DATASHEET - LS-S11



Position switch, 1N/O+1N/C, rounded plunger

LS-S11 Part no. Catalog No. 106783 Eaton Catalog No. LS-S11 **EL-Nummer** 0004315202 (Norway)

Powering Business Worldwide

Delivery program		
Basic function		Position switches Safety position switches
Part group reference		LS(M)
Product range		Rounded plunger
Degree of Protection		IP66, IP67
Features		Basic device, expandable
Ambient temperature	°C	-25 - +70
Contacts		
N/O = Normally open		1 N/0
N/C = Normally closed		1 NC →
Notes		(a) = safety function, by positive opening to IEC/EN 60947-5-1
Contact sequence		$0 - \sqrt{\frac{13}{14}} \sqrt{\frac{21}{22}}$
Contact travel = Contact closed = Contact open		0 4.3 6.1 13-14 NO 21-22 NC Zw = 4.5 mm
Positive opening (ZW)		yes
Colour		
Enclosure covers		Yellow
Enclosure covers		
Housing		Insulated material
Connection type		Screw terminal

Technical data

General

Standards			IEC/EN 60947
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30
Ambient temperature		°C	-25 - +70
Mounting position			As required
Degree of Protection			IP66, IP67
Terminal capacities		mm^2	
Solid		mm ²	1 x (0.5 - 2.5)
Flexible with ferrule		mm^2	1 x (0.5 - 1.5)
Contacts/switching capacity			
Rated impulse withstand voltage	U_{imp}	V AC	4000

Overvoltage category/pollution degree III/3 Rated operational current I _e AC AC-15 24 V I _e A 23 V V 200 V 40 V I _e A 6 28 V V 400 V 415 V I _e A 4 DC-13 V V A 3 110 V I _e A 3 220 V I _e A 0.5 Control circuit ratiability V V 1.0 V 1.0 V 0.0 V 21 V DC/5 mA HF Fault probability 10 V -2 1 fault in 107 operations probability 10 V -2 1 fault in 107 operations 31 5 V DC/1 mA HF Fault probability 10 V -2 1 fault in 107 operations Supply frequency HF Fault probability 10 V -2 1 fault in 107 operations Short-circuit rating to IEC/EN 60947-5-1 mx .400 10 V -2 1 fault in 107 operations Mace accordances A 9 G/gt 6 Rated conditional short-circuit current X 10 C -1 failure at 5 x 106 operations Mechanical variabiles X <td< th=""><th>Rated insulation voltage</th><th>Ui</th><th>V</th><th>400</th></td<>	Rated insulation voltage	Ui	V	400
Rect operational current Inc. A AC-15 34 V 6 24 V 20 V230 V240 V Ie A 6 380 V400 V415 V Ie A 4 DC-13 F V F 24 V Ie A 3 110 V Ie A 3 220 V Ie A 3 Control circuit reliability F T T at \$V DC5 mA F Fault probability 10° < 1 failure at 5 × 10° operations protections protections protections are under the probability		O _I	•	
AC-15 24 V 230 V 230 V 240 V 330 V 400 V 115 V 10				111/3
1	·	l _e	А	
220 V 230 V 240 V 415 V 10	AC-15			
10C-13	24 V	l _e	Α	6
DC-13 24 V	220 V 230 V 240 V	l _e	Α	6
10 V 10 10 V 10 10 V 10	380 V 400 V 415 V	l _e	Α	4
10 V 1	DC-13			
220 V Control circuit reliability at 24 V DC/5 mA bf fault probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 7, < 1 fault in 107 operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ operations probability 10 ° 8, < 1 failure at 5 x 10 ⁶ oper	24 V	I _e	Α	3
Control circuit reliability at 24 V DC/5 mA HF Fault probability 10 -7, < 1 fault in 107 operations probability 10 -8, < 1 failure at 5 x 10 fo operations probability 10 -8, < 1 failure at 5 x 10 fo operations probability 10 -8, < 1 failure at 5 x 10 fo operations portations probability 10 -8, < 1 failure at 5 x 10 fo operations portations portations at 10 IEC/EN 60947-5-1 max. fluxs Repetition accuracy Repetition	110 V	Ie	Α	0.6
HF Fault probability of 0.7, < 1 fault in 107 operations at 5 V DC/1 mA HF Fault probability of 0.7, < 1 fault in 107 operations Supply frequency Short-circuit rating to IEC/EN 60947-5-1 max. fuse Repetition accuracy Rated conditional short-circuit current Mechanical variables Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operating frequency Actuation Actuating force at beginning/end of stroke Actuating force at beginning/end of stroke Max. operating speed with DIN cam HF Fault probability of 0.7, < 1 fault in 107 operations 10	220 V	l _e	Α	0.3
at 5 V DC/1 mA HF Fault probability	Control circuit reliability			
Supply frequency Short-circuit rating to IEC/EN 60947-5-1 max. fuse Repetition accuracy Rated conditional short-circuit current Mechanical variables Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operating frequency Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Hz Ag 400 B Ag 6/9L 6 6 6 1 1 1 1 1 1 1 1 1 1	at 24 V DC/5 mA	H _F	Fault probabilit	< 10 ⁻⁷ , < 1 fault in 107 operations by
Short-circuit rating to IEC/EN 60947-5-1 max. fuse Repetition accuracy Rated conditional short-circuit current Mechanical variables Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operations Standard-action contact Operating frequency Actuating Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Actualing store at beginning speed with DIN cam Actualing speed with DIN cam Actu	at 5 V DC/1 mA	H _F	Fault probabilit	$< 10^{-6}$, < 1 failure at 5 x 10^{6} operations
max. fuse A gG/gL Repetition accuracy mm 0.15 Rated conditional short-circuit current kchain cal variables Lifespan, mechanical Contact temperature of roller head repetation of temperature of roller head repetation contact graphs of the sistence (half-sinusoidal shock, 20 ms) Standard-action contact graphs of the sistence (half-sinusoidal shock, 20 ms) Standard-action contact graphs of the sistence (half-sinusoidal shock, 20 ms) Actuation Actuation Actuating force at beginning/end of stroke Nn 0.2 Max. operating speed with DIN cam 1.05.	Supply frequency		Hz	max. 400
Repetition accuracy mm 0.15 Rated conditional short-circuit current kA 1 Mechanical variables Lifespan, mechanical Operations x 106 standard shock resistance (half-sinusoidal shock, 20 ms) x 106 standard-action contact ≤ 100 Mechanical shock resistance (half-sinusoidal shock, 20 ms) g 25 Standard-action contact Operations/h ≤ 6000 Actuation Standard-action contact N 1.0/8.0 Actuating force at beginning/end of stroke N 1.0/8.0 Actuating torque of rotary drives Nm 0.2 Max. operating speed with DIN cam m/s 1/0.5	Short-circuit rating to IEC/EN 60947-5-1			
Rated conditional short-circuit current Mechanical variables Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operations/h Standard-action contact Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Mechanical Mechanical Max. operating speed with DIN cam Mechanical	max. fuse		A gG/gL	6
Mechanical variables Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operations/h Standard-action contact Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating force at beginning/end of stroke Max. operating speed with DIN cam Operations/h Max. operating speed with DIN cam Operations/h x 10 ⁶ 8 6000 Actuation N 1.0/8.0 Nm 0.2 m/s 1/0.5	Repetition accuracy		mm	0.15
Lifespan, mechanical Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operations/ Standard-action contact Operations/ Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Operations/ x 106 2 100 25 6000 6000 1.0/8.0 1.0/8.0 1.0/8.0 1.0/8.0	Rated conditional short-circuit current		kA	1
Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operating frequency Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Contact temperature of roller head PC ≤ 100 Standard-action contact S = 25 Contaction (Operations/h S = 6000 Actuation N = 6000 N = 1.0/8.0 1.0/8.0 N = 0.2 Max. operating speed with DIN cam N = 1/0.5	Mechanical variables			
Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operating frequency Operations/h Actuation Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Actuating force at beginning speed with DIN cam Mechanical N 1.0/8.0 Nm 0.2 Max. operating speed with DIN cam	Lifespan, mechanical	Operations	x 10 ⁶	8
Standard-action contact Operating frequency Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Standard-action or g Operations/h 1008 1008 25 1008	Contact temperature of roller head		°C	≦ 100
Operating frequency Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Operations/h Sections/h S	Mechanical shock resistance (half-sinusoidal shock, 20 ms)			
Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam N 1.0/8.0 Nm 0.2 Max. operating speed with DIN cam n/s 1/0.5	Standard-action contact		g	25
Mechanical Actuating force at beginning/end of stroke N 1.0/8.0 Actuating torque of rotary drives Nm 0.2 Max. operating speed with DIN cam n/s 1/0.5	Operating frequency	Operations/h		≦ 6000
Actuating force at beginning/end of stroke N 1.0/8.0 Actuating torque of rotary drives Nm 0.2 Max. operating speed with DIN cam m/s 1/0.5	Actuation			
Actuating torque of rotary drives Nm 0.2 Max. operating speed with DIN cam m/s 1/0.5	Mechanical			
Max. operating speed with DIN cam m/s 1/0.5	Actuating force at beginning/end of stroke		N	1.0/8.0
	Actuating torque of rotary drives		Nm	0.2
Notes for angle of actuation $\alpha = 0^{\circ}/30^{\circ}$	Max. operating speed with DIN cam		m/s	1/0.5
	Notes			for angle of actuation $\alpha=0^{\circ}/30^{\circ}$

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	6
Heat dissipation per pole, current-dependent	P _{vid}	W	0.17
Equipment heat dissipation, current-dependent	P _{vid}	W	0
Static heat dissipation, non-current-dependent	P_{VS}	W	0
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
EC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.

10.5 Protection against electric shock	Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components	Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections	Is the panel builder's responsibility.
10.8 Connections for external conductors	Is the panel builder's responsibility.
10.9 Insulation properties	
10.9.2 Power-frequency electric strength	Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage	Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material	Is the panel builder's responsibility.
10.10 Temperature rise	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 7.0

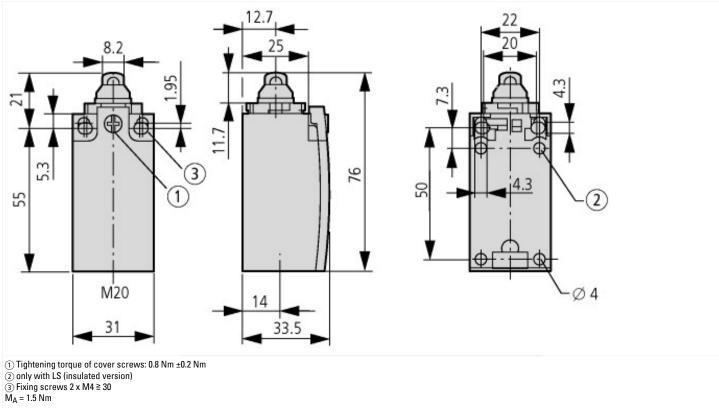
recimical data ettivi 7.0		
Sensors (EG000026) / End switch (EC000030)		
Electric engineering, automation, process control engineering / Binary sensor tech (ecl@ss10.0.1-27-27-06-01 [AGZ382015])	nnology, safety-relat	ted sensor technology / Position switch / Position switch (Type 1)
Width sensor	mm	31
Diameter sensor	mm	0
Height of sensor	mm	61
Length of sensor	mm	33.5
Rated operation current le at AC-15, 24 V	А	6
Rated operation current le at AC-15, 125 V	А	6
Rated operation current le at AC-15, 230 V	А	6
Rated operation current le at DC-13, 24 V	Α	3
Rated operation current le at DC-13, 125 V	А	0.8
Rated operation current le at DC-13, 230 V	А	0.3
Switching function		Slow-action switch
Switching function latching		No
Output electronic		No
Forced opening		Yes
Number of safety auxiliary contacts		1
Number of contacts as normally closed contact		1
Number of contacts as normally open contact		1
Number of contacts as change-over contact		0
Type of interface		None
Type of interface for safety communication		None
Construction type housing		Cuboid
Material housing		Plastic
Coating housing		Other
Type of control element		Plunger
Alignment of the control element		Other
Type of electric connection		Other
With status indication		No
Suitable for safety functions		Yes
Explosion safety category for gas		None
Explosion safety category for dust		None
Ambient temperature during operating	°C	25 - 70
Degree of protection (IP)		IP67
Degree of protection (NEMA)		4X

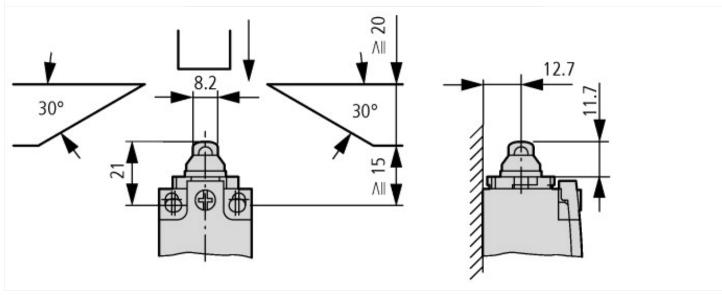
Approvals

Product Standards	IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14; CE marking
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Degree of Protection	IEC: IP66, 67, UL/CSA Type 3R, 4X (indoor use only), 12, 13
North America Certification	UL listed, CSA certified
CSA Class No.	3211-03
CSA File No.	12528
UL Category Control No.	NKCR
UL File No.	E29184

Dimensions





Additional product information (links)

IL053001ZU LS-Titan position switch: basic device

IL053001ZU LS-Titan position switch: basic device

 $ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL053001ZU2018_06.pdf$