LS-Titan Miniature DIN Switches



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LS-Titan Miniature DIN Switches

Product Description

Eaton's LS-Titan® limit switch line is a complete offering of safety position switches designed for worldwide application. Economical insulated plastic or rugged metal enclosures and modular, plug-in operating heads and bodies make LS-Titan a flexible switching solution.

A highlight of the LS-Titan switch line is the world's first electronic position switch (LSE models). These switches feature freely programmable operating points that can be set individually at any time. Additional LSE models provide analog outputs proportional to the actuator position.

LS-Titan switches are suitable for use in safety applications designed to protect persons or processes.

Features

- Modular, plug-in system (head and body components)
- Positive opening NC contacts for safety applications
- Wide variety of economical plastic and rugged metal versions available
- Operating heads can be rotated 90 degrees to suit specific direction of operation
- Unique electronic safety position switches (LSE models) provide analog (0–10 Vdc or 4–20 mA) outputs proportional to the actuator position and allow for easy configuration of a custom trip point
- Can be ordered as separate components (head and body) or as completely assembled switches
- Screw and Cage Clamp® (standard on LSE models and optionally available on mechanical models) connections provide larger wiring areas for easier installation
- Approved for worldwide application

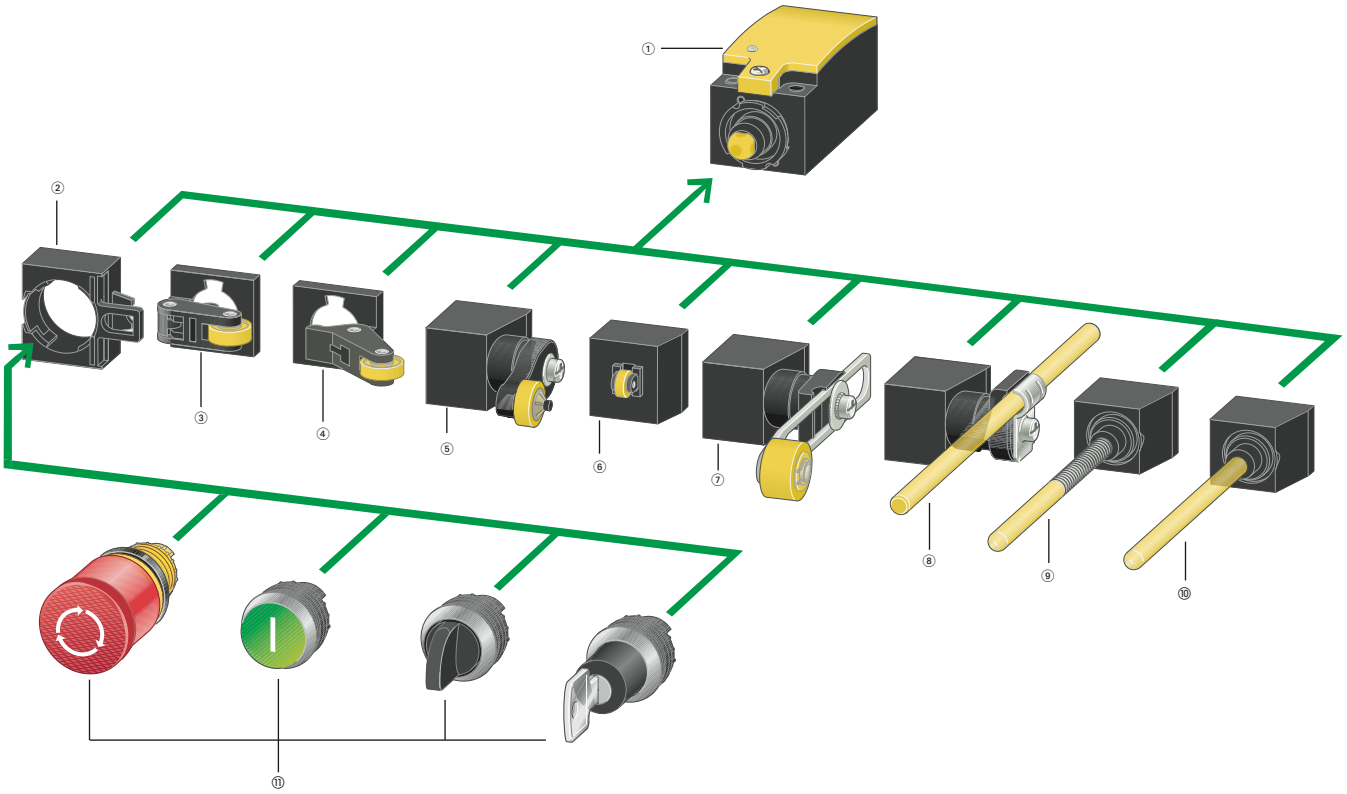
Standards and Certifications

- Safety function by positive opening contacts per IEC/EN 60947-5-1 up to Category 4 per EN 954-1
- TÜV-Rheinland Certified for Functional-Safety (LSE models)
- CSA® certified
- UL® listed
- CE
- CCC

Listed

Note: Cage Clamp is a registered trademark of Wago Kontakttechnik, 32423 Minden, Germany.

Product Identification



Notes

① **Basic device** (see **Pages 3–11**)
According to EN 50047
With screw-on cover
Contacts: 1NO/1NC, 2NO, 2NC
Cage Clamp, screw terminal
As snap-action or standard-action switch
As electronic snap-action switch (individually adjustable)
As 4–20 mA analog signal encoder
As 0–10 Vdc analog signal encoder

② **Fixing adapter** (see M22 catalog CA04716001E, Page 60, or www.eaton.com/m22))
Allows mounting of M22 pushbuttons

③ **Roller lever** (see **Pages 3** and **6**)
For one-sided operation with higher operating speed

④ **Angled roller lever** (see **Pages 3**, **6** and **10**)
For actuation along the unit axis

⑤ **Rotary lever** (see **Pages 3**, **7** and **10**)
For actuation from the side, for pendulum movements

⑥ **Roller plunger** (see **Pages 3**, **6** and **10**)
For actuation from the side with low actuating force

⑦ **Adjustable roller lever** (see **Pages 4**, **7**, **8** and **10**)
For length adjustment as required

⑧ **Actuating rod** (see **Pages 5**, **9** and **11**)
On conveyor belts for lightweight goods

⑨ **Spring-rod** (see **Pages 5**, **9** and **11**)
For flexible actuation from all sides

⑩ **Actuating rod** (see **Pages 5**, **9** and **11**)
Withdrawable mechanism from front

⑪ Pushbuttons from the M22 family; see M22 catalog (CA04716001E) or www.eaton.com/m22

Operating heads can be rotated by 90 degrees.

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Product Selection

LS-Titan Plastic Safety Switches

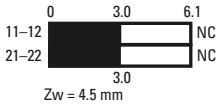
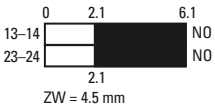
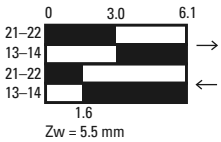
Plastic Safety Switches

Plastic Safety Switch Bodies



Assembled Switch



Switch Body Catalog Number	LS-S02	LS-S20A	LS-S11S
Output Function	2NC with Positive Opening Contacts	2NO with Slow Make/Break	1NO and 1NC with Positive Opening Contact
Terminal Connection	Screw Terminal ①	Screw Terminal ①	Screw Terminal ①
Contact Sequence			
Contact Travel ■ = contact closed ☐ = contact open			Snap-Action Contact 
Operating Head Type ②			
Catalog Numbers Heads Only	**Catalog Numbers Assembled Switches**		
Top Push Roller Plunger 	**LS-XP**	**LS-S02-P**	**LS-S20A-P**	**LS-S11S-P**
Long Roller Lever 	**LS-XL**	**LS-S02-L**	**LS-S20A-L**	**LS-S11S-L**
Short Roller Lever 	**LS-XLS**	**LS-S02-LS**	**LS-S20A-LS**	**LS-S11S-LS**
Large Roller Lever 	**LS-XLB**	**LS-S02-LB**	**LS-S20A-LB**	**LS-S11S-LB**
Angled Roller 	**LS-XLA**	**LS-S02-LA**	**LS-S20A-LA**	**LS-S11S-LA**
Rotary Lever 	**LS-XRL**	**LS-S02-RL**	**LS-S20A-RL**	**LS-S11S-RL**

Notes

① Cage Clamp versions available. Contact Application Engineering.

② For operating head dimensions, see **Page 20**.

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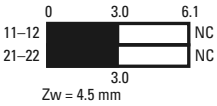
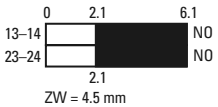
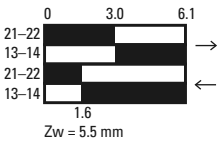
Plastic Safety Switches, continued

Plastic Safety Switch Bodies



Assembled Switch



Switch Body Catalog Number	LS-S02	LS-S20A	LS-S11S
Output Function	2NC with Positive Opening Contacts	2NO with Slow Make/Break	1NO and 1NC with Positive Opening Contact
Terminal Connection	Screw Terminal ①	Screw Terminal ①	Screw Terminal ①
Contact Sequence			
Contact Travel	■ = contact closed □ = contact open			Snap-Action Contact 

Operating Head Type ②

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches		
Adjustable Roller Lever (with 18 mm Roller)	**LS-XRLA**	**LS-S02-RLA**	**LS-S20A-RLA**	**LS-S11S-RLA**
				
Adjustable Roller Lever (with 30 mm Roller)	**LS-XRLA30**	**LS-S02-RLA30**	**LS-S20A-RLA30**	**LS-S11S-RLA30**
				
Adjustable Roller Lever (with 40 mm Roller)	**LS-XRLA40**	**LS-S02-RLA40**	**LS-S20A-RLA40**	**LS-S11S-RLA40**
				
Adjustable Roller Lever (with 40 mm Rubber Roller)	**LS-XRLA40R**	**LS-S02-RLA40R**	**LS-S20A-RLA40R**	**LS-S11S-RLA40R**
				

Notes

① Cage Clamp versions available. Contact Application Engineering.

② For operating head dimensions, see **Page 20**.

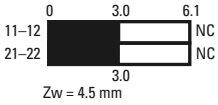
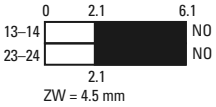
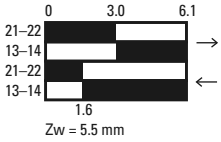
Plastic Safety Switches, continued

Plastic Safety Switch Bodies



Assembled Switch



Switch Body Catalog Number	LS-S02	LS-S20A	LS-S11S
Output Function	2NC with Positive Opening Contacts	2NO with Slow Make/Break	1NO and 1NC with Positive Opening Contact
Terminal Connection	Screw Terminal ①	Screw Terminal ①	Screw Terminal ①
Contact Sequence			
Contact Travel	■ = contact closed □ = contact open			Snap-Action Contact 
Operating Head Type ②			
Catalog Numbers Heads Only	**Catalog Numbers Assembled Switches**		
Plastic Rod Lever	**LS-XRR**	**LS-S02-RR**	**LS-S20A-RR**	**LS-S11S-RR**
Metal Rod	**LS-XRRM**	**LS-S02-RRM**	**LS-S20A-RRM**	**LS-S11S-RRM**
Spring Rod (Wobble) ③	**LS-XS**	**LS-S02-S**	**LS-S20A-S**	**LS-S11S-S**
Actuating Rod	**LS-XOR**	**LS-S02-OR**	**LS-S20A-OR**	**LS-S11S-OR**

Plastic Rod Lever



Metal Rod



Spring Rod (Wobble) ③



Actuating Rod



Notes

① Cage Clamp versions available. Contact Application Engineering.
② For operating head dimensions, see **Page 20**.
③ Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

LS-Titan Plastic Electronic Safety Position Switches

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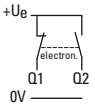
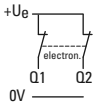
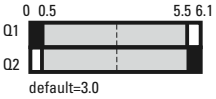
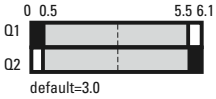
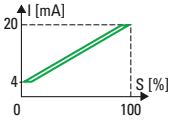
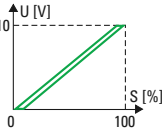
Plastic Electronic Safety Position Switch Bodies



Assembled Switch



Plastic Electronic Safety Position Switches

Switch Body Catalog Number	LSE-11	LSE-02	LSE-AI	LSE-AU
Output Function	1NO and 1 NC	2NC	Analog 4–20 mA	Analog 0–10V
Terminal Connections	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①
Safety Functions and Approvals	These models may be used in safety-oriented circuits. Visual status LED indication is comparable to positive opening contacts. Certified by TÜV as a "Functional-Safety" device. Suitable for protection of people or processes.		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to $+U_e$. Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
Contact Sequence			Analog 4–20 mA	Analog 0–10V
Contact Travel ■ = contact closed □ = contact open				

Operating Head Type ②

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches			
Top Push Roller Plunger 	**LS-XP**	**LSE-11-P**	**LSE-02-P**	**LSE-AI-P**	**LSE-AU-P**
Long Roller Lever 	**LS-XL**	**LSE-11-L**	**LSE-02-L**	**LSE-AI-L**	**LSE-AU-L**
Short Roller Lever 	**LS-XLS**	**LSE-11-LS**	**LSE-02-LS**	**LSE-AI-LS**	**LSE-AU-LS**
Large Roller Lever 	**LS-XLB**	**LSE-11-LB**	**LSE-02-LB**	**LSE-AI-LB**	**LSE-AU-LB**
Angled Roller 	**LS-XLA**	**LSE-11-LA**	**LSE-02-LA**	**LSE-AI-LA**	**LSE-AU-LA**

Notes

① A compatible Cage Clamp tool is available as an accessory on **Page 13**.

② For operating head dimensions, see **Page 20**.

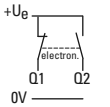
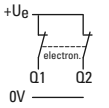
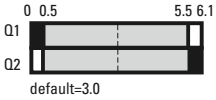
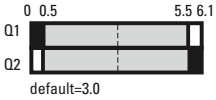
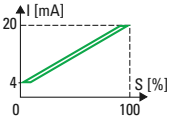
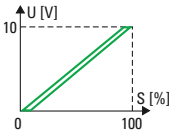
Plastic Electronic Safety Position Switches, continued

Plastic Electronic Safety Position Switch Bodies



Assembled Switch



Switch Body Catalog Number	LSE-11	LSE-02	LSE-AI	LSE-AU
Output Function	1NO and 1NC	2NC	Analog 4–20 mA	Analog 0–10V
Terminal Connections	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①
Safety Functions and Approvals	These models may be used in safety-oriented circuits. Visual status LED indication is comparable to positive opening contacts. Certified by TÜV as a "Functional-Safety" device. Suitable for protection of people or processes.		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to $+U_e$. Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
Contact Sequence			Analog 4–20 mA	Analog 0–10V
Contact Travel ■ = contact closed □ = contact open				

Operating Head Type ②

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches			
Rotary Lever 				
LS-XRL	**LSE-11-RL**	**LSE-02-RL**	**LSE-AI-RL**	**LSE-AU-RL**
Adjustable Roller Lever (with 18 mm Roller) 				
LS-XRLA	**LSE-11-RLA**	**LSE-02-RLA**	**LSE-AI-RLA**	**LSE-AU-RLA**
Adjustable Roller Lever (With 30 mm Roller) 				
LS-XRLA30	**LSE-11-RLA30**	**LSE-02-RLA30**	**LSE-AI-RLA30**	**LSE-AU-RLA30**

Notes

① A compatible Cage Clamp tool is available as an accessory on **Page 13**.

② For operating head dimensions, see **Page 20**.

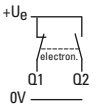
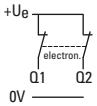
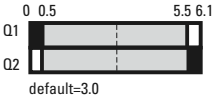
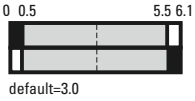
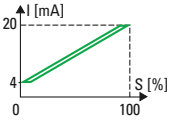
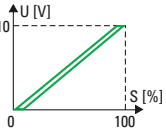
Plastic Electronic Safety Position Switches, continued

Plastic Electronic Safety Position Switch Bodies



Assembled Switch



Switch Body Catalog Number	LSE-11	LSE-02	LSE-AI	LSE-AU
Output Function	1NO and 1NC	2NC	Analog 4–20 mA	Analog 0–10V
Terminal Connections	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①
Safety Functions and Approvals	These models may be used in safety-oriented circuits. Visual status LED indication is comparable to positive opening contacts. Certified by TÜV as a "Functional-Safety" device. Suitable for protection of people or processes.		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to $+U_e$. Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
Contact Sequence			Analog 4–20 mA	Analog 0–10V
Contact Travel ■ = contact closed □ = contact open				

Operating Head Type ②

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches			
Adjustable Roller Lever (With 40 mm Roller)				
LS-XRLA40	LSE-11-RLA40	LSE-02-RLA40	LSE-AI-RLA40	LSE-AU-RLA40
Adjustable Roller Lever (With 40 mm Roller)				
LS-XRLA40R	LSE-11-RLA40R	LSE-02-RLA40R	LSE-AI-RLA40R	LSE-AU-RLA40R
Plastic Rod Lever				
LS-XRR	LSE-11-RR	LSE-02-RR	LSE-AI-RR	LSE-AU-RR







Notes

① A compatible Cage Clamp tool is available as an accessory on **Page 13**.

② For operating head dimensions, see **Page 20**.

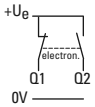
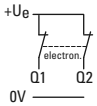
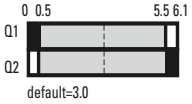
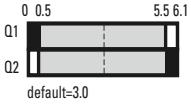
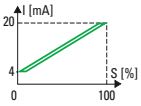
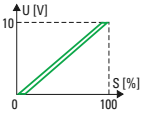
Plastic Electronic Safety Position Switches, continued

Plastic Electronic Safety Position Switch Bodies



Assembled Switch



Switch Body Catalog Number	LSE-11	LSE-02	LSE-AI	LSE-AU
Output Function	1NO and 1NC	2NC	Analog 4–20 mA	Analog 0–10V
Terminal Connections	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①	Cage Clamp ①
Safety Functions and Approvals	These models may be used in safety-oriented circuits. Visual status LED indication is comparable to positive opening contacts. Certified by TÜV as a "Functional-Safety" device. Suitable for protection of people or processes.		Additional diagnostic output that registers a 0V signal in the event of a fault. Self-test function continuously tests both outputs for overloads, short circuits to 0V and short circuits to $+U_e$. Certified by TÜV to EN 954-1, Category 3 or 4. Suitable for protection of people or processes.	
Contact Sequence			Analog 4–20 mA	Analog 0–10V
Contact Travel ■ = contact closed □ = contact open				

Operating Head Type ②

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches			
Metal Rod				
				
LS-XRRM	LSE-11-RRM	LSE-02-RRM	LSE-AI-RRM	LSE-AU-RRM
Spring Rod (Wobble) ③				
				
LS-XS	LSE-11-S	LSE-02-S	LSE-AI-S	LSE-AU-S
Actuating Rod				
				
LS-XOR	LSE-11-OR	LSE-02-OR	LSE-AI-OR	LSE-AU-OR

Notes

① A compatible Cage Clamp tool is available as an accessory on **Page 13**.
② For operating head dimensions, see **Page 20**.
③ Not to be used as a safety position switch. Use only in conjunction with snap-action contact.

LS-Titan Metal Safety Switches

2

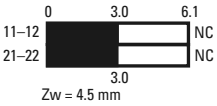
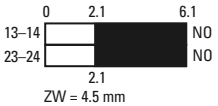
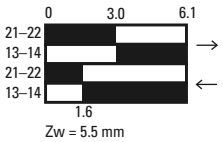
Metal Safety Switch Bodies



Assembled Switch



Metal Safety Switches

Switch Body Catalog Number	LSM-02	LSM-20A	LSM-11S
Output Function	2NC with Positive Opening Contacts	2NO with Slow Make/Break	1NO and 1NC with Positive Opening Contact
Terminal Connection	Cage Clamp	Cage Clamp	Cage Clamp
Contact Sequence			
Contact Travel ■ = contact closed □ = contact open			Snap-Action Contact 

Operating Head Type ①

Catalog Numbers Heads Only	Catalog Numbers Assembled Switches		
Top Push Roller Plunger 	**LSM-XP**	**LSM-02-P**	**LSM-20A-P**	**LSM-11S-P**
Long Roller Lever 	**LSM-XL**	**LSM-02-L**	**LSM-20A-L**	**LSM-11S-L**
Angled Roller 	**LSM-XLA**	**LSM-02-LA**	**LSM-20A-LA**	**LSM-11S-LA**
Rotary Lever 	**LSM-XRL**	**LSM-02-RL**	**LSM-20A-RL**	**LSM-11S-RL**
Adjustable Roller Lever 	**LSM-XRLA**	**LSM-02-RLA**	**LSM-20A-RLA**	**LSM-11S-RLA**

Note

① For operating head dimensions, see **Page 20**.

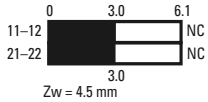
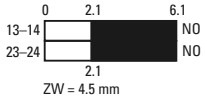
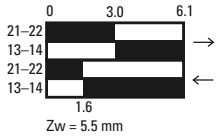
Metal Safety Switches, continued

Metal Safety Switch Bodies



Assembled Switch



Switch Body Catalog Number	LSM-02	LSM-20A	LSM-11S
Output Function	2NC with Positive Opening Contacts	2NO with Slow Make/Break	1NO and 1NC with Positive Opening Contact
Terminal Connection	Cage Clamp	Cage Clamp	Cage Clamp
Contact Sequence			
Contact Travel ■ = contact closed □ = contact open			Snap-Action Contact 
Operating Head Type ①			
Catalog Numbers Heads Only	Catalog Numbers Assembled Switches		
Plastic Rod Lever			
LSM-XRR	LSM-02-RR	LSM-20A-RR	LSM-11S-RR
Metal Rod Lever			
LSM-XRRM	LSM-02-RRM	LSM-20A-RRM	LSM-11S-RRM
Spring Rod (Wobble)			
LSM-XS	LSM-02-S	LSM-20A-S	LSM-11S-S







Note

① For operating head dimensions, see **Page 20**.

2

Understanding LS-Titan Electronic Safety Position Switches

All four LS-Titan LSE switch bodies are safety-rated products. The LSE-11 and LSE-02 switch bodies both have a freely programmable operating point and can be individually adjusted to suit the application, and can be changed as often as required. These devices feature an LED on the body, providing simple indication during programming and operation.

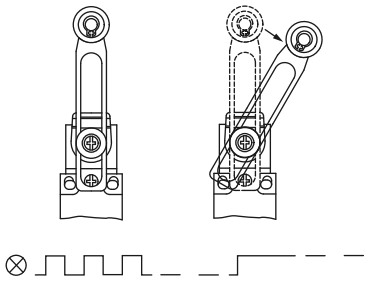
The LSE-AI (4–20 mA) and LSE-AU (0–10V) analog position switches take position data and convert to an analog current or voltage value that can then be continuously fed into an automation system. These two switches also feature a diagnostic output for additional data processing.

This ensures that a safe operating state can be monitored and evaluated at any time. A self-test function is also present on these models. Outputs Q1 and Q2 are continuously tested for overloads, short circuits to 0V and short circuits to $+U_e$.

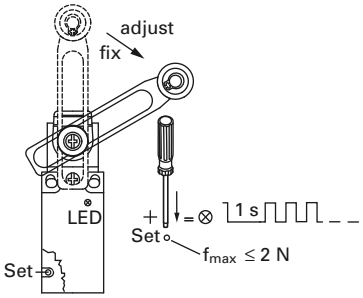
Like the electromechanical position switches, LS-Titan electronic position switches meet Category 3 or 4 of the EN 954-1 standard for machine safety when configured as a redundant system. All devices are thus suitable for safety applications that are used for the protection of persons or processes.

Operating Point Adjustment

LSE-11

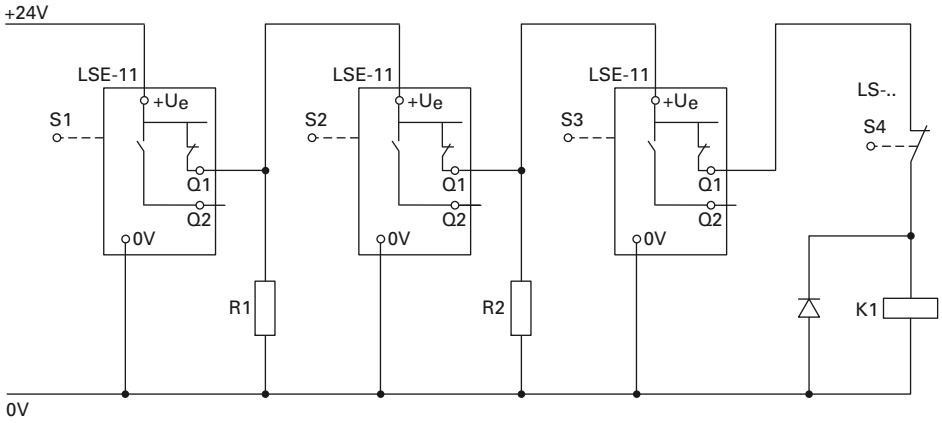


LSE-02



Note: LSE-11 and LSE-02—individual operating point adjustment.

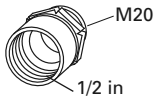
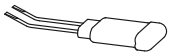
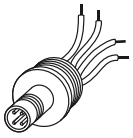
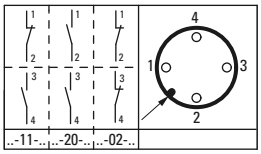
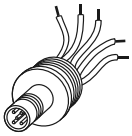
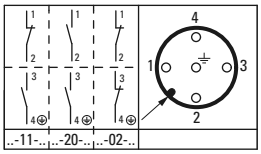
Example of LS-Titan LSE Models in a Safety-Oriented Circuit



Note: LSE-11 and LSE-02 can be used in safety circuits.
S1 is connected to 24 Vdc
S2, S3 each switch with a delay of 0.7s
R1, R2, e.g., series element M22-XLED60 (2820 ohms/0.5W)

Accessories

LS-Titan Safety Switches

	For Use With	Description	Notes	Catalog Number
V1-2-M20 	Any	M20 screw terminal in 1/2". For use with American pipe thread, metal.	The screw connection must be earthed. Not total insulation.	**V1-2-M20-NA**
	Any	M20 screw terminal in 1/2". For use with American pipe thread, molded material.	—	**V1-2-M20**
EMS20 	Any	M20 diaphragm bolt. With internal push-through membrane. Will fit cable with an external diameter of up to 13 mm. Rated IP65 with cable inserted.	—	**EMS20**
LS-XTW 	Any	Cage Clamp tool.	—	**LS-XTW**
MS12A 	LS-Titan plastic bodies (LS-)	Plug connector, 12 mm, 4-pin male connector M12x1 (M12x1). Rated IP65. Molded material. Color coded to IEC/EN 60947-5-2.		**MS12A**
MS12A5 	LS-Titan metal bodies (LSM-)	Plug connector, 12 mm, 5-pin male connector (M12x1). Rated IP65. Molded material. Color coded to IEC/EN 60947-5-2.		**MS12A5**

Technical Data and Specifications

LS-Titan Miniature DIN Switches—IP66, IP67 Complete Units

	Units		LS, LSM	LSE-11/LSE-02	LSE-AI ①	LSE-AU ①
General						
Standards			IEC/EN 60947	IEC/EN 60947 EN 61000-4	IEC/EN 60947 EN 61000-4	IEC/EN 60947 EN 61000-4
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30	Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30	Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30	Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30
Ambient temperature		°C	–25 to +70	–25 to +70	–25 to +70	–25 to +70
Mounting position			As required	As required	As required	As required
Protection type			IP66, IP67	IP66, IP67	IP66, IP67	IP66, IP67
Terminal capacity of screw terminal and Cage Clamp						
Solid		mm^2	1 x (0.5–2.5)	1 x (0.5–2.5)	1 x (0.5–2.5)	1 x (0.5–2.5)
Flexible with ferrules to DIN 46228		mm^2	1 x (0.5–1.5)	1 x (0.5–1.5)	1 x (0.5–1.5)	1 x (0.5–1.5)
Power Supply						
Rated voltage	U_e	Vdc	N/A	12–30	24 (–15%/+20%)	24 (–15%/+20%)
Burden current						
12V	I_e	mA	N/A	15	N/A	N/A
24V	I_e	mA	N/A	18	28–45	24
30V	I	mA	N/A	19	N/A	N/A
Contacts/Switching Capacity						
Rated impulse withstand voltage	U_{imp}	Vac	4000	N/A	N/A	N/A
Rated insulation voltage	U_i	V	400	N/A	N/A	N/A
Overvoltage category/ pollution degree			III/3	III/3	N/A	N/A
Rated Operational Current						
AC–15						
24V	I_e	A	6	N/A	N/A	N/A
230V/240V	I_e	A	6	N/A	N/A	N/A
400V/415V	I_e	A	4	N/A	N/A	N/A
DC-13						
24V	I_e	A	3	0.2	N/A	N/A
110V	I_e	A	0.8	N/A	N/A	N/A
220V	I_e	A	0.3	N/A	N/A	N/A

Note

① The following applies for LSE-11 and LSE-02: ensure that the power supply operates correctly when setting the operating point.

LS-Titan Miniature DIN Switches—IP66, IP67 Complete Units. continued

		Units	LS, LSM	LSE-11/LSE-02	LSE-AI ①	LSE-AU ①
Burden Current, continued						
Analog output Q1						
Output voltage (max. 10 mA)		Vdc	N/A	N/A		0–10
Output current		mA	N/A	N/A	4–20	
Fault scenario		V	N/A	N/A	0	0
Resolution		Steps	N/A	N/A	100	100
Step tolerance		Steps	N/A	N/A	1	1
Shunt resistor, resistive load		ohms	N/A	N/A	<400	>1000
Digital diagnostics output Q2 (switching to + pole PNP)						
Response threshold		V	N/A	N/A	Approx. U_e	Approx. U_e
		mA	N/A	N/A	<200	<200
Control circuit reliability						
At 24 Vdc/5 mA	H_F	Fault probability	$<10^{-7}$, <1 fault in 10^7 operations	N/A	N/A	N/A
At 5 Vdc/1 mA	H_F	Fault probability	$<10^{-6}$, <1 failure at 5 x 10^6 operations	N/A	N/A	N/A
Supply frequency		Hz	Max. 400	N/A	N/A	N/A
Short-circuit rating to IEC/EN 60947-5-1						
Maximum fuse		A gG/gL	6	N/A	N/A	N/A
Repetition accuracy		mm	±0.02	±0.02	±0.02	±0.02

Note

① The following applies for LSE-11 and LSE-02: ensure that the power supply operates correctly when setting the operating point.

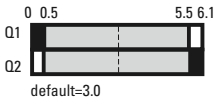
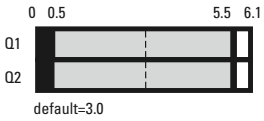
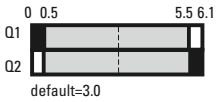
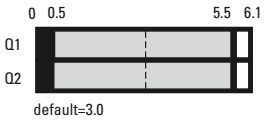
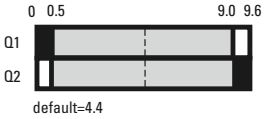
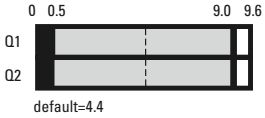
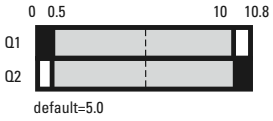
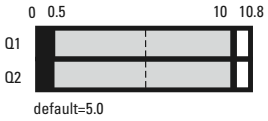
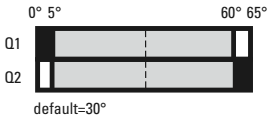
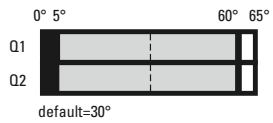
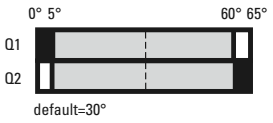
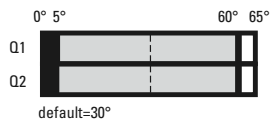
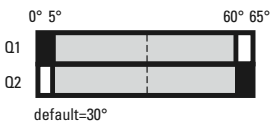
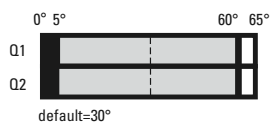
LS-Titan Miniature DIN Switches—IP66, IP67 Complete Units

	Units		LS, LSM	LSE-11/LSE-02	LSE-AI/LSE-AU	LSE-AI/LSE-AU
Mechanical Variables						
Lifespan						
Standard-action contact	Operations	X 10^6	8	N/A	N/A	N/A
Snap-action contact	Operations	X 10^6	8	3 (electronic)	N/A	N/A
Contact temperature of roller head		°C	≤100	≤100	≤100	≤100
Mechanical shock resistance (half-sinusoidal shock, 20 ms)						
Standard-action contact		g	25	N/A	N/A	N/A
Snap-action contact		9	N/A	N/A	N/A	N/A
Basic unit		g	N/A	30	30	30
Operating frequency	Operations/h		≤6000	≤3000	≤3000	≤3000
Switching point			N/A	0.5–5.5 mm freely adjustable	N/A	N/A
Hysteresis		mm	N/A	0.4	0.4	0.4
Contact sequence (contact closed open Zw = positive opening clearance)		mm	N/A	0.04	0.06	0.06
Actuation						
Mechanical						
Actuating force at beginning/ end of stroke						
Basic units		N	1.0/8.0	3.5/8.0	3.5/8.0	3.5/8.0
LS(M)-XP		N	1.0/8.0	1.0/8.0	1.0/8.0	1.0/8.0
LS(M)-XL		N	1.0/8.0	1.0/8.0	1.0/8.0	1.0/8.0
LS(M)-XLA		N	1.0/8.0	1.0/8.0	1.0/8.0	1.0/8.0
Actuating torque of rotary drives		Nm	0.2	0.2	0.2	0.2
Maximum operating speed with DIN cam						
Basic units for angle of actuation	α = 0°/30°	m/s	1/0.5	1/0.5	1/0.5	1/0.5
LS(M)-XRL for angle of actuation	α = 0°	m/s	1.5	1.5	1.5	1.5
LS(M)-XRLA for angle of actuation	α = 30°, L = 125 mm	m/s	1.5	1.5	1.5	1.5
LS(M)-XRR for angle of actuation	L = 130 mm	m/s	1.5	1.5	1.5	1.5
LS(M)-XL for angle of actuation	α = 30°/45°	m/s	1	1	1	1
LS(M)-XLA for angle of actuation	α = 30°/45°	m/s	1	1	1	1
LS(M)-XP for angle of actuation	α = 0°/30°	m/s	1/1	1/1	1/1	1/1
Electromagnetic Compatibility (EMC)						
Electrostatic discharge (IEC/EN 61000-4-2, Level 3 ESD)						
Air discharge		kV		8	8	8
Contact discharge		kV		4	4	4
Electromagnetic fields (IEC/EN 61000-403, RFI)		V/m		10	10	10
Burst pulses (IEC/EN 61000-4-4, Level 3)						
Supply cables		kV		2	2	2
Signal lines		kV		2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV		0.5	0.5	0.5
Immunity to line-conducted interference to (IEC/EN 610000-4-6)		V		10	10	10

2

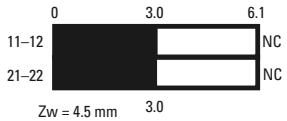
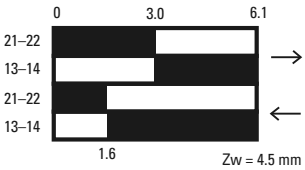
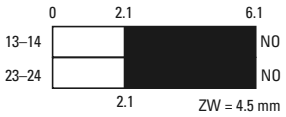
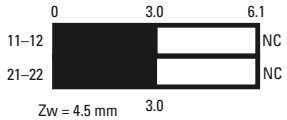
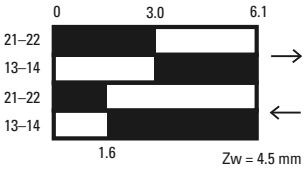
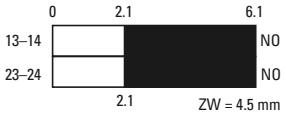
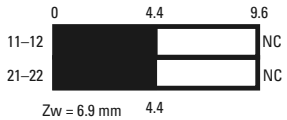
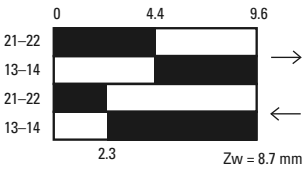
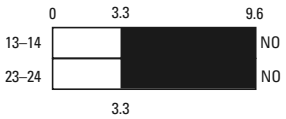
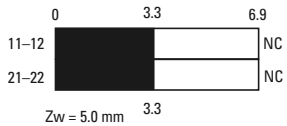
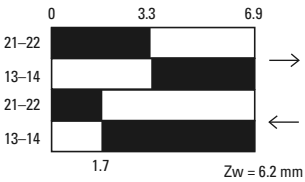
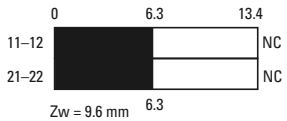
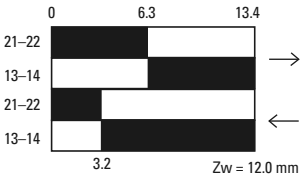
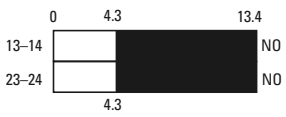
Contact Travel Diagrams

LSE

Description	Contact Travel ■ = contact closed □ = contact open	LSE-11 Q1 Q2	LSE-02 Q1 Q2
Basic Units			
Operating Heads			
Roller plunger			
LS-XP LSM-XP			
Roller lever			
LS-XL LSM-XL LS-XL LS-XLB			
Angled roller lever			
LS-XLA LSM-XLA			
Rotary lever			
LS-XRL LSM-XRL			
Adjustable roller lever			
LS-XRLA LSM-XRLA LS-XRLA30 LS-XRLA40 LS-XRLA40R			
Actuating rod			
LS-XRR LSM-XRR LS-XRRM LSM-XRRM			
Spring rod			
LS-XS LSM-XS			

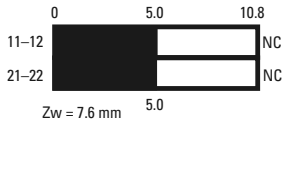
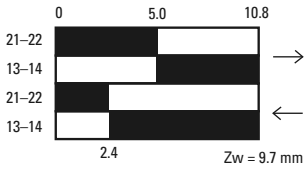
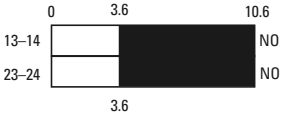
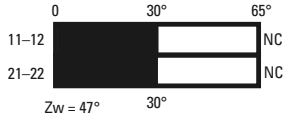
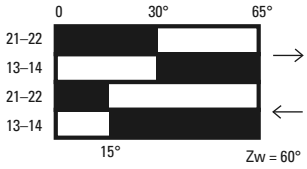
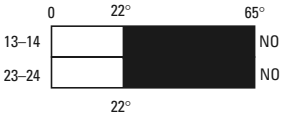
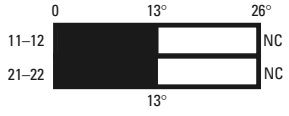
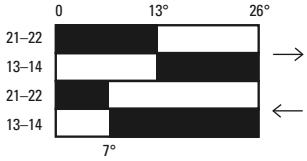
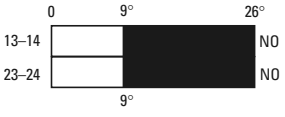
LS and LSM

2

Description	Contact Travel ■ = contact closed □ = contact open	LS-02, LS-S02, LSM-02 NC 12–11, NC 22–21	LS-11S, LS-S11S, LSM-11S NO 14–13, NC 22–21	LS-20A, LS-S20A, LSM-20A NO 14–13, NO 24–23
Basic Units				
Operating Heads				
Roller plunger LS-XP, LSM-XP				
Roller lever LS-XL, LSM-XL				
Roller lever, short LS-XLS				
Roller lever, large LS-XLB				

LS and LSM, continued

Contact Travel
■ = contact closed
□ = contact open

Description	LS-02, LS-S02, LSM-02	LS-11S, LS-S11S, LSM-11S	LS-20A, LS-S20A, LSM-20A
	NC 12 11 NC 22 21	NO 14 13 NC 22 21	NO 14 13 NO 24 23
Operating Heads			
Angled roller lever LS-XLA, LSM-XLA			
Rotary lever LS-XRL, LSM-XRL Adjustable roller lever LS-XRLA, LSM-XRLA LS-XRLA30, LS-XRLA40 LS-XRLA40R Actuating rod LS-XRR, LSM-XRR LS-XRRM, LSM-XRRM			
Spring rod LS-XS, LSM-XS			

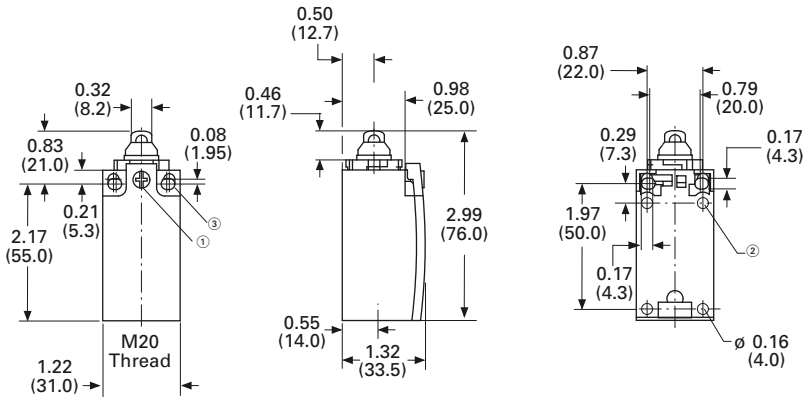
Dimensions

Approximate Dimensions in Inches (mm)

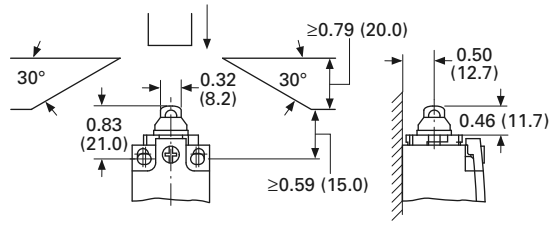
2

Position Switches

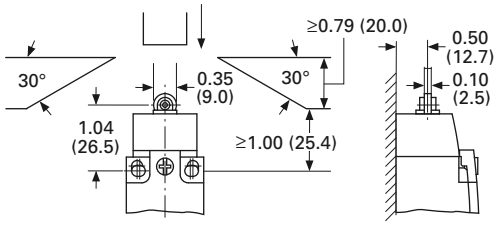
LS-..., LSM-..., LSE-...



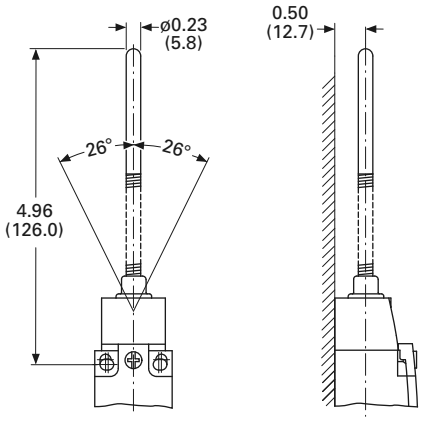
LS-..., LSM-..., LSE-...



LS(M)-.../P



LS(M)-.../S



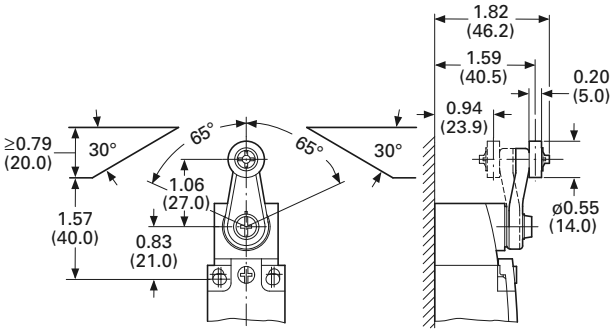
Notes

① Tightening torque of cover screws: 0.8 Nm ±0.2 Nm.
② Only with LS (insulated version).
③ Fixing screws 2 x M4 ≥30
M_A = 1.5 Nm

Approximate Dimensions in Inches (mm)

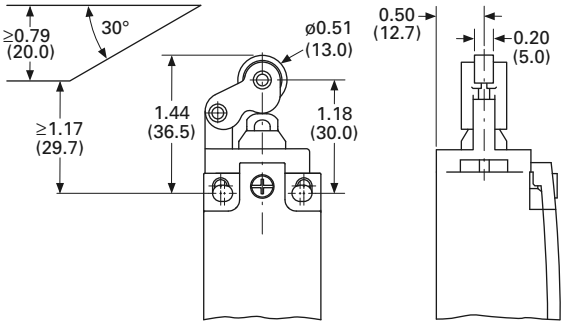
Rotary Lever

LS(M)-.../RL



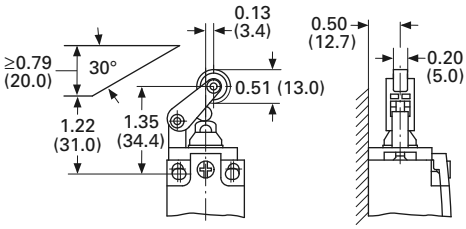
Roller Lever, Short

LS(M)-.../LS



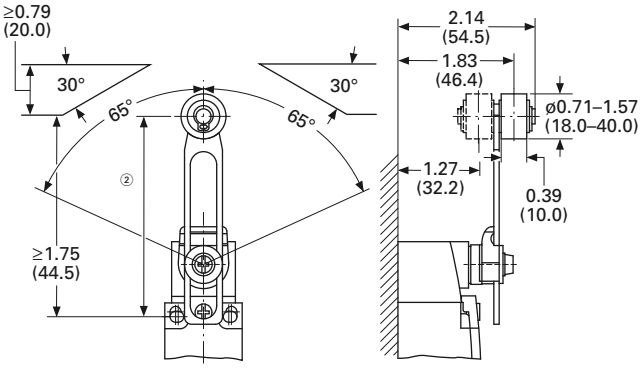
Roller Lever

LS(M)-.../L



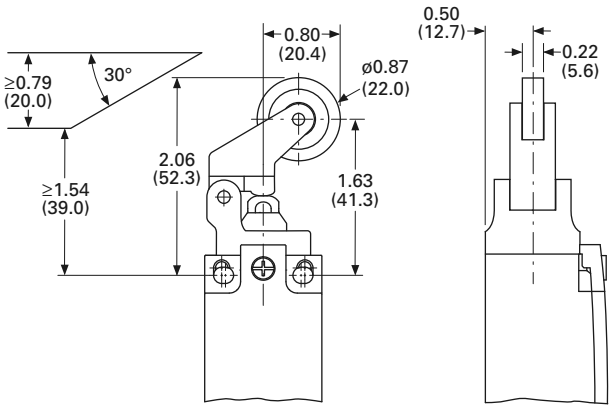
Adjustable Roller Lever

LS(M)-.../RLA



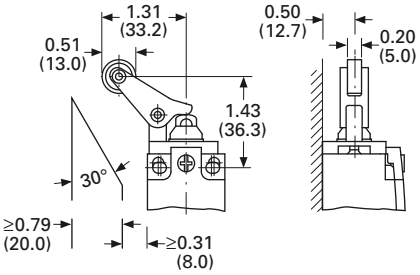
Roller Lever, Large

LS(M)-.../LB ①



Angled Roller Lever

LS(M)-.../XLA



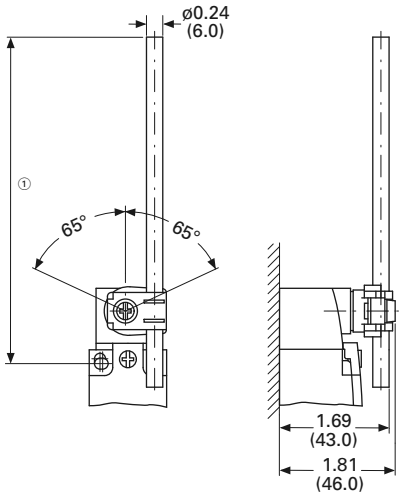
Notes

① Tightening torque of cover screws: 0.8 Nm ±0.2 Nm.
② Setting range of 54.5 to 97.

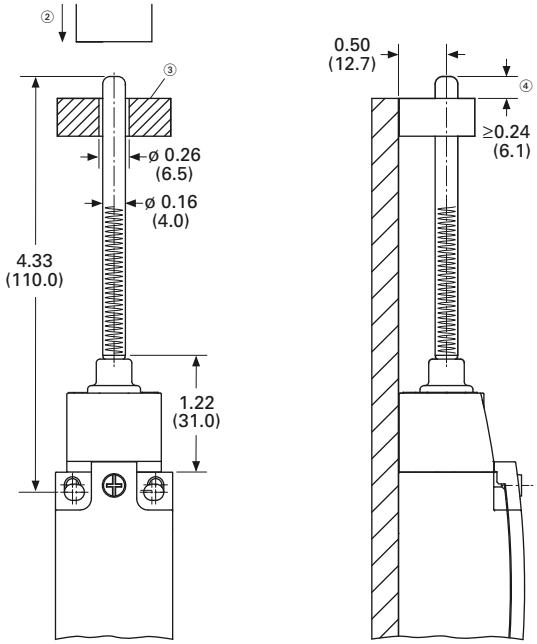
Approximate Dimensions in Inches (mm)

Actuating Rod

LS(M)-.../RR



LS(M)-.../OR



Notes

① LS.../RR ≤150
LS.../RRM ≤210
② Approach direction, vertical.
③ Guide is done by customer, not included.
④ Maximum push-through.