

TS 970 door control

Automatic control panel for GfA ELEKTROMATEN® drives
with DES digital limit switch or NES mechanical limit switch

Approvals and certificates

TS 970

Type test according to:

DIN EN 12453 DIN EN 12978
DIN EN 60335-1 DIN EN 60335-2-103
DIN EN ISO 13849-1 TÜV NORD CERT GmbH



TS 970 – Automatic control panel for DES / NES limit switches

Technical data

- For GfA ELEKTROMATEN drives with DES or NES
- Supply voltage:
1N~230 V, PE / 3~230 V, PE / 3N~400 V, PE / 3~400 V, PE
- Operating frequency: 50 Hz / 60 Hz
- Control voltage: 24 V DC
- Mains supply ratings for external devices: 24 V DC (0.18 A) / 230 V AC (1.6 A)
- Permissible temperature range: -10 °C...+50 °C

Housing

- Dimensions W x H x D [mm]: 155 x 386 x 90 (118¹⁾)
- IP65 rated when hard wired or IP54 if CEE plug used
- Protection against contact provided by covers for live parts
- Top and bottom entry for ELEKTROMATEN connection cables

Design

- Integrated OPEN-STOP-CLOSE control device
- Safety reversing contactor (with 2 independent shutdown options)
- Settings via selector switch with digital display
- Pluggable connection technology
- Connection cable running to ELEKTROMATEN available in various lengths
- Independent, programmable relay contact, e.g. usable for red or green traffic-lights or dock leveller enabling
- UBS²⁾ module for the simple connection of control devices, photo cells, etc. (for details on UBS accessories, see 8.091)
- Slack-rope and pass-door plug-in connection points

Accessories

- Mains switch/isolator
- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.069

¹⁾ Version with mains switch

²⁾ UBS universal command sensor system (see 8.091)

TS 970



Functions

- Automatic detection of DES or NES limit switches
- Change of rotating direction from control panel push buttons
- Adjustment of limit positions (only DES) and all functions from the operator level
- Selectable operating mode:
 - CLOSE/OPEN in hold-to-run mode
 - CLOSE in hold-to-run mode/OPEN in self-hold mode
 - Hold-to-run operation with active safety edge system
 - CLOSE/OPEN in self-hold mode
- Automatic safety edge detection and evaluation:
 - Optical safety edge system (e.g. Vitector system)
 - NO-contact principle, 8k2
 - NC-contact principle, 1k2, with testing
- Automatic closing with adjustable time setting (1-240 seconds) (function can also be activated/deactivated):
 - Once the top limit position or intermediate open position has been reached, the door closes automatically after the set duration
 - Interruption to timer possible via photo cell activation
- Adjustable intermediate open position with individual programming options
- Setting of the permissible number of safety-edge actuations for automatic closure (0-10)
- Adjustable reversing duration for safety-edge actuation

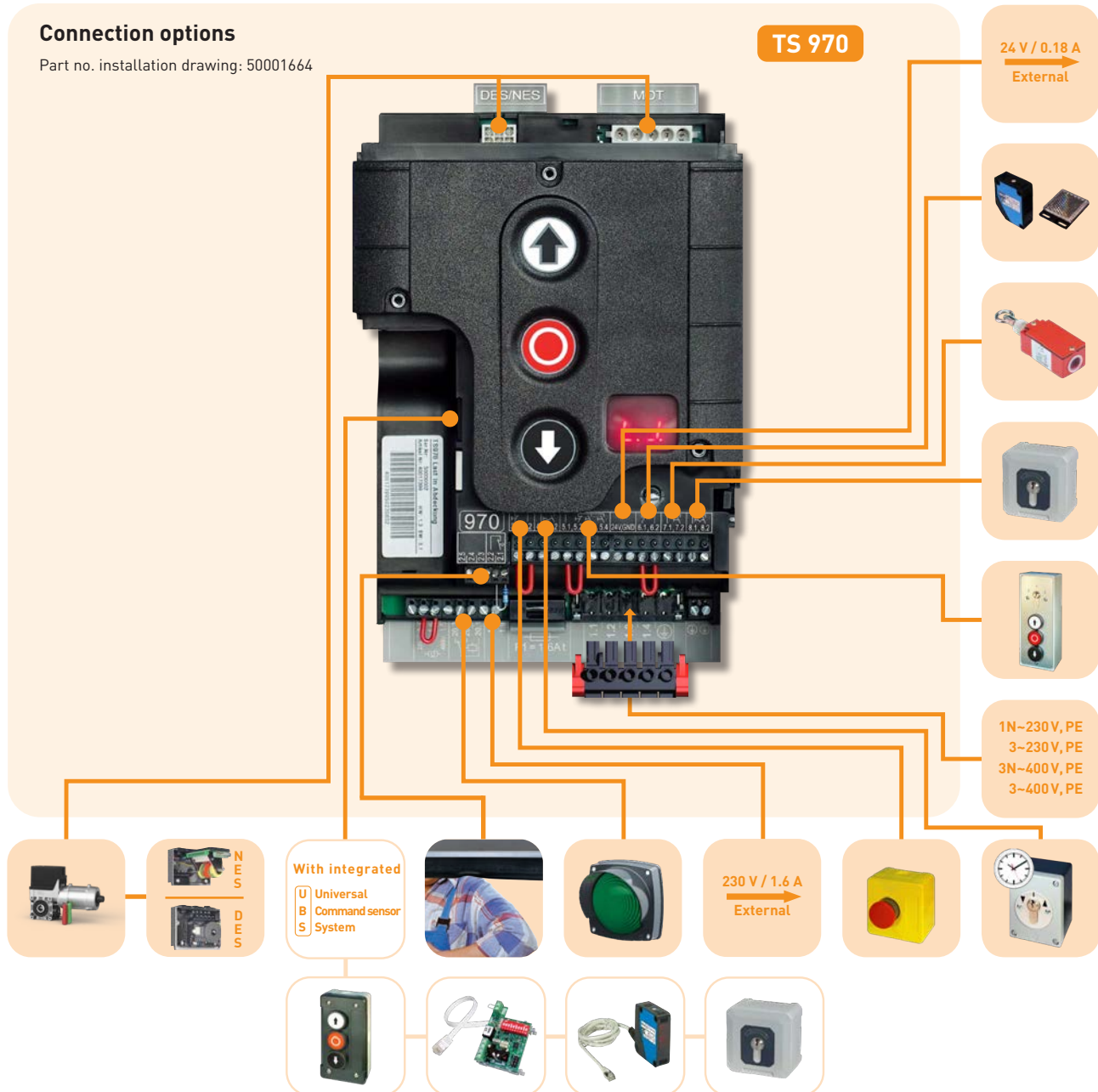
Further functions

- Automatic ground adjustment (only DES) to compensate for rope stretch or subsequent change in ground height (not for pressure-wave switches)
- Overrun correction (only DES) to compensate for changes to overrun, e.g. due to influence of temperature
- Status and information display (including display of 6 most-recent faults); extended evaluation by using optionally available GfA-Stick (see 8.069)
- Cycle counter (non-resettable)
- Maintenance-cycle counter:
 - Setting range: 1,000 - 99,000 cycles
 - Display indication or switch to hold-to-run operation once the maintenance-cycle limit is reached
- Detects door/drive blockage (only DES); in this event the control deactivates the drive unit
- Dynamic run time monitoring (only NES):
 - With every door movement, the time taken to run between the end positions is measured and compared with the most-recently set reference duration
- If the run duration is increased (pre-settable deviation), the control panel is deactivated
- Adjustable force monitoring in OPEN direction (only DES):
 - For counterbalanced doors, sudden changes to the counter-balancing are detected
 - Self-learning feature and consequently no activation of force monitoring function due to, e.g., a change in spring tension
- Automatic detection of ELEKTROMATEN unit with direct inverter (DI) or frequency inverter (FI):
 - Setting of output speed
 - Soft start and soft stop through automatic adjustment of acceleration and braking ramps
 - Possible to modify acceleration and braking ramps

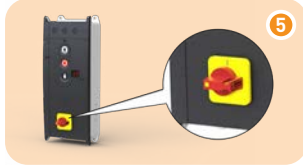
Connection options

Part no. installation drawing: 50001664

TS 970



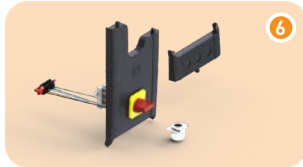
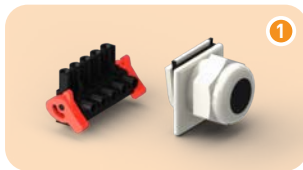
Complete door control with connection kit



Designation	Description	Part no.
TS 970 with connection kit, when hardwired	1 With mains supply terminal and slide gland	20197000.00001
TS 970 with CEE 3N-400 V (5-pole)	2 With pluggable mains supply cable of length 0.7 m	20197000.00002
TS 970 with CEE 1N-230 V (3-pole)	3 With pluggable mains supply cable of length 0.7 m	20197000.00006
TS 970 with CEE 1N-230 V asym. (3-pole)	3 For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	20197000.00014
TS 970 with CEE 3-230 V (4-pole)	3 With pluggable mains supply cable of length 0.7 m	20197000.00017
Adapter for 3-230 V power grids	4 For the connection of single-phase ELEKTROMATEN FI at 3-230 V power grids	30005855
TS 970 with mains switch/isolator 3N-400 V	5 With mains switch/isolator in large cover	20197000.00021
TS 970 with mains switch/isolator 1N-230 V	5 With mains switch/isolator in large cover	20197000.00026

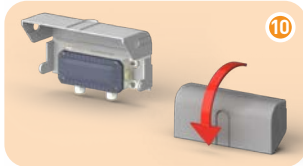
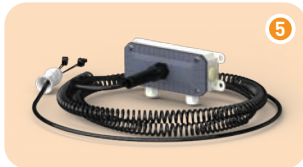
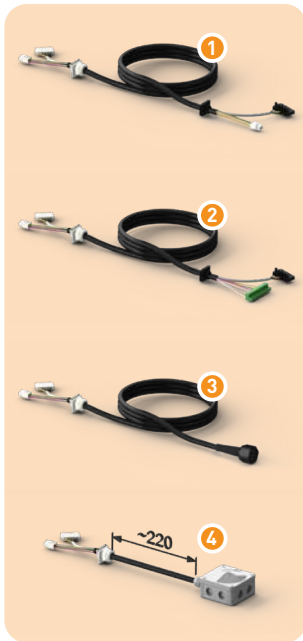
Designation	Description	Part no.
TS 970-XL in plastic housing	W x H x D [mm]: 300 x 400 x 132 (165); Protection class: IP65 - Slide gland for pluggable connection cable running to ELEKTROMATEN drives - 3 DIN mounting rails - 6 x M20 cable glands	
Part no. installation drawing: 50001908	6 Version with mains switch 3N-400 V	20197000.20021
	7 Version when hardwired 230 V-400 V	20197000.20001
	8 Lock for padlock (2 pc)	40019408

Separate connection kits



Designation	Description	Part no.
Connection kit, when hardwired	1 Mains supply terminal and slide gland	30005132.00001
Connection kit CEE 3N-400 V (5-pole.)	2 With pluggable mains supply cable of length 0.7 m	30005132.00002
Connection kit CEE 3N-400 V, IP65 (5-pole)	3 With pluggable mains supply cable of length 0.7 m	30005132.00004
Connection kit CEE 1N-230 V (3-pole)	4 With pluggable mains supply cable of length 0.7 m;	30005132.00006
Connection kit CEE 1N-230 V asym. (3-pole)	4 For SI 25.15 WS / SI 45.7 WS / ST 16.24 WS; with pluggable mains supply cable of length 0.7 m	30005132.00014
Connection kit CEE 3-230 V (4-pole)	4 With pluggable mains supply cable of length 0.7 m	30005132.00017
Adapter for 3-230 V power grids	5 For the connection of single-phase ELEKTROMATEN FI at 3-230 V power grids	30005855
Mains switch/isolator with connection kit 3N-400 V	6 Assembly kit for mains switch/isolator (complete)	30005132.00021
Mains switch/isolator with connection kit 1N-230 V	6 Assembly kit for mains switch/isolator (complete)	30005132.00026

Accessories



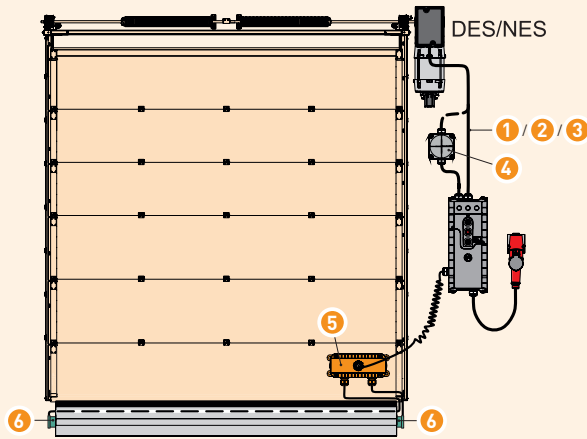
Designation	Description	Part no.
DES connection cable	1 Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable ¹⁾ : 3 m 5 m 7 m 9 m 11 m 13 m 15 m	20002420.00300 20002420.00500 20002420.00700 20002420.00900 20002420.01100 20002420.01300 20002420.01500
NES connection cable	2 Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable ¹⁾ : 3 m 5 m 7 m 9 m 11 m 13 m 15 m	20002320.00300 20002320.00500 20002320.00700 20002320.00900 20002320.01100 20002320.01300 20002320.01500
XES connection cable	3 Connection to ELEKTROMATEN SE 8.60 FI, pluggable on both sides; length of cable ¹⁾ : 3 m 5 m 7 m 9 m 11 m 13 m 15 m	20003673.00300 20003673.00500 20003673.00700 20003673.00900 20003673.01100 20003673.01300 20003673.01500
Connection set TS / clamp	4 Connection of the ELEKTROMATEN using the terminals in the box; use, for example, for routing the connection cable through the wall; Length of cable: 0.22 m	30005728
Spiral cable with junction box (IP65)	5 Straight cable ends (2 m / 0.35 m); length of coiled cable: 0.9 m; max. stretched length: 4 m - For OSE (optical safety edge system, e.g. Vitector system) - Can be combined with OSE system 1 or 2	20002620.00001
Universal OSE set, for system 1	6 System 1 = one junction box; transmitter + receiver, pluggable design with receiver (0.5 m long cable) and transmitter with 6.5 m cable 10.5 m cable Are also required for system 1: 5	30005185.00650 30005185.01050
Universal OSE set, for system 2	7 System 2 = junction box + junction end box; transmitter + receiver, pluggable designs with 0.5 m long cables for each Are also required for system 2: 5+8+9	30005185.00060
Junction end box (IP65) for system 2	8 With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	9 Pluggable on both sides, 5-wire, cable length: 4.5 m 6.5 m 8.5 m 10.5 m	20002630.00450 20002630.00650 20002630.00850 20002630.01050
Splash guard	10 Mechanical protection against water; For spiral cable with junction box 5 and junction end box 8	40017478.00001

■ Visual overview on page 8.075

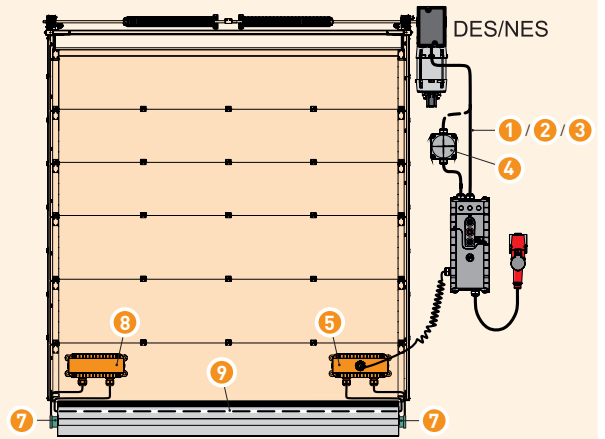
■ Further accessories are described in Section 9, e.g. radio from page 9.023

■ **1)** Further lengths available, upon request

Example with system 1



Example with system 2



Accessories



Designation

Description

Part no.

Mains switch/isolator with connection kit

1

See "Separate connection kits" on page 8.067

Key switch

2

Assembly kit for installation in small cover, supplied with 2 keys

30004616

Emergency STOP switch

3

Assembly kit for installation in small cover

30004615

Toggle switch for intermediate open position

4

Assembly kit for installation in small cover

30004679

Keypad cover

5

For preventing unintentional pressing of keypad buttons (e.g. for use in underground car parks), increased protection against direct contact with water

40017317.00001

Loop detector, two-channel

6

Snap-in system (with UBS module)

40017122

GfA-Stick

7

For use with smartphone or tablet PC together with the "GfA+" App; for reading out and displaying of important data from the door control (e.g. programming, stored error logs, etc.)

20003696

Arrangement



Spare parts TS 970



Designation	Description	Part no.
TS 970 board	① Within cover incl. keyboard	30005273.00001
Bottom section of housing TS-B	② For installation of the TS-board	40019859
Cover kit TS-B1	③+④+⑥ Consists of: small cover, large cover	30005192.00001
Cover kit TS-B1 for mains switch	③+⑤+⑥ Consists of: small cover, large cover, prepared for mains switch	30005192.00006
Spacer foot TS-B	⑥ 4 pc	40016530

Spare parts TS 970-XL



Designation	Description	Part no.
Mounting kit for housing XL	① 4 pc	40017128
Membran push button for TS-B	② With viewing window	30005408
Hinge	③ 2 pc	30005828
Top section of housing XL for TS-B	②+③+④ Consists of: Membrane push button for TS-B, hinges, cover	30005827.00001
Housing XL for TS-B	③+④+⑤ Consists of: Hinges, cover, bottom section with mounting plate and 3 DIN mounting rails	30005126
TS 970 board	⑥ Within cover incl. keyboard	30005273.00001
Mounting adapter TS-B	⑦ For installation of the TS-board	40019862
Connection kit, when hardwired	⑧+⑨ Consists of: Mains supply terminal and slide gland	30005132.00001
TS 970 for control enclosure installation	⑥+⑦+⑧ Consists of: TS 970 board, mounting adapter TS-B, mains supply terminal	30005405
Mains switch for housing XL	⑩ 4-pole	40015183
Housing XL for TS-B with mains switch, complete	①+②+③+④+⑤+⑦+⑩ Consists of: Mounting kit for housing XL, Membrane push button for TS-B, Housing XL for TS-B, Mounting adapter TS-B, mains switch for housing XL	20002984.20005
Lock for padlock	⑪ 2 pc (without padlock)	40019408