



Detect positions reliably and accurately: mechanically, optically, capacitively and inductively.

Wherever exact positioning is required, safety/position switches with positively opening contacts are used. They are equipped with Cage Clamp or screw terminals and are available with metal and insulated enclosures. Their large connection area ensures that they can be wired quickly. Easy to fit and flexible operating heads are a further feature. Safety position switches protect both persons and processes. They are used to ensure that protective doors are safely locked and ensure a safe shutdown.

A variety of sensors makes it possible to use inductive, capacitive, or photoelectric object detection as necessary. These sensors are available in AC and DC versions, as well as in various cubic and tubular designs that make it easy to adapt to any type of location.

LSE-Titan

- Variable, adjustable switching point
- Precisely defined and reproducible
- Quick and bounce-free PNP-switching outputs facilitate high operating frequency
- Certified by the TÜV Rheinland

RS Titan

- Non-contacting: long lifespan, easy installation, high tolerance for doors and hinged flaps that do not close precisely, low maintenance
- High IP67, IP69 degree of protection: easy to clean, rugged, and reliable
- Symmetrical enclosure: easy mounting, low inventory levels
- 2 or 3 switching contacts: suitable for many applications
- Potential-free contacts: easy connection

For more information, visit:
www.Eaton.com/sensors

5.0 Position switches/sensors**5.1 LS, LSM position switches**

LS, LSM-- System overview	166
Safety position switches LS-Titan – Ordering	167
Position switches LS-Titan – Ordering	168
Operating heads – Ordering	178
Accessories – Ordering	179

5.2 Position switches LS...ZB(Z)

LS...ZB(Z) – System overview	180
Position switches LS...ZB(Z) – Description	181
Safety position switches LS...ZBZ – Ordering	183
Safety position switches LS...ZB – Ordering	185
Safety position switches RS-Titan – Ordering	186
Contact travel diagrams – Engineering	187
Complete devices LS, LSM, LSE11, LSE02 – Technical data	190
Safety position switches LS-...-ZB, LS-...-ZBZ – Technical data	192
(Safety) position switches – Dimensions	193

5.3 Inductive sensors E52 Cube series

E52 Cube series – Ordering, engineering	198
E52 Cube series – Technical data	199

5.4 Inductive sensors E55 Limit Switch Style series

E55 Limit Switch Style series – Description	200
E55 Limit Switch Style series – Ordering	201
E55 Limit Switch Style series – Technical data	203
E55 Limit Switch Style series – Engineering, dimensions	204

5.5 Inductive sensors E56 Pancake series

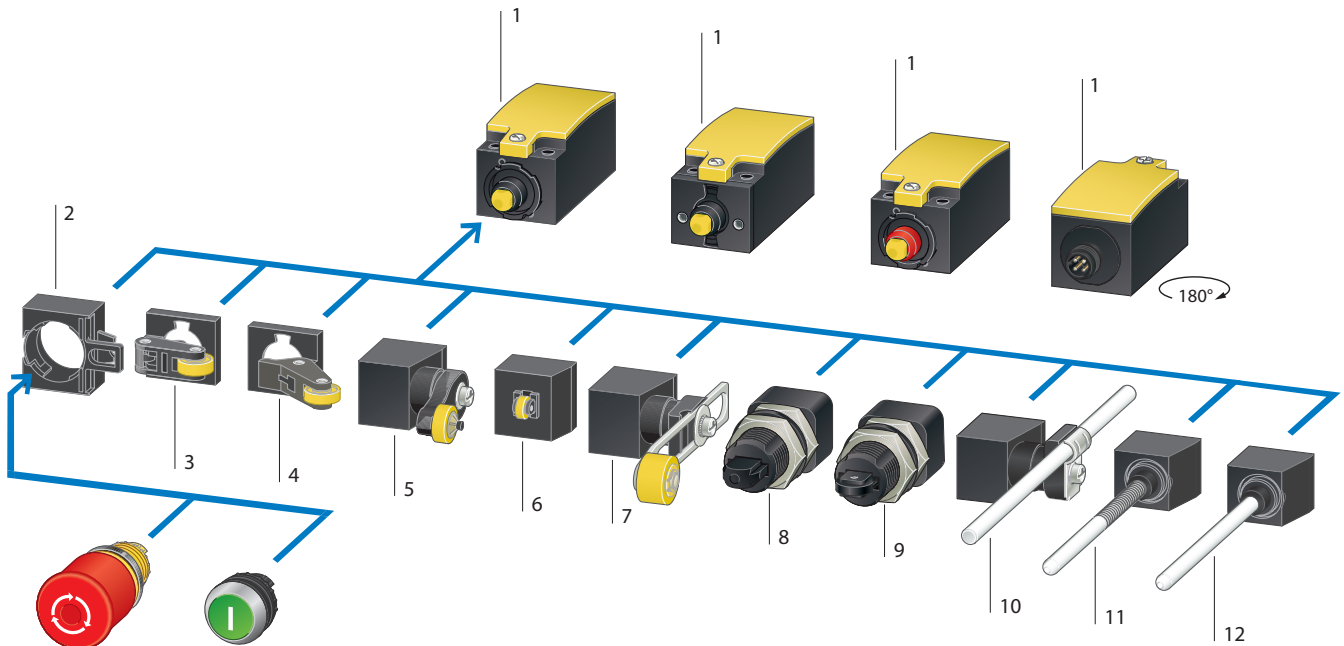
E56 Pancake series – Description	206
E56 Pancake series – Ordering, engineering	207
E56 Pancake series – Technical data	208

5.6 Inductive sensors E57 Global series, other sensors

E57 Global series – Description	210
E57 Global series – Ordering	211
E57 Global series – Technical data	212
Other inductive and capacitive sensors	213

System overview

5



Base devices

Basic device	1
According to EN 50047	
With screw-on cover	
Contact configuration: 1N/O/1NC, 2N/O, 2NC	
Cage Clamp, screw terminal	
As snap-action or standard-action switch	
As electronic snap-action switch, (individually adjustable)	
→ Page 167	

Operating heads

Can be rotated by 90°

Mounting adapter	2
Actuation through front element	
RMQ-Titan®	
Roller lever	3
For single conductor run actuation with higher operating speed	
Angled roller lever	4
For actuation along the unit axis	
Swing handle	5
For actuation from the side, for pendulum movements	
→ Page 178	

Operating heads

Can be rotated by 90°

Roller plunger	6
Adjustable roller lever	7
Rounded plunger, center fixing	8
For mounting in enclosure wall or mounting plate drilling M18 x 1	
Roller plunger, center fixing	9
For mounting in enclosure wall or mounting plate drilling M18 x 1	
Actuating rod	10
Spring-rod actuator	11
Not to be used as a safety position switch.	
Use only in conjunction with snap-action contact.	
Actuating rod	12
→ Page 178	

LS, LSM product features

- Modular system
- IP65 and IP66 protection type (except LSM)

- Personnel protection
- Positive operation
- ☹ Safety function with positively opening contacts to IEC/EN 60947-5-1 up to Category 4 to EN 954-1

- Suitable for use with electronic devices to IEC/EN 61131-2
- Devices for world markets

Ordering

Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = Contact open	Color Enclosure covers	Catalog Number Article no.	Std. pack
⊖ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1					
N/O = Normally open contact	N/C = Normally closed contact				

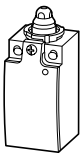
Basic device, expandable

IP66, IP67 operating point electronically adjustable

Basic device

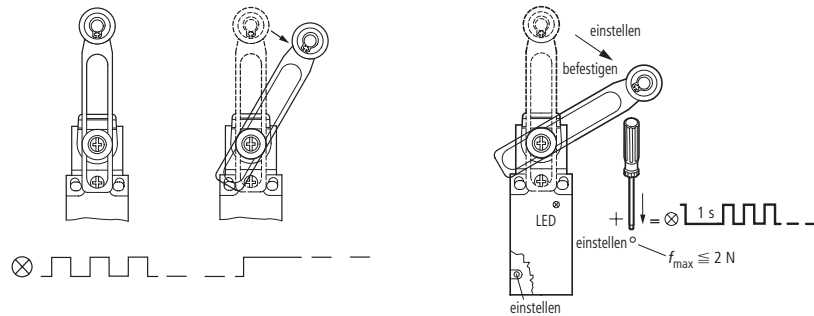
Visible status display, comparable with positive opening function

Partly short-circuit proof, restart after reset



1 N/O	1 N/C				LSE-11 266121	2 units	1)
—	2 N/C				LSE-02 266122	2 units	1)

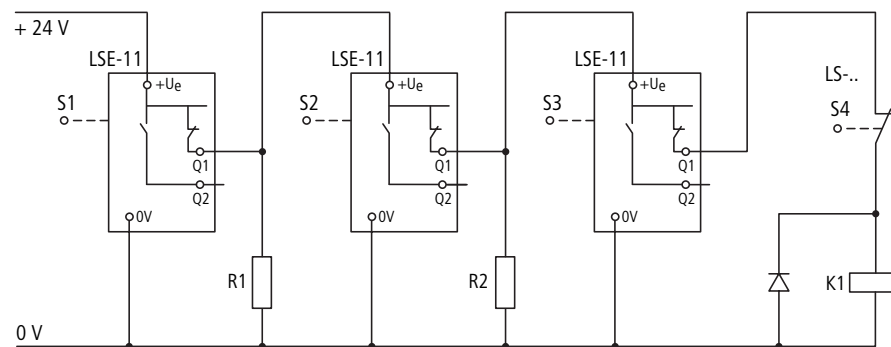
Notes LSE-11 and LSE-02: Individual operating point adjustment:



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

Circuit example for series connection:

LSE-11 and LSE-02 can be used in safety-oriented circuits.



S1 is connected to 24 V DC

S2, S3 each switch with a delay of 0.7 s

R1, R2 e. g. series resistor element M22-XLED60 (2820 Ω/0.5 W)

1) Operating heads → Page 178

Position switches LS-Titan

Contact configuration

Contact
sequence

Contact travel

■ = Contact closed
□ = contact openColor
Enclosure
covers

Enclosure material

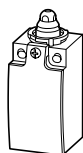
Connection
typeCatalog
Number
Article no.Std.
pack

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O = Normally open contact
N/C = Normally closed contact

Basic device, expandable

Rounded plunger, IP66, IP67



–	2 N/C				Plastic	Cage-Clamp	LS-02 266107	10 units ¹⁾²⁾
–	2 N/C				Plastic	Cage-Clamp	LS-02-SW 272009	10 units ¹⁾²⁾
–	2 N/C				Plastic	Screw terminal	LS-S02 106729	10 units ²⁾
–	2 N/C				Plastic	Screw terminal	LS-S02-SW 106782	10 units ²⁾
–	2 N/C				Metal	Cage-Clamp	LSM-02 266142	2 units ¹⁾²⁾
–	2 N/C				Insulated material EN 50047 Form B	Cage-Clamp	LS-02A 116702	10 units ¹⁾²⁾
–	2 N/C				Insulated material EN 50047 Form B	Screw terminal	LS-S02A 116703	10 units ²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11 266109	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11-SW 272006	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11 106783	10 units ²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11-SW 106807	10 units ²⁾
1 N/O	1 N/C				Metal EN 50047 Form B	Cage-Clamp	LSM-11 266144	2 units ¹⁾²⁾
1 N/O	1 N/C				Insulated material EN 50047 Form B	Cage-Clamp	LS-11A 116704	10 units ¹⁾²⁾
1 N/O	1 N/C				Insulated material EN 50047 Form B	Screw terminal	LS-S11A 116705	10 units ²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D 266114	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D-SW 272007	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D 106791	10 units ²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D-SW 106797	10 units ²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11D 266149	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11DA 292361	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11DA 106795	1 units ²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11DA 292363	1 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Cage-Clamp	LS-11S 266105	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Cage-Clamp	LS-11S-SW 272020	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Screw terminal	LS-S11S 106798	10 units ²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Screw terminal	LS-S11S-SW 106806	10 units ²⁾
1 N/O	1 N/C				Metal EN 50047 Form B	Cage-Clamp	LSM-11S 266140	2 units ¹⁾²⁾

Notes

¹⁾ 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

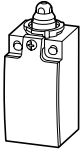
²⁾ Operating heads → Page 178

Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = contact open	Color Enclosure covers	Enclosure material	Connection type	Catalog Number Article no.	Std. pack
-----------------------	------------------	--	---------------------------	--------------------	-----------------	-------------------------------	-----------

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O = Normally open contact
N/C = Normally closed contact

Basic device, expandable



Rounded plunger, IP66, IP67

2 N/O	—			Plastic	Cage-Clamp	LS-20 266120	10 units ¹⁾²⁾
2 N/O	—			Plastic	Cage-Clamp	LS-20-SW 272008	10 units ¹⁾²⁾
2 N/O	—			Plastic	Screw terminal	LS-S20 106808	1 units ²⁾
2 N/O	—			Plastic	Screw terminal	LS-S20-SW 106812	10 units ²⁾
2 N/O	—			Metal	Cage-Clamp	LSM-20 266155	2 units ¹⁾²⁾
2 N/O	—			Plastic	Cage-Clamp	LS-20A 292362	1 units ¹⁾²⁾
2 N/O	—			Plastic	Screw terminal	LS-S20A 106810	10 units ²⁾
2 N/O	—			Metal	Cage-Clamp	LSM-20A 100051	2 units ¹⁾²⁾
2 N/O	—			Insulated material EN 50047 Form B	Cage-Clamp	LS-20B 116706	10 units ¹⁾²⁾
2 N/O	—			Insulated material EN 50047 Form B	Screw terminal	LS-S20B 116707	10 units ²⁾

Notes

¹⁾ 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

²⁾ Operating heads → Page 178

Position switches LS-Titan

Contact configuration

Contact
sequence

Contact travel

■ = Contact closed
□ = Contact openColor
Enclosure
covers

Enclosure material

Connection
typeCatalog
Number
Article no.

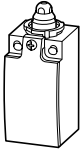
Std. pack

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O = Normally open contact
N/C = Normally closed contact

Complete devices

Rounded plunger, IP66, IP67 (Front mount)



–	2 N/C				Plastic	Cage-Clamp	LS-02/F 292365	1 units	¹⁾²⁾
–	2 N/C				Plastic	Screw terminal	LS-S02/F 106780	1 units	²⁾
–	2 N/C				Metal	Cage-Clamp	LSM-02/F 292371	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11/F 290176	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11/F 106784	1 units	²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11/F 292372	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D/F 106792	1 units	²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D/F 292366	1 units	¹⁾²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11D/F 292373	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11DA/F 292369	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11DA/F 106796	1 units	²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11DA/F 292376	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S/F 292367	1 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11S/F 106799	1 units	²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11S/F 292374	1 units	¹⁾²⁾
2 N/O	–				Plastic	Cage-Clamp	LS-20/F 292368	1 units	¹⁾
2 N/O	–				Plastic	Screw terminal	LS-S20/F 106809	1 units	
2 N/O	–				Metal	Cage-Clamp	LSM-20/F 292375	1 units	¹⁾
2 N/O	–				Plastic	Cage-Clamp	LS-20A/F 292370	1 units	¹⁾
2 N/O	–				Plastic	Screw terminal	LS-S20A/F 106811	1 units	
2 N/O	–				Metal	Cage-Clamp	LSM-20A/F 292377	1 units	¹⁾

Notes

¹⁾ 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

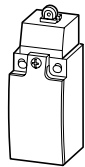
²⁾ The operating head can be rotated at 90° intervals to adapt to the specified approach direction.

Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = Contact open	Color Enclosure covers	Enclosure material	Connection type	Catalog Number Article no.	Std. pack
-----------------------	------------------	--	---------------------------	--------------------	-----------------	-------------------------------	-----------

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

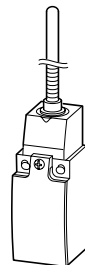
N/O = Normally open contact
N/C = Normally closed contact

Complete devices



Roller plungers, IP66, IP67

1 N/O	1 N/C				Plastic EN 50047 Form C	Cage-Clamp	LS-11/P 266112	2 units	¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form C	Screw terminal	LS-S11/P 106788	2 units	²⁾
1 N/O	1 N/C				Metal EN 50047 Form C	Cage-Clamp	LSM-11/P 266147	2 units	¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form C	Cage-Clamp	LS-11S/P 266118	2 units	¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form C	Screw terminal	LS-S11S/P 106801	2 units	²⁾
1 N/O	1 N/C				Metal EN 50047 Form C	Cage-Clamp	LSM-11S/P 266153	2 units	¹⁾²⁾



Spring-rod actuator IP66, IP67

Do not use spring-rod actuator as a safety position switch; admissible only with snap-action contact.

1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S/S 266104	2 units	¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11S/S 106805	2 units	²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11S/S 266139	2 units	¹⁾²⁾

Notes

¹⁾ 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

²⁾ The operating head can be rotated at 90° intervals to adapt to the specified approach direction.

Position switches LS-Titan

Contact configuration

Contact
sequenceContact travel
■ = Contact closed
□ = contact openEnclosure
cover
colorEnclosure
materialConnection
typeCatalog
Number
Article no.Std.
pack

⊕ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O = Normally open contact
N/C = Normally closed contact

5



Complete devices

Roller lever IP66, IP67

long	—	2 N/C				Plastic	Cage-Clamp	LS-02/L 266108	2 units ¹⁾²⁾
	—	2 N/C				Plastic	Screw terminal	LS-S02/L 106781	2 units ²⁾
	—	2 N/C				Metal	Cage-Clamp	LSM-02/L 266143	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic EN 50047 Form E	Cage-Clamp	LS-11/L 266110	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic EN 50047 Form E	Screw terminal	LS-S11/L 106785	2 units ²⁾
	1 N/O	1 N/C				Metal EN 50047 Form E	Cage-Clamp	LSM-11/L 266145	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D/L 266115	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D/L 106793	2 units ²⁾
	1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11D/L 266150	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic EN 50047 Form E	Cage-Clamp	LS-11S/L 266116	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic EN 50047 Form E	Screw terminal	LS-S11S/L 106800	2 units ²⁾
	1 N/O	1 N/C				Metal EN 50047 Form E	Cage-Clamp	LSM-11S/L 266151	2 units ¹⁾²⁾
short	1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11/LS 290173	2 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic	Screw terminal	LS-S11/LS 106787	1 units ²⁾
	1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D/LS 290174	1 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D/LS 106794	1 units ²⁾
Large	1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11/LB 290175	1 units ¹⁾²⁾
	1 N/O	1 N/C				Plastic	Screw terminal	LS-S11/LB 106786	1 units ²⁾

Notes

¹⁾ 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

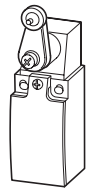
²⁾ The operating head can be rotated at 90° intervals to adapt to the specified approach direction.

Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = contact open	Color Enclosure covers	Enclosure material	Connection type	Catalog Number Article no.	Std. pack
-----------------------	------------------	--	---------------------------	--------------------	-----------------	-------------------------------	-----------

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

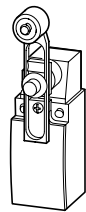
N/O = Normally open contact
N/C = Normally closed contact

Complete devices



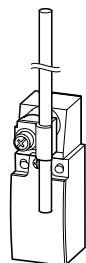
Swing handle, IP66, IP67

1 N/O	1 N/C				Plastic EN 50047 Form A	Cage-Clamp	LS-11/RL 266111	2 units ¹⁾²⁾
1 N/O	1 N/C				Metal EN 50047 Form A	Cage-Clamp	LSM-11/RL 266146	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form A	Screw terminal	LS-S11/RL 106789	2 units ²⁾
1 N/O	1 N/C				Plastic EN 50047 Form A	Cage-Clamp	LS-11S/RL 266117	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form A	Screw terminal	LS-S11S/RL 106802	2 units ²⁾
1 N/O	1 N/C				Metal EN 50047 Form A	Cage-Clamp	LSM-11S/RL 266152	2 units ¹⁾²⁾



Adjustable roller levers, IP66, IP67

1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11/RLA 266113	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11/RLA 106790	2 units ²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11/RLA 266148	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S/RLA 266119	2 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11S/RLA 106803	2 units ²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11S/RLA 266154	2 units ¹⁾²⁾



IP66, IP67 actuating rod

1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S/RR 266106	4 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11S/RR 106804	4 units ²⁾
1 N/O	1 N/C				Metal	Cage-Clamp	LSM-11S/RR 266141	4 units ¹⁾²⁾

Customized complete unit IP66, IP67

(*) user-definable customer ID or stock no.: up to 10 characters

	Plastic	—	LS-COMBINATION 2010791	1 units ¹⁾²⁾
--	---------	---	----------------------------------	-------------------------

Notes

¹⁾ 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

²⁾ The operating head can be rotated at 90° intervals to adapt to the specified approach direction.

Position switch

Contact configuration

Contact
sequence

Contact travel

■ = Contact closed
□ = contact openColor
Enclosure
covers

Enclosure material

Connection
typeCatalog
Number
Article no.Std.
pack

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O =

Normally
open contact

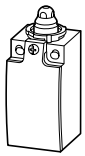
N/C =

Normally
closed contact

Plastic

-40 - +70, IP65

Basic device, expandable



—	2 N/C				Plastic	Cage-Clamp	LS-02-CC 176880	10 units ¹⁾²⁾
—	2 N/C				Plastic	Screw terminal	LS-S02-CC 176890	10 units ²⁾
—	2 N/C				Insulated material EN 50047 Form B	Cage-Clamp	LS-02A-CC 176886	10 units ¹⁾²⁾
—	2 N/C				Insulated material EN 50047 Form B	Screw terminal	LS-S02A-CC 176895	10 units ²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11-CC 176879	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11-CC 176889	10 units ²⁾
1 N/O	1 N/C				Insulated material EN 50047 Form B	Cage-Clamp	LS-11A-CC 176887	10 units ¹⁾²⁾
1 N/O	1 N/C				Insulated material EN 50047 Form B	Screw terminal	LS-S11A-CC 176896	10 units ²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11D-CC 176882	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11D-CC 176891	10 units ²⁾
1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11DA-CC 176884	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic	Screw terminal	LS-S11DA-CC 176893	1 units ²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Cage-Clamp	LS-11S-CC 176881	10 units ¹⁾²⁾
1 N/O	1 N/C				Plastic EN 50047 Form B	Screw terminal	LS-S11S-CC 144118	10 units ²⁾
2 N/O	—				Plastic	Cage-Clamp	LS-20-CC 176883	10 units ¹⁾²⁾
2 N/O	—				Plastic	Screw terminal	LS-S20-CC 176892	1 units ²⁾
2 N/O	—				Plastic	Cage-Clamp	LS-20A-CC 176885	1 units ¹⁾²⁾
2 N/O	—				Plastic	Screw terminal	LS-S20A-CC 176894	10 units ²⁾
2 N/O	—				Insulated material EN 50047 Form B	Cage-Clamp	LS-20B-CC 176888	10 units ¹⁾²⁾
2 N/O	—				Insulated material EN 50047 Form B	Screw terminal	LS-S20B-CC 176897	10 units ²⁾

Notes

¹⁾ 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

²⁾ Operating heads → Page 178

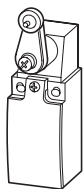
Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = contact open	Color Enclosure covers	Enclosure material	Connection type	Catalog Number Article no.	Std. pack
-----------------------	------------------	--	------------------------------	--------------------	-----------------	-------------------------------	-----------

⇒ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O = Normally open contact
N/C = Normally closed contact

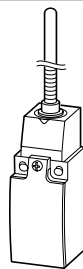
Plastic

–40 - +70, IP65



Swing handle

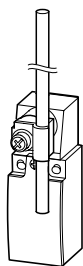
2 N/C					Plastic EN 50047 Form A	Cage clamp	LS-02-CC/RL 156509	2 units	1) 2)
2 N/C					Plastic EN 50047 Form A	Screw terminal	LS-S02-CC/RL 167677	1 units	1) 2)
1 N/O	1 N/C				Plastic EN 50047 Form A	Cage-Clamp	LS-11-CC/RL 120608	2 units	1) 2)
1 N/O	1 N/C				Plastic EN 50047 Form A	Cage-Clamp	LS-11S-CC/RL 179674	2 units	1) 2)



Spring-rod actuator

Do not use spring-rod actuator as a safety position switch; admissible only with snap-action contact.

1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S-CC/S 179677	2 units ^{1) 2)}
-------	-------	--	--	--	---------	------------	------------------------------	--------------------------



Actuating rod

1 N/O	1 N/C				Plastic	Cage-Clamp	LS-11S-CC/RR 179675	4 units ^{1) 2)}
-------	-------	--	--	--	---------	------------	-------------------------------	--------------------------

Notes

- ¹⁾ 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
²⁾ Operating heads → Page 178

Position switch

Contact configuration

Snap-action contact

Contact travel

■ = Contact closed

□ = contact open

Contact diagram

Cage-Clamp¹⁾Std.
pack

⊕ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O =

N/C =

Normally open contact

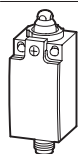
Normally closed contact

Catalog Number
Article no.

Basic device, expandable

with integrated M12 plug, IP66

Rounded plunger



—	2 N/C	—	 Zw = 4.5 mm	LS-02-M12A 178128	1 units
1 N/O	1 N/C	—	 Zw = 4.5 mm	LS-11-M12A 178129	1 units
1 N/O	1 N/C	—	 Zw = 4.5 mm	LS-11D-M12A 178130	1 units
1 N/O	1 N/C	—	 Zw = 5.5 mm	LS-11DA-M12A 178131	1 units
1 N/O	1 N/C	—	 Zw = 5.5 mm	LS-11S-M12A 178132	1 units
2 N/O	—	—	 Zw = 5.5 mm	LS-20-M12A 178133	10 units
2 N/O	—	—	 Zw = 5.5 mm	LS-20A-M12A 178134	1 units
2 N/O	—	—	 Zw = 5.5 mm	LS-20B-M12A 178135	1 units

Notes

¹⁾ 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

Contact configuration

Snap-action contact

Contact travel

■ = Contact closed

□ = contact open

Contact diagram

Cage-Clamp¹⁾Std.
pack

⊕ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1

N/O =

N/C =

Normally open contact

Normally closed contact

Catalog Number
Article no.

Complete devices

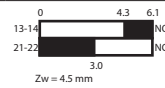
with integrated M12 plug, IP66

Roller plunger

1 N/O

1 N/C

—

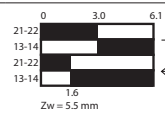
**LS-11/P-M12A**
178137

2 units

1 N/O

1 N/C

Yes

**LS-11S/P-M12A**
178141

2 units

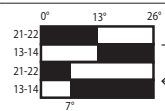
Spring-rod actuator

Not to be used as a safety position switch

1 N/O

1 N/C

Yes

**LS-11S/S-M12A**
178145

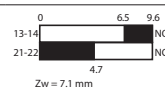
2 units

Roller lever

1 N/O

1 N/C

—

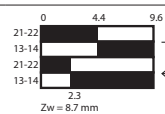
**LS-11/L-M12A**
178136

1 units

1 N/O

1 N/C

Yes

**LS-11S/L-M12A**
178140

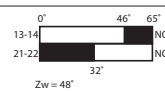
1 units

Swing handle

1 N/O

1 N/C

—

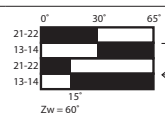
**LS-11/RL-M12A**
178138

1 units

1 N/O

1 N/C

Yes

**LS-11S/RL-M12A**
178142

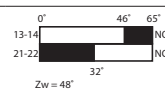
1 units

adjustable roller lever

1 N/O

1 N/C

—

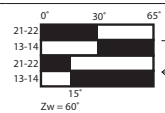
**LS-11/RLA-M12A**
178139

2 units

1 N/O

1 N/C

Yes

**LS-11S/RLA-M12A**
178143

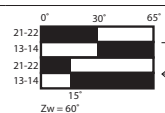
2 units

Actuating rod

1 N/O

1 N/C

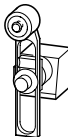
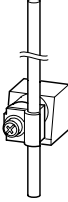
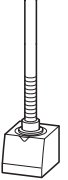
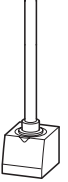
Yes

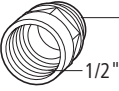
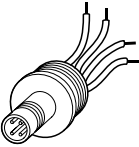
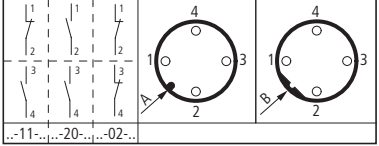
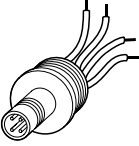
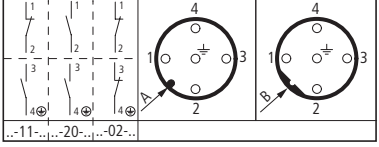
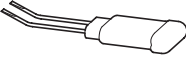
**LS-11S/RR-M12A**
178144

4 units

Notes

¹⁾ 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

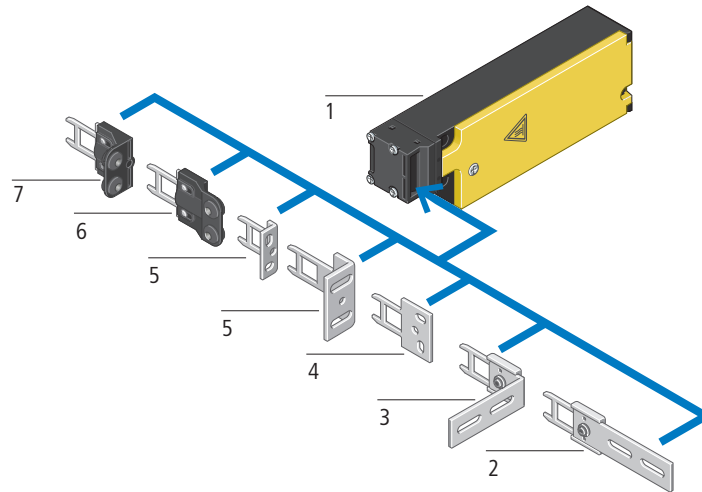
	Plastic Catalog Number Article no.	Std. pack	Metal Catalog Number Article no.	Std. pack	Notes
	Rounded plunger, centre fixing				
For mounting in enclosure wall or mounting plate drilling M18 x 1	LS-XZS 114024	1 units			The operating head can be rotated at 90° intervals to adapt to the specified approach direction.
	Roller plunger, centre fixing				
For mounting in enclosure wall or mounting plate drilling M18 x 1	LS-XZRS 114025	1 units			
	Roller plunger				
–	LS-XP 266125	10 units	LSM-XP 266158	10 units	
	Roller lever				
Large	LS-XLB 290178	5 units			
Short	LS-XLS 290177	1 units			
Long	LS-XL 266123	10 units	LSM-XL 266156	10 units	
	Angled roller lever				
–	LS-XLA 266124	10 units	LSM-XLA 266157	10 units	
	Swing handle				
–	LS-XRL 266126	5 units	LSM-XRL 266159	5 units	
	adjustable roller lever				
D = 18 mm	LS-XRLA 266127	4 units	LSM-XRLA 266160	4 units	
D = 30 mm	LS-XRLA30 266128	5 units			
D = 40 mm (rubber)	LS-XRLA40R 266130	5 units			
D = 40 mm	LS-XRLA40 266129	5 units			
	Actuating rod				
Plastic rod	LS-XRR 266131	4 units	LSM-XRR 266161	4 units	
Metal rod	LS-XRRM 266132	4 units	LSM-XRRM 266162	4 units	
	Spring-rod actuator				
Not to be used as a safety position switch. Use only in conjunction with snap-action contact.	LS-XS 266133	5 units	LSM-XS 266163	5 units	
	Actuating rod				
–	LS-XOR 290190	1 units			
	Mounting adapter				
Actuation through front element RMQ-Titan®	M22-LS 266137	10/1 units			

Description		Catalog Number Article no.	Std. pack	Notes
Screw terminal M20 in 1/2"				
	M20 1/2"	V1/2"/M20-NA 225269	10 units	The screw connection is for earthing; no total insulation For thread length up to 9 mm
	M20 1/2"	V1/2"/M20 225270	10 units	For thread length up to 9 mm
M20 diaphragm bolt, IP65				
		EMS20 225271	25 units	— With integral push-through diaphragm External diameter of cable up to 13 mm IP65 with cable inserted
M20 screw closure				
		LS-X20 266134	25 units	— (Self-sealing grommet) For tightening/loosening using a standard spanner for sealing grommet plugs
Plug connector M12x1, IP66				
Molding material $I_{th} = 4 \text{ A}$ Fuse: 6 A gG/gL				
	4 pole $U_e = 250 \text{ V}$	For use with		
	LS	"A" coded  Standard to IEC/EN 60947-5-2	M12A 266135	10 units
	LS	"B"-coded 	M12B 266136	10 units
			M12A, M12B 	
	5 pole $U_e = 125 \text{ V}$	LSM	"A" coded  Standard to IEC/EN 60947-5-2	M12A5 272202
		LSM	"B"-coded 	M12B5 272203
			M12A5, M12B5 	
cage Clamp twin N/C contact				
	—	For opening two terminals simulta- neously	LS-XTW 290179	1 units
Adapter plate, thickness 2.5 mm				
		For additional fixing with sideways operation, together with locating plate FS-AT (order separately)	LS-XAP 114026	1 units
locating plate				
		For fixing with side motion	FS-AT 019610	20 units

System overview

LS-...ZBZ

5

**Basic device** 1

Spring or magnet-powered interlock
For increased personnel and process protection

Tamper-proof
Multiple coded actuators

Contact configuration: 1 N/O/1 NC
or 2 NC

→ Page 183

Flat flexible actuator 2

For doors that do not close precisely

→ Page 184

Angled flexible actuator 3

For doors that do not close precisely

→ Page 184

Flat actuator 4

For sliding doors

→ Page 184

Angled actuator 5

For swing doors

→ Page 184

Flat compensating actuator 6

For increased tolerance compensation in the direction of door closure

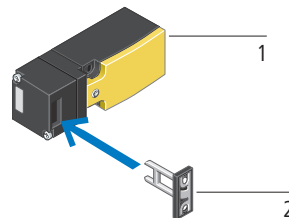
→ Page 184

Angled compensating actuator 7

For increased tolerance compensation in the direction of door closure

→ Page 184

LS-...ZB

**Complete device** 1

For personnel protection

Contact configuration: 1 N/C,
1 N/O / 1 N/O or 2 N/C

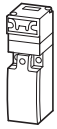
5 directions of operation possible

→ Page 185

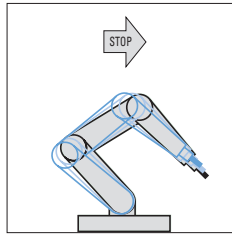
Actuator 2

Multiple coding protection against tampering

LS-...ZB



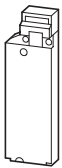
"Personnel protection" by monitoring of the protective mechanism



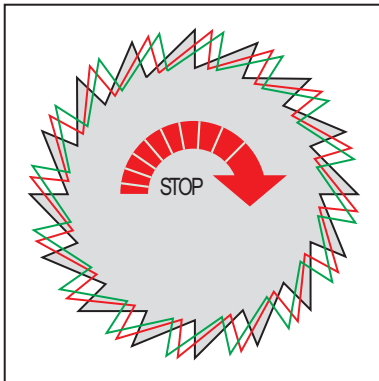
Door open
LS...-ZB disconnects power
No danger

5

LS/ZBZ

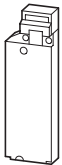


"Increased personnel protection" by monitoring and interlocking the protective mechanism

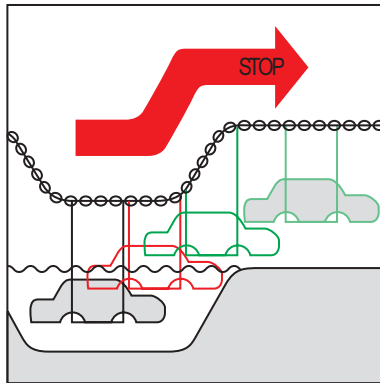


Stop Command
Waiting time
Machine is stopped
Protective mechanism open
No danger

LS/ZBZ



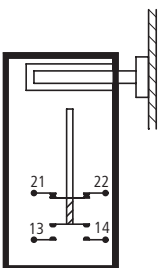
"Increased personnel protection" by monitoring and interlocking the protective mechanism



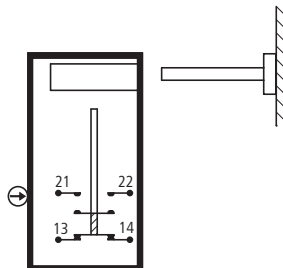
Stop Command
Waiting time
Process sequence halted
Protective mechanism open
Product OK

LS-...ZB

Closed



Open



→ Personnel protection

Door open

→ Enabling contact (21-22) opening positively

Door open

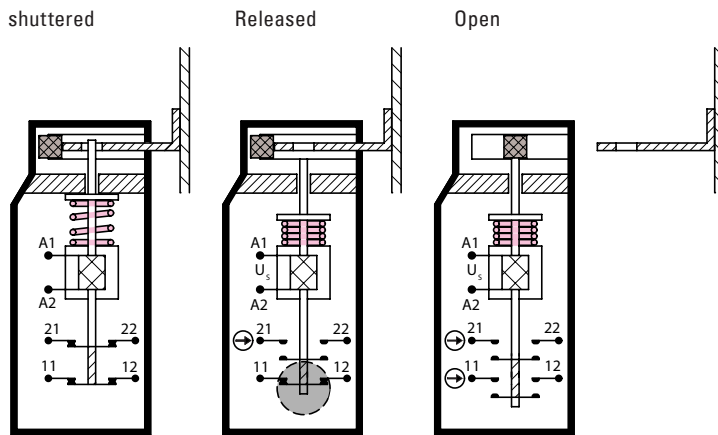
→ Enabling contact safely open; tamperproof against simple tools

Close door

→ Triple coded actuator closes the enabling contact

Switch must never be used as a mechanical stop!

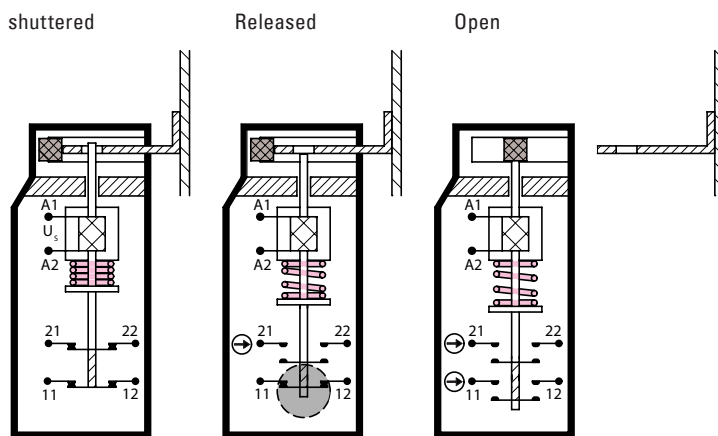


LS-S02-...FT-ZBZ, spring-powered interlock (closed-circuit current principle)

→ Enhanced personnel protection with separate signal for door position

- Door closed and interlocked → De-energized: even with mains failure or wire breakage: door interlocked = safe state
Enabling contact (21-22)
- To unlock door → Applies voltage to coil (A1, A2) e.g. via zero-speed monitor, enabling contact (21-22) opens
- Door open → Both contacts blocked in the open position, even with tampering with simple tools
- Close door → Triple-coded actuator cancels enabling contact inhibit; door position contact (11-12) closes
- Lock door → Disconnect coil voltage:
1st actuator interlocked
2nd enabling contact closed
→ Enable only when door locked

Switch must never be used as a mechanical stop!

**LS-S02-...MT-ZBZ, magnet-powered interlock (operating current principle)**

→ Process protection + personnel protection with separate indication of the door position

- Door closed and interlocked → Energized:
Enables immediate access in the event of mains failure and wire breakage.
Both contacts closed
- To unlock door → Applies voltage to coil (A1, A2) e.g. via zero-speed monitor, enabling contact (21-22) opens
- Door open → Only possible once it is released, door position contact (11-12) opens
- Close door → Triple-coded actuator cancels enabling contact inhibit; door position contact (11-12) closes
- Lock door → Disconnect coil voltage:
1st actuator interlocked
2nd enabling contact closed
→ Enable only when door locked

Switch must never be used as a mechanical stop!



Contact configuration	Contact sequence	Rated control voltage for magnetic system U_s	Catalog Number Article no.	Std. pack
☹ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1 N/O = Normally open contact N/C = Normally closed contact		V		

Basic device with spring-powered interlock (closed-circuit principle) IP65

With interlock monitoring and auxiliary release mechanism
Monitoring of door position: continuous

1 N/O	1 N/C		24 V DC	LS-S11-24DFT-ZBZ/X 106829	1 units
—	2 N/C		24 V DC	LS-S02-24DFT-ZBZ/X 106823	
1 N/O	1 N/C		120 V 50/60 Hz	LS-S11-120AFT-ZBZ/X 106825	
—	2 N/C		120 V 50/60 Hz	LS-S02-120AFT-ZBZ/X 106778	
1 N/O	1 N/C		230 V 50/60 Hz	LS-S11-230AFT-ZBZ/X 106827	
—	2 N/C		230 V 50/60 Hz	LS-S02-230AFT-ZBZ/X 106821	

Basic devices with magnet-powered interlock (open-circuit principle) IP65¹⁾

With interlock monitoring
Monitoring of door position: continuous

1 N/O	1 N/C		24 V DC	LS-S11-24DMT-ZBZ/X 106830	1 units
—	2 N/C		24 V DC	LS-S02-24DMT-ZBZ/X 106824	
1 N/O	1 N/C		120 V 50/60 Hz	LS-S11-120AMT-ZBZ/X 106826	
—	2 N/C		120 V 50/60 Hz	LS-S02-120AMT-ZBZ/X 106820	
1 N/O	1 N/C		230 V 50/60 Hz	LS-S11-230AMT-ZBZ/X 106828	
—	2 N/C		230 V 50/60 Hz	LS-S02-230AMT-ZBZ/X 106822	

Notes

Electric circuitry with DIL contactors and ESR5 safety relay
→ Safety manual TB02000-009, Article no. 119906

With the actuator inserted, the N/O contact is open and the N/C contact is closed.

Switch must never be used as a mechanical stop!



¹⁾ Time control of the release operation possible using ESR5-NV30-30

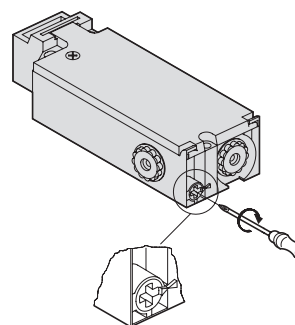
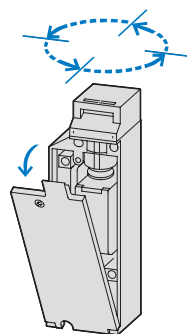
The operating head can be rotated manually in 90° steps to suit the specified level of actuation.

In the event of a loss of voltage, (e.g. during commissioning), the spring-powered LS-...-FT-ZBZ can be released with a screwdriver. The auxiliary release mechanism must be sealed!

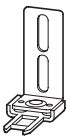
→ Instructional leaflet AWA 1310-2354

For degree of protection IP65, use V-M20 cable glands with connecting thread of max. 9 mm length

V-M20 cable gland → see Online catalog



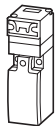
Description

		Catalog Number	Std. pack	Notes
		Article no.		
Actuators				
For combination with LS-...ZBZ/X basic devices Stainless steel				
	Flat actuator For sliding doors	LS-XG-ZBZ 106833	10 units	—
	Angled actuator For swing doors above 250 mm width	short LS-XW-ZBZ 106839	10 units	From width: 350 mm
		long LS-XWA-ZBZ 106838	10 units	From width: 550 mm
	Angled, flexible actuator For doors that do not close precisely	LS-XF-ZBZ 106832	10 units	—
	Flat, flexible compensating actuator For doors that do not close precisely	LS-XFG-ZBZ 106831	10 units	—
	Flat compensating actuator With increased tolerance in closing direction for door that does not close precisely.	LS-XNG-ZBZ 106834	1 units	—
	Angled compensating actuator With increased tolerance in closing direction for door that does not close precisely.	LS-XNW-ZBZ 106835	10 units	—
Accessory				
	Dust protection cap Prevents ingress of foreign matter into the device head	LS-XSK-ZBZ 106837	10 units	—

Contact configuration	Contact sequence	Contact travel ■ = Contact closed □ = Contact open	Approval mark	Connection type	Catalog Number Article no.	Std. pack
☉ Safety function implemented with positive opening as defined in IEC/EN 60947-5-1 N/O = Normally open contact N/C = Normally closed contact						

Safety position switches LS...ZB

IP65, plastic



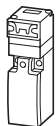
–	2 N/C	
–	2 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	



Cage-Clamp	LS-02-ZB¹⁾ 106817	2 units
Screw terminal	LS-S02-ZB¹⁾ 106874	
Cage-Clamp	LS-11-ZB¹⁾ 106819	
Screw terminal	LS-S11-ZB¹⁾ 106876	
Cage-Clamp	LS-11S-ZB¹⁾ 106870	
Screw terminal	LS-S11S-ZB¹⁾ 106877	

Safety position switch LS...ZB

–40 - +70°C, IP65, plastic



–	2 N/C	
–	2 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	
1 N/O	1 N/C	



Cage-Clamp	LS-02-CC-ZB 177186	2 units
Screw terminal	LS-S02-CC-ZB 177189	
Cage-Clamp	LS-11-CC-ZB 177188	
Screw terminal	LS-S11-CC-ZB 177191	
Cage-Clamp	LS-11S-CC-ZB 177187	
Screw terminal	LS-S11S-CC-ZB 177190	

Notes

Electric circuitry with DIL contactors and ESR5 safety relays
 → Safety manual TB02000-009, order no. 119906

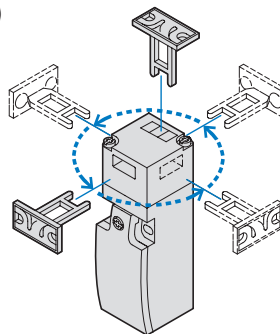
Switch must never be used as a mechanical stop!



For degree of protection IP65, use V-M20 cable glands with connecting thread of max. 9 mm length
 Cable gland V-M20 → Page 77

With the actuator inserted, the N/O contact is open and the N/C contact is closed.

1)



2) Actuator can be repositioned for horizontal or vertical mounting. The operating heads can be turned manually in 90° steps to suit the specified level of actuation.

Contact configuration		Catalog Number	Catalog Number	Std. pack
N/O = Normally open contact	N/C = Normally closed contact	Article no.	Article no.	

Non-contacting safety switch

IP67, IP69
Reed contacts

5



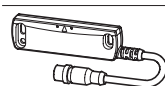
		3 m connection cable	Plug-in connection M12 x 1	
–	2 N/C	RS2-02-C3 177286	RS2-02-Q4 177289	1 units
1 N/O	1 N/C	RS2-11-C3 177287	RS2-11-Q4 177290	
1 N/O	2 N/C	RS2-12-C3 177288	RS2-12-Q6 177291	



–	2 N/C	RS2R-02-C3 177292	RS2R-02-Q4 177295	
1 N/O	1 N/C	RS2R-11-C3 177293	RS2R-11-Q4 177296	
1 N/O	2 N/C	RS2R-12-C3 177294	RS2R-12-Q6 177297	



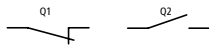
		10 m connection cable	
–	2 N/C	RS2-02-C10 177300	1 units
1 N/O	1 N/C	RS2-11-C10 177301	
1 N/O	2 N/C	RS2-12-C10 177302	
–	2 N/C	RS2R-02-C10 177303	
1 N/O	1 N/C	RS2R-11-C10 177304	
1 N/O	2 N/C	RS2R-12-C10 177305	



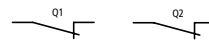
		150 mm connection cable with plug-in connection M12 x 1	
–	2 N/C	RS4-02-Q4 177298	1 units
1 N/O	2 N/C	RS4-12-Q6 177299	

Engineering

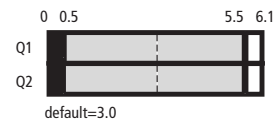
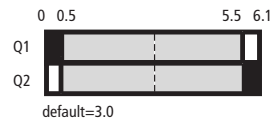
LSE-11



LSE-02



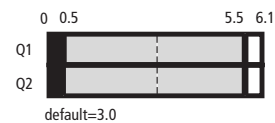
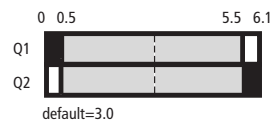
Base devices



Operating heads

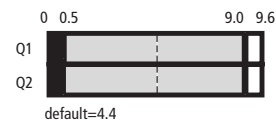
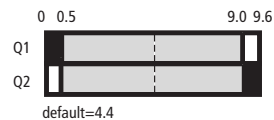
Roller plunger

LS-XP
LSM-XP
LS-XOR



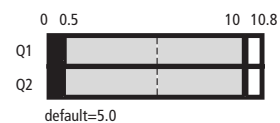
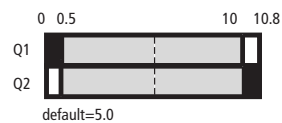
Roller lever

LS-XL
LSM-XL
LS-XLS
LS-XLB



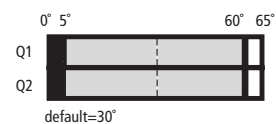
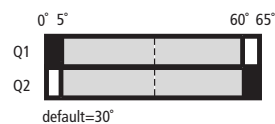
Angled roller lever

LS-XLA
LSM-XLA



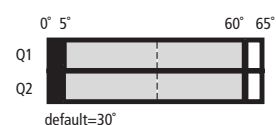
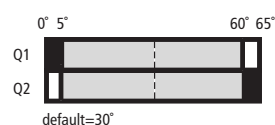
Swing handle

LS-XRL
LSM-XRL



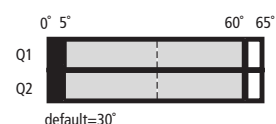
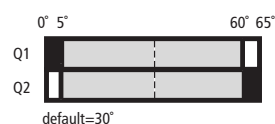
Adjustable roller lever

LS-XRLA
LSM-XRLA
LS-XRLA30
LS-XRLA40
LS-XRLA40R



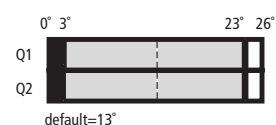
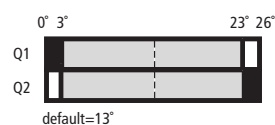
Actuating rod

LS-XRR
LSM-XRR
LS-XRRM
LSM-XRRM



Spring-rod actuator

LS-XS
LSM-XS

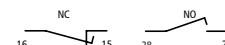
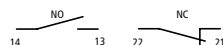
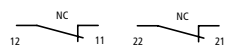


Note: LS-(S)02A,
LS-(S)11A → Page 168
LS-(S)20B → Page 169

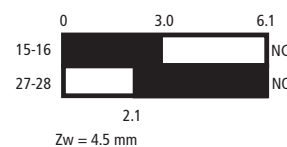
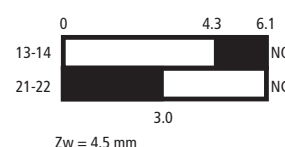
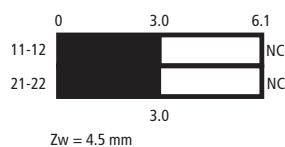
LS-02
LS-S02
LSM-02

LS-11
LS-S11
LSM-11

LS-11D
LS-S11D
LSM-11D

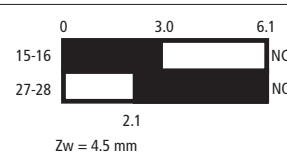
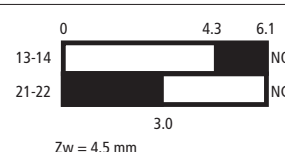
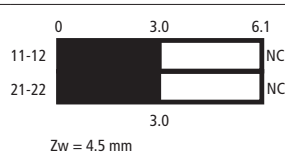


Base devices

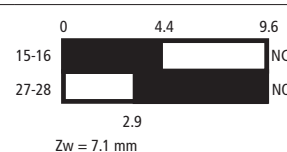
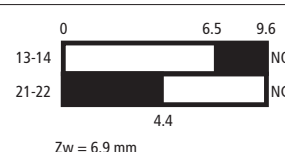
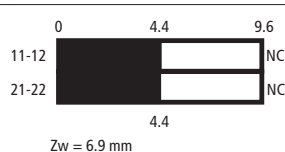


Operating heads

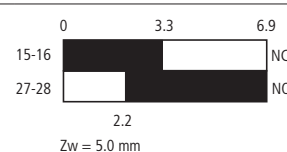
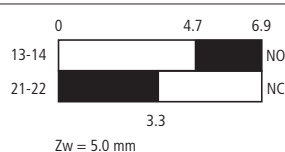
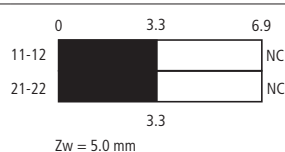
Roller plunger
LS-XP
LSM-XP



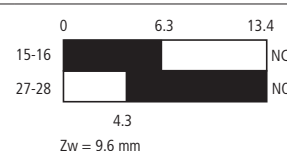
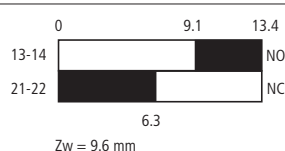
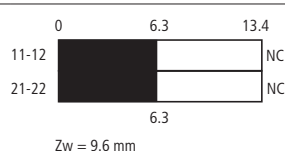
Roller lever
LS-XL, LSM-XL



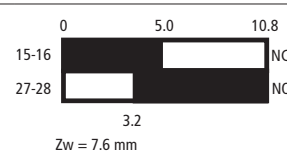
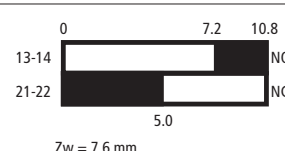
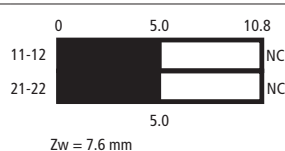
Roller lever, short
LS-XLS



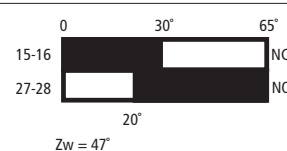
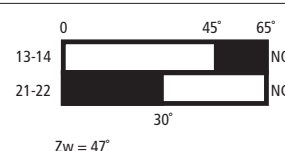
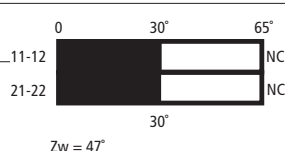
Roller lever, large
LS-XLB



Angled roller lever
LS-XLA, LSM-XLA



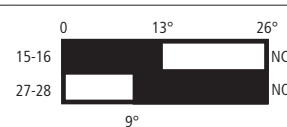
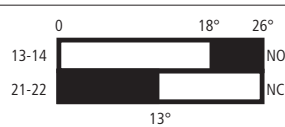
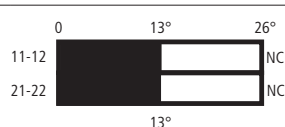
Swing handle
LS-XRL, LSM-XRL



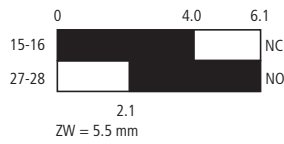
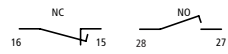
Adjustable roller lever
LS-XRLA, LSM-XRLA,
LS-XRLA30, LS-XRLA40,
LS-XRLA40R

Actuating rod
LS-XRR, LSM-XRR,
LS-XRRM, LSM-XRRM

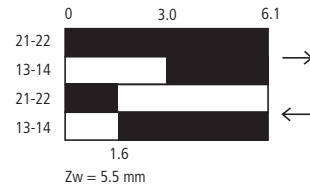
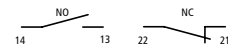
Spring-rod actuator
LS-XS, LSM-XS



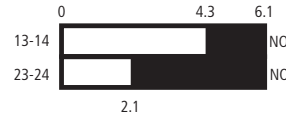
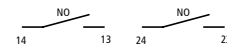
LS-11DA
LS-S11DA
LSM-11DA



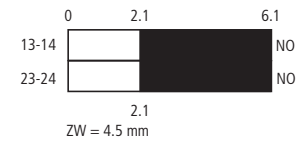
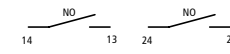
LS-11S
LS-S11S
LSM-11S



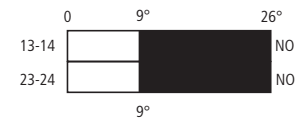
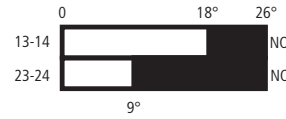
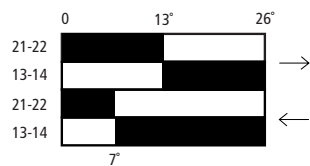
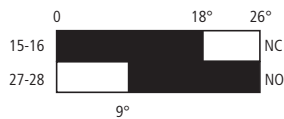
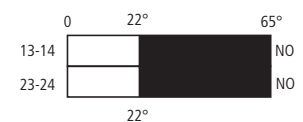
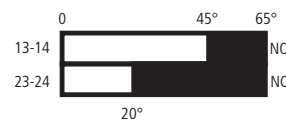
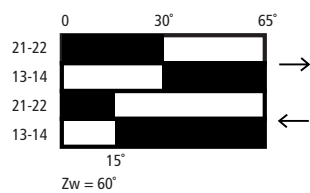
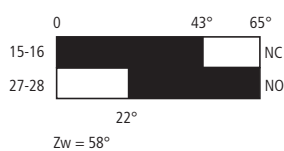
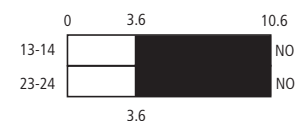
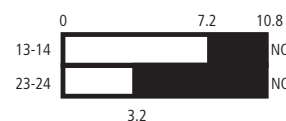
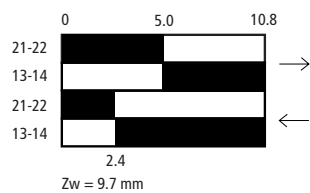
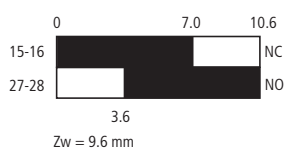
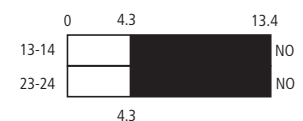
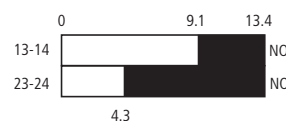
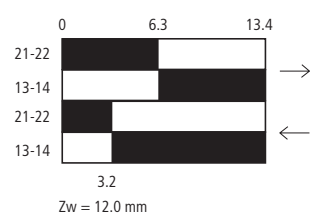
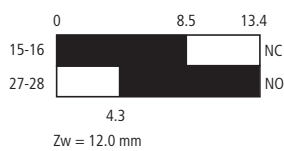
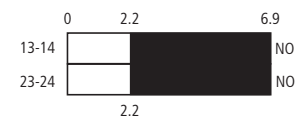
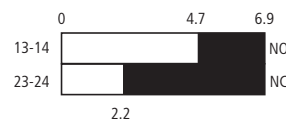
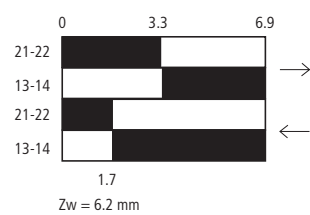
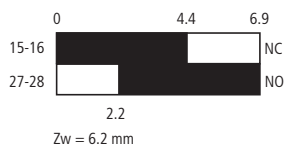
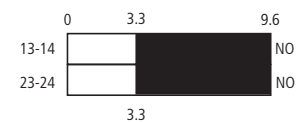
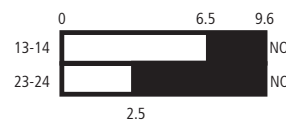
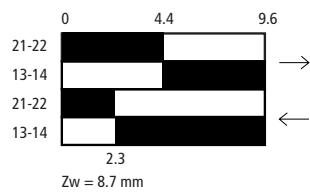
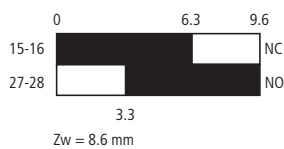
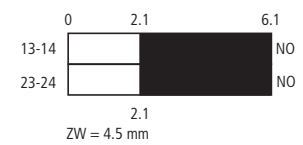
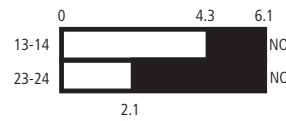
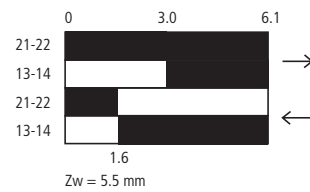
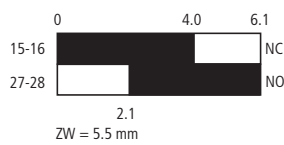
LS-20
LS-S20
LSM-20



LS-20A
LS-S20A
LSM-20A



5



Technical specifications

Complete devices IP66, IP67

LS, LSM

LSE11
LSE02

General				
Standards			IEC/EN 60947	IEC/EN 60947 EN 61000-4
Climatic proofing			Damp heat, constant to IEC 60068-2-78, Damp heat, constant, to IEC 60068-2-30	
Ambient temperature	°C		−25 - +70	−25 - +70
Mounting position			Any	Any
Protection Style			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)
Flexible with ferrules to DIN 46228	mm ²		1 x (0.5 - 1.5)	1 x (0.5 - 1.5)
Power Supply				
Device Voltage Rating	U _e	V DC	—	12 - 30
Rated Current				
12 V	I _e	mA	—	15
24 V	I	mA	—	18
30 V	I	mA	—	19
Contacts/Switching capacity				
Rated impulse withstand voltage	U _{imp}	V AC	4000	—
Rated insulation voltage	U _i	V	400	—
Overvoltage category/pollution degree			Overvoltage category/pollution degree III/3	Overvoltage category/pollution degree III/3
Rated Current				
AC-15	24 V	I _e	A	6
	230 V/240 V	I _e	A	6
	400 V/415 V	I _e	A	4
DC-13	24 V	I _e	A	3
	110 V	I _e	A	0.8
	220 V	I _e	A	0.3
Analog output Q1				
Output voltage (max. 10 mA)		V DC	—	—
Output current		mA	—	—
Fault scenario		V	—	—
Resolution		Steps	—	—
Step tolerance		Steps	—	—
Shunt resistor, resistive load		Ω	—	—
Digital diagnostics output Q2 (pulse-switching PNP)				
Response threshold		V	—	—
		mA	—	—
Fault scenario		V	—	—
Control circuit reliability				
At 24 V DC/5 mA		HF	Fault probability < 10 ⁻⁷ , < 1 failure in 10 ⁷ operations	—
At 5 V DC/1 mA		HF	Fault probability < 10 ⁻⁶ < 1 failure in 5 x 10 ⁶ operations	—
Mains frequency		Hz	Max. 400	—
Short-circuit rating to IEC/EN 60947-5-1				
Max. fuse		A gG/gL	6	—
Repeat accuracy		mm	±0.02	±0.02
UL-File No. E29184				
Rating data for approved types to UL/CSA				
Pilot duty				
AC operated			A300	—
DC operated			Q300 (1 A, 250 V DC)	Q300 (0.2 A, 24 V DC)
UL-approved protection types			NEMA 4, 12, 13	NEMA 4, 12, 13

IP66, IP67 complete devices

LS, LSM

LSE11
LSE02**Mechanical data**

Life point

Slow-action switch	c (contacts)	x 10 ⁶	8	—
Snap-action contact	c (contacts)	x 10 ⁶	8	3 (electronic)
Contact temperature of roller head		°C	≤ 100	≤ 100

Mechanical shock resistance (half-sinusoidal shock, 20 ms)

Slow-action switch		g	25	—
Snap-action contact		g	—	—
Basic device		g	—	30

Operating frequency	Operations/h		≤ 6000	≤ 3000
Operating point			—	0.5 - 5.5 mm, freely adjustable
Hysteresis		mm	—	0.4
Resolution		mm	—	0.04

drive

Mechanical

Actuating force at beginning/end of stroke

Base devices		N	1.0/8.0	3.5/8.0
LS(M)-XP		N	1.0/8.0	1.0/8.0
LS(M)-XL		N	1.0/8.0	1.0/8.0
LS(M)-XLA		N	1.0/8.0	1.0/8.0

Actuating torque of rotary drives

		Nm	0.2	0.2
--	--	----	-----	-----

Max. operating speed with DIN cam

Basic device for angle of actuation	$\alpha = 0^\circ/30^\circ$	m/s	1/0.5	1/0.5
LS(M)-XRL for angle of actuation	$\alpha = 0^\circ$	m/s	1.5	1.5
LS(M)-XRLA for angle of actuation	$\alpha = 30^\circ$, L = 125 mm	m/s	1.5	1.5
LS(M)-XRR for	L = 130 mm	m/s	1.5	1.5
LS(M)-XL for angle of actuation	$\alpha = 30^\circ/45^\circ$	m/s	1	1
LS(M)-XLA for angle of actuation	$\alpha = 30^\circ/45^\circ$	m/s	1	1
LS(M)-XP for angle of actuation	$\alpha = 0^\circ/30^\circ$	m/s	1/1	1/1

Electromagnetic compatibility (EMC)

Electrostatic discharge (ESD), to IEC EN 61000-4-2

Air discharge	kV	—	8
Contact discharge	kV	—	4

Electromagnetic fields (RFI), to IEC EN 61000-4-2

	V/m	—	10
--	-----	---	----

Burst, to IEC/EN 61000-4-4

Supply cables	kV	—	2
Signal cables	kV	—	2

High-energy pulses (surge) (IEC/EN 61000-4-5)

	kV	—	0.5
--	----	---	-----

Radiated RFI, to IEC/EN 61000-4-6

	V	—	10
--	---	---	----

NotesAccessories for the Cage-Clamp terminals from Wago:
power comb, gray, Wago Article No. 264-402

Plug connector

M12A(B)

M12A(B)

General

Pole		4	5
Protection Style		IP66	IP66
Lifespan, mechanical	c (contacts)	> 500	> 500

Characteristics

Rated operating voltage	U _e	V AC	250	125
Rated Current	I _e	A	1	1
Overvoltage category/pollution degree			II/3	II/3