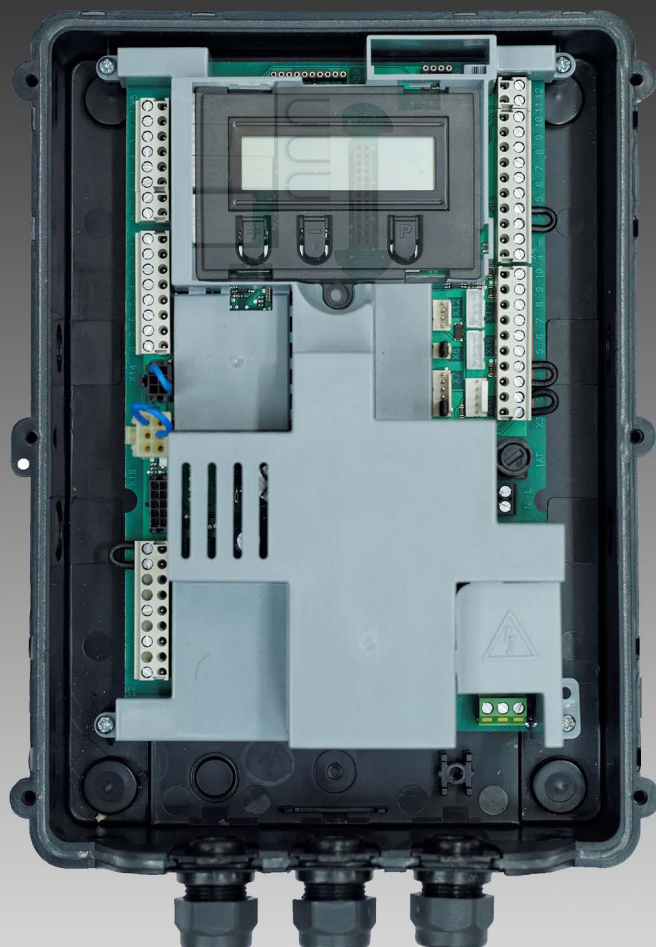


Operating Instructions for Control Panel

# CS 310



**Warning : Please read these instructions fully before installation**

## 1. Contents

|     |  |    |
|-----|--|----|
| 1.  | Contents                                 | 2  |
| 2.  | General Document Information             | 2  |
| 3.  | General safety instructions              | 3  |
| 4.  | Product overview                         | 4  |
| 5.  | Initial operation                        | 5  |
| 6.  | Setting the end limit positions          | 12 |
| 7.  | Programming                              | 14 |
| 8.  | Navigating Parameters (LCD display only) | 17 |
| 9.  | Overview of functions                    | 19 |
| 10. | Error messages and rectification         | 32 |
| 11. | Technical data / Maintenance             | 35 |
| 12. | EC Declaration of Incorporation          | 37 |
| 13. | Appendix                                 | 38 |

## 2. General Document Information

### Original Operating Instructions

- Protected by copyright.
- No part of these instructions may be reproduced without our prior approval.
- Subject to alterations in the interest of technical progress.
- All dimensions given in mm.
- The diagrams in this manual are not to scale.

### Key to symbols



#### DANGER !

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



#### WARNING !

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



#### CAUTION !

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



#### NOTICE

Indicates an imminent danger of damage or destruction.



#### CHECK

Indicates a check to be performed.



#### REFERENCE

Reference to separate documents which must be complied with.



#### Action request


- List, itemisation
- ➔ Reference to other sections of this document

### 3. General Safety Instructions



**DANGER!**

**Failure to comply with the documentation could result in life-threatening danger!**

 Be sure to follow all the safety instructions in this document.

#### Warranty

The function and safety of the equipment is only guaranteed if the warning and safety instructions included in these operating instructions are adhered to.

Link Controls is not liable for personal injury or damage to property if these occur as a result of the warnings and safety advice being disregarded. Link Controls does not accept any liability or warranty for damage due to the use of non-approved spare parts and accessories.

#### Using the equipment for its intended purpose

The CS 310 controls are designed only for controlling gates and doors with digital (AWG) or mechanical end limit position systems.

#### Target group

Only qualified and trained electricians may connect, programme and service the controls. Qualified and trained electricians must meet the following requirements:

- knowledge of the general and specific safety and accident-prevention regulations.
- knowledge of the relevant electrical regulations,
- training in the use and care of appropriate safety equipment.
- capable of recognising the dangers associated with electricity.

#### Instructions regarding installation and connection

- The control must be disconnected from the electricity supply before carrying out any electrical work. It must be ensured that the electricity supply remains disconnected for the duration of the works.
- Local protective regulations must be complied with.

#### Information concerning operation

- Unauthorised persons (particularly children) should not be allowed to play with permanently installed adjusting or control devices.
- Keep remote controls beyond the reach of children.

#### Regulations and test specifications

For connecting, programming and servicing, the following regulations must be observed (the list is not exhaustive).

#### Construction product standards

- EN 13241-1 (Products without fire resistance or smoke control characteristics)
- EN 12445 (Safety in use of power operated doors - Test methods)
- EN 12453 (Safety in use of power operated doors - Requirements)
- EN 12978 (Safety devices for power operated doors and gates - Requirements and test methods)

#### Electromagnetic compatibility (EMC)

- EN 55014-1 (Radio disturbance, household appliances)
- EN 61000-3-2 (Disturbances in supply systems - harmonic currents)
- EN 61000-3-3 (Disturbances in supply systems - voltage fluctuations)
- DIN EN 61000-6-2 (Electromagnetic compatibility (EMC) - Part 6-2: Generic standards – Immunity for industrial environments)
- DIN EN 61000-6-3 (Electromagnetic compatibility (EMC) - Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments)

#### Machinery Directive

- EN 60204-1 (Safety of machinery, electrical equipment of machines) Part 1: General requirements
- EN ISO 12100 (Safety of machinery – general principles for design - risk assessment and risk reduction)

#### Low voltage

- DIN EN 60335-1 (Household and similar electrical appliances - Safety - Part 1: general requirements)
- DIN EN 60335-2-103 (Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows)

#### Committee for Workplaces (ASTA)

- Workplace regulation ASR A1.7 ("Doors and gates")

## 4. Product Overview

### 4.1 Various options

The following package options are available for the CS 310 control:

- CS 310 control with LCD display / programmer
- CS 310 control without LCD display / programmer (programmer is required for all advanced settings)

All the above options can be fitted with a plug-in 24/7 weekly timer, a plug-in radio receiver and a plug-in radio transmission system (for low power opto safety edge sensors).

The following options are available for the enclosure:

- Enclosure with CS three-button station
- Enclosure with KDT three-button station
- Enclosure with ON/OFF key switch
- Enclosure with mains isolation switch
- Housing with emergency stop

The operating instructions describe the connection possibilities and programming procedures for the different models:

- CS 310 control with attached LCD display / programmer

### 4.2 CS 310 basic board (with optional LCD display programmer)

#### Key:

- X1: Mains power supply terminals
- X2: Motor terminals
- X3: Terminal block for command devices
- X4: Terminal block for safety devices
- X5: Terminal block for programmable relays
- X6: Connector for lid mounted ON-OFF switch
- X7: Connector for lid mounted 3-button station
- X8: Connector for display / programmable
- X9: Connector for radio receiver
- X10: Connector for 24/7 weekly timer
- X11: Connector for electronic limit (AWG)
- X12: Connector for external loop detector
- X13: Connector for CS three-button station
- X14: Not used
- X15: Terminal block for mechanical limits
- X16: Connector for BUS system (MS BUS)
- X17: Connector for BUS system (MS BUS)
- X18: Frequency converter interface
- X19: Power supply for external devices  
230V / 50 Hz protected by F1 (1 A fuse)
- X20: Connector for radio safety edge system
  
- H4: Green LED to show operational readiness  
illuminated when control is working
- H6: Red LED to show status messages  
lights up / flashes when the safety devices  
are activated or in the case of errors
  
- S1: Programming button (+) (under display)
- S2: Programming button (-) (under display)
- S3: Programming button (P) (under display)

## 5. Initial operation

### 5.1 General

To ensure that the system functions properly, the following conditions must apply:

- The door/gate is installed and operational.
- The Link Controls operator is installed and ready for operation.
- The command and safety devices are installed and function properly.
- The control housing with the CS 310 control is installed properly.

#### REFERENCE

The relevant manufacturers' instructions must be adhered to for the installation of the door/gate, the Link Controls operator, and the command & safety devices.

### 5.2 Mains connection

#### Preconditions

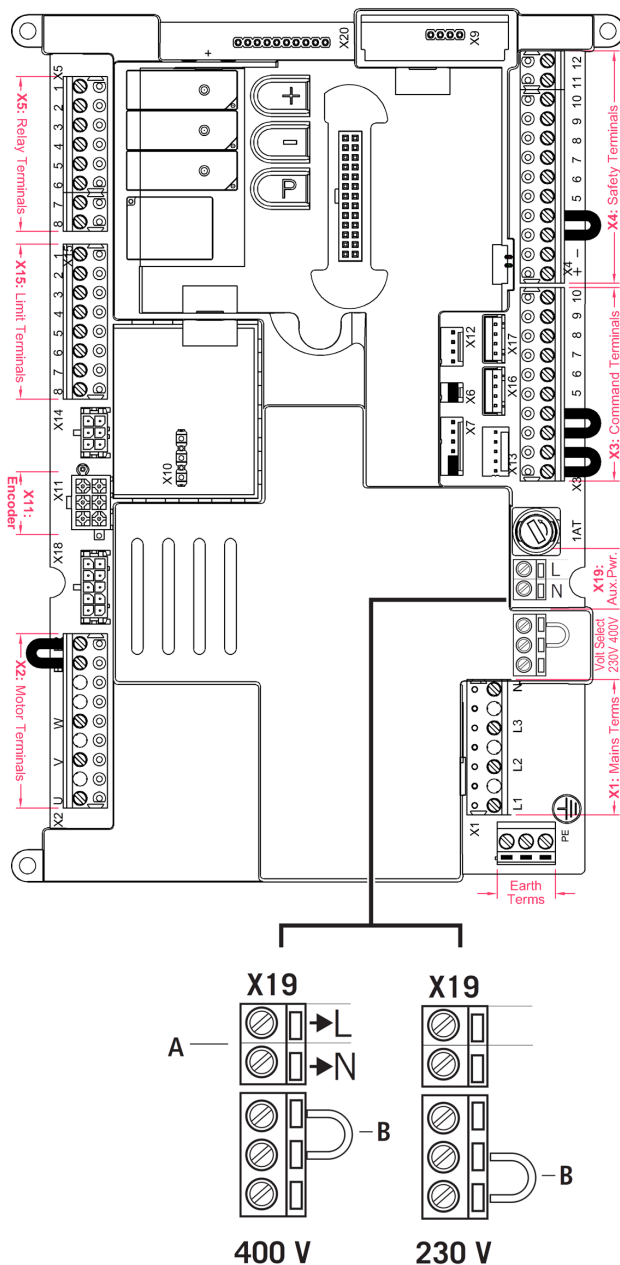
To ensure that the controls functions properly, the following conditions must apply:

- The mains voltage must correspond to the voltage stated on the type plate.
- The mains voltage must be the same as the voltage of the operator.
- For a three-phase current, a clockwise rotating field is required.
- For a permanent connection, an all-pole main isolating switch must be used.
- For a three-phase connection, only 3-way automatic circuit breakers (max 10 A) may be used.

#### NOTICE

#### **Malfunctions can occur as a result of incorrect installation of the control!**

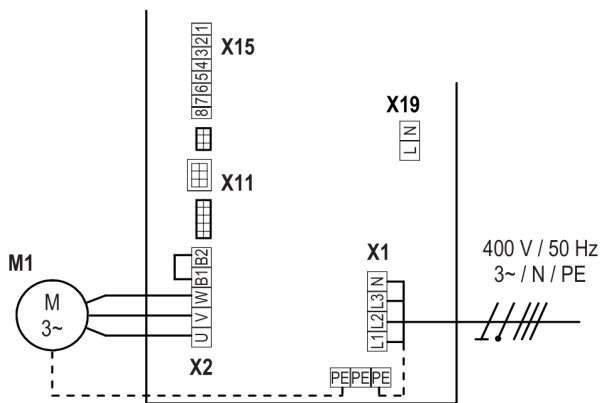
Before switching on the control for the first time, a check must be carried out after completing the wiring to ensure that all the motor connections at the motor and at the control are securely fixed. All control voltage inputs are galvanically isolated from the supply.



- A Output 230 V.  
Power supply for external devices.  
No power entry for the control unit itself.  
→ See '5.3 Power supply for external devices (only for 400 V / 3-phase connection)'
- B The position of the jumper must take into account the power supply and the motor voltage.

# Initial operation

## 400Vac / 3 phase, motor & mains connection



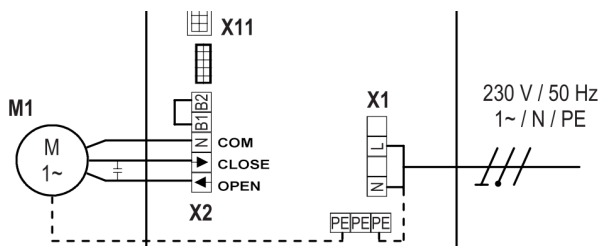
### Key:

- M1: Motor
- X1: Terminal block for mains connection
- X2: Terminal block for motor
- X11: Sockets for electronic limit system (AWG) with safety circuit (STOP CHAIN)
- X15: Terminal block for mechanical limit switches (stop circuit at X2 / B1-B2)
- X19: Power supply connection for external devices

### Connection:

- ✎ Connect the digital end position system or mechanical limit switches to the control.
- ✎ Connect the control to the motor.
- ✎ Connect the control to the mains power supply.
- ✎ Cable groups must be secured close to their relevant terminals using a cable tie.

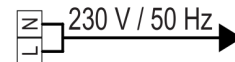
## 1 phase motor (3 wire) & mains connection



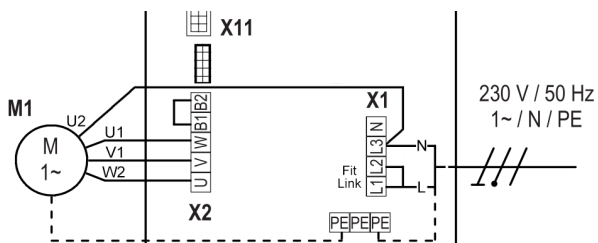
→ "11. Technical data" on page 40

## 5.3 230 Vac Aux Power supply for external devices (only for 400Vac / 3-phase)

X19



## 1 phase motor (4 wire) & mains connection



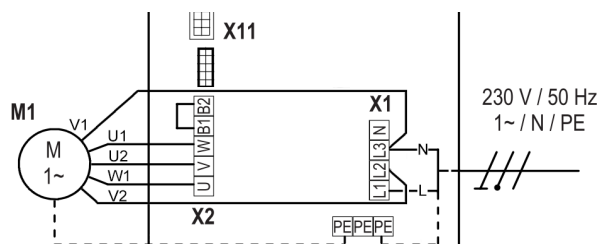
NOTICE

### Damage to property or irreparable damage due to incorrect installation!

Using terminal X19 if the control is connected to a 230 V power supply will destroy the circuit board.

- ✎ Protect terminal X19 with F1, 1A (delay) fuse.

## 1 phase motor (5 wire) & mains connection







## 5.6 Connection of command devices



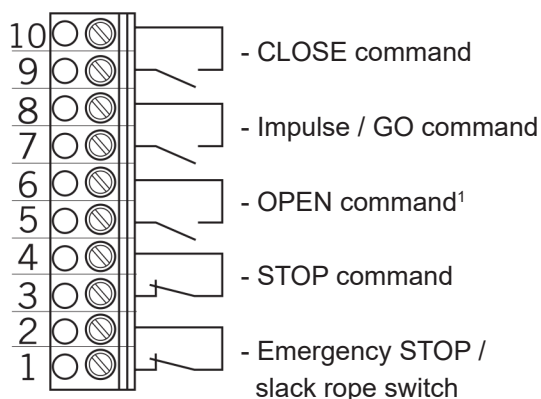
### Danger of injury due to uncontrolled movement of the door/gate!

☞ Install command devices for deadman operation within site of the door/gate, but beyond the danger zone for the user.

#### If the command device is not a key switch:

- ☞ Install it at a height of at least 1.5 m off the ground.
- ☞ Install it so as to make it inaccessible to the general public.

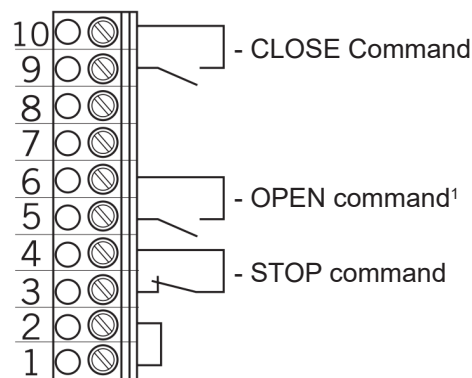
### Terminal block X3



<sup>1</sup> If two-way traffic control is activated:  
OPEN command from inside

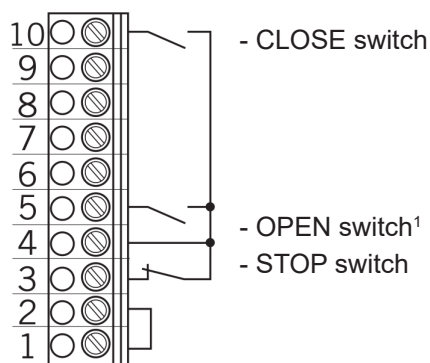
## 5.7 Connection examples for command devices (terminal block X3)

### OPEN / STOP / CLOSE buttons 6-wire example



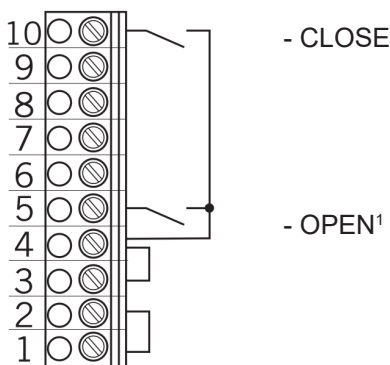
<sup>1</sup> If two-way traffic control is activated:  
OPEN command from inside

### OPEN / STOP / CLOSE switches 4-wire example



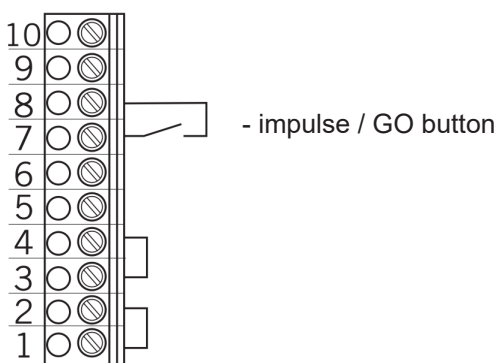
<sup>1</sup> If two-way traffic control is activated:  
OPEN command from inside

### Key switch OPEN / CLOSE



<sup>1</sup> If two-way traffic control is activated:  
OPEN command from inside

### Impulse / GO button (sequence, step by step control)



<sup>1</sup> If two-way traffic control is activated:  
OPEN command from inside



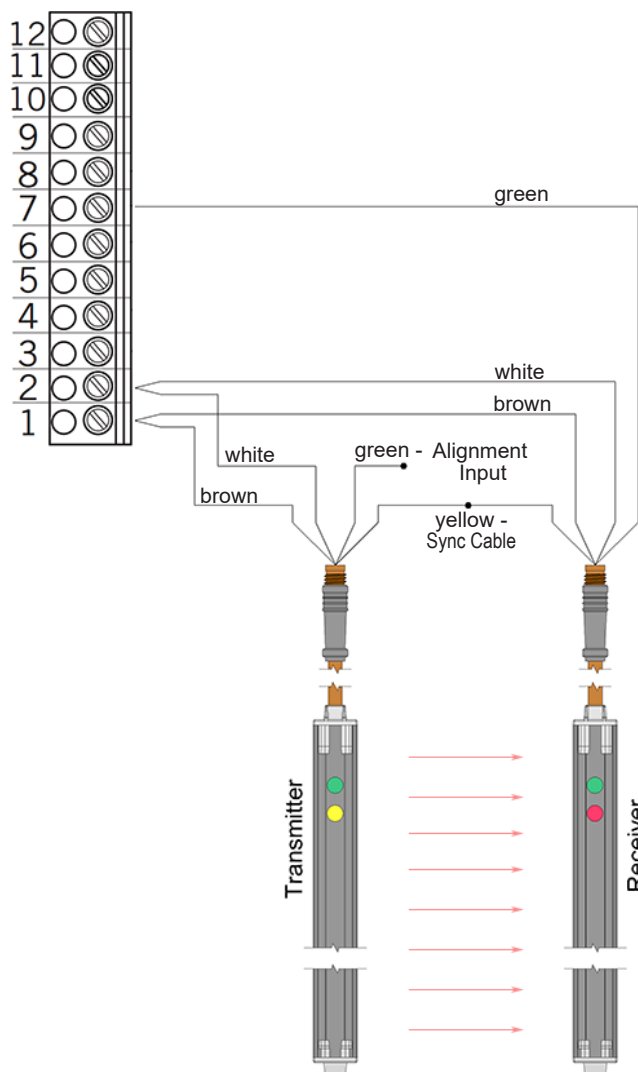
## 5.8 Connection of safety edge devices

The closing safety edge device will be recognised and programmed automatically during initial use and following a reset. If a closing safety edge device is not connected, the input will be queried every time the power supply is switched on, until a closing safety edge device is recognised. If a change is made at a later date, the appropriate system must be selected in a parameter setting in INPUT mode.

→ "7.2 LCD display, modes of operation"

### Terminal block X4

Light curtains (OSE output)



Safety edge mode 'SKS' should be set to MOD4 for light curtain operation (not automatically detected).

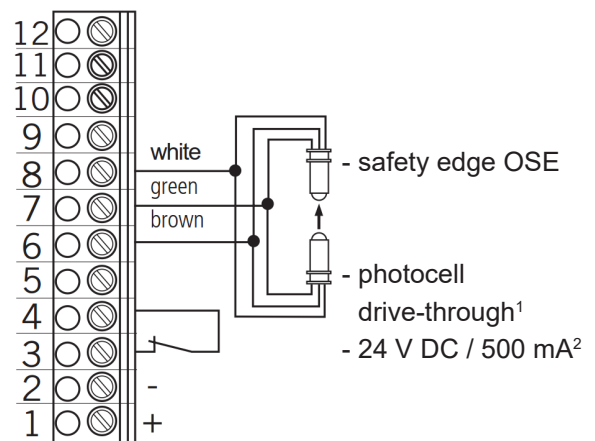
→ "9.2 Input operating mode - SKS"

Safety edge reverse time 'Revers.Time' should be set to >1000ms.

→ "9.2 Input operating mode - Revers.Time"

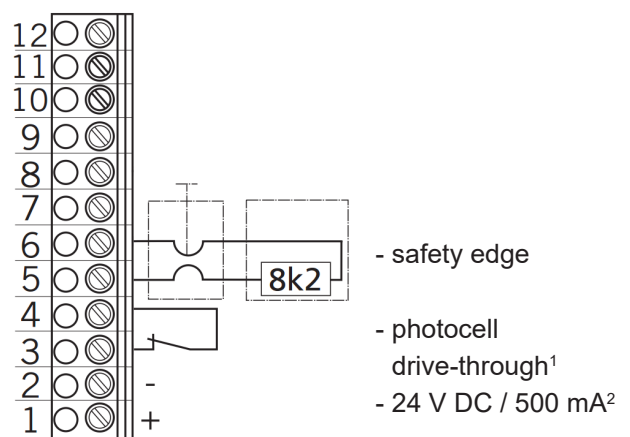
### Terminal block X4

optoelectronic safety edge (OSE)



### Terminal block X4

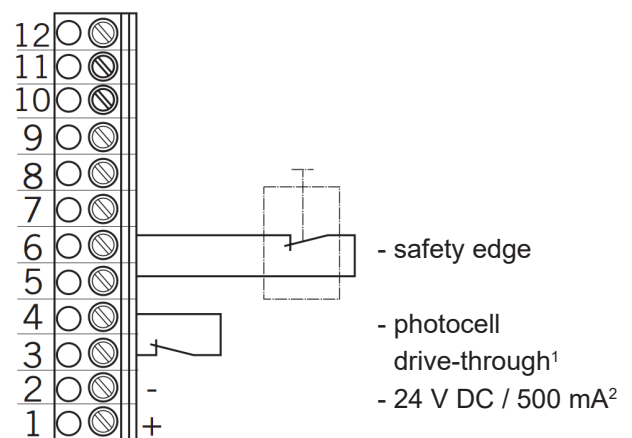
8.2 kOhm safety edge (electric)



### Terminal block X4

pneumatic safety edge (airswitch)

pressure switch test - testing at door close position



<sup>1</sup> effective in close direction

<sup>2</sup> for external switching devices  
(connection to terminals 1 & 2)

# Initial operation

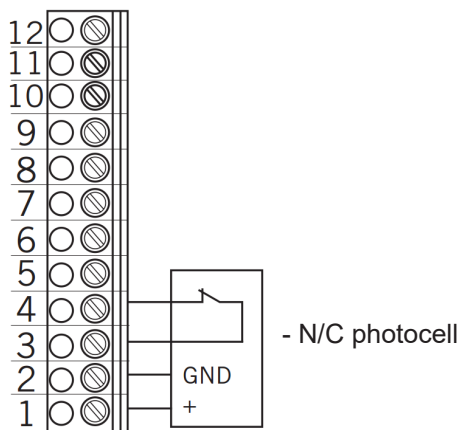
## 5.9 Connection of photocells

The photocell system will be recognised and programmed automatically during initial operation and following a reset. If a photocell system is not connected, the input will be queried every time the power supply is switched on, until a photocell is recognised. If a change is made at a later date, the appropriate system must be selected in a parameter setting in INPUT mode.

→ “7.2 LCD display, modes of operation“

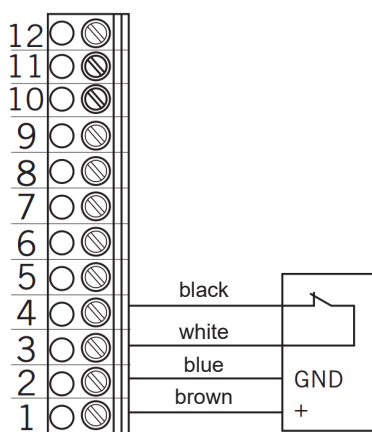
### Terminal block X4

photocell N/C 24 V DC



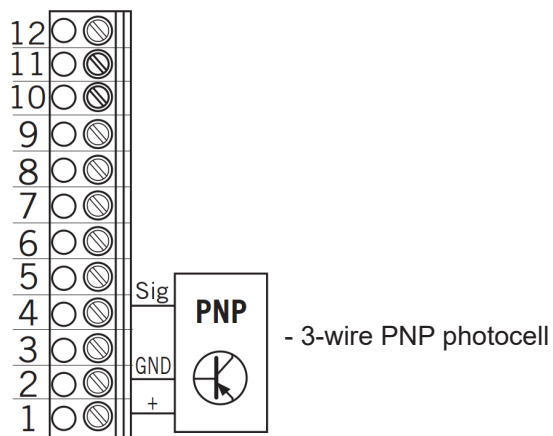
### Terminal block X4

Link Controls 'standard' retro-photocell



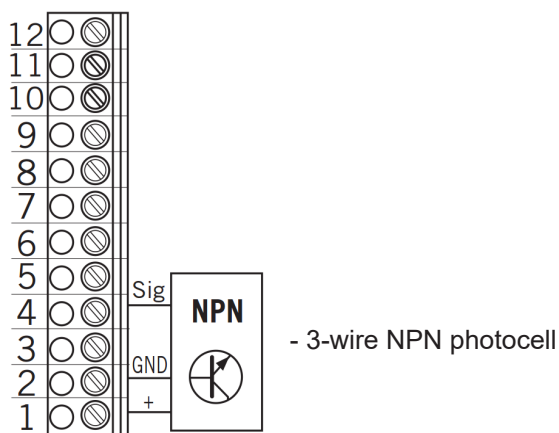
### Terminal block X4

### 3-wire PNP photocell



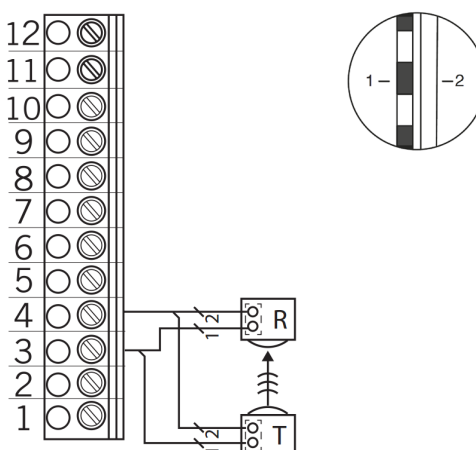
### Terminal block X4

3-wire NPN photocell



### Terminal block X4

2-wire photocell



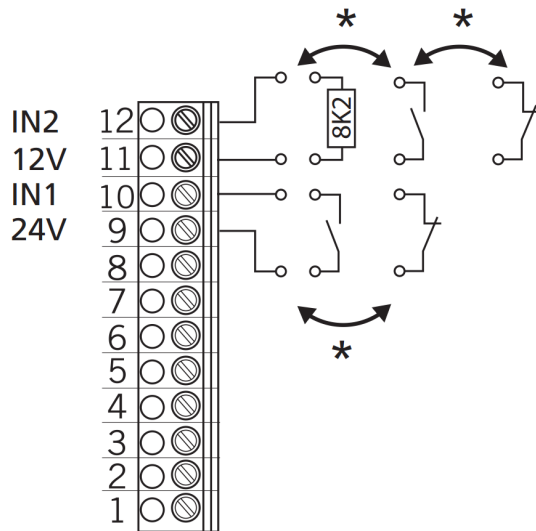
R: Receiver

T: Transmitter

Terminal block X4  
 Programmable inputs  
 Input 1: Terminal 9 & 10  
 Input 2: Terminal 11 & 12

#### NOTICE

Danger of damage to the circuit board due to incorrect connection!  
 Inputs 1 & 2 have different voltages and they must NOT be connected together!



IN1 Input 1  
 IN2 Input 2  
 \* either/or

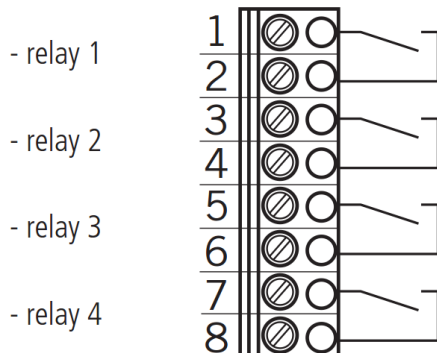
The type of wiring depends on the parameter settings for both inputs in INPUT mode.

## 5.10 Connections for relay outputs

### Terminal block X5

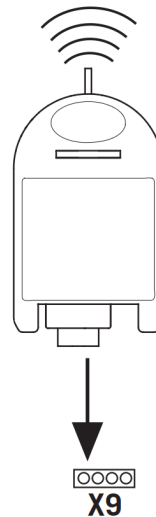
(voltage-free switching contacts)

- Assignment of functions in INPUT mode
- Setting for each single relay



## 5.11 CS radio

### Terminal block X9



#### Connection

- Insert the plug-in receiver into socket X9.

#### Teaching-in the transmitter codes

- Press the programming button on the receiver briefly (<1.6 seconds). The programming mode is activated and the LED flashes.
- Press the required channel button on your transmitter. Once the remote control has saved the transmission code, the LED lights up to approx. 4 seconds.

It is possible to teach-in up to 15 individual transmission codes, although the transmitters may be cloned using the relevant pin connector (refer to the individual transmitter instructions to check if this is possible). If cloning is possible, then an infinite number of transmitters can be used.  
 If the memory is full, the LED will flash rapidly.

#### Selectively deleting a transmission code

- Press the programming button on the receiver briefly (<1.6 seconds). The programming mode is activated and the LED flashes.
- Keep the programming button pressed for longer than 1.6 seconds. The delete mode is activated and the LED flashes very fast.
- Press the required channel button for deleting on your transmitter. The LED lights up for approx. 4 seconds if the appropriate transmission code has been deleted.

The deletion procedure can be cancelled by briefly pressing the programming button.

#### Reset (completely delete memory)

- Press the programming button on the receiver briefly (<1.6 seconds). The programming mode is activated and the LED flashes.
- Keep the programming button pressed for longer than 1.6 seconds. The delete mode is activated and the LED flashes very fast.
- Press the programming button again for more than 1.6 seconds. The LED lights up for approx. 4 seconds if all memory spaces have been deleted.


The deletion procedure can be cancelled by briefly pressing the programming button

## 6. Setting the end limit positions


### 6.1 Checking the rotation direction / travel direction

During initial operation, the door may travel in the wrong direction. Be prepared to stop the door quickly and change if necessary.


#### Changing to ADJUSTMENT mode:

 Press button (P) until the red LED begins to flash slowly. (if the display is used - ADJUSTMENT).

#### Checking the direction of travel:

 If you press button (+), the door/gate should open; if you press button (-), the door/gate should close. If it is correct, continue with setting the end positions.

#### Changing the direction of rotation:


 If the direction of rotation needs to be changed, proceed as follows.  
Press buttons (+) and (-) at the same time for > 5 seconds. The red LED will flash rapidly. (if the display is used - ROT FIELD). Any end positions that have been saved will be deleted. Continue with setting the end positions.

Alternatively, two of the supply phases can be swapped with each other.



For example swap the wires in X1 'L1' & 'L2' or the wires in X2 'U' & 'V' (for single phase).

### 6.2 Setting electronic limits using the buttons on the circuit board



#### Changing to ADJUSTMENT mode


 Press the 'P' button for approx. 5 seconds.  
The red LED flashes slowly.

#### Setting the fully OPEN position

 Press the '+' button to move the door/gate to the fully OPEN position.  
 Then save the limit position by pressing the 'P' button and the '+' button at the same time.  
The red LED will flash quickly for 1 second to indicate that the position is stored.

#### Setting the fully CLOSED position

 Press the '-' button to move the door/gate to the fully CLOSED position.  
 Then save the limit position by pressing the 'P' button and the '-' button at the same time.  
The red LED will flash quickly for 1 second to indicate that the position is stored.

 The ADJUSTMENT mode will then end automatically and the red LED will switch off.

#### N.B.

- The adjustment mode will end automatically after 7 minutes unless a button is pressed.
- When carrying out adjustments for the first time, it is necessary to teach-in both limit positions, as otherwise normal operation is not possible.
- If a limit position has been corrected, the ADJUSTMENT menu can be exited by pressing button 'P' once the teaching-in of the special limit position has been completed.
- After programming the limit positions, the teach-in of the system 'running time' is carried out automatically. The functions of the control are the same as in automatic mode.

#### N.B.

- The adjustment mode will end automatically after 7 minutes unless a button is pressed.
- When carrying out adjustments for the first time, it is necessary to teach-in both limit positions, as otherwise normal operation is not possible.
- If a limit position has been corrected, the ADJUSTMENT menu can be exited by pressing the 'STOP' button once the teaching-in of the special limit position has been completed.
- After programming the limit positions, the teach-in of the system 'running time' is carried out automatically. The functions of the control are the same as in automatic mode.

### 6.3 Setting the electronic limits using the LCD display



#### NOTICE


#### Damage to property or irreparable damage due to incorrect installation!

The display must be plugged in only if it is disconnected from the power supply and at zero voltage. Only one display must be used:  
At plug-in socket X8: LCD Display Standard

#### Changing to ADJUSTMENT mode

 Press the 'P' button until ADJUSTMENT appears.

#### Setting the fully OPEN position

 Press the '+' button to move the door/gate to the fully OPEN position.

- ☞ Then save the limit position by pressing the 'P' button and the '+' button at the same time.

#### **Setting the fully CLOSED position**

- ☞ Press the '-' button to move the door/gate to the fully CLOSED position.
- ☞ Then save the limit position by pressing the 'P' button and the '-' button at the same time.
- ☞ Exit the ADJUSTMENT mode by pressing & holding the 'P' button until the display shows AUTOMATIC

#### **N.B.**

- When carrying out adjustments for the first time, it is necessary to teach-in both limit positions, as otherwise normal operation is not possible.
- If a limit position is corrected, the ADJUSTMENT menu can be exited by pressing button 'P' once the teaching-in of the special limit position has been completed.
- After programming the limit positions, the teach-in of the system 'running time' is carried out automatically. The display shows TEACH IN RUN. The functions of the control are the same as in automatic mode.

## **6.4 Setting the electronic intermediate limit position using the LCD display**

**In AUTOMATIC mode, move the door/gate to the desired position**

#### ***Example shown for part open limit (INC.P.OP)***

- ☞ Press the '+' or '-' buttons to move the door/gate to the desired position.

#### **Changing to INPUT mode**

- ☞ Press & hold the 'P' button until INPUT appears.
- ☞ Press the '+' and '-' buttons together for >2s to activate INPUT mode.

#### **Saving the intermediate limit position (INC.P.OP)**

- ☞ Press the '+' or '-' buttons until INC.P.OP appears. The value is set at A (Automatic).
- ☞ Press the 'P' button to set the current door/gate position as the intermediate limit position.
- ☞ Save the intermediate limit position by pressing the 'P' button again.

#### **Exiting INPUT mode**

- ☞ Press & hold the '+' and '-' buttons for >1s to exit INPUT mode.

#### **☞ Changing to AUTOMATIC mode**

- ☞ Press & hold the 'P' button until AUTOMATIC appears.

#### **N.B.**

- If an intermediate limit position requires correcting, the teach-in value can be altered in the INPUT menu or set to A (Automatic) again to allow a new teach-in procedure to be carried out.

## 6.5 Setting mechanical limits

### Changing to ADJUSTMENT mode:

#### Using the buttons on circuit board

- Press & hold the 'P' button for approx. 5 seconds until the red LED flashes slowly.

or

#### Using the LCD display

- Press the 'P' button until ADJUSTMENT appears.

### Setting the OPEN and CLOSED positions

- Press the '+' button to move the door/gate to the fully OPEN position and check / adjust limit cam to suit.
- Press the '-' button to move the door/gate to the fully CLOSED position and check / adjust limit cam to suit.

### Changing to AUTOMATIC mode:

#### Using the buttons on the circuit board

- Press & hold the 'P' button for approx. 5 seconds until the red LED stops flashing.

or

#### Using the LCD display

- Press & hold the 'P' button until AUTOMATIC appears

### REFERENCE

The procedure for setting the mechanical limits is described in separate documentation (see operator instructions)

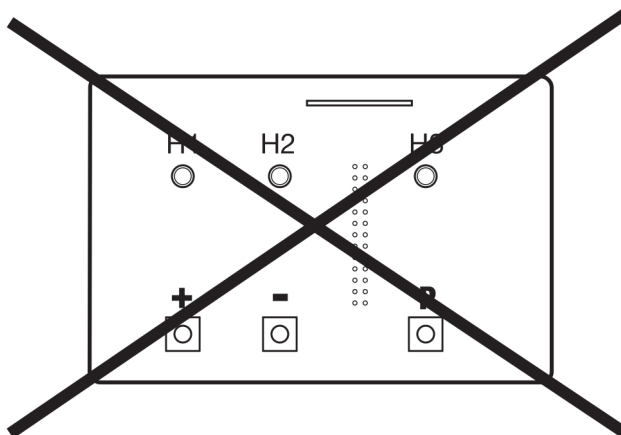
### N.B.

- ADJUSTMENT mode is not exited automatically. To return to normal operating mode, ADJUSTMENT mode must be exited by pressing the 'P' button.

# 7. Programming

### NOTICE

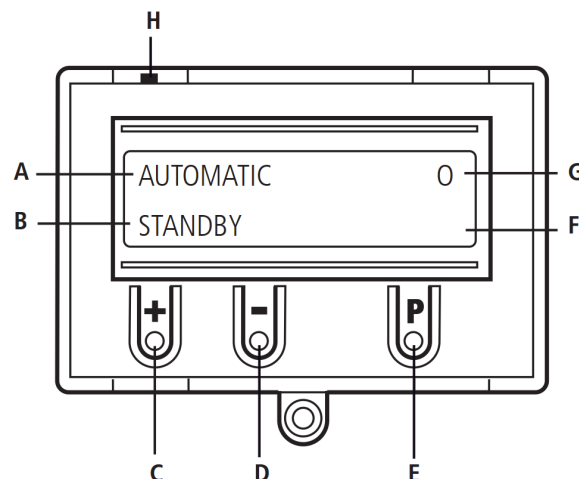
Damage can occur through improper installation! The old style LED module (article no. 590045) cannot be combined with the CS310. Inserting this module and putting it into service can damage the CS310 circuit board beyond repair.



## 7.1 Overview of the LCD display

### NOTICE

Damage can occur through improper installation! The mains power supply must be switched off before connecting the display unit. Only a display unit supplied by Link Controls may be used.



### Key:

- A: mode of operation / diagnostic info
- B: parameter / diagnostic info
- C: '+' button
- D: '-' button
- E: 'P' button
- F: value / status
- G: value / status
- H: jumper



## 7.2 LCD display, modes of operation

The control has four modes with the LCD display:

1. AUTOMATIC
2. ADJUSTMENT
3. INPUT
4. DIAGNOSIS

If the jumper H is removed, the '+' , '-' and 'P' buttons are disabled. The display still functions.

After switching on the, the control will first be in INITIALISATION mode. The display shows 'PLEASE WAIT' and will not be ready for use until this mode has detected any connected devices. This phase lasts for approx. 5 seconds. ADJUSTMENT, INPUT and DIAGNOSIS modes are exited 7 minutes after the last button was pressed, and reverts back to AUTOMATIC mode.

### Operating mode 1:

#### AUTOMATIC (Normal operation)

The door/gate system is operated in AUTOMATIC. Impulse OPEN / CLOSE will depend on connected devices (safety edge) and 'SELF LOCK' parameter.

Display:

- displays the function being carried out
- displays any error messages

If the "SELF LOCK" parameter is set to MOD2 or MOD3 in the input menu, the display changes from AUTOMATIC to MANUAL.

### Operating mode 2:

#### ADJUSTMENT (Limit adjustment)

In the ADJUSTMENT mode, the OPEN and / or CLOSED limit positions can set or adjusted.



#### NOTICE

#### Malfunctions can occur as a result of incorrect operation of the control!

In ADJUSTMENT mode, the door will not stop automatically when it reaches the limit position if electronic limits (AWG – absolute value encoders) are used. The door/gate can be damaged if driven beyond the limit position.

Fine adjustments can be made in the INPUT operating mode (FINE-UP & FINE-DOWN).

Display:

- displays the limit position value

### Operating mode 3:

#### INPUT (Changing parameters)

In the INPUT operating mode, the values of various parameters can be changed.

Display:

- displays the selected parameter
- displays the programmed value / status

### Operating mode 4:

#### DIAGNOSIS (Fault finding)

In the DIAGNOSIS operating mode, door / gate/ control panel checks can be queried.

Display:

- displays the item to be checked
- displays the item status

## 7.3 RESETTING the control using the LCD display

#### Changing to INPUT mode.

- ✎ Press & hold the 'P' button until INPUT appears.
- ✎ Press the '+' and '-' buttons together for >2s to activate INPUT mode.

#### Resetting the controls

- ✎ Press the '+' or '-' buttons until RESET appears in the display. The value is set at OFF.
- ✎ Press the 'P' button - OFF flashes.
- ✎ Press the '+' button until MOD4 appears in the display.
- ✎ Press the 'P' button to begin the reset.

The initialisation phase is run through, and all safety devices that are connected, as well as the limit position system, are automatically detected.

#### Exiting INPUT mode

- ✎ Press & hold the '+' and '-' buttons for >1s to exit INPUT mode.

#### Changing to AUTOMATIC mode

- ✎ Press & hold the 'P' button until AUTOMATIC appears.

## 7.4 RESETTING the control without the LCD display

- ✎ Disconnect the system from the power supply.
- ✎ Press & hold the 'P' and '–' buttons on the circuit board at the same time, and keep them pressed.
- ✎ Switch the power supply back on again.
- ✎ Keep the 'P' and '–' buttons on the circuit board pressed until the red LED (H6) flashes quickly.
- ✎ Let go of the 'P' and '–' buttons on the circuit board.

The initialisation phase is run through (approx 60s) While initialisation is being carried out, it is not possible to programme or operate the system. After initialisation has been completed, the limit positions are deleted and all parameters are reset back to the factory default setting.

## 7.5 Expert Menu

In the factory setting (standard), INPUT mode shows only a few parameters that can be set by the user. These settings parameters reflect the most commonly used requirements for a commercial door/gate system and are adequate for commissioning purposes in a standard situation. The last item in this list is the parameter "EXPERT MENU".

The default setting for this is OFF

OFF: Limited number of parameter settings:

- Menu Language
- INC.P.OP
- OPEN TIME
- FOREWARNING
- FAST CL.
- REVERSEPOINT.
- INPUT 1
- SELF LOCK
- EXPERT MENU

Setting the parameter EXPERT MENU to ON activates expert mode. In this mode, all parameters in the input menu can be called up and set.

- ✎ "10.2 Input operating mode"

Please note

- Expert mode is automatically closed after approx. 7 minutes if no buttons are pressed. In this case, only the limited choice of parameters is available unless the parameter EXPERT MENU is set to ON again.
- The same applies for switching the power off. In this case, too, the parameter EXPERT MODE is set to OFF again.

## 7.6 Initialising / resetting

The following devices will be recognised and configured automatically during initial operation and following a RESET.

- Limit position system
- Closing safety edge device
- Photocell system
- Input 2 (8.2 kΩ wicket door sensor)

During this process (approx. 60 seconds), the green and red LED flash and the top line of the display indicates 'PLEASE WAIT...'. It is not possible to operate the system during this process.

Components can be changed or added at a later date using the LCD display or by resetting the system.

If one of the devices has not yet been connected, this will be indicated by 'A' (Auto detect) in the display.

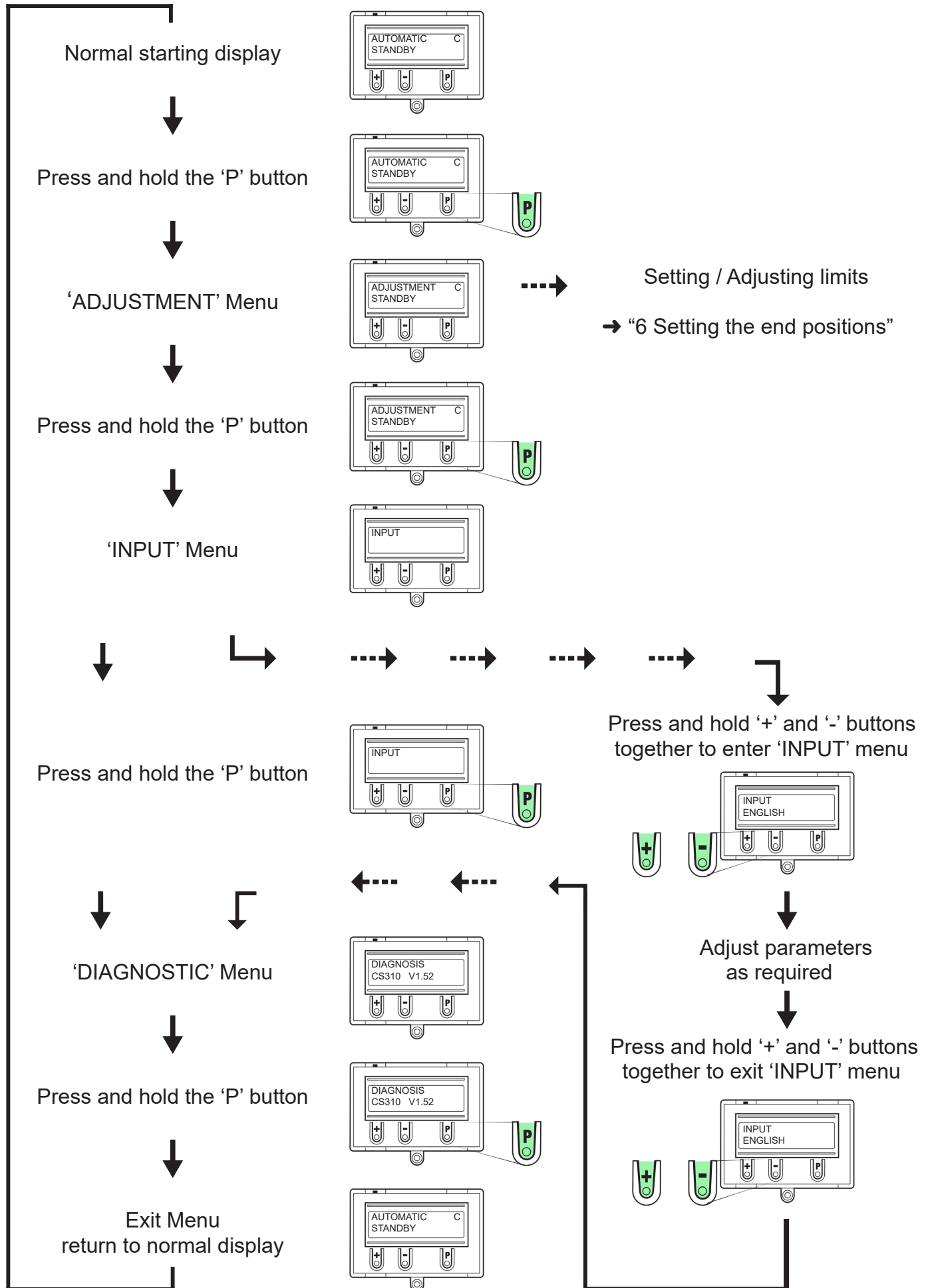
This device will be searched for if any further initialisation procedure is carried out. If this device is recognised, the system automatically switches to the appropriate adjustment mode.

Exception:

Input 2 remains inactive (MOD1) if 8.2 kΩ was not recognised the first time that initialisation was carried out.

## 8. Navigating Parameters (LCD Display only)

### 8.1 Menu Navigation



## 8.2 Example Parameter Adjustment

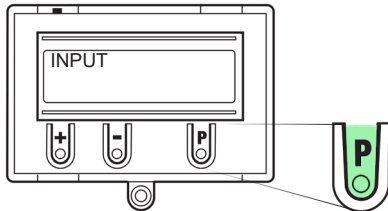
### Requirement :

A building management alarm (Fire signal) is to be connected in order to open the door under a Fire condition (N/C signal going N/O on alarm).

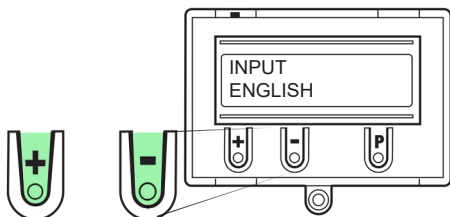
### Solution:

Program Input 1 (X4, terminals 9 & 10) to *MOD9: Fire alarm (BMA) switch 2 (emergency opening) N/C*, as follows :

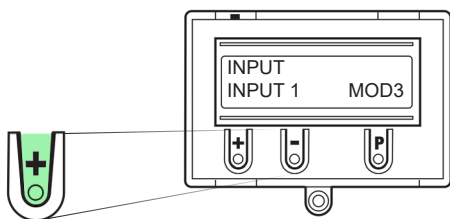
Press and hold the 'P' button until 'INPUT' Menu is reached



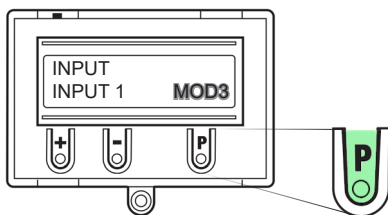
Press both '+' and '-' buttons together - 'ENGLISH' is displayed



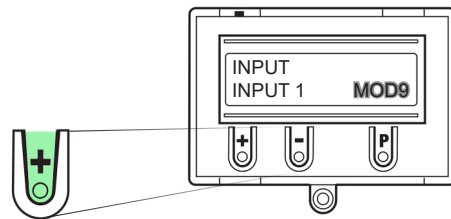
Press the '+' button to scroll through the menu until 'INPUT 1' is reached



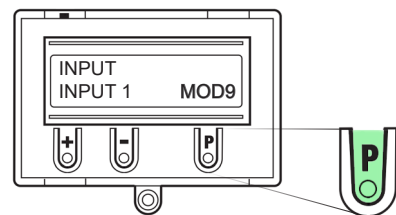
Press the 'P' button and 'MOD3' will flash



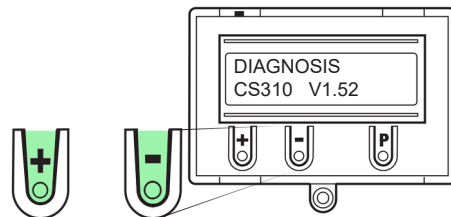
Press the '+' Button until 'MOD9' is displayed



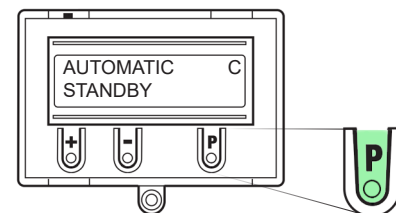
Press the 'P' Button to store the new 'MOD9' setting



Press both '+' and '-' buttons together to exit the 'INPUT' menu



Press and hold the 'P' button until 'AUTOMATIC' is reached  
Programming is now completed



## 9. Overview of functions

### 9.1 Automatic operating mode



| Display                    |   | Description   |
|----------------------------|---|---|
| AUTOMATIC<br>TEACH IN RUN  |   | Automatic teach-in of the running time  |
| AUTOMATIC<br>OPENING PHASE |   | The door/gate is driven to the OPEN end position                                |
| AUTOMATIC<br>CLOSING PHASE |   | The door/gate is driven to the CLOSED end position                              |
| AUTOMATIC<br>STANDBY       |   | The door/gate stands between the end positions                                  |
| AUTOMATIC<br>STANDBY       | O | The door/gate stands at the OPEN end position                                   |
| AUTOMATIC<br>STANDBY       | o | The door/gate stands at the PART OPEN position ("before-end position" top)      |
| AUTOMATIC<br>STANDBY       | C | The door/gate stands at the CLOSED end position                                 |
| AUTOMATIC<br>STANDBY       | R | The door/gate stands at the PART CLOSED position ("before-end position" bottom) |

If the "SELF LOCK" parameter is set to MOD2, 3, 4, 5 or MOD6 in the input menu, the display changes from AUTOMATIC to MANUAL.

| Display             | Description  |
|---------------------|--|
| MANUAL<br>MAIN UP   | The door/gate is driven to the OPEN end position   |
| MANUAL<br>MAIN DOWN | The door/gate is driven to the CLOSED end position |
| MANUAL<br>STANDBY   | The door/gate stands between the end positions     |

## 9.2 Input operating mode



| Function     | Description  | Setting options  | Factory settings |
|--------------|--|--|------------------|
| ENGLISH      | <p>Select the menu language</p> <p><b>Only possible using the LCD display:</b><br/> Alternatively, the menu language can also be selected during the initialisation phase (during initial operation or after a reset). The menu language preset in the factory (ENGLISH) is then displayed as a flashing text for approximately 10 seconds. At this point, the menu language can still be changed during the initialisation procedure. Pressing buttons [+] or [-] will allow you to scroll through and select a language. Save the language you have selected by pressing button [P]. After this, all texts or messages displayed are shown in the language that you have selected.</p> | DEUTSCH<br>ENGLISH<br>FRANCAIS<br>NEDERLANDS<br>DANSK<br>ESPAÑOL<br>POLSKI<br>ČESKY<br>ITALIANO<br>SUOMI<br>SVENSKA<br>TÜRKÇE<br>NORSK<br>MAGYARUL | ENGLISH          |
| FINE-UP      | <p>Fine adjustment of the OPEN position, (+ higher , - lower).<br/> Only visible in systems with electronic limit switch.</p>  | -250 – 250   | 0                |
| FINE-DOWN    | <p>Fine adjustment of CLOSED position, (+ higher , - lower).<br/> Only visible in systems with electronic limit switch.</p>  | -250 – 250   | 0                |
| INC.P.OP     | <p>Adjustment of the PART OPEN position, in relation to the stored OPEN position.<br/> Only visible in systems with electronic limit switch.</p> <p>Automatic teach-in of position:<br/> → “6.5 Setting the electronic intermediate limit position using the LCD display”</p>  | A - teach-in<br>0 = ES-CLOSE<br>–<br>ES-OPEN   | A - teach-in     |
| INC.P.CL     | <p>Adjustment of the pre-limit in the CLOSE position, in relation to the stored CLOSE position.<br/> Only visible in systems with electronic limit switch.</p> <p>Automatic teach-in of position:<br/> → “6.5 Setting the electronic intermediate end position using the LCD display”</p>  | A - teach-in<br>0 = ES-CLOSE<br>–<br>ES-OPEN   | A - teach-in     |
| OPEN TIME    | <p>After the door has opened and all of the safety devices are healthy, the OPEN TIME starts to count down. When the count reaches 0 the door automatically closes to the CLOSE position (AUT.CLOSE).</p> <p>Notice:<br/> By pressing the CLOSE-SWITCH during the open time, the closing run is started.<br/> By pressing the OPEN-SWITCH or STOP button during the open time, the opening time is restarted.<br/> If an automatic closing run is interrupted by the safety edge (SKS) the open time is doubled, and after 3 attempts, automatic closing is aborted.</p>   | 0 - 3600<br>(seconds)<br><br>0 = OFF   | 15               |
| START WARN.  | <p>The START WARN. time delays both the opening and closing door movement after a command has been given.</p>  | 0 - 10<br>(seconds)<br>0 = OFF   | 0 = OFF          |
| FORE-WARNING | <p>The FOREWARNING is activated before carrying out an automatic closing run or closing in impulse mode.</p> <p>Note: This time is added to the START WARN.</p>  | 0 - 300<br>(seconds)<br>0 = OFF  | 0 = OFF          |
| AUT.CLOSE    | MOD1: AUT.CLOSE from OPEN position<br>MOD2: AUT.CLOSE from PART OPEN position<br>MOD3: AUT.CLOSE from OPEN and PART OPEN position<br>MOD4: AUT.CLOSE from all door/gate positions  | MOD1<br>MOD2<br>MOD3<br>MOD4   | MOD1             |



| Function | Description   | Setting options                                | Factory settings |
|----------|---|--|------------------|
| FAST CL. | OFF : The OPEN TIME counts down as usual.<br>MOD2: The OPEN TIME is cut short after the photocell is triggered (the door closes immediately)<br>MOD3: The OPEN TIME is cut short after the photocell is triggered for a minimum of 2 seconds (in order to ignore pedestrian traffic).<br>MOD4 : As MOD2 but only when the door is fully open - not active during door travel  | OFF<br>MOD2<br>MOD3<br>MOD4                    | OFF              |
| RELAY 1  | A relay mode from 1 - 13, 17 - 40 and 60 - 62 can be assigned to all four relays.<br>RELAY 4 can also be programmed with MOD14 - 16.<br><br>MOD1: (Red light 1) flashes during FOREWARNING and is ON during door/gate run*<br>MOD2: (Red light 2) flashes during FOREWARNING and during door/gate run*<br>MOD3: (Red light 3) is ON during FOREWARNING and during door/gate run*<br>MOD4: Impulse signal when there is an OPEN command  | MOD1 - MOD13<br>MOD17 - MOD43<br>MOD60 - MOD62 | MOD6             |
| RELAY 2  | MOD5: Error message<br>MOD6: Door is in the OPEN position<br>MOD7: Door is in the CLOSE position<br>MOD8: Door is not in OPEN position<br>MOD9: Door is not in CLOSE position<br>MOD10: Pre-limit position in the OPEN direction<br>MOD11: Pre-limit position in the CLOSE direction<br>MOD12: Below Pre-limit position in CLOSE direction  | MOD1 - MOD13<br>MOD17 - MOD43<br>MOD60 - MOD62 | MOD7             |
| RELAY 3  | MOD13: Magnetic lock function<br>MOD14 Brake N/O<br>MOD15: Brake N/C<br>MOD16: Brake also remains ON during OPEN TIME<br>MOD17: Safety edge activated (SKS) or test error<br>MOD18: (Red light 4) flashes during FOREWARNING and is OFF during door/gate run<br>MOD19: Above Pre-limit position in OPEN direction<br>MOD21: Test of draw-in protection before opening run (additional module required)  | MOD1 - MOD13<br>MOD17 - MOD43<br>MOD60 - MOD62 | MOD1             |
| RELAY 4  | MOD22: Activation of radio transmission systems 1 and 3 and/or light curtain testing<br>MOD23: (Green light) is on during OPEN position, OFF during FOREWARNING and OFF when door is running*<br>MOD24: Capacitor switching (start) for 230V single phase motors<br>MOD25: Yard light function 2 minutes after OPEN command (including indirectly through impulse)<br>MOD26: Activation of radio 2 transmission system<br>MOD27: Impulse when OPEN position is reached<br>MOD28: Relay OFF<br>MOD29: Door is opening<br>MOD30: Door is closing<br>MOD31: Service, continuous signal once the preset maintenance interval is reached<br>MOD32: Battery operation<br>MOD33: Battery operation not possible<br>MOD34: Fire alarm system signal (BMA signal)<br>MOD35: Photocell activated<br>MOD36: Wicket door locking cylinder<br>MOD37: Testing of stop signal through radio transmission systems 1 and 3<br>MOD38: Testing of light curtain 2 (input 2)<br>MOD39: Fault - relay mimics Fault / error RED LED<br>MOD40: Impulse signal when there is an OPEN command from outside<br>MOD41: Test of radio transmission system 4 in OPEN direction<br>MOD43: Door is opening or closing (running)<br>MOD45: All SKS OK<br>MOD46: Control at Adjustment Mode<br>MOD60: Red traffic light outside (forewarning - flashing, door travel - on)<br>MOD61: Red traffic light outside (forewarning - flashing, door travel - flashing)<br>MOD62: Green traffic light outside<br><br>* If two-way traffic control is activated: traffic light inside | MOD1 - MOD43<br>MOD60 - MOD62                  | MOD14            |
| TL REST  | Switches traffic lights<br>MOD1: In standby mode: OFF<br>MOD2: In standby mode: ON<br>MOD3: In standby mode: OFF after 5 minutes  | MOD1 – MOD3                                    | MOD1             |

## Overview of functions

| Function     | Description  | Setting options              | Factory settings |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
|--------------|--|------------------------------|------------------|---------|-------|----------------|-----------|-------|------------------------------|-----------|-------|------|-----------|-------|------|------|-------|----------------|--------------------|-------|-----------|----------------|-------|-----------|------------------------------|-------|-----------|------|-------|--------------------|----------------|-------------|------|
| SKS          | MOD1: Optical safety edge (OSE)<br>MOD2: Conductive safety edge (8K2)<br>MOD3: Pneumatic airswitch (N/C) with testing<br>MOD4: Light curtain (OSE) without testing (without switching off automatic closing)<br>MOD5: Light curtain (8K2) without testing<br>MOD6: Light curtain (8K2) without testing (without switching off automatic closing)   | A - teach-in<br>MOD1 – MOD5  | A - teach-in     |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| DW TEST      | Selection of testing function for the pneumatic safety edge in the CLOSED position.<br>Only visible if parameter setting SKS = MOD3.<br>OFF : Testing OFF<br>ON : Testing ON   | OFF – ON                     | ON               |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| DW-POINT     | Point at which the pneumatic safety edge is tested (X4 / 5+6).<br>Only indicated if parameter setting SKS = MOD3.<br>Setting is done in increments (only AWG), starting from the lower travel cut-out point.<br><b>Notice:</b> In systems with mechanical limit switches the 'additional limit switch, CLOSED' serves as the DW-POINT.   | A - teach-in<br>0 – 1000     | 20               |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| SKS FUNC     | Safety Edge (SKS) activation response<br>MOD1: Stop + reverse<br>MOD2 Stop + 2 second reversing movement   | MOD1 – MOD2                  | MOD1             |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| SKS REV      | Safety Edge (SKS) override using programmed reverse point - REVERSPPOINT (RP)<br>MOD1: Stop + reverse above REVERSPPOINT (RP), stop only below REVERSPPOINT<br>MOD2 Stop + reverse above REVERSPPOINT (RP), no action below REVERSPPOINT<br>MOD3: Stop + reverse between OPEN position (EO) and CLOSE position (EU)<br><b>Notice:</b><br>In systems with mechanical limit switches the 'additional limit switch, CLOSED S6' serves as the reverse point (RP).  | MOD1 – MOD3                  | MOD1             |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| REVER-SPOINT | Reverse point (RP) before the CLOSED position is reached - Safety Edge override limit.<br>Only visible in systems with electronic limit switch.  | A - teach-in<br>0 - 1000     | 50               |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| LIGHT BARR.  | MOD1: MFZ 2-wire photocell<br>MOD2: N/C contact (relay type) or NPN photocell<br>MOD3: PNP photocell   | A - teach-in<br>MOD1 – MOD3  | A - teach-in     |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| LB FUNC      | <table><thead><tr><th>MODE</th><th>CLOSING</th><th>OPENING</th></tr></thead><tbody><tr><td>MOD1:</td><td>Stop + reverse</td><td>No action</td></tr><tr><td>MOD2:</td><td>Stop + 2s reversing movement</td><td>No action</td></tr><tr><td>MOD3:</td><td>STOP</td><td>No action</td></tr><tr><td>MOD4:</td><td>STOP</td><td>STOP</td></tr><tr><td>MOD5:</td><td>Stop + reverse</td><td>Travel suppression</td></tr><tr><td>MOD6:</td><td>No Action</td><td>Stop + reverse</td></tr><tr><td>MOD7:</td><td>No Action</td><td>Stop + 2s reversing movement</td></tr><tr><td>MOD8:</td><td>No Action</td><td>STOP</td></tr><tr><td>MOD9:</td><td>Travel suppression</td><td>Stop + reverse</td></tr></tbody></table> | MODE                         | CLOSING          | OPENING | MOD1: | Stop + reverse | No action | MOD2: | Stop + 2s reversing movement | No action | MOD3: | STOP | No action | MOD4: | STOP | STOP | MOD5: | Stop + reverse | Travel suppression | MOD6: | No Action | Stop + reverse | MOD7: | No Action | Stop + 2s reversing movement | MOD8: | No Action | STOP | MOD9: | Travel suppression | Stop + reverse | MOD1 – MOD9 | MOD1 |
| MODE         | CLOSING  | OPENING                      |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD1:        | Stop + reverse   | No action                    |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD2:        | Stop + 2s reversing movement   | No action                    |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD3:        | STOP   | No action                    |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD4:        | STOP   | STOP                         |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD5:        | Stop + reverse   | Travel suppression           |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD6:        | No Action  | Stop + reverse               |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD7:        | No Action  | Stop + 2s reversing movement |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD8:        | No Action  | STOP                         |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| MOD9:        | Travel suppression   | Stop + reverse               |                  |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| LB FUNC 2    | Function of photocell 2 - functions as LB FUNC 1 above<br>only visible if INPUT 1 is set for MOD15 (Photocell 2 connected to X4 terminals 9&10)  | MOD1 – MOD9                  | MOD1             |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| PEB POINT    | The photocell is overridden between the PEB POINT and the CLOSE position.<br>(Door/gate in frame function).<br>Only visible in systems with electronic limit switch.   | A - teach-in<br>0 - 7581     | A                |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |
| IMPULS       | MOD1: OPEN – Stop – CLOSE – Stop<br>MOD2: OPEN only<br>MOD3: OPEN only, Stop when door/gate moving<br>MOD4: OPEN only, inactive during door/gate movement<br>MOD5: CLOSE from OPEN position (EO), otherwise OPEN   | MOD1 – MOD5                  | MOD1             |         |       |                |           |       |                              |           |       |      |           |       |      |      |       |                |                    |       |           |                |       |           |                              |       |           |      |       |                    |                |             |      |

| Function           | Description   | Setting options                               | Factory settings  |
|--------------------|---|---|-------------------|
| INPUT 1            | MOD1: PART OPEN button (go to PART OPEN limit position) N/O<br>MOD2: PART OPEN switch (select OPEN or PART OPEN position) OFF/ON<br>MOD3: AUTO CLOSE switch (disable OPEN TIME) N/O<br>MOD4: External CLOCK (permanent open & disable OPEN TIME) N/O<br>MOD5: Fire alarm (BMA) switch 3 (part opening) N/O<br>MOD6: Fire alarm (BMA) switch 1 (emergency closing) N/O<br>MOD7: Fire alarm (BMA) switch 1 (emergency closing) N/C<br>MOD8: Fire alarm (BMA) switch 2 (emergency opening) N/O<br>MOD9: Fire alarm (BMA) switch 2 (emergency opening) N/C<br>MOD10: Ventilation button (part opening) N/O<br>MOD11: Automatic closing button<br>MOD12: Radar motion detectors (special solution in conjunction with INPUT 2)<br>MOD13: Fire alarm (BMA) switch 3 (part opening) N/C<br>MOD14: Wicket door lock<br>MOD15: Photocell 2 - LB FUNC 2 (without FAST CL)<br>MOD16: Forewarning switch<br>MOD17: Impulse button<br>MOD18: Crash sensor<br>MOD19: Deactivate the + and - button at the display for driving UP or DOWN<br>MOD30: OPEN button inside<br>MOD31: OPEN button outside<br>MOD32: CLOSE button (Automatic mode only - no function in deadman control) | A - teach-in<br>MOD1 – MOD17<br>MOD30 – MOD32 | MOD3              |
| INPUT 2<br>(SKS 2) | OFF : NOT active<br>MOD2: Wicket door/gate switch (8K2 Stop only)<br>MOD3: Safety edge OPEN direction (8K2 Stop + reverse)<br>MOD4: Safety edge OPEN direction (8K2 Stop + 2 second reversing movement)<br>MOD5: Battery operation<br>MOD6: Radar motion detectors (special solution in conjunction with INPUT 1)<br>MOD7: Light curtain 2 (8K2 stop + reverse / reversing movement)  | A - teach-in<br>OFF - MOD7                    | OFF               |
| SKS 3              | MOD1: Not in use<br>MOD2: SKS CLOSE<br>MOD3: SKS OPEN<br>MOD4: Stop<br>Only to be used in conjunction with the wireless signal transmission plug-in circuit card in terminal X20.   | MOD1 - MOD4                                   | MOD1              |
| SKS 4              | MOD1: Not in use<br>MOD2: SKS CLOSE<br>MOD3: SKS OPEN<br>MOD4: Stop<br>Only to be used in conjunction with the wireless signal transmission plug-in circuit card in terminal X20.   | MOD1 - MOD4                                   | MOD1              |
| RUNNING-TIME       | Monitoring the maximum running time for an OPEN and CLOSE movement.<br>After programming the limit switches, the teach-in of the system running time is carried out automatically. In the event of a 20% deviation, an ERROR RUNTIME appears.<br>After the automatic teach-in, the running time can be manually changed.  | A - teach-in<br>1 - 300 seconds               | A - teach-in      |
| REVERS. TIME       | Pause time at every change of direction. The reversal time when the safety edge is activated during closing amounts to a quarter of this programmed time.   | 100 - 5000 milliseconds                       | 1000 milliseconds |
| LIMIT SW.          | MOD1: Electronic Limits (AWG)<br>MOD2: Mechanical limit switches (N/C switches)<br>MOD4: Electronic Limits (AWG with negative impulses - Inveter operation only)<br>MOD5: Electronic Limits (AWG) with extra N/C limit switch in CLOSE position<br>MOD6: Electronic Limits (AWG with negative impulses - Inveter operation only)  | A - teach-in<br>MOD1 – MOD6                   | A - teach-in      |

## Overview of functions

| Function     | Description   | Setting options     | Factory settings |
|--------------|---|---------------------|------------------|
| SELF LOCK    | MOD1: Automatic operation<br>MOD2: Manual operation for OPEN + CLOSE with CESD evaluation<br>MOD3: Manual operation for CLOSE with SKS evaluation<br>MOD4: Manual operation for OPEN with SKS evaluation<br>MOD5: Manual operation for OPEN + CLOSE without SKS evaluation<br>MOD6: Manual operation for CLOSE without SKS evaluation   | MOD1 – MOD6         | MOD1             |
| POWER        | Automatic power monitoring (monitoring the rotational speed)<br>Error message is displayed if the door cannot move freely or is obstructed.<br>Setting the sensitivity for both directions of travel.<br>A reading giving the power value (rotational speed) is shown during opening and closing runs. If the power monitoring facility is activated, a value must be set that is lower than the lowest value displayed during door or gate travel. The larger the difference, the less sensitively the power monitoring reacts.<br>The power monitoring facility is only activated if the value is set to > 0. | OFF<br>0 – 999      | 10               |
| RESET MSBUS  | All MSBUS addresses assigned will be reset.<br>After restarting the control, all MSBUS devices connected will be re-addressed.<br>Refer to the instruction manual for the MSBUS device for detailed information.  | ON / OFF            | OFF              |
| RESTART      | Controller is restarted if function is activated.   | ON / OFF            | OFF              |
| FACTORY SET. | Resets all parameters of the control to the factory settings.<br>OFF: No reset<br>MOD10: Total reset (complete with 15s autoclose - as per this manual)   | OFF<br>MOD1 – MOD99 | MOD10            |
| RESET        | OFF: No reset<br>MOD2: Partial reset 1 (without FU parameters)<br>MOD3: Partial reset 2 (everything except limit positions / limit switch system)<br>MOD4: Total reset (everything returned to factory default setting)   | OFF<br>MOD2 – MOD4  | OFF              |
| PIN NO. 2    | Input and selection of a PIN code for programming a maintenance interval.<br>After entering the PIN code, the second programming level is accessible.<br>A maintenance interval can now be set at the parameter SERVICE. Input level 2 goes off again after the power has been switched off, or goes off automatically after 10 minutes. The PIN code can only be changed at the second programming level.  | 0 – 9999            | 1111             |
| SERVICE      | OFF: Maintenance indicator not activated<br>Setting a maintenance interval:-<br>After the preset door cycle has expired, a maintenance message (LED / LCD) is given.<br>If a relay output is programmed to MOD31, the relay is triggered (continuous signal).<br>Only visible after input level 2 is activated with the parameter PIN NO. 2.  | OFF<br>0 – 9999     | OFF              |
| INVERTER     | Inverter frequency converter connected (ON / OFF)<br>Refer to CS310FU instruction manual for detailed information<br>OFF: NO Inveter (FU) connected<br>MOD2: Inverter (FU) connected - mode 2<br>MOD3: Inverter (FU) connected - mode 3   | OFF<br>MOD2 – MOD3  | OFF              |
| EXPERT MENU  | Activation and deactivation of expert setting.<br>In the factory setting OFF, only a limited choice of parameters appears in INPUT mode.<br>If this parameter is set to ON, all parameters in the input menu can be called up and set.<br>OFF: Limited number of parameter settings:<br>– Menu language<br>– INC.P.OP<br>– OPEN TIME<br>– FOREWARNING<br>– FAST CL.<br>– REVERS- POINT.<br>– INPUT 1<br>– SELF LOCK<br>– EXPERT MENU<br>ON: Access to all parameters as listed in Chapter 10.2.   | ON – OFF            | OFF              |

## Explanation of the relay modes:

### A. Traffic light functions

| MOD   | Description                      | CLOSED position       | OPEN position         | Forewarning | Door/gate run |
|-------|----------------------------------|-----------------------|-----------------------|-------------|---------------|
| MOD1  | Red traffic light 1 <sup>3</sup> | ON / OFF <sup>1</sup> | OFF <sup>2</sup>      | Flashing    | ON            |
| MOD2  | Red traffic light 2 <sup>3</sup> | ON / OFF <sup>1</sup> | OFF <sup>2</sup>      | Flashing    | Flashing      |
| MOD3  | Red traffic light 3 <sup>3</sup> | ON / OFF <sup>1</sup> | OFF <sup>2</sup>      | ON          | ON            |
| MOD18 | Red traffic light 4 <sup>3</sup> | OFF                   | OFF                   | Flashing    | OFF           |
| MOD23 | Green traffic light <sup>3</sup> | OFF                   | ON <sup>2</sup>       | OFF         | OFF           |
| MOD60 | Red traffic light 1 <sup>4</sup> | ON / OFF <sup>1</sup> | ON / OFF <sup>2</sup> | Flashing    | ON            |
| MOD61 | Red traffic light 2 <sup>4</sup> | ON / OFF <sup>1</sup> | ON / OFF <sup>2</sup> | Flashing    | Flashing      |
| MOD62 | Green traffic light <sup>4</sup> | OFF                   | ON <sup>2</sup>       | OFF         | OFF           |

<sup>1</sup> depending upon parameter TL REST

<sup>2</sup> If two-way traffic control is activated: dependent on inside or outside OPEN command

<sup>3</sup> If two-way traffic control is activated: traffic light inside

<sup>4</sup> If two-way traffic control is activated: traffic light outside

### B. Position status

| MOD   | Description                                  | Remarks   |
|-------|--|---|
| MOD6  | OPEN position                                | The relay contact closes when the door/gate is in the OPEN position.  |
| MOD7  | CLOSED position                              | The relay contact closes when the door/gate is in the CLOSED position.  |
| MOD8  | Not OPEN position                            | The relay contact closes when the door/gate is not in the OPEN position.  |
| MOD9  | Not CLOSED position                          | The relay contact closes when the door/gate is not in the CLOSED position.  |
| MOD10 | Pre-limit OPEN / PART OPEN position          | The relay contact closes when the door/gate is in the pre-limit OPEN / part OPEN position.  |
| MOD11 | Pre-limit CLOSED position                    | The relay contact closes when the door/gate is in the pre-limit CLOSED position.  |
| MOD12 | Between pre-limit CLOSED and CLOSED position | The relay contact closes when the door/gate is in the area between the pre-limit CLOSED and CLOSED position (below pre-limit CLOSED). |
| MOD19 | Between pre-limit OPEN and OPEN position     | The relay contact closes when the door/gate is in the area between the pre-limit OPEN and OPEN position (above pre-limit OPEN).       |

## C. Impulse signals

| MOD   | Description  | Remarks  |
|-------|--|--|
| MOD4  | Impulse when there is an OPEN command                  | The relay contact closes for 1 second when the door/gate receives an OPEN command.<br>This impulse can be used to control lights, for instance.                  |
| MOD27 | Impulse when OPEN position is reached                  | The relay contact closes for 2 seconds when the door/gate reaches the OPEN position.<br>This impulse can be used, for instance, to enable a following photocell. |
| MOD40 | Impulse when there is an OPEN command from the outside | The relay contact closes for 1 second when the door/gate receives an OPEN command from the outside.<br>This impulse can be used to control lights, for instance. |

## D. Brake functions (only adjustable on relay 4)

| MOD   | Description                       | Remarks   |
|-------|-----------------------------------|---|
| MOD14 | Brake (N/O)                       | Switching the dc output of the brake rectifier via the relay to achieve a quicker brake function. The contact is closed, and the brake released as a result, as soon as the door/gate moves.  |
| MOD15 | Brake (N/C)                       | Switching the dc output of the brake rectifier via the relay to achieve a quicker brake function. The contact is opened, and the brake released as a result, as soon as the door/gate moves.  |
| MOD16 | Brake remains ON during open time | Switching the dc output of the brake rectifier via the relay to achieve a quicker brake function. The contact is closed, and the brake released as a result, as soon as the door/gate moves. To obtain a smoother stop by the door/gate in the OPEN position, the relay contact remains energised in the OPEN position (OPEN TIME). |

## E. Error messages

| MOD   | Description                 | Remarks   |
|-------|-----------------------------|---|
| MOD5  | Error message               | The relay contact opens when a stop command is given or an error occurs for more than 5 seconds.<br>All errors described in Section 10 result in activation of the relay.                                     |
| MOD17 | SKS activated (safety edge) | The relay contact closes when the safety edge is activated. An error with the safety edge or an unsuccessful test is shown via MOD5.  |
| MOD35 | Light Barr. (Photocell)     | The relay contact shows the photocell status of terminals X4 (3&4), the relay contact is energised as below :-<br>Relay ON: Photocell signal is OK<br>Relay OFF: Light beam interrupted or fault in photocell |
| MOD39 | FAIL                        | The relay contact shows the status of the fail / error RED LED  |

## F. Movement signal

| MOD   | Description                | Remarks  |
|-------|----------------------------|--|
| MOD29 | Door is OPENING            | The relay contact closes during door/gate opening direction. |
| MOD30 | Door is CLOSING            | The relay contact closes during door/gate closing direction. |
| MOD43 | Door is OPENING or CLOSING | The relay contact closes during door/gate operation          |



## G Functions for external accessories

| MOD   | Description  | Remarks  |
|-------|--|--|
| MOD13 | Magnetic lock function   | The relay contact closes before every door movement.<br>When the door is stationary, the relay contact is open.<br>A delay of 0.5 seconds is programmed before each door movement.   |
| MOD20 | Activation of infrared transmission system   | Before every CLOSE command, the infrared transmission system is activated and remains active for the duration of the closing run.<br>This activation results in a closing run delay of approx. 0.5 seconds.  |
| MOD21 | Test of draw-in protection   | The relay generates a test signal (contact closes) when the CLOSED position is reached and expects, as a reaction to the test signal, that the stop circuit is interrupted.  |
| MOD22 | Activation of radio 1 transmission system, Testing light curtain 1 (8.2 kΩ or OSE) | The relay generates a test signal (contact closes) when the OPEN position is reached and expects, as a reaction to the test signal, that the safety edge circuit is activated.   |
| MOD24 | Motor start capacitor  | At every open or close command the relay contact closes for approx. 1 second. With the aid of this relay, an additional starting capacitor that is required for AC applications is switched on, to ensure safe starting of the motor.  |
| MOD25 | Yard light function  | At every OPEN command, the relay contact closes for 2 minutes and can therefore be used to control a light.  |
| MOD26 | Activation of radio 2 transmission system  | Before every CLOSE command the radio transmission system is activated by an impulse. The duration of the activation must be set on the transmission system. This activation results in a closing run delay of approx. 0.5 seconds.   |
| MOD28 | Relay OFF  | The relay is always open.  |
| MOD36 | Pneumatic cylinder for locking wicket door (threshold-less door system).           | Every time an OPEN command is given, the relay is activated and controls a pneumatic cylinder which mechanically locks the wicket door that is incorporated in the main door. The locking position of the cylinder is queried through a limit switch. The door only starts moving after this limit switch has been released. The relay remains activated until the CLOSED position has been reached again. |
| MOD37 | Testing the stop signal through radio transmission systems 1 and 3                 | The relay generates a test signal when the OPEN position is reached and expects, as a reaction to the test signal, that the stop circuit is interrupted.   |
| MOD38 | Testing light curtain 2 (8.2 kΩ)<br>Connection to input 2 (X4 / 11&12)             | The relay generates a test signal when the OPEN position is reached and expects, as a reaction to the test signal, that there is an interruption to input 2.   |

## H. Input-dependent messages

| MOD   | Description         | Remarks   |
|-------|---------------------|---|
| MOD32 | Battery mode        | Active during battery operation. Input 2 bridged (setting MOD5).  |
| MOD33 | Not in battery mode | Active during mains operation. Input 2 open (setting MOD5)<br>When programmed with MOD32/33, the relays work as delayed change-over contacts and follow the signal at input 2 if set to MOD5. In this case, input 2 is supplied with a control signal from the uninterruptable power supply (UPS) system which is responsible for switching between mains power and the UPS power supply. |
| MOD34 | BMA signal          | Triggered if BMA (fire alarm system) active.<br>Follows the signal at input 1 if set to MOD5-9 / 13.<br>In this case, input 1 is supplied with a control signal from the fire alarm system, and depending on the setting, opens or closes the door to an end position or an intermediate position.  |

## Key to inputs:

### A. Input 1 functions

| MOD  | Description                                       | Remarks   |
|------|---|---|
| MOD1 | PART OPEN button                                  | When the button is pressed (input 1), the door opens as far as the PART OPEN intermediate position.   |
| MOD2 | PART OPEN switch                                  | Closed: All OPEN commands go to the PART OPEN position.<br>Open: All OPEN commands go to the OPEN position.   |
| MOD3 | AUTO CLOSE switch                                 | Closed: No automatic CLOSING (OPEN TIME is ignored)<br>Open: Automatic CLOSING is activated (only if OPEN TIME > 0)   |
| MOD4 | External CLOCK (permanent open)                   | The door opens once the contact closes and remains in the OPEN position (OPEN TIME is paused) until the contact opens. The door then closes automatically (only if OPEN TIME > 0). This function can be overridden by pressing the CLOSE button. The door CLOSES.   |
| MOD5 | Fire alarm (BMA) switch 3 (partial opening) N/O   | Open: Normal operation<br>Closed: Partial opening of the door. The BES-OPEN position is approached from either direction.<br><br>BUTTON: No function<br>PHOTOCELL: Door stops and briefly reverses (only in CLOSING direction), and closes again after 5 seconds<br>/ SKS<br>STOP: Emergency closing interrupted as long as this is activated |
| MOD6 | Fire alarm (BMA) switch 1 (emergency closing) N/O | Open: Normal operation<br>Closed: Emergency closing of door<br><br>BUTTON: No function<br>PHOTOCELL: Door stops and briefly reverses; closing again after 5 seconds<br>/ SKS<br>STOP: Emergency closing interrupted as long as this is activated  |
| MOD7 | Fire alarm (BMA) switch 1 (emergency closing) N/C | Closed: Normal operation<br>Open: Emergency closing of door<br><br>BUTTON: No function<br>PHOTOCELL: Door stops and briefly reverses; closing again after 5 seconds<br>/ SKS<br>STOP: Emergency closing interrupted as long as this is activated  |
| MOD8 | Fire alarm (BMA) switch 2 (emergency opening) N/O | Open: Normal operation<br>Closed: Emergency opening of door<br><br>BUTTON: No function<br>PHOTOCELL: No function<br>/ SKS<br>STOP: Emergency opening interrupted as long as this is activated.<br>Automatic closing is disabled after fire alarm signal (BMA).  |
| MOD9 | Fire alarm (BMA) switch 2 (emergency opening) N/C | Closed: Normal operation<br>Open: Emergency opening of door<br><br>BUTTON: No function<br>PHOTOCELL: No function<br>/ SKS<br>STOP: Emergency opening interrupted as long as this is activated.<br>Automatic closing is disabled after fire alarm signal (BMA).  |

| MOD   | Description                                     | Remarks  |
|-------|---|--|
| MOD10 | Ventilation button N/O                          | Open: Normal operation<br>Closed: Partial opening of the door or gate. The BES-CLOSE position is approached from either direction.   |
| MOD11 | Automatic closing button                        | 1st activation: No automatic CLOSING (OPEN TIME is ignored)<br>2nd activation: Automatic CLOSING activated (OPEN TIME > 0)<br>3rd activation: No automatic CLOSING (OPEN TIME is ignored)<br>...   |
| MOD12 | Radar motion detectors (special solution)       | in conjunction with input 2 (MOD6). See key to input 2.  |
| MOD13 | Fire alarm (BMA) switch 3 (partial opening) N/C | Open: Normal operation<br>Closed: Partial opening of the door. The BES-OPEN position is approached from either direction.<br><br>BUTTON: No function<br>PHOTOCELL: Door stops and briefly reverses (only in CLOSING direction), and closes again after 5 seconds<br>/ SKS<br>STOP: Emergency closing interrupted as long as this is activated. |
| MOD14 | Wicket door lock                                |  |
| MOD15 | Photocell 2                                     | A second photocell can be installed by setting INPUT 1 to MOD15. This photocell is not effected by the FAST CL function  |
| MOD16 | Forewarning switch                              |  |
| MOD17 | Impulse button                                  |  |
| MOD18 | Crash switch                                    | A N/C switch can be connected as a break out / crash switch. The door will stop and show the error 'ERROR CRASH SENSOR' if the switch is activated. Reset can be achieved with a 5s press of the stop button or by turning the power OFF/ON.   |
| MOD30 | OPEN button - inside                            | When the button is pressed, the door opens to the OPEN position. The traffic light inside changes to green.  |
| MOD31 | OPEN button - outside                           | When the button is pressed, the door opens to the OPEN position. The traffic light outside changes to green.   |
| MOD32 | CLOSE button                                    | When the button is pressed, the door closes to the CLOSED position. (Automatic mode only - will not operate in deadman mode)   |

## B. Functions of input 2

| MOD  | Description                                   | Remarks  |
|------|---|--|
| OFF  | OFF   | Not active   |
| MOD2 | Wicket door switch (8.2 kΩ)                   | Stop if activated  |
| MOD3 | OPEN safety edge (8.2 kΩ)                     | Stop + reverse   |
| MOD4 | OPEN safety edge (8.2 kΩ)                     | Stop + brief reverse   |
| MOD5 | Battery operation (MDFU special solution) N/O | Active if power supplied by battery. Relay switchover MOD32 / MOD33.   |
| MOD6 | Radar motion detectors (special solution) N/O | OPEN commands from input 2 lead to the OPEN position if input 1 (MOD12) is ON.<br>OPEN commands from input 2 lead to the PART OPEN position if input 1 (MOD12) is OFF.<br>All OPEN commands from X3, X7, X13 and X9 always lead to the OPEN position.<br>Input 1 is of no significance here. |
| MOD7 | Light curtain 2 (8.2 kΩ)                      | Acts in same way as light curtain 1 (SKS MOD4): Stop + reverse<br>Type of reversing (reverse / reversing movement) is also adopted.  |

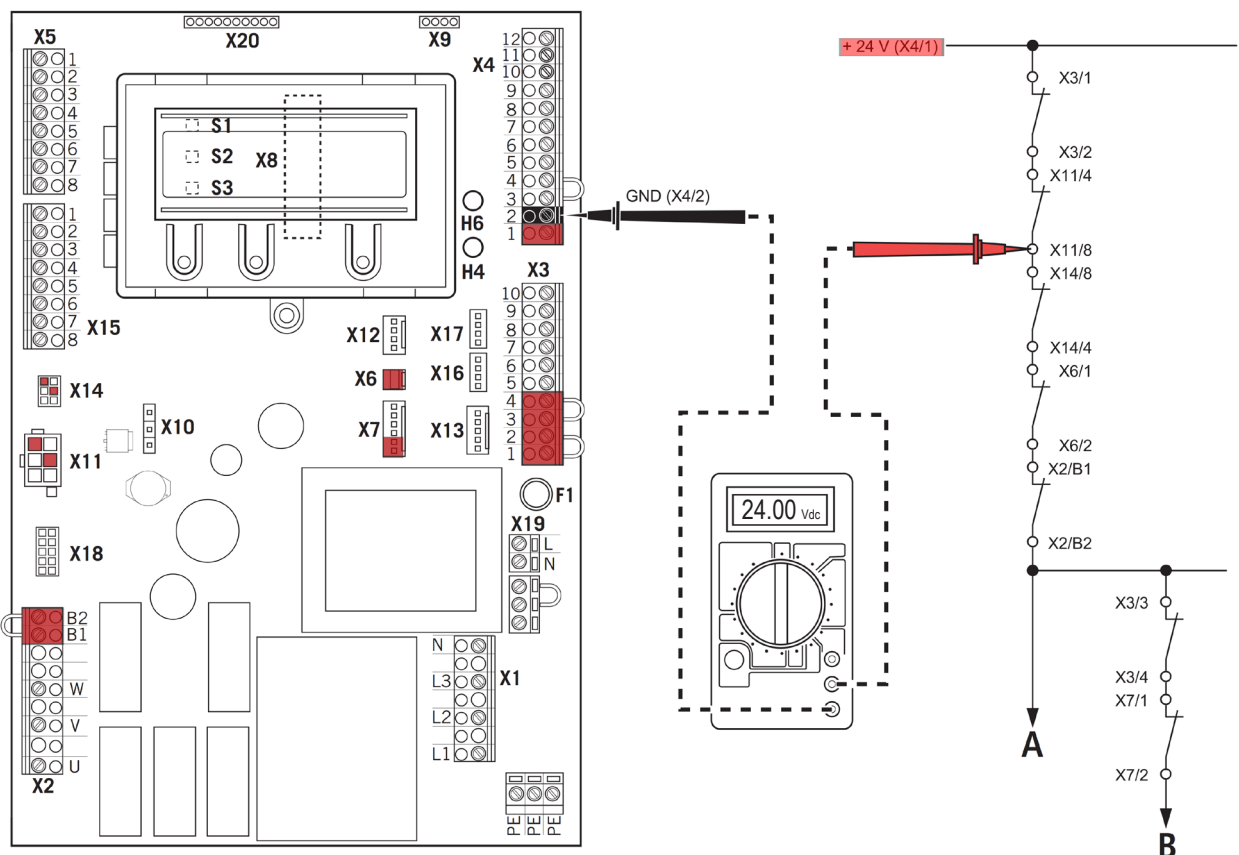
## 9.3 Diagnosis / error memory operating mode



| Display      | Meaning  | Condition  |
|--------------|--|--|
| UPPER SWITCH | UPPER end position (OPEN)  | OFF: End position reached<br>ON: End position not reached  |
| LOWER SWITCH | LOWER end position (CLOSED)  | OFF: End position reached<br>ON: End position not reached  |
| UP-SWITCH    | Command button / OPEN input  | ON: Button activated / input active<br>OFF: Button not activated / input not active                            |
| DOWN-SWITCH  | Command button / CLOSE input   | ON: Button activated / input active<br>OFF: Button not activated / input not active                            |
| INPUT 1      | INPUT 1 (X4 / 9 & 10)  | ON: Input 1 active<br>OFF: Input 1 not active  |
| INPUT 2      | INPUT 2 (X4 / 11 & 12)   | ON: Input 2 active<br>OFF: Input 2 not active<br>(only visible if INPUT 2 set to MOD5 / MOD6)                  |
| SKS          | Closing edge safety device 1<br>(Airswitch (DW), 8.2kΩ or<br>optosensor OSE) (X4 / 5-8)<br>CLOSING direction                         | ON: System healthy<br>OFF: System interrupted (fault)  |
| SKS 2        | Closing edge safety device 2<br>(8.2 kΩ)<br>INPUT 2 (X4 / 11+12)<br>OPEN direction   | ON: System healthy<br>OFF: System interrupted (fault)<br>(only visible if INPUT 2 set to MOD3 / MOD4)          |
| STOP 2       | Safety circuit 2<br>Wicket door switch (8.2 kΩ)<br>INPUT 2 (X4 / 11+12)  | ON: Safety circuit healthy<br>OFF: Safety circuit interrupted (fault)<br>(only visible if INPUT 2 set to MOD2) |
| SKS 3        | Closing edge safety device 3<br>(8.2 kΩ or optosensor OSE)<br>Radio transmission system<br>channel 1<br>OPENING or CLOSING direction | ON: System healthy<br>OFF: System interrupted (fault)<br>(only visible if SKS 3 set to MOD2 / MOD3)            |
| STOP 3       | Safety circuit 3<br>Radio transmission system<br>channel 1   | ON: Safety circuit healthy<br>OFF: Safety circuit interrupted (fault)<br>(only visible if SKS 3 set to MOD4)   |
| SKS 4        | Closing edge safety device 4<br>(8.2 kΩ or optosensor)<br>Radio transmission system<br>channel 2<br>OPENING or CLOSING direction     | ON: System healthy<br>OFF: System interrupted (fault)<br>(only visible if SKS 4 set to MOD2 / MOD3)            |
| STOP 4       | Safety circuit 4<br>Radio transmission system<br>channel 2   | ON: Safety circuit healthy<br>OFF: Safety circuit interrupted (fault)<br>(only visible if SKS 4 set to MOD4)   |
| MPULS INPUT  | Command button / IMPULSE input   | ON: Button activated / input active<br>OFF: Button not activated / input not active                            |
| SWITCH CLOCK | Weekly timer (plug-in at X10)  | ON: Timer activated<br>OFF: Timer not activated  |
| LIGHT BARR.  | Photocell  | ON: Photocell signal OK<br>OFF: Light beam interrupted or fault in photocell                                   |
| SAFETY CIRC. | Safety circuit 1<br>Emergency stop of door system  | ON: Safety circuit healthy<br>OFF: Safety circuit interrupted  |
| STOP         | STOP command button<br>(button on enclosure)   | ON: Button not activated<br>OFF: Button activated  |

| Display                             | Meaning  | Condition   |
|-------------------------------------|--|---|
| ROT FIELD                           | Shows currently set rotational direction of operator.  | RIGHT: Setting for clockwise rotating field<br>LEFT: Setting for anticlockwise rotating field   |
| CYCLE                               | Door cycle counter<br>(1xOPEN + 1xCLOSE = 1 cycle)<br>Counts only if the limits are reached.   | Displays number of full door cycles completed so far<br>Counts complete door cycles only, i.e OPEN & CLOSE is one cycle.<br>Reversions of a closing door due to photocell, safety edge, open commands etc are not counted.  |
| SERVICE                             | Service alarm function<br>Set via INPUT parameter<br>SERVICE and PIN NO. 2   | OFF: Maintenance indicator not activated<br>0 - 9999: Maintenance indicator activated<br>Displays the number of door cycles left until a maintenance message is sent.   |
| AWG                                 | Shows position of absolute value encoder (digital limits)  | Displays the current door position (value) as seen by the encoder.  |
| ERROR >>><br>COUNT >>><br>CYCLE >>> | Controller error / fault memory<br><br>Error messages from the control unit can be read out here with information on the frequency and cycle.<br>The list of error messages can be scrolled through using buttons [+] and [-] on the LCD display.<br><br>→ "10.1 Error message shown on LCD display" | Display changes at 2-second intervals between<br>– error / fault type,<br>– frequency of occurrence, and<br>– indication of cycle in which error last occurred.<br><br><b>With the log storing the individual errors along with the number of times the error has occurred and the last cycle at which it happened, fault finding of intermittant faults becomes easier.</b><br><br>If the quantity given under 'COUNT' is 0, this means that this particular fault has never occurred before.<br><br>Deleting the error log:<br>Press buttons [+] and [-] at the same time for approx. 2 seconds.<br>Every error message must be individually deleted. |

## 9.4 Stop / Safety Circuit test points



The multimeter must be set for 24 Vdc. Measure at all test points on the diagram to locate the fault.

**Circuit A - Emergency Stop / Safety Circuit**  
**Circuit B - Stop**

## 10. Error messages and rectification

### 10.1 Error message shown on LCD display

| Fault / error message   | Cause   | Rectification  |
|---|---|--|
| System does not respond   | <ul style="list-style-type: none"> <li>– No voltage supply.</li> </ul>  | <ul style="list-style-type: none"> <li>– Check the voltage supply of the operator and the controls.</li> </ul>   |
| Door travels in the CLOSE direction when the OPEN button is pressed or travels in the OPEN direction when the CLOSE button is pressed | <ul style="list-style-type: none"> <li>– Rotating field (phase rotation) is incorrect.</li> </ul>   | <ul style="list-style-type: none"> <li>– Check the phase rotation and establish clockwise rotating field if necessary.</li> </ul>  |
| FAULT – X   | <ul style="list-style-type: none"> <li>– Internal software or hardware fault.</li> </ul>  | <ul style="list-style-type: none"> <li>– Restart control.</li> </ul>   |
| SAFETY CIRC.  | <ul style="list-style-type: none"> <li>– The safety circuit is interrupted.<br/>X3 / 1+2 Emergency stop, slack rope switch<br/>X6 / 1+2 Internal ON / OFF switch<br/>X11 / 4+8 Safety circuit for operator<br/>X2 / B1+B2 Jumper<br/>X3 / 3+4 External stop button<br/>X7 / 1+2 Internal stop button</li> </ul> | <ul style="list-style-type: none"> <li>– Check safety circuits at connections indicated, localise interruption and rectify problem.</li> </ul>   |
| ERROR INVERTER  | <ul style="list-style-type: none"> <li>– A problem has arisen in the frequency converter connected.</li> </ul>  | <ul style="list-style-type: none"> <li>– Identify cause.</li> <li>– Acknowledge with STOP.</li> <li>– Turn power on and off.</li> </ul>  |
| ERROR RUNTIME   | <ul style="list-style-type: none"> <li>– The programmed RUNNING TIME has been exceeded.</li> </ul>  | <ul style="list-style-type: none"> <li>– Check the path of the door and the running time.</li> <li>– Re-programme the running time, if necessary.</li> </ul>   |
| ERROR AWG   | <ul style="list-style-type: none"> <li>– Communication between absolute value encoder and control is interrupted and/or has broken down.</li> </ul>   | <ul style="list-style-type: none"> <li>– Check the cable and socket connections at the control panel (X11) <u>and</u> door operator. Replace if necessary.</li> </ul>  |
| TERM SWITCH FAIL  | <ul style="list-style-type: none"> <li>– The door has travelled beyond the programmed end position area (limit positions).</li> <li>– The manual override is engaged (if wired through limit switches).</li> <li>– The end positions have not yet been programmed.</li> </ul>                                   | <ul style="list-style-type: none"> <li>– Move the door back into the programmed area using the emergency manual override facility.</li> <li>– Re-engage the manual override The power must also be turned OFF/ON to clear this condition.</li> <li>– Program the end positions first.</li> </ul> |
| ERROR REVOLUTION  | <ul style="list-style-type: none"> <li>– The power monitoring has been triggered - door is stalling / jammed.</li> </ul>  | <ul style="list-style-type: none"> <li>– Check the door for any mechanical impairment or damage.</li> <li>– Check the incoming supply voltage is stable.</li> <li>– The programmed POWER is set incorrectly.</li> </ul>  |
| ERROR DIRECTION   | <ul style="list-style-type: none"> <li>– The rotating field present is not a clockwise rotating field.</li> </ul>   | <ul style="list-style-type: none"> <li>– Check the rotating field (incoming supply phase rotation) and change the direction, if necessary.<br/>→ '6.1 Checking the direction of rotation / direction of travel'</li> </ul>   |
| ERROR POSITION  | <ul style="list-style-type: none"> <li>– The rotational speed of the absolute value encoder (AWG) deviates from the taught-in rated speed.</li> </ul>   | <ul style="list-style-type: none"> <li>– Disconnect from the power supply and inspect the control shaft of the AWG on the door operator.</li> </ul>  |
| ERROR SKS CLS.  | <ul style="list-style-type: none"> <li>– Closing safety edge device 1 is faulty in the CLOSING direction<br/>→ (X4 / 5-8).</li> </ul>   | <ul style="list-style-type: none"> <li>– Check the closing safety edge and the spiral cable.</li> </ul>  |
| ERROR SKS OPEN 2  | <ul style="list-style-type: none"> <li>– Closing safety edge device 2 is faulty in the OPENING direction<br/>→ (X4 / 11+12) input 2</li> </ul>  | <ul style="list-style-type: none"> <li>– Check the opening safety edge and the spiral cable.</li> </ul>  |
| ERROR STOP 2  | <ul style="list-style-type: none"> <li>– Safety circuit 2 is interrupted.<br/>wicket door switch 8.2 kΩ<br/>→ (X4 / 11+12) input 2</li> </ul>   | <ul style="list-style-type: none"> <li>– Check wicket door switch.</li> </ul>  |
| ERROR SKS CLS. 3  | <ul style="list-style-type: none"> <li>– Closing safety edge device 3 is faulty in the CLOSING direction<br/>→ RADIO transmission system</li> </ul>   | <ul style="list-style-type: none"> <li>– Check closing safety edge device.</li> <li>– Test the RADIO transmission system.</li> </ul>   |



| Fault / error message | Cause  | Rectification   |
|-----------------------|--|---|
| ERROR SKS OPEN 3      | <ul style="list-style-type: none"> <li>Opening safety edge device 3 is faulty in the OPENING direction<br/>→ RADIO transmission system</li> </ul>  | <ul style="list-style-type: none"> <li>Check opening safety edge device.</li> <li>Test the RADIO transmission system.</li> </ul>  |
| ERROR STOP 3          | <ul style="list-style-type: none"> <li>Safety circuit 3 is interrupted.<br/>→ RADIO transmission system</li> </ul>   | <ul style="list-style-type: none"> <li>Test the safety circuit.</li> <li>Test the RADIO transmission system.</li> </ul>   |
| ERROR SKS CLS. 4      | <ul style="list-style-type: none"> <li>Closing safety edge device 4 is faulty in the CLOSING direction<br/>→ RADIO transmission system</li> </ul>  | <ul style="list-style-type: none"> <li>Check closing safety edge device.</li> <li>Test the RADIO transmission system.</li> </ul>  |
| ERROR SKS OPEN 4      | <ul style="list-style-type: none"> <li>Opening safety edge device 4 is faulty in the OPENING direction<br/>→ RADIO transmission system</li> </ul>  | <ul style="list-style-type: none"> <li>Check opening safety edge device.</li> <li>Test the RADIO transmission system.</li> </ul>  |
| ERROR STOP 4          | <ul style="list-style-type: none"> <li>Safety circuit 4 is interrupted.<br/>→ RADIO transmission system</li> </ul>   | <ul style="list-style-type: none"> <li>Test the safety circuit.</li> <li>Test the RADIO transmission system.</li> </ul>   |
| ERROR SKS TEST        | <ul style="list-style-type: none"> <li>Testing of pneumatic (DW) airswitch unsuccessful.</li> <li>Testing of RADIO 1 or RADIO 2 transmission system failed.</li> </ul>                                 | <ul style="list-style-type: none"> <li>Check the pneumatic safety edge, spiral cable and rubber profile.</li> <li>Check the DW-POINT setting.</li> <li>Test the RADIO transmission system.</li> <li>Check whether the right relay MOD was selected for the transmission system.</li> <li>→ "G Functions for external accessories" on page 27</li> </ul> |
| ERROR LIGHT BAR       | <ul style="list-style-type: none"> <li>The photocell attached shows a permanent fault.</li> </ul>  | <ul style="list-style-type: none"> <li>Check photocell (function and alignment).</li> <li>Check cabling.</li> </ul>   |
| ERROR LB TEST         | <ul style="list-style-type: none"> <li>Testing of two-wire photocell failed.</li> </ul>  | <ul style="list-style-type: none"> <li>Check photocell (function and alignment).</li> <li>Check cabling.</li> </ul>   |
| ERROR STOP TEST       | <ul style="list-style-type: none"> <li>Testing of wicket door switch (8.2 kΩ) failed.<br/>→ Input 2</li> </ul>   | <ul style="list-style-type: none"> <li>Check wicket door switch.</li> </ul>   |
| ERROR TRAPIN          | <ul style="list-style-type: none"> <li>Draw-in protection testing (additional module) failed.<br/>→ Relay MOD21</li> </ul>   | <ul style="list-style-type: none"> <li>Check photocell (function and alignment).</li> <li>Check cabling.</li> </ul>   |
| ERROR CYLINDER        | <ul style="list-style-type: none"> <li>The monitoring limit switch for the lock system for threshold-less wicket doors has failed to trigger within 10 seconds of entering an OPEN command.</li> </ul> | <ul style="list-style-type: none"> <li>Check limit switch for the cylinder.</li> </ul>  |
| ERROR MSBUS           | <ul style="list-style-type: none"> <li>Communication between the control and the MS BUS module attached is interrupted.</li> </ul>   | <ul style="list-style-type: none"> <li>Check the cable and socket connections and replace, if necessary.</li> </ul>   |
| ERROR CRASH SENSOR    | <ul style="list-style-type: none"> <li>The monitoring crash switch for the break away system has activated.<br/>→ Input 1</li> </ul>   | <ul style="list-style-type: none"> <li>Identify cause.</li> <li>Acknowledge with 5s STOP.</li> <li>Turn power on and off.</li> </ul>  |

After rectifying the cause of the error, the power supply to the control must be turned off once and/or the control restarted (> INPUT menu > parameter RESTART > ON) in the event of the following errors

- ERROR DIRECTION
- ERROR RUNTIME
- TERM SWITCH FAIL

## 10.2 Error message through LED indicator

### GREEN LED H4 (main circuit board or CSI button unit)

| Fault / error message | LED display | Remarks  |
|-----------------------|-------------|--|
| No operating voltage  | Off         | <ul style="list-style-type: none"> <li>– Check the voltage supply of the operator and the controls.</li> </ul> |

### RED LED H6 (main circuit board or CSI button unit)

| Fault / error message | LED display   | Remarks   |
|-----------------------|---|---|
| SAFETY CIRC.          | Flashes 1x  | <p>Safety circuit is interrupted.</p> <ul style="list-style-type: none"> <li>– Check safety circuit, localise interruption and rectify problem.</li> </ul>  |
| ERROR AWG             | Flashes 2x  | <p>Signal transmission between encoder and control interrupted and/or broken down.</p> <ul style="list-style-type: none"> <li>– Check the cable and socket connections at the control panel (X11) <u>and</u> door operator. Replace if necessary.</li> </ul>  |
| TERM SWITCH FAIL      | Flashes 3x  | <p>The door has travelled beyond the programmed end position area, the manual override is / has been engaged, or the end positions have not yet been programmed.</p> <ul style="list-style-type: none"> <li>– Move the door back into the programmed area using the emergency manual override facility.</li> <li>– Re-engage the manual override The power must also be turned OFF/ON to clear this condition.</li> <li>– Program the end positions first.</li> </ul> |
| ERROR DIRECTION       | Flashes 4x  | <p>The rotating field present is not a clockwise rotating field.</p> <ul style="list-style-type: none"> <li>– Check the rotating field and change the direction, if necessary.</li> </ul> <p>→ "6.1 Checking the direction of rotation / direction of travel"</p>   |
| ERROR REVOLUTION      | Flashes 5x  | <p>The power monitoring has been triggered.</p> <ul style="list-style-type: none"> <li>– Check that the door for any mechanical damage.</li> </ul>  |
| ERROR RUNTIME         | Flashes 6x  | <p>The programmed RUNNING TIME has been exceeded.</p> <ul style="list-style-type: none"> <li>– Check the path of the door and the running time.</li> <li>– Re-programme the running time, if necessary.</li> </ul>  |
| ERROR INVERTER        | Flashes 7x  | <p>A problem has arisen in the frequency converter connected.</p> <ul style="list-style-type: none"> <li>– Identify cause, and acknowledge with STOP.</li> <li>– Turn power supply on and off.</li> </ul>   |
| ERROR MSBUS           | Flashes 9x  | <p>Communication error between the control and the MS BUS end device connected.</p> <ul style="list-style-type: none"> <li>– Check the cable and socket connections and replace, if necessary.</li> </ul>   |
| ERROR SKS             | Continuous light<br>Travel in CLOSING direction only possible in deadman mode | <p>Closing edge safety device faulty in OPENING or CLOSING direction.</p> <ul style="list-style-type: none"> <li>– Check closing edge safety device and spiral cable, check RADIO transmission system, if necessary.</li> </ul>   |
| ERROR LIGHT BAR       | Continuous light<br>Travel in CLOSING direction only possible in deadman mode | <p>The photocell connected shows a permanent fault.</p> <ul style="list-style-type: none"> <li>– Check photocell (function and alignment).</li> <li>– Check cabling.</li> </ul>   |

# 11. Technical data / Maintenance

## 11.1 Mechanical and electrical data

|   |  |
|---|--|
| Housing dimensions:                             | 215 x 275 x 190 mm   |
| Installation:                                   | Vertical mounting on the wall,<br>minimum height<br>above floor = 1,100 mm   |
| Power supply via<br>L1, L2, L3, N, PE:          | 400V/3~ , 50/60Hz<br>230V/3~ , 50/60Hz   |
| L1, N, PE:                                      | 230V/1~ , 50/60Hz  |
|   | Power input max. 2,200 W<br>for power supply 400V/3~   |
| Fuse protection:                                | 10 A K type  |
| Internal consumption of control:                | max. 750 mA  |
| Control voltage:                                | 24 V DC, max. 500 mA; protected by self-resetting fuse for external sensor systems.  |
| Control inputs:                                 | 24 V DC, all input connections must be potential-free; minimum signal duration for input control command >100 ms   |
| Control outputs:                                | 24 V DC max. 500 mA  |
| RS485 A and B                                   | Only for electronic limit switches<br>RS485 level, terminated with a 120Ω  |
| Safety circuit / emergency off:                 | All input connections must be potential-free; if the safety circuit is interrupted, no further electrically powered movement of the operator is possible, not even in deadman mode   |
| Closing safety edge input (performance level C) | Performance level C<br>For 8.2 k electrical safety edge with 8.2 kΩ terminating resistor and for dynamic optical systems (OSE)   |
| Photocell (performance level D):                | If the photocell is used as a D performance level system, it must be checked at regular intervals, but at least every 6 months, to ensure that the system functions properly.<br>MFZ two-wire photocell barriers have a self teach-in facility, and so this requirement does not apply in this case. |
| Display (LCD):                                  | Only an original MFZ display must be used as an LCD programming circuit board.   |

|                    |  |
|--------------------|--|
| Relay outputs:     | If inductive loads are connected (e.g. further relays or brakes), these must be fitted with appropriate suppressor elements (recovery diodes, varistors, RC circuits). Potential-free normally open contact;<br>min. 10 mA ;<br>max. 230 V AC = 4A.<br>Once contacts have been used for power circuits, they can no longer be used for extra-low current circuits. |
| Temperature range: | Operation -10°C ... +45°C<br>Storage: -25°C ... +70°C  |
| Air humidity:      | Up to 80% with no condensation   |
| Vibrations:        | Low-vibration mounting, e.g. on a masonry wall   |
| Type of enclosure  | IP 54  |
| Weight             | approx. 1.8 kg   |

## 11.2 Functional safety category and performance level according to EN ISO 13849-1

| Function   | Implementation   | MTTF <sub>D</sub> electronics | MTTF <sub>D</sub> total with output contactor (1) | DC <sub>avg</sub> | Category | Performance level |
|--|--|-------------------------------|---|-------------------|----------|-------------------|
| Emergency stop button                                      | Input terminal X3, X6, X7, X11<br>Interrupts voltage supply to the output relay and main contactor, independently of the CPU.<br>Signal received by CPU .  | 1175 years                    | 191 years   | 85,3%             | 3        | D                 |
| Stop circuit   | Input terminal X3, X7<br>Interrupts the power supply to the main contactor.<br>Signal to CPU.  | 1175 years                    | 191 years   | -                 | B        | B                 |
| End position detection by AWG (absolute value encoder) (2) | Input terminal X11<br>For determining the position, and end position detection.<br>Safety through checking plausibility of commands with signals received.   | 1062 years                    | 188 years   | 85,6%             | 2        | D                 |
| End position detection through limit switches (2)          | Input terminal X15<br>Safeguarded through excess travel stop. Inputs are evaluated by the CPU.   | 1248 years                    | 193 years   | 85,5%             | 2        | D                 |
| Photocell evaluation                                       | Input terminal X4<br>Impulse evaluation through CPU. Faults are detected through plausibility check in the CPU. The frequency must lie between 130 Hz and 190 Hz. The function is tested by switching on the supply voltage (T117, IC111) of the photocell before every run and every two minutes in standby. If activated in the CLOSING direction, the door stops or reverses. | 1000 years                    | 186 years   | 85,7%             | 2        | D                 |

DC<sub>AVG</sub>  
MTTF<sub>D</sub>


Average diagnostic coverage  
Mean time to dangerous failure

The CS 310 control is maintenance-free.



**DANGER !**

Life-threatening danger due to electric shock!

 The control unit or door/gate system **MUST** be disconnected from the electricity supply before carrying out any electrical work. Take measures to ensure that the power supply remains disconnected for the duration of the work.

The following points must be taken into account when carrying out maintenance on the door/gate or gate system:

- Maintenance must only be carried out by authorized persons.
- Directive ASR A1.7 must be complied with.
- Worn or faulty parts must be replaced.
- Only approved parts may be installed.
- All maintenance work must be documented.
- Replaced faulty parts must be disposed of properly in accordance with the materials they contain and local regulations.

## 12. EC Declaration of Conformity

We hereby declare that the product described below

### **CS 310 Door Control**

are in conformity with the essential requirements of the Machinery Directive 2006/42/EC.

In addition, the logic unit is in conformity with all the provisions of the

- EC Construction Products Regulation (305/2011/EC)
- EC Electromagnetic Compatibility Directive (2004/30/EU)
- EC Low Voltage Directive (2014/35/EU)

The following standards were applied:

### **EN 60204-1 : 2006**

Safety of machinery, electrical equipment of machines;  
Part 1: General requirements

### **EN ISO 12100 : 2010**

Safety of machinery – general principles for design - risk assessment and risk reduction

### **DIN EN 12453 : 2000**

Safety in use of power operated doors - Requirements

### **prEN 12453 : 2014**

Safety in use of power operated doors  
(exclusively for items 1.3.7 and 1.4.3 of Annex I of the Machinery Directive)

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

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

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

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

### **DIN EN 60335-1 : 2012**

Household and similar electrical appliances - Safety -  
Part 1: general requirements

### **DIN EN 60335-2-103 : 2003**

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

The relevant technical documentation is compiled in accordance with Annex VII(B) of the Machinery Directive 2006/42/EC. We undertake to transmit, in response to a reasoned request by the market surveillance authorities, this information in electronic form within a reasonable term.

EC Type Examination Certificate No. 4420513133301  
TÜV NORD CERT GmbH (NB 0044)

Langemarckstraße 20  
D - 45141 Essen, Germany

Person authorised to compile the relevant technical documentation:

MFZ Antriebe GmbH & Co. KG, Neue Mühle 4,  
D-48739 Legden, Germany

The logic unit must not be put into service until the machinery into which the logic unit is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

### **Place / Date:**

Legden, 04/01/2016

### **Manufacturer's signature**

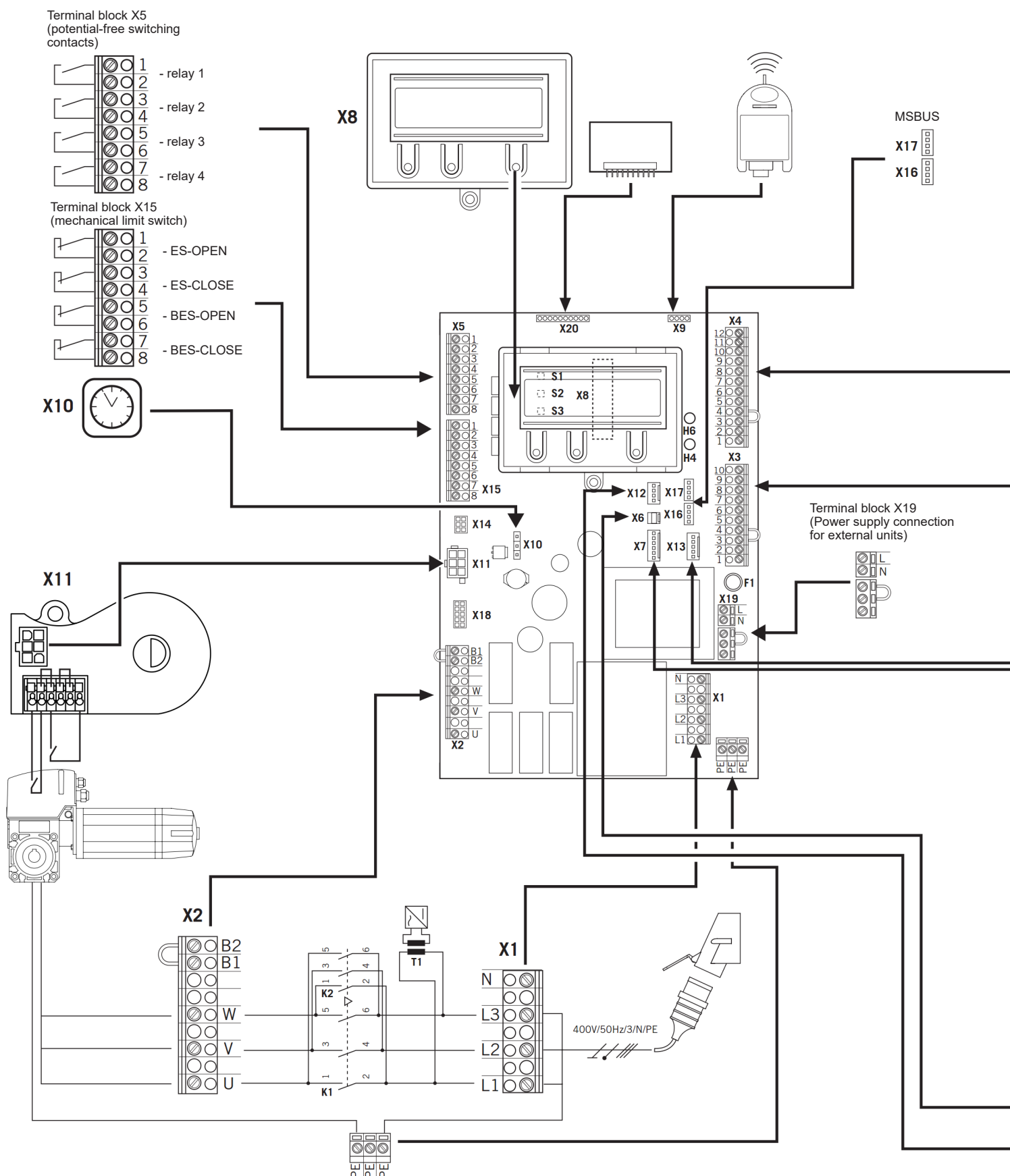


Dirk Wesseling

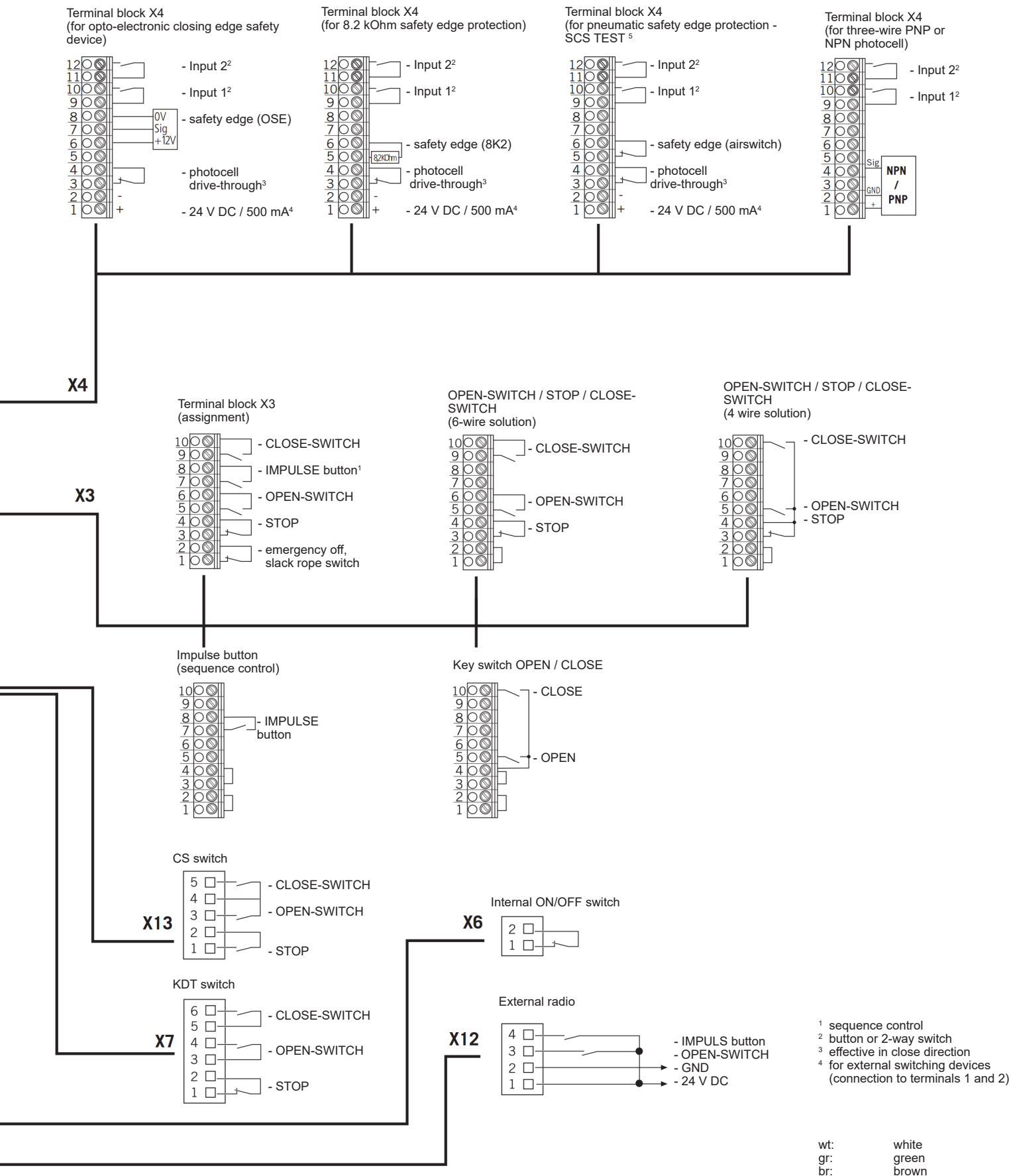
### **Position of signatory**

Management

## 13.1 Overview of connections



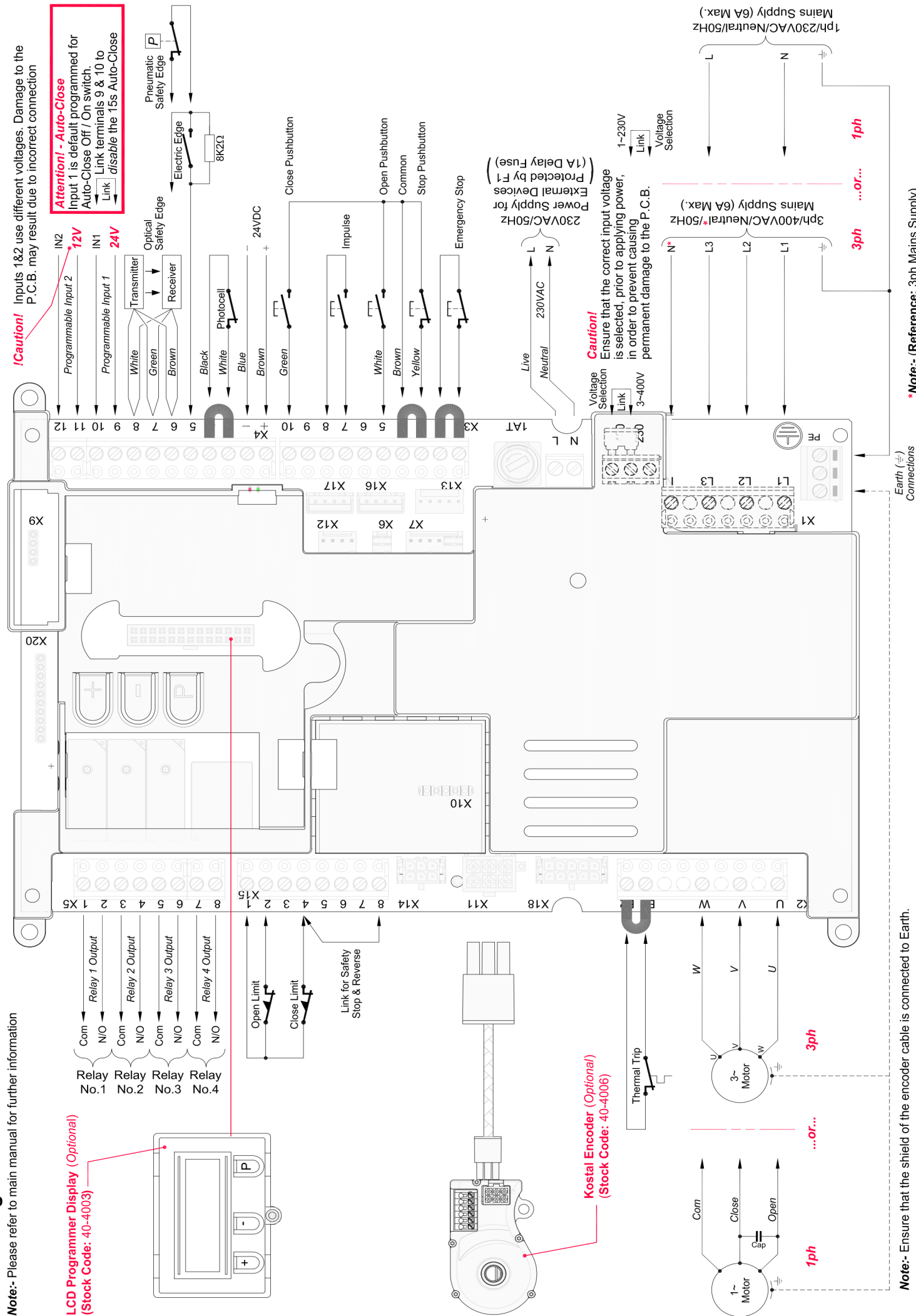




# Wiring Connections

**Note:-** Please refer to main manual for further information

**LCD Programmer Display (Optional)**  
(Stock Code: 40-4003)



**Note:-** Ensure that the shield of the encoder cable is connected to Earth.

**\*Note:- (Reference: 3ph Mains Supply)**  
Whilst a Neutral is not required in order for the control board, it will prevent the use of the auxiliary 230VAC supply provided on X19

**Note:-** Components are not drawn to scale!