TS 971 door control
"Integrated radio"

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

TS 971

Approvals and certificates

TS 971

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

TÜV NORD Baumuster geprüft

TS 971 – **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 (0.35 A or 1.0 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 (118 [1])
- IP65 rated when hard wired or IP54 if CEE plug used
- Protection against contact provided by covers for live parts
- Top and botton entry for ELEKTROMATEN connection cables

Design
- Integrated OPEN-STOP-CLOSE control device with lighting system that prompts operator
- 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
- Integrated radio transmission system for safety devices (WSD [2]) or pluggable connection technology for spiral cables
- Integrated radio receiver for 434 MHz systems of various manufacturers
- Two independent, programmable relay contacts, e.g. usable for red/green traffic-lights or dock leveller enabling
- UBS [3] 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 (also via WSD)

1) Version with mains switch
2) Wireless **S**afety **D**evice
3) UBS universal command sensor system (see 8.091)

Accessories
- Mains switch / isolator
- Emergency STOP switch
- Key switch
- For description and details on further accessories, see 8.075

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
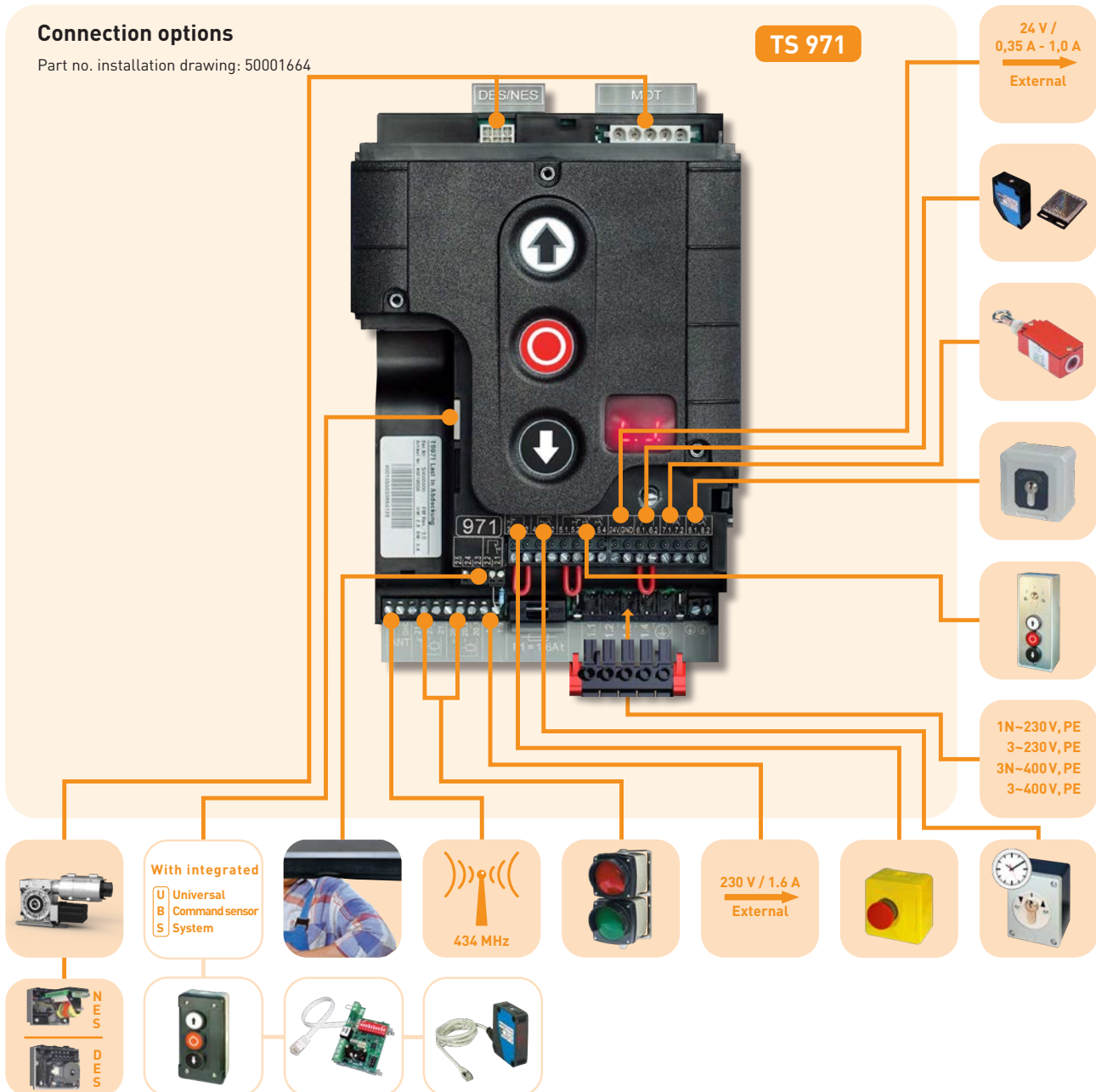
Further functions

- 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 8.075)
- 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
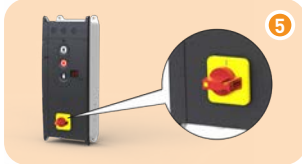 - Possible to modify acceleration and braking ramps

Connection options

Part no. installation drawing: 50001664

TS 971

24 V / 0,35 A - 1,0 A External

1N~230 V, PE
3~230 V, PE
3N~400 V, PE
3~400 V, PE

With integrated
U Universal
B Command sensor
S System

434 MHz

230 V / 1.6 A External

N E S

D E S

Complete door control with connection kit

Designation		Description	External 24 V 350 mA DC Part no.	External 24 V 1000 mA DC Part no.
TS 971 with connection kit, when hardwired	①	With mains supply terminal and slide gland	20097100.00001	20197100.30001
TS 971 with CEE 3N~400 V (5-pole)	②	With pluggable mains supply cable of length 0.7 m	20097100.00002	20197100.30002
TS 971 with CEE 1N~230 V (3-pole)	③	With pluggable mains supply cable of length 0.7 m	20097100.00006	20197100.30006
TS 971 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	20097100.00014	20197100.30014
TS 971 with CEE 3~230 V (4-pole)	③	With pluggable mains supply cable of length 0.7 m	20097100.00017	20197100.30017
Adapter for 3~230 V power grids	④	For the connection of single-phase ELEKTROMATEN FI at 3~230 V power grids	30005855	30005855
TS 971 with mains switch / isolator 3N~400 V	⑤	With mains switch / isolator in large cover	20097100.00021	20197100.30021
TS 971 with mains switch / isolator 1N~230 V	⑤	With mains switch / isolator in large cover	20097100.00026	20197100.30026

Designation		Description	Part no.
TS 971-XL in plastic housing Part no. installation drawing: 50001908		WxHxD [mm]: 300x400x132 (165); Protection class: IP65 - Slide gland for pluggable connection cable running to ELEKTROMATEN drives - 3 DIN mounting rails - 6 x M20 cable glands	
	⑥	Version with mains switch 3N~400 V (24 V 350 m DC)	20097100.20021
	⑥	Version with mains switch 3N~400 V (24 V 1000 mA DC)	20197100.40021
	⑦	Version when hardwired 230 V-400 V (24 V 350 mA DC)	20097100.20001
	⑧	Lock for padlock (2 pc)	40019408
TS 971 in stainless steel control enclosure[1] (For areas with high demands on hygiene or corrosion protection)	⑨	W x H x D [mm]: 400x400x200; Protection class: IP66 - 4-pole mains switch - 3 DIN mounting rails - 8 cable glands	
		Version AISI 304L (V2A)	20097199.00001
		Version AISI 316L (V4A)	20097199.00002
	⑩	Rod aerial ANT3[2] with 3m coax cable	40000351

1) Using the WSD system of TS 971 is not possible
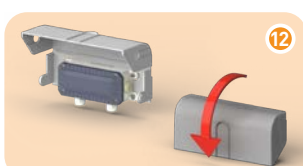**2)** Required when using the integrated 434 MHz radio system

Separate connection kits
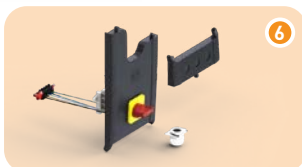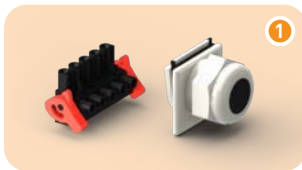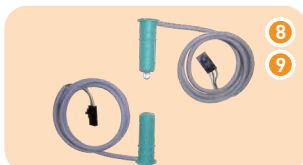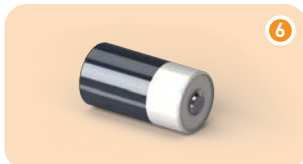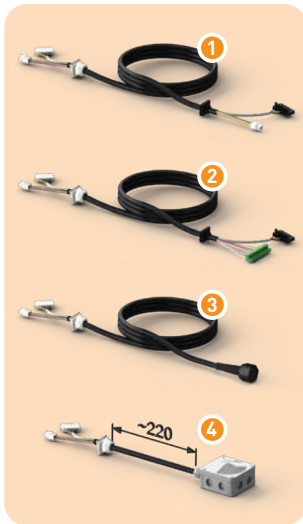
Designation		Description	Part no.
Connection kit, when hardwired	①	Mains supply terminal and slide gland	30005132.00001
Connection kit CEE 3N~400 V (5-pole.)	②	With pluggable mains supply cable of length 0.7 m	30005132.00002
Connection kit CEE 3N~400 V, IP65 (5-pole)	③	With pluggable mains supply cable 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

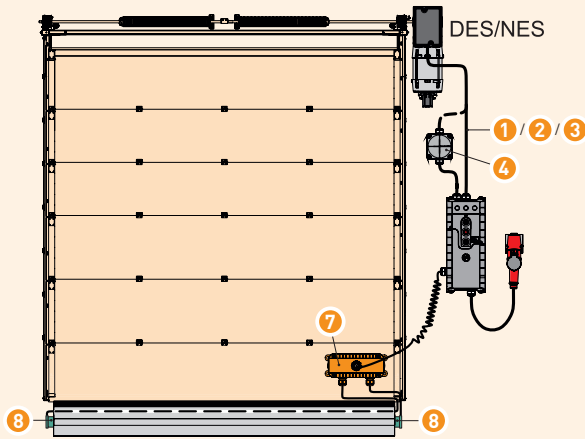| Designation		Description	Part no.

DES connection cable	❶	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	❷	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	❸	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	❹	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
WSD (with battery[2])	❺	Wireless safety device (2,4 GHz), IP65 (receiver integrated in TS 971) - Evaluation for common safety-edge systems and for for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range - Can be combined with OSE system 1 or 2	30005154

Battery[2] for WSD	❻	Replacement, suitable for WSD (3.6 V)
		  1 pc
		  10 pc
		  40 pc
			40017039
			40017079
			40017040

Spiral cable with junction box (IP65)	❼	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	❽	System 1 = one junction box (with WSD or spiral cable); 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: ❺ or ❼	 30005185.00650 30005185.01050
Universal OSE set, for system 2	❾	System 2 = junction box (with WSD or spiral cable) + junction end box; transmitter + receiver, pluggable designs with 0.5 m long cables for each Are also required for system 2: ❺ or ❼ as well as ❿+⓫	 30005185.00060
Junction end box (IP65) for system 2	❿	With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834

Connection cable for system 2	⓫	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	⓬	Mechanical protection against water; For WSD ❺, spiral cable with junction box ❼ and junction end box ❿	40017478.00001

■ Visual overview on page 8.075
■ **1)** Further lengths available, upon request
■ Further accessories are described in Section 9, e.g. radio from page 9.023
■ **2)** Average service life of 1.5 years, approx.

Subject to alterations. (23_So)

Example with spiral cable and system 1

DES/NES

❶ / ❷ / ❸
❹
❼
❽   ❽

Example with WSD and system 2

DES/NES

❶ / ❷ / ❸
❹
❿   ❺
⓫   WSD
❾   ❾

Accessories

 ❶

 ❷

 ❸

 ❹

 ❺

 ❻

 ❼
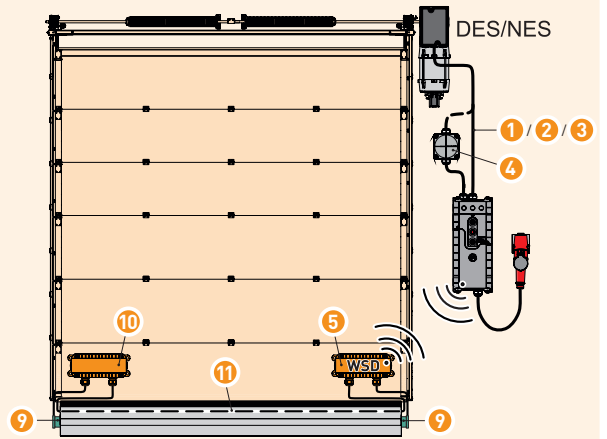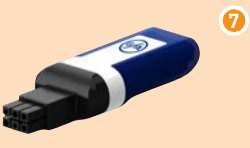
Designation		Description	Part no.
Mains switch/isolator with connection kit	❶	See "Separate connection kits" on page 8.073	
Key switch	❷	Assembly kit for installation in small cover, supplied with 2 keys	30004616
Emergency STOP switch	❸	Assembly kit for installation in small cover	30004615
Toggle switch for intermediate open position	❹	Assembly kit for installation in small cover	30004679
Keypad cover	❺	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	❻	Snap-in system (with UBS module)	40017122
GfA-Stick	❼	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

❸ ❷ ❹

❶

❺

❻
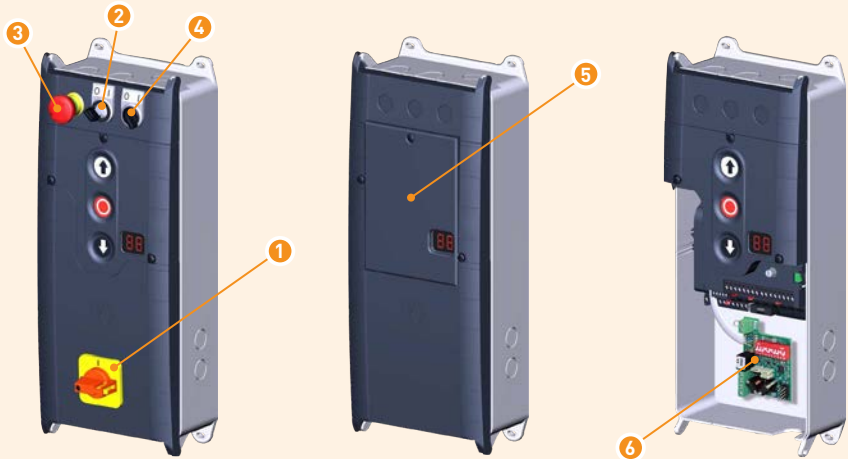
Spare parts TS 971

Designation		Description	Part no.
TS 971 board (24 V 350 mA DC) TS 971 board (24 V 1000 mA DC)	**1**	Within cover incl. keyboard	30005070.00001 30005070.00012
Bottom section of housing TS-B	**2**	For installation of the TS-board	40019858
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 971-XL

Designation		Description	Part no.
Mounting kit for housing XL	**1**	4 pc	40017128
Membrane 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**	Consits of: Hinges, cover, bottom section with mounting plate and 3 DIN mounting rails	30005126
TS 971 board	**6**	Within cover incl. keyboard	30005070.00001
Mounting adapter TS-B	**7**	For installation of the TS-board	40019861
Connection kit, when hardwired	**8**+**9**	Consists of: Mains supply terminal and slide gland	30005132.00001
TS 971 for control enclosure installation	**6**+**7**+**8**	Consists of: TS 971 board, mounting adapter TS-B, mains supply terminal	30005406
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**	Consits 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

8.076