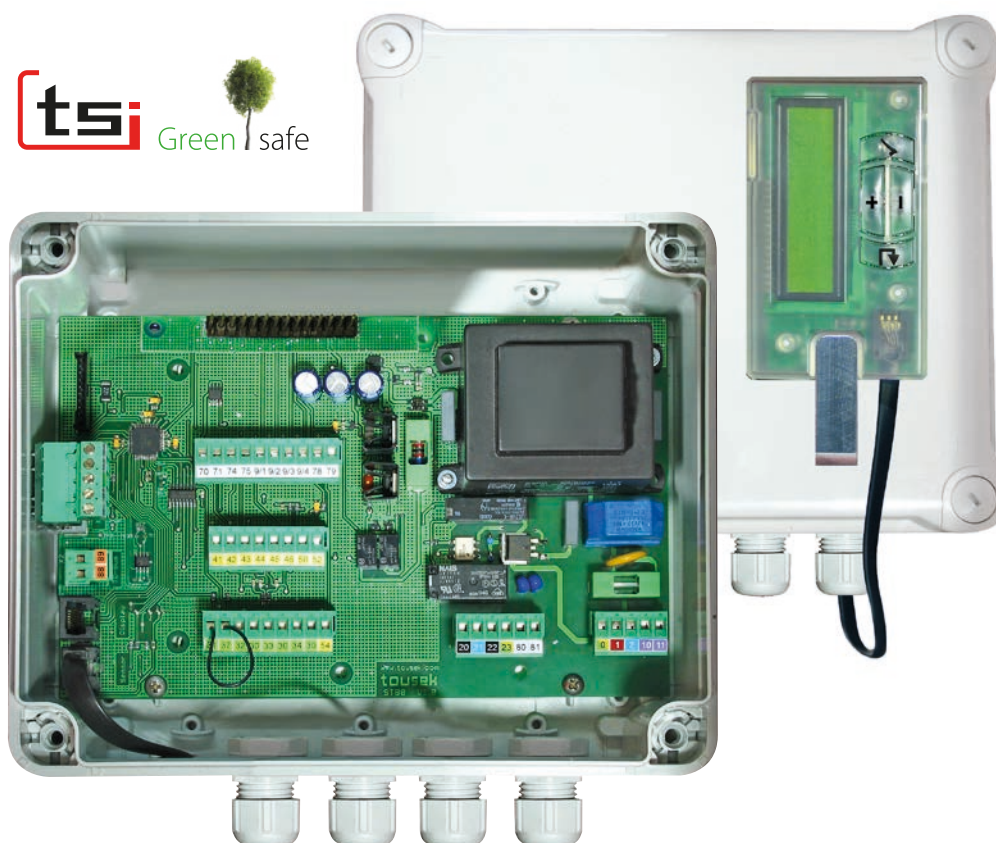


Installation and connection manual

Barrier control ST 80, ST 80V

Master / Slave combination

for double barrier



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) / Master-Slave 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 features

- for double barrier (Master/Slave) with eletromechanic 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 adustment (OPEN/CLOSE)
- Adjustable soft stop time and speed
- Safety system ARS (autom. reversal system)
- Integrated contact edge evaluation
- Automonitoring of photocell
- Ouput for Photocells, magnetic clamp, signal lamp and boom lamp kit
- Slots for optional radio receiver, loop detector, status display module
- 

Control board layout



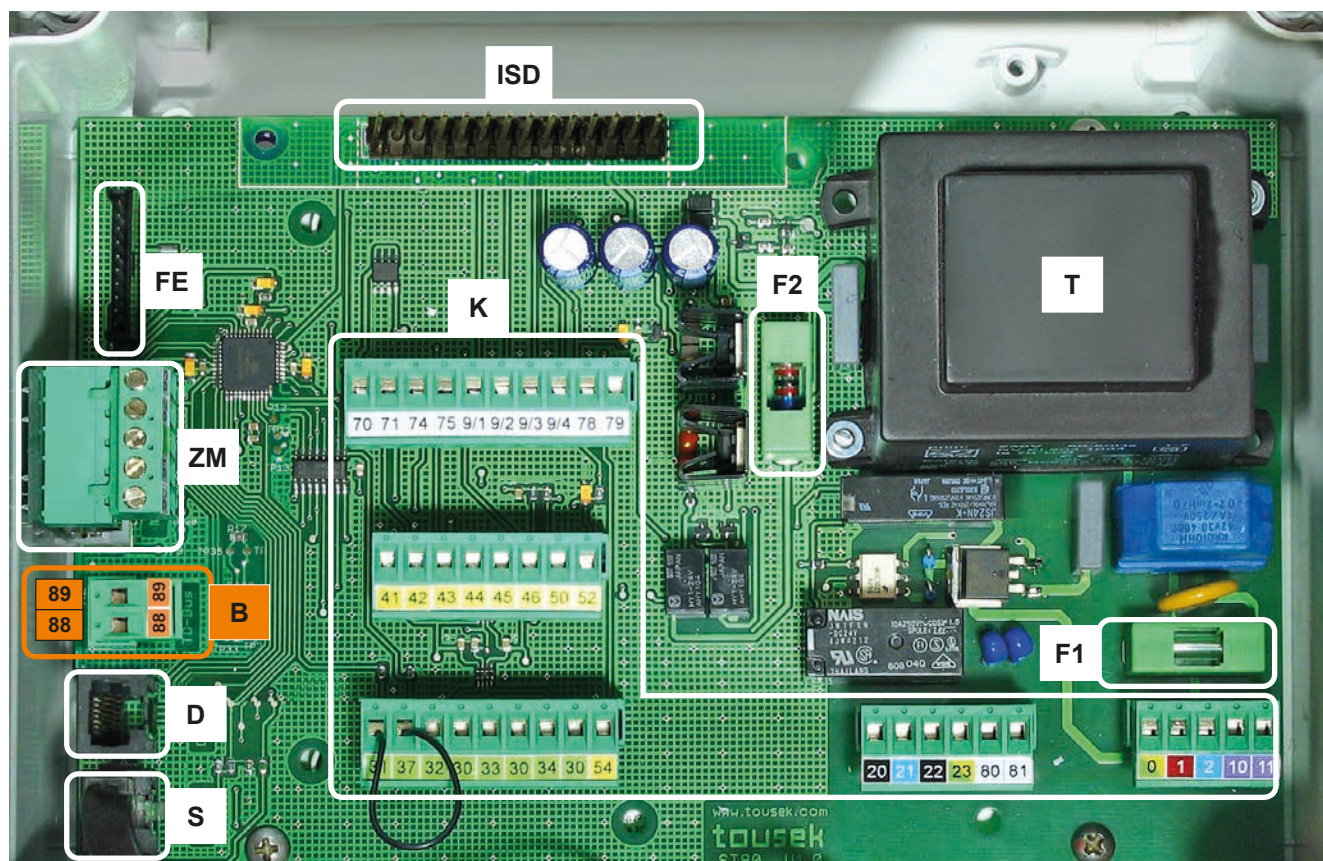
Important

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 the control board

- | | | | |
|-------|--|------|---|
| (K) | terminal blocks | (FE) | Slot for optional receiver (page 20) |
| (S) | Sensor connector | (ZM) | Slot for optional module „Status display“ (page 17) |
| (D) | Display connector or connection with optional tousek-service-interface (TSI) | (T) | Transformer |
| (B) | terminals bus system (for connection master/slave) | (F1) | safety fuse F 5A |
| (ISD) | Slot for optional I-loop detector (page 19) | (F2) | safety fuse F 2A |

Technical data

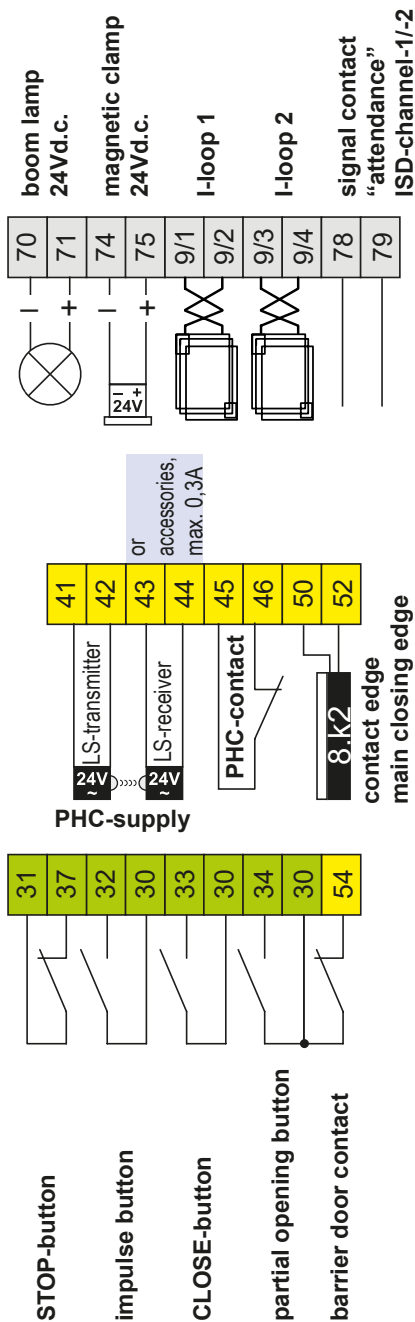
Barrier control	ST 80	ST 80V			ST 80	ST 80V
Power supply	230Va.c. 50Hz		Ambient temperature		- 20°C bis + 70°C	
max. permitted motor capacity	230Va.c., 500W		Protection class		IP66	
Signal lamp output	230Va.c., 100 W max		Speed sensor		■	■
Boom lamp output	24Vd.c.		Forced closing			■
Magnetic clamp output	24Vd.c., 5W max.		Art.no.	Master	12111570	12111580
Photocell output	24Va.c.			Slave	12111550	12111560
Optional equipment	pluggable receiver • additional module for status of barrier • induction loop detector • other impulse givers and safety equipment					

2. Terminal assignment

Barrier control ST 80, ST 80V / Master-Slave

Master-control board

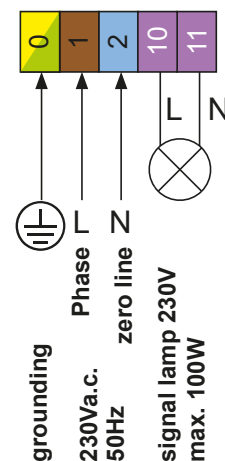
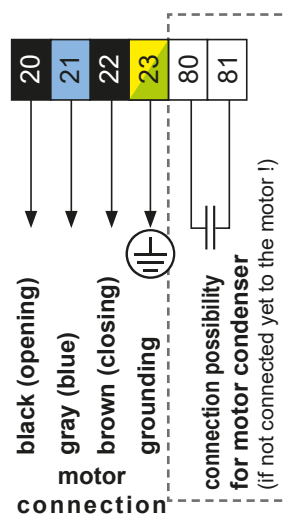
Terminal assignment



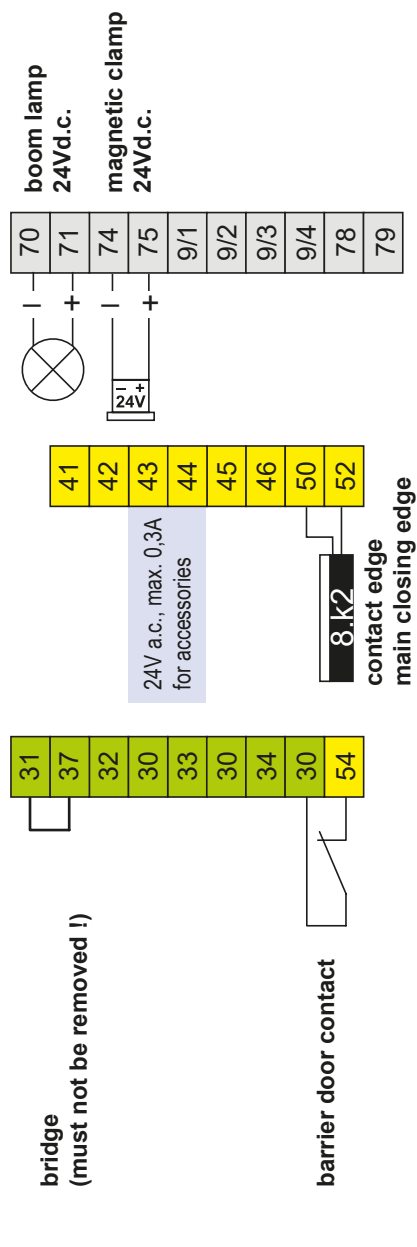
Warning



- 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 (sensor, buttons, radio, photocells, etc.) have to be laid separately from the 230V lines (supply line, motors, signal lamp).



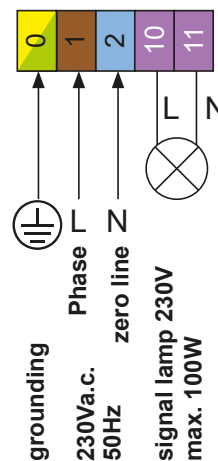
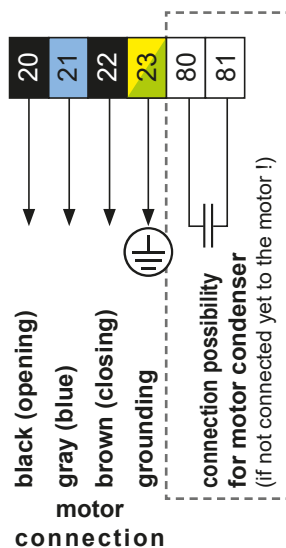
The stop input has no emergency stop function! - In order to ensure the emergency stop function, provide the supply line with an all-pole disconnecting emergency stop switch, that locks after actuation!



Warning

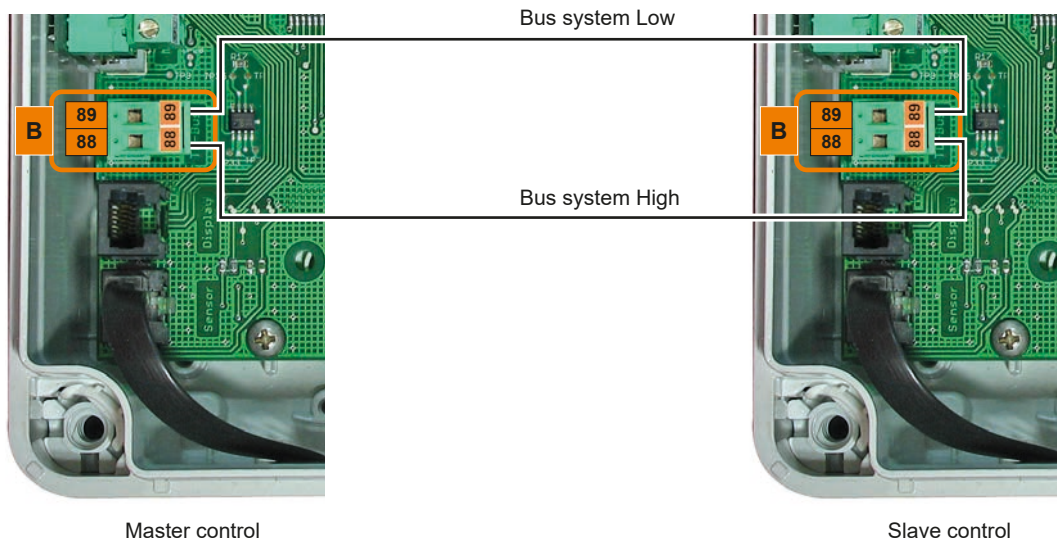


- Before taking off the control cover, the mains switch must be turned off!
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- **IMPORTANT:** The control lines (sensor, buttons, radio, photocells, etc.) have to be laid separately from the 230V lines (supply line, motors, signal lamp).



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

- for connection of the master control with slave control the terminals 88 and 89 of system plugs of each control have to be connected with each other (see picture below)



Important

- max. cable length between the barrier housings is **25m**.
- Cable type: e.g. **EIB / J-Y(St)Y bus cable** or equivalent (max. 2 x 1mm² twisted and shielded)
- Also clamp the shield to terminal 30 on both controls (master, slave)!**

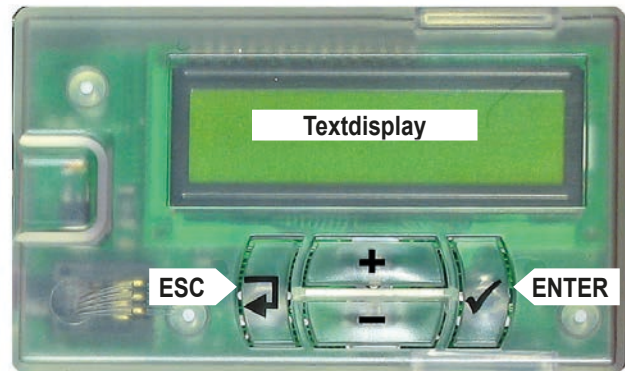
Programming buttons

Adjustments - overview



- Before starting the programming, please choose the language. Use the buttons **+** or **-** to choose menu language and confirm with **✓**.
- language adjustment has to be made in Master- and Slave control .
- 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 of MASTER control is divided into "BASIC SETTINGS" and "MENU CONTROL"
- The program menu of Slave-control has only the "MENU CONTROL" (=MAIN MENU).

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)" (=Main Menu).

MENU CONTROL (= MAIN MENU)

- For further programming you will reach immediately the MENU (CONTROL) (Basic settings are skipped)
- The menu control includes all kinds of settings, while in the slave control only parts of (📄 page 9) in the menu structure described menu items can be selected (marked "M/S").

All other functions are being taken over from the Master control board!



The different menu points are indicated as follows:

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

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

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

Main menu		Sub-layer	adjustments		
buttons/switches page 10, 11	M	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.	
	M	ISD channel 1	<input type="radio"/> Impulse (Master + Slave) <input type="radio"/> safety <input type="radio"/> attendance <input type="radio"/> open Master		
	M	ISD channel 2	<input type="radio"/> Impulse (Master + Slave) <input type="radio"/> safety <input type="radio"/> attendance <input type="radio"/> open Master		
safety page 12–14	M	photocell	<input type="radio"/> active <input type="radio"/> not active		
	M/S	main safety edge	<input type="radio"/> active <input type="radio"/> not active		
	M	PHC/ISD function	<input type="radio"/> reverse during closing <input type="radio"/> during closing stop, then close		
	M	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		
	M	PHC selftest	<input type="radio"/> active <input type="radio"/> not active		
motor page 15	M/S	max. force	<input type="radio"/> 50...100% [increment 5]	ST 80 <input type="radio"/> = 100%	ST 80V <input type="radio"/> = 100%
	M/S	ARS-response time	<input type="radio"/> 0,15...0,95s [increment 0,05]	<input type="radio"/> = 0,50s	<input type="radio"/> = 0,50s
	M/S	speed OPEN	<input type="radio"/> 55...100% [increment 5]	<input type="radio"/> = 90%	<input type="radio"/> = 100%
	M/S	speed CLOSE	<input type="radio"/> 55...100% [increment 5]	<input type="radio"/> = 90%	<input type="radio"/> = 100%
	M/S	soft stop way	<input type="radio"/> 0...5s [increment 0,1]	<input type="radio"/> = 1,5s	<input type="radio"/> = 1s
operating mode page 15,16	M	impulse mode	<input type="radio"/> without pause time extension <input type="radio"/> with pause time extension		
	M	motor partial opening	<input type="radio"/> Master <input type="radio"/> Slave		
	M	operating mode	<input type="radio"/> impulse mode <input type="radio"/> automatic 1...255s [increment 1]		
	M	pause time logic	<input type="radio"/> no influence <input type="radio"/> constant open in automatic mode		
	M	forced closing (<u>only</u> with ST 80V)	<input type="radio"/> active <input type="radio"/> not active		
lights/lamps page 16	M	prewarning OPEN	<input type="radio"/> OFF, 1...30s	<input type="radio"/> = OFF	
	M	prewarning CLOSE	<input type="radio"/> OFF, 1...30s	<input type="radio"/> = OFF	
	M	boom lamp CLOSE	<input type="radio"/> OFF <input type="radio"/> blinking <input type="radio"/> illuminates		
peripher. devices page 17	M	signal contacts	<input type="radio"/> status display 1 <input type="radio"/> status display 2		
	M/S	magnetic clamp	<input type="radio"/> OFF, 0,1...1,0s	<input type="radio"/> = OFF	
diagnosis page 18	M/S	status display	status display of all inputs		
	M	delete positions	<input type="radio"/> NO <input type="radio"/> YES		
	M	factory settings	<input type="radio"/> NO <input type="radio"/> YES		
	M/S	software version	display software version		
	M/S	serial number	display serial number		
	M/S	protocol	display protocol messages		
	M/S	sensor status	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)!



tousek®

DIGITAL



ESC

ENTER



Barrier control ST 80, ST80V / Master-Slave



Danger



- Before connection works or taking off the housing cover the power supply has to be turned off !
 - When connecting control boards, impulse emitters, safety devices and motors as well as when adjusting the power of the operators, it is essential to comply with the applicable safety regulations and standards!
- also follow safety instructions 5 !

The different menu points, that can be selected in the Master control board (= **M**) or in the Master and in the Slave control board (= **M/S**) are indicated as follows:



○ = selectable setting (or possible value assignment) ⊙ = factory settings ⇌ = status display
 shows the menu points which are in the "BASIC SETTINGS"

Furthermore connection notes and other instructions are indicated as follows

M = regards the Master control board **M/S** = regards the Master and Slave control board

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

Buttons/switches

Connections and adjustments



Important

- As impulse-, pedestrian-, close- buttons pushbuttons or key switches as well as external command devices with potential free make contacts can be used.
- As stop switch a break contact has to be used!!



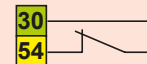
The stop input has no emergency stop function! - In order to ensure the emergency stop function, provide the supply line with an all-pole disconnecting emergency stop switch, that locks after actuation!



Barrier door contact (terminals 30/54)

M/S

- 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 **M** 30/32)

M

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. (an impulse during opening movement is ignored).



- 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!

- **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.



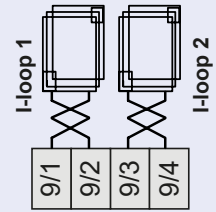
- If the impulse switch is set to DEAD MAN operation, then the partial opening switch works the same way. With the impulse- or the partial opening switch the barrier is opened, with the CLOSE-button it is closed.
- **IMPORTANT: Do not put into operation in dead man mode. Select only after putting into operation page 21), if desired.**



Induction loops

M

- 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)

M

Buttons / switches

- ⊙ **open:** when driving over I-loop 1 the Master and Slave barrier will open.
- **Safety:** when driving over I-loop 1 the chosen setting under „LS/ISD-function“ (➡ page 14) is effected.
- **Attendance:** through a potential free closing-contact (terminals 78/79) the driving over the I-loop 1 can be evaluated.
- **Open Master:** when driving over I-loop 1 only the Master barrier will open.

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

M

Buttons / switches

- ⊙ **open:** when driving over I-loop 2 the Master and Slave barrier will open.
- **Safety:** when driving over I-loop 2 the chosen setting under „LS/ISD-function“ (➡ page 14) is effected
- **Attendance:** through a potential free closing-contact (terminals 78/79) the driving over the I-loop 2 can be evaluated.
- **Open Master:** when driving over I-loop 2 only the Master barrier will open.

CLOSE-button (terminals M 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.



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 button (terminals M 30/34)

Buttons/ switches

- same function as impulse switch.
This button has the function of partial opening, i.e. only the barrier defined for the partial opening is opened (➡ menu item „operating mode“ / „motor partial opening“).
A partial opening impulse in the open position causes the system to change into partial open position (i.e. only the barrier responsible for the partial opening remains open, the other closes).



Important: Photocells notes

M

Photocell connection at Master control unit:

- the control unit has a power supply connection for a **24V a.c.** photocell (PHC)

power supply: **PHC-transmitter**: term. **M** 41/42

PHC-receive: term. **M** 43/44



Note: in „gate closed“ position the terminals 41/42 are being switched into energy saving mode (no current) !

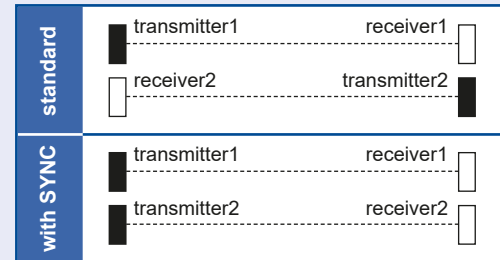
- The PHC contacts have to be closed when using powered and positioned photocells (opening contact).

PHC-contact: terminals **M** 45/46

Mounting note (SYNC function):

IMPORTANT: 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.



Self-monitoring of photocells:

The control unit has a monitoring function for the connected photocells. A test will be triggered by each impulse and will be checked if the receiver of the photocell responds to the signal from the photocell transmitter. If there is no communication between the photocell receiver and transmitter the control unit responds with an error.

➡ **The deactivation of the self-test function is only permitted if the safety installations correspond to the category 3 !**

Photocell function:

The exact function of the photocells depend on the programming of the control unit:
see menu point **SAFETY / PHC/ISD function** and **SAFETY / PHC/ISD pause time** (➡ page 14).

you will find detailed information in the corresponding photocell manual..

Photocell (contact: terminals **M** 45/46)

M

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

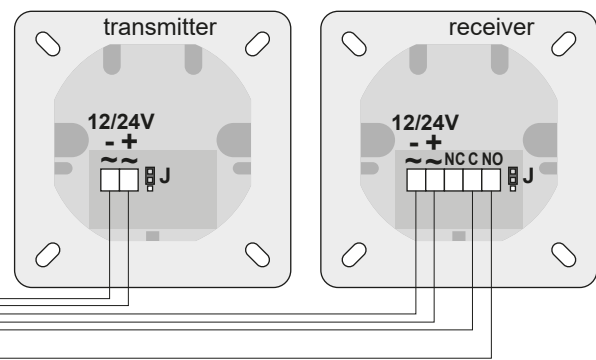


Important

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

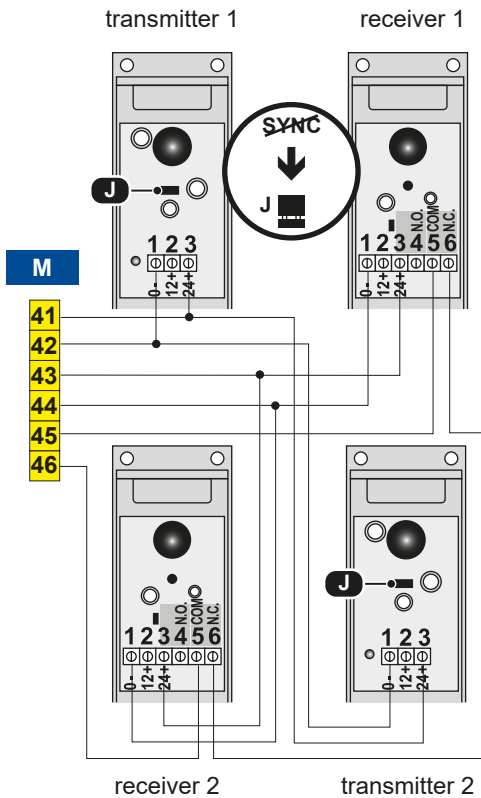
M

41
42
43
44
45
46



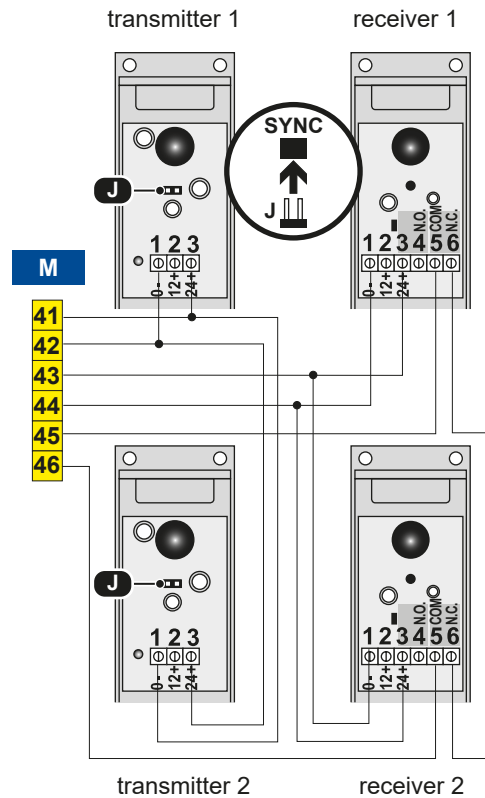
2 photocells Tousek LS 41 / LS 180 as safety device

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

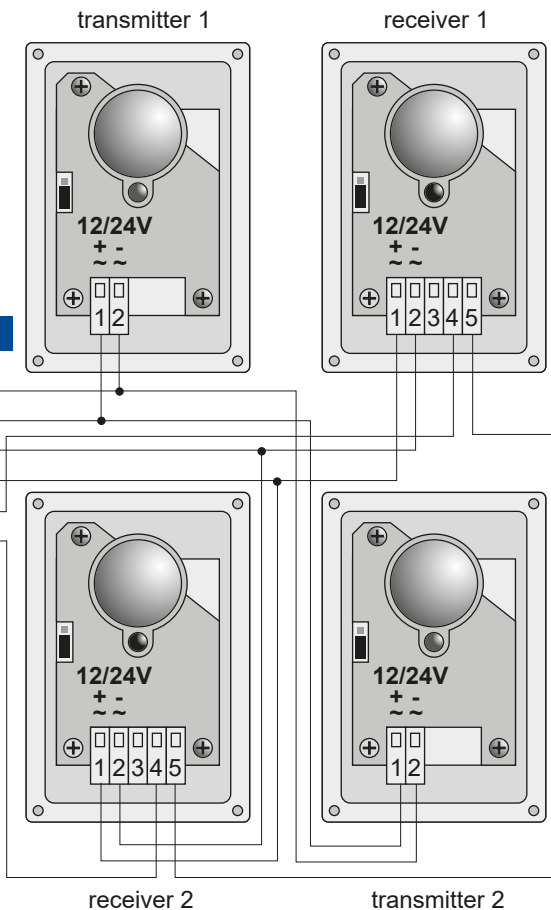
To activate the SYNC-function you have to remove Jumper J in both photocell transmitters!



2 photocells Tousek LS 45/2 as safety device

M

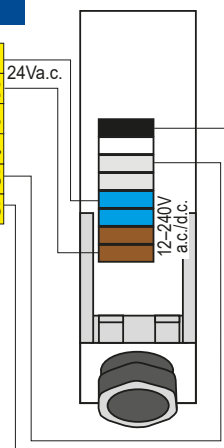
41
42
43
44
45
46



Photocells Tousek RLS 620 as safety device

M

41
42
43
44
45
46



Important

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

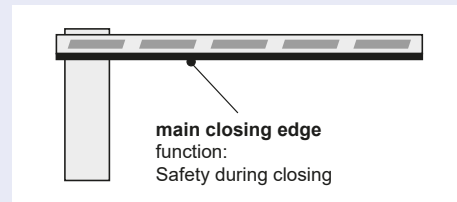


Safety edge (de)activation of main closing edge

M/S

• OBSTACLE DETECTION:

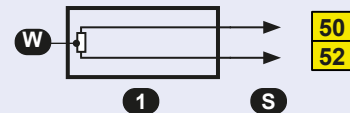
If the contact edge of the main closing edge is triggered, an opening movement is effected for approx. 1s, then the barrier stops.



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)

M/S

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

M

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

M

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

M

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)

M/S

Motor

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

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

M/S

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)

M/S

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)

M/S

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)

M/S

Motor

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

**Danger**

- Before connection works or taking off the housing cover the power supply has to be turned off !
- Please check the adjustments to be in compliance with the valid safety regulations and standards that have to be strictly followed ! ➡ see also safety instructions on page 5 !

Operating logic

Connections and adjustments

Impulse logic

M

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.

Motor partial opening

M

Operating logic

- **Master:** partial opening by Master barrier.
- **Slave:** partial opening by Slave barrier.

Operating mode

M

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.
Exception: If the system is in the partial open position (i.e., only the partial opening barrier boom is open) and a command by an impulse emitter switch (or radio transmitter) for a full opening is given (both barrier booms are open), then after the pause time has elapsed, the system returns to the partial open position (i.e., only the barrier responsible for the partial opening remains open, the other closes).

Pause time logic

M

Operating logic

- **no influence**
- **permanent open in automatic mode:** If „always open in automatic mode“ and „pause time“ are simultaneous activated the automatic mode can be deactivated. An impulse in complete open position causes a switch into „impulse mode“ but only for the current cycle. So the gate stays in OPEN position. The next impulse closes the gate and the control unit switches to „automatic mode“ again. This function allows that the entrance of a company site stays open during the day (first impulse in complete open position). The gate can be closed with the second impulse e.g. in the evening (second impulse - for closing the gate and switching to the „automatic mode“). The control unit switches to the „automatic mode“ again (automatic opening and closing of the gate).

Note: An impulse through the pedestrian button in the complete open position doesn't start the „always open“ function. This action causes a movement in CLOSE direction and the gate stops at pedestrian OPEN position.

If the gate is in partial open position and „permanent open in automatic mode“ is selected, so it is possible to adjust permanent partial open for this cycle by giving an impulse via pedestrian button. Permanent partial open can be finished analogous to the above described method.





Forced closing (only ST 80V)

M

Operating logic

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

Light / Lamps

Connections and adjustments



Danger

- Before connection works or taking off the housing cover the power supply has to be turned off !
- Please see safety rules! (→ page 5)



Prewarning OPEN (signal lamp: terminals M/S 10/11)

M

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 M/S 10/11)

M

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



Signal lamp

M/S

- A signal lamp **230V, max. 100W** can be connected at terminals 10/11 of Master and Slave board (the setting is made via Master control)



Tousek boom lamp kit

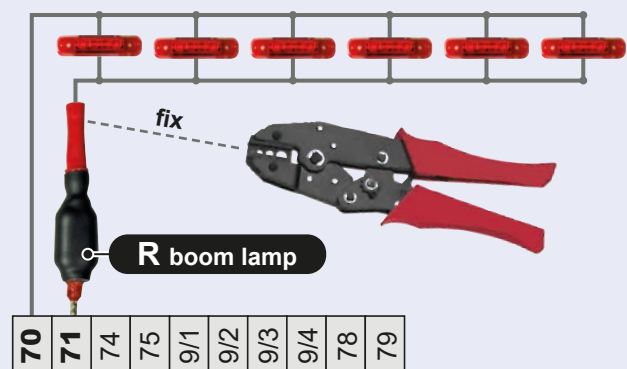
M/S

- 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 Master/Slave (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 Master/ Slave.



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

M

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

M

Peripherals

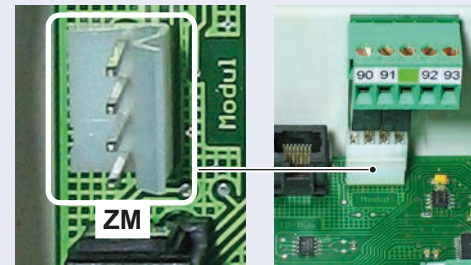
- **Status display 1:** with the two potential free signal contacts **K1** and **K2** the adjustments of the barrier can be evaluated.
- **Status display 2:** with the two potential free signal contacts **K1** and **K2** the adjustments as well as the movement direction of the barrier can be evaluated.



Status display module (optional)

M

- **turn off power supply before installing the additional module!**
- The module „Gate status display“ has to be plugged to the according slot/plug (**ZM**) of control board.
- Additionally the corresponding value has to be selected in menu point „signal contacts“

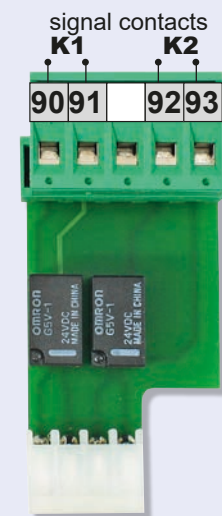


Additional module Gate status display

- with potential free signal contacts K1 (Kl. 90/91) and K2 (Kl. 92/93) the gate status can be evaluated in two ways.
- Contact load: **24Va.c./d.c., max. 10W**

		function	K1	K2
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

Signal contact: 0 = open, 1 = closed



Magnetic clamp (terminals M/S 74 (-) / 75 (+))

M/S

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.



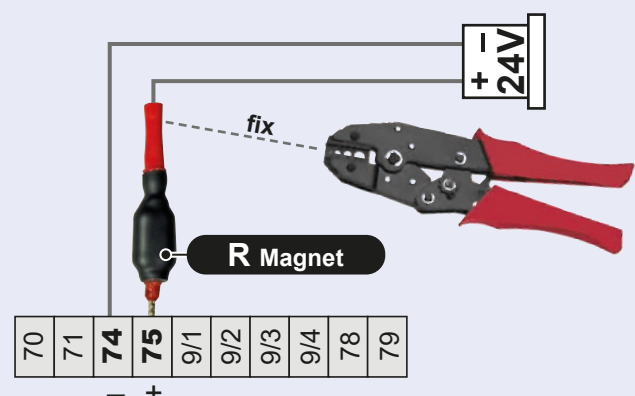
Magnet for boom fixing

M/S

- 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 Master/Slave.

Connection of magnet

- **ATTENTION: turn off power supply!**
 - The magnet has to be connected to the control 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.**







Status display

M/S

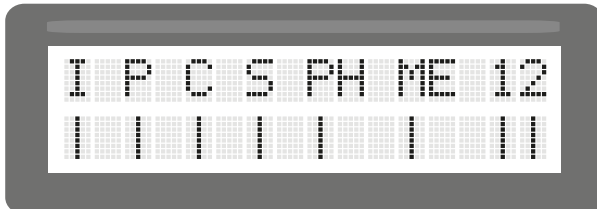
Reset / Diagnosis

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

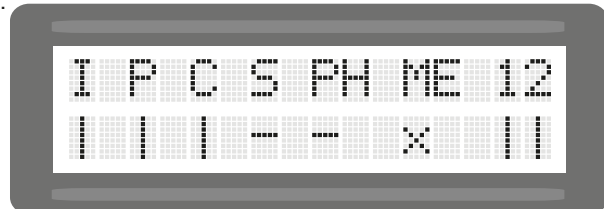
- I** impulse button
- P** partial opening
- C** CLOSE-button
- S** STOP-button
- Ph** photocell contact
- ME** contact edge at main safety edge
- 1** induction loop 1
- 2** induction loop 2

-  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

M

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.



If for any reason one of the two control boards is being exchanged without the other, then first of all, the command „delete positions“ in the menu „diagnosis“ has to be executed otherwise it may cause a fatal system crash!

Factory setting

M

Reset / Diagnosis

- ⊙ **NO:** Kno 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 (**in Master- and Slave-control**). the limit positions are newly set after an impulse.



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

Software version (control function)

M/S

Reset / Diagnosis

➔ shows the software version on display

Serial number (control function)

M/S

Reset / Diagnosis

➔ shows the serial number on text display

Protocole

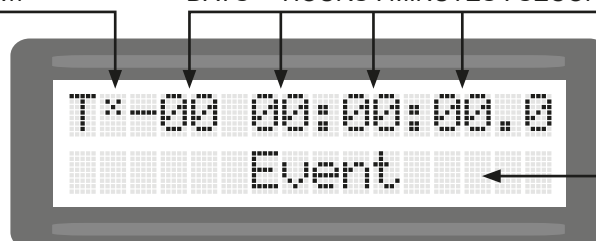
M/S

Reset / Diagnosis

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

With * the protocole beginning hence the end is shown

Time since the last event:
DAYS HOURS : MINUTES : SECONDS



type of event

Status Sensor (control function)

M/S

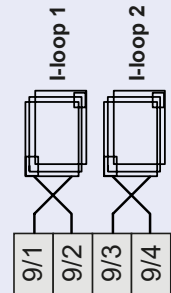
Reset / Diagnosis

➔ 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



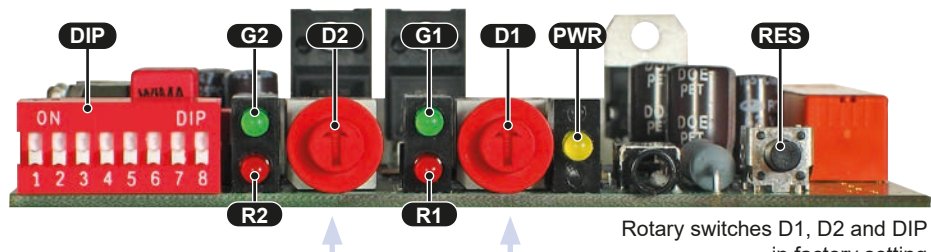
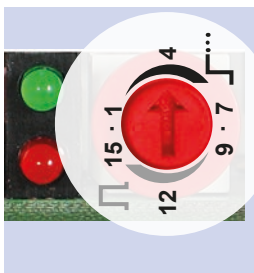
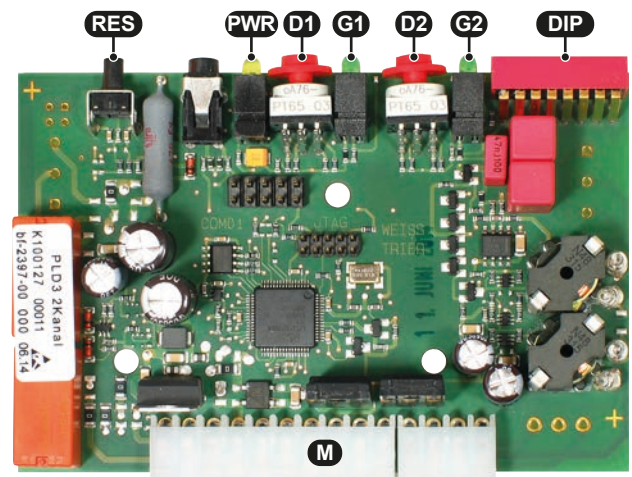
Switch off the power supply. open the control board housing and plug the I-loop detector onto the connection slot as shown on picture.

- 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	
R1 (red)	1	defective
R2 (red)	2	
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



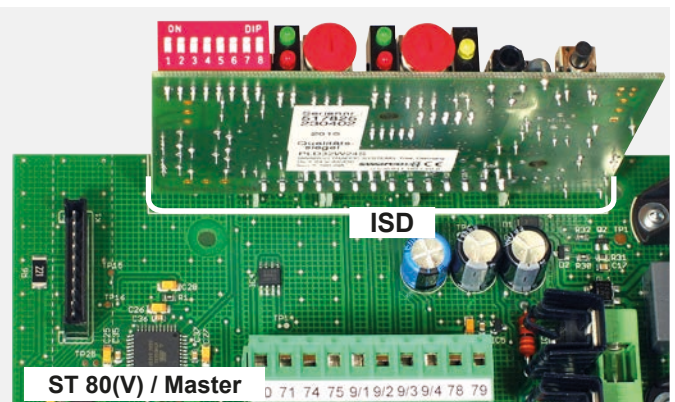
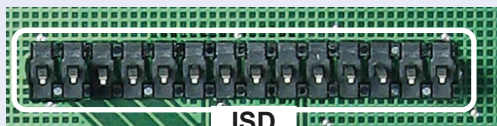
Rotary switches D1, D2 and DIP in factory setting


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.



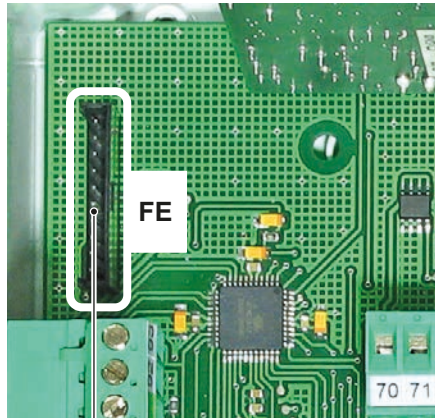
Insert the board of the induction loop detector on the slot (ISD) of the master control board.



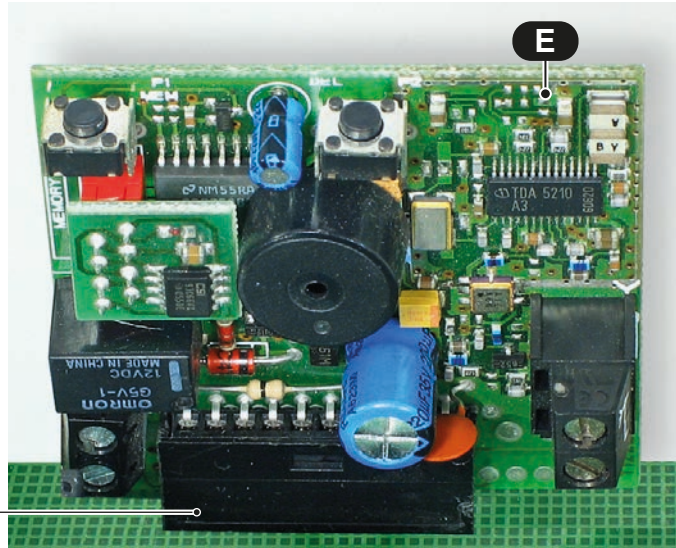
- Turn off power supply. 
- Open cover of control unit
- Receiver board (E) RS433/868-STN1 (1-channel) or RS433/868-STN2 (2-channel) into the connection slot (FE), as shown in picture.
- For range extension an external antenna FK433 or FK868 can be connected.

**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: preparation works

- Connect control panels, safety devices and motors under consideration of the safety regulations.
Attention: if no stop switch is connected then the terminals 31/37 have to be bridged (Master + Slave).
- Turn on the equipment (Master and Slave) (correct connection being 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 (Slave + Master).
- After that the slave control carries out a system test. If an error occurs, a message appears in the display. With the **ENTER button** you get into the **MAIN MENU** to perform parameter changes. Exit using **ESC button** - is the further system test completed successfully „End positions being detected“ appears in the display - the slave control waits for a pulse of the master control.
- After choice of the language the most important operating parameters can be set within the **BASIC SETTINGS** of the master control. Exit using **ESC button** - system tests of the master control are carried out. If an error occurs you get into the BASIC SETTINGS again by pressing the **ENTER button**.
- After the successful system test of the master also in its display „End positions being detected“ appears.
- Now if the master receives an impulse (transmitter, impulse button) the automatic detection of limit positions of the master's and the slave's boom is started. After successful completion „Ready for use“ appears in both displays.



If for any reason one of the two control boards is being exchanged without the other, then first of all, the command „delete positions“ in the menu „diagnosis“ has to be executed.

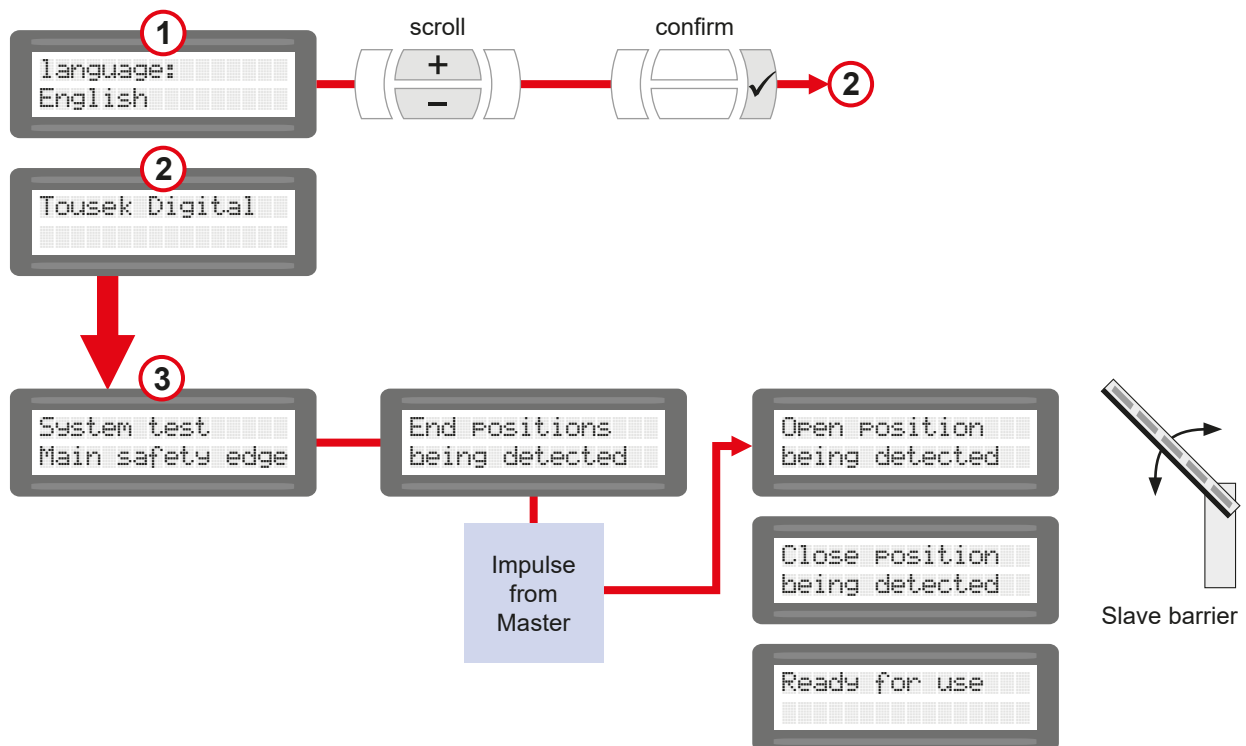
Slave control

S

Putting into operation

LANGUAGE SELECTION for slave control

- 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.





The slave's main menu includes only a part of the master's menu items (see *Menu structure p.9*). These are the items where for slave and master different operating parameters can be set. Otherwise the slave takes over the operating parameters of the master.

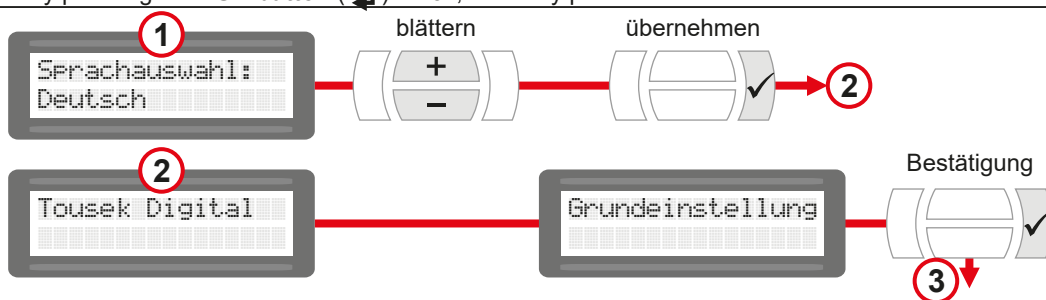
Master control

M

Putting into operation

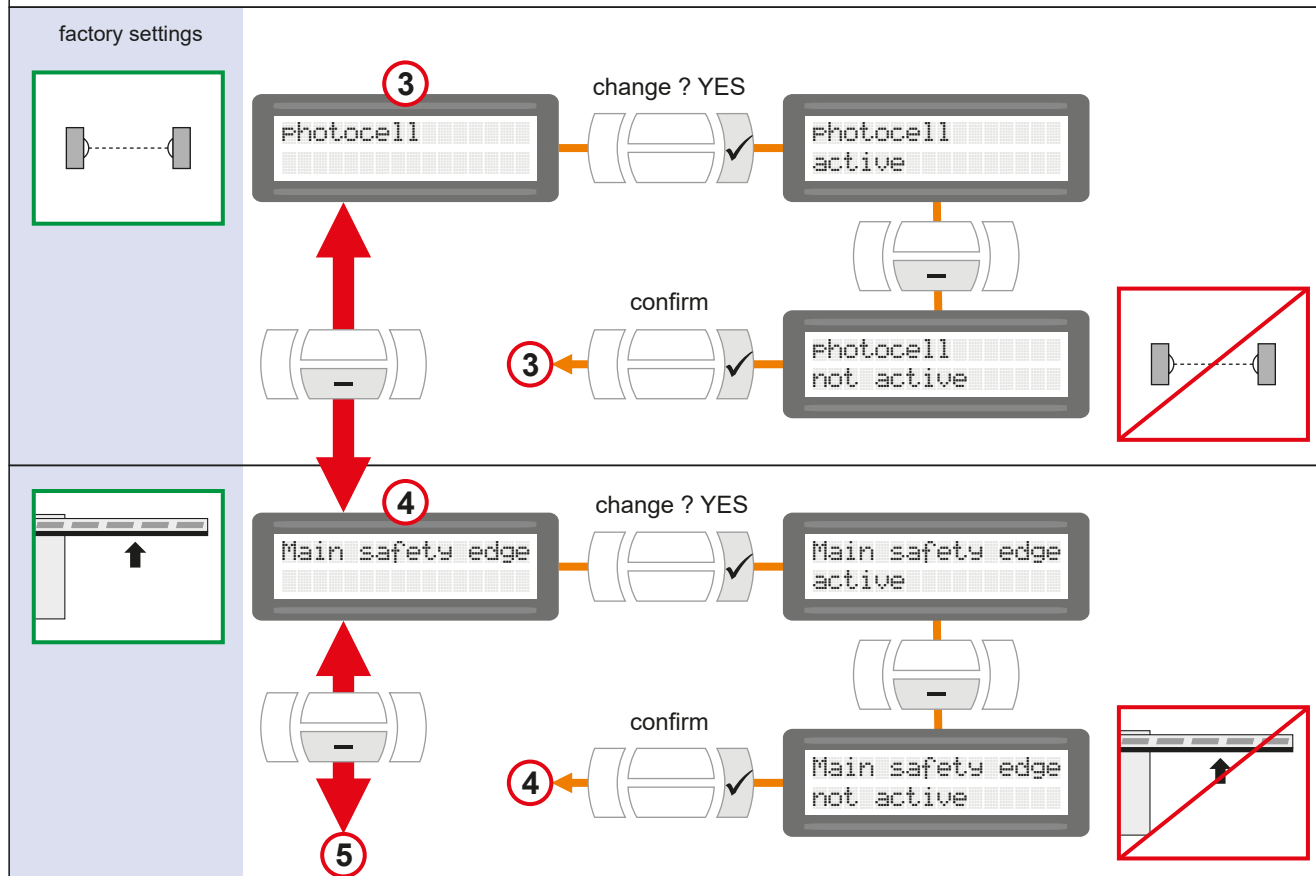
LANGUAGE SELECTION for master control

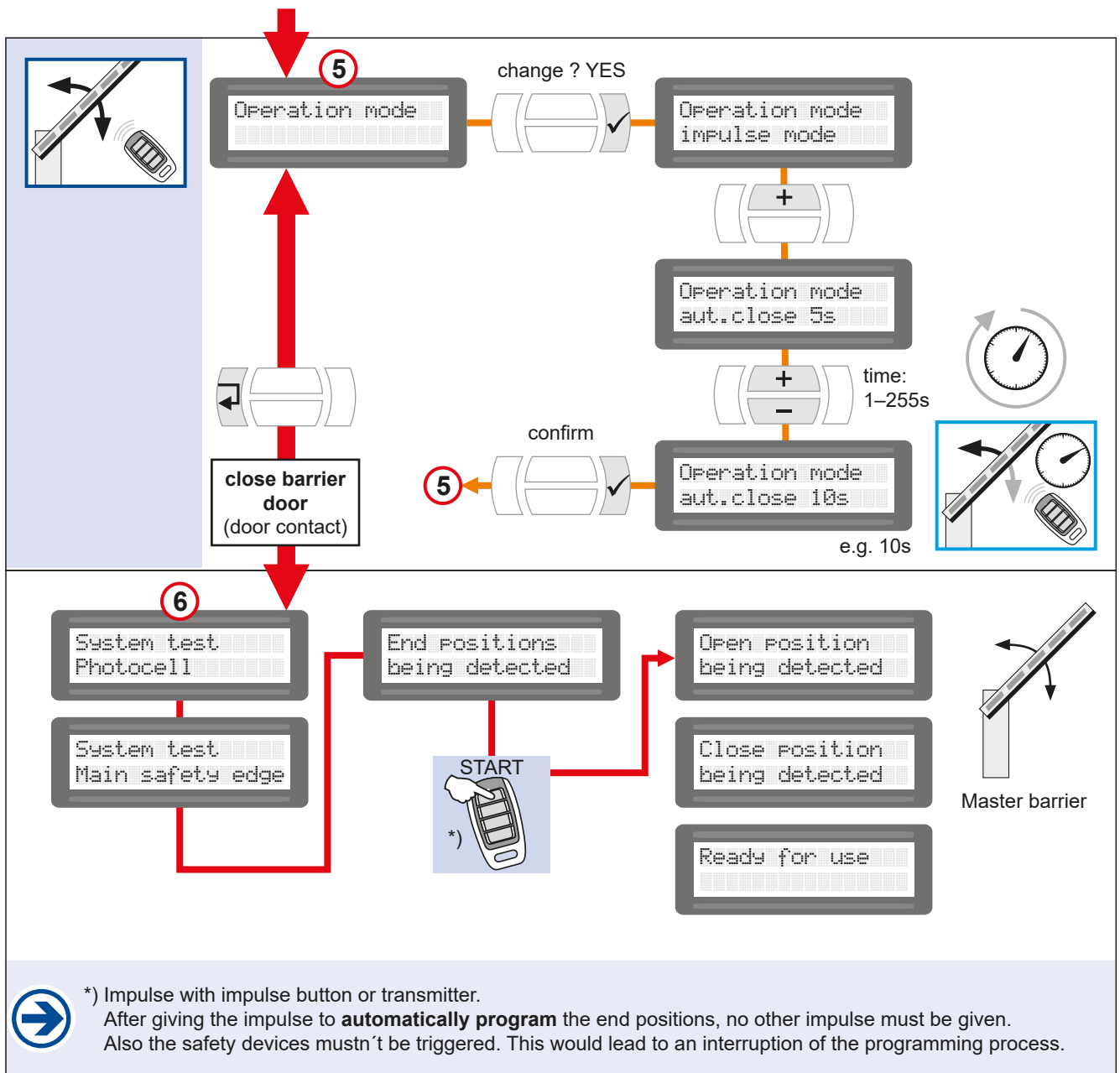
- Can be selected during initial operation (hence after reset to factory settings).
- Can be also chosen by pressing the **ESC button** (↵) for 5s, from any position in menu.



BASIC SETTING of Master-control

- 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 9).
- The next programming adjustments are made in the main settings menu (see page 8,9).





Error	possible reason	solution
Display: „Stop-button triggered“	stop-button not connected or not bridged	Stop-button (KI.) connect or bridge > use status display for help
Display: „Photocell triggered“	photocell interrupted	check correct connection hence re- move obstacle > use status display for help
Display: „Main closing edge triggered“	main safety edge interrupted or hot-wired	check correct connection hence re- move 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 re- move obstacle > use status display for help
Display: „Low Voltage“	undervoltage	check supply line
Display: „search Master“	communication problem	check connection/transmission
Display: „search Slave“	communication problem	check connection/transmission
Display: „Slave OFFLINE“	message of Master control, if Slave con- trol not in „ready for use“ mode	make Slave control „ready for use“
Display: „AR-System Slave“	Slave-barrier ran into an obstacle or is too hard to move	check adjustment of forces, remove obstacle hence check if Slave boom is easy to move
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

9. Dimensioned drawing of box IP54

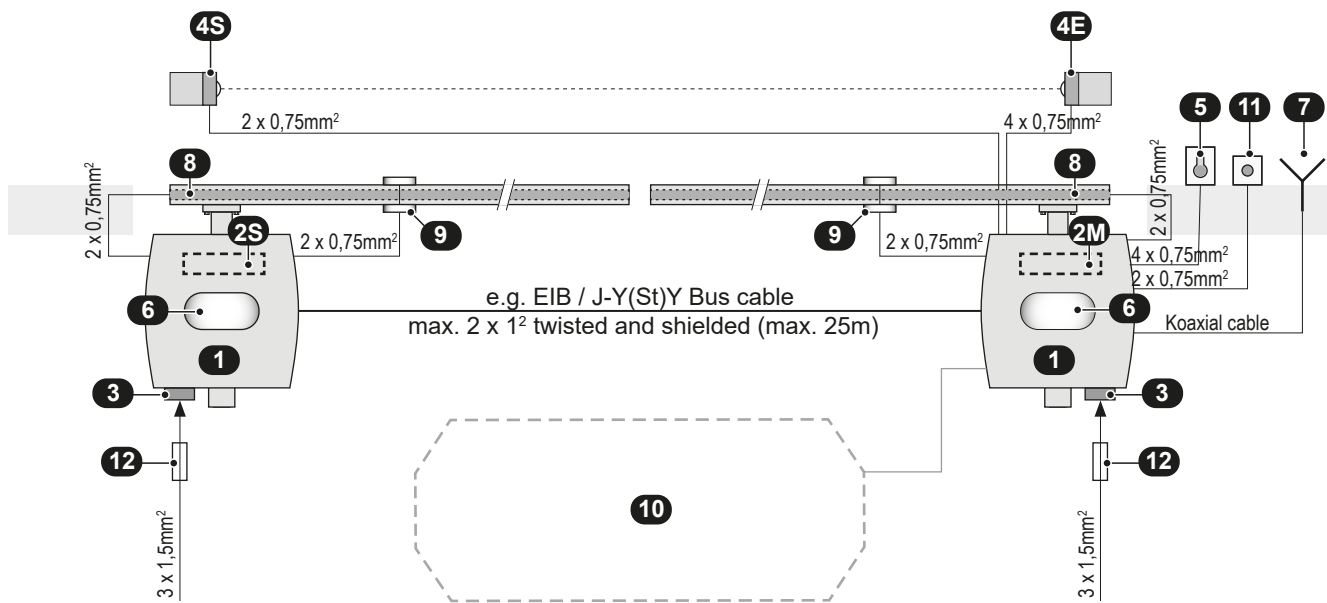
Barrier control ST 80, ST 80V / Master-Slave

- dimensions in mm



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

- | | |
|---|---|
| <ol style="list-style-type: none"> 1 Barriers (double barrier) with integrated Master and Slave control 2 electronic control (2M = Master, 2S = Slave) 3 Main switch
Note: an all-pole disconnecting main switch with a contact opening distance of min 3mm has to be provided. 4 photocell (S:transmitter, E: receiver) 5 button or key switch 6 Signal lamp (alternative: boom signal lamp) | <ol style="list-style-type: none"> 7 Antenna for optional radio receiver (pluggable into Master control) 8 safety contact edge 9 boom lamp 10 induction loop (optional I-loop necessary - pluggable into Master control) 11 Stop button 12 supply line with fuse max. 12A |
|---|---|



The number of wires in the control lines (0.75 mm²) is given without ground wire. For continuity reasons it is recommended to use flexible wires, and use no more strong control lines.



Note for cable laying

- The laying of electrical cables must be carried out in conduits which are suitable for use in the ground. The protective tubes must be routed so that they are led into the inside of the drive housing.
- control lines (buttons, light barriers, etc.) have to be separated from the 230 lines (cable, motors, signal light) and allowed to lay a max. length of 50m.
- For lengths > 50m decoupling measures have to be provided!
- only lines with double Isolation can be used which are suitable for laying in the ground.
If special rules require another type of cable, cable must be used in accordance with these regulations.



Warning note

Note: The above illustration is merely a symbolic representation of patterns in which possibly not all security components that are required are included for your particular application

In order to achieve an optimal protection of the system, is essential to ensure that all - in accordance with the applicable regulations for the specific application required - safety devices and accessories (such as photoelectric sensors, inductive loops, safety edges, signal lights or traffic lights, main switch, emergency stop buttons, etc.) are used.

All shear, crush and pinch points of the door system must be protected absolutely.

In this context we refer to the Machinery Directive and safety regulations and EU standards in their country or as amended.

The Tousek Ges.m.b.H. can not be held liable for the disregard of standards during the installation or operation of the facility

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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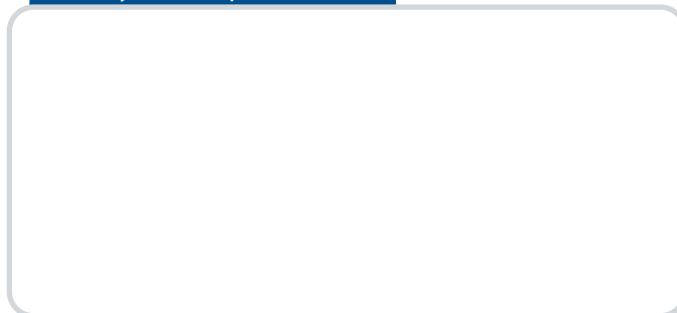
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15. 07. 2021



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