

# Instruction Manual

Frequenz400-100 / Frequenz400-140



REV: 03

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# 1 General Safety Information



- The door operator may only be used under the conditions described in these instructions. Any other use will be considered improper usage and therefore dangerous. The manufacturer is not liable for damage resulting from improper, incorrect or inappropriate usage.
- Failure to observe the information contained in these instructions may lead to personal or material damage. The instructions must be passed on to all future users and operators of the door operator.
- Only use the door operator if no maintenance or adjustment measures are required to do so. Disconnect the operator from the power supply for cleaning or maintenance.
- Only use the door operator if the entire area of movement is fully visible. During operation, be aware of other people who may be within the operating range of the product or who may enter this area. Do not drive or walk underneath the door while it is moving.
- Do not use the door operator to lift up objects and/or people.
- Ensure that children are kept away from the area around the door.
- Children over the age of 8 and persons with reduced physical, sensory or mental capabilities may operate the door operator when supervised or if they have been instructed in the safe handling of the equipment and are aware of the associated risks.
- Keep remote controls and/or other controls out of reach of children to prevent the accidental activation of the door operator.
- Cleaning work on the door operator or the door or any maintenance measures may only be performed by children when supervised.



**Dispose the operator according to your local environmental regulations.  
Electrical parts must not be disposed as domestic waste !**

## 2 Product Description

The door operator has been developed for industrial doors.

The door operator can be equipped with the following additional safety devices, such as:

- Photocells, Light curtains, Safety edges
- Radar
- Loop detector
- Remote control, Push buttons, Pull switches
- Traffic light

The door operator is operated via the control unit.

You can choose different operating settings for the operator (e.g. automatic, semi-automatic or hold to run).

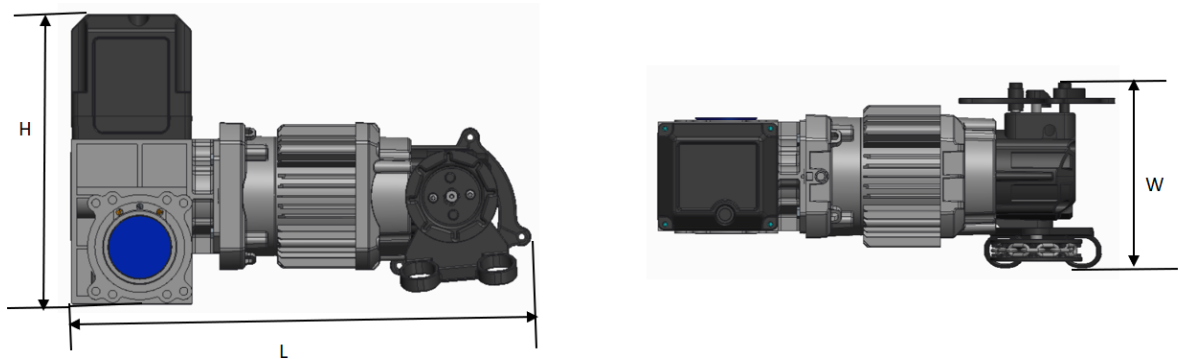
## 3 Technical Data

Model	Frequenz 400-100	Frequenz 400-140
Rated Voltage/Frequency	400V 3-phase/ 50Hz	400V 3-phase / 50Hz
Rated input power in KW	0.8	1.1
Torque in Nm	100	140
Speed in RPM	30	30
Frequency converter	NA	
Diameter hollow shaft in mm	25.44mm	25.44/31.75mm
Max cycles per hour	35c/h	
Emergency release	Chain hoist	
Limit setting of door travel	Digital encoder	

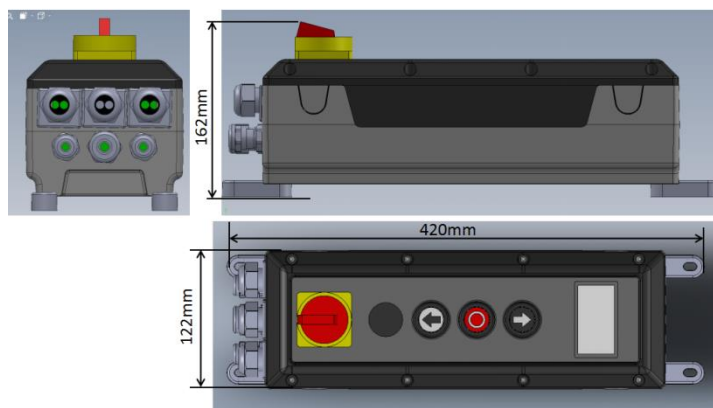
## 4 Drawing of appearance and dimension

Hyper lift-model	Frequenz 400-100	Frequenz 400-140
Door operator L*W*H(mm)	431*180*280	488*180*280
Control box L*W*H(mm)	420*122*162	420*122*162
Packing L*W*H(mm)	573*510*200	573*510*200

### Door operator



### Control box



## 5 Warnings – Symbols



**Note:** Technical information must be observed

**Fig. 1** Number of a figure



**Caution:** Warns of a risk to a person / risk of injury



**Warning:** Warns of a risk to material / risk of damage

## 6 Safety information of operation



The door may only be operated if:

- Conformity in accordance with Machinery Directive 2006/42/EC was declared following assembly.
- The door complies with the standards EN 12605, EN 12604 and DIN EN 13241-1.
- The door operator has been assembled in accordance with EN 12453, EN 12445 and EN 12635.
- Any additionally installed safety equipment is functioning properly.
- There is an internally operated emergency release for garages that have no second access.
- Any pass door set within the door is equipped with a safety device that prevents switch-on while the door is open.
- The emergency release cannot be caught on any vehicle parts (e.g. roof structures).
- It is insured that the installation is conform with the national safety regulations.

**Keep the instruction manual at a safe place!**

## 7 Safety information for installation

### Important:

The door must move easily and be functional and well-balanced in accordance with the manufacturer's specifications.

It must be possible to open and close the door by hand easily.

Assembly must be carried out by trained and specialized personnel.

Electrical installation work must only be performed by authorized and specialized personnel.

The suitability and bearing capacity of the supporting structure of the building in which the door operator is to be installed must be checked and confirmed by expert personnel.



The door operator must be securely fastened at all the mounting points provided. The mounting material must be chosen according to the material characteristics of the supporting structure to ensure that a minimum tensile force of 900 N can be withstood.

If these requirements are not fulfilled, the door operator may fall down or the door may move without control. This means there is a risk of personal injury or material damage.

When mounting the door operator, it must be secured by appropriate means against falling until it is completely and safely attached.

Observe the relevant occupational health and safety regulations during the installation.

## 8 Proper Use

**This door operator is suitable for use with balanced sectional doors and sectional doors equipped with spring-break protection and/or safety catch.**

The maximum dimensions given in the technical data must be complied with.

Before installing the door operator, any existing locking mechanisms for the door must be disassembled or taken out of operation.

Use in an explosion-proof environment is not permitted.

Any other use above and beyond this is considered as improper use.

All the below activities performed without the express written approval of the manufacturer:

- Expansions or modifications
- Use of non-original replacement parts
- Performance of repairs by persons or operators that have not been authorized by the manufacturer may result in the loss of the warranty.

No liability can be accepted for damages that result from the following causes:

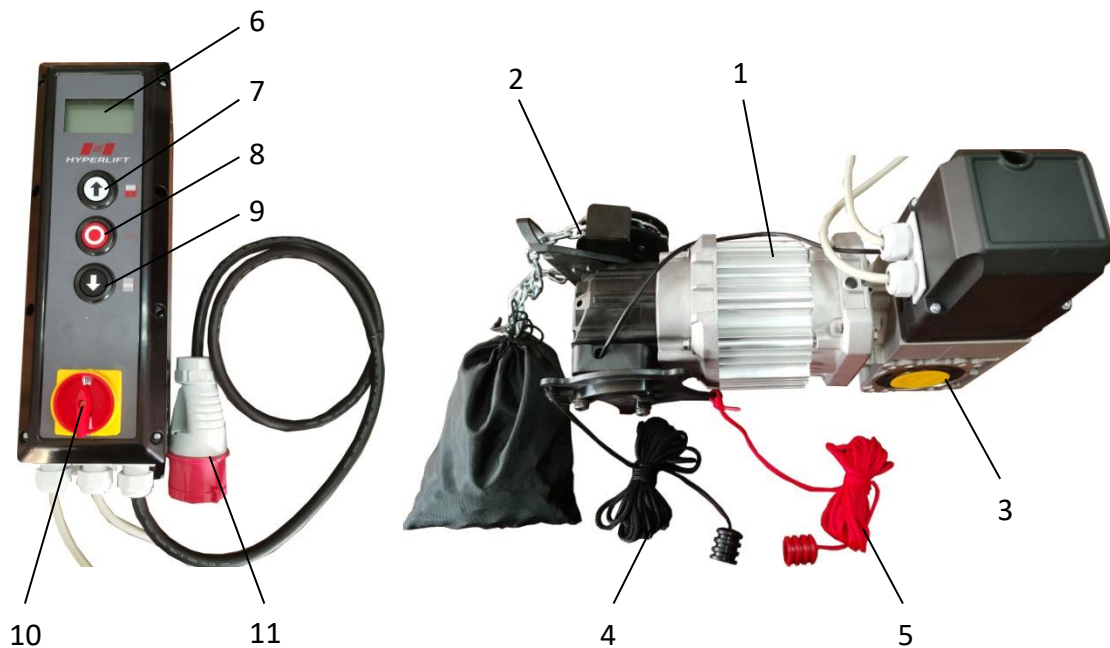
- Technical defects on the door to be operated and structural deformations occurring during operation
- Improper maintenance of the door
- Failure to observe the operating instructions

## 9 Scope of delivery

1	Door operator with emergency release (chain)
2	Control unit with main switch
3	Torque bracket
4	Assembly fasteners
5	External power cable with plug
6.	Signal cable
7.	Internal power cable



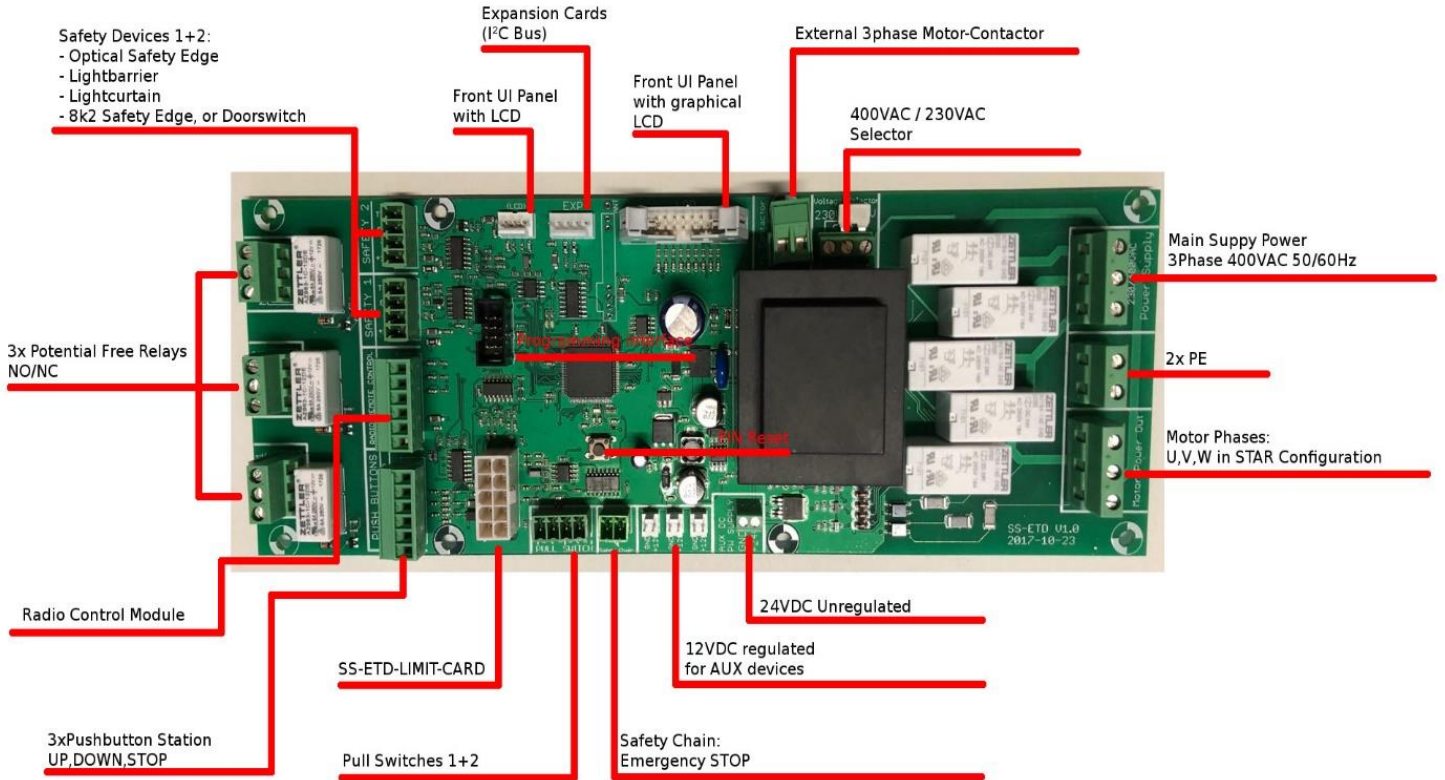
## 10 Components introduction



1	Motor
2	Emergency release (Chain)
3.	Gear box
4.	Emergency release deactivate cord
5	Emergency release activate cord
6	LCD display
7	“UP” button
8	“STOP” button
9	“DOWN” button
10	Main switch
11	Power plug

# 11 Layout of control unit

## Frequenz 400V



## 12 Installation

➔ The door operator shown is similar to sectional door operators type with chain drive. Unless described otherwise, the assembly steps also apply to high speed door operators with crank.

### Preparation for installation



Risk of personal injury and/or material damage due to electrical voltage. Have a specialized electrician open and close the cover for the motor controller.

### Determine the installation location of the door operator

- ➔ The door operator must be positioned 100% above the door drive shaft.
- ➔ Make sure that neither the emergency manual operation chain nor crank (depending on version) can impair the normal operation of the door (clearance) and that they can be used at any time.

### 12.1 Install the torque bracket

Install the torque bracket (3) as shown in Fig. 1. Make sure that the drive shaft for the door can extend at least 135 mm (dimension A) in the door operator to be installed.

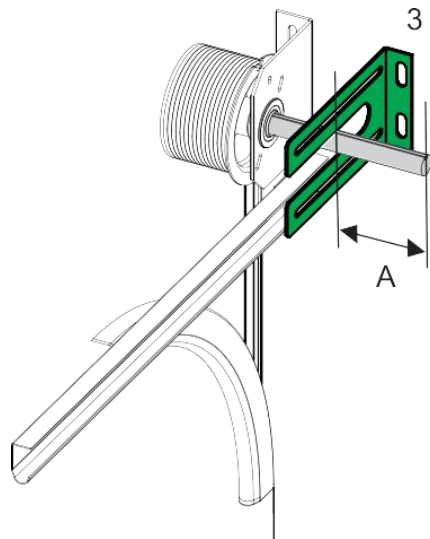


Fig. 1

### 12.2 Install the feature key

Install the key (8) in the groove of the drive shaft for the door so that is secured against movement in Fig2.

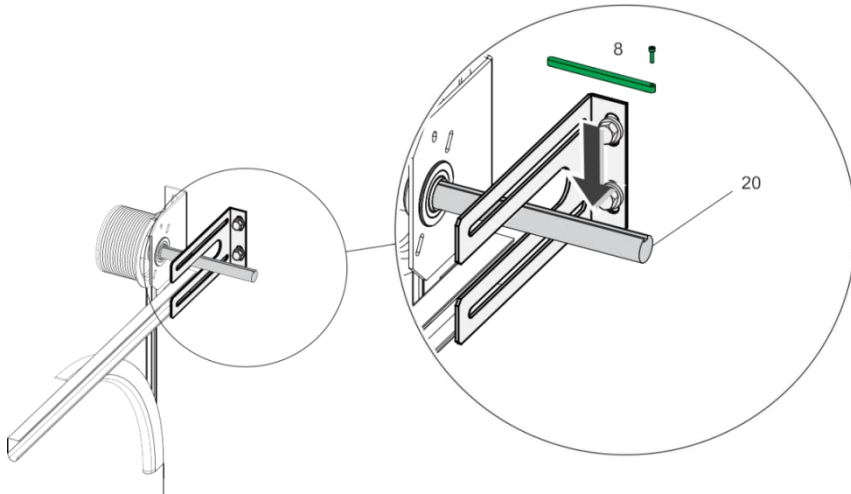


Fig.2



The door operator is heavy, which may falls and causes personal injury and/or material damage. A suitable hoist must be used to bring it into the installation location.

- Do not supply power to the door operator yet. Do not connect any plugs.
- Position the drive shaft for the door operator such that it is suitable for the position of the anti-twist device (key, position 8 in Fig. 2). To do this, turn the transmission via the emergency operation.
- Grease the drive shaft for the door such that the door operator can be easily connected.

### 12.3 Secure the door operator

Slide the door operator onto the door drive shaft (20) in Fig. 2. Secure the door operator with the 4 screws and washers (13) in Fig. 3.

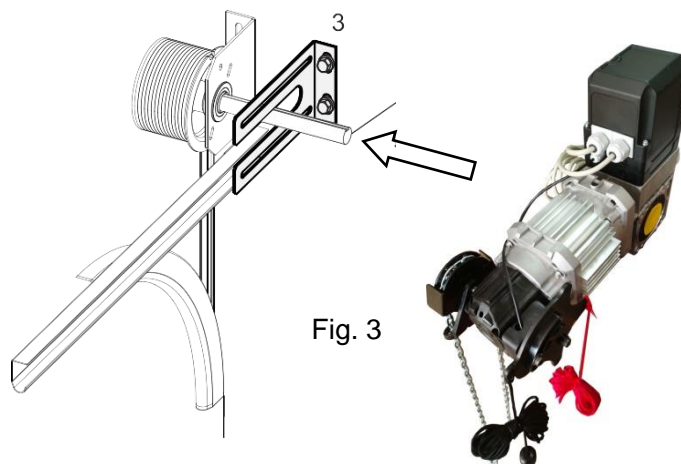


Fig. 3

#### 12.4 Install the emergency release cord

- Secure the emergency release cord such that the emergency release can be activated by using the red emergency release cord.
- The emergency release is activated when the chain wheel (3) has been moved by pulling down the red emergency release cord in Fig. 4.
- Make sure that the emergency release can be deactivated again by pulling the black cord.



Fig. 4

#### 12.5 Check the emergency operation

Make sure that the door can be opened and closed without any problems by pulling on the chain in Fig. 5.



Fig. 5

If the door can be opened and closed without any problems, this confirms the functional reliability of the emergency operation. The door operator can be commissioned.

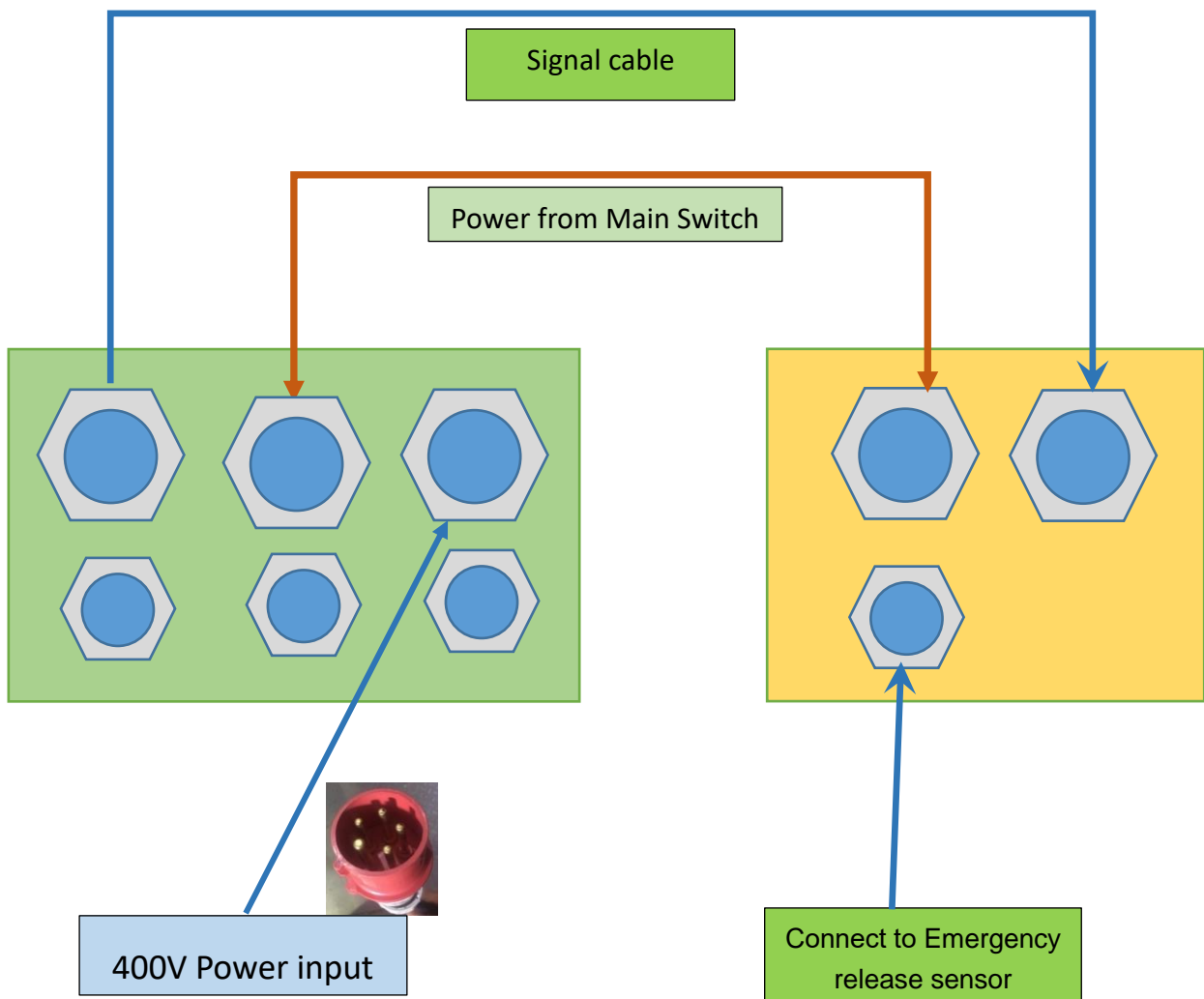
# 13 Wiring



Control Box



Door Operator



### 13.1 Additional accessories wiring guideline



- Must use **NC mode** safety devices.
- After connecting additional devices, activate them in the operator menu if necessary (see section 14)
- Maximum combined current draw (12V): 300 mA
- **All safety devices may be connected to either SAFETY 1 or SAFETY 2.** Both connectors are equivalent. Examples will show only connections to SAFETY 1 for the sake of simplicity.

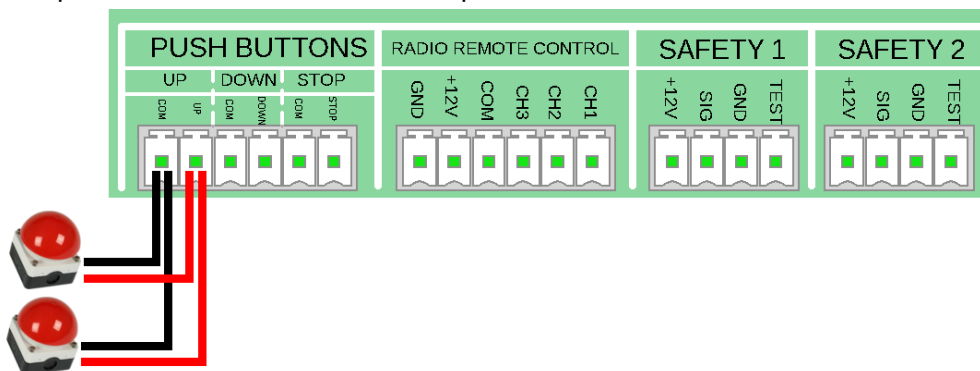
#### 13.1.1 Push buttons

Connect additional buttons, key-switches and other command sources to the PUSH BUTTONS row. The input functions and logic are programmable (see 14.6.2).

Default settings are:

Input	Default logic setting	Default function
UP	NO (normally open)	Open door
DOWN	NO (normally open)	Close door
STOP	NC (normally closed)	Stop door

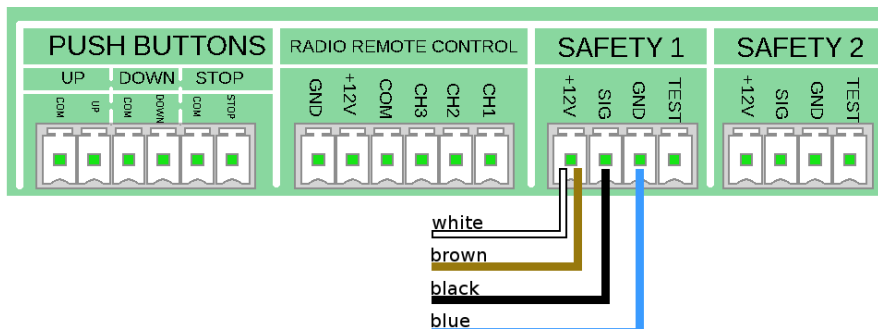
Multiple buttons can be connected in parallel as shown below:



#### 13.1.2 Light curtain

Activate light curtain in MENU → SAFETY DEVICES → SAFETY 1 or SAFETY 2 → LIGHT CURTAIN then pick the correct TEST MODE for your light curtain (See 14.4).

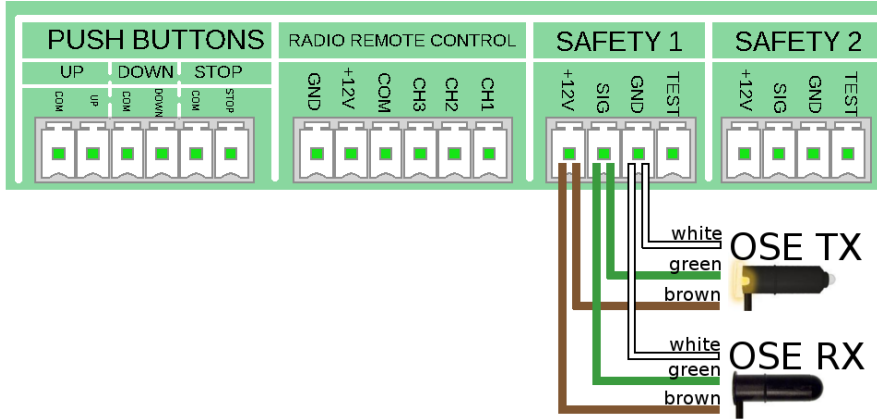
See below for FSS type light curtain example:



### 13.1.3 Safety edges

Activate safety edge in MENU → SAFETY DEVICES → SAFETY 1 or SAFETY 2 → SAFETY EDGE then pick the correct TEST MODE (See 14.4).

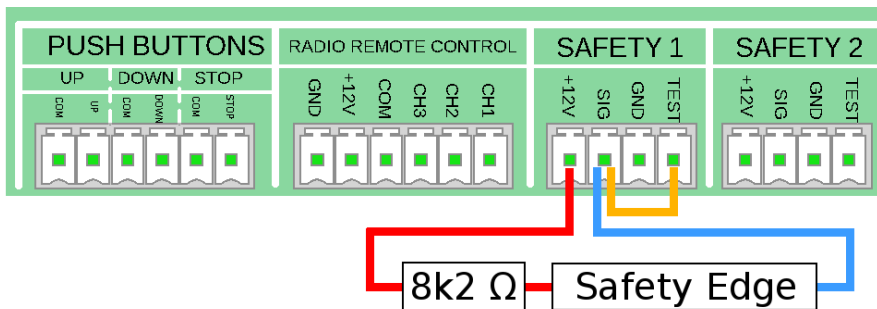
OSE:



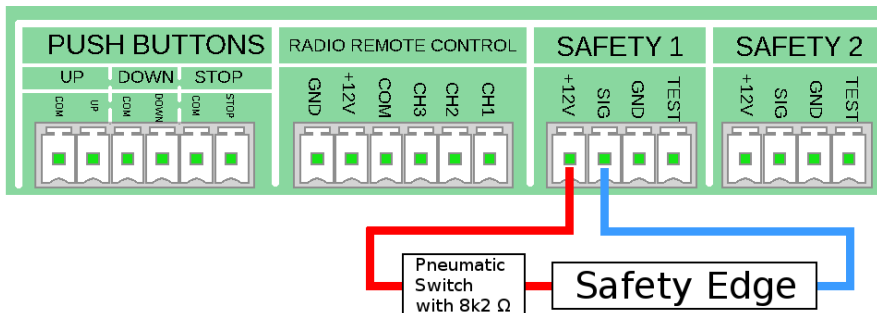
8k $\Omega$  resistive edge:



The 8k $\Omega$  resistive edge is tested before each downwards movement. A connection between SIG and TEST must be present.



8k $\Omega$  air pressure switch:

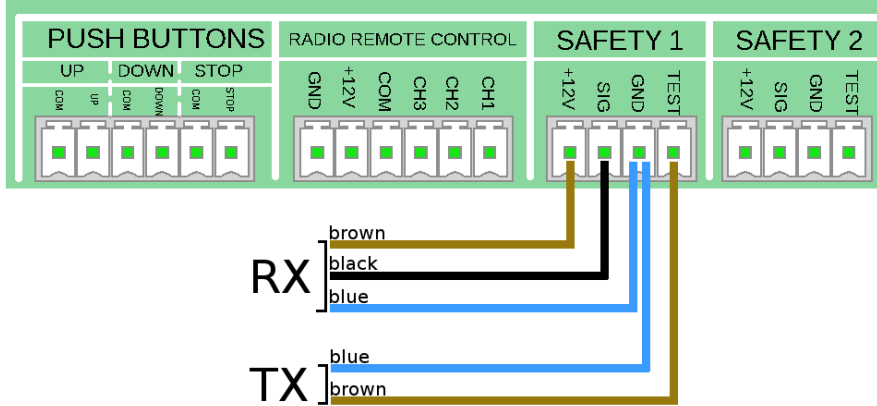




### 13.1.4 Photocell

Activate photocell in MENU → SAFETY DEVICES → SAFETY 1 or SAFETY 2 → PHOTOCELL then pick the correct TEST MODE (See 14.4).

See below for PHOTOCELL in mode 4-WIRE: TEST (-):



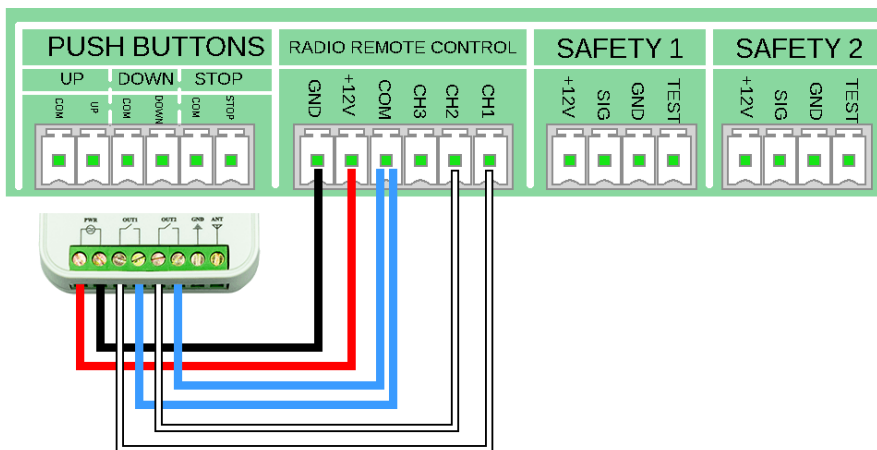
### 13.1.5 Remote control / radar / induction loop

Connect radio remotes or other additional command sources (for example: radar, induction loops) to the RADIO REMOTE CONTROL row of inputs.

The inputs functions are programmable (see 14.6.3).

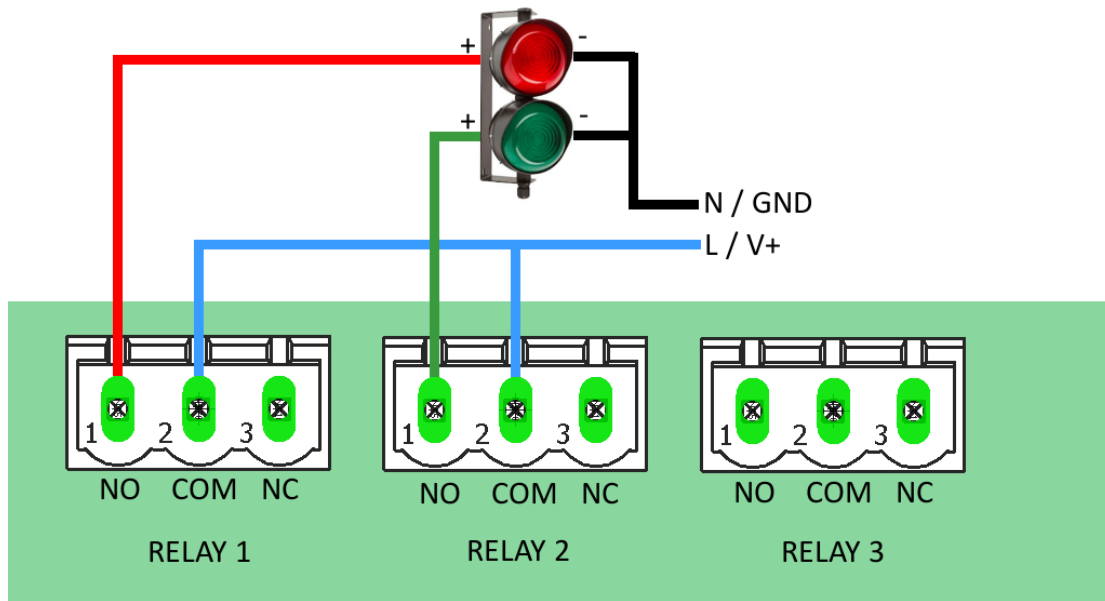
Default settings are:

Input	Default logic setting	Default function
CH1	NO (normally open)	Open door
CH2	NO (normally open)	Close door
CH3	NO (normally open)	Impulse (UP – STOP – DOWN – STOP sequence)



### 13.1.6 Traffic light

Connect traffic light as shown below:



Some example setups for using the red/green traffic light:

Example 1: Red light stays on while door is closed:

1. **red** light: MENU → INPUTS/OUTPUTS → RELAY OUTPUTS → RELAY 1 → ENDPOSITION → NOT OPEN
2. **green** light: MENU → INPUTS/OUTPUTS → RELAY OUTPUTS → RELAY 1 → ENDPOSITION → OPEN ENDPOSITION

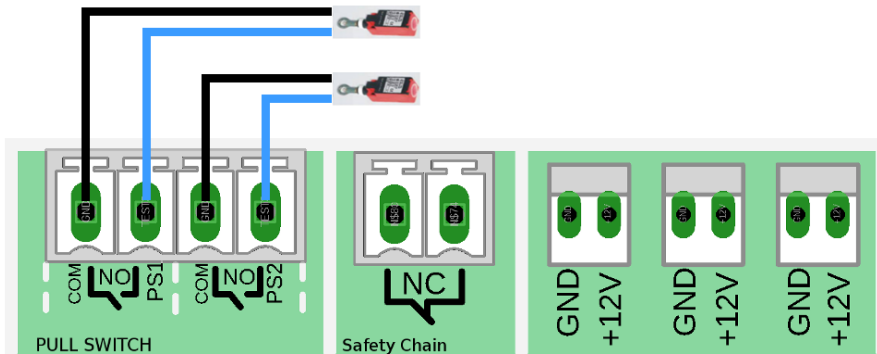
Example 2: Blinking red light with a warning time before movement:

1. **red** light: MENU → INPUTS/OUTPUTS → RELAY OUTPUTS → RELAY 1 → MOVEMENT → BOTH DIRECTIONS → BLINKING → [set pre run delay as required]
2. **green** light: MENU → INPUTS/OUTPUTS → RELAY OUTPUTS → RELAY 1 → ENDPOSITION → OPEN ENDPOSITION

### 13.1.7 Impulse function pull switches / push buttons

The impulse function (UP – STOP – DOWN – STOP sequence) allows to control the door with a single button.

Connect NO-type pull switches or push buttons to either PS1 or PS2 (both are equivalent).

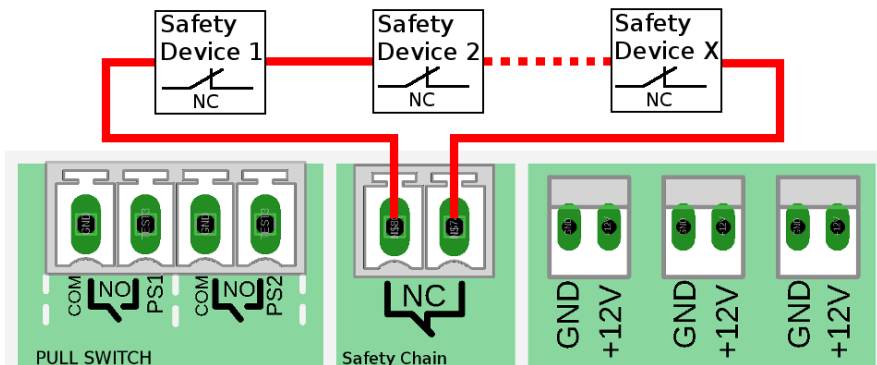


### 13.1.8 Safety Chain

This connector allows for adding devices into the safety chain in series.

When the NC-type safety chain is opened at any point, all motor relays will disengage immediately.

➔ **Note:** A bridge must be placed in this connector when it is not used. Door movement is not possible while this connector remains open. **Error code [96]** will be shown while safety chain is open at this connector.



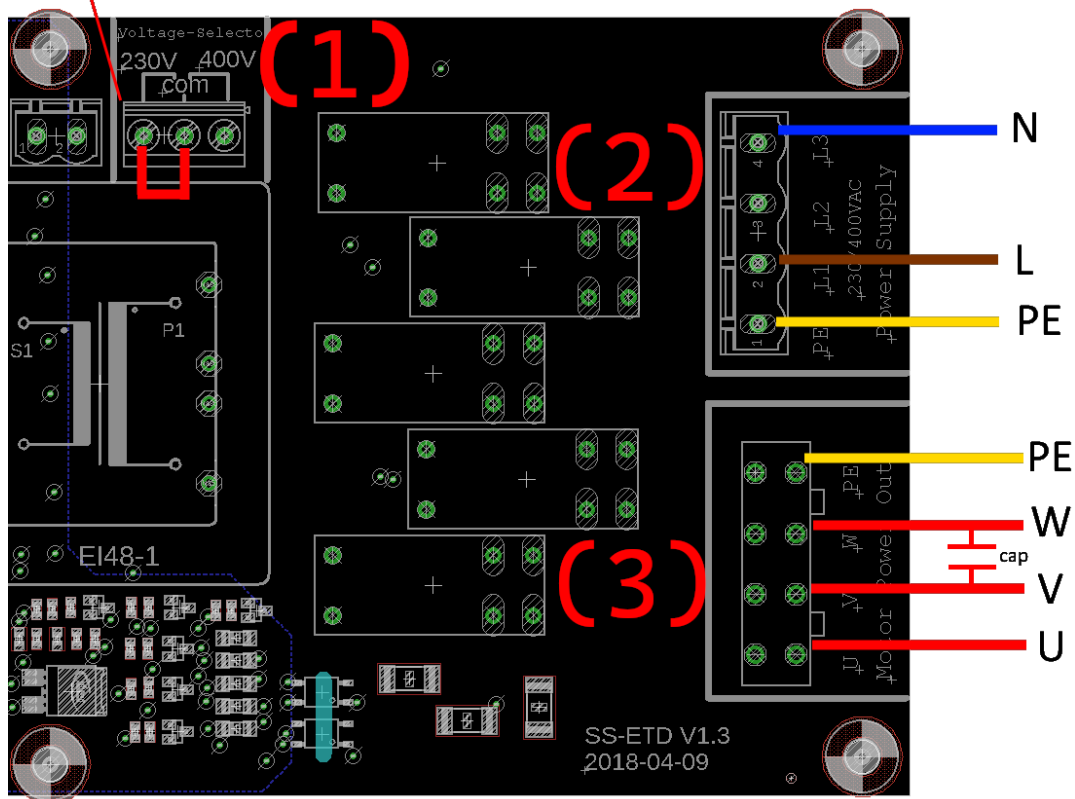
## 13.2 230V single-phase operation

This operator may be used in single-phase, 230V configuration, to drive a capacitor motor.

To prepare the operator for 230V single-phase mode, perform the following steps:

- (0) Make sure to fully disconnect the operator from supply power!
- (1) Move the 'Voltage-Selector' bridge into the 230V + COM position as shown below.
- (2) Connect phase N to input L3, phase L to input L1. Leave input L2 open.
- (3) Connect capacitor motor to motor out, so that the capacitor is placed between motor phases V and W.

**Attention!**  
**Shift bridge to connect pins 230V and COM!**






## 14 Operator Programming

Press and hold (  +  ) OR (  +  ) for 3 sec. to enter the menu.

Each time you enter the menu, the system will ask for a language. The selected language will remain active after leaving the menu.

SELECT LANGUAGE	
	ENGLISH
	DEUTSCH
	NEDERLANDS
	FRANCAIS
	中文

Use  and  buttons to scroll through the menu.

Use the  button to enter the menu and to confirm your settings.



**Control Box**

In general, when entering a sub-menu, the item initially selected is the currently active setting for that point.

## 14.1 Set Password

By activating the password-function you can protect the control unit to be modified by unauthorized persons.



**Unauthorized modifications of the control unit settings can lead to personal injuries and/or damage of property! We recommend generally to use a password!**

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs/ Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M1 Menu Password	
1	Set Password
2	Disable Password
<—	Back



Set Password	
2	↑
1	----
<—	↓



Apply Change?	
	CONFIRM
<—	CANCEL

Press ↑ and ↓ to select password figure you need.



**Note: The password can be reset by accessing the inside of the device!**

- 1) Open the Control Box enclosure and find the PIN reset button on the PCB
- 2) Press and hold the PIN reset button for 10 seconds (while the system is powered)

## 14.2 Load Settings

You can perform a **Factory Reset** in this menu.

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs/ Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M2	Load Settings
1	Factory Reset
<—	Back



M2.2	Execute Reset?
1	CONFIRM
2	CANCEL

## 14.3 Door Positions

The content of this menu depends on the type of limit hardware connected:

### 14.3.1 Door Positions – Digital Positioner

*The Door Positions menu when using a digital position encoder.*

**Overview** - In this menu you define the following parameters:

- (1) Match the **rotational direction** of the motor to your door installation.
- (2) Set the **closed** position of the door.
- (3) Set the **open** position of the door.
- (4) (Optional) Set the position for the **smoke detector** function.
- (5) (Optional) Set the position for the **partial opening** function.
- (6) (Optional) Set a position for **blanking photocells** (for photocells that become obstructed by the door as it travels downwards).

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M3	Door-Positions
1	Check Direction
2	Closed Endposition
3	Open Endposition
4	Smoke Detector Sys.
5	Partial Open Pos.
6	Blank Light barrier
<—	Back

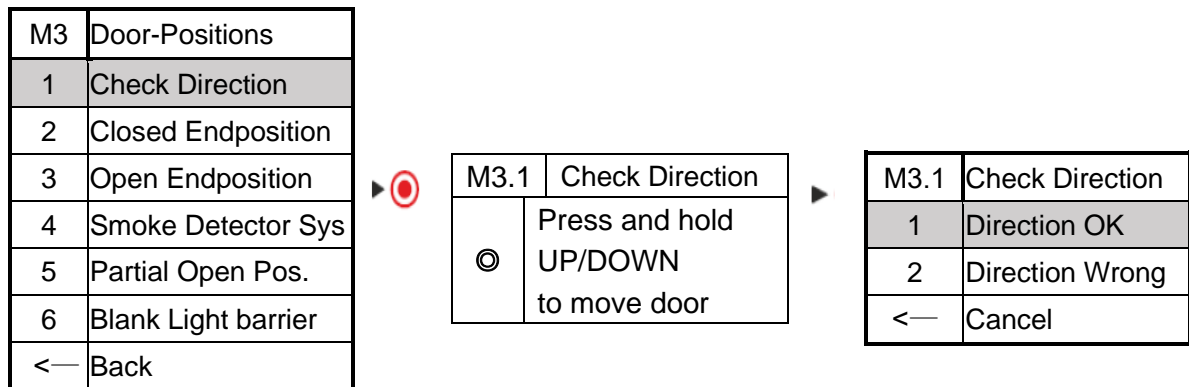


### (1) Check Direction

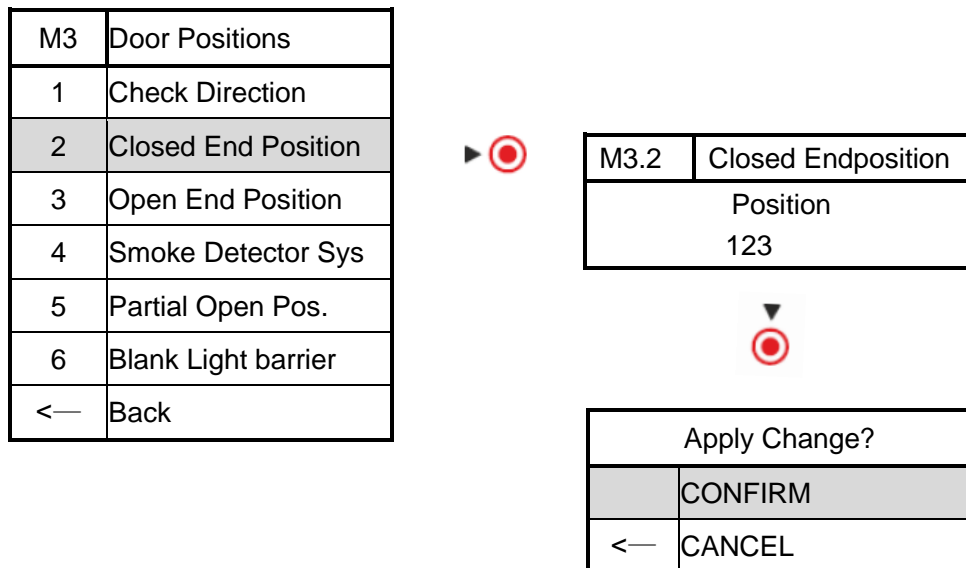
Press “UP” or “DOWN” button and keep pressed to move the door.  
After a short amount of door travel has occurred, release the button.

Did the door travel in the correct direction?

Select YES / NO and the system will adjust itself accordingly.



### (2) Closed End Position (Door closed):



### (3) Open End position (Door open):

➔ Redo in Menu 3 “Open End Position” the steps shown above for programming the “OPEN” end position.

#### (4) Smoke Detector Sys.:

Set the position that the door shall move to when the smoke detector function is triggered.

Note: the input(s) that trigger the smoke detector function must be set separately.  
See **14.6 Inputs / Outputs**

M3	Door Positions
1	Check Direction
2	Closed End Position
3	Open End Position
4	Smoke Detector Sys
5	Partial Open Pos.
6	Blank Light barrier
<—	Back



M3.4.1	Smoke Detector Sys
1	Enable
2	Disable
<—	Back

M3.4.2	set SD position
Position 123	



Apply Change?	
	CONFIRM
<—	CANCEL

#### (5) Partial Open Position:

Here you define the upper endposition for the partial open function.

M3	Door Positions
1	Check Direction
2	Closed End Position
3	Open End Position
4	Smoke Detector Sys
5	Partial Open Pos.
6	Blank Light barrier
<—	Back



M3.5.1	Partial Open Pos.
1	Enable
2	Disable
<—	Back

M3.5.2	Partial Open Pos.
Position 123	



Apply Change?	
	CONFIRM
<—	CANCEL

## (6) Blank light barrier:

If the door obstructs the lightbarrier/photocell at some point during its closing movement, this function allows you to suppress the resulting false detection.

After enabling the function for a safety device, this safety device will become inactive once the door travels beyond the set position.



### Caution!

**Before blanking the light barrier, ensure that a second safety device (light curtain, safety edge etc.) is installed!**

M3	Door Positions
1	Check Direction
2	Closed End Position
3	Open End Position
4	Smoke Detector Sys
5	Partial Open Pos.
6	Blank Light Barrier
<—	Back



M3.6.1	Safety Device
1	SAFETY 1
2	-----
<—	Back



M3.6.2	Blanking
1	Enable
2	Disable
<—	Back



M3.6.3	Blank Light barrier
Position	
123	



Press UP or DOWN to run the door to required blank height.

Apply Change?	
	CONFIRM
<—	CANCEL

### 14.3.2 Door Positions – Mechanical Limit Switches

The Door Positions menu when using mechanical limit switches (or no digital position encoder can be detected).

**Overview** - In this menu you define the following parameters:

- (1) Allows to **freely move the door** in manual mode. Useful for setting limit switches, doing door maintenance etc.
- (2) Set the **rotational direction** of the motor to match your door installation.
- (3) (Optional) Enable/ disable **CDM6 Mode**. Enable the special operation mode for CDM5/6 drives.
- (4) (Optional) Set the position for the **partial opening** function
- (5) (Optional) **Reset door runtimes**. The door stores a record of the typical opening and closing travel times. If an endposition is not reached in time, the motor will switch off to avoid running into blockage.

This option allows to clear manually this record. Useful if the distance between endpositions was changed.

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M3	Door-Positions
1	Free Movement
2	Set Motor Direction
3	CDM6 Mode
4	Partial Open Pos.
5	Reset Door Runtime
<—	Back

## (1) Free Movement

Allows to move the door freely.

This can be useful when setting up limit switches, troubleshooting issues, or doing maintenance.

The function can be used in one of the following modes:

Obey Endpositions: The door will stop on the upper and lower limit switches.

Ignore Endpositions: The door will move over the limit switches without stopping.

The display will show information about the door:

Left column: Door movement direction.

Middle column: Active limit switches.

Right column: Triggered safety devices (if any are enabled)

M3	Door-Positions
1	Free Movement
2	Set Motor Direction
3	CDM6 Mode
4	Partial Open Pos.
5	Reset Door Runtime
<—	Back



M3.1	Free Movement
1	Obey Endpositions
2	Ignore Endpositions
<—	Back



M3.1	Free Movement	
▲	OPEN	
●	PRE	SAFETY 1
▼	CLOSED	SAFETY 2

Press STOP (●) to **exit**.

## (2) Set Motor Direction

If the door moves in the wrong direction, use this item to change it.

When entering the menu, the currently active motor direction is selected.

To invert the motor direction, select the other item and save.

M3	Door-Positions
1	Free Movement
2	Set Motor Direction
3	CDM6 Mode
4	Partial Open Pos.
5	Reset Door Runtime
<—	Back



M3.2	Motor Direction
1	RIGHT
2	LEFT
<—	Back



Apply Change?	
CONFIRM	
CANCEL	



### (3) CDM6 Mode

CDM6 mode enables support for CDM6 type drives.



Only enable this function if a CDM6 drive is installed on your door!

M3	Door-Positions
1	Free Movement
2	Set Motor Direction
3	CDM6 Mode
4	Partial Open Pos.
5	Reset Door Runtime
<—	Back



M3.3	CDM6 Mode
1	CDM6 Enabled
2	CDM6 Disabled
<—	Back



Apply Change?
CONFIRM
CANCEL

### (4) Partial Open Pos.

When using mechanical limit switches, the partial open position is set by teaching the door's runtime from the closed position towards the partial open position.

Partial Open modes:

**All keys:** The door will travel towards the partial open position on the first press of any UP key (or the PART key). If an UP key is pressed a second time, the door will open fully instead.

**PART-key only** (recommended when using remote door openers): The door will travel into the partial open position if the PART key is pressed. UP keys are unaffected and will open the door fully as usual.

Note: The PART key is a function that can be assigned to any of the programmable inputs (**see 14.7 INPUTS / OUTPUTS**)

M3	Door-Positions
1	Free Movement
2	Set Motor Direction
3	CDM6 Mode
4	Partial Open Pos.
5	Reset Door Runtime
<—	Back



M3.4	Partial Open Pos.
1	Disable
2	On: All Keys
3	On: Part-Key Only
<—	Back



1. Press ▼ to move the door into the lower endposition:

M3.4	To Starpos
▼ Move door into lower endpositon	

2. The door will stop on the lower endposition:

M3.4	On Startpos
▲ Move door into Partial Open Pos.	

3. Press ▲ to move the door from the lower endposition into the desired partial open position in one continuous movement.

The system will record the time this movement takes.

M3.4	Recording
▲ Move door into Partial Open Pos.	

4. When the desired partial open position is reached, let go of the ▲ key.

Save the position to enable the partial open function:

Apply Change?	
CONFIRM	
CANCEL	



### (5) Reset Door Runtime

The door runtime monitor is a safety function intended to switch off the motor in case of a blocked or stalled door:

After each successful travel, the system will remember the time it took to travel to the opposite endposition.

If during an automatic door movement, the door does not reach the endposition within the usual time, the system will stop the door and display **error message 31**.

Afterwards the system will erase the runtime. **This means during the next travel the door will not stop after a set runtime!**

If the endposition limit switches have been adjusted, the stored door runtimes probably do not match your new endposition configuration.

In that case, it makes sense to reset the runtimes using this menu item, so that you do not encounter the error message on your first travels.

## 14.4 Safety Devices

### SAFETY 1 and SAFETY 2:

The control unit has 2 supervised connectors for safety devices (e.g. photocells, light curtains, safety-edges, stop-buttons etc.)

 **We strongly recommend to always use safety devices in order to ensure a safe operation of the door !**

Connect the safety device according to its manufacturer's manual with the inputs "SAFETY 1" and/or "SAFETY 2" of the control unit and select the relevant safety device from the menu "Safety".

### Example Safety Edge with 8k2 Ohm inline resistor:

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



1	SAFETY1 off
2	SAFETY2 off
<—	Back



M4.1.1	Device Type
1	Off
2	Safety-Edge
3	Retractable Photocell
4	Photocell
5	Light curtain
6	Stop-Switch
<—	Back



M4.1.2	Test Mode
1	Untested
2	8K2 resistor
3	8K2 Pneumatic
4	Pulsed (3Wire/OSE)
5	4-Wire: Test (+)
6	4-Wire: Test (-)
<—	CANCEL





M4.1.3	Active Direction
1	Down
<—	CANCEL



M4.1.4	Reverse Mode
1	Full Reverse
2	Partial Reverse
3	Stop
<—	CANCEL



Apply Change?	
	CONFIRM
<—	CANCEL



For SAFETY 2 or other safety devices, re-do the configuration similar as shown in above example.

Advise on selecting compatible safety devices:

1. **Only use 'untested' (simple switch) safety devices, if these are allowed in your region and for your application!**
2. All safety devices (except frequency/pulsed types) must be NC type and support 12V supply power.
3. If rubber edge: select 'Safety-Edge', then select the test type based on the device built into the rubber edge
  - Metal-band electric contact type with 8k2 Ohm resistance -> 8k2 resistor
  - Pneumatic (air pressure) switch -> untested
  - Pneumatic switch with 8k2 Ohm resistor -> 8k2 pneumatic
  - Optical safety edge with transceiver and receiver part, 3 wires -> Pulsed/FSS (OSE)
  - Optical safety edge with transceiver and receiver part, 4 wires (1 of the wires is labeled TEST) -> 4-wire
4. On 4-wire test mode: For safety device with a separate TEST wire. Please consult your safety device's manual for the correct test mode setting:
  - 4-Wire: Test (+) -> test is initiated when TEST wire goes HIGH.
  - 4-Wire: Test (-) -> test is initiated when TEST wire goes LOW.
5. If safety device on door edge needs to switch off before reaching the floor, for example optical safety edge on retracting/folding arms -> Retractable Photocell
6. Stop-Switch can be used to secure the door-in-door function.



**Caution!**

**Check the function of the safety devices before you set the door in operation!**

## 14.5 Operation Mode

Here you can choose between 3 different operation modes:

**Manual UP and DOWN** (Hold to run mode)

**Automatic UP and DOWN**

**Semi Automatic** (automatic UP, hold to run DOWN)



To use **Automatic UP/DOWN** mode, the leading door edge must be secured with a safety device!

The following safety devices fulfill this function:

Safety Edge, Retractable Photocell, Light Curtain

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M5	Operation Mode
1	Manual UP/DOWN
2	Automatic UP/DOWN
3	Semi-Automatic
<—	Back



Apply Changes?	
	CONFIRM
<—	CANCEL

## 14.6 Inputs / Outputs

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



1	Relay Outputs
2	Inputs
3	Radio Channels
4	Special Programs <i>[current active program]</i>
<—	Back

This menu lets you assign functions to the programmable inputs & outputs.

The control unit offers:

3 potential free **Relays** contacts (expandable to up to 9 relays)

3 general **Inputs** (preconfigured for using external UP,DOWN,STOP keys)

3 **Radio Channels** for connecting a RADIO REMOTE CONTROL (preconfigured to OPEN,CLOSE,IMPULSE)

Note: If a special program is active, it will lock down the function of certain inputs and outputs. These will then be marked as locked in the menu.

You can not change the setting for these inputs/outputs until the special program is disabled.

### 14.6.1 Relay Outputs

Choose a relay to assign a function to:

1	Relay 1 <i>[current active function]</i>
2	Relay 2 <i>[current active function]</i>
3	Relay <i>[current active function]</i>
<—	Back



Relay functions overview:

Relay function		Description
1	Off	No active function. Relay remains in OFF position.
2	Door Movement	Switch relay when door moves.
3	Endposition	Switch relay when door reaches an endposition.
4	Electric Door-lock	Control a locking bolt. Different types are supported.
5	Radio Remote	Relay switches when a selected radio channel is activated.
6	Fault Indicator	Relay switches on while the door is blocked (due to a fault or safety chain).
7	Brake	Control a motor brake.
8	SD position	Relay switches ON when Smoke Detector function was activated, after the SD position has been reached.

### (1) Off

Select Off to disable a currently set relay function.

### (2) Door Movement

1. Direction: Choose the direction in which the relay shall be active

Direction		Description
1	Opening	Relay active when door is moving upwards.
2	Closing	Relay active when door is moving downwards.
3	Both Directions	Relay active whenever door is moving in any direction.

2. During Movement: Choose the relay behavior

During Movement		Description
1	Blinking	The relay will switch on and off at 0.5s frequency.
2	Relay On	The relay will switch on and remain on during the movement.

3+4. Pre-Run Delay:

Lets you set a short waiting time prior to each movement in the chosen direction.

During the delay time, the door is still stopped, but the relay will switch on to warn of the upcoming movement.

Delay can be set from 0s to 15s.

### (3) Endposition

1. Endposition: Choose in which doorposition the relay shall become active

Endposition		Description
1	Open Endposition	Relay active when door is in upper endposition.
2	Closed Endposition	Relay active when door is in lower endposition.
3	Both Endpositions	Relay active whenever door is in any endposition.
4	Not Open	Relay active when door is <b>not</b> in upper endposition.
5	Not Closed	Relay active when door is <b>not</b> in lower endposition.
6	Not in Endposition	Relay active when door is <b>not</b> in any endposition.

Note: If partial open function is active, then the partial open position will be treated as an 'Open Endposition' for this relay function.

2. In Endposition: Choose the relay behavior upon reaching the selected endposition (for positions 1-3 only)

In Endposition		Description
1	Permanently On	While the door is in the endposition, the relay will remain on.
2	Impulse	The relay will shortly switch on upon reaching the endposition, then switch off again.

#### (4) Electric Door-Lock

1. E-Lock Delay: Set a short waiting time, to give the lock time to open before moving the door. Only set this delay if your lock requires it.

2. E-Lock Relay: Choose the relay operation mode.

E-Lock Relay		Description
1	Permanently On	<i>For spring-loaded locks that will automatically lock up when the relay switches off.</i> The relay will switch on during door movement to keep the lock open, then switch off once the door stops.
2	Pulse to Open	<b>Lock open</b> channel for locks which need to be actively driven open and close. Relay will pulse shortly before door movement to open the lock.
3	Pulse to Close	<b>Lock closing</b> channel for locks which need to be actively driven open and close. Relay will pulse shortly after the door has reached the lower endposition, to lock the door.  Note: Will only lock the door if the door has stopped accurately on the endposition, to avoid possible damage.

#### (5) Radio Remote

1. Radio Remote Ch.: Choose the radio channel that the relay should be linked with.

Radio Remote Ch.		Description
1	Channel 1	Relay will switch whenever radio channel 1 is activated.
2	Channel 2	Relay will switch whenever radio channel 2 is activated.
3	Channel 3	Relay will switch whenever radio channel 3 is activated.

Note: This relay function is in addition to whatever function may be assigned to the radio channel.

## 2. Function: Choose the relay behavior

Function		Description
1	Impulse	The relay will switch on shortly, then switch off again, when the radio channel is activated.
2	Toggle	The relay will toggle between on and off each time the radio channel is activated.

### (6) Fault Indicator

The relay will remain on while there is any situation that would prevent the door from moving.

This does not include the stop-button or triggered safety devices on SAFETY 1+2, as these events are considered part of normal operation.

### (7) Brake

The relay will switch on to open the brake during movement and switch off to engage the brake when the door stops.

Make sure to choose the correct relay output for your type of motor brake:

**NO:** For brakes that disengage when powered

**NC:** For brakes engage when powered

## 14.6.2 Inputs

1. Choose an input to assign a function to:

1	GPIO 1 [UP] <i>[current active function]</i>
2	GPIO 2 [DOWN] <i>[current active function]</i>
3	GPIO 3 [STOP] <i>[current active function]</i>
<—	Back



2. Choose a function to assign to the input:

General purpose programmable input functions overview:

GPIN function		Description
1	Off	No active function.
2	Impulse	Impulse key function similar to Pull Switch 1+2
3	Open	Open (Up) key function
4	Open to part. Position	Open the door to partial open position.
5	Close	Close (Down) key function
6	Stop	Stop key function
7	Smoke Alarm Sys	Trigger the Smoke Alarm function
8	Lock Release	For use with door-locks that return a status signal

### 3. Choose the input logic

GPIN FUNCTION		Description
1	NO (Norm. Open)	The input is active when the two pins are bridged.
2	NC (Norm. Closed)	The input is active when there is no connection between the two pins.

### 14.6.3 Radio Channels

#### 1. Choose a Radio Channel input to assign a function to:

1	GPIO 1 [UP] <i>[current active function]</i>
2	GPIO 2 [DOWN] <i>[current active function]</i>
3	GPIO 3 [STOP] <i>[current active function]</i>
<—	Back



#### 2. Choose a function to assign to the input:

Radio channel functions overview:

Function	Description
1 Off	No active function.
2 Impulse	Impulse key function similar to Pull Switch 1+2
3 Open	Open (Up) key function
4 Open to part. Position	Open the door to partial open position.
5 Close	Close (Down) key function
6 Stop	Stop key function

Note: Manual door movement (Hold-To-Run mode) is not supported via functions assigned to Radio Channels, as using a radio remote does not guarantee that the operator has clear view of the door.

### 14.6.4 Special Programs

Here you can activate special programs, that change the overall behavior of the controller.

Each special program uses a preset list of inputs and outputs.

By activating the special program, all currently set functions on these inputs/outputs will be overwritten. These functions are then locked and can not be changed until the special program is deactivated.

Special Programs		Description
1	Disable	Disable any active special program and release all locked inputs/outputs.
2	Two-Way-Traffic	A two-way-traffic control mode. The operator will distinguish between opening requests from inside and outside the door, and signal which side is free to move through the door via 2 sets of red/green traffic lights. <i>Requires the presence of a door safety device to make use of the automatic closing function.</i>
3	Airlock	Connect two FREQUENZ operators to form an airlock with two doors. In an airlock, at least one door will remain closed at any given time. <i>Requires the presence of a door safety device to make use of the automatic closing function.</i>

**Two-Way-Traffic** assigned I/O functions:

Input/Output	Assigned function name	Description
GPIO 1	Radar Inside	Open request from inside
GPIO 2	Radar Outside	Open request from outside
Relay 1	Lights Inside	Red/green traffic light installed inside
Relay 2	Lights Outside	Red/green traffic light installed outside
Relay 3 (optional)	Lights power switch	Toggles power for all traffic lights.

**Airlock** assigned I/O functions:

Input/Output	Assigned function name	Description
GPIO 1	Input S1	Connect to Output S1 on other side
GPIO 2	Input S2	Connect to Output S2 on other side
GPIO 3	Airlock Disable	Switch to disable airlock function.
Relay 1	Output S1	Connect to Input S1 on the other side
Relay 2	Output S2	Connect to Input S2 on the other side
Relay 4	Lights Inside	Red/green traffic light installed inside
Relay 5	Lights Outside	Red/green traffic light installed outside
Relay 6 (optional)	Lights power switch	Toggles power for all traffic lights.



## 14.7 Automatic Close



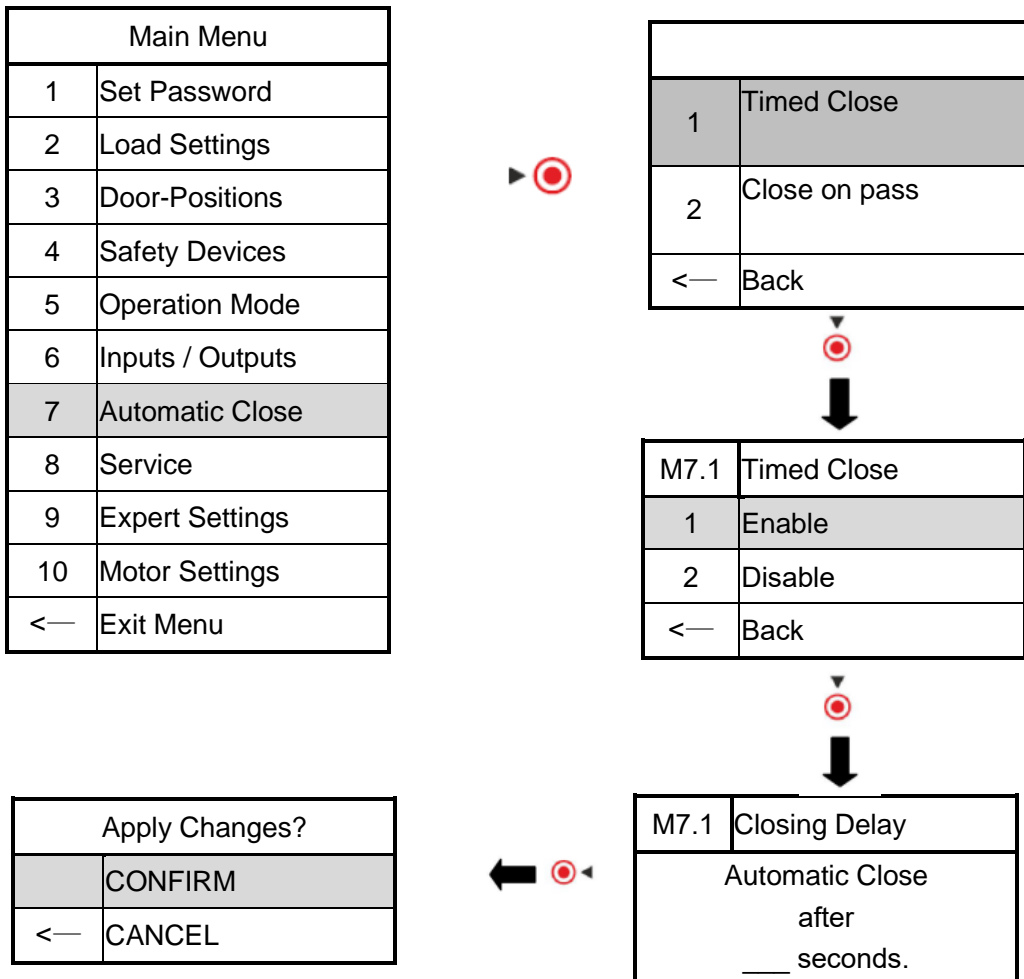
**A door safety device (e.g. photocell, light curtain) is mandatory when using the automatic closing function.**

### (1) Timed Close

The door will close automatically after the set time has passed.

Crossing the door safety device or issuing another OPEN request will reset the timer.

**Hint:** Setting a value of 0 seconds here will make it so, that the door remains open indefinitely and only closes after a pass-through!



### (2) Close on Pass

When crossing the door safety device, the timer will be reset to this new (shorter) time. Allows closing the door quickly after the user has passed through door.

Setup procedure same as Timed Close.

## 14.8 Service

In the service menu you can view all information related to the door and operator. You can also define service intervals, store service contacts etc.

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu




M8	Service
1	System Information
2	Door Information
3	Service Done
4	Service Contact
5	Service Interval
<—	Back

### (1) System Information

Page 1: Model ID, Page 2: Firmware Version, Page 3: Model Serial Number

Press  to **exit**

### (2) Door information

Shows door cycle information. A door cycle is a complete cycle of opening the door and going back to closed position. Press  to **exit**

Page 1: Total lifetime cycles on this device

Page 2: Door cycles since last maintenance

Page 3: Door cycles until next maintenance is due

### (3) Service done

Confirm after maintenance, to reset the door cycle counter until maintenance.

### (4) Service contact

Here you can store a service contact and phone number. These information will be displayed when maintenance is overdue.

### (5) Service interval

Set maximum number of door cycles between services



**Please respect your local regulations in terms of safety of automatic doors !**

## 14.9 Expert Settings



**Caution:**

**Expert settings may only be changed by trained and authorized professionals !  
Changes and wrong configurations can lead to personal injuries and/or damage of property !**

**The content of this menu depends on the type of limit hardware connected:**

### 14.9.1 Expert Settings – Digital Positioner

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



1	Safety Limit
2	Pre-End Position
3	Brake Offset
5	Door Type
<—	Back

#### (1) Safety Limit

Defines a maximum distance that door may overshoot the endposition, before an emergency stop is issued.

#### (2) Pre-End Position

Defines the distance prior to the lower endposition, at which point all edge safety devices switch to the STOP mode.

This prevents the door from reversing when the safety edge compacts on hitting the floor.

#### (3) Brake Offset

Defines the distance prior to a stop position, at which point the motor is switched off and the brake engages. The door will typically glide a short distance after this.

**Attention:** This value is only a starting parameter for the automatic adjustment. Typically the operator will learn the best stop point automatically over the course of a few cycles!  
You do NOT need to change this value manually.

#### (5) Door Type

The type of door selected has a minor impact on the way some other functions work.

## 14.9.2 Expert Settings – Mechanical Limit Switches

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



1	Partial Reverse Time
2	CDM6 Timeout
5	Door Type
<—	Back

### (1) Partial Reverse Time

Defines the duration of upwards travel (in seconds) after a partial reverse has been triggered. The door will stop after this time has passed, or if it reaches the upper endposition.

### (2) CDM6 Timeout

The CDM6 type operator does not come with a limit switch for the lower endposition. Instead it relies on the safety edge to stop the door at the right position.

This item defines the maximum duration of further travel, after the lower pre-end switch has been encountered.

If the safety edge has not triggered within this timeframe, the door will stop anyways and assume the endposition was reached. The operator will show **error [38]**.

### (5) Door Type

The type of door selected has a minor impact on the way some other functions work.

## 14.10 Motor settings

In this menu you can adjust the reversal speeds.

**Emergency Reversal:** Applied when a safety device triggers and causes the door to revert. Typically the fastest reversal that is physically possible.



**Attention:** Make sure to use a setting that allows for safe operation when using a safety edge! Changing these values may change impact forces!

**Soft Reversal:** Applied when using the direction keys to revert the door travel. Some contactless safety devices (e.g. photocell, light curtain) may also be set to use this value instead.

Main Menu	
1	Set Password
2	Load Settings
3	Door-Positions
4	Safety Devices
5	Operation Mode
6	Inputs / Outputs
7	Automatic Close
8	Service
9	Expert Settings
10	Motor Settings
<—	Exit Menu



M10 Service	
1	Emergency-Reversal
2	Soft Reversal
<—	Back

M10.1 Emergency-Reversal	
1	Very fast
2	Fast
3	Normal
4	Soft
5	Very soft
<—	Back



Apply Changes?	
	CONFIRM
<—	CANCEL

## 15 Special Applications

This section shows in detail how to setup both hardware and system configuration, to use the operator in some special applications.

### 15.1 Two-Way-Traffic Function (full setup)

#### 15.1.1 Brief

Two-Way-Traffic mode is a special operation mode, in which the system manages traffic through the door approaching from inside and outside the building.

Traffic is controlled by two red/green traffic lights.

Two-Way-Traffic mode always encompasses automatic mode and automatic close after time.

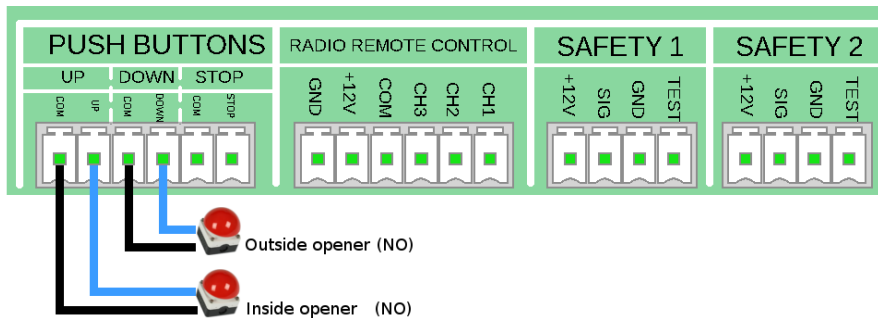
Note: These instructions assume we want to use the optional relay 3 to control the traffic light power.

#### 15.1.2 Requirements

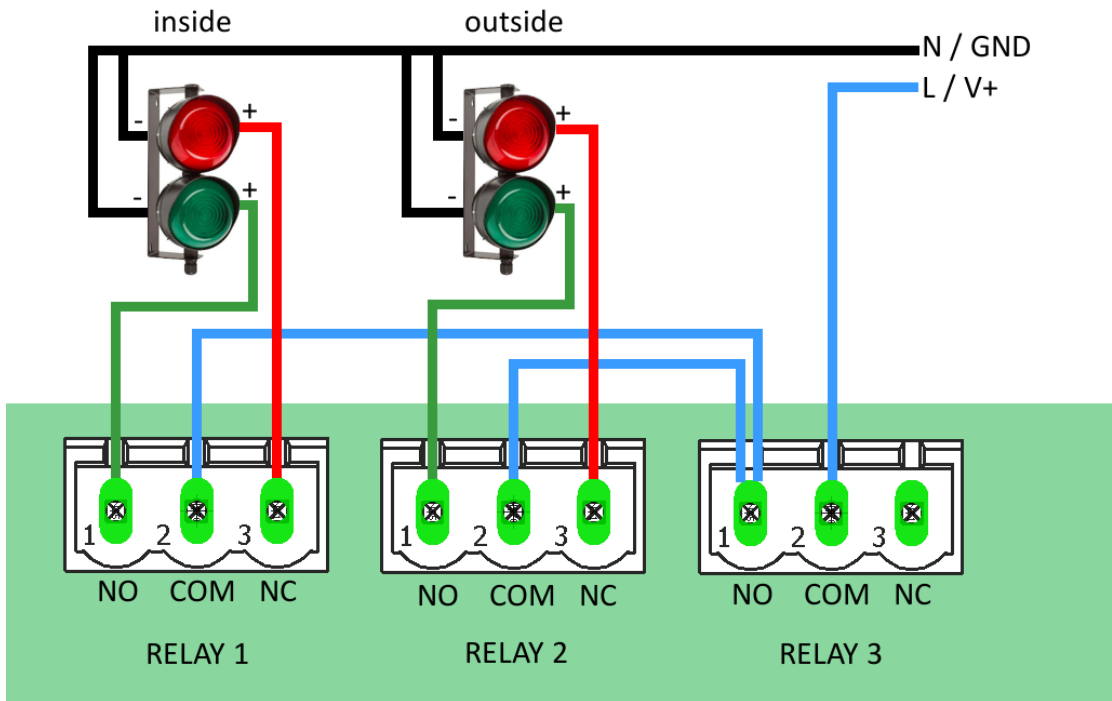
1. Full door safety installation:
  - A door edge safety device (safety edge or lightcurtain)
  - A door space safety device (photocell or lightcurtain)
2. Two red/green traffic lights.

#### 15.1.3 Hardware setup: Connection + Wiring

1. Connect the door opening command sources:



- Connect door opener from inside on PUSHBUTTONS - UP
  - Connect door opener from outside on PUSHBUTTONS – DOWN
2. Connect the two red/green traffic lights:



- Relay 1 controls the inside traffic light
- Relay 2 controls the outside traffic light
- Relay 3 controls power to traffic lights (for blinking / switch off)

#### 15.1.4 System Configuration

##### How to ENABLE the Two-Way-Traffic function:

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [4] SPECIAL PROGRAMS  
→ [2] TWO-WAY-TRAFFIC  
→ ENTER
3. Set up Two-Way-Traffic configuration:
  - 3.1. Overwrite  
→ PROCEED
  - 3.2. On closed do  
→ Lights off
  - 3.3. Pre Run Delay (Open)  
→ Set the delay before opening the door (0-15 sec)
  - 3.4. Pre Run Delay (Closing)  
→ Set the delay before closing the door (0-15 sec)
  - 3.5. Closing Delay  
→ Set the timespan a green light is shown after opening the door.  
After this delay, the door will process the next opening request, or close again if

there are no more requests.

3.6. Close on Pass

→ Enable – Crossing the door will reset the closing delay to the close on pass time (entered next), instead of the full closing delay.

3.7. Closing Delay

→ Set the timespan to wait after the door has been crossed

3.8. Clearance Time

→ Set the delay between switching from one side shown a green light and the opposite side shown a green light. This is the time users are given for clearing the door area to not block oncoming traffic.

3.9. Apply Changes

→ CONFIRM

**How to DISABLE the Two-Way-Traffic function:**

1. Enter System Configuration Menu

2. Navigate to:

MAIN MENU

→ [6] INPUTS/OUTPUTS

→ [4] SPECIAL PROGRAMS

→ [1] DISABLE

→ ENTER

3. → CONFIRM



## 15.2 Airlock Function (simple setup)

### 15.2.1 Brief

Interconnect two door controllers to realize a basic airlock function:

If one door is open, the other door is locked.

Compared to the full airlock setup (see 15.3):

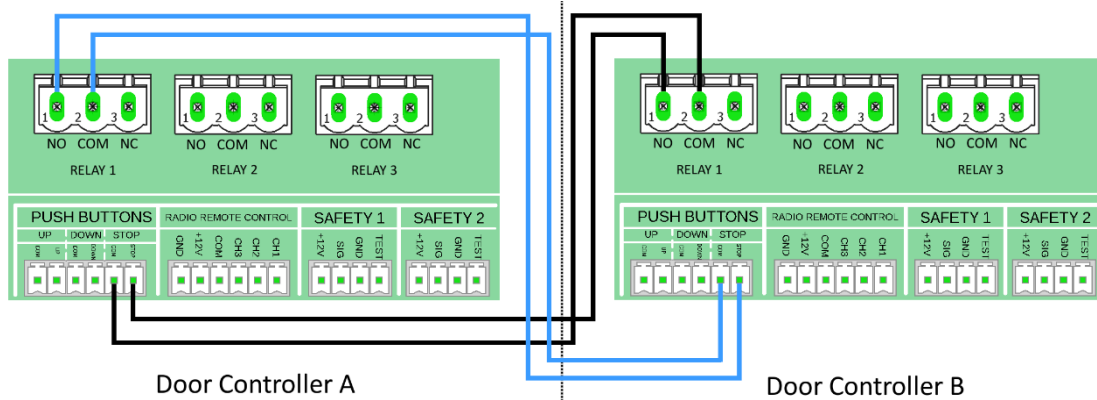
PRO:

- Can be used to combine a FREQUENZ drive and another manufacturer's drive into an airlock, provided there is a programmable relay and STOP input.
- Can be used without a photocell and even in manual mode.

CON:

- No pass-through sequence: user must open the other door manually from inside the airlock once first door has closed.

### 15.2.2 Hardware setup: Connection + Wiring



### 15.2.3 System Configuration

On both system setup as follows:

#### Setup RELAY 1

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [1] RELAY OUTPUTS  
→ [1] RELAY 1  
→ ENTER
3. Setup relay 1:  
→ ENDPOSITION  
→ NOT CLOSED  
→ CONFIRM

#### Setup GPIN 3 [STOP]

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [2] INPUTS  
→ [3] GPIO 3 [STOP]  
→ ENTER
3. Setup GPIN 3  
→ [6] STOP  
→ NO (Norm. Open)  
→ CONFIRM

## 15.3 Airlock Function (full setup)

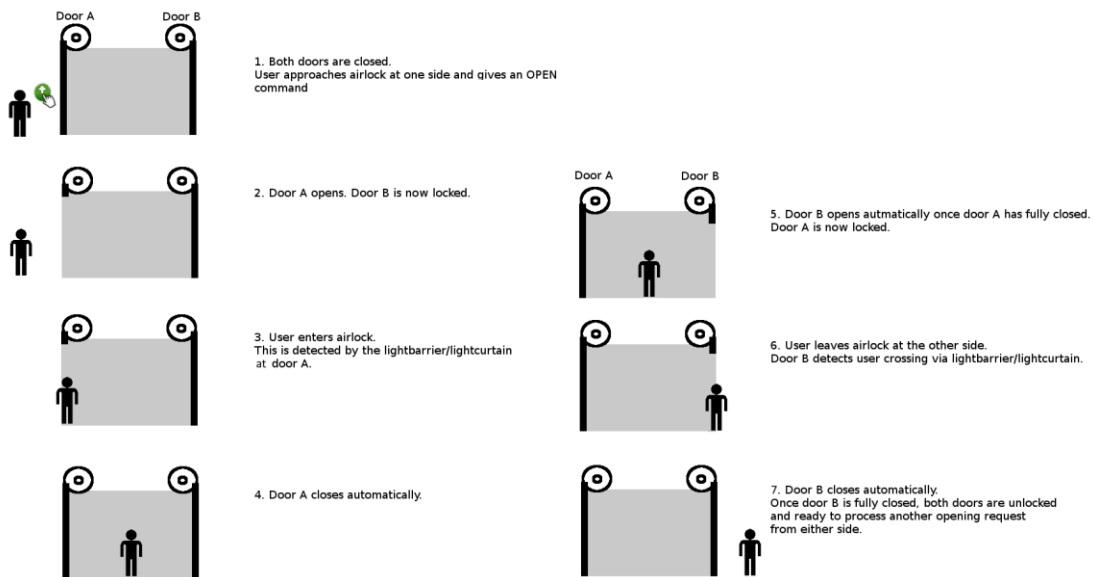
### 15.3.1 Brief

Airlock mode is a special operation mode, in which two door operators coordinate with each other to implement an airlock. The airlock allows users to pass through both doors while maintaining at least one closed door at all times.

The combined airlock system manages requests from both sides of the airlock (much like the Two-Way-Traffic function does).

An optional set of two red/green traffic lights on each door may be used to control traffic through the airlock.

Example of a typical airlock sequence:

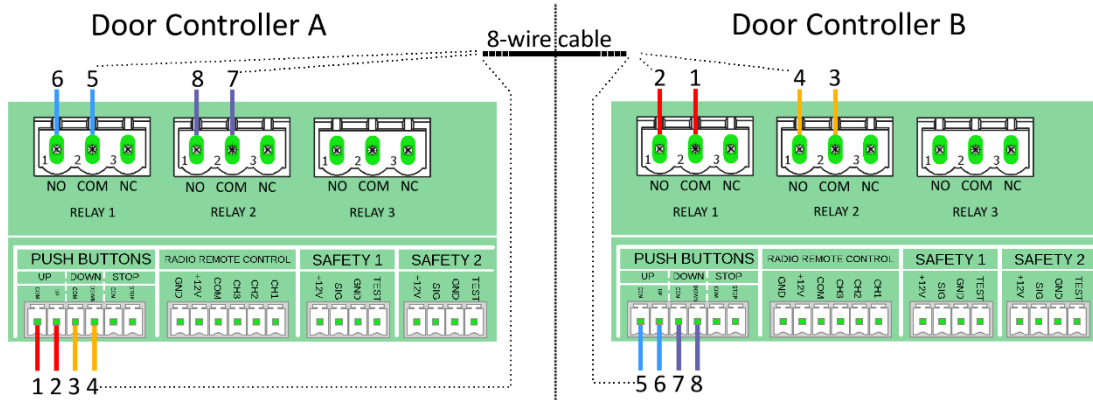


### 15.3.2 Requirements

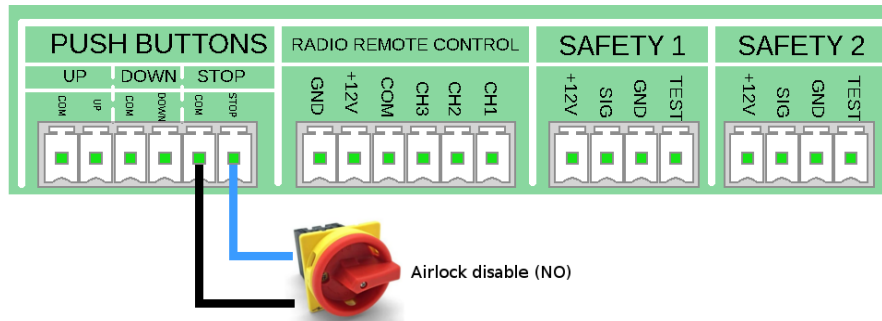
1. Two FREQUENZ door operators.
2. An 8 wire cable to connect the two operators with each other.
3. Full door safety installation:
  - A door edge safety device (safety edge or lightcurtain)
  - A door space safety device (photocell or lightcurtain)
4. Optional: Two red/green traffic lights.

### 15.3.3 Hardware setup: Connection + Wiring

1. Connect the two systems with each other via an 8-wire cable to form the airlock.

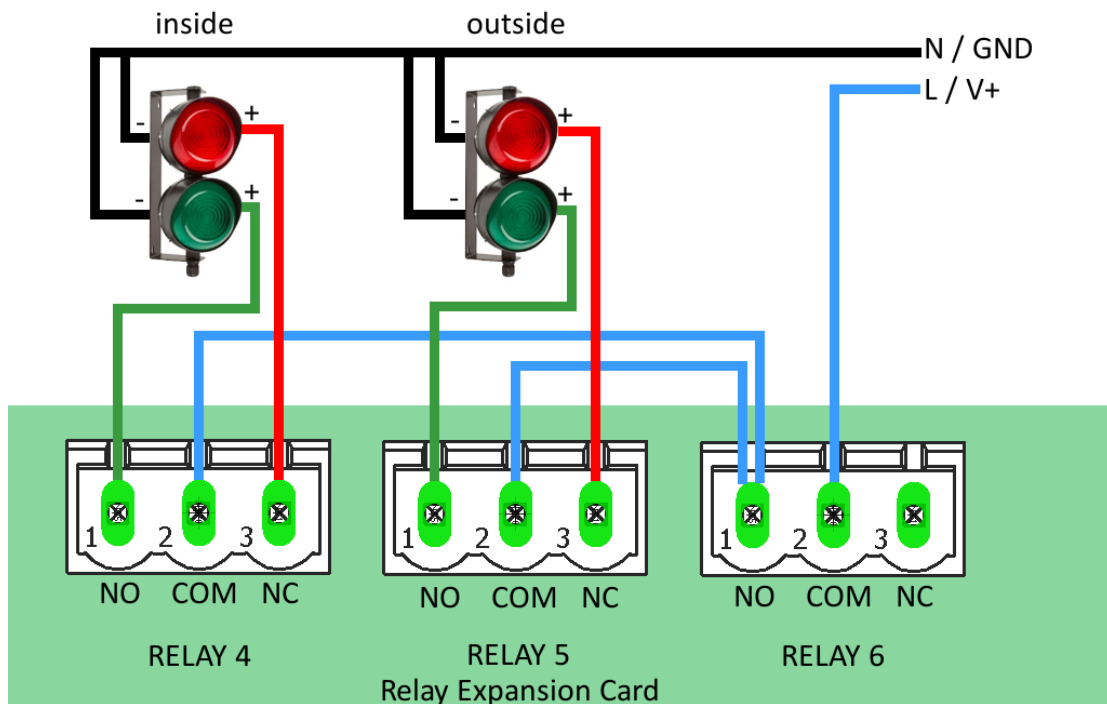


2. (Optional): Connect a switch for 'Airlock Disable' function to each door on PUSHBUTTONS [STOP]



The switch allows to temporarily disable the airlock function on the door.

3. (Optional): Connect a set of traffic lights to each operator



### 15.3.4 System Configuration

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [4] SPECIAL PROGRAMS  
→ [3] AIRLOCK  
→ ENTER
3. Set up Two-Way-Traffic configuration:
  - 3.1. Overwrite  
→ Proceed
  - 3.2. On closed do  
→ Lights off (if using optional Relay 3)
  - 3.3. Pre Run Delay (Open)  
→ Set the delay before opening the door (0-15 sec)
  - 3.4. Pre Run Delay (Closing)  
→ Set the delay before closing the door (0-15 sec)
  - 3.5. Closing Delay  
→ Set the timespan a green light is shown after opening the door. After this delay, the door will close again.
  - 3.6. Close on Pass  
→ Enable – Crossing the door will reset the closing delay to the close on pass time (entered next), instead of the full closing delay.
  - 3.7. Closing Delay  
→ Set the timespan to wait after the door has been crossed.

Note: After enabling the Airlock function, the function of relays 1+2 (onboard), relays 4+5+(6) (expansion card) and inputs 1+2+3 are locked.

You may enter the relay/inputs menus and read the assigned functions, but they cannot be changed until Airlock function is disabled again.

#### How to DISABLE the Two-Way-Traffic function:

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [4] SPECIAL PROGRAMS  
→ [1] DISABLE  
→ ENTER
3. → CONFIRM

### **15.3.5 Operation / Usage Notes:**

- The following inputs will be interpreted as a request from outside the airlock and result in the airlock doors opening one after the other:
  - o Ext. UP
  - o Pull Switch 1+2 (recommended)
  - o Radio UP
- The following buttons will be interpreted as a request from inside the airlock, to leave the airlock on that side only:
  - o Cover pushbutton UP
- It is recommended to install both operators inside the airlock, because access to the operators' front cover pushbuttons allows anyone trapped inside the airlock to exit towards either side.
- Airlock mode only locks the door in closed position. If the door is already (partially) open for whatever reason, the door may be moved independently of the other door.  
Close the door(s) to resume airlock mode.

## **15.4 Smoke Alarm System**

### **15.4.1 Brief**

The smoke alarm function moves the door into a previously defined position and holds it there as long as a smoke alarm trigger is active.

While the smoke alarm is active, safety device reactions are modified and possible user interference is limited.

A relay can be set to switch on when the smoke alarm position has been reached.

### **15.4.2 Requirements**

- A door-edge safety device must be installed and active, to allow the door to move in automatic mode.
- The system must be equipped with a digital positioner. The smoke alarm function is not supported while using mechanical limit switches
- Not compatible with airlock mode
- The connected smoke alarm trigger should be a potential free switch

### **15.4.3 Hardware setup: Connection + Wiring**

1. Connect a smoke alarm trigger to one of the programmable inputs labeled 'PUSHBUTTONS'.
2. Optional: Wire the return signal from a relay of your choice (COM+NO)

### **15.4.4 System Configuration**

**Enable the Smoke Alarm function and set the target position:**

1. Enter System Configuration Menu
2. Navigate to:

MAIN MENU

→ [3] DOOR-POSITIONS  
→ [4] SMOKE DETECTOR SYSTEM  
→ ENTER

3. → ENABLE
4. Move the door into the desired smoke alarm position  
→ ENTER  
→ CONFIRM

**Set the Smoke Alarm trigger:**

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [2] INPUTS
3. Choose the input that the smoke alarm trigger is connected to.  
→ ENTER
  - a. GPIN Function  
→ [7] SMOKE ALARM SYSTEM
  - b. Choose the logic setting matching the connected smoke alarm trigger:
    - i. → NO – the smoke alarm is active when input is bridged
    - ii. → NC – the smoke alarm is active when input is open
  - c. → CONFIRM

**(Optional) Set relay for 'smoke alarm position reached':**

1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [1] RELAY OUTPUTS
3. Choose a relay  
→ ENTER
  - a. Relay-Function  
→ [8] SD POSITION
  - b. → CONFIRM

## **15.5 Connecting a Door-Lock with return channel**

### **15.5.1 Brief**

The following section describes how to connect a spring-loaded door lock with return channel.

This type of door lock will open when powered and return to locked position by itself through spring-force.

The door lock is equipped with a switch that closes when the lock has fully opened and the door is free to move ("return channel").

### 15.5.2 Hardware setup: Connection + Wiring

1. Connect the door lock control to a free relay (pins NO+COM)
2. Connect the return channel to a free programmable input (labeled PUSHBUTTONS)

### 15.5.3 System Configuration

Set a relay to control the door lock:

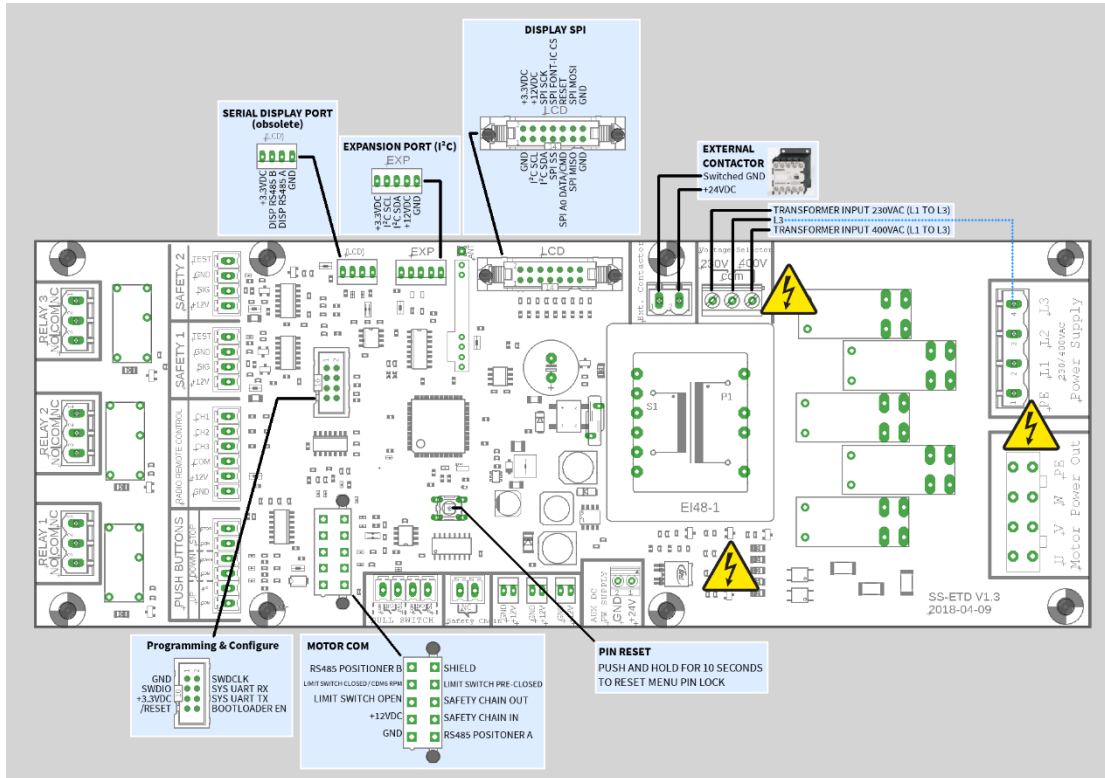
1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [1] RELAY OUTPUTS
3. Choose a relay  
→ ENTER
  - a. Relay-Function  
→ [4] ELECTRIC DOOR-LOCK
  - b. E-lock Delay  
Choose the delay before opening the door. When using a lock with return channel, a set delay is not required, because we will get the signal when the lock is opened.  
→ 0 seconds
  - c. E-lock relay  
Choose the type of lock used. We are using a spring-loaded lock with a single input for opening the lock:  
→ [1] PERMANETLY ON
  - d. → CONFIRM

Set an input to receive the return signal:

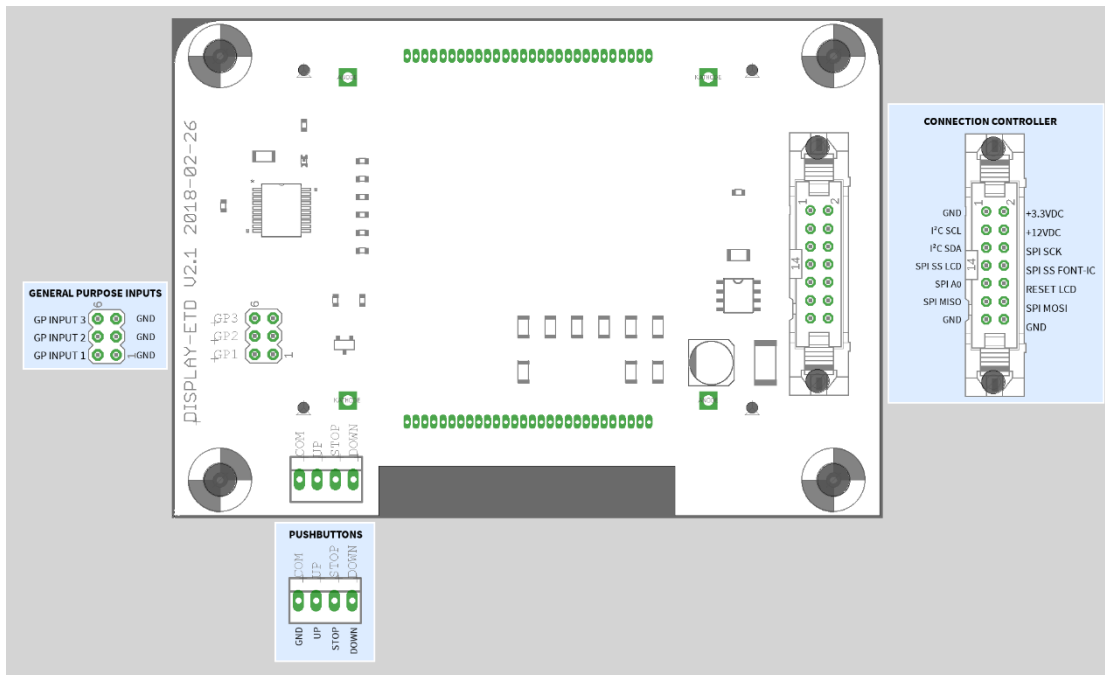
1. Enter System Configuration Menu
2. Navigate to:  
MAIN MENU  
→ [6] INPUTS/OUTPUTS  
→ [2] INPUTS
3. Choose the input that the return signal is connected to.  
→ ENTER
  - a. GPIN Function  
→ [8] LOCK RELEASE
  - b. GPIN Function  
Choose the logic setting matching the connected return channel
    - i. → NO – once the lock is opened, the input will be closed
    - ii. → NC – once the lock is opened, the input will be open, else closed
  - c. → CONFIRM

# 16 Connectors Pin Assignment

Connectors main PCB:



Connector display module:





## 17 Error Code Table

Error Code	Issue	Description
01	<b>Endposition (encoder only)</b>	The door was moving over the CLOSED endposition. You may move the door back into the valid position using the UP key. If the error persists, go to menu “expert settings – brake offset” and increase the value of the brake offset. If needed, learn the endpositions anew.
02	<b>Endposition (encoder only)</b>	The door was moving over the OPEN endposition. You may move the door back into the valid position using the DOWN key. If the error persists, go to menu “expert settings – brake offset” and increase the value of the brake offset. If needed, learn the endpositions anew.
03	<b>Wrong rotation direction (encoder only)</b>	The turning direction of the motor and positioner did not match, or the door moved in the wrong direction. Enter the <b>Door-Positions</b> menu and perform <b>Check Directions</b> to resolve the issue.
04	<b>Door blocked</b>	During movement the door was blocked unexpected. Check the door for manual obstacles (locking devices etc.) This failure also occurs if there is no signal from the encoder. In this case check the wiring of the encoder.
05	<b>Door movement (encoder only)</b>	The door has moved but it was supposed to be stopped. If the movement was due to emergency release then you can ignore the error message. If installed, then check the electrical brake of the motor.
08	<b>Configuration</b>	The stored data of the door configuration is defective. The system did a factory reset to fall back to safe values. Program the operator anew.
14	<b>Endposition (encoder only)</b>	At least one endposition is missing. Go to menu “door position” and learn the door positions anew.
15 -19	<b>Self Test Failure</b>	The system detected a failure while self-testing its electronic systems. Please report to customer service if error persists after a restart.
20	<b>Relay failure</b>	A motor relay is stuck. Control unit needs to be replaced.
24	<b>Safety Chain Test</b>	When testing the safety chain, the system detected that it does not switch as expected. Check safety chain wiring.
26-29	<b>Self Test Failure</b>	The system detected a failure while self-testing its electronic systems. Please report to customer service if error persists after a restart.
30	<b>Limit switch (mech. limits only)</b>	Both OPEN and CLOSED mechanical limit switches are triggered simultaneously. Check limit switches and their wiring.

<b>31</b>	<b>Door Runtime exceeded (mech. Limits only)</b>	The door did not reach the target endposition within the expected time (= the time it took during the last full travel). The system suspected a blocked door and has stopped the motor. This is a one-time event! The door runtime is now reset and will be relearned during the next complete travel. Please cycle the door once manually while observing it.
<b>33</b>	<b>Pass-door</b>	The stop-switch of the passdoor is triggered. Check door and switch and their wiring
<b>34</b>	<b>Smoke Alarm</b>	The smoke alarm has been triggered. The door will travel into the smoke alarm position within short notice.
<b>35</b>	<b>Maximum reverse</b>	In autoclosing mode the door reached its maximum attempts to close the door. Each time it reversed due to a triggered safety device. Check the safety device and check for obstacles in the driveway.
<b>37</b>	<b>CDM6 timeout (CDM6 only)</b>	The CDM6 centrifugal switch did not switch. Motor stopped. Check switch and wiring.
<b>38</b>	<b>CDM6 closed position timeout (CDM6 only)</b>	While closing the door, after crossing the preend-position, the system expects the safety edge trigger within a set time, to indicate that the closed endposition has been reached. This did not occur in time. Please check safety edge. You may adjust the preend-position, or adjust the timeout time in Expert Settings -> CDM6 timeout (See 14.9.1)
<b>39</b>	<b>Electric Door Lock Failure</b>	The system tried to disengage the door lock, but there was no signal indicating the opening of the door lock. This failure only occurs, if an input has been set to receive the electronic door lock signal.
<b>60-64</b>	<b>Safety 1 defective</b>	Safety device connected to SAFETY 1 is not working. Check the safety device.
<b>70-74</b>	<b>Safety 2 defective</b>	Safety device connected to SAFETY 2 is not working. Check the safety device.
<b>93</b>	<b>Encoder (encoder only)</b>	Signals from the encoder are missing. Check the wiring of the encoder.
<b>96</b>	<b>Safety chain</b>	The terminal "Safety Chain" is open. Check the connected devices on function
<b>97</b>	<b>Safety chain motor</b>	The thermal fuse of the motor is triggered or the emergency release is activated. Let the motor cool down and check emergency release mechanism.
<b>99-100</b>	<b>Encoder battery (encoder only)</b>	The battery inside the encoder is running low. Please replace the battery. (This only applies for certain multi-turn encoder models that require a battery)

## 18 EC Declaration

### EC Declaration of Incorporation

for the assembly of a partly machine  
in accordance with machinery directive 2006/42/EG, annex II part 1 B

the manufacturer herewith declares that the door operators  
**Frequenz 400-100 and Frequenz 400-140**

is developed and produced in accordance with

- machinery directive 2006/42/EG
- low voltage directive 2014/35/EU
- emc directive 2014/30/EU
- RoHS directive 2011/65/EU

Following normatives have been applied:

- EN 60335-1, as far as it concerns (safety of electrical devices/ operators for doors)
- EN 61000-6-3 (emc)
- EN 61000-6-2 (emc)
- EN 12453:2000 part 5.2 (safety of doors)
- EN 60335-1:2012 (safety of electrical devices)
- EN 60335-2-103:2003 (safety of electrical devices)
- EN ISO 13849-1:2008 (safety of control units for machinery)

Following requirements of machinery directive 2006/42/EG are fulfilled:

1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.6, 1.3.2, 1.3.4, 1.3.7, 1.5.1, 1.5.4,  
1.5.6, 1.5.14, 1.6.1, 1.6.2, 1.6.3, 1.7.1, 1.7.3, 1.7.4

On request of authorities the technical approvals can be transferred electronically.

The partly machine is only for use on door applications in order to built a complete machine in accordance with machinery directive 2006/42/EG. The door must set in operation only if the above normatives are fulfilled.

March 2020