



tousek®
G A T E A U T O M A T I O N



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GENERAL WARNING AND SAFETY NOTES

- These installation and operating instructions form an integral part of the product "control". They have been specifically written for professional installers trained and skilled in the trade and should be carefully read in their full length before carrying out the installation. They describe the proper installation and operation of the control unit only, not of the overall device "automatic barrier". After the installation this manual has to be handed over to the user.
- Installation, connection, adjustments, putting into operation, and servicing may only be carried out by trained professionals in full accordance with these installation- and operating instructions.
- Before carrying out works at the barrier-system, the power supply has to be turned off.
- The EU Machine Directive, laws and rules concerning the prevention of accidents, and laws and standards which are in force in the EU and in the individual countries have to be strictly followed.
- The TOUSEK Ges.m.b.H. cannot be held liable for any claims resulting from disregards of the laws and standards in force during the installation and operation.
- The packaging materials (cardboard, plastic, EPS foam parts and filling material etc.) have to be properly disposed of in accordance with the applying recycling- and environmental protection laws. They may be hazardous to children and therefore have to be stored out of children's reach.
- The product is not suitable for installation in explosion-hazardous areas.
- The product may only be used in accordance with its original purpose, for which it has been exclusively designed, and which is described in these installation and operating instructions. The TOUSEK Ges.m.b.H. rejects any liability if the product is used in any way not fully conforming to its original purpose as stated herein.
- Children have to be instructed, that the gate facility as well as the belonging parts may not be used improperly, e.g. for playing. Furthermore handheld transmitters have to be kept in safe places and other impulse emitters as buttons and switches have to be installed out of children's reach.
- Before beginning with the installation the installer has to make sure that all mechanical components of the gate facility, like carrier profile/rail, gate frame and panels, guiding elements etc. are sufficiently supportive and resistant for the purpose of gate automation.
- All electrical installations have to be made in full conformity with the applying rules and laws (e.g. using a fault current circuit breaker, proper grounding etc.).
- An all-pole disconnecting main switch with a contact opening-gap of minimum 3 mm has to be foreseen.
- The electric motor heats up during operation. Therefore the device should only be touched after it has cooled off.
- After installation the proper function of the barrier facility and the safety devices has to be checked!
- The TOUSEK Ges.m.b.H. rejects any liability for claims resulting from usage of the product in combination with components or devices which do not fully conform to the applying safety laws and rules.
- Only original spare- and replacement parts may be used for repair of the product.
- The installer has to inform the user about all aspects of the automatic operation of the complete barrier facility, as well as about emergency operation. The installer further has to supply to the user all instructions relating to the safe operation of the barrier facility. The installation and operating instructions also have to be handed over to the user.



Maintenance

- **Maintenance works may only be carried out by qualified personnel.**
- **Maintenance and servicing of the complete barrier facility has to be carried out according to the barrier builder's/installer's instructions.**
- **Check on a monthly basis whether force adjustment works properly.**


Manufacturer's Declaration of conformity:

The company TOUSEK Ges.m.b.H., Zetschegasse 1, 1230 Vienna/Austria, declares that the control unit ST 80, ST 80V complies with the following directives:

- Low Voltage Directive 2014/35/EU, incl. changes
- Electromagnetic Compatibility Directive 2014/30/EU, incl. changes

January 2019

Control board characteristics

- For barriers with electromech. motors 230V and speed sensor
- Programming with illuminated LC display in english language
- Three operating modes (impulse, automatic, deadman)
- Automatic closing with adjustable pause time
- Runtime of operator is being automatically determined
- Separate speed adjustment (OPEN/CLOSE)
- Adjustable soft stop time and speed
- Safety system ARS (autom. reversal system)
- Integrated contact edge evaluation
- Automonitoring of photocell
- Output for Photocells, magnetic clamp, signal lamp and boom lamp kit
- Slots for optional radio receiver, loop detector, status display module
- 

Control board layout



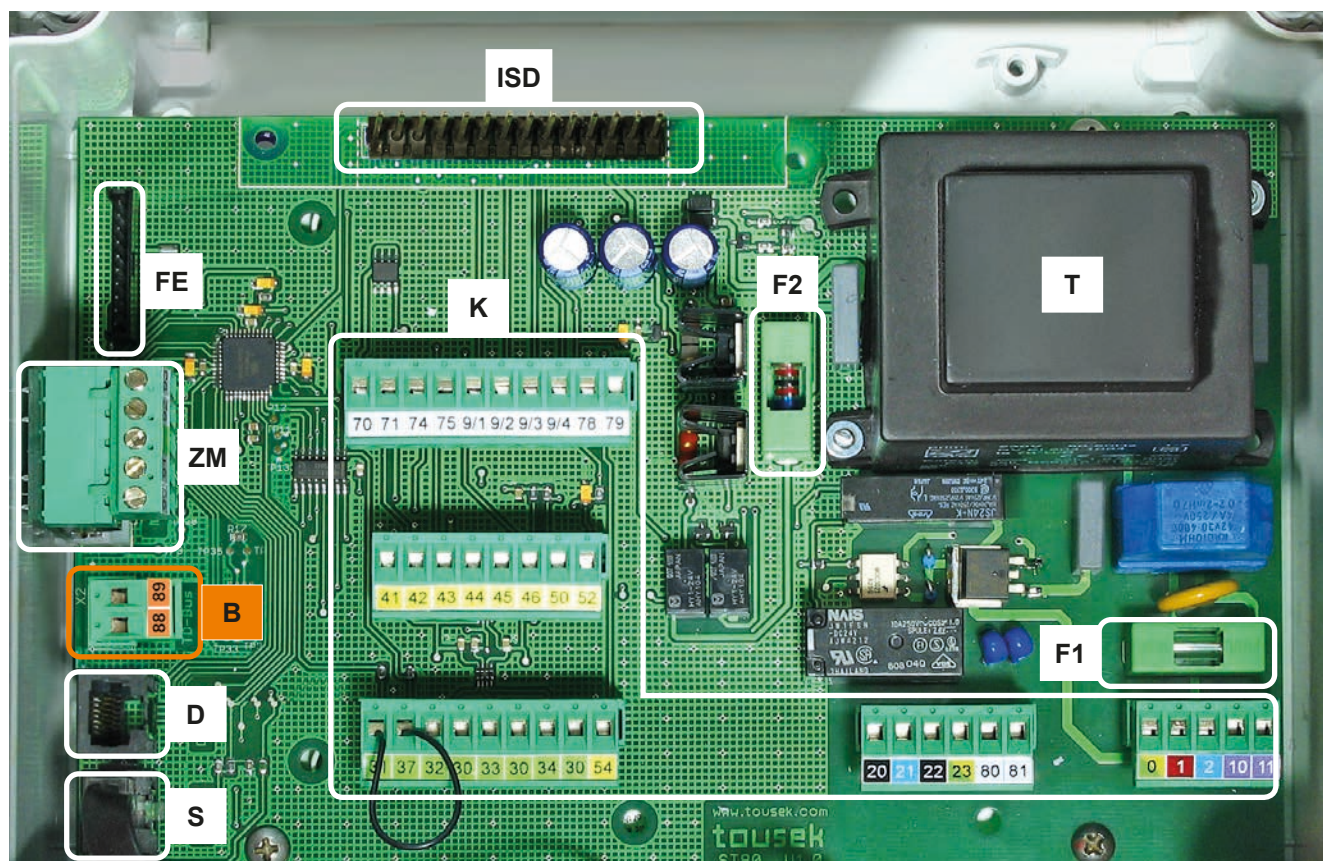
Important

The optional tousek- service-interface must be connected with socket (D) !



Attention

During connection, adjustment and maintenance works please take care, that the electronic circuit board won't be damaged by moisture (rain).



Components of control board

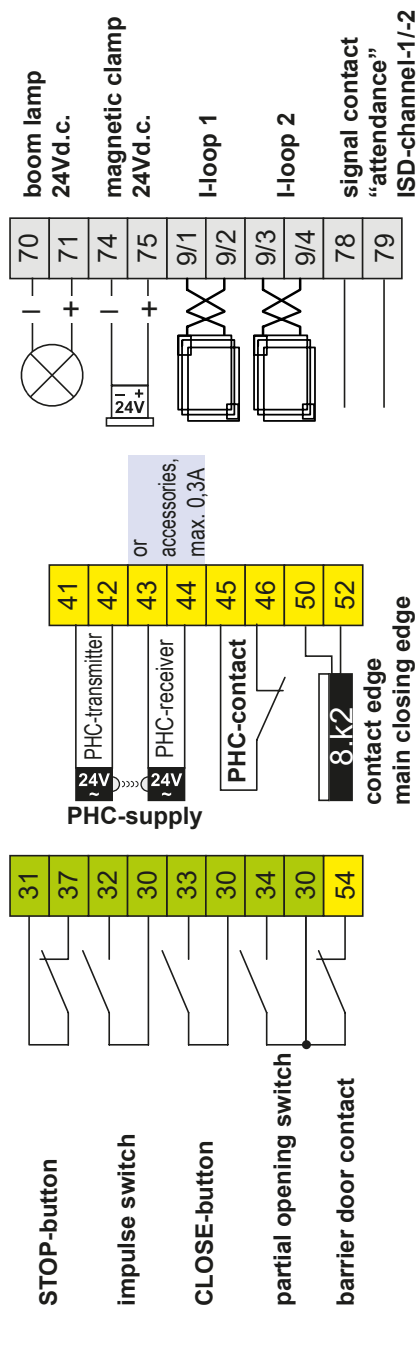
- | | | | |
|-------|--|------|--|
| (K) | terminal blocks | (FE) | Slot for optional receiver (p.18) |
| (S) | Sensor connector | (ZM) | Slot for optional module „Status display“ (p.19) |
| (D) | Display connector or connection with optional tousek-service-interface (TSI) | (T) | Transformer |
| (B) | terminals bus system | (F1) | safety fuse F 5A |
| (ISD) | Slot for optional I-loop detector (p.17) | (F2) | safety fuse F 2A |

Technical data

| Barrier control unit | ST 80 | ST 80V | | ST 80 | ST 80V |
|-------------------------------|--|--------|---------------------|-------------------|----------|
| Power supply | 230Va.c. 50Hz | | Ambient temperature | - 20°C bis + 70°C | |
| max. permitted motor capacity | 230Va.c., 500W | | Protection class | IP66 | |
| Signal lamp output | 230Va.c., 100 W max. | | Speed sensor | ■ | ■ |
| Boom lamp output | 24Vd.c. | | Forced closing | | ■ |
| Magnetic clamp output | 24Vd.c., 5W max. | | Article no. | 12111590 | 12111600 |
| Photocell output | 24Va.c. | | | | |
| Optional equipment | pluggable receiver • additional module for status of barrier • induction loop detector • other impulse givers and safety equipment | | | | |

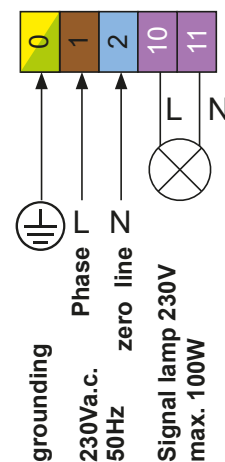
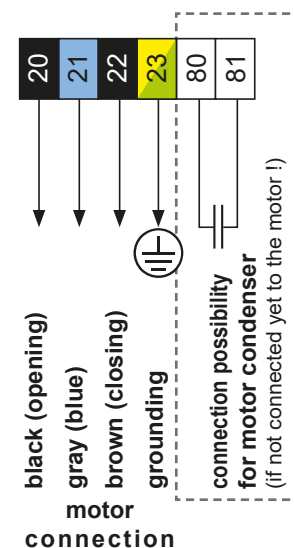
2. Terminal assignment

Barrier control unit ST 80, ST 80V



Warning

- Before taking off the control cover, the mains switch must be turned off!
- If the control is power supplied, its inner part is under tension.
- In order to avoid electrical strokes, the safety regulations have to be respected.
- The device may only be connected by trained professionals.
- The product is not suitable for installation in explosion-hazardous areas.
- An all-pole disconnecting mains switch with a contact opening gap of min. 3 mm has to be foreseen. The barrier facility has to be secured according to the valid safety regulations!
- **IMPORTANT:** The control lines (buttons, radio, photocells, etc.) have to be laid separately from the 230V lines (supply line, motors, signal lamp).



The stop input has no emergency stop function! - In order to ensure the emergency stop function, provide the supply line with an all-pole disconnecting emergency stop switch, that locks after actuation!

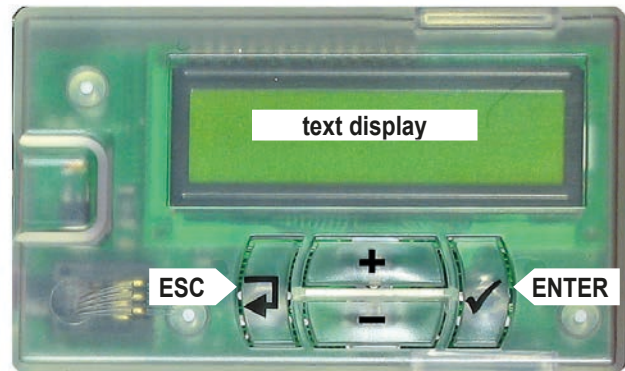
Programming buttons

Adjustment - overview



- Before starting the programming, please choose the language. Use the buttons **+** or **-** to choose menu language and confirm with **✓**.
- Note: Language selection can also be chosen by pressing the ESC button (↶) for 5s, from any position in menu.

- For programming please remove cover (A) of control device (loosen 2 bolts).
- The text display (T) informs you about operating status, chosen menus and the adjustment of various parameters..
- The programming of the control is carried out with the help of four buttons (**+**, **-**, **✓** (=Enter) and ↶ (=Escape).
- Scrolling through the available menu points (up/down) or the adjustment of a parameter (value increase/decrease) is carried out with buttons **+** and **-**..
AUTO-COUNT: when holding one of the buttons the value changes automatically.
- When pressing the **✓**-button a confirmation for entering the shown menu point, resp. for accepting the shown value of a parameter is given.
- When pressing the ↶-button you return to the superior menu point. Possibly changed adjustments of a parameter are rejected with this button (the former values will remain).
- **AUTO-EXIT:** if no button is pressed during 1 min. then the menu switches automatically to the "ready" menu (without saving changed parameters).



Programming menu

Adjustment - overview



- The program menu is divided into "BASIC SETTINGS" and "MENU CONTROL"

BASIC SETTINGS

- **When entering the programming of the control unit for the first time you will see the BASIC SETTINGS**
- Here the necessary adjustments which are necessary for the use of the operator/barrier can be set quickly.
- For advanced settings/programming please choose the menu point "menu (control)".

MENU CONTROL






- For further programming you will reach immediately the MENU (CONTROL) (Basic settings are skipped)
- The menu control includes all kinds of settings.



The different menu points are indicated as follows:

○ = selectable setting ⊙ = factory settings ⊞ = status display

G shows the menu points which are in the "BASIC SETTINGS"

| Main menu | Sub layer | Settings/adjustments | | |
|---|--|--|---|--------------------|
| buttons/switches <i>see page 8–10</i> | impulse switch | <input type="radio"/> OPEN/CLOSE/OPEN <input type="radio"/> OPEN <input type="radio"/> DEADMAN | in DEADMAN mode the ISD channel1+2 with adjustment „open“ has no function. | |
| | ISD channel 1 | <input type="radio"/> impulse <input type="radio"/> safety <input type="radio"/> attendance | | |
| | ISD channel 2 | <input type="radio"/> impulse <input type="radio"/> safety <input type="radio"/> attendance | | |
| safety <i>see page 10–12</i> |  photocell | <input type="radio"/> active <input type="radio"/> not active | | |
| |  main safety edge | <input type="radio"/> active <input type="radio"/> not active | | |
| | PHC/ISD function | <input type="radio"/> reverse during closing <input type="radio"/> during closing stop, then close | | |
| | PHC/ISD pause time | <input type="radio"/> no influence <input type="radio"/> abort pause time <input type="radio"/> restart of pause time <input type="radio"/> immediate closing after opening | | |
| | PHC selftest | <input type="radio"/> active <input type="radio"/> not active | | |
| motor <i>see page 13</i> | max. force | <input type="radio"/> 50...100% [increment 5] | ST 80 ⊖ = 100% | ST 80V ⊖ = 100% |
| | ARS-response time | <input type="radio"/> 0,15...0,95s [increment 0,05] | ⊖ = 0,50s | ⊖ = 0,50s |
| | speed OPEN | <input type="radio"/> 55...100% [increment 5] | ⊖ = 90%  | ⊖ = 100% |
| | speed CLOSE | <input type="radio"/> 55...100% [increment 5] | ⊖ = 90%  | ⊖ = 100% |
| | soft stop way | <input type="radio"/> 0...5s [increment 0,1] | ⊖ = 1,5s | ⊖ = 1s |
| operating mode <i>see page 13</i> | impulse mode | <input type="radio"/> without pause time extension <input type="radio"/> with pause time extension | | |
| |  operating mode | <input type="radio"/> impulse mode <input type="radio"/> automatic 1...255s [increment 1] | | |
| | pause time logic | <input type="radio"/> no influence <input type="radio"/> constant open in automatic mode | | |
| | forced closing (only with ST 80V) | <input type="radio"/> active <input type="radio"/> not active | | |
| lights/lamps <i>see page 14</i> | prewarning OPEN | <input type="radio"/> OFF, 1...30s | ⊖ = OFF | |
| | prewarning CLOSE | <input type="radio"/> OFF, 1...30s | ⊖ = OFF | |
| | boom lamp CLOSE | <input type="radio"/> OFF <input type="radio"/> blinking <input type="radio"/> illuminates | | |
| peripher. devices <i>see page 15</i> | signal contacts | <input type="radio"/> status display 1 <input type="radio"/> status display 2 | | |
| | magnetic clamp | <input type="radio"/> OFF, 0,1...1,0s | ⊖ = OFF | |
| diagnosis <i>see page 16</i> | status display | <input checked="" type="radio"/> status display of all inputs | | |
| | delete positions | <input type="radio"/> NO <input type="radio"/> YES | | |
| | factory settings | <input type="radio"/> NO <input type="radio"/> YES | | |
| | software version | <input checked="" type="radio"/> display software version | | |
| | serial number | <input checked="" type="radio"/> display serial number | | |
| | protocol | <input checked="" type="radio"/> display protocol messages | | |
| | sensor status | <input checked="" type="radio"/> display sensor | | |



At barriers with 6m boom length the settings for speed OPEN/CLOSE must not be more than 90% (= factory setting of ST 80)!

Note: some adjustments regarding function or operating logic can only be executed if barrier is closed and if the display shows „ready“.



tousek®

DIGITAL



ESC

ENTER



Barrier control unit ST 80, ST80V



Warning

- Before taking off the control cover, the mains switch must be turned off!
- If the control is power supplied, its inner part is under tension.
- In order to avoid electrical strokes, the safety regulations have to be kept.
- The device may only be connected by trained professionals.



- The product is not suitable for installation in explosion-hazardous areas.
- An all-pole disconnecting mains switch with a contact opening gap of min. 3 mm has to be foreseen. The barrier facility has to be secured according to the valid safety regulations!
- **IMPORTANT:** The control lines (buttons, radio, photocells, etc.) have to be laid separately from the 230V lines (supply line, motors, signal lamp).



The different menu points are indicated as follows:

○ = selectable setting ⊙ = factory settings ⇌ = status display

Ⓜ shows the menu points which are in the "BASIC SETTINGS"

- A general status display of all inputs can be found in the menu DIAGNOSIS / STATUS DISPLAY

Buttons/switches

Connections and adjustments



Barrier door contact (terminal 30/54)

- When opening the barrier door, a safety contact is released which stops any boom movement. The last indications on the display remain unchanged.
- If the door is closed again, the open position of barrier boom is being newly learned/programmed.



barrier door contact

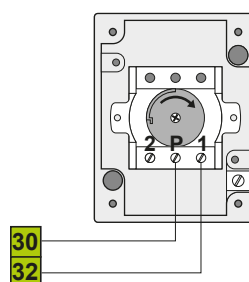
Ⓜ Impulse switch (terminals 30/32)

Buttons/switches

- ⊙ **OPEN / CLOSE / OPEN impulse repetition:** After a command of the impulse switch the motor starts an open or close movement. If the impulse switch is pressed again during this movement, the motor reverses.



- In this operation mode it is not possible to stop the motor with the impulse switch – it always travels until reaching an end position. (Opened or closed position).
- for the function OPEN/CLOSE/OPEN we strongly suggest the installation of a photocell!



impulse switch
(e.g. key switch EPZ 1-1T)

- **OPEN:** Only open commands are accepted of the impulse switch. Closing the barrier with the impulse switch is not possible.
- **DEADMAN:** The motor opens as long as the impulse switch is pressed – closing the barrier with the impulse switch is not possible. As soon as the switch is released, the barrier boom stops. If deadman mode is selected, the radio receiver is set out of order for safety reasons.



- If the impulse switch is set to DEAD MAN operation, then the partial opening switch works the same way. With the impulse- or the partial opening switch the barrier is opened, with the CLOSE-button it is closed.
- **IMPORTANT: Do not put into operation in dead man mode. Select only after putting into operation (see page 20), if desired.**

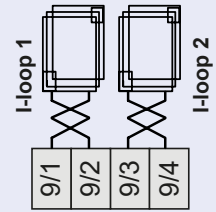


pushbuttons or key switches as well as external radio receivers with potential free make contacts can be used as impulse emitters



Induction loops

- With the optional available induction loop detector (see page 17) the use of induction loops is made possible.
Connection I-loop 1: Kl. 9/1, 9/2, I-loop 2: Kl. 9/3, 9/4
- The function of I-loops has to be selected under „ISD channel 1“ and „ISD channel 2“ :
Note: if the function „open“ under menu point is selected and if the impulse switch is set to „DEADMAN“, then the opening of the boom is omitted when driving over the I-loop !



ISD channel 1 (I-loop 1: terminals 9/1 and 9/2)

Buttons / switches

- ⊙ **open:** when driving over I-loop 1 the barrier will open.
- **Safety:** when driving over I-loop 1 the chosen setting under „LS/ISD-function“ (see p. 12) is effected.
- **Attendance:** through a potential free closing-contact (terminals 78/79) the driving over the I-loop 1 can be evaluated.

ISD channel 2 (I-loop 2: terminals 9/3 and 9/4)

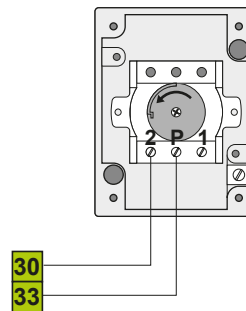
Buttons / switches

- ⊙ **open:** when driving over I-loop 2 the barrier will open.
- **Safety:** when driving over I-loop 2 the chosen setting under „LS/ISD-function“ (see p. 12) is effected
- **Attendance:** through a potential free closing-contact (terminals 78/79) the driving over the I-loop 2 can be evaluated

CLOSE-button (terminals 30/33)

Buttons / switches

- A command with the CLOSE-switch engages closing of barrier. In deadman mode the barrier closes as long as the CLOSE-switch is pressed/switched. As soon as switch is released the barrier movement stops.



CLOSE-button
(e.g. key switch EPZ 1-2T)

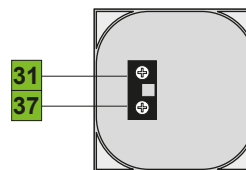


As CLOSE-buttons you may use pushbuttons or key switches as well as external radio receivers with potential free make contacts can be used.

STOP-switch (terminals 31/37)

Buttons / switches

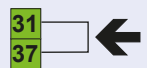
- when pressing the stop switch the gate stops in any desired position.



STOP-button
(e.g. switch KDT-1N)



As stop switch a break contact has to be used.
If no stop switch is connected, terminals 31/37 have to be wire-bridged.



The stop input has no emergency stop function! - In order to ensure the emergency stop function, provide the supply line with an all-pole disconnecting emergency stop switch, that locks after actuation!

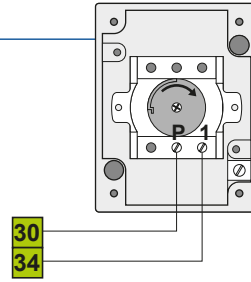
Partial opening (terminals 30/34)

- same function as impulse switch.
when using with a second barrier this button has the function of partial opening.

Buttons / switches



As impulse emitters pushbuttons or key switches as well as external radio receivers with potential free make contacts can be used.



pedestrian opening button
(e.g. key switch EPZ 1-1T)

Safety



Photocells

Connections and adjustments

- The control unit has a power supply connection for a 24V a.c. photocell (LS):
supply LS-transmitter: terminals 41/42 **Note:** in „closed“ position the terminals 40/41 are being switched into energy saving mode (no current)
supply LS-receiver: terminals 43/44.
- The contact has to be closed when using powered and positioned photocells (opening contact).
Connection of the photocell contact: terminals 45/46

- When using two pairs of photocells please do not install both photocell transmitters/receivers on the same side (to eliminate interference between both) !

Exception: photocells with SYNC function allow the installation of both photocell transmitters/receivers on the same side without causing interference to each other.

Standard:



with SYNC-function:



- Photocell self-test function:**

The control board is equipped with a self-test function for the connected photocell. With an opening impulse (switch or button) the transmitter of the photocell is switched off for a short time in barrier position „closed“ . Thus the photocell receiver interrupts the contact 45/46 - so the control board verifies the function of the photocell receiver. If this short interruption at the photocell input is not carried out, the control board reports an error. **The deactivation of the self-test function is only allowed if the safety installations correspond to the category 3 !**

- The exact function of the photocells depend on the programming of the control unit.
Photocell function please see menu point SAFETY / photocell function or photocell with pause time (p. 12)
- You will find detailed information in the corresponding photocell manual.**

Photocell (Contact: terminals 45/46)

Safety

- ☒ **active:** to be selected, if photocell should be triggered.
- ☐ **not active:** to be selected, if photocell should not be triggered.

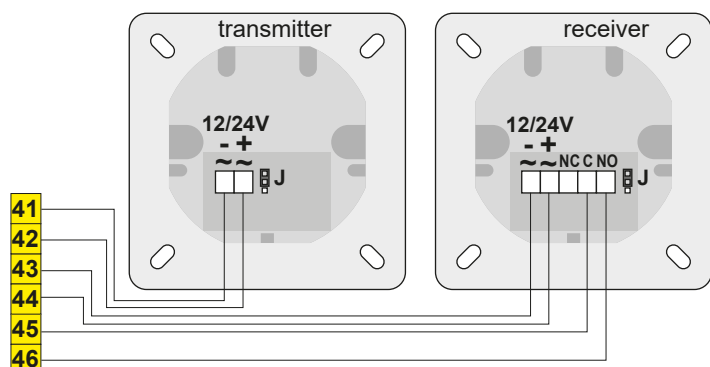
Photocell - connection examples

Photocell Tousek LS 26 as safety device



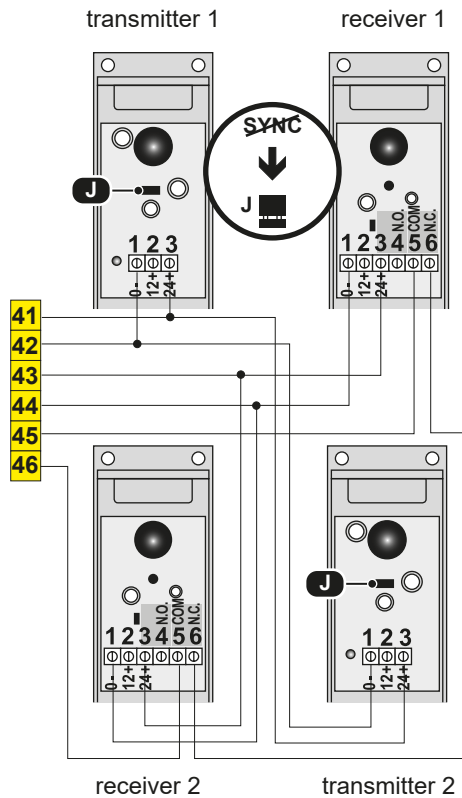
Important

- Jumper J of transmitter and receiver has to be adjusted in the same way.



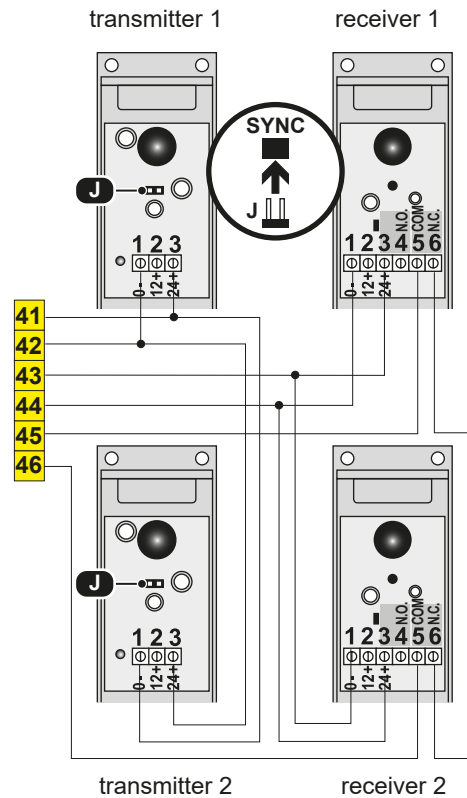
2 photocells Tousek LS 41 / LS 180 as safety device

If the SYNC-function is inactive, the photocell transmitters and receivers have to be mounted on different sides!



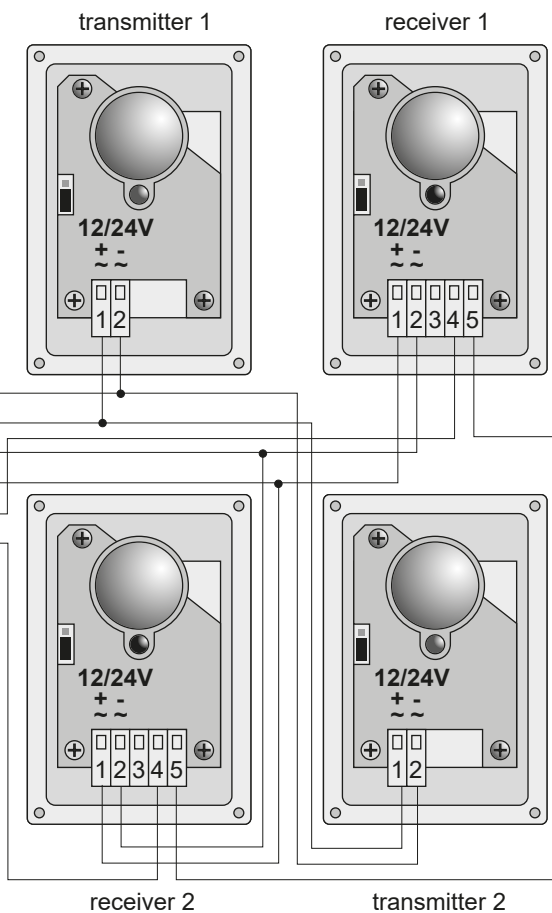
2 photocells Tousek LS 41 / LS 180 as safety device with SYNC-function activated

To activate the SYNC-function you have to remove Jumper J in both photocell transmitters!

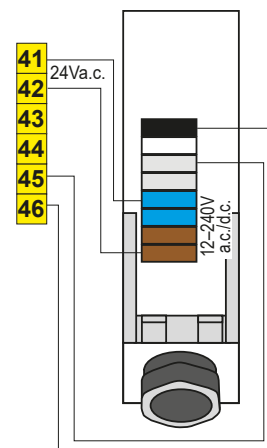


2 Photocells Tousek LS 45/2 as safety device

41
42
43
44
45
46



Photocells Tousek RLS 620 as safety device



Important

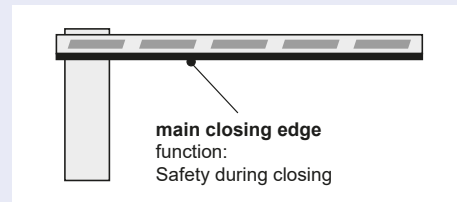
- As the photocell LS 45/2 does not support SYNC-function, the photocell transmitters and receivers have to be mounted on different sides!



Safety edge (de)activation of main closing edge

• OBSTACLE DETECTION:

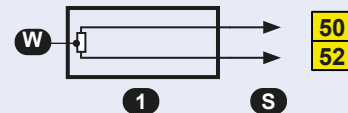
If the contact edge of the main closing edge is triggered, an opening movement is effected for approx. 1s, then the barrier stops.



main closing edge
▼

That means: the barrier safety contact edge has to react on an obstacle during closing movement. The connection has to be made on terminals 50/52.

Example: W 8,2kΩ final resistance
 1 final edge
 S to control board



Important

- During the initial learning phase of the barrier the contact edge should not be triggered. This would lead to an error message.

Main closing edge (terminals 50/52)

Safety

- ⊙ **ACTIVE:** to be selected if the contact edge (8,2kOhm) of main closing edge should be evaluated.
- **NOT ACTIVE:** to be selected if the contact edge (8,2kOhm) of main closing edge should not be evaluated.

PHC/ISD-function

Safety

- ⊙ **Reverse during closing:** an interruption of the photocell/induction loop during closing makes the barrier reverse (open). In automatic mode the barrier closes as soon as the pause time has run out. In impulse operation another closing command has to be actuated.
- **Stop during closing, then close:** an interruption of the photocell beam or induction loop during closing makes the motor stop as long as the photocell/loop stays interrupted. After release of the photocell, the barrier closes.

PHC/ISD-Photocell/induction loop with pause time

Safety

- ⊙ **no influence:** the photocell/induction loop doesn't have any influence on the pause time in automatic mode.
- **Stop of pause time (immediate closing):** in automatic mode an interruption of the photocell/induction loop during pause time shortens the pause time. After release of the photocell the barrier starts closing.
- **Restart pause time:** in automatic mode an interruption of the photocell or induction loop during pause time, restarts the pause time. As soon as the pause time has run out, the barrier closes.
- **Immediate close after opening:** If the photocell is interrupted during the opening movement, the barrier starts closing as soon as it reached the open end position.

PHC-Test

Safety

- ⊙ **active:** photocell self-test is executed with an opening impulse (switch, button) in gate position „closed“.
- **not active:** photocell self-test is not executed.



Attention

- The photocell self-test can only be deactivated by selecting „not active“.
- The deactivation of the self-test function is only permitted if the safety installations correspond to the category 3 !

max. force ☉ 100% (factory setting)

Motor

- **50–100% adjustable [increment 5]:** determines the max. possible motor force.

ARS response time ☉ 0,5s (factory setting)

Motor

- **0,15–0,95s closing speed adjustable [increment 0,05]:** determines, in which time the AR-System responds. The lower the value, the more sensitive the sensor will react.

Speed OPEN ☉ 90% for ST80 / ☉ 100% for ST80V (factory setting)

Motor

- **55–100% adjustable [increment 5]:** determines the speed of motor during opening.



At barriers with 6m boom length the setting for speed OPEN must not be more than 90% (= factory setting of ST 80)!

Speed CLOSE ☉ 90% for ST80 / ☉ 100% for ST80V (factory setting)

Motor

- **55–100% adjustable [increment 5]:** determines the speed of motor during closing.



At barriers with 6m boom length the setting for speed CLOSE must not be more than 90% (= factory setting of ST 80)!

Soft runtime ☉ 1,5s for ST80 / ☉ 1s for ST80V (factory setting)

Motor

- **0–5s adjustable [increment 0,1]:** determines the time of softstop.

**Attention**

Please check the adjustments to be in compliance with the valid safety regulations and standards that have to be strictly followed !

Operating logic

Connections and adjustments

Impulse logic

Operating logic

- ☉ **without pause time extension:** a command in automatic mode during pause time does not lead to a pause time extension. The impulse is being ignored.
- **with pause time extension:** a command in automatic mode during pause time restarts pause time.

Operating mode

Operating logic

- ☉ **Impulse mode:** Impulse through impulse switch/button or CLOSE-button to start closing of barrier.
- **Automatic mode, pause time 1-255s adjustable [increment 1]:** barrier closes automatically after the adjusted pause time.

Pause time logic

Operating logic

- ☉ **no influence**
- **Permanent open in automatic mode:** if this function is activated, the control unit goes from automatic mode into impulse mode **with activated pause time through impulse in open barrier boom position for this cycle**, hence if barrier is open then an impulse will end the automatic mode - the barrier remains open. Only the next impulse will close the barrier and the control unit goes back to automatic mode. With this function e.g. the entrance to a company site can remain open during the day (1st impulse in barrier open position) and closed in the evening (2nd impulse). The control board switches back to automatic mode (autom. opening and closing of barrier).

Forced closing (only with ST 80V)

Operating logic

- ☉ **active:** this function causes that a manually released boom goes immediately back to closure.
- **not active:** the forced closing is deactivated



Warning

- Before connection works please turn off the main power switch !
- Safety rules please see page 8 !



Prewarning OPEN (signal lamp: terminals 10/11)

Light / Lamps

- ☉ turned off
- **1–30s adjustable:** Before each opening movement the signal lamp/ flashing light is activated for the adjusted time.

Prewarning CLOSE (signal lamp: terminals 10/11)

- ☉ turned off
- **1–30s adjustable:** Before each closing movement the signal lamp/ flashing light is activated for the adjusted time.



Signal lamp

- A signal lamp **230V, max. 100W** can be connected at terminals 10/11.

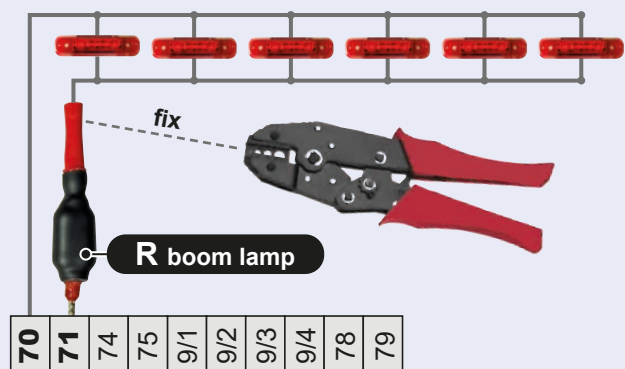


Tousek boom lamp kit

- The barrier can be equipped with a boom lamp kit **24Vd.c., max. 5W**, consisting of 6 lamps.
- **Note:** The kit for round booms (Product No. 13710250) must be connected via a specially dimensioned series resistor (**R boom lamp**) to the control board ST 80 (see figure), the kit for flat booms (Art.Nr. 13710190) **without a resistor**.

Connection of boom lamp kit

- **ATTENTION:** turn off power supply!
- When using the kit for round booms (Prod. No. 13710250) slide the connecting cable of the boom lights into the opening of the protective resistor and fix it with Crimp wrench.
- Connect to **terminals 70/71** of the control ST 80.



Boom lamp CLOSE (terminals 70 (-) / 71 (+))

Light / Lamps

- The boom lamp blinks during movement and stops blinking in open position.
- For the prewarning time the adjustments for the signal lamp are valid
- For closed position you can choose one of the following functions:
- ☉ **OFF**
- **blinks:** boom lamp blinks in closed position
- **illuminates:** boom lamp illuminates in closed position

Signal contacts (Description status display module see page 19)

Peripherals

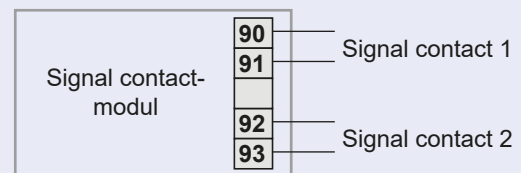
- ⊙ **Status display 1:** with the two potential free signal contacts 1 and 2 the adjustments of the barrier can be evaluated.
- **Status display 2:** with the two potential free signal contacts 1 and 2 the adjustments as well as the movement direction of the barrier can be evaluated.

| | | function | Signal-contact 1 | Signal-contact 2 |
|------------------------|---|---|------------------|------------------|
| Barrier status display | 1 | Barrier in CLOSE-Position | 1 | 0 |
| | | Barrier in OPEN-Position | 0 | 1 |
| 2 | | Barrier in CLOSE-Position | 1 | 1 |
| | | Barrier opens or has been stopped in the process | 1 | 0 |
| | | Barrier closes or has been stopped in the process | 0 | 1 |
| | | Barrier in OPEN-Position | 0 | 0 |

0 = Signal contact open, 1= Signal contact closed

**Signal contacts**

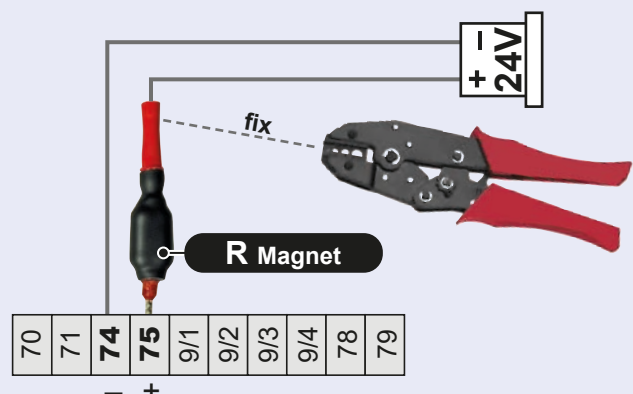
- Requirement for barrier status display 1 or 2 is the availability of the optional module (p.19).
- max. contact load: 1A 24Va.c./d.c.

**Magnet for boom fixing**

- The barrier can be equipped with a magnet **24Vd.c., 5W max.** for fixing the boom in closed position. This is connected via a series resistor (**R magnet**) to the controller ST 80.

Connection of magnet

- **ATTENTION: turn off power supply!**
 - The magnet has to be connected to the control ST 80 via a protective resistor.
 - **This protective resistor is designed for the tousek adhesive magnets GD 70.**
 - Slide the connecting cable of the magnet, as shown in picture, Idet, into the opening of the resistor and fix it with Crimp wrench.
 - Connecting cables and series resistor have to be connected, as shown, with **terminals 74(-) / 75(+)** of the control board.
- Pay attention to polarity.**

**Magnetic clamp** (terminals 74 (-) / 75 (+))

Peripherals





- ⊙ **OFF**
 - **0,1–1s adjustable:** before boom opening the magnetic clamp is being turned off - the boom opens only after the adjusted time.
- In closed position the magnetic clamp is automatically switched on.

Status display

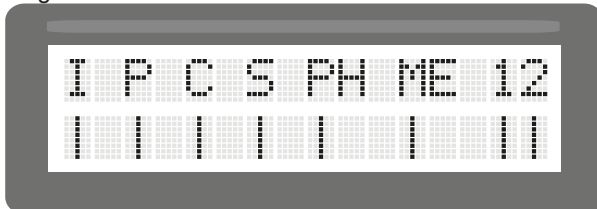
Reset / Diagnosis

➤ **Status display on text display** for inputs like photocell, contact edge, stop switch, impulse switch

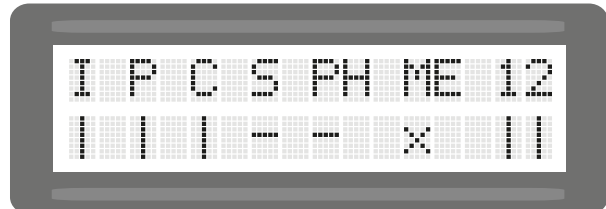
- I** impulse button
- P** partial opening
- C** CLOSE-button
- S** STOP-button
- PH** photocell contact
- ME** contact edge at main safety edge
- 1** induction loop 1
- 2** induction loop 2

-  Status: not triggered
-  Status: triggered
-  Status: contact strip not connected or defect
-  Status: contact strip or photocell deactivated in menu

e. g.



All inputs okay.



Impulse-, pedestrian - and close button not triggered.
STOP-button and photocell are triggered.
Contact strip (main closing edge) not connected or defect.
induction loop 1, 2 not triggered.

Delete positions

Reset / Diagnosis

- ⊙ **NO:** does not delete the end positions "closed" and "open"
- **YES:** the determined end positions are being deleted.
Note: the end positions will be determined after new impulse.



The mechanical stops have to be placed so that possibly existing safety contact edges can not be triggered, as this would lead to an error message.

Factory setting

Reset / Diagnosis

- ⊙ **NO:** no reset back to factory settings
- **YES:** reset back to factory settings and delete the adjusted limits. The end positions (limits) will be redetermined after impulse.



Note: The factory settings of the single menu points are marked with ⊙ in this manual

Software version (control function)

Reset / Diagnosis

➤ shows the software version on display

Serial number (control function)

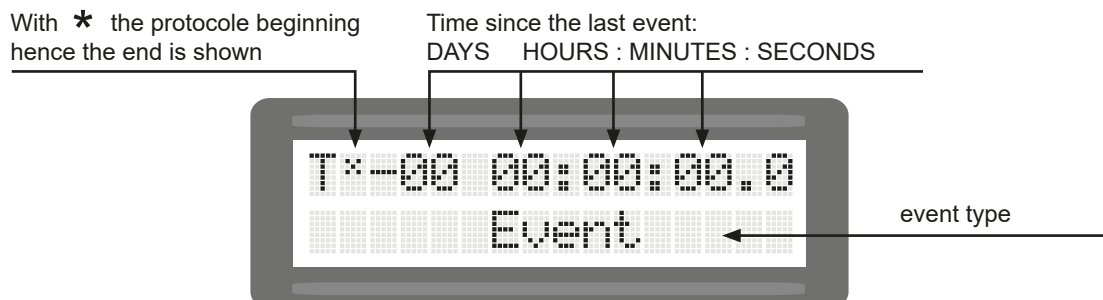
Reset / Diagnosis

➤ shows the serial number on text display

Protocole

Reset / Diagnosis

➤ **shows the protocole list on display:** all events that take place are protocollated in this list. with the buttons + and - the single events can be seen:



Status Sensor (control function)

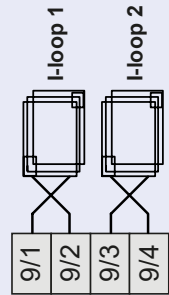
Reset / Diagnosis

➤ Degree and signal strength of rotation speed sensor is shown on display.



Important

- The device is for plugging onto a compact control board. The compact control board has to be built into a separate housing with IP54-insulation.
- After each device setting a readjustment is carried out automatically. After a change in the frequency (DIP switch 1: OFF / ON) the Reset-button (RES) has to be pressed.
- Special notes for loop:** The safe function of the device depends essentially on the correct technical installation and of the laying of the loop wire, as these are the sensors of the device. The loop should not be mechanically loaded or moved. The loop feed line has to be twisted for **approx. 20 to 50 times per meter** and separated from any voltage carrying lines.
- The loop connection has to be made to **terminals 9/1-9/2 (= loop 1) and 9/3-9/4 (= loop 2)**.
- Function of I-loops:** depending on settings under „button/switch / ISD channel 1 (2)“, „Safety / LS/ISD-function“ and „Safety / LS/ISD-pause time“.
- Detailed informations can be found in the corresponding manual.



Mounting and installation



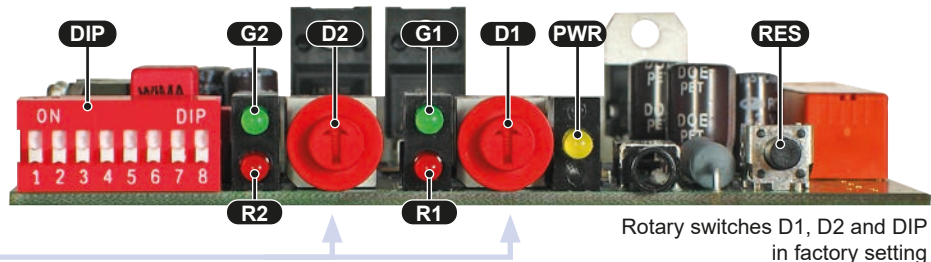
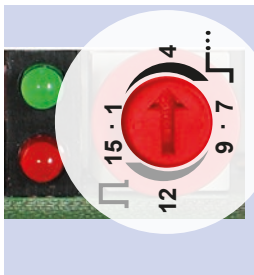
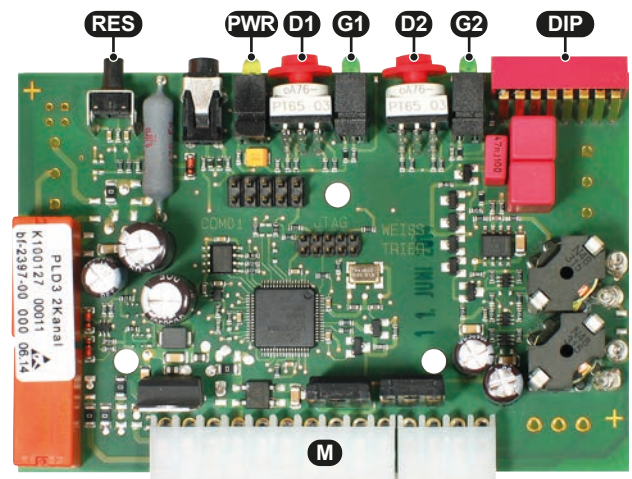
Switch off the power supply. open the control board housing and plug the I-loop detector onto the connection slot as shown on picture.

- All detector settings can be made easily with the rotary switches (**D1**) for channel 1 and (**D2**) for channel 2 as well as the DIP-switches (**DIP**). [see corresponding manual](#).

Factory settings (DIP1–DIP8 = OFF, D1 and D2 = 4).

| LED's | for channel | display |
|--------------|-------------|---------------------------------|
| G1 (green) | 1 | detection |
| G2 (green) | 2 | detection |
| R1 (red) | 1 | defective |
| R2 (red) | 2 | defective |
| PWR (yellow) | | blinking when adjusting / power |

DIP DIP-switch
RES Reset-button
M Molex bar
D1 rotary switch channel 1
D2 rotary switch channel 2



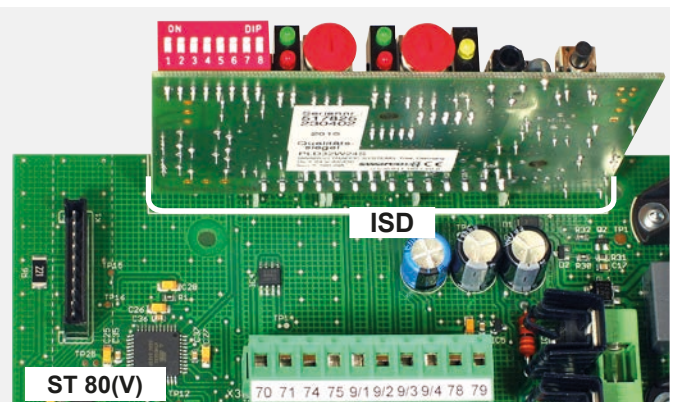
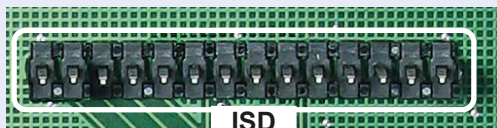
Rotary switches D1, D2 and DIP in factory setting


The Reset button (**RES**) has 2 functions which can be activated via the different duration of the key pressure:

- Adjustment:** short key pressure (< 2s), Initialization of all activated loop channels.
- Reset:** average duration of the key press (> 2s), reset the detector, subsequent initialization of all channels.



Insert the board of the induction loop detector on the slot (ISD) of the control board.

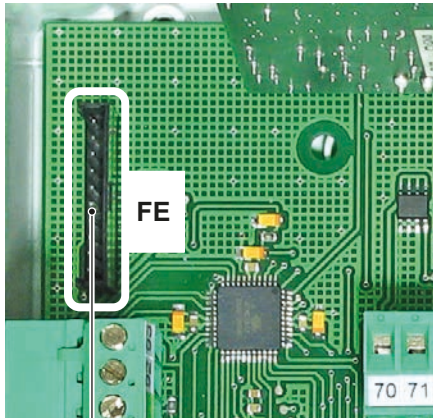


- Turn off power supply. 
- Open cover of control unit
- Receiver board (E) RS433/868-STN1 (1-channel) or RS433/868-STN2 (2-channel) into the connection slot (FE), as shown in picture.
- For range extension an external antenna FK433 or FK868 can be connected.

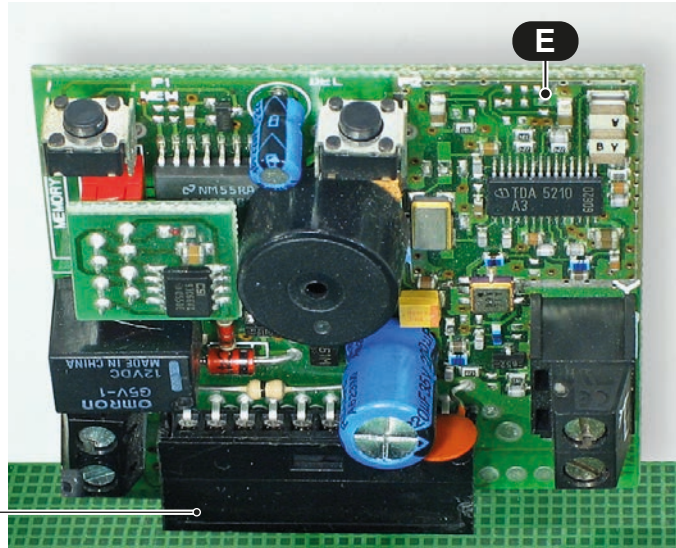


Important

- With the use of the 2-channel-receiver the second channel takes over the function of the partial opening entry mode switch.
- For programming of receiver please *see manual for radio receiver*.



connection slot for radio receiver



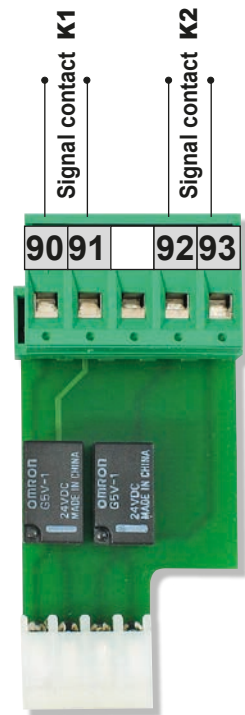
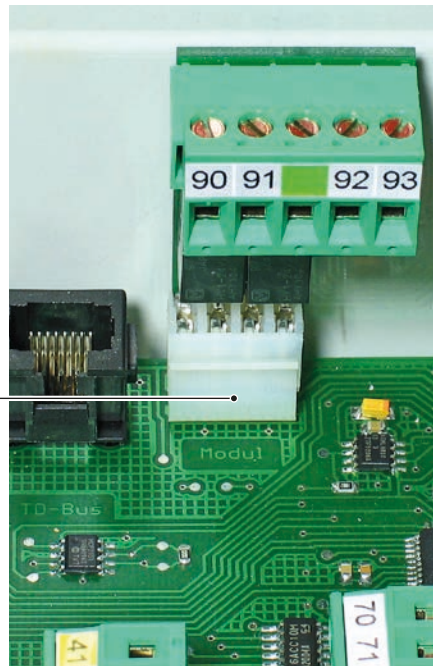
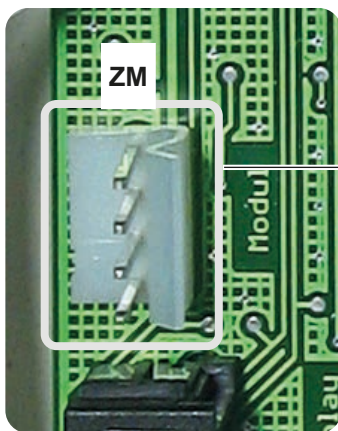


Important

- The optional module „Status display“ has to be plugged onto the connector slot (ZM) of control board and enables the evaluation of boom position or boom movement.
- Function of module: depending on the adjustments under „Peripherals / Signal contacts“ (p.15).

Connection the module

- Turn off the power supply !
- Plug in the „status display“ module into the slot (ZM) .



- With the potential free signal contacts K1 (term. 90/91) and K2 (term. 92/93) the barrier status can be evaluated in two ways (see menu point *Signal contacts*).
- Contact load: **24Va.c./d.c., max. 10W**

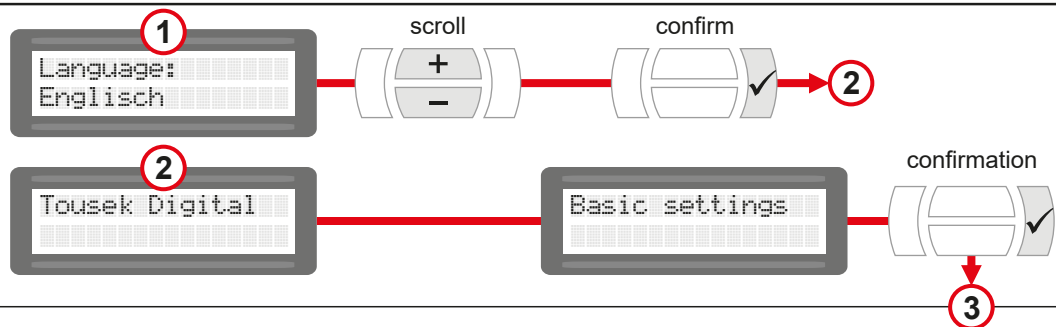


Important: preparation works

- Connect control panels, safety devices to the motor under consideration of the safety regulations .
Attention: if no stop switch is connected then the terminals 31/37 have to be bridged.
- Turn on the equipment (correct connection is preconditioned).
- **Important:** Putting into operation in Impulse mode (standard setting) and not in dead man mode.
- During initial operation the choice of language is the first adjustment, then in the “Basic settings” the adjustment of most important operator settings and after the system test, the automatic detection of limit positions of boom is made.

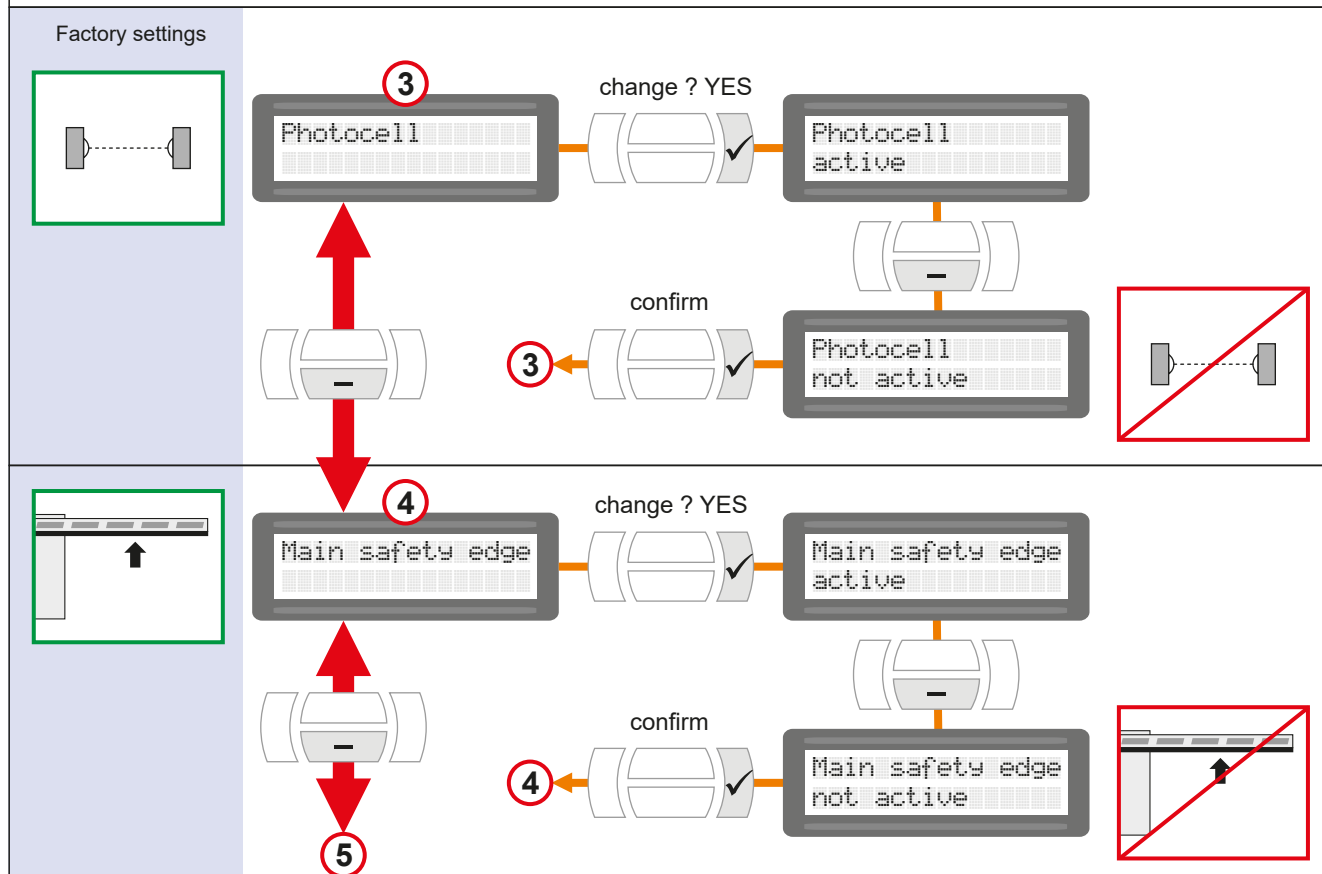
LANGUAGE SELECTION

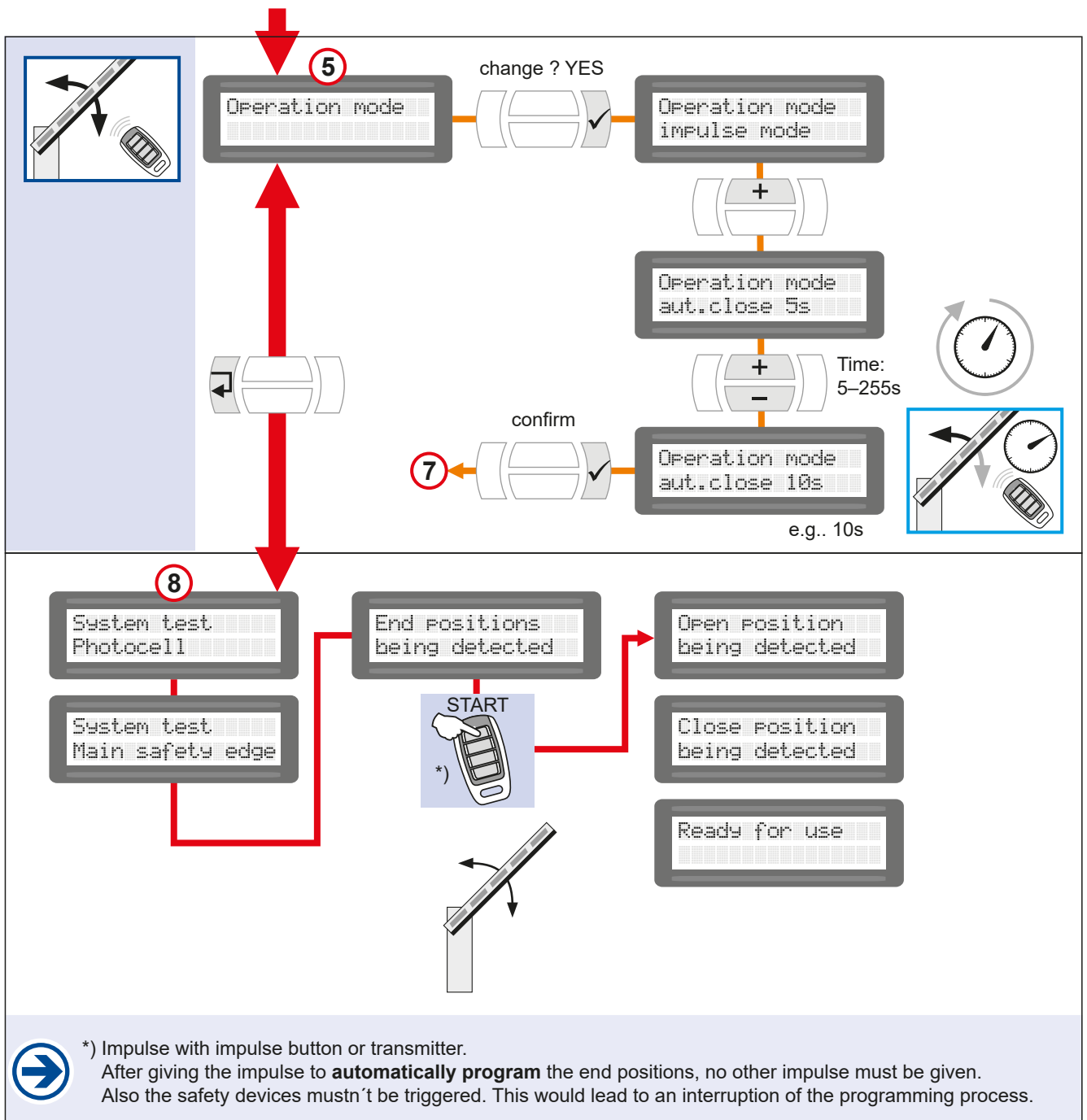
- Can be selected during initial operation (hence after reset to factory settings).
- Can be also chosen by pressing the ESC button (↵) for 5s, from any position in menu.



BASIC SETTINGS

- For setting the most important adjustments for initial operation of motor.
- Can be selected during initial operation (hence when restoring the factory setting).
- All safety devices are activated when leaving factory (see menu page 7).
- The next programming adjustments are made in the main settings menu (see page 6, 7).





9. Error search

Barrier control unit ST 80, ST 80V

| Error | possible reason | solution |
|--|---|---|
| Display: „Stop-button triggered“ | stop-button not connected or not bridged | Stop-button (Kl.) connect or bridge > use status display for help |
| Display: „Photocell triggered“ | photocell interrupted | check correct connection hence remove obstacle > use status display for help |
| Display: „Main closing edge triggered“ | main safety edge interrupted or hot-wired | check correct connection hence remove obstacle > use status display for help |
| Display: „AR-System triggered“ | boom ran into an obstacle or is too hard to move | check adjustment of forces, remove obstacle hence check if boom is easy to move |
| Display: „photocell test negative“ | interruption or hot-wired photocell | check correct connection hence remove obstacle > use status display for help |
| Display: „Low Voltage“ | undervoltage | check supply line |
| No reaction when giving an impulse | no line voltage hence safety fuse broken | check line voltage as well as safety fuses. |
| | error of transmitter/control device/impulse button, e.g. transmitter not programmed | check transmitter/control device, e.g. program transmitter and check battery |
| Control relays are switching but no barrier movement | motor is in emergency release (unlocked) | lock motor gearing |

10. Dimensioned drawing of housing IP54

Barrier control unit ST 80, ST 80V

- Dimensions in mm



We reserve the right to change dimensions and technical specifications without prior notice.

tousek PRODUCTS

- sliding gate operators
- cantilever systems
- swing gate operators
- garage door operators
- folding door operators
- traffic barriers
- electronic controls
- radio remote controls
- key operated switches
- access control
- safety devices
- accessories

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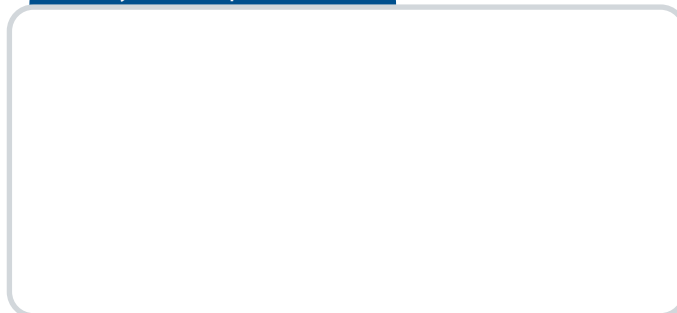
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