



**Position switch, Roller lever, Complete unit, 1 N/O, 1 NC, Cage Clamp,  
Yellow, Insulated material, -25 - +70 °C, Short**

**Part no.** LS-11/LS  
**Catalog No.** 290173  
**Alternate Catalog No.** LS-11-LS  
**EL-Nummer (Norway)** 4315231

## Delivery program

|   |  |    |   |
|---|--|----|---|
| Basic function  |  |    | Position switches<br>Safety position switches   |
| Part group reference  |  |    | LS(M)-...   |
| Product range   |  |    | Roller lever  |
| Degree of Protection  |  |    | IP66, IP67  |
| Features  |  |    | Complete unit   |
| Ambient temperature   |  | °C | -25 - +70   |
| Description   |  |    | Short   |
| <b>Contacts</b>   |  |    |   |
| N/O = Normally open   |  |    | 1 N/O   |
| N/C = Normally closed   |  |    | 1 NC   |
| Notes   |  |    |  = safety function, by positive opening to IEC/EN 60947-5-1  |
| Positive opening (ZW)   |  |    | yes   |
| <b>Colour</b>   |  |    |   |
| Enclosure covers  |  |    | Yellow  |
| Housing   |  |    | Insulated material  |
| Connection type   |  |    | Cage Clamp  |
| Notes   |  |    | Cage-Clamp is a registered trademark of Wago Kontakttechnik, 32432 Minden, Germany.<br>Accessories for the Cage-Clamp terminals from Wago: power comb, gray, Wago Article No. 264-402 |
| <b>Notes</b> The operating head can be rotated at 90° intervals to adapt to the specified approach direction. |  |    |   |

## 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 <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 <sub>imp</sub> | V AC | 4000  |
| Rated insulation voltage              | U <sub>i</sub>   | V    | 400   |
| Overvoltage category/pollution degree |                  |      | III/3 |
| Rated operational current             | I <sub>e</sub>   | A    |       |
| AC-15                                 |                  |      |       |
| 24 V                                  | I <sub>e</sub>   | A    | 6     |
| 220 V 230 V 240 V                     | I <sub>e</sub>   | A    | 6     |
| 380 V 400 V 415 V                     | I <sub>e</sub>   | A    | 4     |
| DC-13                                 |                  |      |       |

|  |                |                   |  |
|--|----------------|-------------------|--|
| 24 V                                     | I <sub>e</sub> | A                 | 3  |
| 110 V                                    | I <sub>e</sub> | A                 | 0.6  |
| 220 V                                    | I <sub>e</sub> | A                 | 0.3  |
| Control circuit reliability              |                |                   |  |
| at 24 V DC/5 mA                          | H <sub>F</sub> | Fault probability | < 10 <sup>-7</sup> , < 1 fault in 10 <sup>7</sup> operations           |
| at 5 V DC/1 mA                           | H <sub>F</sub> | Fault probability | < 5 x 10 <sup>-6</sup> , < 1 failure at 5 x 10 <sup>6</sup> 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      |
| 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                                  |
| <b>Notes</b>                               |  |     | for angle of actuation α = 30°/45° |

## Design verification as per IEC/EN 61439

|  |                   |    |  |
|--|-------------------|----|--|
| Technical data for design verification   |                   |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 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   |
| IEC/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 8.0

|  |    |                      |
|--|----|----------------------|
| Sensors (EG000026) / End switch (EC000030)   |    |                      |
| Electric engineering, automation, process control engineering / Binary sensor technology, safety-related sensor technology / Safety-related position switch / Safety position switch (Type 1) (ecI@ss10.0.1-27-27-26-01 [AKE640013]) |    |                      |
| Width sensor   | mm | 31                   |
| Diameter sensor  | mm | 0                    |
| Height of sensor   | mm | 61                   |
| Length of sensor   | mm | 33.5                 |
| Rated operation current I <sub>e</sub> at AC-15, 24 V  | A  | 6                    |
| Rated operation current I <sub>e</sub> at AC-15, 125 V   | A  | 6                    |
| Rated operation current I <sub>e</sub> at AC-15, 230 V   | A  | 6                    |
| Rated operation current I <sub>e</sub> at DC-13, 24 V  | A  | 3                    |
| Rated operation current I <sub>e</sub> at DC-13, 125 V   | A  | 0.8                  |
| Rated operation current I <sub>e</sub> at DC-13, 230 V   | A  | 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  |    | Roller lever         |
| Alignment of the control element   |    | Other                |
| Type of electric connection  |    | Cable entry metrical |
| 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)  |    | IP66/IP67            |
| Degree of protection (NEMA)  |    | Other                |