



Roller door control RTS16

for 230 V AC motors

Installation and operating instructions

- For installers and electricians -

Not intended for end-customers (users)!

- The user must be provided with operating instructions for "his application".
- Attention must be drawn to any possible dangers.
- Operation and maintenance must be explained to the user.

Read these instructions before starting to use the system!

Contents

	Page
1.0. Safety and warning instructions	3
1.1. Installation instructions	
1.2. Storage and transport	
2.0. Description of roller door control RTS16	4
2.1. Applications	
3.0. Functional description	4
3.1. Self-test	
3.2. Current sensing	5
3.3. Safety input 8K2 or Fraba-OSE	
3.4. Light switch	
3.5. End switch	
3.6. EMERGENCY OFF	
3.7. Radio	
4.0. LEDs	5
Meaning of the LEDs	
5.0. DIP switches	6
Description of functions	
6.0. Internal switches	7
Description of functions	
7.0. Connection terminals	7
Connection terminal table	
8.0. Electrical installation	8
8.1. Installation and connection	
8.2. Installation sequence	
9.0. Installation plan	8
Installation example on a roller door	
10.0. Connection of 8K2 safety rails	9
To be observed at all times!	
11.0. Programming the operating modes	9
11.1. Radio functions	
12.0. Teaching-in transmitter switches	9
Setting operating mode (Impulse, running direction, light)	
13.0. Deleting radio	9
Deleting all taught-in transmitters	
14.0. Keypad	10
Connection and functions of the optional keypad	
15.0. Installing the radio module	11
15.1. Replacing the radio module	
16.0. Technical data	12
16.1. Maintenance	
16.2. Repair	
17.0. Fault-finding	13



1.0. Safety instructions

Working on the controls

- Switch off the supply voltage!
- Only switch the voltage on again after checking all connections.

Assembly, installation, commissioning and maintenance

- Only by specialist, qualified personnel, e.g. a qualified electrician, who can correctly assess the safe working condition.
- In accordance with the guidelines and accepted rules of the technology.

Assembly and operation

- The system will only work reliably if carefully assembled in accordance with these instructions.
- This remote control may only be used for devices and systems in which a fault in the transmitter or receiver does not create any danger to persons or equipment, or in which such a risk is covered by other safety devices.
- This remote control may not be used for equipment and systems with an increased accident risk (e.g. crane systems!
- Remote control of systems involving an accident risk is only recommended, if at all, with direct line-of-sight contact.
- Observe the applicable local regulations.
- Observe the accident prevention, VDE and EVU regulations.
- Information is available from the VDE and relevant trade associations.
- No technical modifications may be carried out by the user.
Any modifications will invalidate the liability and guarantee conditions.

1.1. Installation instructions

Failure to observe these safety instructions can lead to personal injury and damage to equipment!

Increased internal temperatures due to direct exposure to sunlight will decrease the working life. Water or insects getting into the controls will lead to damage or total failure.

In order to avoid damage to the controls:

- Protect the controls from the effects of weather.
- Install only in the housing.
- Any damp getting into the unit during assembly and installation must be removed prior to commissioning with the aid of a hair-dryer!
- Use the attachment holes in the chambers of the cover screws.
- In order to avoid deformation of the housing and leaks, fit only to a smooth undersurface, and do not over-tighten screws.
- Install vertically, feeding lines in from the bottom.
- Open the twist nipple carefully using a round screwdriver. Do not cut open with a knife!
- Signal lines (e.g. impulse, Open, Stop, Close...) must not exceed a maximum length of 30 m! This does not apply to the power supply line.

1.2. Storage and transport conditions

Failure to observe these instructions can lead to failure, even after commissioning!

Store in a dry, dust-free area protected against shocks and impacts.

Storage temperature -20 °C...+80 °C at 30 %...60 % rel. air humidity.

Transport only with adequate and well-padded extra packaging.

- The existing packaging is not intended as transport packaging.
- Damage caused by failure to observe these instructions is not covered by the guarantee!

2.0. Roller door control RTS16

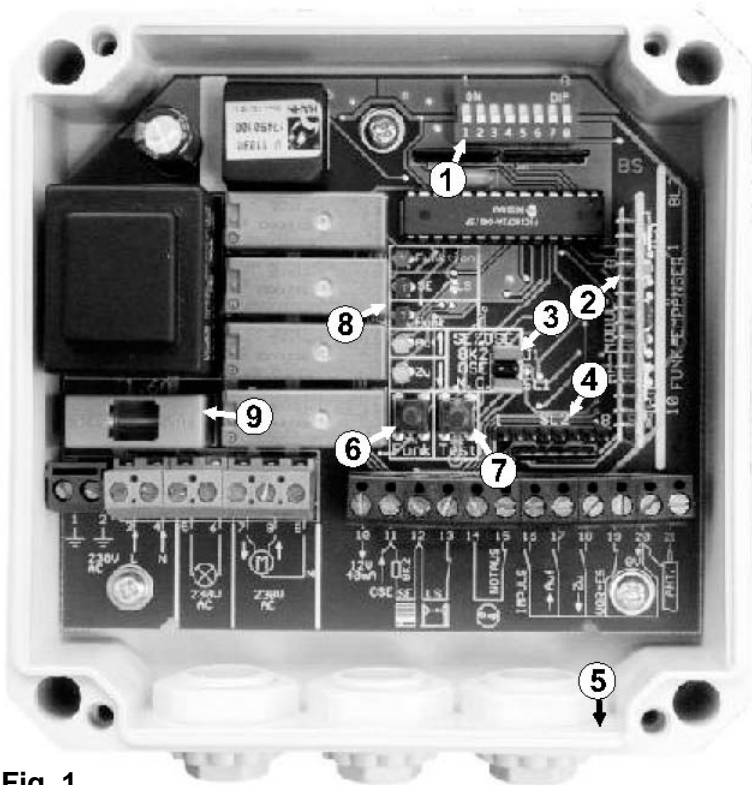


Fig. 1

- ① **DIP switches**
see pages 6+7
- ② **Radio module sockets**
see page 11, 15.0.
- ③ **SL1 Selection: Fraba-OSE or safety rail 8K2**
- ④ **SL2 Connection for optional keypad in cover**
- ⑤ **Antenna aperture**
for external antenna.
- ⑥ **Radio switch**
see page 7, 6.0.
- ⑦ **Test switch**
see page 7, 6.0.
- ⑧ **LEDs 1...5**
see page 5, 4.0.
- ⑨ **Fuse**
T 1.6 A 5x20 mm

2.1. Applications

The RTS16 is a 230 V AC motor control for 230 V AC motors with integral end switches. Typical applications include radio control of roller doors, blinds, awnings, curtains etc. Other 230 V AC drives without end switches can also be operated by means of run-time deactivation.

3.0. Functional description RTS16

- Following actuation of the EMERGENCY OFF or STOP switch on the keypad, the next impulse command will cause the motor to run in the opposite direction.
- Following actuation of the EMERGENCY OFF, automatic closure is blocked until an IMPULSE, OPEN or CLOSE command is given.
- Simultaneous actuation of the OPEN and CLOSE input will be interpreted as EMERGENCY OFF.
- During operation, the OPEN / CLOSE command only has a Stop function (panic function).
- Approx. 10 s before automatic closure, the lights will be activated as a warning (independent of S4/S5).
- OPEN and CLOSE have no effect when the system is already in the opened / closed position!
- OPEN or CLOSE command of shorter than 1.5 s: Optional typing operation (via S8), i.e. on cancellation of the command the drive stops again (e.g. for blind or awning adjustment).
- The number of actuations is stored for service purposes.

3.1. Self-test

- An automatic RESET and self-test of the controls is carried out every 4 hours when not in use.
- Self-test of LS and SE input, memory and safety switching.
- If an error is detected twice, the controls are locked.
- The lock is removed following another self-test, interruption of the power supply, an IMPULSE, OPEN, CLOSE or radio command, provided that no further fault occurs.

3.2. Current sensing

- Monitoring of the motor with integral end switches by means of current measurement.
- Internal condition switching takes place 0.5 s after switching motor off by internal end switches.

3.3. Safety input (Terminals 10-12)

- Safety rail 8K2, alternatively Fraba-OSE (select via **Jumper SL1**). Fit the jumper as shown in Fig. 2 depending on the application.
- Evaluation takes place via controller and hardware (2-channel).
- Monitoring by self-test before every motor start.
- If already in end position, system can only start if SE-input is actuated if the end switch is also activated.
- If the SE-rail is activated (CLOSED end position, radio control is blocked. Operation is only possible in dead man's mode via the OPEN/CLOSED inputs or the keypad (RTS16-1).

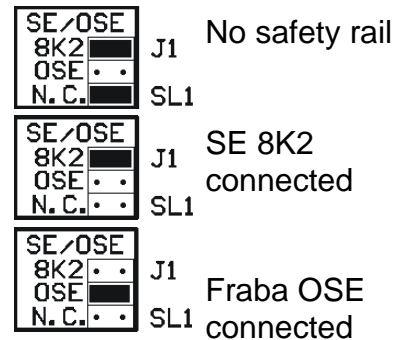


Fig.2

3.4. Light switch (Terminals 12+13)

- Setting of the function via **DIP switches S6/S7**.
- Monitoring by self-test before every motor start.
- If the light switch is actuated starting by radio is blocked. Emergency operation is only possible in dead man's mode via the OPEN/CLOSED inputs or the keypad (RTS16-1).
- If the input is not used, it must be "bridged".

3.5. End switch (Terminals 19+20)

- On actuating the safety input (SE) max. 2 s after the end switch, the system closes to the end position (run-time of switch-off by internal end switches). If the SE-input is not actuated within 2 s after actuating the end switch (positive testing), release or reversing takes place (see **DIP switches S6/S7**).
- If the input is not used, it must be "bridged".

3.6. EMERGENCY OFF (Terminals 14+15)

- If the input is not used, it must be "bridged".

3.7. Radio

- Maximum 60 transmitters / switches can be taught-in.
- Radio functions Impulse, Open, Close and Light.
- Light actuation while motor is running: Light goes out directly after start.
- Light output can be separately actuated by radio, max. 15 min.

4.0. Meaning of the LEDs

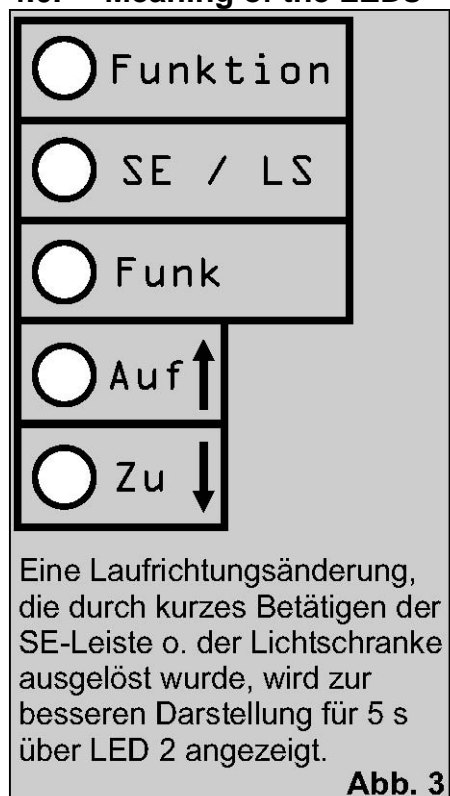


Abb. 3


- LED1 - Operation (power) and function display:
(green) Fast flashing: Warning time for automatic closure
1 x flashing / Pause... EMERGENCY OFF actuated
2 x flashing / Pause... Open/close actuated (EMERG. OFF)
3 x flashing / Pause... EMERG. OFF + Open/close actuated
4 x flashing / Pause... Locked after self-test
- LED2 - SE / LS-input actuated:
(red) 1 x flashing / Pause... SE actuated
2 x flashing / Pause... LS actuated
3 x flashing / Pause... SE + LS actuated
- LED3 - Radio actuated, display of teach/delete mode
(red) Fast flashing: radio deletion running
Permanently on: valid radio signal present
1 x flashing / Pause... Learn mode IMPULSE
2 x flashing / Pause... Learn mode OPEN
3 x flashing / Pause... Learn mode CLOSE
4 x flashing / Pause... Learn mode LIGHT
- LED4 - Open actuated (Open relay actuated)
(yellow)
- LED5 - Close actuated (Close relay actuated)
(yellow)

5.0. Functions of DIP switches (for position, see Fig. 1, P. 4)

Switch 1 = **Impulse / dead man's operation** (motor runs only as long as switch is actuated).

OFF = Impulse operation for opening and closing.

ON = **Dead man's operation** for "Close" (*OPEN always has impulse operation*).

Running direction CLOSE only when CLOSE input actuated or  switch pressed on keypad

Running direction OPEN: Same function as SW1=OFF.

Switch 2 = **Run-time restriction**

OFF = Switching off at end positions by integral end switches and detection by current sensing. Run-time switch-off after 120 s.

ON = Pre-selected run-time restriction by means of taught-in time (for hydraulic and sliding clutch drives, without internal end switches).

Teaching-in run-time restriction:

- Move door to end position (e.g. by radio).
- DIP switch 2 = ON (no current sensing!)
- Start door (e.g. by radio).
- Wait for the required run-time (max. 120 s).
- Stop door (e.g. by radio).

The taught-in run-time will now run from the beginning at every motor start, even if started from an intermediate position.

Switch 3 = **Automatic closing On / Off**

Teaching-in opening time:

- DIP switch 3 = OFF
- Move door to end position
- Wait for the required opening time (max. 16 min)
- Set DIP switch 3 to ON = save the time.

If LS, SE, and all radio or switch commands are actuated, the opening time will be reset, and then runs completely again from the beginning. Automatic closing is in effect if SE has been actuated, if the END SWITCH has been activated! If EMERGENCY OFF is actuated, automatic closing is blocked until an IMPULSE, OPEN or CLOSE command is given. If the OPEN switch is activated manually or by radio, automatic closing is blocked. After a power failure, automatic closing is in effect (following the opening time), provided that the door is not in the CLOSED end position.

If automatic closing is activated, an "OPEN" command has no effect!

Switches 4 / 5 = **Light / Warning light** output

4 = OFF 5 = OFF = 2 min. Restart after motor start

4 = OFF 5 = ON = Only when motor is running

4 = ON 5 = OFF = 4 s before motor start for OPEN and CLOSE

NOTE: No keypad operation is possible in this operating mode (**S8** has no effect)!

4 = ON 5 = ON = 4 s before start of CLOSE when motor is running

NOTE: No keypad operation is possible in this operating mode (**S8** has no effect)!

Switches 6 / 7 = **LIGHT SWITCH (LS)** and **SAFETY DEVICE (SE)**

6 = OFF 7 = OFF = LS: Released for OPEN and CLOSE

SE: Stop for OPEN, reverse for CLOSE

6 = OFF 7 = ON = LS: No effect for OPEN, released for CLOSE

SE: Stop for OPEN, reverse for CLOSE

6 = ON 7 = OFF = LS: No effect for OPEN, reverse for CLOSE

SE: Stop for OPEN, released for CLOSE

6 = ON 7 = ON = LS: No effect for OPEN, reverse for CLOSE, closure after LS after taught-in time, range 0.5 s...60 s.

For teaching-in, the door must be outside the CLOSED end position. The light switch must now be pressed, and after the required time, switches S6 and S7 set to ON. The teach-in process is now completed.

SE: Stop for OPEN, released for CLOSE.

If LS is not actuated, the door will close after approx. 15 minutes.

5.0. Functions of the DIP switches (continued from Page 6)

Switch 8 = **Function OPEN / CLOSE input Impulse or keypad operation**

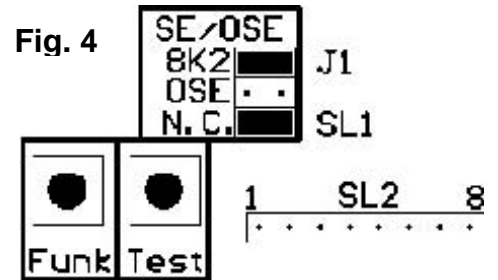
8 = OFF = OPEN / CLOSE input with impulse operation

8 = ON = OPEN / CLOSE input with keypad operation for blind adjustment

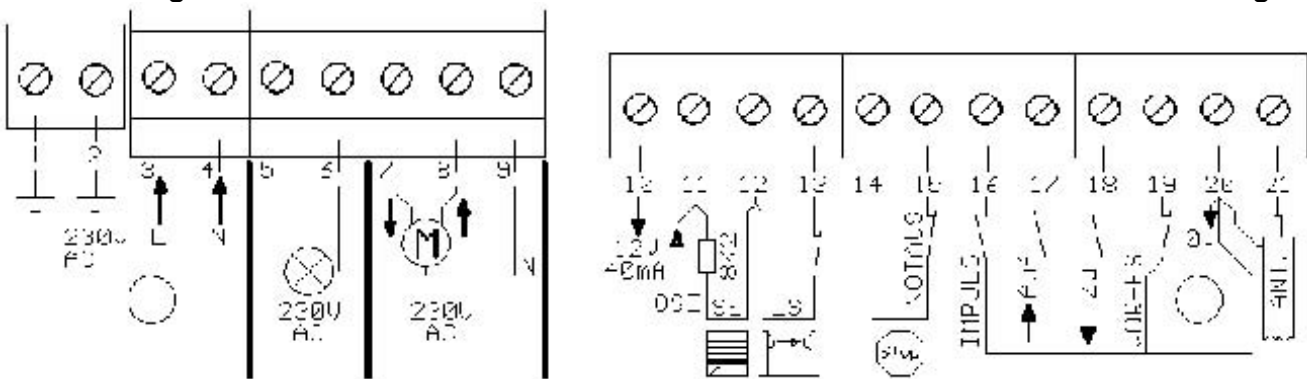
If the input is actuated for less than 1.5 s in keypad operation, the drive will stop again at the end of the command (blind adjustment). If the OPEN / CLOSE input is actuated for longer than 1.5 s, the drive will automatically continue to the end position after the command.

6.0. Functions of the internal switches

- **Radio** 4 channels can be taught-in:
 - 1 x press (flashing): Impulse
 - 2 x presses (flashing): Open
 - 3 x presses (flashing): Close
 - 4 x presses (flashing): Light, approx. 15 min.
- **TEST** Open IMPULSE input. A keypad can also be connected to **SL2** (OPEN-STOP-CLOSE + 4 status LEDs).



7.0. Configuration of connection terminals



Terminal	Function	Remarks
1-4	Operating voltage	230 V ± 10% 50 Hz 1+2 = PE
5+6	Light/warning light	230 V 50 Hz max. 100 W
7-9	Motor	230 V 50 Hz max. 250 VA
10+12	12 V DC output	max. 40 mA for LS / OSE (12=0 V)
11+12	Safety input	8K2/OSE (selection/connection see page 5/3.3 and page 9/10.0)
12+13	Light switch	Opener (remove jumper when connecting)
14+15	EMERGENCY OFF	Opener (remove jumper when connecting)
16+20	Impulse switch	Closer
17+20	OPEN switch	Closer
18+20	CLOSE switch	Closer
19+20	End switch	Opener (remove jumper when connecting)
21+20	Antenna	20 = screening

FRABA OSE connection: brown=terminal 10 (+12 V), green=terminal 11 (signal), white=terminal 10 (earth).

Connection (see Page 8, 8.0. "Electrical installation")

The power supply must be connected according to the table, observing local regulations, e.g. VDE, EVU etc.

Signal lines (e.g. impulse, Open, Stop, Close...) must not exceed a maximum length of 30 m! This does not apply to the power supply line.

Never connect an outside voltage to terminals 10...21. All switches must be connected potential-free.

Failure to observe this rule will destroy the receiver immediately and invalidate the guarantee! Connect the antenna to terminal 21 and feed it out of the housing through the aperture "Pos. 5" (see Page 4, Fig. 1) (see Page 3).

8.0. Electrical installation (Follow the instructions on page 3!)

- For safety reasons, the electrical installation must be carried out only by a qualified electrician.
- In commercial applications, special safety devices are required, such as dead man's operation, safety rail, lockable main switch and EMERGENCY OFF SWITCH. The full specifications are given in the "Guidelines for power-operated windows, doors and gates", published by the Central Trades association and available from Carl Heymanns Verlag KG in Cologne.
- A lockable main switch must be fitted in the main power supply line in accordance with safety guidelines.



The regulations prevailing at the point of use must be observed!

8.1. Installation and connection of the controls

Please ensure when installing the housing that

- the housing is not subject to stress or tension, so that the cover remains watertight.
- the controls are not exposed to direct sunlight.
- the cables are installed from the bottom, to prevent the ingress of water and insects.

8.2. Installation sequence

1. Install the housing in a suitable position, and lay the cables to the drive, power supply and additional devices (lights, Fraba, safety rail 8K2, EMERGENCY OFF, light switch, end switch...). Signal lines (e.g. impulse, Open, Stop, Close...) must not exceed a maximum length of 30 m! This does not apply to the power supply line.
2. Connect the cables to the controls, and select all the necessary functions via the jumper **SL1** and the **DIP switch** "Pos. 1".
3. Switch on the power supply voltage, and check all functions, especially the safety devices!
4. Connect the antenna, and teach-in the transmitters (see page 9, 12.0.).
5. The customer or installer of the door drive must check after installation that the maximum closing forces are maintained in accordance with the following norms
 - prEN 12 445 (Safety of power-operated doors. Test procedures) and
 - prEN 12 453 (Safety of power-operated doors. Requirements) and any other norms or regulations applicable at the place of installation!

9.0. Installation plan



Fig. 6

The example shows the RTS16 on a roller door with safety rail, light switch, warning light, end switch and emergency stop switch.

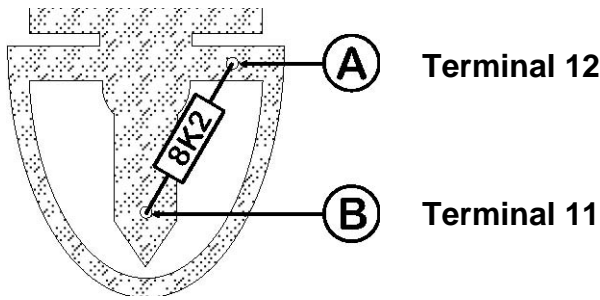
The operation of the drive and the electronics must only be carried out in accordance with the applicable norms !



10.0. Connecting the 8K2 safety rail

Important!

In order to ensure reliable operation, the safety rail must be connected in accordance with the following diagram.



What happens if...

In the event of faulty connection, it can happen that the controls detect an actuated SE rail, although this is not actually the case!

11.0. Programming the operating modes

A maximum of 60 transmitters can be taught-in. If 60 transmitters have already been taught-in to the receiver, no further transmitters will be accepted, and the codes already learnt will not be lost. The first transmitter taught-in determines which coding scheme will be valid. Only 12-bit, 18-bit or Keeloq transmitters can be taught-in. This means that if the first coding learnt was for example 18-bit, then only transmitters with 18-bit coding can be taught-in. Another coding can be taught-in after first deleting all existing transmitters.

An “asymmetrical” coding must be set for transmitters with a coding switch! Setting all coding switches to “ON” or “OFF” will lead to a loss of function or incorrect function!

11.1. Operating modes / Radio functions

Impulse: Every actuation of the sender causes a change in the running direction (Close...Stop...Open...).

OPEN: The OPEN direction is started when the radio signal is detected.

CLOSE: The CLOSE direction is started when the radio signal is detected.

Light: The light is switched on or off when the radio signal is detected. (max. 15 minutes)

12.0. Teaching-in transmitter switches

Operating mode	Programming	“OUT” LED display
Impulse	Press “RADIO” switch 1 x briefly Actuate the transmitter switch for 2 s.	flashes 1 x - Pause - flashes 1 x ... lights up
OPEN	Press “RADIO” switch 2 x briefly Actuate the transmitter switch for 2 s.	flashes 2 x - Pause - flashes 2 x ... lights up
CLOSE	Press “RADIO” switch 3 x briefly Actuate the transmitter switch for 2 s.	flashes 3 x - Pause - flashes 3 x ... lights up
Light On/Off	Press “RADIO” switch 4 x briefly Actuate the transmitter switch for 2 s.	flashes 4 x - Pause - flashes 4 x ... lights up

13.0. Deleting radio:

Press and hold the “Radio” switch “Pos. 6” until the “Radio” LED changes from “Flickering” to “Off”. All taught-in transmitters will thereby be deleted! Individual codes cannot be deleted separately.

14.0. Keypad connection and functions (optional with the RTS16-0)

The RTS16-1 is fitted with a keypad at the factory.

With the RTS16-0 model, a keypad can be retro-fitted at any time without any problems.

Connect the plug of the flat cable to connection **SL2** as shown in Figure 8.

When working on the controls, the housing cover can be held in place with the screws at the upper part of the housing (Fig. 7).

Take care not to kink or trap the flat cable when closing the housing cover!

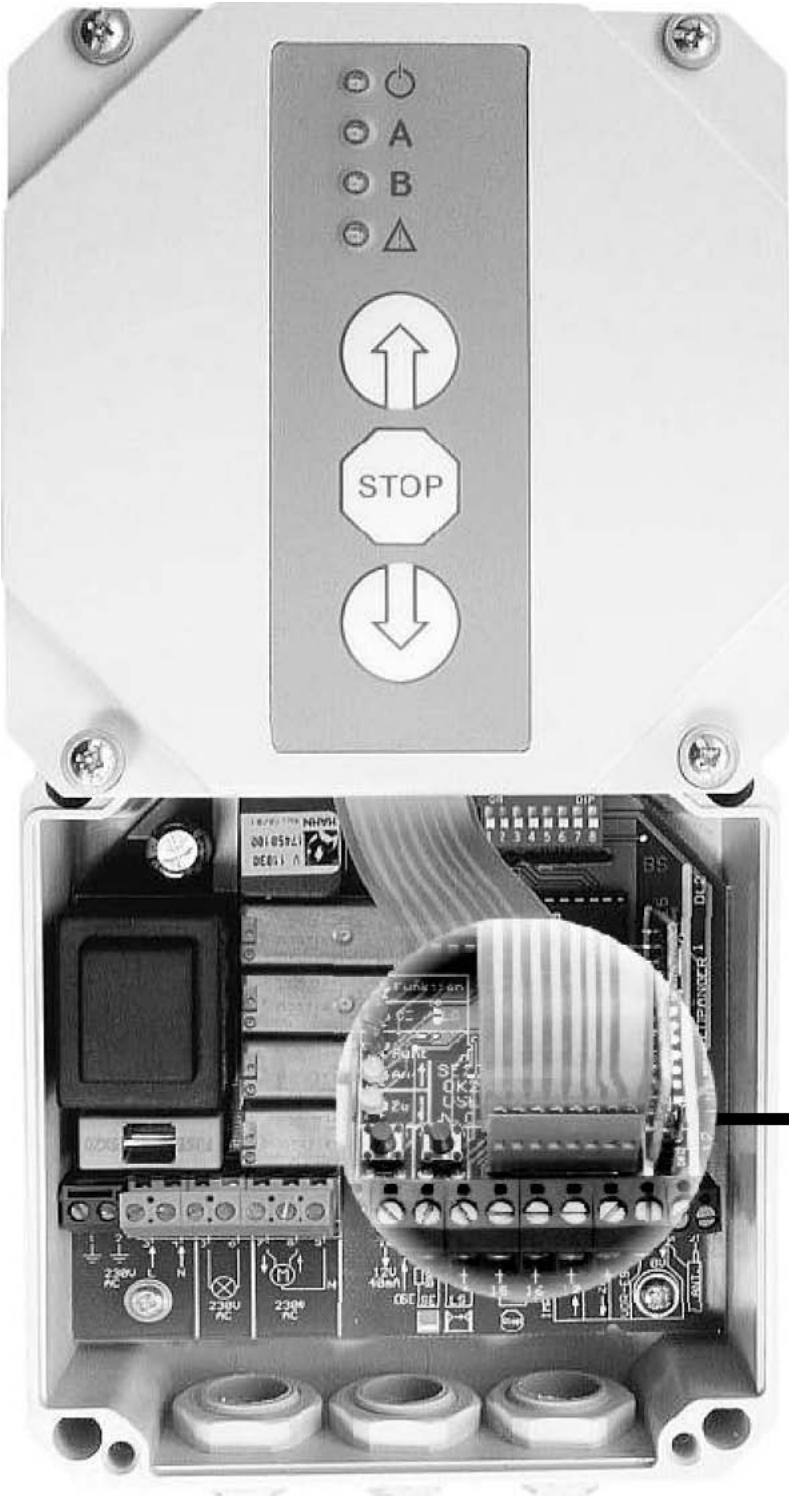







Fig. 7

-  **Operation/function display**
Internal LED 1
- A** **Motor start OPEN/CLOSE**
Internal LED 4/5
- B** **Radio actuated**
Internal LED 3
-  **SE/LS-input actuated**
Internal LED 2
-  **Start opening**
Internal terminal 17
-  **Stop motor**
*Function as for EMERG. OFF
-  **Start closing**
Internal terminal 18

* EMERG. OFF does not have any emergency stop function here (no safety circuit)

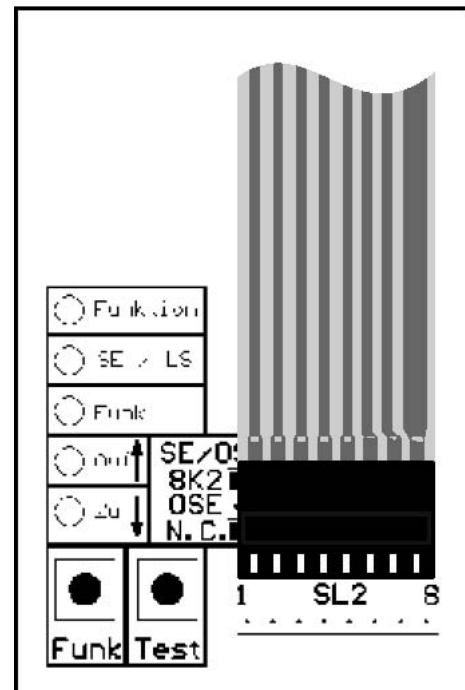


Fig. 8

15.0. Installing the radio module

In order to operate the RTS16 by radio, a radio module matching the selected transmitter must be installed. The modules are supplied with a suitable antenna.

In order to avoid damage due to electrical discharging, you must earth yourself before installing the module (e.g. by touching a water pipe or radiator).



The following radio modules can be used:

HAM27-51 = 27.015 MHz AM **HAM40-51** = 40.685 MHz AM
HFM40-51 = 40.685 MHz FM **HQAM433-51** = 433.920 MHz AM
HQAM868-57 = 868.300 MHz AM

Procedure:

- Switch off the power supply voltage!
- Connect a radio module with the required frequency to socket "BL 1". (Fig. 9)
- Connect the antenna to terminal 21 (RTS16) and feed out of the housing through the aperture "Pos. 5" (see Page 4, Fig. 1).
- Switch on the supply voltage.
- Teach-in new transmitters (see Page 9, 12.0.).

15.1. Replacing the radio module (Frequency change)

If interference occurs in the frequency band being used, the receiver can be converted to another frequency by replacing the radio module. The transmitter and the radio module must have the same frequency and the same modulation procedure e.g. AM or FM.

Procedure:

- Switch off the supply voltage!
- Disconnect the radio module carefully from the connection socket "BL 1" (Fig. 9).
- Connect a radio module with the required frequency.
- Connect a suitable antenna to terminal (RTS16) and feed out of the housing through the aperture "Pos. 5" (see Page 4, Fig. 1).
- Switch on the supply voltage.
- Delete the radio (see Page 9, 13.0.).
 - Teach-in new transmitters (see Page 9, 12.0.).

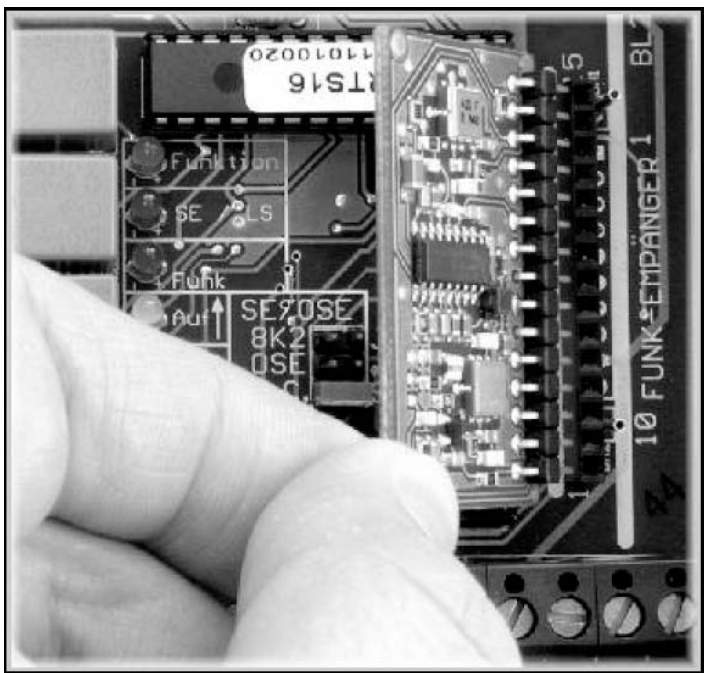


Fig. 9

The example shows the installation of the HQAM433 radio module. The installation is carried out in the same way for all modules.

16.0. Technical data

Operating voltage:	- 230 V \pm 10 % 50 Hz
Power consumption:	- Rest current approx. 1.7 VA, motor and light on max. 350 VA
Fuses:	- Si1, 230 V/AC T 1.6 A 5x20 mm
Outputs:	- Motor 230 V/AC 60 VA...250 VA, Light / Warning light 230 V/AC, max. 100 W, 12 V/DC max. 40 mA for LS / OSE
Inputs:	- Impulse switch (<i>Open, Stop, Close, Stop, Open...</i>), OPEN switch, CLOSE switch, emergency stop switch, light switch, safety rail 8K2 or Fraba OSE, end switch
Sockets:	- HF-module (BL1) Keypad (SL2)
Motor performance:	- min. 60 VA, max. 250 VA
Switch-on time:	- 25 % ED at max. 120 s motor run-time
Connections:	- Screw terminals, max. 4 mm ²
Radio (optional):	- Radio module with 27MHz, 40MHz, 433MHz or 868MHz AM/FM
Coding:	- 12-bit, 18-bit or Keeloq, self-learning, max. 60 codes (transmitters switch) can be taught-in
Operating temperature:	- 20 °C to +70 °C at 30 % to 80 % rel. air humidity
Dimensions:	- 125 mm x 125 mm x 52 mm plastic housing, IP54
Weight:	- approx. 0.5 kg incl. housing

16.1. Maintenance

- The closing force, the connected safety devices (contact rail, EMERGENCY OFF, ...) and the proper function of the controls should be checked every 6 months.

16.2. Repair

- Repairs to the controls must be carried out only by the manufacturer!
- No technical modifications may be carried out by the user. Any modifications will invalidate the liability and guarantee conditions.



17.0. Fault finding

<u>Symptom</u>	<u>Possible cause</u>	<u>Remedy</u>
"Function" LED fails to come on	- No operating voltage	- Check power supply connection - Check fuse
No motor function	- Safety input not correctly set - LEDs flash - The inputs for EMERGENCY light switch and end switch must be bridged if not being used	- Check jumper SL1, see Page 5 Fig. 2 - Diagnosis see 4.0 Page 5 - Check and install jumper if necessary
Radio not working LED on transmitter cones on	- Transmitter not taught-in - Frequency of transmitter and radio module not identical - Transmitter switch not pressed for long enough - Transmitter defective - Radio module defective - LEDs flash - SE or LS actuated	- Teach-in transmitter see Page 9 - Use matching transmitter - Press switch for at least 1 to 2 sec. - Check transmitter and replace if necessary - Check installation and replace if necessary - Diagnosis see 4.0 Page 5 - Dead man's operation only
Inadequate range	- Battery in manual transmitter too weak - Antenna not connected or incorrectly laid	- Check battery and replace if necessary - Maintain proper distance from steel equipment and electrical leads