

# TS 971 & TS 971+ door controls

“Integrated radio“ / “Internet of Things“

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

## Approvals and certificates

TS 971 / 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



**TS 971** – Automatic control for DES / NES

**+** – IoT

### 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<sup>1)</sup>)
- 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 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<sup>2)</sup>) 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<sup>3)</sup> 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 Safety Device

3) UBS universal command sensor system (see 8.091)

4) Digital InterFace

### 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

- Internet access via separately available IoT gateway



### Further functions

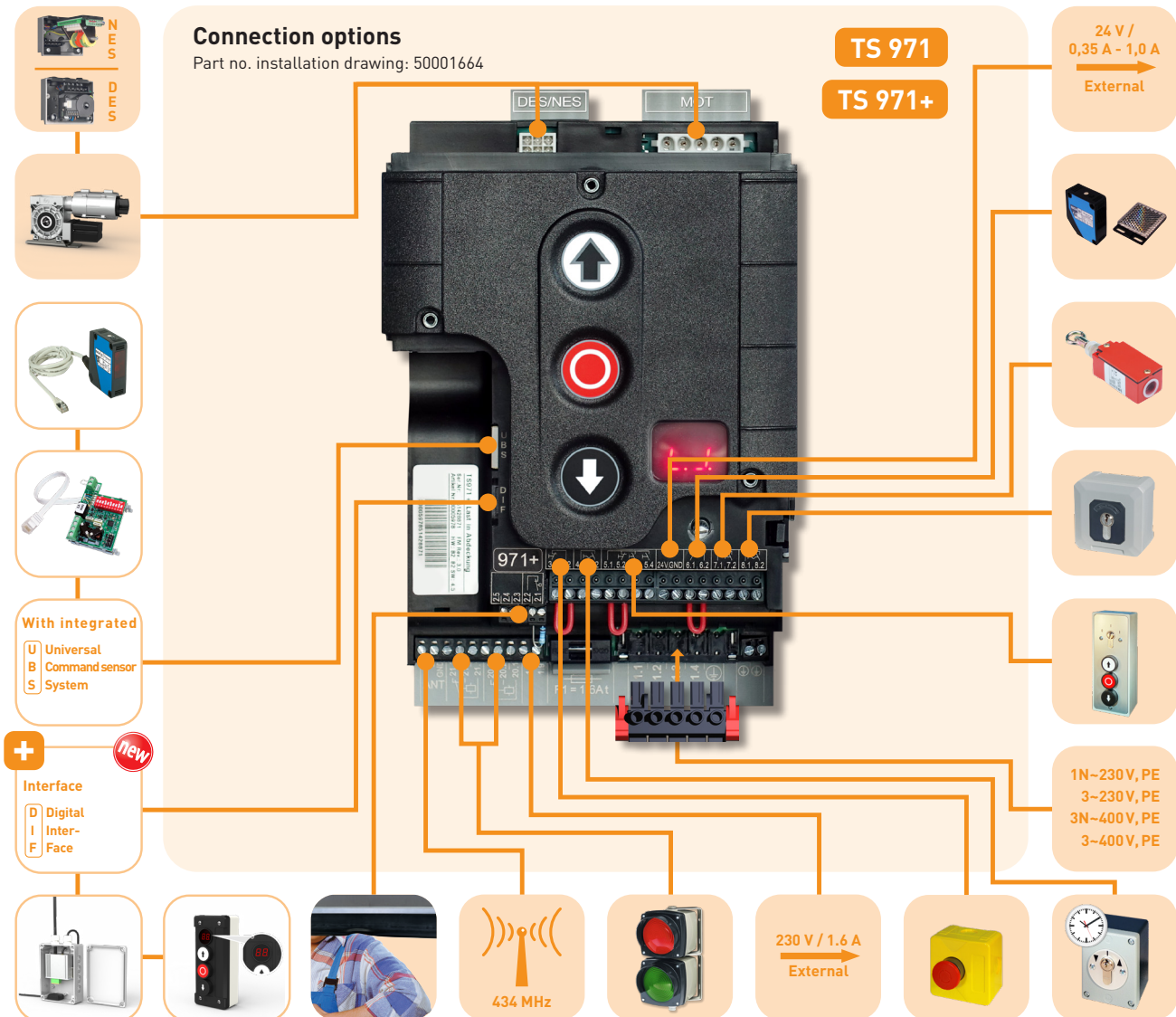
- Automatic ground adjustment (only DES) to compensate for rope stretch or subsequent change in ground height (not for pressure-wave switches)
- Overrun correction (only DES) to compensate for changes to overrun, e.g. due to influence of temperature
- Status and information display (including display 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

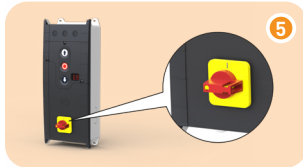
### Additional functions<sup>1)</sup> of the TS 971+

- Direct data transmission to the evodo web platform as a basis for continuous monitoring of your door systems (If you are interested in a pilot test with active participation, please contact your representative in GfA Sales).
- Connection of the new external push buttons with display for applications such as:
  - Operability with simultaneous access protection of the door control
  - Requirement for enclosure of the door control
  - See accessories under 9.021

1) Only one of the two functions can be used via the DIF interface.



## Complete door control with connection kit

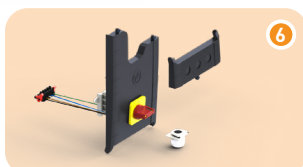
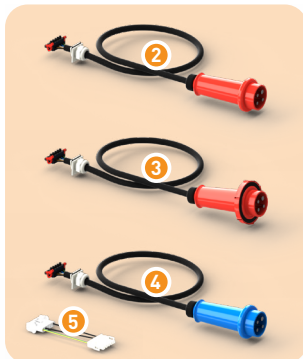
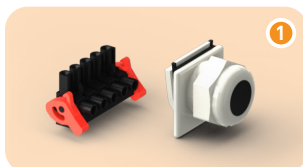


Designation	Description	TS 971 External 24 V 350 mA DC Part no.	TS 971+ External 24 V 350 mA DC Part no.	TS 971+ External 24 V 1000 mA DC Part no.
TS 971 with connection kit, when hardwired	1 With mains supply terminal and slide gland	20097100.00001	20197100.00001	20197100.30001
TS 971 with CEE 3N-400 V (5-pole)	2 With pluggable mains supply cable of length 0.7 m	20097100.00002	20197100.00002	20197100.30002
TS 971 with CEE 1N-230 V (3-pole)	3 With pluggable mains supply cable of length 0.7 m	20097100.00006	20197100.00006	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	20197100.00014	20197100.30014
TS 971 with CEE 3-230 V (4-pole)	3 With pluggable mains supply cable of length 0.7 m	20097100.00017	20197100.00017	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	30005855
TS 971 with mains switch/isolator 3N-400 V	5 With mains switch/isolator in large cover	20097100.00021	20197100.00021	20197100.30021
TS 971 with mains switch/isolator 1N-230 V	5 With mains switch/isolator in large cover	20097100.00026	20197100.00026	20197100.30026

Designation	Description	Part no.
TS 971 XL in plastic housing	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	
Part no. installation drawing: 50001908		
■ TS 971 XL	6 Version with mains switch 3N-400 V (24 V 350 m DC)	20097100.20021
■ TS 971+ XL	6 Version with mains switch 3N-400 V (24 V 1000 mA DC)	20197100.40021
■ TS 971 XL	7 Version when hardwired 230 V-400 V (24 V 350 mA DC)	20097100.20001
Lock	8 Lock for padlock (2 pc)	40019408
TS 971 in control enclosure <sup>1)</sup>	W x H x D [mm]: 400x400x200; Protection class: IP66 - 4-pole mains switch - 3 DIN mounting rails - 8 cable glands	
Part no. installation drawing: 50002227 (V2A/V4A) 50002230 (steel)		
	9 Version stainless steel V2A (AISI 304L)	20097199.00001
	9 Version stainless steel V4A (AISI 316L)	20097199.00002
	9 Version steel (powder-coated)	20097199.00004
	11 Rod aerial ANT3 <sup>2)</sup> with 3m coax cable	40000351

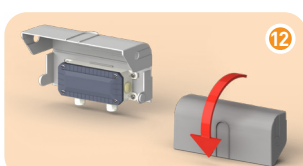
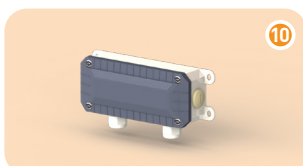
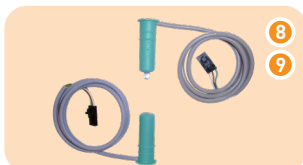
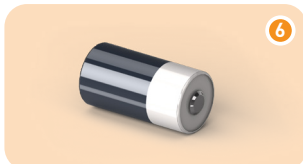
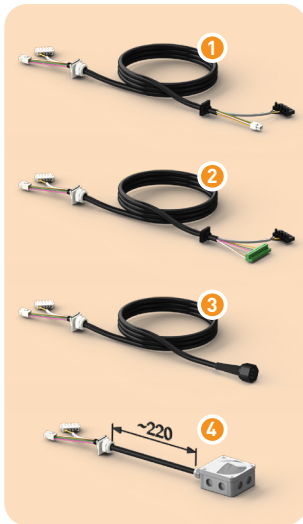
<sup>1)</sup> Using the WSD system of TS 971 is not possible  
<sup>2)</sup> Required when using the integrated 434 MHz radio system

## 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	<b>1</b> Connection to ELEKTROMATEN drives with digital limit switch, pluggable on both sides; length of cable <sup>1)</sup> : 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	<b>2</b> Connection to ELEKTROMATEN drives with mechanical limit switch, pluggable on both sides; length of cable <sup>1)</sup> : 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	<b>3</b> Connection to ELEKTROMATEN SE 8.60 FI, pluggable on both sides; length of cable <sup>1)</sup> : 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	<b>4</b> 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 <sup>2)</sup> )	<b>5</b> Wireless safety device (2,4 GHz), IP65 (receiver integrated in TS 971) - Evaluation for common safety-edge systems and for pass-door and slack-rope switches - Pluggable connection technology - Wide operating range - Can be combined with OSE system 1 or 2	30005154
Battery <sup>2)</sup> for WSD	<b>6</b> Replacement, suitable for WSD (3.6 V) 1 pc 10 pc 40 pc	40017039 40017079 40017040
Spiral cable with junction box (IP65)	<b>7</b> 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	<b>8</b> 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: <b>5</b> or <b>7</b>	30005185.00650 30005185.01050
Universal OSE set, for system 2	<b>9</b> 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: <b>5</b> or <b>7</b> as well as <b>10+11</b>	30005185.00060
Junction end box (IP65) for system 2	<b>10</b> With plug-in connection points for transmitter / receiver, as well as for pass-door and slack-rope switches	30004834
Connection cable for system 2	<b>11</b> 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	<b>12</b> Mechanical protection against water; For WSD <b>5</b> , spiral cable with junction box <b>7</b> and junction end box <b>10</b>	40017478.00001

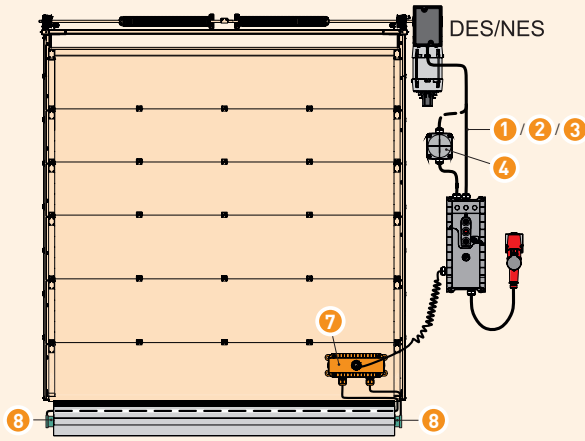
■ Visual overview on page 8.075

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

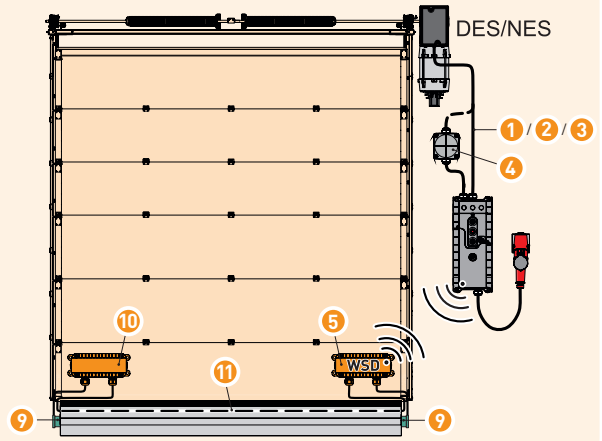
■ **1)** Further lengths available, upon request

■ **2)** Average service life of 1.5 years, approx.

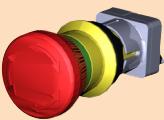
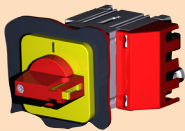
### Example with spiral cable and system 1



### Example with WSD and system 2



## Accessories

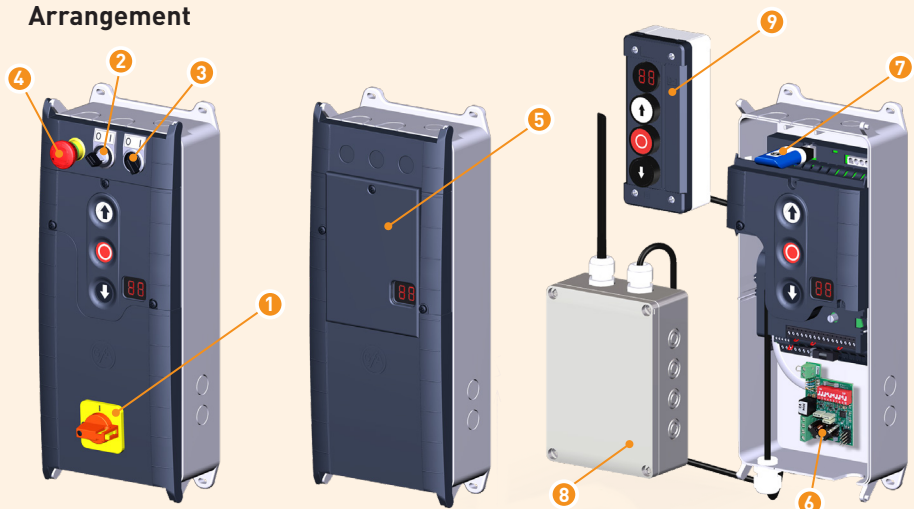


Designation	Description	Part no.
Mains switch/isolator with connection kit	1 See "Separate connection kits" on page 8.073	
Key switch	2 Assembly kit for installation in small cover, supplied with 2 keys	30004616
Toggle switch for intermediate open position	3 Assembly kit for installation in small cover	30004679
Emergency STOP switch	4 Assembly kit for installation in small cover	30004615
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 and "evodo Stick app" App; for reading out and displaying of important data from the door control (e.g. programming, stored error logs, etc.)	20003696
IoT Gateway	8 Device for connecting the TS 971+ to the internet via NB-IoT or LAN, including connection cable: 1 m 10 m 20 m To be used in combination with the evodo Web platform <sup>1)</sup>	20004281.10100 20004281.11000 20004281.12000
Control devices with display	9 External control devices with mirrored display of the door control; See accessories, section 9.021 et seq.	

new

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### Arrangement



■ 1) If you are interested in a pilot test with active participation, please contact GfA Sales.

## Spare parts TS 971



Designation	Description	Part no.
TS 971 board (24 V 350 mA DC) TS 971+ board (24 V 350 mA DC) TS 971+ board (24 V 1000 mA DC)	1	30005070.00001 30005070.00013 30005070.00014
Bottom section of housing TS-B	2	40019858
Cover kit TS-B1	3+4	30005192.00001
Cover kit TS-B1 for mains switch	3+5	30005192.00006
Spacer foot TS-B	6	40016530

## Spare parts TS 971 XL



Designation	Description	Part no.
Mounting kit for housing XL	1	40017128
Membrane push button for TS-B	2	30005408
Hinge	3	30005828
Top section of housing XL for TS-B	2+3+4	30005827.00001
Housing XL for TS-B	3+4+5	30005126
TS 971 board (24 V 350 mA DC) TS 971+ board (24 V 350 mA DC) TS 971+ board (24 V 1000 mA DC)	6	30005070.00001 30005070.00013 30005070.00014
Mounting adapter TS-B	7	40019861
Connection kit, when hardwired	8+9	30005132.00001
TS 971 for control enclosure installation	6+7+8	30005406
Mains switch for housing XL	10	40015183
Housing XL for TS-B with mains switch, complete	1+2+3+4+5+7+10	20002984.20004
Lock for padlock	11	40019408