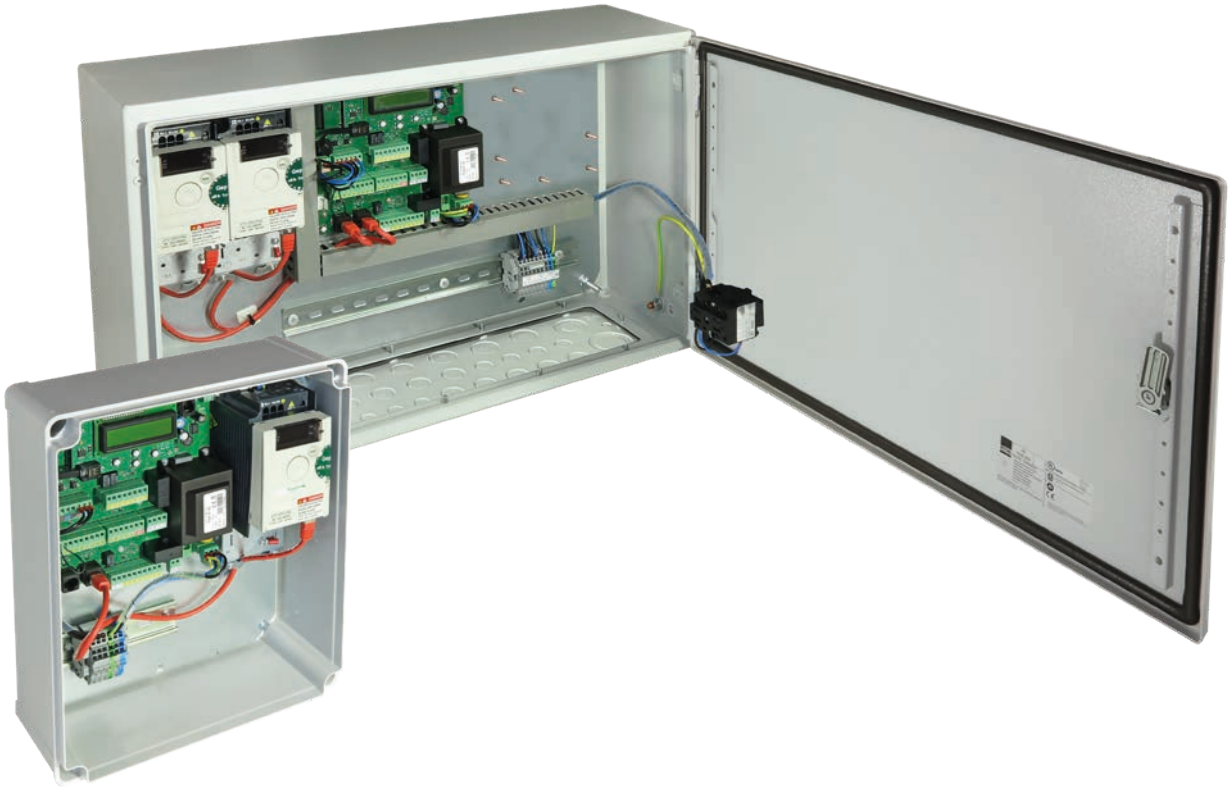
Connection and installation manual

ST 63 control unit for folding and swing gates

V 2.0



tousek GATE AUTOMATION

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General warning and safety notes

- These installation and operating instructions form an integral part of the product **“control unit”.** 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. It concerns the control only, not of the overall device “automatic gate”. 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 on the gate system, the power supply has to be turned off.**
- Before taking off the housing cover, always turn off the mains switch!
- 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. can not 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.**
- **After installation the proper function of the gate 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 gate 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 gate 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 gate facility has to be carried out according to the gate builder´s/ installer´s instructions.**
- **Check the proper sensitivity setting of the ARS safety reverse system once a month.**

EU - Manufacturer´s Declaration:

The company TOUSEK Ges.m.b.H., based in Zetschegasse 1, A-1230 Vienna/Austria, hereby declares that the control unit ST 63 complies with the folloleaf directives:

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

Oktober 2018

Product features

- Suitable for folding/swing gates with the electromechanic operators SWING X3 TPspeed and SWING X4 LHTP with integrated speed sensor (1 leaf or 2 leaves operation possible).
- opening and closing delay for one leaf separately adjustable
- automatic closing time adjustable
- runtime for the both operators detected automatically
- swing gate: separate adjustable soft stop time of both operators folding gate: adjustable ramp time (no loss of fore even with reduced speed)
- safety system ARS (autom. reversal system)
- operating mode: impulse, automatic, dead man or emergency mode
- integrated evaluation of safety sensing edges
- self-monitoring of photocells
- self-diagnosis display
- optional module: “electric lock /magnetic clamp” or “drop bolt”
- slots for optional modul and radio receiver
- easy programming via menu navigation

1K ST63 for 1 leaf,
in plastic housing 295 x 340 x 130mm

1 / 2 ST63 for 1 or 2 leaves,
in steel housing 600 x 380 x 210mm

Function

ST 63 control unit for folding and swing gates

The following operating modes can be selected:

- **impulse:** opening and closing via command given by an impulse button
- **automatic:** automatic closing if pause time is over
- **deadman mode:** The motor opens as long as the impulse button is pressed (hold)
- **Emergency mode:** deadman mode without safety devices (in case of malfunction)

Technical data

Folding/swing gate control unit ST63	
power supply	230V a.c., +/-10% 50Hz
motor output (via FU-frequency converter)	1-leaf: 1 x 370W, 3 x 230Va.c. 2-leaves: 2 x 370W, 3 x 230Va.c.
flashing light output	24Va.c., max. 5W
courtyard light output	230V a.c., max. 60W ohmic
E-Schlossausgang	optional 12Vd.c. or 24V d.c. (via module)
magnetic clamp output	optional 24Vd.c. (via module)
power supply output	24Va.c.
photocell output	24Va.c.
ambient temperature	-20°C to +70°C
protection class	IP66
speed sensor	■

Types		
ST 63K 1-leaf	Art.Nr.	12112240
	housing	plastic 295 x 340 x 130mm
	frequency converter	1 (for 1 leaf)
ST63 1-leaf	Art.Nr	12112210
	housing	steel 600 x 380 x 210mm
	frequency converter	1 (for 1 leaf)
ST63 2-leaves	Art.Nr.	12112220
	housing	steel 600 x 380 x 210mm
	frequency converter	2 (for 2 leaves)

Additional modules for the steel cabinet	optional dropbolt control unit (1- or 2-leaves) • optionale traffic light control unit STA 11
other optional components	pluggable radio receiver • Additional module for gate status evaluation, • E-lock/magnet module or drop bolt module

To ensure a perfect operation an all-current-sensitive residual current circuit breaker type B must be used!

Warning

- **Before connection works or 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 gate 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).**

- **To ensure a perfect operation, an all-current-sensitive residual current circuit breaker type B must be used!**

DANGER NOTES - Use of frequency converter

- **Read this manual carefully before installing and using the converter. Installation, ajdustment, repair and maintenance have to be made by professional staff.**

> The non-compliance of the following instructions leads to death or perilous injuries !!!

LOOK UP TO CONTINUOUS EARTHING

- An oxidated cooling element can form a confining layer to the mounting plate. Take implicitly the suggested earthing connections into account!

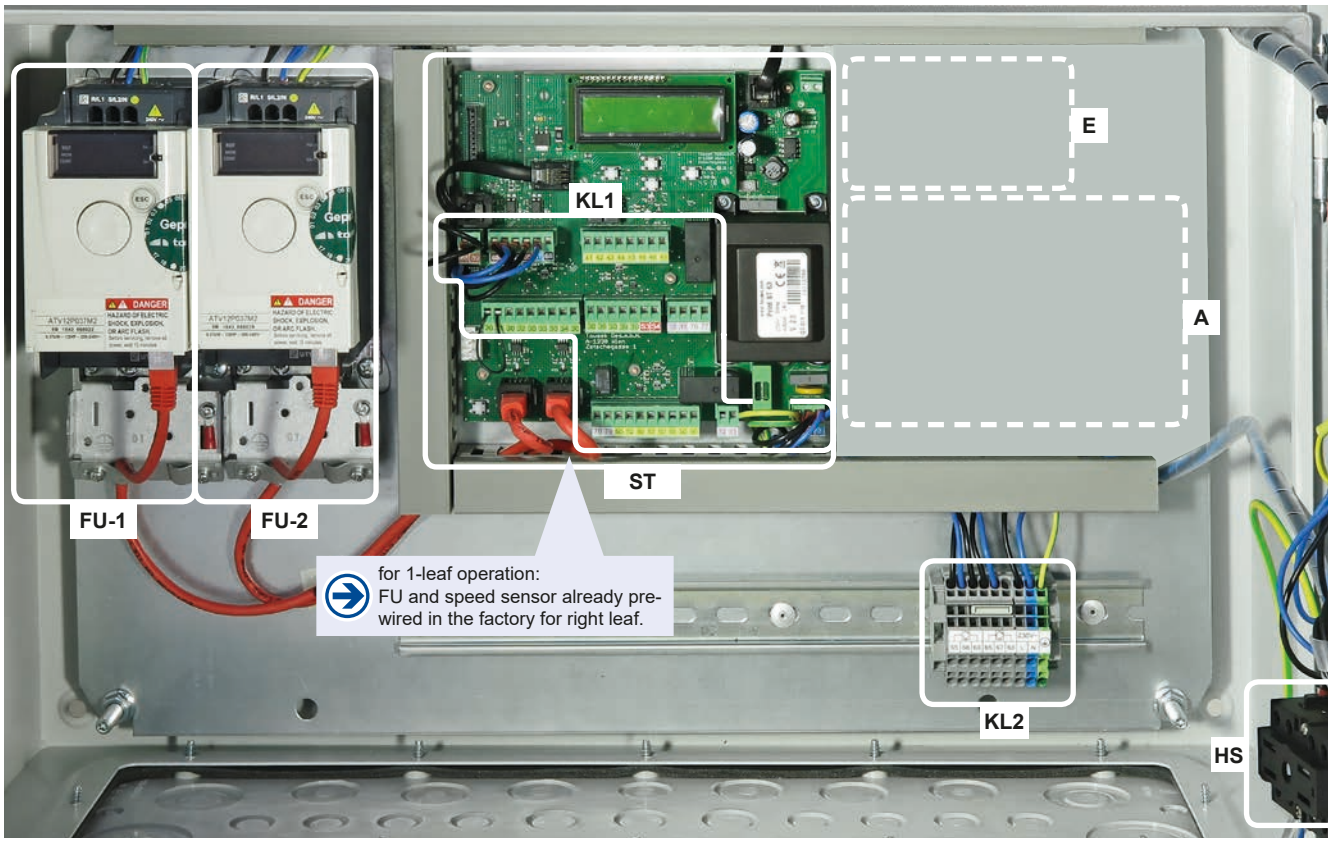
ACCIDENTAL USE OF DEVICE

- **Read this manual carefully before installing and using the converter**.
- Adjustment of parameter settings have to be done by trained professionals.

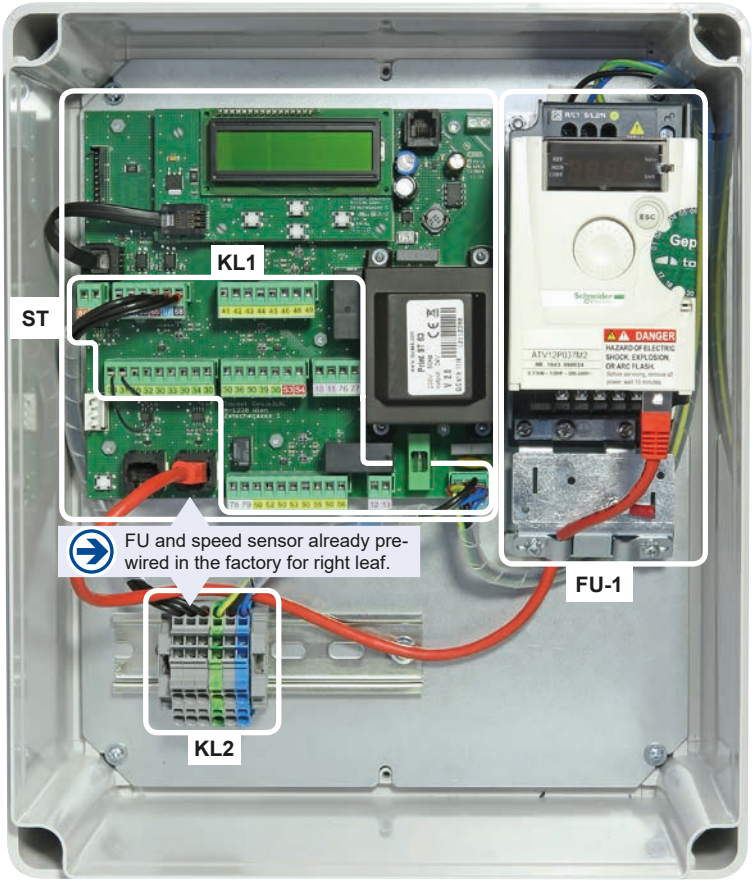
DANGER OF ELECTRIC SHOCK OR ELECTRIC ARC AND EXPLOSION

- **Read this manual carefully before installing and using the converter. Installation, ajdustment, repair and maintenance have to be made by professinal staff.**
- The user is responsible for the compliance of all relevant international and national electrotechnical rules/requirements regarding the protection earthing of all devices.
- Numerous components of the frequency converter, including the printed circuits boards, are being supplied through the mains voltage. DO NOT TOUCH ! Only use electrically isolated tools.
- **Do NOT touch non** shielded elements or bolt connections at terminals with mains voltage on
- **DO NOT short-out** the clamps PA/+ and PC/- or the DC-Bus-condensers.
- Before maintenance of converter:
  - Cut off any power supply (also external of control device).
  - Put a warning signboard with „DO NOT TURN ON“ onto the power switch or circuit breaker.
  - Lock the power switch or circuit breaker in open position.
  - WAIT 15 MINUTES so that the PC-Bus-condensers can discharge.
  - Measure the voltage supply of DC-Busses between clamps PA/+ and PCI-, to make sure that the voltage is under 42 Vd.c. The LED´s of converter can not show whether there is no DC-bus supply.
  - Should the DC-Bus-condensers not fully discharge please contact manufacturer. Do not try to repair yourself.
- Mount all covers and before switching on the supply or before starting and stopping the converter.

1/2 control unit in steel housing for 1 or 2 leaf operation



1K Control unit in plastic housing für 1 leaf operation



components of the control box

FU-1 frequency converter 1
FU-2 frequency converter 2 *(only in steel housing)*

ST control board with display and four programming buttons +, -, ENTER and ESC
HS main switch *(only in steel housing)*
KL1 control board terminals **(ST)**

on DIN rail:
KL2 terminal block for 230Va.c. power supply, speed sensor and grounding connection

Expandability with the optional components listed below is only possible in the steel cabinet

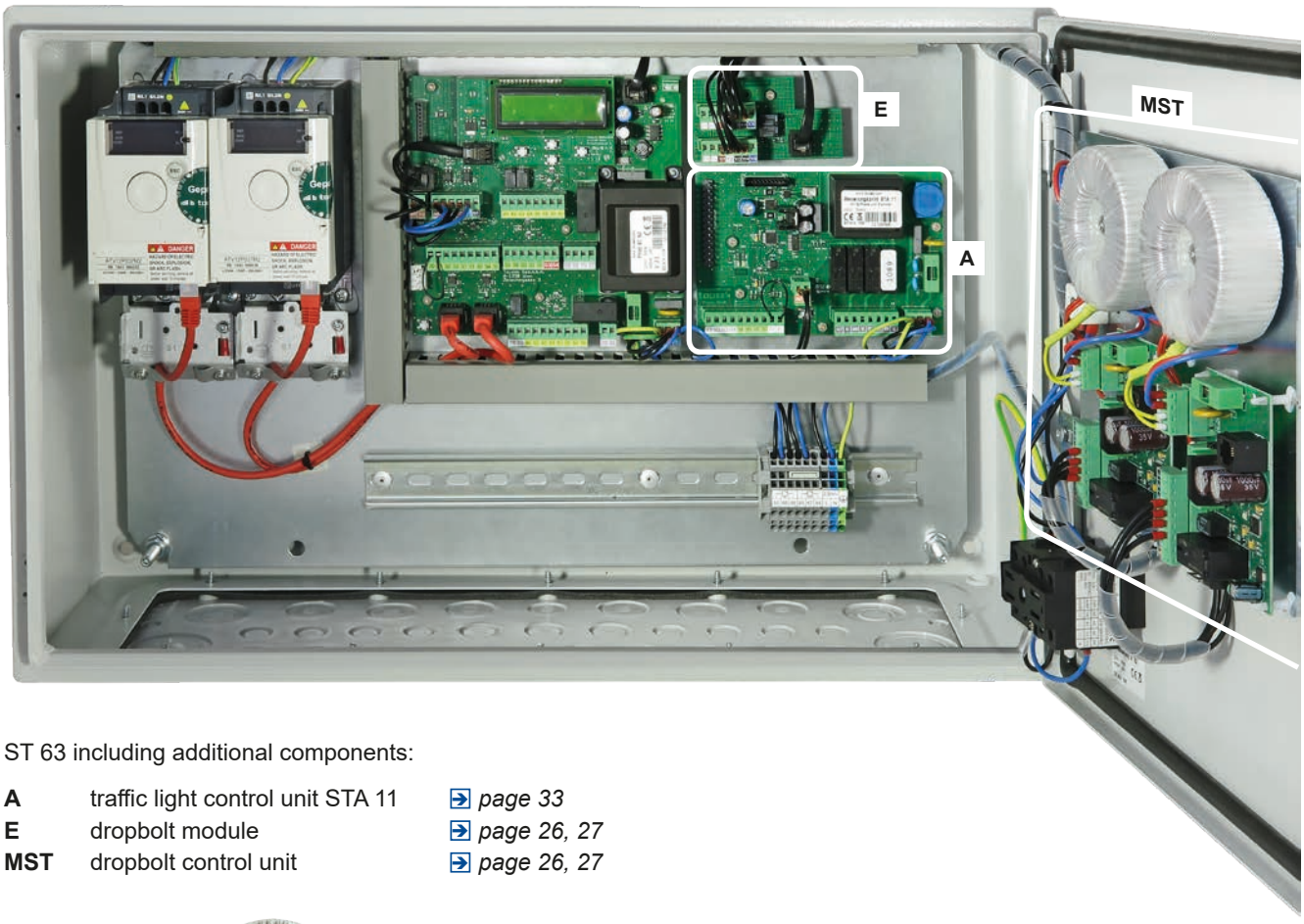
Optionale components in steel housing:
page 7

A traffic light control board STA 11
E **drop bolt modul**
MST drop bolt control unit (on housing door) with 1 or 2 motor control boards to control 1 or 2 drop bolts SAFELOCK

IMPORTANT

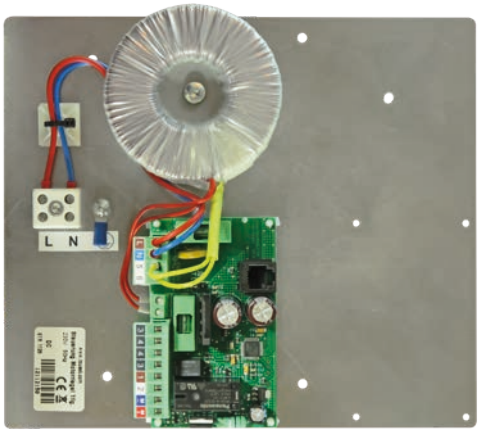
The factory setting of the frequency converter (FU) must not be changed!
In case of changes the warranty becomes automatically void!

Optional components for steel housing:
traffic light control unit (A), dropbolt module (E), dropbolt control unit (MST)

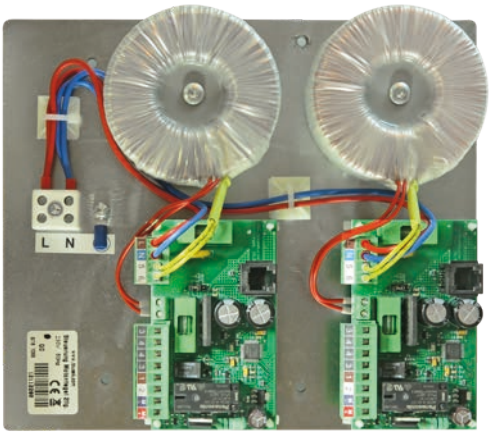


ST 63 including additional components:

A	traffic light control unit STA 11	*page 33*
E	dropbolt module	*page 26, 27*
MST	dropbolt control unit	*page 26, 27*



dropbolt control unit for one dropbolt



dropbolt control unit for two dropbolts

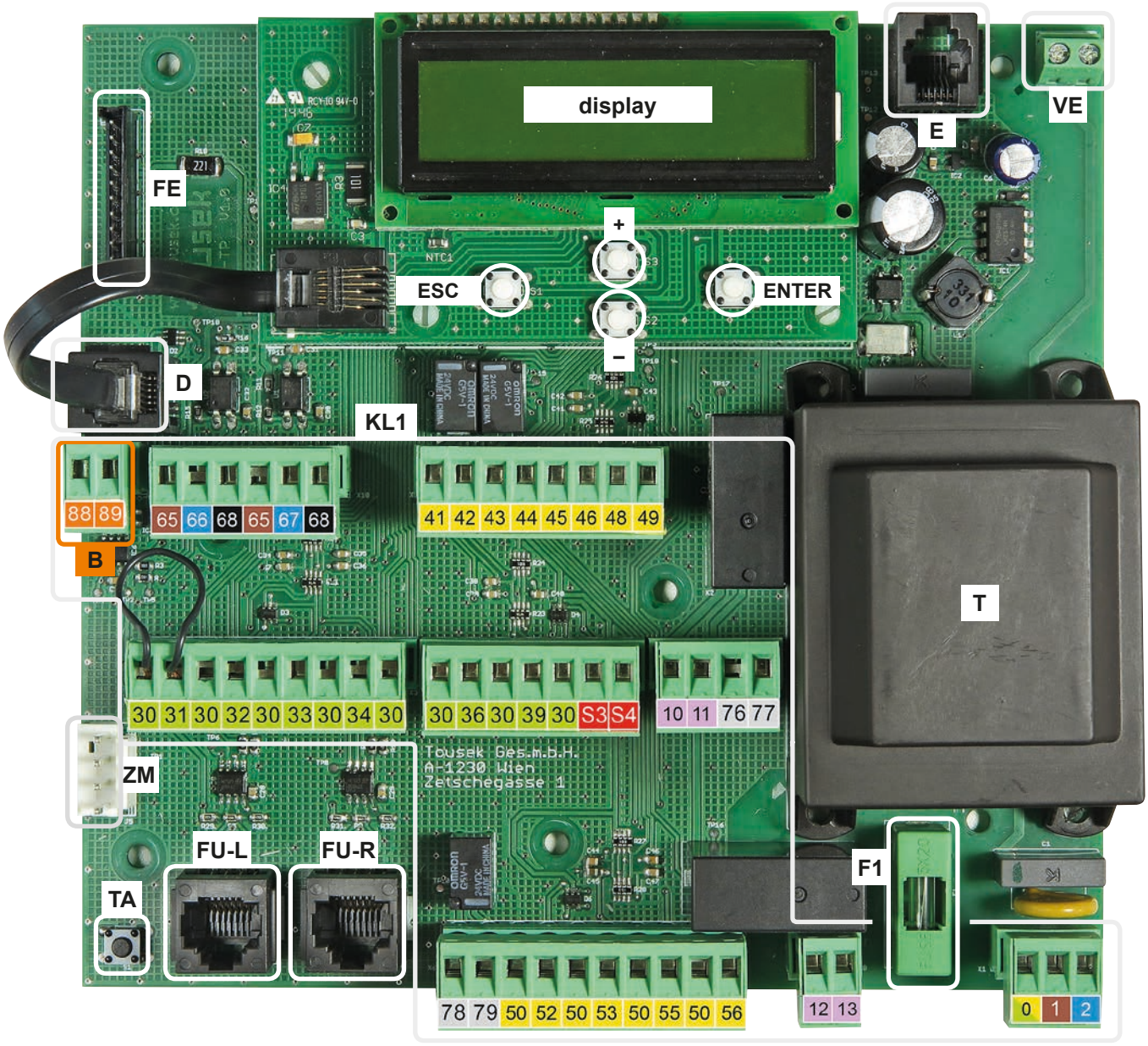
connections

- The connections between the control board and other components of the control box are made in the factory.
- The connection works of the operator must be carried out according to the installation manua (*page 10)*.
- All other neccesary connection works must be carried out on the connection terminals **(KL1)** of the control unit. Except the connection of speed sensor wires and power supply wires which must be connected to the terminal block **(KL2)** on the DIN rail *(see page 9).*
- *connection of the dropbolt or the electric lock page 26–27*

Overview

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

(KL1) connection terminals
(B) term. 88/89: for traffic light control connection (optional)
(D) Display connection or TC-/TSI-connection (optional „tousek-connect“ / „tousek-service-interface“)
(TA) additional pulse button (corresponding to: term. 30/32)

Important

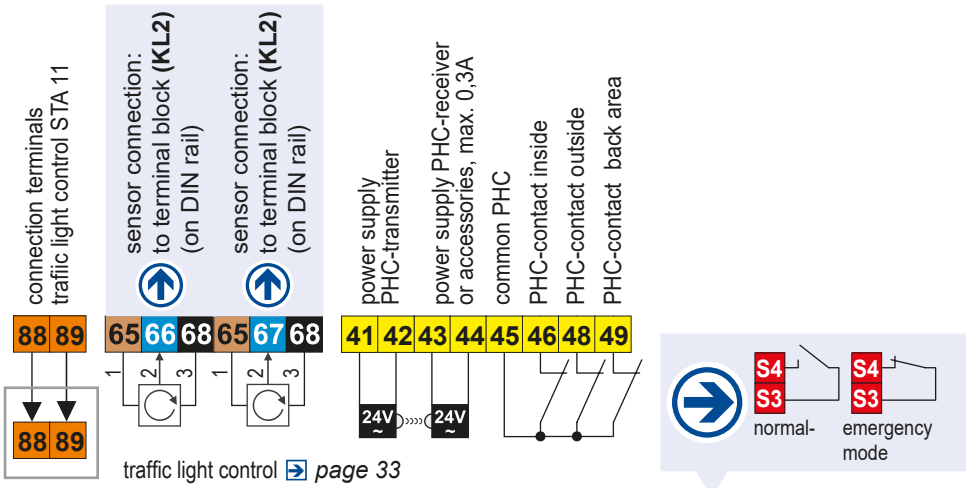
The optional „tousek-connect“ or the „tousek-service interface“ must be connected with socket **(D)!**
Not with (E) !

(FU-L) MODBUS (FU-connection for LEFT leaf)
(FU-R) MODBUS (FU-connection for RIGHT leaf)
(E) System plug for optional module drop bolt or electric lock / magnet *(page 26–27)*
(VE) 230V a.c. for electric lock/magnet module
(FE) slot for optional radio receiver *(page 29)*
(ZM) slot for optional module „status display“ *(page 25)*
(T) transformer
(F1) fuse T 1A

Danger

- **Before connection works or taking off the housing cover the power supply has to be turned off !**
- **Follow safety instructions!** *(page 5)*

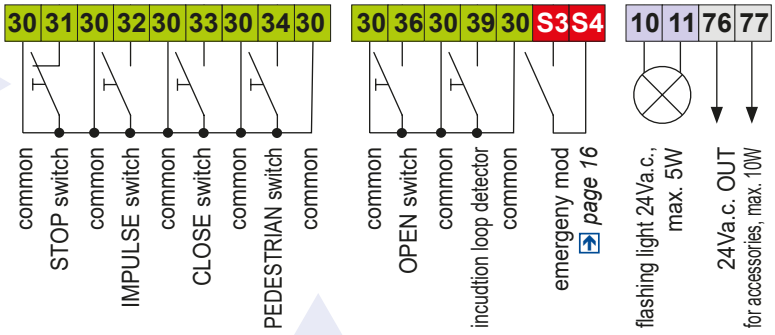
terminal blocks (KL1) of the control board



STOP-button

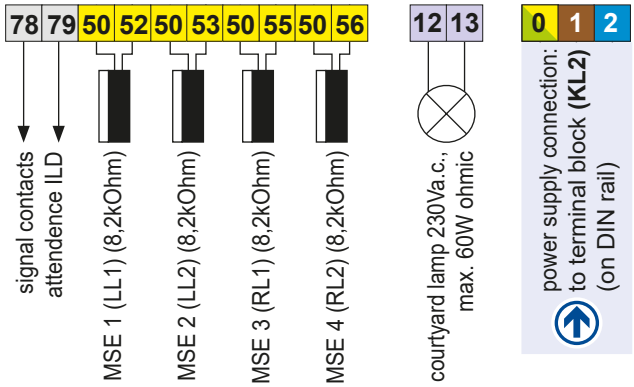
If no STOP button is connected, bridge the terminals 30/31!
(jumper as factory settings)

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!



The impulse inputs (impulse, I loop, pedestrian, CLOSE, OPEN) are **not active** in traffic light mode!

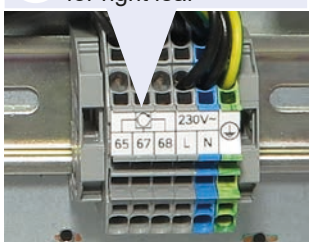
signal contact „attendence ILD“ (78/79):
potential free contact, max. switching voltage 60Vd.c., 30W ohmic load

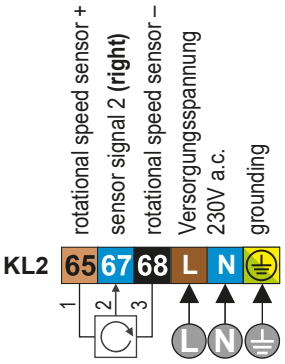


terminal block (KL2) on DIN rail

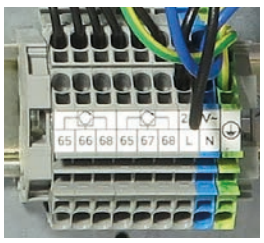
1K ST63K for 1 leaf operation:

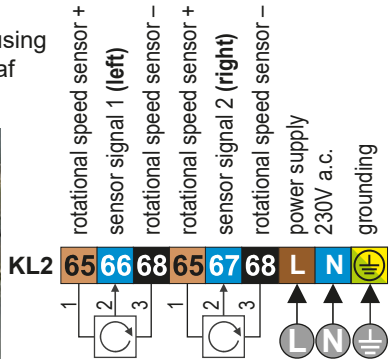
prewired in the factory for right leaf





1/2 ST63 in steel housing for one/double leaf operation:





Important: motor and sensor wires

- **Attention: Before carrying out any connection works, the power supply of the gate facility has to be turned off!**
- It is possible to connect 2 SWING X-TP motors to the control unit ST63. The operator SWING X-TP has a connection cable for the power supply and for the integrated torque sensor. The sensor signal is sent to the control unit and defines the performance/response when hitting an obstacle or when reaching a gate end position.
- **The motor and sensor wires must be supplied to the control unit in 2 separate tubes or a cable channel with partition.**
- 1 1K The ST63 control unit for 1 leaf operation is prewired in the factory for right leaf. For left leaf operation the MODBUS must be connected to the FU-L slot. The sensor wires must be connected for the left operator according to the chart below.

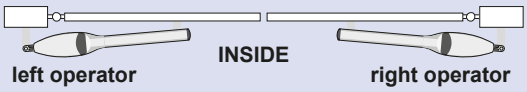
sensor wires connection to the terminal block (KL2)

- The sensor wire must not exceed the **max. length of 50m !** - For lengths of more than 20m shielded control lines must always be used. **The shield must be clamped together with the cable number 3 (terminal 68).**
- If sensor wires with more than 3 cables are used the remaining cables must be clamped together with the **cable number 3 (terminal 68) - do not clamp to a ground wire (earth lead)!**
- When connecting the sensors to the control unit please note the labeling/marking of the cables (number 1–3). **Bad connection leads to destruction !**

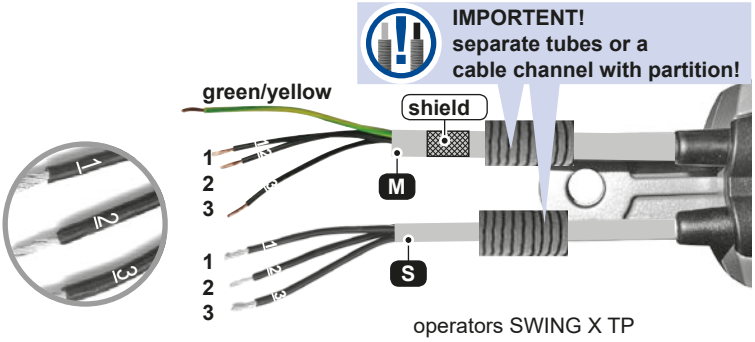
motor wires

- The motor wire (3 wires marked with 1, 2, 3 and the ground wire) must be connected to the frequency converter. If 2 operators going to be connected each operator must be connected to one frequency converter (FU-1, FU-2). The frequency converter (FU) of the **left operator** must be connected to the **FU-L** MODBUS slot of the control board. The frequency converter (FU) of the **right operator** must be connected to the **FU-R** MODBUS slot of the control board.
- **IMPORTANT:** After switching on the power supply and giving an impulse (command) the gate leaves must **open!** If it is not the case, 2 of the 3 phases (1, 2, 3) connected to the frequency converter must be interchanged.

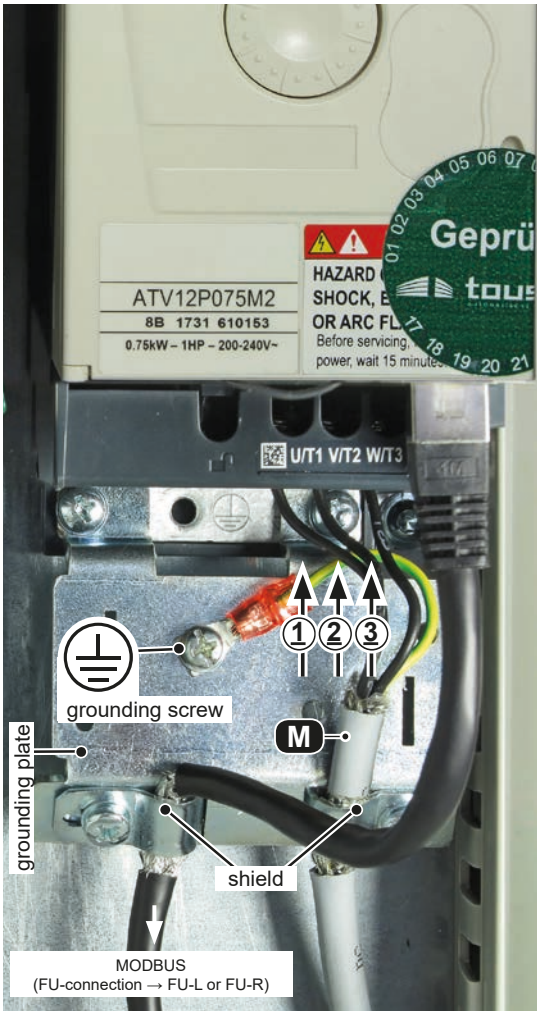
CONNECTION OF OPERATORS to control unit



Connection wire with the color / number		left operator	right operator
		MODBUS → FU-L	MODBUS → FU-R
(M) motor wire	1 →	frequency converter U/T1	frequency converter U/T1
	2 →	V/T2	V/T2
	3 →	W/T3	W/T3
	green/yellow →	grounding screw	grounding screw
	shield →	grounding plate	grounding plate
(S) sensor wire	1 →	terminal KL2: 65	terminal KL2: 65
	2 →	terminal KL2: 66	terminal KL2: 67
	3 →	terminal KL2: 68	terminal KL2: 68
	if shield used →		



operators SWING X TP

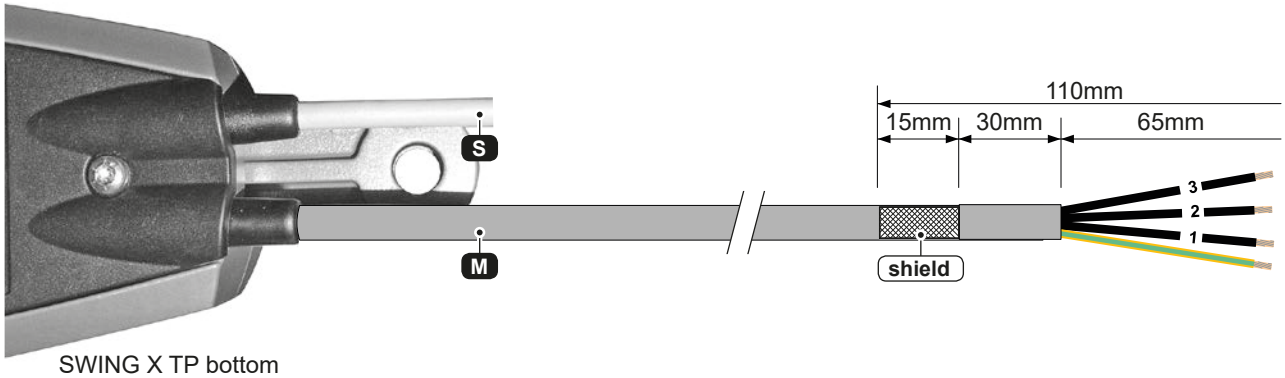


SWING X-TP: cable extension with connection box

For EMC conform cable extension is necessary to use a connection box with the suitable screws.

motor wire:

(M) motor wire
(S) sensor wire



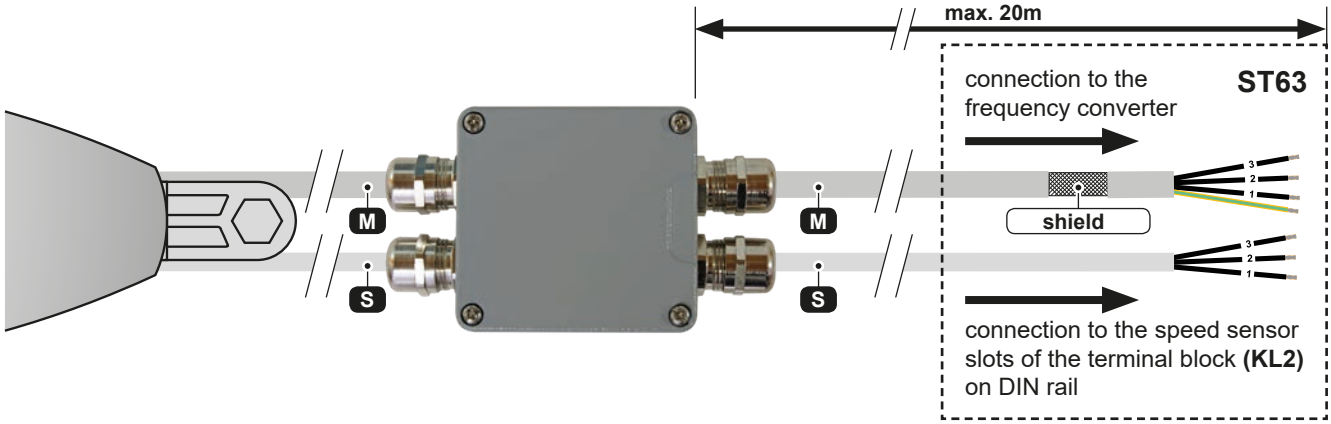
SWING X TP bottom

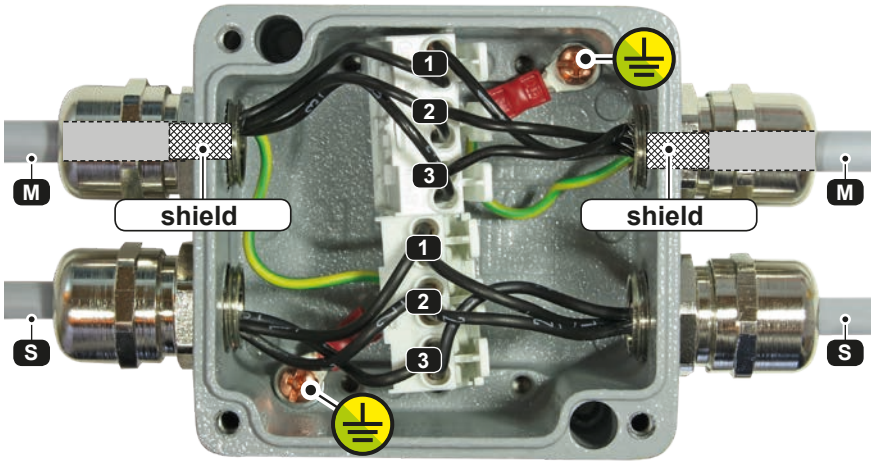
cable extension:

		Article no.
connection box SWING X TP	to extend the motor wire and the sensor wire	14120420

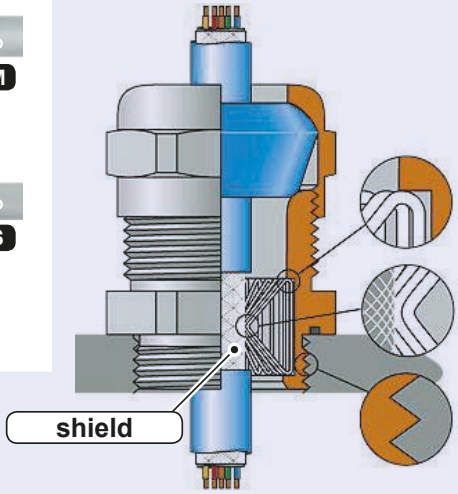
		Article no.
motor wire for SWING X TP *)	**10m extension**	14120430
	20m extension	14120440

*) or equivalent cable of the type YSLC/PUR-JZ 4G0,75mm²





cable bolting M16



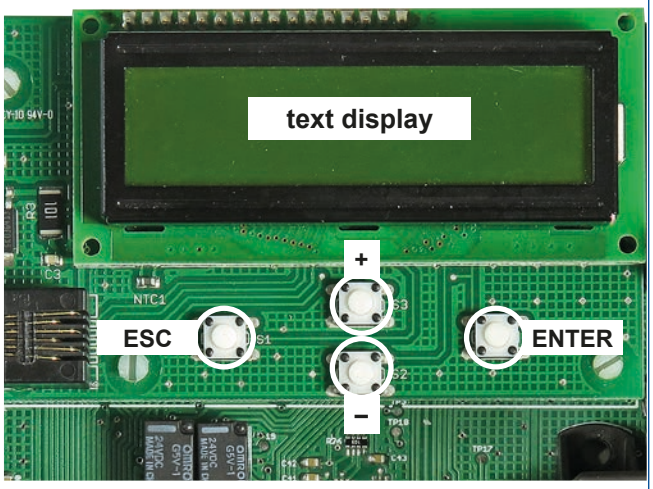
- Metal tongues in the holes serve as contact to the shield. Remove the cable sheath at these points!
- **Take care of the right connection between the metal tongues in the holes and the shield of the motor wire (M).**

Programming buttons

Adjustments - overview

- The adjustment (programming) of the operating parameters is carried out with four programming buttons and the display.
- Before starting the programming, please choose the language. Use the buttons **+** or **-** to choose menu language and confirm with **ENTER.**
- **Note: Language selection can also be chosen by pressing the ESC button for 5s, from any position in menu**.
- Before the programming can be started, you have to select the door type (swing gate or folding gate)

- The text display informs about behaviour, chosen menus and adjustment of different settings.
- The programming of the control is carried out with the help of four buttons **(+, -, ENTER and ESC).**
- 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 **ENTER**-button a confirmation for entering the shown menu point, resp. for accepting the shown value of a parameter is given.
- When pressing the **ESC**-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 (wihtout saving changed parameters)



Programming menu

Adjustments - overview

- The program menu is divided into „POSITIONING“ „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 for the use of the operator/gate can be set quickly.
- For advanced settings/programming please choose the menu point „menu control”.

MENU CONTROL

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

The different menu points are indicated as follows:

○ = selectable settings ⊙ = factory settings ➲ = status display

G shows the menu points which are in the “ BASIC SETTINGS”

main layer		sub layer	settings/adjustments	
buttons/switches → page 15		**impulse button**	⊙ OPEN/STOP/CLOSE ○ OPEN/CLOSE/OPEN ○ OPEN ○ DEADMAN	*) if impulse button is set on DEADMAN, then all other buttons also in DEADMAN mode-.
		pedestr. opening	⊙ OPEN/STOP/CLOSE ○ OPEN/CLOSE/OPEN ○ OPEN ○ DEADMAN *)	
		ILD channel *(ILD = Induction loop detector)*	⊙ impulse OPEN ○ security ○ attendence	(also in DEADMAN mode) ○ security ⊙ attendence
photocells → page 17		G **inner photocell**	○ not active ⊙ during closing reverse ○ stop, opens after release ○ during opening stop-then open	
		G **outer photocell**	○ not active ⊙ during closing reverse ○ stop, opens after release	
		G **back area photoc.**	⊙ active ○ not active	
		ILD/PHC pause time *ILD/PHC = induction loop detektor / photocell*	⊙ no influence of photocell/ ILD ○ cancel pause time (close immediately) ○ re-start pause time ○ immediate closing after opening	
		PHC-self test *(PHC = photocell)*	⊙ active ○ not active	
safety edge → page 20		G **safety edge LL1** *LL = left leaf*	○ not active ○ opening active ○ closing active ⊙ opening / closing	
		G **safety edge LL2**	○ not active ○ opening active ○ closing active ⊙ opening / closing	
		G **safety edge RL1** *RF = right leaf*	○ not active ○ opening active ○ closing active ⊙ opening / closing	
		G **safety edge RL2**	○ not active ○ opening active ○ closing active ⊙ opening / closing	
		SE- status display	➲ Display: status safety edges (= SE)	
left leaf → page 21		**delay left leaf**	⊙ opening delay ○ closing delay	
		delay time left leaf	○ OFF, 1...25s	⊙ = 2s
		force	○ 60...100%	⊙ = 70%
		speed	○ 60...100% (SWING X3 TPspeed) 75...100% (SWING X4 LHTP)	⊙ = 100%
	only with swing gates	**soft speed**	○ 25...50%	⊙ = 50%
		soft stop time OPEN	OFF, 0,1...9,0s	⊙ = 5s
		soft stop time CLOSE	OFF, 0,1...9,0s	⊙ = 5s
right leaf → page 21		**delay right leaf**	○ opening delay ⊙ closing delay	
		delay time right leaf	○ OFF, 1...25s	⊙ = 2s
		force	○ 60...100%	⊙ = 70%
		speed	○ 60...100% (SWING X3 TPspeed) 75...100% (SWING X4 LHTP)	⊙ = 100%
	only with swing gates	**soft speed**	○ 25...50%	⊙ = 50%
		soft stop time OPEN	OFF, 0,1...9,0s	⊙ = 5s
		soft stop time CLOSE	OFF, 0,1...9,0s	⊙ = 5s
operating mode → page 22		**impulse logic**	⊙ stop, start of pause time ○ impulse suppressioning when opening ○ pause time extension	
		G **operating mode**	⊙ impulse mode ○ 1...255s automatic close [increment 1]	
		pedestr. opening	○ 25...100%	⊙ = 100%
		automatic mode	⊙ complete / pedestrian opening ○ only complete opening ○ only pedestrian opening	
		pause time logic	⊙ no influence ○ permanent ON	
	only with folding gates	**ramp time open**	1,0...6,0s	⊙ = 3s
		ramp time close	1,0...6,0s	⊙ = 3s

Note: Some changes in the functionality or operating logic are not accepted until the gate is closed and the word „Ready" appears on the display.

menu item showed:

with traffic mode, without traffic mode, with swing gates, with folding gates

Note: Some changes in the functionality or operating logic are not accepted until the gate is closed and the word „Ready“ appears on the display.

main layer	sub layer	settings/adjustments		
light/ lamps page 23	**prewarning OPEN**	○ OFF, 1...30s		⊙ = OFF
	prewarning CLOSE	○ OFF, 1...30s		⊙ = OFF
	court yard light [1]	○ OFF, 5...950 ○ 10s afterglow		⊙ = OFF
	green phase	○ 5...120s	[increment 1]	⊙ = 20s
	clearance time	○ 1...60s	[increment 1]	⊙ = 5s
	traffic light gate CLOSED	⊙ red light OFF ○ permanent RED		
	traffic light logic	⊙ green on both sides ○ green on one side		
peripherals page 24	**traffic light**	⊙ not active ○ active		
	locking	⊙ electric lock/magnetic clamp ○ drop bolt		
	reverse stroke Reverse stroke only with activated locking!	with E-lock/magnetic clamp: ⊙ not active ○ 0,5...8s		with drop bolt: ⊙ not active ○ active
	delay magnetic clamp	⊙ OFF ○ 0,1...1s		/
	electric lock	⊙ not active ○ 1...10s		/
	drop bolt	/		⊙ OPEN and CLOSE ○ OPEN only ○ CLOSE only
	additional module	⊙ gate status display 1 ○ gate status display 2		
diagnosis page 28	**status display**	➲ state display of all inputs		
	delete positions	⊙ NO ○ YES		
	factory settings	⊙ NO ○ YES		
	software version	➲ show software version		
	serial number	➲ show serial number		
	protocol	➲ show protocol notes		

menu item showed: with traffic mode, without traffic mode

tousek DIGITAL

ESC ENTER

swing / folding gate control ST63

Note: deactivate locking (Electric lock or drop bolt)

To deactivate locking, the menu item „locking“ has to be set to „Electric lock/magnetic clamp“ and the menu item „Electric lock“ to „not active“ afterwards.

Danger

- **Before connection works or taking off the housing cover the power supply has to be turned off !**
- **Follow safety instructions!** *(page 5)*

The single menu points are marked as shown below:

○ = possible adjustment (or value assignment) ⊙ = factory setting ➲ = status display

G marks the menu points which are contained in the BASIC SETTINGS

- A general status display of all inputs is available in menu DIAGNOSIS / STATUS DISPLAY.

buttons/switches

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

In traffic light mode the impulse-, pedestrian-, close- and impulse-OPEN buttons are without any function.

Impulse button (terminals 30/32)

⊙ **OPEN/STOP/CLOSE successive impulses** (factory setting): an impulse of the impulse switch makes the motor start opening/closing. If the impulse switch is actuated again during this opening-/closing movement, the motor stops. With the next command of the impulse switch the motor moves in the opposite direction of the last gate movement

○ **OPEN/CLOSE/OPEN successive impulses:** an impulse of the impulse switch makes the motor start opening/closing. If the impulse switch is actuated again during this opening/closing movement, the travel direction is reversed.

- **In this operation mode it is not possible to stop the motor with the impulse switch – it always moves 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 opening commands are accepted by the impulse switch – closing the gate with the impulse switch is not possible.

○ **DEAD MAN:** The motor opens as long as the impulse switch is pressed (hold) – closing the gate with the impulse switch is not possible. As soon as the switch is released, the motor stops. **If hold to run operating mode is selected, the radio receiver slot (FE) is set out of order for reasons of safety.**

- If the impulse switch is set to DEAD MAN operation, then also all other buttons are in DEAD MAN mode. With the impulse-, open- or the pedestrian button the gate 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 30)***, if desired.**

Pedestrian button (terminals 30/34)

⊙ **OPEN/STOP/CLOSE successive impulses:**
An impulse of the pedestrian button makes the according gate leaf open/close. If the pedestrian button is actuated again during this movement, the motor stops. With the next impulse the motor moves in opposite direction of the last gate movement.

○ **OPEN/CLOSE/OPEN successive impulses:**
A command of the pedestrian button makes the according gate wing open/close. If the button is actuated again during this movement, the travel direction is reversed.

- **In this operation mode it is not possible to stop the motor with the pedestrian button – it always moves 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 opening commands are accepted by the pedestrian button – closing the gate with the pedestrian button is not possible.

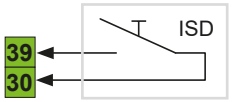
○ **DEADMAN:** The motor opens as long as the pedestrian button is pressed (hold) – closing the gate with the pedestrian button is not possible. As soon as the button is released, the motor stops. **If hold to run operating mode is selected, the radio receiver slot (FE) is set out of order for reasons of safety.**

The DEADMAN function can not be chosen actively but is set automatically as soon as the impulse button is set to DEADMAN mode.

ILD channel (N.O. contact, terminals 30/39)

no traffic light and **no** deadman mode	traffic light or deadman mode	
⊙ **impulse OPEN**	/	When driving on the induction loop, the gate opens.
○ **security**	○ **security**	When driving on the induction loop, the setting selected under „photocell“ is effective (➔ *page 17)*.
○ **attendence**	⊙ **attendence**	Via a potential free closing contact (terminals 78/79) the approach to the induction loop can be evaluated.

An optionally available induction loop detector forwards the signals of an induction loop via a potential-free switching contact to the terminals 30/39.
Further information ➔ *corresponding ISD manual.*



STOPP-switch (N.C. contact, terminals 30/31)

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

As stop switch a break contact has to be used.
If no stop switch is connected, terminals 30/31 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!

CLOSE-button (N.O. contact, terminals 30/33)

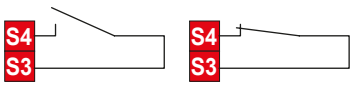
- A command with the CLOSE-switch engages closing of gate. In deadman mode the gate closes as long as the CLOSE-switch is pressed/switched. As soon as switch is released the gate movement stops.

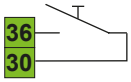
OPEN-button (N.O. contact, terminals 30/36)

- A command with the OPEN-switch engages opening of gate. In deadman mode the gate opens as long as the CLOSE-switch is pressed/switched. As soon as switch is released the gate movement stops.

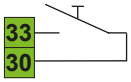
EMERGENCY MODE switch (terminals S3/S4)

- to activate the emergency mode a button with maintained contact must be connected to the terminals S3/S4.
- safety device malfunction: in emergency mode the gate can be opened and closed with reduced speed. The gate travels like in dead-man mode. With OPEN-switch the gate can be opened and withc CLOSE-switch it can be closed.





with OPEN switch: open the gate



with CLOSE switch: close the gate

In emergency mode are the photocells and the safety edges deactivated, but the STOP-switch is still active.
Right after deleting the end positions (menu diagnosis→delete positions→yes) emergency mode is NOT possible.

Important: Photocells notes

Photocell connection:

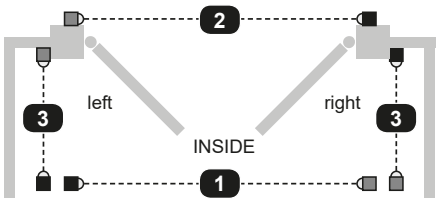
- the control unit has a power supply connection for a **24V a.c.** photocell (PHC)

  power supply: **PHC-transmitter: terminals 41/42**
  PHC-receiver: terminals 43/44

  Note: in „gate closed" position the terminals 41/42 and 43/44 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-contacts: **inside = terminals 45/46, outside = terminals 45/48, back area = terminals 45/49**

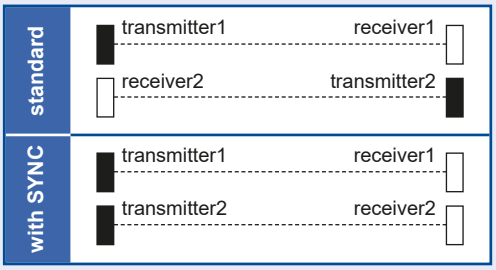


(1) inner photocell
(2) outer photocell
(3) back area photocell

Mounting note (SYNC function):

IMPORTANT: When using two pairs of photocells please do not install both photocell transmitters/receivers on the same side (to eleminate 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 !**

you will find detailed information in the corresponding photocell manual.

All the photocells are activated by default (inside/outside/back area) in the menu. But it can be deactivated while basic settings are carried out.

G inner photocell (PHC-contact: terminals 45/46)

- ○ **not active:** to be selected, if the inner photocell should not be triggered.
- ⊙ **during closing reverse:** if the safety device is triggered during closing the gate reverses (opens). If automatic mode is selected the gate closes after the pause time is over. If impluse mode is selected a new CLOSE impulse must be given.
- ○ **stop, opens after release:** if the safety device is triggered during opening or closing the motor stops until the device is released. Then the gate opens. If automatic mode is selected the gate closes after the pause time is over. If impluse mode is selected a new CLOSE impulse must be given.
- ○ **during opening stop-then open:** if the safety device is triggered during opening the motor stops until the device is released. Then the gate opens. (back area monitoring). If automatic mode is selected the gate closes after the pause time is over. If impluse mode is selected a new CLOSE impulse must be given.

G outer photocell (PHC-contact: terminals 45/48)

- ○ **not active:** to be selected, if the outer photocell should not be triggered.
- ⊙ **during closing reverse:** if the safety device is triggered during closing the gate reverses (opens). If automatic mode is selected the gate closes after the pause time is over. If impluse mode is selected a new CLOSE impulse must be given.
- ○ **stop, opens after release:** if the safety device is triggered during opening or closing the motor stops until the device is released. Then the gate opens. If automatic mode is selected the gate closes after the pause time is over. If impluse mode is selected a new CLOSE impulse must be given.

G back area photocell (contact: terminals 45/49)

- ⊙ **active:** to be selected, if the back area of the gate has to be protected by photocells.
- ○ **not active:** no monitoring by PHC-back area.

ILD/PHC pause time

- ⊙ **no influence of photocell/ ISD:** the safety device has no influence on pause time in automatic mode.
- ○ **cancel pause time:** if the safety device is triggered **during the pause time** the pause time will be reduced, it means the door closes after release of the safety device.
- ○ **re-start pause time:** if the safety device is triggered **during the pause time (automatic mode)**, the pause time will be restarted (as set). After the elapsed pause time the door closes.
- ○ **immediate closing after opening:** if the safety device is triggered **during opening or in open position**, the door immediate closes after the open position has been reached and the safety device has been released.

In traffic light mode only the adjustments „no inluence“ and „immediate closing after opening“ are available.

PHC- self test

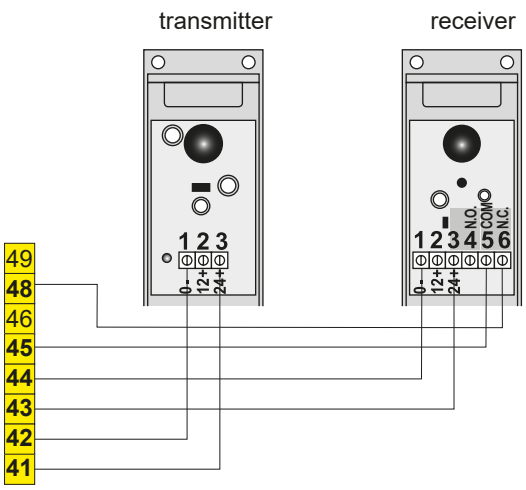
- ⊙ **active:** photocell self-test is executed with an opening impulse (switch, button) in gate position „closed“.
- ○ **not active:** photocell self-test is not executed.

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 !**

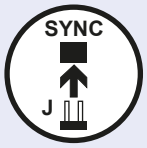
Photocells - connection examples

Outer photocell Tousek LS 41/180 as safety device



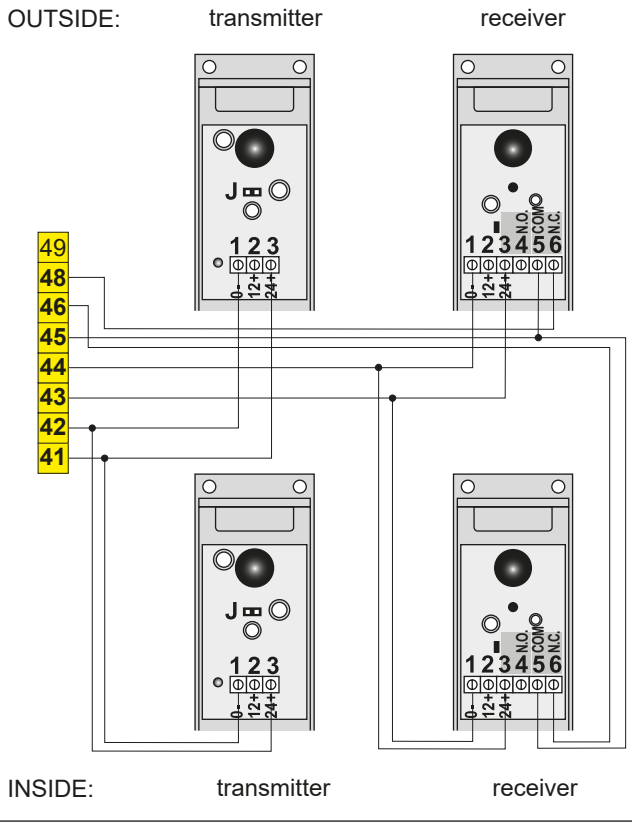
Important

- **To activate** the SYNC-function, the plug-in bridges **(J)** in both photocell transmitters **have to be removed.** *(see manual LS 41/180).*

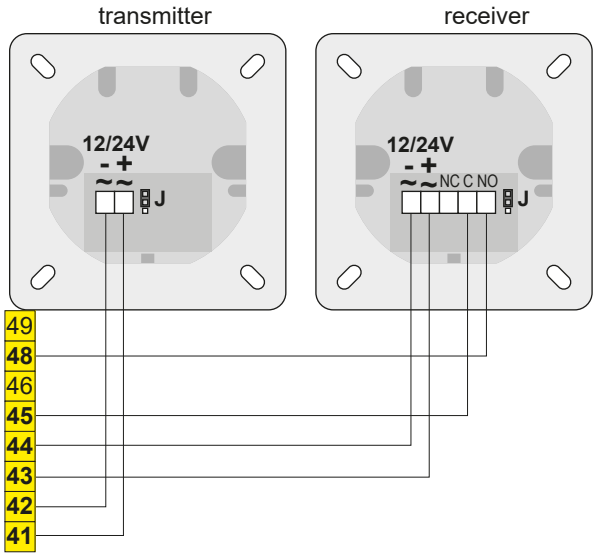


Outer and inner photocell Tousek LS 41/180 as safety device

with active SYNC-function



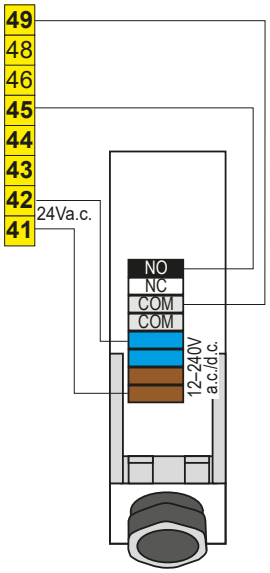
Outer photocell
Tousek LS 26 as safety device



Important

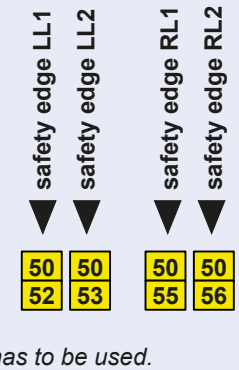
- **Jumper J of transmitter and receiver has to be adjusted in the same way.**

Back area reflective photocell
Tousek RLS 620 as safety device

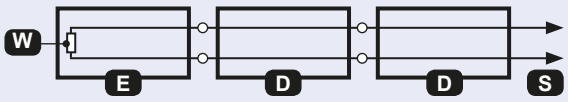


Safety sensing edges

- **OBSTACLE DETECTION:** When a contact strip is triggered/activated then a change of direction is effected for 1s. After that the gate stops.
- The safety sensing edges are activated and have the function OPEN/CLOSE by default. Tha safety sensing edges can be deactivated or the function can be changed while the basic settings are carried out *(see below)*
- Safety sensing edges on the same gate leaf and with the same function (i.e. active when opening, closing or opening / closing) can be connected in series as shown below.



Example: W 8,2kΩ final resistance
E final edge
D passage edge
S to control



*When connecting one safety edge a final edge **(E)** has to be used.*

Important

- **After giving the impulse to automatically program the end positions, no other impulse must be given. Also the safety devices mustn´t be triggered. This would lead to an interruption of the programming process.**
- **Therefore, the mechanical stops must be set so that the existing contact strips cannot be triggered.**

G safety edge LL1 (8,2kΩ safety edge 1, left leaf: terminals 50/52)

Safety edges

- ○ **not active:** should not be evaluated.
- ○ **opening active:** should be evaluated **at opening.**
- ○ **closing active:** should be evaluated **at closing.**
- ⊙ **opening / closing:** should be evaluated **at opening and closing.**

G safety edge LL2 (8,2kΩ safety edge 2, left leaf: terminals 50/53)

Safety edges

- ○ **not active:** should not be evaluated.
- ○ **opening active:** should be evaluated **at opening.**
- ○ **closing active:** should be evaluated **at closing.**
- ⊙ **opening / closing:** should be evaluated **at opening and closing.**

G safety edge RL1 (8,2kΩ safety edge 1, right leaf: terminals 50/54)

Safety edges

- ○ **not active:** should not be evaluated.
- ○ **opening active:** should be evaluated **at opening.**
- ○ **closing active:** should be evaluated **at closing.**
- ⊙ **opening / closing:** should be evaluated **at opening and closing.**

G safety edge RL2 (8,2kΩ safety edge 2, right leaf: terminals 50/55)

Safety edges

- ○ **not active:** should not be evaluated.
- ○ **opening active:** should be evaluated **at opening.**
- ○ **closing active:** should be evaluated **at closing.**
- ⊙ **opening / closing:** should be evaluated **at opening and closing.**

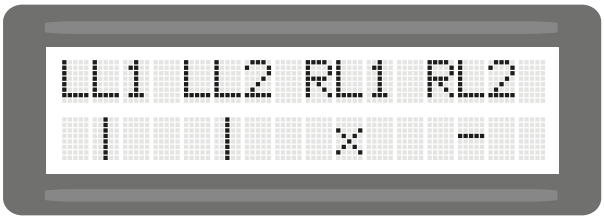
SE-status display

Safety edges

➲ Status dsplay of safety sensing edges **LL1** left leaf (1) **RL1** right leaf (1)
LL2 left leaf (2) **RL2** right leaf (2)

|	status: not triggered
----	status: triggered
X	status: contact strip not connected or defect
□	status: contact strip deactivated in menu

e.g.



Left leaf

delay left leaf

⊙ **opening delay:** the left leaf opens after the adjusted delay time.

○ **closing delay**: the left leaf closes after the adjusted delay time.

time delay left leaf ⊙ 2s (factory setting)

○ **OFF, 1–25s adjustable [increment 1]:** indicates the delay time at opening or closing.

force ⊙ 70% (factory setting)

○ **60–100% adjustable [increment 5]:** determines the operator force.

speed ⊙ 100% (factory setting)

○ **60–100% (SWING X3 TPspeed)**
75–100% (SWING X4 LHTP) **adjustable [increment 5]:** determines the speed of motor.

soft speed ⊙ 50% (factory setting) only with swing gate

○ **25–50% adjustable [increment 5]:** determines the soft speed of motor.

soft stop OPEN ⊙ 5s (factory setting) only with swing gate

○ **OFF, 0,1–9,0s adjustable [increment 0,1]:** determines soft stop time in opening direction.

soft stop CLOSE ⊙ 5s (factory setting) only with swing gate

○ **OFF, 0,1–9,0s adjustable [increment 0,1]:** determines soft stop time in closing direction.

Right leaf

delay right leaf

○ **opening delay:** the left leaf opens after the adjusted delay time.

⊙ **closing delay**: the left leaf closes after the adjusted delay time.

time delay right leaf ⊙ 2s (factory setting)

○ **OFF, 1–25s adjustable [increment 1]:** indicates the delay time at opening or closing.

force ⊙ 70% (factory setting)

○ **60–100% adjustable [increment 5]:** determines the operator force.

speed ⊙ 100% (factory setting)

○ **60–100% (SWING X3 TPspeed)**
75–100% (SWING X4 LHTP) **adjustable [increment 5]:** determines the speed of motor.

soft speed ⊙ 50% (factory setting) only with swing gate

○ **25–50% einstellbar [5er Schritte]:** determines the soft speed of motor.

soft stop OPEN ⊙ 5s (factory setting) only with swing gate

○ **OFF, 0,1–9,0s adjustable [increment 0,1]:** determines soft stop time in opening direction.

soft stop CLOSE ⊙ 5s (factory setting) only with swing gate

○ **OFF, 0,1–9,0s adjustable [increment 0,1]:** determines soft stop time in closing direction.

Attention

With speed adjustment the valid safety regulations and standards have to be strictly followed (Kinetic energy) !

impulse logic

Operating mode

⊙ **stop, start of pause time:** An command by impulse button during the movement stops the gate and starts pause time in automatic operation. When the pause time has run out, the gate closes automatically.

○ **impulse suppressioning:** Commands received during the opening movement are suppressed, commands during closing are accepted.

➔ **In traffic light mode automatically „impulse suppressioning“ is active.**

○ **pause time extension:** A command during pause time restarts the pause time. If this menu point is chosen, an impulse suppression during opening is active at the same time.

operating mode

Operating mode

⊙ **impulse mode:** Impulse through impulse button or CLOSE-button to start closing of gate.

○ **1–255s automatic close adjustable [increment 1]:** gate closes automatically after the adjusted pause time.

pedestrian opening ⊙ 100% (factory setting)

Operating mode

○ **25–100% adjustable [increment 1]:** value defines the partial opening based on the total opening.

➔ **In traffic light mode this setting has no influence.**

This adjustment is ONLY adopted in CLOSED-position.

automatic mode

Operating mode

⊙ **complete / pedestrian opening:** either with complete as well as partial opening, the gate closes automatically after the adjusted pause time.

○ **only complete opening:** only after complete opening, the gate closes automatically after the adjusted pause time.

➔ **In traffic light mode automatically „only complete opening“ is active.**

○ **only pedestrian opening:** only after partial opening the gate closes automatically after the the adjusted pause time.

pause time logic

Operating mode

⊙ **no influence**

➔ **In traffic light mode automatically „no influence“ is active.**

○ **permanent ON:** if this function is activated, the control unit goes from automatic mode into impulse mode **with activated pause time through impulse in open gate position** for this cycle , hence if gate is open then an impulse will end the automatic mode - the gate remains open. Only the next impulse will close the gate 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 gate open position) and closed in the evening (2nd impulse). The control board switches back to automatic mode (autom. opening and closing of gate).

The ramp time determines the acceleration (zero to adjusted speed) as well as the stopping (adjusted speed to zero) of the gate. The higher the adjusted ramp time is the slower is the acceleration and the stopping of the gate.

ramp time open ⊙ 3s (factory setting)

only with folding gate

Operating mode

⊙ **1,0–6,0s adjustable [increment 0,1]:** ramp time when gate opens.

ramp time close ⊙ 3s (factory setting)

only with folding gate

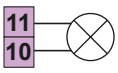
Operating mode

⊙ **1,0–6,0s adjustable [increment 0,1]:** ramp time when gate closes.

Danger

- **Before connection works or taking off the housing cover the power supply has to be turned off !**
- **Follow safety instructions!** *(page 5)*

a signal lamp can be connected to the terminals 10/11 with **24V a.c., max. 5W**



signal lamp

prewarning OPEN (terminals 10/11)

Light / lamps

⊙ **OFF**

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

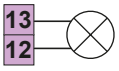
prewarning CLOSE (terminals 10/11)

Light / lamps

⊙ **OFF**

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

A courtyard light (external light e.g. garden lighting) can be connected to the terminals 12/13 with **230V and max. 60W ohmic.**



court yard light

court yard light (terminals 12/13)

Light / lamps

⊙ **OFF**

○ **5–950s adjustable:** the courtyard lamp will be triggered for the adjusted time with each opening command.

○ **10s afterglow:** after reaching the open position the coutyard lamp is glowing for 10 seconds.

green phase ⊙ 20s (factory setting)

Light / lamps

○ **5–120s adjustable [increment 1]:** duration of green phase.

clearance time ⊙ 5s (factory setting)

Light / lamps

○ **1–60s adjustable [increment 1]:** time to leave the traffic light intermediate area.

traffic light gate CLOSE

Light / lamps

⊙ **red light OFF:** red traffic light does not illuminate in closed position.

○ **permanent RED:** red traffic light illuminates also in closed position.

traffic light logic

Light / lamps

⊙ **green on both sides:** both traffic lights illuminate GREEN in open position, regardless of which side has been given the green request.

○ **green on one side:** only the traffic light illuminates GREEN in open position, from the side from where the green request has been requested.

traffic light

Peripherals

⊙ **not active**

○ **active:** Traffic light function active

- With the optional traffic light control unit, that has to be connected to the bus terminals **88, 89** *(page 33)*, you can implement a traffic light operation mode.
- **Note: The functions and settings relevant for the traffic light operation are displayed in the menu only after selecting "active"** → *see*
- Connection of the traffic light → see instruction manual of the traffic light control unit.

Valid for the traffic light mode:

- **The inputs of the pulse buttons of the drive control have no function and the impulse emission is only possible via traffic light board!**
- **When using a radio receiver and the traffic light mode, the receiver is not to be plugged into the slot of the control unit, but into the slot of the traffic light control!** *page 37*

The door lock can be done by means of electric lock / magnetic clamp or drop bolt.
In both cases, the corresponding module is additionally required (*page 26).*
To control the motor bolt SAFELOCK, a motor bolt control is also required *(page 27).*

To deactivate locking, the menu item „locking" has to be set to „Electric lock/magnetic clamp" and the menu item „Electric lock" to „not active" afterwards.

locking

Peripherals

⊙ **Electric lock/magnetic clamp:** locking with optional Electric lock/magnetic clamp module.

○ **Electric drop:** locking with additional electric drop module.

LOCKING WITH ELECTRIC LOCK/MAGNETIC CLAMP:

reverse stroke

Peripherals

⊙ **not active**

○ **0,1–8s einstellbar:** After an impulse is given, a short closing movement for unlocking is initiated first (serves to relax the latch before unlocking). Afterwards the unlocking is performed and the door is opening. With an electric lock, the reversal stroke is only carried out in the opening direction.

delay magnetic clamp

Peripherals

⊙ **OFF**

○ **0,1–1s adjustable:** Time for releasing the magnetic clamp before the gate movement.

Electric lock

Peripherals

⊙ **not active**

○ **1–10s adjustable:** The electric lock is activated by impulse button or pedestrian button for a period of time set here to ensure the release depending on the gate situation.

LOCKING WITH DROP BOLT:

reverse stroke

Peripherals

⊙ **not active**

○ **active:** after giving an impulse via switch or transmitter the gate reverses before opening or closing in order to loosen the drop bolt. After the drop bolt is completely retracted the gate start to move (open or close).

electric drop

Peripherals

⊙ **OPEN and CLOSE:** locking with an electric drop in both end positions of the gate.

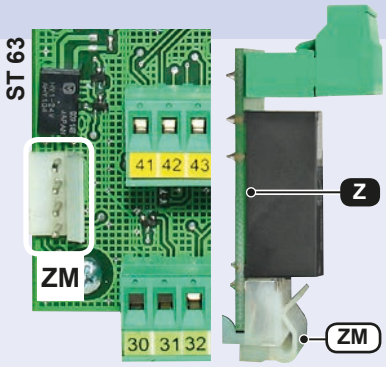
○ **OPEN only:** locking with an electric drop only in the gate open position.

○ **CLOSE only:** locking with an electric drop only in the gate closed position.

- ⊙ **gate status display 1:** with the two potential-free signal contacts K1 and K2, the gate end positions (limits) can be evaluated.
- ○ **gate status display 2:** with the two potential-free signal contacts K1 and K2, the gate end positions (limits), the gate movement as well as a gate stop outside of the end positions can be evaluated.

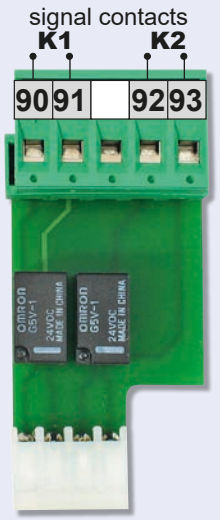
Additional module (optional)

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



Additional module Gate status display

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



		Function	K1	K2
Gate status display	1	Gate in CLOSE-Position	1	0
		Gate in OPEN-Position	0	1
	2	Gate in CLOSE-Position	0	0
		Gate opens or closes	0	1
		Gate stopped or fault (Gate not in end position)	1	0
		Gate in OPEN-position	1	1

signal contacts: 0 = open, 1= closed

Danger

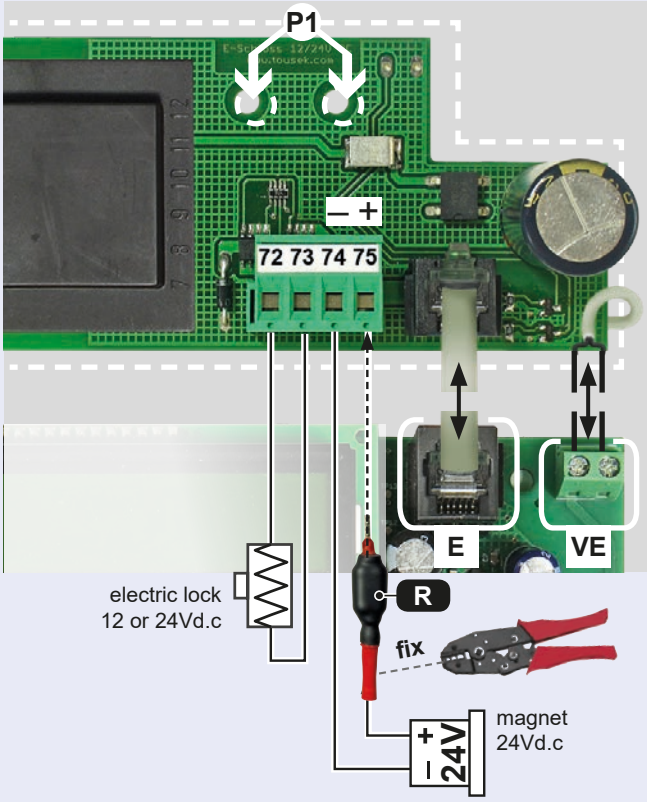
- **Before connection works or taking off the housing cover the power supply has to be turned off !**
- **Follow safety instructions!** *(page 5)*

Optional module for electric lock/magnetic clamp

- The control unit needs an optional module for connection of an electric lock/magnet (12V or 24Vd.c. version depending on electric lock).

Connection of module

- **ATTENTION: turn off power supply!**
- The module is also housed in the control cabinet - fixed at positions **(P1)** by spacers and screws.
- Connect electric lock module via RJ-plug **(E)** with the control unit**.**
- Connect the electric lock (12/24Vd.c.) to the removable terminals **72/73** of the module.
- The magnet (24Vd.c.) must be connected via a resistor **(R)** for the connection to the module.
- To do this, push the connecting cable of the magnetic clamp as shown into the opening of the series resistor and fix by means of crimping pliers.
- Connect the connection cable and resistor **(R)**, as shown, to the removable terminals **74 (–) / 75 (+)** of the module. **Pay attention to polarity.**
- To supply the module the 2-pin cable is connected to the control terminals **(VE).**
- After wiring, the E-lock-mode has still to be activated in the menu of the control under („peripherals / locking“ and „peripherals / electric lock“)
- Magnets are driven into the open and closed position of the gate, the electric lock only in closed position.



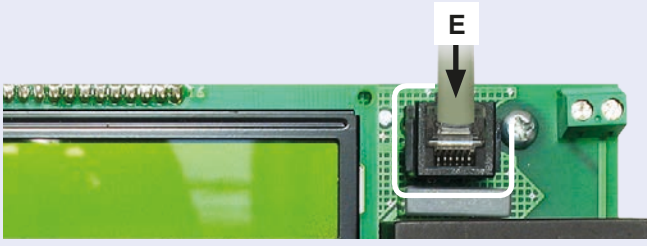
The series resistor (R) is for tousek magnets GD 50 and GD 70.

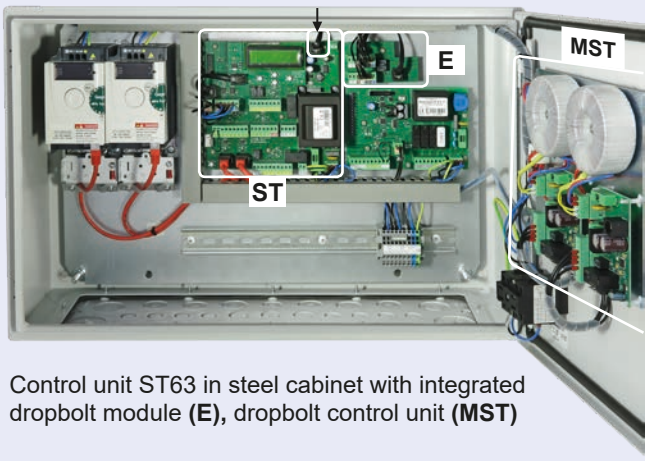
optional dropbolt module

- In order to connect the dropbolt SAFELOCK to the control unit it needs an optional modul and a dropbolt control unit. If needed then for double leaf swing gate also two dropbolts can be connected. Thereby the terminal block is labelled with **„X“** for the first bolt and with **„Y“** for the second bolt.

Modul connection

- **ATTENTION: Turn off the power supply!**
- The module **(E)** is connected with a RJ-plug-in connector to the control unit **(ST)** in the housing of the ST 63.
- The removable terminals „X“ and „Y“ on the module are wired to the dropbolt control unit (MST) according to the sketch (page 27).
- After succesful connection the dropbolt operation need to be activated in the control unit menu („peripherials/locking“ and „peripherials/dropbolt“)





Control unit ST63 in steel cabinet with integrated dropbolt module **(E),** dropbolt control unit **(MST)**

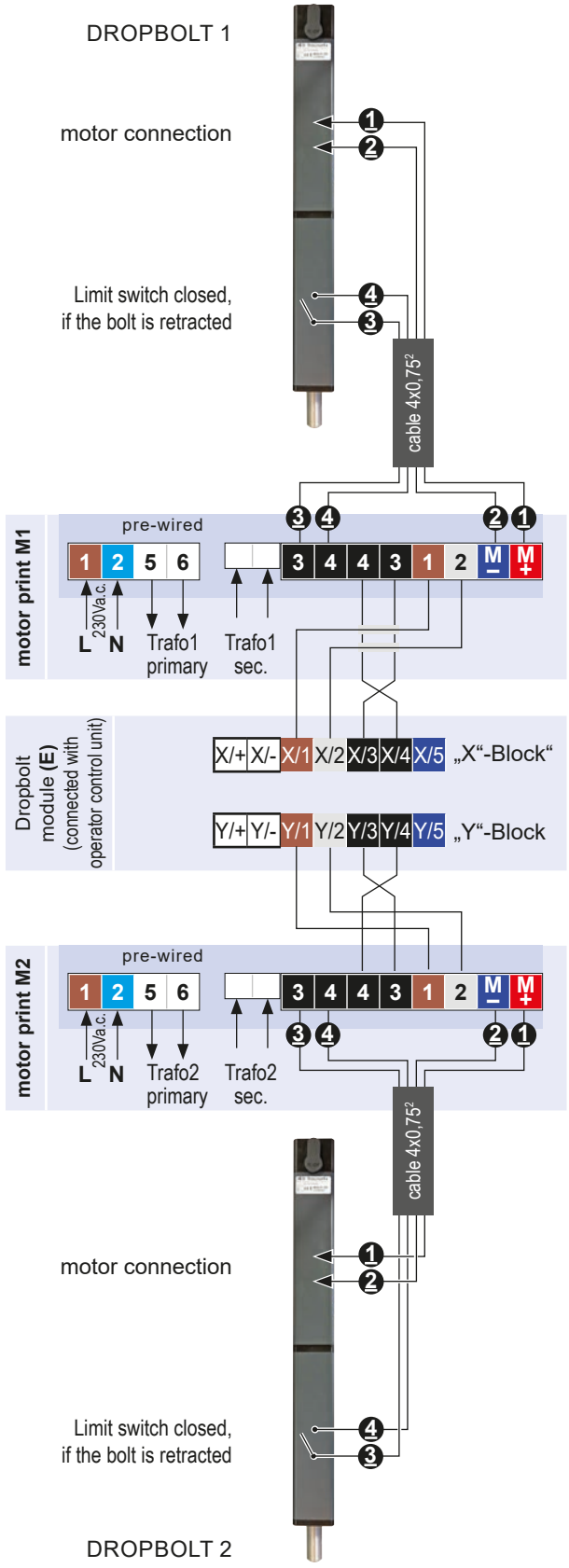
Connection of dropbolt SAFELOCK (optional)

The SAFELOCK control unit is available to actuate one or two dropbolts (only with ST63 in the steel cabinet). Generally the components to use one or two dropbolts, such as dropbolt module **(E),** motor print boards **(M1,M2)** and transformers **(TR1, TR2)** are already prewired as shown in the illustration below:

- motor print boards **(M1, M2)** are wired to the dropbolt module **(E),** which is then connected to the ST 63: or one dropbolt: only terminal block „X“ - for two dropbolts: terminal blocks „X“ + “Y“
- 230Va.c. a.c. power supply and grounding **(V)** of the dropbolt control unit.

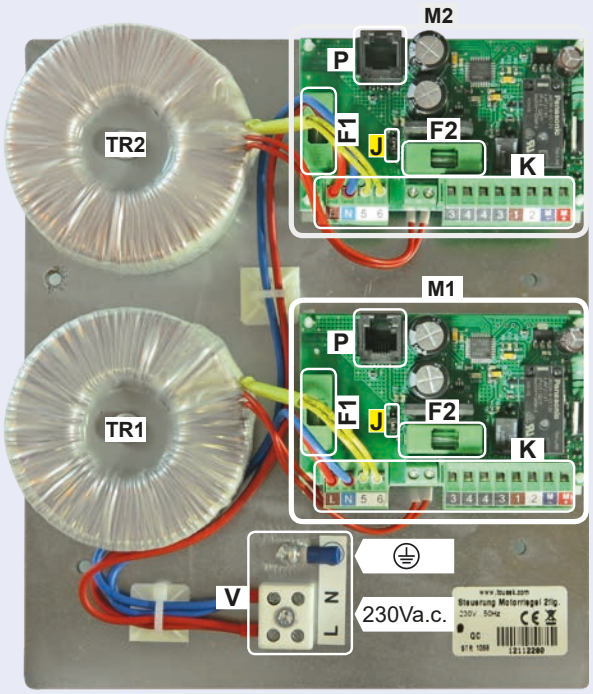
Dropbolt connection

- Dropbolts must be connected directly to the terminal blocks **(K)** of the motor print boards via connection cable 4 x 0,75² (motor connection and limit switch).
- Strictly note the numbering **1 – 4** of the connection cable.



Dropbolt control unit SAFELOCK (optional)

The SAFELOCK control unit is available for one or two dropbolts and is installed on the inside of the steel cabinet door of the ST 63.



(V) supply terminals, grounding screw
(TR1, 2) transformer 1, 2
(M1, 2) motor print 1, 2

Motor print components:
(P) programming slot
(F1) fuse 0,25A T
(F2) fuse 4A T
(J) Jumper
(K) terminals

Jumper J	motor print
T	**„T“ with tousek controls**
T	„⎍“ with foreign control units

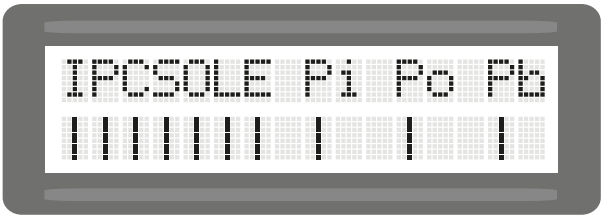
status display

➲ **Status display** for inputs as photocell, safety sensing edges, stop button, impulse switch ....

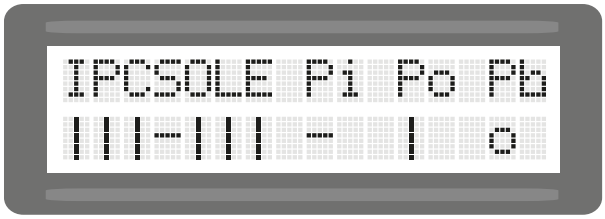
I	impulse button
P	pedestrian entry
C	CLOSE-button
S	STOP-button
O	OPEN-button
L	induction loop detector contact (ISD)
E	emergency mode switch
Pi	inner photocell
Po	outer photocell
Pb	back area photocell

!	Status: not triggered
----	Status: triggered
X	Status: contact strip not connected or defect
▢	Status: s. edge or photocell deactivated in menu

e.g.



Emergency mode not activated → normal operation
All inputs okay.



Emergency mode not activated → normal operation
Impulse-, pedestrian- and CLOSE-buttons not triggered.
STOPP-button and inner photocell triggered.
Outer photocell not triggered.
Back area photocell deactivated in menu

delete position

⊙ **NO:** does not delete the end positions “gate closed” and “gate open”

○ **YES:** the determined end positions are beeing 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

⊙ **NO:** no reset back to factory settings

○ **YES:** reset back to factory settings

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

software version

➲ **shows the software version on display**

gate type: **S** swing gate / **F** folding gate
operator type: **X3TP** / **X4TP**

e.g. swing gate with
SWING X3 TPspeed operator

e.g. folding gate with
SWING X4 LHTP operator

serial number

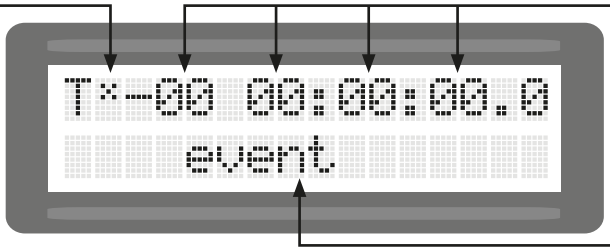
➲ **shows the serial number on display**

protocol

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

With * the protocol beginning
hence the end is shown

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



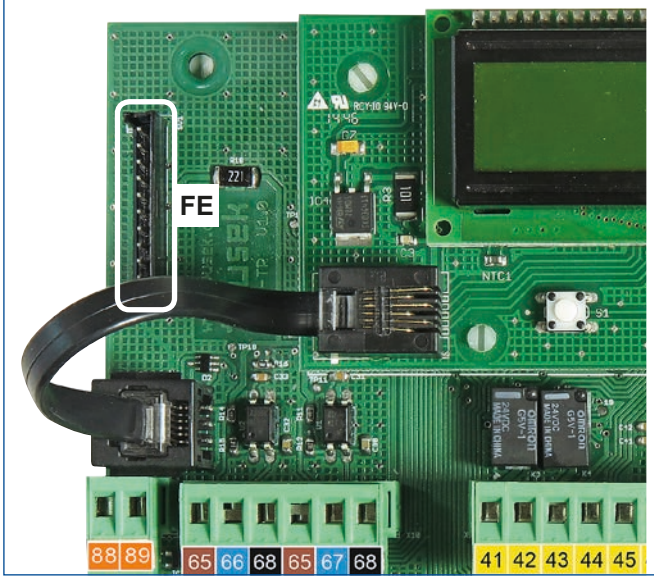
Type of event

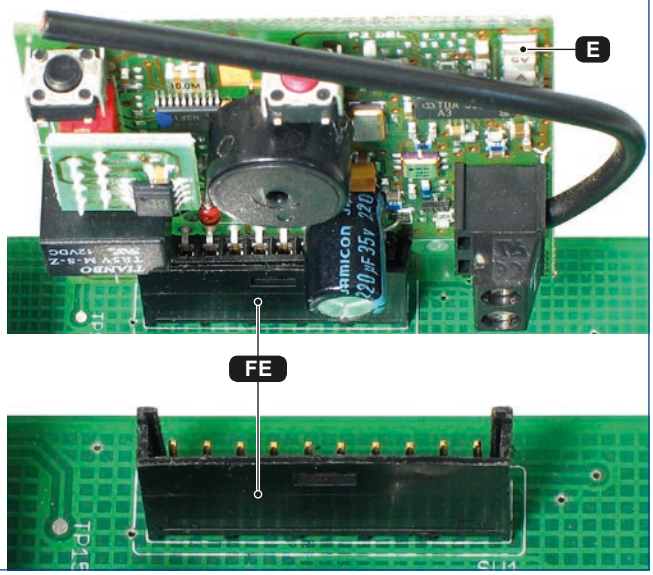
3. Connecting the receiver

- **Disconnect the power supply.**
- Plug-in the receiver printed circuit board **(E) RS433/868-STN1 (1 channel) or RS433/868-STN2 (2 channels)** into the corresponding slot **(FE)** as shown in the 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 pedestrian entry mode switch.**
- For programming of receiver please ***see manual for radio receiver.***



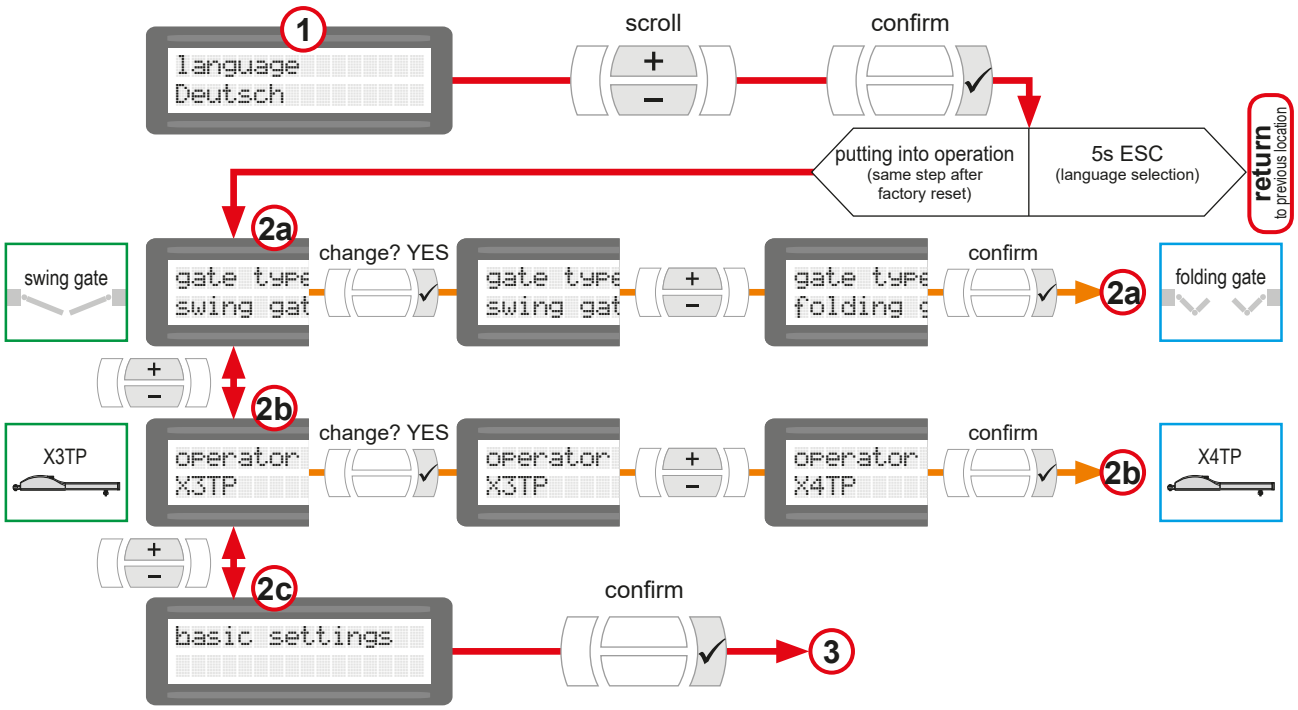


important: preparation works

- All electrical installations (control panels, safety devices ...) have to be made in full conformity with the applying rules and laws.
  Attention: if no stop switch is connected then the terminals 30/31 have to be bridged.
- **The mechanical limits have to be placed so that contact edges are not triggered, as this would lead to an error message.**
- Unlock emergency release of operator and set gate to half-opened position. Then lock the operator again.
- Switch on the operator (correct connection necessary).
- **Important:** Putting into operation in Impulse mode (standard setting) and not in dead man mode.
- During initial operation the choices of language and gate type (swing- or folding gate) are made first, afterwards in the „**Basic settings**" the adjustment of the most important operator settings. After the successfull system test the detection of limit positions of gate is performed automatically.

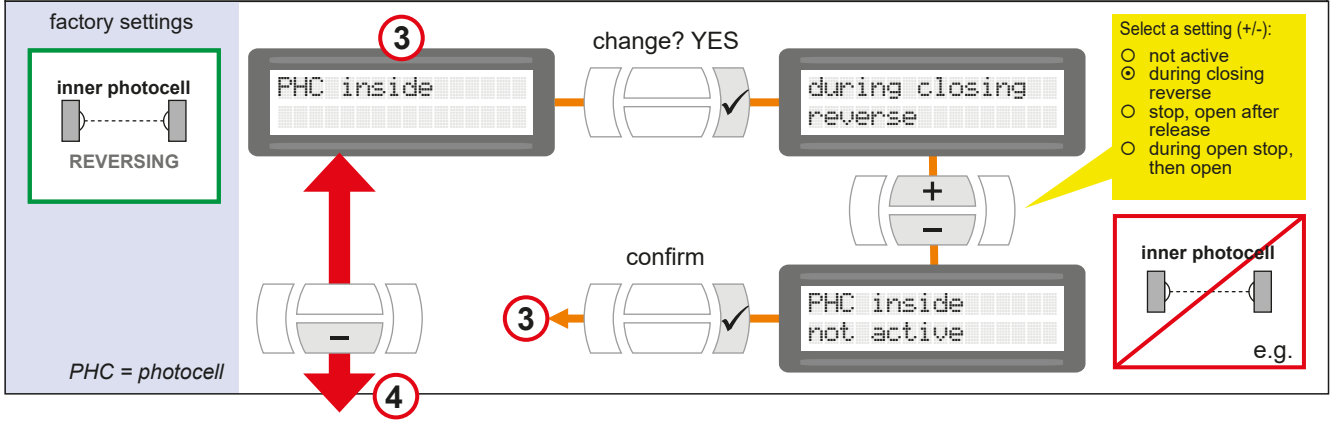
LANGUAGE and GATE TYPE SELECTION

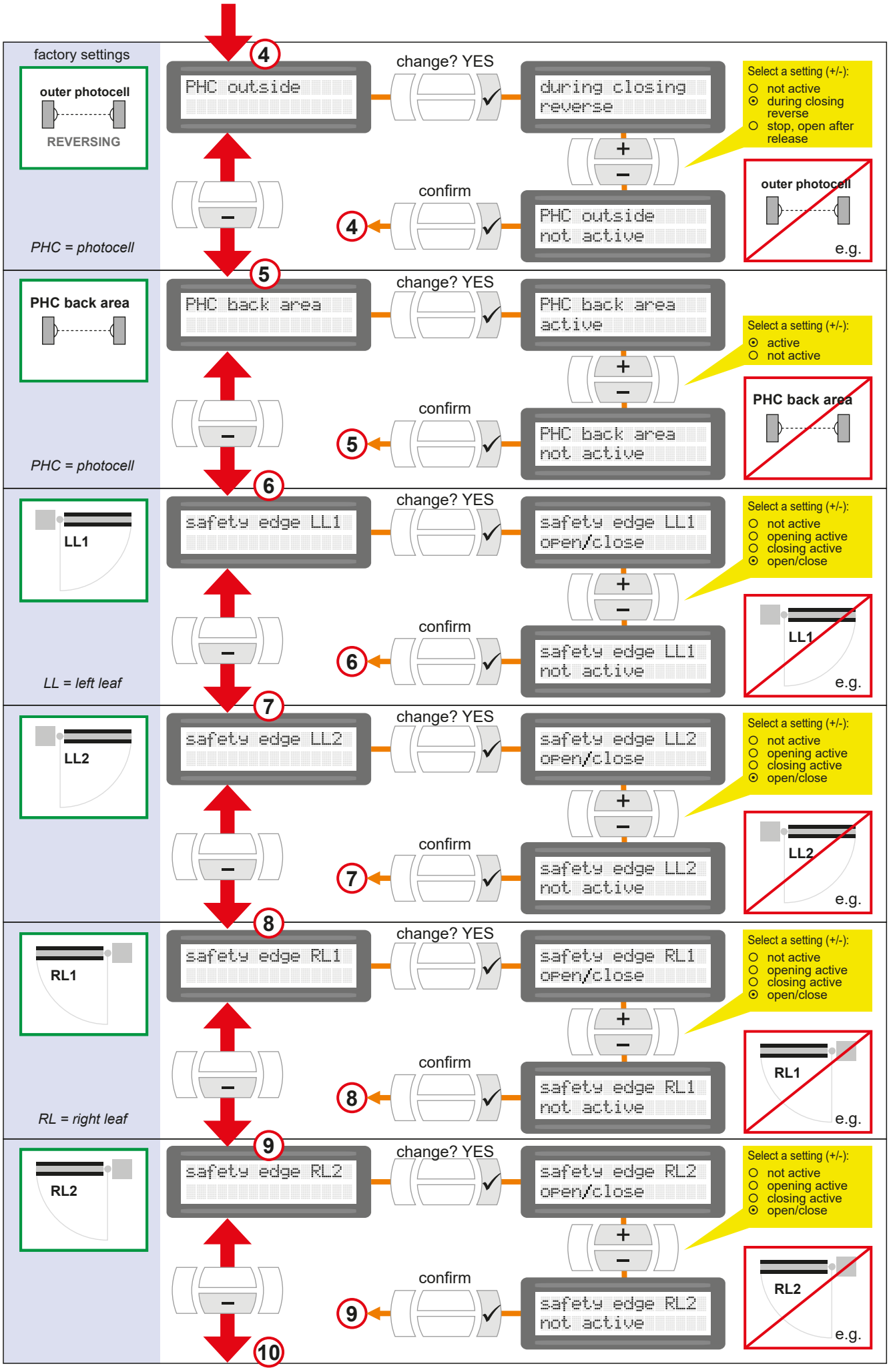
- Can be selected during initial operation (hence after reset to factory settings).
- Language selection can be also **chosen by pressing the ESC button** (↵) **for 5s**, from any position in menu.

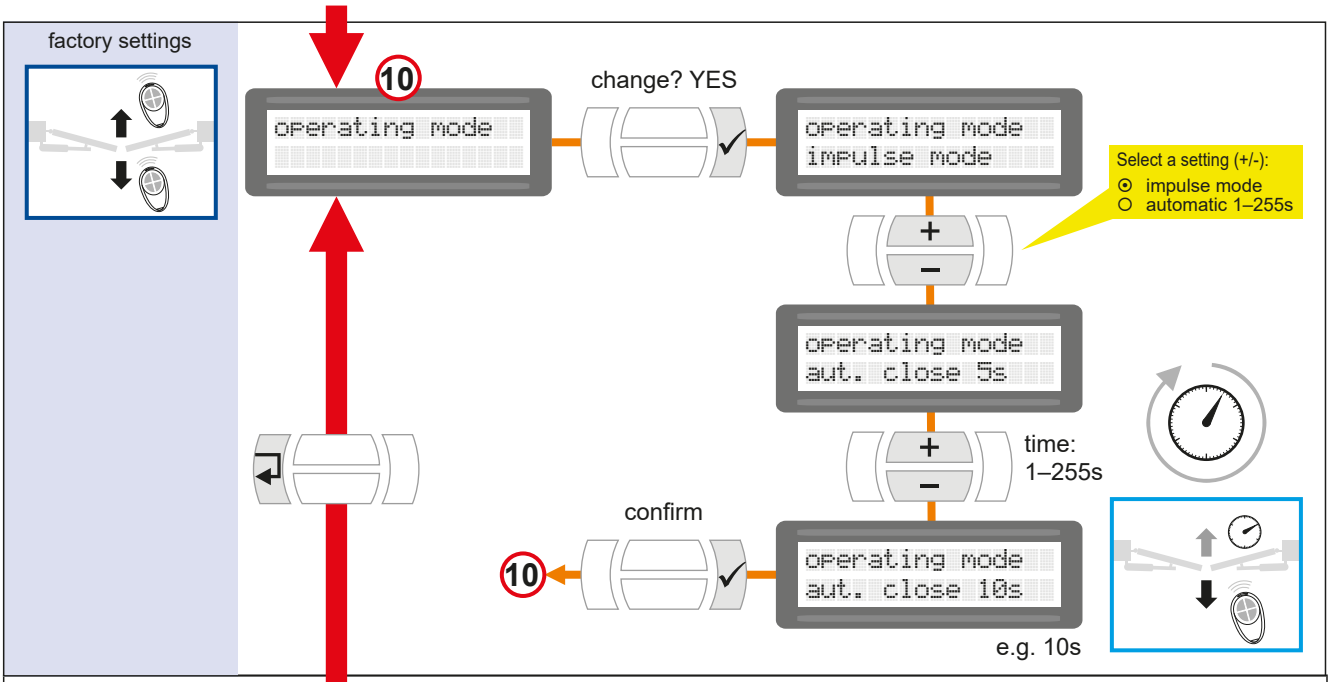


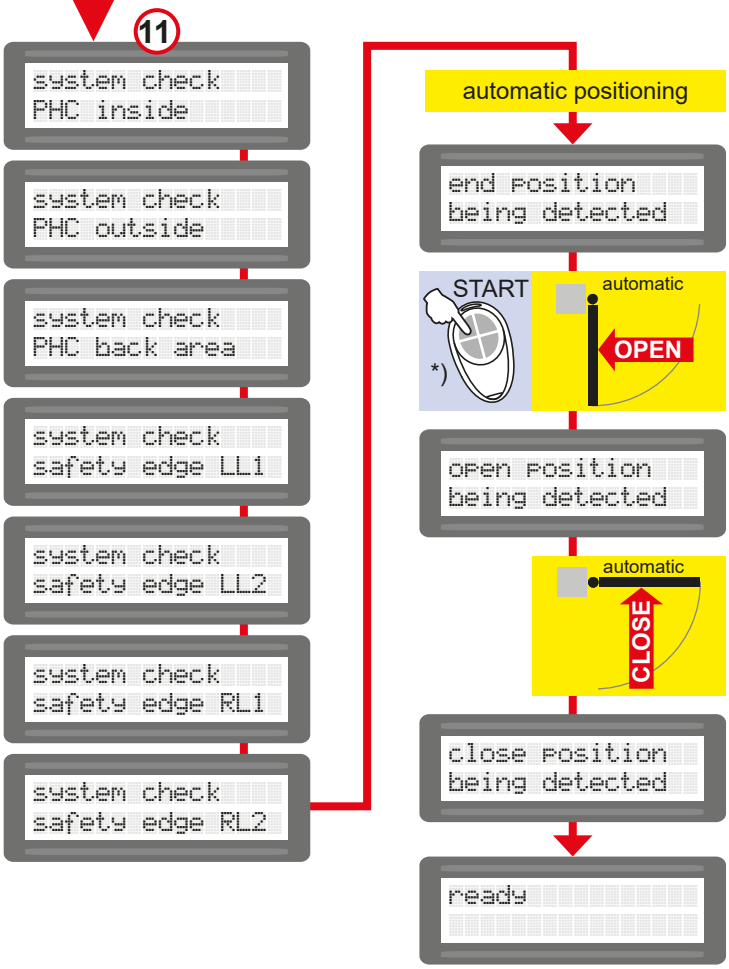
BASIC SETTINGS

- **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** *(page 13, 14).*
- **The next programming adjustments are made in THE MAIN SETTINGS MENU** *(page 12–14).*




factory settings
outer photocell
REVERSING
PHC = photocell
4
PHC outside
change? YES
during closing
reverse
Select a setting (+/-):
not active
during closing reverse
stop, open after release
+
−
confirm
4
PHC outside
not active
outer photocell
e.g.
5
PHC back area
change? YES
PHC back area
active
Select a setting (+/-):
active
not active
confirm
5
PHC back area
not active
PHC back area
e.g.
PHC = photocell
6
safety edge LL1
change? YES
safety edge LL1
open/close
Select a setting (+/-):
not active
opening active
closing active
open/close
LL1
confirm
6
safety edge LL1
not active
LL1
e.g.
LL = left leaf
7
safety edge LL2
change? YES
safety edge LL2
open/close
Select a setting (+/-):
not active
opening active
closing active
open/close
LL2
confirm
7
safety edge LL2
not active
LL2
e.g.
8
safety edge RL1
change? YES
safety edge RL1
open/close
Select a setting (+/-):
not active
opening active
closing active
open/close
RL1
confirm
8
safety edge RL1
not active
RL1
e.g.
RL = right leaf
9
safety edge RL2
change? YES
safety edge RL2
open/close
Select a setting (+/-):
not active
opening active
closing active
open/close
RL2
confirm
9
safety edge RL2
not active
RL2
e.g.
10



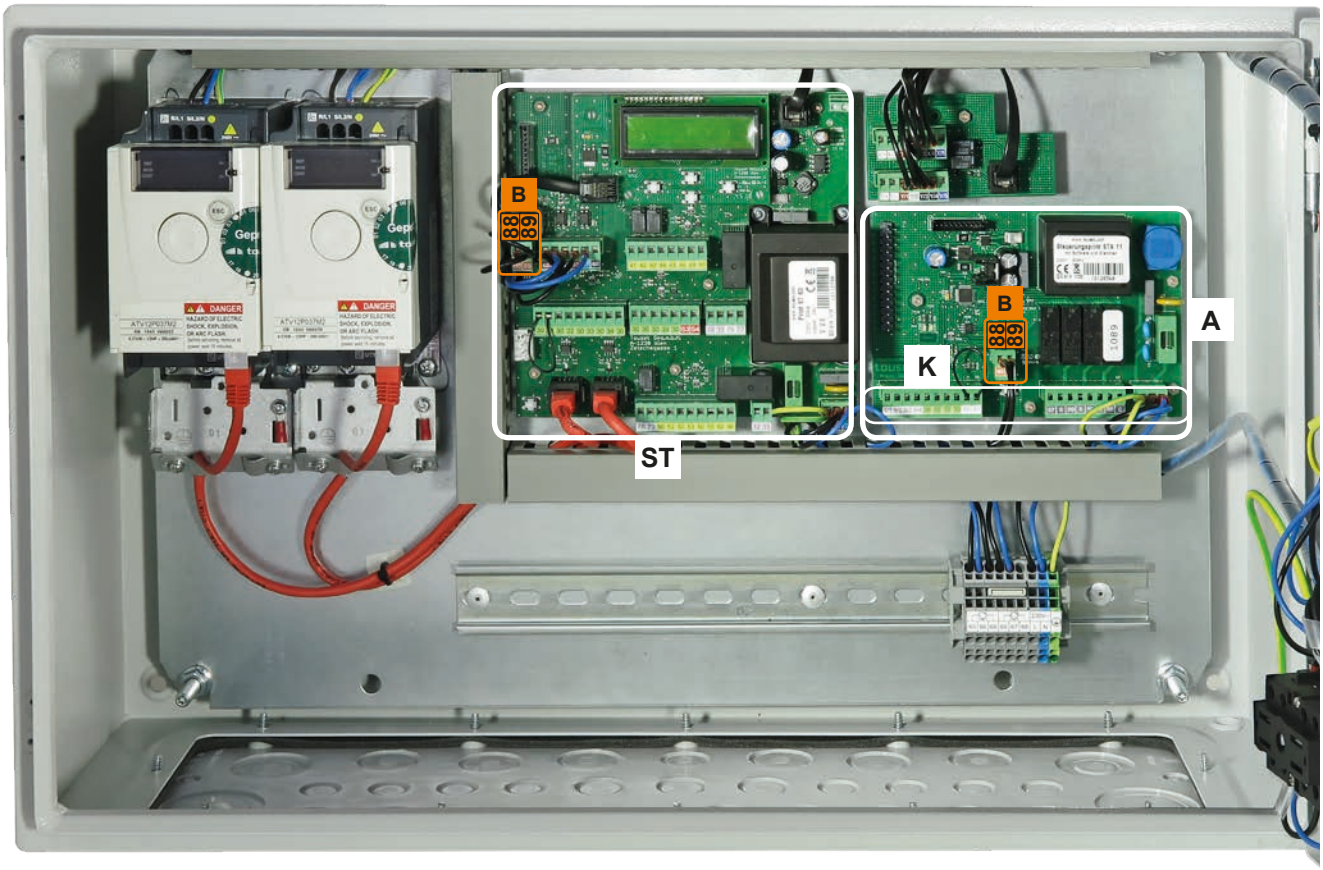


*) Impulse with impulse button or transmitter.
After giving the impulse to **automatically program** the end positions, no other impulse must be given.
Also the safety devices mustn´t be triggered. This would lead to an interruption of the programming process.

5. Optional Traffic light control unit STA 11

- Connection possibility of two impulse switches or induction loops for Green request and two Red/Green traffic lights 230V, 60W (inside and outside).
- Connection slots for optional radio receiver and induction loop detector
- **Only for control unit ST 63 in steel housing**
- CE

(ST) control board ST63
(A) traffic light control STA 11
(B) Bus terminals (88 / 89)
(K) terminals of the traffic light control board STA 11



General

- To implement traffic light function the control unit STA 11 has to be connected with the operator control unit via bus system.

Valid for the traffic light mode:
- **The inputs of the pulse buttons of the ST 63 have no function and the impulse emission is only possible via traffic light board** *page 35–37 (I-loops, pulse buttons, radio)*!
- **When using a radio receiver in traffic light mode, the receiver is not to plugged into the slot of the operator control unit, but into the slot of the traffic light control!!**

Technical data

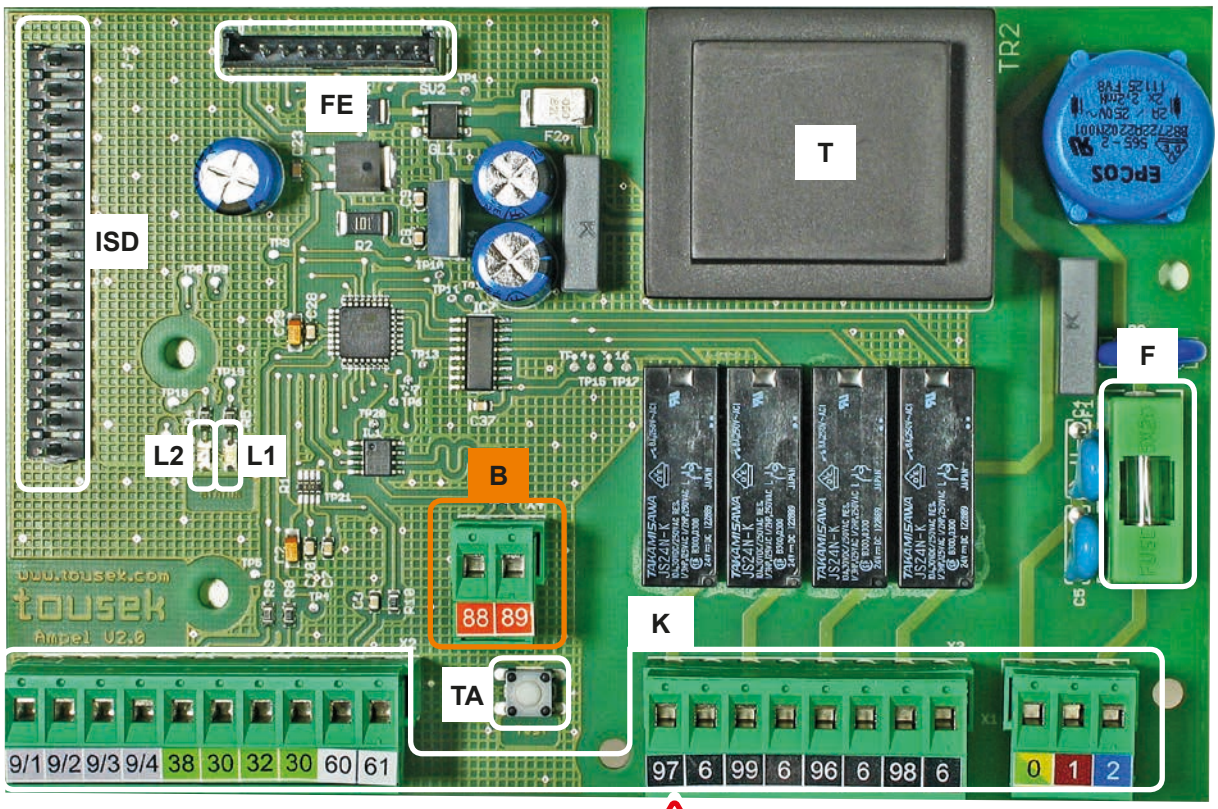
Traffic light control board STA 11 in plastic housing IP 54 (210 x 310 x 125mm)	
Power supply	230Va.c., +6/-10%, 50Hz
Relay load Red/Green traffic light	230V, max. 60W
Article no.	12120370
Optional equipment	induction loop detector ISD 6 (2-channels) • pluggable receiver

Function

At the terminals of the traffic light controller separate impulse generators can be connected for „inside“ and „outside“.
The programming of the traffic light control is done in the progrmming menu of the connected operator control board. These relate to the function of the duration of the green phase and the clearance time, the traffic light at the door position „closed“ (whether or continuous red) and the traffic light system logic.
Depending on how the „traffic light logic“ was adjusted, after completion of command processing and gate opening, either the side, which has given the order, or both sides receive the green light. Vehicles can therefore only drive in one direction or both directions entering the gate area. Furthermore, the traffic light controller has the capacity to store incoming transit needs and to work at the end of the current cycle.

Functional sequence				Traffic light (command giving side)	Traffic light (counter side)
1	**Gate closed** Continuous red function adjustable via operator control board	selectable	**no continuous red**	OFF	OFF
			continuous red	RED	RED
2	**opening command (INSIDE or OUTSIDE)**			RED	RED
	Prewarning OPEN is being started (= red traffic light warning and possibly signal light warning before opening the door), duration adjustable via gate automation control board				
	> Gate opens after the prewarning time.				
3	**Gate open (limit position reached)** traffic light logic, adjustable via operator control board	selectable	**both sides Green**	GREEN	GREEN
			one side Green	GREEN	RED
4	**Green phase is started** ⓘ Duration is adjustable through operator control board				
5	**Clearance time is started (= time to exit the traffic light intermediary region)** **Duration of adjustable drive control**			RED	RED
	> Gate closes after clearance time, cycle starts again (→ 1) • if during the closing procedure an impulse is generated, so the gate opens immediately, and the green phase begins when the opening is completed.				
ⓘ	• If a further order from one side is given with traffic light logic „both sides Green“ during the green phase/clearance time is given, then the green phase is restarted. • If a further order from the same side is given with traffic light logic „one side Green“ during the green phase/clearance time, then a restart of the green phase for this side is effected. • If a further order from the counter side is given with traffic light logic „one side Green“during the green phase/clearance time, then the gate remains after the green phase/clearance time open and the Green display changes to the counter side.				

ⓘ **When the stop button is triggered, the gate stops moving and only opens again with command by either side.**



Components of traffic light control board

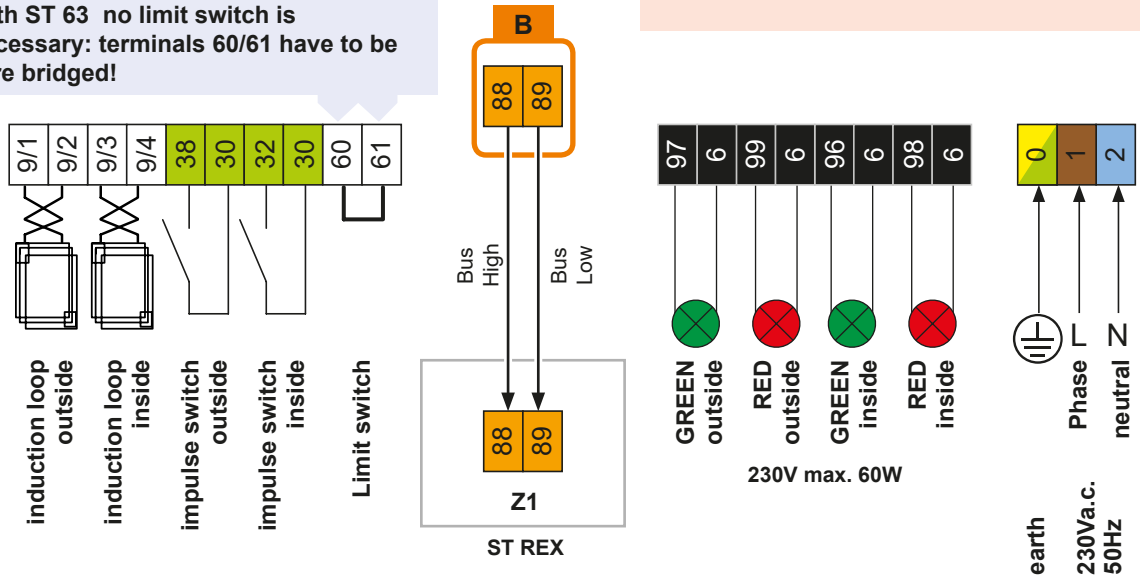
- **(K)** Terminals
- **(B)** Bus terminals (connection with operator control unit)
- **(TA)** Test button (switches all traffic lights on)
- **(L 1)** green LED: Status OK
- **(L 2)** red LED: error (message on the display of the drive control)
- **(T)** Transformer
- **(ISD)** Slot for optional induction loop detector *(p. 38)* (command)
- **(FE)** Slot for optional radio receiver *(p. 37)*
- **(F)** fuse 3,15A T

For connection, adjustment and maintenance works ensure that the electronics are not damaged by moisture (rain).

Warning

- **Before opening the control housing please switch off necessarily the main switch!**
- **In-supplied control inside the unit is powered.**
- **the safety regulations to prevent electrical shock have to be respected.**
- **The unit is designed to be connected by qualified personnel.**
- **The device must not be used in hazardous areas!**
- **A pole disconnecting main switch with a min. contact gap of 3mm has to be provided. The system must be protected in each case in accordance with applicable safety regulations!**
- **IMPORTANT: The control lines (buttons, radio remote control, light barriers, etc.) have to be separated from the 230 lines (supply, motor, signal light) to relocate**

With ST 63 no limit switch is necessary: terminals 60/61 have to be wire bridged!



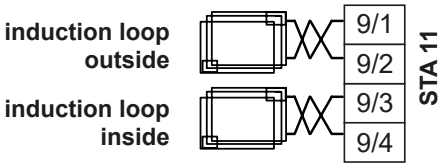
Induction loops

- **For the use of induction loops (for Green/Opening command) the I-loop slot (ISD) of the traffic light board STA 11 has to be equipped with an optional avalaible I-loop detector ISD 6 (2-channels).** *(page 38)*

Induction loop input (outside: term. 9/1+9/2, inside: term.9/3+9/4)

Connections

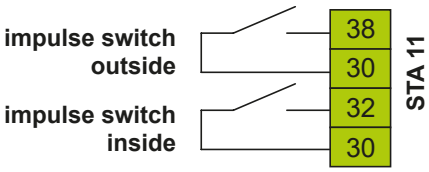
- For the connection of induction loops to give an impulse to the green request.
- With the 2-channel I-loop detector ISD 6 both loops (inside/outside) can be evaluated.



Impulse switch (outside: term. 38/30, inside: term. 32/30)

Connections

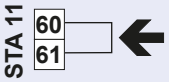
- For the connection of impulse switches on the inside and outside to give an impulse for the green request. **The impulse is also possible via an optional, plug-in radio receiver.**
- The green switching for one or both sides is dependent on the adjustment of the traffic light logic of the operator control board *(see according manual)*.



Limit switch input (term. 60/61)

Connections

Important



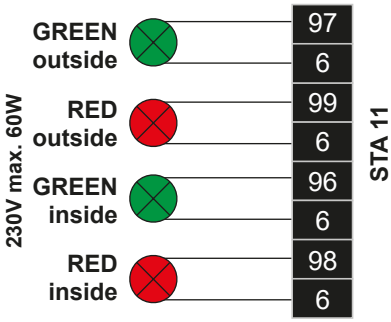
With the control unit ST REX no limit switch connection at the traffic control unit STA 11 is necessary, **instead the terminals 60/61 must be wire bridged!**

Traffic light outputs

outside: GREEN: term. 97/6, RED: term. 99/6
inside: GREEN: term. 96/6, RED: term. 98/6)

Connections

- on the described terminals Red/Green traffic lights **(230V max. 60W)** can be connected for inside and outside location.



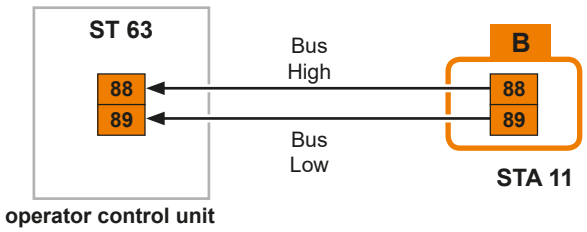
Connection traffic light board with operator control board (term. 88/89)

Connections

- Via the bus system *(see pic.)* the traffic light control board is connected with the operator control board.

Important

- **Max. cable length between automation and traffic light control is 25m.**
- **Cable type e.g.: shielded control cable YSLY 2 x 1mm² oder gleichwertig.**



Adjustments

- **The functions of the traffic light control is determined by the settings of the connected operator control board. These relate to the duration of the green phase and the clearance time, the traffic light at the closed door position (whether or continuous red) and the traffic light logic (both sides / one side green).**

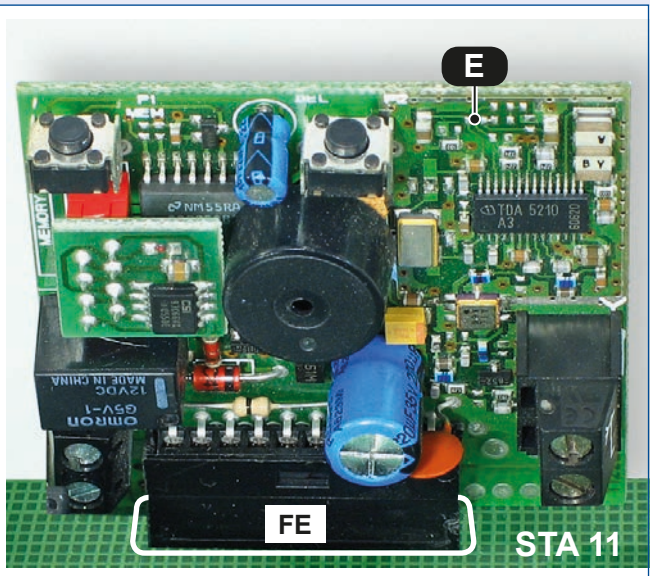
Important

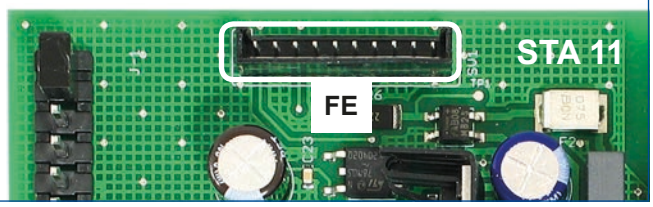
- **When using a radio receiver in traffic light mode, the receiver is not to plugged into the slot of the ST 63, but into the slot of the traffic light control STA 11 !**

- **Disconnect the power supply.**
- Open traffic light control housing
- Plug-in the receiver printed circuit board **(E) RS433/868-STN1 (1 channel) or RS433/868-STN2 (2 channels)** into the corresponding slot **(FE)** as shown in the picture.
- For range extension an external antenna FK433 or FK868 can be connected.

Important

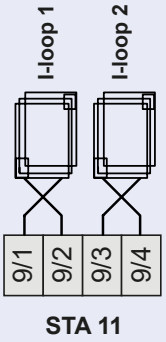
- **With the use of the 2-channel-receiver the first channel takes over the function of the impulse button outside and the second the function of the impulse button inside.**
- For programming of receiver please ***see manual for radio receiver.***





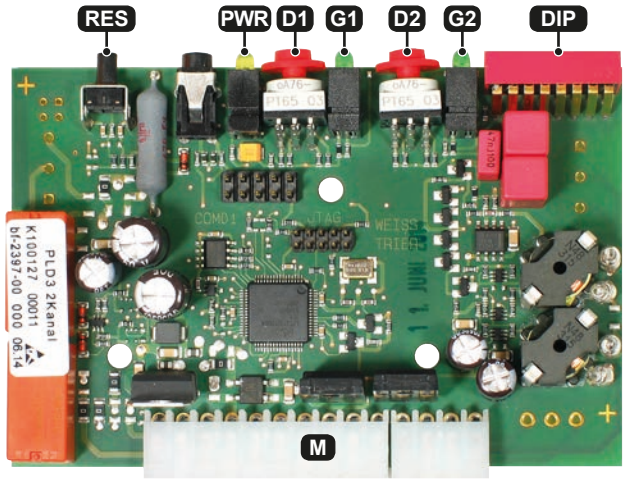
Important

- 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.
- With the 2 channel induction loop detector ISD 6 both loops can be evaluated (the green / open request inside and outside can be realised).
- The loop connection has to be made to **terminals 9/1-9/2 (= loop 1) and 9/3-9/4 (= loop 2).**
- *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.

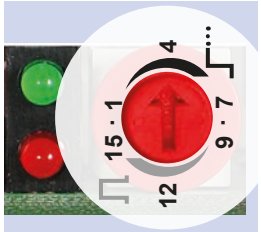


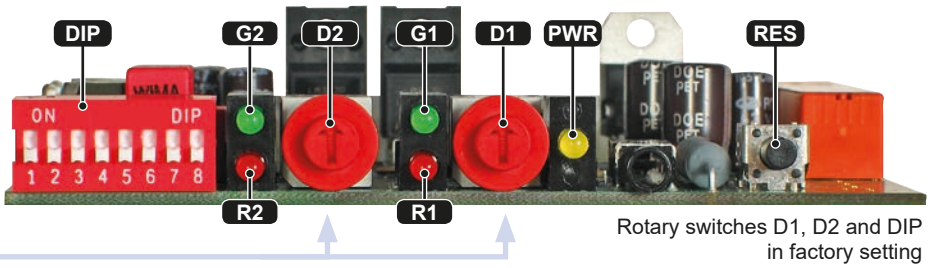
- All detector settings can be made easily with the rotary switches **(D1)** for channel 1 and **(D2)** for channel 2 as well a s the DIP-switches **(DIP)**. *see corresponding manual.*

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

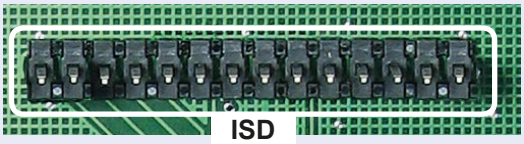


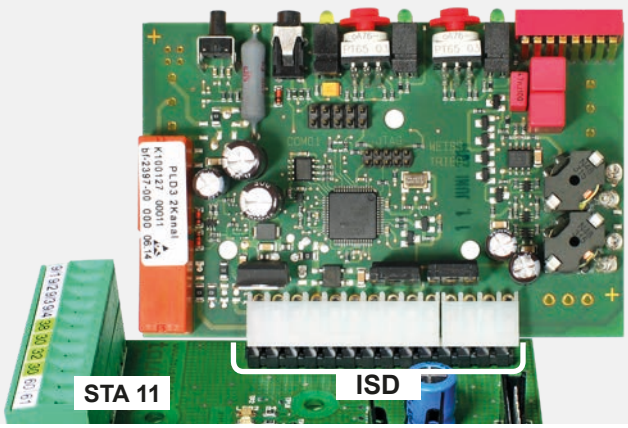


Rotary switches D1, D2 and DIP in factory setting

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 traffic light control unit **STA 11**.





error	possible reason	solution
display: „Stop-switch triggered“	stop-button not connected or not bridged	Stop-button connect or bridge → use status display for help
display: „inner photocell triggered“	concerned photocell interrupted	check correct connection hence remove obstacle → use status dispaly for help
display: „outer photocell triggered“		
display: „PHC back area triggered“		
display: „safety edge LL1 triggered“	concerned safety edge interrupted or hot-wired	check correct connection hence remove obstacle → use status dispaly for help
display: „safety edge LL2 triggered“		
display: „safety edge RL1 triggered“		
display: „safety edge RL2 triggered“		
display: „inner photocell test negative“	concerned photocell interrupted or hot-wired	check correct connection hence remove obstacle → use status dispaly for help
display: „outer photocell test negative“		
display: „PHC back area test negative“		
display: „sensor left triggered“	no communication with absolute-sensor	check correct connection
display: „sensor right triggered“		
display: „FC error left“	no connection between ST 63 and frequency converter	check correct connection of the FC
display: „FC error right“		
display: „search traf. lig.“ (only when traffic light is activated)	no connection to the traffic light control board STA11	check correct connection of the traffic light control board → check status LED´s on the STA11
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
Entry to control menu not possible	Duration command is present (Impulse-, pedestrian button)	Check the commander teminals → see status display
Gate opens, but doesn´t close	photocell interrupted	Check the correct PHC position and function
	AR-System triggered	check the sensor and force adjust-ments
radio receiver - no function	radio receiver board connected wrong	check the correct installation. See under point connection of the radio receiver
	Antenna connected wrong or no antenna	Check the antenna connection
	transmitter not programmed	Programm the transmitter

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