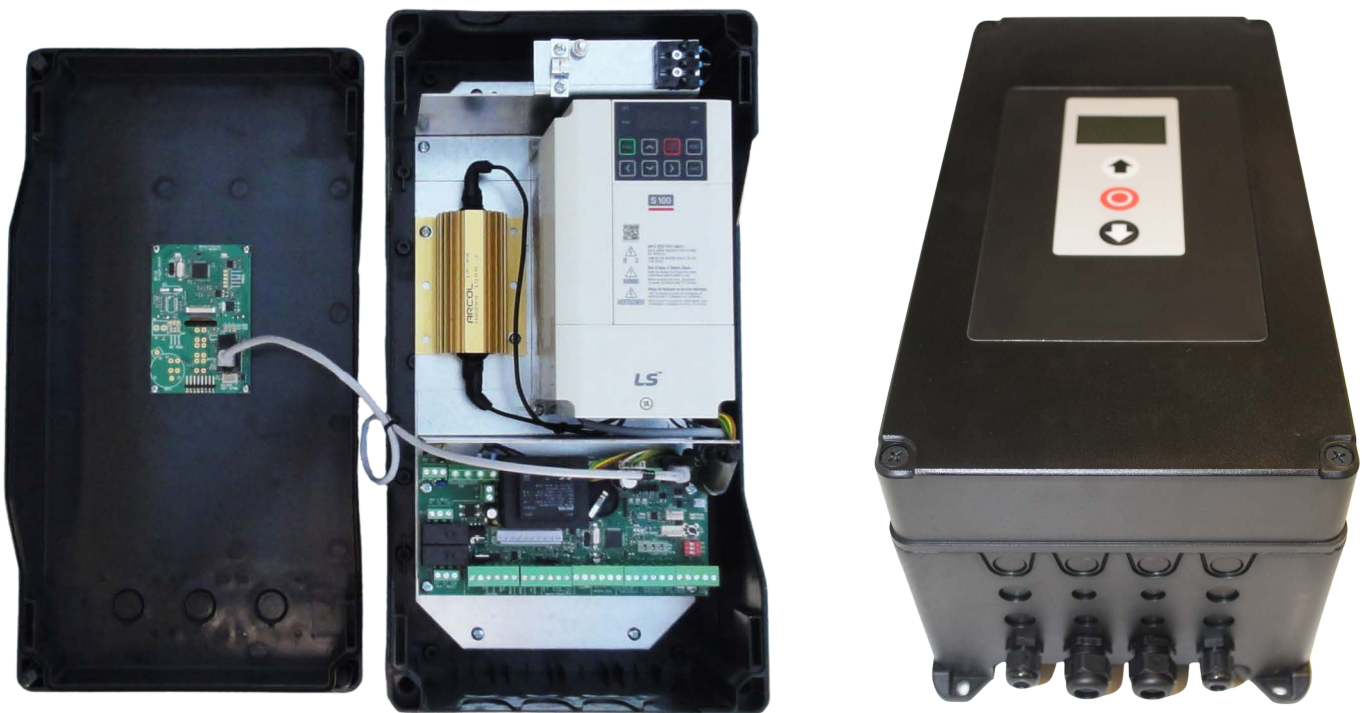**DALMATIC CONTROLLER**
GRAFICAL DISPLAY - ELECTRONIC LIMITS
LCC V3 INVERTER
1X230V/3X230V – 2,2KW

*PRELIMINARY MANUAL!*

| | It is important to follow this installation guide during the installation to insure correct installation. |
|---|---|

## Dalmatic Controller 230V 2,2kW



**Features:**

★ Door control with integrated inverter for high speed doors.

★ Smooth start and stop to increase life of mechanical components.

★ Strong inverter for AC motor sized up to 2.2 kW, 3 x 230V.

★ Overload capacity 150% of rated current, 60 sec.

★ Aluminum housing. IP66.

★ User friendly graphical display with backlight for easy setup.

★ Connection for electronic encoders. (Dalmatic, Feig, Kostal)

★ Connection of 3 edge types. (Pneumatic, 8k2 electric or optical edge).

★ 2 x Photo safety input with automatic test function.

★ Plug-in terminals for external push-buttons – OPEN – STOP - CLOSE.

★ Plug-in connector for Teleco radio.

★ AUX relay output for brake.

★ AUX potential free change over relay output for free user purpose.

★ AUX potential free signal solid state relay output.

★ Plug-in connector for Lamp-PCB for traffic light or 2 relays for free programming.

★ Option RS485 output for special features.

★ Options for self learning edgetype, encoder type and rotation direction.

★ Option for 24 Hour clock for log registering.

★ Future options for Bluetooth or Wi-Fi communication.

★ Designed for future standard EN 12453:2014.with reference to EN13849-1.

★ Certified Class B functional safety software.

| Inverter Motor setup features | | | |
|---|---|---|---|
| Rated motor power | 0.1  – 2.2 kW<br>(3 phase motor) | Rated rotary speed | 500 – 4000 RPM |
| Rated motor voltage | 100 – 400 VAC | Rated motor frequency | 50 – 200 Hz |
| Rated motor current | 1 – 10 A | | |
| **Inverter OPEN direction** | | **Inverter CLOSE direction** | |
| Freq. High OPEN | 10 – 200 Hz | Freq. High CLOSE | 10 – 200 Hz |
| Freq. Low OPEN | 5 – 200 Hz | Freq. Low CLOSE | 5 – 200 Hz |
| Acc. Time OPEN | 0.1 – 10 Sec. | Acc. Time CLOSE | 0.1 – 10 Sec. |
| Dec. Time full to Low | 0.1 – 10 Sec. | Dec. Time full to Low | 0.1 – 10 Sec. |
| Dec. Time to stop | 0.1 – 10 sec. | Dec. Time to stop | 0.1 – 10 sec. |
| Low speed setpoint before OPEN limit | 5 – 50 % of run range | Low speed setpoint before CLOSE limit | 5 – 50 % of run range |

| Door control setup features | | | |
|---|---|---|---|
| Parameter 1 | Deadman – impulse settings | Parameter 32 | Auto closing setup |
| Parameter 2 | Special settings regarding failure on safety edge or photo | Parameter 33 | Car wash function.<br>(close after photo) |
| Parameter 11 | Encoder type and direction setup.<br>Dalmatic Encoder MTM-E-V.0<br>Feig Encoder TST PD<br>Kostal Encoder 05.4420.00 | Parameter 34 | "forced" closing setup |
| | | Parameter 35 | Go function setup |
| Parameter 12 | Electronic limit settings, OPEN | Parameter 51 | Run time setup |
| Parameter 13 | Fine tune OPEN limit | Parameter 52 | Reverse time – safety edge |
| Parameter 14 | Electronic limit settings, CLOSE | Parameter 53 | Reverse time – photo cells |
| Parameter 15 | Fine tune CLOSE limit | Parameter 58 | Service counter |
| Parameter 16 | ½ OPEN settings | Parameter 59 | Service counter reaction |
| Parameter 17 | Auto close ½ OPEN | Parameter 81 | Encoder position failure |
| Parameter 21 | Safety edge setup<br>(PNE, 8k2, Optical) | Parameter 82 | Encoder test function<br> (MTM-E. Encoder) |
| Parameter 22 | Electronic afterrun (PNE edge) | Parameter 88 | AUX 2 relay settings |
| Parameter 29 | Wire tightening function | Parameter 100 – 125 | Inverter Motor setup – See above. |
| Parameter 31 | Photo 1 and photo 2 setup | | |

RELATED PRODUCTS



Dalmatic rapid and sectional gears



Dall gearmotors
Sectional doors
Safety



Dalmatic photocells with built in amplifier.



MTM encoder

# 1   SAFETY INSTRUCTIONS

During the installation it is necessary to observe and follow the safety and accident-prevention regulations valid for the specific application.

**CAUTION** – Do not connect CEE plug before the installation is complete with all plug in terminals connected and all screw terminals are secured.

In particular the following standards should be noticed (The list may not be sufficiently)

- 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)

It is important to follow this installation guide during the installation to insure correct installation. A mains switch or CEE-plug must be located close to the door control unit and must be easy to reach.

The door must always be correct balanced.

Only trained personal should install electrical equipment according to national security regulations.

The product must not be disposed with regular housekeeping waste and must be treated as WEEE (Disposal of electronic equipment).

The order number written on the white cell on the PCB shows the year of production (.--)

The original languages of the manuals are Danish and English and every other translation are made from these.

1.1 **ELECTRICAL INSTALLATION**

During the electrical installation the installer shall note the following:

- The main power supply must be in the area 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 sign of the gear motor.
- Temperature control is necessary when using the control outside the temperature range -10 - + 40 $^{\circ}$C.
- The control unit must not be used in environments with risk of condensation. Furthermore it is important to mount the control board on a flat wall without vibrations away from children and other not allowed users.



Never touch the internal elements within 15 minutes after power off.

Wait till it is completely discharged.

## 2   TECHNICAL DETAILS

| | |
|---|---|
| Installation: | Vertical on a vibration free and flat wall |
| Temperature range (operating) | -10…+40°C |
| Humidity: | Up to 93% RH non-condensing. |
| Vibration: | Low-vibration installation, wall mounted. Below 0.5g (acceleration) |
| Enclosure data : | IP66 (indoor use only) |
| Dimension (W x H x D): | 204 x 412 x 200 mm |
| Supply voltage: | 230VAC +/- 10% L1, N, PE<br><br>50/60Hz,  Mains fuse max: 3 x 10A |
| Transformer: | Max 13 VA , VDE 0570/EN61558<br><br>Primary 230VAC.<br><br>Both secondary windings are overload protected by multifuses. |
| Motor output: | Max motor load by 3 x 230VAC:  2,2 kW<br><br>Max motor current: 10A |
| Emergency stop, Stop, Thermo spec. door stop and Safety chain | Function as normal stop command. |
| 24VDC Output (terminals X3-18,X3-19): | 24VDC ± 20% (non-regulated), Max load: 160mA<br><br>(if no plug-in module is used, else these currents must be subtracted)) |
| Safety edge input: | PNE/air switch<br><br>Electric type - 8k2 termination ± 10%<br><br>Optical type (Fraba OSE or Dalmatic TSS/RSS)<br><br>Performance level C, Category 2 |
| Optical safety edge: | Input voltage high (green):          2.5 - 5.0          Volt.<br>Input voltage low (green):          < 0.5          Volt.<br>Input frequency range (green):   250 – 2000   Hz. (50% duty-cycle)<br>Pulse interval maximum (green):          7.0 mS<br>          (when not 50% dutycycle) |
| Photo input | X13-9,10,11,22 External photo, 24VDC (e.g. self-contain photo cell)<br><br>Performance level C, Category 2 |
| Electronic limits | RS485, Data+ Data-, terminated with 120 Ohm |
| Relay output AUX1 (RE1) | NO contact:  max. 230VAC/5A |

| Relay output AUX2 (RE2) | Change over contact: max. 230VAC/5A |
|---|---|
| Relay output AUX3 (Solid state) | Solid state NO: max. 30V/50mA |
| Directives – EMC Directive 2014/30/EU | EN 61000-6-3 (2007) Emission – Residential<br><br>EN 61000-6-1 (2007) Immunity – Residential<br><br>EN 61000-6-4 (2007) Emission – Industry<br><br>EN 61000-6-2 (2005) Immunity – Industry<br><br>EN 61000-4-3 (2006) +A1(2008) +A2(2010) RF-field immunity<br><br>EN 60335-1 (2012) Safety – Part 1: General requirements |
| Directive – Low Voltage Directive<br><br>LVD 2014/35/EU | EN 60335-1 (2012) Safety of Household and similar electrical appliance/<br><br>Part 1 |
| Inverter 2.2 kW | Power 2,2 kw<br><br>$I_N$ 10A<br><br>Max overload 1,5 x $I_N$ , 60 sec.<br><br>Frequency range 0-650 Hz<br><br>Supply 230V +/- 10%   -   44–67 Hz<br><br>Integrated EMC filter |

## 3   INVERTER CONNECTIONS

# LCC V3 INVERTER

**MOTOR CONNECTION:**

Connect motor cable to U,V,W terminals on inverter + EARTH/shield on enclosure.

Adjust motor nameplate parameter is software (parameter 100-104).

Please direction of motor. When open command the door must be up running. If not, interchange 2 motor wires.
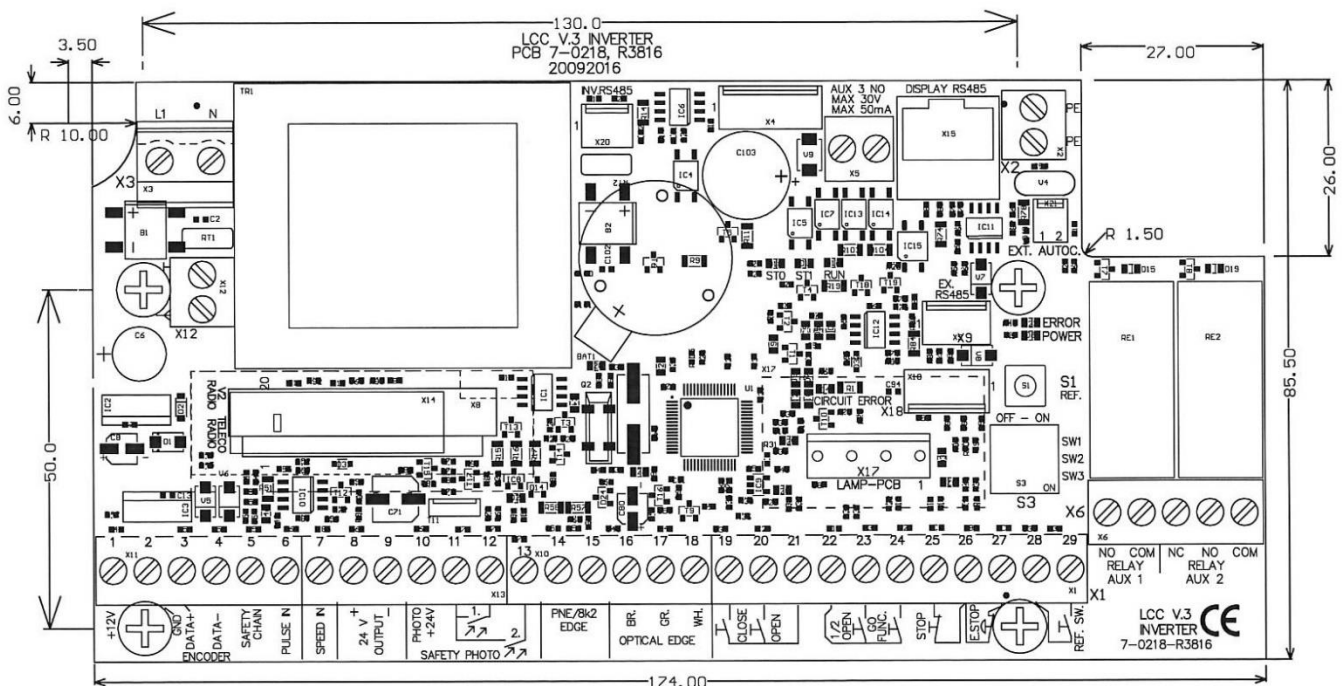
**BRAKE CONNECTION:**

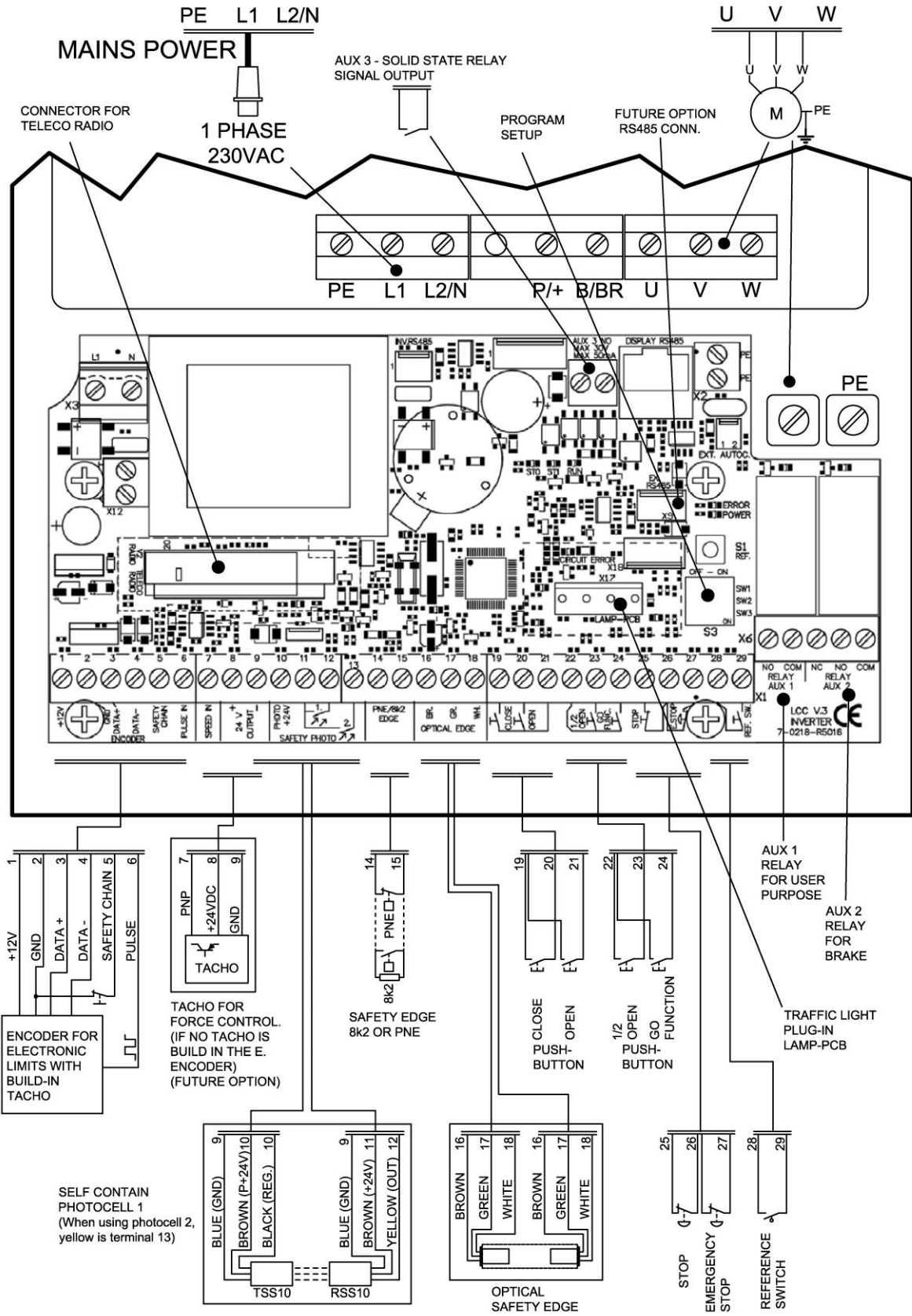Connect brake to Neutral on inverter and Phase to AUX 2relay on Door control PCB.

**CONNECTION OF ENCODER, PHOTO CELLS, SAFETY EDGE:**

**Connect cables for encoder, photo cells, safety edge according to symbol/text on Door control PCB.**

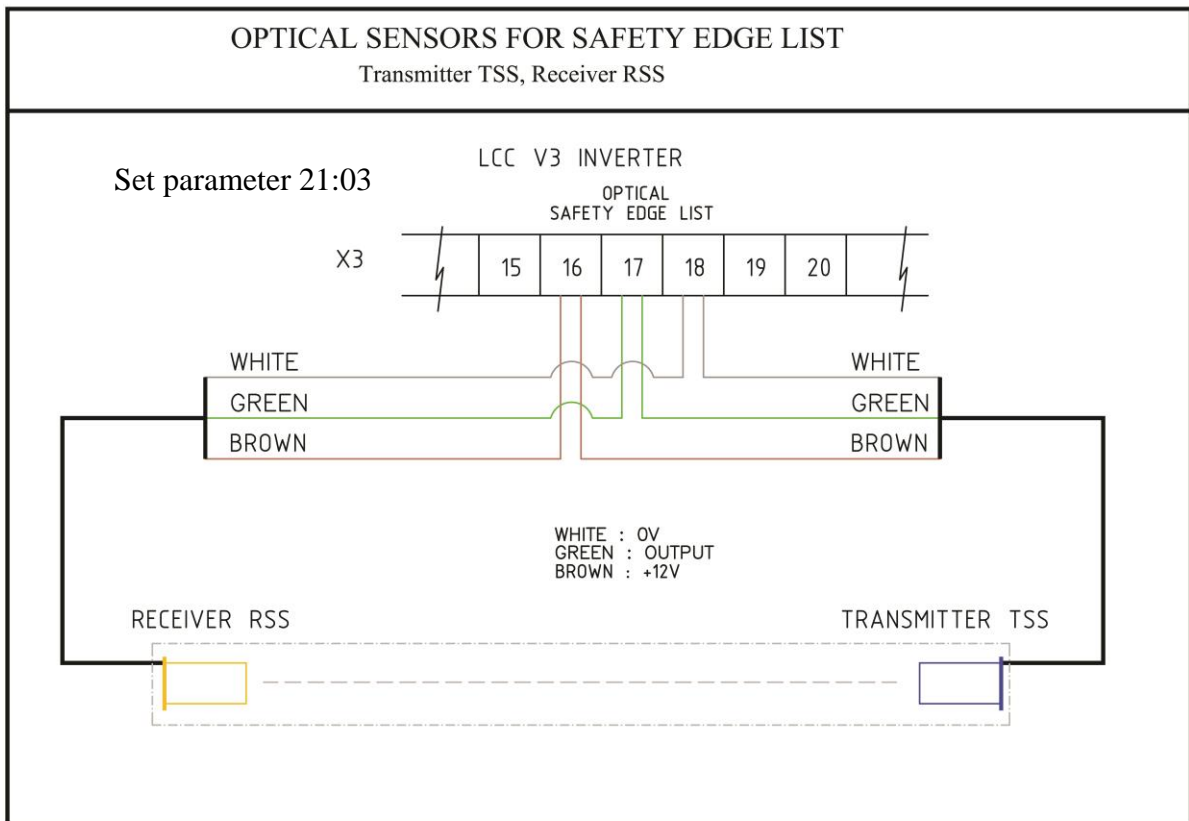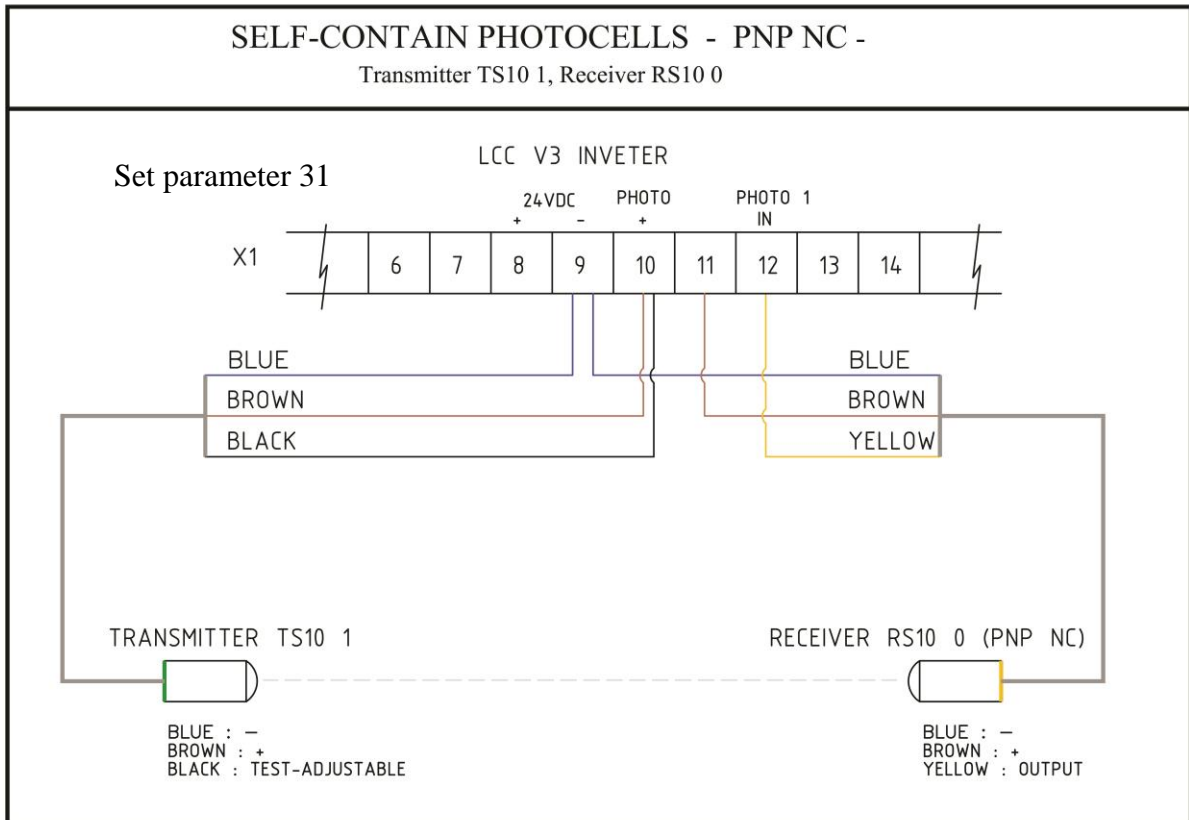**(connection symbols/text is like you know from Dalmatic control V7E)**

**Note that photo transmitter also needs a (-) from 24 V output terminals.**

## DALMATIC CONTROLLER - CONNECTIONS

PE   L1   L2/N

**MAINS POWER**

U   V   W

CONNECTOR FOR
TELECO RADIO

AUX 3 - SOLID STATE RELAY
SIGNAL OUTPUT

1 PHASE
230VAC

PROGRAM
SETUP

FUTURE OPTION
RS485 CONN.

M   PE

PE   L1   L2/N      P/+   B/BR   U   V   W

PE

+12V   GND   DATA+   DATA-   SAFETY CHAIN   PULSE   SPEED IN   24 V OUTPUT   PHOTO +24V   SAFETY PHOTO   PNE/8k2 EDGE   OPTICAL EDGE   CLOSE   OPEN   1/2 OPEN   GO FUNC.   STOP   REF. SW.

ENCODER

NO COM
RELAY
AUX 1

NC NO COM
RELAY
AUX 2

LCC V.3
INVERTER
7-0218-R5016

1   +12V
2   GND
3   DATA +
4   DATA -
5   SAFETY CHAIN
6   PULSE

ENCODER FOR
ELECTRONIC
LIMITS WITH
BUILD-IN
TACHO

7   PNP
8   +24VDC
9   GND

TACHO

TACHO FOR
FORCE CONTROL.
(IF NO TACHO IS
BUILD IN THE E.
ENCODER)
(FUTURE OPTION)

14   PNE
15   8k2

SAFETY EDGE
8k2 OR PNE

19
20   CLOSE
21   OPEN

CLOSE
PUSH-
BUTTON

22
23   1/2 OPEN
24   GO FUNCTION

1/2 OPEN
GO
PUSH-
BUTTON

AUX 1
RELAY
FOR USER
PURPOSE

AUX 2
RELAY
FOR
BRAKE

TRAFFIC LIGHT
PLUG-IN
LAMP-PCB

SELF CONTAIN
PHOTOCELL 1
(When using photocell 2,
yellow is terminal 13)

9   BLUE (GND)
10   BROWN (P+24V)
10   BLACK (REG.)

9   BLUE (GND)
11   BROWN (+24V)
12   YELLOW (OUT)

TSS10   RSS10

16   BROWN
17   GREEN
18   WHITE

16   BROWN
17   GREEN
18   WHITE

OPTICAL
SAFETY EDGE

25
26   STOP

27   EMERGENCY STOP

28
29   REFERENCE SWITCH

## 4   PHOTO CONNECTIONS

### SELF-CONTAIN PHOTOCELLS  -  PNP NC -
Transmitter TS10 1, Receiver RS10 0

Set parameter 31

LCC  V3  INVETER

24VDC    PHOTO      PHOTO 1
  +    −    +          IN

X1    6   7   8   9   10   11   12   13   14

BLUE                                    BLUE
BROWN                                  BROWN
BLACK                                  YELLOW

TRANSMITTER  TS10  1          RECEIVER  RS10  0  (PNP  NC)

BLUE : −                       BLUE : −
BROWN : +                      BROWN : +
BLACK : TEST-ADJUSTABLE        YELLOW : OUTPUT

### OPTICAL SENSORS FOR SAFETY EDGE LIST
Transmitter TSS, Receiver RSS

Set parameter 21:03

LCC  V3  INVERTER

OPTICAL
SAFETY  EDGE  LIST

X3    15   16   17   18   19   20

WHITE                                   WHITE
GREEN                                   GREEN
BROWN                                   BROWN

WHITE : 0V
GREEN : OUTPUT
BROWN : +12V

RECEIVER  RSS                  TRANSMITTER  TSS

## 5   CONNECTION OF TRAFFIC LIGHT LAMP PCB V.1 MODULE

## (BUY SEPARATE)

Plug in module can be used to control traffic lights and give potential free signals (door opened, door closed or door in movement).

*Find more information about traffic light settings in the data sheet which is included with the module.*
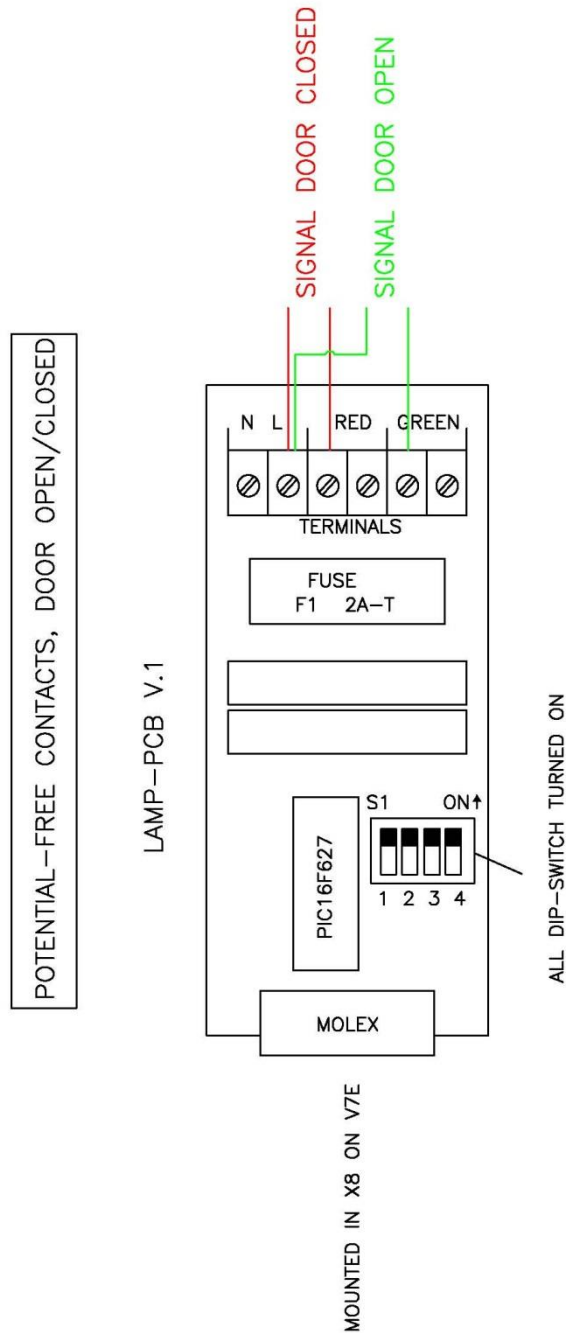
# 6   DECLARATION OF CONFORMITY

## 6.1   CE DECLARATION – CONTROL UNIT

$$\mathcal{C}\mathcal{E}$$

Machinery Directive, 2006/42/EC, Annex II, para. A
Safety component according to 2006/42/EC Annex IV, 21

**Declaration under sole responsibility that the door control units:**

**Dalmatic Controller**

**manufactured at and technical documentation:**

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

- is in accordance with the following other EC Directives:
- EMC Directive (Directive 2014/30/EU) relating to electromagnetic compatibility.

- Machinery Directive 2006/42/EC

- Low Voltage requirements (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 60439-1
EN61000-6-2
EN61000-6-3
EN12453:2001 (+2014)
EN ISO 13849-1:2015
EN 12978+ A1:2009

*Other standard and technical specifications:*
*EN12453 refers to EN60335-1:2012*

Responsible for technical documentation

© DK – Lystrup   17.03.17

Hans Hilmar Dall, Owner and director

**PARAMETER LIST  - DOOR CONTROL PARAMETERS:**

| 1 | Operation settings |
| 2 | Special setting regarding failure on safety list or photo |
| 11 | Selection of limits (Mechanical/encoder) |
| 12 | Electronic limit settings, OPEN |
| 13 | Electronic limit settings, OPEN fine tuning |
| 14 | Electronic limit settings, CLOSE |
| 15 | Electronic limit, CLOSE fine tuning |
| 16 | 1/2 Open settings |
| 17 | Auto close 1/2 open |
| 21 | Selection of safety list |
| 22 | Electronic after run |
| 23 | Extra safety list |
| 29 | Wire tightening function |
| 31 | Photo cells |
| 32 | Auto close |
| 33 | Car wash function |
| 34 | "Forced" closing |
| 35 | GO function (Step) |
| 41 | Force control – Section |
| 44 | Force control automatic settings (41:03) |
| 51 | Run time |
| 52 | Reverse time – safety list |
| 53 | Reverse time – photo cells |
| 58 | Service counter |
| 59 | Service counter reaction |
| 81 | Encoder position failure |
| 82 | Encoder test function |
| 84 | Special open function |
| 87 | AUX 1 Relay settings |
| 88 | AUX 2 Relay settings |
| 89 | AUX 3 Relay settings |

**PARAMETER LIST  - INVERTER PARAMETERS:**

| 100 | **Rated motor power** |
|-----|------------------------|
| 101 | **Rated  voltage** |
| 102 | **Rated current**              **(motor name plate)** |
| 103 | **Rated rotary speed**         **(motor name plate)** |
| 104 | **Rated frequency**            **(motor name plate)** |
| 105 | **Autotune**                   **(future option)** |
| 109 | **Max. frequency** |

| 110 | **Frequency high speed opening** |
|-----|-----------------------------------|
| 111 | **Frequency low speed opening** |
| 112 | **Acceleration time opening** |
| 113 | **Deceleration time opening - full speed to low speed** |
| 114 | **Deceleration time to stop** |
| 115 | **Low speed set point before open limit  (% of full distance)** |

| 120 | **Frequency high speed closing** |
|-----|-----------------------------------|
| 121 | **Frequency low speed closing** |
| 122 | **Acceleration time closing** |
| 123 | **Deceleration time closing - full speed to low speed** |
| 124 | **Deceleration time to stop** |
| 125 | **Low speed set point before close limit  (% of full distance)** |

# LCC V3 INVERTER

**Note:**

Please note that force control parameter 41 + 44 is not useful yet.

**PROGRAMMING:**

The programming of door control is like you know from Dalmatic door control V7E with parameter number and value.  New parameter numbers for inverter setup are from parameter 100 and above.

*CAUTION! Be sure that stop circuits are mounted and no emergency stop or other stop is activated before entering programming mode.*

1.  **Select programming mode:**

   **To enter programming  mode change DIL switch  no. 1 (4 pole) to ON position.  The door will always run in hold-to-run mode when programming.**

   **(Back to normal mode: Change DIL switch 1 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

   (only membrane pushbuttons: ▲, ▼, STOP are in use)

   (You are free to use OPEN, CLOSE and STOP on membrane pushbutton or external pushbutton connected to screw terminals.)

   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".

<sub>1.1</sub>  **OPERATION**

### 1.1.1  *Operation mode*

| `01:01` | Hold-to-run OPEN<br>Hold-to-run CLOSE (Put a bridge in X1 terminal 14-15 when there is no safety list) |

Hold-to-run OPEN
Hold-to-run CLOSE (Put a bridge in X1 terminal 14-15 when there is no safety list)

`01:02`  Impulse OPEN
Hold-to-run CLOSE (Put a bridge in X1 terminal 14-15 when there is no safety list)

`01:03`  Impulse OPEN
Impulse CLOSE

`01:04`  Impulse OPEN
Impulse CLOSE
0,5 sec reverse by stop on force control in opening direction.

### 1.1.2  *Reaction – Failure on photo or Safety edge list*

`02:00`  Hold to run operation not possible when failure on photo or safety edge list.

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).

`02:01`  Hold to run possible when failure on photo or safety edge list.

**Do not use 01 when a device with constant close signal is mounted. Usage of 01 is on customers own risk.**

## 1.2  SELECTION OF LIMITS

Dall gearmotor                    TAE gearmotor

              

↓                                 ↓

              

Dalmatic encoder                  Kostal encoder

↓                                 ↓

**Selection in parameter 11**

| | |
|---|---|
| **11:01** | **11:05** |
| Dalmatic right turning | Kostal right turning |
| **11:02** | **11:06** |
| Dalmatic left turning | Kostal left turning |

| | |
|---|---|
| **11:03** | **After changing to Kostal encoder a new power up is needed to start communication. Note that Data+ = Kostal RS485A** |
| Not in use | |
| **11:04** | |
| Not in use | |

Right turning, open direction
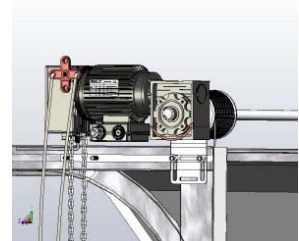


Left turning, open direction
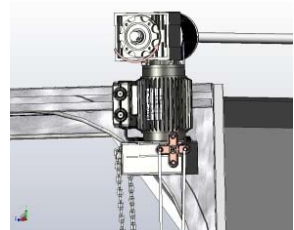
1.3    **LEARNING OPEN AND CLOSE LIMITS**

## LEARNING – ELECTRONIC OPEN LIMIT:

*NOTE:*        *½ OPEN limit cannot be active during programming (parameter 16).*
*Photo in the door frame (parameter 31) cannot be active during learning of limits.*
*When relearning limits parameter 41(force control) and 51(run time) will be reset to factory setting.*

| 12:⌐⌐ | → Press STOP 2 times → | RUN | → Run the door to open position. (By pressing OPEN or DOWN). Press the STOP push-button to confirm open limit. |

*(The display will show open limit symbol about 2 sec. and the display will automatic switch back to active parameter number)*

| ⌐ - - - ⌐ |
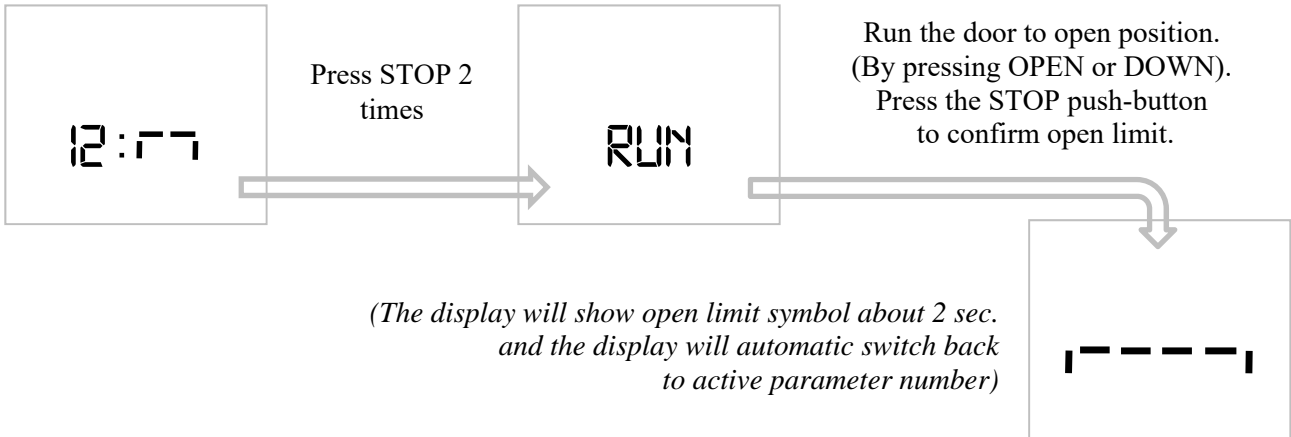
## LEARNING – ELECTRONIC CLOSE LIMIT:

| 14:⌐⌐ | → Press STOP 2 times → | RUN | → Run the door to close position. (By pressing OPEN or CLOSE). Normally 3-5 cm. from the floor (with pneumatic safety edge). Press the STOP push-button |

*(The display will show close limit symbol about 2 sec. and the display will automatic switch back to active parameter number)*

| ⌐_ _ _ _⌐ |
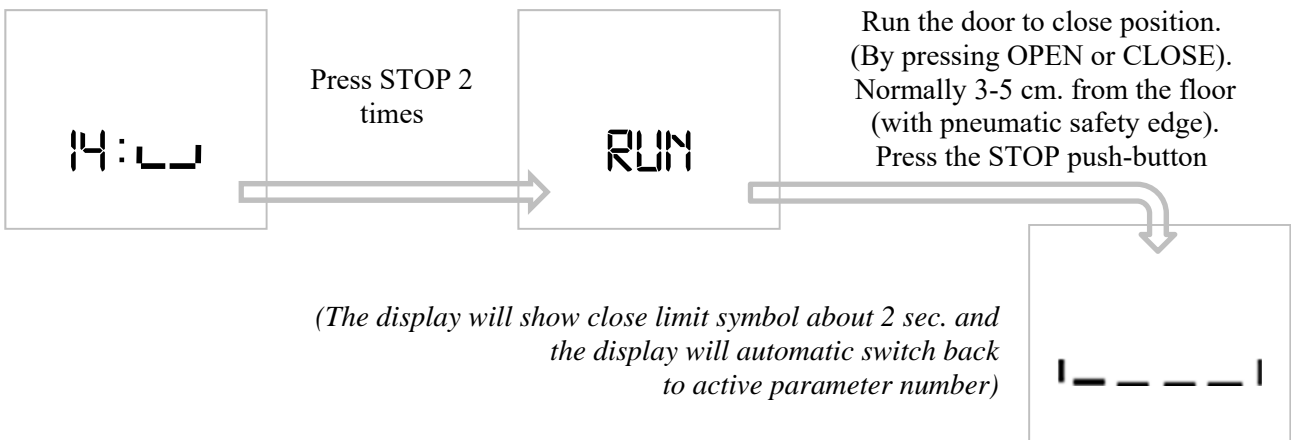
### 1.3.1 *Fine tuning of electronic Limit OPEN*

13:ПS     Press STOP push-button
until the display parameter value is active.

Fine tune OPEN limit 6-9 more open, 1-4 less open. Press OPEN
or CLOSE push-button to change value.

RUN     If the value is changed: Press STOP push-button (Display
shows"RUN".)
Test the fine tuning by running the door up and down.

Press the STOP push-button to save and return to parameter
value.
(adjustment range is maximum +/- 0.8% of the door run range)

Pressing STOP without a value change = return to parameter
number.

### 1.3.2 *Fine tuning of electronic Limit CLOSE*

15ↆS     Press STOP push-button
until the display parameter value is active.

Fine tune CLOSE limit 6-9 more open, 1-4 less open. Press OPEN or
CLOSE push-button to change value.

RUN     If the value is changed: Press STOP push-button (Display shows"
RUN".)
Test if the fine tuning by running the door up and down.

Press the STOP push-button to save and return to parameter
value.
(adjustment range is maximum +/- 0.8% of the door run range)

Pressing STOP without a value change = return to parameter
number.

      

1.4 **½ OPEN SETTINGS**

**½ Open select**

|16:00| No ½ open active.

|16:01| **Mechanical limit switches:** (Value 00 in parameter 11)
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.

*Electronic limits: (Value > 00 selected in parameter 11)*

**ON/OFF controlled by switch in terminal X3,15+16**

|16:02| ½ open stop active. Electronic limit on 50 % open position.
|16:03| ½ open stop active. Electronic limit on 55 % open position.
|16:04| ½ open stop active. Electronic limit on 60 % open position.
|16:05| ½ open stop active. Electronic limit on 65 % open position.
|16:06| ½ open stop active. Electronic limit on 70 % open position.
|16:07| ½ open stop active. Electronic limit on 75 % open position

**½ OPEN command by a push button NO in terminal X3,15 + 16**

|16:08| ½ open stop active. Electronic limit on 50 % open position.
|16:09| ½ open stop active. Electronic limit on 55 % open position.
|16:10| ½ open stop active. Electronic limit on 60 % open position.
|16:11| ½ open stop active. Electronic limit on 65 % open position.
|16:12| ½ open stop active. Electronic limit on 70 % open position.
|16:13| ½ open stop active. Electronic limit on 75 % open position.

1.4.1 *Auto close from ½ open*

|17:00| No auto close from ½ open limit.
|17:01| Auto close from ½ open limit.

*Note that auto close must be activated in parameter 32.*

1.5    **SAFETY EDGE SETTINGS**

**Safety edge selection**

| | |
|---|---|
| `21:01` | PNE / DW air switch |
| `21:02` | 8k2 ohm electrical |
| `21:03` | Optical |
| `21:04` | Special LP DW air switch |

*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.*

*Note, that nothing must be connected to X1 terminal 14-15 when parameter value 03 have been chosen.*

1.6    **ADVANCED SETTINGS**

### 1.6.1    *After run*

*(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)*

| | |
|---|---|
| `22:00` | No after run |
| `22›00` | After run active – after run time 0.01 – 0.50 sec. |

*Monitoring of PNE/DW air switch safety edge is automatically selected when after run is active When the door reach close limit switch when closing the door will continue to close until PNE/DW air switch activate or until the after run time exceeds.*

PROGRAMMING:

Set close limit switch about 3-5 cm over the floor. Adjust the door to the floor by setting the after run time on the right level until the door stops on PNE/DW signal from the safety list.

### 1.6.2    *Wire tighten*

*(Used to prevent the wire is getting loose when the door is closed. Works as a small pull back*
*time when the door stops on close limit)*

| | |
|---|---|
| `29:00` | No wire tighten function |
| `29:01` | Wire tighten   5 mS |
| `29:02` | Wire tighten 10 mS. |
| `29:03` | Wire tighten 20 mS. |
| `29:04` | Wire tighten 30 mS. |

## 1.7    PHOTO SETTINGS

*Photo 1: External photo, signal mounted in screw terminal X1:12*
*Photo 2: External photo, signal mounted in screw terminal X1:13*

| | |
|---|---|
| `31:00` | No Photo safety connected |
| `31:01` | Photo 1 connected |
| `31:02` | Photo 2 connected |
| `31:03` | Photo 1 and 2 connected |

**Additional photo mounted in the door track.**

*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*

| | |
|---|---|
| `31:04` | Photo 1 connected and mounted in the door frame. |
| `31:05` | Photo 2 connected and mounted in the door frame. |
| `31:06` | Photo 1 and 2 connected and photo 1 mounted in the door frame. |
| `31:07` | Photo 1 and 2 connected and photo 2 mounted in the door frame. |

*Install additional safety photo cells in the door track to protect the photo cells from the sun and knocks. After the installation the photo cells will automatically be disabled when the door passes the photo beam.*
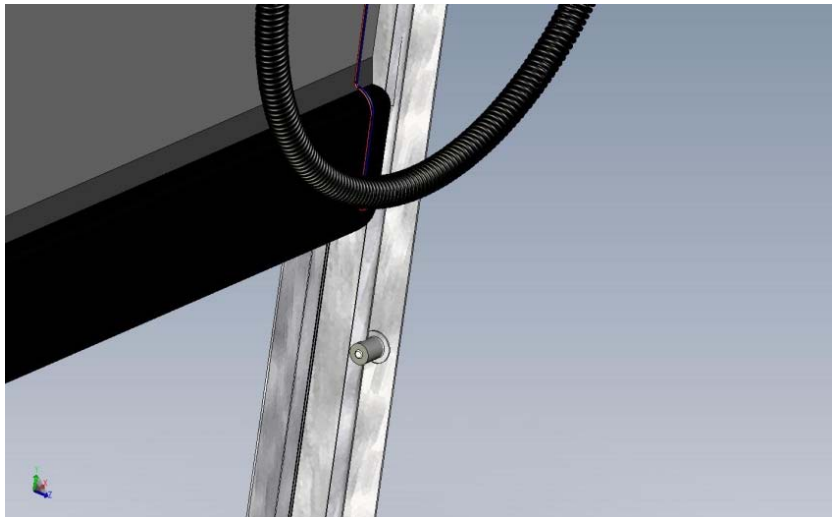


**Avoid mounting the photo receiver on the door side where the sun is shining directly on the sensor when the sun is low!**

1.8    **COMFORT SETTINGS**

### 1.8.1    *Auto close select*

*Set the door to auto close after a selected time.*
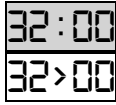
| | |
|---|---|
| `32:00` | No auto closing |
| `32>00` | Seconds 1 – 990 (after 99 the changing will be in x10 of seconds and the value is flashing quickly - e.g. 18 is 180 seconds) |

*Count down of auto close time will show in the display.*

*Note that impulse close must be selected in parameter 1.*

### *Interlock:*

*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. If the interlock function is not wanted, deselect this in parameter 36.*



**WARNING**
**Automatic closing is normally only allowed if additional photo safety is used selected in parameter 31.**

### 1.8.2    *Car wash function*

*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.*

| | |
|---|---|
| `33:00` | No car wash function |
| `33>00` | 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.) |

### 1.8.3    *"Forced" closing (Only when car wash function is selected in parameter 33)*

| | |
|---|---|
| `34:00` | No forced closing |
| `34:01` | Forced closing after 2 min. (even though photo has not been activated). |
| `34:02` | Forced closing after 5 min. (even though photo has not been activated). |
| `34:03` | Forced closing after 10 min. (even though photo has not been activated). |
| `34:04` | Forced closing after 20 min. (even though photo has not been activated). |

### 1.8.4  *Go function (Step )*

*Impulse function used for step-by-step operation*

⚠️

**It is only possible to close the door by the Go function, when photo safety is used, selected in parameter 31.**

**Auto close without additional photo safety, connect a bridge in X1: 10-12 and select parameter 31:01 (at customers own risk).**

| | |
|---|---|
| `35:00` | Normal go function (Closing is only possible from open limit) |
| `35:01` | Special go function (stop command possible in opening direction). |
| `35:02` | Go function with open function only. |

*(Parameter only visible if photo is selected in parameter 31)*

### 1.8.5  *Interlock function (see 1.8.1 )*

| | |
|---|---|
| `36:00` | Interlock function OFF ) |
| `36:01` | Interlock function ON. |

*(Parameter only visible if auto close is selected in parameter 32)*

---

1.9 **FORCE CONTROL** *** NOTE! - FUTURE OPTION ***
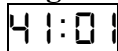
*All mechanical spring and door limits must be adjusted before selecting force control.*
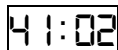
*Force control is an added safety to prevent an obstacle to get lifted by the door in opening direction and in closing direction the force control works as extra force limitation on closing edge. Balance of springs is monitored with the force control with a tolerance selected in parameter 44 (Automatic learning, and set with potentiometer in manual learning)*

**Force control settings**

`41:00`     No force control.

**Manual learning with potentiometer**
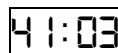
`41:01`     Force control manual adjustment (motor 1300 -1750 rpm) (Standard Dall door operator)

`41:02`     Force control manual adjustment (motor 2600 -3500 rpm)

*If manual learning is selected - go to next page!!*

---
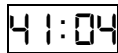
**Automatic learning (RECOMMENDED LEARNING)**

 `41:03`     Force control by automatic learning – multi turn = Motor 850-3600 rpm. (Standard Dall encoder).

 `41:04`     Force control by automatic learning with singleturn encoder (*) (Kostal encoder on TAE gearmotors).

Press STOP → **RUN** → Run the door 2 complete door cycles (1 time with Kostal encoder) from closed position without any stop. When learning is finished the ”RUN” will stop flashing 2 sec. and the display will automatic switch back to active parameter number.

---

*(*)Encoder is single turn when it is mounted on top of the gear and is turning only 5 turns/ cycle.*

*If new automatic learning is wanted. Press stop 2 times until ”RUN” is flashing again.*
*(setup of torque – look in parameter 44)*

*Note: Minimum door opening time is 7.0 sec.*

***Please note when using single turn encoder:***
The use of encoder turning area is important. More than 180 angle degrees is recommended.
Door opening time is also important and ought to be between 7 and 14 sec.

If the door opening time is between 14 and 25 sec. the encoder turning area usage must be between 270-310 angle degrees.

Longer door opening times needs more than 360 degrees. Kostal encoder cannot be used more than 310 degrees.
Dalmatic encoder can manage 6 revolutions and Feig encoder can manage 3 revolutions single turn.
Faster door opening times less than 7 sec is not recommended because of non-accurate door limits.

### 1.9.1   *Force control manual learning OPEN*

*(not shown if automatic or no force control is selected)*

`42:60`    Procedure for changing value:

Press STOP push-button until the parameter value is active (flashing)

1.   If this is the first adjustment - Turn potentiometer P1 clock-wise to maximum.

2.   Push CLOSE to reset for new value and run the door to closed position.

3.   Press OPEN continuously and turn slowly P1 until the door is stopped, and turn a little back. The display shows approximately P1 percent value.

Check the torque and change the value if necessary.

**By pressing STOP the value is stored and display switch to parameter number. The value must be stored before leaving programming mode.**

(if no OPEN or CLOSE have been pressed, no new value is changed)


### 1.9.2   *Force control manual learning CLOSE*

*(not shown if automatic or no force control is selected)*

`43:50`    Procedure for changing value: Press STOP push-button until the parameter value is active (flashing)

1. If this is the first adjustment - Turn potentiometer P1 clock-wise to maximum.

2. Push OPEN to reset for new value and run the door to open position.

4.   Press CLOSE continuously and turn slowly P1 until the door is stopped, and turn a little back. The display shows approximately P1 percent value.

Check the torque and change the value if necessary.

**By pressing STOP the value is stored and display switch to parameter number. The value must be stored before leaving programming mode.**

(if no OPEN or CLOSE have been pressed, no new value is changed)

### 1.9.3    *Sensitivity force control automatically learning (Parameter 41:03 )*

*(not shown if manual or no force control is selected)*

| `44:00` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -0.5 % |
| | Wear limit (from initial values) | -5 % |
| `44:01` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -1.0 % |
| | Wear limit (from initial values) | -5 % |
| `44:02` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -1.5 % |
| | Wear limit (from initial values) | -5 % |
| `44:03` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -2.0 % |
| | Wear limit (from initial values) | -5 % |
| `44:04` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -2.5 % |
| | Wear limit (from initial values) | -6 % |
| `44:05` | Force control delay | 0.8 sec. |
| | Stopped by low speed | -3.0 % |
| | Wear limit (from initial values) | -7 % |

*Automatic force adjustment regarding door balance   0.3  %/10 door cycles*

### 1.9.4    *Sensitivity force control automatically learning Single turn (Parameter 41:04)*

| `44:02` | Force control delay | 0.4 sec. |
| | Stopped by low speed | -3.5 % |
| | Wear limit (from initial values) | -7 % |
| `44:05` | Force control delay | 0.4 sec. |
| | Stopped by low speed | -7.0 % |
| | Wear limit (from initial values) | -14 % |
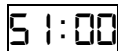
*Automatic force adjustment regarding door balance*      *0.9  %/10 door cycles*
*Reaction time for force change*      *about 2.4 sec.*

    

1.10    **RUN TIME CONTROL**

*The door will stop if the pre-set run time exceeds and the display shows E:03.*

**Run time control**

`51:00`    No run time control

`51:01`    Run time 20 sec.
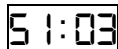
`51:02`    Run time 40 sec.

`51:04`    Run time 60 sec.

**Run time control - automatic learning**

`51:03`    Automatic run time.  ”RUN” position is now available by pressing STOP.
Run the door from closed to open position without any stop. (keep press OPEN)

When run time is learned (by open limit) the ”RUN” will stop flashing and the display will automatic switch back to active parameter number)
Run time is learned time + 12.5%. Below 10 seconds learned time, fixed 1 second is added.

*Both limits must be set before selecting automatic run time.*

1.11    **REVERSE TIME**

**1.11.1  *Safety edge***
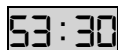
`52:01`    Reverse time of safety edge in 1/100 seconds. 0.00 – 0.99 sec.
Example: 01 = 0.01 sec.
(If 00 is selected the reverse time is set to minimum 0.004 sec.)

**1.11.2  *Photo***

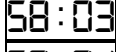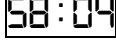`53:30`    Reverse time of Photo in 1/100 seconds. 0.05 – 0.99 sec.
Example:  30 = 0.30 sec.
This reverse time is also used as force reversing time.
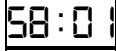
1.12    **SERVICE COUNTER**

Use service counter to make service interval on doors.

**Service counter setup**

| | |
|---|---|
| `58:00` | No Service countdown |
| `58:01` | 15 open cycles before service **(for test only)** |
| `58:02` | 5000 open cycles before service |
| `58:03` | 10000 open cycles before service |
| `58:04` | 20000 open cycles before service |

Reset for new countdown or selecting value:
Press STOP to select parameter value. Press OPEN or CLOSE to select value.

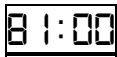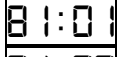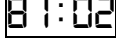Press STOP again **minimum 2 sec**.  CLR is shown 2 sec. in display to confirm new countdown.

**1.12.1**  *Service count reaction*

| | |
|---|---|
| `59:00` | Display shows E:04 |
| `59:01` | Switch to hold-to-run control and display shows E:04 |

*If LED pad is mounted: Service LED will light when service countdown reach 0.*

1.13  **SPECIAL SETTINGS**

**Delay time indication of missing encoder position**

| | |
|---|---|
| `81:00` | 1 sec. |
| `81:01` | 2 sec. |
| `81:02` | 4 sec. |

(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 relearning of limits)

**Encoder positioning failure – automatic resetting**

`81:03`  4 sec. After operation without change of encoder position the door will stop and error code E:09 will be automatically reset.
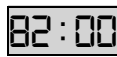
⚠ **No limit monitoring by selecting value 03**

**1.13.1 *Encoder test function***

*(Parameter only visible if Dall Encoder is selected in parameter 11.
(11:01 or 11:02))*

⚠ *Run the door to middle position between limits before activating the test function. The control unit is able to run this encoder test before limits is learned and it's possible to pass the limits by this running.*

`82:00`  Ready for encoder test.
"RUN" position is now available by pressing STOP.
Press OPEN or CLOSE until the door stop again (about 1 sec.).
Display will show the result:

a) If encoder is answering, position is moving and encoder battery is above low level the display shows measured battery voltage e.g. "3.65" Volt. (Low battery is below 3.2 Volt.) (ENCODER IS OK).

b) If encoder is answering but the battery is low the display shows "E BA"

c) If encoder doesn't answer the display shows "ERRA"

d) If encoder position is not moving the display shows "ERRP"

### 1.13.2  *Special open function*

| `84:00` | Normal open function | |
|---|---|---|
| `84:01` | Special open function: | Open signal with high priority.<br>The door will always open on a continuously open signal, even after a stop command.<br>(E.g. a fire open signal) |

### 1.13.3  *Relay AUX 1*

| `87:00` | Relay no function |
|---|---|

### 1.13.4  *Relay AUX 2*

| `88:00` | Relay active when door is running |
|---|---|
| `88:01` | Relay active when the door is closed |
| `88:02` | Relay active when the door is open |
| `88:03` | Relay used for electric lock |

### 1.13.5  *Relay AUX 3*

| `89:00` | Relay no function |
|---|---|
| `89:01` | Relay active control failure (encoder-disengagement sw.- thermo) |

1.14    **INVERTER SETTINGS**

### 1.14.1 *MOTOR SETTINGS*

| | | |
|---|---|---|
| 100: 1,1 | Rated motor power [kW] | (motor nameplate) |
| 101: 230 | Rated voltage [V] | (motor nameplate) |
| 102: 5,9 | Rated current [A] | (motor nameplate) |
| 103: 1400 | Rated current [A] | (motor nameplate) |
| 104: 50 | Rated frequency [Hz] | (motor nameplate) |

| | | |
|---|---|---|
| 105: 0 | Autotune | Note! Future option |

109: 100    Max. frequency [Hz]
Note: If frequency max is adjusted below parameter 110, 111, 120 or 121 value these values is automatic reduced also.

### 1.14.2 *SETTINGS OPENING DIRECTION*

| | |
|---|---|
| 110: 50 | Frequency HIGH speed opening [Hz] |
| 111: 10 | Frequency LOW speed opening [Hz] |
| 112: 1,0 | Acceleration time opening [Sec.] |
| 113: 1,0 | Deceleration time opening, high speed to low speed [Sec.] |
| 114: 0,3 | Deceleration time to stop [Sec.] |
| 115: 30 | Low speed set point before open limit [%] of full distance. |

### 1.14.3 *SETTINGS OPENING DIRECTION*

| | |
|---|---|
| 120: 30 | Frequency HIGH speed closing [Hz] |
| 121: 10 | Frequency LOW speed closing [Hz] |
| 122: 1,0 | Acceleration time closing [Sec.] |
| 123: 2,0 | Deceleration time closing, high speed to low speed [Sec.] |
| 124: 0,3 | Deceleration time to stop [Sec.] |
| 125: 30 | Low speed set point before close limit [%] of full distance. |

Note! All acceleration/deceleration times, are seconds from 0 Hz → max Hz / max Hz → 0 Hz. (Max Hz = parameter 109)

1.15    **RESET TO FACTORY SETTINGS**

Reset to factory settings by changing DIL switch 3 to ON position and activate STOP and UP push-buttons in 2 seconds.

The display will flash with "FAC" and program version number will be shown.

Remember to switch DIL switch 3 back to OFF position.