

Command and signalling devices

	Page
RMQ	3-2
Signal towers SL	3-8
Position switches LS-Titan®, AT	3-10
Inductive proximity switches LSI	3-17
Optical proximity switches LSO	3-19
Capacitive proximity switches LSC	3-20
Electronic position switches LSE-Titan®	3-22
Analog electronic position switches	3-23
New combinations for your solutions	3-25

Command and signalling devices

RMQ

Commands and signals are the fundamental functions for controlling machines and processes. The required control signals are produced either manually by control circuit devices or mechanically by position switches. The respective application governs the degree of protection, the shape and colour.

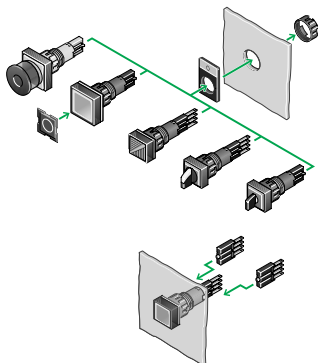
Advanced technology has been used consistently in the development of the new control circuit devices RMQ-Titan®. The use of LED elements and laser inscription throughout offer maximum reliability, efficiency and flexibility. In detail, this means:

- High-quality optics for a uniform appearance,
- Highest degree of protection up to IP67 and IP69K (suitable for steam-jet cleaning),
- Clear contrast using LED element lighting, even in daylight,
- 100.000 h, i.e. machine lifespan,
- Impact and vibration resistant,
- LED operating voltage from 12 to 500 V,
- Low power consumption – only 1/6 of filament lamps,
- Expanded operating temperature range -25 to +70 °C,
- Light testing circuit,
- Built-in safety circuits for highest operational reliability and accessibility,
- Abrasion-proof and clearly contrasting laser inscription,
- Customer-specific symbols and inscriptions from 1 off,
- Text and symbols can be freely combined,
- Terminations using screws and Cage Clamp¹⁾ throughout,
- Spring-loaded Cage Clamp terminals for reliable and maintenance free contact,
- Switching contacts suitable for use with electronic devices to EN 61131-2: 5 V/1 mA,
- Freely programmable switching behaviour on all selector switch actuators: spring-return/stay-put,
- All actuators in illuminated and non-illuminated version,
- Emergency-Stop buttons with pull- and turn-to-release function,

- Emergency-Stop buttons with lighting option for active safety,
- Contacts switch differing potentials,
- For use also in safety-related circuits using positive operation and positively opening contacts,
- Complying with industry Standard IEC/EN60947.

1) Cage Clamp is a registered trade mark of Messrs. WAGO Kontakttechnik GmbH, Minden.

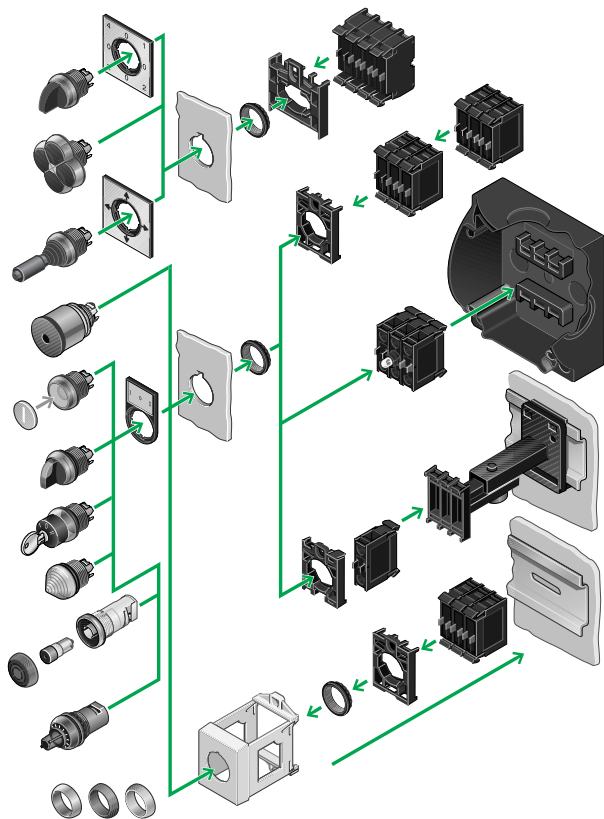
RMQ16



Command and signalling devices

RMQ

RMQ-Titan® System Overview



3

Command and signalling devices

RMQ

RMQ-Titan®

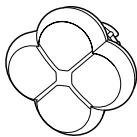
Four-way pushbutton

Moeller has added more operator elements to its highly successful range of control circuit devices RMQ-Titan. They are modular in construction. Contact elements from the RMQ-Titan range are used. The front rings and front frames are of the familiar RMQ-Titan format and colour.

3

Four-way pushbutton

The four-way pushbuttons enable users to control machines and systems in four directions of movement, with each direction of movement being assigned one contact element. The actuator has four individual button plates. They can be specifically selected for various applications and can be laser-inscribed to suit the customer's requirements.



Joystick

The joystick has four precisely assigned positions. Each direction of movement is assigned one contact element. The joystick enables users to control machines and systems in four directions of movement.



Selector switch actuators

The selector switch actuators have four positions. The actuator is available as rotary head or thumb-grip as required. One contact element is assigned to each On and each Off position.

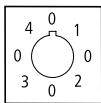
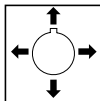
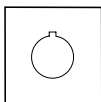


Labels

Moeller offers labels in various versions for all the operator elements. Versions available are:

- Blank,
- With direction arrows,
- With inscription 0-1-0-2-0-3-0-4.

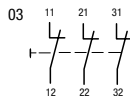
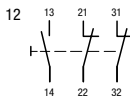
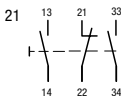
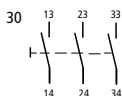
In addition, customized inscriptions are possible. The software Labeleditor enables customized inscriptions to be designed and these can be subsequently applied to the labels by laser, permanently and proof against wiping off.



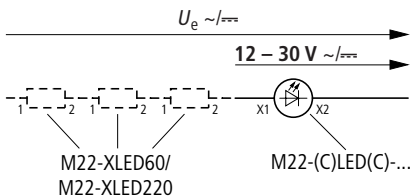
Command and signalling devices

RMQ

Terminal markings and function numbers (conventional number/circuit symbol), EN 50013

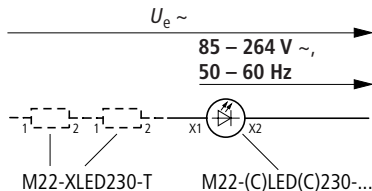


Voltage versions with series elements



M22-XLED60 ¹⁾	$U_e \cong \text{AC/DC}$
1 ×	60 V
2 ×	90 V
3 ×	120 V
...	...
7 ×	240 V
M22-XLED220	$U_e \cong$
1 ×	220 VDC

1) For increasing the voltage AC/DC.



M22-XLED230-T ¹⁾	$U_e \cong$
1 ×	400 V~
2 ×	500 V~

1) AC- for increasing the voltage 50/60 Hz.

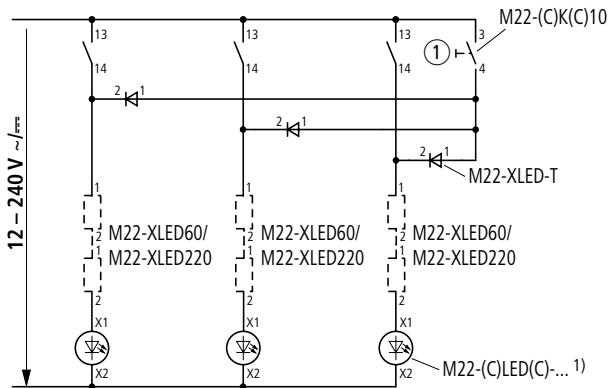
Command and signalling devices

RMQ

Circuit for light test

The test button is used to check operation of the indicator lights independently of the respective control state. Decoupling elements prevent voltage feedback.

M22-XLED-T for $U_e = 12$ to 240 V AC/DC (also for light test with signal towers SL)



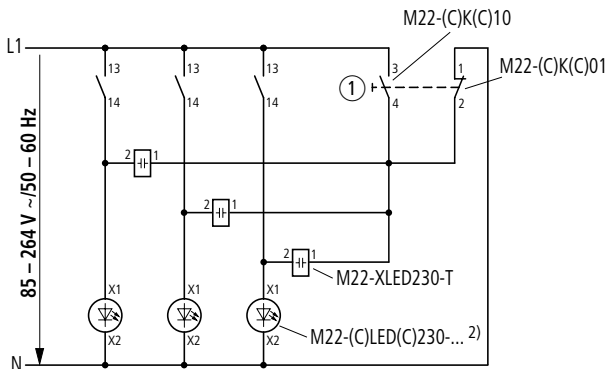
① Test button

1) Only for elements 12 to 30 V.

Command and signalling devices

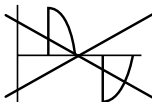
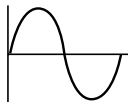
RMQ

M22-XLED230-T for $U_n = 85$ to 264 V AC/50 – 60 Hz



① Test button

1) For elements 85 to 264 V.



3

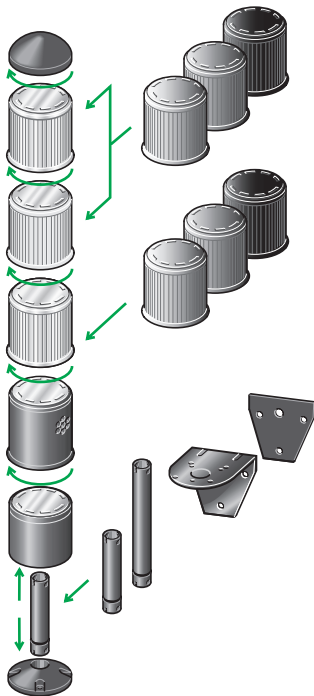
Command and signalling devices

Signal Towers SL

Signal Towers SL – everything under visual control at all times

Signal towers SL indicate machine states using visible and acoustic signals. Mounted on control panels or on machines, they can be reliably recognized as continuous light, flashing light, strobe light or acoustic indicator even from a distance, and dealt with as necessary.

3



Product features

- Continuous light, flashing light, strobe light and acoustic indicator can be combined as required.
- Free programmability permits the actuation of five addresses.
- Simple assembly without tools by bayonet fitting.
- Automatic contacting by built-in contact pins.
- Excellent illumination by specially shaped lenses with Fresnel effect.
- Use of filament bulbs or LEDs as required.
- A large number of complete units simplifies selection, ordering and stock holding for standard applications.

The various colours of the light elements indicate the operating status in each case to IEC/EN 60204-1 an:

RED:

Dangerous state – Immediate action necessary

YELLOW:

Abnormal status – monitor or action

GREEN:

Normal status – no action necessary

BLUE:

Discontinuity – action mandatory

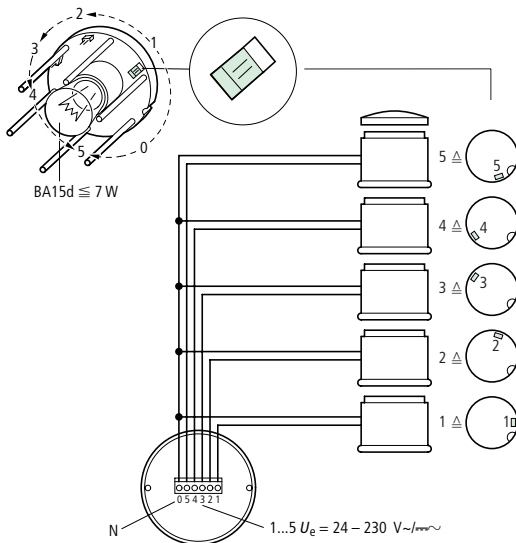
WHITE:

Other status – can be used as required.

Command and signalling devices

Signal Towers SL

Programmability



Five signal lines from a terminal strip in the basic module run through each module. The module is addressed via a wire link (jumper) on each printed circuit board. Five different addresses can also be allocated several times.

Thus, for example, a red strobe light and in parallel with it an acoustic indicator can indicate and announce the dangerous status of a machine. Insert both jumpers into the same position on the pcb – and it's done!

(→ section "Circuit for light test", page 3-6.)

Command and signalling devices

Position switches LS-Titan®, AT

	LS, LSM, ATO, ATR	AT4	AT4/...JZB
Standards	<ul style="list-style-type: none"> • IEC 60947, EN 60947, VDE 0660 → EN 50047 • Dimensions • Fixing dimensions • Switching points • Minimum IP65 	<ul style="list-style-type: none"> • IEC 60947, EN 60947, VDE 0660 → EN 50041 • Dimensions • Fixing dimensions • Switching points • IP65 	<ul style="list-style-type: none"> • IEC 60947, EN 60947, VDE 0660 → EN 50041 • Dimensions • Fixing dimensions • Switching points • IP65
Suitable applications	<ul style="list-style-type: none"> • Also for use in safety circuits, by positive operation and positively opening contacts 	<ul style="list-style-type: none"> • Also for use in safety circuits, by positive operation and positively opening contacts 	<ul style="list-style-type: none"> • Safety position switches for protection of personnel • With separate actuating element for protective guards • Positive operation and positively opening contacts • Approval by German Trade Association and SUVA (Swiss accident prevention authority)
Actuator	<ul style="list-style-type: none"> • Plunger • Roller plunger • Roller lever • Angled roller lever • Adjustable roller lever • Actuating rod • Spring rod actuator • Operating heads adjustable in 90° steps 	<ul style="list-style-type: none"> • Plunger • Roller head (adjustable in 90° steps, can be operated vertically or horizontally) • Roller plunger • Roller lever • Adjustable roller lever • Actuating rod • Spring rod actuator • Operating heads adjustable in 90° steps 	<ul style="list-style-type: none"> • Coded actuating element • Operating head: <ul style="list-style-type: none"> – Adjustable in 90° steps – Can be actuated from both sides • Actuating element <ul style="list-style-type: none"> – Convertible for vertical and horizontal fixing • With triple coding

Command and signalling devices

Position switches LS-Titan[®], AT

	ATO-...-ZB	ATO-...ZBZ
Standards	<ul style="list-style-type: none"> • IEC 60947, EN 60947, VDE 0660 • IP65 	<ul style="list-style-type: none"> • IEC 60947, EN 60947, VDE 0660 • IP65
Suitable applications	<ul style="list-style-type: none"> • Safety position switches for protection of personnel • With separate actuating element for protective guards • Positive operation and positively opening contacts • Approved by German Trade Association and SUVA (Swiss Accident Insurance Institute) 	<ul style="list-style-type: none"> • Safety position switches for protection of personnel • With separate actuating element for protective guards • Positive operation and positively opening contacts • Electromagnetic interlocking • Approved by German Trade Association and SUVA (Swiss Accident Insurance Institute)
Actuator	<ul style="list-style-type: none"> • Coded actuating element • Operating head: <ul style="list-style-type: none"> – Adjustable in 90° steps – Can be actuated from four sides and from above 	<ul style="list-style-type: none"> • Coded actuating element • Operating head: <ul style="list-style-type: none"> – Adjustable in 90° steps – Can be actuated from four sides

Command and signalling devices

Position switches LS-Titan®, AT

AT4/ZB, AT0-ZB safety position switches

Moeller safety position switches have been specially designed for monitoring the position of protective guards such as doors, flaps, hoods and grilles. They meet the requirements of the German Trade Association for the testing of positively opening position switches for safety functions (GS-ET-15). These requirements include:

“Position switches for safety functions must be designed such that the function used for protection cannot be changed or defeated by hand or by using simple tools.” Simple tools include: pliers, screwdrivers, pins, nails, wire, scissors, pocket knives, etc.

In addition to these requirements, AT0-ZB position switches offer additional manipulation safety by means of an operating head which can rotate but cannot be removed.

Positive opening is an opening movement by which it is ensured that the main contacts of a switch have attained the open position at the same time as the actuating element assumes the Off position. Moeller position switches all meet these requirements.

Certification

All Moeller safety position switches are certified by the German employers liability insurance association or by the Technical Monitoring Service (TÜV), Rheinland, and the Swiss accident prevention authority (SUVA).



Positive opening

Mechanically operated position switches in safety circuits must have positively opening contacts (see EN 60947-5-1/10.91). Here, the term positive opening is defined as follows: “The execution of a contact separation as the direct result of a predetermined motion of the actuating element of the switch via non-spring operated parts (e.g. not dependent on a spring)”.

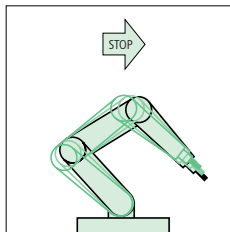
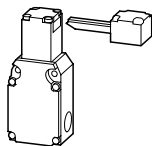
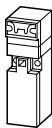
Command and signalling devices

Position switches LS-Titan®, AT

"Personnel protection" by monitoring the protective device

AT0-ZB

AT4/ZB



- Door open
- AT...-ZB switches off the power
- No danger

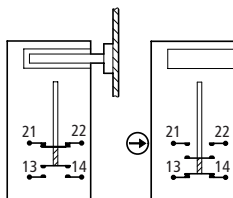
3

AT...ZB

Closed

Open

→ Personnel protection



Door opening

Door open

Closing door

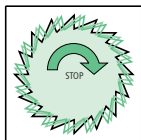
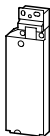
- Enabling contact (21–22) opening positively
- Enabling contact safely open, even where attempts are made to tamper using basic tools
- Triple-coded actuator closes the enable contact

Command and signalling devices

Position switches LS-Titan®, AT

“Enhanced personnel protection” by monitoring and interlocking the protective device

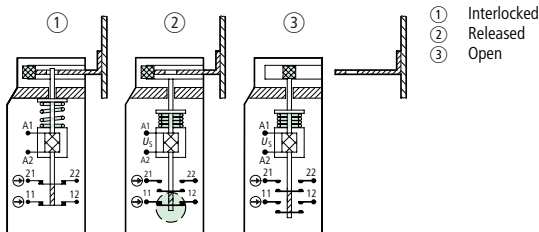
AT0-ZBZ



- Stop command
- Waiting time
- Machine stops
- Protective device on
- No danger

3

AT0-...FT-ZBZ, spring-powered interlock (closed-circuit principle)



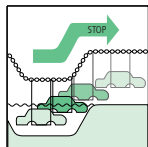
→ Enhanced personnel protection with separate indication of the door position

- | | | | |
|-------------------------------------|---|--------------------------------|---|
| <p>1. Door closed + interlocked</p> | <p>→ De-energized: even with mains failure or wire breakage: door interlocked = safe condition
enabling contact(21-22) closed</p> | <p>4. Door open</p> | <p>→ Both contacts blocked in the open position, even where attempts are made to tamper using basic tools</p> |
| <p>2. Releasing of door</p> | <p>→ Applies voltage to coil (A1, A2) e.g. via zero-speed monitor, enabling contact (21-22) opens</p> | <p>5. Closing of door</p> | <p>→ Triple-coded actuator cancels blocking of the enabling contact. Door position contact (11-12) closes</p> |
| <p>3. Opening of door</p> | <p>→ Only possible once it is released. Door position contact (11-12) opens</p> | <p>6. Interlocking of door</p> | <p>→ Disconnects coil voltage:
1. Actuator, interlocked
2. Enabling contact closed
→ Enable only, when door interlocked</p> |

Command and signalling devices

Position switches LS-Titan®, AT

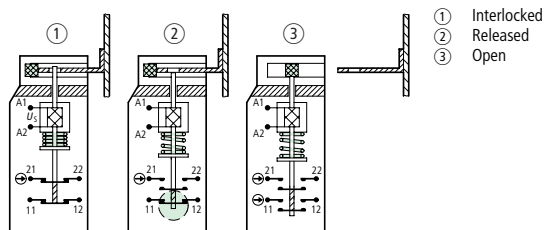
"Process protection"



- Stop command
- Waiting time
- Process sequence ended
- Protective device on
- Product satisfactory

3

AT0...MT-ZBZ, magnet-powered interlock (open-circuit principle)



→ Process protection + personnel protection with separate indication of the door position

1. Door closed + interlocked

→ Energized: enables immediate access in the event of mains failure and wire breakage. Both contacts closed

2. Releasing of door

→ Disconnects power from coil (A1, A2) e.g. via zero-speed monitor, enabling contact (21-22) opens

3. Opening of door

→ Only possible once it is released. Door position contact (11-12) opens

4. Door open

→ Both contacts blocked in the open position, even where attempts are made to tamper using basic tools

5. Closing of door

→ Triple-coded actuator cancels blocking of the enabling contact. Door position contact (11-12) closes

6. Interlocking of door

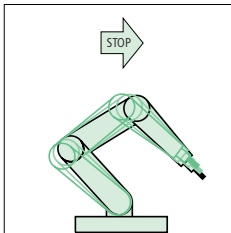
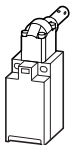
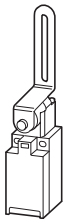
→ Applies coil voltage:
1. Actuator, interlocked
2. Enabling contact closed
→ Enabling possible only with the door interlocked

Command and signalling devices

Position switches LS-Titan®, AT

“Personnel protection” by monitoring of the protective device

ATR-.../TKG ATR-.../TS

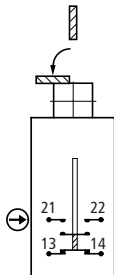
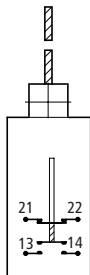


- Hinged protective cover open
- ATR/T... switches off the power
- No danger

ATR-.../TKG, ATR-.../TS

Closed

Open



→ Personnel protection

Opening of hinged protective cover



Enabling contact (21–22) opening positively

Hinged protective cover open



Enabling contact safely open, even where attempts are made to tamper using basic tools

Closing of hinged protective cover



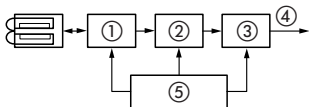
Closes enabling contact (21–22)

Command and signalling devices

Inductive proximity switches LSI

The inductive proximity switch operates on the principle of the attenuated LC oscillator: when metal enters the response range of the proximity switch, power is withdrawn from the system. The metal part causes an energy loss, which is caused by the formation of eddy currents. The eddy current losses are related to the size and nature of the metal part.

The change in the oscillation amplitude of the oscillator results in a current change, which is evaluated in the downstream electronics and is converted into a defined switching signal. A steady-state signal is available at the output of the unit, for the duration of the attenuation.



- ① Oscillator
- ② Rectifier
- ③ Amplifier
- ④ Output
- ⑤ Power supply

Properties of inductive proximity switches

The following details apply to all inductive proximity switches:

- Protective insulation to IEC 346/VDE 0100 or IEC 536,
- Degree of protection IP67,
- High operating frequency or switching frequency,
- Maintenance and wear-free (long service life),

- Resistant to vibration,
- Any required mounting position
- LED display indicates the switching or output status and simplifies adjustment during installation,
- Operational temperature range -25 to $+70$ °C
- Oscillating load: cycle time 5 minutes, amplitude 1 mm in the frequency range 10 to 55 Hz,
- Comply with IEC 60947-5-2,
- Have a steady-state output which remains activated as long as the unit is being attenuated
- Bounce-free switching behaviour in the microsecond range (10^{-6} s).

Switching distance S

The switching distance is the distance at which a metal part approaching the active surface effects a signal change at the output. The switching distance depends on:

- Direction of approach
- Parameter
- Material of the metal part

The following correction factors must be used for different materials:

Steel (St 37)	$1.00 \times S_n$
Brass	$0.35 - 0.50 \times S_n$
Copper	$0.25 - 0.45 \times S_n$
Aluminium	$0.35 - 0.50 \times S_n$
High-grade steel	$0.60 - 1.00 \times S_n$

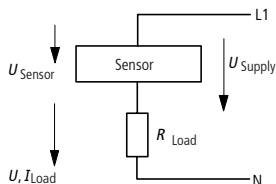
S_n = Rated switching distance

Command and signalling devices

Inductive proximity switches LSI

AC operating mode

AC inductive proximity switches have two terminals. The load is connected in series with the sensor.

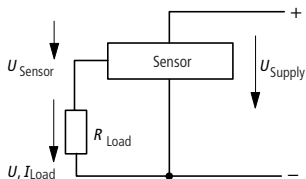


3

DC operating mode

DC inductive proximity switches have three terminals and are operated with a protective low voltage.

The switching behaviour can be determined more precisely, because the load is actuated via a separate output, and is independent of the load.



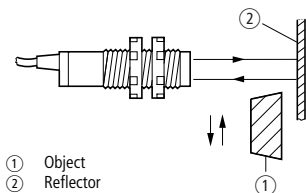
Command and signalling devices

Optical proximity switches LSO

Principle of operation

The optoelectronic sensors in the switch operate using modulated infrared light. Visible light therefore cannot affect their operation. Infrared light can penetrate even severe dirt on the optics, and thus ensures reliable operation. Proximity switch transmitters and receivers are matched to one another. The sensor receiver has an integral bandpass filter to amplify primarily the transmitted frequency. All other frequencies are attenuated. This gives the units good resistance to extraneous light. Precision plastic optics ensure long range and long sensing distances. There are two types of optical proximity switch, distinguished by their function.

Reflected-light beam



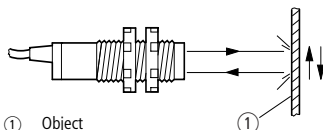
The reflected-light beam transmits infrared light to the object being scanned, which reflects this light in all directions. The portion of this light which strikes the receiver ensures a switching signal is produced, assuming adequate intensity. Evaluation takes place of "Reflection" and "No reflection". These states mean the same as presence or absence of an object in the sensing range. The degree of reflection of the object surface to be monitored affects the operating range S_d .

The following correction factors apply to different reflecting material characteristics.

Material	Factor app.
Paper, white, matt, 200 g/m ²	$1 \times S_d$
Metal, gloss	$1.2 - 1.6 \times S_d$
Aluminium, black, anodized	$1.1 - 1.8 \times S_d$
Polystyrene, white	$1 \times S_d$
Cotton, white	$0.6 \times S_d$
PVC, grey	$0.5 \times S_d$
Wood, untreated	$0.4 \times S_d$
Card, black, gloss	$0.3 \times S_d$
Card, black, matt	$0.1 \times S_d$

S_d = Switching range

Reflected-light barrier



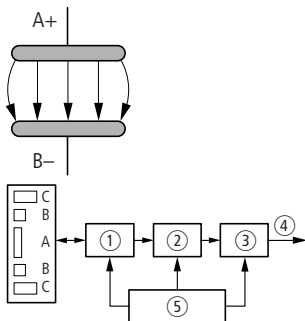
The unit transmits a pulsed infrared light beam, which is reflected by a triple reflector or mirror. The interruption in the light beam causes the unit to switch. Light barriers identify objects irrespective of their surface, as long as they do not have a gloss finish. The reflector size must be chosen such that the object to be detected virtually completely interrupts the light beam. Reliable detection is always achieved if the object is the same size as the reflector. The unit can also be set to detect transparent objects.

Command and signalling devices

Capacitive proximity switches LSC

Principle of operation

The active area of a capacitive proximity switch LSC is formed by two concentrically arranged metal electrodes. You can imagine these as the electrodes of a capacitor that are opened up. The electrode surfaces of this capacitor are arranged in the feed-back branch of a high-frequency oscillator circuit. This is adjusted such that it will not oscillate when the surface is clear. When an object approaches the active surface of the proximity switch, it enters the electric field in front of the electrode surfaces. This effects a rise in the coupling capacitance between the plates and the oscillator begins to respond. The oscillation amplitude is monitored via an evaluation circuit and converted into a switching command.



- ① Oscillator
- ② Evaluation circuit
- ③ Amplifier
- ④ Output
- ⑤ Power supply
- A, B Main electrodes
- C Auxiliary electrode

Effects

Capacitive proximity switches are activated both by conductive as well as non-conductive objects. Metals achieve the greatest switching distances due to their high conductivity. Reduction factors for various metals, such as are necessary with inductive proximity switches, need not be taken into account.

Actuation by objects made of non-conductive materials (insulators):

When an insulator is brought between the electrodes of a capacitor, the capacitance rises relative to the dielectric constant ϵ of the insulator. The dielectric constant for all solid and liquid materials is greater than that for air. Objects made of non-conductive materials affect the active surface of a capacitive proximity switch in the same way. The coupling capacitance is increased. Materials with a high dielectric constant achieve great switching distances.

Note

When scanning organic materials (wood, grain, etc.) it must be noted that the attainable switching distance is greatly dependent on their water content. ($\epsilon_{\text{Water}} = 80!$)

Influence of environmental conditions

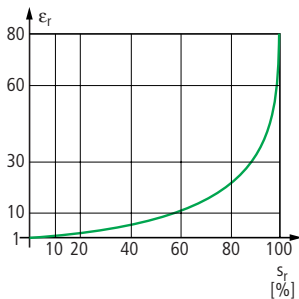
As can be seen from the following diagram, the switching distance S_r is dependent on the dielectric constant ϵ_r of the object to be monitored.

Metal objects produce the maximum switching distance (100 %).

With other materials, it is reduced relative to the dielectric constant of the object to be monitored.

Command and signalling devices

Capacitive proximity switches LSC



The following table lists the dielectric constants ϵ_r of some important materials. Due to the high dielectric value of water, the fluctuations with wood can be significant. Damp wood therefore is registered much more effectively by capacitive proximity switches than dry wood.

Material	ϵ_r
Air, vacuum	1
Teflon	2
Wood	2 to 7
Paraffin	2.2
Kerosene	2.2
Oil of terpentine	2.2
Transformer oil	2.2
Paper	2.3
Polyethylene	2.3
Polypropylene	2.3
Cable insulation	2.5
Soft rubber	2.5
Silicone rubber	2.8
Polyvinyl chloride	2.9
Polystyrene	3
Celluloid	3
Perspex	3.2
Araldite	3.6
Bakelite	3.6
Silica glass	3.7
Hard rubber	4
Oil-impregnated paper	4
Chipboard	4
Porcelain	4.4
Laminated paper	4.5
Quartz sand	4.5
Glass	5
Polyamide	5
Mica	6
Marble	8
Alcohol	25.8
Water	80

Command and signalling devices

Electronic position switches LSE-Titan®

Switching point adjustable and variable

The switching point on electronic position switches LSE-Titan is adjustable and variable. Two high-speed and bounce-free PNP switching outputs enable high switching frequencies.

The position switch is overload as well as conditionally short-circuit proof and has snap-action switching behaviour. This ensures a defined and reproduceable switching point. The switching point lies in the range from 0.5 to 5.5 mm (supplied as = 3 mm).

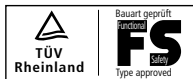
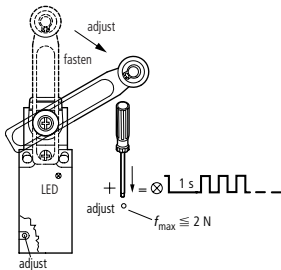
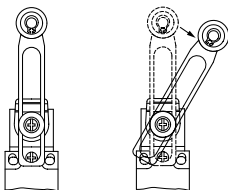
Adjustment to a new switching point is carried out as follows:

Move the plunger from the original to the new switch position. For this purpose, press the setting button for 1 s. The LED now flashes with a high pulse frequency and the new switching point is retentively set.

In redundant structures, position switches LSE-Titan just like electromechanical position switches, achieve safety category 3 or 4 to EN 954-1, Safety of machinery.

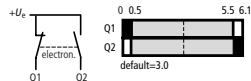
Note

This means that all the devices are also suitable for safety applications designed for personnel or process protection.

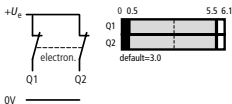


Contact travel diagram

LSE-11



LSE-02



Command and signalling devices

Analog electronic position switches

Analog electronic position switches

Two types are available:

- LSE-AI with current output,
- LSE-AU with voltage output.

Analog, mechanically actuated position switches directly linked with the world of automation

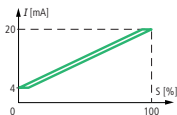
Analog position switches LSE-AI (4 to 20 mA) and LSE-AU (0 to 10 V) represent another innovation in electronic position switches. Using them, it is now possible for the first time to monitor the actual position of a flue gas valve or an actuator continuously. The actual position is converted in analog fashion into voltage (0 to 10 V) or current (4 to 20 mA) and then continuously signalled to the electronics. Even objects of varying sizes or thicknesses, such as brake shoes, can be scanned and the results processed further.

Simple rotational-speed dependent control systems of fan motors or smoke-venting blowers signal the opening angle of the air damper (e.g. 25, 50 or 75 %) and thus save power and material wear. The analog position switches also have a diagnosis output for further processing of

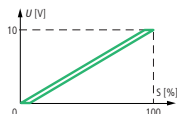
data. This means that the safe status can be monitored and analysed at all times. The position switch also has a self-test function. The outputs Q1 and Q2 are constantly scanned for overload, short circuit against 0 V and short circuit against $+U_e$.

Contact travel diagram

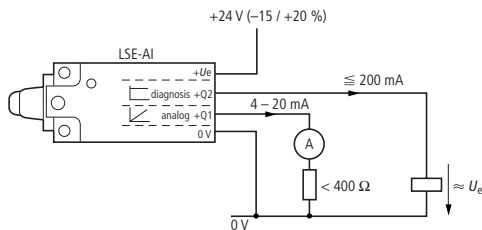
LSE-AI



LSE-AU

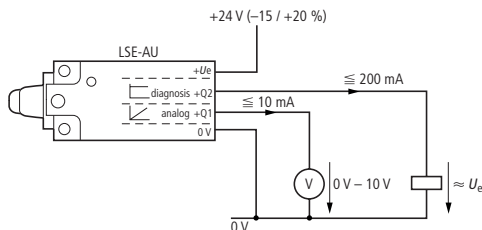


Connection diagram



Command and signalling devices

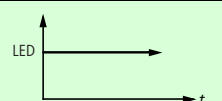

Analog electronic position switches





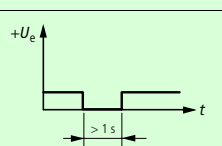
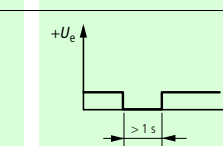
3

Circuit diagram

Normal scenario

	LSE-AI	LSE-AU
Q1	4 – 20 mA	0 – 10 V
Q2	$\approx U_e$	$\approx U_e$
LED		

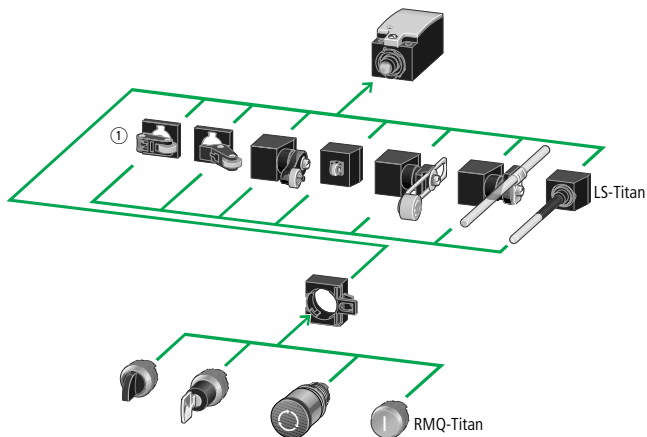
Fault scenario

	LSE-AI	LSE-AU
Q1	0 mA	0 V
Q2	0 V	0 V
LED		
Reset		

Command and signalling devices

New combinations for your solutions

RMQ-Titan® and LS-Titan®



- ① Operating heads in four positions, each turned by 90°, can be fitted subsequently.

Actuating devices RMQ-Titan® simply snap fitted

Another unique feature is the possibility to combine control circuit devices from the RMQ-Titan range with the position switches LS-Titan. Pushbuttons, selector switches or Emergency-Stop buttons can all be directly snapped on to any position switch as operating head. The complete unit then has at least the high degree of protection IP66 at front and rear.

In addition, all the operating heads and the adapter for accepting the RMQ-Titan actuators have a bayonet fitting that enables quick and secure fitting. Using the bayonet fitting, the heads can be attached in any of the four directions (4 × 90°).

Notes

3