard for  
industrial environments

### **EN 61000-6-3:2007**

Electromagnetic compatibility (EMC) Part 6-3  
Generic standards – Emission standard for  
residential, commercial and light-industrial  
environments

## Declaration of incorporation

within the meaning of Supply of Machinery (Safety) Regulations 2008  
for partly completed machinery, Appendix II Part B

## Declaration of conformity

within the meaning of Electromagnetic Compatibility Regulations 2016  
within the meaning of Restriction of the Use of Certain Hazardous Substances in Electrical  
and Electronic Equipment Regulations 2021



We,  
**GfA ELEKTROMATEN GmbH & Co. KG**  
declare under our sole responsibility that the  
following product complies with the above directives  
and is only intended for installation in a door system.

Door control  
TS959

We undertake to transmit in response to a reasoned  
request by the appropriate regulatory authorities the  
special documents on the partly completed  
machinery.

This product must only be put into operation when it  
has been determined that the complete  
machine/system in which it has been installed  
complies with the provisions of the above-mentioned  
directives.

Authorised representative:  
**Andrew Collett**  
GfA ELEKTROMATEN UK Ltd  
Tournament Fields Business Park,  
Agincourt Rd,  
Warwick CV34 6XZ

Düsseldorf, 01.05.2023

**Stephan Kleine**  
CEO

A handwritten signature in black ink, appearing to read 'S. Kleine', with a horizontal line extending to the right.

Signature

The following requirements from Appendix I of the  
Supply Machinery (Safety) Regulations 2008 are  
met:

1.1.2, 1.1.3, 1.1.5, 1.2.2, 1.2.3, 1.2.6, 1.3.2, 1.3.3,  
1.3.9, 1.5.1, 1.5.2, 1.5.4, 1.5.6, 1.5.7, 1.5.8, 1.5.9,  
1.5.10, 1.5.11, 1.5.13, 1.6.1, 1.6.2, 1.6.4, 1.7.2, 1.7.3,  
1.7.4.3.

Applied Standards:

**BS EN 12453:2022**

Industrial, commercial and garage doors and gates -  
Safety in use of power operated doors -  
Requirements

**BS EN 12978:2003+A1:2009**

Industrial, commercial and garage doors and  
gates - Safety devices for power operated doors  
and gates - Requirements and test methods

**BS EN 60335-2-103:2015**

Household and similar electrical appliances -  
Safety - Part 2-103: Particular requirements for  
drives for gates, doors and windows

**BS EN 61000-6-2:2005**

Electromagnetic compatibility (EMC) Part 6-2  
Generic standards – Immunity standard for  
industrial environments

**BS EN 61000-6-3:2007**

Electromagnetic compatibility (EMC) Part 6-3  
Generic standards – Emission standard for  
residential, commercial and light-industrial  
environments