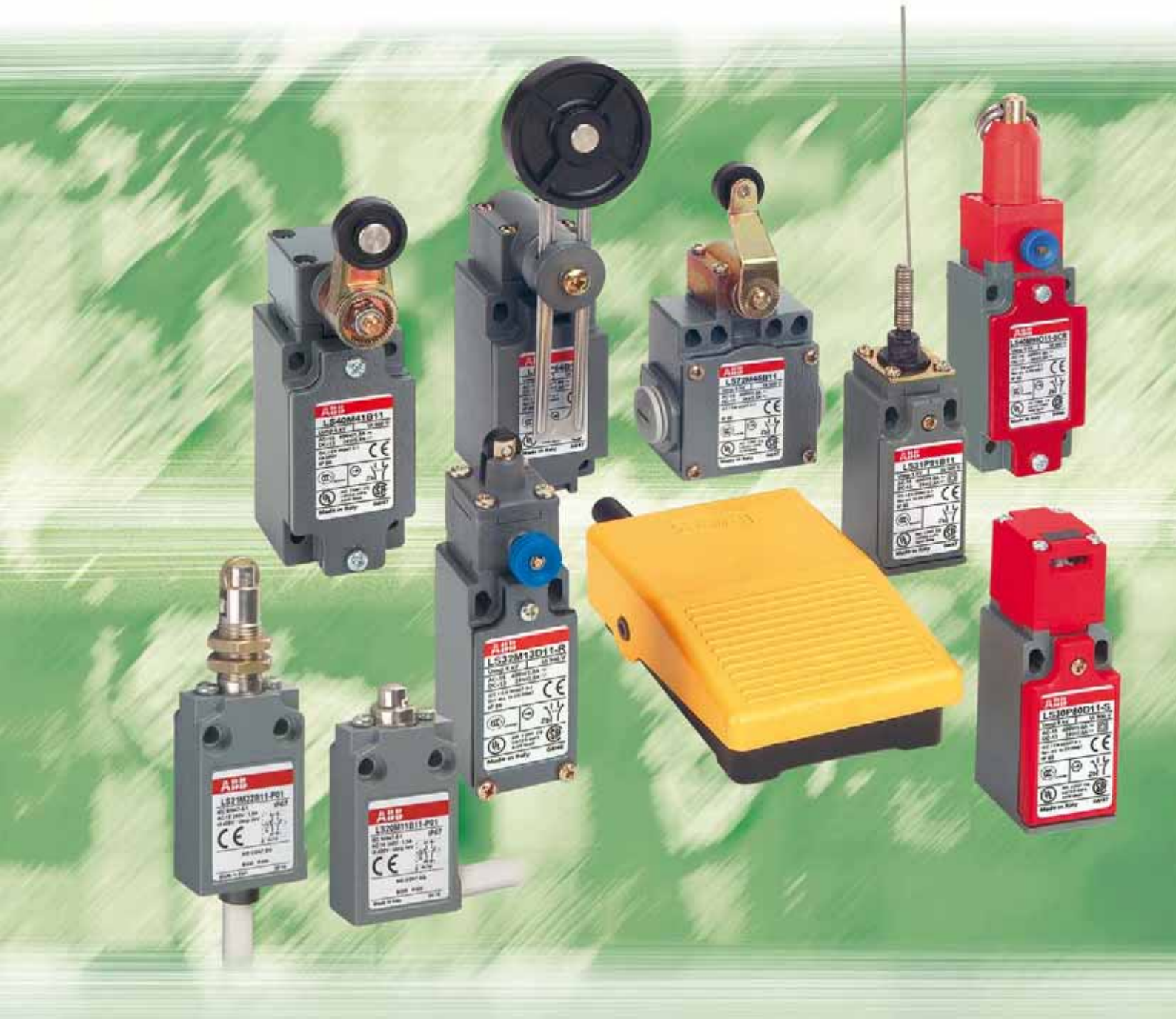
Short Form Catalogue

LS Series
Limit Switches



ABB

LS Series Limit Switches
Foot Switches

Contents

30 mm width
Metal Casing IP67
Plastic Casing IP67 – Double insulation ⧈

LS2 □□ ...

M = Metal casing
P = Plastic casing

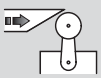
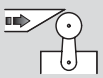
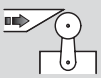
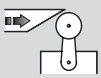
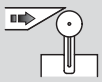
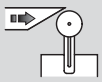
0 = Cable output left / right
1 = Cable output bottom




Type	LS2..M11, LS2..P11	LS2..M12, LS2..P12	LS2..M13, LS2..P13	LS2..M14, LS2..P14
Actuator	Brass plain plunger	Steel roller plunger	Plastic roller plunger	Cross steel roller plunger
Action type				
CENELEC Conformity / Positive opening operation	–	–	–	–






LS2..M41, LS2..P41	LS2..M42, LS2..P42	LS2..M45, LS2..P45	LS2..M46, LS2..P46	LS2..M51, LS2..P51	LS2..54, LS2..P54
ø14 plastic roller lever	ø14 steel roller lever	ø18 plastic roller with bent lever	ø18 steel roller with bent lever	Adjustable ø18 plastic roller lever	Adjustable ø18 steel roller lever
					
–	–	–	–	–	–

35 mm width
Metal Casing IP67
Plastic Casing IP67 – Double insulation ⧈

LS2 □□ ...

M = Metal casing
P = Plastic casing

5 = Cable output left / right
6 = Cable output bottom

As the range is very large, the products shown there are the most common. For the complete range, please consult us.




Type	LS2..M11, LS2..P11	LS2..M12, LS2..P12	LS2..M14, LS2..P14	LS2..M21, LS2..P21
Actuator	Brass plain plunger	Steel roller plunger	Cross steel roller plunger	Brass plain plunger with fixing nuts
Action type				
CENELEC conformity / Positive opening operation	–	–	–	–

Limit Switches - IP67

LS2..M15, LS2..P15

Cross plastic roller plunger

–

LS2..M21, LS2..P21

Brass plain plunger with fixing nuts

–

LS2..M22, LS2..P22

Steel roller plunger with fixing nuts

–

LS2..M23, LS2..P23

Plastic roller plunger with fixing nuts

–

LS2..M24, LS2..P24

Cross roller plunger with fixing nuts

–

LS2..M25, LS2..P25

Cross plastic roller plunger with fixing nuts

–

LS2..M71, LS2..P71

Adjustable ø3 steel rod lever

–

LS2..M72, LS2..P72

Adjustable ø3 fibre-glass rod lever

–

LS2..M73, LS2..P73

Adjustable ø6 polyamide rod lever

–

LS2..M78, LS2..P78

Adjustable ⧄3 steel rod lever

–

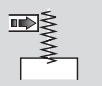
LS2..M91, LS2..P91

Spring rod

– –

LS2..M92, LS2..P92

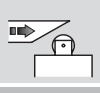
Flexible rod with insulated end



– –

LS2..M22, LS2..P22

Steel roller plunger with fixing nuts



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LS2..M24, LS2..P24

Cross steel roller lever with fixing nuts

–

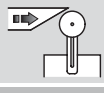
LS2..M41, LS2..P41

ø14 Plastic roller lever

–

LS2..M51, LS2..P51

Adjustable ø18 plastic roller lever



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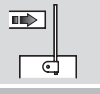
LS2..M71, LS2..P71

Adjustable ø3 steel rod lever



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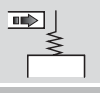
LS2..M91, LS2..P91

Spring rod



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LS Series Limit Switches

Plastic Casing IP65 - Double insulation

30 mm **LS3□P...**
60 mm **LS7□P...**
Width

Electrical Connection
- **0** = Pg 13.5
- **1** = Pg 11
- **2** = M16 x 1.5
- **3** = M20 x 1.5
- **5** = 1/2" NPT

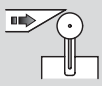
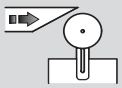
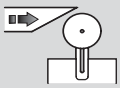



Type	LS..P10, LS..P11	LS..P12, LS..P13	LS..P14	LS..P31
Actuator	Plain plunger	Roller plunger	Plain plunger	Roller lever
Action type				
CENELEC conformity / Positive opening operation	EN 50047 →	EN 50047 →	EN 50047 →	EN 50047 →

Nota: For LS7□P... (60 mm width) compatible with EN 50047 (fixing)






	LS..P51, LS..P53	LS..P52	LS..P55	LS..P61	LS..P62	LS..P71, LS..P72
	Adjustable roller lever	Adjustable roller lever	Adjustable roller lever	Flexible lever	Flexible lever	Adjustable rod lever
						
	– →	– →	– →	– ⊗	– ⊗	– →

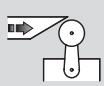
Plastic Casing IP65 - Double insulation

40 mm **LS4□P...**
Width

Electrical Connection
- **0** = Pg 13.5
- **3** = M20 x 1.5
- **5** = 1/2" NPT

As the range is very large, the products shown here are the most common. For the complete range, please consult us.




Type	LS..P11	LS..P13	LS..P31	LS..P41
Actuator	Plain plunger	Roller plunger	Roller lever	Roller lever
Action type				
CENELEC conformity / Positive opening operation	EN 50041 →	EN 50041 →	– →	EN 50041 →

Plastic Casing IP65

LS..P32

Roller lever

–

LS..P35

Roller lever

EN 50047

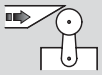
LS..P38

Adjustable roller lever

–

LS..P41, LS..P43

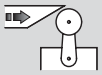
Roller lever



EN 50047

LS..P42

Roller lever



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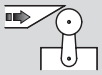
LS..P45, LS..P46

Roller lever



–

LS..P73

Adjustable rod lever

–

LS..P74

Adjustable rod lever

–

LS..P78

Adjustable rod lever

–

LS..P91

Flexible rod

–

LS..P92

Flexible rod

–

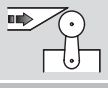
LS..P98B11-A

Pull action

–

LS..P44

Roller lever



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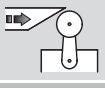
LS..P51

LS..P54

Adjustable roller levers



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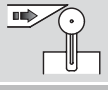

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LS..P61

Adjustable flexible and rigid rod levers

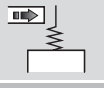
–

LS..P72

EN 50041

LS..P91

Flexible rod



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LS Series Limit Switches

Metal Casing IP66

30 mm **LS3□M...**
60 mm **LS7□M...**
Width

Electrical Connection
- **0** = Pg 13.5
- **1** = Pg 11
- **2** = M16 x 1.5
- **3** = M20 x 1.5
- **5** = 1/2" NPT

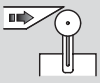
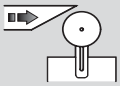
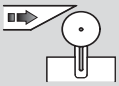



Type	LS..M11	LS..M12, LS..M13	LS..M14	LS..M31
Actuator	Plain plunger	Roller plunger	Plain plunger	Roller lever
Action type				
CENELEC conformity / Positive opening operation	EN 50047 ⊕	EN 50047 ⊕	EN 50047 ⊕	EN 50047 ⊕

Nota: For LS7□M... (60 mm width) compatible with EN 50047 (fixing)






LS..M51, LS..M53	LS..M52	LS..M55	LS..M61	LS..M62	LS..M71, LS..M72
Adjustable roller lever	Adjustable roller lever	Adjustable roller lever	Flexible lever	Flexible lever	Adjustable rod lever
					
– ⊕	– ⊕	– ⊕	– ⊗	– ⊗	– ⊕

Metal Casing IP66

40 mm **LS4□M...**
Width

Electrical Connection
- **0** = Pg 13.5
- **3** = M20 x 1.5
- **5** = 1/2" NPT

As the range is very large, the products shown here are the most common. For the complete range, please consult us.



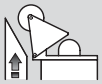


Type	LS..M11	LS..M13	LS..M21	LS..M22	LS..M31
Actuator	Plain plunger	Roller plunger	Plain plunger	Roller plunger	Roller lever
Action type					
CENELEC conformity / Positive opening operation	EN 50041 ⊕	EN 50041 ⊕	EN 50041 ⊕	EN 50041 ⊕	– ⊕

Metal Casing IP66

LS..M32

Roller lever



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LS..M35

Roller lever

EN 50047

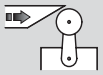
LS..M38

Adjustable roller lever

–

LS..M41, LS..M43

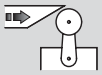
Roller lever



EN 50047

LS..M42

Roller lever



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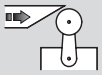
LS..M45, LS..M46

Roller lever



–

LS..M73

Adjustable rod lever

–

LS..M74

Adjustable rod lever

–

LS..M78

Adjustable rod lever

–

LS..M91

Flexible rod

–

LS..M92

Flexible rod

–

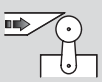
LS..M98B11-A

Pull action

–

LS..M41

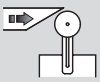
Roller lever



EN 50041

LS..M51

Adjustable roller levers



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LS..M54

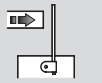
–

LS..M61

Adjustable flexible and rigid rod levers

–

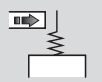
LS..M72



EN 50041

LS..M91

Flexible rod



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LS Series Limit Switches

Safety Limit Switches

30 mm Width

LS3 □ □ ...

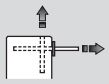
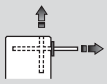
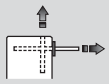
P = Plastic casing
M = Metal casing

Electrical Connection
0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

40 mm Width

LS4 □ □ ...

Electrical Connection
0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Limit Switches	LS3..P80..-S	LS3..M80..-S	LS3..P81..-S	LS3..M81..-S	LS4..P80..-S	LS4..M80..-S
Operating head options:	Adjustable head		Pivoting head		Adjustable head	
Action type: **Translation with small latch (key)**						
Positive opening operation	⊖		⊖		⊖	

Keys

Keys

Keys for LS3... limit switches	LSA30P03	LSA30P04	LSA30P05	LSA30P06	LSA30P07	LSA30P08	LSA30P09
Keys for LS4... limit switches	—	—	LSA40X05	LSA40X06	LSA40X07	LSA40X08	LSA40X09
Actuator	Right angle key	Straight key	Right angle key	Straight key	Right angle key + shock absorber	Straight key + shock absorber	Adjustable angle key
Fixing	22 mm	22 mm	13 mm	13 mm	15 mm	15 mm	40 mm

Limit Switches with Latch and Manual Reset

30 mm Width

LS3 □ □ ...

P = Plastic casing
M = Metal casing

Electrical Connection
0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

Limit Switches	LS3..P11..-R	LS3..M11..-R	LS3..P12..-R	LS3..M12..-R
Actuator:	Galvanized steel plain plunger		Galvanized steel roller plunger	
Action type				
Positive opening operation	⊖		⊖	

Safety Limit Switches with Pulling Cable

30 mm Width

LS3 □ □ ...

P = Plastic casing
M = Metal casing

Electrical Connection
0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

40 mm 60 mm Width

LS4 □ **M** ...
LS6 □ **M** ...

Electrical Connection
0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Limit Switches	LS3..P98..-SCR	LS3..M98..-SCR	LS4..M98..-SCR	LS6..M98..-SCR
Actuator:	By red cable		By red cable	
Action type: **Pulling**				
Positive opening operation				

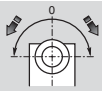
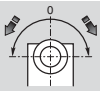
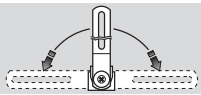
Safety Limit Switches with Rotative Axis or with Lever

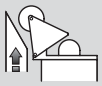
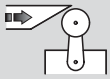
30 mm Width

LS3 □ □ ...

P = Plastic casing
M = Metal casing

Electrical Connection
0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

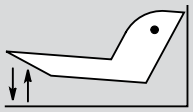
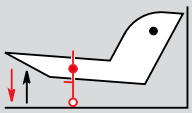
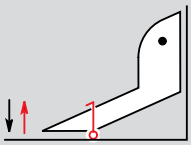
Limit Switches	LS3..P75..-S	LS3..M75..-S	LS3..P76..-S	LS3..M76..-S	LS3..P77..-S	LS3..M77..-S
Actuator:	Galvanized steel rotative axis		Stainless steel rotative axis		Galvanized steel lever	
Action type						
Positive opening operation						

LS3..P13..-R	LS3..M13..-R	LS3..P31..-R	LS3..M31..-R	LS3..P32..-R	LS3..M32..-R	LS3..P41..-R	LS3..M41..-R
Plastic roller plunger		Plastic roller lever on galvanized steel plunger				Rotary lever with plastic roller	
							
							

Foot Switches with Cover

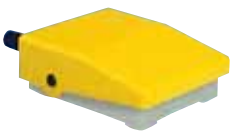
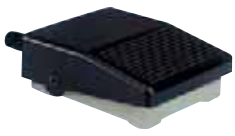
Double insulation
IP65

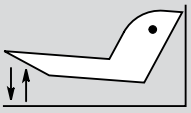
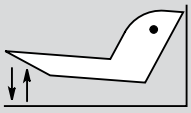


Foot Switches	IPS..1..	IPS..2..	IPS..3..
Actuator:	Free movement	Locked in neutral position	Latched in low position
Action type			
CENELEC conformity / Positive opening operation	–	–	–

Mini Foot Switches

IP40

Mini Foot Switches	IPM..1..	IPM..2..
Actuator:	Free movement	Free movement
Action type		
CENELEC conformity / Positive opening operation	–	–

LS Series Limit Switches
Foot Switches

Contents

LS20P ... LS26P.. and LS20M ... LS26M..
Prewired Limit Switches

Double Insulation ⧈ - Plastic Casing IP67 or Metal Casing IP67

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (5 A conventional thermal current).
- Electrically separated contacts (Zb shape).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are exceptional detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

LS20P ... LS26P limit switches, made of fibre-glass reinforced UL-V0 thermoplastic material, sealed with epoxy resin at the base on the body, offer double insulation ⧈ and a degree of protection IP67.

LS20M ... LS26M limit switches, made of zinc alloy (zamack), sealed with epoxy resin at the base on the body, offer a degree of protection IP67.

The casings come in 2 dimensions: **LS20 ... LS21**, 30 mm width, **LS25 ... LS26**, 35 mm width.

A variety of operating heads:
- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 2 x ø3 screws for LS20P...LS26P
Assembled using 2 x M3 screws for LS20M...LS26M

Casing:
- 30 mm or 35 mm width

Contact blocks:
- Contact configuration: 1 N.O. + 1 N.C.
- Positive opening operation ⊖
- Snap action or slow action
- Zb shape: the 2 contacts are electrically separated

Mounting the casing:
- 2 x M4 screws on the top part

Electrical connection:
- Cable output left/right or cable output bottom:
  for LS20P...LS26P
  - cable IEC 20/22 II PVC 4 x 0.75 mm²
  - cable UL 62 PVC 4 x AWG 18

  for LS20M...LS26M
  - cable IEC 20/22 II PVC 5 x 0.75 mm²
  - cable UL 62 PVC 5 x AWG 18
- Standard length: 1 m (other lenghts on request)
- Other outputs (on request):
  - connector M12 or 7/8" NPT
  - cable with end connector

- Compounding with epoxy resin for IP67 protection degree

Type

Example:	L	S	2	0	P	1	1	B	1	1	–	P	0	1
Example:	L	S	2	5	M	5	1	D	1	1	–	U	0	2
	L	S									–			

Limit Switch ..... **LS**

Casing width: **30** mm **2**
1 cable output left / right **0**
1 cable output bottom **1**

Casing width: **35** mm **2**
1 cable output left / right **5**
1 cable output bottom **6**

Plastic casing ..... **P**
Metal casing ..... **M**

Operating heads
Codes ..... **10 ... 98**

Cable length:
01 ..... 1 m
02 ..... 2 m
03 ..... 3 m
05 ..... 5 m
10 ..... 10 m (Max. for UL cable)
11 ... 99 (for IEC cable only)

P ..... cable IEC 20/22 II - PVC
U ..... cable UL 62 - PVC

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts

Snap action:
B ..... Zb Snap

Dependent (slow) action:
D ..... Zb Non-overlapping late make

LS3..P.., LS4..P.. and LS7..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are exceptional detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

LS3..P..., **LS4..P...** and **LS7..P...**, limit switches, which are made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation ⧈ and a degree of protection IP65.

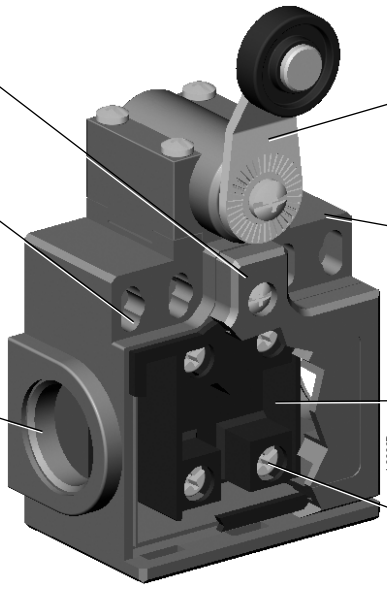
The casings come in 3 dimensions: **LS3..P...** 30 mm width, **LS4..P...** 40 mm width, **LS7..P...** 60 mm width.

Cover:
- Closed using 1 x ø3 screw for 30 & 60 mm width
- Self clipping closure for 40 mm width

One piece sealing gasket to ensure tightness

Mounting the casing:
- 2 x M4 screws for 30 mm width
- 2 or 4 x M5 screws for 40 mm width
- 2 or 4 x M4 screws for 60 mm width

Electrical connection:
- 1 (LS30P), 1 (LS40P) or 2 (LS70P) cable inlets for Pg 13.5 cable gland
- 1 (LS31P) or 2 (LS71P) cable inlets for Pg 11 cable gland
- 1 (LS32P) or 2 (LS72P) cable inlets for ISO 16 cable gland
- 1 (LS33P), 1 (LS43P) or 2 (LS73P) cable inlets for ISO 20 cable gland
- 1 (LS35P) cable inlet by 1/2" NPT plastic adaptor
- 1 (LS45P) cable inlet for 1/2" NPT cable gland
- 1 (LS75P) cable inlet by 1/2" NPT plastic adaptor + 1 cable inlet Pg11 for additional 1/2" NPT plastic adaptor (on request)
- Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer. (on request)



A variety of operating heads:
- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 4 x ø3 screws for 30 & 60 mm width
Assembled using 4 x ø4 screws for 40 mm width

Casing:
- 30 mm width with standardized dimensions according to EN 50047
- 40 mm width with standardized dimensions according to EN 50041
- 60 mm width compatible with EN 50047 (Fixing)

Block of 2 contacts:
- Contact configuration: 1 N.O. + 1 N.C., 2 N.O., 2 N.C.
- Positive opening operation ⊖
- Snap action or slow action
- The 2 contacts are electrically separated

Connecting terminals:
- M3.5 (+,–) pozidriv 2 screw (Screw head with captive cable clamp)
- Markings conform with IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Type

Example: L S | 7 2 | P | 4 1 | B 1 1

L S

Limit **S**witch ..... **LS**

Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet M16 x 1.5 for ISO 16 cable gland **2**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor delivered not mounted **5**

Casing width: **4**0 mm **4**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet for 1/2" NPT cable gland **5**

Casing width: **6**0 mm **7**
2 cable inlets for Pg 13.5 cable gland **0**
2 cable inlets for Pg 11 cable gland **1**
2 cable inlets M16 x 1.5 for ISO 16 cable gland **2**
2 cable inlets M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor + 1 cable inlet Pg 11 for additional 1/2" NPT plastic adaptor (on request) **5**

P ..... **P**lastic casing

Operating heads: (see panorama)
10 ... **98** ..... Codes

Snap action:
B ..... Zb Snap (except for 2 N.O. contacts)

Dependent (slow) action:
L ..... Slow / Simultaneous
D ..... Zb Non-overlapping late make
C ..... Zb Overlapping early make

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
20 ..... **2** N.O. contacts
02 ..... **2** N.C. contacts

LS3..M.., LS4..M.. and LS7..M.. Limit Switches

Metal Casing IP66

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are exceptional detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

Limit switches, **LS3..M..** and **LS7..M..**, which are made of zinc alloy (zamack), have a degree of protection IP66.

Limit switches, **LS4..M..**, which are made of aluminium alloy, have a degree of protection IP66.

The casings come in 3 dimensions: **LS3..M...** 30 mm width, **LS4..M...** 40 mm width, **LS7..M...** 60 mm width.

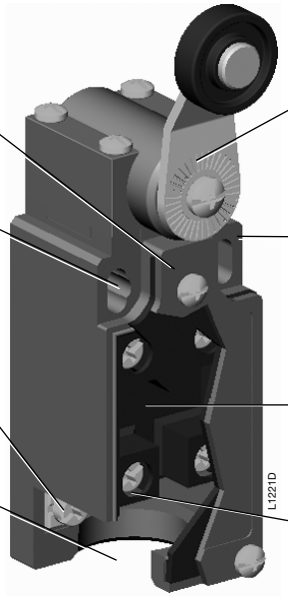
Cover:
- Closed using 3 x M3 screws for 30 mm width
- Closed using 4 x M3 screws for 60 mm width
- Closed using 2 x M4 screws for 40 mm width

One piece sealing gasket to ensure tightness

Mounting the casing:
- 2 x M4 screws for 30 mm width
- 2 or 4 x M5 screws for 40 mm width
- 2 or 4 x M4 screws for 60 mm width

Terminal for protective conductor placed near the cable inlet and marked: ⏚
- M3.5 (+,–) pozidriv 2 screw (Screw head with captive cable clamp)

Electrical connection:
- 1 (LS30M), 1 (LS40M) or 3 (LS70M) cable inlets for Pg 13.5 cable gland
- 1 (LS31M) or 3 (LS71M) cable inlets for Pg 11 cable gland
- 1 (LS32M) or 3 (LS72M) cable inlets for ISO 16 cable gland
- 1 (LS33M), 1 (LS43M) or 3 (LS73M) cable inlets for ISO 20 cable gland
- 1 (LS35M), 1 (LS45M) or 3 (LS75M) cable inlets for 1/2 NPT cable gland
- Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer. (on request)



A variety of operating heads:
- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 4 x M3 screws for 30 & 60 mm width
Assembled using 4 x M4 screws for 40 mm width

Casing:
- 30 mm width with standardized dimensions according to EN 50047.
- 40 mm width with standardized dimensions according to EN 50041.
- 60 mm width compatible with EN 50047 (Fixing).

Block of 2 contacts:
- Contact configuration: 1 N.O. + 1 N.C. or 2 N.O. or 2 N.C.
- Positive opening operation ⊖
- Snap action or slow action
- The 2 contacts are electrically separated

Connecting terminals:
- M3.5 (+,–) pozidriv 2 screw (Screw head with captive cable clamp)
- Markings conform with IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Type

Example: L S | 3 2 | M | 4 1 | B 1 1

L S

Limit **S**witch ..... **LS**

Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet M16 x 1.5 for ISO 16 cable gland **2**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet for 1/2" NPT cable gland **5**

Casing width: **4**0 mm **4**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet for 1/2" NPT cable gland **5**

Casing width: **6**0 mm (new casing) **7**
3 cable inlets for Pg 13.5 cable gland **0**
3 cable inlets for Pg 11 cable gland **1**
3 cable inlets M16 x 1.5 for ISO 16 cable gland **2**
3 cable inlets M20 x 1.5 for ISO 20 cable gland **3**
3 cable inlets for 1/2" NPT cable gland **5**

M

Operating heads: (see panorama)
10 ... 98 ..... Codes

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
20 ..... **2** N.O. contacts
02 ..... **2** N.C. contacts

Snap action:
B .....Zb Snap (except for 2 N.O. contacts)

Dependent (slow) action:
L .....Slow / Simultaneous
D .....Zb Non-overlapping late make
C .....Zb Overlapping early make

M ..... **M**etal casing

LS2..P.. Limit Switches

Double insulation ⧈ - Plastic Casing IP67
30 mm and 35 mm Width

LS20P11B11

LS21P12B11

LS25P16B11

LS20P21B11

LS20P22B11

LS20P41B11

LS20P51B11

LS25P91B11

LS20P: 1 cable output left / right ..... 0 ..... 5 9
LS21P: 1 cable output bottom ..... 1 ..... 6 0
LS25P: 1 cable output left / right ..... 5 ..... 6 7
LS26P: 1 cable output bottom ..... 6 ..... 6 8

Plastic Casing - IP67
30 mm Width

Plastic Casing - IP67
35 mm Width

Ordering Details

see table below — see table below

Contact blocks		Type	Order code	Weight kg (1)(2)
		state cable output code ☐ ☐☐	state cable output code ☐☐ ☐☐	Packing 1 piece
B11	**D11**			
Brass plain plunger (nickel plated)				
1	-	LS2 ☐ P11B11-P ☐☐	1SBV01 ☐☐ 11R32 ☐☐	0.125
1	-	LS2 ☐ P11B11-U ☐☐	1SBV01 ☐☐ 11R38 ☐☐	0.125
-	1	LS2 ☐ P11D11-P ☐☐	1SBV01 ☐☐ 11R33 ☐☐	0.125
-	1	LS2 ☐ P11D11-U ☐☐	1SBV01 ☐☐ 11R39 ☐☐	0.125
Steel roller plunger (zinc plated)				
1	-	LS2 ☐ P12B11-P ☐☐	1SBV01 ☐☐ 12R32 ☐☐	0.130
1	-	LS2 ☐ P12B11-U ☐☐	1SBV01 ☐☐ 12R38 ☐☐	0.130
-	1	LS2 ☐ P12D11-P ☐☐	1SBV01 ☐☐ 12R33 ☐☐	0.130
-	1	LS2 ☐ P12D11-U ☐☐	1SBV01 ☐☐ 12R39 ☐☐	0.130
Brass plain plunger (nickel plated) **with dust protection**				
1	-	LS2 ☐ P16B11-P ☐☐	1SBV01 ☐☐ 16R32 ☐☐	0.125
1	-	LS2 ☐ P16B11-U ☐☐	1SBV01 ☐☐ 16R38 ☐☐	0.125
-	1	LS2 ☐ P16D11-P ☐☐	1SBV01 ☐☐ 16R33 ☐☐	0.125
-	1	LS2 ☐ P16D11-U ☐☐	1SBV01 ☐☐ 16R39 ☐☐	0.125
Brass plain plunger (zinc plated) **with fixing nuts**				
1	-	LS2 ☐ P21B11-P ☐☐	1SBV01 ☐☐ 21R32 ☐☐	0.140
1	-	LS2 ☐ P21B11-U ☐☐	1SBV01 ☐☐ 21R38 ☐☐	0.140
-	1	LS2 ☐ P21D11-P ☐☐	1SBV01 ☐☐ 21R33 ☐☐	0.140
-	1	LS2 ☐ P21D11-U ☐☐	1SBV01 ☐☐ 21R39 ☐☐	0.140
Steel roller plunger (zinc plated) **with fixing nuts**				
1	-	LS2 ☐ P22B11-P ☐☐	1SBV01 ☐☐ 22R32 ☐☐	0.145
1	-	LS2 ☐ P22B11-U ☐☐	1SBV01 ☐☐ 22R38 ☐☐	0.145
-	1	LS2 ☐ P22D11-P ☐☐	1SBV01 ☐☐ 22R33 ☐☐	0.145
-	1	LS2 ☐ P22D11-U ☐☐	1SBV01 ☐☐ 22R39 ☐☐	0.145
ø14 plastic (polyacetal) **roller lever**				
1	-	LS2 ☐ P41B11-P ☐☐	1SBV01 ☐☐ 41R32 ☐☐	0.175
1	-	LS2 ☐ P41B11-U ☐☐	1SBV01 ☐☐ 41R38 ☐☐	0.175
-	1	LS2 ☐ P41D11-P ☐☐	1SBV01 ☐☐ 41R33 ☐☐	0.175
-	1	LS2 ☐ P41D11-U ☐☐	1SBV01 ☐☐ 41R39 ☐☐	0.175
Adjustable ø18 plastic (polyacetal) **roller lever**				
1	-	LS2 ☐ P51B11-P ☐☐	1SBV01 ☐☐ 51R32 ☐☐	0.190
1	-	LS2 ☐ P51B11-U ☐☐	1SBV01 ☐☐ 51R38 ☐☐	0.190
-	1	LS2 ☐ P51D11-P ☐☐	1SBV01 ☐☐ 51R33 ☐☐	0.190
-	1	LS2 ☐ P51D11-U ☐☐	1SBV01 ☐☐ 51R39 ☐☐	0.190
Spring rod				
1	-	LS2 ☐ P91B11-P ☐☐	1SBV01 ☐☐ 91R32 ☐☐	0.190
1	-	LS2 ☐ P91B11-U ☐☐	1SBV01 ☐☐ 91R38 ☐☐	0.190
-	1	LS2 ☐ P91D11-P ☐☐	1SBV01 ☐☐ 91R33 ☐☐	0.190
-	1	LS2 ☐ P91D11-U ☐☐	1SBV01 ☐☐ 91R39 ☐☐	0.190

(1) With LS25 & LS26 add extra 0.005 kg - (2) With 1 m of cable (add 0.07 kg by extra meter length)

Length cable code (Other length on request)

Cable length	Code ☐☐	Code ☐☐
1 m	0 1	0 1
2 m	0 2	0 2
5 m	0 5	0 5
10 m	1 0	1 0

Note: **-P** ☐☐ = cable IEC 20/22 II PVC, **-U** ☐☐ = cable UL 62 PVC maxi. 10 m

LS3..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 30 mm Width

LS30P11B11

LS30P31B11

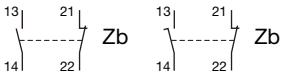
LS30P41B11

LS30P52B11

LS30P91B11

LS30P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 2
LS31P: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 0 1
LS32P: 1 cable inlet for ISO 16 cable gland..... 2 ..... 0 3
LS33P: 1 cable inlet for ISO 20 cable gland..... 3 ..... 2 2
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 1

Ordering Details

Contact blocks		Type	Order code	Weight kg (1)
				
B11	D11	state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
Steel plain plunger (zinc plated)				
1	-	LS3 ☐ P11B11	1SBV01 ☐☐ 11R1211	0.070
-	1	LS3 ☐ P11D11	1SBV01 ☐☐ 11R1411	0.070
ø11 plastic (polyacetal) **roller plunger**				
1	-	LS3 ☐ P13B11	1SBV01 ☐☐ 13R1211	0.070
-	1	LS3 ☐ P13D11	1SBV01 ☐☐ 13R1411	0.070
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated) **horizontal action**				
1	-	LS3 ☐ P31B11	1SBV01 ☐☐ 31R1211	0.070
-	1	LS3 ☐ P31D11	1SBV01 ☐☐ 31R1411	0.070
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated) **vertical action**				
1	-	LS3 ☐ P32B11	1SBV01 ☐☐ 32R1211	0.075
-	1	LS3 ☐ P32D11	1SBV01 ☐☐ 32R1411	0.075
ø18 plastic (polyacetal) **roller lever**				
1	-	LS3 ☐ P41B11	1SBV01 ☐☐ 41R1211	0.090
-	1	LS3 ☐ P41D11	1SBV01 ☐☐ 41R1411	0.090
ø50 rubber roller lever				
1	-	LS3 ☐ P42B11	1SBV01 ☐☐ 42R1211	0.120
-	1	LS3 ☐ P42D11	1SBV01 ☐☐ 42R1411	0.120
Adjustable ø18 plastic (polyacetal) **roller lever**				
1	-	LS3 ☐ P51B11	1SBV01 ☐☐ 51R1211	0.100
-	1	LS3 ☐ P51D11	1SBV01 ☐☐ 51R1411	0.100
Adjustable ø50 rubber roller lever				
1	-	LS3 ☐ P52B11	1SBV01 ☐☐ 52R1211	0.130
-	1	LS3 ☐ P52D11	1SBV01 ☐☐ 52R1411	0.130
Adjustable ø3 fibre-glass rod lever				
1	-	LS3 ☐ P72B11	1SBV01 ☐☐ 72R1211	0.100
-	1	LS3 ☐ P72D11	1SBV01 ☐☐ 72R1411	0.100
Spring rod				
1	-	LS3 ☐ P91B11	1SBV01 ☐☐ 91R1211	0.080
-	1	LS3 ☐ P91D11	1SBV01 ☐☐ 91R1411	0.080

(1) For LS35P add 0.007 kg

LS4..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 40 mm Width

LS40P11B11

LS40P13B11

LS40P51B11

LS40P72B11

LS40P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 5
LS43P: 1 cable inlet for ISO 20 cable gland..... 3 ..... 0 7
LS45P: 1 cable inlet for 1/2" NPT cable gland..... 5 ..... 2 4

Ordering Details

Contact blocks		Type	Order code	Weight kg
 Zb **B11**	 Zb **D11**	state cable inlet code ☐	state cable inlet code ☐☐	Pack[ing] 1 piece
Steel plain plunger (zinc plated)				
1	-	LS4 ☐ P11B11	1SBV01 ☐☐ 11R1211	0.140
-	1	LS4 ☐ P11D11	1SBV01 ☐☐ 11R1411	0.140
ø12 stainless steel roller plunger				
1	-	LS4 ☐ P13B11	1SBV01 ☐☐ 13R1211	0.145
-	1	LS4 ☐ P13D11	1SBV01 ☐☐ 13R1411	0.145
ø22 plastic (polyacetal) **roller lever on steel plunger**				
1	-	LS4 ☐ P31B11	1SBV01 ☐☐ 31R1211	0.175
-	1	LS4 ☐ P31D11	1SBV01 ☐☐ 31R1411	0.175
ø22 plastic (polyacetal) **roller lever**				
1	-	LS4 ☐ P41B11	1SBV01 ☐☐ 41R1211	0.185
-	1	LS4 ☐ P41D11	1SBV01 ☐☐ 41R1411	0.185
ø50 rubber roller lever				
1	-	LS4 ☐ P44B11	1SBV01 ☐☐ 44R1211	0.205
-	1	LS4 ☐ P44D11	1SBV01 ☐☐ 44R1411	0.205
Adjustable ø22 plastic (polyacetal) **roller lever**				
1	-	LS4 ☐ P51B11	1SBV01 ☐☐ 51R1211	0.190
-	1	LS4 ☐ P51D11	1SBV01 ☐☐ 51R1411	0.190
Adjustable ø50 rubber roller lever				
1	-	LS4 ☐ P54B11	1SBV01 ☐☐ 54R1211	0.200
-	1	LS4 ☐ P54D11	1SBV01 ☐☐ 54R1411	0.200
Adjustable ø6 plastic (polyacetal) **rod lever**				
1	-	LS4 ☐ P72B11	1SBV01 ☐☐ 72R1211	0.185
-	1	LS4 ☐ P72D11	1SBV01 ☐☐ 72R1411	0.185

LS7..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 60 mm Width

LS72P11B11

LS72P31B11

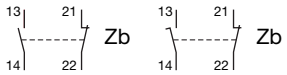
LS72P41B11

LS72P91B11

LS72P98B11-A

LS70P: 2 cable inlets for Pg 13.5 cable gland ..... 0 ..... 0 9
LS71P: 2 cable inlets for Pg 11 cable gland ..... 1 ..... 0 8
LS72P: 2 cable inlets for ISO 16 cable gland ..... 2 ..... 1 0
LS73P: 2 cable inlets for ISO 20 cable gland ..... 3 ..... 2 8
LS75P: 1 cable inlet by 1/2" NPT plastic adaptor + 1 cable inlet Pg 11
for additional 1/2" NPT plastic adaptor..... 5 ..... 2 7

Ordering Details

Contact blocks		Type	Order code	Weight kg (1)
		state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
B11	**D11**			
Steel plain plunger (zinc plated)				
1	-	LS7 ☐ P11B11	1SBV01 ☐☐ 11R1211	0.100
-	1	LS7 ☐ P11D11	1SBV01 ☐☐ 11R1411	0.100
ø11 plastic (polyacetal) **roller plunger**				
1	-	LS7 ☐ P13B11	1SBV01 ☐☐ 13R1211	0.100
-	1	LS7 ☐ P13D11	1SBV01 ☐☐ 13R1411	0.100
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated)				
1	-	LS7 ☐ P31B11	1SBV01 ☐☐ 31R1211	0.105
-	1	LS7 ☐ P31D11	1SBV01 ☐☐ 31R1411	0.105
ø18 plastic (polyacetal) **roller lever**				
1	-	LS7 ☐ P41B11	1SBV01 ☐☐ 41R1211	0.125
-	1	LS7 ☐ P41D11	1SBV01 ☐☐ 41R1411	0.125
ø50 rubber roller lever				
1	-	LS7 ☐ P42B11	1SBV01 ☐☐ 42R1211	0.145
-	1	LS7 ☐ P42D11	1SBV01 ☐☐ 42R1411	0.145
Adjustable ø18 plastic (polyacetal) **roller lever**				
1	-	LS7 ☐ P51B11	1SBV01 ☐☐ 51R1211	0.135
-	1	LS7 ☐ P51D11	1SBV01 ☐☐ 51R1411	0.135
Adjustable ø50 rubber roller lever				
1	-	LS7 ☐ P52B11	1SBV01 ☐☐ 52R1211	0.155
-	1	LS7 ☐ P52D11	1SBV01 ☐☐ 52R1411	0.155
Adjustable ø3 fibre-glass rod lever				
1	-	LS7 ☐ P72B11	1SBV01 ☐☐ 72R1211	0.120
-	1	LS7 ☐ P72D11	1SBV01 ☐☐ 72R1411	0.120
Spring rod				
1	-	LS7 ☐ P91B11	1SBV01 ☐☐ 91R1211	0.110
-	1	LS3 ☐ P91D11	1SBV01 ☐☐ 91R1411	0.110
Pull action with ring				
1	-	LS7 ☐ P98B11-A	1SBV01 ☐☐ 98R1211	0.145
-	1	LS7 ☐ P98D11-A	1SBV01 ☐☐ 98R1411	0.145

(1) For LS7**5**P add 0.007 kg

LS2..M.. Limit Switches

Metal Casing IP67 - 30 mm and 35 mm Width

LS20M11B11

LS21M12B11

LS25M16B11

LS20M21B11

LS20M22B11

LS20M41B11

LS20M51B11

LS25M91B11

LS20M: 1 cable output left / right ..... 0 ..... 5 5
LS21M: 1 cable output bottom ..... 1 ..... 5 6
LS25M: 1 cable output left / right ..... 5 ..... 6 3
LS26M: 1 cable output bottom ..... 6 ..... 6 4

Metal Casing - IP67
30 mm Width
Metal Casing - IP67
35 mm Width

Ordering Details

see table below — see table below

Contact blocks		**Type**	**Order code**	**Weight kg** (1)(2)
13 21 Zb 14 22	13 21 Zb 14 22	state cable output code	state cable output code	Packing
B11	**D11**	☐ ☐☐	☐☐ ☐☐	1 piece
Brass plain plunger (nickel plated)				
1	-	LS2 ☐ M11B11-P ☐☐	1SBV01 ☐☐ 11R20 ☐☐	0.175
1	-	LS2 ☐ M11B11-U ☐☐	1SBV01 ☐☐ 11R26 ☐☐	0.175
-	1	LS2 ☐ M11D11-P ☐☐	1SBV01 ☐☐ 11R21 ☐☐	0.175
-	1	LS2 ☐ M11D11-U ☐☐	1SBV01 ☐☐ 11R27 ☐☐	0.175
Steel roller plunger (zinc plated)				
1	-	LS2 ☐ M12B11-P ☐☐	1SBV01 ☐☐ 12R20 ☐☐	0.180
1	-	LS2 ☐ M12B11-U ☐☐	1SBV01 ☐☐ 12R26 ☐☐	0.180
-	1	LS2 ☐ M12D11-P ☐☐	1SBV01 ☐☐ 12R21 ☐☐	0.180
-	1	LS2 ☐ M12D11-U ☐☐	1SBV01 ☐☐ 12R27 ☐☐	0.180
Brass plain plunger (nickel plated) **with dust protection**				
1	-	LS2 ☐ M16B11-P ☐☐	1SBV01 ☐☐ 16R20 ☐☐	0.175
1	-	LS2 ☐ M16B11-U ☐☐	1SBV01 ☐☐ 16R26 ☐☐	0.175
-	1	LS2 ☐ M16D11-P ☐☐	1SBV01 ☐☐ 16R21 ☐☐	0.175
-	1	LS2 ☐ M16D11-U ☐☐	1SBV01 ☐☐ 16R27 ☐☐	0.175
Brass plain plunger (nickel plated) **with fixing nuts**				
1	-	LS2 ☐ M21B11-P ☐☐	1SBV01 ☐☐ 21R20 ☐☐	0.190
1	-	LS2 ☐ M21B11-U ☐☐	1SBV01 ☐☐ 21R26 ☐☐	0.190
-	1	LS2 ☐ M21D11-P ☐☐	1SBV01 ☐☐ 21R21 ☐☐	0.190
-	1	LS2 ☐ M21D11-U ☐☐	1SBV01 ☐☐ 21R27 ☐☐	0.190
Steel roller plunger (zinc plated) **with fixing nuts**				
1	-	LS2 ☐ M22B11-P ☐☐	1SBV01 ☐☐ 22R20 ☐☐	0.195
1	-	LS2 ☐ M22B11-U ☐☐	1SBV01 ☐☐ 22R26 ☐☐	0.195
-	1	LS2 ☐ M22D11-P ☐☐	1SBV01 ☐☐ 22R21 ☐☐	0.195
-	1	LS2 ☐ M22D11-U ☐☐	1SBV01 ☐☐ 22R27 ☐☐	0.195
ø14 plastic (polyacetal) **roller lever**				
1	-	LS2 ☐ M41B11-P ☐☐	1SBV01 ☐☐ 41R20 ☐☐	0.225
1	-	LS2 ☐ M41B11-U ☐☐	1SBV01 ☐☐ 41R26 ☐☐	0.225
-	1	LS2 ☐ M41D11-P ☐☐	1SBV01 ☐☐ 41R21 ☐☐	0.225
-	1	LS2 ☐ M41D11-U ☐☐	1SBV01 ☐☐ 41R27 ☐☐	0.225
Adjustable ø18 plastic (polyacetal) **roller lever**				
1	-	LS2 ☐ M51B11-P ☐☐	1SBV01 ☐☐ 51R20 ☐☐	0.240
1	-	LS2 ☐ M51B11-U ☐☐	1SBV01 ☐☐ 51R26 ☐☐	0.240
-	1	LS2 ☐ M51D11-P ☐☐	1SBV01 ☐☐ 51R21 ☐☐	0.240
-	1	LS2 ☐ M51D11-U ☐☐	1SBV01 ☐☐ 51R27 ☐☐	0.240
Spring rod				
1	-	LS2 ☐ M91B11-P ☐☐	1SBV01 ☐☐ 91R20 ☐☐	0.240
1	-	LS2 ☐ M91B11-U ☐☐	1SBV01 ☐☐ 91R26 ☐☐	0.240
-	1	LS2 ☐ M91D11-P ☐☐	1SBV01 ☐☐ 91R21 ☐☐	0.240
-	1	LS2 ☐ M91D11-U ☐☐	1SBV01 ☐☐ 91R27 ☐☐	0.240

(1) For LS25 & LS26 add extra 0.005 kg - (2) With 1 m of cable (add 0.1 kg by extra meter length)

Length cable code (Other length on request)

Cable length	Code ☐☐	Code ☐☐
1 m	0 1	0 1
2 m	0 2	0 2
5 m	0 5	0 5
10 m	1 0	1 0

Note: **-P** ☐☐ = cable IEC 20/22 II PVC, **-U** ☐☐ = cable UL 62 PVC maxi. 10 m

LS3..M.. Limit Switches

Metal Casing IP66 - 30 mm Width

LS32M11B11

LS32M12B11

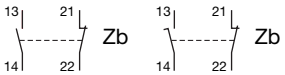
LS32M38B11

LS32M41B11

LS32M51B11

LS30M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 8
LS31M: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 1 7
LS32M: 1 cable inlet for ISO 16 cable gland..... 2 ..... 1 9
LS33M: 1 cable inlet for ISO 20 cable gland..... 3 ..... 3 8
LS35M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 7

Ordering Details

Contact blocks		Type	Order code	Weight kg
				
B11	D11	state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
Steel plain plunger (zinc plated)				
1	-	LS3 ☐ M11B11	1SBV01 ☐☐ 11R1211	0.180
-	1	LS3 ☐ M11D11	1SBV01 ☐☐ 11R1411	0.180
Steel roller plunger (zinc plated)				
1	-	LS3 ☐ M12B11	1SBV01 ☐☐ 12R1211	0.185
-	1	LS3 ☐ M12D11	1SBV01 ☐☐ 12R1411	0.185
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated) **horizontal action**				
1	-	LS3 ☐ M31B11	1SBV01 ☐☐ 31R1211	0.175
-	1	LS3 ☐ M31D11	1SBV01 ☐☐ 31R1411	0.175
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated) **vertical action**				
1	-	LS3 ☐ M32B11	1SBV01 ☐☐ 32R1211	0.175
-	1	LS3 ☐ M32D11	1SBV01 ☐☐ 32R1411	0.175
ø22 plastic (polyacetal) **roller lever on steel plunger** (zinc plated)				
1	-	LS3 ☐ M38B11	1SBV01 ☐☐ 38R1211	0.180
-	1	LS3 ☐ M38D11	1SBV01 ☐☐ 38R1411	0.180
ø18 plastic (polyacetal) **roller lever**				
1	-	LS3 ☐ M41B11	1SBV01 ☐☐ 41R1211	0.230
-	1	LS3 ☐ M41D11	1SBV01 ☐☐ 41R1411	0.230
ø50 rubber roller lever				
1	-	LS3 ☐ M42B11	1SBV01 ☐☐ 42R1211	0.255
-	1	LS3 ☐ M42D11	1SBV01 ☐☐ 42R1411	0.255
Adjustable ø18 plastic (polyacetal) **roller lever**				
1	-	LS3 ☐ M51B11	1SBV01 ☐☐ 51R1211	0.240
-	1	LS3 ☐ M51D11	1SBV01 ☐☐ 51R1411	0.240
Adjustable ø50 rubber roller lever				
1	-	LS3 ☐ M52B11	1SBV01 ☐☐ 52R1211	0.265
-	1	LS3 ☐ M52D11	1SBV01 ☐☐ 52R1411	0.265
Spring rod				
1	-	LS3 ☐ M91B11	1SBV01 ☐☐ 91R1211	0.180
-	1	LS3 ☐ M91D11	1SBV01 ☐☐ 91R1411	0.180

LS4..M.. Limit Switches

Metal Casing IP66 - 40 mm Width

LS40M11B11

LS40M41B11

LS40M51B11

LS40M91B11

LS40M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 1
LS43M: 1 cable inlet for ISO 20 cable gland..... 3 ..... 1 6
LS45M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 1

Ordering Details

Contact blocks		Type	Order code	Weight kg
 Zb **B11**	 Zb **D11**	state cable inlet code ☐	state cable inlet code ☐☐	Pack[ing] 1 piece
Stainless steel plain plunger				
1	-	LS4 ☐ M11B11	1SBV01 ☐☐ 11R1211	0.240
-	1	LS4 ☐ M11D11	1SBV01 ☐☐ 11R1411	0.240
ø12 stainless steel roller plunger				
1	-	LS4 ☐ M13B11	1SBV01 ☐☐ 13R1211	0.240
-	1	LS4 ☐ M13D11	1SBV01 ☐☐ 13R1411	0.240
ø22 plastic (polyacetal) **roller lever on stainless steel plunger**				
1	-	LS4 ☐ M31B11	1SBV01 ☐☐ 31R1211	0.275
-	1	LS4 ☐ M31D11	1SBV01 ☐☐ 31R1411	0.275
ø22 plastic (polyacetal) **roller lever**				
1	-	LS4 ☐ M41B11	1SBV01 ☐☐ 41R1211	0.280
-	1	LS4 ☐ M41D11	1SBV01 ☐☐ 41R1411	0.280
ø22 stainless steel roller lever				
1	-	LS4 ☐ M42B11	1SBV01 ☐☐ 42R1211	0.280
-	1	LS4 ☐ M42D11	1SBV01 ☐☐ 42R1411	0.280
Adjustable ø22 plastic (polyacetal) **roller lever**				
1	-	LS4 ☐ M51B11	1SBV01 ☐☐ 51R1211	0.290
-	1	LS4 ☐ M51D11	1SBV01 ☐☐ 51R1411	0.290
Adjustable ø6 plastic (polyacetal) **rod lever**				
1	-	LS4 ☐ M72B11	1SBV01 ☐☐ 72R1211	0.285
-	1	LS4 ☐ M72D11	1SBV01 ☐☐ 72R1411	0.285
Spring rod				
1	-	LS4 ☐ M91B11	1SBV01 ☐☐ 91R1211	0.235
-	1	LS4 ☐ M91D11	1SBV01 ☐☐ 91R1411	0.235

LS7..M.. Limit Switches

Metal Casing IP66 - 60 mm Width

LS72M11B11

LS72M12B11

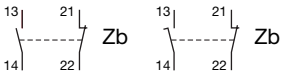
LS72M38B11

LS72M45B11

LS72M98B11-A

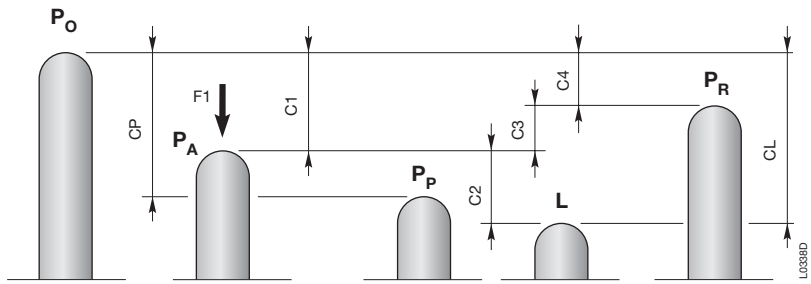
LS70M: 3 cable inlets for Pg 13.5 cable gland ..... 0 ..... 4 2
LS71M: 3 cable inlets for Pg 11 cable gland ..... 1 ..... 4 1
LS72M: 3 cable inlets for ISO 16 cable gland ..... 2 ..... 4 3
LS73M: 3 cable inlets for ISO 20 cable gland ..... 3 ..... 5 2
LS75M: 3 cable inlets for 1/2" NPT cable gland ..... 5 ..... 5 1

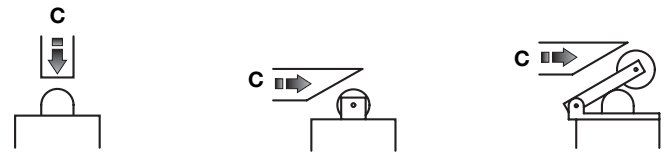
Ordering Details

Contact blocks		Type	Order code	Weight kg
				
B11	**D11**	state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
Steel plain plunger (zinc plated)				
1	-	LS7 ☐ M11B11	1SBV01 ☐☐ 11R1211	0.270
-	1	LS7 ☐ M11D11	1SBV01 ☐☐ 11R1411	0.270
Steel roller plunger (zinc plated)				
1	-	LS7 ☐ M12B11	1SBV01 ☐☐ 12R1211	0.280
-	1	LS7 ☐ M12D11	1SBV01 ☐☐ 12R1411	0.280
ø12.5 plastic (polyacetal) **roller lever on steel plunger** (zinc plated) **horizontal action**				
1	-	LS7 ☐ M31B11	1SBV01 ☐☐ 31R1211	0.265
-	1	LS7 ☐ M31D11	1SBV01 ☐☐ 31R1411	0.265
ø22 plastic (polyacetal) **roller lever on steel plunger** (zinc plated)				
1	-	LS7 ☐ M38B11	1SBV01 ☐☐ 38R1211	0.270
-	1	LS7 ☐ M38D11	1SBV01 ☐☐ 38R1411	0.270
ø18 plastic (polyacetal) **roller with bent lever**				
1	-	LS7 ☐ M45B11	1SBV01 ☐☐ 45R1211	0.335
-	1	LS7 ☐ M45D11	1SBV01 ☐☐ 45R1411	0.335
Adjustable ø3 stainless steel rod lever				
1	-	LS7 ☐ M71B11	1SBV01 ☐☐ 71R1211	0.380
-	1	LS7 ☐ M71D11	1SBV01 ☐☐ 71R1411	0.380
Spring rod				
1	-	LS7 ☐ M91B11	1SBV01 ☐☐ 91R1211	0.315
-	1	LS7 ☐ M91D11	1SBV01 ☐☐ 91R1411	0.315
Pull action with ring				
1	-	LS7 ☐ M98B11-A	1SBV01 ☐☐ 98R1211	0.350
-	1	LS7 ☐ M98D11-A	1SBV01 ☐☐ 98R1411	0.350

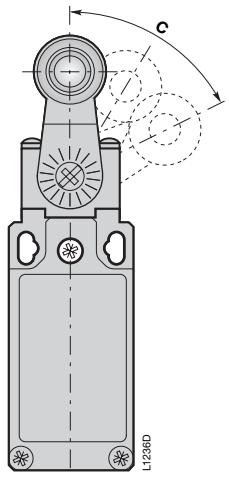
Limit Switches Plastic or Metal Casing

Travel and Operation Diagrams





C: Travel in millimetres



C: Travel in degrees

P_O Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force **F1**, when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force **F1**.

P_R Release position:
position of the switch actuator when the contacts return to their initial free position.

C_1 Pre-travel (average travel):
distance between the free position P_O and the operating position P_A.

C_P Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

C_2 Over-travel (average travel):
distance between the operating position P_A and the max. travel position **L**.

C_L Max. travel (maximum travel):
distance between the free position P_O and the max. travel position **L**.

C_3 Differential travel (C1-C4) (average travel):
travel difference of the switch actuator between the operating position P_A and the release position P_R.

C_4 Release travel (average travel):
distance between the release position P_R and the free position P_O.

Diagram for snap action contacts:

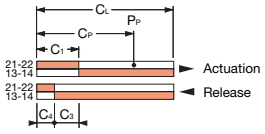
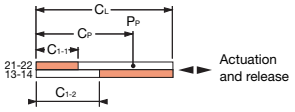


Diagram for non-overlapping slow action contacts:



Contacts position

Note: for slow action contacts, $C_3 = 0$, C_{1-1} = pre-travel of contact 21-22, C_{1-2} = pre-travel of contact 13-14.

Examples:

LS32M13B11
(snap action contacts)

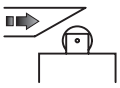
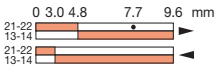


Diagram in millimetres/**cam travel**



LS32M41B11
(snap action contacts)

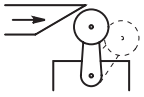
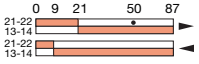


Diagram in degrees/**lever rotation**



LS32M11D11
(non-overlapping slow action contacts)

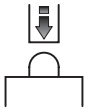
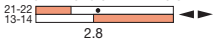


Diagram in millimetres/**plunger travel**



LS20 ... LS26 Prewired Limit Switches

Plastic Casing ▣ IP67 and Metal Casing IP67
Technical Data

General Technical Data

		Plastic Casing	Metal Casing
Standards		IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508 and CSA C22-2 n° 14	
Certifications - Approvals		UL - CSA (only with UL62-1581 cable)	
Air temperature near the device			
– during operation	**°C**	– 25 ... + 70	– 25 ... + 70
– for storage	**°C**	– 40 ... + 70	– 40 ... + 70
Climatic withstand		According to IEC 68-2-3 and salty mist according to IEC 68-2-11	
Mounting positions		All positions are authorized	
Shock withstand (according to IEC 68-2-27 and EN 60068-2-27)		25**g*** (1/2 sinusoidal shock for 11 ms) no change in contact position	
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6)		25**g**** (10 ... 500 Hz) no change in position of contacts greater than 100 µs	
Protection against electrical shocks (acc. to IEC 536)		Class II	Class I
Degree of protection (according to IEC 529 and EN 60529)		IP67	
Degree of protection (according to UL 50 and NEMA)		Type 1 Enclosure (indoor use)	Type 4 - 4x - 6 Enclosure (Outdoor use)
Consistency (measured over 1 million operations)		0.1 mm (upon closing point)	

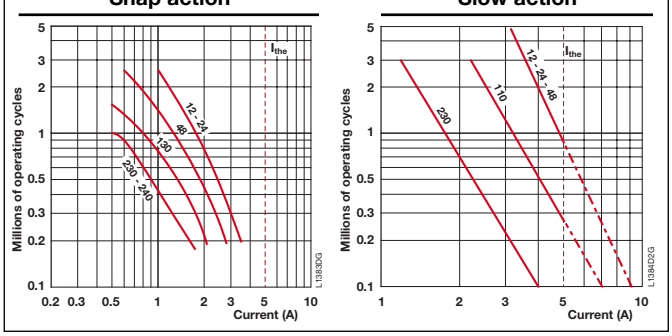
Electrical Data

Rated insulation voltage U_i					
– according to IEC 60947-1 and EN 60947-1			**V**	400 (degree of pollution 3)	
– according to UL 508, CSA C22-2 n° 14			**V**	300	
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)			**kV**	4	
Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) $\theta \leq 40$ °C			**A**	5	
Short-circuit protection gG type fuses			**A**	6	
Rated operational current					
I_e / AC-15	– acc. to IEC 60947-5-1	24 V - 50/60 Hz	**A**	5.0	
		120 V - 50/60 Hz	**A**	3.0	
		240 V - 50/60 Hz	**A**	1.5	
	– acc. to UL 508, CSA C22 n° 14			B 300	
I_e / DC-13	– acc. to IEC 60947-5-1	24 V - d.c.	**A**	1.1	
		125 V - d.c.	**A**	0.22	
		250 V - d.c.	**A**	0.1	
	– acc. to UL 508, CSA C22 n° 14			R 300	
Positivity				Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1	
Resistance between contacts			**mΩ**	25	
Pre-wired connection			**mm² / AWG**	4 x 0.75 mm² / 4 x AWG 18	5 x 0.75 mm² / 5 x AWG 18
Type of cable					
– UL 62-1581 (PVC)				Black - Ø ext. 7.20 ± 0.2	Black - Ø ext. 8.20 ± 0.2
– IEC 20/22 II (PVC) (no flame propagation)				Black - Ø ext. 7.20 ± 0.2	Grey - Ø ext. 8.20 ± 0.2
Terminal marking				According to EN 50013	
Mechanical durability				10 Millions of operations	
Electrical durability (according to IEC 60947-5-1 appendix C)				Utilization categories AC-15 and DC-13 (See curves and values below)	
– max. switching frequency			**Cycles/h**	3600	
– load factor				0.5	

* Shock: 25g for LS20P/M.., ... LS26P/M.. with D11 contact block
5g for LS20P/M.., ... LS26P/M.. with B11 contact block

** Vibrations: except for LS20P/M93 ... LS26P/M93 : 15 g

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	5.7 W	7.2 W
Voltage	48 V	4.1 W	5.4 W
Voltage	110 V	2.2 W	3.6 W

LS3..., LS4... and LS7... Limit Switches

Plastic Casing ☐ IP65 and Metal Casing IP66
Technical Data

General Technical Data

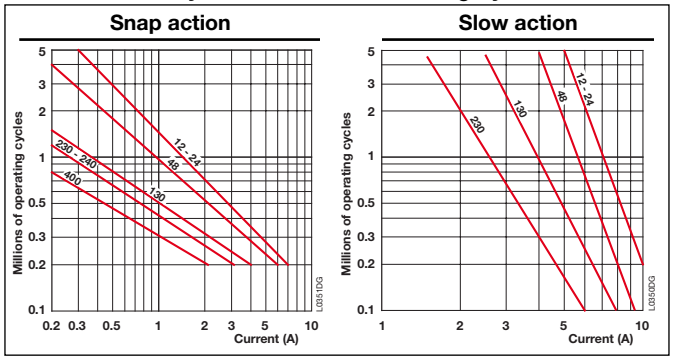
		Plastic Casing	Metal Casing
Standards		IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508 and CSA C22-2 n° 14	
Certifications - Approvals		UL - CSA - CCC	
Air temperature near the device			
– during operation	**°C**	– 25 ... + 70	– 25 ... + 70
– for storage	**°C**	– 30 ... + 80	– 30 ... + 80
Climatic withstand		According to IEC 68-2-3 and salty mist according to IEC 68-2-11	
Mounting positions		All positions are authorized	
Shock withstand (according to IEC 68-2-27 and EN 60068-2-27)	**g**	50**g*** (1/2 sinusoidal shock for 11 ms) no change in contact position	
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6)	**g**	25**g** (10 ... 500 Hz) no change in position of contacts greater than 100 µs	
Protection against electrical shocks (acc. to IEC 536)		Class II	Class I
Degree of protection (according to IEC 529 and EN 60529)		IP65	IP66 **
Consistency (measured over 1 million operations)		0.1 mm (upon closing point)	0.1 mm (upon closing point)

Electrical Data

				Plastic Casing	Metal Casing
Rated insulation voltage U_i					
– according to IEC 60947-1 and EN 60947-1			**V**	500 (degree of pollution 3)	400 (LS3..M.. & LS7..M..), 500 (LS4xM..) - (degree of pollution 3)
– according to UL 508, CSA C22-2 n° 14			**V**	600	300 (LS3..M.. & LS7..M..), 600 (LS4..M..)
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)			**kV**	6	
Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) $\theta \leq 40$ °C			**A**	10	
Short-circuit protection gG type fuses			**A**	10	
Rated operational current					
I_e / AC-15	– acc. to IEC 60947-5-1	24 V - 50/60 Hz	**A**	10	
		130 V - 50/60 Hz	**A**	5.5	
		230 V - 50/60 Hz	**A**	3.1	
		240 V - 50/60 Hz	**A**	3	
		400 V - 50/60 Hz	**A**	1.8	
	– acc. to UL 508, CSA C22 n° 14			A 600	A 300 (LS3..M.. & LS7..M..), A 600 (LS4..M..)
I_e / DC-13	– acc. to IEC 60947-5-1	24 V - d.c.	**A**	2.8	
		110 V - d.c.	**A**	0.6	
		250 V - d.c.	**A**	0.27	
	– acc. to UL 508, CSA C22 n° 14			Q 600	Q 300 (LS3..M.. & LS7..M..), Q 600 (LS4..M..)
Positivity				Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1	
Resistance between contacts			**mΩ**	25	
Mechanical durability			Millions of operations	15 / 10 / > 5 } LS 3x / 7x P { 10...12 ; 30...38 / 13 ; 41...46 ; 51...55 ; 61...78 / 14 ; 91...92 ; 98	15 / 10 / > 5 } LS 3x / 7x M { 11...12 ; 31...38 / 13 ; 41...46 ; 51...55 ; 61...78 / 14 ; 91...92 ; 98
			Millions of operations	15 / 10 / > 5 } LS 4x P { 11 ; 12 ; 31...33 / 13 ; 41...44 ; 51...55 ; 61...74 / 14 ; 19 ; 34...36 ; 91...93	30 / 25 / 10 } LS 4x M { 11...13 ; 21...23 ; 31...33 / 41...44 ; 51...55 ; 61...74 / 91...93
Electrical durability (according to IEC 60947-5-1 appendix C)				Utilization categories AC-15 and DC-13 (see curves and values below)	
– max. switching frequency			**Cycles/h**	3600	
– load factor				0.5	
Connecting data of contact blocks					
	Connecting terminals			M3.5 (+,–) pozidriv 2 screw with cable clamp	
	Connecting capacity	1 or 2 x **mm² / AWG**		0.5 mm² / AWG 20 to 2.5 mm² / AWG 14	
	Terminal marking			According to EN 50013	

***** Except for LS3..M42, M52 and M55 - LS3..P42, P52 and P55 - LS7..M42, M52 and M55 - LS7..P42, P52 and P55: 25g
****** Except for LS3..M52, M55, M73, M74 and M92 - LS7..M52, M55, M73, M74 and M92 - LS4..M54, M72, M92 and M93 : the degree of protection is IP65.

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

LS2..P.. and LS2..M.. Limit Switches

Plastic Casing ☐ and Metal Casing - IP67 - 30 mm Width Prewired

Movement to be detected:

For Plastic Casing:
Cable: 4 x 0.75 mm² / 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:
Cable: 5 x 0.75 mm² / 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)

On end	30° Cam Trans.	On end	
			

Actuator

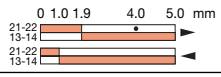
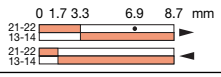
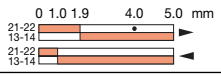
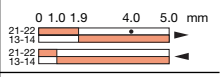
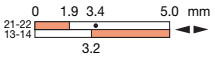
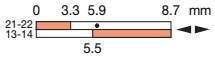
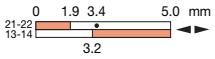
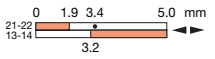
	Metal plunger	Metal Roller plunger	Metal plunger (with dust protection cup)	Metal plunger with fixing nuts
⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖	⊖
Maximum actuation speed	0.5 m/s	0.1 m/s	0.5 m/s	0.5 m/s
Min. force / torque: - actuation	15 N	10 N	15 N	15 N
- positive opening operation	30 N	30 N	30 N	30 N

Additional Technical Data

Cable output left / right code 0
Cable output bottom code 1

Plastic casing ..... P
Metal casing ..... M

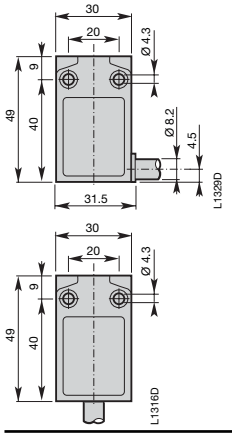
IEC 20/22 II PVC cable code ..... P
UL 62 PVC cable code ..... U

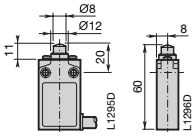
Type to be completed with the above codes ☐					
Snap action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐11B11-☐01**	**LS2☐☐12B11-☐01**	**LS2☐☐16B11-☐01**	**LS2☐☐21B11-☐01**
	Operation diagram				
Non-overlapping Slow action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐11D11-☐01**	**LS2☐☐12D11-☐01**	**LS2☐☐16D11-☐01**	**LS2☐☐21D11-☐01**
	Operation diagram				
Weight (1) (packing per unit)	**kg**	0.125	0.130	0.125	0.140

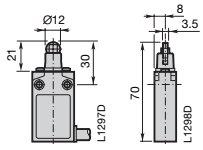
(1) add 0.050 kg with metal casing.

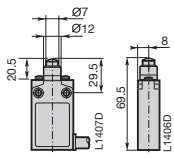
Closed contact / Open contact

Dimensions (mm)

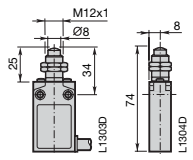








- Tightening torque of nuts : 5 N.m
- Distance between nuts : 9 mm
- Nuts thickness : 3 mm



LS2..P.. and LS2..M.. Limit Switches

Plastic Casing ☐ and Metal Casing - IP67 - 30 mm Width Prewired

Movement to be detected:

For Plastic Casing:
Cable: 4 x 0.75 mm² / 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:
Cable: 5 x 0.75 mm² / 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)

30° Cam Translation Movement | **Multidirectional**




Actuator

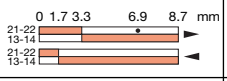
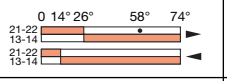
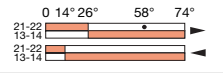
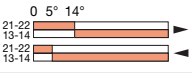
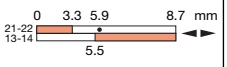
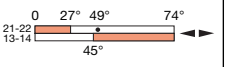
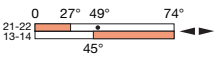
	Metal Roller plunger with fixing nuts	ø14 plastic roller lever	Adjustable ø18 plastic roller lever	Spring rod
⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖	–
Maximum actuation speed	0.1 m/s	1.5 m/s	1.5 m/s	1.0 m/s
Min. force / torque: - actuation	10 N	0.08 N.m	0.08 N.m	0.10 N.m
- positive opening operation	30 N	0.28 N.m	0.28 N.m	–

Additional Technical Data

Cable output left / right code 0
Cable output bottom code 1

Plastic casing ..... P
Metal casing ..... M

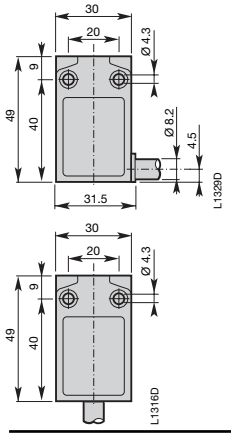
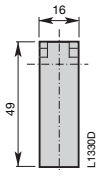
IEC 20/22 II PVC cable code ..... P
UL 62 PVC cable code ..... U

Type to be completed with the above codes ☐					
Snap action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐22B11-☐01**	**LS2☐☐41B11-☐01**	**LS2☐☐51B11-☐01**	**LS2☐☐91B11-☐01**
	Operation diagram				
Non-overlapping Slow action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐22D11-☐01**	**LS2☐☐41D11-☐01**	**LS2☐☐51D11-☐01**	-
	Operation diagram				-
Weight (1) (packing per unit)	**kg**	0.145	0.175	0.190	0.190

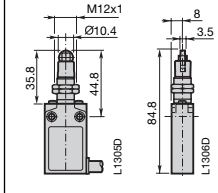
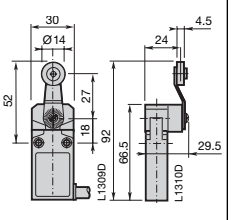
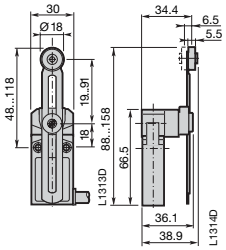
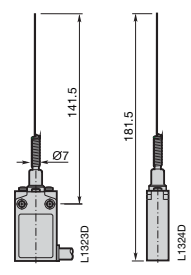
(1) add 0.050 kg with metal casing.

Closed contact / Open contact

Dimensions (mm)

- Tightening torque of nuts : 5 N.m
- Distance between nuts : 9 mm
- Nuts thickness : 3 mm

LS2..P.. and LS2..M.. Limit Switches

Plastic Casing ☐ and Metal Casing - IP67 - 35 mm Width Prewired

Movement to be detected:

For Plastic Casing:
Cable: 4 x 0.75 mm² / 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:
Cable: 5 x 0.75 mm² / 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)

On end	30° Cam Trans.	On end	
			

Actuator

	Metal plunger	Metal Roller plunger	Metal plunger (with dust protection cup)	Metal plunger with fixing nuts
⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕	⊕
Maximum actuation speed	0.5 m/s	0.1 m/s	0.5 m/s	0.5 m/s
Min. force / torque: - actuation	15 N	10 N	15 N	15 N
- positive opening operation	30 N	30 N	30 N	30 N

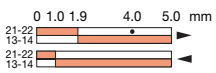
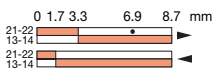
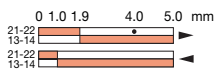
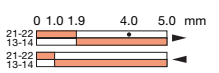
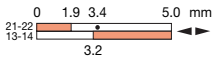
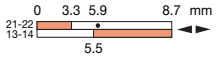
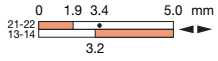
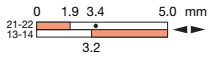
Additional Technical Data

Cable output left / right code 5
Cable output bottom code 6

Plastic casing ..... P
Metal casing ..... M

IEC 20/22 II PVC cable code ..... P
UL 62 PVC cable code ..... U

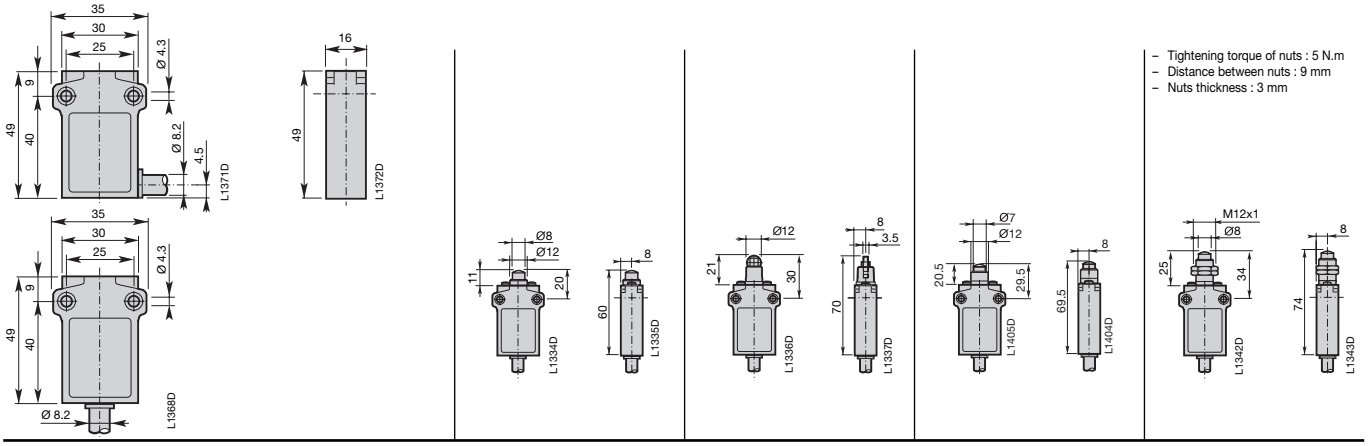
Type to be completed with the above codes ☐

Snap action contacts 13 BN 21 BK Zb 14 BU 22 BK	Type	LS2☐☐11B11-☐01	LS2☐☐12B11-☐01	LS2☐☐16B11-☐01	LS2☐☐21B11-☐01
	Operation diagram				
Non-overlapping Slow action contacts 13 BN 21 BK Zb 14 BU 22 BK	Type	LS2☐☐11D11-☐01	LS2☐☐12D11-☐01	LS2☐☐16D11-☐01	LS2☐☐21D11-☐01
	Operation diagram				
Weight (1) (packing per unit)	kg	0.125	0.130	0.125	0.140

(1) add 0.050 kg with metal casing.

Closed contact / Open contact

Dimensions (mm)



- Tightening torque of nuts : 5 N.m
- Distance between nuts : 9 mm
- Nuts thickness : 3 mm

LS2..P.. and LS2..M.. Limit Switches

Plastic Casing ☐ and Metal Casing - IP67 - 35 mm Width Prewired

Movement to be detected:

For Plastic Casing:
Cable: 4 x 0.75 mm² / 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:
Cable: 5 x 0.75 mm² / 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)

30° Cam Translation | **Multidirectional**




Actuator

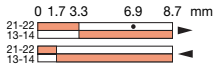
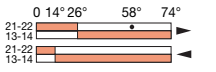
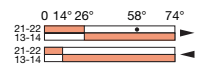
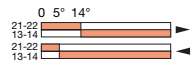
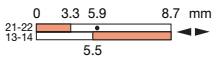
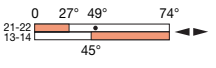
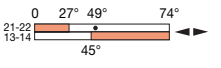
	Metal Roller plunger with fixing nuts	ø14 plastic roller lever	Adjustable ø18 plastic roller lever	Spring rod
⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕	-
Maximum actuation speed	0.1 m/s	1.5 m/s	1.5 m/s	1.0 m/s
Min. force / torque: - actuation	10 N	0.08 N.m	0.08 N.m	0.10 N.m
- positive opening operation	30 N	0.28 N.m	0.28 N.m	-

Additional Technical Data

Cable output left / right code 5
Cable output bottom code 6

Plastic casing ..... P
Metal casing ..... M

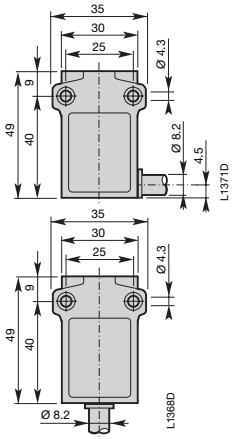
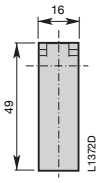
IEC 20/22 II PVC cable code ..... P
UL 62 PVC cable code ..... U

Type to be completed with the above codes ☐					
Snap action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐22B11-☐01**	**LS2☐☐41B11-☐01**	**LS2☐☐51B11-☐01**	**LS2☐☐91B11-☐01**
	Operation diagram				
Non-overlapping Slow action contacts 13 BN 21 BK Zb 14 BU 22 BK	**Type**	**LS2☐☐22D11-☐01**	**LS2☐☐41D11-☐01**	**LS2☐☐51D11-☐01**	-
	Operation diagram				-
Weight (1) (packing per unit)	**kg**	0.200	0.200	0.230	0.235

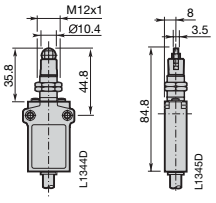
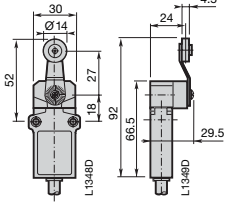
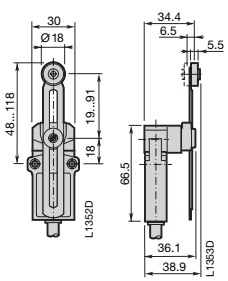
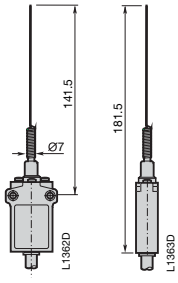
(1) add 0.050 kg with metal casing.

Closed contact / Open contact

Dimensions (mm)

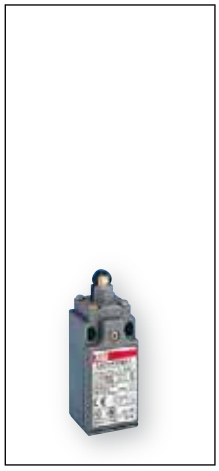
- Tightening torque of nuts : 5 N.m
- Distance between nuts : 9 mm
- Nuts thickness : 3 mm

LS3..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 30 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

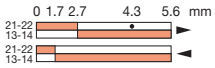
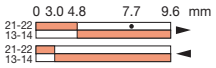
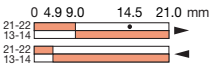
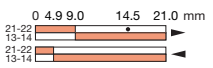
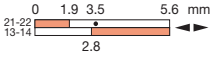
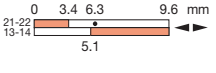
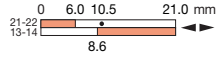
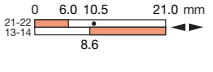
On end	30° Cam Translat.	30° Unidirectional Cam Translation	
			

Actuator

	Metal plunger	ø11 plastic roller plunger	ø12.5 plastic roller lever on steel plunger	ø12.5 plastic roller lever on steel plunger
Conformity / ⊖ (N.C. contact with positive opening operation)	EN 50047 (B shape) ⊖	EN 50047 (C shape) ⊖	EN 50047 (E shape) ⊖	– ⊖
Maximum actuation speed	0.5 m/s	0.3 m/s	1 m/s	1 m/s
Min. force / torque: - actuation	15 N	12 N	7 N	7 N
- positive opening operation	45 N	41 N	24 N	24 N

Additional Technical Data

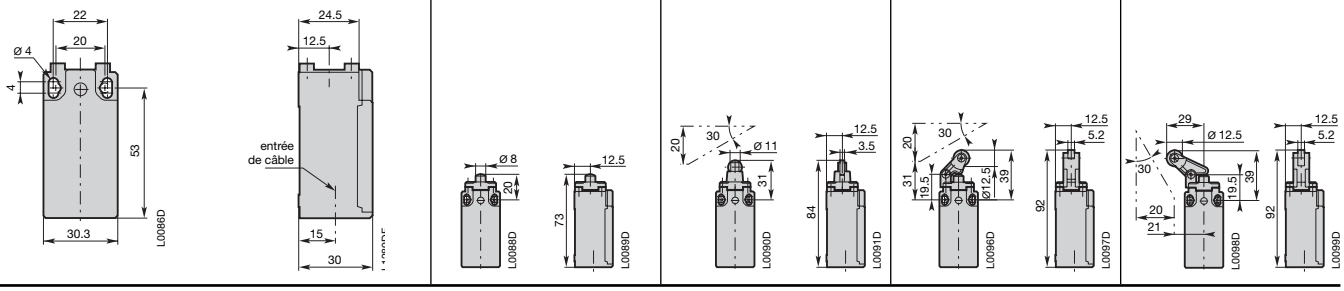
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT (by plastic adaptor)

Snap action contacts 	**Type**	**LS3☐P11B11**	**LS3☐P13B11**	**LS3☐P31B11**	**LS3☐P32B11**
	Operation diagram				
Non-overlapping Slow action contacts 	**Type**	**LS3☐P11D11**	**LS3☐P13D11**	**LS3☐P31D11**	**LS3☐P32D11**
	Operation diagram				
Weight (packing per unit)	**kg**	0.070	0.070	0.070	0.075

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

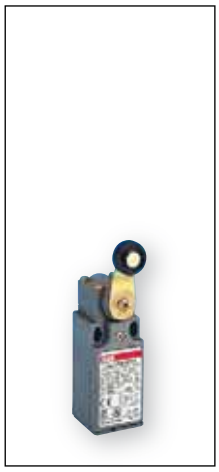
Dimensions (mm)

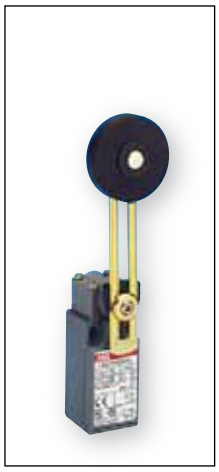
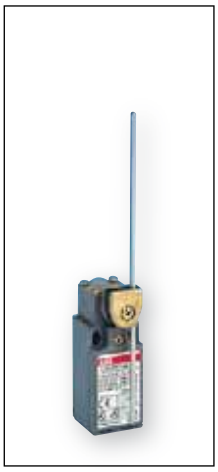
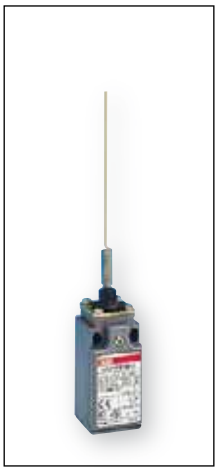


LS3..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 30 mm Width
1 Cable Inlet for Cable Gland

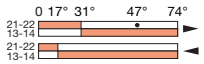
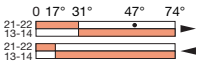
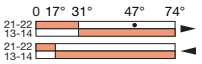
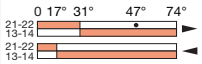
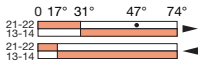
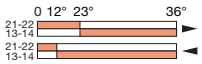
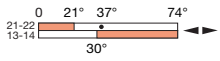
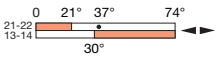
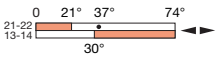
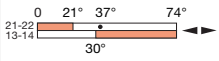
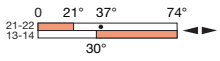
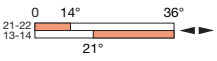
30° Cam Translation Movement | **Fully Direction Trans.** | **Multidirectional**



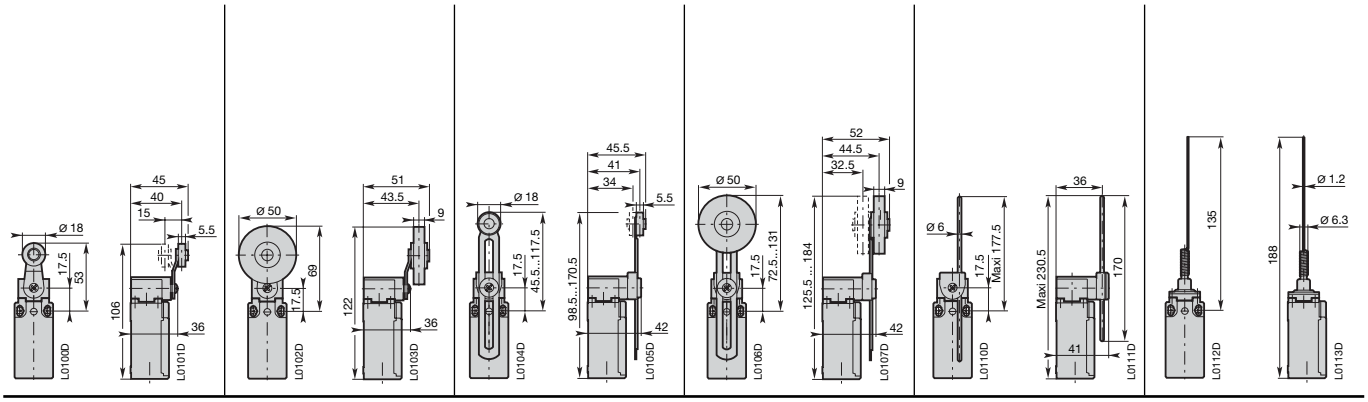
ø18 plastic roller lever	ø50 rubber roller lever	Adjustable ø18 plastic roller lever	Adjustable ø50 rubber roller lever	Adjustable ø3 fibre-glass rod lever	Spring rod lever
EN 50047 (A shape)	–	–	–	–	–
1.5 m/s	1.5 m/s	1.5 m/s	1.5 m/s	1.5 m/s	1 m/s
0.1 N.m	0.1 N.m	0.1 N.m	0.1 N.m	0.1 N.m	0.12 N.m
0.32 N.m	0.32 N.m	0.32 N.m	0.32 N.m	0.32 N.m	–

LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT (by plastic adaptor)

LS3☐P41B11	LS3☐P42B11	LS3☐P51B11	LS3☐P52B11	LS3☐P72B11	LS3☐P91B11
					
LS3☐P41D11	**LS3☐P42D11**	**LS3☐P51D11**	**LS3☐P52D11**	**LS3☐P72D11**	**LS3☐P91D11**
					
0.090	0.120	0.100	0.130	0.100	0.080

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact



LS4..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 40 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

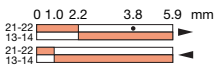
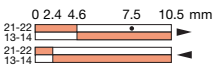
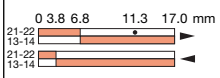
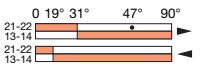
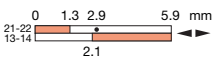
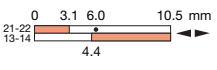
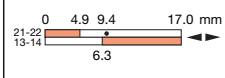
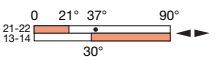
On end	30° Cam Translat.	Unidirectional	30° Cam Translat.
			

Actuator

	Metal plunger	ø12 stainless steel roller plunger	Polyamide roller lever on steel plunger	ø22 plastic roller lever
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50041 (B shape) ⊕	EN 50041 (C shape) ⊕	– ⊕	EN 50041 (A shape) ⊕
Maximum actuation speed	0.5 m/s	0.5 m/s	1 m/s	1.5 m/s
Min. force / torque: - actuation	14 N	14 N	8 N	0.15 N.m
- positive opening operation	45 N	40 N	40 N	0.30 N.m

Additional Technical Data

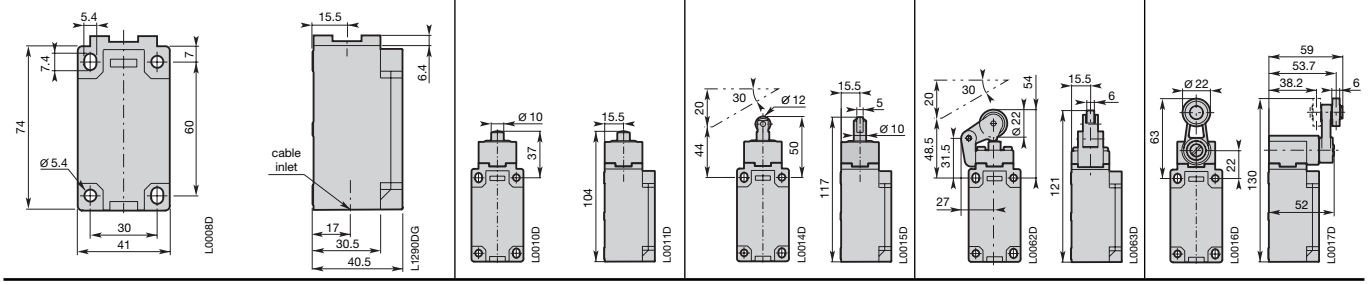
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Snap action contacts 13 21 Zb 14 22	**Type**	**LS4 ☐ P11B11**	**LS4 ☐ P13B11**	**LS4 ☐ P31B11**	**LS4 ☐ P41B11**
	Operation diagram				
Non-overlapping Slow action contacts 13 21 Zb 14 22	**Type**	**LS4 ☐ P11D11**	**LS4 ☐ P13D11**	**LS4 ☐ P31D11**	**LS4 ☐ P41D11**
	Operation diagram				
Weight (packing per unit)	**kg**	0.140	0.145	0.175	0.185

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

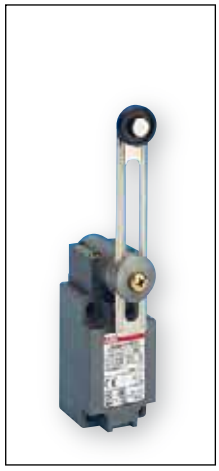
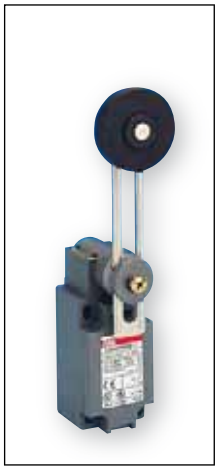
Dimensions (mm)



LS4..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 40 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

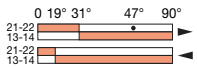
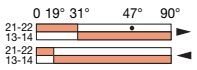
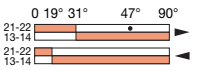
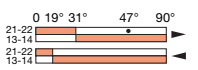
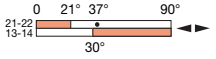
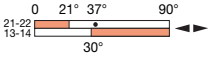
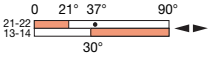
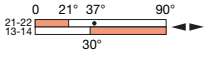
30° Cam Translation Movement			Fully Direction Trans.
			

Actuator

	ø50 rubber roller lever	Adjustable ø22 plastic roller lever	Adjustable ø50 rubber roller lever	Adjustable ø6 plastic rod lever
Conformity / ⊕ (N.C. contact with positive opening operation)	– ⊕	– ⊕	– ⊕	EN 50041 (D shape) ⊕
Maximum actuation speed	1.5 m/s	1.5 m/s	1.5 m/s	1.5 m/s
Min. force / torque: - actuation	0.15 N.m	0.15 N.m	0.15 N.m	0.15 N.m
- positive opening operation	0.30 N.m	0.30 N.m	0.30 N.m	0.30 N.m

Additional Technical Data

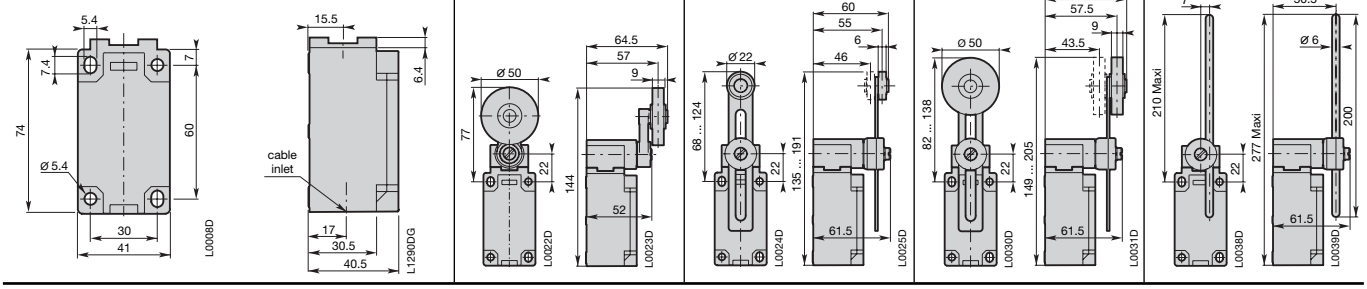
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Snap action contacts 	**Type**	**LS4 ☐ P44B11**	**LS4 ☐ P51B11**	**LS4 ☐ P54B11**	**LS4 ☐ P72B11**
	Operation diagram				
Non-overlapping Slow action contacts 	**Type**	**LS4 ☐ P44D11**	**LS4 ☐ P51D11**	**LS4 ☐ P54D11**	**LS4 ☐ P72D11**
	Operation diagram				
Weight (packing per unit)	**kg**	0.205	0.190	0.200	0.185

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS7..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 60 mm Width
2 Cable Inlets for Cable Gland

Movement to be detected:

On end	30° Cam Translat.	Unidirectional	30° Cam Translat.
			

Actuator

	Metal plunger	ø11 plastic roller plunger	ø12.5 plastic roller lever on steel plunger	ø18 plastic roller lever
Conformity / ⊖ (N.C. contact with positive opening operation)	– ⊖	– ⊖	– ⊖	– ⊖
Maximum actuation speed	0.5 m/s	0.3 m/s	1 m/s	1.5 m/s
Min. force / torque: - actuation	15 N	12 N	7 N	0.1 N.m
- positive opening operation	45 N	41 N	24 N	0.32 N.m

Additional Technical Data

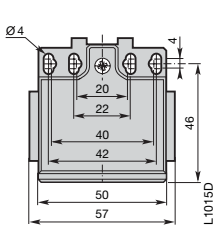
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

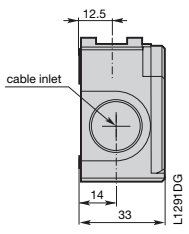
Snap action contacts 13 21 Zb 14 22	**Type**	**LS7 ☐ P11B11**	**LS7 ☐ P13B11**	**LS7 ☐ P31B11**	**LS7 ☐ P41B11**
	Operation diagram	0 1.7 2.7 4.3 5.6 mm 21-22 13-14 21-22 13-14	0 3.0 4.8 7.7 9.6 mm 21-22 13-14 21-22 13-14	0 4.9 9.0 14.5 21.0 mm 21-22 13-14 21-22 13-14	0 17° 31° 47° 74° 21-22 13-14 21-22 13-14
Non-overlapping Slow action contacts 13 21 Zb 14 22	**Type**	**LS7 ☐ P11D11**	**LS7 ☐ P13D11**	**LS7 ☐ P31D11**	**LS7 ☐ P41D11**
	Operation diagram	0 1.9 3.5 5.6 mm 21-22 13-14 2.8	0 3.4 6.3 9.6 mm 21-22 13-14 5.1	0 6.0 10.5 21.0 mm 21-22 13-14 8.6	0 21° 37° 74° 21-22 13-14 30°
Weight (packing per unit)	**kg**	0.100	0.100	0.105	0.125

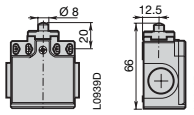
Special heads, accessories and special contact arrangement or particular function: please consult us.

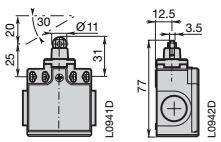
Closed contact / Open contact

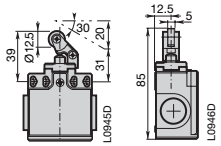
Dimensions (mm)

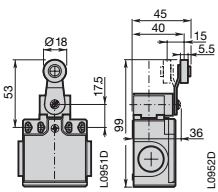










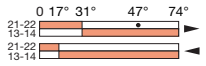
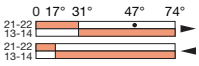
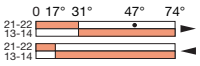
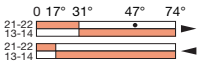
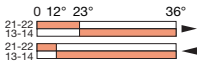
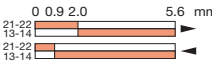
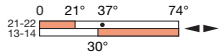
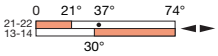
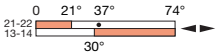
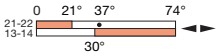
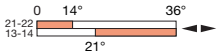
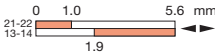


LS7..P.. Limit Switches

Double Insulation ⧈ - Plastic Casing IP65 - 60 mm Width
2 Cable Inlets for Cable Gland

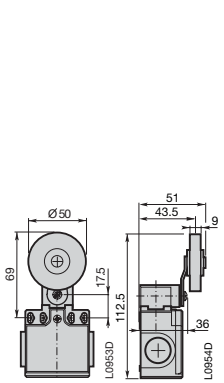
30° Cam Translation Movement			Fully Direction Trans.	Multidirectional	Pull action
					
ø50 rubber roller lever	**Adjustable ø18 plastic roller lever**	**Adjustable ø50 rubber roller lever**	**Adjustable ø3 fibre-glass rod lever**	**Spring rod lever**	**Pull action with ring**
– ⊕	– ⊕	– ⊕	– ⊕	– –	– –
1.5 m/s 0.1 N.m 0.32 N.m	1.5 m/s 0.1 N.m 0.32 N.m	1.5 m/s 0.1 N.m 0.32 N.m	1.5 m/s 0.1 N.m 0.32 N.m	1 m/s 0.12 N.m –	0.5 m/s 30 N –

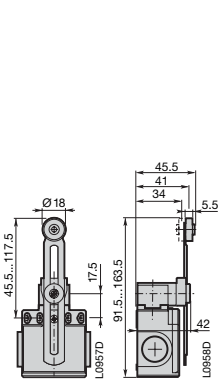
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

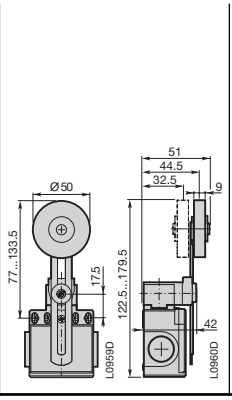
LS7 ☐ P42B11	**LS7 ☐ P51B11**	**LS7 ☐ P52B11**	**LS7 ☐ P72B11**	**LS7 ☐ P91B11**	**LS7 ☐ P98B11-A**
					
LS7 ☐ P42D11	**LS7 ☐ P51D11**	**LS7 ☐ P52D11**	**LS7 ☐ P72D11**	**LS7 ☐ P91D11**	**LS73 ☐ P98D11-A**
					
0.145	0.135	0.155	0.120	0.110	0.145

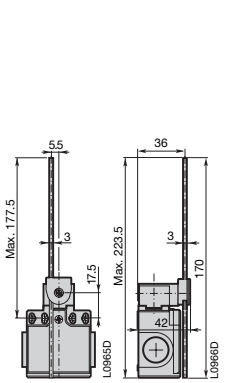
Special heads, accessories and special contact arrangement or particular function: please consult us.

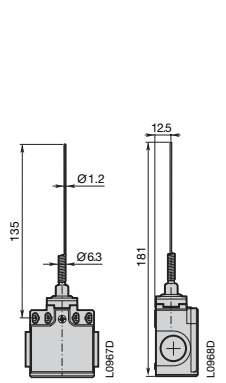
Closed contact / Open contact



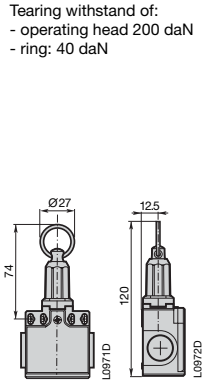








Tearing withstand of:
- operating head 200 daN
- ring: 40 daN



LS3..M.. Limit Switches

Metal Casing IP66 - 30 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

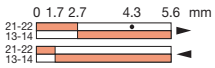
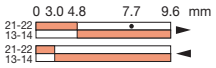
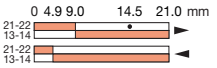
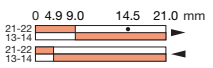
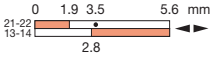
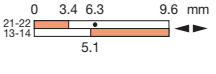
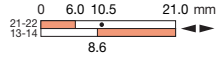
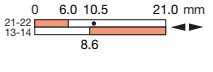
On end	30° Cam Translat.	30° Unidirectional Cam Translation	
			

Actuator

	Metal plunger	Metal roller plunger	ø12.5 plastic roller lever on steel plunger	ø12.5 plastic roller lever on steel plunger
Conformity / ⊖ (N.C. contact with positive opening operation)	EN 50047 (B shape) ⊖	EN 50047 (C shape) ⊖	EN 50047 (E shape) ⊖	– ⊖
Maximum actuation speed	0.5 m/s	0.3 m/s	1 m/s	1 m/s
Min. force / torque: - actuation	15 N	12 N	7 N	7 N
- positive opening operation	45 N	41 N	24 N	24 N

Additional Technical Data

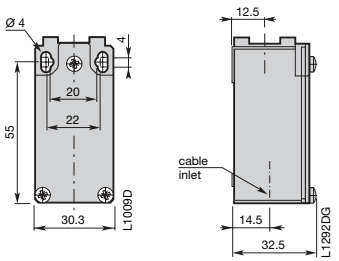
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

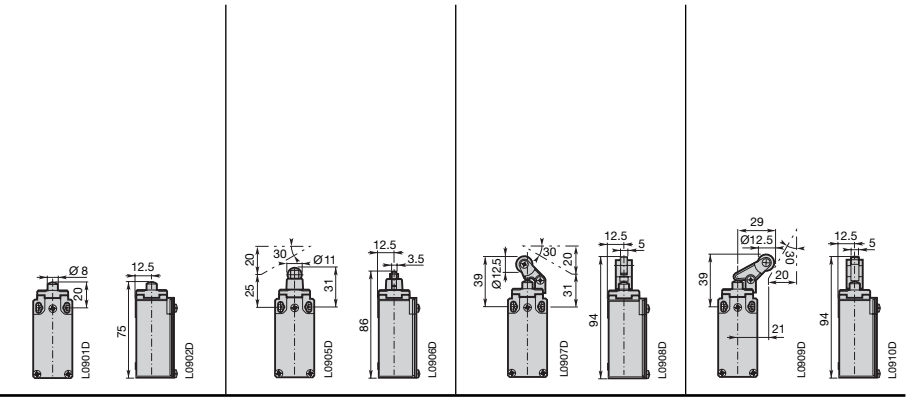
Snap action contacts 	Type	LS3 ☐ M11B11	LS3 ☐ M12B11	LS3 ☐ M31B11	LS3 ☐ M32B11
	Operation diagram				
Non-overlapping Slow action contacts 	Type	LS3 ☐ M11D11	LS3 ☐ M12D11	LS3 ☐ M31D11	LS3 ☐ M32D11
	Operation diagram				
Weight (packing per unit)	kg	0.180	0.185	0.175	0.175

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



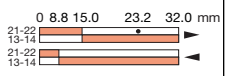
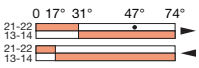
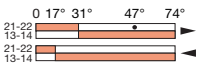
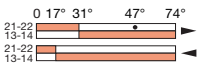
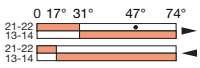
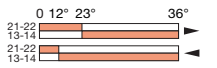
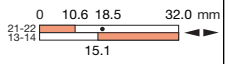
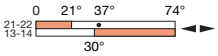
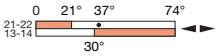
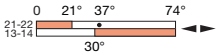
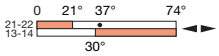
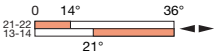


LS3..M.. Limit Switches

Metal Casing IP66 - 30 mm Width
1 Cable Inlet for Cable Gland

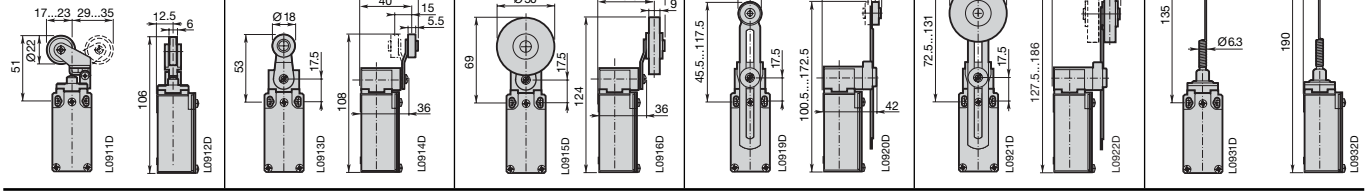
Unidirectional	30° Cam Translation Movement				Multidirectional
					
ø22 plastic roller lever on steel plunger	**ø18 plastic roller lever**	**ø50 rubber roller lever**	**Adjustable ø18 plastic roller lever**	**Adjustable ø50 rubber roller lever**	**Spring rod lever**
–	EN 50047 (A shape)	–	–	–	–
1 m/s	1.5 m/s	1.5 m/s	1.5 m/s	1.5 m/s	1 m/s
7 N	0.1 N.m	0.1 N.m	0.1 N.m	0.1 N.m	0.12 N.m
24 N	0.32 N.m	0.32 N.m	0.32 N.m	0.32 N.m	–

LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

LS3☐M38B11	LS3☐M41B11	LS3☐M42B11	LS3☐M51B11	LS3☐M52B11	LS3☐M91B11
					
LS3☐M38D11	**LS3☐M41D11**	**LS3☐M42D11**	**LS3☐M51D11**	**LS3☐M52D11**	**LS3☐M91D11**
					
0.180	0.230	0.255	0.240	0.265	0.180

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact



LS4..M.. Limit Switches

Metal Casing IP66 - 40 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

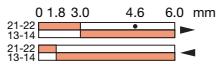
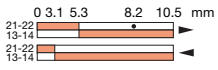
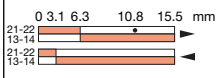
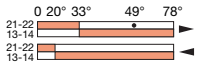
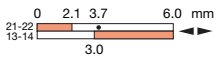
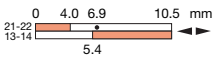
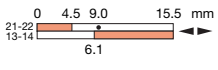
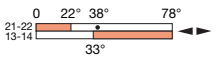
On end	30° Cam Translat.	Unidirectional	30° Cam Translat.
			

Actuator

	Stainless steel plunger	ø12 stainless steel roller plunger	ø22 plastic roller lever on stainless steel plunger	ø22 plastic roller lever
Conformity / ⊖ (N.C. contact with positive opening operation)	EN 50041 (B shape) ⊖	EN 50041 (C shape) ⊖	– ⊖	EN 50041 (A shape) ⊖
Maximum actuation speed	0.5 m/s	0.5 m/s	1.5 m/s	1.5 m/s
Min. force / torque: - actuation	30 N	22 N	12 N	0.15 N.m
- positive opening operation	45 N	40 N	40 N	0.30 N.m

Additional Technical Data

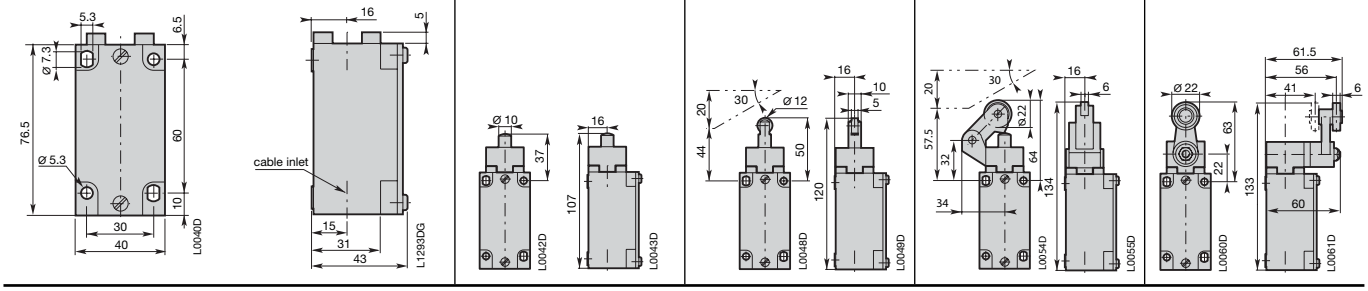
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Snap action contacts 13 21 Zb 14 22	**Type**	**LS4 ☐ M11B11**	**LS4 ☐ M13B11**	**LS4 ☐ M31B11**	**LS4 ☐ M41B11**
	Operation diagram				
Non-overlapping Slow action contacts 13 21 Zb 14 22	**Type**	**LS4 ☐ M11D11**	**LS4 ☐ M13D11**	**LS4 ☐ M31D11**	**LS4 ☐ M41D11**
	Operation diagram				
Weight (packing per unit)	**kg**	0.240	0.240	0.275	0.280

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS4..M.. Limit Switches

Metal Casing IP66 - 40 mm Width
1 Cable Inlet for Cable Gland

Movement to be detected:

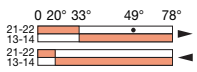
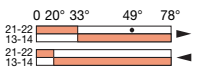
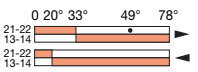
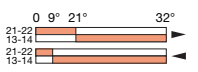
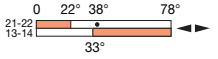
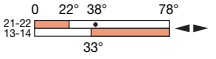
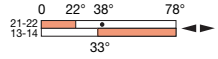
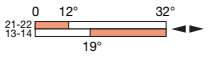
30° Cam Translation Movement		Fully Direction Trans.	Multidirectional
			

Actuator

	ø22 stainless steel roller lever	Adjustable ø22 plastic roller lever	Adjustable ø6 plastic rod lever	Spring rod
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50041 (A shape) ⊕	– ⊕	EN 50041 (D shape) ⊕	– –
Maximum actuation speed	1.5 m/s	1.5 m/s	1.5 m/s	1 m/s
Min. force / torque: - actuation	0.15 N.m	0.15 N.m	0.15 N.m	0.18 N.m
- positive opening operation	0.30 N.m	0.30 N.m	0.30 N.m	–

Additional Technical Data

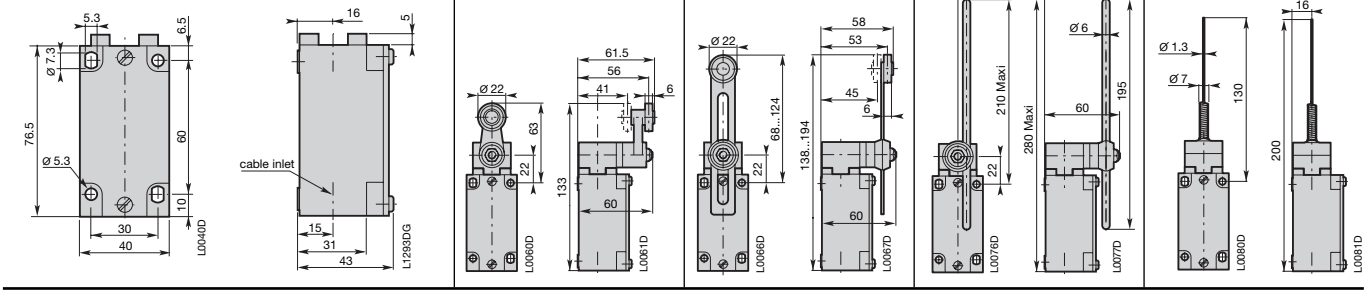
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Snap action contacts 	Type	LS4 ☐ M42B11	LS4 ☐ M51B11	LS4 ☐ M72B11	LS4 ☐ M91B11
	Operation diagram				
Non-overlapping Slow action contacts 	Type	LS4 ☐ M42D11	LS4 ☐ M51D11	LS4 ☐ M72D11	LS4 ☐ M91D11
	Operation diagram				
Weight (packing per unit)	kg	0.280	0.290	0.285	0.235

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS7..M.. Limit Switches

Metal Casing IP66 - 60 mm Width
3 Cable Inlets for Cable Gland

Movement to be detected:

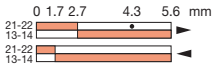
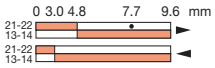
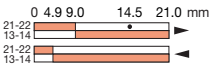
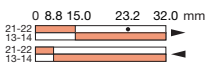
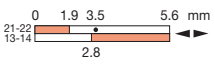
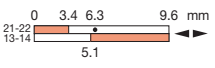
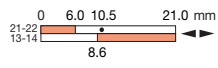
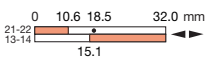
On end	30° Cam Translat.	Unidirectional 30° Cam Translation	
			

Actuator

	Metal plunger	ø11 metal roller plunger	ø12.5 plastic roller lever on steel plunger	ø22 plastic roller lever on steel plunger
Conformity / ⊖ (N.C. contact with positive opening operation)	– ⊖	– ⊖	– ⊖	– ⊖
Maximum actuation speed	0.5 m/s	0.3 m/s	1 m/s	1 m/s
Min. force / torque: - actuation	15 N	12 N	7 N	7 N
- positive opening operation	45 N	41 N	24 N	24 N

Additional Technical Data

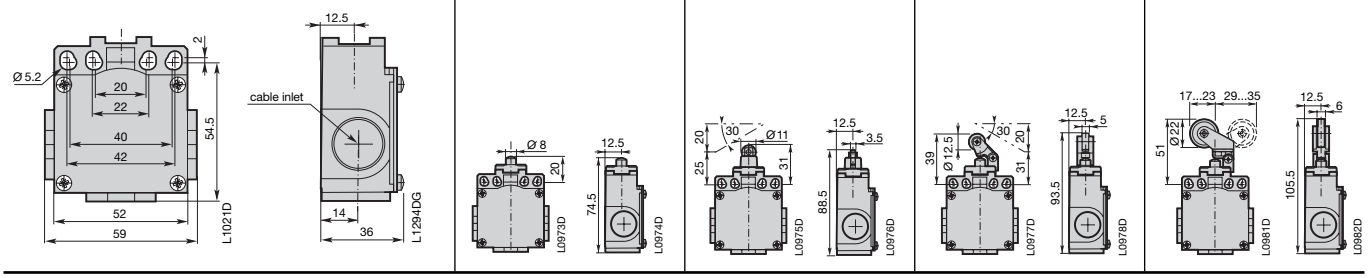
LS type code to be complete with the cable inlet code ..... [0] = Pg 13.5
[1] = Pg 11
[2] = M16 x 1.5
[3] = M20 x 1.5
[5] = 1/2" NPT

Snap action contacts 13 21 Zb 14 22	**Type**	**LS7 ☐ M11B11**	**LS7 ☐ M12B11**	**LS7 ☐ M31B11**	**LS7 ☐ M38B11**
	Operation diagram				
Non-overlapping Slow action contacts 13 21 Zb 14 22	**Type**	**LS7 ☐ M11D11**	**LS7 ☐ M12D11**	**LS7 ☐ M31D11**	**LS7 ☐ M38D11**
	Operation diagram				
Weight (packing per unit)	**kg**	0.270	0.280	0.265	0.270

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS7..M.. Limit Switches

Metal Casing IP66 - 60 mm Width
3 Cable Inlets for Cable Gland

Movement to be detected:

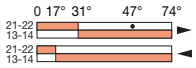
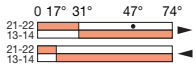
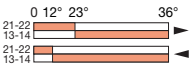
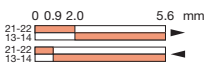
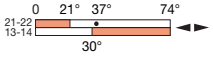
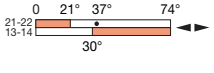
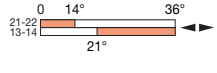
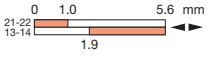
30° Cam Translat.	Fully directional Trans.	Multidirectional	Pull action
			

Actuator

	ø18 plastic roller with bent lever	Adjustable ø3 stainless steel rod lever	Spring rod	Pull action with ring
Conformity / ⊕ (N.C. contact with positive opening operation)	– ⊕	– ⊕	– –	– –
Maximum actuation speed	1.5 m/s	1.5 m/s	1 m/s	0.5 m/s
Min. force / torque: - actuation	0.1 N.m	0.1 N.m	0.12 N.m	30 N
- positive opening operation	0.32 N.m	0.32 N.m	–	–

Additional Technical Data

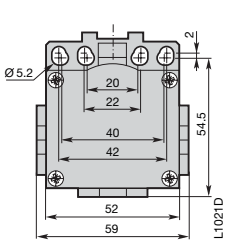
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

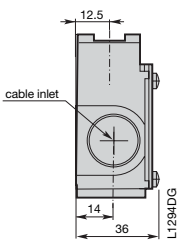
Snap action contacts 	**Type**	**LS7 ☐ M45B11**	**LS7 ☐ M71B11**	**LS7 ☐ M91B11**	**LS7 ☐ M98B11-A**
	Operation diagram				
Non-overlapping Slow action contacts 	**Type**	**LS7 ☐ M45D11**	**LS7 ☐ M71D11**	**LS7 ☐ M91D11**	**LS7 ☐ M98D11-A**
	Operation diagram				
Weight (packing per unit)	**kg**	0.335	0.380	0.315	0.350

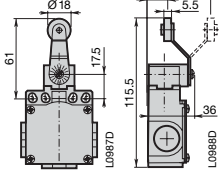
Special heads, accessories and special contact arrangement or particular function: please consult us.

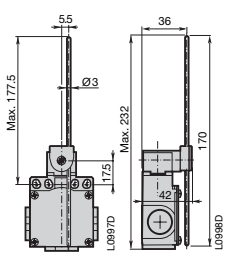
Closed contact / Open contact

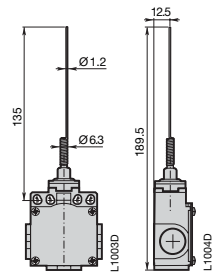
Dimensions (mm)



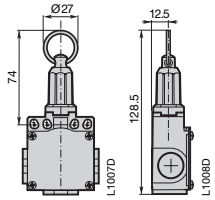








Tearing withstand of:
- operating head: 200 daN
- ring: 40 daN



Safety Limit Switches with Small Latch (Key)

Double Insulation - Plastic Casing IP65 - 30 and 40 mm Width
Metal Casing IP66 - 30 and 40 mm Width

Applications

Easy to use, the limit switches with small latch (key) offer specific qualities:

- Visible operation.
- Capability for strong current switching (conventional thermal current 10 A).
- Opening guaranteed of the "N.C." contact(s) when the small latch is withdrawn from the limit switch.
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operation positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection of industrial machines without inertia in which down-time is less than access time to the dangerous area. Use on sliding or pivoting protectors (covers, cases, doors, grids, etc.).

- They contribute to protection of operators working on dangerous machines, by opening the control circuit. Withdrawal of the small latch (key) by opening the mobile protector causes immediate stopping of the machine drive.
- Associated with other standard limit switches and safety switching devices, they produce automatic control circuits meeting standard EN 954-1.
- They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European an international standards.

Description

LS3..P..-S (30 mm width) and **LS4..P..-S** (40 mm width) safety limit switches with key, which are made of fibre-glass reinforced UL-V0 thermo-plastic material, offer double insulation ⧈ and a degree of protection IP65.

LS3..M..-S (30 mm width) safety limit switches with key, which are made of zinc alloy (zamak), have a degree of protection IP66.

LS4..M..-S (40 mm width) safety limit switches with key, which are made of aluminium alloy, have a degree of protection IP66.

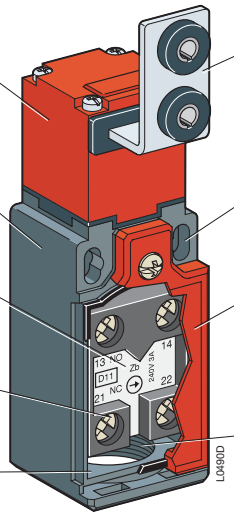
2 operating head options:
- Adjustable every 90° assembled using 4 x ø 3 screws (L3..P), 4 x ø 4 screws (L4..P), 4 x M3 screws (L3..M) and 4 x M4 screws (L4..M)
- Pivoting from 0° to 360° with 1 x M3 screw (LS3..P81 or LS3..M81 only)

Casing:
- 30 mm width with standardized dimensions according to EN 50047
- 40 mm width with standardized dimensions according to EN 50041

Block of 2 or 3 contacts
- Contact configuration: 1 N.O. + 1 N.C., 2 N.C., 1 N.O. + 2 N.C. or 3 N.C. (LS4..P/M only)
- Positive opening operation ⊖
- Snap action (only for blocks of 2 contacts)
- Slow action
- The contacts are electricaly separated

Connecting terminals
- M3.5 (+,-) posidriv 2 screw (Screw head with captive cable clamp)
- Marking conform to IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Terminal for protective conductor placed near the cable inlet and marked: ⏚ (LS3..M & LS4..M only)
- M3.5 (+,–) pozidriv 2 screw (Screw head with captive cable clamp)



7 small latch (key) options (for LS3..P or LS3..M) and 5 small latch (key) options (for LS4..P or LS4..M) to be ordered separately:
- Right angle key (13 or 22 mm fixing)
- Straight key (13 or 22 mm fixing)
- Straight key or right angle key with shock absorber
- Adjustable right angle key

Mounting the casing:
- 2 x M4 screws in top part for 30 mm width
- 2 or 4 x M5 screws for 40 mm width

Cover
- Closed using 1 x ø 3 screw for LS3..P..-S
- Closed using 3 x M3 screws for LS3..M..-S
- Self clipping for LS4..P..-S
- Closed using 2 x M4 screws for LS4..M..-S

One piece sealing gasket to ensure tightness

Electrical connection:
- 1 (LS30P/M & LS40P/M) cable inlet for Pg 13.5 cable gland
- 1 (LS31P/M) cable inlet for Pg 11 cable gland
- 1 (LS32P/M) cable inlet for ISO 16 cable gland
- 1 (LS33P/M & LS43P/M) cable inlet for ISO 20 cable gland
- 1 (LS35P) cable inlet by 1/2" NPT plastic adaptor
- 1 (LS35M & LS45P/M) cable inlet for 1/2" NPT cable gland

Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer (on request)

Type

Example : L S 3 1 P 8 0 D 1 1 – S

L S P – S

Limit **S**witch ..... **LS**

S ..... **S**afety device

Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet for ISO 16 cable gland **2**
1 cable inlet for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M) **5**

Casing width: **4**0 mm **4**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for ISO 20 cable gland **3**
1 cable inlet for 1/2" NPT cable gland **5**

Plastic casing ..... **P**
Metal casing ..... **M**

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
12 ..... **1** N.O. + **2** N.C. contacts (LS4..P.. or LS4..M.. only)
02 ..... **2** N.C. contacts
03 ..... **3** N.C. contacts (LS4..P.. or LS4..M.. only)

Snap action:
B .....Zb Snap (for 1 N.O. + 1 N.C. and 2 N.C. contacts only)

Dependent (slow) action:
L .....Slow / Simultaneous
D .....Zb Non-overlapping late make
C .....Zb Overlapping early make (for 1 N.O. + 1 N.C. contacts only)

Operating heads: (see panorama)
80 .....Adjustable every 90°
81 .....Continuously pivoting from 0° to 360° (LS3..P & LS3..M only)

Safety Limit Switches with Axis or Lever

Double Insulation - Plastic Casing IP65 - 30 mm Width
Metal Casing IP66 - 30 mm Width

Applications

Easy to use, the limit switches with rotative axis or lever offer specific qualities:

- Visible operation.
- Capability for strong current switching (conventional thermal current 10 A).
- Opening of the "N.C." contact(s) for a very small rotation angle: 7°.
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection of light industrial machines without inertia equipped with angular movement protectors (doors, hinged grids, rotative covers or cases, etc.). Detection by the rotative axis or by means of a lever.

- Opening of the mobile protector guarantees operator protection by immediately stopping the machine drive.
- These switches are suitable for conformity of the existing installed machine base, as they can be mounted on protection devices already installed.
- Associated with other standard limit switches and safety switching devices, they produce automatic control circuits meeting standard EN 954-1.
- They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European and international standards.

Description

LS3..P75..-S to **LS3..P77..-S** safety limit switches, which made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation ⧈ and a degree of protection IP65.

LS3..M75..-S to **LS3..M77..-S** safety limit switches, which made of zinc alloy (zamack), have a degree of protection IP66.

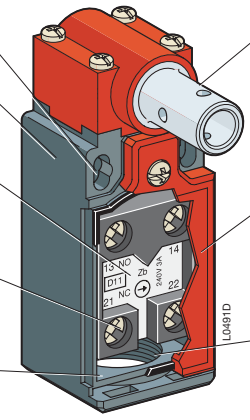
Casing fixing (Plastic or Metal)
- 2 x M4 screws in the top part

Casing (Plastic or Metal)
- 30 mm wide with standardised dimensions corresponding to EN 50047

Block of 2 contacts
- Contact configuration: 1 N.O. + 1 N.C. or 2 N.C.
- Positive opening operation ⊖
- Slow action or snap action
- The 2 contacts are electrically separated

Connecting terminals
- M3.5 (+,-) posidriv 2 screw
(Screw head with captive cable clamp)
- Marking conform to IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Terminal for protective conductor placed near the cable inlet and marked: ⏚ (LS3..M only)
- M3.5 (+,–) pozidriv 2 screw
(Screw head with captive cable clamp)



3 operating head options:
- Galvanised steel rotative axis
- Stainless steel rotative axis
- Galvanised steel flush mounting right angle lever

Assembly by 4 x ø 3 screws for LS3..P..-S
Assembly by 4 x M3 screws for LS3..M..-S

Cover
- Closed using 1 x ø 3 screw for LS3..P..-S
- Closed using 3 x M3 screws for LS3..M..-S

One piece sealing gasket to ensure tightness.

Electrical connection:
- 1 (LS30P/M) cable inlet for Pg 13.5 cable gland
- 1 (LS31P/M) cable inlet for Pg 11 cable gland
- 1 (LS32P/M) cable inlet for ISO 16 cable gland
- 1 (LS33P/M) cable inlet for ISO 20 cable gland
- 1 (LS35P) cable inlet by 1/2" NPT plastic adaptor
- 1 (LS35M) cable inlet for 1/2" NPT cable gland

Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer (on request)

Type

Example : L S | 3 1 | P | 7 5 | D 1 1 – S

L S — Limit **S**witch ..... **LS**

3 1 — Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet M16 x 1.5 for ISO 16 cable gland **2**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M) **5**

P — **P**lastic casing ..... **P**
Metal casing ..... **M**

7 5 — Operating heads: (see panorama)
Galvanised steel rotative axis **75**
Stainless steel rotative axis **76**
Galvanised steel flush mounting right angle lever **77**

D 1 1 — Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
02 ..... **2** N.C. contacts

Snap action:
B .....Zb Snap

Dependent (slow) action:
L .....Slow / Simultaneous
D .....Zb Non-overlapping late make
C .....Zb Overlapping early make

S — **S** .....Safety device

Safety Limit Switches with Pulling Cable

Double Insulation - Plastic Casing IP65 - 30 mm Width
Metal Casing IP66 - 30, 40 and 60 mm Width

Applications

Easy to use, the safety limit switches with pulling cable for emergency stop with latching and manual rest offer specific qualities:

- Visible operation.
- Capability for strong current switching (conventional thermal current 10 A)
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖)
- Electrically separated contacts.
- Precision on operation positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection in the technical premises (testing-station, painting lines,...) and on the industrial machines (presses, conveyor belts, transfer machines,...) being able to present risks or dangerous phenomena under operation.
In any point of his working area, the operator must be able to easily actuate (to pull) the cable to order the stop of the machine or the work in progress.

- Associated with safety switching devices, they produce automatic control circuits meeting standard EN 954-1.
- They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European an international standards.

Description

Safety limit switches with pulling cable for emergency stop with Latching and manual reset :

LS3..P..-SCR (30 mm width), which are made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation ⧈ and a degree of protection IP65.

LS3..M..-SCR (30 mm width), which are made of zinc alloy (zamak), have a degree of protection IP66.

LS4..M..-SCR (40 mm width) and **LS6..M..-SCR** (60 mm width), which are made of aluminium alloy, have a degree of protection IP66.

Blue manual reset button

Casing:
- 30 mm width with standardized dimensions according to EN 50047
- 40 mm width with standardized dimensions according to EN 50041
- 60 mm width

Block of 2 or 3 contacts
- Contact configuration: 1 N.O. + 1 N.C., 2 N.C., 1 N.O. + 2 N.C. or 3 N.C. (LS4..M..-SCR & LS6..M..-SCR only)
- Positive opening operation ⊖
- Snap action (only for blocks of 2 contacts)
- Slow action
- The contacts are electrically separated

Connecting terminals
- M3.5 (+,-) posidriv 2 screw (Screw head with captive cable clamp)
- Marking conform to IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Terminal for protective conductor placed near the cable inlet and marked: ⏚ (LS3..M..-SCR, LS4..M..-SCR & LS6..M..-SCR only)
- M3.5 (+,–) pozidriv 2 screws (Screw head with captive cable clamp)

Operating head:
- Assembling using 4 x M3 screws for LS3..M
- Assembling using 4 x ø 3 screws for LS3..P
- Assembling using 4 x M4 screws for 40 & 60 mm width

Mounting the casing:
- 2 x M4 screws in top part for 30 mm width
- 2 or 4 x M5 screws for 40 mm width
- 2 x M5 screws in top part for 60 mm width

Cover
- Closed using 1 x ø 3 screw for LS3..P..-SCR
- Closed using 3 x M3 screws for LS3..M..-SCR
- Closed using 2 x M4 screws for LS4..M..-SCR
- Closed using 4 x M4 screws for LS6..M..-SCR

One piece sealing gasket to ensure tightness

Electrical connection:
- * (LS30P/M, LS40M & LS60M) cable inlet for Pg 13.5 cable gland
- 1 (LS31P/M) cable inlet for Pg 11 cable gland
- 1 (LS32P/M) cable inlet for ISO 16 cable gland
- * (LS33P/M, LS43M & LS63M) cable inlet for ISO 20 cable gland
- 1 (LS35P) cable inlet by 1/2" NPT plastic adaptor
- * (LS35M, LS45M & LS65M) cable inlet for 1/2" NPT cable gland

* 1 cable inlet (LS3.P/M & LS4.M) & 3 cable inlets (LS6.M)

Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer (on request)

Type

Example : L S | 3 1 | P | 9 8 | D 1 1 – SCR

L S | | **P** | | | – **SCR**

Limit **S**witch ..... **LS**

SCR ..... Safety device with ring

Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet for ISO 16 cable gland **2**
1 cable inlet for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M) **5**

Casing width: **4**0 mm **4**
Casing width: **6**0 mm **6**
1 cable inlet (LS40M) or 3 x cable inlets (LS60M) for Pg 13.5 cable gland **0**
1 cable inlet (LS43M) or 3 x cable inlets (LS63M) for ISO 20 cable gland **3**
1 cable inlet (LS45M) or 3 x cable inlets (LS65M) for 1/2" NPT cable gland **5**

Plastic casing ..... **P**
Metal casing ..... **M**

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
12 ..... **1** N.O. + **2** N.C. contacts (LS4..M.. or LS6..M.. only)
02 ..... **2** N.C. contacts
03 ..... **3** N.C. contacts (LS4..M.. or LS6..M.. only)

Snap action:
B .....Zb Snap (for 1 N.O. + 1 N.C. and 2 N.C. contacts only)

Dependent (slow) action:
L .....Slow / Simultaneous
D .....Zb Non-overlapping late make
C .....Zb Overlapping early make (for 1 N.O. + 1 N.C. contacts only)

Operating heads:
98 ..... with ring and blue manual reset

Double Insulation - Plastic Casing IP65 - 30 and 40 mm Width
Metal Casing IP66 - 30 and 40 mm Width

LS30P80D11-S

LS32M80D11-S

LS40P80D12-S

LS40M80D12-S

LSA30P08

LS30P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 2
LS31P: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 0 1
LS32P: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 0 3
LS33P: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 2 2
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 1

Plastic Casing - 30 mm Width
IP65 □

LS30M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 8
LS31M: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 1 7
LS32M: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 1 9
LS33M: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 3 8
LS35M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 7

Metal Casing - 30 mm Width
IP66

Ordering Details - Product without | Small Latch (Key)

Contact blocks		Type	Order code	Weight kg (1)
13 21 Zb 14 22	11 21 12 22			
D11	**L02**	state cable inlet code □	state cable inlet code □□	Packing 1 piece
Plastic Limit Switches with Adjustable Head Every 90°				
1	-	LS3 □ P80D11-S	1SBV03 □□ 80R1411	0.080
-	1	LS3 □ P80L02-S	1SBV03 □□ 80R1302	0.080
Metal Limit Switches with Adjustable Head Every 90°				
1	-	LS3 □ M80D11-S	1SBV03 □□ 80R1411	0.180
-	1	LS3 □ M80L02-S	1SBV03 □□ 80R1302	0.180

(1) For LS**3**5P add 0.007 kg.

LS40P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 5
LS43P: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 0 7
LS45P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 4

Plastic Casing - 40 mm Width
IP65 □

LS40M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 1
LS43M: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 1 6
LS45M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 1

Metal Casing - 40 mm Width
IP66

Ordering Details - Product without | Small Latch (Key)

Contact blocks		Type	Order code	Weight kg
13 21 31 14 22 32	11 21 31 12 22 32			
D12	**L03**	state cable inlet code □	state cable inlet code □□	Packing 1 piece
Plastic Limit Switches with Adjustable Head Every 90°				
1	-	LS4 □ P80D12-S	1SBV03 □□ 80R1412	0.155
-	1	LS4 □ P80L03-S	1SBV03 □□ 80R1303	0.155
Metal Limit Switches with Adjustable Head Every 90°				
1	-	LS4 □ M80D12-S	1SBV03 □□ 80R1412	0.210
-	1	LS4 □ M80L03-S	1SBV03 □□ 80R1303	0.210

Ordering Details - Small Latch (Key)

Description of key	Fixing mm	Type	Order code	Weight kg Packing 1 piece
Small Latch (Keys) for LS3..P.. or LS3..M..				
Right angle key	13	LSA30P05	1SBV 048 605 R1000	0.011
Straight key	13	LSA30P06	1SBV 048 606 R1000	0.011
Right angle key with shock absorber	15	LSA30P07	1SBV 048 607 R1000	0.014
Straight key with shock absorber	15	LSA30P08	1SBV 048 608 R1000	0.014
Adjustable angle key	40	LSA30P09	1SBV 048 609 R1000	0.022
Small Latch (Keys) for LS4..P.. or LS4..M..				
Right angle key	13	LSA40X05	1SBV 048 805 R1000	0.014
Straight key	13	LSA40X06	1SBV 048 806 R1000	0.014
Right angle key with shock absorber	15	LSA40X07	1SBV 048 807 R1000	0.017
Straight key with shock absorber	15	LSA40X08	1SBV 048 808 R1000	0.017
Adjustable angle key	40	LSA40X09	1SBV 048 809 R1000	0.025

Safety Limit Switches with Axis or Lever

Double Insulation - Plastic Casing IP65 - 30 mm Width
Metal Casing IP66 - 30 mm Width

LS30P75D11-S

LS32M76D11-S

LS30P77D11-S

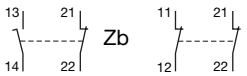
LS30P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 2
LS31P: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 0 1
LS32P: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 0 3
LS33P: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 2 2
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 1

Plastic Casing - 30 mm Width
IP65 ☐

LS30M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 8
LS31M: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 1 7
LS32M: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 1 9
LS33M: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 3 8
LS35M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 7

Metal Casing - 30 mm Width
IP66

Ordering Details

Contact blocks		**Type**	**Order code**	**Weight kg** (1)
		state cable inlet code ☐	state cable inlet code ☐☐	Pack[ing] 1 piece
D11	**L02**			
Plastic Limit Switches with Rotative Axis (zinc plated)				
1	-	LS3 ☐ P75D11-S	1SBV03 ☐☐ 75R1411	0.090
-	1	LS3 ☐ P75L02-S	1SBV03 ☐☐ 75R1302	0.090
Plastic Limit Switches with Stainless Steel Rotative Axis				
1	-	LS3 ☐ P76D11-S	1SBV03 ☐☐ 76R1411	0.090
-	1	LS3 ☐ P76L02-S	1SBV03 ☐☐ 76R1302	0.090
Metal Limit Switches with Rotative Axis (zinc plated)				
1	-	LS3 ☐ M75D11-S	1SBV03 ☐☐ 75R1411	0.190
-	1	LS3 ☐ M75L02-S	1SBV03 ☐☐ 75R1302	0.190
Metal Limit Switches with Stainless Steel Rotative Axis				
1	-	LS3 ☐ M76D11-S	1SBV03 ☐☐ 76R1411	0.190
-	1	LS3 ☐ M76L02-S	1SBV03 ☐☐ 76R1302	0.190
Plastic Limit Switches with Lever (zinc plated)				
1	-	LS3 ☐ P77D11-S	1SBV03 ☐☐ 77R1411	0.110
-	1	LS3 ☐ P77L02-S	1SBV03 ☐☐ 77R1302	0.110
Metal Limit Switches with Lever (zinc plated)				
1	-	LS3 ☐ M77D11-S	1SBV03 ☐☐ 77R1411	0.210
-	1	LS3 ☐ M77L02-S	1SBV03 ☐☐ 77R1302	0.210

(1) For LS **35**P add 0.007 kg.

Safety Limit Switches with Pulling Cable

Double Insulation - Plastic Casing IP65 - 30 mm Width
Metal Casing IP66 - 30, 40 and 60 mm Width

LS32M98D11-SCR

LS40M98D11-SCR

LS60M98D12-SCR


LSR5242


LSR5444


LSR5343


LSR5551

LS30P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 2
LS31P: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 0 1
LS32P: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 0 3
LS33P: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 2 2
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 1

Plastic Casing - 30 mm Width
IP65 ⧈

LS30M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 8
LS31M: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 1 7
LS32M: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 1 9
LS33M: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 3 8
LS35M: 1 cable inlet for 1/2" NPT cable gland ..... 5 ..... 3 7

Metal Casing - 30 mm Width
IP66

Contact blocks		Type	Order code	Weight kg (1)
13 21 Zb 14 22	11 21 12 22			
D11	**L02**	state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
Plastic Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset				
1	-	LS3 ☐ P98D11-SCR	1SBV03 ☐☐ 98R1411	0.115
-	1	LS3 ☐ P98L02-SCR	1SBV03 ☐☐ 98R1302	0.115
Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset				
1	-	LS3 ☐ M98D11-SCR	1SBV03 ☐☐ 98R1411	0.270
-	1	LS3 ☐ M98L02-SCR	1SBV03 ☐☐ 98R1302	0.270

(1) For LS 35P add 0.007 kg.

LS40M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 1
LS43M: 1 cable inlet for ISO 20 cable gland ..... 1 ..... 1 6
LS45M: 1 cable inlet for 1/2" NPT cable gland ..... 2 ..... 3 1

Metal Casing - 40 mm Width
IP66

LS60M: 3 cable inlets for Pg 13.5 cable gland ..... 0 ..... 1 3
LS63M: 3 cable inlets for ISO 20 cable gland ..... 1 ..... 1 5
LS65M: 3 cable inlets for 1/2" NPT cable gland .... 2 ..... 3 3

Metal Casing - 60 mm Width
IP66

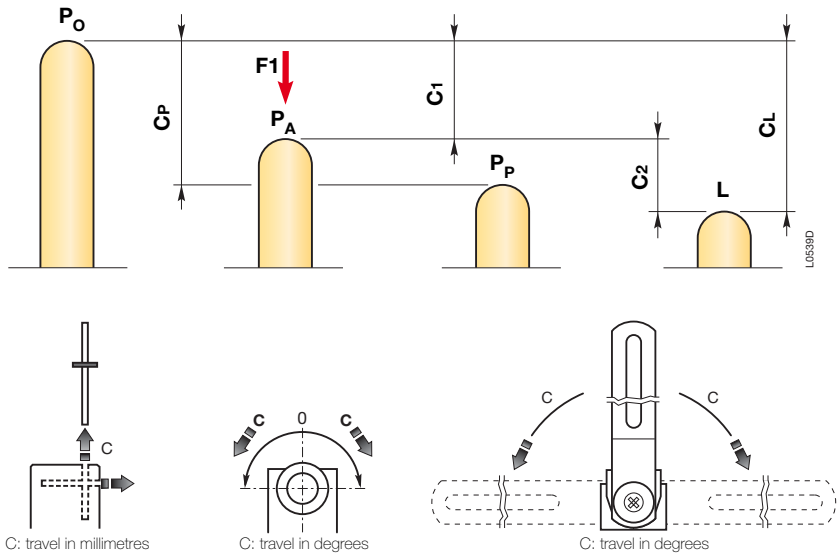
Contact blocks		Type	Order code	Weight kg
13 21 31 14 22 32	11 21 31 12 22 32			
D12	**L03**	state cable inlet code ☐	state cable inlet code ☐☐	Packing 1 piece
Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset				
1	-	LS4 ☐ M98D12-SCR	1SBV03 ☐☐ 98R1412	0.270
-	1	LS4 ☐ M98L03-SCR	1SBV03 ☐☐ 98R1303	0.270
Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset				
1	-	LS6 ☐ M98D12-SCR	1SBV03 ☐☐ 98R1412	0.300
-	1	LS6 ☐ M98L03-SCR	1SBV03 ☐☐ 98R1303	0.300

Accessories

Description of accessories		Type	Order code	Weight kg Packing 1 piece
Cable grip D5		LSR5242	1SBV 047 800 R5242	0.060
Cable end protector D5		LSR5343	1SBV 047 800 R5343	0.005
Cable support M8 x 59		LSR5444	1SBV 047 800 R5444	0.080
Turnbuckle M6		LSR5141	1SBV 047 800 R5141	0.080
End spring (LS3...P, LS3...M)		LSR5845	1SBV 047 800 R5845	0.050
End spring (LS4...M, LS6...M)		LSR5846	1SBV 047 800 R5846	0.050
D5 red cable: length	10.50 meters	LSR5547	1SBV 047 800 R5547	0.580
	15.50 meters	LSR5548	1SBV 047 800 R5548	0.860
	25.50 meters	LSR5549	1SBV 047 800 R5549	1.410
	51.00 meters	LSR5550	1SBV 047 800 R5550	2.790
	102.00 meters	LSR5551	1SBV 047 800 R5551	5.600

Safety Limit Switches

Travel and Operating diagrams



P_O Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force **F1,** when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force **F1**.

C_1 Pre-travel (average travel):
distance between the free position **P_O** and the operating position **P_A.**

C_P Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

C_2 Over-travel (average travel):
distance between the operating position **P_A** and the max. travel position **L**.

C_L Max. travel (maximum travel):
distance between the free position **P_O** and the max. travel position **L**.

Note: **C_{1-1}** = pre-travel of contact 21-22,
C_{1-2} = pre-travel of contact 13-14.

Examples:

LS30P80L02-S
Simultaneous slow action contacts

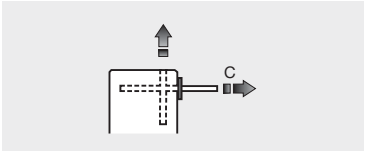


Diagram
in millimetres / key travel

LS30P76D11-S
non-overlapping slow action contacts

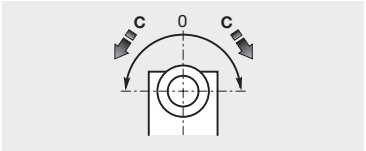
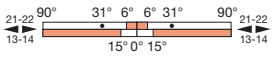


Diagram
in degrees / lever rotation



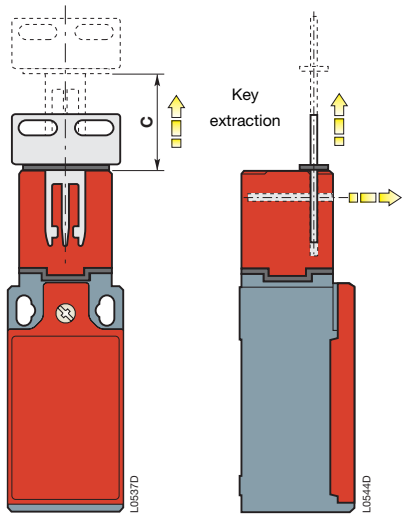
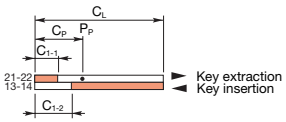


Diagram for non-overlapping slow action contacts:



C: travel

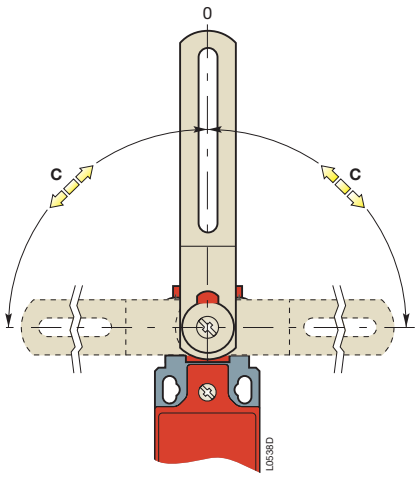
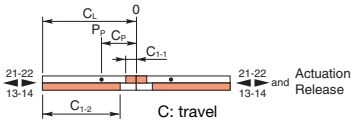


Diagram for non-overlapping slow action contacts:

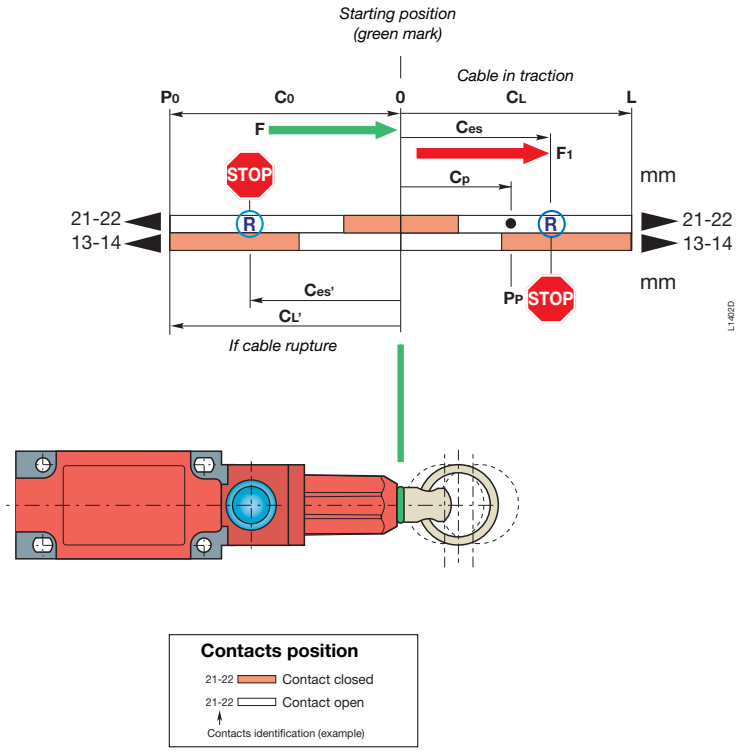


C: travel

Contacts position

Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

Travel and Operating diagrams and Installation



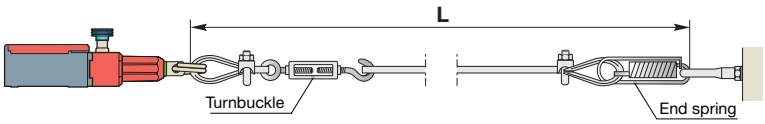
Po	Free position: position of the switch actuator (ring plunger) when no external force exerted on it.
Pp	Positive opening position: position of switch actuator (ring plunger) from which positive opening is ensured.
0	Starting position (green mark): the safety system is on by pulling the blue reset button.
L	Max. travel position: maximum acceptable travel position of the switch actuator (ring plunger).
Co	Minimum travel for arming the safety system and to obtain the starting position under the effect of a force **F**.
Cp	Positive opening travel: minimum travel of the switch actuator (ring plunger), from the starting position, to ensure the positive opening operation of the normally closed contact (**N.C.**).
Ces, Ces'	Emergency Stop and Latching travel: minimum travel to obtain the emergency stop and the mechanical latching of the safety system under the effect of a force **F1**.
CL	Max. travel (maximum travel): distance between the starting position **0** and the max. travel position **L**.
CL'	Distance between the starting position **0** and the free position **Po** if the cable breaks.

Installation

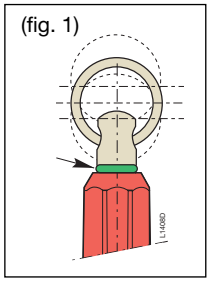
To obtain the right operation of the apparatus, please follow carefully below instructions:

1. If necessary, according the Limit Switch position turn the head by unscrewing the 4 fixing screws in oder that the blue reset button become accessible. When the head is well place, re-screw the 4 screws with a tightening torque of 0.8 Nm.
2. In order to have the cable correctly guided, fix tightly the apparatus and the cable support on rigid elements. Insert on the side of the Limit Switch a turnbuckle, and in the other side of the cable an extremity spring. Put the cable in tension by using the turnbuckle till the green mark appear on the metal plunger at the extremity of the red head (fig. 1).
3. Pull the blue reset button to arm the safety system and close the safety contacts.
4. The inside contacts of the Limit Switch will always change of position each time the cable will be operated (by pulling) as shown on the above diagram.
5. Check that the apparatus operate correctly before to switch on the machine by following the below test procedure :
   a) pull slowly the cable, the blue reset button doesn't change of position but the **N.C.** contact open and operate the "normal" stop of the machine.
   b) Pull the cable with an **F1** force, the blue reset button change of position and operate the emergency stop of the machine with latching of the safety system.
   c) In order to switch on again the device, please come back to point n° 2 and repeat the operation (if necessary).
6. The use of those apparatus involve the respect of following standard: EN 1088, EN 292, EN 954-1

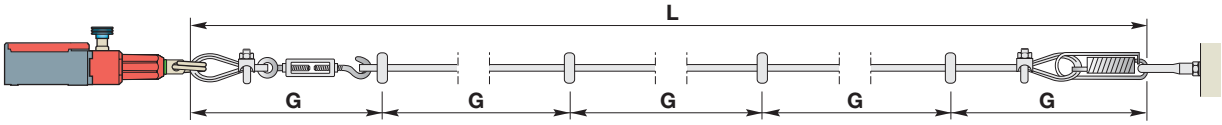
LS3..M98..-SCR and **LS3..P98-SCR** series: **L** = 6 m maximum
LS4..M98..-SCR and **LS6..M98-SCR** series: **L** = 16 m maximum



(fig. 1)



LS3..M98..-SCR and **LS3..P98-SCR** series: **L** = 15 m maximum **G** = 3 m maximum
LS4..M98..-SCR and **LS6..M98-SCR** series: **L** = 25 m maximum **G** = 3÷5 m maximum



Safety Limit Switches

Plastic Casing ▣ IP65 and Metal Casing IP66
Technical Data

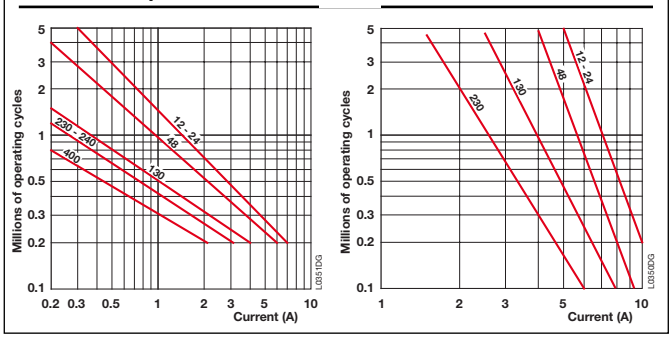
General Technical Data

			Plastic Casing	Metal Casing
Standards			IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508,and CSA C22-2 No. 14	
Certifications - Approvals			UL - CSA - CCC	
Air temperature near the device				
– during operation		**°C**	-25 ... +70	
– for storage		**°C**	-30 ... +80	
Climatic withstand			According to IEC 68-2-3 and salty mist according to IEC 68-2-11	
Mounting positions			All positions are authorised	
Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) (1/2 sinusoidal shock for 11 ms) no change in contact position		**g**	Limit switch with **small latch** (key)**:** 10 g Limit switch with **rotative axis** or **lever** and Limit switch **with pulling cable:** 40 g	
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6)		**g**	5 g (10 ... 500 Hz) no change in position of contacts > 100 µs	
Protection against electrical shocks (acc. to IEC 536)			Class II	Class I
Degree of protection (according to IEC 529 and EN 60529)			IP65	IP66

Electrical Data

					Plastic Casing	Metal Casing
Rated insulation voltage U_i						
– according to IEC 60947-1 and EN 60947-1				**V**	500 (degree of pollution 3)	500 (LS4..M..), (LS6..M..), 400 (LS3..M..) - (degree of pollution 3)
– according to UL 508, CSA C22-2 No. 14					600	600 (LS4..M..), (LS6..M..), 300 (LS3..M..)
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)				**kV**	6	
Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C)				**A**	10	
Short-circuit protection - gG type fuses				**A**	10	
Rated operational current						
I_e / AC-15	– acc. to IEC 60947-5-1	24 V - 50/60 Hz		**A**	10	
		130 V - 50/60 Hz		**A**	5.5	
		230 V - 50/60 Hz		**A**	3.1	
		240 V - 50/60 Hz		**A**	3	
		400 V - 50/60 Hz		**A**	1.8	
	– according to UL 508, CSA C22 No.14				A 600	A 600 (LS4..M), (LS6..M) - A 300 (LS3..M)
I_e / DC-13	– acc. to IEC 60947-5-1	24 V - d.c.		**A**	2.8	
		110 V - d.c.		**A**	0.6	
		250 V - d.c.		**A**	0.27	
	– according to UL 508, CSA C22 No.14				Q 600	Q 600 (LS4..M), (LS6..M) - Q 300 (LS3..M)
Positivity					Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1	
Resistance between contacts				**mΩ**	25	
Mechanical durability			Millions of operations		> 1 million	
Max. switching frequency				**Cycles/h**	600	
Electrical durability (according to IEC 60947-5-1 appendix C)					Utilization categories AC-15 and DC-13 (see curves and values below)	
– Max. switching frequency				**Cycles/h**	3600	
– Load factor					0.5	
Connecting data of contact blocks						
	Connecting terminals				M3.5 (+,–) pozidriv 2 screw with cable clamp	
	Connecting capacity		1 or 2 x **mm² / AWG**		0.5 mm² / AWG 20 to 2.5 mm² / AWG 14	
	Terminal marking				According to EN 50013	

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

LS3..P80..-S and LS3..M80..-S Limit Switches with Small Latch (Key) and adjustable Head

1 Cable Inlet for Cable Gland

Movement to be detected:

Small Latch (Key), Front or Vertical Translation

Casing 30 mm width

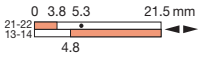
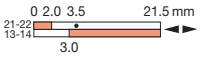
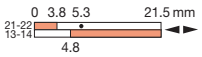
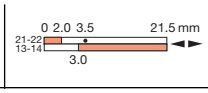
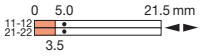
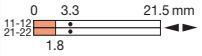
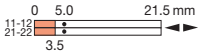
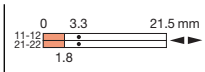
- Plastic: Degree of protection IP65
- Metal: Degree of protection IP66

Actuator

	Key	Key
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖
Actuation speed: maximal / minimal	0.5 / 0.01 m/s	0.5 / 0.01 m/s
Min. force / torque: - for insertion of the key	15 N	15 N
- for extraction of the key	15 N	15 N
- positive opening operation	30 N	30 N

Additional Technical Data (Operating diagrams with keys inserted)

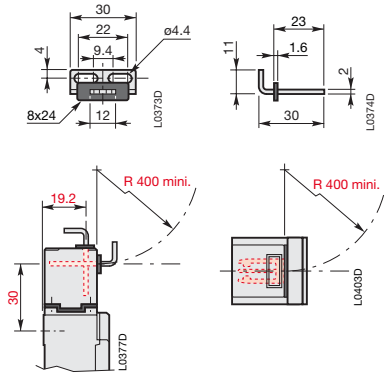
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT (by plastic adaptor for LS3..P80..-S)

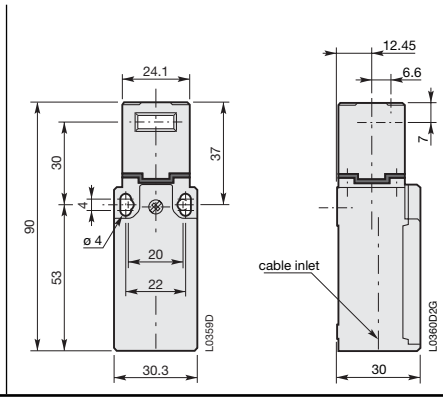
Snap action contacts slow action contacts  Zb	Type	LS3☐P80D11-S		LS3☐M80D11-S	
	Operation diagram				
Simultaneous Slow action contacts 	Type	LS3☐P80L02-S		LS3☐M80L02-S	
	Operation diagram				
Weight (packing per unit) kg		0.080		0.180	

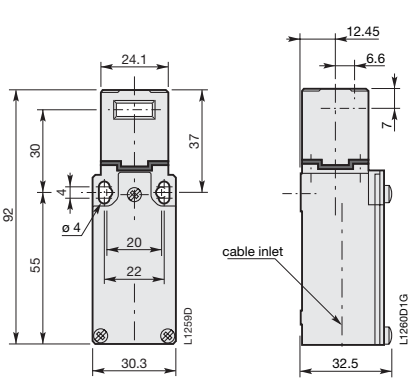
Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)







LS4..P80..-S and LS4..M80..-S Limit Switches with Small Latch (Key) and adjustable Head

1 Cable Inlet for Cable Gland

Movement to be detected:

Small Latch (Key), Front or Vertical Translation

Casing 40 mm width

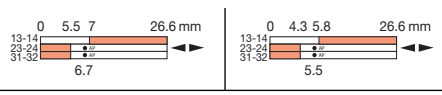
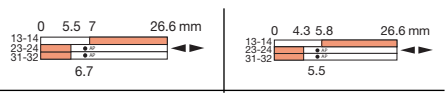
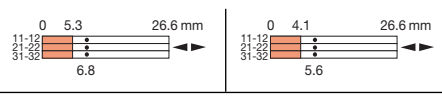
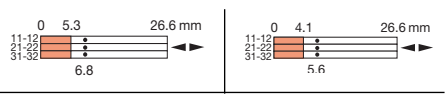
- Plastic: Degree of protection IP65
- Metal: Degree of protection IP66

Actuator

	Key	Key
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖
Actuation speed: maximal / minimal	0.5 / 0.01 m/s	0.5 / 0.01 m/s
Min. force / torque: - for insertion of the key	30 N	30 N
- for extraction of the key	30 N	30 N
- positive opening operation	45 N	45 N

Additional Technical Data (Operating diagrams with keys inserted)

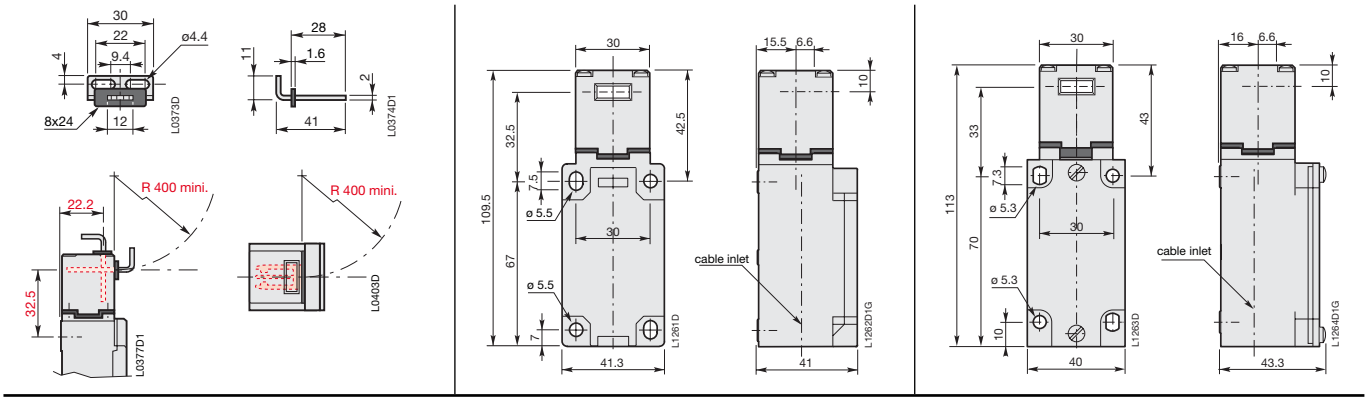
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
3 = M20 x 1.5
5 = 1/2" NPT

Non-overlapping slow action contacts 	**Type**	**LS4 ☐ P80D12-S**	**LS4 ☐ M80D12-S**
	Operation diagram		
Simultaneous Slow action contacts 	**Type**	**LS4 ☐ P80L03-S**	**LS4 ☐ M80L03-S**
	Operation diagram		
Weight (packing per unit)	**kg**	0.155	0.210

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



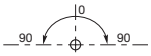
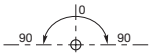
LS3..P7..-S and LS3..M7..-S Limit Switches with Rotative Axis and adjustable Head

1 Cable Inlet for Cable Gland

Movement to be detected: **Angular Around Rotative Axis**

Casing 30 mm width

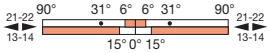
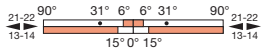
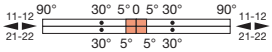
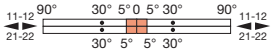
- Plastic: Degree of protection IP65
- Metal: Degree of protection IP66

Actuator	 Rotative Axis (zinc plated)	 Stainless Steel Rotative Axis
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖
Actuation speed: maximal / minimal	0.5 / 0.01 m/s	0.5 / 0.01 m/s
Min. force / torque: - actuation	0.12 N.m	0.12 N.m
- positive opening operation	0.60 N.m	0.60 N.m

Additional Technical Data

LS type code to be complete with the cable inlet code

- [0] = Pg 13.5
- [1] = Pg 11
- [2] = M16 x 1.5
- [3] = M20 x 1.5
- [5] = 1/2" NPT (by plastic adaptor for LS3..P7..-S)

Non-overlapping slow action contacts 	**Type**	**LS3☐P75D11-S**	**LS3☐M75D11-S**	**LS3☐P76D11-S**	**LS3☐M76D11-S**
	Operation diagram				
Simultaneous Slow action contacts 	**Type**	**LS3☐P75L02-S**	**LS3☐M75L02-S**	**LS3☐P76L02-S**	**LS3☐M76L02-S**
	Operation diagram				
Weight (packing per unit)	**kg**	0.090	0.190	0.090	0.190

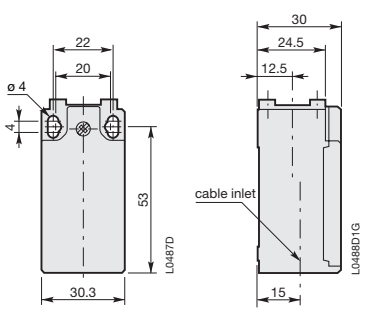
Special heads, accessories and special contact arrangement or particular function: please consult us.

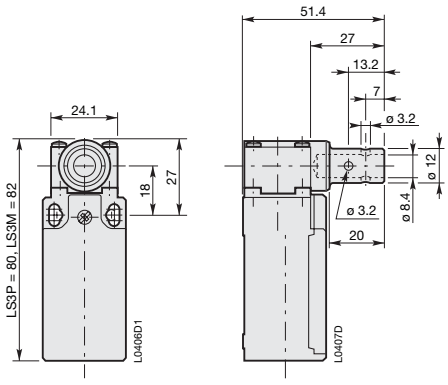
Closed contact / Open contact

Dimensions (mm)

Plastic Casing

(for Metal Casing see page 54)





LS3..P7..-S and LS3..M7..-S Limit Switches with Right Angle Lever and Adjustable Head

1 Cable Inlet for Cable Gland

Movement to be detected:

Angular with Lever

Lever adjusted to the left (by user) | Lever in central position (factory assembled) | Lever adjusted to the right (by user)

Casing 30 mm width

- Plastic: Degree of protection IP65
- Metal: Degree of protection IP66

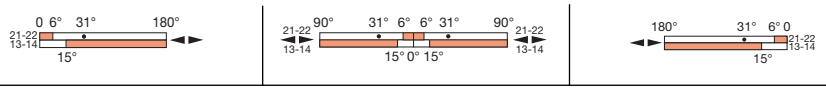
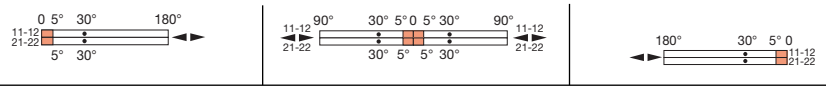
Actuator

Galvanized steel flush mounting right angle lever

Conformity / ⊖ (N.C. contact with positive opening operation)	⊖
Actuation speed: maximal/minimal	0.5 / 0.01 m/s
Min. force / torque: - actuation	0.12 N.m
- positive opening operation	0.60 N.m

Additional Technical Data

LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT (by plastic adaptor for LS..P7..-S)

Non-overlapping slow action contacts 13 21 Zb 14 22	**Type**	**LS3 ☐ P77D11-S / LS3 ☐ M77D11-S**
	Operation diagram	
Simultaneous Slow action contacts 11 21 12 22	**Type**	**LS3 ☐ P77L02-S / LS3 ☐ M77L02-S**
	Operation diagram	
Weight (packing per unit)	**kg**	LS3..P77..-S = 0.110 kg / LS3..M77..-S = 0.210 kg

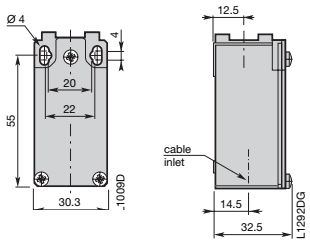
Special heads, accessories and special contact arrangement or particular function: please consult us.

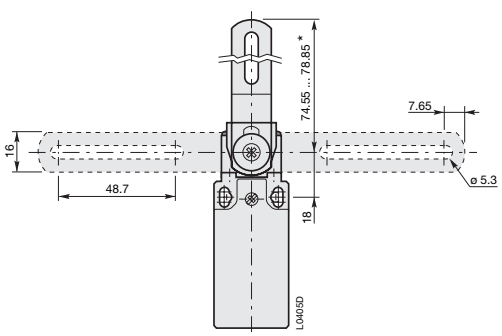
Closed contact / Open contact

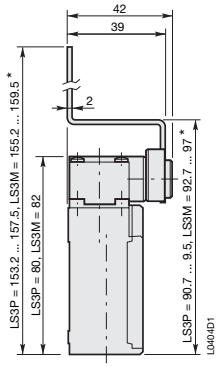
Dimensions (mm)

Metal Casing

(for Plastic Casing see page 53)





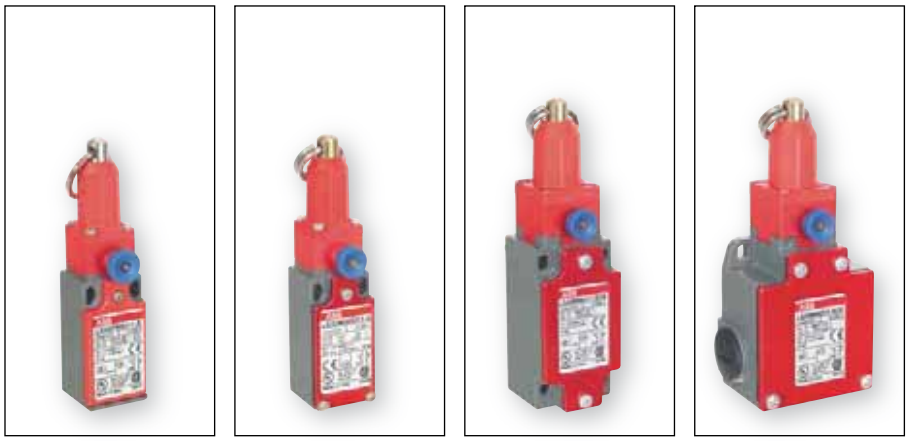


* Adjusted to maximum by factory

LS3..P98..-SCR, LS3..M98..-SCR, LS4..M98..-SCR and LS6..M98..-SCR Safety Limit Switches

With Pulling Cable for Emergency Stop and Manual Reset

Movement to be detected: **Stop by Pulling the cable**



Casing 30 mm width
- Plastic: Degree of protection IP65
- Metal: Degree of protection IP66
- 1 cable inlet for cable gland

Casing 40 mm width
- Metal: Degree of protection IP66
- 1 cable inlet for cable gland

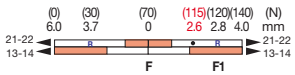
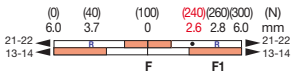
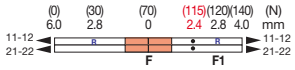
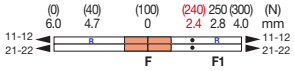
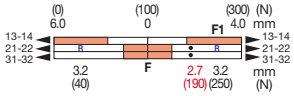
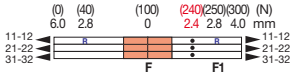
Casing 60 mm width
- Metal: Degree of protection IP66
- 3 cable inlets for cable gland

Actuator

	Red cable	Red cable
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖
Min. force : - for arming the safety system (**F**)	70 N	100 N
- for actuation	95 N	170 N
- for activating the reset and stop (**F1**)	120 N	250 N
- positive opening operation	115 N	240 N

Additional Technical Data

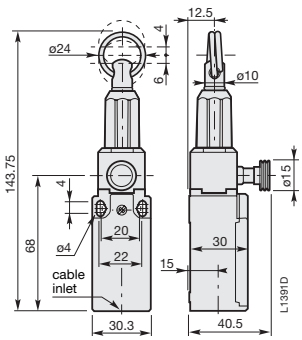
LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11 (except for LS4..M98..-SCR and LS6..M98..-SCR)
2 = M16 x 1.5 (except for LS4..M98..-SCR and LS6..M98..-SCR)
3 = M20 x 1.5
5 = 1/2" NPT (by plastic adaptor for LS3..P98..-SCR)

Non-overlapping slow action contacts 13 21 / 14 22 Zb	**Type**	**LS3 ☐ P98D11-SCR**	**LS3 ☐ M98D11-SCR**	**LS4 ☐ M98D11-SCR**	**LS6 ☐ M98D11-SCR**
	Operation diagram				
Simultaneous slow action contacts 11 21 / 12 22	**Type**	**LS3 ☐ P98L02-SCR**	**LS3 ☐ M98L02-SCR**	**LS4 ☐ M98L02-SCR**	**LS6 ☐ M98L02-SCR**
	Operation diagram				
Non-overlapping slow action contacts 13 21 31 / 14 22 32	**Type**			**LS4 ☐ M98D12-SCR**	**LS6 ☐ M98D12-SCR**
	Operation diagram				
Simultaneous slow action contacts 11 21 31 / 12 22 32	**Type**			**LS4 ☐ M98L03-SCR**	**LS6 ☐ M98L03-SCR**
	Operation diagram				
Weight (packing per unit)	**kg**	0.115	0.270	0.270	0.300

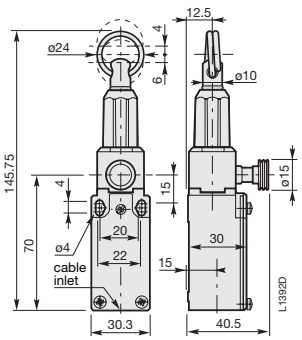
Closed contact / Open contact

Dimensions (mm)

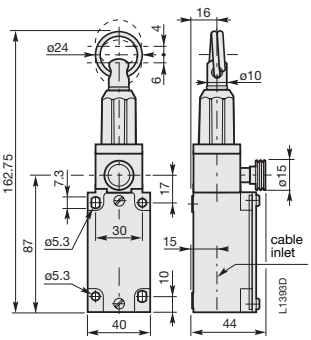
LS3..P98..-SCR



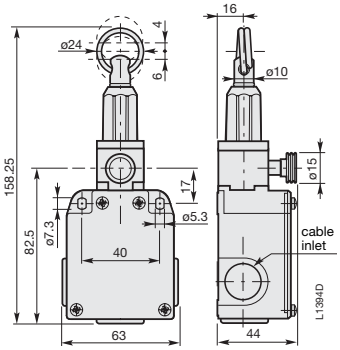
LS3..M98..-SCR



LS4..M98..-SCR



LS6..M98..-SCR



Limit Switches with Latch and Manual Reset

Plastic Casing IP65 □ and Metal Casing IP66 - 30 mm Width

Applications

Easy to use, the limit switches for safety applications with latch and manual reset offer specific qualities:

- Visible operation (fault memorisation).
- Capability for strong current switching (conventional thermal current 10 A).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for detection and monitoring of faults in hoisting machines, electric lifts, freight elevators, escalators, conveyor belts, etc.

Limit switches with latch and manual reset comply with the requirements of standard EN 81-1: safety rules for the construction and installations of electric lifts. In this application they detect or monitor: cabin overtravel, cabin speed by means of a speed limiting device, energisation of the parachute block on detection of excessive speed with respect to the set-point value, etc.

They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European and international standards.

Description

LS3..P..-R (plastic casing, 30 mm width) limit switches with latch and manual reset, which are made of fibreglass reinforced UL-V0 thermoplastic material, offer double insulation □ and a degree of protection IP65.
LS3..M..-R (metal casing, 30 mm width) limit switches, which are made of zinc alloy (zamack), have a degree of protection IP66.
Limit switches with latch and manual reset are equipped with 1 N.C. + 1 N.O. or 2 N.C. contact blocks with positive opening operation of the "N.C." contact(s). After actuating the control device and overshooting the latching point, the N.C. safety contact(s) remain in the open position.
Return to the initial operating state takes place by voluntary action on the reset button.

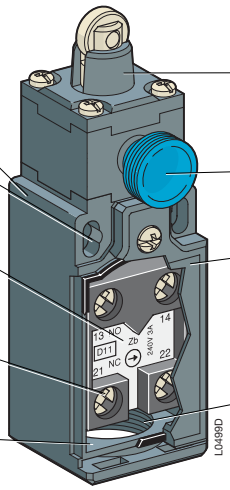
Casing
- 30 mm wide with standardized dimensions corresponding to EN 50047

Casing fixing
- 2 x M4 screws in the top part

Block of 2 contacts
- Contact configuration: 1 N.O. + 1 N.C. or 2 N.C.
- Positive opening operation ⊖
- Snap or dependent action
- The 2 contacts are electrically separated

Connecting terminals
- M3.5 (+,-) posidriv 2 screw (Screw head with captive cable clamp)
- Marking conform to IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Terminal for protective conductor placed near the cable inlet and marked: ⏚ (LS3..M only)
- M3.5 (+,–) pozidriv 2 screw (Screw head with captive cable clamp)



A variety of operating head options:
- Plain plunger
- Roller plunger
- Roller lever adjustable or not, etc.

Assembly using 4 x ø 3 screws for LS3..P..
Assembly using 4 x M3 screws for LS3..M..

Blue manual reset button

Cover
- Closed using 1 x ø 3 screw for LS3..P..-R
- Closed using 3 x M3 screws for LS3..M..-R

One piece sealing gasket to ensure tightness

Electrical connection:
- 1 (LS30P/M) cable inlet for Pg 13.5 cable gland
- 1 (LS31P/M) cable inlet for Pg 11 cable gland
- 1 (LS32P/M) cable inlet for ISO 16 cable gland
- 1 (LS33P/M) cable inlet for ISO 20 cable gland
- 1 (LS35P) cable inlet by 1/2" plastic adaptor
- 1 (LS35M) cable inlet for 1/2" cable gland

Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer (on request).

Type

Example : L S | 3 0 | P | 1 3 | D 1 1 – R

L S — Limit **S**witch ..... **LS**

R ..... Reset Device

Contact types:
11 ..... **1** N.O. + **1** N.C. contacts
02 ..... **2** N.C. contacts

Casing width: **3**0 mm **3**
1 cable inlet for Pg 13.5 cable gland **0**
1 cable inlet for Pg 11 cable gland **1**
1 cable inlet M16 x 1.5 for ISO 16 cable gland **2**
1 cable inlet M20 x 1.5 for ISO 20 cable gland **3**
1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M) **5**

Snap action:
B .....Zb Snap

Dependent (slow) action:
L .....Slow / Simultaneous
D .....Zb Non-overlapping late make
C .....Zb Overlapping early make

Plastic casing ..... **P**
Metal casing ..... **M**

Operating heads: (see panorama)
11 ... **55** and **71** ... **74, 78** ..... codes

LS3..P..-R and LS3..M..-R Limit Switches with Latch and Manual Reset

Plastic Casing IP65 □ and Metal Casing IP66 - 30 mm Width

LS31P11D11-R

LS31P13D11-R

LS32M31D11-R

LS32M41D11-R

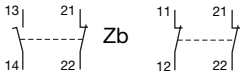
LS30P: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 0 2
LS31P: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 0 1
LS32P: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 0 3
LS33P: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 2 2
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 2 1

Plastic Casing - 30 mm Width
IP65 □

LS30M: 1 cable inlet for Pg 13.5 cable gland ..... 0 ..... 1 8
LS31M: 1 cable inlet for Pg 11 cable gland ..... 1 ..... 1 7
LS32M: 1 cable inlet for ISO 16 cable gland ..... 2 ..... 1 9
LS33M: 1 cable inlet for ISO 20 cable gland ..... 3 ..... 3 8
LS35M: 1 cable inlet by 1/2" NPT plastic adaptor .. 5 ..... 3 7

Metal Casing - 30 mm Width
IP66

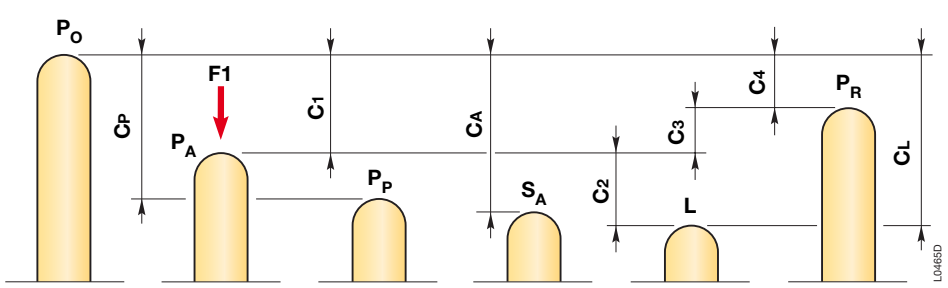
Ordering Details

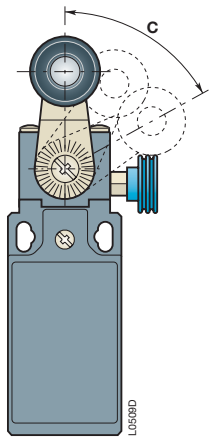
Contact blocks		Type	Order code	Weight kg (1)
 Zb **D11**	**B02**	state cable inlet code □	state cable inlet code □□	Packing 1 piece
Plastic Limit Switches with steel plain plunger (zinc plated)				
1	-	LS3 □ P11D11-R	1SBV02 □□ 11R1411	0.090
-	1	LS3 □ P11B02-R	1SBV02 □□ 11R1202	0.090
Plastic Limit Switches with plastic (polyacetal) roller plunger				
1	-	LS3 □ P13D11-R	1SBV02 □□ 13R1411	0.090
-	1	LS3 □ P13B02-R	1SBV02 □□ 13R1202	0.090
Plastic Limit Switches with plastic roller (polyacetal) **lever**				
1	-	LS3 □ P41D11-R	1SBV02 □□ 41R1411	0.095
-	1	LS3 □ P41B02-R	1SBV02 □□ 41R1202	0.095
Metal Limit Switches with steel plain plunger (zinc plated)				
1	-	LS3 □ M11D11-R	1SBV02 □□ 11R1411	0.190
-	1	LS3 □ M11B02-R	1SBV02 □□ 11R1202	0.190
Metal Limit Switches with plastic (polyacetal) **roller lever on steel plunger** (zinc plated)				
1	-	LS3 □ M31D11-R	1SBV02 □□ 31R1411	0.195
-	1	LS3 □ M31B02-R	1SBV02 □□ 31R1202	0.195
Metal Limit Switches with plastic roller (polyactal) **lever**				
1	-	LS3 □ M41D11-R	1SBV02 □□ 41R1411	0.195
-	1	LS3 □ M41B02-R	1SBV02 □□ 41R1202	0.195

(1) For LS 3**5**P add 0.007 kg

Limit Switches with Latch and Manual Reset

Travel and Operation diagrams





P_O Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force **F1**, when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

S_A Latching point:
point of no return of the switch actuator beyond which the opened status of the (N.C.) contact(s) is maintained. Unlocking will only occur after deliberate action on the reset button.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force **F1**.

P_R Release position:
position of the switch actuator when the contacts return to their initial free position.

C_1 Pre-travel (average travel):
distance between the free position P_O and the operating position P_A.

C_P Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

C_A Latching travel (average travel):
distance between the free position P_O and the latching point S_A.

C_2 Over-travel (average travel):
distance between the operating position P_A and the max. travel position **L**.

C_L Max. travel (maximum travel):
distance between the free position P_O and the max. travel position **L**.

C_3 Differential travel (C_1-C_4) (average travel):
travel difference of the switch actuator between the operating position P_A and the release position P_R.

C_4 Release travel (average travel):
distance between the release position P_R and the free position P_O.

Diagram for snap action contacts:

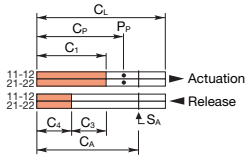
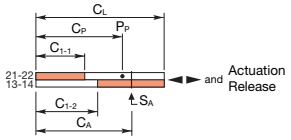


Diagram for non-overlapping slow action contacts:



Contacts position

Note: for slow action contacts, $C_3 = 0$, C_{1-1} = pre-travel of contact 21-22, C_{1-2} = pre-travel of contact 13-14.

Examples:

LS30P13D11-R
non-overlapping slow action contacts

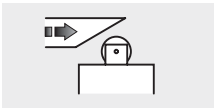
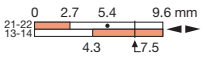


Diagram in millimetres / cam travel



LS30P41L02-R
simultaneous slow action contacts

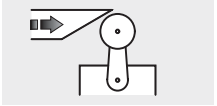
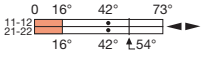


Diagram in degrees / lever rotation



LS30P11B02-R
snap action contacts

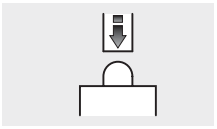
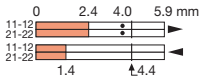


Diagram in millimetres / plunger travel



Limit Switches with Latch and Manual Reset

Technical Data

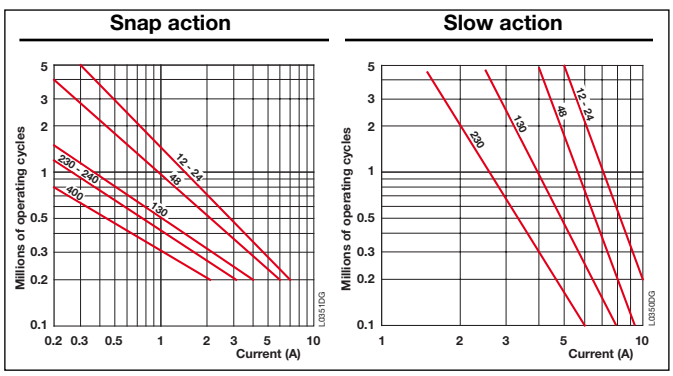
General Technical Data

			Plastic Casing	Metal Casing
Standards			IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508, CSA C22-2 No.14	
Certifications - Approvals			UL - CSA - CCC	
Air temperature near the device				
– during operation		**°C**	-25 ... +70	
– for storage		**°C**	-30 ... +80	
Climatic withstand			According to IEC 68-2-3 and salty mist according to IEC 68-2-11	
Mounting positions			All positions are authorised	
Shock withstand (according to IEC 68-2-27 and EN 60068-2-27)		**g**	50 g (1/2 sinusoidal shock for 11 ms) no change in contact position	
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6)		**g**	25 g (10 ... 500 Hz) no change in position of contacts > 100 µs	
Protection against electrical shocks (acc. to IEC 536)			Class II	Class I
Degree of protection (according to IEC 529 and EN 60529)			IP65	IP66
Consistency			0.1 mm upon closing points	

Electrical Data

				Plastic Casing	Metal Casing
Rated insulation voltage U_i					
– according to IEC 60947-1 and EN 60947-1			**V**	500 (degree of pollution 3)	400 (degree of pollution 3)
– according to UL 508, CSA C22-2 No.14			**V**	600	300
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)			**kV**	6	
Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C)			**A**	10	
Short-circuit protection gG type fuses			**A**	10	
Rated operational current					
I_e / AC-15	– acc. to IEC 60947-5-1	24 V - 50/60 Hz	**A**	10	
		130 V - 50/60 Hz	**A**	5.5	
		230 V - 50/60 Hz	**A**	3.1	
		240 V - 50/60 Hz	**A**	3	
		400 V - 50/60 Hz	**A**	1.8	
	– according to UL 508, CSA C22 No.14			A 600	A 300
I_e / DC-13	– according to IEC 60947-5-1	24 V - d.c.	**A**	2.8	
		110 V - d.c.	**A**	0.6	
		250 V - d.c.	**A**	0.27	
	– according to UL 508, CSA C22 No.14			Q 600	Q 300
Positivity				Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1	
Resistance between contacts			**mΩ**	25	
Mechanical durability		Millions of operations		> 1 million	
Max. switching frequency			**Cycles/h**	600	
Electrical durability (according to IEC 60947-5-1 appendix C)				Utilization categories AC-15 and DC-13 (see curves and values below)	
– Max. switching frequency			**Cycles/h**	3600	
– Load factor				0.5	
Connecting data of contact blocks					
	Connecting terminals			M3.5 (+,–) pozidriv 2 screw with cable clamp	
	Connecting capacity	1 or 2 x **mm² / AWG**		0.5 mm² / AWG 20 to 2.5 mm² / AWG 14	
	Terminal marking			According to EN 50013	

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

LS3..P..-R Limit Switches with Latch and Manual Reset

1 Cable Inlet for Cable Gland

Movement to be detected:

On end	30° Cam Translation	30° Cam Translation
		

Casing

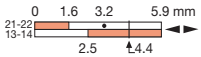
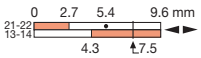
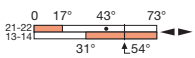
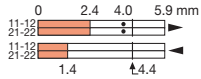
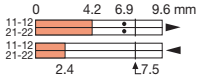
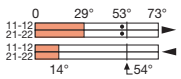
- Plastic
- 30 mm width
- Degree of protection IP65

Actuator

	Steel plain plunger	ø11 Plastic roller plunger	ø18 Rotary lever with plastic roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Maximum actuation speed	0.5 m/s	0.3 m/s	1.5 m/s
Min. force / torque: - actuation	9 N	12 N	0.10 N.m
- positive opening operation	44 N	41 N	0.32 N.m

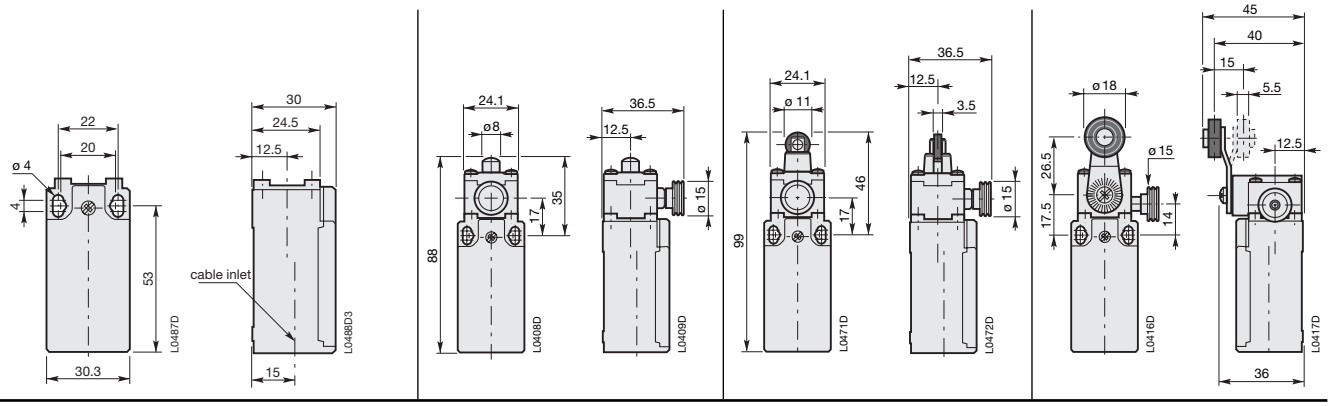
Additional Technical Data

LS type code to be complete with the cable inlet code ..... [0] = Pg 13.5
[1] = Pg 11
[2] = M16 x 1.5
[3] = M20 x 1.5
[5] = 1/2" NPT (by plastic adaptor)

Non-overlapping slow action contacts  Zb	**Type**	**LS3☐P11D11-R**	**LS3☐P13D11-R**	**LS3☐P41D11-R**
	Operation diagram			
Snap action contacts 	**Type**	**LS3☐P11B02-R**	**LS3☐P13B02-R**	**LS3☐P41B02-R**
	Operation diagram			
Weight (packing per unit)	**kg**	0.090	0.090	0.95

Closed contact / Open contact

Dimensions (mm)



LS3..M..-R Limit Switches with Latch and Manual Reset

1 Cable Inlet for Cable Gland

Movement to be detected:

On end	30° Unidirectional Cam	30° Cam Translation
		

Casing

- Metal
- 30 mm width
- Degree of protection IP66

Actuator

	Steel plain plunger	ø12.5 Plastic roller plunger on galvanized steel plunger	ø18 Rotary lever with plastic roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Maximum actuation speed	0.5 m/s	1 m/s	1.5 m/s
Min. force / torque: - actuation	9 N	7 N	0.10 N.m
- positive opening operation	44 N	24 N	0.32 N.m

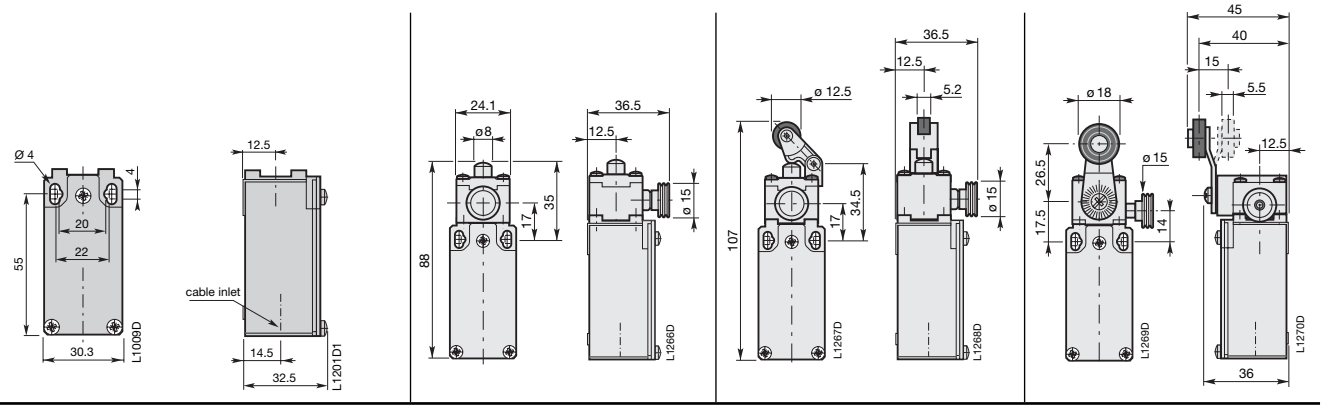
Additional Technical Data

LS type code to be complete with the cable inlet code ..... 0 = Pg 13.5
1 = Pg 11
2 = M16 x 1.5
3 = M20 x 1.5
5 = 1/2" NPT

Non-overlapping slow action contacts 13 21 Zb 14 22	**Type**	**LS3☐M11D11-R**	**LS3☐M31D11-R**	**LS3☐M41D11-R**
	Operation diagram	0 1.6 3.2 5.9 mm 21-22 13-14 2.5 4.4	0 5.3 10.7 19.6 mm 21-22 13-14 8.6 15.6	0 17° 43° 73° 21-22 13-14 31° 54°
Simultaneous slow action contacts 11 21 12 22	**Type**	**LS3☐M11B02-R**	**LS3☐M31B02-R**	**LS3☐M41B02-R**
	Operation diagram	0 2.4 4.0 5.9 mm 11-12 21-22 11-12 21-22 1.4 4.4	0 8.4 13.8 19.6 mm 11-12 21-22 11-12 21-22 4.6 15.6	0 29° 53° 73° 11-12 21-22 11-12 21-22 14° 54°
Weight (packing per unit)	**kg**	0.190	0.195	0.195

Closed contact / Open contact

Dimensions (mm)



Foot Switches

IPS Foot Switches with Covers, IPM Mini Foot Switches
Description

Application

Foot switch operated machines such as: shearing machines, folding machines, spinning lathes, machine tools, wrapping machines, riveting presses, etc.

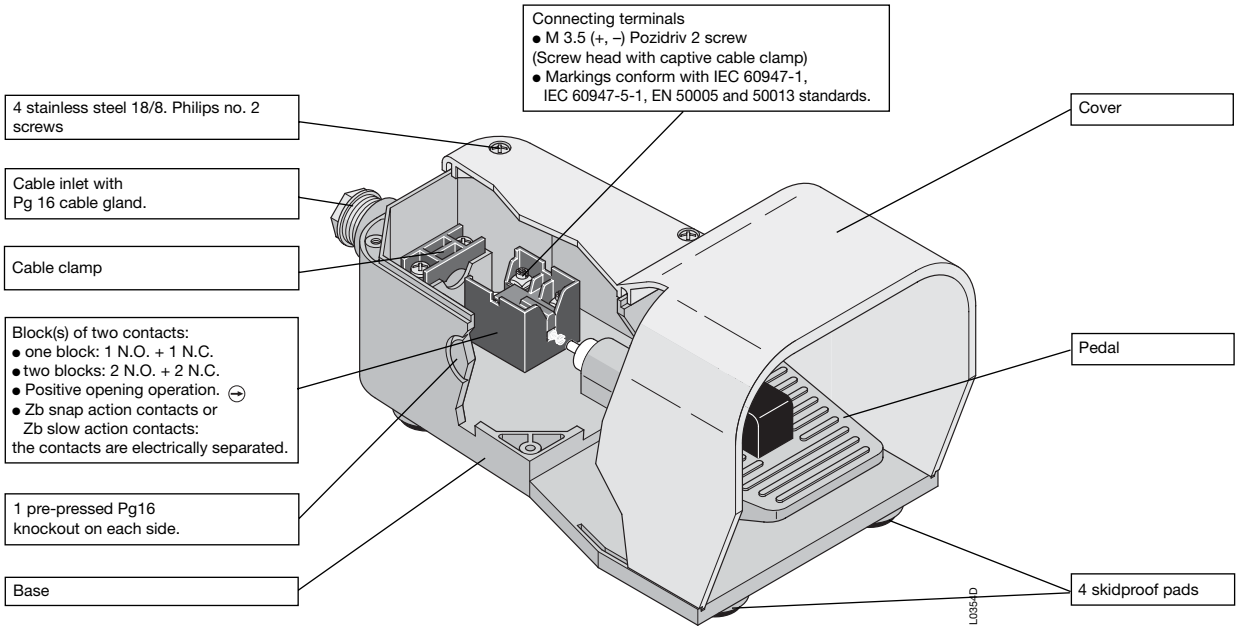
Foot switches with covers come in three operation formats:

- **Free movement:** contact position follows pedal movement: actuated when the pedal is pushed down, released when pedal is in a state of rest.
- **Foot switch locked in neutral position:** same operation as above, after unlocking the pedal with the end of the foot.
- **Foot switch latched in low position:** same operation as free movement, except that a state of rest is obtained only after having unlatched the pedal with the end of the foot.

Description of IPS Foot Switches with Covers

- **Dimensions:** 285 x 140 x 145.
- **Materials:** base, cover and pedal made of shock resistant Bayblend® FR 90 material (alloyed polycarbonate and ABS).
- **Colour choice:** grey base; grey, yellow or red cover.
- **Variations:** grey base, half-red cover. Especially used for emergency stop function.

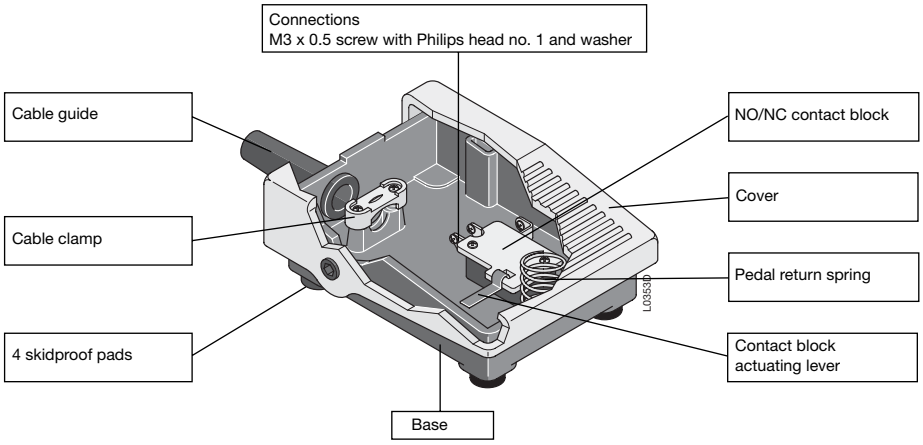
Note: this emergency stop function must never contain the «locked in neutral position» device.



On request: Foot switches with covers can be assembled on a plate and equipped with a transportation handle. Instead of the handle an emergency stop button can be installed above a tube that allows for connection cable passage. (see the catalogue of separate elements)

Description of IPM Mini Foot Switches

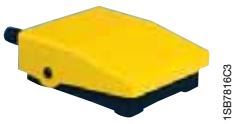
- **Reduced dimensions:** 100 x 75 x 34 mm.
- **Materials:** cover and base made of self-extinguishing ABS.
- **Colour choice:** black or grey base; black, grey, yellow or red cover.



Foot Switches

IPS Foot Switches with Covers
IPM Mini Foot Switches

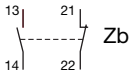
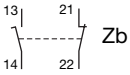
IPSY 1B11



IPM1Y

IPSY: Yellow Cover ..... Y 5
IPSG: Grey Cover ..... G 6
IPSR: Red Cover ..... R 8

Ordering Details

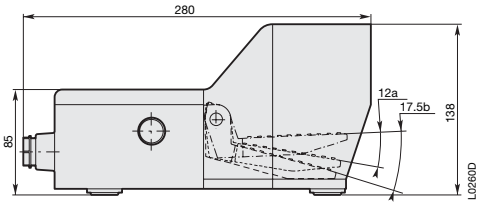
Contact blocks Snap action	Contact blocks Non-overlaping Slow action	Type	Order code	Weight kg (1)
 B11	 D11	state colour code ☐	state colour code ☐	Packing 1 piece
Free Movement				
1	-	IPS ☐ 1B11	1SBV 002 10 ☐ R1211	1.100
-	1	IPS ☐ 1D11	1SBV 002 10 ☐ R1411	1.100
Locked in Neutral Position				
1	-	IPS ☐ 2B11	1SBV 002 20 ☐ R1211	1.100
-	1	IPS ☐ 2D11	1SBV 002 20 ☐ R1411	1.100
Latched in Low Position				
1	-	IPS ☐ 3B11	1SBV 002 30 ☐ R1211	1.100
-	1	IPS ☐ 3D11	1SBV 002 30 ☐ R1411	1.100

Ordering Details

Contact blocks N.O. / N.C.	Cover colour	Type	Order code	Weight kg (1)
				Packing 1 piece
Black Base				
1	Yellow	IPM1Y	1SBV 001 101 R1823	0.130
1	Grey	IPM1G	1SBV 001 102 R1823	0.130
Grey Base				
1	Yellow	IPM2Y	1SBV 001 105 R1823	0.130
1	Grey	IPM2G	1SBV 001 106 R1823	0.130

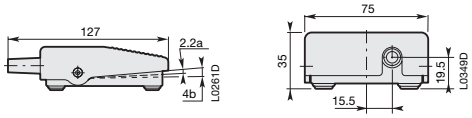
Dimensions (mm)

Foot Switches with cover



Plain foot switch - a = pre-travel, b = total travel

Mini Foot Switches



Foot Switches
Technical Data

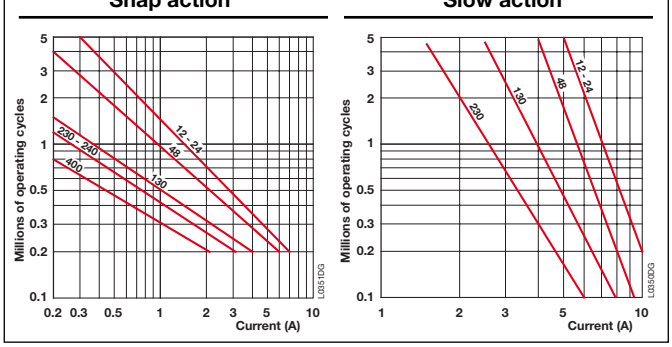
General Technical Data

			Mini Foot Switch	Foot Switch with cover
Standards			IEC 1058-1	IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508, CSA C22-2 No.14
Certifications - Approvals			–	UL - CSA - BG - CCC
Air temperature near the device				
– during operation		**°C**	-10 ... +70	-10 ... +70
– for storage		**°C**	-25 ... +80	-30 ... +80
Climatic withstand			–	According to IEC 68-2-3 and salty mist according to IEC 68-2-11
Shock withstand (according to IEC 68-2-27 and EN 60068-2-27)		**g**	–	50 g (1/2 sinusoidal shock for 11 ms) no change in contact position
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6)		**g**	–	25 g (10 ... 500 Hz) no change in position of contacts > 100 µs
Protection against electrical shocks (acc. to IEC 536)			Class II	Class II
Degree of protection (according to IEC 529 et EN 60529)			IP40	IP65
Operating angle		**Degree**	2 to 4	15
Actuation torque		**N.m.**	1.2	0.25

Electrical Data

				Mini Foot Switch	Foot Switch with cover
Rated insulation voltage U_i			**V**	250	–
– according to IEC 60947-1 and EN 60947-1			**V**	–	500 (degree of pollution 3)
– according to UL 508, CSA C22-2 No.14			**V**	–	600
Rated impulse withstand voltage U_{imp}			**kV**	1	6 (according to IEC 60947-1 and EN 60947-1)
Conventional free air thermal current I_{th}			**A**	15	10 (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C)
Short-circuit protection gG type fuses			**A**	10	10
Rated operational current		250 V - a.c.	**A**	3	–
		230 V - d.c.	**A**	0.06	–
I_e / AC-15	– acc. to IEC 60947-5-1	24 V - 50/60 Hz	**A**	–	10
		130 V - 50/60 Hz	**A**	–	5.5
		230 V - 50/60 Hz	**A**	–	3.1
		240 V - 50/60 Hz	**A**	–	3
		400 V - 50/60 Hz	**A**	–	1.8
	– according to UL 508, CSA C22 No.14			–	A 600
I_e / DC-13	– according to IEC 60947-5-1	24 V - d.c.	**A**	–	2.8
		110 V - d.c.	**A**	–	0.6
		250 V - d.c.	**A**	–	0.27
	– according to UL 508, CSA C22 No.14			–	Q 600
Positivity				–	Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1
Resistance between contacts			**mΩ**	30	25
Mechanical durability		Millions of operations		10	30
Max. switching frequency			**Cycles/h**	–	600
Electrical durability			**Operations**	100000	(according to IEC 60947-5-1 appendice C) Utilization categories AC-15 and DC-13 (see curves and values below)
– Max. switching frequency			**Cycles/h**	–	3600
– Load factor				–	0.5
Connecting data of contact blocks					
Connecting terminals				M3 x 0.5 screw with Philips head	M3.5 (+,–) pozidriv 2 screw with cable clamp
Connecting capacity		1 or 2 x **mm² / AWG**		–	0.5 mm² / AWG 20 to 2.5 mm² / AWG 14
Terminal marking				refer to contact block	According to EN 50013

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

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