## **DATASHEET - LS-20-SW**



Position switch, Rounded plunger, Basic device, expandable, 2 N/O, Cage Clamp, Black, Insulated material, -25 - +70 °C

Powering Business Worldwide

Part no. LS-20-SW Catalog No. 272008 Alternate Catalog LS-20-SW

No

## **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		$\begin{array}{c c} & 13 & 23 \\ \hline & 14 & 24 \end{array}$
Contact travel = Contact closed = Contact open		0 4.3 6.1 13-14 NO 23-24 NO
Colour		
Enclosure covers		Black
Enclosure covers		
Housing		Insulated material
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**

Rated insulation voltage

#### 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 <sup>2</sup>	
Solid		mm <sup>2</sup>	1 x (0.5 - 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 x (0.5 - 1.5)
Repetition accuracy		mm	0.15
Contacts/switching capacity			
Rated impulse withstand voltage	$U_{\text{imp}}$	V AC	4000

400

 $U_{i}$ 

Overvoltage category/pollution degree			III/3
Rated operational current	l <sub>e</sub>	Α	
AC-15			
24 V	l <sub>e</sub>	Α	6
220 V 230 V 240 V	l <sub>e</sub>	Α	6
380 V 400 V 415 V	le	Α	4
DC-13			
24 V	l <sub>e</sub>	Α	3
110 V	I <sub>e</sub>	Α	0.6
220 V	I <sub>e</sub>	Α	0.3
Control circuit reliability			
at 24 V DC/5 mA	$H_{F}$	Fault probabilit	$< 10^{-7}, < 1$ fault in $10^7$ operations ty
at 5 V DC/1 mA	H <sub>F</sub>	Fault probabilit	$< 5 \times 10^{-6}$ , $< 1$ failure at $5 \times 10^{6}$ operations
Supply frequency		Hz	max. 400
Short-circuit rating to IEC/EN 60947-5-1			
max. fuse		A gG/gL	6
Rated conditional short-circuit current		kA	1
Mechanical variables			
Lifespan, mechanical	Operations	x 10 <sup>6</sup>	8
Contact temperature of roller head		°C	≦ 100
Mechanical shock resistance (half-sinusoidal shock, 20 ms)			
Standard-action contact		g	25
Operating frequency	Operations/h		≦ 6000
Actuation			
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		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 <sub>vid</sub>	W	0.17
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	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

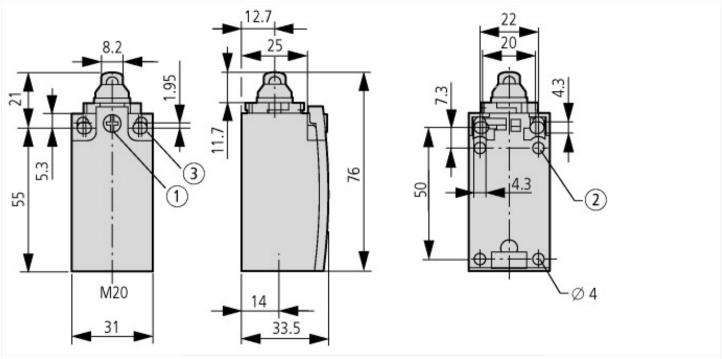
Bestrict anginaring, automation, process control anginaring / Binary sensor technology, related sensor face (Palsa 101-772-774-64) [AGZARO15])    World a sensor	Technical data ETIM 7.0		
Incline   164	Sensors (EG000026) / End switch (EC000030)		
Diameter sensor         mm         0           Height of sensor         mm         61           Length of sensor         mm         33-5           Rated operation current le at AC-15, 24V         A         6           Rated operation current le at AC-15, 23D V         A         6           Rated operation current le at DC-13, 24V         A         3           Rated operation current le at DC-13, 24V         A         3           Rated operation current le at DC-13, 25V         A         0           Rated operation current le at DC-13, 25V         A         0           Rated operation current le at DC-13, 25V         A         0           Switching function         A         0         3           Rated operation current le at DC-13, 25V         A         0           Switching function         A         0         3           Rated operation current le at DC-13, 25V         A         0         3           Weithing function factoric         A         0         3           Rated operation current le at DC-13, 25V         A         0         3           Weithing function         A         0         3         0           Rated operation current le at DC-13, 25V         0         0 </td <td colspan="3">Electric engineering, automation, process control engineering / Binary sensor technology, safety-related sensor technology / Position switch / Position switch (Type 1) (ecl@ss10.0.1-27-27-06-01 [AGZ382015])</td>	Electric engineering, automation, process control engineering / Binary sensor technology, safety-related sensor technology / Position switch / Position switch (Type 1) (ecl@ss10.0.1-27-27-06-01 [AGZ382015])		
Height of sensor	Width sensor	mm	31
Length of sensor Rated operation current le at AC-15, 24 V Rated operation current le at AC-15, 125 V Rated operation current le at AC-15, 125 V Rated operation current le at AC-15, 125 V Rated operation current le at AC-15, 24 V Rated operation current le at CC-13, 24 V Rated operation current le at DC-13, 24 V Rated operation current le at DC-13, 25 V Rated oper	Diameter sensor	mm	0
Rated operation current le at AC-15, 24 V         A         6           Rated operation current le at AC-15, 125 V         A         6           Rated operation current le at AC-15, 220 V         A         6           Rated operation current le at DC-13, 24 V         A         3           Rated operation current le at DC-13, 125 V         A         0.8           Rated operation current le at DC-13, 220 V         A         0.3           Switching function         Image: specific current le at DC-13, 220 V         A         0.3           Switching function latching         No         No           Output electronic         No         No           Forced opening         No         No           Number of contacts as normally closed contact         0         0           Number of contacts as normally open contact         0         None           Number of contacts as normally open contact         0         None           Type of interface for safety communication         None         None           Construction type housing         Cuboid         Other           Material housing         Cuboid         Other           Alignment of the control element         Plunger         Other           Type of electric connection         None         <	Height of sensor	mm	61
Rated operation current le at AC-15, 125 V         A         6           Rated operation current le at AC-15, 230 V         A         3           Rated operation current le at DC-13, 24 V         A         0.3           Rated operation current le at DC-13, 125 V         A         0.3           Rated operation current le at DC-13, 230 V         A         0.3           Switching function         Slow-action switch           Switching function         No         No           Output electronic         No         No           Forced opening         No         No           Number of safety auxiliary contacts         0         0           Number of contacts as normally closed contact         2         2           Number of contacts as change-over contact         0         0           Type of interface for safety communication         None         None           Construction type housing         Cubid         Other           Material housing         Other         Other           Coasting housing         Other         Other           Type of electric connection         Other         Other           Alignment of the control element         No         No           Type of electric connection         No         No<	Length of sensor	mm	33.5
Rated operation current le at DC-13, 24 V         A         3           Rated operation current le at DC-13, 125 V         A         0.8           Rated operation current le at DC-13, 125 V         A         0.3           Rated operation current le at DC-13, 230 V         A         0.3           Switching function         No         No           Switching function latching         No         No           Output electronic         No         No           Forced opening         No         0           Number of contacts as normally closed contact         0         0           Number of contacts as normally open contact         2         0           Number of contacts as change-over contact         2         None           Type of interface for safety communication         None         None           Construction type housing         Other         Other           Material housing         Other         Other           Yope of control element         Plunger         Other           Type of electric connection         No         No           With status indication         No         No           Suitable for safety functions         No         No           Explosion safety category for dust         No	Rated operation current le at AC-15, 24 V	Α	6
Rated operation current le at DC-13, 24 V A 0.8 Rated operation current le at DC-13, 125 V A 0.8 Rated operation current le at DC-13, 125 V A 0.3 Switching function Switching function latching Output electronic Forced opening Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as normally open contact Viye of interface for safety communication Construction type housing Material housing Construction type housing Material housing Coating housing Type of control element Alignment of the control element Vilhi status indication Vilhi status indication Statuble for safety category for dust Ambient temperature during operating  **Coating housing type of control element Coating housing the control element Coating housing Coatin	Rated operation current le at AC-15, 125 V	Α	6
Rated operation current le at DC-13, 125 V Rated operation current le at DC-13, 230 V Rowitching function Switching function Switching function latching Output electronic Forced opening Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as change-over contact Vipe of interface for safety communication Construction type housing Material housing Construction type housing Control element Vipe of control element Vipe of control element Vipe of control element Vipe of safety functions Stable for safety functions Explosion safety category for gas Explosion safety category for dust Ambient temperature during operating Degree of protection (IP)  A	Rated operation current le at AC-15, 230 V	Α	6
Rated operation current le at DC-13, 230 V  Switching function  Switching function latching  Output electronic  Forced opening  Number of contacts as normally closed contact  Number of contacts as normally open contact  Number of contacts as change-over contact  Type of interface  Type of interface for safety communication  Construction type housing  Material housing  Coating housing  Material housing  Control element  Alignment of the control element  Type of elettric connection  With status indication  Suitable for safety functions  Explosion safety category for dust  Ambient temperature during operating  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  No  Switable for safety functions  Explosion safety category for dust  Ambient temperature during operating  Part of the control element of the control eleme	Rated operation current le  at DC-13, 24 V	Α	3
Switching function Switching function latching Output electronic Forced opening Number of safety auxiliary contacts Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as normally open contact Number of contacts as change-over contact Number of contacts as contacts	Rated operation current le  at DC-13, 125 V	Α	0.8
Switching function latching         No           Output electronic         No           Forced opening         No           Number of safety auxiliary contacts         0           Number of contacts as normally closed contact         0           Number of contacts as normally open contact         2           Number of contacts as change-over contact         0           Type of interface         None           Construction type housing         Cuboid           Material housing         Other           Costing housing         Other           Type of control element         Other           Alignment of the control element         Other           Type of or sefety communication         Other           Suitable for safety functions         Other           Alignment of the control element         Other           Type of or sefety functions         No           Suitable for safety functions         No           Explosion safety category for gas         None           Explosion safety category for dust         None           Ambient temperature during operating         °C         25 - 70           Degree of protection (IP)         IF67	Rated operation current le at DC-13, 230 V	Α	0.3
Dutput electronic Forced opening Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as normally open contact Number of contacts as change-over contact Number of contacts as change-over contact Type of interface None Type of interface for safety communication Construction type housing Material housing Coating housing Type of control element Number of control element Number of control element None Construction type four of the control element Number of the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number of contacts as normally observed on the control element Number	Switching function		Slow-action switch
Forced opening Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as normally open contact Number of contacts as change-over contact Number of contacts as normally open contact Number of contacts as change-over contact Number of contacts as normally open contact Number of contacts as normaly open contact Number of contacts as normally open contact Number	Switching function latching		No
Number of safety auxiliary contacts Number of contacts as normally closed contact Number of contacts as normally open contact Number of contacts as normally open contact Number of contacts as change-over contact Onterface Number of contacts as change-over contact Type of interface for safety communication Construction type housing Material housing Coating housing	Output electronic		No
Number of contacts as normally closed contact  Number of contacts as normally open contact  Number of contacts as change-over contact  Type of interface  Type of interface for safety communication  Construction type housing  Material housing  Coating housing  Coating housing  Cother  Type of control element  Type of element  Alignment of the control element  Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  Degree of protection (IP)	Forced opening		No
Number of contacts as normally open contact  Number of contacts as change-over contact  Type of interface Type of interface for safety communication  Construction type housing  Coating housing  Coating housing  Type of control element  Alignment of the control element  Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for dust  Ambient temperature during operating  Coating housing  1	Number of safety auxiliary contacts		0
Number of contacts as change-over contact Type of interface Type of interface for safety communication Construction type housing Material housing Coating housing Coating housing Coating the control element Type of electric connection With status indication With status indication Suitable for safety functions Explosion safety category for dust Ambient temperature during operating Coating housing	Number of contacts as normally closed contact		0
Type of interface for safety communication  Type of interface for safety communication  Construction type housing  Material housing  Coating housing  Coating housing  Coating housing  Coating the control element  Alignment of the control element  Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for dust  Ambient temperature during operating  C C 25 - 70  Degree of protection (IP)  None	Number of contacts as normally open contact		2
Type of interface for safety communication  Construction type housing Coating housing Coating housing Coating housing Coating housing Coating housing Coating the control element Alignment of the control element Type of electric connection With status indication Suitable for safety functions Explosion safety category for gas Explosion safety category for dust Ambient temperature during operating Coating housing Cuboid C	Number of contacts as change-over contact		0
Construction type housing  Material housing  Coating housing  Coating housing  Type of control element  Alignment of the control element  Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  Cuboid  Cuboid  Cuboid  Other  Cuboid  Other  Plunger  Other  Other  Other  No  Other  No  Solitable of Safety functions  No  Solitable for safety functions  Explosion safety category for dust  None  Plof7	Type of interface		None
Material housing Coating housing Cother Type of control element Alignment of the control element Type of electric connection With status indication Suitable for safety functions Explosion safety category for gas Explosion safety category for dust Ambient temperature during operating Degree of protection (IP)  Other O	Type of interface for safety communication		None
Coating housing  Coating housing  Other  Type of control element  Alignment of the control element  Other  Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  Other  Other  Other  No  No  Suitable for Safety functions  No  Explosion safety category for dust  None  167	Construction type housing		Cuboid
Type of control element Alignment of the control element Type of electric connection With status indication Suitable for safety functions Explosion safety category for dust Ambient temperature during operating Degree of protection (IP)  Plunger Other O	Material housing		Other
Alignment of the control element Type of electric connection With status indication Suitable for safety functions Explosion safety category for dust Ambient temperature during operating Degree of protection (IP)  Other Other  No No No No No Explosion safety category for dust None PC 25 - 70 Pegree of protection (IP)	Coating housing		Other
Type of electric connection  With status indication  Suitable for safety functions  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  Other  Other  Other  Other  No  No  No  No  No  Explosion safety category for dust  None  1967	Type of control element		Plunger
With status indication  Suitable for safety functions  Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  Degree of protection (IP)  No  No  None  25 - 70  IP67	Alignment of the control element		Other
Suitable for safety functions  Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  C 25 - 70  Degree of protection (IP)  No  No  P67	Type of electric connection		Other
Explosion safety category for gas  Explosion safety category for dust  Ambient temperature during operating  CC 25 - 70  Degree of protection (IP)  None  1P67	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
Degree of protection (NEMA) 4X	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
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

