

**Selection Guide**

**Safety and Reliability -  
Monitoring and Indication  
LS-Titan® position Switches**

LS-Titan® position switch  
LSE-Titan® position switch



Quick and Flexible

Metal or plastic versions

The LS-Titan position switches are optionally available in robust metal enclosures or in light insulated enclosures. Exchangeable metal or plastic operating heads make the LS-Titan position switch particularly flexible. Modular design, vibration proof and maintenance-free Cage-Clamp terminations guarantee extremely fast installation.

Electronic position switch with programmable operating point

The highlight is the world's first electronic position switch, the LSE-Titan. Its freely programmable operating point can be set individually at any time: Move to the operating point – press the Set key – ready!

The LSE conforms to safety category 3 with EN 954-1 of the machine guideline just as the electromechanical position switches. The devices are thus suitable for use with safety applications designed to protect persons or processes.

LS-Titan® Position Switch  
UL/CSA 4X, 13  
IP 66

Contacts  
M = Make  
B = Break  
⊕ = Safety function with  
positively opening con-  
tacts to IEC/EN 60947-5-1

Contact sequence  
diagram for  
plunger and  
roller plunger

Contact sequence  
contact  
■ closed  
□ open  
Zw = Positive opening  
clearance

Plunger  
EN 50 047

Roller plunger  
EN 50 047

Contact sequence  
diagram for  
spring rod



plastic version



–	2B⊕			LS-02	
1M	1B⊕			LS-11	LS-11/P
1M	1B⊕			LS-11D	
1M	1B⊕			LS-11S*	LS-11S/P
2M	–			LS-20	

metall version



–	2B⊕			LSM-02	
1M	1B⊕			LSM-11	LSM-11/P
1M	1B⊕			LSM-11D	
1M	1B⊕			LSM-11S*	LSM-11S/P
2M	–			LSM-20	







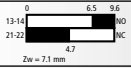


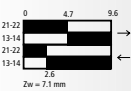
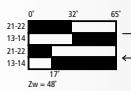

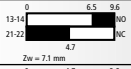


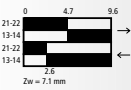
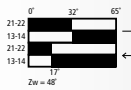
\* LS/LSM-..S = Snap-Action contact

LSE-Titan® electronic position switch  
Setting a variable operating point

The LSE electronic position switch has an operating point that can be set variably. Two fast and bounce-free PNP switch outputs enable high switching frequencies. They are protected against short-circuit and overload and are equipped with an abrupt switching behaviour. This guarantees a defined and reproducible operating point. The actual operation point is in a range between 0.5 mm to 5.5 mm (supplied ex-works = 3 mm).

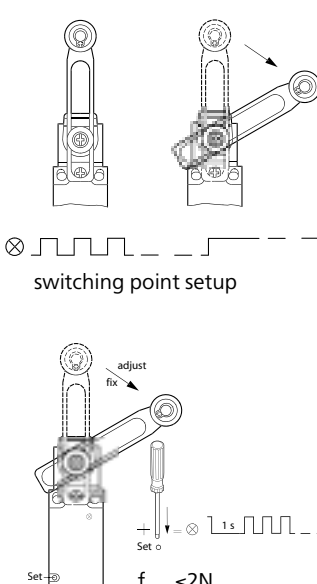
The setting to the “new” operating point is performed as follows: The plunger must be moved from the “old” to the “new” operating position. Now the set button should be pressed for a duration of 1 sec. The LED now flashes with a higher pulse frequency and the new operation point is set retentively.




Spring-Rod	Contact sequence diagram for roller lever	Roller lever EN 50 047	Contact sequence diagram for rotary lever, adjustable roller lever and actuating rod	Rotary lever EN 50 047	Adjustable roller lever	Actuating rod
						
		LS-02/L				
		LS-11/L		LS-11/RL	LS-11/RLA	
		LS-11D/L				
LS-11S/S		LS-11S/L		LS-11S/RL	LS-11S/RLA	LS-11S/RR
		LSM-02/L				
		LSM-11/L		LSM-11/RL	LSM-11/RLA	
		LSM-11D/L				
LSM-11S/S		LSM-11S/L		LSM-11S/RL	LSM-11S/RLA	LSM-11S/RR

Limit switch  
electronic  
-LSE-

Individual adjustment of  
switching point



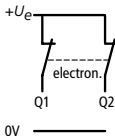
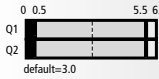
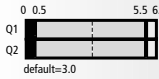








Bauart geprüft  
functional

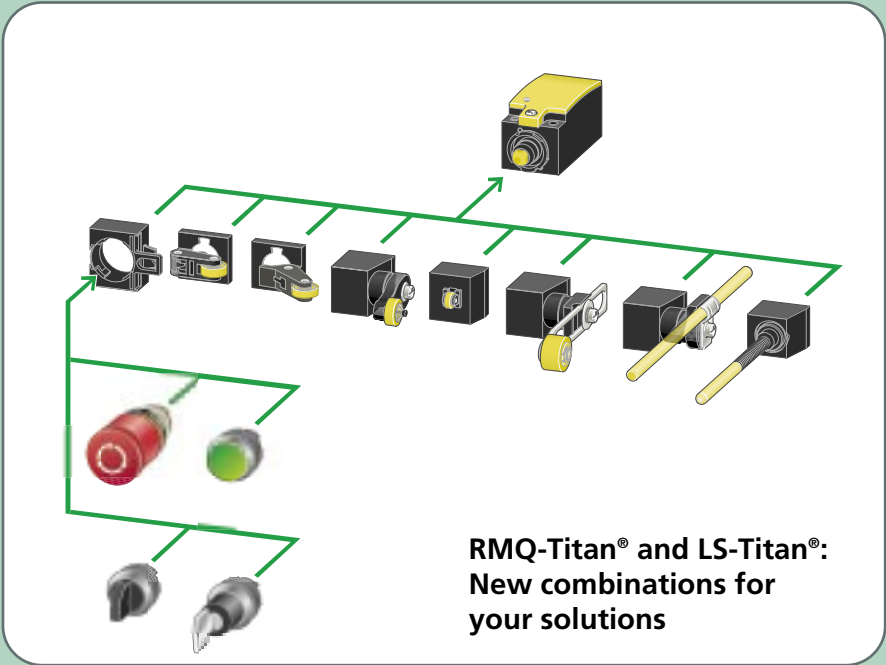
**FS**  
Safety  
Type approved

Simply snap on the RMQ-Titan command device

A further unique feature is the ability to combine a control circuit device from the RMQ-Titan range with the LS-Titan position switches. Pushbutton actuators, selector switches or emergency-stop buttons can be simply snapped on directly as the operating heads on each position switch. The combined unit maintains the degree of protection IP66 on both the front and rear.

LSE-Titan® Position Switch  $U_e=12-30V\ DC$ $I_e=15-19mA$	Contact sequence diagram for plunger	Optical status display, safety category 3 EN 954-1
 		LSE-02
		LSE-11

LS-Titan® operating heads, accessories	Roller lever	Angled roller lever	Roller plunger
Plastic version			
	LS-XL	LS-XLA	LS-XP
Metal version			
	LSM-XL	LSM-XLA	LSM-XP



The operating head can be attached in all four directions (4 x 90°) and can be installed quickly and securely with a bayonet fitting.

Rotary lever	Adjustable roller lever d=18mm	Adjustable-roller lever d=30mm	Adjustable roller lever d=40mm	Adjustable roller lever d=40mm (Rubber)	Plastic actuating rod	Metal actuating rod	Spring rod actuator	RMQ-Titan fixing adapter
LS-XRL	LS-XRLA	LS-XRLA30	LS-XRLA40	LS-XRLA40R	LS-XRR	LS-XRRM	LS-XS	M22-LS
LSM-XRL	LSM-XRLA				LSM-XRR	LSM-XRRM	LSM-XS	

Technical data  
LS-Titan position switches®

				LS, LSM	LSE
<b>General</b>					
Standards				IEC/EN 60947	IEC/EN 61947, EN 954-1 Level 3, EN61000-4
Climatic proofing				Damp heat, constant according to IEC 60068-2-3 Damp heat, cyclical, according to IEC 60068-2-30	
Ambient temperature		°	C	-25/70	-25/70
Mounting position				As required	As required
Protection type				IP66	IP66
Terminal capacity		Solid	m	m <sup>2</sup>	1 × (0,5 – 2,5)
		Flexible with ferrule		mm <sup>2</sup>	1 × (0,5 – 1,5)
<b>Supply voltage</b>					
Rated voltage <sup>1)</sup>			U <sub>e</sub>	V DC	–
Rated operational current		12 V	A		–
		24 V	A		–
		30 V	A		–
<b>Contacts/switching capacity</b>					
Rated impulse withstand voltage			U <sub>imp</sub>	V AC	4000
Rated insulation voltage			U <sub>i</sub>	V	400
Overvoltage category/pollution degree					III/3
Rated operational current	AC-15	24 V	I <sub>e</sub>	A	6
		230 V/240 V	I <sub>e</sub>	A	6
		400 V/415 V	I <sub>e</sub>	A	4
	DC-13	24 V	I <sub>e</sub>	A	10
		110 V	I <sub>e</sub>	A	1
		220 V	I <sub>e</sub>	A	0.5
Supply frequency			Hz	max. 400	
Short-circuit rating in the closed state (IEC/EN 60947-5-1)					
Maximum fuse				A gG/gL	10
Short-circuit rating to IEC/EN 60947-5-1 Maximum fuse				A gG/gL	6
Repetition accuracy of switching point				mm	± 0,02
<b>Mechanical variables</b>					
Lifespan	Standard-action contact	Operations	× 10 <sup>6</sup>	6	–
	Snap-action contact	Operations	× 10 <sup>6</sup>	6	3 (electronic)
Contact temperature of roller head			°C	≤ 100	≤ 100
Shock resistance (half-sinusoidal shock 11 ms) to IEC 60068-2-27	Standard-action contact		g	30	–
	Snap-action contact	g		30	30
Operating frequency		Operations/h		≤ 6000	≤ 6000
Switching point				–	0.5 – 5.5 mm, freely adjustable
Hysteresis				–	0.5 mm
Switch path resolution				–	0.04 mm
<b>Actuation</b>					
Mechanical	Actuating force at beginning/end of stroke	Basic units	N		1.0/8.0
		LS(M)-XP		N	1.0/8.0
		LS(M)-XL		N	1.0/8.0
		LS(M)-XLA		N	1.0/8.0
	Actuating torque of rotary drives		Nm	0.2	0.2
	Max. operating speed with DIN cam	Basic units for angle of actuation	α = 0°/30°	m/s	1/0,5
		LS(M)-XRL for angle of actuation	α = 0°	m/s	1,5
		LS(M)-XRLA for angle of actuation	α = 30°, L = 125 mm	m/s	1,5
		LS(M)-XRR for	L = 130 mm	m/s	1,5
		LS(M)-XL for angle of actuation	α = 30°/45°	m/s	1
		LS(M)-XLA for angle of actuation	α = 30°/45°	m/s	1
		LS(M)-XP for angle of actuation	α = 0°/30°	m/s	1/1
		<b>Electromagnetic compatibility (EMC)</b>			
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)	Air discharge		kV	–	8
	Contact discharge		kV	–	4
Electromagnetic fields (IEC/EN 61000-4-3, RFI)			V/m	–	10
Burst pulses (IEC/EN 61000-4-4, level 3)	Supply cables		kV	–	2
	Signal lines		kV	–	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		k	V	–	0.5
Immunity to line-conducted interference to (IEC/EN 61000-4-6)			V	–	10

Notes

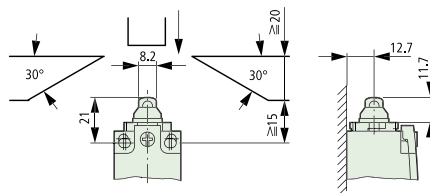
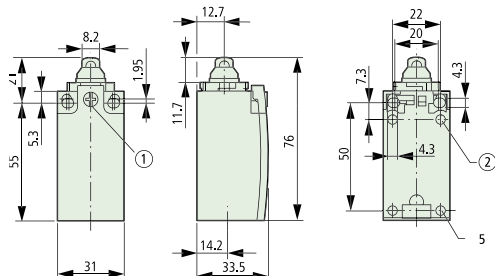
<sup>1)</sup> Ensure that sufficient power supply is available when setting the switch point.

## Dimensions

### LS-Titan® position switches

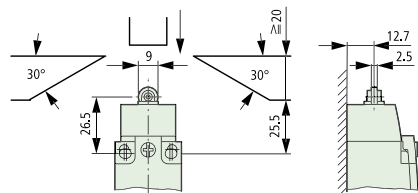
#### Position switches

LS-..., LSM-..., LSE-... ① Tightening torque of cover screw: 1.0 Nm  $\pm$  0.2 Nm

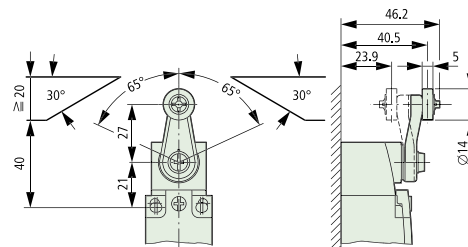


② Only with LS (plastic design)

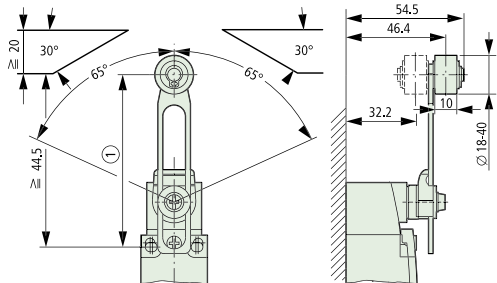
LS-11(S)/P



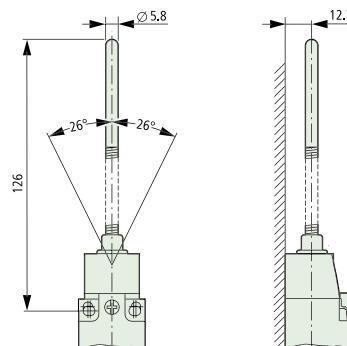
LS(M)-11(S)/RL



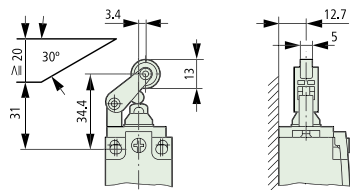
LS(M)-11(S)/RLA ① Setting range from 54.5 to 97



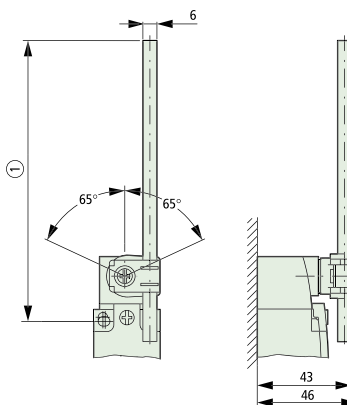
LS(M)-11S/S



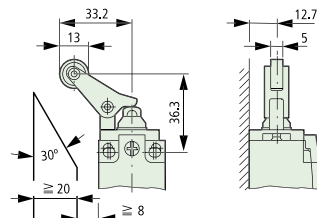
LS(M)-.../L



LS(M)-11S/RR ① LS.../RR  $\leq$  150



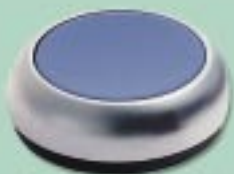
LS(M)-XL(A)



LS.../RRM  $\leq$  210



## The New RMQ-Titan® Control Circuit Devices are in Great Shape



Modern styling has been combined with an optimum range of functions, - ideal for use at machines and on panels. The ergonomically shaped button elements are matched to the shape of a fingertip for even more comfortable operation.

### LEDs - the reliable, cost-efficient lighting elements

RMQ-Titan control circuit devices emit light non-stop for over 100 000 hours. The LED elements in RMQ-Titan do not then suddenly fail, however, the strength of their light is simply reduced. Special lenses and coloured LEDs offer enduring reliability at a very attractive price.

Emergency-Stop actuators are now illuminated as well. This safety component is thus clearly visible even in dark rooms and a separate indicator light is not required.

### Customized symbols and texts thanks to laser technology

All button plates, indicator lights and legend plates from the RMQ-Titan range of control circuit devices can be inscribed with the required texts and symbols using a laser. The information is burned in and, unlike printed elements, remains there permanently.

### High degrees of protection ensure safety

All RMQ-Titan front elements, apart from the acoustic indicator, have at least degree of protection IP 66.

The applications are already practically limitless, but push-button actuators and indicator lights even have degree of protection IP 69K!

They withstand cleaning with a high-pressure, or steam-jet device, - essential, for example, for fitting to the outside of refuse collection vehicles.



The new surface mounting enclosures with stainless steel screws and degree of protection IP 66 permit operation of up to six control circuit devices in the harshest of conditions. Optimally suited for use on site.



Complete units are available ready for use in standard solutions.

