



# Brief instructions

Door control

TS 971

Automatic control panel with radio

Version: 51171624



0000000 0000 51171624 XXXXX

– en –

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## Contents

<b>1</b>	<b>General safety information</b> .....	<b>5</b>
<b>2</b>	<b>Technical data</b> .....	<b>6</b>
<b>3</b>	<b>Electrical installation</b> .....	<b>7</b>
	Connection cable connection overview .....	8
	Limit switch configuration, screwable version up to year of construction in 1997 .....	9
	Limit switch configuration, single limit switches .....	9
	Mains supply .....	10
	Mains supply to control .....	10
	Completing the electrical installation .....	10
	Overview of control .....	11
<b>4</b>	<b>Starting up the control</b> .....	<b>12</b>
	DES: Rapid adjustment of final limit positions .....	12
	NES: Rapid adjustment of final limit positions .....	13
<b>5</b>	<b>Electrical installation – control accessories</b> .....	<b>14</b>
	Connection of door safety switches X2 .....	14
	Connection of safety devices X2 .....	15
	External supply X1 .....	16
	Emergency STOP X3 .....	16
	Automatic closing On/Off X4 .....	16
	External control device X5 .....	16
	Photo cell X6 .....	16
	Light curtain X6 .....	17
	Radio receiver X7 .....	17
	Pull switch X7 .....	17
	Intermediate open X8 .....	17
	Red/green traffic lights X20 / X21 .....	17
	Magnetic brake X20 / X21 .....	17
<b>6</b>	<b>Control programming</b> .....	<b>18</b>
<b>7</b>	<b>Table menu items</b> .....	<b>19</b>
	Door operating modes .....	19
	Door positions .....	20
	Door functions .....	21
	Safety functions .....	26

DI/FI settings .....	27
Extended door functions.....	28
Teach-in of radio transmitter .....	29
Maintenance cycle counter.....	30
Readout of data memory .....	31
Deleting / readout.....	31
Reading out WSD door-module data.....	32
<b>8 Safety devices.....</b>	<b>32</b>
X2: Input for safety devices .....	32
EMERGENCY operation .....	33
X3: Input, emergency STOP .....	33
<b>9 Status display.....</b>	<b>34</b>
Faults .....	34
Commands.....	39
Status indications .....	39
<b>10 Explanation of symbols .....</b>	<b>41</b>
<b>11 Declaration of incorporation / Declaration of conformity.....</b>	<b>43</b>

### Symbols



**Warning** - Risk of injury or danger to life!



**Warning** - Danger to life from electric shock!



**Note** - Important information!



**Prompt** - Required action!

Illustrations show example products. Differences from the delivered product are possible.

## 1 General safety information

### Specified use

The door control is intended for a power-operated door with a drive unit (NES/DES GfA limit switch system).

The safe operation is only guaranteed with specified normal use. The drive unit is to be protected from rain, moisture and aggressive ambient conditions. No liability for damage caused by other applications or non-observance of the information in the manual.

Modifications are only permitted with the agreement of the manufacturer. Otherwise the Manufacturer's Declaration shall be rendered null and void.

### Safety information



**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
- Please include these instructions when you pass on the product

Installation and commissioning are to be performed by skilled personnel only.

Only trained electrical craftsmen are permitted to work on electrical equipment. They must assess the tasks assigned to them, recognise potential danger zones and be able to take appropriate safety measures.

Installation work is only to be carried out with the supply off.

Observe the applicable regulations and standards.

### Coverings and protective devices

Only operate with corresponding coverings and protective devices.

Ensure that gaskets are fitted correctly and that cable glands are correctly tightened.

### Spare parts

Only use original spare parts.



## 2 Technical data

Series		TS 971
Dimensions W x H x D		155 mm x 386 mm x 90 mm
Installation		Vertical, free of vibration
Operating frequency		50 Hz / 60 Hz
Supply voltage (+/- 10%)		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
Protection per phase, on-site		10 A ..... 16 A
External mains supply: Internal electronic protection		24 V DC 0.35 A
External mains supply: X1/L, X1/N Protection via F1 micro-fuse		1 N~230 V 1.6 A time-lag
Control inputs		24 V DC, type. 10 mA
Relay contacts		2 potential-free changeover contacts
Loading of relay contacts, ohmic/inductive		230 V AC, 1 A 24 V DC, 0,4 A
Control power consumption		18 W
Temperature range	Operation Storage	-10 °C ..... +50 °C +0 °C ..... +50 °C
Air humidity, non-condensing		up to 93 %
Protection class of housing with CEE-plug		IP 54 / IP 65
Protection class of housing		IP 65
Compatible GfA - limit switch		NES (mechanical limit switch) DES (digital limit switch)
Integrated radio receiver	WSD Radio	2.4 GHz 434 MHz

### 3 Electrical installation



#### **Warning - Danger to life due to electrical current!**

- Disconnect the cables (mains OFF) and check that the supply is off
- Observe the applicable regulations and standards
- Ensure proper electrical connection
- Use suitable tools



#### **On-site backup fuse and mains disconnector!**

- Only use all current sensitive earth leakage circuit breakers type B for FI-drive units
- Connection to the indoor installation via an all-pole disconnecter unit, with current  $\geq 10$  A as per EN 12453 (e.g. CEE plug connector, main switch)



#### **Note! - The inputs of the following safety devices of the control are rated**

##### **Performance Level c (PLc):**

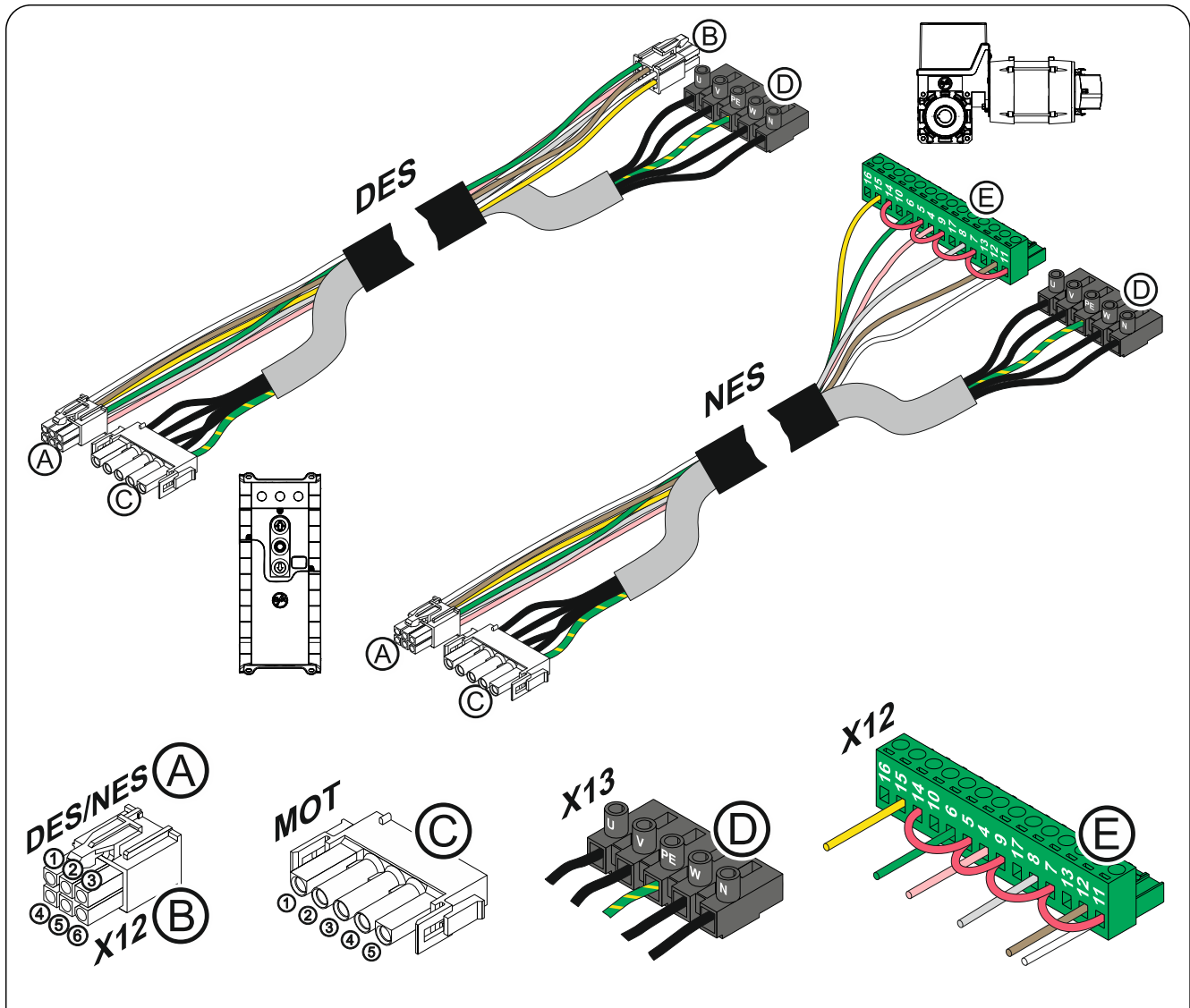
- Slack-rope switch
- Pass-door switch
- Safety edge
- Limit switch system
- Safety circuit of the drive unit
- Emergency STOP control device

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



**Observe the installation instructions of the drive unit!**

## Connection cable connection overview



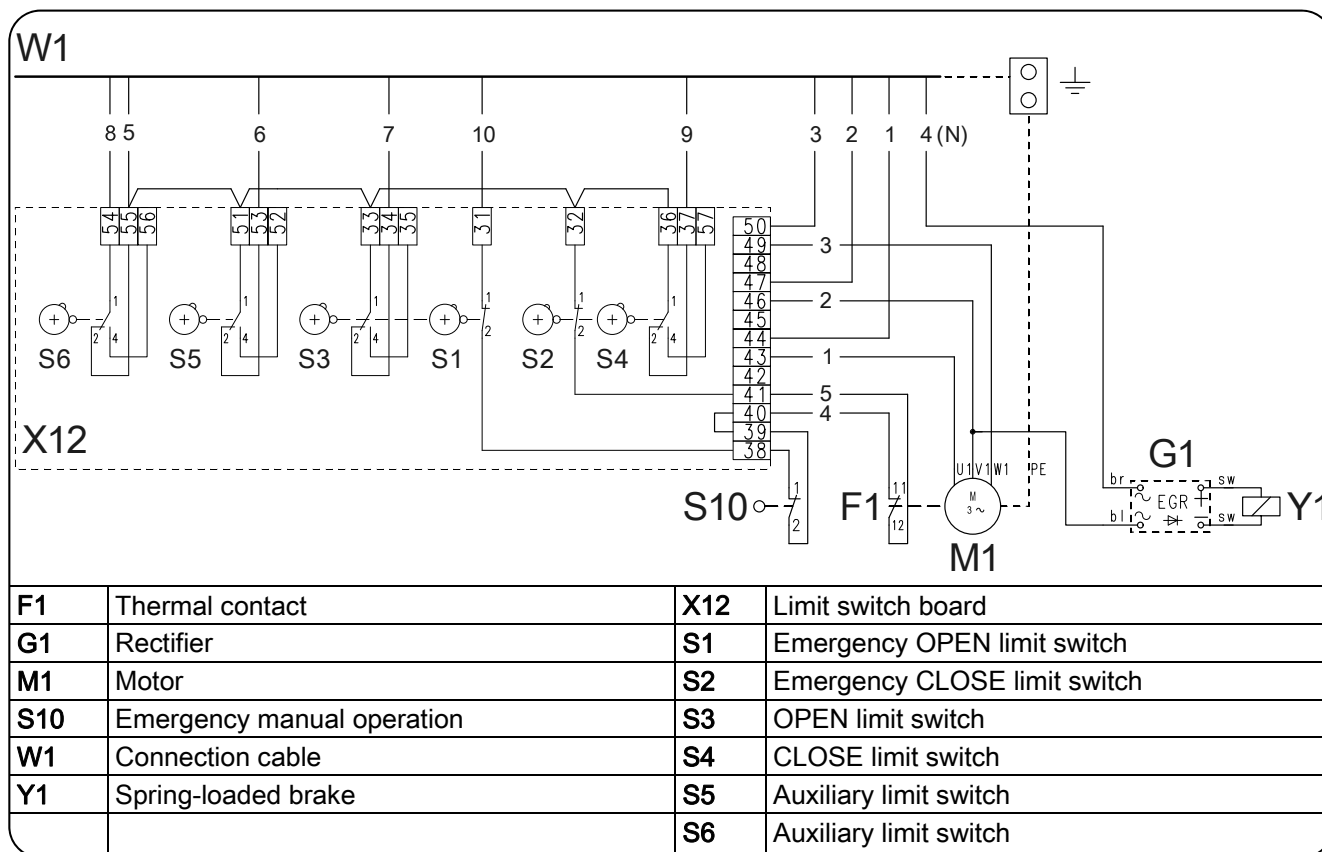
Ⓐ DES → Ⓑ X12 DES				Ⓒ MOT → Ⓓ X13			
Pin	Core	Pin	Description:	Pin	Core	Term.	Description:
①	5/wh	①	+24 V safety circuit	①	3	W	Phase W
②	6/bn	②	Channel B (RS485)	②	2	V	Phase V
③	7/gn	③	Ground	③	1	U	Phase U
④	8/ye	④	Channel A (RS485)	④	4	N	Neutral conductor (N)
⑤	9/gy	⑤	Safety circuit	⑤	PE	PE	
⑥	10/pk	⑥	8 V DC supply voltage				

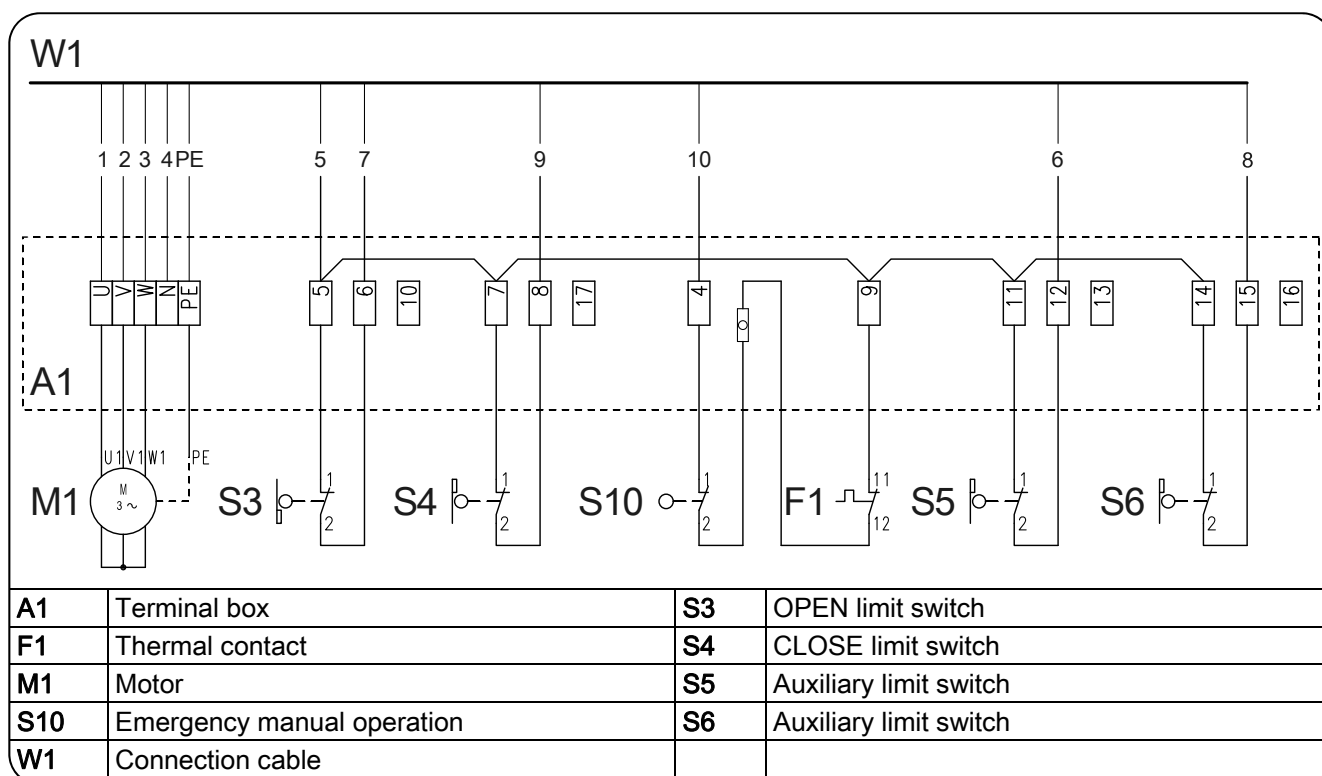
Ⓐ NES → Ⓔ X12 NES			
Pin	Core	Term.	Description:
①	5/wh	11	Limit switch common +24 V, wire link to: 7, 9, 5, 14
②	6/bn	12	S5 Auxiliary limit switch
③	7/gn	6	S3 Open limit switch
④	8/ye	15	S6 Auxiliary limit switch
⑤	9/gy	8	S4 CLOSE limit switch
⑥	10/pk	4	Safety circuit



## Limit switch configuration, screwable version up to year of construction in 1997



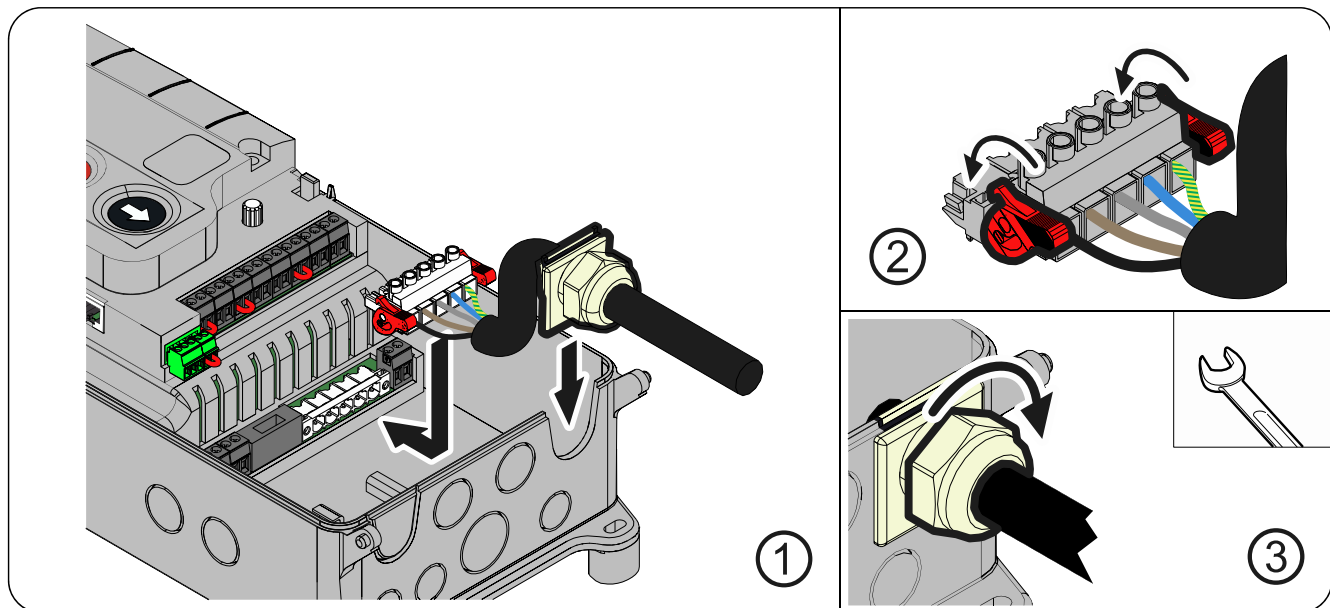
## Limit switch configuration, single limit switches



## Mains supply

3~, N, PE 220 – 400 V 50 - 60 Hz	3~, PE 220 – 400 V 50 - 60 Hz	1~, N, PE, sym. 220 – 230 V 50 - 60 Hz	1~, N, PE, asym. 220 – 230 V 50 - 60 Hz
		$\neq$ SI 25.15 WS, SI 45.7 WS	$=$ SI 25.15 WS, SI 45.7 WS

## Mains supply to control

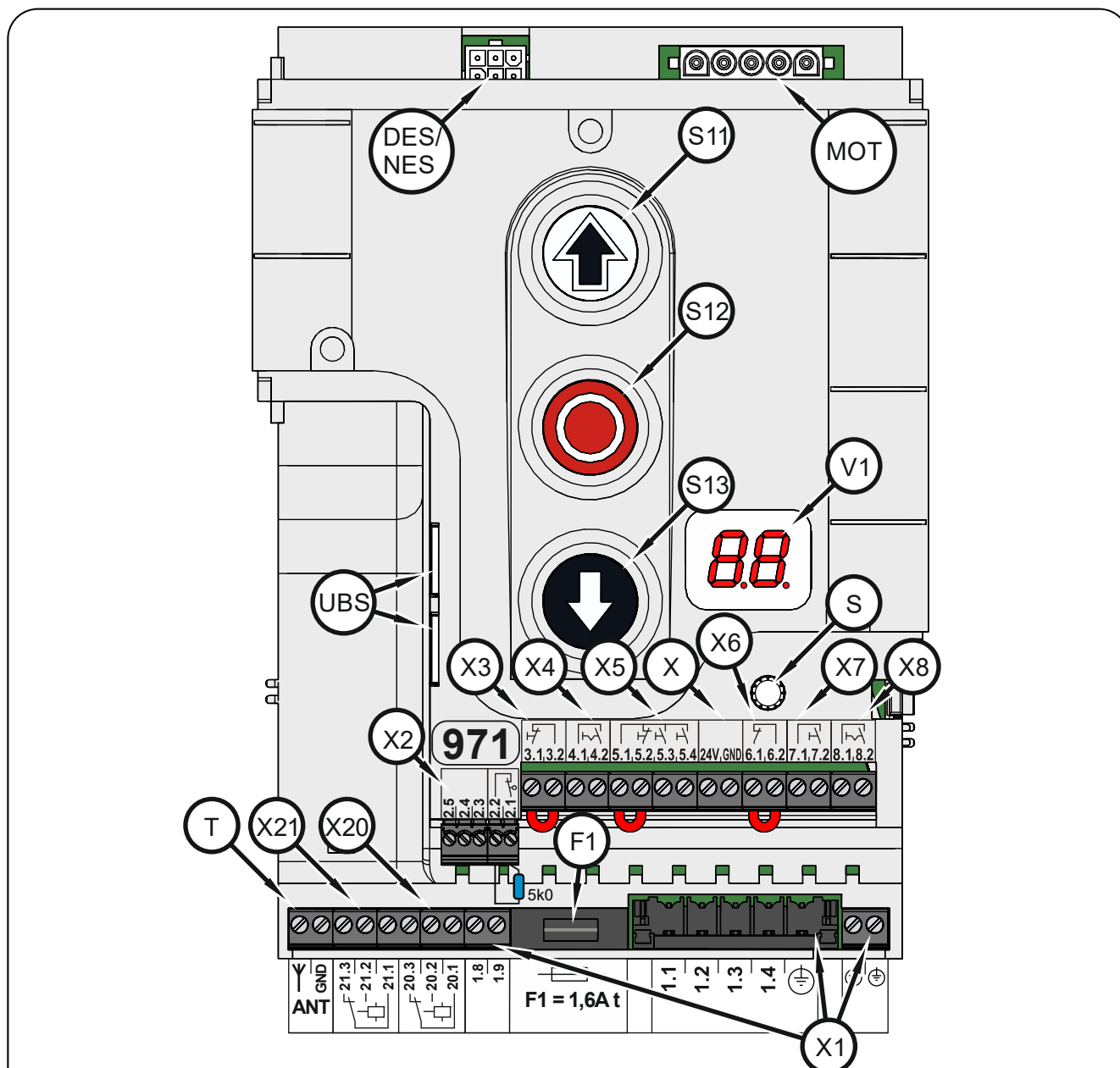


## Completing the electrical installation

Install and tighten cable entries and/or cable glands.

For commissioning of the control, leave the covers open.

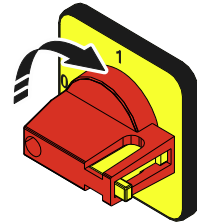
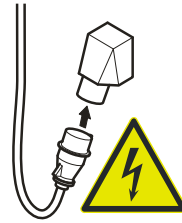
## Overview of control



<b>DES/ NES</b>	DES or NES limit switch socket	<b>X</b>	24 V mains supply, external devices
<b>F1</b>	Micro-fuse 1.6 A time-lag	<b>X1</b>	Mains supply
<b>MOT</b>	Motor socket	<b>X2</b>	Door safety switch and safety devices
<b>S</b>	Selector switch	<b>X3</b>	Emergency STOP control device
<b>S11</b>	OPEN push-button	<b>X4</b>	Automatic closing On/Off
<b>S12</b>	STOP push-button	<b>X5</b>	Control device, external three push-button
<b>S13</b>	CLOSE push-button	<b>X6</b>	Through / reflective photo cell
<b>T</b>	Internal aerial, 434 MHz	<b>X7</b>	Pull switch, external radio receiver
<b>UBS</b>	Universal command sensor socket	<b>X8</b>	Intermediate open On/Off
<b>V1</b>	Display	<b>X20</b>	Potential-free relay contact 1
		<b>X21</b>	Potential-free relay contact 2

## 4 Starting up the control

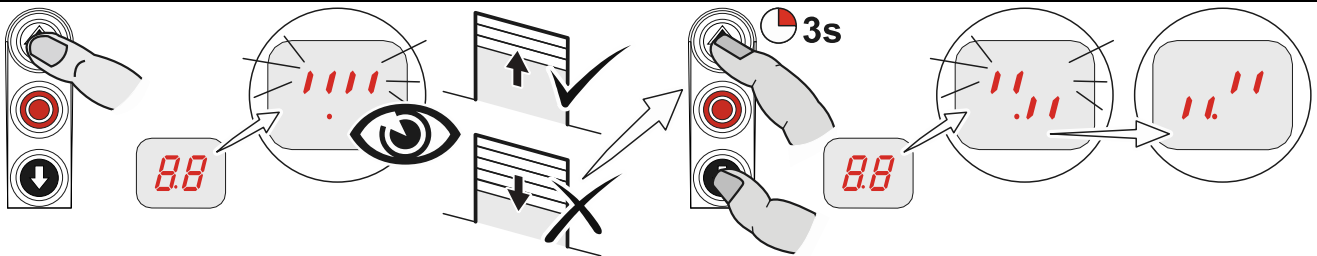
- Supply cables  
Insert / switch on



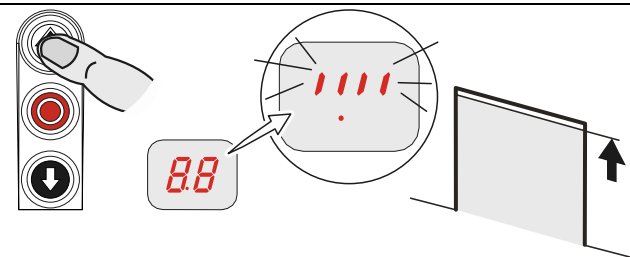
### DES: Rapid adjustment of final limit positions

When using a light curtain with OSE signal output (connection to terminal X2), please note menu item 0.3 first.

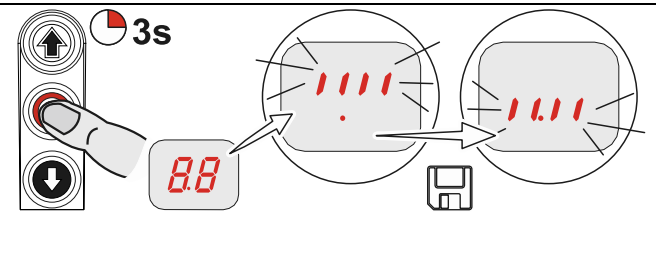
#### 1. Check output rotating direction



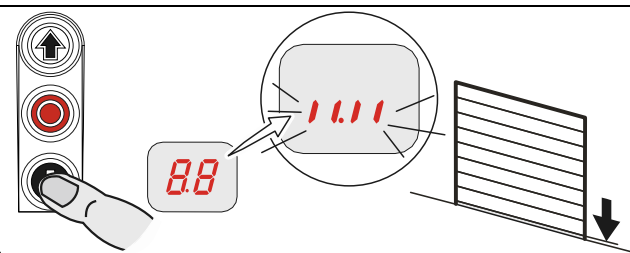
#### 2. Move to OPEN final limit position



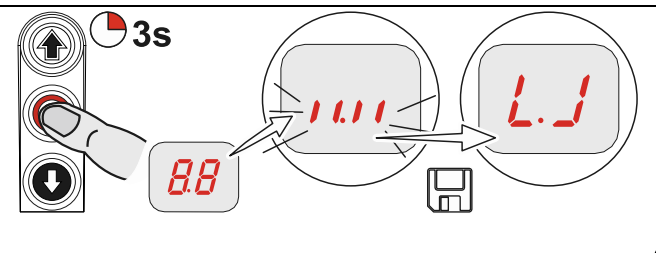
#### 3. Save OPEN final limit position



#### 4. Move to CLOSE final limit position



#### 5. Save CLOSE final limit position



After rapid adjustment of the final limit positions, the door operating mode “hold-to-run” is active. The final limit positions can be corrected later with menu items 1.1 to 1.4. The pre-limit is set automatically with safety edge connected. A correction is possible using menu item 1.5.



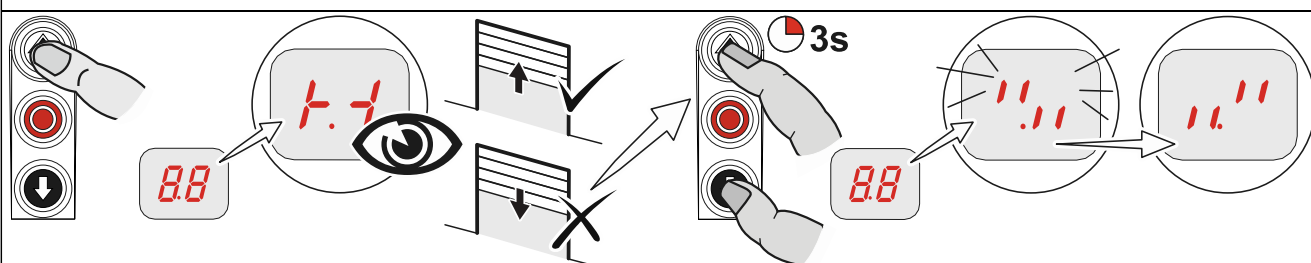
**Observe the installation instructions of the drive unit!**

- For adjusting the mechanical limit switch, see the drive unit installation instructions

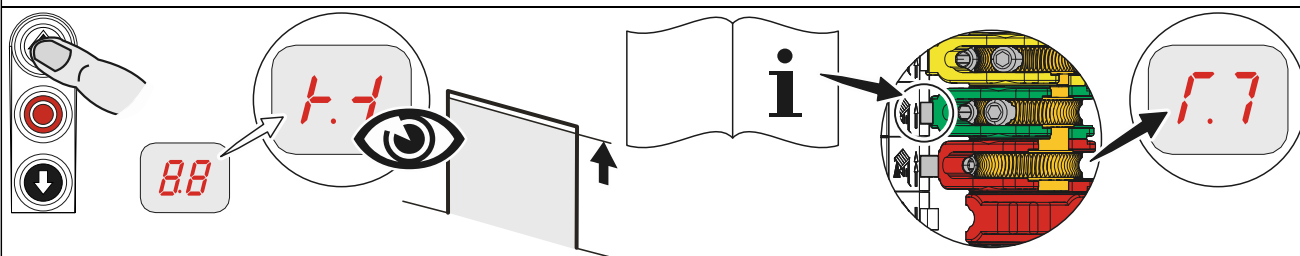
## NES: Rapid adjustment of final limit positions

When using a light curtain with OSE signal output (connection to terminal X2), please note menu item 0.3 first.

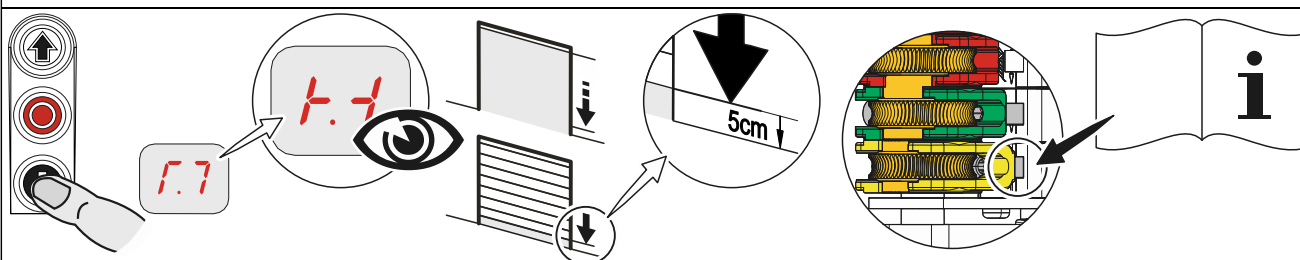
### 1. Check output rotating direction



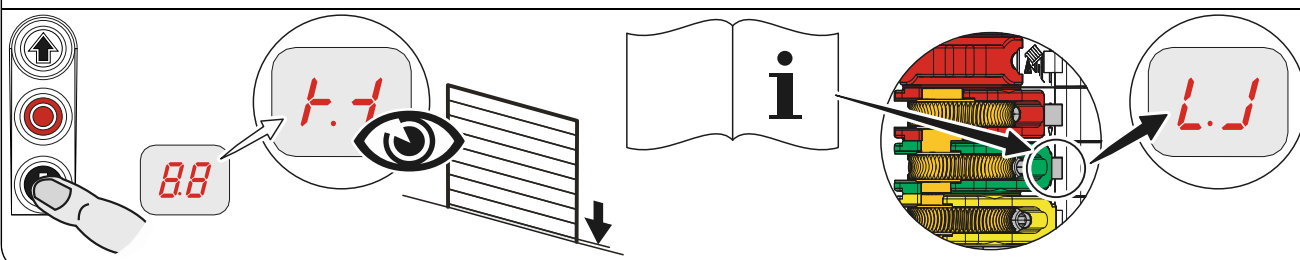
### 2. Move to OPEN final limit position and adjust S3 OPEN limit switch



### 3. Move to CLOSE final limit position 5cm above the ground and adjust S5 pre-limit switch



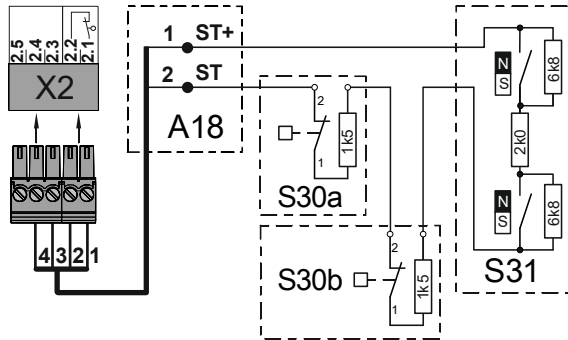
### 4. Move to CLOSE final limit position and adjust S4 CLOSE limit switch



## 5 Electrical installation – control accessories

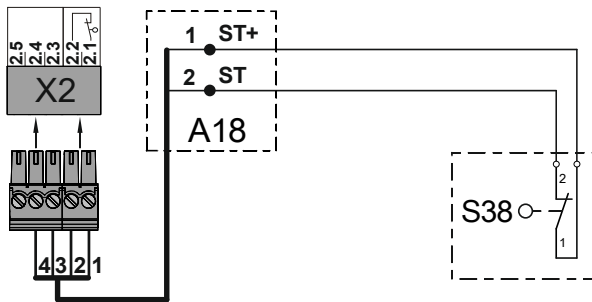
### Connection of door safety switches X2

Pass-door switch / slack-rope switch  
suitable for Performance Level c (PLc)



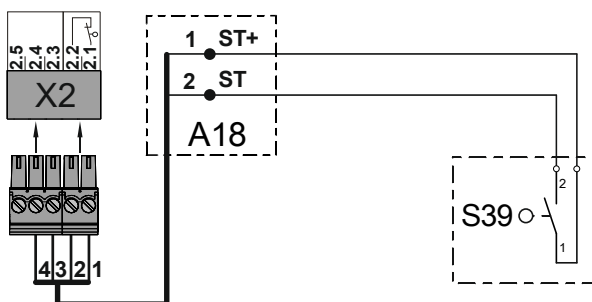
- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- S30a** Pass-door switch
- S30b** (NC contact)
- S31** Electronic pass-door switch (Entrysense)

Crash switch as NC contact



- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- S38** Crash switch (NC contact)

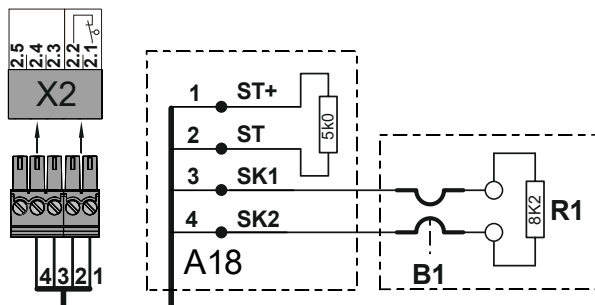
Crash switch as NO contact



- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- S39** Crash switch (NO contact)

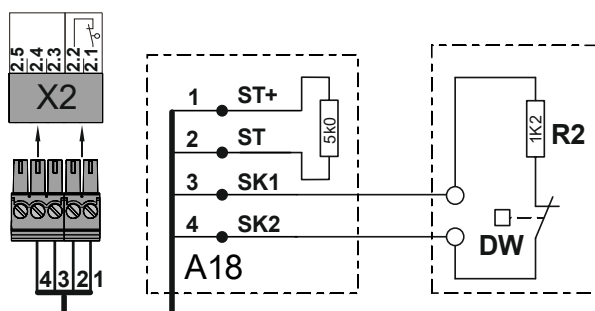
## Connection of safety devices X2

### Electrical safety edge



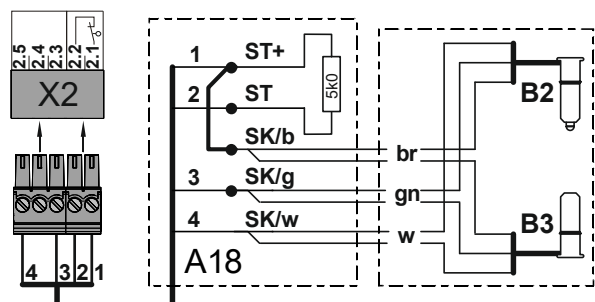
- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- SK1** Input electrical safety edge
- SK2** Input electrical safety edge
- B1** Electrical safety edge
- R1** End of line resistor (8k2)
- X2** Door control socket

### Pneumatic safety edge



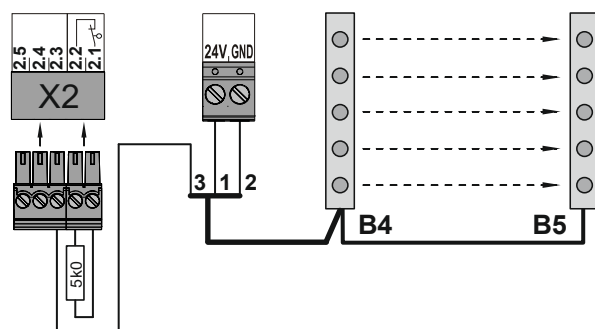
- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- SK1** Input pneumatic safety edge
- SK2** Input pneumatic safety edge
- DW** Pneumatic switch
- R2** End of line resistor (1k2)
- X2** Door control socket

### Optical safety edge system



- A18** Junction box
- ST+** Mains supply
- ST** Input for door safety switch
- SK/b** Mains supply (brown)
- SK/g** Output (green)
- SK/w** Earth (white)
- B2** Optical transmitter
- B3** Optical receiver
- X2** Door control socket

### Light curtain (only with OSE interface)



- 1** Mains supply + 24 V
- 2** Ground (GND)
- 3** Signal output light curtain
- B4** Light curtain transmitter
- B5** Light curtain receiver

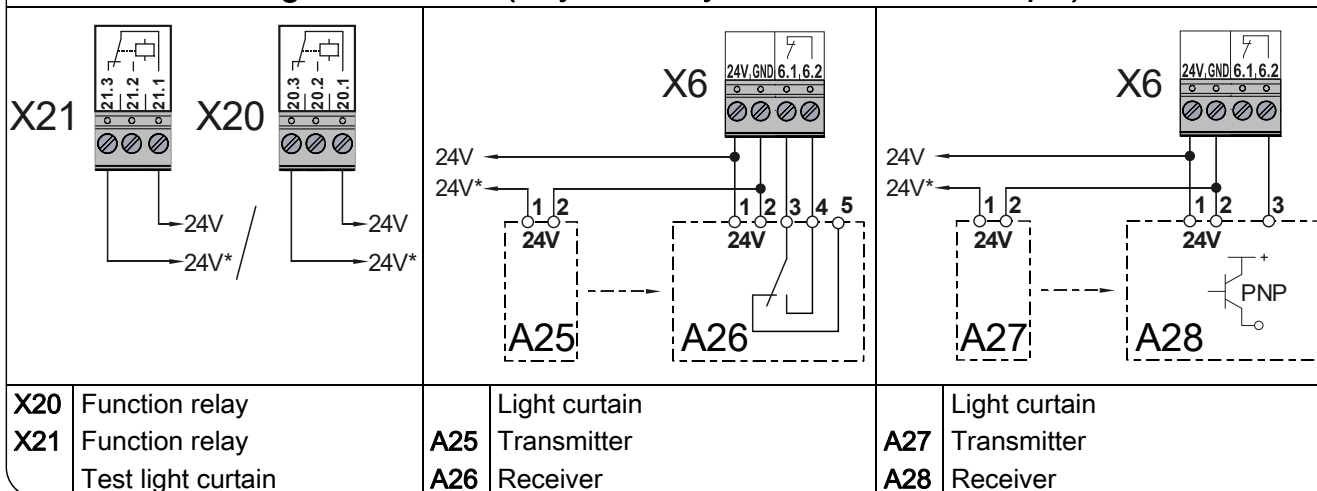
External supply X1		Emergency STOP X3		Automatic closing On/Off X4	
<b>A1</b>	External device	<b>A2</b>	Control device Emergency STOP	<b>A3</b>	Control device Key switch
<b>F1</b>	Micro-fuse 1,6 A				

External control device X5					
Three push button		<b>A4</b>	Key push-button	<b>A6</b> Three push button	

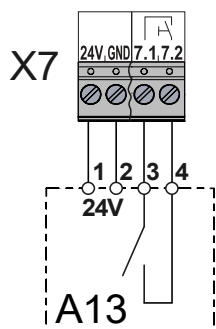
Photo cell X6					
<b>A8</b>	Reflective photo cell	<b>A9</b>	Through-beam photo cell Transmitter	<b>A11</b>	Through-beam photo cell Transmitter
		<b>A10</b>	Receiver	<b>A12</b>	Receiver



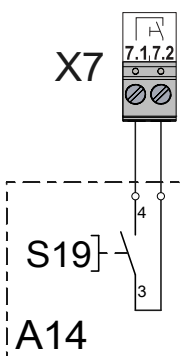
### Light curtain X6 (only with relay or semiconductor output)



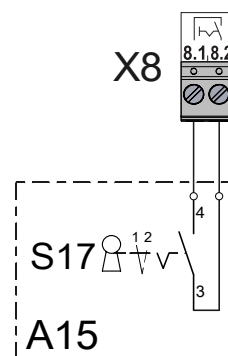
### Radio receiver X7



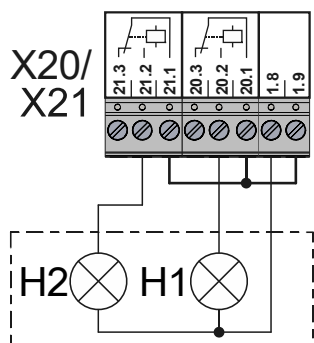
### Pull switch X7



### Intermediate open X8

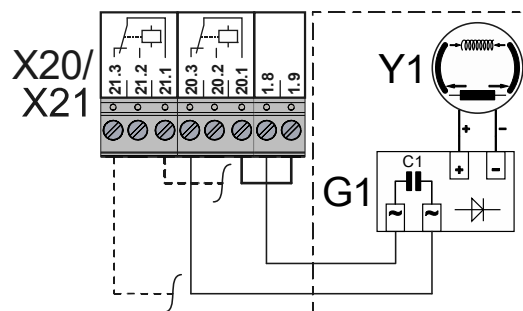


### Red/green traffic lights X20 / X21



<b>H1</b>	Traffic-light, green
<b>H2</b>	Traffic-light, red

### Magnetic brake X20 / X21



<b>G1</b>	Rectifier
<b>Y1</b>	Magnetic brake

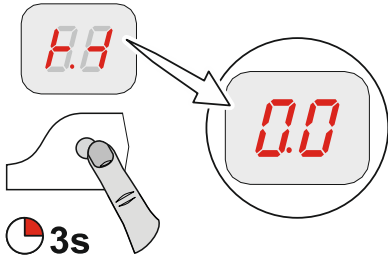


#### Note!

- Install and tighten cable entries and/or cable glands

## 6 Control programming

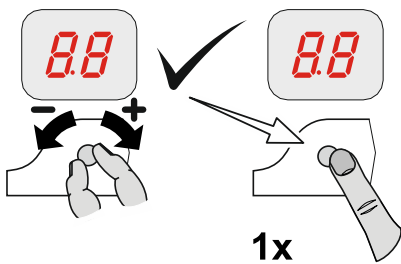
### 1. Start programming



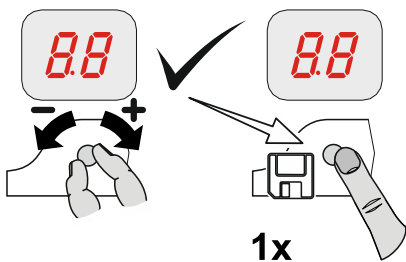
**! Note!**

- Complete programming is only possible after setting the final limit positions.

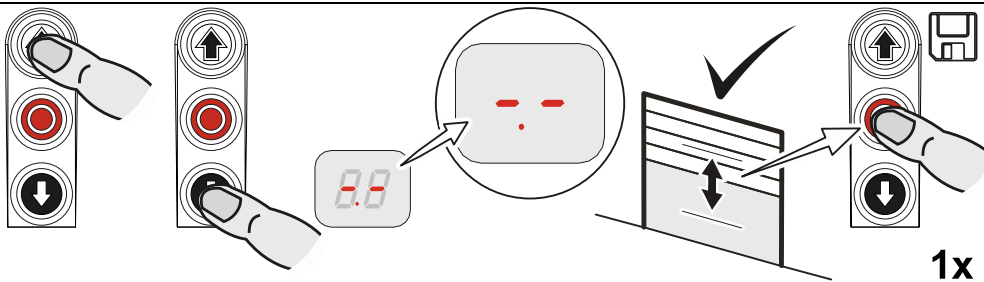
### 2. Select menu item and confirm



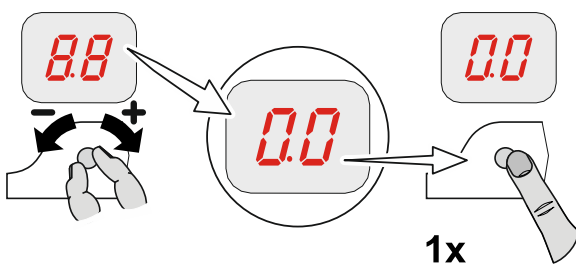
### 3.a) Set and store functions





























### 3.b) Set and store positions (DES)



### 4. Exit programming



## 7 Table menu items

Door operating modes			
 	<b>Door operating mode</b>		
		Hold-to-run OPEN Hold-to-run CLOSE	 
		Self-hold OPEN Hold-to-run CLOSE	
		Self-hold OPEN Self-hold CLOSE	
		Self-hold OPEN / CLOSE Self-hold, CLOSE hold-to-run release via external X5 control device	
		Hold-to-run OPEN Hold-to-run CLOSE with active safety edge / photo cell	
 	<b>Output rotating direction</b>		
		Maintain output rotating direction	
		Change output rotating direction	
 	<b>Special function (DES)*</b>		
		Spiral cable or WSD	 
		Light curtain	
		Parallel operation of light curtain and WSD (Operation of a safety edge on WSD not possible)	

### \*) NOTE!

This menu item is only enabled at initial operation or after a complete reset. The selection must be made before setting the final limit positions. The selection is retained even after a reset but can then be changed.

Door positions					
		<b>OPEN final limit position, coarse correction (DES)</b>			
			Approach and store desired door position		1x
		<b>CLOSE final limit position, coarse correction (DES)</b>			
			Approach and store desired door position		1x
		<b>OPEN final limit position, fine correction (DES)</b>			
				Without door movement, [+] OPEN correction [-] CLOSE correction	1x
		<b>CLOSE final limit position, fine correction (DES)</b>			
				Without door movement, [+] OPEN correction [-] CLOSE correction	1x
		<b>Fine-correction pre-limit switch for safety edge (DES)</b>			
				Without door movement, [+] OPEN correction [-] CLOSE correction	1x
		<b>Adjust intermediate open X8 (DES)*</b>			
			Approach and store desired door position		1x
		<b>Setting for position of relay 1 switching point (DES)*</b> Select relay function via menu item 2.7			
			Approach and store desired door position		1x
		<b>Setting for position of relay 2 switching point (DES)*</b> Select relay function via menu item 2.8			
			Approach and store desired door position		1x

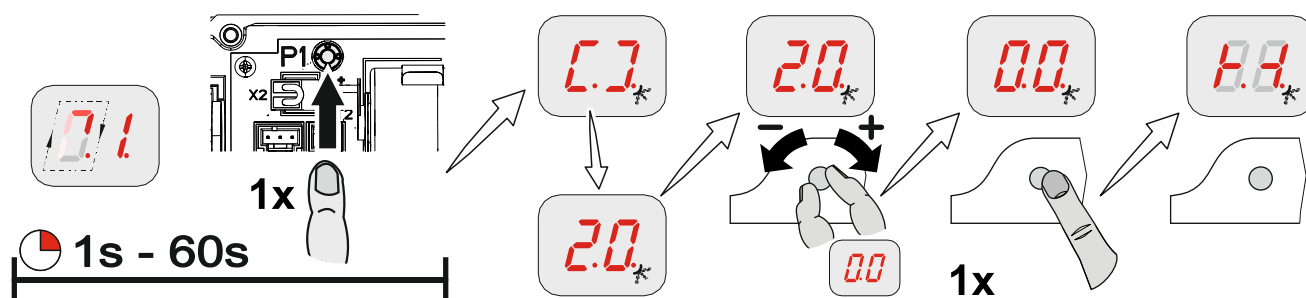
\*) Menu items 1.6 to 1.7 disappear at NES. The switching point must be adjusted via the S6 auxiliary limit switch at the drive unit.

## Door functions

	 1x	<b>Safety device</b>	
		<b>Spiral cable</b>	 1x
<p>Select radio channel from .2 to 4.0</p> <p>Wireless safety device - WSD door-module</p> <p><b>Wireless safety device</b> for the safety edge (replaces spiral cable).</p> <ul style="list-style-type: none"> <li>Up to 39 doors: Do not assign any radio channel twice.</li> <li>If more than 39 doors: Ensure maximum distance between the door controls with the same channels.</li> <li>Note taugt-in channels in the controls housing. Important for service work.</li> </ul>			 1x
 Pay attention to the WSD door-module manual			

Teach-in of of the selected radio channel at the WSD door-module

WSD door-module connected, dot on right is lit



## Door functions

		Door functions			
<b>2.1</b>	 1x	<b>Safety edge function in the pre-limit area</b>			
		<b>.1</b>	Safety edge active	 1x	
		<b>.2</b>	Safety edge inactive		
		<b>.3</b>	Ground adjustment (DES) (Activation of safety edge at ground contact)		
		<b>.4</b>	Reversing in overrun area (DES)		
<b>2.2</b>	 1x	<b>Overrun correction (DES)</b>			
		<b>.0</b>	Off	 1x	
		<b>.1</b>	On (Do not use with ground adjustment)		

## Door functions

2.3	1x	<b>Automatic closing</b>					
		.0	Off		1x		
		.1	▲	9.9	1 to 99 seconds		
		1.-	↔	0.0	▲	9.9	100 to 199 seconds
		2.-	↔	0.0	▲	4.0	200 to 240 seconds
2.4	1x	<b>Reaction of automatic closing to photo cell / light curtain</b>					
		.0	Off		1x		
		.1	Stopping of automatic closing and CLOSE command				
		.2	Vessel recognition Stopping of automatic closing and CLOSE command when actuated for >1.5 seconds				
2.5	1x	<b>Reverse in case of obstacle</b> (no function with light curtain)					
		.0	Off		1x		
		.1	▲	1.0	Adjustable from 1 to 10 Number of safety device actuations		
2.6	1x	<b>Pull switch or radio receiver function X7</b>					
		.1	Type of impuls 1 Door is in OPEN final limit position      CLOSE command Door is not at OPEN final limit position    OPEN command		1x		
		.2	Type of impuls 2 Command sequence OPEN – STOP – CLOSE – STOP – OPEN				
		.3	Type of impuls 3 OPEN command only				










### Door functions

2.7		Relay function on X20			
2.8		Relay function on X21		X20	X21
	.0	Off			
	.1	Impuls contact* for 1 second	1x		
	.2	Permanent contact*			
	.3	Red lamp, permanently lit during door movement OPEN final limit position      Flashing for 3 seconds CLOSE final limit position      Flashing for 3 seconds			
	.4	Red lamp, permanently lit during door movement OPEN final limit position      Flashing for 3 seconds CLOSE final limit position      Off			
	.5	Red lamp, permanently lit during door movement OPEN final limit position      Permanently lit for 3 seconds CLOSE final limit position      Permanently lit for 3 seconds			
	.6	Red lamp, permanently lit during door movement OPEN final limit position      Permanently lit for 3 seconds CLOSE final limit position      Off			
	.7	Permanent green light Dock leveller release Active only in OPEN final limit position			
	.8	Permanent contact in CLOSE final limit position			
	1.0	Light sensing device 1-second pulse at each OPEN command			
	1.1	Permanent contact at door position*			
	1.2	Brake control Active during operation Inactive at stop			
	1.4	Light curtain test, etc. Test prior to each closing operation			

\*) Previous teach-in of door positions via menu item 1.7 (1.8) relay X20 (X21) (only DES) or respectively via the S6 auxiliary limit switch of the drive unit (NES).



### Door functions

	 1x	<b>Intermediate open function</b>	
		All command inputs	 1x 
	Input X7.2 and internal radio receiver		
	Input X5.3 and OPEN push-button of control		

## Safety functions

<b>3.1</b>	 1x	<b>Force monitoring (DES)</b>						
					0 = Off Adjustable for 2 % to 10 % overload			 1x
<b>3.2</b>	 1x	<b>Interruption of the photo cell function (DES)</b>						
		Off					 1x	
		On (single reference position taught-in twice)					 1x	
<b>3.3</b>	 1x	<b>Travel time monitoring (NES)</b>						
				0 = Off 1 to 90 seconds			 1x	
<b>3.4</b>	 1x	<b>Door safety switch</b> (Input X2.2 / WSD door-module for ".1", ".2" and ".4" only)						
		Slack-rope switch / Pass-door switch					 1x	
		Crash switch as NC contact After activation: "Hold-to-run" door operating mode					 1x	
		Crash switch as NO contact After activation: "Hold-to-run" door operating mode					 1x	
		Crash switch as NC contact After activation: Reversing in OPEN final limit position. Reset after contact reset otherwise "Hold-to-run" door operating mode					 1x	
		Crash switch as NO contact After activation: Reversing in OPEN final limit position. Reset after contact reset otherwise "Hold-to-run" door operating mode					 1x	
<b>3.5</b>	 1x	<b>Automatic opening</b> (Automatic closing menu item 2.3)						
				0 = Off 1 to 99 minutes			 1x	
<b>3.8</b>	 1x	<b>Reversing duration adjustment</b>						
				[+] slower [-] faster			 1x	

## DI/FI settings

<b>4.1</b>	 1x	<b>OPEN output speed</b>			
			Output speed in rpm		 1x
<b>4.2</b>	 1x	<b>CLOSE output speed</b> When a safety device is triggered, the door moves at reduced speed.			
			Output speed in rpm		 1x
<b>4.3</b>	 1x	<b>Increased CLOSE output speed</b> Up to an opening height of 2.5 m When a safety device is triggered, the door moves at reduced speed.			
			Output speed in rpm 0 = Off		 1x
<b>4.4</b>	 1x	<b>Changeover position to CLOSE output speed</b> (with adherence to minimum opening height requirement of 2.5 m!)			
		Approach and store desired door position			 1x
<b>4.5</b>	 1x	<b>OPEN acceleration</b>			
			DI Steps of 1.0 seconds FI Steps of 0.1 seconds		 1x
<b>4.6</b>	 1x	<b>CLOSE acceleration</b>			
			DI Steps of 1.0 seconds FI Steps of 0.1 seconds		 1x
<b>4.7</b>	 1x	<b>OPEN deceleration</b>			
			DI Steps of 1.0 seconds FI Steps of 0.1 seconds		 1x
<b>4.8</b>	 1x	<b>CLOSE deceleration</b>			
			DI Steps of 1.0 seconds FI Steps of 0.1 seconds		 1x
<b>4.9</b>	 1x	<b>OPEN/CLOSE crawling speed</b>			
			Output speed in rpm		 1x

### Extended door functions

76		1x		Selection of radio transmitters manufacturer (434 MHz)			
	.0	Internal radio receiver deactivated		1x			
	.1	(Fixcode) GfA, Tedsen					
	.2	Teleco "COD1"					
	.3	-					
	.4	(Rolling code of various providers) GfA UK, JCM, Dickert, Tormatic					
	.5	(Fixed code) RDA					
	.6	-					
	.7	-					
	.8	-					
	.9	-					
	.10	-					
77		1x		Radio receiver function			
	.1	Teach-in of a handheld transmitter		1x			
	.2	Cancellation of a taught-in handheld transmitter					
	.3	Cancellation of all taught-in handheld transmitter					

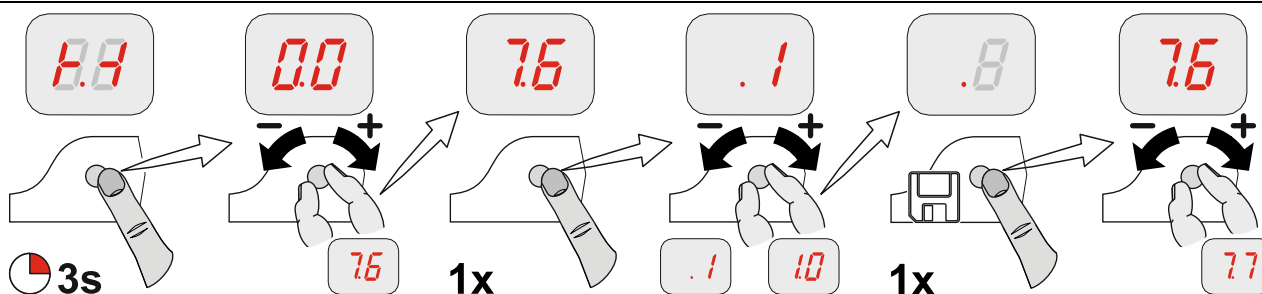


**Note!**

- A combination of different radio transmitter manufacturers is possible
- Only use 434-MHz handheld transmitters
- Up to 64 radio channels can be taught

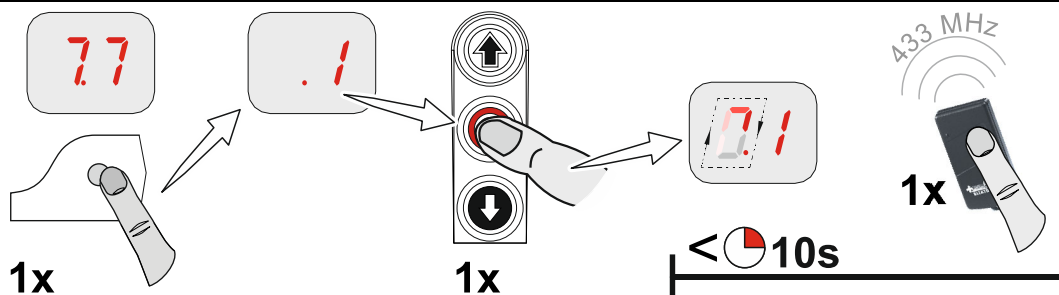
**Teach-in of handheld transmitters**

**1. Select radio transmitter manufacturer's system**

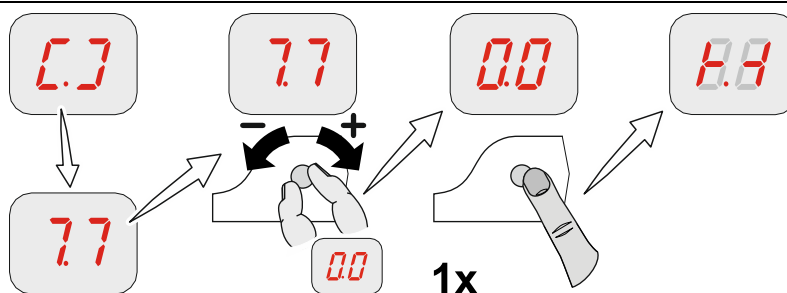


**2. Activate radio transmitter**

**3. Carry out teaching-in**



**4. Switch to door operation**



### Maintenance cycle counter





8.5	1x	<b>Maintenance cycle preselection</b>		0.0	
	0.0	0.1  9.9	01-99 corresponds to 1,000 to 99,000 cycles Cycles are counted down	1x	
8.6	1x	<b>Reaction upon reaching "0"</b>			
	.1	Status indication "CS" appears in turns with value set by menu item <b>8.5</b> .	1x		
	.2	Changeover to "Hold-to-run" door operating mode. Status indication "CS" appears in turns with value set by menu item <b>8.5</b> .			
	.3	Changeover to "Hold-to-run" door operating mode. Status indication "CS" appears in turns with value set by menu item <b>8.5</b> . Option: Press STOP-button for 3 seconds to deactivate changeover and status indications for 500 cycles.			
	.4	Status indication "CS" appears in turns with value set by menu item <b>8.5</b> and relay contact X21 switches.			

## Readout of data memory

	 1x	<b>Cycle counter</b> 7-digit number													
	M	HT	ZT	T	H	Z	E								
Displayed in division of ten consecutively															
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">M = 1,000,000</td> <td style="width: 25%;">ZT = 10,000</td> <td style="width: 25%;">H = 100</td> <td style="width: 25%;">E = 1</td> </tr> <tr> <td>HT = 100,000</td> <td>T = 1,000</td> <td>Z = 10</td> <td></td> </tr> </table>								M = 1,000,000	ZT = 10,000	H = 100	E = 1	HT = 100,000	T = 1,000	Z = 10	
M = 1,000,000	ZT = 10,000	H = 100	E = 1												
HT = 100,000	T = 1,000	Z = 10													
	Display change of the last 6 faults														
	 1x	<b>Data counter</b> 7-digit number													
	M	HT	ZT	T	H	Z	E								
Displayed in division of ten consecutively															
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">M = 1,000,000</td> <td style="width: 25%;">ZT = 10,000</td> <td style="width: 25%;">H = 100</td> <td style="width: 25%;">E = 1</td> </tr> <tr> <td>HT = 100,000</td> <td>T = 1,000</td> <td>Z = 10</td> <td></td> </tr> </table>								M = 1,000,000	ZT = 10,000	H = 100	E = 1	HT = 100,000	T = 1,000	Z = 10	
M = 1,000,000	ZT = 10,000	H = 100	E = 1												
HT = 100,000	T = 1,000	Z = 10													
		Cycle counter of the last change in programming					 1x								
		Number of activations of slack-rope, pass-door and crash switch					 1x								
	 1x	<b>Software version</b>													
	The software version of the control is displayed. For direct inverter or frequency inverter drive units, the software version of the motor is displayed as well.														

## Deleting / readout

	 1x	<b>Deleting of all settings</b>		
		Activating GfA stick		 1x
		All settings are set to factory setting! Except for cycle counter		 3s

<b>Reading out WSD door-module data</b>	
  1x	<b>WSD door-module data</b> (Only activated at taught-in WSD door-module, Displaying of missing data is done by „-.-.“)
	Data indicated alternately <ol style="list-style-type: none"> <li>1. Version of master radio module</li> <li>2. Type of safety edge               <ul style="list-style-type: none"> <li>„0.0.“ = none</li> <li>„0.1.“ = 1k2</li> <li>„0.2.“ = 8k2</li> <li>„0.3.“ = optic</li> <li>„0.4.“ = WSD door-module with light curtain on X2</li> </ul> </li> <li>3. Door safety switch               <ul style="list-style-type: none"> <li>„0.0.“ = inactive</li> <li>„0.1.“ = active</li> </ul> </li> <li>4. Battery voltage</li> <li>5. Assigned / selected communication channel</li> <li>6. Signal quality ranging from 0% - 99%</li> </ol>
	Pay attention to the WSD door-module manual

## 8 Safety devices

### X2: Input for safety devices

The door control detects three different safety edges automatically. Electrical safety edge, Pneumatic safety edge, optical safety edge system. Alternatively, a light curtain can be connected.



#### Important!

- ▶ Connect safety edge systems in accordance with EN 12978
- ▶ Check position of S5 pre-limit switch on the safety edge (only for NES)
- When the door is opened > 5 cm, a reversing must be executed if the safety edge has been activated
- "Hold-to-run" door operating mode can always be used should the safety edge be defective



## EMERGENCY operation



### Warning!

- ▶ For EMERGENCY operation, the door has to be checked (it has to be in a fault-free state)
  - “Hold-to-run” door operating mode:  
The door must be fully visible from the operating point

EMERGENCY operation allows for moving the door to a required position by bypassing faults with the signal transmission of the safety device.



EMERGENCY operation is activated after pressing the STOP push-button and holding for 7 seconds, and is indicated by the flashing display.



### Note!

- The door cannot be moved in case of F1.3 and F1.4 fault indications for reasons of operating safety.
  - ▶ Activation of EMERGENCY operation: Use the built in push button of the control to press and hold the STOP-button while simultaneously pressing the OPEN or CLOSE push-button to move the door

## X3: Input, emergency STOP

The emergency STOP control device is connected to a safety circuit with Performance Level c (Plc) according to ISO 13849-1. Connection of an emergency STOP control device as per EN 13850 or an evaluation unit for an anti-trap safety device. The F1.4 fault indication appears upon activation.









### Note!












- Frequency inverter drive unit: The emergency STOP switches the supply off. The door control can only be operated again 30 seconds after unlocking the emergency STOP. (Display rotates during this time)













## 9 Status display

Faults		
	Display: "F" and code	
Code	Fault description	Fault causes and fault correction
	Terminals X2.1 – X2.2 are open. Slack-rope switch/Pass-door contact is open. The WSD door-module is not taught-in or the terminals X1/X2 in the WSD door module are open.	Check door safety switch. Check whether the connection cable is connected. Check the WSD door-module.
	Open safety circuit (DES) Emergency manual operation has been activated. Thermal protection of the motor has tripped	Check emergency manual operation. Check door and door drive unit for stalling. <b>Warning! Danger of the door dropping!</b> Stalling may indicate the anti fall back device (if incorporated) has activated. Take appropriate measures.
	Terminals X3.1 – X3.2 are open. Emergency STOP has been activated.	Check emergency STOP. Check whether the connection cable is connected.
	Radio transmission of WSD door-module is faulty.	<ul style="list-style-type: none"> <li>• Radio channel assigned twice: Use menu item 9.6 to read off the radio channel. Use menu item 2.0 to manually assign the radio channels.</li> <li>• Moisture in WSD door-module: Replace WSD door-module und use a splash guard (optional equipment).</li> <li>• Obstacle between WSD door-module and door control: Adapt fitting configuration or use a spiral cable.</li> <li>• Battery voltage too low: Read off voltage value using menu 9.6 and replace battery if this is less than 3.2 V.</li> </ul> <p>Red LED in WSD door-module: Press P1 push-button.</p> <ul style="list-style-type: none"> <li>• Flashing: Faulty radio connection</li> <li>• Lit: Radio connection OK</li> </ul> <p> Pay attention to the WSD door-module manual</p>

## Faults

Code	Fault description	Fault causes and fault correction
	<b>Display: "F" and code</b>	
	Faulty entrysense switch. Faulty entrysense installation.	Open and close pass door. Check the DIP-switches in the junction box for spiral cable or WSD. Check the resistance and wiring of the spiral cable. Check the pass door installation.
	Line cross-circuit in the safety circuit.	Switch control off and on. Check the DIP-switches in the junction box for spiral cable or WSD. Check the resistance and wiring of the spiral cable.
	WSD door-module batteries are too low.	Change batteries of the WSD door-module. If the battery service life was considerably less than one year, check fault code 1.6 (radio channels assigned twice, obstacles).
	No safety edge detected.	Check the wiring of the safety edge. Check function of WSD door-module.
	Terminals X6.1 – X6.2 are open. Photo cell has been activated.	Check alignment of the photo cell. Check connection cable. Replace photo cell if necessary.
	Maximum number of reversing movements for door through safety edge system activation has been reached. (Only with automatic closing)	Obstacles along the door travel path. Check whether the safety edge system is correctly functioning.
	Activation of safety edge 8k2.	Check whether the safety edge system is correctly functioning. Check whether the connection cable has short-circuited.
	Safety edge 8k2 defective.	Check whether the safety edge system is correctly functioning. Check whether the connection cable is connected.
	Activation of safety edge 1k2.	Check whether the safety edge system is correctly functioning. Check whether the connection cable is connected.
	Safety edge 1k2 defective.	Check whether the safety edge system is correctly functioning. Check whether the connection cable has short-circuited.





<b>Faults</b>		
	<b>Display: "F" and code</b>	
Code	Fault description	Fault causes and fault correction
	1k2 testing is negative.	Testing is activated in the lower final limit position. Check pre-limit switch (with NES "S5").
	Wireless safety device of the WSD door-module or optical safety edge system has been activated or is defective.	Check the WSD door-module. Check whether the safety edge system is correctly functioning.
	(DES) OPEN emergency stop switch reached.	In the voltage-free state, move the door back via emergency manual operation.
	(NES) OPEN or CLOSE emergency stop switch reached. Emergency manual operation has been activated. Thermal protection of the motor has tripped Limit switch system has changed over from NES to DES without the control being reset.	Check OPEN/CLOSE emergency stop switch. Check emergency manual operation. Reset of control via menu item "9.5". Check door and door drive unit for stalling. <b>Warning! Danger of the door dropping!</b> Stalling may indicate the anti fall back device (if incorporated) has activated. Take appropriate measures.
	(DES) CLOSE emergency stop switch reached.	In the voltage-free state, move the door back via emergency manual operation.
	(NES) Faulty activation of the "S5" pre-limit switch.	Check the "S5" pre-limit switch for correct functioning and setting.
	No limit switch detected (active at initial operation).	Connect the limit switch to the control. Check the limit-switch connection cable.
	Limit switch system has changed over from DES to NES without the control being reset.	Reset of control via menu item "9.5".
	Internal plausibility error.	Execute fault clearance through movement command.
	Internal control temperature too high.	Switch off control and let it cool down.

## Faults






F.	Display: "F" and code	
Code	Fault description	Fault causes and fault correction
41	Triggering of force monitoring.	Check the door mechanism for stiffness.
45	Crash switch X2.1 – X2.2 is activated.	Check crash switch / connection cable. To reset fault: Press STOP-button and hold for 3 seconds.
46	Light curtain actuated at terminals X2.3 - X2.5 / X6.1 - X6.2.	Check light curtain. Check whether the connection cable is connected.
47	Light curtain defective.	Comply with the light curtain manufacturer's specifications. Check connection cable.
50	Fault of the controller.	Switch control off and on. Replace control if necessary.
51	ROM error.	Switch control off and on. Replace control if necessary.
52	CPU error.	Switch control off and on. Replace control if necessary.
53	RAM error.	Switch control off and on. Replace control if necessary.
54	Internal fault of control.	Switch control off and on. Replace control if necessary.
55	Fault of digital limit switch (DES)	Check DES connector and connection cable. Switch control off and on.
56	Fault with door movement.	Check the limit switches for correct rotational movement. Switch control off and on. Check door and door drive unit for stalling. <b>Warning! Danger of the door dropping!</b> Stalling may indicate the anti fall back device (if incorporated) has activated. Take appropriate measures.

<b>Faults</b>		
<b>F.</b>	<b>Display: "F" and code</b>	
<b>Code</b>	<b>Fault description</b>	<b>Fault causes and fault correction</b>
<b>5.7</b>	Fault with rotating direction.	Change rotating direction via menu item "0.2".
<b>5.8</b>	Unacceptable door movement in stopped state.	Execute fault clearance trough movement command. Check brake and drive unit.
<b>5.9</b>	No compliance with specified travel direction at drive unit.	Execute fault clearance trough movement command. Check for overload of the drive.
<b>6.1</b>	DI / FI closing speed is too high.	Switch control off and on. Replace drive unit if necessary.
<b>6.2</b>	Internal FI communication fault.	Switch control off and on. Replace FI drive unit if necessary.
<b>6.3</b>	Low voltage in the DC voltage sink.	Execute fault clearance trough movement command. Check mains input voltage. Change slope durations/speeds.
<b>6.4</b>	Excess voltage in the DC voltage link.	Check mains input voltage. Execute fault clearance trough movement command. Change slope durations/speeds.
<b>6.5</b>	Temperature limit exceeded.	Check for overload of the drive unit. Cool down the drive unit and reduce the number of cycles.
<b>6.6</b>	Permanent current overload.	Check for overload of the drive unit. Check the door mechanism for stiffness or weight.
<b>6.7</b>	Brake / FI fault.	Check brake; replace if necessary. If problem recurs, replace drive unit.
<b>6.9</b>	Collective indication for FI.	Execute fault clearance trough movement command. Replace drive unit if message is continually displayed.
<b>8.1</b>	At initial operation minimum travel distance was not completed.	Move the door for at least 1 second.













### Commands

Commands	
	Display: "E" and code
Code	Command description
	An OPEN-command is present. Inputs X5.3, X7.2, internal radio system, UBS control device or UBS radio receiver.
	A STOP-command is present. Inputs X5.2, X7.2, internal radio system, UBS control device or UBS radio receiver or simultaneous OPEN and CLOSE commands.
	A CLOSE-command is present. Inputs X5.4, X7.2, internal radio system, UBS control device or UBS radio receiver.

### Status indications














Status display	Description
	Preset value for maintenance cycle counter reached.
	Dot on left is not lit: control circuit has a short circuit or is overloaded.
	Dot on right is lit: internal WSD door-module is active.
	Function for changing the rotating direction is activated, only possible during initial operation.
	Change of rotating direction has been carried out, only possible during initial operation.










## Status indications

Status display	Description
 Flashing	Emergency operation is active or programming option is blocked.
 Flashing	Teach in OPEN final limit position.
 Flashing	Teach in CLOSE final limit position.
 Flashing	UPWARDS travel active.
 Flashing	CLOSING operation active.
 	Stop between the set final limit positions.
 	Stop at the OPEN final limit position.
 	Stop at the intermediate stop position.
 	Stop at the CLOSE final limit position.
 	Teaching in or deleting of the WSD door-module or handheld transmitter is confirmed. Blocking of programming option confirmed. Flashing display: Unblocking of programming option active.
 	Interruption of the photo cell function: At first interruption of the light beam.
 	Interruption of the photo cell function: When exiting the programming.



## 10 Explanation of symbols

Symbol	Explanation
	Prompt: Read installation instructions.
	Prompt: Check.
	Prompt: Note.
	Prompt: Note the setting of the menu below.
	Factory setting of the menu.
	Factory setting of the menu, value on the right.
	Factory setting of the minimum limit, dependent on drive unit.
	Factory setting of the maximum limit, dependent on drive unit.
	Setting range.
	Prompt: Select menu item or value, turn selector switch <b>S</b> to the left or to the right.
	Prompt: View menu item, press selector switch <b>S</b> once.
	Prompt: Store, press selector switch <b>S</b> once.
	Prompt: Start programming, actuate the selector switch <b>S</b> for three seconds.

Symbol	Explanation
	Prompt: Setting via OPEN/CLOSE built in push-button; Use OPEN push-button to increase value, CLOSE push-button to decrease value.
 1x	Prompt: Press stop button once via built in push-button.
 1x	Prompt: Save, press stop button once via built in push-button.
 3s	Prompt: Save, press stop button for three seconds via built in push-button.
 3s	Prompt: Reset the control, press stop button for three seconds via built in push-button.
	Prompt: Move to door position.
	Prompt: Move to door position for OPEN final limit position.
	Prompt: Move to pre-limit.
	Prompt: Move to door position for CLOSE final limit position.

## 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  
within the meaning of RED Directive 2014/53/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  
**TS 971**  
Part no.: 20097100

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 to compile the  
technical documents is the undersigned.

Düsseldorf, 21.10.2019

**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 300328-2:2017**

Wideband transmission systems - Data  
transmission equipment operating in the 2,4 GHz  
ISM band and using wide band modulation  
techniques

**EN 12453:2019**

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