

# Technical Manual E8

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<https://en.dictator.de/products/fire-door-operators/control-systems/>

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## E8 Control System for DC Fire Protection Drive Units

The E8 control system is designed for DC motors to open fire protection sliding doors. The control system permits either deadman 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 potentialfree contact whose function can be adjusted: contact when the door is open, closed, in movement, in alarm 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, 50/60 Hz +/- 10 % / max. 250 W
Power supply (secondary)	max. 400 mA
Output voltage to the motor	24 or 48 VDC, 5 A
Potentialfree contact/capacity	max. 30 VAC / 60 VDC, 10 A
Temperature range	0 - 40 °C, 20 - 70 % humidity
Dimensions of the plastic casing (ABS)	H x W x D = 310 x 230 x 130 mm
Protection/ Contamination level	IP 56 / 2
Overvoltage class/ Insulation	II / class I

## I. Mechanical Installation

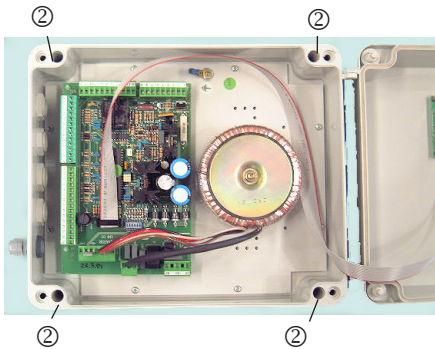
### **Safety Warning:**

**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!**



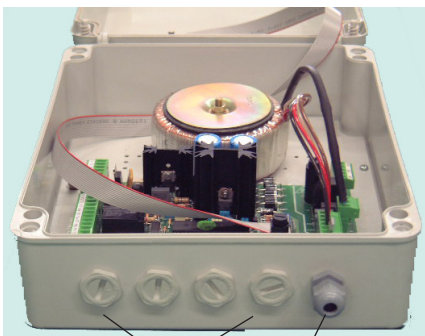
Ill. 1

1) Loosen the 4 screws of the lid ① and carefully fold the lid sideways from the casing.



Ill. 2

2) Fix the casing to the wall (4 holes in the casing ②) (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, smoke detectors, 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 C3/25 and C3/26 (Emergency-Stop 1)
- 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“)
- Binders C4/37 und C4/38 (relay contact for an alarm central)
- Binders C4/39 und C4/40 (relay contact for the smoke detector loop)

### II/3 Electrical Cables

- **IMPORTANT:** The connection cable from the motor (DC) to the control system (connection to the binders 3 and 4) must be a screened cable (screened cable 2 x 1.5 mm<sup>2</sup>). The screen must be connected to the earth of the control system.

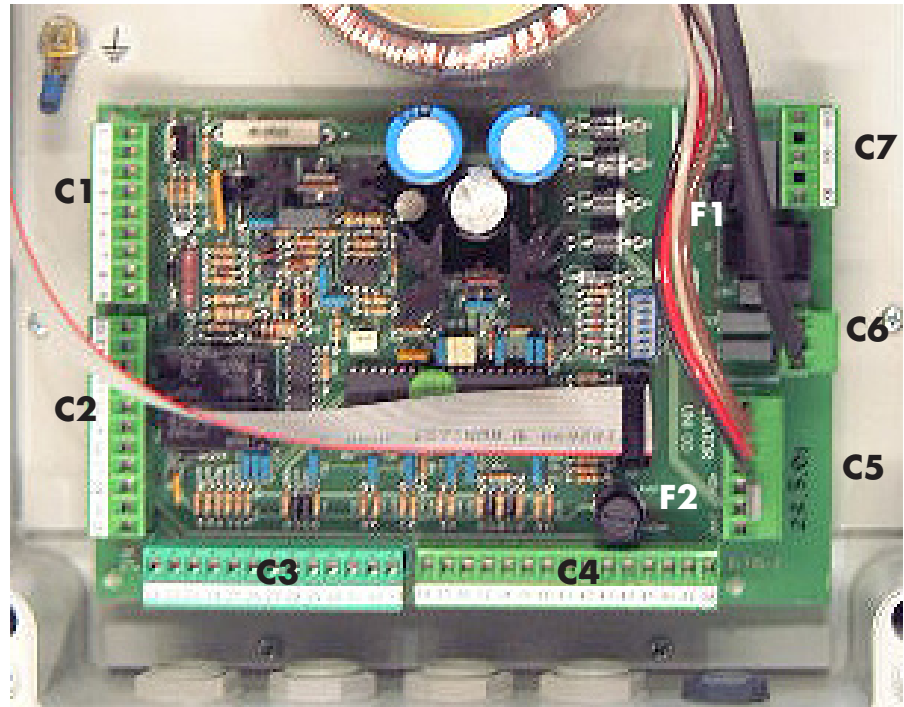
- Connection of the speed control device and electromagnet of the door drive: cable 4 x 0.5 mm<sup>2</sup>
- Connection of the position control system in the drive unit: screened cable 3 x 0.5 mm<sup>2</sup>

**Note:** both the DICTAMAT 3700-21, 7000-21 and 8000-21 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 1.5 mm<sup>2</sup>
- Connection of other external devices: cable 0.75 mm<sup>2</sup>

## II. Electrical Connection - cont.

### II/4 Interior of the Casing



#### Fuses:

F1 Fuse TT 1 A	Mains fuse (time-lag fuse) (Complete 230 VAC supply))
F2 Fuse T 400 mA	(primary protection) 24 VDC (time-lag fuse)

#### Removable blocks of binders

C1 Binders 1 - 9:	connection electromagnet, motor DC, speed control device, position control system
C2 Binders 10 - 20:	Possibility to connect a frequency converter and a 24 VDC UPS (external 24 VDC 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 smoke detectors and photocell
C5 Binders 49 - 55:	Bridge to choose voltage of the motor, secondary transformer
C6 Binders 56 - 57:	Connection 230 VAC for primary transformer
C7 Binders 58 - 60:	230 VAC mains supply control system

**II. Electrical Connection - cont.****II/6 Terminal Connections**Terminal block C1

1/2	Power supply 24 VDC for electromagnet, (1 - / 2 +)
3/4	Motor 24 / 48 VDC (3 - / 4 +)
5/6	Speed control device (5 black / 6 red)
7 - 9	Position control system (7 green / 8 blue / 9 yellow)

Terminal block C2

10/11	Connection of a frequency converter from 0 to 10 VDC (10 - / 11 +)
12/13	Potentialfree contact for the frequency converter max. 110 V/10 A
14/15	Relay contact (NO) switching load max. 110 V/10 A
15/16	Relay contact (NC) switching load max. 110 V/10 A
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“
37/38	Relay contact for alarm central
39/40	Relay contact for alarm central or smoke detectors
41/42	RESET
43/44	Power supply 24 VDC for a photocell (43+/44-)
45/46	Power supply 24 VDC for smoke detectors (45+/46-)
47/48	Power supply 24 VDC for smoke detectors (47+/48-)

Terminal block C5

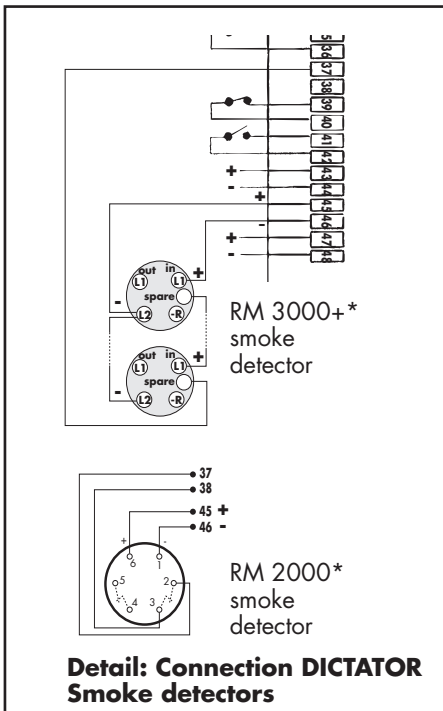
49/50	Bridge for motor 24 VDC
50/51	Bridge for motor 48 VDC
52/53	Secondary transformer 22 V, (52 black/53 red)
54/55	Secondary transformer 22 V, (54 white/55 brown)

Terminal block C6

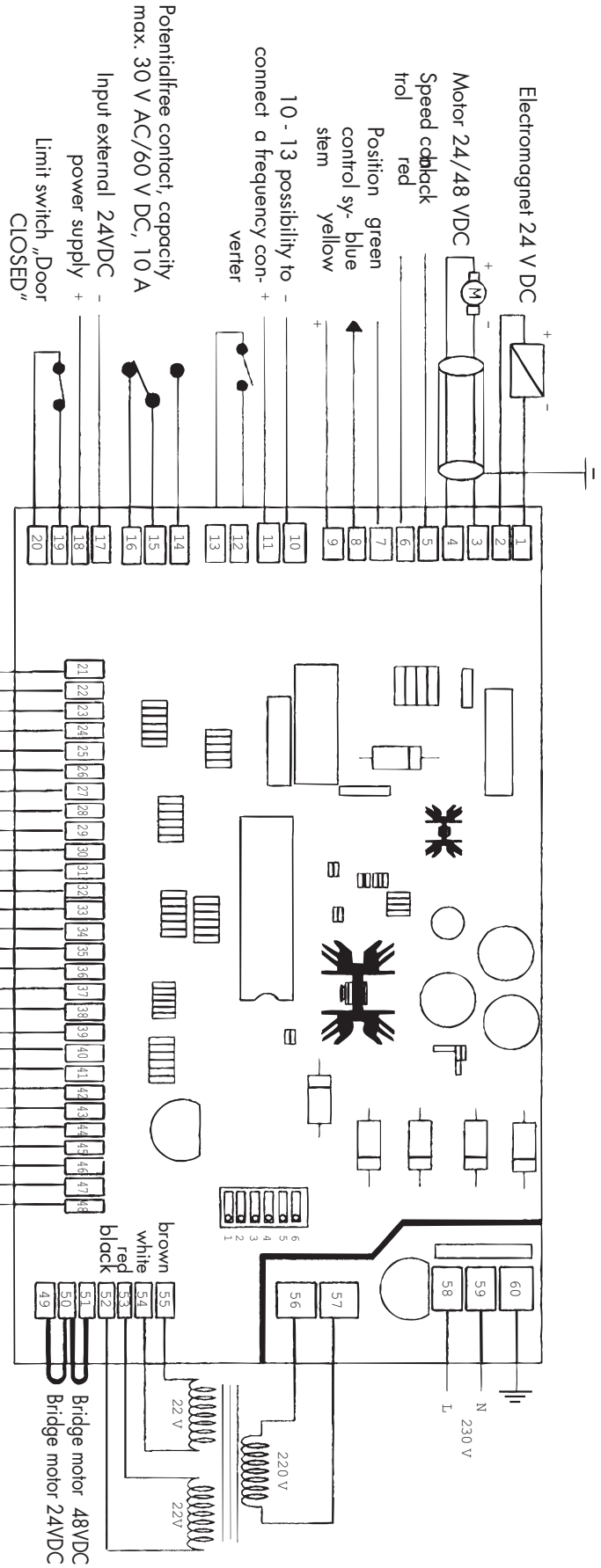
56/57	Power supply 230 VAC for primary transformer
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Terminal block C7

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



**\*When using a RM 4000/WM 4000 detector see the connection example in the RZ-24 manual on page 21.**



DICTAMAT 8000-21 7000-21 3700-21	Binders control system E8 (driving wheel opposite motor)*
81	4
82	3
83	6
84	5
85	2
86	1
87	7
88	8
89	9

\*When the driving wheel is on the same side as the motor: 81 - 3 and 82 - 4



## III. Adjustment / Programming

### III/1 Adjustment - 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 *deadman 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 05.023.17).

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 or d. 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-d“ 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 depends on the direction in which the door is moving.

*In OPENING direction:*

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

002 Door moves at creep speed



*In CLOSING direction:*

001 Door moves at creep speed

002 Door moves at „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  and  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 speed

With this parameter you can adjust the normal travel speed of the door for opening. 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

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### III. Adjustment / Programming - cont.

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#### „P-3“ Function of the Stop-switches 2 and 3 in 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 must always be set to 000.

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

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

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

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

This parameter **must** always be adjusted to **000**. Its function, to control a door lock, cannot be used with the E8 control system (special feature of the E82 control system).

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### III. Adjustment / Programming - cont.

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#### **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“.

#### **„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.

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### III. Adjustment / Programming - cont.

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#### „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 to close.

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 E8 normally always shows the parameter P-0, i.e. the present position of the door.

<b>III. Adjustment / Programming (cont.)</b>				
<b>Parameter</b>	<b>Function</b>	<b>Possible adjustments</b>	<b>ex works</b>	<b>Your value</b>
<b>P-0</b>	<b>Position of the door</b> 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	-	-
<b>P-1</b>	<b>Crawling speed</b> 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	
<b>P-2</b>	Normal <b>Opening speed</b>	100 - 200	150	
<b>P-3</b>	<b>Function of the STOP-switches 2 and 3 in alarm</b> 000: STOP 2 and STOP 3 also active during an alarm closing 001: STOP 2 and STOP 3 without function during an alarm closing (Closing function has priority in case of alarm.)	000 - 001	001	
<b>P-4</b>	<b>Blocking</b> 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	
<b>P-5</b>	<b>Automatic closing</b> 000: Automatic closing switched off 001 - 180: Automatic closing ON. Value indicates time in sec.	000 - 180	000	
<b>P-C</b>	<b>Closing: must be adjusted to the value 000</b> 000: Closing with counterweight (FOR FIRE PROTECTION) 001: Closing with motor: 24/48 VDC motors 002: Closing with motor: three-phase AC motors	000 - 002	001	<b>000</b>
<b>P-d</b>	<b>„Release function“. Must be adjusted to 000</b>	000 - 001	000	<b>000</b>
<b>Press simultaneously to get to P-6 to P-b</b>				
<b>P-6</b>	<b>RESET position control / Position „Door CLOSED“</b> Adjust to 000, when the door is completely closed.	000 - 999	000	
<b>P-7</b>	<b>Position „Door OPEN“ (with position control)</b> Move door with the OPEN switch to the Position OPEN. Enter the value shown in P-0 in P-7.	000 - 999	000	
<b>P-8</b>	<b>Position „Creep speed OPEN“ (with position control)</b> 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	000 - 999	000	
<b>P-9</b>	<b>Position „Creep speed CLOSE“ (with position control)</b> 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	
<b>P-A</b>	<b>Function STOP 3 (safety element)</b> 000: Door stops and continues closing when free again 001: Door stops and then opens completely again	000 - 001	001	
<b>P-b</b>	<b>Position control integrated in drive unit/limit switches</b> 000: Position control with position control system 001: Position control with separate limit switches	000 - 001	001	

## IV. Diagnostics/Indication of Errors

### IV/1 Codes in the Display of the E8

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.

Error Code	Meaning	Possible Causes / Measures
<b>RES</b>	Press the RESET button on the casing.	In general a RESET is required to restart the control system after switching on the current or after an alarm. PLEASE NOTE: As long as the alarm is still active (check smoke detector or release button), the RESET will not work. In case the gate has not been closed completely after an alarm: Turn off the current and switch it on again, wait till the gate has closed completely and then press RESET.
<b>ALA</b>	Alarm	One or several smoke detectors have set off.
<b>SC</b>	Short circuit in the power supply of the motor	
<b>SCE</b>	Short circuit in the power supply of the magnet	
<b>S-1</b>	STOP 1 active	
<b>S-2</b>	STOP 2 active	
<b>S-3</b>	STOP 3 active	In case the light barrier is connected here: please check if anything is in its survey area.
<b>T01</b>	Error due to too long operating time	Please check which maximum operating time has been adjusted (adjustable between 3 and 30 minutes, parameter P-E). Normally this error occurs whenever the current supply of the gate operator is interrupted or the movement of the gate is obstructed.  <b>Press RESET button</b> (after the current supply has been restored). Now the control system is ready to work again.
<b>Continuation on the next page</b>		

**IV. Diagnostics/Indication of Errors - cont.**

**IV/1 Codes in the Display of the E8 - cont.**

Error Code	Meaning	Possible Causes / Measures
<i>continuation</i>		
<b>T02</b>	Error due to exceeding the maximum allowed current (this happens whenever the control system operates more than 30 seconds with the maximum current).	Motor cannot move the gate as the force needed is too high (e.g. higher friction due to dirt).  <b>Press RESET button</b> Now the control system is ready to work again.
<b>FCd</b>	Problems with recognising the position: gate does not stop in the open position, but closes immediately.	<ul style="list-style-type: none"> <li>- When using limit switches possible malfunction of these switches (contacts of the limit switches opened at the same time)</li> <li>- Parameter P-b is adjusted to limit switches, but an operator with encoder is connected.</li> <li>- Parameter P-b is adjusted to an operator with encoder, but an operator without encoder is connected.</li> <li>- Check, if all required bridges according to point II/4 have been set (see page 05.023.6)</li> <li>- Check the fuse F2 above the clamps 43/44</li> </ul>

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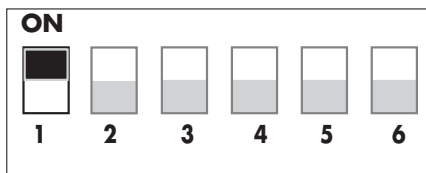
## V. Configuration of the DIP Switches

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 14/15/16.

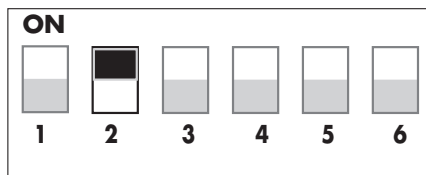
**Only one of the Dip switches 2 - 6 may be in position ON.**



### Dip Switch 1

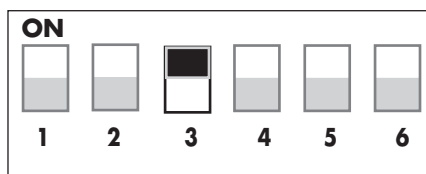
**ON** Deadman operation

**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.)



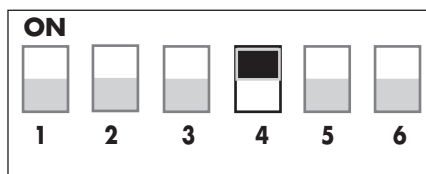
### Dip Switch 2 in Position ON

Binders 14/15 : contact closes, when the door is completely open



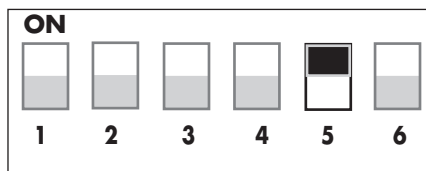
### Dip Switch 3 in Position ON

Binders 14/15: contact closes, when the door is completely closed



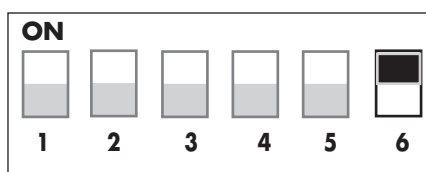
### Dip Switch 4 in Position ON

Binders 14/15: contact closes, whenever the door is moving



### Dip Switch 5 in Position ON

Binders 14/15: contact closes during alarm at the binders 37/38 and 39/40 (when contact at binders 37/38 and 39/40 opens)



### Dip Switch 6 in Position ON

Binders 14/15: contact closes, when the door is completely open  
Binders 15/16: contact closes, when the door is completely closed

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## **VI. Maintenance / Safety Advice**

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### **VI / 1 Maintenance**

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

### **VI / 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.

### **VI / 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.

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**VII. Applied Standards**

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The control system E8 has the CE mark. It has been tested according to the valid norms.

**VII / 1 Electromagnetic  
Compatibility**

EN 50081-2 (93)  
EN 50082-2 (95)  
EN 61000-3-2 (95)  
EN 61000-3-3 (95)

**VII / 2 Low-Voltage**

EN 61010