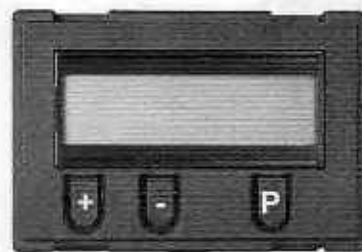






CS 300 controls

Quick start guide to select the language



1

After connecting the power the display shows ...

AFSTELLING
RUSTSTAND

2

press and hold the [P] button until the next operating mode appears in the display ...

INVOER

3

press and hold the [+] and [-] buttons at the same time until the first parameter to be set appears in the display ...

INVOER
NEDERLANDS

4

press and hold the [P] button until a **flashing** cursor appears in the bottom right hand corner ...

INVOER
NEDERLANDS

5

using the [+] or [-] buttons, the current parameter (language) can now be altered to the preferred menu language ...

INPUT
ENGLISH

6

press the [P] button and keep it pressed until the cursor disappears ...

INPUT
ENGLISH

7

press and hold the [+] and [-] buttons at the same time until the current parameter disappears to leave the parameter list ...

INPUT

8

press and hold the [P] button until the desired operating mode appears in the display ...

ADJUSTMENT
STANDBY

1. Contents

1.	Contents	2
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2. Key to symbols



Danger of personal injury!
The safety instructions must be observed!



Warning! Danger to property!
The safety instructions must be observed!



Information
Reference to other sources of information.

3. General safety instructions

Guarantee

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

MFZ Antriebe GmbH + Co.KG is not liable for any personal injury or damage to property that occurs as a result of the warning and safety instructions being disregarded.

Using the equipment for its intended purpose

The CS 300 controls are designed only for controlling gates and doors with digital end position systems. It is only permitted to operate the equipment in dry rooms.

Target group

Only qualified and trained electricians may connect, programme and service the controls.

Qualified and trained electricians meet the following requirements:

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

Instructions for installation and connection

- The controls must be disconnected from the electricity supply before carrying out electrical works. It must be ensured that the electricity supply remains disconnected during the works.
- Local protective regulations must be complied with.
- Mains cables and control cables must be laid separately.

Regulations and bases for testing

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

- EN 50081-1 (Radio disturbance, household appliances)
- EN 50082-1 (Immunity, household appliances)
- EN 50014-1 (Emission, household appliances)
- EN 61000-3-2 (Disturbances in supply systems - harmonic currents)
- EN 61000-3-3 (Disturbances in supply systems - voltage fluctuations)

Machinery guidelines

- EN 60204-1 (Safety of machinery, electrical equipment of machines)
- EN 292-1 (Safety of machinery - Basic concepts, general principles for design - Basic terminology, methodology)

Low voltage

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

Professional association (D)

- BGR 232 (Directive for Power-driven Windows, Doors and Gates)

4.1 Various options

The following package options are available for the CS 300 controls:

- CS 300 control with LCD monitor
- CS 300 control with LCD monitor in housing
- CS 300 control with LED module for setting the OPEN and CLOSED door positions (further adjustment settings are not possible)
- CS 300 control without LED module and without LCD monitor (module or monitor are required for adjusting the settings)

All the above options can be fitted with a plug-in weekly timer and a plug-in radio receiver.

The following options are available for the housing.

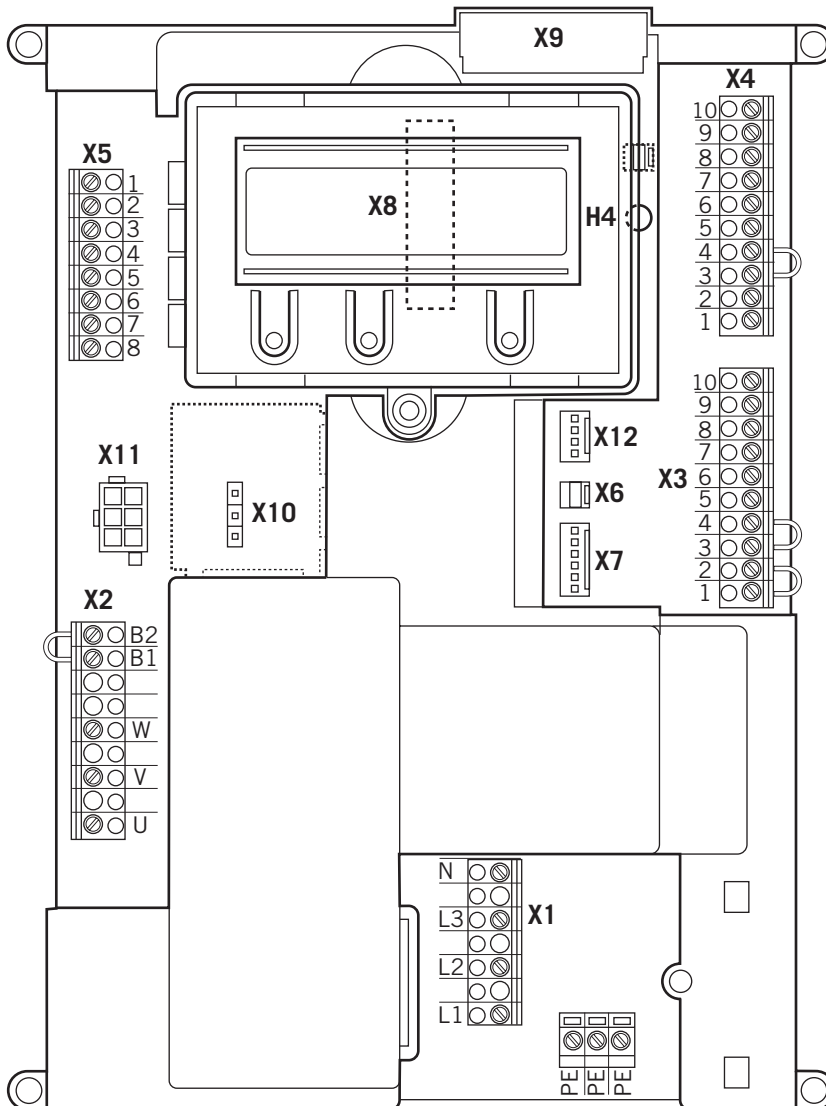
- housing with 3-button input unit
- housing with membrane keypad
- housing with key switch ON/OFF
- housing with main switch
- housing with emergency off switch

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

- CS 300 control with LED board
- CS 300 control with attached LCD display board

4. Overview of products

4.3 CS 300 basic board (with attached LCD display monitor)



Key:

- X1: terminal block mains connection
- X2 : terminal block motor
- X3: terminal block command devices
- X4: terminal block safety elements
- X5: terminal block relay
- X6: sockets for internal ON-OFF switch
- X7: sockets for internal 3-button input unit
- X8: socket for monitor (under monitor)
- X9: sockets for radio receiver
- X10: sockets for weekly timer
- X11: sockets for digital end-position system
- X12: socket for external radio receiver
- H4: status display for safety edge protection (SEP) – illuminated when SEP is working

5. Initial Operation

5.1 General



Warning!

To guarantee that the equipment functions properly, the following points must be ensured:

- The gate or door is installed and operational.
- The MFZ drive motor is installed and ready for operation.
- The command and safety devices are installed and ready for operation.
- The control housing with the CS 300 control is installed.



Information:

For the installation of the gate/door, the MFZ drive motor and the command and safety devices, the relevant manufacturer's instructions are to be adhered to.

5.2 Mains connection

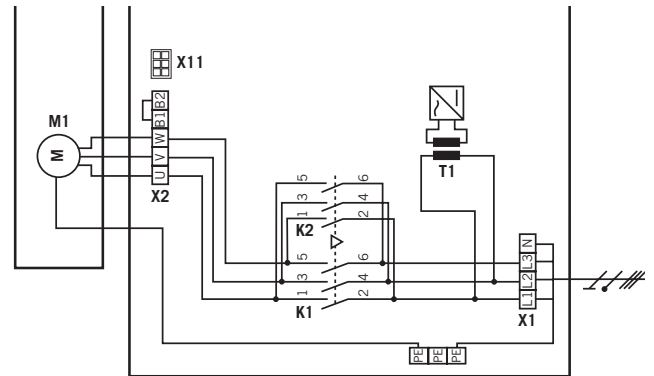


Danger!

To guarantee that the controls function properly, the following points must be ensured:

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

Detailed circuit diagram for mains connection and motor



Key:

- K1: protection, CLOSE
- K2: protection, OPEN
- M1: motor
- T1: transformer
- X1: terminal block for mains connection
- X2: terminal block for motor
- X11: sockets for digital end position system with safety circuit (STOP CIRCUIT)

Connection:

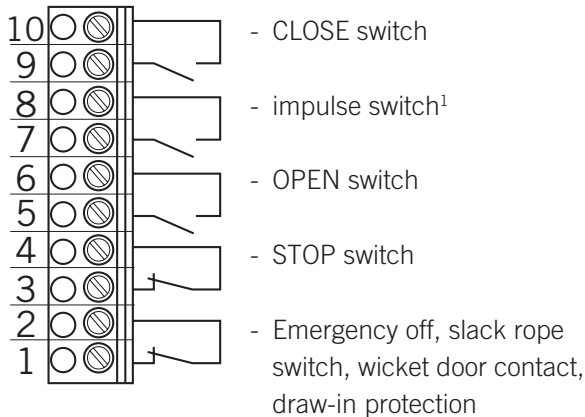
- Connect the digital end-position system to the control.
- Connect the control to the mains.
- Connect the control to the motor.

5. Initial Operation

5.3 Allocation of connections for command and safety devices

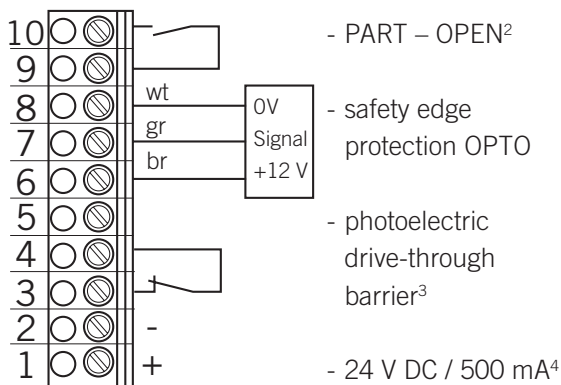
Command and safety devices can be connected to terminals X3, X4 and X5.

Terminal block X3



Terminal block X4

(for optoelectronic safety edge protection)



¹ sequence control

² button or selector switch

³ effective in down direction

⁴ for external switching devices
(connection to terminals 1 and 2)

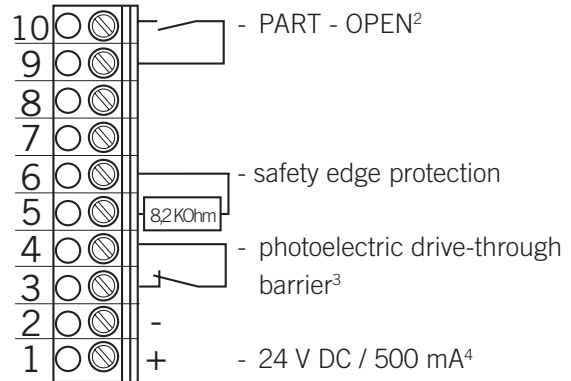
wt: white

gr: green

br: brown

Terminal block X4

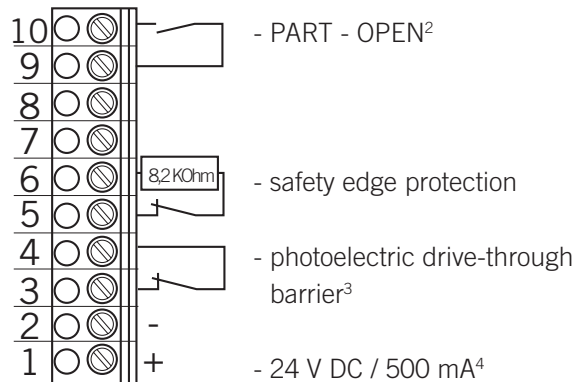
(for 8.2 kOhm safety edge protection)



Terminal block X4

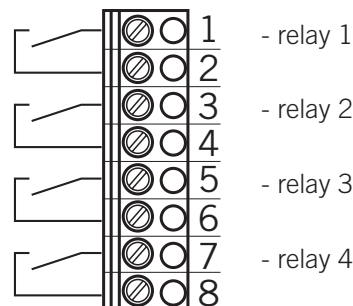
(for pneumatic safety edge protection – pressure sensor test:

- A 8.2 kOhm resistor must be connected in series
- The input point pressure sensor TEST must be switched on)



Terminal block X5

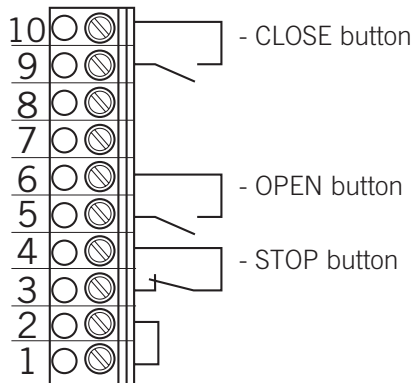
(potential free switch contact)



5.4 Connection examples for command and safety devices (terminal block X3)

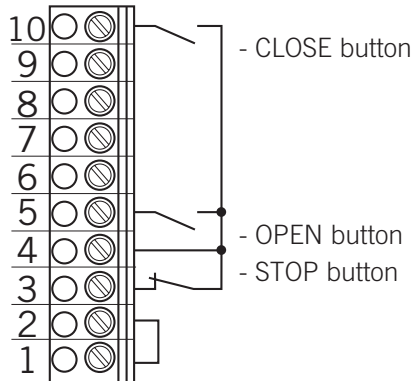
OPEN / STOP / CLOSE buttons

(6-lead solution)

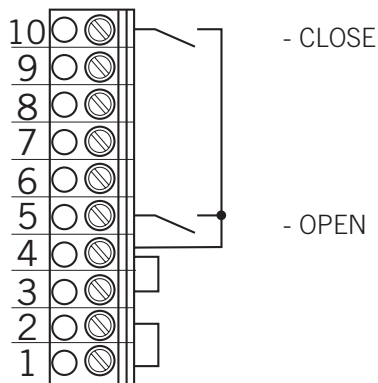


OPEN / STOP / CLOSE buttons

(4-lead solution)

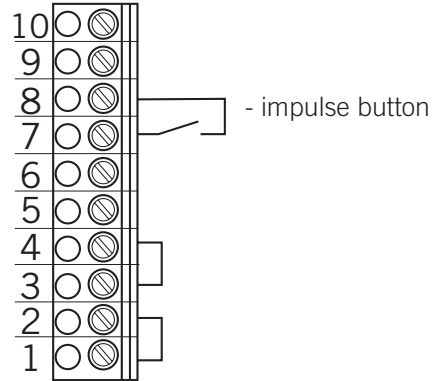


Key switch OPEN / CLOSE



Impulse button

(sequence control)

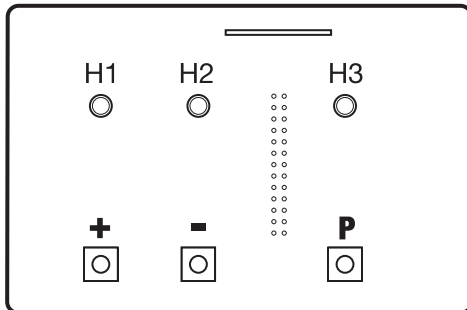


Connection:




➡ Connect the command and safety devices to the control.

6. Programming with the LED module

6.1 Overview of LED module



Key:

-  LED off
-  LED illuminated
-  LED flashing

6.2 LED module, modes of operation

With the LED module, the controls have two modes of operation:

1. AUTOMATIC
2. ADJUSTMENT



Information:

The current mode of operation of the control is shown via the LEDs.









- In the AUTOMATIC mode, no LEDs flash.
- In the ADJUSTMENT mode, at least one LED flashes.

Pressing the P button toggles between the modes of operation.

Operating mode 1: AUTOMATIC

In the AUTOMATIC operating mode the door system is operated.

LED displays:

H1	H2	Status
		The door is open. The programmed OPEN end position has been reached.
		The door is closed. The programmed CLOSED end position has been reached.
		The door is between end positions. No end position has been reached.
		The door has been moved beyond the CLOSED/OPEN end position.

Operating mode 2: ADJUSTMENT

In the ADJUSTMENT mode, the OPEN/CLOSED end position settings are adjusted.



Warning!

In the ADJUSTMENT mode of operation, the drive does not switch off when the end position is reached. The door can be damaged if driven beyond the end position.

LED displays:

H1	H2	Status
●	◎	The OPEN end position is programmed at this door position.
◎	●	The CLOSED end position is programmed at this door position.
◎	◎	The CLOSED and OPEN end positions are not programmed at this door position.

6.3 Setting the end positions

Setting the OPEN end position

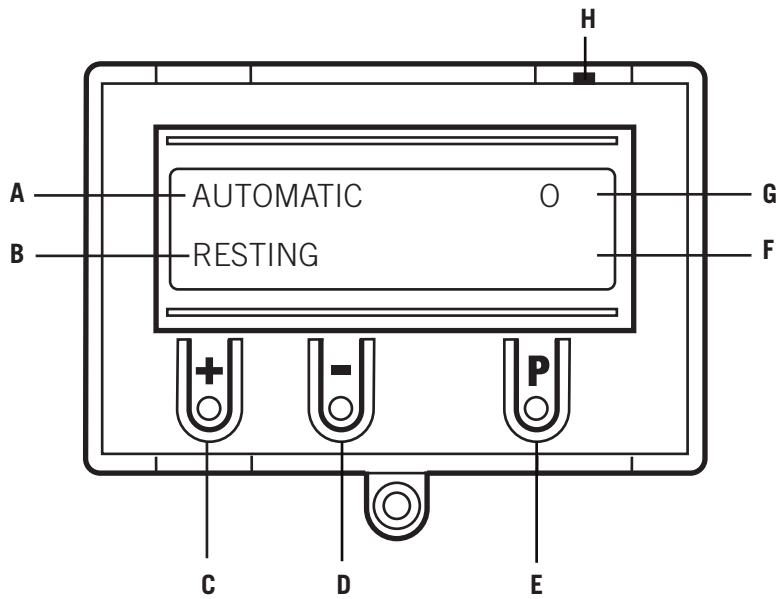
- ☞ Change the mode of operation to ADJUSTMENT by pressing the P button.
- ☞ Drive the door into the desired OPEN end position by pressing the + button.
- ☞ Save the end position by pressing simultaneously the P button and the + button.

Setting the CLOSED end position

- ☞ Change the mode of operation to ADJUSTMENT by pressing the P button.
- ☞ Drive the door into the desired CLOSED end position by pressing the - button.
- ☞ Save the end position by pressing simultaneously the P button and the - button.

7. Programming with the LCD monitor

7.1 Overview of the LCD monitor



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 monitor, modes of operation

The control has four modes of operation with the LCD monitor:

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

When the jumper H is pulled, the + button, the - button and the P button have no function. The display still functions.

Operating mode 1: AUTOMATIC

In the AUTOMATIC operating mode the door system is operated.

Display:

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

If the "self locking" parameter is set to OFF in the input menu, the display changes from AUTOMATIC to MANUAL OPERATION.

Operating mode 2: ADJUSTMENT

In the ADJUSTMENT mode, the OPEN/CLOSED end position settings are adjusted.



Warning!

In the ADJUSTMENT mode of operation, the drive does not switch off when the end position is reached. The door can be damaged if driven beyond the end position.

Fine adjustments can be made in the INPUT operating mode.

Display:

- displays the end position value

Operating mode 3: INPUT

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

Display:

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

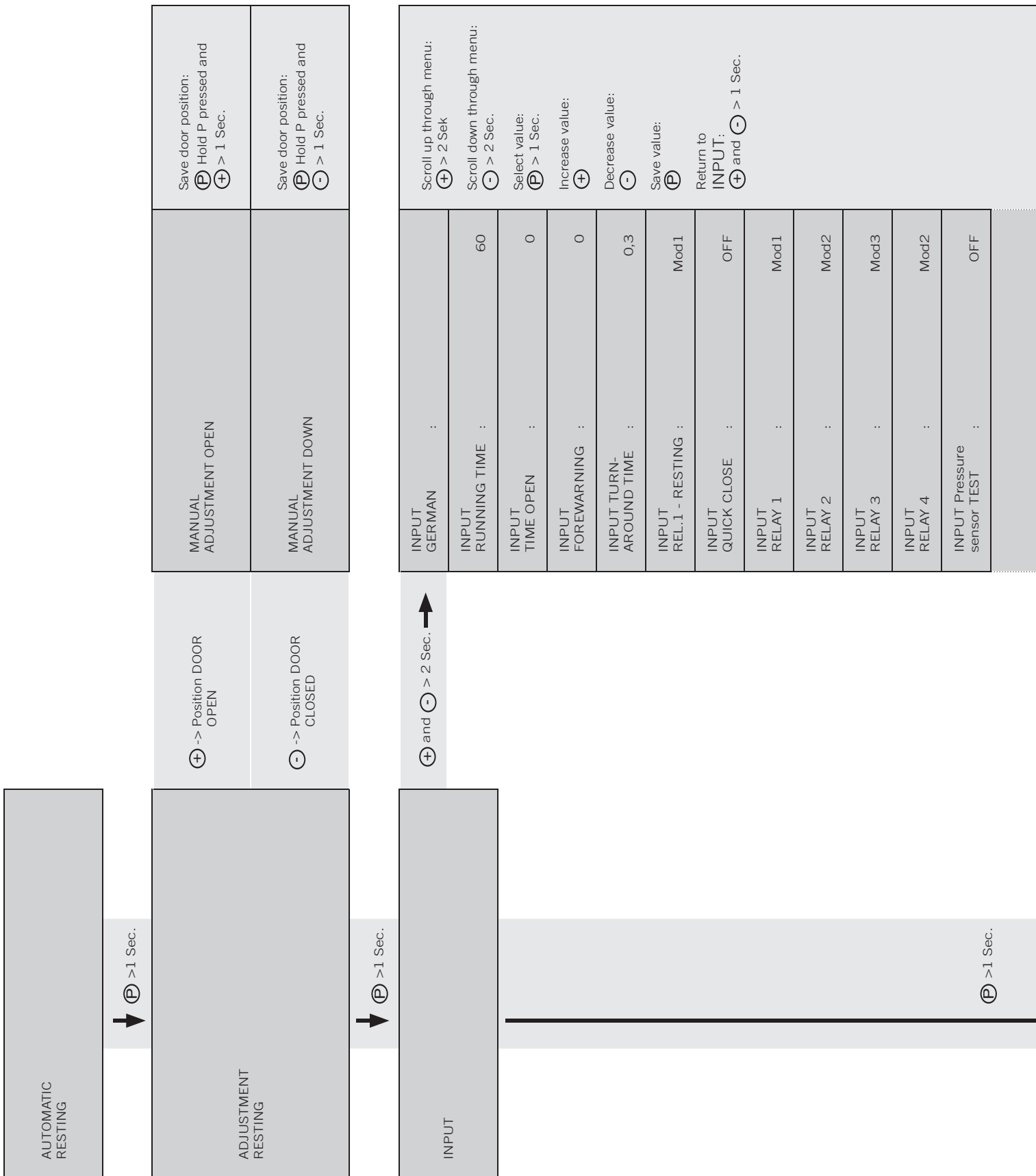
Operating mode 4: DIAGNOSIS

In the DIAGNOSIS operating mode, door-specific checks can be queried.

Display

- displays the check
- displays the checking status

8. Navigator (LCD monitor only)



INPUT DELAY-OPEN :	OFF
INPUT FINE-OPEN :	4050
INPUT FINE-CLOSE :	3950
INPUT BES-OPEN :	4000
INPUT BES-CLOSE :	4000
INPUT ROT. FIELD :	RE
INPUT REVERSE OFF :	50
INPUT POWER :	0
INPUT AUTO LEVEL :	OFF
INPUT SELF LOCK :	ON
INPUT SU/WI :	MOD1

DIAGNOSIS

ES UP :	ON
ES DOWN :	ON
OPEN BUTTON :	OFF
PART OPEN :	OFF
CLOSE BUTTON :	OFF
SEP :	ON
IMPULS :	OFF
TIMER :	OFF
P/E BARRIER :	ON
STOP CIRCUIT :	ON
CYCLE AVE :	4
	2599

Scroll up through menu:

⊕ > 2 Sek

Scroll down through menu:

⊖ > 2 Sec.

Return to AUTOMATIC operating mode:

Ⓟ

Only query is possible

9. Overview of functions

9.1 Automatic operating mode

Display		Description
AUTOMATIC OPEN		The door is driven to the OPEN* end position
AUTOMATIC CLOSE		The door is driven to the CLOSED* end position
AUTOMATIC RESTING		The door stands between the end positions
AUTOMATIC RESTING	O	The door stands at the OPEN end position
AUTOMATIC RESTING	o	The door stands at the position PART OPEN („before-end position“ up)
AUTOMATIC RESTING	U	The door stands at the CLOSED end position
AUTOMATIC RESTING	u	The door stands at the position PART CLOSE („before-end position“ down)
AUTOMATIC RESTING	r	The door stands in the position where the reversing switches off

*When the gate is being driven OPEN, the power currently being used is displayed

9.2 Input operating mode

Function	Description	Setting options	Factory setting
DEUTSCH	Select the menu language	DEUTSCH ENGLISH FRANCAIS ESPAÑOL NEDERLANDS POLSKI CESKY	DEUTSCH
RUNNING TIME	Monitoring the max. running time for an open and close movement	1 – 250 Seconds	60 Seconds
OPEN TIME	After the door has opened, it runs in the CLOSE direction again after the set time has elapsed. Open time > 0 = impulse functions only work in OPEN direction	0 – 600 Seconds	0 = Auto-close off
ADVANCE WARNING TIME	The traffic light flashes before the door starts to move downwards. The programmed forewarning time is only active if the open time > 0 or if in radio-impulse operating mode	0 - 120 Seconds	0 = Off
TURNAROUND TIME	Standing time at every change of direction	0,1 - 2,0 Seconds (in 1/10 Sec)	0,3 Seconds
REL.1 RESTING	MOD1: Relay 1 resting OFF MOD2: Relay 1 resting ON	MOD1 MOD2	MOD1
QUICK CLOSE	ON: The open time is cut short after the photoelectric barrier has been passed (door closes immediately) OFF: The open time continues as usual	ON OFF	OFF
RELAY 1	MOD1: Relay 1 is permanently ON when the door is moving and flashes for forewarning MOD2: Relay 1 flashes when the door is moving and as a forewarning MOD3: Relay 1 is permanently ON when the door is moving and as a forewarning	MOD1 MOD2 MOD3	MOD1
RELAY 2	MOD1: Relay 2 gives impulse on OPEN command MOD2: OPEN end position MOD3: CLOSE end position MOD4: Before-end position OPEN MOD5: Before-end position CLOSE	MOD1 MOD2 MOD3 MOD4 MOD5	MOD2
RELAY 3	MOD1: Error message MOD2: OPEN end position MOD3: CLOSE end position MOD4: Before-end position OPEN MOD5: Before-end position CLOSE MOD6: From before CLOSE position to CLOSE position	MOD1 MOD2 MOD3 MOD4 MOD5 MOD6	MOD3
RELAY 4	MOD1: Magnetic locking function MOD2: Brake MOD3: Brake negated MOD4: Brake remains ON during open time MOD5: Brake remains ON during open time and direction turnaround (relay switches OFF when turnaround initiated by SEP)	MOD1 MOD2 MOD3 MOD4 MOD5	MOD2

Function	Description	Setting options	Factory setting
Pressure sensor TEST	<p>ON: PS testing is active OFF: PS testing is inactive</p> <p>The testing of the PS switch takes place in the CLOSE end position. For this, the PS contact must be temporarily broken when the gate lowers to rest on the ground.</p>	ON OFF	OFF
DELAY-OPEN	<p>ON: Forewarning before opening OFF: Immediate opening</p>	ON OFF	OFF
FINE-OPEN	Fine adjustment of OPEN end position	0 – 8190	4050
FINE-CLOSE	Fine adjustment of CLOSE end position	0 – 8190	3950
BES-OPEN	Setting the before-end position switch point for the OPEN direction (PART-OPEN)	0 – 8190	4000
BES-CLOSE	Setting the before-end position switch point for the CLOSE direction	0 – 8190	4000
ROT. FIELD	<p>C: clockwise rotating field A: anti-clockwise rotating field</p> <p>This setting may only be altered in the case of a special customised drive installation!</p>	RE LI	RE
REVERSE OFF	The point where the reversing switch is activated before the CLOSE end position is reached.	10 – 250	50
POWER	<p>The power is displayed during the opening movement. If the power monitoring facility is activated, a value must be set, which is lower than the lowest value displayed during opening. The larger the difference, in comparison to the lowest value displayed, the less sensitive the reaction of the power monitoring. The power monitoring facility is only activated if the value is set to be > 0.</p>	0 – 999	0
AUTO-LEVEL	<p>ON: Align with ground, ON OFF: Align with ground, OFF</p>	ON OFF	OFF
SELF LOCK.	<p>ON: Automatic operation OFF: Manual operation</p>	ON OFF	ON
SU/WI	<p>MOD1: PART-OPEN button at terminal X4 (9 + 10) MOD2: PART-OPEN selector switch at terminal X4 (9 + 10) When the selector switch is closed, all OPEN commands go to the before-end switch OPEN</p>	MOD1 MOD2	MOD1

9.3 Diagnostic operating mode

Display	Meaning	Status
ES-OPEN	OPEN end position	OFF: confirmed ON: not confirmed
ES-CLOSE	CLOSE end position	OFF: confirmed ON: not confirmed
OPEN BUTTON	OPEN button	OFF: confirmed ON: not confirmed
PART OPEN	PART OPEN button (X4 / 9 + 10)	OFF: confirmed ON: not confirmed
CLOSE BUTTON	CLOSE button	OFF: confirmed ON: not confirmed
SEP	Safety edge protection	ON: system circuit is closed OFF: system is interrupted (fault)
IMPULSE	Impulse button	OFF: confirmed ON: not confirmed
TIMER	Weekly timer	OFF: confirmed ON: not confirmed
P/E BARRIER	Photoelectric drive-through barrier	ON: circuit closed OFF: interrupted (fault)
STOP CIRCUIT	- Stop button of controls - Stop systems of drive	ON: circuit closed OFF: interrupted (fault)
CYCLE	Gate-cycle counter	Displays the gate cycles
AVE	Absolute value encoder	Shows the gate position value

10. Error messages and rectification

Fault / error message	Cause	Rectification
System does not respond	- No voltage supply	- Check the voltage supply of the drive and the controls
Door travels to the CLOSE end position when the OPEN button is pressed Door travels to the OPEN end position when the CLOSE button is pressed	- Rotating field is connected wrongly	- Check the rotating field and establish clockwise rotating field if necessary
ERROR END POSITION	- The door has travelled beyond one of the end positions - The end positions have not been programmed yet	- Check the programming of the end positions and reset them if necessary
ERROR RUN TIME	- The programmed running time has been exceeded	- Check the path of the door - Re-programme the running time
ERROR SEP	- The safety edge protection is faulty - Safety edge protection was triggered	- Check the safety edge protection and the spiral cable - Remove obstruction from path of door
ERROR PRESSURE SENSOR TESTING	- The PS switch is not activated at the CLOSE end position	- Check the PS switch, spiral cable and profile - Check the setting for the CLOSE end position
ERROR ROT. FIELD	- An incorrect rotating field is connected to terminal X1	- Ensure that a clockwise rotating field is connected
ERROR RS 485	- Communications fault between the end position switch and the controls	- Check the cable and socket connections
ERROR POWER	- The power monitoring has been triggered	- Check that the door can move freely - Reset the power value

After rectifying the cause of the fault, the controls must be disconnected briefly from the mains!

11. Technical data

Model	CS 300
Voltage	400 / 230 V
Frequency	50 Hz
Current	10 A max.
Protection grade	IP 65
Operating temperature	-10° C to +60° C
Protection class	I
Control voltage	24 V DC
Dimensions	215 mm x 275 mm x 190 mm
Weight	1,8 kg

12. EU Declaration of Conformity

GB

Manufacturer:

MFZ Antriebe GmbH & Co. Kg, Neue Muehle 4,
48739 Legden, Germany

We hereby declare that, by virtue of their conceptual development and design, as well as their manufacture as we have brought them onto the market, the products cited below:

CS300 Door Controls

conform to the relevant basic health and safety regulations of the following EU guidelines and standards:

EU Construction Products Directive 89/106/EU

DIN EN 13241-1
DIN EN 12453
DIN EN 12445
DIN EN 12978

EU Electromagnetic Compatibility Directive 89/336/EU

EN 50081-1
EN 50082-1
EN 55014-1
EN 61000-3-2
EN 61000-3-3

EU Machinery Directive 98/37/EU

EN 60204-1
EN 292-1

EU Low Voltage Directive 73/23/EU

EN 60335-1
EN 60335-2-103

BGR 232 - Directive for Power-driven Windows, Doors and Gates Directive for Power-driven Windows, Doors and Gates

Legden, 1 February 2006
Manufacturer's signature:



Hans-Joachim Molterer

Position of signatory:
Manager

