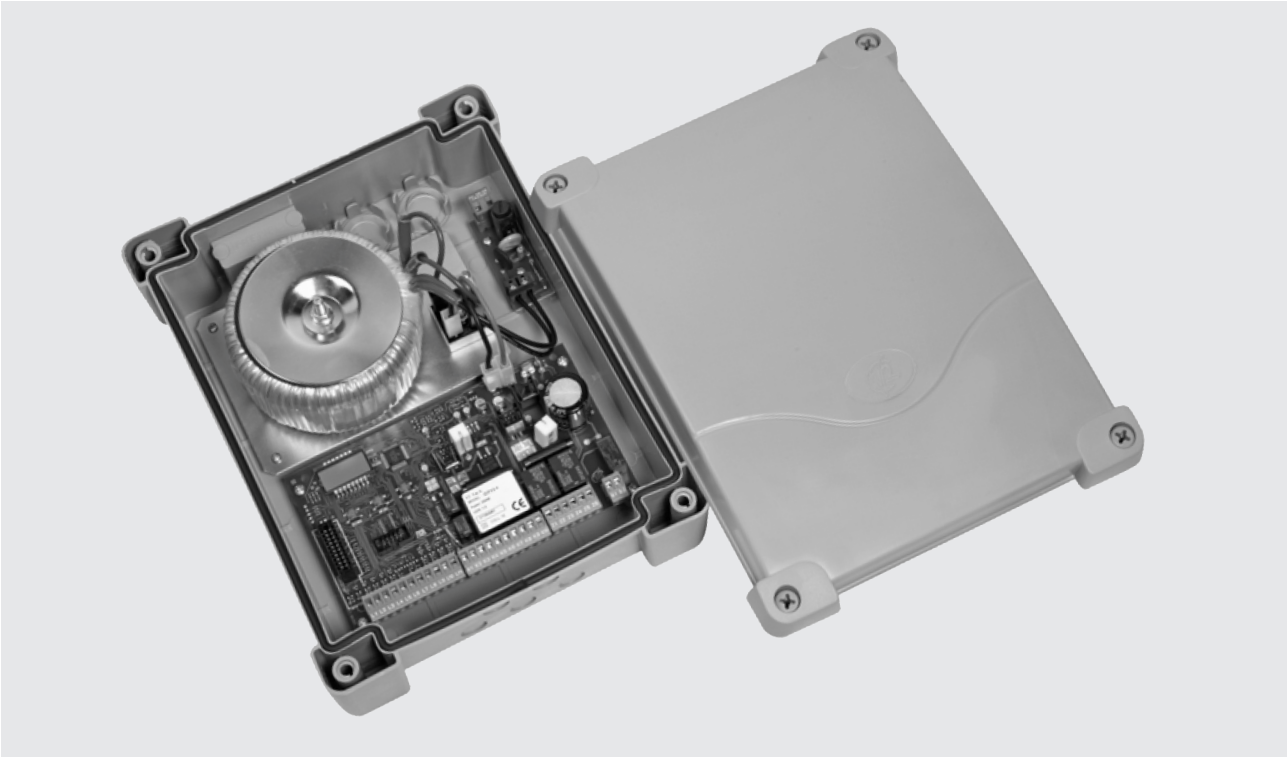

Instructions for Fitting, Operating and Maintenance

Digital control board **MS1024** for 24 VDC hinged gate operator DX524, DX250 SA, DX424 SA

MS1024

4Ddoors

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Table of content

1 NOTES AND CONFORMITY 3
1.1 General safety instructions 3
1.2 Declaration of incorporation for an incomplete machine 3
1.3 About these Instructions 4
1.4 Further applicable documents for customer/users . . .4
1.5 Caution Indications 4

2 SAFETY PRECAUTIONS 4
2.1 Intended use. 4
2.2 Inappropriate use 4
2.3 Fitter qualification 4
2.4 Important safety instructions. 4
2.5 Important instructions for a safe installation 4
2.6 Checking the gate / gate system 4
2.7 Warnings 5
2.8 Maintenance advice 5

3 WARRANTY 5
3.1 Warranty period 5
3.2 Prerequisites. 5
3.3 Performance. 6

4 TECHNICAL DETAILS 6
4.1 Technical data 6
4.2 Description of control board 6

5 ELECTRICAL CONNECTION 6
5.1 Safety instructions: work involving electrics/electronics 6
5.2 Power supply 6
5.3 Connecting the motor 7
5.4 Connecting end switches 7
5.5 Connection of warning/flashing light. 7
5.6 Connecting external lighting 7
5.7 Connection of light barriers 7
5.8 Closing border protection 7
5.9 Connection stop interrupter 8
5.10 Command inputs 8
5.11 Electronic lock 8
5.12 Radio receiver 8
5.13 Extra module 8

6 LAYOUT OF CONTROL BOARD 9
6.1 Function-button and Display. 9
6.2 Programming mode (mainmenue 1). 9
6.3 Function menu settings 9
6.4 Time menu settings 10
6.5 Value menue setting 10
6.6 learn runtimes mode (main menue 4) 10
6.7 Set to factory settings (main menue 5). 10

7 SET-UP OF CONTROL BOARD 10
7.1 Quick set-up 10
7.2 Learning of runtimes. 10
7.3 Set-up menu 12
7.4 P01 Duration leaf 1 OPEN 12
7.5 P02 Duration leaf 2 OPEN 12
7.6 P03 Duration leaf 1 OPEN PEDESTRIAN traffic 12
7.7 P04 Duration leaf 1 CLOSE 12
7.8 P05 Duration leaf 2 CLOSE 13
7.9 P06 Duration leaf 1 CLOSE PEDESTRIAN traffic . . .13
7.10 P07 Duration leaf 2 CLOSE PEDESTRIAN traffic . . .13
7.11 P08 Duration leaf delay OPEN. 13
7.12 P09 Duration leaf delay CLOSE 13
7.13 P10 ELECTRONIC KEY LOCK (clamp K9/K10) 14
7.14 P10.F mode „quiet“ key lock. 14
7.15 P11 Duration IN ADVANCE function ELECTRONIC KEY LOCK 14
7.16 P12 Short reverse for opening with electronic key lock .14
7.17 P13.o Warning time LAMP in OPEN-direction 14
7.18 P13.c Warning time LAMP in CLOSE-direction 15
7.19 P14 FORCE motor 1 15
7.20 P14s Soft FORCE motor 1 15
7.21 P15 FORCE motor 2 15
7.22 P15.S Soft FORCE motor 2 15
7.23 P16 Adjustment of deactivated forces at start of track . .16
7.24 P17.o Starting ramp in OPEN-direction 16
7.25 P17.c Starting ramp in CLOSE-direction 16
7.26 P18.o Duration of Soft-Stop in OPEN-direction 16
7.27 P18.o Duration of Soft-Stop in CLOSE-direction 16
7.28 P19 Fast close time after slow-down during closure . .17
7.29 P20 Start command during opening phase 17
7.30 P21 Start command during closing phase 17
7.31 P22 Start-impulse during opened gate. 17
7.32 P23 Start-impulse (START P) PEDESTRIAN OPENING track 18
7.33 P24 Automatic closing 18
7.34 P25 IMMEDIATE CLOSURE after passing photocells . .18
7.35 P27 Warning light in GATE OPEN position 18
7.36 P28 Function of START connections L3/L6 L4/L6 . . .19
7.37 P29 Function of STOP connections L5/L6 19
7.38 P30 Photocell 1 input L7/L11 (on the inside) 19
7.39 P31 Photocell 2 input L8/L11 (on the outside) 20
7.40 P32 photocell test - security test 20
7.41 P33 input closing border protection 1 L9/L11 20
7.42 P34 input closing border protection 2 L10/L11 20
7.43 P35 Test of closing border protection 21
7.44 P36 Input for Endswitches K1/K2/K3/K4/K5. 21
7.45 P37 Input Encoder K1/K2/K3/K4/K5/K6 21
7.46 P38 Duration of delay for heavy gates 21
7.47 P39o Obstacle detection motor 1 - OPEN 22
7.48 P39c Obstacle detection motor 1 - CLOSE 22
7.49 P40o Obstacle detection motor 2 - OPEN 22
7.50 P40c Obstacle detection motor 2 - CLOSE 22
7.51 P42 optional relay B1/B2 23
7.52 P43 function channel 2 radio-control 23
7.53 P44 Low voltage outputs - lights 23
7.54 P45 Max. motor power during battery operation 23
8.1 End of programming. 24

8 READING OF CYCLE COUNTER 24

9 SIGNAL OF SERVICE REQUIRED 25

10 FUNCTION OF OBSTACLE SENSOR 25

11 OPERATION DEFECTS 26
11.1 MAINS led does not switch on 26
11.2 OVERLOAD led is on 26
11.3 Too long pre-blinking 26

12 ERROR-MESSAGES 26
12.1 Error 1 26
12.2 Error 2 26
12.3 Error 3 26
12.4 Error 4 26
12.5 Error 5 26
12.6 Error 7 26
12.7 Error 8 27
12.8 Error 9 27

13 ERROR LIST (MAIN MENU 3) 27

14 FUNCTIONS IN MENU -PRG 28

15 FUNCTIONS IN MENU -CNT 30

16 FUNCTIONS IN MENU -ERR 31

17 FUNCTIONS IN MENU -LRN 31

18 FUNCTIONS IN MENU -DEF 31

19 CONNECTIONS CONTROL BOARD MS1024 32

1 NOTES AND CONFORMITY

1.1 General safety instructions

CAUTION

To install and program the control board correctly, read these instructions carefully. If installed wrongly or in case of incorrect working process, serious injury can be caused.

- Packaging materials (plastic, polystyrene, etc.) should not be stored in reach of children. If necessary please dispose properly.
- Please keep the manual.
- This product has been developed and produced for the use mentioned in these instructions only. Different use may be source to damage and risks.
- The producer refuses every liability for damages caused by improper or not intended use of the drive.
- The unit may not be installed in explosive environments.
- The mechanical elements must correspond to the norms EN 12604 and EN 12605. For countries not being part of the European Union the above mentioned norms as well as the national legal directives must be respected
- The producer rejects every responsibility for consequences, caused by non-professional production of closing mechanisms or by deformation caused during operation.
- Installation must be carried out following the norms EN 12453 and EN 12445. For countries not being part of the European Union the above mentioned norms as well as the national legal directives must be respected.
- Before every interference switch off power supply and prevent from being switched on again.
- Install an all-poles separating safety switch with a contact distance of at least 3mm before the power supply line. In addition install an error current safety switch using a trigger threshold of 0,03 A.
- Check if the grounding system was installed properly. All metallic parts must be grounded.
- Install all safety devices (e.g. light barrier, safety strips etc.) which avoid a person getting injured by jamming, cutting or being dragged along. These installations must correspond to the norm EN 12978.
- We recommend at least one flashing device for every gate situation. In addition a warning sign should be installed in sight.
- The producer rejects every liability regarding safety and functioning of the installation site, if components of a different brand are used.
- For maintenance and repair only original parts may be used.
- No changes must be made to the components of the installation site without permission of the producer.
- Familiarize the operator of the installation with the correct handling of the installation. Explain the emergency unlocking in case of power failure and hand over the mounting instructions/ manual.
- No children or adults should stay near the installation when in operation.
- The radio controls and every other transmitter should be out of the reach of children to avoid an accidental activation of the gate.
- The passing through should only take place when gate does not move.
- The operator should not perform repairs or direct interferences himself, he is supposed to contact qualified professional staff.
- **Service**: Check functioning of gate, but especially functioning of safety devices (including push force of drive) and unlocking device at least twice a year.
- All procedures, not explicitly mentioned in this manual, are not valid.

1.2 Declaration of incorporation for an incomplete machine

Partly completed machinery as defined in the EC Directive 2006/42/EC is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which this Directive applies. This is why this product must only be put into operation after it has been determined that the entire machine/system in which it will be installed corresponds with the guidelines of the EC Directive mentioned above.

After installation, the installer of the gate system must declare conformity to DIN EN 13241-1 in accordance with the scope of application.

Dear Customer,
Thank you for choosing this quality product from our company.

1.3 About these Instructions

- These instructions are original **translation** of an **operating instructions**, outlined in the EC Directive 2006/42/EC.
- Read through all of the instructions carefully, as they contain important information about the product.
- Pay attention to and follow the instructions provided, particularly the safety instructions and warnings.
- Please keep these instructions in a safe place and make sure that they are available to all users at all times.

1.4 Further applicable documents for customer/users

Please ensure that the following guides were ultimately delivered to the customer who uses the product:

- this guide / instructions
- Hinged Gate **Operator** guide
- Hinged gate guide / instructions

1.5 Caution Indications

The general warning symbol indicates a danger that can lead to **injury** or **death**.

In the text, the general warning symbol will be used in connection with the caution levels described below. In the illustrated section, an additional instruction refers back to the explanation in the text.

⚠	**DANGER!**
	Indicates a danger that leads directly to death or serious injuries.
⚠	**WARNING!**
	Indicates a danger that can lead to death or serious injuries.
⚠	**CAUTION!**
	Indicates a danger that can lead to minor or moderate injuries.
☞	**ATTENTION!**
	Indicates a danger that can lead to damage or destruction of the product.

2 SAFETY PRECAUTIONS

2.1 Intended use

The hinged gate is designed and intended exclusively for the operation of smooth-running hinged gate operators DX524, DX250 SA, DX424 SA (24 VDC) in the domestic, non-commercial sector. The maximum permissible gate size and maximum weight must not be exceeded.
The gate must be easy to open and close by hand.

Please observe the manufacturer‘s specifications regarding the door and operator combination.
Possible hazards as defined in EN 12604, EN 12445 and EN 12453 are prevented by the design itself and by carrying out installation in accordance with our guidelines.
Gate systems used by the general public and equipped with a single protective device, e.g. force limit, may only be used when monitored.

2.2 Inappropriate use

Do **not** use this controller for any other gate-operators!
Do **not** use this controller for larger and heavier gates than specified!

2.3 Fitter qualification

Only correct fitting and maintenance in compliance with the instructions by a competent/specialist company or a competent/qualified person ensures safe and flawless operation of the system. According to EN 12635, a specialist is a person with suitable training, specialist knowledge and practical experience sufficient to correctly and safely fit, test, and maintain a gate system.

2.4 Important safety instructions

Work to be carried out (mounting, maintenance, repair and dismantling) by qualified service personal only!
Should the hinged gate operator fail, a specialist must be immediately entrusted with its inspection / repair.

2.5 Important instructions for a safe installation

Any further processing must ensure that the national regulations governing the operation of electrical equipment are complied with.

2.5.1. After installation

The installer of the gate system must declare conformity to DIN EN 13241-1 in accordance with the scope of application.

2.6 Checking the gate / gate system

The design of the operator is **not** suitable **nor** intended for the opening and closing of heavy gates, i.e. gates that can no longer be opened or closed manually. Before installing the operator, it is therefore necessary to check the gate and make sure that it can also be easily moved by hand. In addition, check the entire gate system (gate pivots, bearings and fastenings) for wear and possible damage. Check for signs of corrosion or fractures. The gate system may not be used if repair or adjustment work needs to be carried out. Always remember that a fault in the gate system or a misaligned gate can also cause severe injury.

Note
Before installing the operator and in the interests of personal safety, make sure that any necessary repairs to the gate are carried out by a qualified service engineer.

2.7 Warnings

WARNING!

Danger of injury due to unexpected gate travel!

Incorrect assembly or handling of the operator may trigger unwanted gate travel that may result in persons or objects being trapped.

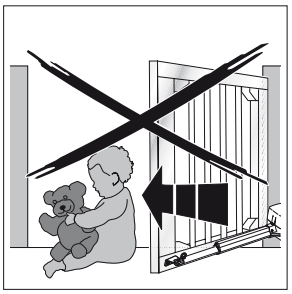
Follow all the instructions provided in this manual. Incorrectly attached control devices (e.g. buttons) may trigger unwanted gate travel. Persons or objects may be trapped as a result.

- Install control devices at a height of at least 1.5 m (out of the reach of children).
- Fit permanently installed control devices (such as buttons) so that the entire area of travel of the gate is visible, but they are still away from moving parts.

Persons or objects may be trapped if the installed safety equipment fails.

- In accordance with BGR 232, install at least one clearly visible and easily accessible emergency command unit (emergency OFF) near the gate so the gate can be brought to a standstill in the case of danger.

WARNING!



Danger of injury during gate travel!

If people or objects are in the area around the gate while the gate is in motion, this can lead to injuries or damage.

Make sure that:

- Children are not allowed to play near the gate system.
- Make sure that no persons or objects are in the gate‘s travel range.
- Make sure that no persons or objects are located between the gate and the operator mechanics.

- If the gate has only one safety feature, only operate the gate operator if you are within sight of the gate‘s area of travel.
- Monitor the gate travel until the gate has reached the end-of-travel position.
- Only drive or pass through remote control gate systems if the gate is in the OPEN end-of-travel position!

2.8 Maintenance advice

The hinged gate operator is maintenance-free.
For your own safety, however, we recommend having the gate system **checked by a specialist in accordance with the manufacturer‘s specifications**.

Note
The function of all the safety and protective devices, must be checked once a month and, if necessary, any faults or defects rectified immediately.

Inspection and maintenance work may only be carried out by a specialist. In this connection, please contact your supplier. A visual inspection may be carried out by the owner. If repairs become necessary, please contact your supplier. We would like to point out that any repairs not carried out properly or with due professionalism shall render the warranty null and void.

3 WARRANTY

- We shall be exempt from our warranty obligations and product liability in the event that the customer carries out his own structural alterations or undertakes improper installation work or arranges for same to be carried out by others without our prior approval and contrary to the fitting guidelines we have provided.
- Moreover, we shall accept no responsibility for the inadvertent or negligent use of the operator and the accessories nor for improper maintenance of the gate and its counterbalance.

3.1 Warranty period

- In addition to the statutory warranty provided by the dealer in the sales contract, we grant the following warranty for parts from the date of purchase:
- 2 years for the operator mechanics, motor, motor control, radio equipment, accessories.
- There is no warranty on consumables (e.g. fuses, batteries, lamps).
- Claims made under the warranty do not extend the warranty period. For replacement parts and repairs the warranty period is six months or at least the remainder of the warranty period.

3.2 Prerequisites

- A claim under this warranty is only valid for the country in which the equipment was bought. The product must have been purchased through our authorised distribution channels.
- A claim under this warranty exists only for damage to the object of the contract itself. Reimbursement of expenditure for dismantling and fitting, testing of corresponding parts, as well as demands for lost profits and compensation for damages, are excluded from the warranty.
- The receipt of purchase substantiates your right to claim under the warranty.

3.3 Performance

- For the duration of the warranty we shall eliminate any product defects that are proven to be attributable to a material or manufacturing fault.
- We pledge to replace free of charge and at our discretion the defective goods with nondefective goods, to carry out repairs, or to grant a price reduction.

Damages caused by the following are excluded:

- improper fitting and connection
- improper initial start-up and operation
- external factors such as fire, water, abnormal environmental conditions
- mechanical damage caused by accidents, falls, impacts
- negligent or intentional destruction
- normal wear or deficient maintenance
- repairs conducted by unqualified persons
- use of non-original parts
- removal or defacing of the data label

Replaced parts become our property.

4 TECHNICAL DETAILS

4.1 Technical data

Motor voltage	230 VAC / 50Hz
Maximal Power	150 W
Duty rating	60%
Voltage for accessories	24 VAC / max. 500 mA
Operating Temperature	-20 ÷ +60 °C
Fuse	F1 = 10 A
Dimensions housing	295 x 230 x 100 mm
Weight	3000 g
Index of protection	IP54

4.2 Description of control board

The digital control board is an innovative product, which guaranties safety and reliability for the automation of 1- and 2-leaf gates.
The control board comes with a display, which allows an easy programming and serves as a constant control of the status of the control and safety inputs. The easy structure of the menu permits a user friendly adjustment of the operating times and functions.

Further features:

- Separated force adjustment for motor 1 and motor 2, separated for open and close directions.
- Obstacle detection via voltage control in the starting capacitors.
- Automatic learning of runtimes.
- Operation without end-switches; endpositions door-open and door closed programmed by runtimes.
  IMPORTANT: If drives without end switches are used, there must be installed external mechanical limit stops.
- Testing of safety devices (photocells, safety strips and motor triac) before each opening.
- Deactivation of safety inputs via configuration menu, which means not connected safety devices can be deactivated in the corresponding menu. This way it is not necessary to connect external bridges to the corresponding clamps.
- 24 VAC exit for controlling a signal- or flashing light (max. 24 VDC).
- potential-free relay for controlling an external light.

5 ELECTRICAL CONNECTION

5.1 Safety instructions: work involving electrics/electronics

DANGER!

Mains voltage!
Contact with the mains voltage presents the danger of a deadly electric shock. The following points apply to all work involving electrics / electronics:

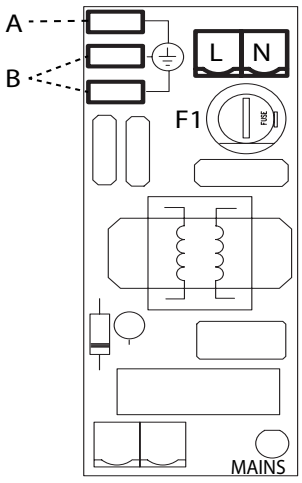
- Electrical connections may only be made by a qualified electrician!
- On-site electrical installation must confirm to the applicable protective regulations (230/240 VAC, 50/60 Hz)!
- Ensure that the national regulations governing the operation of electrical equipment are complied with.
- Before undertaking any electrical work, disconnect the system from the mains supply and ensure that it cannot be inadvertently turned on.

ATTENTION

- External voltage on the connecting terminals of the control will destroy the electronics.
- The connection cables of the operator (24 V DC) must be laid in a separate installation system from the other supply cables (230 V AC).

5.2 Power supply

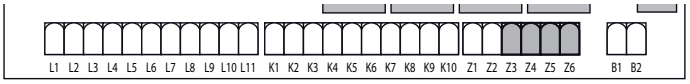
- Connect controller with 230 VAC / 50Hz.
- Protect with an earth leakage circuit breaker (30 mA) according to legal requirements
- Connect power supply on clamps **N** and **L**.
- Connect the earth cable of the system to the preset faston **A**.
- Connect the earth cable of the motor to the preset faston **B**.



5.3 Connecting the motor

The control board can control one or two **24 VDC** motors. If only one motor is used, connect it to the corresponding clamps for motor 1.

- Connect the power supply for **motor 1** as follows:
  motor + to clamp **Z3**
  motor - to clamp **Z4**
- Connect the power supply for **motor 2** as follows:
  motor **+** to clamp **Z5**
  motor **-** to clamp **Z6**

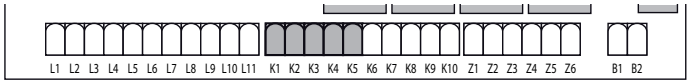


Note
set menü **P02** to „**0**“, if only one motor is used

5.4 Connecting end switches

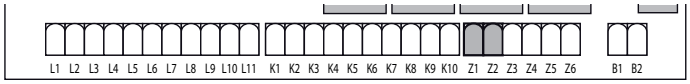
- connect end swicht (potential-free opener contact) of **motor 1**:
  end switch **Gate-close** to clamp **K2**
  end switch **Gate-open** to clamp **K1**
  common end switch to clamp **K5**

- connect end swicht (potential-free opener contact) of **motor 2**:
  end switch **Gate-close** to clamp **K4**
  end switch **Gate-open** to clamp **K3**
  common end switch to clamp **K5**



5.5 Connection of warning/flashing light

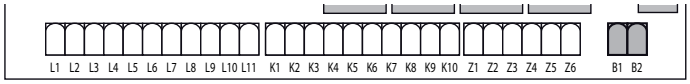
A warning light (e.g. red traffic light), a flashing light without integrated flasher unit or a control light can be connected to the control board. Connect the light (**24 VDC / max. 10 W**) to clamps **Z1(+)** and **Z2 (-)**.



Note
For settings, see ***„P44 Low voltage outputs - lights“ on page 23***.

5.6 Connecting external lighting

Connect external lighting to clamps **B1** and **B2** (potential-free relay output), **max. 230 VAC / max. 40 W**.



Note
For settings, see ***„P42 optional relay B1/B2“ on page 23*** and ***„P43 function channel 2 radio-control“ on page 23***.

5.7 Connection of light barriers

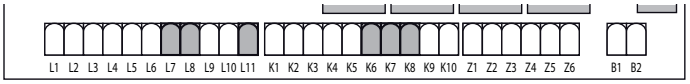
The control board has two safety inputs for photocells which are divided in different categories:

- **photocells type 1:** The photocells are installed in the inner area of the gate and is active in OPEN and CLOSE direction.
  An activation of the photocells stops the gate movement as long as the light beam is interrupted. With the uninterrupted light beam, the control board opens the gate entirely.
- **photocells type 2**: The photocells are installed on the outside of the gate and are only activated in closure. When activated, the control board opens the gate immediately without waiting for release.

To supply the photocells, the control board disposes of a voltage output **24 VAC / max. 500 mA** and in addition a testing output which checks the functioning of the connected photocells before every opening.
The power supply clamps for the photocells are protected by an electronic fuse which interrupts the power when overload.

Connection to control board:

- voltage supply of sender to clamps **K7 (-)** and **K8 (+)**
- voltage supply of receiver to clamps **K6 (+)** and **K7 (-)**
- potential-free opening contact of receiver **type 1** to clamps **L7** and **L11**
- potential-free opening contact of receiver **type 2** to clamps **L8** und **L11**



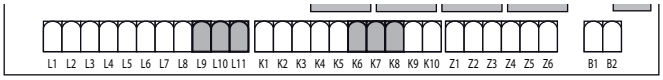
Note
If there are more photocells of the same type installed (**type1 / type 2**), their opening contacts must be connected in series.
If a reflection photocell is used, the voltage supply must be connected to the clamps **K7 (-)** and **K8 (+)** of the control board in order to disable the testing.

5.8 Closing border protection

Two inputs are available for connecting closing border protections:

- **border protection type 1 (clamps L9 and L11)**: The input is only active in opening direction. If the closing border protection is activated when opening, the drive stops and reverses for approx. **3 sec**.
  The next command or the passing of remaining-open-time (with activated auto-closure) will close the gate.

- **border protection type 2 (clamps L10 and L11)**: The input is only activated in closing direction. If the closing border protection is activated, the drive stops and reverses for approx. **3 sec**. in OPEN direction; with the auto-closure activated, the gate opens entirely. When the closing border protection is activated 5 x with activated auto-closure, the gate remains open and closes only when a new command is given.



Note
For settings, see ***„P35 Test of closing border protection“ on page 21***.

Use closing border protections and evaluation units according to **DIN EN 12978** only.

Settings:

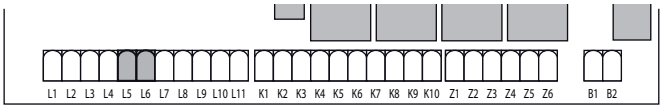
- evaluation for 8k2 safety closing border protection
- evaluation for external evaluation units with opener contact and testing.
- evaluation for external evaluation units with opener contact without testing.

- Connect 8k2 safety closing border protection / potential-free opener contact of evaluation unit (**border protection type 1**) to clamps **L9** and **L11**.
- Connect 8k2 safety closing border protection / potential-free opener contact of evaluation unit (**border protection type 2**) to clamps **L10** and **L11**.
- Connect the voltage supply of an external evaluation unit (**24 VAC** only) to the clamps **K8 (+)** and **K7 (-).** For testing the voltage supply will be interrupted.
- If it´s not possible to test the evaluation unit this way, connect the voltage supply to the clamps **K6 (+)** and **K7 (-).**

5.9 Connection stop interrupter

There can be connected a STOP interrupter with potential-free opener contact to the control board. When confirmed, the gate movement stops immediately.

- Connect potential-free opener contact to clamp **L5 (STOPP)** and **L6 (COM)**.



Note
When with the auto-closure activated during gate movement or when gate is open the Stop button is pushed, even after passing the remaining-open-time no closure is carried out. A new command must be given.

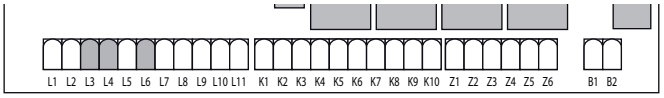
5.10 Command inputs

The control board disposes of two command inputs which can be programmed differently, see ***„P28 Function of START connections L3/ L6 L4/L6“ on page 19***:

- **Standard mode**:
  A command on input **START** opens or closes the gate.
  A command on input **START P** opens or closes the gate for the time which is programmed in menu **P03** (pedestrian opening).
- **Open/ close mode**:
  A command on input **START** opens the gate.
  A command on input **START P** closes the gate.
- **Deadman mode**:
  A command on input **START** opens the gate as long as the contact is closed. When contact is opened, the gate stops immediately.
  A command on input **START P** closes the gate as long as the contact is closed. When contact is opened, the gate stops immediately.
- **Time mode (permanent open)**:
  A permanent command on input **START** opens the gate or remains open for the time of the permanent command.
  A permanent command on input **START P** opens the gate or remains it in pedestrian opening for the time of the permanent command.
  After opening the permanent command closes the gate after passing the remaining-open and prewarning time.

  Note
  Time mode only works with auto-closure.

- Connect the potential-free closer contact:
  command **START** to clamp **L3 (START)** and **L6 (COM)**.
  command **START P** to clamp **L4 (START P)** and **L6 (COM)**.

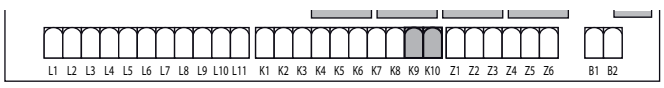


Note
Button **UP** / **channel 1** of the plug-on radio receiver has the same function as input **START**.
Button **DOWN** / **channel 2** of the plug-on radio receiver has the same function as input **START P**.

5.11 Electronic lock

A **12 V** electronic lock can be connected. This way a secure and mechanical lock in end position gate-CLOSED is ensured.

- Connect to clamps **K9** and **K10**.



5.12 Radio receiver

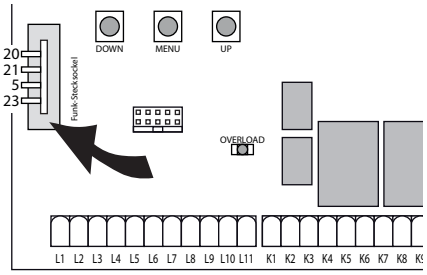
A radio receiver can be plugged-on onto the included 4-pole adaptor (for example BHE221).

Note
Switch off power supply before plugging on the radio receiver.

For the programming of the radio components, please refer to the corresponding instructions of receiver and transmitter.

Connection of adapter:

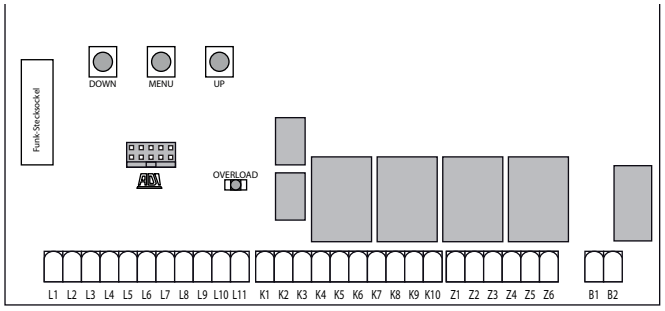
20 0 VDC
21 channel 1 (Start)
5 + 12 VDC
23 channel 2 (Start P)



5.13 Extra module

The digital control board offers the possibility to expand the system with new functions using extra modules. To connect these extra modules there is a ADI plug-on socket installed on the control board.

Note
ATTENTION! Read the instructions of the modules carefully **before** installing the components.

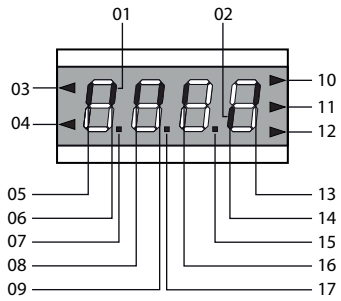


6 LAYOUT OF CONTROL BOARD

6.1 Function-button and Display

After switching on the power supply, the control board checks the correct functioning of the display by switching on all segments for **~ 1,5 sec.** (**8.8.8.8.**) Afterwards it shows the software version.
At the end of the test the menu is shown:

01 - Contact open
02 - Contact closed
03 - START
04 - START P (pedestrian)
05 - STOP
06 - photocell 1
07 - DOWN
08 - photocell 2
09 - Contact barrier 1
10 - Opening phase in process
11 - Pause/ gate open
12 - Closing phase in process
13 - end switch motor 1
14 - end switch motor 2
15 - UP
16 - Contact barrier 2
17 - MENU



- The display shows the status of the connected control and safety devices as well as the programming buttons.
- If the upper vertical segment lights up, the contact is closed.
- If the lower vertical segment lights up, the contact is open.
- The above shown illustration shows that inputs of endswitch, FOTO 1/2, contactbarrier 1/2 and STOP are connected correctly.
- The dots between the numbers show the status of the programming buttons. If a button is pushed, the corresponding dot lights up.

Arrows at the left of the display show the state of the command inputs START - START P connected to the control board:

- Command START = upper arrow (03) lit.
  Command START P = lower arrow (04) lit.

Arrows at the right of the display shows the state of the gate:

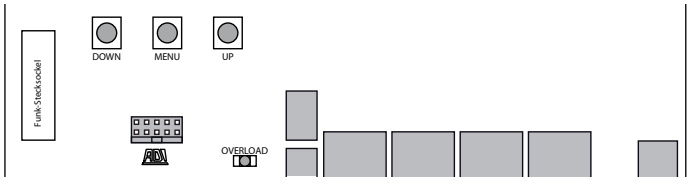
- The upper arrow lights up when the gate is in opening phase. When flashing, opening phase has been initiated by safety device (safety strip or light barrier).
- The middle arrow shows that the gate is open or in inclined position. When flashing, the auto-closure is activated.
- The lower arrow lights up when the gate is in closing phase. When flashing, closing phase has been initiated by safety device (safety strip or light barrier).

6.1.1. Function of buttons DOWN and UP in normal mode

- **DOWN** corresponds to the command **START P** (pedestrian opening).
- **UP** corresponds to the command **START** (key switch, push button).

6.1.2. Function of buttons DOWN, MENU and UP in programming mode

To get into the programming mode or rather to navigate in it, the buttons **DOWN**, **MENU** and **UP** may be used.



function of buttons

5 main menues are selectable:

1	**-PrG**	Programming mode
2	**-Cnt**	counter / maintenance counter
3	**-Err**	error list
4	**-Lrn**	Learn mode, Learning runtimes
5	**-dEF**	set back to factory setting

- Press **MENU**, for choosing a main menu. Press **MENU** until the designated menue appears, like **-PrG**. Release button **MENU**.
- In Programming mode, changes are saved by pressing **MENU**.
- Press **DOWN** once to select the modes step by step downwards. If you keep **DOWN** pressed, a fast run through the menues starts downwards until **EndE** is reached.
- Press **UP** once, to select the modes step by step upwards. If you keep **UP** pressed, a fast run through the menues starts upwards until **P01** is reached.

6.2 Programming mode (mainmenue 1)

activate programming mode:

- Press **MENU** until **-PrG** is displayed.
- Release button **MENU**.
- Press **UP** or **DOWN** for the desired menue (**P01** to **P36)**. (P-menues description starts at ***page 9***)
- Press **MENU** to display the current setting of the P-menue. by pressing **UP** or **DOWN** these settings are changeable.
- **Press MENU** again to save changes and return to menue-level.

leave programming mode:

- Press **UP** or **DOWN**, until **Ende** is displayed.
- press **MENU**, **nEin** is displayed.
- **press UP** or **DOWN** to choose option **JA** (yes).
- Press **MENU** to leave programming mode.

the control board switches back to normal mode. (operation-mode).

Note
If no action is carried out within 1 minute, programming mode is left without saving the earlier made modifications. The modifications are not saved either, if the programming mode is not left via **EndE** and **JA**.

In programming mode there are 3 menu types:

- Function menu
- Time menu
- Value menu (service menu)

6.3 Function menu settings

In this menu certain functions may be activated and deactivated, e.g. light barrier, stop-circuit etc..

6.4 Time menu settings

In this menu working hours like opening and closure time of drive, remaining-open-time, prewarn-time, etc.

The indication mode depends of the registered setting:

- Times under 1 minute:

pressing **UP** once increases the set time by 0,5 seconds,
pressing **DOWN** once reduces the time by 0,5 seconds.

- times between 1 and 10 minutes:

pressing **UP** once increases the set time by 5 seconds,
pressing **DOWN** once reduces the time by 5 seconds.

- times over 10 minutes:

pressing **UP** once increases the set time by 30 seconds,
pressing **DOWN** once reduces the time by 30 seconds.

- If button **UP** or **DOWN** remains pressed, the quick-scroll starts until maximum/ minimum value of setting is reached.
  In some cases value "**0**" is equivalent to a deactivation of the function and therefore indicated as **AUS** (off) instead of "**0**".

6.5 Value menue setting

Settings values, e.g. counter, duration time etc..

- Press **UP** once increses the value
- Press **DOWN** once decreases the value.
- If button **UP** or **DOWN** remains pressed, a fast-run until starts until maximum/ minimum value of setting is reached.
  In some cases value "**0**" is equivalent to a deactivation of the function and therefore indicated as **AUS** (off) instead of "**0**".

6.6 learn runtimes mode (main menue 4)

Automatic learning of runtimes activation:

- Press **MENU** until **-Lrn** is displayed.
- Release button **MENU**.
- **nEin** is displayed, change to **JA** by pressing **UP** or **DOWN**.
- Press **MENU** for comfirmation, learn runtimes mode starts. See also ***„Function-button and Display" on page 9***.

Hinweis
Before starting this mode for a **one-leaf gate**, switch the runtime for motor 2 in menu **P02** to "**0**".

For running this mode, set menue **P28** to **StAn**.
See ***page 19***.

6.7 Set to factory settings (main menue 5)

All settings can be set back to factory setting.
For activating factory settings:

- Press **MENU** until **-dEF** is displayed.
- Release button **MENU**.
- **nEin** is displayed, change to **JA** by pressing **UP** or **DOWN**.
- Press **MENU** for comfirmation. The controller is set back to its factory settings and in normal operation mode.

Note
For factory settings, see table on ***page 12***.
These settings are useful for a fast installation, but **not** always for good operation! Ideal values for every gate should be set individual by a specialist.

7 SET-UP OF CONTROL BOARD

7.1 Quick set-up

In this chapter the set-up of the control board is described.
Please proceed as follows::

- Activate factory setting, see ***page 10***.
- Learn runtimes, see ***page 10***.

Note
Open gate ~1 m **before** start learning runtimes!
Install and activate safety devices (**P29**-**P34**) **after** learning runtimes.

After a successful learning procedure the control board switches back to normal mode and saves the carried out settings and runtimes.

7.2 Learning of runtimes

7.2.1. two motors with end switches

- After starting the learning cycle, motor 1 moves a short time into OPEN direction. Next motor 2 first and then motor 1 move until they reach gate-CLOSED end switches.
- Next both leaves move until reaching gate-OPEN end switches.
- Next leaf 2 and then, after the set leaf-delay-time, leaf 1 move until reaching end position gate CLOSED.

- The maximum power-value for motor 1 OPEN (**P39.o**) is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.o** is displayed.

Note
If no action is carried out within 20 seconds, programming mode is left **without** saving the earlier made modifications.

- Press **DOWN**, **P39.c** is displayed.
  Press **MENU**, maximum power-value for motor 1 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.c** is displayed.

- Press **DOWN**, **P40.o** is displayed.
  Press **MENU**, maximum power-value for motor 2 OPEN is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P40.o** is displayed.

- Press **DOWN**, **P40.c** is displayed.
  Press **MENU**, maximum power-value for motor 2 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P40.c** is displayed.

- Press **DOWN**, until **Ende** is displayed.
  Press **MENU** to choose option **JA** (yes).
  Press **MENU** to leave programming mode.

Note
Values for closing border protection are **not** saved, if leaving the menue any other way than described!

Increase values **P39.o**, **P39.c**, **P40.o**, **P40.c** for **~0,5 A**, as for winter the drives need more power!

- **Runtimes are now registered.**

7.2.2. one motor with end switches

Note
Before starting this mode for a **one-leaf gate**, switch runtime for motor 2 in menu **P02** to "**0**".

- After starting the learning cycle, the motor moves the leaf into CLOSE direction until gate-CLOSED end switches are reached.
- Next the leaf opens until gate-OPEN end switches are reached.
- Next the leaf closes until end position gate CLOSED are reached.

- The maximum power-value for motor 1 OPEN (**P39.o**) is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.o** is displayed.

Note
If no action is carried out within 20 seconds, programming mode is left **without** saving the earlier made modifications.

- Press **DOWN**, **P39.c** is displayed.
  Press **MENU**, maximum power-value for motor 1 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.c** is displayed.

- Press **DOWN**, until **Ende** is displayed.
  Press **MENU** to choose option **JA** (yes).
  Press **MENU** to leave programming mode.

Note
Values for closing border protection are **not** saved, if leaving the menue any other way than described!

Increase values **P39.o** and **P39.c** for **~0,5 A**, as for winter the drives need more power!

- **Runtimes are now registered**.

7.2.3. two motors without end switches

Note
If drives without end switches are used, **install** external mechanical limit stops for OPEN/CLOSE.

Set value **10** in menue **P18.o** and **P18.c**,
set at least **2,00"** in menue **P38** to avoid malfunction!

- After starting the learning cycle, motor 1 moves a short time into OPEN direction.
- Next motor 2 first and then motor 1 move until they reach gate-CLOSED limit stop.
- Next both leafs move until reaching gate-OPEN mechanical limit stop.
- Next leaf 2 and then, after the set leaf-delay-time, leaf 1 move until reaching end-position at gate CLOSED.

- The maximum power-value for motor 1 OPEN (**P39.o**) is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.o** is displayed.

Note
If no action is carried out within 20 seconds, programming mode is left **without** saving the earlier made modifications.

- Press **DOWN**, **P39.c** is displayed.
  Press **MENU**, maximum power-value for motor 1 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.c** is displayed.

- Press **DOWN**, **P40.o** is displayed.
  Press **MENU**, maximum power-value for motor 2 OPEN is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P40.o** is displayed.

- Press **DOWN**, **P40.c** is displayed.
  Press **MENU**, maximum power-value for motor 2 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P40.c** is displayed.

- Press **DOWN**, until **Ende** is displayed.
  Press **MENU** to choose option **JA** (yes).
  Press **MENU** to leave programming mode.

Note
Values for closing border protection are **not** saved, if leaving the menue any other way than described!

Increase values **P39.o**, **P39.c**, **P40.o**, **P40.c** for **~0,5 A**, as for winter the drives need more power!

- **Runtimes are now registered**.

7.2.4. one motor without end switches

Note
Before starting this mode for a **one-leaf gate**, switch the runtime for motor 2 in menu **P02** to "**0**".

If drives without end switches are used, **install** external mechanical limit stops for OPEN/CLOSE.

Set value **10** in menue **P18.o** and **P18.c**,
set at least **2,00"** in menue **P38** to avoid malfunction!

- After starting the learning cycle, the motor moves the leaf into CLOSE direction until gate-CLOSED limit stops are reached.
- Next the leaf opens until gate-OPEN limit stops are reached.
- Next the leaf closes until end position gate CLOSED are reached.

- The maximum power-value for motor 1 OPEN (**P39.o**) is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.o** is displayed.

Note
If no action is carried out within 20 seconds, programming mode is left **without** saving the earlier made modifications.

- Press **DOWN**, **P39.c** is displayed.
  Press **MENU**, maximum power-value for motor 1 CLOSE is displayed.
  If necessary, increase/decrease the value by pressing **UP** or **DOWN**.
  To save the value, press **MENU**, **P39.c** is displayed.

- Press **DOWN**, until **Ende** is displayed.
  Press **MENU** to choose option **JA** (yes).
  Press **MENU** to leave programming mode.

Note
Values for closing border protection are **not** saved, if leaving the menue any other way than described!

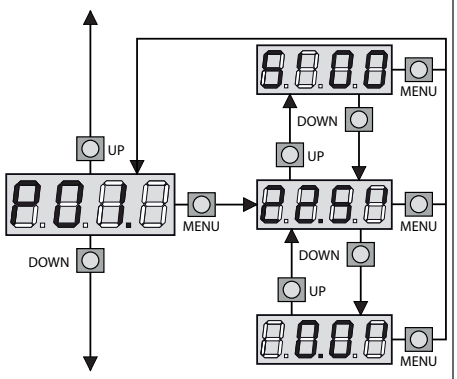
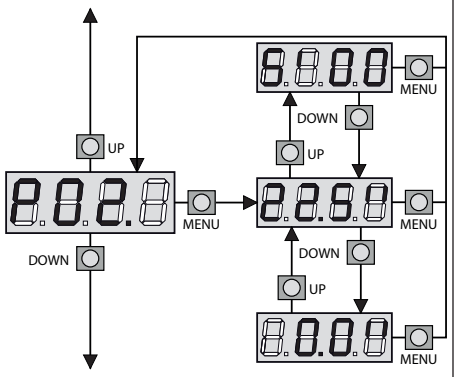
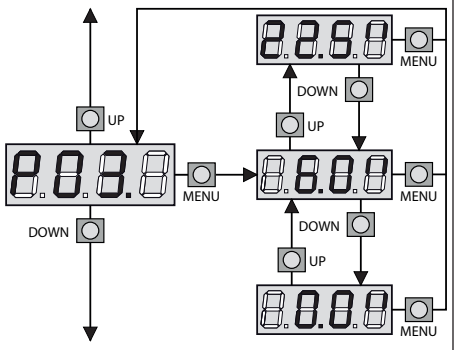
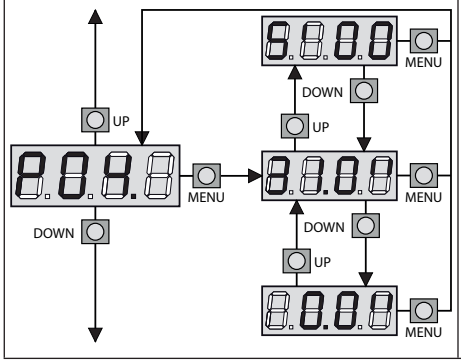
Increase values **P39.o** and **P39.c** for **~0,5 A**, as for winter the drives need more power!

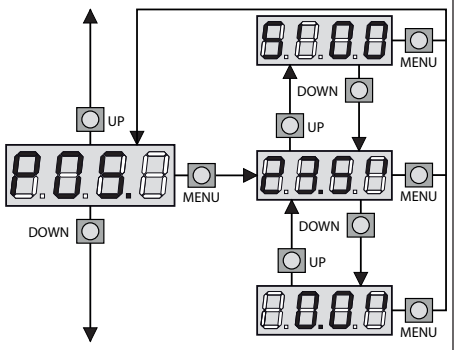
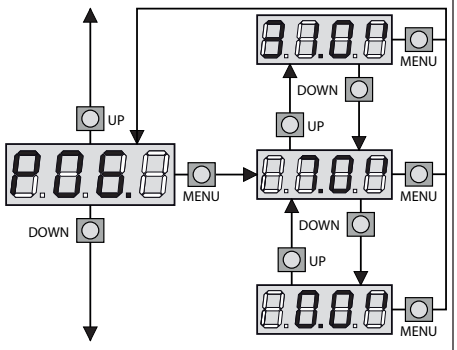
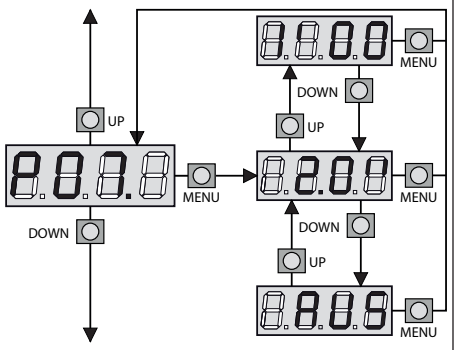
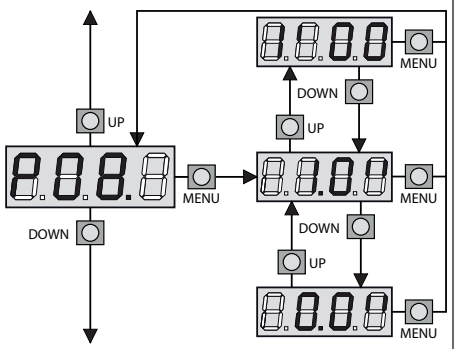
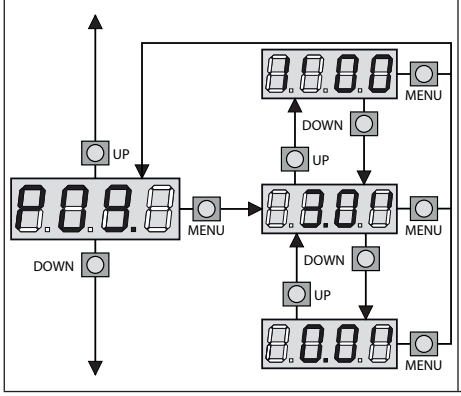
- **Runtimes are now registered**.

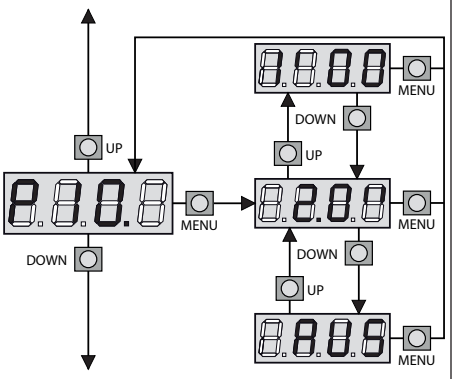
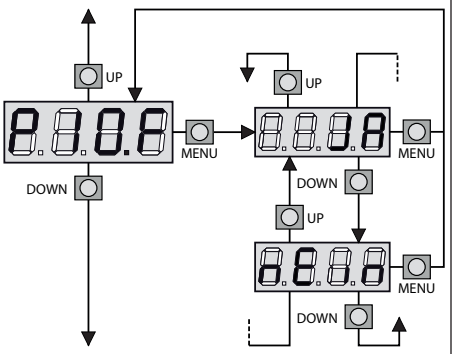
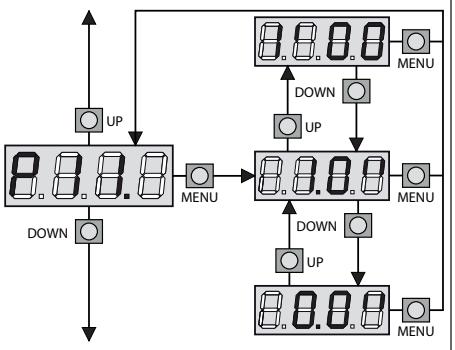
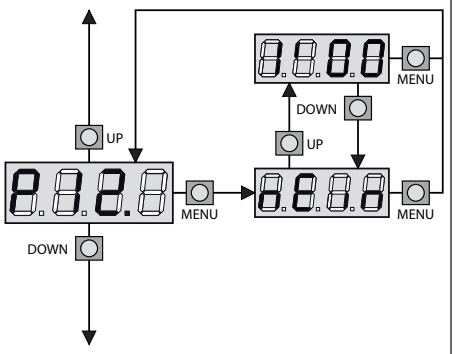
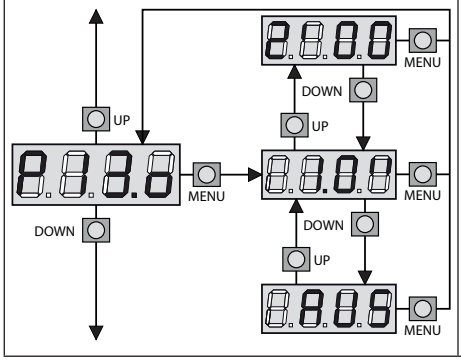
7.3 Set-up menu

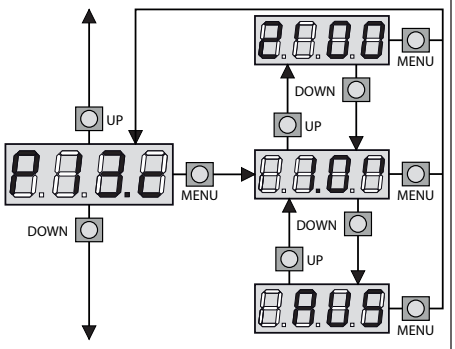
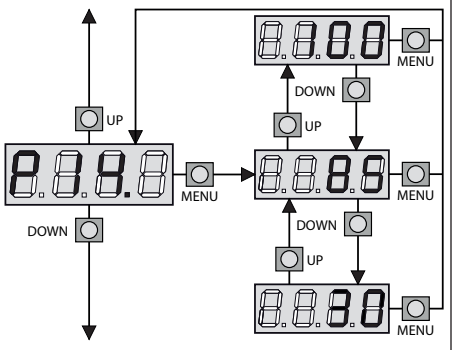
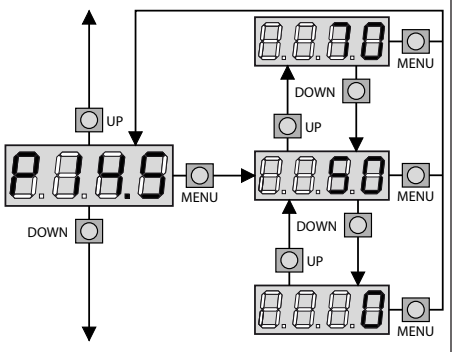
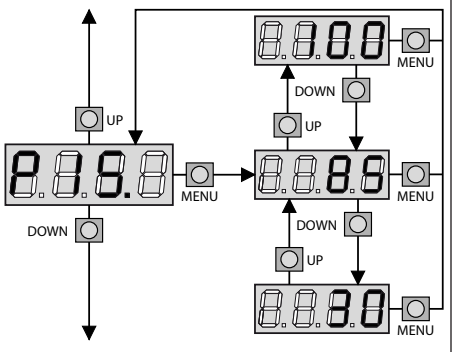
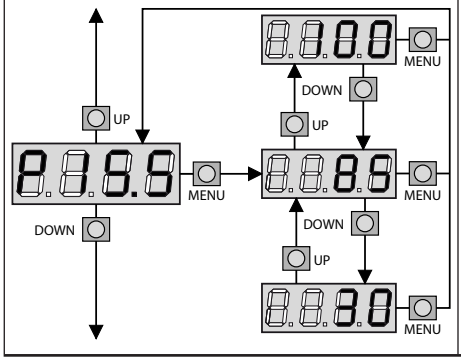
On the following pages the options of the set-up menu are explained. After having learned the runtimes, you may now make and save the necessary changes for the gate situation. It is important that you leave the menu via **EndE**, if not, the changes will not be saved.

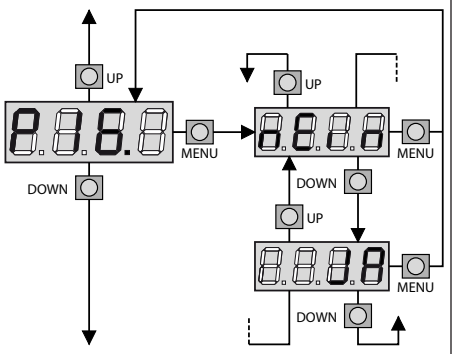
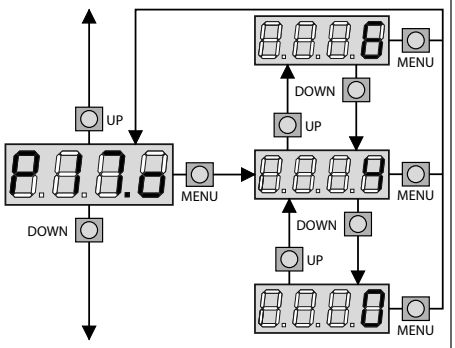
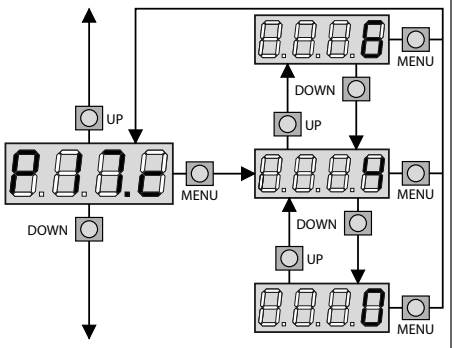
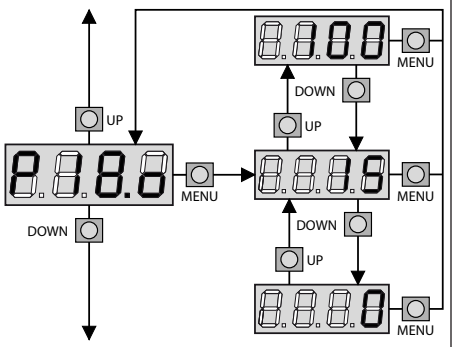
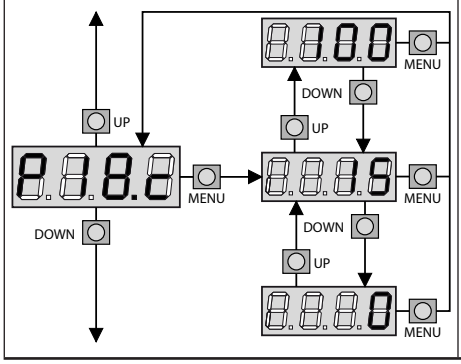
Note
Please make the changes step by step and check if they are made correctly. This way you can immediately detect and eliminate errors.

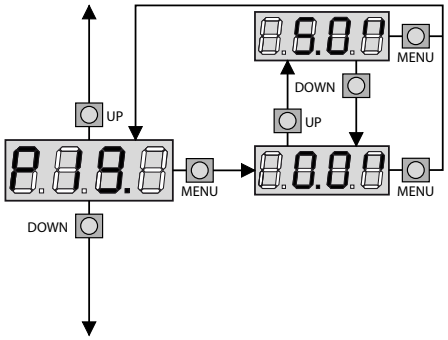
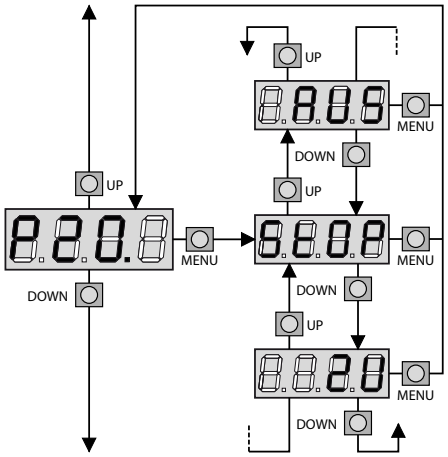
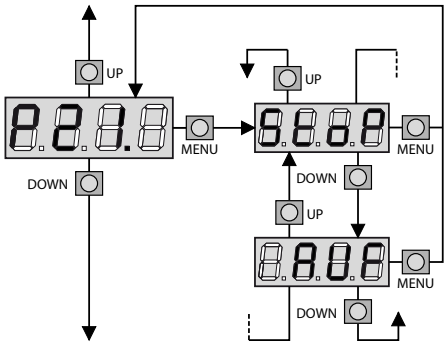
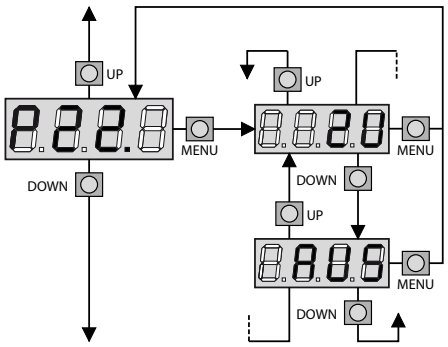
Display	Description	Values	
	**7.4 P01 Duration leaf 1 OPEN** Might be interrupted if an obstacle-signal or end-switch-signal is generated.	**0.0" - 5.0'**	**22.5"**
	**7.5 P02 Duration leaf 2 OPEN** Might be interrupted if an obstacle-signal or end-switch-signal is generated. **Note** If motor 2 is not installed, switch menu P02 to „**0**“. All options for motor 2 will be ignored then.	**0.0" - 5.0'**	**22.5"**
	**7.6 P03 Duration leaf 1 OPEN PEDESTRIAN traffic** If command **START P** is active, **motor 1** opens for the duration. ● Max. setable time = time in **P01**.	**0.0" - 1.0'** **max. P01**	**6.0"**
	**7.7 P04 Duration leaf 1 CLOSE** Might be interrupted if an obstacle-signal or end-switch-signal is generated.	**0.0" - 5.0'**	**23.5"**

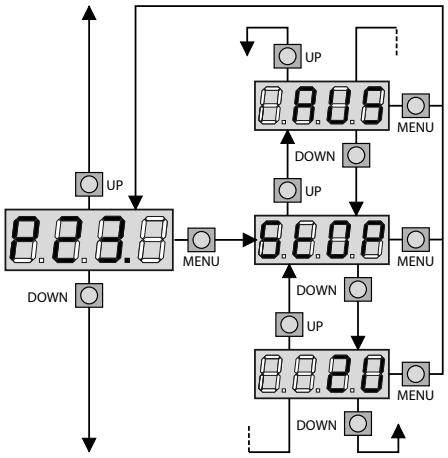
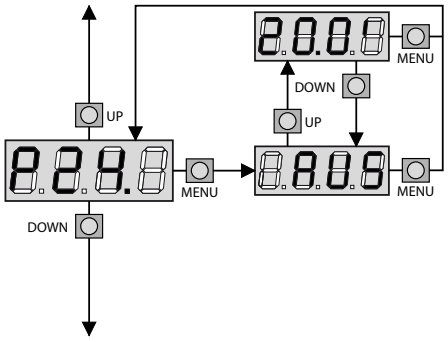
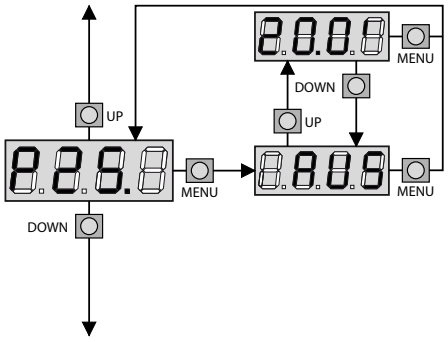
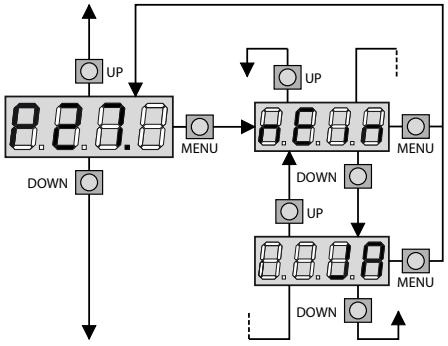
Display	Description	Values	
	**7.8 P05 Duration leaf 2 CLOSE** Might be interrupted if an obstacle-signal or end-switch-signal is generated.	**0.0" - 5.0'**	**23.5"**
	**7.9 P06 Duration leaf 1 CLOSE PEDESTRIAN traffic** Might be interrupted if an obstacle-signal or end-switch-signal is generated. • Max. setable time = time in **P04**.	**0.0" - 1.0'** **max. P04**	**7.0"**
	**7.10 P07 Duration leaf 2 CLOSE PEDESTRIAN traffic** • option for additional time for leaf 1 to close (e.g. if strong wind decelerates closing of leaf 1, this duration delays clsoing of leaf 2) • **AUS** = function deactivated	**0.0" - 1.0'** **AUS**	**2.0"**
	**7.11 P08 Duration leaf delay OPEN** • **motor 1** opens first, after duration **motor 2** opens.	**0.0" - 1.0'**	**1.0"**
	**7.12 P09 Duration leaf delay CLOSE** • motor 2 closes first, after duration motor 1 closes. This duration should avoid a collision.	**0.0" - 1.0'**	**3.0"**

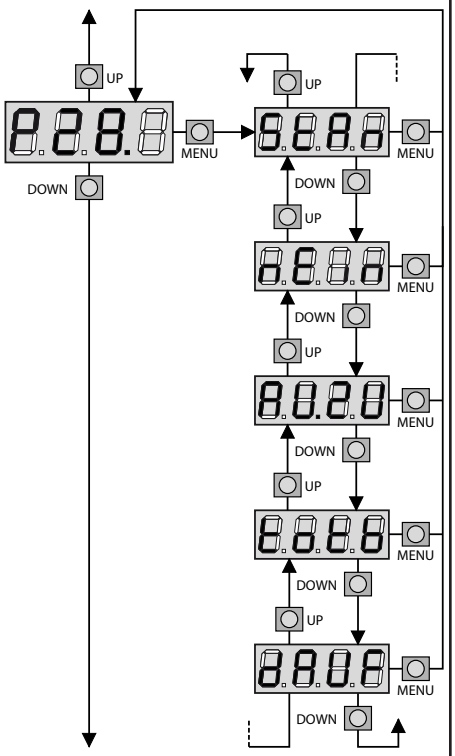
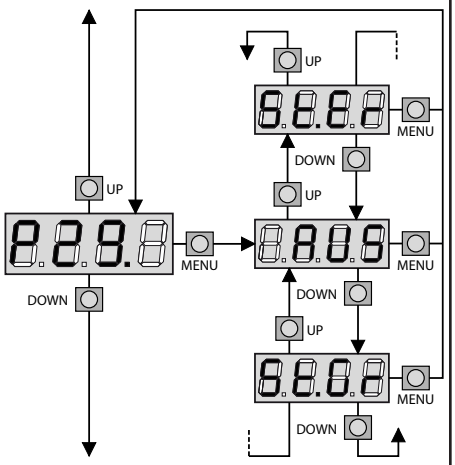
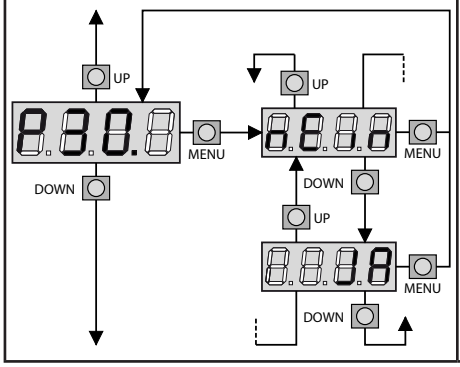
Display	Description	Values	
	**7.13 P10 ELECTRONIC KEY LOCK (clamp K9/K10)** Function and duration of activation of ELECTRONIC KEY LOCK ● **AUS** = function deactivated **Note** if no electronic key lock is used, set **P10** to **AUS**.	**0.5" - 1.0' AUS**	**1.0"**
	**7.14 P10.F mode „quiet“ key lock** operation mode for electronic key lock. **JA** „quiet“ mode (100 Hz) **nEin** Standard mode (50 Hz) **Note** quiet mode uses a higher frequenzy to reduce the lock-sound. If any problems happen during unlocking, use Standard mode.	**JA nEin**	**JA**
	**7.15 P11 Duration IN ADVANCE function ELECTRONIC KEY LOCK** duration of controlling electronic key lock before motor starts. ● If active, duration of **P10 must** be higher than **P11**. ● **AUS** = function deactivated **Note** if no electronic key lock is used, set **P11** to **AUS**.	**0.0" - 1.0' AUS**	**1.0"**
	**7.16 P12 Short reverse for opening with electronic key lock** duration (gate locked by electronic key lock) before opening starts. It allows easier unlock for the key lock. ● If active, duration of **P11 must** be higher than **P12**. ● **AUS** = function deactivated	**0.0" - 1.0' AUS**	**AUS**
	**7.17 P13.o Warning time LAMP in OPEN-direction** Warning lamp is activated during opening and for the set duration. ● **AUS** = function deactivated **Note** If no lamp is connected, set **P13.o** to **AUS**.	**0.0" - 1.0' AUS**	**AUS**

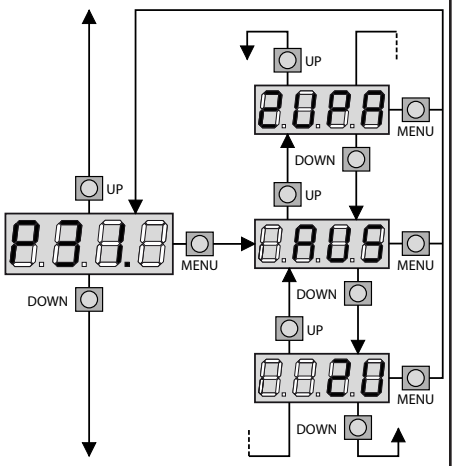
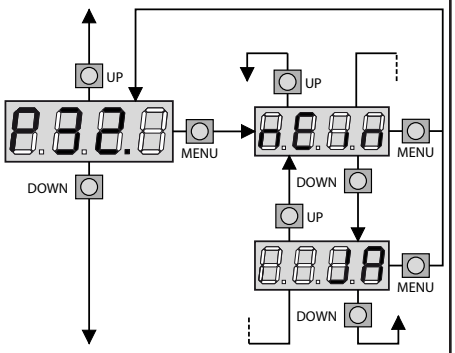
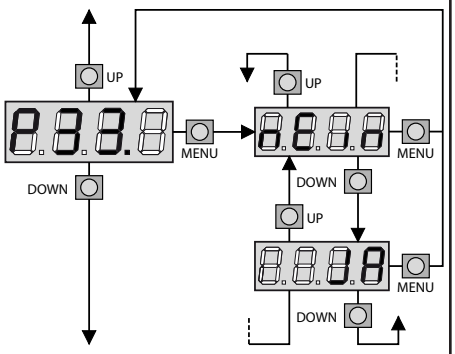
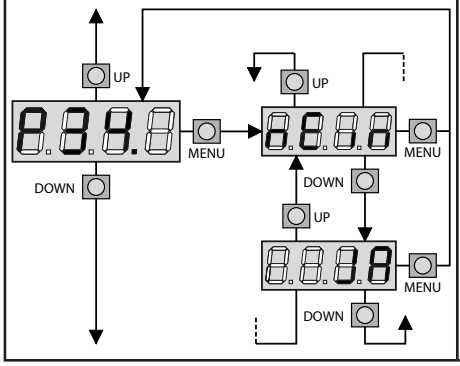
Display	Description	Values	
	**7.18 P13.c Warning time LAMP in CLOSE-direction** Warning lamp is activated during closing and for the set duration. • **AUS** = function deactivated **Note** If no lamp is connected, set **P13.c** to **AUS**.	**0.0" - 1.0' AUS**	**AUS**
	**7.19 P14 FORCE motor 1** • this value equates motor-force in %.	**30 - 100%**	**85%**
	**7.20 P14s Soft FORCE motor 1** force of motor 1 used during soft-start and Soft-Stopp • this value equates motor-force in %.	**0 - 70%**	**50%**
	**7.21 P15 FORCE motor 2** • this value equates motor-force in %.	**30 - 100%**	**85%**
	**7.22 P15.S Soft FORCE motor 2** force of motor 2 used during soft-start and Soft-Stopp • this value equates motor-force in %.	**0 - 70%**	**50%**

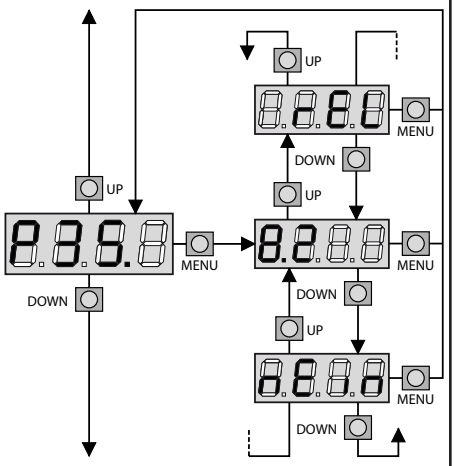
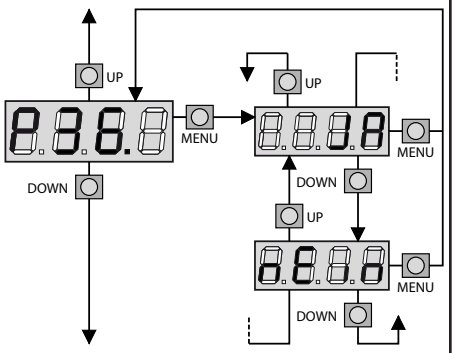
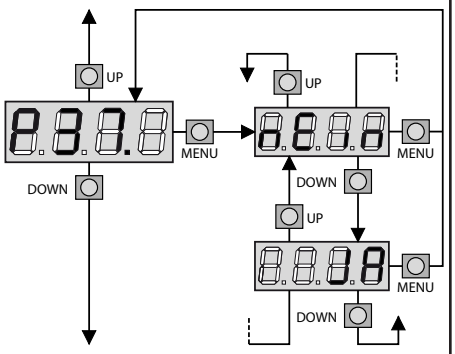
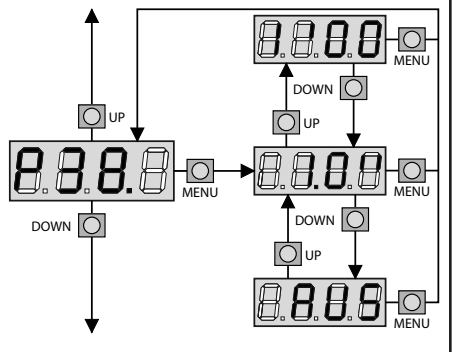
Display	Description	Values	
	**7.23 P16 Adjustment of deactivated forces at start of track** If this function is active, the controller ignores the FORCE values set in **P14** and **P15** for 2 seconds at the beginning of the Start-phase. Instead, the motors run with **100%**.	**JA/nEin**	**Ja**
	**7.24 P17.o Starting ramp in OPEN-direction** In order not to stress the motor too much when the motion starts into OPEN-direction, the power is gradually increased until it reaches the set value (**P14**, **P15**) or **100%** if the take-off is enabled. The higher the set value, the longer the length of time of the ramp (ramp = time necessary to reach the value of nominal power) ● **0** = function deactivated	**0 - 6**	**0**
	**7.25 P17.c Starting ramp in CLOSE-direction** In order not to stress the motor too much when the motion starts into CLOSE-direction, the power is gradually increased until it reaches the set value (**P14**, **P15**) or **100%** if the take-off is enabled. The higher the set value, the longer the length of time of the ramp (ramp = time necessary to reach the value of nominal power) ● **0** = function deactivated	**0 - 6**	**0**
	**7.26 P18.o Duration of Soft-Stop in OPEN-direction** Duration of soft-stop in % of complete runtime for opening. The motors open with reduced force until the open-endposition is reached. ● max. value is **100%**. **Note** if value **P03** is less than value **P01**, a soft-stopp is **not** possible.	**0 - 100%**	**15%**
	**7.27 P18.o Duration of Soft-Stop in CLOSE-direction** Duration of soft-stop in % of complete runtime for closing. The motors open with reduced force until the closed-endposition is reached. ● max. value is **100%**.	**0 - 100%**	**15%**

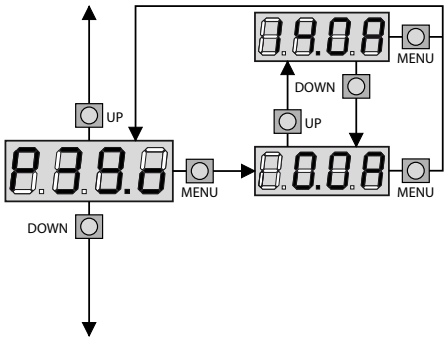
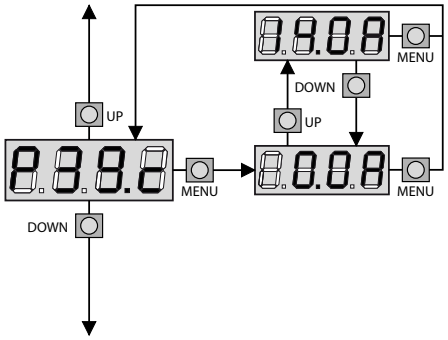
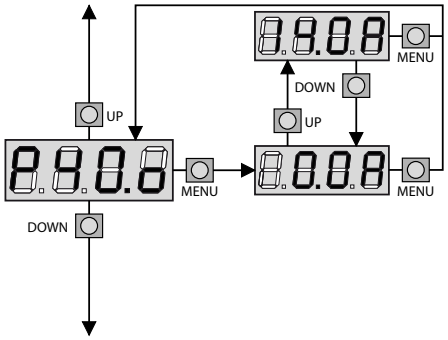
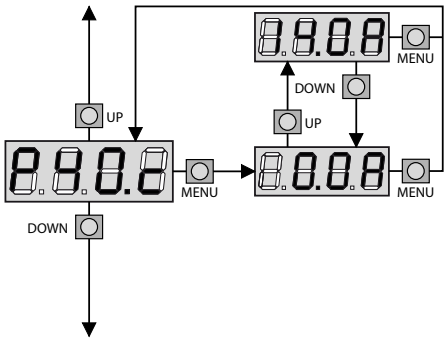
Display	Description	Values	
	**7.28 P19 Fast close time after slow-down during closure** If in **P18.c** a slowing time other than **0** is set up, it could be likely that the gate speed is not enough for the lock to fasten during the closing phase. In case this function is enabled, once the slowing down phase is finished, the control unit will give a normal speed command (100% speed) for the set up time, and then it will open the gate for a second fraction, to avoid leaving the motor under stress. **Note** if no electronic key lock is used, set **P19** to **AUS**. („**0**“)	**0.0" - 1.0"** **AUS**	**AUS**
	**7.29 P20 Start command during opening phase** This menu allows fixing the control unit conduct in case it receives a Start command during the **opening** phase. **StoP** Gate stops and goes to pause. **ZU** Gate stops and closes immediately. **AUS** Impulse is ignored, gate opens completely. **Note** Set to **StoP** for impulse-operation. Set to **AUS** for automatic operation. (open by Start-command, close only by automatic closing)	**StoP** **ZU** **AUS**	**StoP**
	**7.30 P21 Start command during closing phase** This menu allows fixing the control unit conduct in case it receives a Start command during the **closing** phase. **StoP** Gate stops. **AUF** Gate stops and re-opens immediately. **Note** Set to **StoP** for impulse-operation. Set to **AUF** for automatic operation. (open by Start-command, close only by automatic closing)	**StoP** **AUF**	**StoP**
	**7.31 P22 Start-impulse during opened gate** This menu allows fixing the control unit conduct in case it receives a Start command when the gate is open during its pause phase. **ZU** Gate closes immediately. **AUS** Impulse is ignored, gate remains open. **PAUS** Gate remains open, pause time is reset and starts again. **Note** Set to **ZU** for impulse-operation. Set to **AUS** or **PAUS** for automatic operation. (open by Start-command, close only by automatic closing)	**ZU** **AUS** **PAUS**	**ZU**

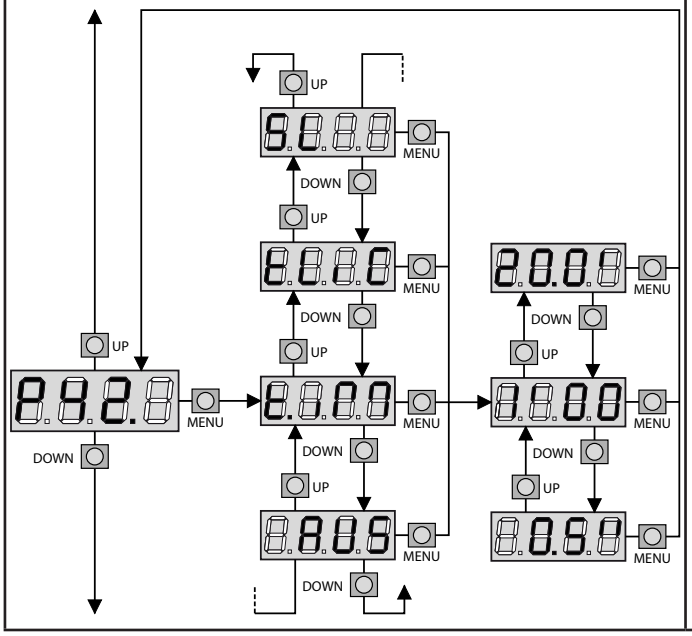
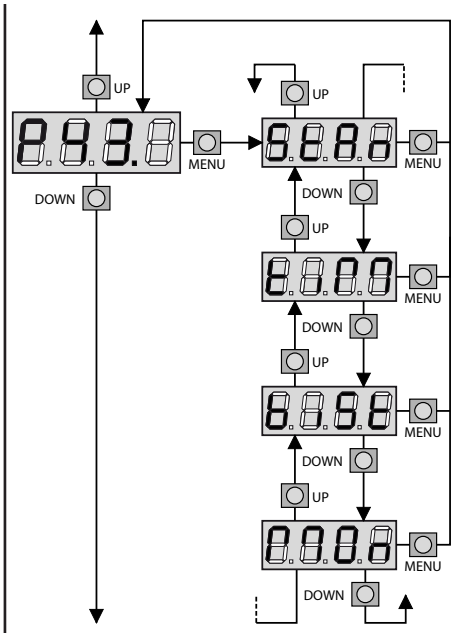
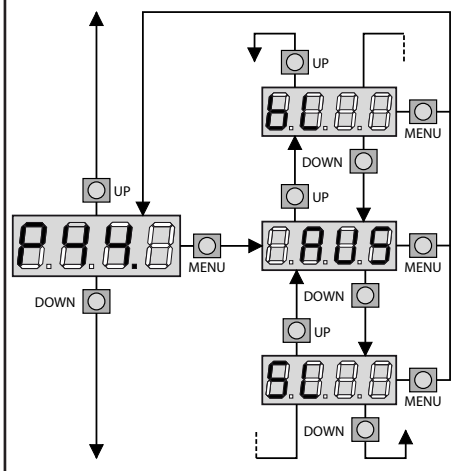
Display	Description	Values	
	**7.32 P23 Start-impulse (START P) PEDESTRIAN OPENING track** This menu allows fixing the control unit conduct in case it receives a Pedestrian Start command (**START P**/pedestrian) during the partial opening phase. **StoP** Gate stops. **ZU** Gate stops and closes immediately. **AUS** Impulse is ignored, gate opens completely. **Note** a **START** command in any phase of partial opening will cause the total opening. a **START-P** command will be ignored, if a **START** command was given before to start/stopp the gate.	**StoP** **ZU** **AUS**	**StoP**
	**7.33 P24 Automatic closing** In automatic mode, the control unit automatically recloses the gate on expiry of the time limit set in this menu. • By a **START** command, the gate closes before the set up time expires. • If options **AUS** or **PAUS** are set in menue **P22**, the gate only closes by the automatic closing function. **Note** If the control unit receives a STOP command when the gate is in pause, it will automatically pass to the semi-automatic operation - automatic closing function is deactivated. Another **START**-command activates automatic-operation.	**AUS** **0.5" - 20.0'**	**AUS**
	**7.34 P25 IMMEDIATE CLOSURE after passing photocells** This function closes the gate immediately after a transit plus the set time. Therefore, use a shorter time than set in **P24**. **Note** this function need the **automatic closing** function. Not active in semi-automatic-operation.	**AUS** **0.5" - 20.0'**	**AUS**
	**7.35 P27 Warning light in GATE OPEN position** In normal operation, warning lights are only active during gate movement. This function activates the warning light when gate is open or in another position, except close position. **Note** this function need the **automatic closing** function. Not active in semi-automatic-operation.	**nEin** **JA**	**nEin**

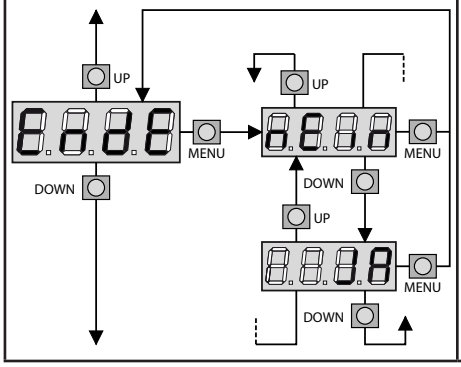
Display	Description	Values	
	**7.36 P28 Function of START connections L3/ L6 L4/L6** This menu allows selecting functions for **START** and **START P** commands. **StAn** Standard function **START** and **START P**. **nEin** Start inputs from terminal board are disabled. Radio inputs active. **AU.ZU** **START** impulse always controls the opening phase, **START P** always controls the closing phase. **totb** Deadman function; the gate will open as long as the **START** input stays closed and it will close as long as **START P** stays closed. **dAUF** Timer-operation; the gate opens and stays open until the START input or START P input are opened; at this point the pause count down will start and after this duration the gate closes.	**StAn** **nEin** **AU.ZU** **totb** **dAUF**	**StAn**
	**7.37 P29 Function of STOP connections L5/ L6** This menu allows selecting functions for **STOP** commands. **AUS** “STOP” connections are deactivated. **St.Gr** STOP impulse stops gate. The next START impulse continues track in the **same** direction. **St.Er** STOP impulse stops gate. The next START impulse drives the gate in the **inverse** direction. **Note** The setting of parameter STOP determines also in which direction the gate will move at the next **START**, if it has stopped because of an intervention of the safety edges or the obstacle sensor. If you set to **AUS**, the **START** command restarts the motion in the same direction.	**AUS** **St.Gr** **St.Er**	**AUS**
	**7.38 P30 Photocell 1 input L7/L11 (on the inside)** This menu allows enabling the input for **type 1** photocells, that is to say, photocells active both during the opening and closing phase. Mount the photocell behind the moving area on the inside. **nEin** Input disabled (ignored by the control unit). No jumper with the common is required. **JA** Input enabled.	**nEin** **Ja**	**nEin**

Display	Description	Values	
	**7.39 P31 Photocell 2 input L8/L11 (on the outside)** This menu allows enabling the input for **type 2** photocells, that is to say, photocells not active during the opening phase. Mount on the outside. **AUS** Input disabled (ignored by the control unit). No jumper with the common is required. **ZUPA** Input enabled during closing and at standstill gate: an interruption stops closing the gate immediately and opens the gate. No movement possible if the photocell is interrupted. **ZU** Input enabled for the closing phase only. Warning: for this option, disable photocell test.	**AUS** **ZUPA** **ZU**	**AUS**
	**7.40 P32 photocell test - security test** To achieve a safer operation for the user, the unit performs a photocells operational test before a normal working cycle. If no operational faults are found, the gate starts moving. Otherwise, it will stand still and the flashing light will stay on for **5 sec**. The whole test cycle lasts less than one second. **nEin** Function deactivated. **JA** Test of both photocells activated. **Note** Set activated in order to grant a higher safety!	**nEin** **JA**	**nEin**
	**7.41 P33 input closing border protection 1 L9/L11** This menue is to activate closing border protections type 1. Only active in **OPEN**-direction! See ***„Closing border protection“ on page 7***. **nEin** input disabled (ignored by the control unit). No jumper with the common is required. **JA** Input enabled during opening; disabled during closure.	**nEin** **JA**	**nEin**
	**7.42 P34 input closing border protection 2 L10/L11** This menue is to activate closing border protections type 2. Only active in **CLOSE**-direction! See ***„Closing border protection“ on page 7***. **nEin** Input disabled (ignored by the control unit). No jumper with the common is required. **JA** Input enabled during closure; disabled during opening.	**nEin** **JA**	**nEin**

Display	Description	Values	
	**7.43 P35 Test of closing border protection** This menu allows setting the test method closing border protection. **nEin** Test disabled. Analysis by relay-output (opener) only, no testing. **8.2** Integrated 8k2-analysis activated. **rEL** External analysis by relay-output (opener) and testing. **Note** Set to **nEin**, if no closing border protection is mounted.	**nEin** **8.2** **rEL**	**nEin**
	**7.44 P36 Input for Endswitches K1/K2/K3/K4/ K5** Input to connect up to 4 normally closed (NC) limit switches that are activated by the gates movement and indicate, if the gate/leafs has reached the completely open or closed position. See ***„Connecting end switches“ on page 7***. **nEin** input disabled (ignored by the control unit). No jumper with the common is required. **JA** input enabled.	**nEin** **JA**	**nEin**
	**7.45 P37 Input Encoder K1/K2/K3/K4/K5/K6** Input for encoders to provide the controller with the position of the gate panels. **nEin** input disabled (ignored by the control unit). No jumper with the common is required. **JA** input enabled.	**nEin** **JA**	**nEin**
	**7.46 P38 Duration of delay for heavy gates** When an opening or closing operation is interrupted by a command or for the intervention of the photocell, the set-up time for the opposite movement would be excessive, so the control unit operates the motors only for the time necessary to recover the actually covered journey. This could be not sufficient, particularly in the case of very heavy gates, as because of the inertia at the inversion moment the gate runs an extra space in the previous direction that the control unit is not able to take into account. If after an inversion the gate does not return exactly to the starting position, it is possible to set this duration. It´s added to the time calculated by the control unit in order to recover the inertia. **Note** set to **AUS** if encoders are in use. If set to **AUS**, the complete runtime (**P01**+**P04**) starts, even if the gate is in a position between the end-positions. This results in no Soft-stopp positioning.	**AUS** **0.5" - 1.0'**	**AUS**

Display	Description	Values	
	**7.47 P39o Obstacle detection motor 1 - OPEN** This menu allows to regulate the sensitivity of the obstacle sensor for **motor 1 into open-direction**. When the current absorbed by the motor exceeds the set value, the controller detects an alarm. ● If set to **0.0A**, the function is disabled. ● The higher the value, the more motor-force is used versus the obstacle. **Note** See ***„Function of obstacle sensor“ on page 25***.	**0.0A - 14.0A**	**0.0A**
	**7.48 P39c Obstacle detection motor 1 - CLOSE** This menu allows to regulate the sensitivity of the obstacle sensor for **motor 1 into close-direction**. When the current absorbed by the motor exceeds the set value, the controller detects an alarm. ● If set to **0.0A**, the function is disabled. ● The higher the value, the more motor-force is used versus the obstacle. **Note** See ***„Function of obstacle sensor“ on page 25***.	**0.0A - 14.0A**	**0.0A**
	**7.49 P40o Obstacle detection motor 2 - OPEN** This menu allows to regulate the sensitivity of the obstacle sensor for **motor 2 into open-direction**. When the current absorbed by the motor exceeds the set value, the controller detects an alarm. ● If set to **0.0A**, the function is disabled. ● The higher the value, the more motor-force is used versus the obstacle. **Note** See ***„Function of obstacle sensor“ on page 25***.	**0.0A - 14.0A**	**0.0A**
	**7.50 P40c Obstacle detection motor 2 - CLOSE** This menu allows to regulate the sensitivity of the obstacle sensor for **motor 2 into close-direction**. When the current absorbed by the motor exceeds the set value, the controller detects an alarm. ● If set to **0.0A**, the function is disabled. ● The higher the value, the more motor-force is used versus the obstacle. **Note** See ***„Function of obstacle sensor“ on page 25***.	**0.0A - 14.0A**	**0.0A**

Display	Description	Values	
	**7.51 P42 optional relay B1/B2** function of an optional relay (potential free) can be set here. See ***„Connecting external lighting“ auf Seite 54***. **t.iM** the relay is enabled by a **Start** or **Start P** command. After the time limit (max. 20 minutes) the relay is disabled. **AUS** the relay is disabled. **t.LiC** the relay is activated during the motion of the gate; when the gate stops (closed or open) the relay is on for the time set in **t.iM**. **Note** If menue **P27** is set to „**JA**“, the relay is also ON during the pause time. For a warning light operation, set the time to „**0**“. **SL** Indicator light operation: - GATE STOPPED: Light off - GATE IN PAUSE: the light is on, fixed - GATE OPENING: the light flashes slowly (2 Hz) - GATE CLOSING: the light flashes quickly (4 Hz)	**t.iM,** **0.0" - 20.0'** **AUS** **t.LiC** **SL**	**t.iM, 1.0'**
	**7.52 P43 function channel 2 radio-control** set function for command input via channel 2 of the radio controll. **StAn** Standard-function, a command will cause the partial opening of the gate (pedestrian start). **tiM** Timer-function, the relay (**B1/B2**) is activated receiving the transmission of the remote control; it is disabled after the time set in **P42**. **biSt** Bistable operation, the status of the relay (**B1/B2**) changes at each transmission of the remote control. **Mon** Monostabile operation, the relay (**B1/B2**) is activated for all the length of the transmission of the remote control. Releasing the key of the remote control the relay is deactivated.	**StAn** **tiM** **biSt** **Mon**	**StAn**
	**7.53 P44 Low voltage outputs - lights** set the operation of the low voltage output, e.g. flashing- or warning lights. **AUS** function not used. **bL** Flashing light operation, flashing during gate movement. **SL** Indicator light operation: - GATE STOPPED: Light off - GATE IN PAUSE: the light is on, fixed - GATE OPENING: the light flashes slowly (2 Hz) - GATE CLOSING: the light flashes quickly (4 Hz)	**AUS** **bL** **SL**	**AUS**
	7.54 P45 Max. motor power during battery operation not activated, as no battery operation is available.	**JA** **nEin**	**JA**

Display	Description	Values	
	**8.1 End of programming** This menu allows to finish the programming (both default and personalized) saving the modified data into memory. **nEin** Further corrections to carry out: do **not** quit the programming. **JA** changes complete: when programming is complete and the data are saved, the display shows the control panel. **THE INSERTED DATA HAVE BEEN MEMORIZED: THE CONTROL-UNIT IS READY TO BE USED.**	**nEin** **Ja**	**nEin**

8 READING OF CYCLE COUNTER

The control unit counts the completed opening cycles of the gate and, if requested, it shows that service is required after a fixed number of cycles. Two counters are available:

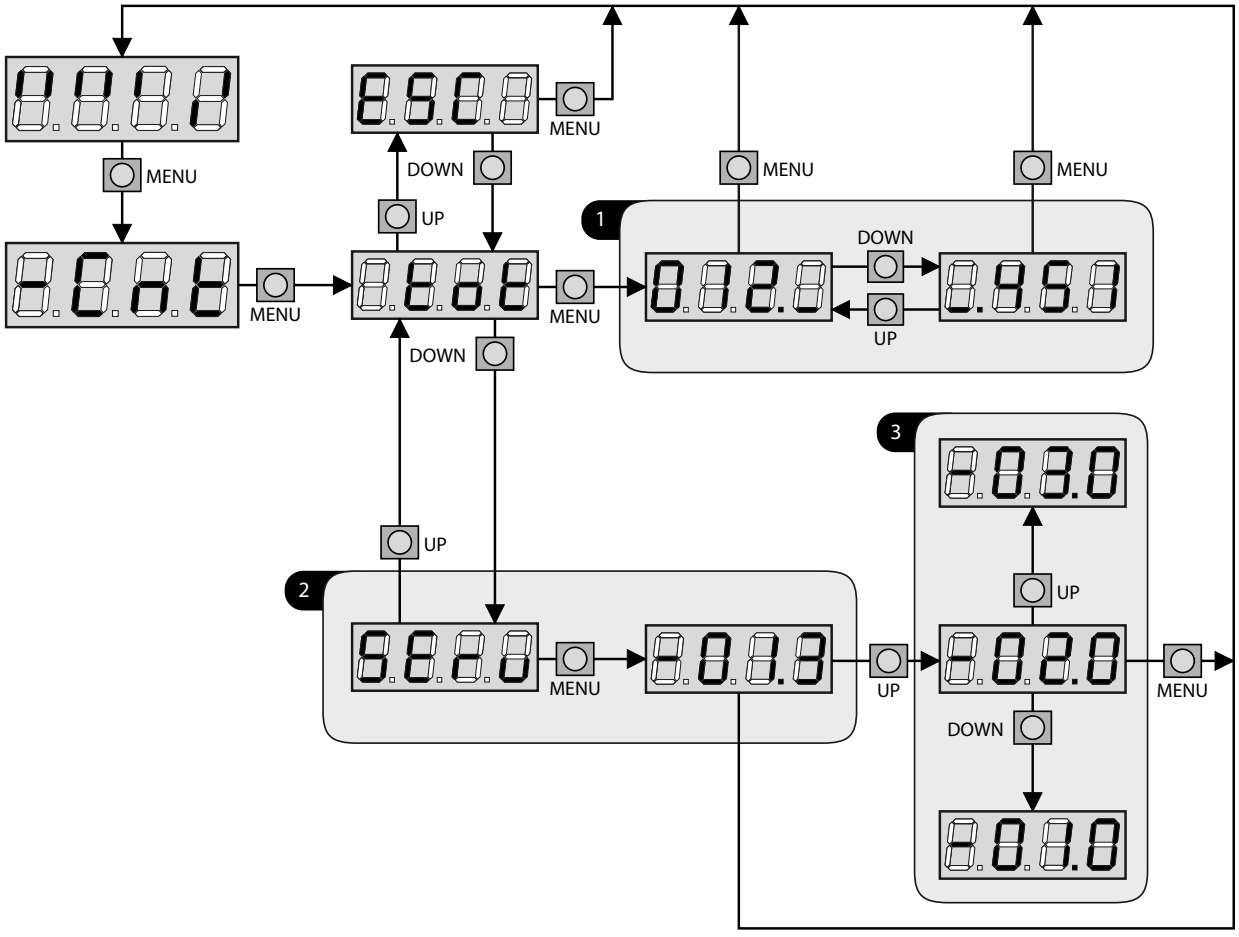
- A totalizing counter for completed opening cycles that cannot be zeroed (option **tot**)
- A downward counter for the number of cycles before the next request for service (option **SErv**). This counter can be programmed according to the desired value.

The scheme below shows how to read the totalizing counter, the number of cycles before the next service is required as well as how to program the number of cycles before the next request for service (as for the example shown. The control unit completed no. 12451 cycles and there are no. 1300 cycles before the next service request.

Area 1 is the reading of the total number of completed cycles; through **Up** and **Down** keys, you can alternate the display of thousands or units.

Area 2 is the reading of the number of cycles before the next request for service: its value is rounded down to the hundreds.

Area 3 is the setup of this latter counter; if you press once **UP** or **DOWN** key, the current counter value will be rounded up or down to thousands, any following pressure will have the setup be increased or decreased of 1000 units. The previous displayed count will get lost.



9 SIGNAL OF SERVICE REQUIRED

As soon as the counter of **cycles before the next request for service** is „**0**“, the control unit shows the request for service through an additional **5-second pre-blinking**.

- This signal will be repeated at each opening cycle, until the installer enters into the counter reading and setup menu, and possibly programs the number of cycles after which the next service will be requested.
- In case no new value is setup (that is to say that the counter value is left at „**0**“), the signalling function for the service request will be disabled and no signal will be repeated anymore.

Note
any service operations shall be carried out by qualified staff only.

10 FUNCTION OF OBSTACLE SENSOR

the controller is provided with a system to detect obstacles. For setting sensibility, see menues **P39.o**, **P39.c**, **P40.o** and **P40.c** (***page 22***).

- the lower the power is set, the faster the controller responds to the obstacle.
- at „**0.0A**“ the sensor is disabled.

The controller identifies an obstacle by comparison between the saved values and the measured power actually used. If the used power is higher, an obstacle is detected.

Note
detection of an obstcle is up to settings of menue **P18** (***page 16***) and the point of time, the obstacle apperars.

Soft-Stop disabled (Menue P18.o and P18.c)

- when disabled, the gate stops when an obstacle appears and moves immediately in opposite direction.

Soft-Stop enabled (Menue P18.o and P18.c)

- when enabled, a detection of an obstacle needs „normal“ speed. The switch off behaviour is like set in menue ***„P33 input closing border protection 1 L9/L11“ on page 20*** and ***„P34 input closing border protection 2 L10/L11“ on page 20***.
  For connection, see ***„Closing border protection“ on page 7***.

Soft-Stop and **End-switch disabled (Menue P18.o, P18.c and P36)**

- gate movement stopps, but not removing from the obstacle.

11 OPERATION DEFECTS

This paragraph shows some possible operation defects, along with their cause and applicable remedy.

11.1 MAINS led does not switch on

Cause:	**no voltage on controller**
Remedy:	1. Before acting on the control unit, disconnect through the disconnecting switch on the power line and remove the power supply terminal. 2. Be sure that there is no voltage break upstream the control unit. 3. Check whether the fuse **F1** is burnt-out, if so replace it with same value. (**type 250V F2,5L**).

11.2 OVERLOAD led is on

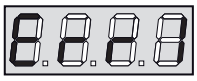
Cause:	**overload on accessory power supply.**
Remedy:	1. Remove the extractable part containing terminals **K1** to **K10**. OVERLOAD led will switch off. 2. Remove the overload cause. 3. Reinsert the terminal board extractable part and check that this led is not on again.

11.3 Too long pre-blinking

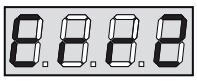
Cause:	When a Start command is given and the blinker switches on immediately but the gate is late in opening, it means that the setup cycle count down expired and the control unit shows that service is required.
Remedy:	fulfill service.

12 ERROR-MESSAGES

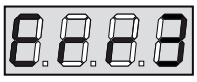
12.1 Error 1

Display:	on display when you exit from programming: 
Info:	Changed data could not be stored. This kind of defect has no remedy.
Action:	**Send in control unit for repair.**

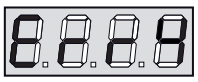
12.2 Error 2

Display:	
Info:	A Start command is given and the gate does **not** open, Triac test **failed**.
Action:	**Check connections of motor and condensator.** **If OK, send in control unit for repair.**

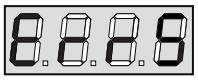
12.3 Error 3

Display:	
Info:	A Start command is given and the gate does **not** open; photocell test **failed**.
Action:	1. Be sure that no obstacle interrupted the photocell beam when the Start command was given. 2. Be sure that photocells, as enabled by their relevant menus, have been installed actually. 3. If you have photocells **type 2**, be sure that **P31** menu item is on **ZUPA**. 4. Be sure that photocells are powered and working; when you interrupt their beam, you should hear the relay tripping. 5. Ensure the photocells are connected correctly, as shown in the dedicated section on ***„Connection of light barriers“ on page 7***.

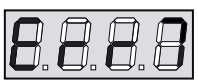
12.4 Error 4

Display:	
Info:	A Start command is given and the gate does **not** open (or does a partial opening). It means that the end of stroke is damaged or that the wiring that connects the sensor to the control unit is broken.
Action:	**Change end-switch or the broken wiring. A contact in end-position must be send.**

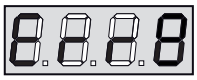
12.5 Error 5

Display:	
Info:	Once given a start control, the gate does **not** open, the test of the safety edges **failed**.
Action:	1. Check for correct wiring and function, see ***„Closing border protection“ on page 7***. 2. Check menu **P33** / **P34**, function enabled? (***page 20***) 3. Menu **P35** testing setting OK? (***page 21***) 4. Run a function test for the border protection devices.

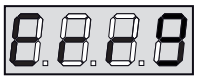
12.6 Error 7

Display:	
Info:	gate does **not** open after START command. Encoder error or wrong setting in Menu **P37** when no encoder is mounted! (***page 21***)
Action:	Check Encoder, if no encoder is in use, check P37 setting.

12.7 Error 8

Display:	
Info:	Self-learning function of controller is refused.
Action:	The setting of the control unit is not compatible with the requested function. In order to execute the self-learning it is necessary that the Start inputs are enabled in standard mode (Menu **P28** = **Stan**), see ***page 19***. To survey the currents of the motor, the length of the opening and closure must be ≥ 7,5 second.

12.8 Error 9

Display:	
Info:	Programming was **locked** by means of the programming lock key.
Action:	Activate programming by a programming lock key. Insert in the connector of the **ADI** interface to activate the programming lock, and unlock the device.

13 ERROR LIST (MAIN MENU 3)

The last 30 errors can be shown and listed by this function.

load error list:
- Press **MENU** until **-Err** is displayed.
- Release **MENU** button, **ESC** is displayed
- Press **UP** or **DOWN** to choose an error (error 1 - 30).
- Press **MENU** to select an error, errorcode is displayed.
- Scroll with **UP** or **DOWN** through the list.
- Press **MENU** for returning to error-list.

Note
Newest error is set to place 1, oldest (of latest 30) to 30.

Reset error list:
- choose **rES** and confirm with **MENU**.
  nEIn is displayed.
- Press **UP** or **DOWN** to choose **JA**.
- Press **MENU** to confirm, the error-list will be deleted and **ESC** displayed.
- Press **ESC** to leave the error list, confirm with **MENU**.

F01	error storing data, see ***„Error 1“ on page 26***.
F02	error motor power, see ***„Error 2“ on page 26***.
F03	wrong configuration, see ***„Error 8“ on page 27***.
F04	error end-switch, see ***„Error 4“ on page 26***.
F05	Stopp-circuit activated or interrupted.
F06	error powering.
F07	Controller locked, see ***„Error 9“ on page 27***.
F08	light barries photocell **type 1** activated or interrupted.
F09	Closing border protection **Zu** activated or interrupted.
F15	Test failed: Closing border protection **Zu**.
F20	Stop interrupter in **Auf**.
F22	5x Stop interrupter oder Schließkantensicherung in **AUF**.
F26	Stop interrupter in **Zu**.
F27	5x Stop interrupter oder Closing border protection in **Zu**.
F31	light barries **type 1** activated or interrupted.
F32	Closing border protection **Auf** activated or interrupted.
F33	Test failed: Closing border protection **Auf**.
F37	Test failed: light barries photocell **type 1**, see ***„Error 3“ on page 26***.
F38	Test failed: light barries photocell **type 2** see ***„Error 3“ on page 26***.

14 FUNCTIONS IN MENU -PRG

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING	YOUR VALUES
P01	**0.0" - 5.0'**	P01 Duration leaf 1 OPEN	**22,5"**	
P02	**0.0“ - 5.0‘**	P02 Duration leaf 2 OPEN	**22,5"**	
P03	**0.0" - 1.0'**	P03 Duration leaf 1 OPEN PEDESTRIAN traffic	**6,0"**	
P04	**0.0" - 5.0'**	P04 Duration leaf 1 CLOSE	**23,5"**	
P05	**0.0" - 5.0'**	P05 Duration leaf 2 CLOSE	**23,5"**	
P06	**0.0" - 1.0'**	P06 Duration leaf 1 CLOSE PEDESTRIAN traffic	**7,0"**	
P07	**0.0" - 1.0'**	P07 Duration leaf 2 CLOSE PEDESTRIAN traffic	**2,0"**	
	AUS	function deactivated		
P08	**0.0" - 1.0'**	P08 Duration leaf delay OPEN	**1,0"**	
P09	**0.0" - 1.0'**	P09 Duration leaf delay CLOSE	**3,0"**	
P10	**0.5" - 1.0'**	P10 ELECTRONIC KEY LOCK (clamp K9/K10)	**2,0"**	
	AUS	function deactivated		
P10.F	**JA/nEin**	P10.F mode „quiet“ key lock	**JA**	
P11	**0.0" - 1.0'**	P11 Duration IN ADVANCE function ELECTRONIC KEY LOCK	**1,0"**	
P12	**0.5" - 1.0'**	P12 Short reverse for opening with electronic key lock	**AUS**	
	AUS	function deactivated		
P13.o	**0.5" - 1.0'**	P13.o Warning time LAMP in OPEN-direction	**AUS**	
	AUS	function deactivated		
P13.c	**0.5" - 1.0'**	Warning time LAMP in CLOSE-direction	**AUS**	
	AUS	function deactivated		
P14	**30% - 100%**	P14 FORCE motor 1	**85**	
P14.S	**0% - 70%**	P14s Soft FORCE motor 1	**50**	
P15	**30% - 100%**	P15 FORCE motor 2	**85**	
P15.S	**0% - 70%**	P15.S Soft FORCE motor 2	**50**	
P16	**JA/nEin**	Adjustment of deactivated forces at start of track	**JA**	
P17.o	**0 - 6**	P17.o Starting ramp in OPEN-direction	**0**	
	0	function deactivated		
P17.c	**0 - 6**	P17.c Starting ramp in CLOSE-direction	**0**	
	0	function deactivated		
P18.o	**1% - 100%**	P18.o Duration of Soft-Stop in OPEN-direction	**15**	
	0	function deactivated		
P18.c	**1% - 100%**	P18.o Duration of Soft-Stop in CLOSEdirection	**15**	
	0	function deactivated		
P19	**0.0" - 5.0"**	P19 Fast close time after slow-down during closure	**0.0"**	
P20		P20 Start command during opening phase	**StoP**	
	AUS	Impulse is ignored, gate opens completely		
	ZU	Gate stops and closes immediately		
	StoP	Gate stops and goes to pause		
P21		P21 Start command during closing phase	**StoP**	
	StoP	Gate stops		
	AUF	Gate stops and re-opens immediately		
P22		P22 Start-impulse during opened gate	**ZU**	
	AUS	Impulse is ignored, gate remains open		
	ZU	Gate closes immediately		
	PAUS	Gate remains open, pause time is reset and starts again		
P23		P23 Start-impulse (START P) PEDESTRIAN OPENING track	**StoP**	
	AUS	Impulse is ignored, gate opens completely		
	ZU	Gate stops and closes immediately		
	StoP	Gate stops		

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING	YOUR VALUES
P24		P24 Automatic closing	**AUS**	
	AUS	function deactivated		
	0.5" - 20.0'	The gate closes after the setup time		
P25		P25 IMMEDIATE CLOSURE after passing photocells	**AUS**	
	AUS	function deactivated		
	0.5" - 20.0'	The gate closes after the setup time		
P27		P27 Warning light in GATE OPEN position	**nEin**	
	nEin	function deactivated		
	JA	Warning light will be on during the pause time too		
P28		P28 Function of START connections L3/L6 L4/L6	**StaN**	
	nEin	Start inputs from terminal board are disabled		
	StAn	Standard function **START** and **START P**		
	AU.ZU	**START** impulse always controls the opening phase, **START P** always controls the closing phase		
	totb	Deadman function; the gate will open as long as the **START** input stays closed and it will close as long as **START P** stays closed		
	dAUF	Timer-operation; the gate opens and stays open until the **START** input or **START P** input are opened; at this point the pause count down will start and after this duration the gate closes		
P29		P29 Function of STOP connections L5/L6	**AUS**	
	AUS	“STOP” connections are deactivated		
	St.Er	STOP impulse stops gate. The next START impulse drives the gate in the **inverse** direction		
	St.Gr	STOP impulse stops gate. The next START impulse continues track in the **same** direction		
P30		P30 Photocell 1 input L7/L11 (on the inside)	**AUS**	
	AUS	Input disabled		
	JA	Input enabled		
P31		P31 Photocell 2 input L8/L11 (on the outside)	**AUS**	
	AUS	Input disabled		
	ZUPA	Input enabled during closing and at standstill gate: an interruption stops closing the gate immediately and opens the gate. No movement possible if the photocell is interrupted.		
	ZU	Input enabled for the closing phase only		
P32		P32 photocell test - security test	**nEin**	
	nEin	function deactivated		
	JA	Test of both photocells activated		
P33		P33 input closing border protection 1 L9/L11	**nEin**	
	nEin	Input disabled		
	JA	Input enabled during opening; disabled during closure		
P34		P33 input closing border protection 2 L10/L11	**nEin**	
	nEin	Input disabled		
	JA	Input enabled during closure; disabled during opening		
P35		P35 Test of closing border protection	**nEin**	
	nEin	Test disabled. Analysis by relay-output (opener) only, no testing		
	8.2	Integrated 8k2-analysis activated.		
	rEL	External analysis by relay-output (opener) and testing.		
P36		P36 Input for Endswitches K1/K2/K3/K4/K5	**JA**	
	nEin	input disabled (ignored by the control unit)		
	JA	input enabled		
P37		P37 Input Encoder K1/K2/K3/K4/K5/K6	**nEin**	
	nEin	input disabled (ignored by the control unit)		
	JA	input enabled		

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING	YOUR VALUES
P38		P38 Duration of delay for heavy gates	**AUS**	
	AUS	function deactivated		
	0.5" - 1.0'	time activated		
P39.o	**0.0 - 14.0 A**	P39o Obstacle detection motor 1 - OPEN	**0.0 A**	
P39.c	**0.0 - 14.0 A**	P39c Obstacle detection motor 1 - CLOSE	**0.0 A**	
P40.o	**0.0 - 14.0 A**	P40o Obstacle detection motor 2 - OPEN	**0.0 A**	
P40.c	**0.0 - 14.0 A**	P40c Obstacle detection motor 2 - CLOSE	**0.0 A**	
P42		P42 optional relay B1/B2	**t.iM, 1.0'**	
	t.iM	the relay is enabled by a **Start** or **Start P** command. After the time limit (0.5"-20.0') the relay is disabled.		
	AUS	the relay is disabled		
	t.LiC	the relay is activated during the motion of the gate; when the gate stops (closed or open) the relay is on for the time set in **t.LiC** (0.0"-20.0').		
	SL	Indicator light operation: - GATE STOPPED: Light off - GATE IN PAUSE: the light is on, fixed - GATE OPENING: the light flashes slowly (2 Hz) - GATE CLOSING: the light flashes quickly (4 Hz)		
P43		P43 function channel 2 radio-control	**StAn**	
	StAn	Standard-function, a command will cause the partial opening of the gate (pedestrian start)		
	TiM	Timer-function, the relay (**B1/B2**) is activated receiving the trans-mission of the remote control; it is disabled after the time set in **P42**		
	biSt	Bistable operation, the status of the relay (**B1/B2**) changes at each transmission of the remote control		
	Mon	Monostabile operation, the relay (**B1/B2**) is activated for all the length of the transmission of the remote control. Releasing the key of the remote control the relay is deactivated		
P44		P44 Low voltage outputs - lights	**AUS**	
	AUS			
	bL			
	SL			
P45		P45 Max. motor power during battery operation	**JA**	
	nEin	not activated		
	JA	activated		
EnDE		End of programming	**nEin**	
	nEin	It does not exit from the program menu		
	JA	It exits from the program menu by storing the setup parameters		

15 FUNCTIONS IN MENU -CNT

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING	YOUR VALUES
		displays cycles and service counter:	**tot**	
	tot	- displays actual number of cycles.		
	ESC	- leave menu.		
	Serv	- service counter (**0** = counter disabled).		

16 FUNCTIONS IN MENU -ERR

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING
		displays error list:	**ESC**
1	**F.. / -- --**	error list-nr. 1 (latest error)	
2	**F.. / -- --**	error list-nr. 2.	
3	**F.. / -- --**	error list-nr. 3.	
4	**F.. / -- --**	error list-nr. 4.	
5	**F.. / -- --**	error list-nr. 5.	
...	**...**		
29	**F.. / -- --**	error list-nr. 29.	
30	**F.. / -- --**	error list-nr. 30.	
rES	**JA/nEin**	reset error list.	
ESC		leave menu.	

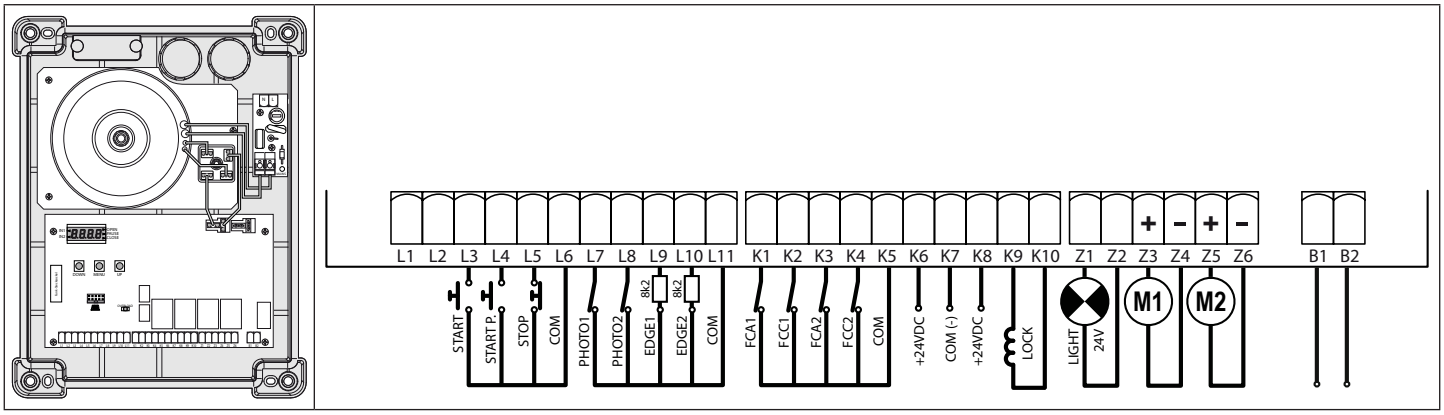
17 FUNCTIONS IN MENU -LRN

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING
		learn runtimes: see also ***„learn runtimes mode (main menue 4)“ auf Seite 61***	**nEin**
	nEin	**no** start of learning runtimes.	
	JA	start of learning runtimes.	

18 FUNCTIONS IN MENU -DEF

DISPLAY	VALUE	DESCRIPTION	FACTORY SETTING
		Factory setting:	**nEin**
	nEin	factory settings are **not** loaded	
	JA	factory settings are loaded	

19 CONNECTIONS CONTROL BOARD MS1024



clamp	connection/device	function
L1	not used	
L2	not used	
L3	push button, key switch (potential-free CLOSE contact)	**START**
L4	command OPEN PEDESTRIAN (potential-free CLOSE contact)	**START P**
L5	STOP (potential-free OPEN contact)	**STOP**
L6	Mass (-)	**COM**
L7	Photocells Type 1 (potential-free OPEN contact)	**light barrier photocell 1**
L8	Photocells Type 2 (potential-free OPEN contact	**light barrier photocell 2**
L9	Closing border protection OPEN (8k2 or potential-free OPEN contact)	**Closing border protection OPEN**
L10	Closing border protection CLOSE (8k2 or potential-free OPEN contact)	**Closing border protection CLOSE**
L11	Mass (-)	**COM**
K1	End-switch OPEN motor 1 (potential-free OPEN contact)	**end switch Gate-open motor 1**
K2	End-switch CLOSE motor 1 (potential-free OPEN contact)	**end switch Gate-close motor 1**
K3	End-switch OPEN motor 2 (potential-free OPEN contact)	**end switch Gate-open motor 2**
K4	End-switch CLOSE motor 2 (potential-free OPEN contact)	**end switch Gate-close motor 2**
K5	Mass (-)	**COM**
K6	24 VAC for photocells or other accesories	**24 VDC, max. 500 mA**
K7	Mass (-) for 24 VAC	**0 VDC (GND)**
K8	24 VAC fot function test	**24 VDC (Test TX)**
K9	Electronic lock	**Electronic lock, 12 VDC / max. 15 W**
K10		
Z1	Flashing- warninglights output 24 VDC	**warning/flashing light**
Z2		**24 VDC / max. 10 W**
Z3	powering motor 1	**motor 1 (+)**
Z4		**motor 1 (-)**
Z5	powering motor 2	**motor 2 (+)**
Z6		**motor 2 (-)**
B1	external lighting (potential-free relay output)	**external lighting potentialfrei max. 230 VAC / 40 W**
B2		
N	N power supply 230 VAC / 50 Hz	**See *„Power supply“ on page 6***
L	L power supply 230 VAC / 50 Hz	
F1	fuse 2,5 A	
MAINS	Operation-LED, lits when power is on	
OVERLOAD	Displays an overload on 24 VAC-output	
ADI	ADI-plug-on socket, for extra modules	
OPEN	system in opening phase	
PAUSE	Pause (gate open or in an inclined position)	
CLOSE	system in closing phase	

MS1024

4Ddoors

GARAGE DOORS REDEFINED

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