

Technical Manual E82

You can find the current version of our manual on our website under «Downloads»:
<https://en.dictator.de/products/door-drives-gate-drives/control-systems/>

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E82 Control System

for DC drive units (DICTAMAT 5000-21, 3400-21)

The E82 control system is designed for DC motors to open and close sliding doors. The E82 control system offers some interesting features as the connection and control possibility for electric door locks.

The control system permits either dead-man or impulse operation.

Some of the parameters are adjusted with help of the membrane keys and the display on the lid of the casing. This replaces traditional potentiometres and permits to carry out adjustments with the casing of the control system being closed. This is a highly valuable safety feature.

The control system provides a potential-free contact whose function can be adjusted: contact when the door is open, closed, in movement or both final positions.

The terminal blocks of the control system can be completely removed from the control system in order to facilitate the electrical connection.

The control system can be used both for 24 VDC and 48 VDC drive units.



Technical Data

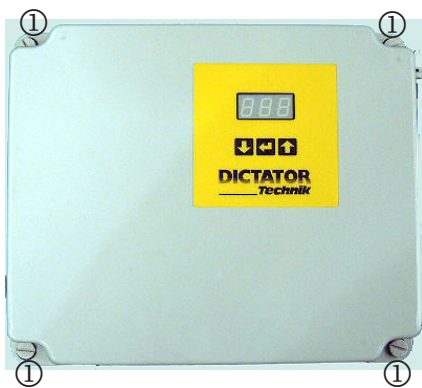
Mains voltage /Power consumption	230 VAC, 50/60Hz +/- 10 % / max. 250 W
Power supply (secondary)	max. 400 mA
Output voltage to the motor	24 or 48 V DC, 5 A
Potentialfree contact/capacity	max. 250 V / 10 A
Temperature range	0 - 40° C, 20 - 70 % humidity
Dimensions of the plastic casing (ABS)	HxWxD = 310x230x130mm
Protection/ Contamination level	IP 56 / 2
Overvoltage class/ Insulation	II / class I

I. Mechanical Installation

Safety Warning:

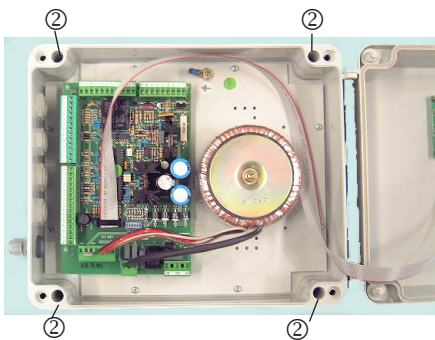
The installation and starting of this control system may only be done by a specialist, in compliance with the relevant international standards and regulations.

Never do any installation when the control system is current carrying!



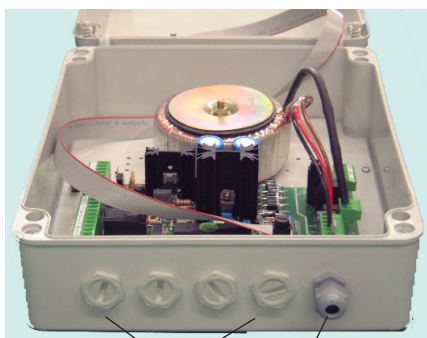
Ill. 1

1) Loosen the 4 screws of the lid ① and carefully fold the lid side-wards from the casing.



Ill. 2

2) Fix the casing to the wall (4 holes ② in the casing) (ill. 2).



Ill. 3

3) In order to connect the mains cable please use the screw cable inlet ③. For the connection cables 4 further cable inlets ④ are available (remove the screwable seals!). Make sure you use screw cable inlets with pull relief. The inlets of the casing are suitable for M20 screw cable inlets.

II. Electrical Connection

II/1 Connection of external devices

Connect all cables from the external devices (drive unit, operating elements, photocell ...) to the removable binders. _____
Maximum length of the cables 30 m.

II/2 Bridges

If no external devices are connected to the following binders make sure to place bridges (if you connect a motor with an integrated position control system, no limit switches are required)

- Binders C2/19 and C2/20 (Limit switch „Door CLOSED“)
- Binders C3/31 and C3/32 (Stop 3, photocell)
- Binders C3/33 and C4/34 (Limit switch „Door OPEN“)
- Binders C4/35 and C4/36 (Limit switch „Crawling speed“)

Ex works bridges are placed on the following binders. They may not be removed (as these binders have special functions for the fire-protection control system E8).

- Binders C4/37 and C4/38
- Binders C4/39 and C4/40

II/3 Electrical Cables

- **IMPORTANT:** The connection cable from the motor (DC) to the control system (connection to the binders 70 and 71) must be a screened cable (screened cable 2 x 1,5mm²). The screen must be connected to the earth of the control system.

- Connection of the position control system in the drive unit:
screened cable 3 x 0,5 mm²

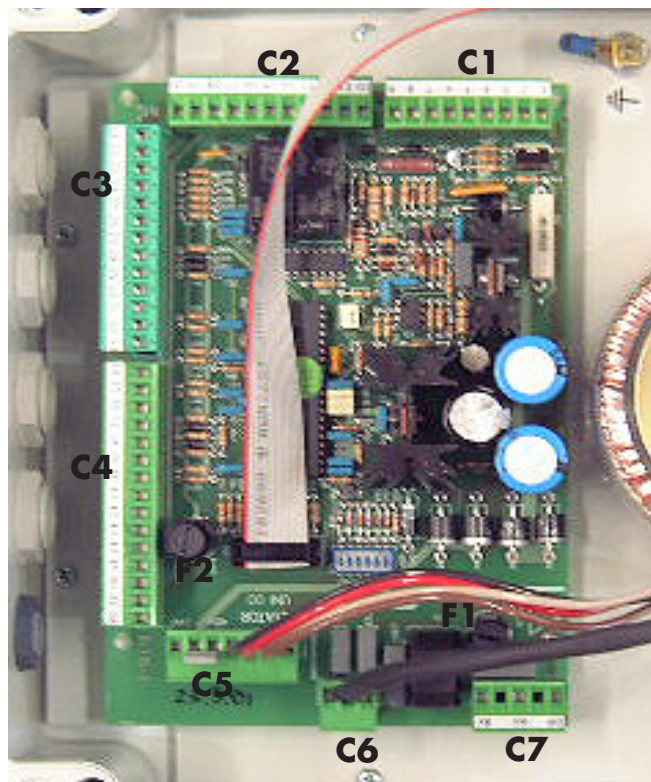
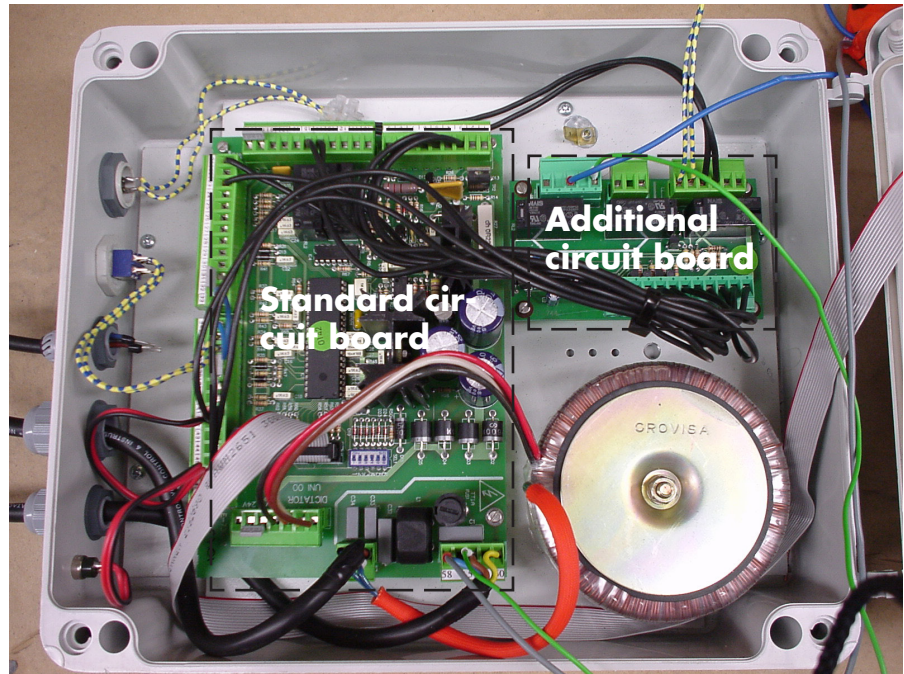
Note: both the DICTAMAT 3400-21 and 5000-21 drive units are delivered ex works with a 2,5 m connection cable from the drive unit to the control system.

- For the connection to the 230 VAC mains the binders 58/59 and 60 (earth) are provided in the control system. We recommend to use a flexible cable or a cable 3 x 1,5mm²

- Connection of other external devices: cable 0,75 mm²

II. Electrical Connection - cont.

II/4 Interior of the casing



**Standard
Circuit board**

Fuses:

F1 Fuse TT 1 A

Mains fuse (time-lag fuse)
(Complete 230V AC-supply)

F2 Fuse T

400 mA 24 V DC power pack (time-lag)

II. Electrical Connection - cont.

fuse)

Removable terminal blocks on the standard circuit board

- C1 Binders 1 - 9: connection electromagnet (only for special applications); position control system
- C2 Binders 10 - 20: Possibility to connect a frequency converter and a 24 VDC UPS (external 24VDC power supply), limit switch „Door CLOSED
- C3 Binders 21 - 33: Connection of the switches OPEN, CLOSE; STOP 1, 2, 3 and limit switch „Door OPEN“
- C4 Binders 34 - 48: Connection limit switch „Door OPEN“, limit switch „Crawling speed“, alarm , RESET, 24 VDC power supply for photocell and door lock
- C5 Binders 49 - 55: Bridge to choose voltage of the motor, secondary transformer
- C6 Binders 56 - 57: Connection 230 V AC for primary transformer
- C7 Binders 58 - 60: 230 VAC mains supply control system

Removable terminal blocks on the additional circuit board



- C8 Binders 3 - 6, 14, 15, 21, 23, 25, 41, 45, 46: Connection standard circuit board to additional circuit board. All binders are wired ex works.
- C9 Binders 61 - 63: Potentialfree relay contact (max. capacity 250V, 10A)
- C10 Binders 64, 65: Potentialfree relay contact for the door lock (max. capacity 250V, 10A)
- C11 Binders 66 - 71: Contact for the door lock, connection of a remote control /pull switch, motor DC

II. Electrical Connection - cont.

II/5 Terminal connections

Terminal block C1

- 1/2 Power supply 24 VDC for electromagnet, (1 - / 2 +)
- 3 - 6 Connection to additional circuit board
- 7 - 9 Position control system (7 green / 8 blue / 9 yellow)

Terminal block C2

- 10/11 Connection of a frequency converter from 0 to 10VDC (10 - / 11 +)
- 12/13 Potentialfree contact for the frequency converter max. 110V/10A
- 14/15 Connection to additional circuit board
- 16 reserved
- 17/18 Input external 24 VDC power supply (UPS), 24 Ah (17-/18+)
- 19/20 Limit switch „Door CLOSED“

Terminal block C3

- 21/22 Switch OPEN door (make contact)
- 23/24 Switch CLOSE door (make contact)
- 25/26 STOP 1 in opening and closing direction
- 27/28 STOP 2, only in closing direction
- 29/30 STOP 2, only in closing direction
- 31/32 STOP 3, only in closing direction; this Stop can be used e.g. to connect a photocell in order to reopen the door
- 33 1st binder for the limit switch „Door OPEN“

Terminal block C4

- 34 2nd binder for the limit switch „Door OPEN“
- 35/36 Limit switches for „Crawling speed OPEN“ and „...CLOSE“
- 37/38 reserved for the fire protection control system E8
- 39/40 reserved for the fire protection control system E8
- 41/42 RESET
- 43/44 Power supply 24 VDC for a photocell (43+/44-)
- 45/46 Connection to additional circuit board
- 47 Supply 24 VDC+ for an electric door lock
- 48 Connection to additional circuit board

Terminal block C5

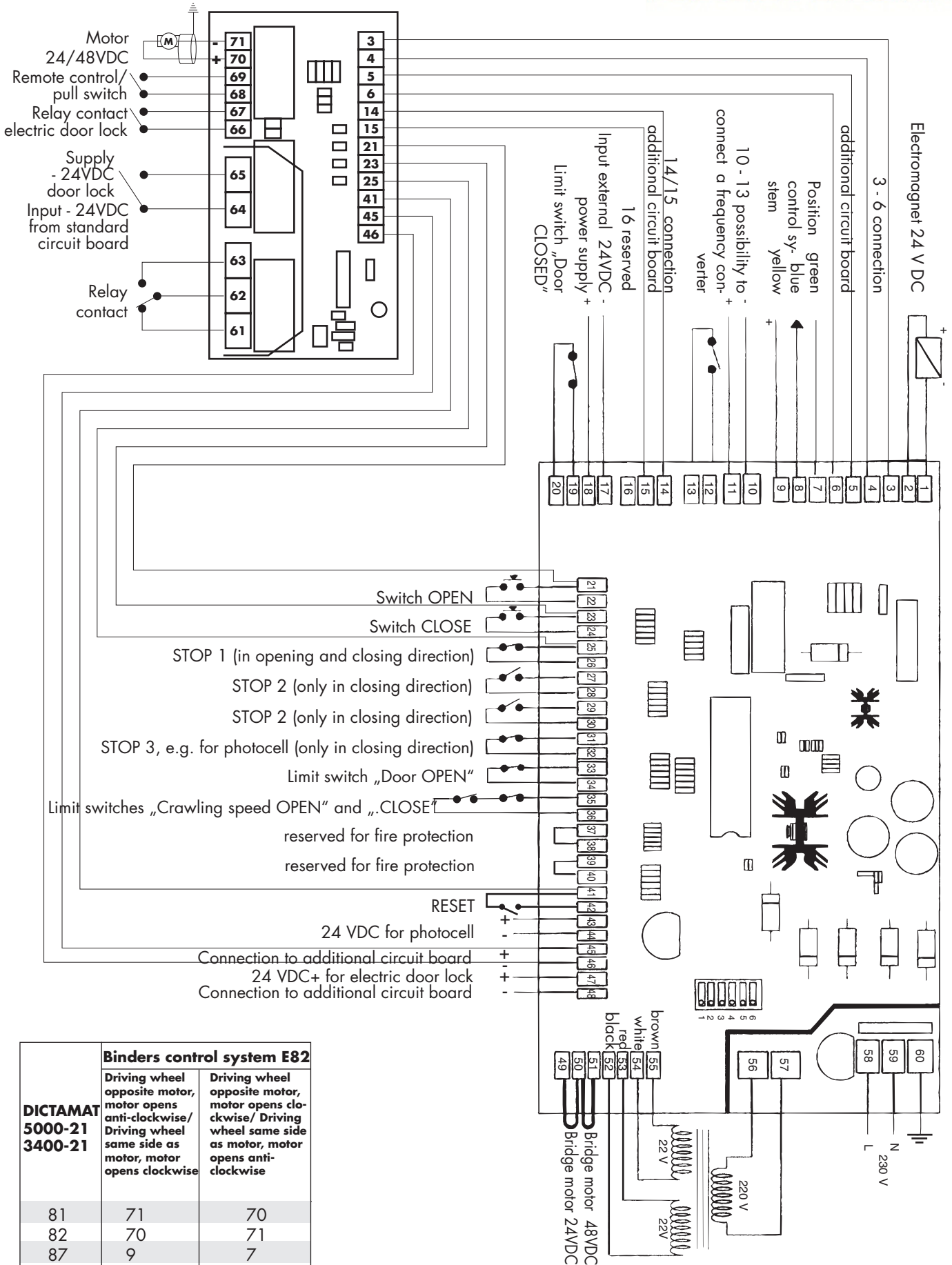
- 49/50 Bridge for motor 24 VDC
- 50/51 Bridge for motor 48 VDC
- 52/53 Secondary transformer 22 V, (52 black/53 red)
- 54/55 Secondary transformer 22 V, (54 white/55 brown)

Terminal block C6

- 56/57 Power supply 230 V AC for primary transformer

Terminal block C7

- 58/59 Mains power supply for the control system 230 VAC
- 60 Earth



III. Adjustment / Programming

III/1 Adjustment - General Informations / Display



Upon delivery the parameters „P-8“ (position „crawling speed“) and „P-7“ (Position „OPEN“) are adjusted to „000“. If a door drive with integrated position control system is connected, the control system automatically switches to an **adjustment mode**. This permits to move the door with the push buttons OPEN and CLOSE to the required positions and thus adjust them precisely.

The control system automatically chooses for this operation the *dead-man operation*. All opening movements are done in the crawling speed, without any restriction as to the opening distance. As soon as the parameters for the change of the speed to the „Crawling Speed OPEN“ (P-8) and the position „Door OPEN“ (P-7) have been entered, this adjustment mode is switched off and the control system changes to the adjusted operation type (deadman or impulse; adjustment with Dip-Switch 1, see page 04.044.47).

The control system has some parameters preadjusted ex works that can be adjusted on site with the membrane keys on the lid of the casing.



Change from one parameter to the next
+ ENTER



Reduce the values of the parameters



Increase the values of the parameters

If you press the central key (Enter) the display shows „P-X“, X being either a number from 1 to 9 or one of the letters A, b, C, d or E. This displays the parameter that presently can be adjusted.

IMPORTANT: The **parameters** are combined in **2 groups**: the parameters „P-1“ to „P-5“ as well as „P-C“ to „P-E“ are accessible without restriction. The parameters „P-6“ to „P-b“ only can be adjusted by persons instructed in the use of the control system. In order to get to these parameters, you have to press the arrows and at the same time when the parameter „P-0“ is displayed.

If none of the arrow-keys is pressed for more than 6 seconds the display automatically returns to the parameter „P-0“. This prevents unauthorized persons from modifying any adjusted values.

III. Adjustment / Programming - cont.

III/2 Parameter

„P-0“ Position of the door

The parameter P-0 shows the *present position* of the door when a drive unit with integrated position control system is connected.

If *separate limit switches* are used, the values shown in the display have the following signification:

000 Door is CLOSED (limit switch Door CLOSED has been actuated)

003 Door is OPEN (limit switch Door OPEN has been actuated)

The signification of the values 001/002 depend on the direction in which the door is moving.

In OPENING direction:

001 Door moves in „normal“ speed (between the positions of the limit switches creep speed CLOSE and OPEN)

002 Door moves in creep speed

In CLOSING direction:

001 Door moves in creep speed

002 Door moves in „normal“ speed (between the positions of the limit switches creep speed CLOSE and OPEN)

„P-1“ Crawling speed

This parameter permits to adjust the crawling speed before the position OPEN. The control system automatically switches to this speed as soon as the position „Crawling Speed OPEN“ is reached (adjusted with the parameter „P-8“ or indicated by a separate limit switch).

This parameter, just as all following parameters, is adjusted with the arrow membrane keys \times and \times on the lid of the casing. The adjusted value is memorized as soon as you change to another parameter or the display changes back to „P-0“

The value for the crawling speed is adjusted ex works to 40 digits. It can be increased to a maximum of 100 digits.

The crawling speed before the position Door CLOSED is set in the control system and cannot be adjusted. However it is possible to adjust the distance before the position Door CLOSED where the motor changes to the crawling speed (see parameter „P-9“).

„P-2“ Normal opening and closing speed

With this parameter you can adjust the normal travel speed of the door for opening and closing. The control system switches automatically to this speed after an initial acceleration.

The value for this speed is adjusted ex works at 150 digits. This value can be reduced to min. 100 digits and increased to max. 200 digits.

III. Adjustment / Programming - cont.

„P-3“ Function of the Stop-switches 2 and 3 on alarm

This parameter offers the possibility to cancel the STOP-command during an alarm closing.

Value 000: STOP 2 and STOP 3 also active during an alarm closing

Value 001: STOP 2 and STOP 3 without function during an alarm closing - priority of the closing command

„P-4“ Blocking the door in the closed position

This parameter offers the possibility to block a door in the closed position with an electromagnet incorporated in the door drive (special design!)

Value 000: Blocking on

Value 001: Blocking off

Ex works the parameter „P-4“ is adjusted to 001, that means no blocking in the closed position.

Note: The **blocking force** in case of a drive unit with power transmission by rope is about 50 kg and in case of a toothed belt about 80 kg.

„P-5“ Automatic closing

The parameter 5 permits to activate or switch off the automatic closing and to adjust the time after which the door closes automatically.

Value 000: Automatic closing Off

Value 001 - 180: Automatic closing On; value indicates the time in seconds after which the door closes

Ex works the parameter 5 is set to 000, that means the automatic closing is Off.

„P-C“ Closing by motor

This parameter is set ex works to 001 and may not be changed.

Value 000: Closing by counter weight or closing spring - **only valid for fire protection doors!!!**

Value 001: Closing with motor, 24/48VDC motors

Value 002: Closing with motor, three-phase motors VAC

„P-d“ „Release function for electric door locks“

This special feature is required when an electric door lock is connected.

Value 000: to be set when no door lock is connected (ex works)

Value 001: if a door lock is connected and an OPEN-command is given, the motor first moves shortly in the closing direction to relieve the pressure on the door lock, so that it will unlock without any problem.

III. Adjustment / Programming - cont.

„P-E“ Adjustment of the maximum operating time

The control of the operating time is an additional safety feature. With the parameter P-E the maximum operating time is adjusted. If this time is exceeded, i.e. the door has not reached its closed or opened position within the adjusted time (limit switch operated) the control system automatically disconnects and shows the error T01 (see point V Diagnostics).

The value to be adjusted depends on the size of the door. Ex works the value is adjusted to 3 minutes.

Value 003 - 030: Maximum operating time between 3 and 30 minutes

Parameters P-6 to P-9:

Adjustments only required when using door operators with integrated position control and „P-b“ is adjusted to the value 000.



IMPORTANT: If errors have occurred during the adjustment of the final positions the control system can be returned to the default settings by a **RESET of the control system adjustment**. Disconnect the control system shortly, move the door to its closed position, switch on the current again. Then adjust the parameters P-6, P-7 and P-8 to „000“ and start anew with the adjustments as described below.

The display has to show rising (positive) numbers when the door opens. In case negative numbers appear, check the connection of the position control system.

„P-6“ Adjustment of the position control system: position „Door CLOSED“



Before starting the adjustment of the positions, please make sure that the parameter P-b is adjusted to the value „000“.

The first position to be entered when using a *drive unit with integrated position control system* is the closed position.

Close the door completely and adjust the value with the arrow keys  and  to „0“.

„P-7“ Adjustment of the position control system: position „Door OPEN“

Move the door with the OPEN-switch to the position Door OPEN.

Note the value shown in P-0 and enter then this value in P-7, using the arrow membrane keys  and .

The value of the position Door OPEN must always be higher than the value adjusted in P-8 for the position „Crawling speed OPEN“.

III. Adjustment / Programming - cont.

„P-8“ Adjustment of the position control system: position „Crawling speed OPEN“

When reaching this position the control system automatically reduces the speed to the crawling speed (adjusted with parameter P-1).

The value of this position should be about 50 digits less than that of the position Door OPEN.

„P-9“ Adjustment of the position control system: position „Crawling speed CLOSE“

When reaching this position the control system automatically reduces the speed to a slower speed (set in the control system, not adjustable).

The indicated value shows at what distance (in cm) before the position Door CLOSED the speed is reduced.

If the closing speed should not be reduced before the position Door CLOSED the value has to be set to „000“.

„P-A“ Function of STOP 3 (safety element)

The parameter „P-A“ determines the function of the STOP 3. The STOP 3 is especially provided for the connection of safety equipment.

Value 000: STOP 3 interrupts the closing. When the obstacle has disappeared the door will - after about 4 sec. - automatically continue the closing.

Value 001: STOP 3 interrupts the closing. The door stops and then automatically opens again completely. If the automatic closing is ON the door will start closing after the preset time (see parameter „P-5“).

IMPORTANT: this function (001) is **only possible** when the operating mode is adjusted to **impulse operation** (see point VI Configuration of the DIP-Switches).

„P-b“ Adjustment of the position control required: drive unit with integrated position control system or separate limit switches

The parameter „P-b“ is provided for the distinction between a drive unit with integrated position control system or the use of separate limit switches.


Value 000: Drive unit with integrated position control system (ATTENTION: adjust the parameters P-6 to P-9)

Value 001: Connection of separate limit switches

NOTE:

The display of the control system E82 normally always shows the parameter P-0, i.e. the present position of the door.

III. Adjustment / Programming (cont.)

Parameter	Function	Possible adjustments	ex works	Your value
P-0	Position of the door Indicates the present position of the door. Has just informative character. After the adjustment of the other parameters the display always returns to P-0	not adjustable	-	-
P-1	Crawling speed This speed is activated upon reaching the memorized position or the limit switches „Crawling speed“; the door moves with the adjusted slower speed until reaching its final positions	040 - 100	040	
P-2	Normal Opening and Closing speed	100 - 200	150	
P-3	Function der STOP -switches 2 and 3 in alarm 000: STOP 2 and STOP 3 also active during an alarm closing 001: STOP 2 and STOP 3 without function during an alarm closing	000 - 001	001	
P-4	Blocking of the door in the closed position 000: Door is blocked in the closed position 001: Door is not blocked in the closed position	000 - 001	001	
P-5	Automatic closing 000: Automatic closing switched off 001 - 180: Automatic closing ON. Value indicates time in sec.	000 - 180	000	
P-C	Closing : must be adjusted to the value 001 000: Closing with counterweight (ONLY FOR FIRE PROTECTION) 001: Closing with motor: 24/48VDC motors 002: Closing with motor: three-phase AC motors	000 - 002	001	001
P-d	„Release function“ for electric door locks 000: No electric door lock connected (no release function) 001: Release function with door lock connected	000 - 001	000	
P-E	Maximum operating time The control of the operating time is an additional safety feature. The time to be adjusted depends on the travel of the door. It is adjusted in minutes, i.d. 003 = 3 minutes	003 - 030	003	
	Press simultaneously to get to P-6 to P-b			
P-6	RESET position control / Position „Door CLOSED“ Adjust to 000, when the door is completely closed.	000 - 999	000	
P-7	Position „Door OPEN“ (with position control) Move door with the OPEN switch to the Position OPEN. Enter the value shown in P-0 in P-7.	000 - 999	000	
P-8	Position „Crawling speed OPEN“ (with position control) Adjusted value must be lower than P-7 (recommendation: about 40 - 50 digits below P-7). Move door with the OPEN switch to position „Crawling speed OPEN“. Enter the value shown in P-0 in P-8.	000 - 999	000	
P-9	Position „Crawling speed CLOSE“ (with position control) Adjusted value must be higher than P-6. Move door with switch to position „Crawling speed CLOSE“. Enter the value shown in P-0 in P-9.	000 - 999	015	
P-A	Function STOP 3 (safety element) 000: Door stops and continues closing when free again 001: Door stops and then opens completely again	000 - 001	001	
P-b	Position control integrated in drive unit/limit switches 000: Position control with position control system 001: Position control with separate limit switches	000 - 001	001	

IV. Functions of the remote control

IV / 1 Sequence of commands of the remote control (or pull switch)

- Remote control/pull switch - basic function

A remote control can be connected to the binders 68/69 of the additional circuit board. The sequence of commands is as follows:

OPEN - STOP - CLOSE - STOP

Each impulse provokes the next command. The limit switches or the memorized positions of the position control system act as a STOP.

- Remote control - photocell

Connection of a photocell to the binders 31/32

Parameter „P-A“ = 001 (door opens after a response of the photocell)

Photocell active only in closing direction

When the photocell responds after a closing command from the remote control (i.e. the door opens again), the sequence of commands is as follows: STOP - CLOSE - STOP - OPEN

- Remote control - automatic closing

When the automatic closing is activated („P - 5“ > 001) the sequence of commands is as follows: STOP - OPEN - STOP - CLOSE

- Remote control - hand switch

If there are OPEN and CLOSE switches connected to the binders 21/22 (OPEN) und 23/24 (CLOSE), the remote control works after a OPEN command as follows: STOP - CLOSE - STOP - OPEN

IV / 2 Lead time

All warning equipment as sirens or flash lights (binders 61 - 63) start with a lead of about 2 - 3 seconds before the door starts moving.

V. Diagnostics

V. Diagnostics

In the display of the control system certain combinations of letters and numbers are shown to indicate the status of the control system. This facilitates adjustments and helps to locate errors.

Letters displayed	Description
RES	After switching on the current or after an ALARM a RESET is required to restart the control system
ALA	reserved for the fire protection type E8
SC	Short circuit in the power supply of the motor
SCE	Short circuit in the power supply of the magnet
S-1	STOP 1 active
S-2	STOP 2 active
S-3	STOP 3 active
T01	Error due to too long operating time (max. operating time adjustable between 3 and 30 minutes) After a RESET the control system is ready to work again. Normally this error occurs, when the control system supplies current to the motor, the motor does not receive the current, however does not move and therefore does not reach a final position.
T02	Error due to exceeding the maximum allowed current (this happens whenever the control system operates more than 30 seconds with the maximum current). After a RESET the control system is ready to work again. Normally this error occurs whenever the motor cannot move the door as the force needed is too high (e.g. higher friction due to dirt).

VI. Configuration of the DIP-Switches

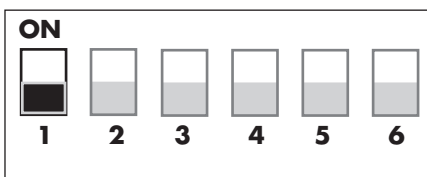
The Dip-Switches permit to select the following functions:

Dip-switch 1: Deadman or impulse operation

Dip-switches 2 - 6: Configuration of the potentialfree relay contact at the binders 61/62/63.

Only one of the dip-switches 2 - 6 may be in position ON.

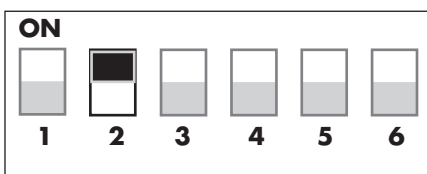
DIP-switch on the additional circuit board: configuration of the potentialfree relay contact at the binders 66/67



Dip-switch 1

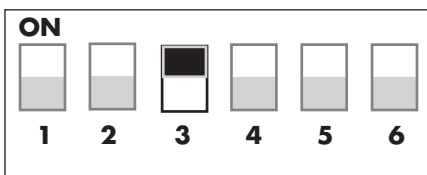
ON Deadman operation

OFF Impulse operation (when starting the adjustment of the positions when using a drive unit with integrated position control system, the control system automatically changes to deadman operation. Only when all positions have been entered the control system returns to impulse operation)



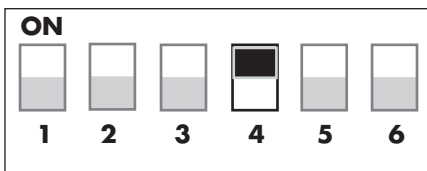
Dip-switch 2 in pos. ON

Binders 62/63 : contact closes, when the door is completely open



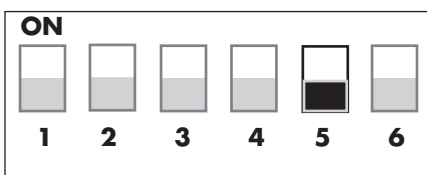
Dip-switch 3 in pos. ON

Binders 62/63: contact closes, when the door is completely closed



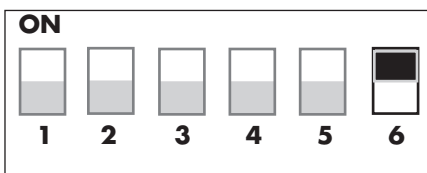
Dip-switch 4 in pos. ON

Binders 62/63: contact closes, whenever the door is moving



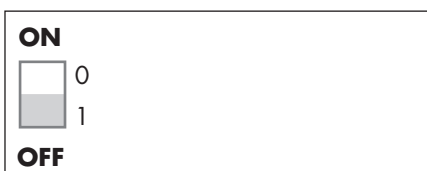
Dip-switch 5: always in pos. OFF

No function



Dip-switch 6 in pos. ON

Binders 62/63: contact closes, when the door is completely open
Binders 61/62: contact closes, when the door is completely closed



DIP-Switch on additional circuit board for binders 66/67

ON: after an OPEN-command (impulse-operation) the control system waits for 3 seconds for a **feed-back from the electric door lock**, that it has been unlocked. After this confirmation the door opens automatically. If no feed-back is given, the control system is switched off. A RESET is required to put it back to work

OFF: after an OPEN-command (impulse-operation) the door opens **without** waiting for a **feed-back** from the electric door lock.

VII. Maintenance / Safety Advice

VII / 1 Maintenance

All functions of the control system E82 have to be checked once a year.

VII / 2 Safety advice

Certain tensions within the control system might lead to an electrical discharge, that might destroy the control system. Therefore increased attention is required, if work has to be done near the control system or the current carrying cables coming from the control system.

No work on the control system and the whole installation is allowed while the current is still on. The power supply always has to be switched off beforehand.

Therefore make sure a lockable switch is installed in the supply line to the control system, that will cut off the power supply completely.

VII / 3 Cleaning

The casing of the control system always has to be kept closed and clean. For the cleaning of the casing just use water and soap. Never use aggressive detergents.

VIII. Applied standards

The control system E82 has the CE mark. It has been tested according to the valid norms.

VIII / 1 Electromagnetic compatibility

EN 50081-1 (92)
EN 50081-2 (93)
EN 61000-6-2 (99)
EN 61000-3-2 (95)
EN 61000-3-3 (95)

VIII / 2 Low-voltage

EN 61010