

Electrical operating instructions

GB

Door Control Panel TS 980 only for SE 6.70 FU

(Design and functions subject to change)

51171178 / 10.2002



ELEKTROMATEN®



OPERATING AND INSTALLATION INSTRUCTIONS

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SAFETY DIRECTIONS

Basic Directions

This control has been built in accordance with **DIN EN 12453 Industrial, commercial and garage doors and gates - Safety in use of power operated doors - Requirements; DIN EN 12978 Industrial, commercial and garage doors and gates - Safety devices for power operated doors - Requirements and Test methods** - and left the factory in perfect condition from the point of view of safety. To maintain this condition and to ensure safe operation, the user must observe all the directions and warnings contained in these operating instructions.

In principle, only trained electrical craftsmen should work on electrical equipment. They must assess the work which has been assigned to them, identify potential danger sources and take suitable safety precautions.

Reconstruction of or changes of this control Panel TS 980 is only permissible with the approval of the manufacturer. Original replacement parts and accessories authorised by the manufacturer guarantee safety. Liability ceases to apply if other parts are used.

The operational safety of this control Panel TS 980 is only guaranteed if it is used in accordance with the regulations. The limiting values stated in the technical data should not be exceeded under any circumstances (see corresponding sections of the operating instructions).

Safety Regulations

During the installation, initial operation, maintenance and testing of the ELEKTROMATEN, it is necessary to observe the safety and accident-prevention regulations valid for the specific application.

In particular, you should observe the following regulations (this list is not exhaustive):

European normativ

- DIN EN 12453
Safety in use of power operated doors - Requirements
- DIN EN 12445
Safety in use of power operated doors - Test methods
- DIN EN 12978 Industrial, commercial and garage doors and gates -
Safety devices for power operated doors - Requirements and Test methods

Please check normative´s bellow.

VDE-regulations

- DIN EN 418
Safety machinery
Emergency stop equipment functional aspects
Principles for design
- DIN EN 60204-1 / VDE 0113-1
Safety of machinery - Electrical equipment of machines - Part 1:
Prescriptions générales
- DIN EN 60335-1 / VDE 0700-1
Safety of household and similar electrical appliances - Part 1:
General requirements



Regulations

- Please ensure that the local regulations relating to the Safety of Operations of Doors are followed

SAFETY DIRECTIONS

Explanation of warnings

These operating instructions contain directions which are important for using the ELEKTROMATEN appropriately and safely.

The individual directions have the following meaning:



DANGER

This indicates danger to the life and health of the user if the appropriate precautions are not taken.



CAUTION

This warns that the ELEKTROMATEN or other materials may be damaged if the appropriate precautions are not taken.

General warnings and safety precautions

The following warnings are to be understood as a general guideline for working with the ELEKTROMATEN in conjunction with other devices. These directions must be observed strictly during installation and operation.

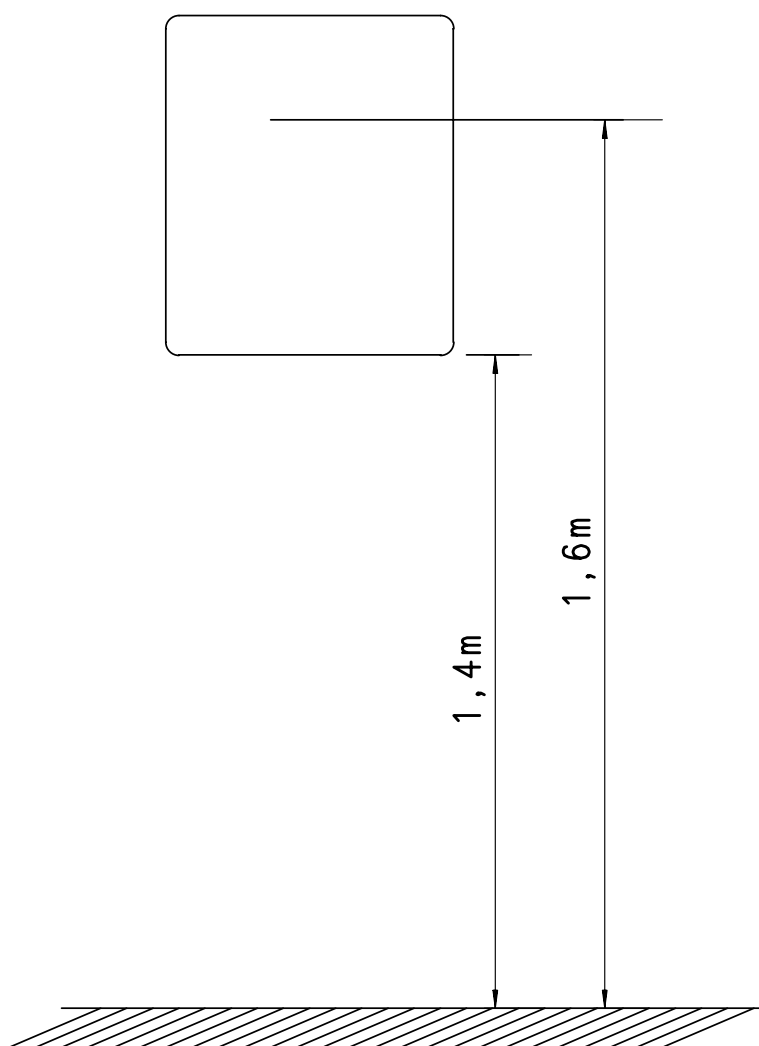


- Please observe the safety and accident prevention regulations valid for the specific application. The installation of the ELEKTROMATEN, the opening of covers or lids and electrical connection must be carried out when the supply is switched off.
- The ELEKTROMATEN must be installed with the authorised coverings and protective devices. Care should be taken that any seals are fitted correctly and screw couplings are tightened correctly.
- In the case of ELEKTROMATEN with a permanent mains connection, an all-pole main switch with appropriate back-up fuse must be provided.
- Check live cables and conductors regularly for insulation faults or breakages. When a fault is detected in the cabling, the defective cabling should be replaced after immediately switching off the mains supply.
- Before starting operation, check whether the permissible mains voltage range of the devices corresponds to the local mains voltage.
- Emergency stop devices in accordance with VDE 0113 should remain operational in all operating modes of the control. Releasing the emergency stop device should not cause any uncontrolled or undefined restart.

ENCLOSURE INSTALLATION

Before mounting the enclosure the surface has to be checked for flatness, slope and freedom from vibrations. For installation we recommend to use the template supplied. Mounting must be vertical.

Mounting, see drawing.



MAINS SUPPLY

The TS 980 control can be used with all GfA ELEKTROMATEN up to 2,2KW



Warning! This indicates danger to the life through electric shock.
Before starting assembly, disconnect the equipment from the electricity supply.

The control panel TS 980 works with the following supplies. (See diagrams)
Fig.1 to Fig.4 mains supply

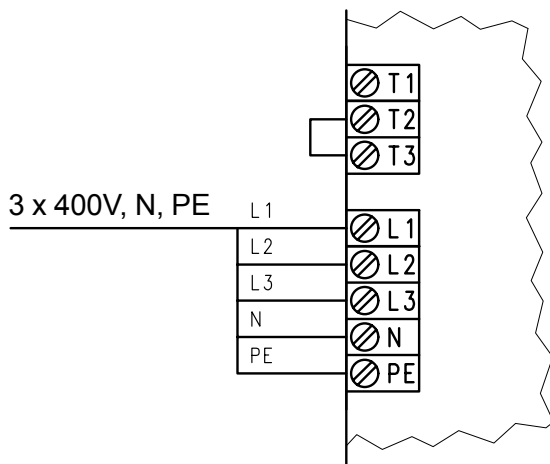


Fig. 1 Mains supply 3x 400V,N,PE

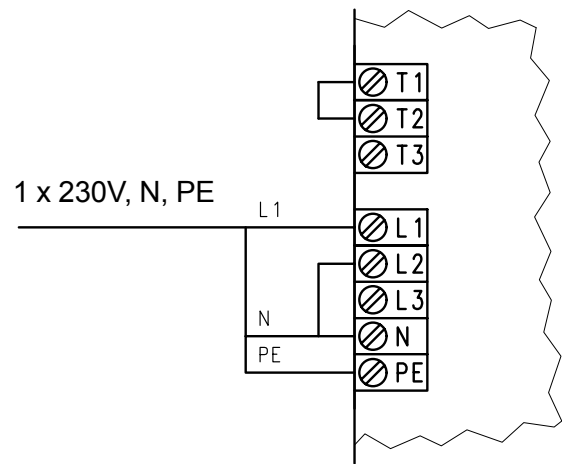


Fig. 2 Mains supply 1x 230V,N,PE

SAFETY DEVICES

Safety edge system with optional connection for shutter pass-door or slack-wire switch.

The control recognises and works with 5 different safety edges.

Each one needs a special 4 core spiral cable and includes an optional shutter pass-door or slack-wire switch contact.

The spiral cable connection must be made on the print with the plug provided. The other end is connected to a terminal box or a signal emitter, such as a pressure switch.

- Resistance evaluation 8K2 with normally open safety edge contact (page 9)
- Resistance evaluation 1K2 with normally open safety edge contact (page 9)
- Resistance evaluation 1K2 with normally closed safety edge contact (page 10)
(pressure switch with "Pressure Wave Testing")
- Resistance evaluation 8K2 with normally closed safety edge contact (page 11)
- Optical safety edge system (Fraba type) (page 11)



Important note!

When connecting a safety edge, make sure of compliance with DIN EN 12978 Industrial, commercial and garage doors and gates - Safety devices for power operated doors - Requirements and Test methods.

Mounting the spiral cable

A bush is provided on both sides of the control box for mounting the spiral cable.

Push the blue plugs through into the enclosure until there is sufficient cable to allow them to be connected to the board. The plug with two cores must be connected to the pass-door and slack-wire switch terminals. The three core plug must be connected to the safety edge terminals.

The control panel TS 980 recognises automatically the type of safety edge used.

Please check after installation all terminal screws are tight to ensure they are finger safe.

SAFETY DEVICES

Resistance evaluation 8K2 with normally open safety edge contact

This evaluation system is made for electrical safety edges within an end-of-line resistor of 8K2. The resistor must be connected in series with the switch in the safety edge.

If a pass-door or slack-wire switch is to be connected, remove the bridge at terminals ST and ST+ in the terminal box

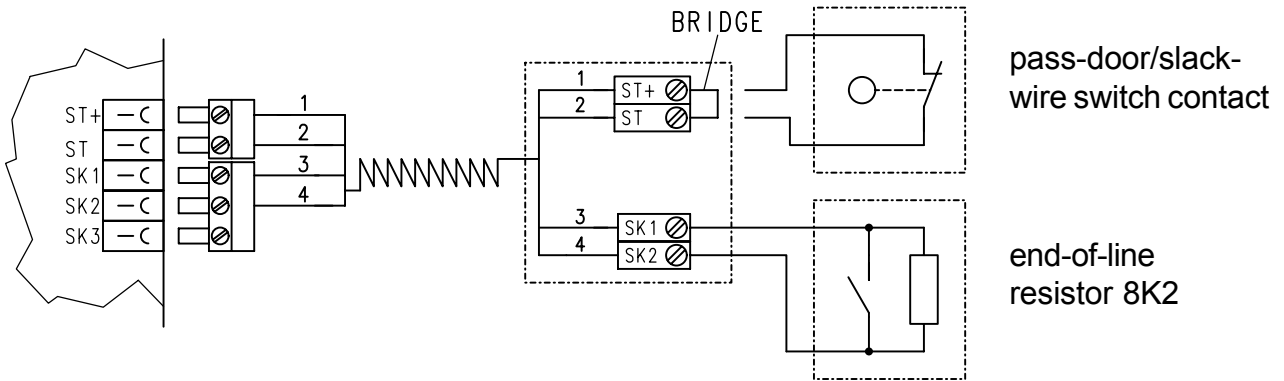


fig. 1 wiring diagram electrical safety edge with 8K2 resistor and normally open contact

Resistance evaluation 1K2 with normally open safety edge contact

This evaluation system is made for electrical safety edges within an end-of-line resistor of 1K2. The resistor must be connected in series with the switch in the safety edge.

If a pass-door or slack-wire switch is to be connected, remove the bridge at terminals ST and ST+ in the terminal box.

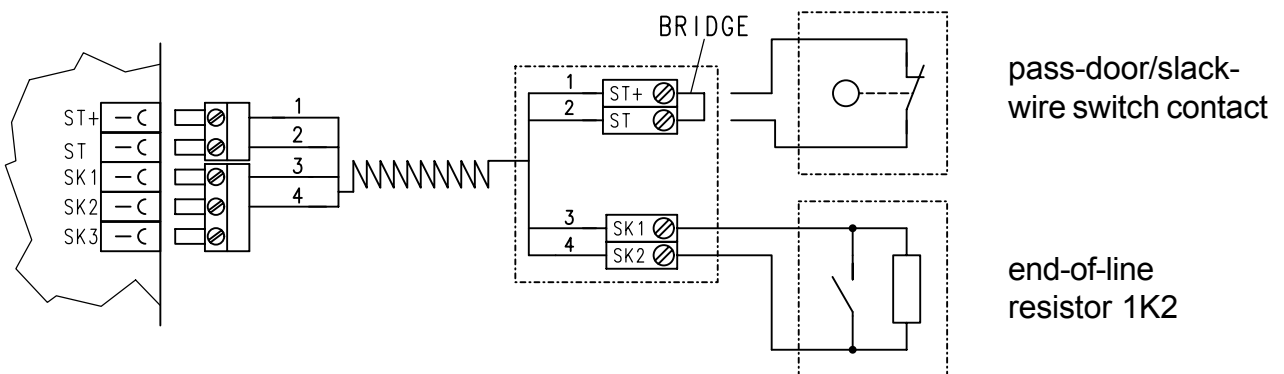


fig. 2 wiring diagram electrical safety edge with 1K2 resistor and normally open contact

SAFETY DEVICES

Resistance evaluation 1K2 with normally closed safety edge contact

This evaluation system is made for pressure-wave switches (N/C) with an end-of-line resistor of 1K2.

A pressure wave is generated by compressing the rubber profile, which is conducted to the pressure-wave switch through the plastic hose. The system should be tested as the door closes.

If a pressure wave activates the pressure switch in this time the TS 980 recognises the function of the safety edge. If the pressure switch has not been activated, the control goes into fault mode and the system will only work in DEAD MAN mode in the close direction.

If pass-door or slack-wire switch contact is to be connected, remove the bridge at terminal ST and ST+ in the terminal box.



Important note!

When setting the closed position the rubber edge has to send out a pressure wave sufficient to operate the pressure switch.

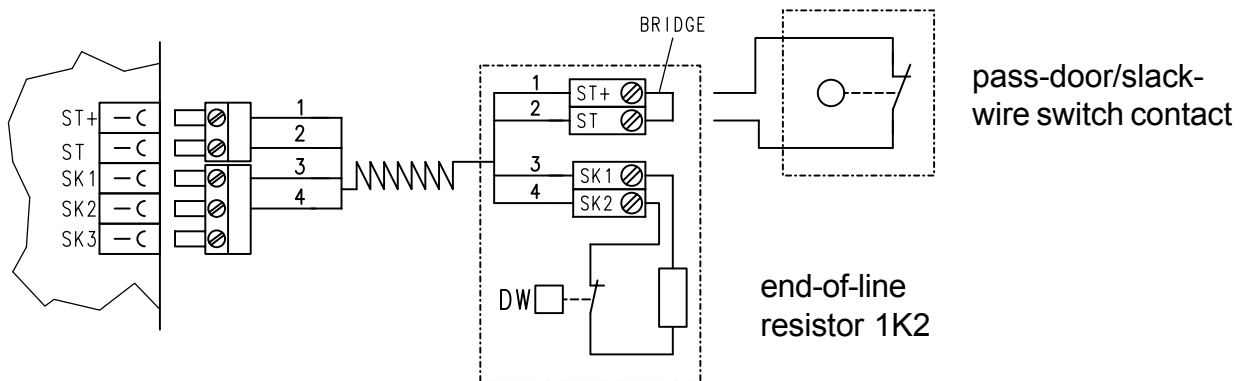


Fig.3: Wiring diagram resistance evaluation 1K2 normally closed contact (pressure - wave switch)

SAFETY DEVICES

Resistance evaluation 8K2 with normally closed safety edge contact

This evaluation system is made for safety edges within an end-of-line resistor of 8K2. When a normally closed safety edge system which works in quiescent current mode is connected, a separate safety edge control has to be connected. The resistor must be connected in series with the switch in the safety edge.

If pass-door or slack-wire switch is to be connected, remove bridge at terminals ST and ST+ in the terminal box.

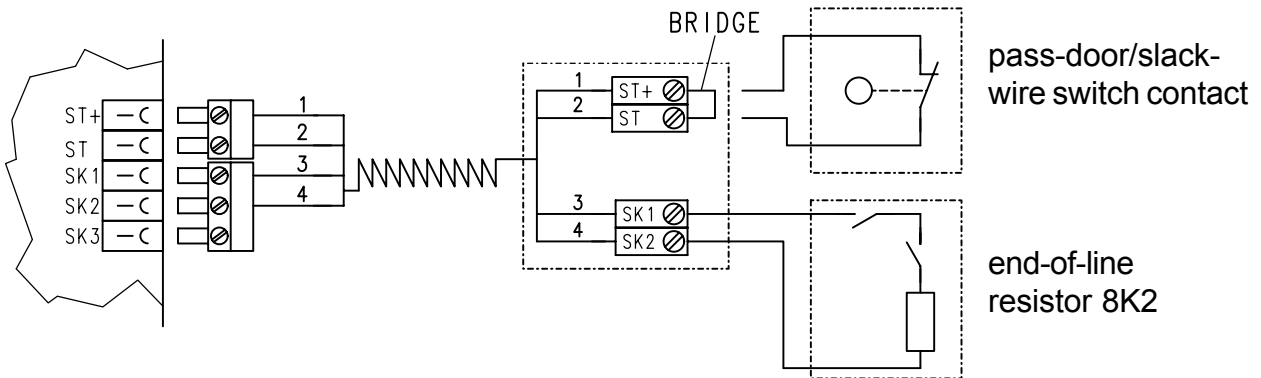
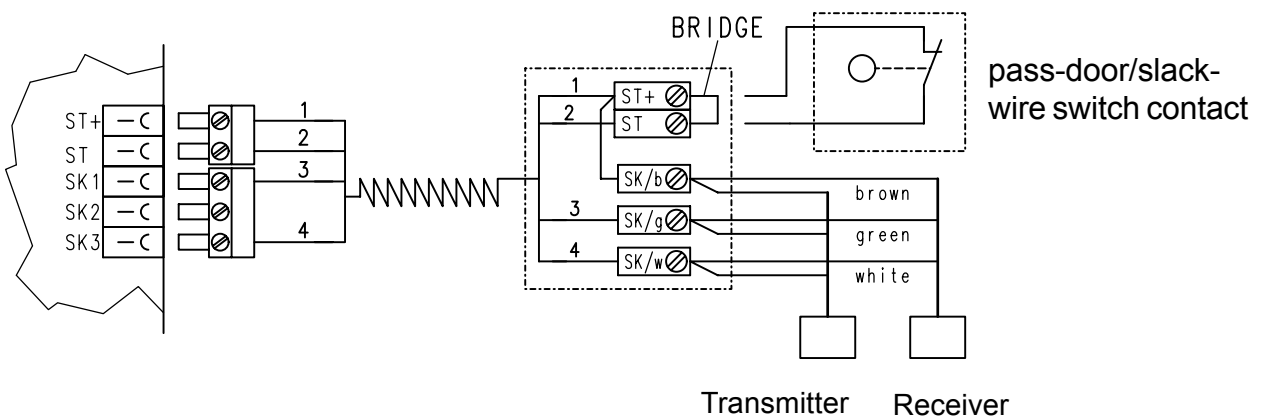


fig. 4 wiring diagram electrical safety edge with 8K2 resistor and normally open contact

To monitor the end of line safety edge system correctly, the resistor should be mounted close to the switching unit. I. e. pressure switch.

Optical safety edge (Fraba Type)

The principle of operation is similar to a through-beam light barrier with self testing. By activating the safety edge, the light beam is interrupted. If a pass-door or slack-wire switch is to be connected, remove the bridge at terminals ST and ST+ in the terminal box.



The fig. 5 wiring diagram optical safety edge system (Fraba type)

SAFETY DEVICES

Safety against entrapment

This is an additional safety system (e.g. self-testing light barrier) which shall prevent trapping a person or obstacle in the door. In accordance with EN 12453 monitoring is required of each door or shutter where lifting of people or obstacles cannot be prevented (e.g. Grilles).

A separate control system within an end-of-line resistor of 1K2 should be connected. TS 980 recognises various faults - short circuit, contact or supply interruption.

This safety system is only in effect in the upwards direction.

When recognising a contact the door movement upwards Stops and returns downwards for only 2 sec.. Then the door Stops until a new command is received. At the same time the control-display displays Emergency Stop Entrapment.

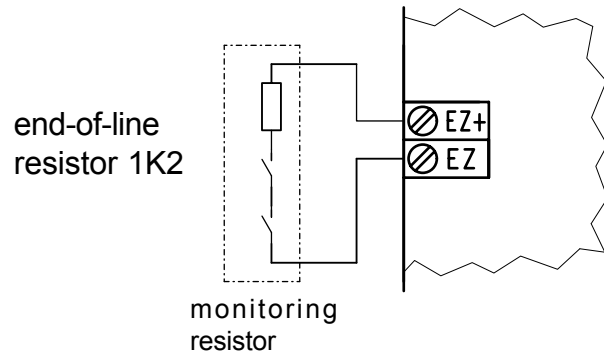


Fig. 1: Wiring diagram of indicator with a monitoring resistor.



Important note

In accordance with EN 954 -1 the safety edge control of the entrapment device has to meet category 2.

Slack-wire Switch

For doors with a cable or chain drive, in accordance EN 12453 slackness must be monitored. The control can be done with a slack-wire switch which can be connected directly on TS 980 terminals SL+/SL the reaction is just STOP.

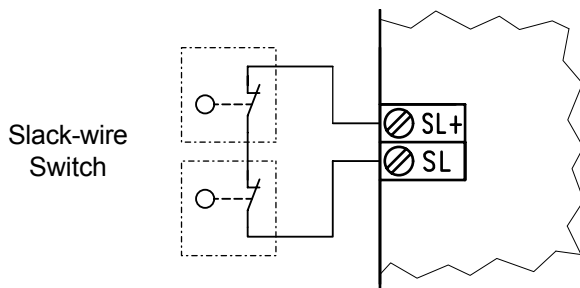


Fig. 2: Slack-wire switch wiring

Emergency Stop

In accordance DIN EN 418 the emergency Stop button has to meet category 0.

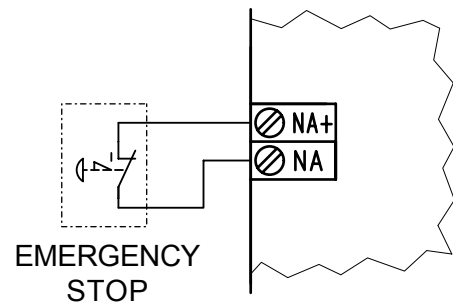


Fig. 3: EMERGENCY STOP wiring

SAFETY DEVICES

Photo-beam

One external photo-beam (through-beam or reflex type) can be connected.

If the beam is interrupted while the shutter is closing, it will STOP and move BACK UP. The beam is only operational in the closing direction.

Supply for the beam is 230V AC or 24V DC. A timed return after interruption in the automatic closing mode can be programmed only when a beam is connected (see program).

In accordance with EN 954 -1 the beam has to meet category B.



Important note!

Photo beam on the 24 V DC power supply may not exceed 60 mA.

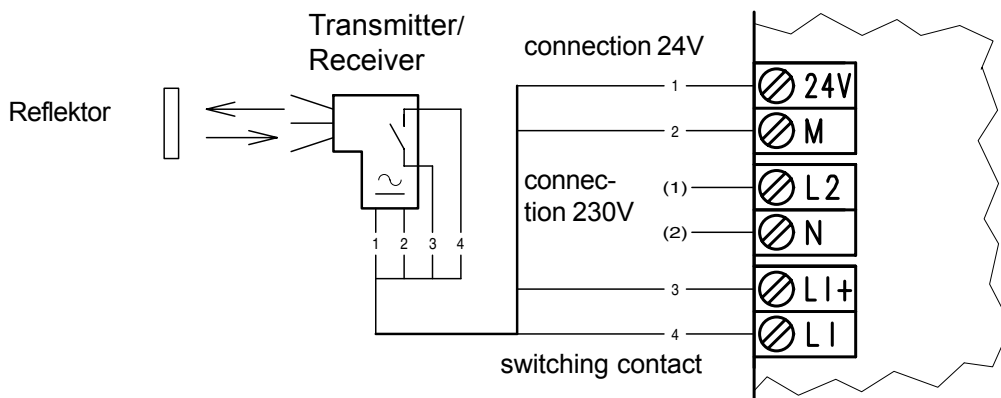


Fig. 4: Wiring diagram for reflective photo-beam

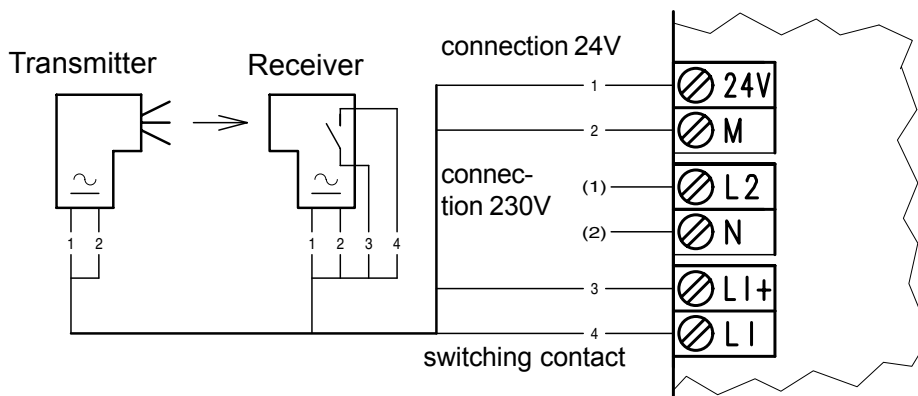


Fig. 5: Wiring diagram for thro-beam-photo-beam

PUSH BUTTON

Three push button station

Terminals are provided for two three button stations



Important Note

The first push button station has to be installed where the door movement can be seen through-out its travel for dead-man mode control. The Second push button can be installed at any other place and the door movement has not to be controlled. When the control goes into fault mode the second pushbutton will be disabled.

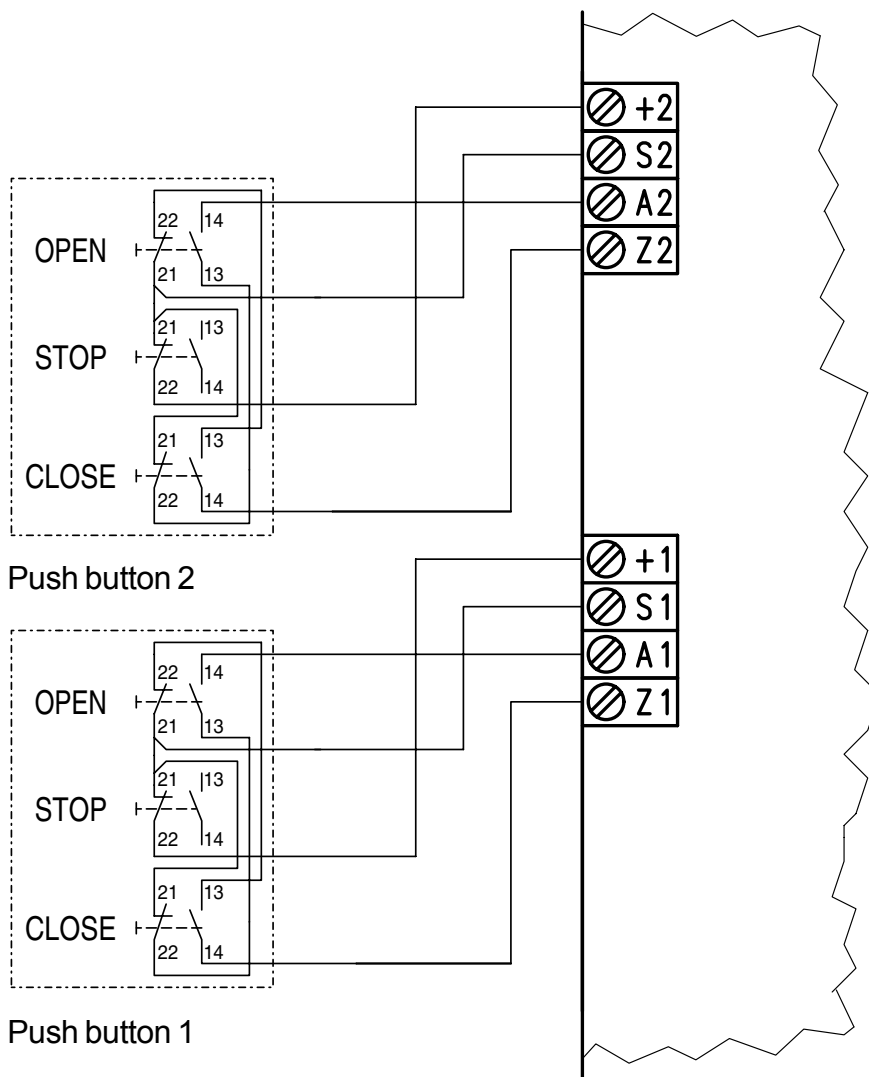


Fig. 1: Wiring diagram three button station

PUSH BUTTON

Intermediate stop mode

Intermediate Stop mode can be activated with a key switch (latching - ON-OFF) and setting the limit S6 at the required intermediate position when using mechanical limits (see page 26). The intermediate shutter position "PART-OPEN" is only in effect in the upwards direction and is the new OPEN position. By turning the key switch to the OFF position, the shutter works in standard mode.

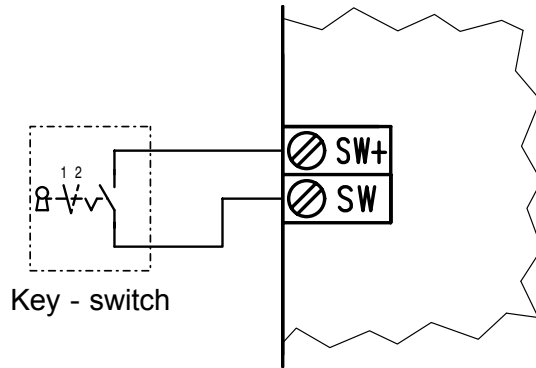


Fig. 1 wiring key switch (latching)

Ceiling pull switch

With each command (impulse) the shutter responds as follows:

Shutter position	Shutter mode
Shutter closed	Shutter moves to open position
Shutter moving open	No reaction
Shutter open	Shutter moves to close position
Shutter intermediate position open	Shutter moves to close position
Shutter moving closed	Shutter will STOP and move BACK UP

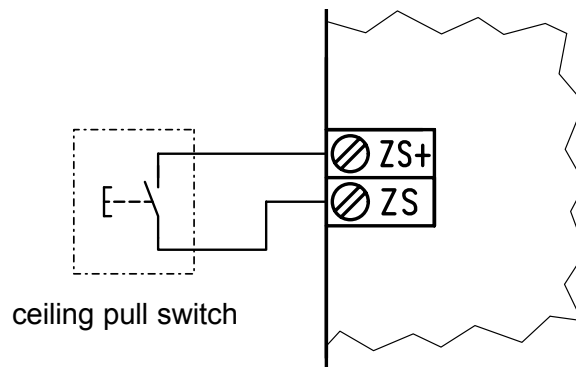


Fig. 2: wiring ceiling pull switch

RELAY CONTACT

The control provides two potential free relay contacts, which can be used for several functions. Functions can be programmed:

Relay contact 1	Relay contact 2
Fore-warning signal light	Signal light green
Switch contact	Switch contact
no function	no function

The relay contact will be supplied with no function programmed. The switch contact can be loaded max.: Voltage 230V current 1A.

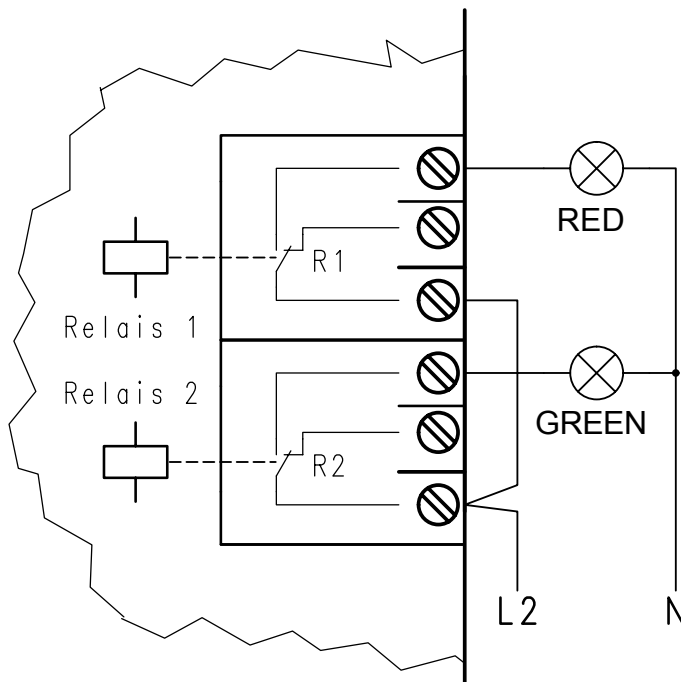
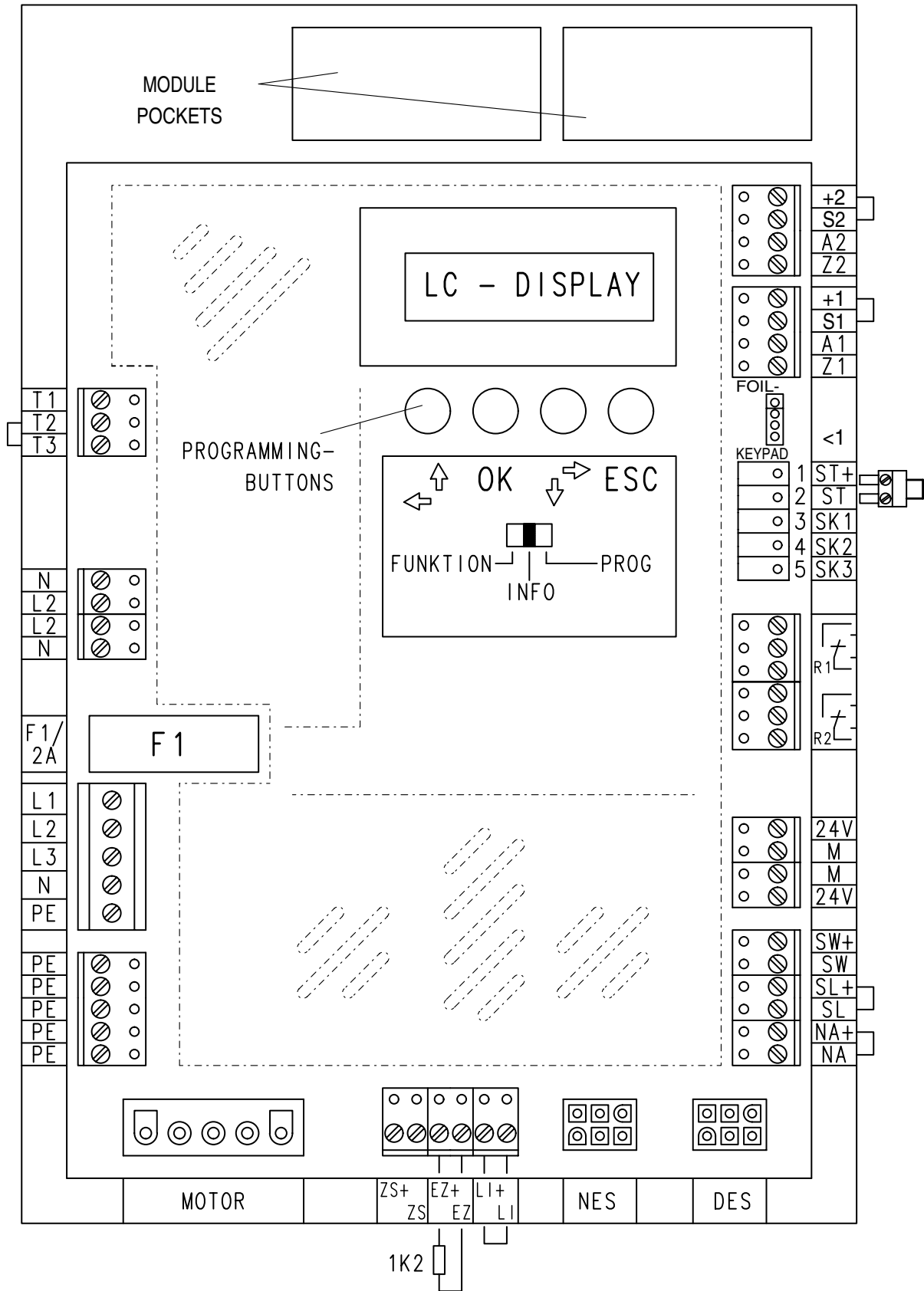


Fig. 1: Wiring diagram relay contact's

PCB PRINT OVERVIEW

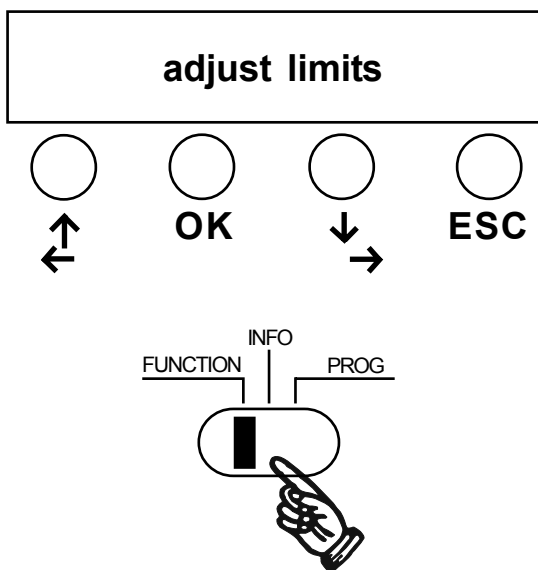


INITIALISATION

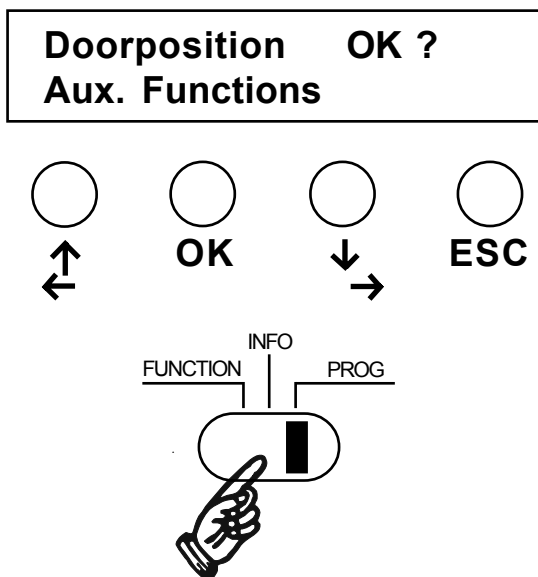
Initial installation

The control panel TS 980 is delivered with a 5 pole CEE plug and a foil keypad Open - Stop - Close. The SELECTOR SWITCH is set in the position "Function".

After installation, during the set-up, an initialising program starts running, which recognises DES , this needs max 5 sec.



display appears: Adjust limits



On initial installation the SELECTOR SWITCH must be set to PROG

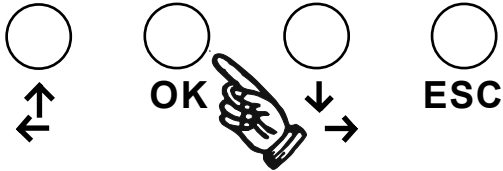
To move UP ↑ and DOWN ↓ in the program press the arrowed button, door position or additional adjustment can be selected. Confirm selected function with OK.

ADJUSTMENT OF THE LIMITS/ BASIC-FUNCTION

When control has recognised DES digital limits, and inverter adjust limit DES



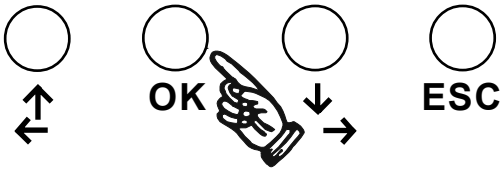
After PROG has been selected, the limits should be adjusted. Confirm door position OK



Select with arrowbutton ↑ ↓



Display appears, confirm OK?



To exit use ESC



Control is in the Menu for setting the limits. The arrow button UP and DOWN should be pressed and the shutter will move in DEAD MAN MODE to the final open position.

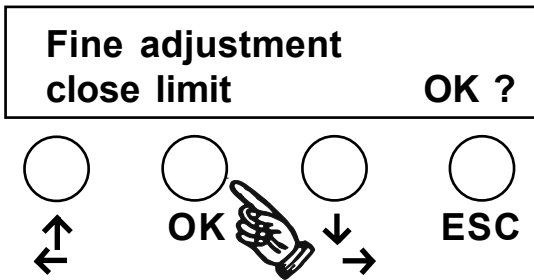
The final open position must be confirmed by pressing the OK button.

Display shows final limit close position. Follow same commands as before for final close limit position.

After correct limit adjustment and switching over the selector switch to "Function" the control is ready to operate in DEAD MAN MODE and both final limit positions should be confirmed by the moving door.

To exit use ESC

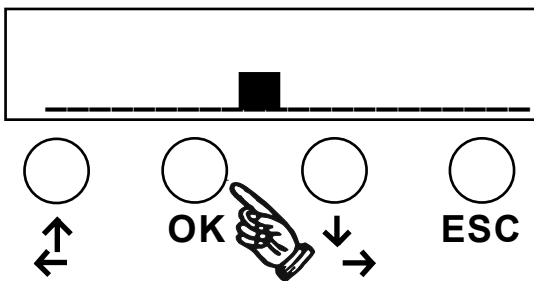
ADJUSTMENT OF THE LIMITS/ BASIC-FUNCTION



Set selector switch to PROG

Press the arrow button UP and DOWN and the display shows fine adjustment, open/close limit. After confirming with OK, control changes to adjustment mode.

Fine adjustment



This procedure uses the cursor on the display.

To make fine adjustments move cursor with the arrow buttons to the left or the right.

E.g. final close limit: By pushing the UP button the cursor moves left and the limit moves up. When moving the cursor, depending upon tube and shutter diameter, drum diameter, chainwheel ratio, etc. each step changes the final limit switch position by about 5 mm. New final limit position must be confirmed with OK.

After fine adjustment, switch over the selector switch to "Function" the door position can be checked and again readjusted.

When all the required door positions have been set, the safety limits and the pre-limit switch are adjusted automatically in the case of the digital limit. The pre-limit switch is set to disconnect reversing mode when the safety edge system is connected. A self-testing mode for pressure switch system will be initiated. The pre-limit switch switching position is automatically set 5 cm before the final limit close.

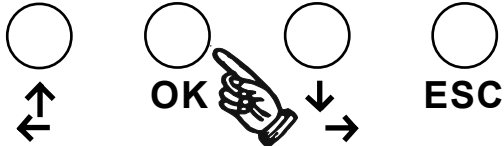
ADJUSTMENT OF THE LIMITS/ BASIC-FUNCTION

Safety devices

The TS 980 Control panel is able to recognise and work with several safety edge system (SKS). For detail see page 8. All available systems are listed.

After the limits are set correctly, the display shows:

**Recognise
safety edge system OK ?**



To exit use ESC

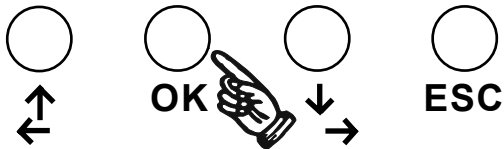
To identify SKS, OK button must be pressed.

The connected safety edge system is recognised and the display shows resistance evaluation or name of system, e.g.

FRABA SK OK ?

If no safety edge system is connected the display shows 'safety edge system not available' and the door will move only in DEAD MAN MODE in the downwards direction. A defective safety edge system has the same effect.

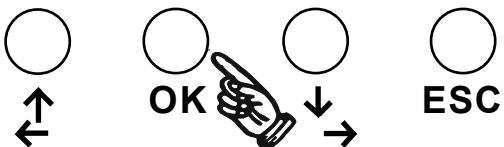
**Safety edge
1,2 K Ohm OK?**



Leaving this point is not possible and can only be confirmed by OK.

Recognition starts automatically. To confirm SKS system (resistance evaluation) press OK and the rubber profile must be pressed by hand to make contact.

**Safety edge
1,2 K Ohm OK?**



Leaving this point is not possible and can only be confirmed by OK.

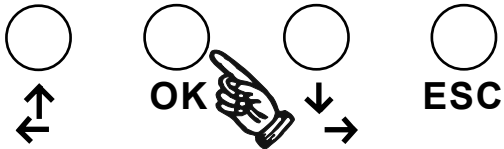
After confirmation by pressing OK and making a contact on the rubber-profile the safety edge system is on order.

ADJUSTMENT OF THE LIMITS/ BASIC-FUNCTION

Intermediate stop

Before the intermediate mode can be activated the final limits must be set correctly.

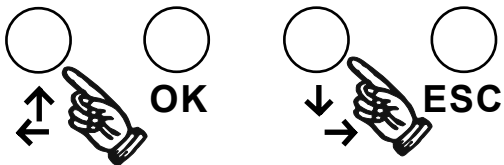
Intermediate Mode Adjustment OK?



Confirm with OK:

To exit use ESC

**Door OPEN >
Door CLOSE < OK?**



This adjustment is the same as setting the final limits.

The shutter position is reached in DEAD MAN MODE.

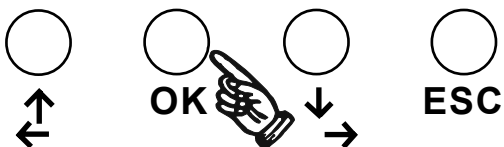
Pre-limit S6 must be switched once, to set the memory in the control. If the function works correctly, the control confirms set.

If S6 has been chosen for intermediate stop the relay contact 2 cannot be used as a switching contact.

To exit use ESC

After adjustments the display returns to main menu.

**To main menu
OK ?**



Confirm with OK and main menu appears on the display.

ADJUSTMENT: AUXILIARY FUNCTIONS

Selecting Aux. Function mode

Press the arrowed button UP and DOWN  , OK can be moved to Aux. Functions or leave with ESC.



If pressing ESC before selection has been confirmed the function would stay in work or non adjustment has been made.

Back and forth jumping is necessary.

To exit use ESC

Adjusting the automatic close feature

After selecting Aux. Functions the display shows:



When automatic close feature is required confirm OK.



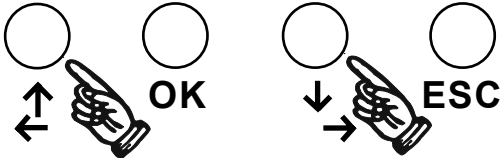
The timer works between 0 and 299 sec. The first figure blinks on hundreds and by pushing the arrow button a number between 0 and 2 can be set and confirmed with OK.

The second figure blinks on tens and by pushing the arrow button a number between 0 and 9 can be set and confirmed with OK, similarly with the units figure. When each figure is adjusted and confirmed with OK the timer mode is in order.

ADJUSTMENT: AUXILIARY FUNCTIONS

After adjustment of the automatic close feature the display shows Auto close LI, photo-beam interruption.

Auto close → yes < >	LI no OK ?
--------------------------------	----------------------



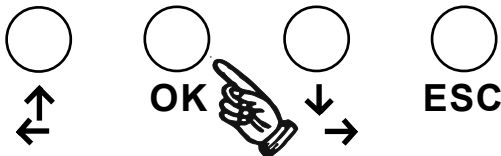
This menu only appears when a photo-beam is installed and the timer to close is set. If the closing cycle is required to start immediately after the photo-beam has been interrupted and re-made use the arrowed buttons UP and DOWN to set the >> arrow before yes.

If the closing delay timer should not be interrupted set the >> arrow before no and confirm OK.

Adjustment relay contact 1

This will be shown after automatic close feature

relay contact adjustment	1 OK ?
---	-------------------------



See description relay contact (page 16). The TS 980 has 2 potential free relay contacts available that can be chosen for several functions.

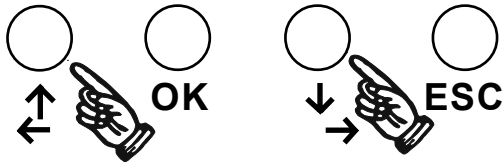
In this operation mode only one pre-warning signal light can be connected. The additional functions of the switching contact are also available.

Otherwise this mode can be left in 'no function'.

ADJUSTMENT: AUXILIARY FUNCTIONS

relay contact 1
No function < >

Press arrowed buttons and select no function or relay contact and confirm OK.

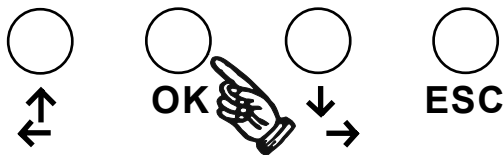


or

relay contact 1
red light < >

red light
Fore-warning time 00 sec

The timer should be adjusted between 0 and 40 sec. to warn of the start of the closing cycle. Adjustment is the same as the automatic closing feature and must be confirmed by OK. With the arrowed button the required time can be selected and confirmed by OK.



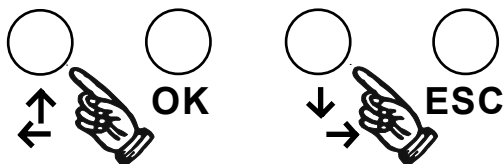
or

relay contact 1
switch contact < >

When pre-warning time has been confirmed (also 00 sec. is possible) control changes to continued or flash light of the connected traffic-lamp.

red light
continuous light < >

Press the arrowbutton the required selection must be confirmed by OK.



or

red light
flash light < >

Blinking frequency 1 HZ

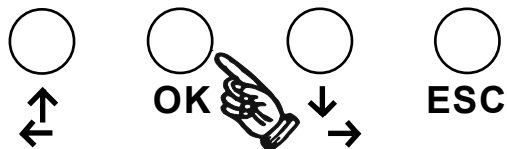
ADJUSTMENT: AUXILIARY FUNCTIONS

Adjustment relay contact 2

Display appears automatically this function.

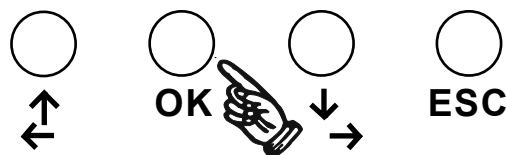
relay contact adjustment	2 OK ?
-----------------------------	-----------

Confirm by OK.



relay contact No function	2 < >
------------------------------	----------

After confirming with the OK button, the display shows 'no function' with the arrowed button the required function can be selected.



or

relay contact green light	2 < >
------------------------------	----------

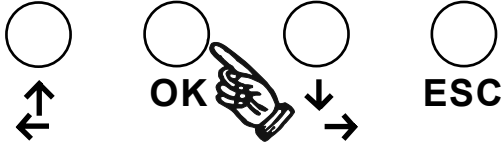
or

relay contact switch contact	2 < >
---------------------------------	----------

ADJUSTMENT: AUXILIARY FUNCTIONS

Adjustment of the Door speed (Frequency Inverter)

Inverter adj.
OK ?

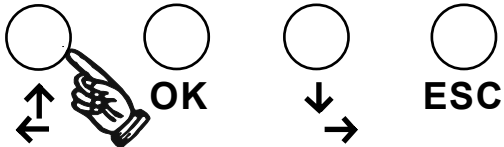


With this setting it is possible to adjust the Door speed, in both directions.

The speed adjustment is made in steps, 0 to 9, with zero being the slowest.

The up and down buttons adjust the speed setting and the "OK" button is used to confirm the setting.

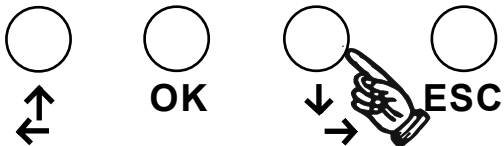
Door Speed
UP 0



The TS 980, control checks the Door speed in both directions and then sets the slow ramps for optimum performance.

There are no additional adjustments necessary.

Door Speed
Close 0



see above



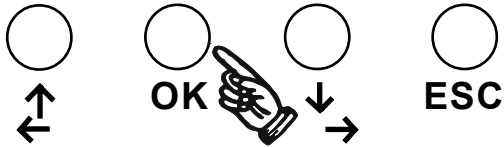
Important Note:

To ensure that the forces on the safety edge are in accordance with DIN EN 12453 when the door is closing the door speed MUST NOT increase (run on).

ADJUSTMENT: AUXILIARY FUNCTIONS

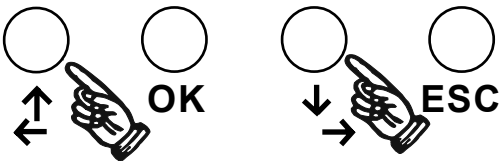
Adjustment of pre-limit

pre-limit switch
SK einst. OK ?



To change the safety edge function to Stop Only after the pre-limit has been activated (e.g. for folding doors)

SK pre-limit area
→ active < > inactive



This function can be required for Roller shutters or Folding doors required to close completely. With the arrowed buttons all functions can be set active or inactivate.

Arrow set before 'active', the safety edge is enabled after the pre-limit or if the arrow is set before 'inactive' the safety edge is disabled after the pre-limit is reached.



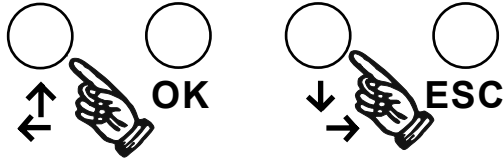
Important note in connection with safety edge system!

In operation of vertical moving doors (Sectional doors or vertical lift-gates, it is essential to set pre-limit SK. The pre-limit area is set 5cm before final close position and activates the pressure switch self-testing mode or with an electrical safety edge system the reversing function is deactivated.

ADJUSTMENT: AUXILIARY FUNCTIONS

Automatic ground adjustment

Auto ground adjustment
 → active < > inactive



The function 'Auto ground adjustment' is used for doors with a cable e.g. Sectional doors or vertical lift-gate. An automatic correction of slackness or change of ground height up to 5 cm is possible. The slack wire switch is still recognised.



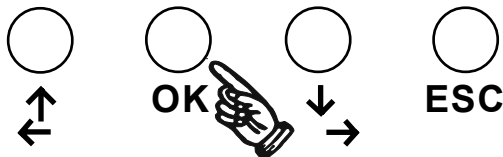
Important note!

When this function is used, it is essential to make sure the safety edge makes contact with the ground on each shutter movement. To assist fit an additional rubber to make sure of ground contact.

Automatic ground adjustment is possible if the pre-limit switch is set on active. With the arrowed buttons active or inactive can be selected. This display appears automatically after the pre-limit function is selected.

Adjustment of reversing time (time between contact of safety edge and switching point of contactor) to be selected only for rapid doors.

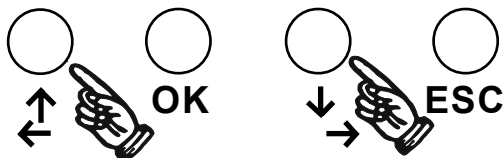
reversing time
 OK?



When this function is required it must be confirmed by OK.

The control supplies only two possibilities of speed + = fast and - = slow.

reversing time SK
 → + -



Pressing the arrow buttons UP and DOWN selects + and -. Slow should be used for slow and heavy shutters.



Important note!

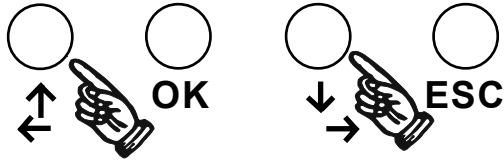
A check of Force Limitation must be done in accordance DIN EN 12453, the reversing time has an influence on the limiting force.

ADJUSTMENT: AUXILIARY FUNCTIONS

Overrun correction should be selected only for rapid doors.

correction lower limit
→ active < > inactive

Limit overrun correction can be used to ensure the door always closes to the correct position. Press the arrowed button to select active or inactive.



Important note!

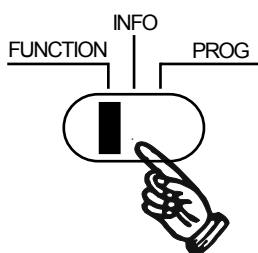
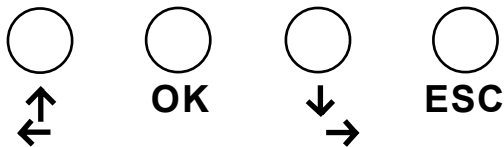
Dependent on temperature change during a long period of no operation, at the close limit the shutter could be open 1 cm. This fault can be corrected with switching the final limits by shutter movement.

Final program

After all requested adjustments have been made the SELECTOR SWITCH must be set to "Function".

Final close

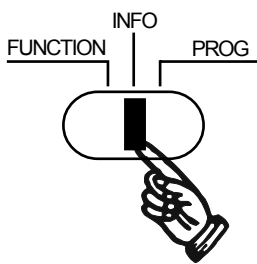
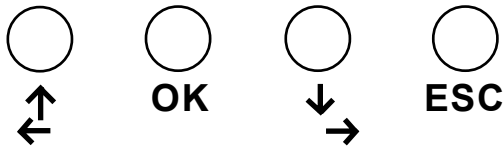
The door can be operated in program mode. In Operating mode all faults or restrictions appear on the display. When errors are present, the fault will be shown on the display after the change to "Function".





REQUEST INFO MODE

To select INFO MODE set the switch to the central position, the display first shows the cycle counter. It counts each full cycle. A full cycle means leaving and reaching the final close limit.

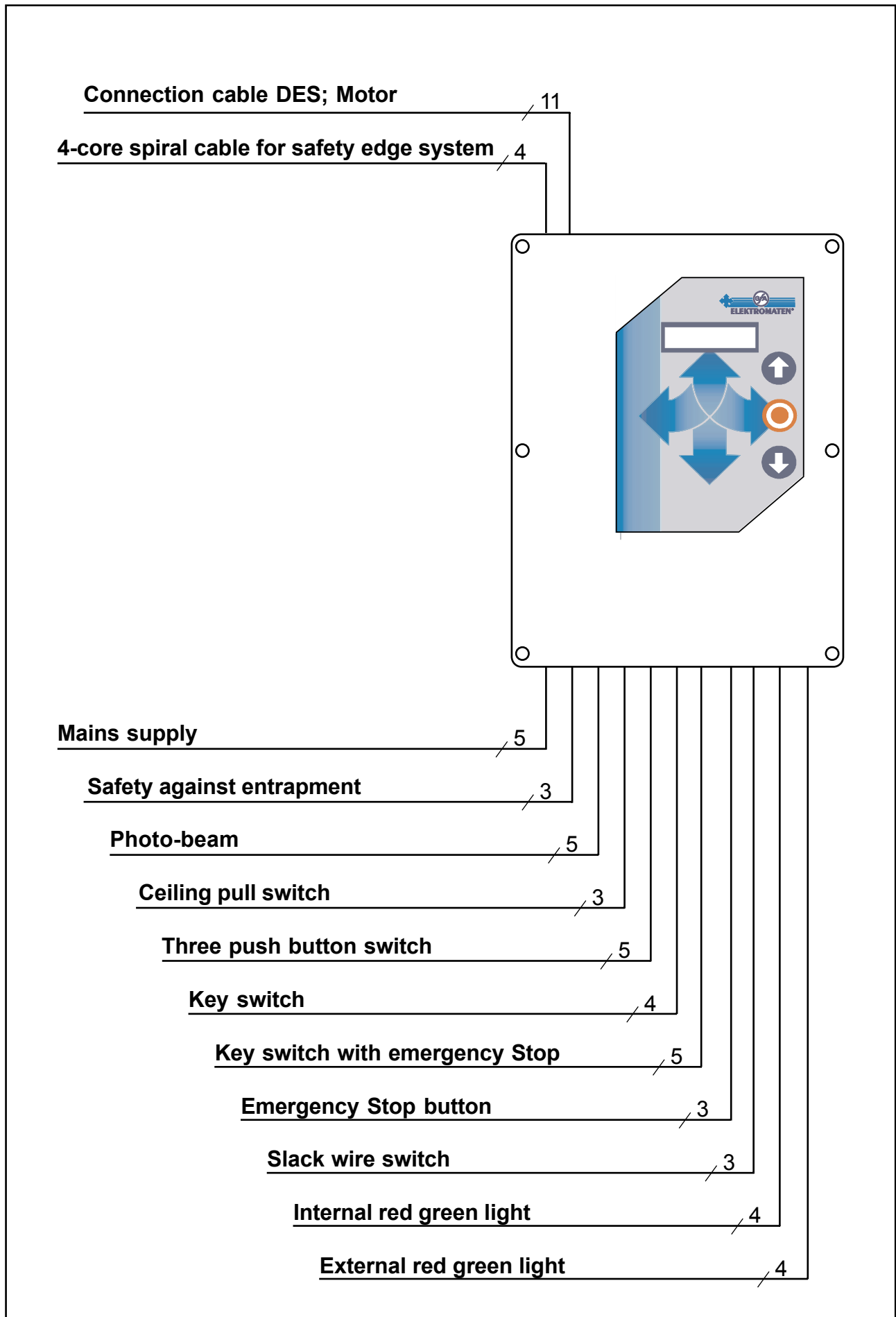
In INFO mode shutter movements are not possible.



Pushing the arrow buttons UP and DOWN   selects..

number of cycles	Displays all movements after first installation reset not possible.
last command	Displays the last command
last fault	Displays the last 2 faults
program change at cycle count: XXX	Monitors program changes, only 3 numbers (XXX) at the counted shutter cycles (XXXXX) max. 5 numbers.
last maintenance at cycle count: XXXXX	displays cycles from last maintenance
new maintenance memory ?	Cycle count for the next maintenance can be memorised.

INSTALLATION PLAN



FAULT REPORT

The following faults can appear on the display.

reported fault

function

shutter in safety limit area	shutter movement not possible
limit not connected	limit not recognised no function
CPU - fault	micro-controller test not OK
safety edge fault	safety edge short circuit supply disconnected
fault entrapment security	resistor not available supply disconnected
fault pressure switch testing	testing not recognised in pre - limit area
SKS contacted	safety edge rubber triggered, longer 10sec. or defect
LI Photo beam activated	light barrier activated
fault obstacle	In automatic closing mode the shutter has twice touched an obstacle, new command demanded
command Stop	continuous Stop, bridge+1 to S1 or +2 to S2 not available
command open	continuous command pushbutton fault
command close	continuous command pushbutton fault
final limit adjustment	final limit not adjusted or not memorised
emergency stop safety device	fault safety limit, thermal, handoperation
emergency stop pass door, cable slack switch	Pass door or slack cable switch contact input error
emergency stop, emergency push button	emergency stop button activated or bridge on PCP not available
emergency stop entrapment security	entrapment safety defect or resistor not available

FAULT REPORT

The following faults can appear on the display.

reported fault

function

NES; DES short circuit	false plug in contact
internal fault report serial protocol at DES	Electronic limit and frequency inverter protocol faulty
DES fault	Electronic limit defect
emergency stop inv. timeout	faulty inverter circuit Reset by switching off and on
emergency stop safety slope	opened safety device (nc-contact built in series) during initialisation Reset by switching off and on

TECHNICAL DATA

Housing material	ABS plastic
Housing dimensions	300 x 230 x 110
Mains supply	3 x 400V, N +/- 10%with /without N 3 x 230V, +/- 10% 1 x 230V, N +/- 10%r
Frequency	adjustable
Max. motor power	0,75KW (1ph; 230V)
Supply fusing	10A delay
Supply for external devices	230V supply with neutral fuse 2A delay 24V DC, max. current 150mA, output short in circuit safe
Power input control	15VA
Max. realy contact current	230V AC,2A
Controlling inputs	24V
Temperature	in use: from -10 up to +50°C in storage from -20 up to +70°C
Humidity:	up to 95% not condensing
Installation:	vibration free mounting, e.g. on flatt wall
Protection:	with plugged cable IP54, IP65 available