

# **OPERATION MANUAL**

## **CONTROL V7E**

VERSION 29.22

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## 2 GENERAL INSTRUCTIONS

### 2.1 Original operating instructions

- Copyright protection: any reproduction is permitted only with permission of Tornado Antriebstechnik GmbH.
- Changes in the interest of technical progress are reserved.
- All dimensions are in millimetres, drawings are not necessarily to scale.

### 2.2 Using the equipment for its intended purpose

The control V7E is designed only for controlling gates and doors with mechanical or digital end position systems.

For other applications, the controller must be consulted with the manufacturer.

### 2.3 Warranty

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

The manufacturer is not liable for any personal injury or damage to property that occurs as a result of the warning and safety instructions being disregarded.

The CE declaration and warranty is voided by changes such as unauthorized attachments, modifications or rewiring goes out. Only original spare parts shall be used.

These parts serve to maintain the quality and safety of the machine. Changes are only permitted after consultation with the manufacturer.

### 2.4 Target group

Only qualified and trained service engineers shall install the control.

Only qualified and trained electricians shall connect and carry out the electrical maintenance.

Qualified and trained professionals have knowledge of the general and specific safety and accident prevention regulations, of the relevant regulations and standards, training in the use and maintenance of adequate safety equipment, as well as the ability to recognize hazards associated with their work.

### 2.5 Key to symbols



#### DANGER !

Safety notice indicating a danger that will directly result in death or severe injury.



#### WARNING !

Safety notice indicating a danger that could result in death or severe injury.



#### CAUTION !

Safety notice indicating a danger that could result in slight or moderate injuries.

#### NOTICE !

Safety notice indicating a danger that could result in damage to property or in irreparable damage to the product

#### INFORMATION !

Reference to a check that needs to be carried out or to separate documents that must be observed.

### 3. SAFETY-RELATED REGULATIONS

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

- EN 12453 (Safety in use of power operated doors - Requirements)
- EN 12445 (Safety in use of power operated doors - Test methods)
- EN 12978 ((Industrial commercial and garage doors and gates - safety devices for power operated doors - Requirements and test methods)

References to additional, additionally accepted standards must also be observed, such as:

- EN 60204-1 (Safety of machinery, electrical equipment of machines, part 1: general requirements)
- EN 12100-1 (Safety of machinery, basic concepts, general principles for design. Basic terminology, methodology)
- EN 60335-1 (Household and similar electrical appliances - Safety)
- EN 60335-2-103 (Particular requirements for drives for gates, doors and windows)
- Committee for Workplaces (ASTA)
- Workplace regulation ASR A1.7 ("Doors and gates")

### 4. SAFETY INSTRUCTIONS



#### **DANGER !**

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

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



#### **DANGER !**

Life-threatening danger due to electric shock!

- It is vital that you disconnect the operator system from the power supply before commencing cabling work. Take measures to ensure that the power supply remains disconnected for the duration of the work.

#### **NOTICE !**

For a three-phase current, a clockwise rotating field is required.



#### **WARNING !**

- Ensure that children can not play with the door controls or the hand transmitter.
- Before setting the door in motion, make sure that no persons or objects are within the danger zone of the door.
- Check all the existing emergency command devices.
- Pay attention to potential crushing and shearing zones in the door system.
- Never touch a running door, the guide rail or any moving parts.

#### **INFORMATION !**

For a permanent connection, an all-pole main switch must be used.



#### **WARNING !**

- The control and the drive must be installed with its intended covers and guards. It is important to ensure the correct fit of any seals and couplings are tightened correctly.
- The mains voltage must correspond to the voltage stated on the type plate.
- The mains voltage must be the same as the voltage of the drive.
- For a three-phase connection, only 3-way automatic circuit breakers (10A) may be used.
- Before switching on the controls for the first time, a check must be carried out after completing the wiring to ensure that all the motor connections at the motor and at the controls are securely fixed.
- SAFETY RELAYS:
  - If the control unit is a version without three safety relays, the door manufacturer/installer is responsible of preventing any dangerous situation if one of the contactors is welded.

## 5. INITIAL OPERATION

Before initial operation and at regular intervals of no more than one year, power-operated windows, doors and gates must be inspected by a qualified person (whereby written inspection records must be kept).

After setting the system in operation, the operator of the door system, or the operator's representatives, must be instructed in the operation of the system.

Make sure before installation that the direction of rotation of the gear motor is correct and that all protective devices are functioning.

### NOTICE !

To avoid damaging the device, the following must be ensured:

- The cable types and cross-sections are to be chosen according to the regulations.
- The rated currents and the connection type must match those on the motor type plate.
- The on site fuse must comply with the specifications.



### DANGER !

Life-threatening danger due to electric shock!

It is vital that you disconnect the operator system from the power supply before commencing cabling work. Take measures to ensure that the power supply remains disconnected for the duration of the work.

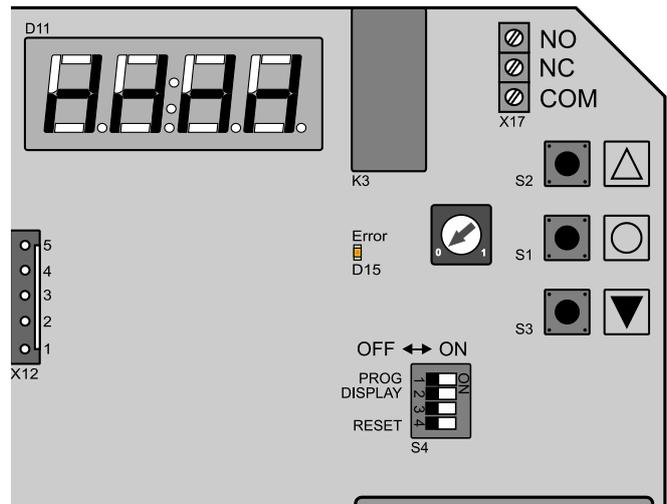
## 5.1 Electrical installation

### NOTICE !

- The main power supply must be in the range of max. +/- 10% of the control unit's mains supply.
- Be sure not to overload the gear motor in accordance with the electrical data on the type plate.
- Temperature control is necessary when using the control outside the temperature range -10 - + 50°C.
- The control unit must not be used in environments with risk of condensation.

## 5.2 HOW TO program

The door will always run in hold-to-run mode when programming. Program the control by opening the enclosure. Find OPEN - CLOSE - STOP push-buttons and a 4 pole DIL switch on the PCB (S4).



### 1. Select programming mode

To enter programming mode: Change DIL switch 1 (S4) to ON position.

Back to normal mode: Change DIL switch 1 (S4) to OFF position.

### 2. Navigating the table

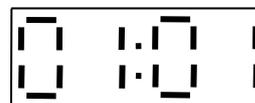
STOP push-button is used to navigate between parameter number and parameter value.

OPEN and CLOSE push-buttons is used to select parameter number or change parameter value.

Active digits will be flashing.

Some of the parameters have an extra step when pressing the stop push-button. For example when the door needs to run in programming stage. Display will show "RUN".

### 3. Parameter explanation



Parameter value.

Parameter number.

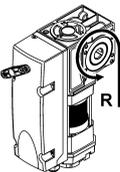
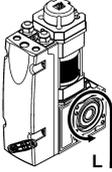
### 5.3 Parameter

#### Parameter overview

Parameter	Description	Page
01:01	Operation mode	7
02:01	Reaction – Failure on photo or Safety edge	7
11:00	Selection of limits	7
12:77	Learning - Electronic Limit Open	8
13:75	Fine Tuning of electronic Limit Open	8
14:00	Learning - Electronic limit CLOSE	8
15:05	Fine tuning of electronic limit CLOSE	9
16:00	½ Open settings	9
17:00	Auto close ½ open	10
21:01	Safety edge selection	10
22:00	After run	10
23:00	Extra safety edge	10
29:00	Wire tightening	11
31:00	Photo settings	11

Parameter	Description	Page
32:00	Auto close	11
33:00	Car wash function	11
34:00	Forced closing	12
35:00	GO function (Step)	12
36:00	Interlock function ON/OFF	12
51:00	Run time control	12
52:01	Reverse time safety edge	12
53:30	Reserve time photo	13
58:00	Service counter setup	13
59:00	Service count reaction	13
81:00	Delay time indication of missing encoder position	13
88:00	Option relay K3	13

The factory setting is shown in **bold** letters.

Parameter	Value
<p><b>Operation mode</b></p> 	<p><b>01 = Hold to run OPEN</b>  <b>Hold to run CLOSE (bridge in terminal X3 / 23-24 when there is no safety edge)</b></p> <p>02 = Impulse OPEN            Hold to run CLOSE (bridge in terminal X3 / 23-24 when there is no safety edge)</p> <p>03 = Impulse OPEN            Impulse CLOSE</p> <p>04 = Impulse OPEN            Impulse CLOSE            0,5 sec reverse by stop on force control in opening direction.</p> <p>Notice: The door will always run in hold-to-run mode when programming.</p>
<p><b>Reaction – Failure on photo or Safety edge</b></p> 	<p><b>00 = Hold to run operation not possible when failure on photo or safety edge.</b></p> <p>The door cannot close when there is an error on photo or safety edge. By a special code the door can close one time in hold to run mode. Press and hold STOP when pressing 222111 (2 = DOWN push button and 1 = OP push button).</p> <p>01 = Hold to run possible when failure on photo or safety edge.</p>
<p><b>Selection of Limits</b></p> 	<p><b>00 = Mechanical Limits</b></p> <p>01 = Dalmatic right turning            02 = Dalmatic left turning            03 = Feig TST PD right turning            04 = Feig TST PD left turning            05 = Kostal– right turning            06 = Kostal– left turning</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>Arrow = door opening</p> <p>After changing to Kostal encoder a new power up is needed to start communication.</p>

Parameter	Value
<p><b>Learning - Electronic limit OPEN</b></p> 	<p>Press STOP 2 times - Display shows ,run'.</p> <p>Run the door to open position. (By pressing OPEN or DOWN).</p> <p>Press the STOP push-button to confirm open limit.</p> <p>(The display will show open limit symbol about 2 sec. and the display will automatic switch back to active parameter number).</p> <p><u>Notice:</u></p> <ul style="list-style-type: none"> <li>• ½ OPEN limit cannot be active during programming (parameter 16).</li> <li>• Photo in the door frame (parameter 31) cannot be active during learning of limits.</li> <li>• When relearning limits parameter 41(force control) and 51(run time) will be reset to factory setting.</li> </ul>
<p><b>Fine tuning of electronic limit OPEN</b></p> 	<p>Press STOP push-button until the display parameter value is active.</p> <p>Fine tune OPEN limit 6-9 more open, 1-4 less open. Press OPEN or CLOSE push-button to change value.</p> <p>If the value is changed: Press STOP push-button (Display shows "RUN")</p> <p>Test the fine tuning by running the door up and down.</p> <p>Press the STOP push-button to save and return to parameter value. (adjustment range is maximum +/- 0.8% of the door run range)</p> <p>Pressing STOP without a value change = return to parameter number.</p>
<p><b>Learning - Electronic limit CLOSE</b></p> 	<p>Press STOP 2 times - Display shows ,run'.</p> <p>Run the door to close position (by pressing OPEN or DOWN). Normally 3-5 cm from the floor.</p> <p>Press the STOP push-button to confirm close limit.</p> <p>(The display will show close limit symbol about 2 sec. and the display will automatic switch back to active parameter number)</p> <p><u>Notice:</u></p> <ul style="list-style-type: none"> <li>• ½ OPEN limit cannot be active during programming (parameter 16).</li> <li>• Photo in the door frame (parameter 31) cannot be active during learning of limits.</li> <li>• When relearning limits parameter 41 (force control) and 51 (run time) will be reset to factory setting.</li> <li>• The safety edge is not active during programming.</li> </ul>

Parameter	Value
<p data-bbox="199 434 515 495"><b>Fine tuning of electronic limit CLOSE</b></p>  	<p data-bbox="571 367 1374 398">Press STOP push-button until the display parameter value is active.</p> <p data-bbox="571 421 1485 481">Fine tune OPEN limit 6-9 more open, 1-4 less open. Press OPEN or CLOSE push-button to change value.</p> <p data-bbox="571 504 1150 564">If the value is changed: Press STOP push-button (Display shows "RUN")</p> <p data-bbox="571 586 1203 618">Test the fine tuning by running the door up and down.</p> <p data-bbox="571 640 1369 701">Press the STOP push-button to save and return to parameter value (adjustment range is maximum +/- 0.8% of the door run range)</p> <p data-bbox="571 723 1406 754">Pressing STOP without a value change = return to parameter number</p>
<p data-bbox="252 1196 464 1227"><b>½ Open settings</b></p> 	<p data-bbox="571 837 874 869"><b>00 = No ½ open active.</b></p> <p data-bbox="571 891 1206 922">Mechanical limit switches: (Value 00 in parameter 11)</p> <p data-bbox="571 922 1382 1088">01 = ½ open stop active. Position controlled by mechanical micro switch (NC type) in terminal 15 + 16. Short-circuit terminal 15+16 parallel connected by mechanical switch to ON/OFF this function.</p> <p data-bbox="571 1111 1222 1142">Electronic limits: (Value &gt; 00 selected in parameter 11)</p> <p data-bbox="571 1164 1166 1196">ON/OFF controlled by switch in terminal X3,15+16</p> <p data-bbox="571 1218 1342 1411">02 ½ open stop active. Electronic limit on 50 % open position. 03 ½ open stop active. Electronic limit on 55 % open position. 04 ½ open stop active. Electronic limit on 60 % open position. 05 ½ open stop active. Electronic limit on 65 % open position. 06 ½ open stop active. Electronic limit on 70 % open position. 07 ½ open stop active. Electronic limit on 75 % open position</p> <p data-bbox="571 1433 1326 1464">½ OPEN command by a push button NO in terminal X3,15 + 16</p> <p data-bbox="571 1487 1342 1680">08 ½ open stop active. Electronic limit on 50 % open position. 09 ½ open stop active. Electronic limit on 55 % open position. 10 ½ open stop active. Electronic limit on 60 % open position. 11 ½ open stop active. Electronic limit on 65 % open position. 12 ½ open stop active. Electronic limit on 70 % open position. 13 ½ open stop active. Electronic limit on 75 % open position</p>

Parameter	Value
<p>Auto close ½ open</p> 	<p><b>00 = No auto close from ½ open limit</b>  <b>01 = Auto close from ½ open limit</b></p> <p><u>Notice:</u>            Auto close must be activated in parameter 32.</p>
<p>Safety edge selection</p> 	<p>Note that actual edge must be connected but not activated before this setup. If the controller has observed a wrong edge select, the display will show ERR. Please note that nothing must be connected to X3 terminal 23-24 when parameter value 03 have been chosen.</p> <p><b>01 = NCC edge or DW switch AU contact</b>  <b>02 = 8k2 electrical edge</b>  <b>03 = optical edge (Type FRABA)</b>  <b>04 = DW switch (AG contact)</b>  <b>05 = Wireless safety edge with test function (X20)</b></p>
<p>After run</p> 	<p><b>00 = No after run</b>  <b>&gt; 00 After run active (after run time 0.01 – 0.50 sec.).</b></p> <p>Monitoring of PNE/DW air switch safety edge is automatically selected when after run is active. When the door reaches the close limit switch, the door will continue to close until PNE/DW air switch activate or until the after run time exceeds.</p> <p><u>Notice:</u>            Can be used to prevent that the door reverses when it reaches the floor before the close limit gets activated – for instance if there is dirt in the door opening or if the wires are getting longer.</p>
<p>Extra safety edge (X20 – terminal 3-4)</p> 	<p><b>00 = No extra safety edge</b>  <b>01 = Extra safety edge works parallel with primary safety edge</b>  <b>02 = Extra safety edge stops door in opening direction</b>  <b>03 = Stop and short reversal in opening direction</b>  <b>05 = Slack rope switch</b>  <b>06 = Slack rope switch (NC)</b></p>

Parameter	Value
<p>Wire tightening</p> 	<p><b>00 = No wire tighten function</b>            01 = Wire tighten 5 ms            02 = Wire tighten 10 ms            03 = Wire tighten 20 ms            04 = Wire tighten 30 ms</p> <p>Used to prevent that the wire is getting loose when the door is closed. Works as a small pull back time when the door stops on close limit.</p>
<p>Photo settings</p> 	<p>Photo 1: Plug in photo module mounted in X12            Photo 2: External photo mounted in screw terminals X3</p> <p><b>00 = No Photo safety connected</b>            01 = Photo 1 connected            02 = Photo 2 connected            03 = Photo 1 and 2 connected</p> <p><b>Parameter 31:04 – 31:07 (only possible with electronic limits)</b></p> <p>04 = Photo 1 connected and mounted in the door frame (*)            05 = Photo 2 connected and mounted in the door frame            06 = Photo 1 und 2 connected and Photo 1 mounted in the door frame (*)            07 = Photo 1 und 2 connected and Photo 2 mounted in the door frame (*)</p> <p>(*) After selecting the right parameter value run mode is available by pressing stop. Location of photo will now be learned by running from close to open position. The door will stop when the photo is no longer blocked and the control unit will change back to parameter number automatically.</p>
<p>Auto close</p> 	<p>Note that impulse close must be selected in parameter 1!</p> <p><b>00 = No auto closing</b>            xx = Seconds 1 – 990 (after 99 the changing will be in x10 of seconds and the value is flashing quickly - e.g. 18 is 180 seconds)</p> <p>Interlock:</p> <p>If stop or emergency stop is activated more than 5 sec. with door in open position. The auto close is interlocked to prevent closing. Reset of interlock by CLOSE push-button or "GO FUNCTION" close.</p> <p>It is only possible to use automatic closing after selecting photo settings in parameter 31, which activates additional security provided by the light-sensitive sensors. Automatic closing without additional safety by light-sensitive sensors: bypass terminals 20-22 on terminal strip X3 and select parameter 31:02.</p>
<p>Car wash function</p> 	<p>(Only available if auto close select is on)</p> <p><b>00 = No car wash function</b>            xx = Photo active time in 0.1 sec. Units (e. g. 15 = 1.5 sec.)            (Adjustable 1 – 30 units = 0.1 sec. to 3.0 sec)</p> <p>Count down of auto closing time starts, only if photo has been activated more than "photo active time". Door shall be complete closed before start of a new cycle.</p>

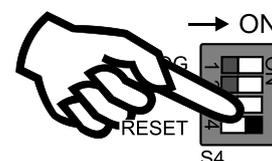
Parameter	Value
<p><b>Forced closing</b></p> 	<p>Only when car wash function is selected (parameter 33), closing even though photo has not been activated</p> <p><b>00 = No forced closing</b>            01 = Forced closing after 2 min.            02 = Forced closing after 5 min.            03 = Forced closing after 10 min.            04 = Forced closing after 20 min.</p>
<p><b>GO function (Step)</b></p> 	<p>Only when photo is selected (parameter 31), Impulse function used for step-by-step operation</p> <p><b>00 Normal go function (Closing is only possible from open limit)</b>            01 Special go function (stop command possible in opening direction)</p> <p>Automatic closing is normally only allowed if additional photo safety is used (parameter 31). Auto close without additional photo safety requires a connecting bridge between X3, 20-22 (parameter 31:02).</p>
<p><b>Interlock function</b></p> 	<p>Only when auto close is selected (parameter 32)</p> <p><b>00 = Interlock function OFF</b>  <b>01 = Interlock function ON</b></p>
<p><b>Run time control</b></p> 	<p>00 = No run time control            01 = run time 20 sec.  <b>02 = run time 40 sec.</b>            03 = Automatic run time.</p> <p>"RUN" position is now available by pressing STOP.</p> <p>Run the door from closed to open position without any stop (keep press OPEN).</p> <p>When run time is learned (by open limit) the "RUN" will stop flashing and the display will automatic switch back to active parameter number).</p> <p>Run time is learned time + 12.5%. Below 10 seconds learned time, fixed 1 second is added.</p> <p><u>Notice:</u> Both limits must be set before selecting automatic run time.</p>
<p><b>Reverse time safety edge</b></p> 	<p>xx = Reverse time of safety edge in 1/100 seconds.  <b>01 = 0,01 Sec</b></p> <p>Range: 0.00 – 0.99 sec</p> <p>(when using a single phase motor the parameter is to be set to 50 to avoid problems with too fast reversing time)</p> <p>(If 00 is selected the reverse time is set to minimum 0.004 sec.)</p>

Parameter	Value
<p>Reverse time photo</p> 	<p>xx = Reverse time of Photo in 1/100 seconds.  <b>30 = 0.30 seconds</b></p> <p>Range 0.05 – 0.99 sec.</p> <p>This reverse time is also used as force reversing time.            (when using a single phase motor the parameter is to be set to 50 to avoid problems with too fast reversing time)</p>
<p>Service counter setup</p> 	<p><b>00 = No Service countdown</b>            01 = 15 open cycles before service (for test only)            02 = 5000 open cycles before service            03 = 10000 open cycles before service            04 = 20000 open cycles before service</p> <p>Reset for new countdown or selecting value:</p> <ul style="list-style-type: none"> <li>• Press STOP to select parameter value.</li> <li>• Press OPEN or CLOSE to select value.</li> <li>• Press STOP again minimum 2 sec.</li> <li>• CLR is shown 2 sec. in display to confirm new countdown.</li> </ul>
<p>Service count reaction</p> 	<p><b>00 = Display shows E:04</b>            01 = Switch to hold-to-run control and display shows E:04</p> <p>If LED pad is mounted: Service LED will light when service countdown reach 0.</p>
<p>Delay time indication of missing encoder position</p> 	<p>00 = 1 Sec.            01 = 2 Sec.            02 = 4 Sec.</p> <p>Display shows E:09 after pre-set operation time without change of encoder position. Failure can be reset by hold-to-run steps to find both end limits or re-learning of limits.</p> <p><b>03 = 4 Sec.</b>            (After operation without change of encoder position the door will stop and error code E:09 will be automatically reset)</p> <p><u>Notice:</u> No limit monitoring by selecting value 03.</p>
<p>Option relays K3</p> 	<p><b>00 = K3 active when door is running</b>            01 = K3 active when the door is closed            02 = K3 active when the door is open</p> <p>Mechanical relay and terminals X17 needs to be mounted on the PCB on position K3.</p>

#### 5.4 Reset to factory settings

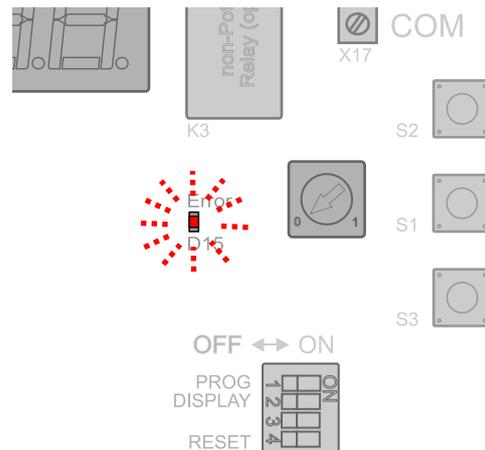
Reset to factory settings by changing DIP switch 4 (S4) to ON position and push STOP and OPEN at the same time within 2 seconds. The display will flash with "FAC" and program version number will be shown.

Remember to switch DIL switch 4 back to OFF position



## 6. LED CODES (D15)

Used when electronic limits is selected :

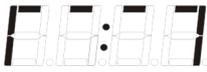
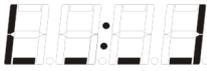
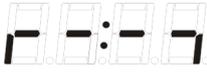
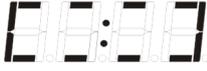


Flashes on error LED	Error Explanation	Solving error
1	No answer from encoder	Check connections. Maybe RS485 A and B are interchanged.
2	Limits not learned	Learn limits.
3	Motor running unintended	Service needed. Fatal error. Move the door manual to middle position without power. Change from normal mode to programming mode on DIL switch no. 1. This will clear the SER error. If the door is running again in 1 sec. without command when power is on then the PCB is defect.
4	Calculation error	Check that parameter 11 value is correct selected. (Left/right turning select). Possible user error – both limits are the same. Encoder error.
5	Not in use	
6	Not in use	
7	Kostal encoder –wrong selection of left/right turning	Re-learn limits. Check that parameter 11 value is correct selected (Left/right turning select) or re-learn limits.
8	Kostal encoder – Failure operating voltage	Check connection and supply voltage. Change encoder.
9	EEPROM failure on IC4 by power up	Try factory clear or change controller.

## 7. RUN MODE

The display will in run mode show status of limits, some inputs or error codes if they occurs.

When power up the software version is showed shortly.

Display	Description	Remark
	Nothing active 4 chairs symbol	Door is stopped between limits and no errors are found.
	Open limit active	Normal symbol as an aid in programming and troubleshooting.
	Close limit active	Normal symbol as an aid in programming and troubleshooting.
	1/2 open limit active	Normal symbol as an aid in programming and troubleshooting.
	STOP active	Normal symbol as an aid in programming and troubleshooting.
	OPEN push-button active	Normal symbol as an aid in programming and troubleshooting. Activation of loop detector will also show this symbol.
	CLOSE push-button active	Normal symbol as an aid in programming and troubleshooting.
	GO function active	Normal symbol as an aid in programming and troubleshooting. <b>(Note that GO function is only possible to use when photo is installed)</b>
	Photo 1 active	Normal symbol as an aid in programming and troubleshooting. Photo 1 is internal photo amplifier mounted in X12.
	Photo 2 active	Normal symbol as an aid in programming and troubleshooting. Photo 2 is external photo cells mounted in the screw terminals.
	Safety Edge active	Normal symbol as an aid in programming and troubleshooting.
	Door running up	Normal symbol as an aid in programming and troubleshooting.
	Door running down	Normal symbol as an aid in programming and troubleshooting.

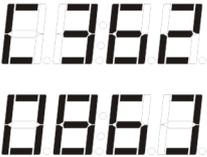
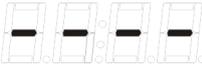
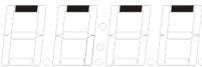
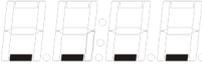
## 7.1 Error Codes

Display	Description	Remark
	Edge monitoring	Monitoring failure of safety edge if this function is activated. Check or adjust safety edge.
	Run time	Door is stopped on run time control.
	Service	Service counter decremented to 0. Reset for new countdown.
	Photo	Failure in photo circuit. (Test cycle after last stop failed, Press stop to start new test)
	Safety edge	Failure in edge circuit. (Test cycle after last stop failed, Press stop to start new test)
	Encoder	Door started, but the position is not changing. Door is stopped after delay time and E:09 failure is shown about 1 sec (see parameter 81). Both limits shall be founded again by hold-to-run steps or both limits must be relearned.
	EEPROM	EEPROM failure of powerup. Try factory clear or change processor.

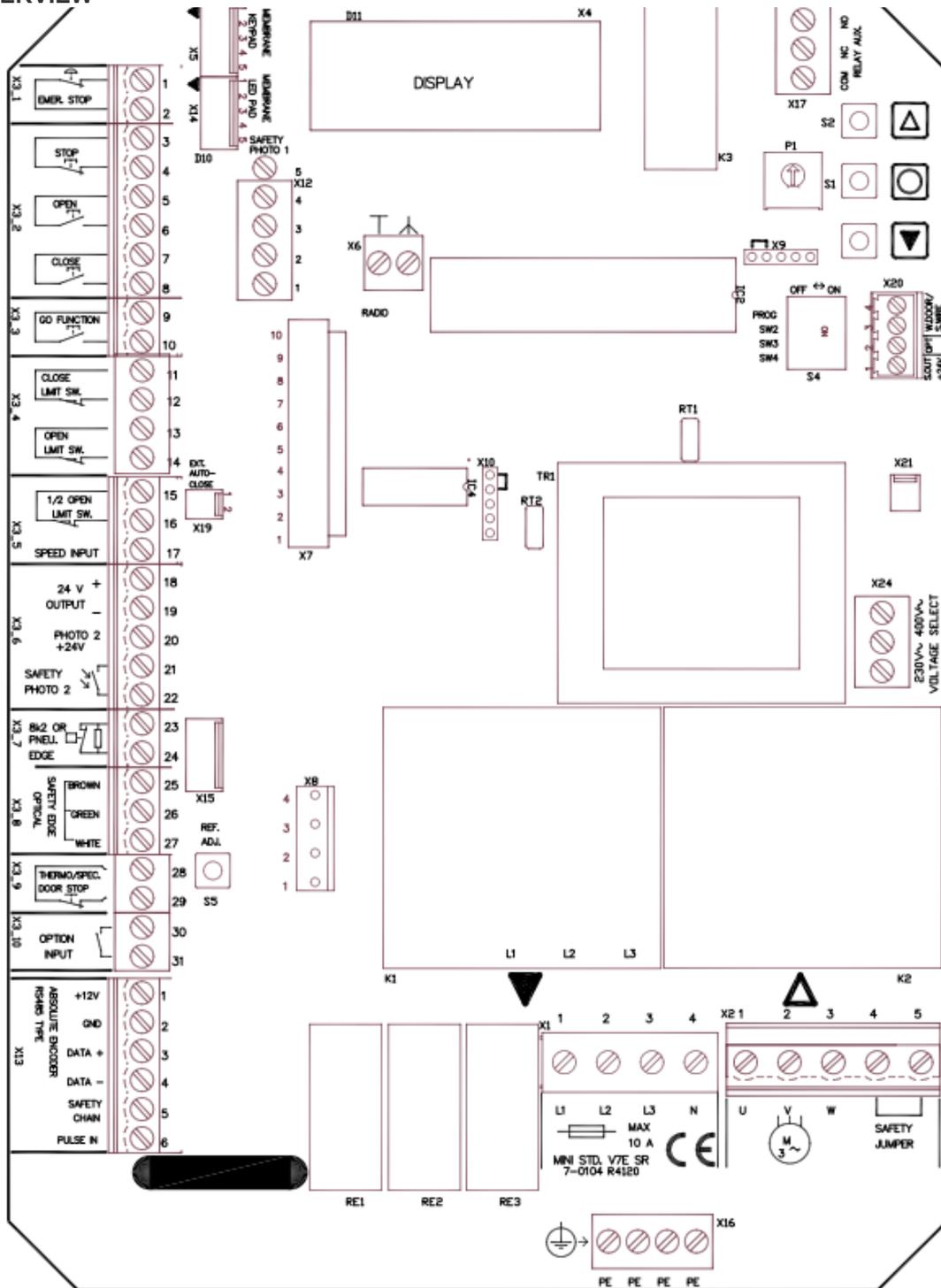
## 8. ELECTRONIC COUNTER AND LAST 10 ERRORS

To select counter or error history – Close the door and switch DIL switch 2 to ON.

*The door cannot be moved when display status is active!*

<p><b>Electronic Counter</b></p> 	<p>The display is flashing between and the most significant digits (1000 to 999000) and the least significant digits (000 – 999).</p> <p>Example shown is (362 and 086) = 362086 door openings</p> <p>Press STOP to see last 10 errors or exit by switching DIL switch 2 to off.</p>
<p><b>Last 10 Errors</b></p>	<p>Press OPEN (up) to select newer error. Press CLOSE (down) to select older error.</p> <p>If there is no errors the display will show:</p>  <p>By the end of the registered 10 errors the display will show::</p> <p>Upper end</p>  <p>Lower end</p>  <p>Switch DIL switch 2 to OFF to get out of "display status".</p> <p>Reset of last 10 errors by pressing OPEN at least 10 sec. when "upper end" symbol is shown.</p> <p>Exit by switching DIL switch 2 to off.</p>

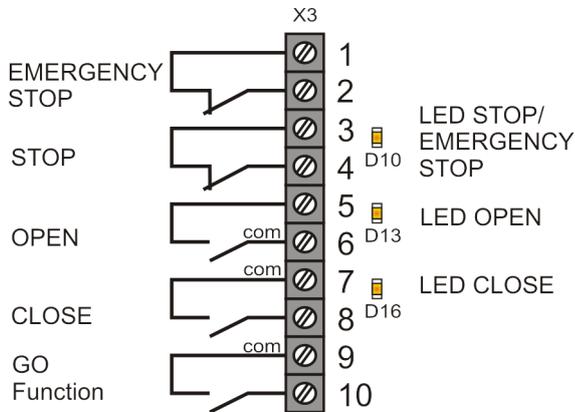
### 9. PCB OVERVIEW



S1	STOP button	X1	Mains supply	X17	Relay K3
S2	OPEN button	X2	Motor	X19	Auto. Close (ON/OFF)
S3	CLOSE button	X3	Control and safety devices	X20	Secondary safety edge
D7	LED Power	X5	Key pad	X24	Power supply selection
D10	LED Stop	X6	Antenna radio receiver	K1	Contactor OPEN
D12	LED limit CLOSE	X7	Plug in module: radio receiver	K2	Contactor CLOSE
D13	LED push button OPEN	X8	Plug in module: traffic lights	K3	Relay, potential-free
D14	LED limit OPEN	X12	Plug in module: Photo 1	RT1	Polyfuse
D15	LED Limit Error	X13	Digital limit switch	RT2	Polyfuse
D16	LED push button CLOSE	X14	Plug in module: LED Panel	TR1	Transformer

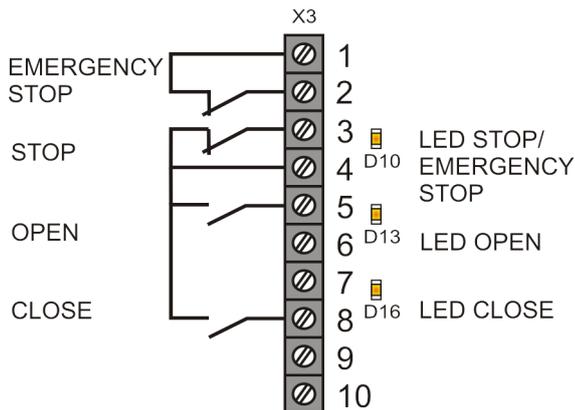
## 10. CONNECTIONS X3

### 10.1 Command devices / 6 wire connection

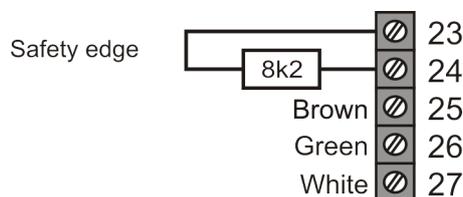


The LED light when a button is actuated or when interrupting the STOP circuit.

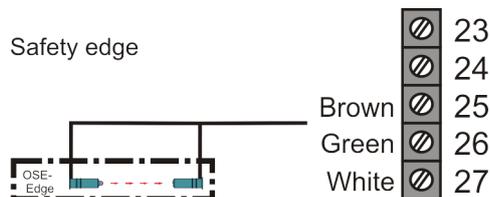
### 10.2 Command devices / 4 wire connection



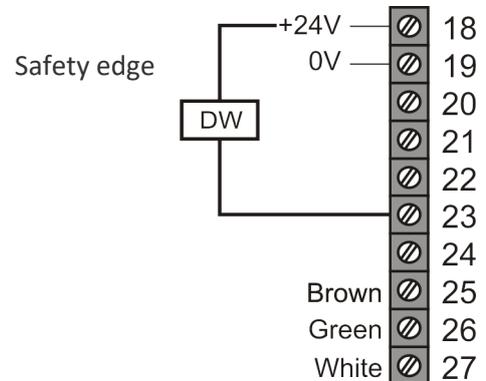
### 10.3 Safety device - Electrical safety edge (Parameter 21:02)



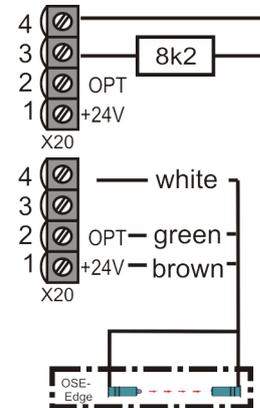
### 10.4 Safety device - Optical safety edge (Parameter 21:03)



### 10.5 Safety device - Pneumatic safety edge (Parameter 21:04)

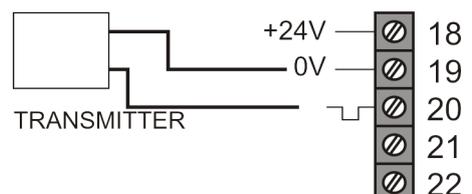
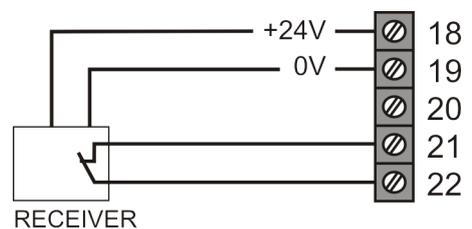


### 10.6 Additional safety edge



### 10.7 Photo Beam one way - Photo 2 (Testing required)

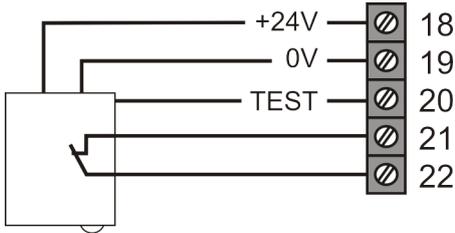
The supply voltage of the transmitter is switched off to test the photocell. Without testing, the sensor can not be used.



### 10.8 Photo Beam Reflex - Photo 2 (Testing required)

Colour code photo beam RAY-RT:

- 18: +24 V = brown
- 19: 0V = blue
- 20: Test = grey
- 21: Input = black
- 22: Input = white



**INFORMATION !**

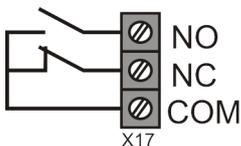
The polarity of the test signal must be considered. The signal is switched to low (0V) while testing.

### 10.9 Additional photo beam - Photo 1 / X12 (Parameter 31:01)

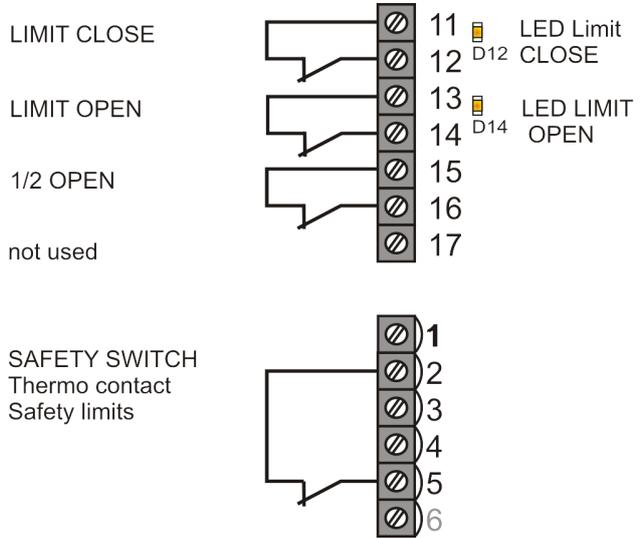
- 4 + 24 VDC
  - 3 Photo 1 signal input
  - 2 0 V GND
  - 1 Photo +
- X12

X12	Self contain photo cell	Photocell with relay output
4	+ Supply to receiver	+ Supply
3	+ Signal from receiver	Relay output
2	- common ground	- common ground
1	+ Supply to transmitter	Relay output

### 10.10 Potential Free Contact K3 (OPTION)



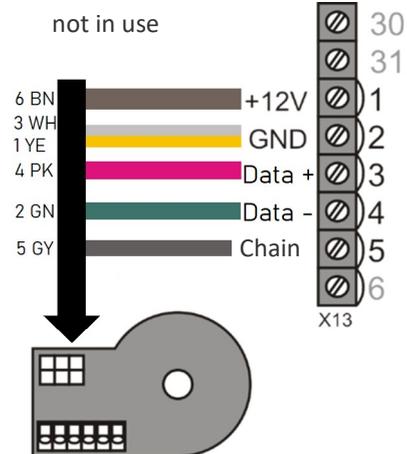
### 10.11 Limit switch - Mechanical limit switch Parameter 11:00)



**INFORMATION !**

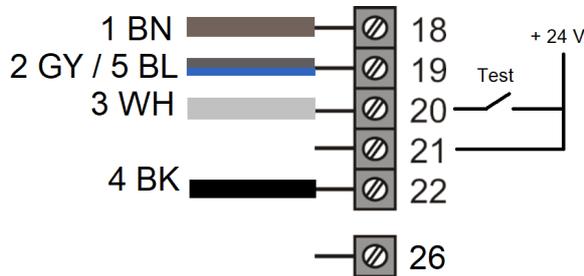
LED D12 / D 14 are activated when the respective end position is reached.

### 10.12 Limit Switch - Kostal Encoder (Parameter 11:05, 11:06)



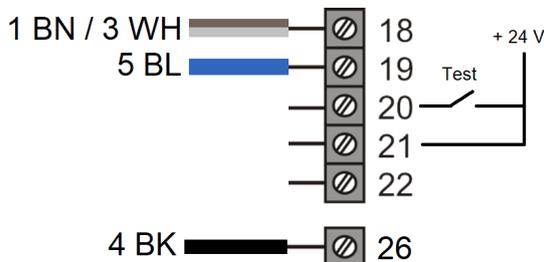
### 10.13 Light curtain

P-N-P transistor



No	Semiconductor output	Colour
1	USP	Brown
2	LO / DO	Grey
3	Test input	White
4	Output (PNP / NPN)	Black
5	Ground (0 V)	Blue
6	Not in use	Green

OSE connection



No	OSE output	Colour
1	USP	Brown
2	Not in use	Grey
3	Test Input	White
4	Output (OSE)	Black
5	Ground (0 V)	Blue
6	Not in use	Green

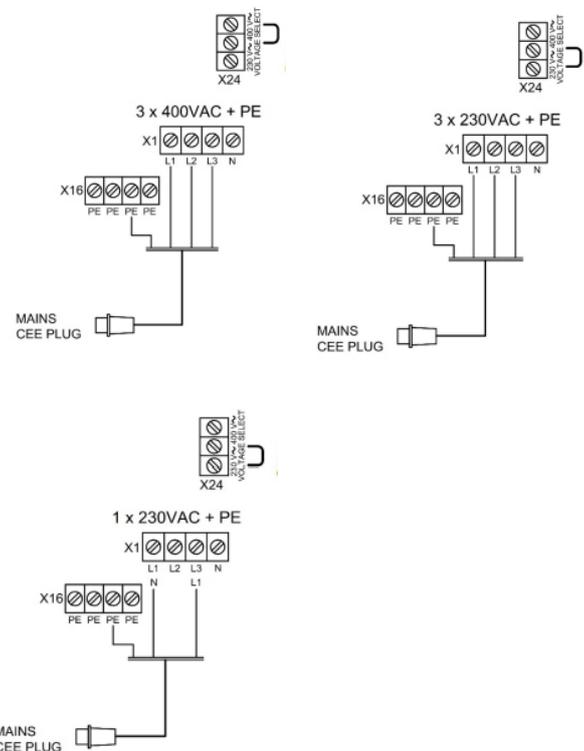
### 10.14 Plug-in modules

- X7 RCM434A03 RADIO RECEIVER  
Plug-in module radio receiver
- X8 TRAFFIC LIGHT LAMP PCB V.1  
Plug-in module traffic lights

### 10.15 Single phase motor

Supply 1x230V	V7E terminals
N	X1: L1
L	X1: L3 + N (linked with a wire)
Motor connection	
Phase open direction	X2: U
Phase close direction	X2: V
Common N	X2: W

### 10.16 Power supply



**DANGER !**

It must be an insulated wire mounted in terminal X24.

## 11. TECHNICAL DATA

Enclosure data:	293 x 190 x 110 mm, ABS
Protection:	IP65 (with appropriate cable glands)
Installation:	Vertical on a vibration free and flat wall, min. height: 1.1 m
Mass:	ca. 1.8 kg
Humidity:	Up to 93% RH non-condensing
Temperature range:	Operating: -10° C ... +50°C
PCB dimension:	225 x 163 x 80 mm
Supply voltage:	400 V/AC ± 10% L1,L2,L3,N,PE 230 V/AC ± 10% L1,L2,L3,PE 230 V/AC ± 10% L, N 50/60Hz, Mains fuse max: 3 x 10A
Transformer:	Max 13 VA , VDE 0570/EN61558 Primary 230VAC winding is thermal protected by built-in thermal transformer fuse. Both secondary windings are overload protected by multifuses.
Motor output:	Max motor load by 3 x 400V/AC: 4 kW Max motor load by 3 x 230V/AC: 2.3 kW Max motor load by 1 x 230V/AC: 1.5 kW Max motor current: 8,5 A
Operating duty cycle:	60% at max. 120 s runtime
Consumption control:	Max. 13 VA
Control voltage:	24 VDC, max. 250 mA; protected by polyfuse
Electronic limits:	RS485, Data+ Data-, terminated with 120 Ohm
Emergency stop, Stop, Thermo	Function as normal stop command and disconnect power to contactor coils.
Safety edge input:	<ul style="list-style-type: none"> <li>• PNE/air switch</li> <li>• Electric type - 8k2 termination ± 10%</li> <li>• Optical type (Fraba OSE or Dalmatic TSS/RSS)</li> </ul> Performance level C, Category 2
Optical safety edge:	Input voltage high (green): 2.5 - 5.0 Volt Input voltage low (green): < 0.5 Volt Input frequency range (green): 250 – 2000 Hz. (50% duty-cycle) Pulse interval maximum (green): 7.0 ms (when not 50% duty cycle)
Photo input (X3-19,20,21,22 ):	External photo, 24VDC (e.g. self contain photo cell)
24 VDC Output (X3-18, X3-19):	24VDC ± 20% (non-regulated), Max load: 250mA
Option relay output (K3 + X17):	Change over contact: 230VAC/5A

## 12. DECLARATION OF CONFORMITY

### EU DECLARATION of conformity



Declaration under sole responsibility that the door control units:

Mini Std. V.7E SR

manufactured at and technical documentation:

**DALMATIC A/S  
LÆGÅRDSVEJ 9  
DK-8520 LYSTRUP**

is in accordance with the following Directives:

EMC Directive (Directive 2014/30/EU) relating to electromagnetic compatibility.

Machinery Directive 2006/42/EC

Low Voltage Directive 2014/35/EU) to electrical equipment intended for use within certain voltage limits.

Furthermore, it declared - that the following standards have been used:

EN 60335-1:2012/ AC:2014	Household and similar electrical appliance – Safety
EN 60335-2-103:2015	Household and similar electrical appliance – Safety – Particular requirement for drives for gates, doors and windows
EN 61000-6-2:2005	EMC – Immunity for industrial environment)
EN 61000-6-3:2007 +A1:2011	EMC – emission for residential, commercial and light industrial environment)
EN12453:2017	Industrial, commercial and garage doors and gates Safety in use of power operated doors.
EN ISO 13849-1:2015	Safety of machinery.
EN 12978:2003 A1: 2009	Industrial, commercial and garage doors and gates Safety devices of power operated doors and gates.

Responsible for technical documentation

© - Lystrup | 10.10.2018



**Hans Hilmar Dall, Owner and director**

EC type examination  
No: 44 205 18194901  
TüV Nord Cert GmbH  
Langemarkstrasse 20  
45141 Essen



**Rolling Shutter Operators**  
**Sectional Door Operators**  
**High-Speed Door Operators**  
**Chain Wheel Operators**  
**Controls**  
**Safety Systems**  
**Accessories**