DATASHEET - LSM-20A



Position switch, Rounded plunger, Basic device, expandable, 2 N/O, Cage Clamp, Yellow, Metal, -25 - +70 °C, version A

FAT•N°

Powering Business Worldwide

Part no. LSM-20A Catalog No. 100051 Alternate Catalog LSM-20A

No.

EL-Nummer 4315199

(Norway)

Delivery program

Delivery program		
Basic function		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		2 N/O
Contact sequence		$0 - \frac{13}{14} = \frac{13}{24}$
Contact travel = Contact closed = Contact open		0 2.1 6.1 13-14 NO 23-24 NO
Colour		
Enclosure covers		Yellow
Enclosure covers		
Housing		Metal
Connection type		Cage Clamp
Notes		Cage-Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany. Accessories for the Cage-Clamp terminals from Wago:power comb, gray, Wago Article No. 264-402

Technical data

General

StandardsIEC/EN 60947Climatic proofingDamp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30Ambient temperature°C-25 - +70Mounting positionAs requiredDegree of ProtectionIP66, IP67Terminal capacitiesmm²1x (0.5 - 2.5)Flexible with ferrulemm²1x (0.5 - 1.5)Repetition accuracymm0.15	dellerar		
Ambient temperature C -25 - +70 Mounting position Degree of Protection Terminal capacities Solid Flexible with ferrule C -25 - +70 As required IP66, IP67 IP67 IP67 IP67 IV (0.5 - 2.5) IV (0.5 - 2.5) IV (0.5 - 1.5)	Standards		IEC/EN 60947
Mounting position Degree of Protection Terminal capacities Solid mm² 1 x (0.5 - 2.5) Flexible with ferrule As required IP66, IP67 Terminal capacities mm² 1 x (0.5 - 1.5)	Climatic proofing		Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30
Degree of Protection IP66, IP67 Terminal capacities mm² Solid mm² 1 x (0.5 - 2.5) Flexible with ferrule mm² 1 x (0.5 - 1.5)	Ambient temperature	°C	-25 - +70
Terminal capacities mm ² Solid mm ² 1 x (0.5 - 2.5) Flexible with ferrule mm ² 1 x (0.5 - 1.5)	Mounting position		As required
Solid $mm^2 \qquad 1 \times (0.5 - 2.5)$ Flexible with ferrule $mm^2 \qquad 1 \times (0.5 - 1.5)$	Degree of Protection		IP66, IP67
Flexible with ferrule $mm^2 = 1 \times (0.5 - 1.5)$	Terminal capacities	mm^2	
	Solid	mm^2	1 x (0.5 - 2.5)
Repetition accuracy mm 0.15	Flexible with ferrule	mm^2	1 x (0.5 - 1.5)
	Repetition accuracy	mm	0.15

Contacts/switching capacity

Rated impulse withstand voltage	U_{imp}	V AC	4000
Rated insulation voltage	Ui	V	400

AC-15 24 V				
AC-15 24 V	Overvoltage category/pollution degree			III/3
24 V 230 V 240 V	Rated operational current	l _e	Α	
220 V 230 V 240 V 415 V 10	AC-15			
Be	24 V	l _e	Α	6
DC-13 24 V	220 V 230 V 240 V	l _e	Α	6
10 V	380 V 400 V 415 V	le	Α	4
110 V	DC-13			
20V I I I I I I I I I I I I I I I I I I I	24 V	I _e	Α	3
Control circuit reliability at 24 V DC/5 mA #F Fault probability at 5 V DC/1 mA #F Fault probability 5 x 10 °, < 1 fault in 10 ° operations at 5 V DC/1 mA #F Fault probability 5 x 10 °, < 1 failure at 5 x 10 ° operations 5 x 10 °, < 1 failure at 5 x 10 ° operations max. fuso Supply frequency Bated conditional short-circuit current #A #B	110 V	I _e	Α	0.6
HF Fault probability 10-7, < 1 fault in 107 operations at 5 V DC/1 mA HF Pault probability 5 x 10-6, < 1 failure at 5 x 106 operations Supply frequency Short-circuit rating to IEC/EN 60947-5-1 max. fuse 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 Actuation Mechanical Actuating force at beginning/end of stroke Actuating force at beginning/end of stroke Max. operating speed with DIN cam Hz Pault probability 10-7, < 1 fault in 107 operations Max. 400 Actuating force at beginning/end of stroke N 10-8.0 N 10/8.0 N 10/8.0 N 10/9.0	220 V	l _e	Α	0.3
HF Fault probability 5 x 10 6, < 1 failure at 5 x 10 6 operations Supply frequency Short-circuit rating to IEC/EN 60947-5-1 max. fuse 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 Actuation Actuating frequency Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam HZ Fault probability 5 x 10 6, < 1 failure at 5 x 10 6 operations max. 400 1 A gG/gL 6 6 6 6 6 6 6 6 6 6 6 6 6	Control circuit reliability			
Supply frequency Short-circuit rating to IEC/EN 60947-5-1 max. fuse 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 Operating frequency Operating frequency Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Hz max. 400 A gd/gL A gG/gL A g	at 24 V DC/5 mA	H _F	Fault probabilit	$< 10^{-7}, < 1$ fault in 10^7 operations
Short-circuit rating to IEC/EN 60947-5-1 max. fuse 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 Operations/h Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam A gG/gL A gall A gG/gL A gall A	at 5 V DC/1 mA	H _F	Fault probabilit	$< 5 \times 10^{-6}$, < 1 failure at 5×10^{6} operations
max. fuse 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 Operations/h Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Actual torus Act	Supply frequency		Hz	max. 400
Rated conditional short-circuit current kA 1 Mechanical variables Va	Short-circuit rating to IEC/EN 60947-5-1			
Mechanical variables Lifespan, mechanical Operations x 10 ⁶ 8 Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) Standard-action contact Operations/h Standard-action contact Operations/h Operations/h Sebool Actuation Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Operations N 1.0/8.0 Nm 0.2 m/s 1/0.5	max. fuse		A gG/gL	6
Lifespan, mechanical Contact temperature of roller head Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) 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 Operations x 106 CC ≤ 100 5 6 6 6 000 1.0/8.0 1.0/8.0 1.0/8.0 1.0/5	Rated conditional short-circuit current		kA	1
Contact temperature of roller head Mechanical shock resistance (half-sinusoidal shock, 20 ms) 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 Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Max. operating speed with DIN cam Actual torque of rotary drives Nm 0.2 Max. operating speed with DIN cam Actual torque of rotary drives Nm 0.2	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 Operations/h g g g 25 Operations/h ≤ 6000 N 1.0/8.0 N 0.2 m/s 1/0.5	Lifespan, mechanical	Operations	x 10 ⁶	8
Standard-action contact g 25 Operating frequency Operations/h ≤ 6000 Actuation Mechanical 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	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 ≤ 6000 N 1.0/8.0 Nm 0.2 m/s 1/0.5	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 Nm 0.2 Max operating speed with DIN cam M/S 1/0.5	Standard-action contact		g	25
Mechanical Actuating force at beginning/end of stroke Actuating torque of rotary drives Max. operating speed with DIN cam Nm 0.2 Max operating speed with DIN cam m/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

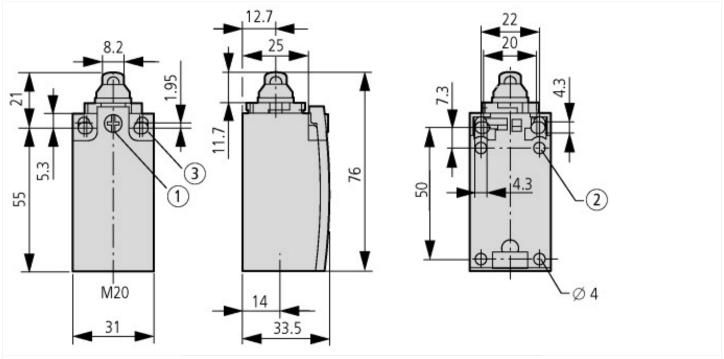
	Technical data ETIM 7.0		
Activation 1972 1974 1	Sensors (EG000026) / End switch (EC000030)		
Image Imag	Electric engineering, automation, process control engineering / Binary sensor technolog (ecl@ss10.0.1-27-27-06-01 [AGZ382015])	gy, safety-related se	nsor technology / Position switch / Position switch (Type 1)
design of sensor mm 61 ength of sensor mm 33.5 lated operation current le at AC-15, 24 V A 6 lated operation current le at AC-15, 230 V A 6 lated operation current le at DC-13, 24 V A 8 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A 9 lated operation current le at DC-13, 25 V A A lated operation current le at DC-13, 25 V B A lated operation current le at DC-13, 25 V B B lated operation current le at DC-13, 25 V B B lated operation current le at DC-13, 25 V B B lated operation current le at DC-13, 25 V B B lated operation current le at DC-13, 25 V B B <t< th=""><th>Width sensor</th><th>mm</th><th>31</th></t<>	Width sensor	mm	31
any of seasor mm 33.5 lated operation current le at AC-15, 28 V A 6 lated operation current le at AC-15, 28 V A 6 lated operation current le at AC-15, 28 V A 6 lated operation current le at AC-15, 28 V A 3 lated operation current le at DC-13, 24 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V A 0 lated operation current le at DC-13, 28 V 0 0 lated operation current le at DC-13, 28 V 0 0 lated operation current le at DC-13, 28 V 0 <	Diameter sensor	mm	0
A	Height of sensor	mm	61
A 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Length of sensor	mm	33.5
A 6	Rated operation current le at AC-15, 24 V	Α	6
ated operation current le at DC-13, 24 V A 0.8 ated operation current le at DC-13, 125 V A 0.8 ated operation current le at DC-13, 125 V A 0.8 ated operation current le at DC-13, 125 V A 0.3 aterior operation current le aterior operation	Rated operation current le at AC-15, 125 V	Α	6
As taked operation current le at DC-13, 250 V A D D D D D D D D D D D D D D D D D D D	Rated operation current le at AC-15, 230 V	Α	6
A Slow-action switch witching function latching witching function safety awxiliary contacts witching function safety communication witching function sype of interface for safety communication witching function sype of control element witching function safety functions witching function safety functions witching function safety functions witching function safety category for dust witching function safety category for dust witching function (IP) Witching function safety category for dust witching function safety safe	Rated operation current le at DC-13, 24 V	Α	3
switching function latching switching function switching function switching function latching switching function switching function latching switching function switch	Rated operation current le at DC-13, 125 V	Α	0.8
witching function latching butput electronic orced opening butput of safety auxiliary contacts butber of safety auxiliary contacts butber of contacts as normally closed contact butber of contacts as normally closed contact butber of contacts as normally open contact butber of contacts as normally open contact butber of contacts as normally open contact butber of contacts as change-over contact butber of contacts as normally closed c	Rated operation current le at DC-13, 230 V	Α	0.3
Support of control element Su	Switching function		Slow-action switch
tumber of safety auxiliary contacts tumber of safety auxiliary contacts tumber of contacts as normally closed contact tumber of contacts as normally open contact tumber of contacts as change-over co	Switching function latching		No
tumber of safety auxiliary contacts tumber of contacts as normally closed contact tumber of contacts as normally open contact tumber of contacts as normally open contact tumber of contacts as change-over contact tumber of contacts as normally open contact tumb	Output electronic		No
tumber of contacts as normally closed contact tumber of contacts as normally open contact tumber of contacts as change-over contact tumber of contacts as change-over contact type of interface type of interface for safety communication to none tonstruction type housing Anterial housing to other of control element type of control element type of control element type of electric connection type of electric connection type of esercy functions total safety functions type of safety category for gas txplosion safety category for dust tumber of protection (IP) The safety functions The safety functions The safety category for dust The safety category for dust The safety function operating The safety category for dust The safety category fo	Forced opening		No
Aumber of contacts as normally open contact Alumber of contacts as change-over contact Alumber of contacts as normally open contact Alumber of contacts as change-over contact Alumber of contacts as change-over contact Alumber of treated for safety communication And continuity pe housing Alumber of control element Alumber of	Number of safety auxiliary contacts		0
Aumber of contacts as change-over contact ype of interface ype of interface for safety communication ype for safety category for gas Autorial housing ype of control element ype of control element ype of electric connection ype felectric connection ype of electric ype of electr	Number of contacts as normally closed contact		0
ype of interface (or safety communication) None Construction type housing Material housing Coating housing You of control element Vitye of electric connection Vith status indication No Cable entry metrical No No Sexplosion safety category for gas None Annual Sexplosion safety category for dust None No	Number of contacts as normally open contact		2
None Construction type housing Contruction type housing Contruction type housing Control element Control eleme	Number of contacts as change-over contact		0
Construction type housing Adaterial housing Adaterial housing Coating housing	Type of interface		None
Material housing Material housing Metal Coating housing Other Plunger Unger U	Type of interface for safety communication		None
Coating housing Coating housin	Construction type housing		Cuboid
ype of control element Nignment of the control element Yope of electric connection Other Cable entry metrical No No Autiable for safety functions Auxilosion safety category for gas Auxilosion safety category for dust Auxilo	Material housing		Metal
Alignment of the control element Alignm	Coating housing		Other
cype of electric connection Vith status indication Vith status indication Vith status indication Vith status indication No No No Explosion safety category for gas Vith status indication No No No No No No No No No	Type of control element		Plunger
Vith status indication No Ruitable for safety functions Ruitable for safety category for gas Ruplosion safety category for dust Ruplo	Alignment of the control element		Other
Suitable for safety functions Suplosion safety category for gas Suplosion safety category for dust Suppose of protection (IP) Suppose of protection (IP	Type of electric connection		Cable entry metrical
Explosion safety category for gas None None None None Ambient temperature during operating CC 25 - 70 Degree of protection (IP) IP67	With status indication		No
Explosion safety category for dust Ambient temperature during operating C 25 - 70 Degree of protection (IP) IP67	Suitable for safety functions		No
Ambient temperature during operating °C 25 - 70 Degree of protection (IP) IP67	Explosion safety category for gas		None
Degree of protection (IP)	Explosion safety category for dust		None
	Ambient temperature during operating	°C	25 - 70
legree of protection (NEMA) 4X	Degree of protection (IP)		IP67
	Degree of protection (NEMA)		4X

Approvals

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Product Standards	IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14; CE marking
UL File No.	E29184
UL Category Control No.	NKCR

CSA File No.	12528
CSA Class No.	3211-03
North America Certification	UL listed, CSA certified
Degree of Protection	IEC: IP66, 67, UL/CSA Type 3R, 4X (indoor use only), 12, 13

Dimensions



- ① Tightening torque of cover screws: 0.8 Nm \pm 0.2 Nm ② only with LS (insulated version) ③ Fixing screws $2 \times M4 \ge 30$ $M_A = 1.5$ Nm

