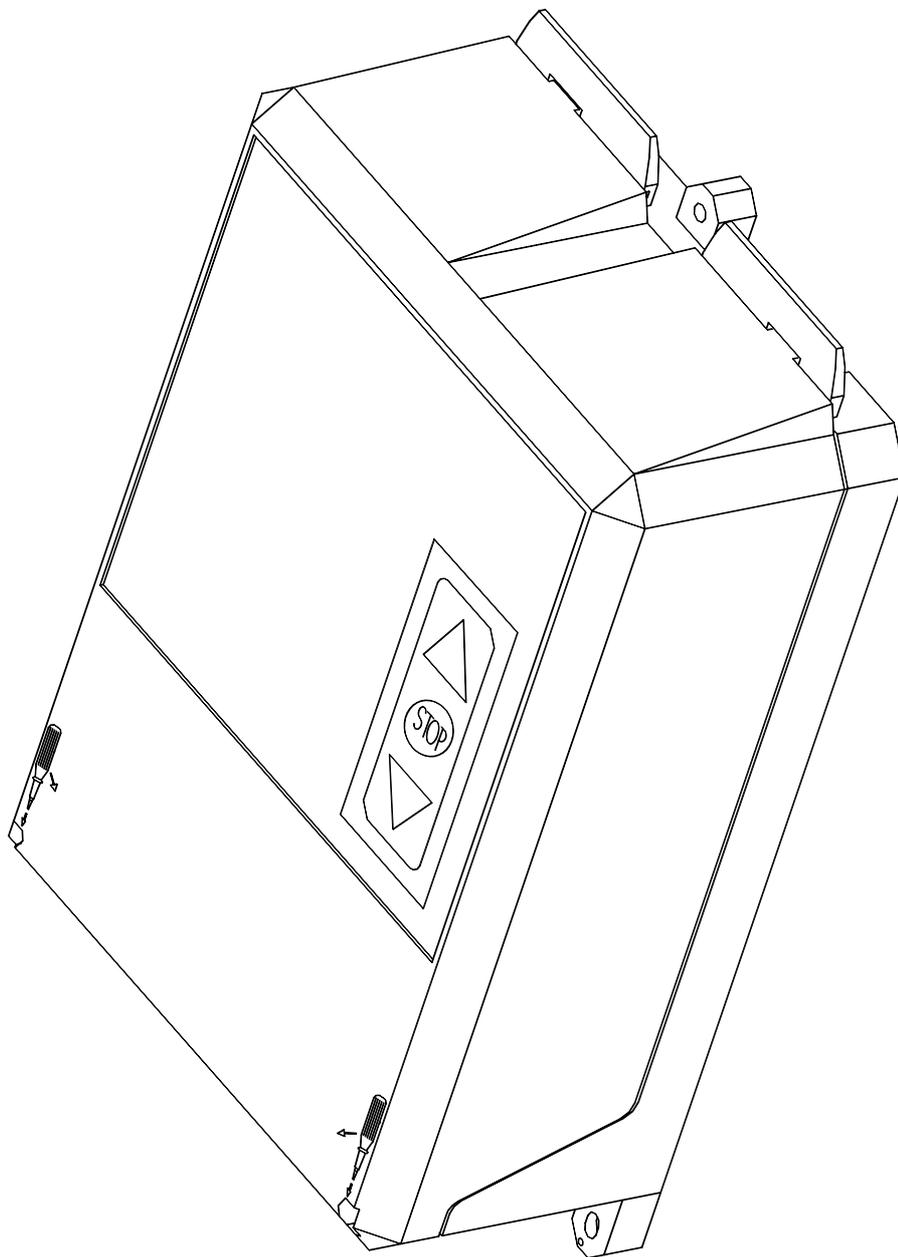


TST WU



Important !

**You must read the function description before operating,
connecting or starting up door controller.**

Notes

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This edition replaces all earlier versions.

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This Manual is directed especially at persons involved with starting up / commissioning the TST WU door controller of FEIG ELECTRONIC GmbH. Starting up the controller must be carried out only by officially trained electrical experts who are familiar with the safety standards of electrical drive and automation technology.

The entity which has placed the TST WU door controller in service is solely responsible for the completeness of the startup manual.

This Manual shows only a small range of the controller functions. Further functions and descriptions for individual door functions as well as more exact specifications for the controller and hazard notes can be found in the main description.

The collecting of information in this document has been done to the best of our knowledge and with due diligence. FEIG ELECTRONIC GmbH does not warrant the correctness and completeness of the information in this document. In particular, FEIG ELECTRONIC GmbH cannot be held liable for following damages due to faulty or incomplete information.

Since mistakes can never be completely avoided in spite of our best efforts, we always welcome feedback. The installation recommendations contained in this document presume favorable surrounding conditions. FEIG ELECTRONIC GmbH assumes no liability for perfect function in environments alien to the system. FEIG ELECTRONIC GmbH provides no warranty that the information in this document is free of foreign copyrights. FEIG ELECTRONIC GmbH does not grant any licenses for its own or foreign patents or other copyrights in connection with this document. Warranty claims against FEIG ELECTRONIC GmbH are the right of the direct contractual partner only and are not transferable. Warranty is assumed only for the products supplied by FEIG ELECTRONIC GmbH. There is no warranty for the overall system.

The description of products, their use, possibilities and performance data are not to be taken as assured properties and are subject to technical changes.

General notes concerning this document

The following symbols are used in this function description to alert the user to various hazards and useful tips.

 **WARNING** alerts to a possible hazard to persons if the procedure is not performed as described.

 **ATTENTION** alerts to possible damage to the controller.

 **IMPORTANT** alerts to information which is important to the function of the door controller or door.

 refers to useful information which is useful but not absolutely necessary for using the TST WU door controller

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1 Safety information

ATTENTION: IMPORTANT SAFETY INSTRUCTIONS

IT IS IMPORTANT FOR THE SAFETY OF PERSONS TO OBSERVE THESE INSTRUCTIONS. THESE INSTRUCTIONS MUST BE KEPT:

- All work concerning installation, set-up and maintenance must be carried out exclusively by qualified staff. You must specifically pay attention to the following regulations : VDE0100, EN 50110 (VDE0105), EN 60204 (VDE0113), EN 50178 (VDE0160), EN 60335 (VDE0700), fire prevention regulations, accident prevention regulations and the regulations relevant to industrial gates (ZH1/494, EN12453, EN12978)
- The control system should only be opened when the power supply is completely switched off.
- If the potential-free contacts of the relay outputs or other contact points are operated with external power. i.e. with a dangerous voltage which can still be live after switching off the control system or when the mains plug is disconnected, an appropriate warning sticker must be clearly visible on the control system casing. ("ATTENTION! all mains electricity circuits must be switched off before accessing the connecting terminals.")
- The control system must never be operated when it is open.
- The control system should only be operated with dismantled CEE connector if the mains supply can be completely disconnected from the control system by means of a corresponding switch. The mains plug or the switch used as a substitute must be easily accessible.
- If the connecting cable of this appliance is damaged, it must be replaced by the manufacturer or his after-sales service or by a similarly qualified person in order to avoid dangers.
- Even after switching off the power supply, there are still dangerous voltages for up to ½ a minute on the DC-bus capacitors. The discharge time until the voltage values are less than 60 V DC is a maximum of 1 minute. Touching internal control system components during this discharge time is dangerous.
- If the switching power supply is defective, the discharge time for the DC-bus capacitors to reach less than 60 V DC can increase significantly. Here, discharge times of up to 2 minutes can occur.
- If the 24 V control system is short-circuited or extremely overloaded, the switching power supply does not start although the DC-bus capacitors are charged. The display and LEDs remain dark. It is not possible to start the power supply unit until after the short-circuit or extreme overload has been resolved.
- After switching off the power, the power supply unit is still supplied for several seconds by the DC-bus capacitors and still maintains the power supply function for a certain time depending on the power supply unit loading.
- The control system must not be operated without a connected protection earth. The absence of protection earth results in dangerous high voltages, caused by discharge capacities, on the control system housing. The protection earth connection must be carried out in accordance with EN50178 Section 5.2.11.1 for increased leakage currents >3,5mA.
- The system must not be switched on or operated when wet. This can result in destruction of the control system.
- If the control systems are used outside the specified temperature range, it must be ensured, using a regulated and monitored heating system, that the specified operating temperature range is maintained when the power supply is switched on and during operation of the control system.
- It is prohibited to operate the control system if the keypad or screen is damaged.. Damaged keypads and screens must be replaced. Touching the keypad with sharp objects must be avoided in order to avoid damaging the keypad. The keypad is basically only intended to be touched with the fingers.
- Before switching on the control system for the first time, it must be ensured that the plug connectors and evaluation cards (plug-in modules) are in the correct position. Mislaced or skewed plugging-in the cards can result in damage to the control system as can installing unauthorised third-party cards.
- When the gate is operated in dead-man operating mode, it must be ensured that the gate area can be viewed by the operator as safety equipment such as safety rail and light barrier are not effective in this mode.
- It is forbidden to operate the contactors manually. If the protective foil is destroyed, the guarantee is void.
- In order to avoid hazards due to a defective or sticking contactor, a mechanical stop must be installed in the end positions for all gate types

- The parameter setting and operation of the safety equipment must be checked. The adjustment of the parameters, bridges and other operating elements must only be carried out by qualified staff.

⚠ WARNING Disregarding the safety information can be detrimental to health or damage the control system.

We do not claim to have fully covered the safety information. Please contact your supplier for further information about the product.

The manufacturer has carefully tested the appliance hardware and software and the product documentation, however cannot make any guarantee of complete correctness.

Appliance identification (type plate with information about the name and address of the manufacturer, serial number, type description, power supply and temperature range) must be done by the user.

2 Technical data

Housing dimensions (W x H x D):	ca.: 182 x 320 x 93mm (without emergency stop button)		
Mounting:	upright		
Power supply range for 3-phase current with N	3 x 200 ... 415V $\pm 10\%$ / 50 .. 60Hz corresponds to mains power supply voltage of 115 ... 240V $\pm 10\%$ / 50 .. 60Hz		
Power supply range for 3-phase current without N	3 x 115 ... 240V $\pm 10\%$ / 50 .. 60Hz corresponds o mains power supply voltage of 115 ... 240V $\pm 10\%$ / 50 .. 60Hz IMPORTANT N must be connected with L2.		
Power supply range for 3-phase current without N in connection with the option TST WU-0.0-A – Supply adjustment 400V	3 x 360 ... 400V $\pm 10\%$ / 50 .. 60Hz		
Required fuse	3x 10A Type K		
Power consumption Power supply unit without motor	max. 30W		
Power consumption Power supply unit with AC3 motor at	400V Max. 2.2 kW	230V Max. 1.5 kW	115V Max. 0.75 kW
External power supply (230 V):	230 V _{AC} $\pm 10\%$, 50...60 Hz (fused on the printed circuit board: 2 AT)		
Control voltage / external power supply 2:	24 V _{DC} $\pm 5\%$ max. 500 mA including all plug-in modules and 12 V connections fused via self-resetting semiconductor fuse		
External power supply 12V:	11.3 V _{DC} $\pm 5\%$, regulated, max. 150 mA		
Control inputs:	24 V _{DC} / typ.15 mA min. signal duration for input control commands: > 100 ms all inputs must be connected potential-free or:		
IN1 ... IN8: (with TST RWU: IN21 ... IN 28)	< 2 V: inactive → logical 0 > 17 V: active → logical 1		
IN9 ... IN10:	< 5 V: inactive → logical 0 >16 V: active → logical 1		
RS485 A and B:	Only for electronic limit switches RS485 level, terminated with 100Ω		
Safety chain / emergency stop	All inputs must be connected potential-free < 15 V: inactive → logical 0 >17 V: active → logical 1 Contact load capacity: $\geq 35 V_{DC} / \geq 200 \text{ mA}$ If the safety chain is interrupted, no movement of the drive is possible, not even in dead-man		

Safety rail input	for electric safety rails with 1.2k Ω or 8.2k Ω terminal resistance and for dynamic optical systems	
Relay outputs	if inductive loads are switched (e.g. further relays or brakes), they must be equipped with corresponding noise suppression measures (free-wheeling diodes, varistors, RC elements)	
Relays K1, K2: (with TST RWU: K3 ... K6)	\Rightarrow 24VDC / 500 mA \Rightarrow 230 VAC / min. 0.1 A / max. 80 W potential-free switching, change-over contact	<i>Contacts which have been used once for power switching can no longer switch extra-low voltage</i>
Drive output:	3x 400VAC, max. 2.2 kW for AC-3 Reversing contactor is prepared for operating three-phase drives Max. length of the motor cable: 30m	
electromechanical brake	230 V _{AC} -control via switched motor phase and N	
Operating temperature range:	-20...+50°C	
Storage temperature range	-20...+70°C	
Air humidity	up to 95% not condensating	
Mains cable installation	Y, the mains cable must only be replaced by the manufacturer or his after-sales service or by another qualified person	
Equipment mobility	stationary	
Protection class	Protection class I	
Equipment type	Motor appliance, external motor is not part of the delivery from FEIG ELECTRONIC GMBH	
Vibration	low vibration installation, e.g. on a brick wall	
Protection class	IP54 (IP65 by replacing CEE connection and sealing cable entries) All unused cable entries must be closed.	
Weight	ca. 2.8 kg	
Directives	Standards:	
EMV-Directive: 89/336/EWG modified by: 91/263/EWG 92/031/EWG 93/068/EWG	EN 50081-1 / 03.93:	interference emissions, residential area
	EN 50081-2 / 03.94:	interference emissions, industrial area
	EN 61000-6-2 / 2001:	interference resistance, industrial area
Low voltage directive: 73/023/EWG modified by: 93/068/EWG	EN 60335-1 / 2003:	Safety of electrical appliances for domestic use and similar purposes / Part 1
Prototype tested according to:	EN12453 / 2001:	Usage safety of power-operated gates – requirements
	EN12445 / 2001:	Usage safety of power-operated gates – test methods
Applied national technical specifications concerning the directives mentioned above	EN12978 / 2003:	Gates – safety equipment – requirements and test methods

3 Installation of the control system

**ATTENTION: IMPORTANT INFORMATION FOR SAFE INSTALLATION.
OBSERVE ALL INSTRUCTIONS; WRONG INSTALLATION CAN RESULT IN SERIOUS INJURIES.**

! WARNING

During install of control system, system must be disconnected from the mains.

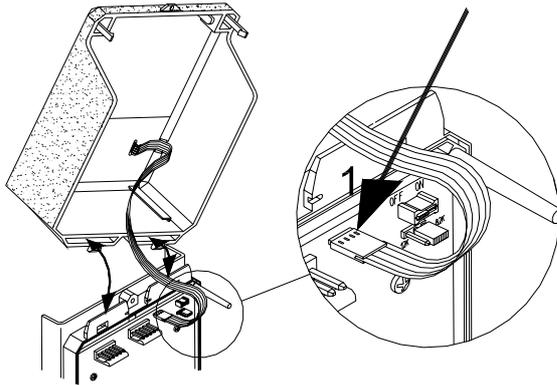


Figure 1: Cover installation
Keypad connection

! ATTENTION

- Before installation, the control system must be checked to make sure it does not show any signs of transport or other damage. Damage inside the control system can result in significant consequential damages to the control system and risk of injury to the user.
- Touching the electronic parts, especially the components of the processor circuit, is forbidden. Electronic components can be damaged or destroyed by electrostatic discharge.
- Before opening the casing cover, it must be ensured there are no drill filings lying on the cover which can fall inside the casing.
- It must be ensured the system is disconnected from the mains during installation.
- Unused cable entries must be sealed using suitable measures in order to guarantee the protection class IP54 of the casing.
- The cable entries must not be subjected to any mechanical loads, especially tensile loads.

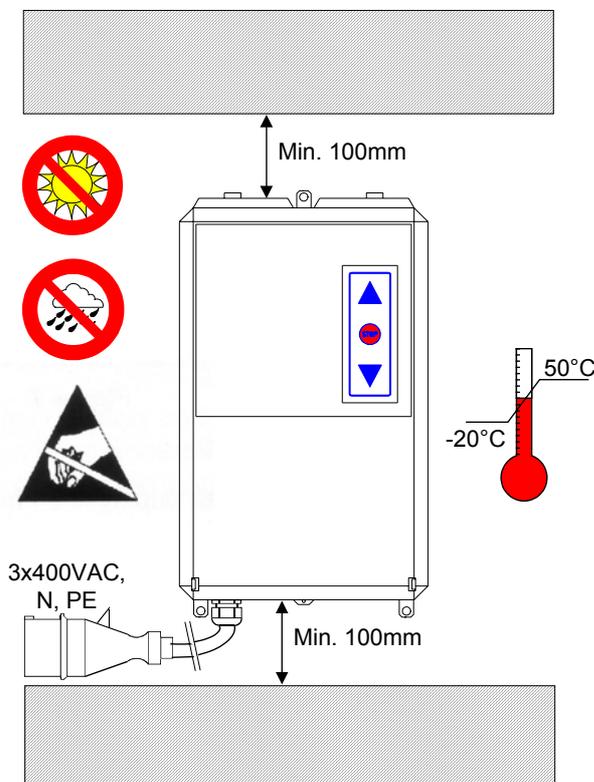


Figure 2: Installation of the control system

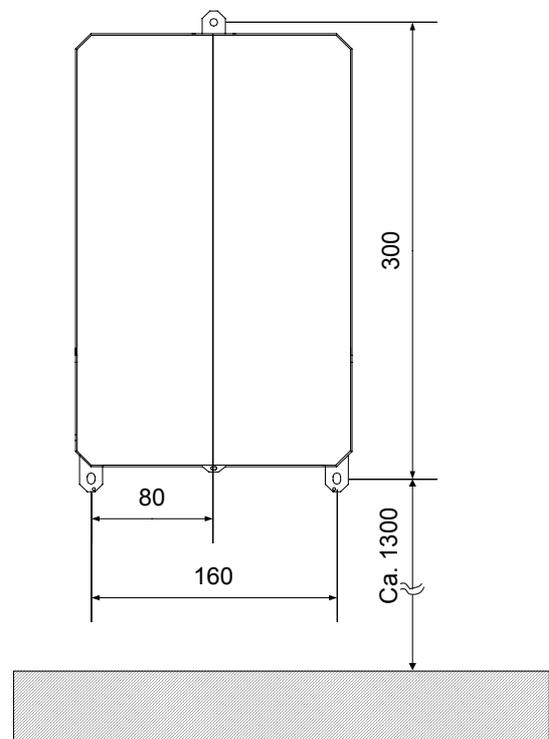


Figure 3: Drilling plan

4 Electrical connection

! WARNING

- Connection, testing and maintenance work on the open control system must only be carried out in a voltage-free state. You must pay particular attention to the points mentioned in the safety information.
- There are still up to 2 minutes of dangerous voltage after switching off the control system.
- Touching the electronic components is dangerous due to residual voltages.
- The control system must never be operated while the housing cover is open.

! ATTENTION

- Before switching on the system for the first time after completing the wiring, it must be checked whether all motor connections on the control system and on the motor are tightened and the motor is switched to star or delta correctly.

- All control voltage inputs are galvanically isolated from the power supply by means of a reinforced insulation. We recommend at least one additional isolation with a nominal voltage > 230 V (according to EN 60335-1) for all components which are to be connected to the control system.
- Very high electrostatic charges take place especially for fast-operating rollup plastic gates. Damage to the control system can result from this voltage discharge. Therefore, suitable countermeasures must be taken to prevent electrostatic charging.
- Maximum cross sections for connection of the printed circuit board terminals.:

	Single wire (rigid)	Fine strand (with/without wire end ferrule)
Screw terminals	2.5	1.5
Plug-in terminals	1.5	1.0
Motor terminals	2.5	2.5
Mains connection	2.5	1.5

4.1 Power supply connection

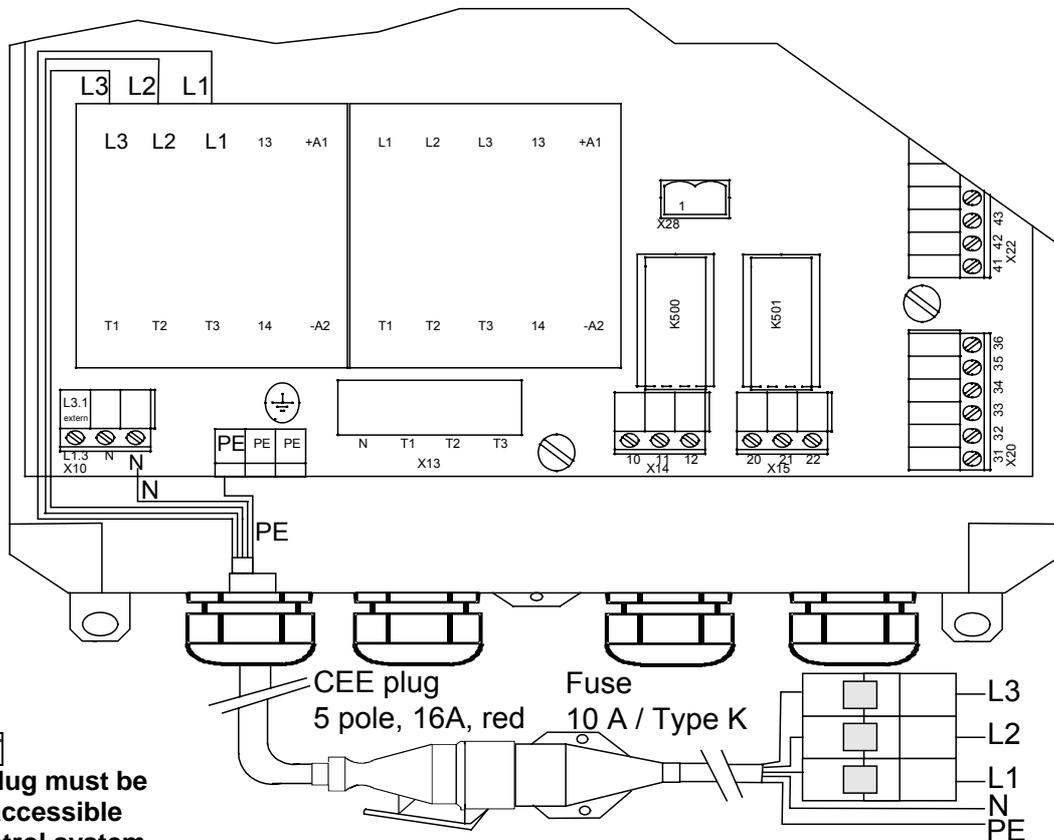


Figure 4: Mains cable connection

IMPORTANT

The mains plug must be visible and accessible from the control system.

4.2 Motor connection

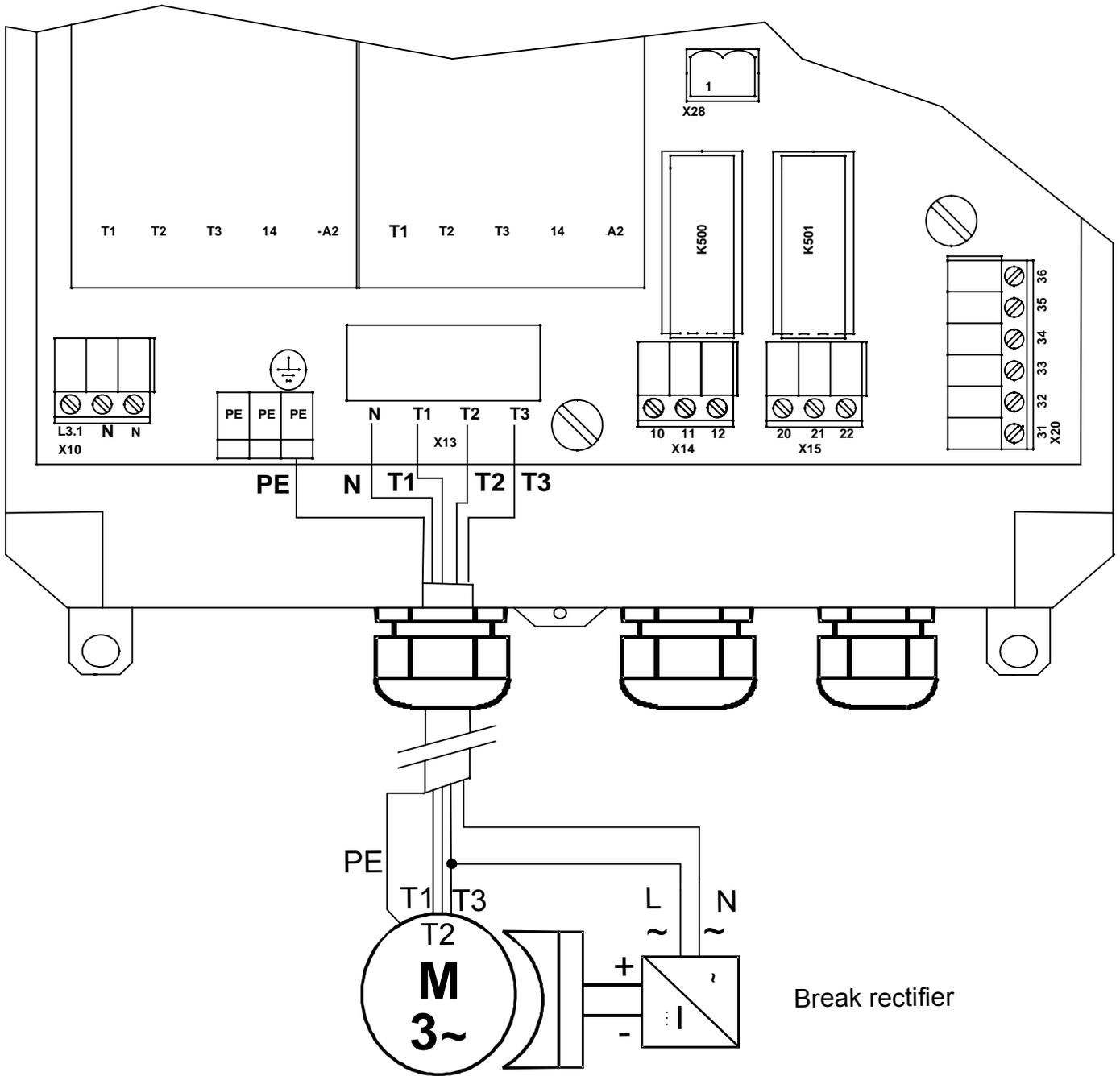


Figure 5: Motor connection

4.3 Safety edge connection

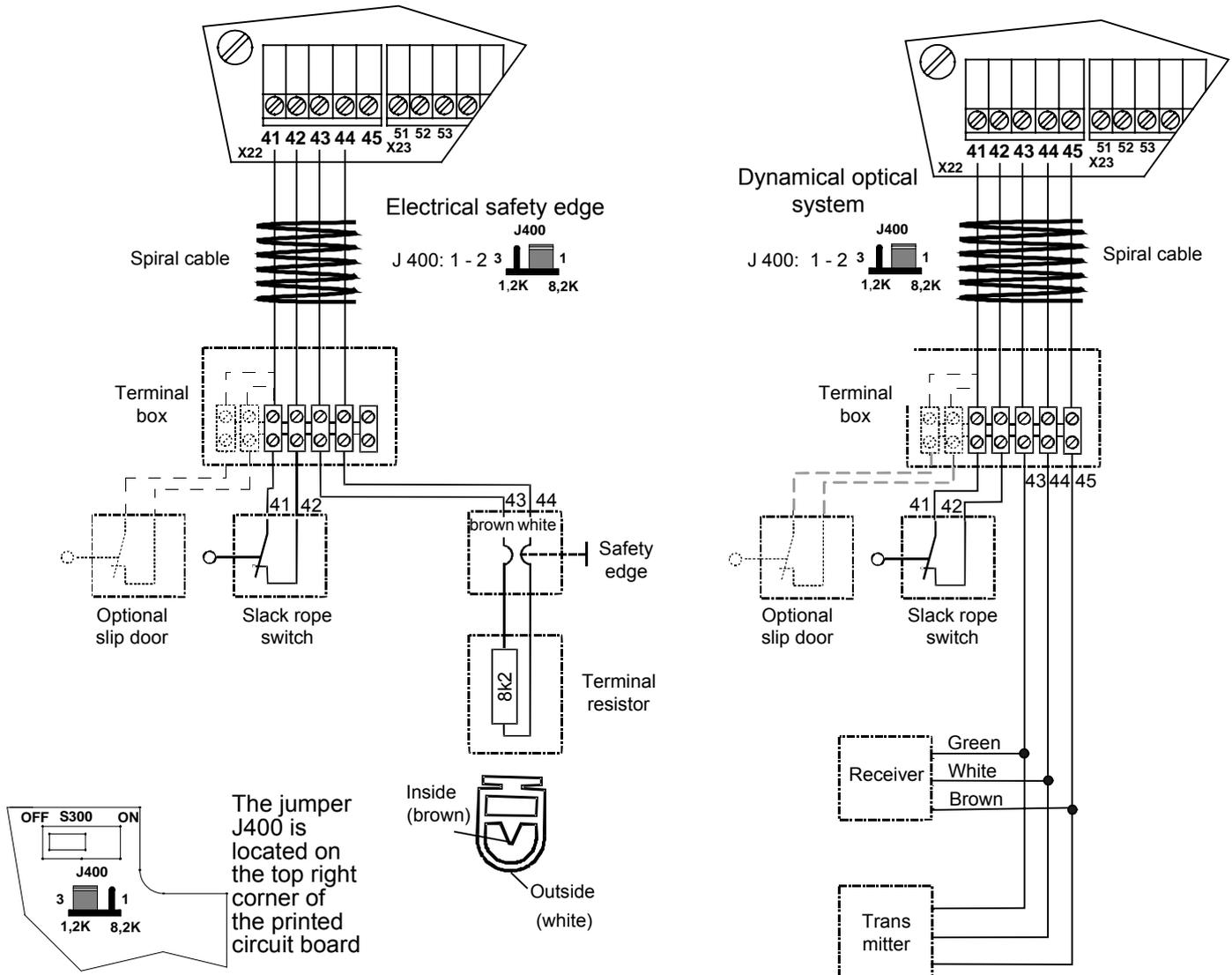


Figure 6: Safety edge connection

Different types of safety edges can be connected, such as e.g.:

- Electrical safety edge with 1.2kΩ or 8.2kΩ terminal resistor.
- Dynamic optical systems.

If one of these types of safety edges is connected when the TST WU gate control system is switched on, it will be recognised automatically.

IMPORTANT If no safety edge is connected, automatic closing of the door is not possible.

It is possible to connect other types of safety edges. Please contact the gate manufacturer for this.

4.4 Limit switch connection

Three different limit switch systems can be used with the TST WU gate control system. An absolute encoder and mechanical cam limit switch can be used as limit switches.

4.4.1 Absolute encoder

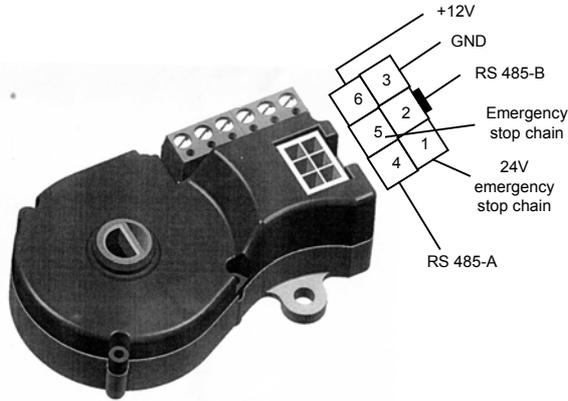


Figure 7: Absolute encoder

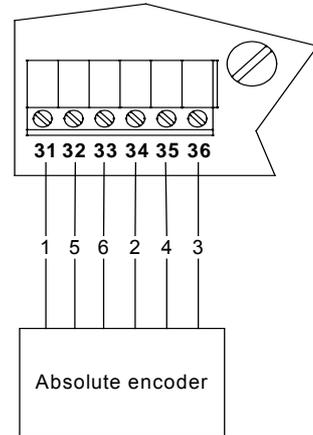


Figure 8: Absolute value transmitter connection

4.4.2 Mechanical limit switches

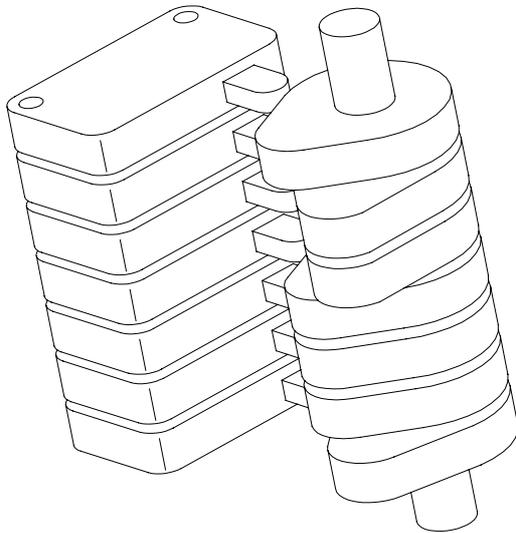


Figure 9: Cam limit switch

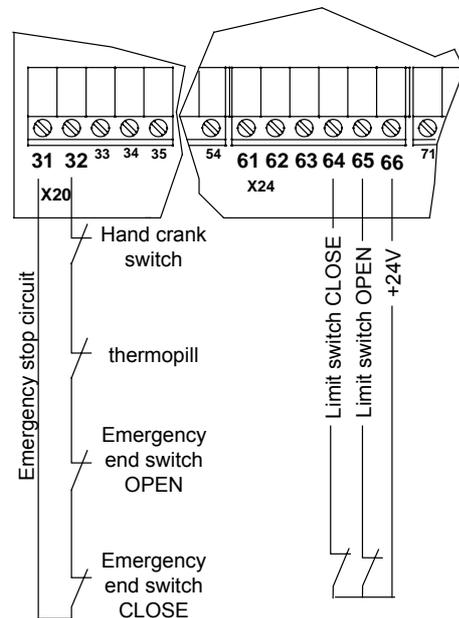


Figure 10: Cam limit switch connection

IMPORTANT

Check the electrical connection again before operating the control system. The appliance can be damaged by wrong connections.

5 General operating instructions for parameterisation

Starting parameterisation mode

1.	 Switch off gate control system	Switch off power supply completely (Observe safety instructions)	7-segment display goes out after a delay of several seconds	
2.	 Put DIP switches in the ON position	Service mode is activated, close the switch cabinet. (See Section 6.2 for the position of the DIP switches)		
3.	 Switch on the gate control system	Switch on control system	the first decimal position flashes when service mode is active Content of the display depends on the status of the control system	. * . . .
4.	 STOP (permanent)	Press Stop button and keep it pressed	pending messages are displayed, e.g.:	E. 2 0 1
5.	 Up (permanent)	Press Up key and keep it pressed	after ca. 2 seconds waiting: In parameterisation mode	P. 0 0 0

Parameter selection when parameterisation mode is active

 UP or  DOWN	select desired parameter ATTENTION: Not all parameters are directly visible or modifiable depending on password and type of security level set	the parameter value can be displayed or modified (see below) display varies according to the selection	P. . . .
---	---	---	----------

Parameter editing for selected parameter

1.		Control system in parameterisation mode	Display of the desired parameter name	P. 0 1 0
2.	 STOP (short)	Open the parameter	the current parameter value is displayed:	5
3.	 Up	Up key for increasing parameter value	if the current parameter value in force is changed, the decimal positions flash	6*
or	 Down	Down key for reducing the parameter value		4*
4.	 STOP (long)	save amended parameter value	the parameter counts as saved when no positions are flashing any more	6
or	 STOP (short)	discard amended parameter value	cancellation, the original parameter value is displayed again	4
5.	 STOP (short)	for changing to the display of the parameter name	Display parameter name	P. 0 1 0

Leaving parameterisation mode

 STOP (long)	parameterisation mode is stopped immediately, gate operation is active again	The last saved value is obtained automatically
---	--	--	---------

Reset the control system

 +  +  press simultaneously and keep pressed for ca. 3 seconds.

IMPORTANT

Service mode is exited automatically after ca. 1 hour. If you want to return to service mode, the control system must be switched off for a short time and turned on again afterwards or a reset must be performed.

6 Basic settings

Please follow the other steps in these instructions in order to operate the TST WU gate control system.

6.1 Automatic querying of the basic data

If the TST WU gate control system has not already been set up by the manufacturer, the following parameters are queried automatically:

IMPORTANT The DIP switch must be switched on (see Figure 11: Position S300) so that the TST WU gate control system can retrieve the parameters automatically.

 If the DIP switch is not switched on and the basic parameters are not set, the error F.090 is displayed.

 The "-1" indicator on the display tells the control system that this parameter is forcibly queried.

- **Positioning system P.205**

The limit switch system switch is used must be set with the parameter P.205.

- P.205: 0 = Mechanical limit switch
- P.205: 1 = Reserved
- P.205: 2 = Reserved
- P.205: 3 = Absolute value transmitter DES-A
- P.205: 4 = Reserved
- P.205: 5 = Reserved
- P.205: 6 = reserved
- P.205: 7 = Absolute encoder DES-B
- P.205: 8 = Absolute encoder TST PD

 The automatic querying of the basic data can be cancelled by pressing the  UP key during the switching on of the control system. This gives direct access to the parameterisation level.

6.2 Changing parameters

 Changing the basic data is not necessary if these were previously automatically queried and set.

Proceed as follows to change parameters:

- Unplug the mains plug
- Switch the DIP switch S300 on.
- Plug in the mains plug.
- Press the  STOP and the  UP keys simultaneously for ca. 3 sec to reach the parameterisation mode of the gate control system.
- Change the desired parameters.
- After completing the adjustments, exit from parameterisation mode by pressing the  STOP key for ca. 3 sec.

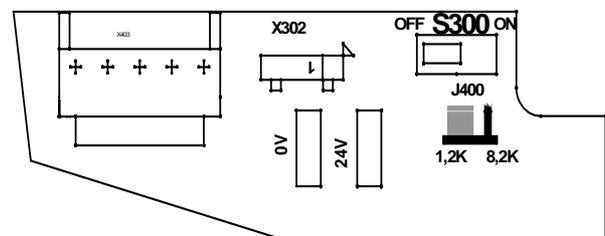


Figure 11: Position S300

7 Putting into operation...

7.1 ... with absolute value transmitter or incremental encoder

1. Open calibration mode by pressing the  STOP key for a short time
2. Move to the gate-CLOSED position with the  DOWN key and save by pressing the  STOP key for ca. 3 sec.

IMPORTANT If the gate movement direction is wrong, the motor rotating field is incorrect: switch off the control system and change 2 motor connections.

3. Move to the gate-OPEN position with the  UP key and save by pressing the  STOP key for ca. 3 sec.

 The limit switch bands are set automatically by running the gate in automatic mode.

7.2 ... with mechanical limit switches

1. Move the gate to ca. 10 cm before the closed position with the  DOWN key.

IMPORTANT Distance is very much dependent on the type of gate and the speed, increase the value for fast gates.

If the gate movement direction is wrong, the motor rotating field is incorrect: switch off the control system and change 2 motor connections.

2. Set the bottom limit switch so that it just activates.

IMPORTANT Limit switch in the end positions must not be run over!

3. Move the gate to ca. 10 cm before the open position with the  UP key.

IMPORTANT Distance is very much dependent on the type of gate and the speed, increase the value for fast gates.

4. Set the top limit switch so that it just activates.

IMPORTANT Limit switch in the end positions must not be run over!

5. If required for the type of gate: set the top and bottom EMERGENCY limit switches.

 Connect N.C. contacts e.g. in the safety circuit in series with thermopile.

6. Go to parameterisation mode by pressing the  STOP and  UP keys and select parameter P.980 "Service Mode", open this and set parameter value "2" to "0" (automatic mode)

7. Leave the parameterisation mode by pressing the  STOP key for a long time (3 sec.).

8. If necessary correct the gate-OPEN and gate-CLOSED limit switch positions by fine adjustment of the stop positions in automatic mode.

WARNING In order to avoid unintended operation of the gate, only carry out the adjustment of the limit switches when EMERGENCY STOP is pressed or the control system is switched off !

9. Gate can now be operated in automatic mode.

7.3 New request for calibration of the end positions

If the end positions using electronic limit switches have already been calibrated but are not suitable for the gate, calibration of the end positions can be requested again.

The following parameter must be set for this:

P.210: 5 = New calibration of all end positions

8 Other connection possibilities

8.1 Photo eye

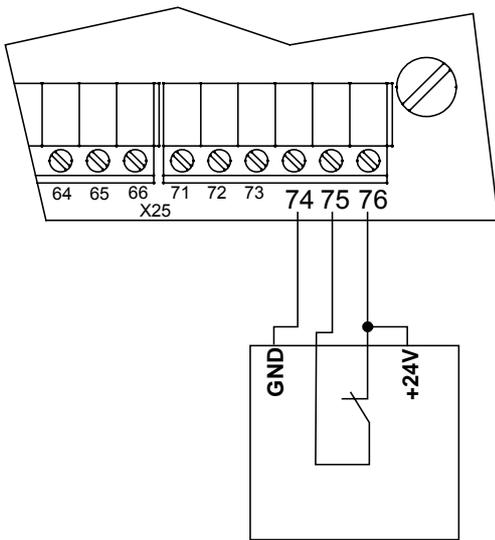


Figure 12: Photo eye connection

8.2 External control device

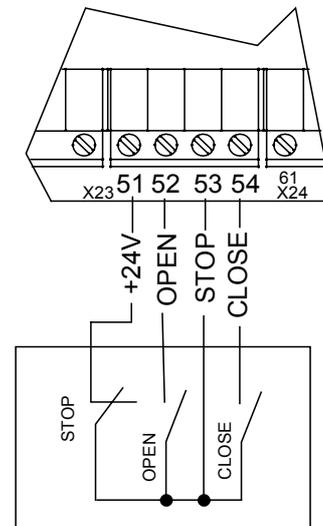
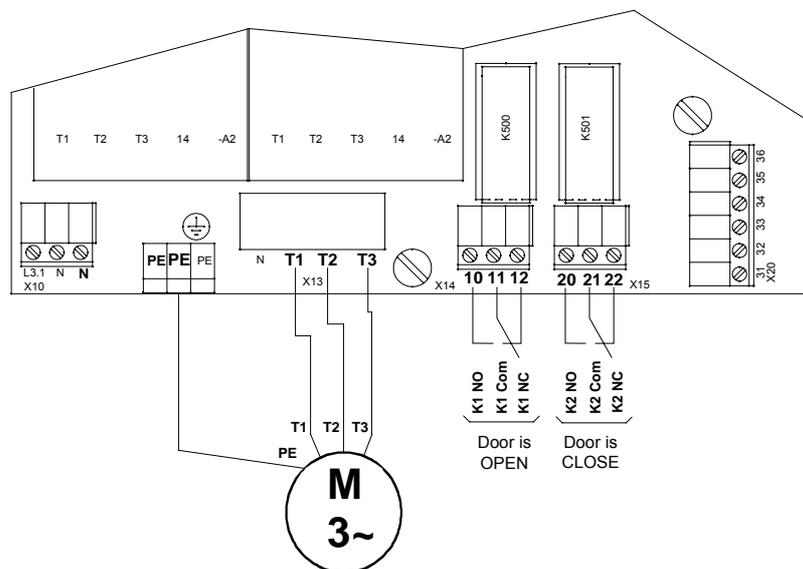
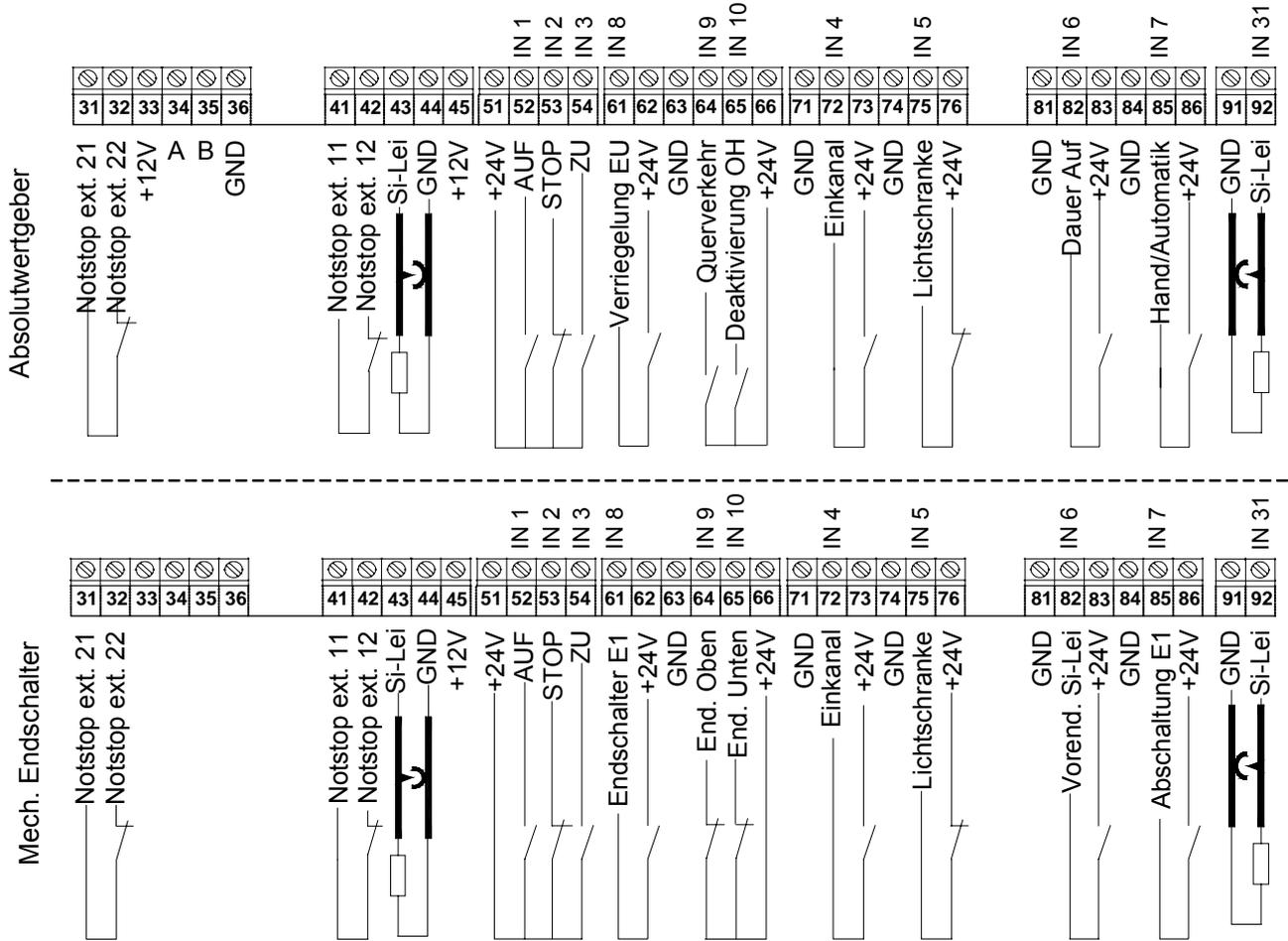


Figure 13: External control device

9 Outputs overview



10 Inputs overview



11 Functions

P.	[Unit] Adjustment range	Gate functions	Factory setting
000	[Cycles]	Display gate cycles counter Display: 1234567 ⇒ 1234. ▼-press .567 Display: 67 ⇒ 67	
005	[Cycles]	Display the number of cycles still operable until maintenance is necessary. Display: 1234567 ⇒ 1234. ▼-press .567 Display: 67 ⇒ 67	-1
010	[s] 0..200	Auto close time 1 (Stop position Top - Eo) 0 = automatic closing deactivated	10
011	[s] 0..200	Auto close time 2 (Intermediate holding position - E1) 0 = automatic closing deactivated	10
025	[s] 0..200	Pre warning time / clearance time 0 = pre warning time deactivated	0

P.	[Unit] Range	Selecting the limit switch system	Default
205	0..8	Selecting the positioning system: 0. Limit switch 1 (limit switch as normally closed, pre-limit switch normally open) 1. Limit switch 2 (limit switch and pre-limit switch normally closed) 2. Incremental encoder (reference switch in lower end position) 3. Absolute encoder DES-A 4. Absolute encoder TST PB-A 5. SSI encoder (only with UL-Version) 6. Reserved 7. Absolute encoder DES-B 8. Absolute encoder TST PD	-1

P.	[Unit] Adjustment range	Calibration of the stop positions with electronic limit switches	Factory setting
210	0..5	Selection of the position to be calibrated by deadman operation ("teach in"): 0: no → none/cancel 1: Eu → Limit switch Bottom, Top (intermediate stop see P244) 2: Eo → Limit switch Top (intermediate stop see P244) 3: uo → Limit switch Bottom and Top 4: E1 → Limit switch intermediate position (P244 is ignored) 5: al → (all) limit switches Bottom, Top & intermediate stop (according to P244)	0
215	0..1	Request new calculation of the pre-end switch positions and limit switch bands 0: do not make any correction 1: request correction of the limit switch bands and pre-end switches Parameter is only active if automatic correction was set at the factory.	0
221	[Inc] ± 125	Correction value for stop position Bottom (is set to 0 for new calibration !)	0
231	[Inc] ± 60	Correction value for stop position Top (is set to 0 for new calibration !)	0

P.	[Unit] Adjustment range	Diagnostics	Factory setting
910	0..22	Selecting display mode (request by STOP button or during motor movement) 0: Controller sequence (Automatic mode) 1: [Hz] current rotary field frequency 2: [A] current motor current (> 1A) 3: [V] current motor voltage 4: [A] current link current (effective current) 5: [V] link voltage 6: [°C] final stage temperature in °C 7: [°F] final stage temperature in °F 8: last measured run time (1/10 to 99.9s, 1/1 starting at 100s) For electronic limit switches only: 9: [Inc] current position progress 10:[Inc] current reference position 11:[dig] current channel 1 value of absolute encoder 12:[dig] current channel 2 value of absolute encoder 13:[dig] current reference voltage (2.5V) 14:14: Temperature in housing in [°C] 15:15: Temperature in housing in [°F] 16:Reserved 17:Reserved 18:Rotation speed of the TST PD shaft ☞ <i>only with TST PD</i> 19:Reserved 20:Reserved 21:Number of position requisition without answers 22:Number of wrong received signs in TST PD encoder (activates also the output in P.955)	0
920	Eb 1 Eb 2 ... Eb 7 Eb 8 Ebcl Eb -	Display error memory / faults ⇒ Open by pressing STOP key again, ⇒ Scroll with UP / DOWN keys ⇒ Close by pressing STOP key. ⇒ Leave with Cancel "EB-". <ul style="list-style-type: none"> • Eb 1 → Error messages 1 (most recent) or. Er-- • Eb 2 → Error messages 2 or. Er-- ... • Eb 7 → Error messages 3 or. Er-- • Eb 8 → Error messages 4 or. Er-- • Ebcl → delete complete failure memory • Eb - → Cancel (Display noEr: no errors)	Eb 1
925		Display the software version	
930	[s] 0..120,0	Run time of the motor during the last gate operation	

P.	[Unit] Adjustment range	Service operating modes	Factory setting
973	0..1	Reset of the service counter: Reset (1) / Cancel (0)	0
980	0..3	Service mode 0: Automatic (automatic opening and closing) 1: Deadman Close (manual closing / automatic opening) 2: Deadman (manual opening and closing) 3: Emergency operation (deadman opening and closing, all errors and safeties are ignored).	0
999	0..FFFF	Password input	1

12 Messages overview

Improper end positions		
F.000	Door position too far up	<ul style="list-style-type: none"> • Too small a parameter value for upper emergency limit switch • Upper limit switch range (limit switch band) too small • Mechanical brake defective or improperly set
F.005	Door position too far down	<ul style="list-style-type: none"> • Too small a parameter value for lower emergency limit switch • Lower limit switch range (limit switch band) too small • Mechanical brake defective or improperly set

Implausibilities in door movement		
F.020	Run time exceeded (during opening, closing or deadman)	<ul style="list-style-type: none"> • current motor run time has exceeded set maximum run time, door may be sticking or is blocked • If using mechanical limit switches, one may not have tripped
F.030	Lag error (position change of the door is less than expected)	<ul style="list-style-type: none"> • Door or motor is blocked • Too little power for lift torque • Too little speed • Mechanical limit switch was not left or is defective • Absolute or incremental encoder not tightened sufficiently in its mounting • Wrong positioning system selected (P.205)
F.031	Detected rotational direction deviates from expected	<ul style="list-style-type: none"> • When using incremental encoders: Channel A and B reversed • Motor rotation direction reversed compared with calibration setting • Too much „pancaking“ when starting, brake releases too soon, or too little torque, adjust boost as necessary.
F.043	Pre-limit switch fault (light barrier)	<ul style="list-style-type: none"> • The pre-limit switch for the light barrier remains activated even in the middle end position or upper end position.

Maintenance counter exceeded		
F.080	Fault: Maintenance is required	<ul style="list-style-type: none"> • Service counter has expired

Parameters not set		
F.090	Controller not parameterized	<ul style="list-style-type: none"> • The basic parameters (P.205, P.100 to P.103) for the TST WU controller have not yet been set.

Safety chain faults		
F.201	Internal E-Stop „push-button“ tripped or Watchdog (computer monitor)	<ul style="list-style-type: none"> • E-Stop chain was interrupted starting at input „internal E-Stop“ without parameterizing mode having been selected • Internal parameter or EEPROM checks defective, pressing the STOP key provides additional information about the cause
F.211	External E-Stop 1 tripped	<ul style="list-style-type: none"> • E-Stop chain was interrupted starting at Input 1 (terminals 1 and 2)
F.212	External E-Stop 2 tripped	<ul style="list-style-type: none"> • E-Stop chain was interrupted starting at Input 2 (terminals 3 and 4)

Faults in the safety chain		
F.360	Short circuit detected on edge input	<ul style="list-style-type: none"> Short circuit detected on edges with normally closed contact
F.361	Number of edge trips for closing has reached set limit	<ul style="list-style-type: none"> Parameterized, maximum number of safety edge trips during a door cycle was exceeded
F.363	Interruption on edge input	<ul style="list-style-type: none"> Connection cable defective or not connected Termination resistor incorrect or missing Jumper J600 incorrectly set
F.364	Safety edge testing failed	<ul style="list-style-type: none"> Safety edge was not activated as expected when requesting a test. The time between request for testing and actual testing not in agreement
F.366	Too high a pulse frequency for optical safety edge	<ul style="list-style-type: none"> Defective optical safety edge Defective input for internal safety edge
F.369	Internal safety edge incorrectly parameterized	<ul style="list-style-type: none"> An internal safety edge is connected but deactivated
F.374	Safety bar testing failed	<ul style="list-style-type: none"> Pre-limit switch for safety edge incorrectly set or defective Processing module defective Safety edge defective
F.385	Fault in pre-limit switch for safety edge	<ul style="list-style-type: none"> Pre-limit switch for turning off the safety edge or reversing after safety edge tripping remains tripped even in the upper end position.

General hardware faults		
F.400	Controller hardware reset detected	<ul style="list-style-type: none"> Excessive noise on supply voltage Internal watchdog tripped RAM error
F.401	Internal reset detected	<ul style="list-style-type: none"> Watchdog-Error
F.40A	Internal reset detected	<ul style="list-style-type: none"> Software Exception

General hardware faults		
F.524	24V faulty	<ul style="list-style-type: none"> The external 24V supply is disturbed Shortcut or overload of the external 24V

Positioning system faults		
F.700	Position sensing defective	<p>For mechanical limit switches:</p> <ul style="list-style-type: none"> At least one limit switch does not correspond to the configured active status. An implausible combination of at least 2 active limit switches <p>For electronic limit switches:</p> <ul style="list-style-type: none"> After invoking activation of the factory parameters (Parameter P.990) the corresponding positioning system was not parameterized. Calibration not completed or is incorrect and must be repeated. When activating the intermediate stop the intermediate stop is implausible. Synchronization not finished or reference switch defective.

Positioning system faults		
F.750	Protocol Transmission error	<ul style="list-style-type: none"> Defective hardware or electrically noisy environment
F.751	Synchronization FU <-> absolute encoder	<ul style="list-style-type: none"> Defective hardware or electrically noisy environment Absolute encoder processor electronics defective
F.752	Timeout with protocol transmission	<ul style="list-style-type: none"> Interface cable defective / interrupted Absolute encoder processor electronics defective Defective hardware or electrically noisy environment
F.760	Position outside of window	<ul style="list-style-type: none"> Position encoder drive defective Absolute encoder processing electronics defective Defective hardware or electrically noisy environment

12.1 Internal system-related errors F.9xx

These are internal errors which cannot be eliminated by the user.
If such an error occurs, call customer service immediately.

12.2 Information messages

General messages

STOP	Stop / Reset state, wait for next incoming command
Eu	End position Lower Eu
≡Eu≡	End position Lower locked → no raising possible (e.g., lock-door)
ZUF □	Closing active
‘Eo’	End position Upper Eo
≡Eo≡	End position Upper locked → no closing possible (e.g., safety edge)
□AUF	Opening active
-E1-	End position middle E1 (intermediate stop position)
≡E1≡	End position middle locked → no closing possible (e.g., safety edge)
FAIL	Fault → only deadman travel is possible, possibly automatic opening
EICH	Calibration → Setting the end positions in deadman travel (for absolute encoder) → Start procedure using STOP key
≡NA≡	E-Stop → No travel possible, hardware safety chain interrupted
NOTF	E-travel → Deadman travel without taking into account safeties, etc.
‘Hd’	Manual → Deadman mode
ParA	Parameterizing
‘Au’	Automatic → indicates change from „Manual“ to „Automatic“ status
‘Hc’	Semi-automatic → indicates change from „Manual“ to „Semi-automatic“
WU	Initial display after power up (Power Up and self-test)

Status messages during calibration

E.i.E.u.	Calibration of the End position Lower requested (in deadman travel)
E.i.E.o.	Calibration of the End position Upper requested (in deadman travel)
E.i.E.1.	Calibration of the intermediate position E1 (in deadman travel)

Status messages during deadman

Hd.cL	Deadman close (membrane key: CLOSE)
Hd.oP	Deadman open (membrane key: OPEN)
Hd.Eu	End position Lower reached, no further deadman close possible
Hd.Eo	End position Upper reached, no further deadman open possible
Hd.Ao	Outside of permitted Eo position (no deadman open possible)

Information messages during Automatic mode

I.080	Maintenance required soon / service counter nearly expired
I.160	Continuous CLOSED still active
I.170	Forced opening being performed
I.180	Waiting for Foil key pad command
I.185	Reset necessary (P.408)
I.199	Door cycle not plausible (re-initialize → Parameters)
I.310	Open-command on Door2 being issued
I.500	Correction of upper limit switch running
I.502	Upper limit switch band corrected
I.505	Correction of lower limit switch running
I.507	Lower limit switch band corrected
I.510	Limit switch correction finished
I.515	Controller is preparing automatic teach-in of the limit switches
I.555	Limit switches being corrected

Information messages while parameterizing

noEr	Error memory: no error saved
Er--	Error memory: if error but no associated message found
Prog	Programming message while carrying out original parameter or default set

General inputs

E.000	OPEN key on membrane keypad
E.050	STOP key on membrane keypad
E.090	CLOSE key on membrane keypad
E.101	Input 1
E.102	Input 2
E.103	Input 3
E.104	Input 4
E.105	Input 5
E.106	Input 6
E.107	Input 7
E.108	Input 8
E.109	Input 9
E.110	Input 10
E.121	Input 21
...	...
E.128	Input 28

Safety/Emergency stop chain

E.201	Internal E-Stop „pushbutton“ tripped
E.211	External E-Stop 1 tripped
E.212	External E-Stop 2 tripped

Safety edge, general

E.360	Activation of internal safety edge
E.363	Fault in internal safety edge
E.370	Activation of external safety edge
E.373	Fault in external safety edge
E.379	External safety edge activated but not yet plugged in

RC plug-in module

E.401	RC Channel 1
E.402	RC Channel 2

Induction loop processor plug-in module

E.501	Detector Channel 1
E.502	Detector Channel 2