

LIMIT SWITCHES

Limit Switches

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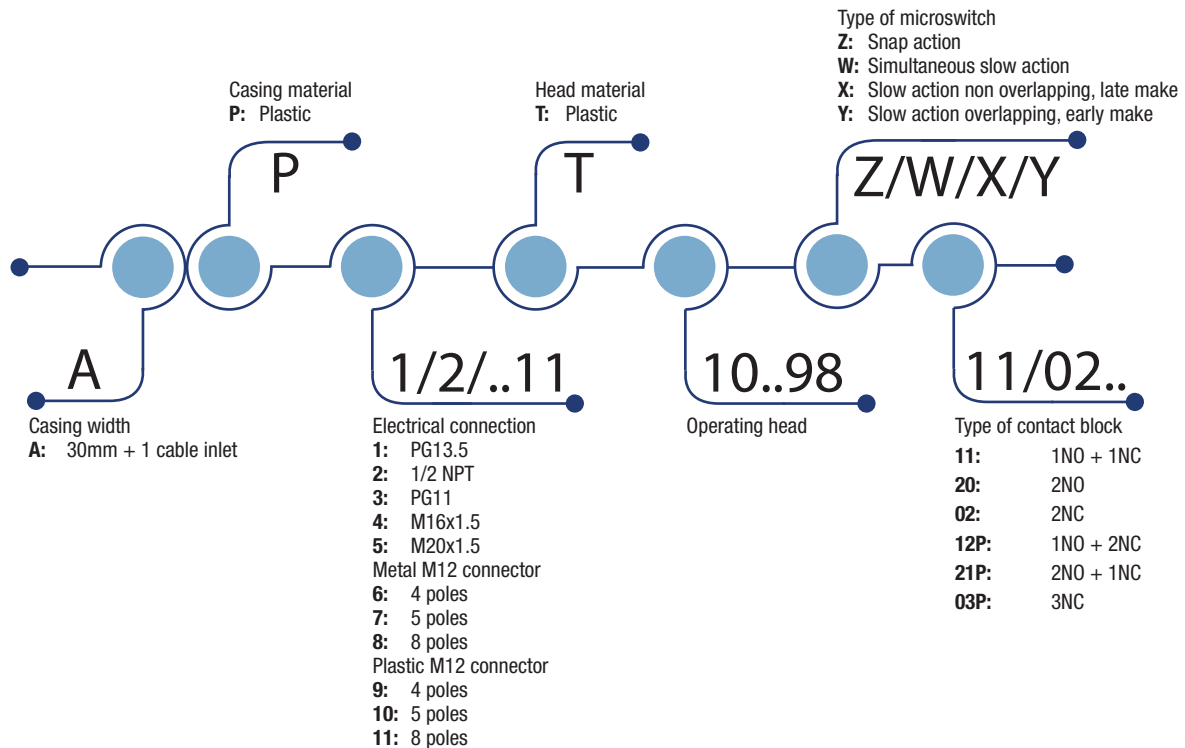
Limit Switches AP series

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø3 screws

03 Casing:

- 30 mm. width with standardized dimensions acc. to EN 50047

04 Mounting screws

- 2 x M4 screws on top part

05 Cover

- 1 screw Ø3 pozidriv 1

06 Contact Block

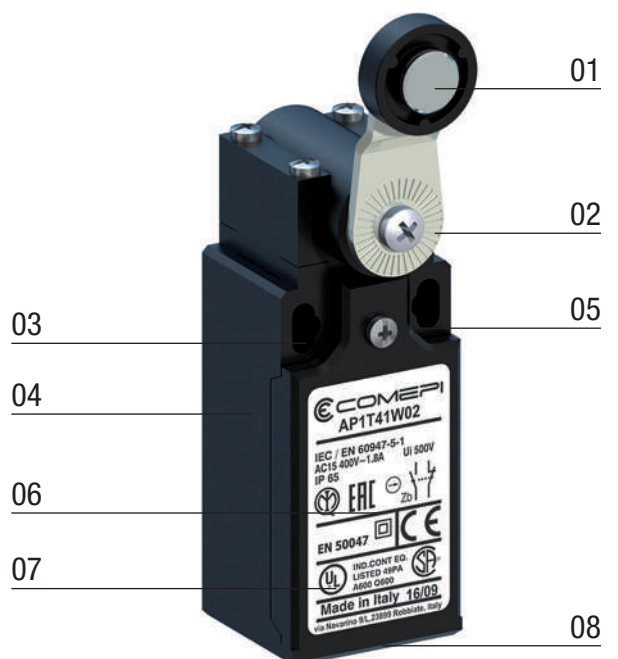
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 1 x threaded cable entry suitable for cable gland, M12 connector or DEUTSCH connector



Limit Switches **AP series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

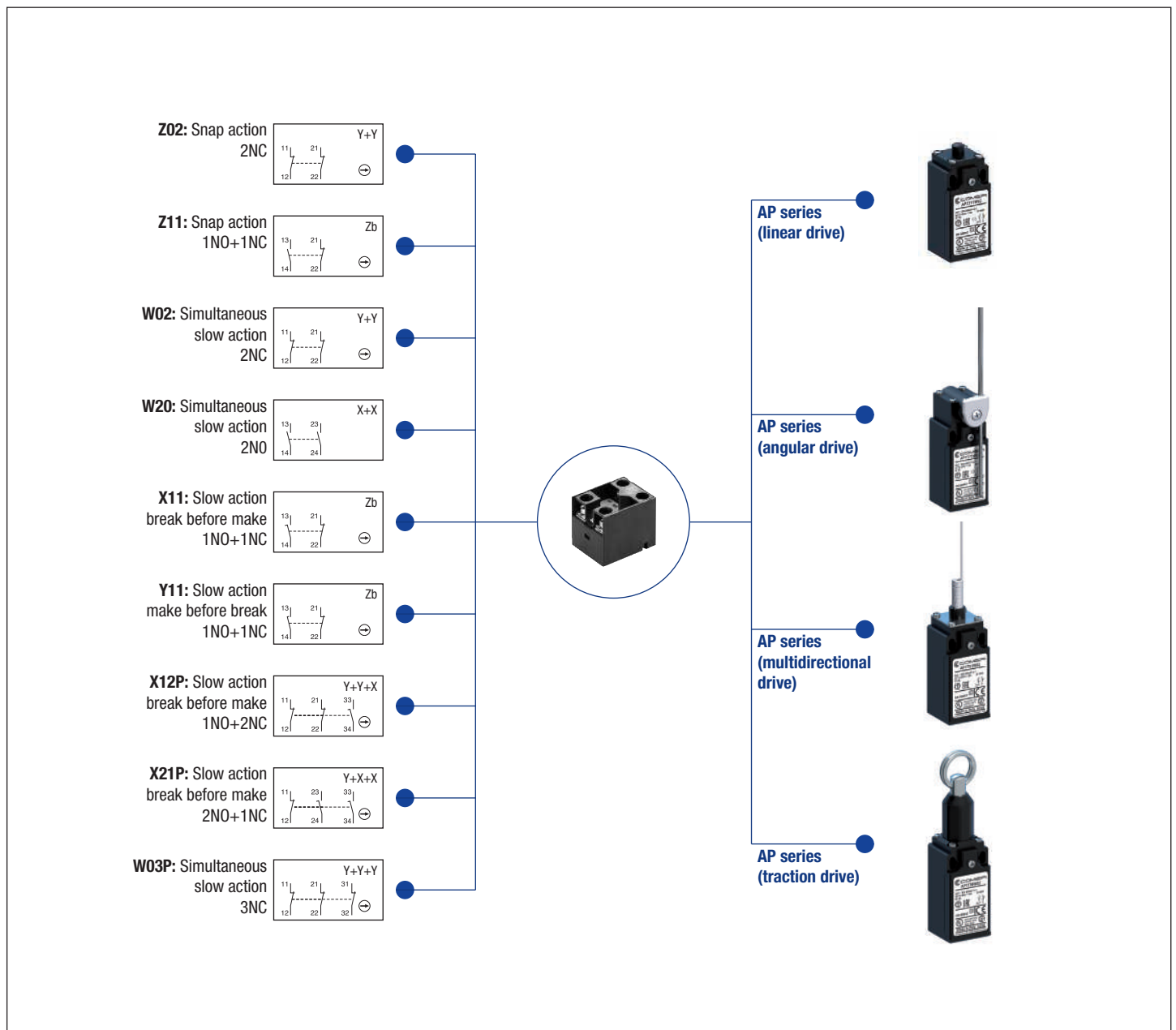
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made of reinforced UL-VO thermoplastic fiber-glass, offer double insulation \square and a degree of protection of IP65.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches AP series

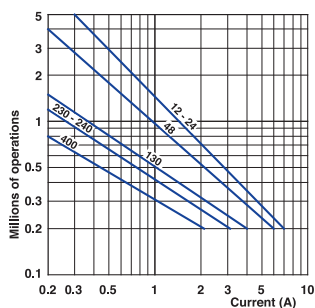
Technical Data

| | AP Series | |
|---|---|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class II | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP65 (for all models) - IP67 (only for operating heads from 10 to 39) | |

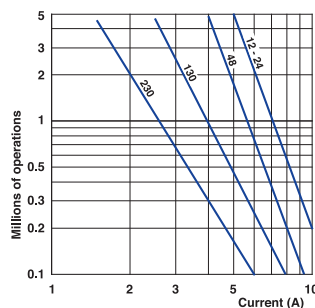
Electrical Data

| | | |
|--|---|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for contacts type X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 0.55 0.4 |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | - | |
| Recommended tightening torque | Plastic | |
| Cover | 0,5Nm, max 0,8 | |
| Head | 0,5Nm, max 0,8 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Mechanical durability | 15 millions of operations 10 millions of operations >5 millions of operations | T10...12; T21; T2101; T30...34; T38 T13; T41...48; T51...55; T61...75 T14; T35; T36; T39; T91...93; T98 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches AP series

Technical Data

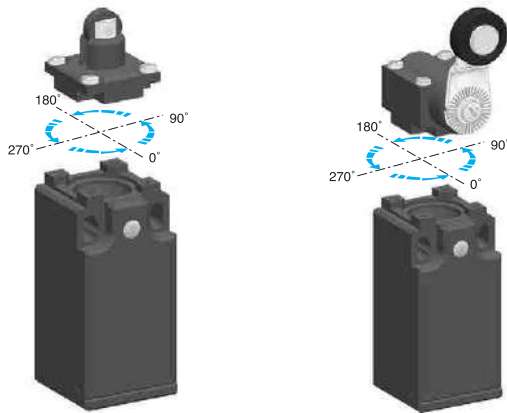
Technical data approved by IMQ

| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
|--|--|--------|
| Degree of protection | IP 65 | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02, X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A |
| I_e / DC-13 | 24 V - d.c. | 6 A |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A |

IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Technical data approved by UL

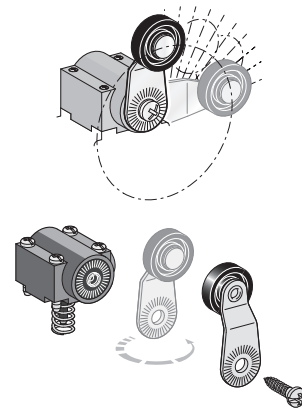
| Standards | Devices conform with UL 508 |
|---|-----------------------------|
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A600, Q600 |
| Contact blocks type X12P, X21P and W03P | |
| Utilization categories | A300, Q300 |

Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions



Metal actuators

The operating heads used in plastic limit switches AP and DP series have the same dimensions of the ones used in the corresponding metal AM and DM series. It is therefore possible to supply "mixed" versions, that is:

- plastic operating head on metal casing
- metal operating head on plastic casing

Manual reset operating head

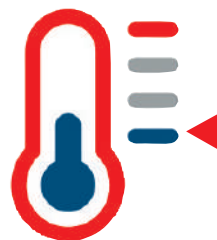
Limit switches equipped with special operating head with manual reset button.

For more information:



For further informations, please contact our technical department.

Low Temperature



The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low. These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact.

To order add the digits "40" following the operating head indication in part number.

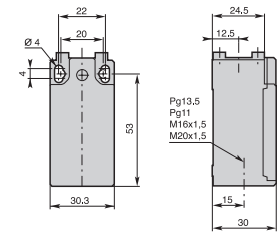
For example: AP1T10Z11 → AP1T1040Z11

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector

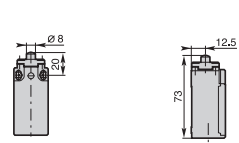


Contact Blocks

| | | | | | |
|------------------|------------|------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T10Z11 | AP•T11Z11 | AP•T12Z11 | AP•T13Z11 | AP•T14Z11 |
| X11 (1NO + 1NC) | AP•T10X11 | AP•T11X11 | AP•T12X11 | AP•T13X11 | AP•T14X11 |
| Y11 (1NO + 1NC) | AP•T10Y11 | AP•T11Y11 | AP•T12Y11 | AP•T13Y11 | AP•T14Y11 |
| W02 (2NC) | AP•T10W02 | AP•T11W02 | AP•T12W02 | AP•T13W02 | AP•T14W02 |
| W20 (2NO) | AP•T10W20 | AP•T11W20 | AP•T12W20 | AP•T13W20 | AP•T14W20 |
| Z02 (2NC) | AP•T10Z02 | AP•T11Z02 | AP•T12Z02 | AP•T13Z02 | AP•T14Z02 |
| X12P (1NO + 2NC) | AP•T10X12P | AP•T11X12P | AP•T12X12P | AP•T13X12P | AP•T14X12P |
| X21P (2NO + 1NC) | AP•T10X21P | AP•T11X21P | AP•T12X21P | AP•T13X21P | AP•T14X21P |
| W03P (3NC) | AP•T10W03P | AP•T11W03P | AP•T12W03P | AP•T13W03P | AP•T14W03P |

T1• - Plain plunger

T10: nylon plunger T11: metal plunger

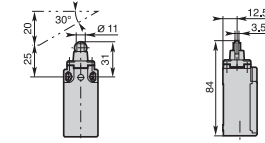


Conformity EN50047
Min. actuating force
Weight

15N (30N ⇄)
70 g

T1• - Roller plunger

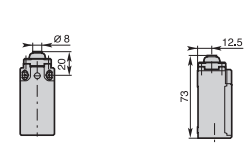
T12: metal roller T13: nylon roller



Conformity EN50047
Min. actuating force
Weight

12N (30N ⇄)
75 g

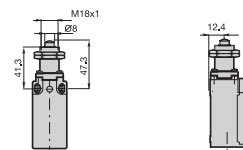
T14 - Metal plunger with dust protection cup



Conformity EN50047
Min. actuating force
Weight

15N (30N ⇄)
70 g

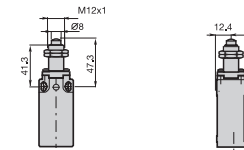
T21 - Plain plunger with M18x1 fixing nuts



Min. actuating force
Weight

15N (30N ⇄)
80 g

T2101 - Plain plunger with M12x1 fixing nuts

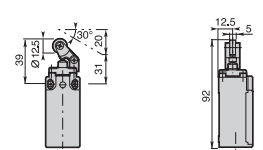


Min. actuating force
Weight

15N (30N ⇄)
80 g

T3• - Plastic roller lever

T30: on plastic plunger T31: on metal plunger



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
75 g

Contact Blocks

| | | | | |
|------------------|------------|--------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T21Z11 | AP•T2101Z11 | AP•T30Z11 | AP•T31Z11 |
| X11 (1NO + 1NC) | AP•T21X11 | AP•T2101X11 | AP•T30X11 | AP•T31X11 |
| Y11 (1NO + 1NC) | AP•T21Y11 | AP•T2101Y11 | AP•T30Y11 | AP•T31Y11 |
| W02 (2NC) | AP•T21W02 | AP•T2101W02 | AP•T30W02 | AP•T31W02 |
| W20 (2NO) | AP•T21W20 | AP•T2101W20 | AP•T30W20 | AP•T31W20 |
| Z02 (2NC) | AP•T21Z02 | AP•T2101Z02 | AP•T30Z02 | AP•T31Z02 |
| X12P (1NO + 2NC) | AP•T21X12P | AP•T2101X12P | AP•T30X12P | AP•T31X12P |
| X21P (2NO + 1NC) | AP•T21X21P | AP•T2101X21P | AP•T30X21P | AP•T31X21P |
| W03P (3NC) | AP•T21W03P | AP•T2101W03P | AP•T30W03P | AP•T31W03 |

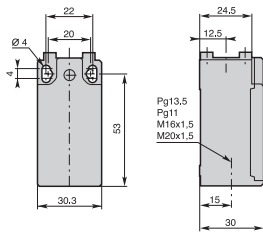
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector

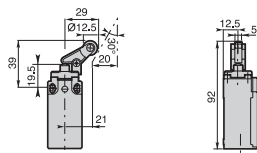


Contact Blocks

| | | | | |
|------------------|------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T32Z11 | AP•T34Z11 | AP•T35Z11 | AP•T36Z11 |
| X11 (1NO + 1NC) | AP•T32X11 | AP•T34X11 | AP•T35X11 | AP•T36X11 |
| Y11 (1NO + 1NC) | AP•T32Y11 | AP•T34Y11 | AP•T35Y11 | AP•T36Y11 |
| W02 (2NC) | AP•T32W02 | AP•T34W02 | AP•T35W02 | AP•T36W02 |
| W20 (2NO) | AP•T32W20 | AP•T34W20 | AP•T35W20 | AP•T36W20 |
| Z02 (2NC) | AP•T32Z02 | AP•T34Z02 | AP•T35Z02 | AP•T36Z02 |
| X12P (1NO + 2NC) | AP•T32X12P | AP•T34X12P | AP•T35X12P | AP•T36X12P |
| X21P (2NO + 1NC) | AP•T32X21P | AP•T34X21P | AP•T35X21P | AP•T36X21P |
| W03P (3NC) | AP•T32W03P | AP•T34W03P | AP•T35W03P | AP•T36W03P |

T3 - Plastic roller lever

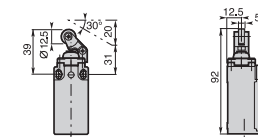
T32: on metal plunger T34: on plastic plunger



Min. actuating force
Weight

7N (24N ⇄)
80 g

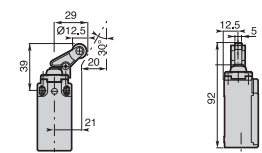
T35 - Plastic roller lever on metal plunger with dust protection cup



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
75 g

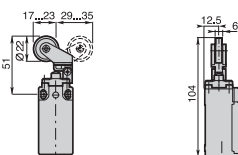
T36 - Plastic roller lever on metal plunger with dust protection cup



Min. actuating force
Weight

7N (24N ⇄)
80 g

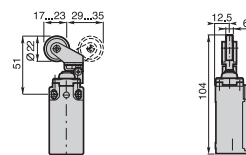
T38 - Adjustable plastic roller lever on metal plunger



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
80 g

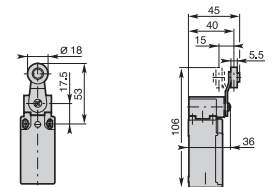
T39 - Adjustable plastic roller lever on metal plunger with dust protection cup



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
80 g

T41 - Ø 18 nylon roller lever



Conformity EN50047
Min. actuating torque
Weight

0,10Nm (0,32Nm ⇄)
95 g

Contact Blocks

| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T38Z11 | AP•T39Z11 | AP•T41Z11 |
| X11 (1NO + 1NC) | AP•T38X11 | AP•T39X11 | AP•T41X11 |
| Y11 (1NO + 1NC) | AP•T38Y11 | AP•T39Y11 | AP•T41Y11 |
| W02 (2NC) | AP•T38W02 | AP•T39W02 | AP•T41W02 |
| W20 (2NO) | AP•T38W20 | AP•T39W20 | AP•T41W20 |
| Z02 (2NC) | AP•T38Z02 | AP•T39Z02 | AP•T41Z02 |
| X12P (1NO + 2NC) | AP•T38X12P | AP•T39X12P | AP•T41X12P |
| X21P (2NO + 1NC) | AP•T38X21P | AP•T39X21P | AP•T41X21P |
| W03P (3NC) | AP•T38W03P | AP•T39W03P | AP•T41W03P |

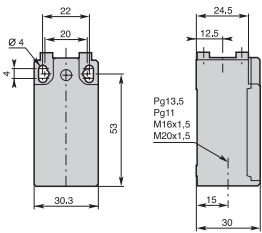
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

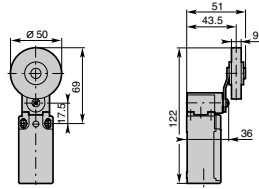
- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector



Contact Blocks

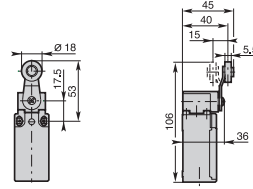
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

T42 - Ø 50 rubber roller lever



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 115 g

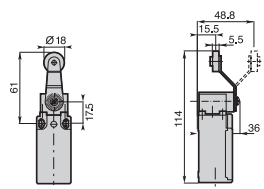
T43 - Ø 18 metal roller lever



Conformity EN50047

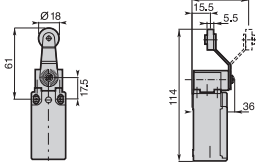
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 100 g

T45 - Ø 18 nylon roller lever



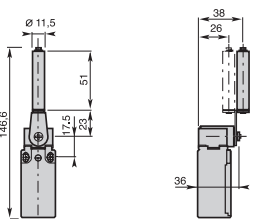
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 95 g

T46 - Ø 18 metal roller lever



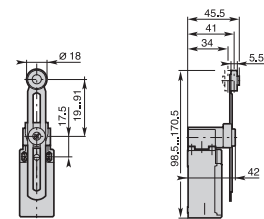
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 100 g

T48 - Ceramic rod lever



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 100 g

T51 - Adjustable lever with Ø 18 nylon roller



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 100 g

Contact Blocks

- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

- AP•T46Z11
- AP•T46X11
- AP•T46Y11
- AP•T46W02
- AP•T46W20
- AP•T46Z02
- AP•T46X12P
- AP•T46X21P
- AP•T46W03P

- AP•T48Z11
- AP•T48X11
- AP•T48Y11
- AP•T48W02
- AP•T48W20
- AP•T48Z02
- AP•T48X12P
- AP•T48X21P
- AP•T48W03P

- AP•T51Z11
- AP•T51X11
- AP•T51Y11
- AP•T51W02
- AP•T51W20
- AP•T51Z02
- AP•T51X12P
- AP•T51X21P
- AP•T51W03P

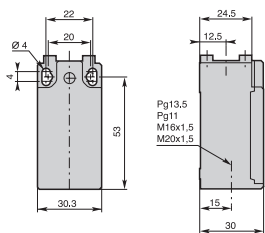
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

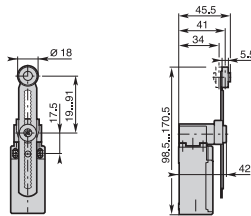
- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector



Contact Blocks

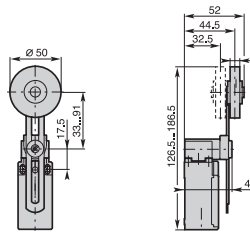
| | | | |
|------------------|--------------|------------|--------------|
| Z11 (1NO + 1NC) | AP•T5100Z11 | AP•T52Z11 | AP•T5200Z11 |
| X11 (1NO + 1NC) | AP•T5100X11 | AP•T52X11 | AP•T5200X11 |
| Y11 (1NO + 1NC) | AP•T5100Y11 | AP•T52Y11 | AP•T5200Y11 |
| W02 (2NC) | AP•T5100W02 | AP•T52W02 | AP•T5200W02 |
| W20 (2NO) | AP•T5100W20 | AP•T52W20 | AP•T5200W20 |
| Z02 (2NC) | AP•T5100Z02 | AP•T52Z02 | AP•T5200Z02 |
| X12P (1NO + 2NC) | AP•T5100X12P | AP•T52X12P | AP•T5200X12P |
| X21P (2NO + 1NC) | AP•T5100X21P | AP•T52X21P | AP•T5200X21P |
| W03P (3NC) | AP•T5100W03P | AP•T52W03P | AP•T5200W03P |

T5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller



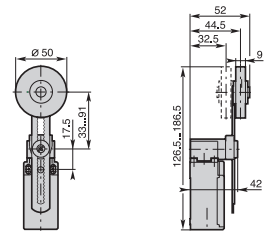
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 105 g

T52 - Adjustable lever with Ø 50 rubber roller



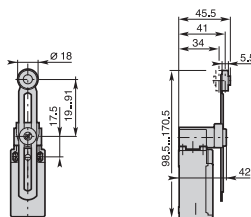
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 125 g

T5200 - Adjustable toothed lever (step 2 mm) with Ø 50 rubber roller



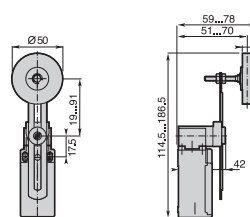
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 125 g

T53 - Adjustable lever with Ø 18 metal roller



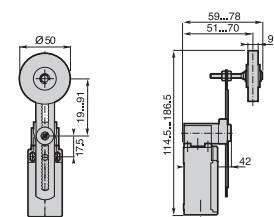
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 110 g

T55 - Adjustable lever with adjustable Ø 50 rubber roller



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 130 g

T5500 - Adjustable toothed lever (step 2 mm) with adjustable Ø 50 rubber roller



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 130 g

Contact Blocks

| | | | |
|------------------|------------|------------|--------------|
| Z11 (1NO + 1NC) | AP•T53Z11 | AP•T55Z11 | AP•T5500Z11 |
| X11 (1NO + 1NC) | AP•T53X11 | AP•T55X11 | AP•T5500X11 |
| Y11 (1NO + 1NC) | AP•T53Y11 | AP•T55Y11 | AP•T5500Y11 |
| W02 (2NC) | AP•T53W02 | AP•T55W02 | AP•T5500W02 |
| W20 (2NO) | AP•T53W20 | AP•T55W20 | AP•T5500W20 |
| Z02 (2NC) | AP•T53Z02 | AP•T55Z02 | AP•T5500Z02 |
| X12P (1NO + 2NC) | AP•T53X12P | AP•T55X12P | AP•T5500X12P |
| X21P (2NO + 1NC) | AP•T53X21P | AP•T55X21P | AP•T5500X21P |
| W03P (3NC) | AP•T53W03P | AP•T55W03P | AP•T5500W03P |

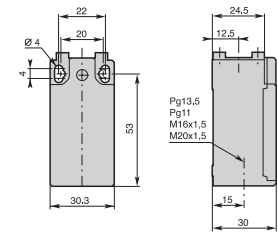
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

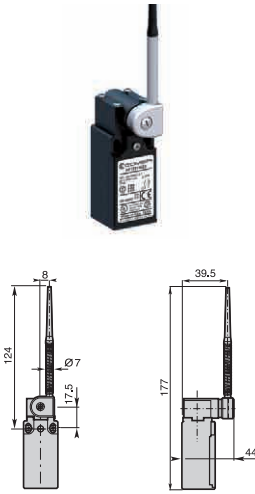
- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector



Contact Blocks

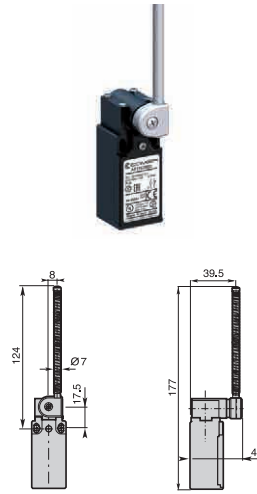
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

T61 - Nylon actuator with stainless steel spring



Min. actuating torque 0,10Nm
Weight 105 g

T62 - Stainless steel spring actuator



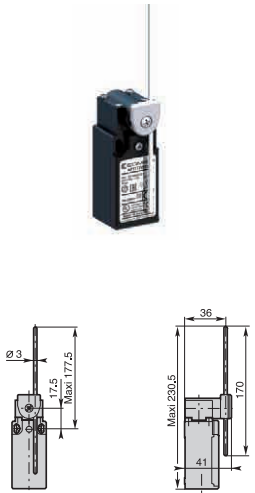
Min. actuating torque 0,10Nm
Weight 105 g

T71 - Adjustable Ø 3 rod lever with stainless steel rod



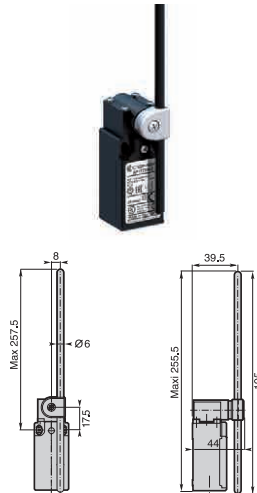
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 105 g

T72 - Adjustable Ø 3 rod lever with fiberglass rod



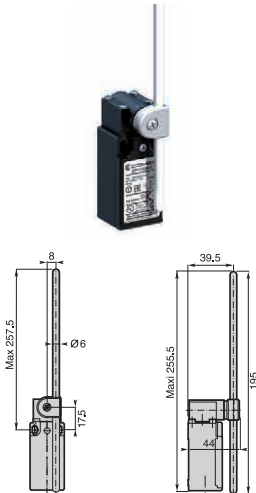
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 105 g

T73 - Adjustable Ø 6 rod lever with nylon rod



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 115 g

T74 - Adjustable Ø 6 rod lever with fiberglass rod



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 115 g

Contact Blocks

- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

- AP•T72Z11
- AP•T72X11
- AP•T72Y11
- AP•T72W02
- AP•T72W20
- AP•T72Z02
- AP•T72X12P
- AP•T72X21P
- AP•T72W03P

- AP•T73Z11
- AP•T73X11
- AP•T73Y11
- AP•T73W02
- AP•T73W20
- AP•T73Z02
- AP•T73X12P
- AP•T73X21P
- AP•T73W03P

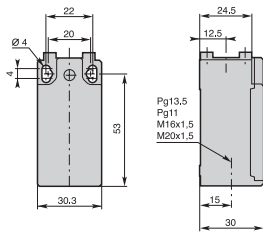
- AP•T74Z11
- AP•T74X11
- AP•T74Y11
- AP•T74W02
- AP•T74W20
- AP•T74Z02
- AP•T74X12P
- AP•T74X21P
- AP•T74W03P

Limit Switches AP_T series

Double insulation - Plastic casing IP65 - 30 mm. width

Electrical connection:

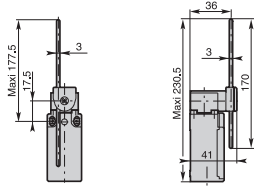
- AP1: one cable inlet for PG 13,5 Cable Gland
- AP2: one cable inlet by 1/2" NPT Plastic Adapter
- AP3: one cable inlet for PG11 Cable Gland
- AP4: one cable inlet for M16 x 1,5 Cable Gland
- AP5: one cable inlet for M20 x 1,5 Cable Gland
- AP6: 4 poles M12 metal connector
- AP7: 5 poles M12 metal connector
- AP8: 8 poles M12 metal connector
- AP9: 4 poles M12 plastic connector
- AP10: 5 poles M12 plastic connector
- AP11: 8 poles M12 plastic connector



Contact Blocks

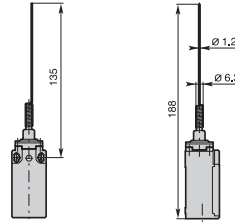
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

T75 - Adjustable 3x3 square steel rod lever



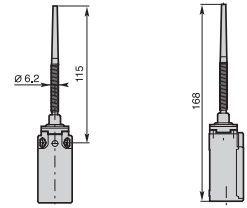
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 105 g

T91 - Stainless steel spring multidirectional actuator



Min. actuating torque 0,12Nm
Weight 80 g

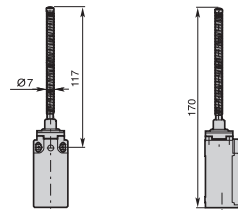
T92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque 0,12Nm
Weight 85 g

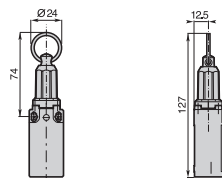
| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T75Z11 | AP•T91Z11 | AP•T92Z11 |
| X11 (1NO + 1NC) | AP•T75X11 | AP•T91X11 | AP•T92X11 |
| Y11 (1NO + 1NC) | AP•T75Y11 | AP•T91Y11 | AP•T92Y11 |
| W02 (2NC) | AP•T75W02 | AP•T91W02 | AP•T92W02 |
| W20 (2NO) | AP•T75W20 | AP•T91W20 | AP•T92W20 |
| Z02 (2NC) | AP•T75Z02 | AP•T91Z02 | AP•T92Z02 |
| X12P (1NO + 2NC) | AP•T75X12P | AP•T91X12P | AP•T92X12P |
| X21P (2NO + 1NC) | AP•T75X21P | AP•T91X21P | AP•T92X21P |
| W03P (3NC) | AP•T75W03P | AP•T91W03P | AP•T92W03P |

T93 - Stainless steel spring multidirectional actuator



Min. actuating torque 0,12Nm
Weight 90 g

T98 - Pull action with ring



Min. actuating force 15N
Weight 115 g

Contact Blocks

| | | |
|------------------|------------|------------|
| Z11 (1NO + 1NC) | AP•T93Z11 | AP•T98Z11A |
| X11 (1NO + 1NC) | AP•T93X11 | AP•T98X11A |
| Y11 (1NO + 1NC) | AP•T93Y11 | AP•T98Y11A |
| W02 (2NC) | AP•T93W02 | AP•T98W02A |
| W20 (2NO) | AP•T93W20 | AP•T98W20A |
| Z02 (2NC) | AP•T93Z02 | |
| X12P (1NO + 2NC) | AP•T93X12P | |
| X21P (2NO + 1NC) | AP•T93X21P | |
| W03P (3NC) | AP•T93W03P | |

Operation diagrams: page 123 - All dimensions are in mm

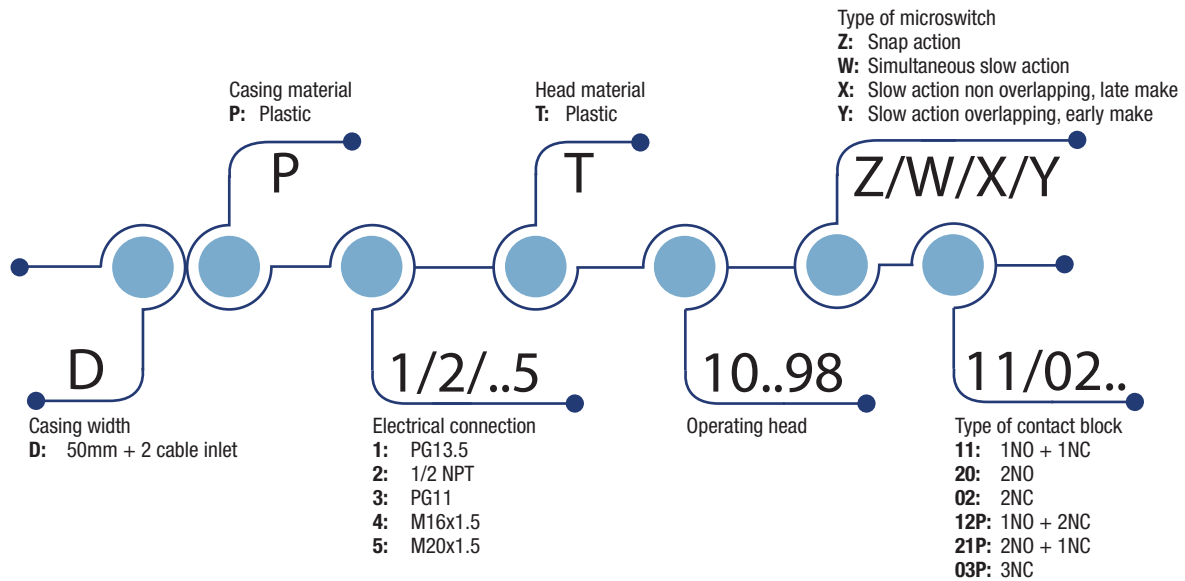
Limit Switches DP series

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø3 screws

03 Casing:

- 50 mm. width

04 Mounting screws

- 2 or 4 x M4 screws on top part

05 Cover

- 1 screw Ø3 pozidriv 1

06 Contact Block

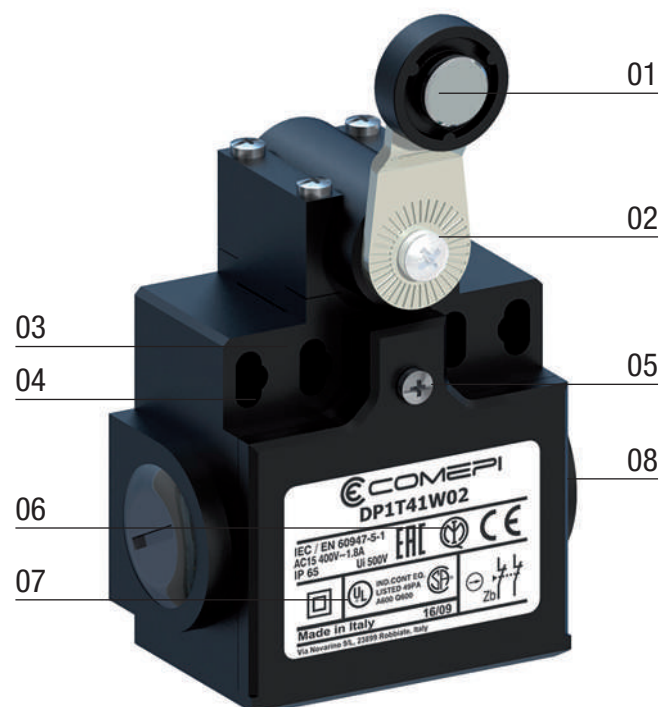
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 2 x threaded cable inlets suitable for cable gland



Limit Switches **DP series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

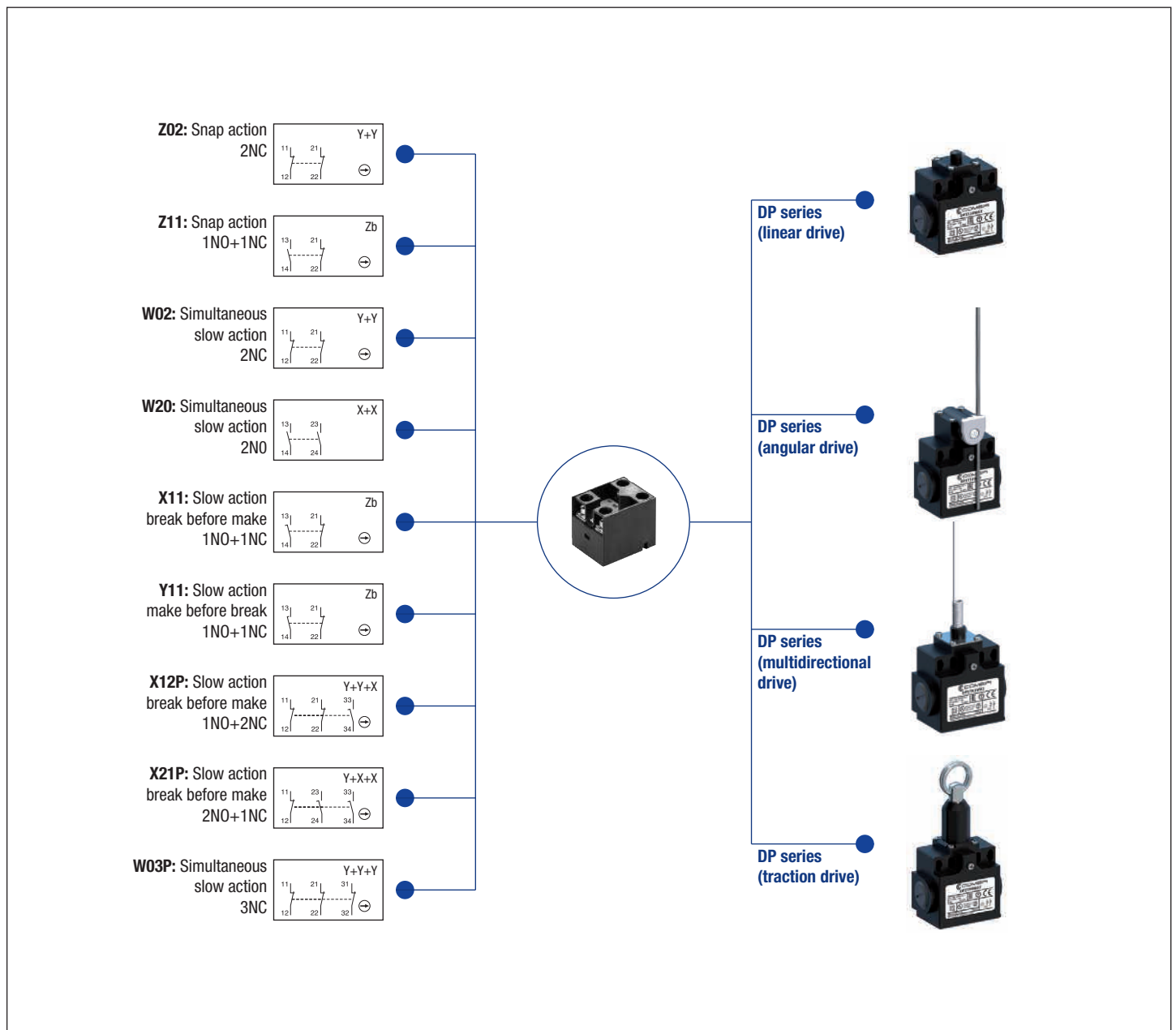
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made of reinforced UL-VO thermoplastic fiber-glass, offer double insulation  and a degree of protection of IP65.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **DP series**

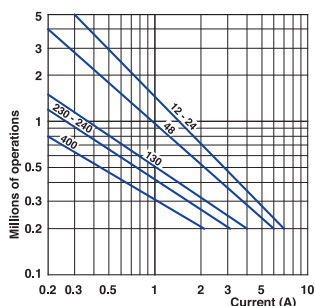
Technical Data

| | DP_T Series | |
|---|---|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class II | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP65 (for all models) - IP67 (only for operating heads from 10 to 39) | |

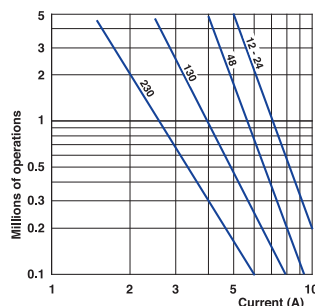
Electrical Data

| | | |
|--|---|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for contacts type X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 0.55 0.4 |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | - | |
| Recommended tightening torque | Plastic | |
| Cover | 0,5Nm, max 0,8 | |
| Head | 0,5Nm, max 0,8 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Mechanical durability | 15 millions of operations 10 millions of operations >5 millions of operations | T10...12; T21; T2101; T30...34; T38 T13; T41...48; T51...55; T61...75 T14; T35; T36; T39; T91...93; T98 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches DP series

Technical Data

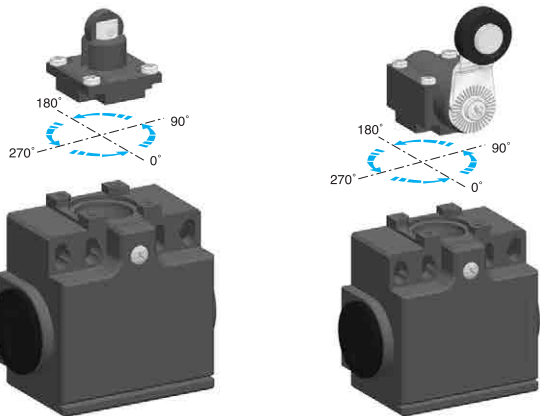
Technical data approved by IMQ

| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
|--|--|--------|
| Degree of protection | IP 65 | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02, X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A |
| I_e / DC-13 | 24 V - d.c. | 6 A |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A |

IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Technical data approved by UL

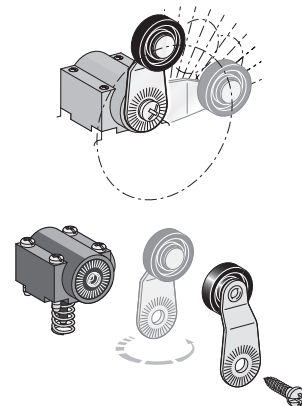
| Standards | Devices conform with UL 508 |
|--|-----------------------------|
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A600, Q600 |
| Contact blocks type X12P, X21P and W03P | |
| Utilization categories | A300, Q300 |

Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions

Metal actuators

The operating heads used in plastic limit switches AP and DP series have the same dimensions of the ones used in the corresponding metal AM and DM series. It is therefore possible to supply "mixed" versions, that is:

- plastic operating head on metal casing
- metal operating head on plastic casing

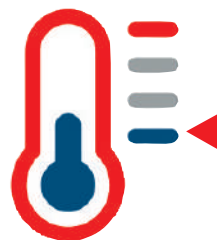


Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low. These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact.

To order add the digits "40" following the operating head indication in part number.

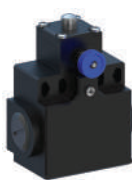
For example: DP1T10Z11 → DP1T1040Z11



Manual reset operating head

Limit switches equipped with special operating head with manual reset button.

For more information:



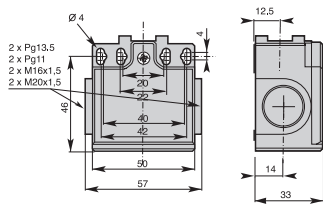
For further informations, please contact our technical department.

Limit Switches **DP_T series**

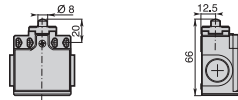
Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

- DP1:** two cable inlets for PG 13,5 Cable Gland
DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
DP3: two cable inlets for PG11 Cable Gland
DP4: two cable inlets for M16 x 1,5 Cable Gland
DP5: two cable inlets for M20 x 1,5 Cable Gland

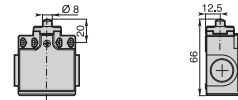


T10 - Plain nylon plunger



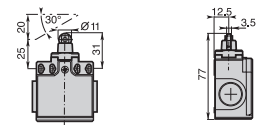
Min. actuating force
Weight 15N (30N ⊖)
100 g

T11 - Plain metal plunger



Min. actuating force
Weight 15N (30N ⊖)
100 g

T12 - Metal roller plunger

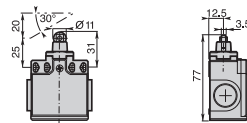


Min. actuating force
Weight 12N (30N ⊖)
105 g

Contact Blocks

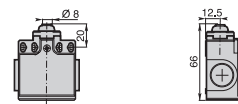
| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T10Z11 | DP•T11Z11 | DP•T12Z11 |
| X11 (1NO + 1NC) | DP•T10X11 | DP•T11X11 | DP•T12X11 |
| Y11 (1NO + 1NC) | DP•T10Y11 | DP•T11Y11 | DP•T12Y11 |
| W02 (2NC) | DP•T10W02 | DP•T11W02 | DP•T12W02 |
| W20 (2NO) | DP•T10W20 | DP•T11W20 | DP•T12W20 |
| Z02 (2NC) | DP•T10Z02 | DP•T11Z02 | DP•T12Z02 |
| X12P (1NO + 2NC) | DP•T10X12P | DP•T11X12P | DP•T12X12P |
| X21P (2NO + 1NC) | DP•T10X21P | DP•T11X21P | DP•T12X21P |
| W03P (3NC) | DP•T10W03P | DP•T11W03P | DP•T12W03P |

T13 - Nylon roller plunger



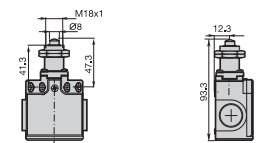
Min. actuating force
Weight 12N (30N ⊖)
105 g

T14 - Metal plunger with dust protection cup



Min. actuating force
Weight 15N (30N ⊖)
100 g

T21 - Plain plunger with M18x fixing nuts



Min. actuating force
Weight 15N (30N ⊖)
110 g

Contact Blocks

| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T13Z11 | DP•T14Z11 | DP•T21Z11 |
| X11 (1NO + 1NC) | DP•T13X11 | DP•T14X11 | DP•T21X11 |
| Y11 (1NO + 1NC) | DP•T13Y11 | DP•T14Y11 | DP•T21Y11 |
| W02 (2NC) | DP•T13W02 | DP•T14W02 | DP•T21W02 |
| W20 (2NO) | DP•T13W20 | DP•T14W20 | DP•T21W20 |
| Z02 (2NC) | DP•T13Z02 | DP•T14Z02 | DP•T21Z02 |
| X12P (1NO + 2NC) | DP•T13X12P | DP•T14X12P | DP•T21X12P |
| X21P (2NO + 1NC) | DP•T13X21P | DP•T14X21P | DP•T21X21P |
| W03P (3NC) | DP•T13W03P | DP•T14W03P | DP•T21W03P |

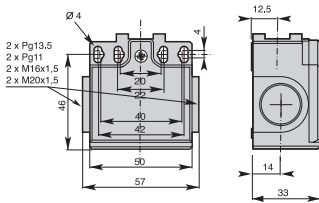
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DP_T series

Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

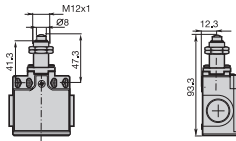
- DP1:** two cable inlets for PG 13,5 Cable Gland
- DP2:** two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
- DP3:** two cable inlets for PG11 Cable Gland
- DP4:** two cable inlets for M16 x 1,5 Cable Gland
- DP5:** two cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

| | | | |
|-------------------------|--------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T2101Z11 | DP•T30Z11 | DP•T31Z11 |
| X11 (1NO + 1NC) | DP•T2101X11 | DP•T30X11 | DP•T31X11 |
| Y11 (1NO + 1NC) | DP•T2101Y11 | DP•T30Y11 | DP•T31Y11 |
| W02 (2NC) | DP•T2101W02 | DP•T30W02 | DP•T31W02 |
| W20 (2NO) | DP•T2101W20 | DP•T30W20 | DP•T31W20 |
| Z02 (2NC) | DP•T2101Z02 | DP•T30Z02 | DP•T31Z02 |
| X12P (1NO + 2NC) | DP•T2101X12P | DP•T30X12P | DP•T31X12P |
| X21P (2NO + 1NC) | DP•T2101X21P | DP•T30X21P | DP•T31X21P |
| W03P (3NC) | DP•T2101W03P | DP•T30W03P | DP•T31W03P |

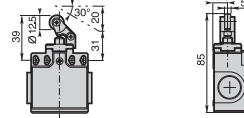
T2101 - Plain plunger with M12x1 fixing nuts



Min. actuating force
Weight

15N (30N ⊖)
110 g

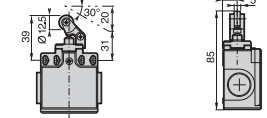
T30 - Plastic roller lever on plastic plunger



Min. actuating force
Weight

7N (24N ⊖)
105 g

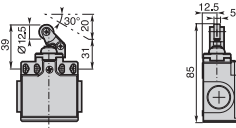
T31 - Plastic roller lever on metal plunger



Min. actuating force
Weight

7N (24N ⊖)
105 g

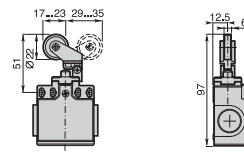
T35 - Plastic roller lever on metal plunger with dust protection cup



Min. actuating force
Weight

7N (24N ⊖)
105 g

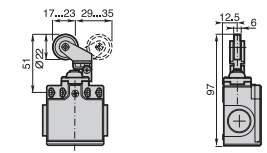
T38 - Adjustable plastic roller lever on metal plunger



Min. actuating force
Weight

7N (24N ⊖)
110 g

T39 - Adjustable plastic roller lever on metal plunger with dust protection cup



Min. actuating force
Weight

7N (24N ⊖)
110 g

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T35Z11 | DP•T38Z11 | DP•T39Z11 |
| X11 (1NO + 1NC) | DP•T35X11 | DP•T38X11 | DP•T39X11 |
| Y11 (1NO + 1NC) | DP•T35Y11 | DP•T38Y11 | DP•T39Y11 |
| W02 (2NC) | DP•T35W02 | DP•T38W02 | DP•T39W02 |
| W20 (2NO) | DP•T35W20 | DP•T38W20 | DP•T39W20 |
| Z02 (2NC) | DP•T35Z02 | DP•T38Z02 | DP•T39Z02 |
| X12P (1NO + 2NC) | DP•T35X12P | DP•T38X12P | DP•T39X12P |
| X21P (2NO + 1NC) | DP•T35X21P | DP•T38X21P | DP•T39X21P |
| W03P (3NC) | DP•T35W03P | DP•T38W03P | DP•T39W03P |

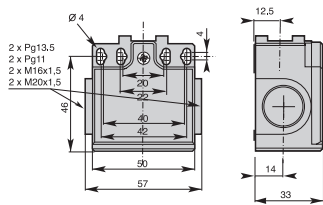
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DP_T series

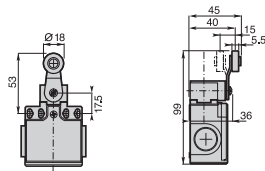
Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

- DP1:** two cable inlets for PG 13,5 Cable Gland
DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
DP3: two cable inlets for PG11 Cable Gland
DP4: two cable inlets for M16 x 1,5 Cable Gland
DP5: two cable inlets for M20 x 1,5 Cable Gland

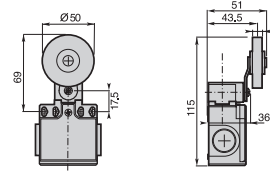


T41 - Ø 18 nylon roller lever



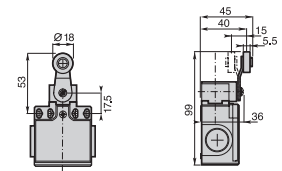
Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 125 g

T42 - Ø 50 rubber roller lever



Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 145 g

T43 - Ø 18 metal roller lever

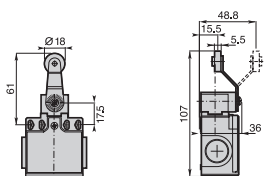


Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 130 g

Contact Blocks

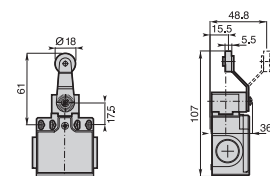
| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T41Z11 | DP•T42Z11 | DP•T43Z11 |
| X11 (1NO + 1NC) | DP•T41X11 | DP•T42X11 | DP•T43X11 |
| Y11 (1NO + 1NC) | DP•T41Y11 | DP•T42Y11 | DP•T43Y11 |
| W02 (2NC) | DP•T41W02 | DP•T42W02 | DP•T43W02 |
| W20 (2NO) | DP•T41W20 | DP•T42W20 | DP•T43W20 |
| Z02 (2NC) | DP•T41Z02 | DP•T42Z02 | DP•T43Z02 |
| X12P (1NO + 2NC) | DP•T41X12P | DP•T42X12P | DP•T43X12P |
| X21P (2NO + 1NC) | DP•T41X21P | DP•T42X21P | DP•T43X21P |
| W03P (3NC) | DP•T41W03P | DP•T42W03P | DP•T43W03P |

T45 - Ø 18 nylon roller lever



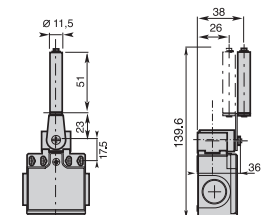
Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 125 g

T46 - Ø 18 metal roller lever



Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 130 g

T48 - Ceramic rod lever



Min. actuating torque 0,10Nm (0,32Nm ⊖)
 Weight 130 g

Contact Blocks

| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T45Z11 | DP•T46Z11 | DP•T48Z11 |
| X11 (1NO + 1NC) | DP•T45X11 | DP•T46X11 | DP•T48X11 |
| Y11 (1NO + 1NC) | DP•T45Y11 | DP•T46Y11 | DP•T48Y11 |
| W02 (2NC) | DP•T45W02 | DP•T46W02 | DP•T48W02 |
| W20 (2NO) | DP•T45W20 | DP•T46W20 | DP•T48W20 |
| Z02 (2NC) | DP•T45Z02 | DP•T46Z02 | DP•T48Z02 |
| X12P (1NO + 2NC) | DP•T45X12P | DP•T46X12P | DP•T48X12P |
| X21P (2NO + 1NC) | DP•T45X21P | DP•T46X21P | DP•T48X21P |
| W03P (3NC) | DP•T45W03P | DP•T46W03P | DP•T48W03P |

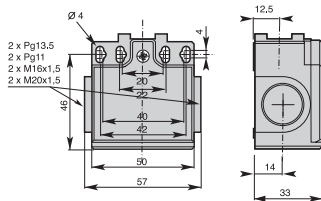
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DP_T series

Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

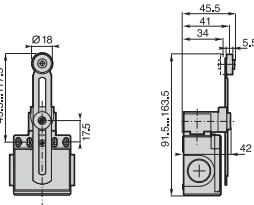
- DP1:** two cable inlets for PG 13,5 Cable Gland
- DP2:** two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
- DP3:** two cable inlets for PG11 Cable Gland
- DP4:** two cable inlets for M16 x 1,5 Cable Gland
- DP5:** two cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

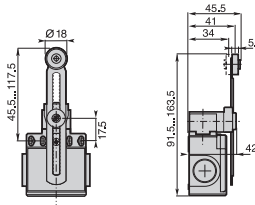
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

T51 - Adjustable lever with Ø 18 nylon roller



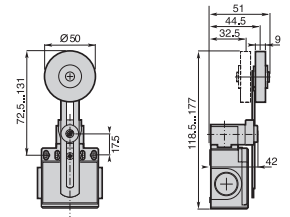
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 135 g

T5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller



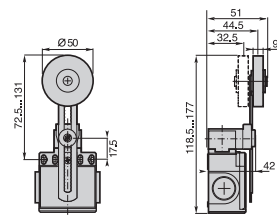
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 135 g

T52 - Adjustable lever with Ø 50 rubber roller



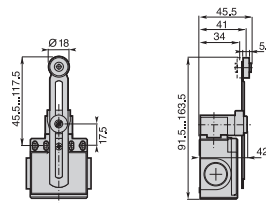
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 155 g

T5200 - Adjustable toothed lever (step 2 mm) with Ø 50 rubber roller



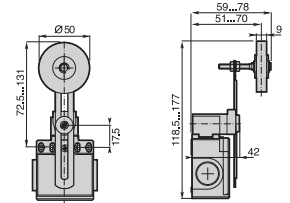
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 155 g

T53 - Adjustable lever with Ø 18 metal roller



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 140 g

T55 - Adjustable lever with adjustable Ø 50 rubber roller



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 155 g

Contact Blocks

- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

- DP•T51Z11
- DP•T51X11
- DP•T51Y11
- DP•T51W02
- DP•T51W20
- DP•T51Z02
- DP•T51X12P
- DP•T51X21P
- DP•T51W03P

- DP•T5100Z11
- DP•T5100X11
- DP•T5100Y11
- DP•T5100W02
- DP•T5100W20
- DP•T5100Z02
- DP•T5100X12P
- DP•T5100X21P
- DP•T5100W03P

- DP•T52Z11
- DP•T52X11
- DP•T52Y11
- DP•T52W02
- DP•T52W20
- DP•T52Z02
- DP•T52X12P
- DP•T52X21P
- DP•T52W03P

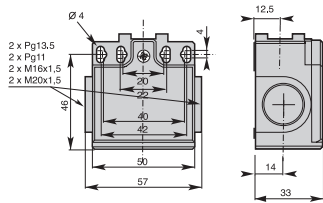
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DP_T series

Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

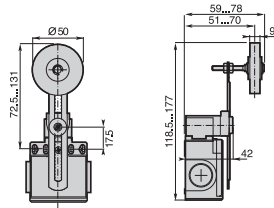
- DP1:** two cable inlets for PG 13,5 Cable Gland
DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
DP3: two cable inlets for PG11 Cable Gland
DP4: two cable inlets for M16 x 1,5 Cable Gland
DP5: two cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

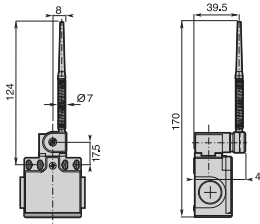
| | | | |
|------------------|--------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T5500Z11 | DP•T61Z11 | DP•T62Z11 |
| X11 (1NO + 1NC) | DP•T5500X11 | DP•T61X11 | DP•T62X11 |
| Y11 (1NO + 1NC) | DP•T5500Y11 | DP•T61Y11 | DP•T62Y11 |
| W02 (2NC) | DP•T5500W02 | DP•T61W02 | DP•T62W02 |
| W20 (2NO) | DP•T5500W20 | DP•T61W20 | DP•T62W20 |
| Z02 (2NC) | DP•T5500Z02 | DP•T61Z02 | DP•T62Z02 |
| X12P (1NO + 2NC) | DP•T5500X12P | DP•T61X12P | DP•T62X12P |
| X21P (2NO + 1NC) | DP•T5500X21P | DP•T61X21P | DP•T62X21P |
| W03P (3NC) | DP•T5500W03P | DP•T61W03P | DP•T62W03P |

T5500 - Adjustable toothed lever (step 2 mm) with adjustable Ø 50 rubber roller



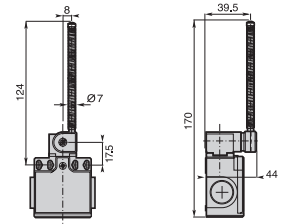
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 155 g

T61 - Nylon actuator with stainless steel spring



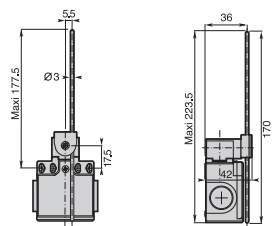
Min. actuating torque 0,10Nm
Weight 135 g

T62 - Stainless steel spring actuator



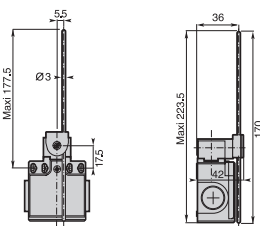
Min. actuating torque 0,10Nm
Weight 135 g

T71 - Adjustable Ø 3 rod lever with stainless steel rod



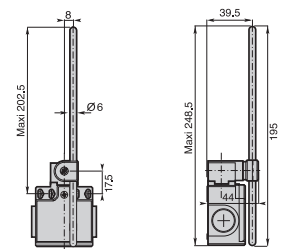
Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 130 g

T72 - Adjustable Ø 3 rod lever with fiberglass rod



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 130 g

T73 - Adjustable Ø 6 rod lever with nylon rod



Min. actuating torque 0,10Nm (0,32Nm ⊖)
Weight 145 g

Contact Blocks

| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T71Z11 | DP•T72Z11 | DP•T73Z11 |
| X11 (1NO + 1NC) | DP•T71X11 | DP•T72X11 | DP•T73X11 |
| Y11 (1NO + 1NC) | DP•T71Y11 | DP•T72Y11 | DP•T73Y11 |
| W02 (2NC) | DP•T71W02 | DP•T72W02 | DP•T73W02 |
| W20 (2NO) | DP•T71W20 | DP•T72W20 | DP•T73W20 |
| Z02 (2NC) | DP•T71Z02 | DP•T72Z02 | DP•T73Z02 |
| X12P (1NO + 2NC) | DP•T71X12P | DP•T72X12P | DP•T73X12P |
| X21P (2NO + 1NC) | DP•T71X21P | DP•T72X21P | DP•T73X21P |
| W03P (3NC) | DP•T71W03P | DP•T72W03P | DP•T73W03P |

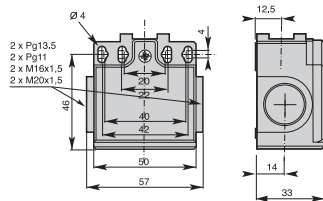
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DP_T series

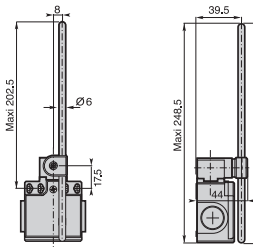
Double insulation - Plastic casing IP65 - 50 mm. width

Electrical connection:

- DP1:** two cable inlets for PG 13,5 Cable Gland
- DP2:** two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT
- DP3:** two cable inlets for PG11 Cable Gland
- DP4:** two cable inlets for M16 x 1,5 Cable Gland
- DP5:** two cable inlets for M20 x 1,5 Cable Gland

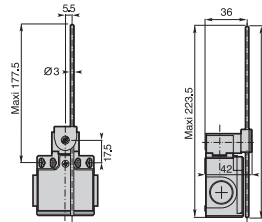


T74 - Adjustable Ø 6 rod lever with fiberglass rod



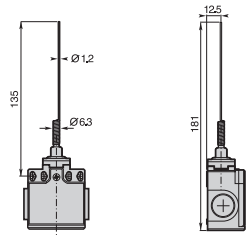
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **145 g**

T75 - Adjustable 3x3 square steel rod lever



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **130 g**

T91 - Stainless steel spring multidirectional actuator

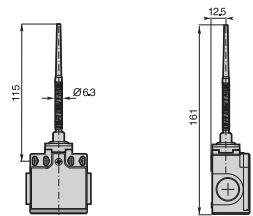


Min. actuating torque **0,12Nm**
Weight **110 g**

Contact Blocks

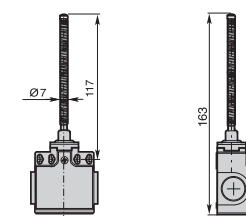
| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T74Z11 | DP•T75Z11 | DP•T91Z11 |
| X11 (1NO + 1NC) | DP•T74X11 | DP•T75X11 | DP•T91X11 |
| Y11 (1NO + 1NC) | DP•T74Y11 | DP•T75Y11 | DP•T91Y11 |
| W02 (2NC) | DP•T74W02 | DP•T75W02 | DP•T91W02 |
| W20 (2NO) | DP•T74W20 | DP•T75W20 | DP•T91W20 |
| Z02 (2NC) | DP•T74Z02 | DP•T75Z02 | DP•T91Z02 |
| X12P (1NO + 2NC) | DP•T74X12P | DP•T75X12P | DP•T91X12P |
| X21P (2NO + 1NC) | DP•T74X21P | DP•T75X21P | DP•T91X21P |
| W03P (3NC) | DP•T74W03P | DP•T75W03P | DP•T91W03P |

T92 - Multidirectional nylon actuator with stainless steel spring



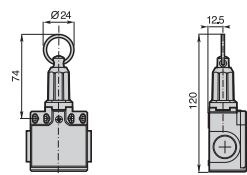
Min. actuating torque **0,12Nm**
Weight **115 g**

T93 - Stainless steel spring multidirectional actuator



Min. actuating torque **0,12Nm**
Weight **120 g**

T98 - Pull action with ring



Min. actuating force **30N**
Weight **145 g**

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DP•T92Z11 | DP•T93Z11 | DP•T98Z11A |
| X11 (1NO + 1NC) | DP•T92X11 | DP•T93X11 | DP•T98X11A |
| Y11 (1NO + 1NC) | DP•T92Y11 | DP•T93Y11 | DP•T98Y11A |
| W02 (2NC) | DP•T92W02 | DP•T93W02 | DP•T98W02A |
| W20 (2NO) | DP•T92W20 | DP•T93W20 | DP•T98W20A |
| Z02 (2NC) | DP•T92Z02 | DP•T93Z02 | |
| X12P (1NO + 2NC) | DP•T92X12P | DP•T93X12P | |
| X21P (2NO + 1NC) | DP•T92X21P | DP•T93X21P | |
| W03P (3NC) | DP•T92W03P | DP•T93W03P | |

Operation diagrams: page 123 - All dimensions are in mm

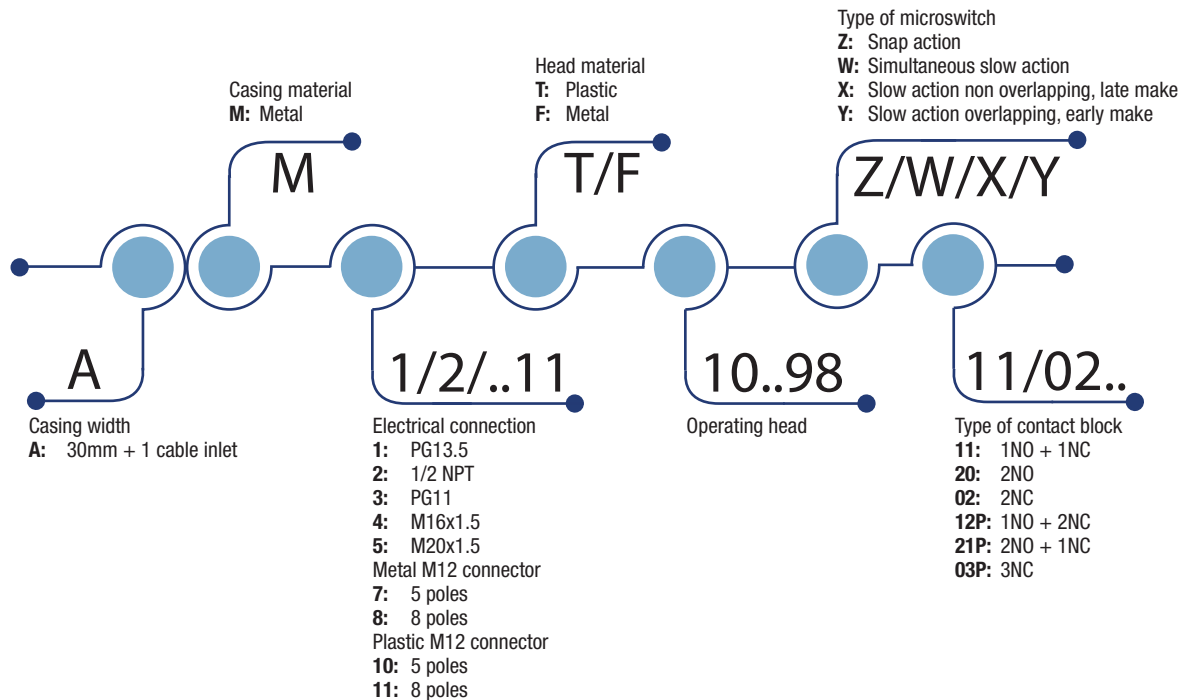
Limit Switches **AM series**

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø3 screws

03 Casing:

- 30 mm. width with standardized dimensions acc. to EN 50047

04 Mounting screws

- 2 or 4 x M4 screws on top part

05 Cover

- 3 screws Ø3 pozidriv 1

06 Contact Block

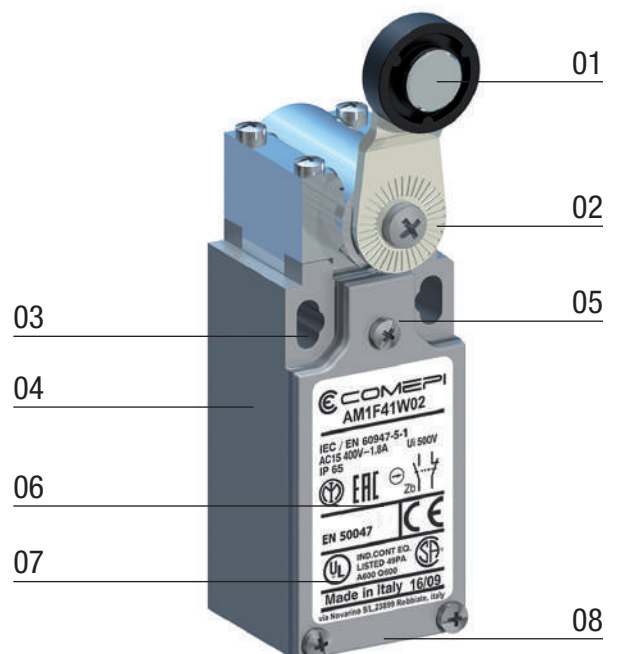
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 1 x threaded cable entry suitable for cable gland, M12 connector or DEUTSCH connector



Limit Switches **AM series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

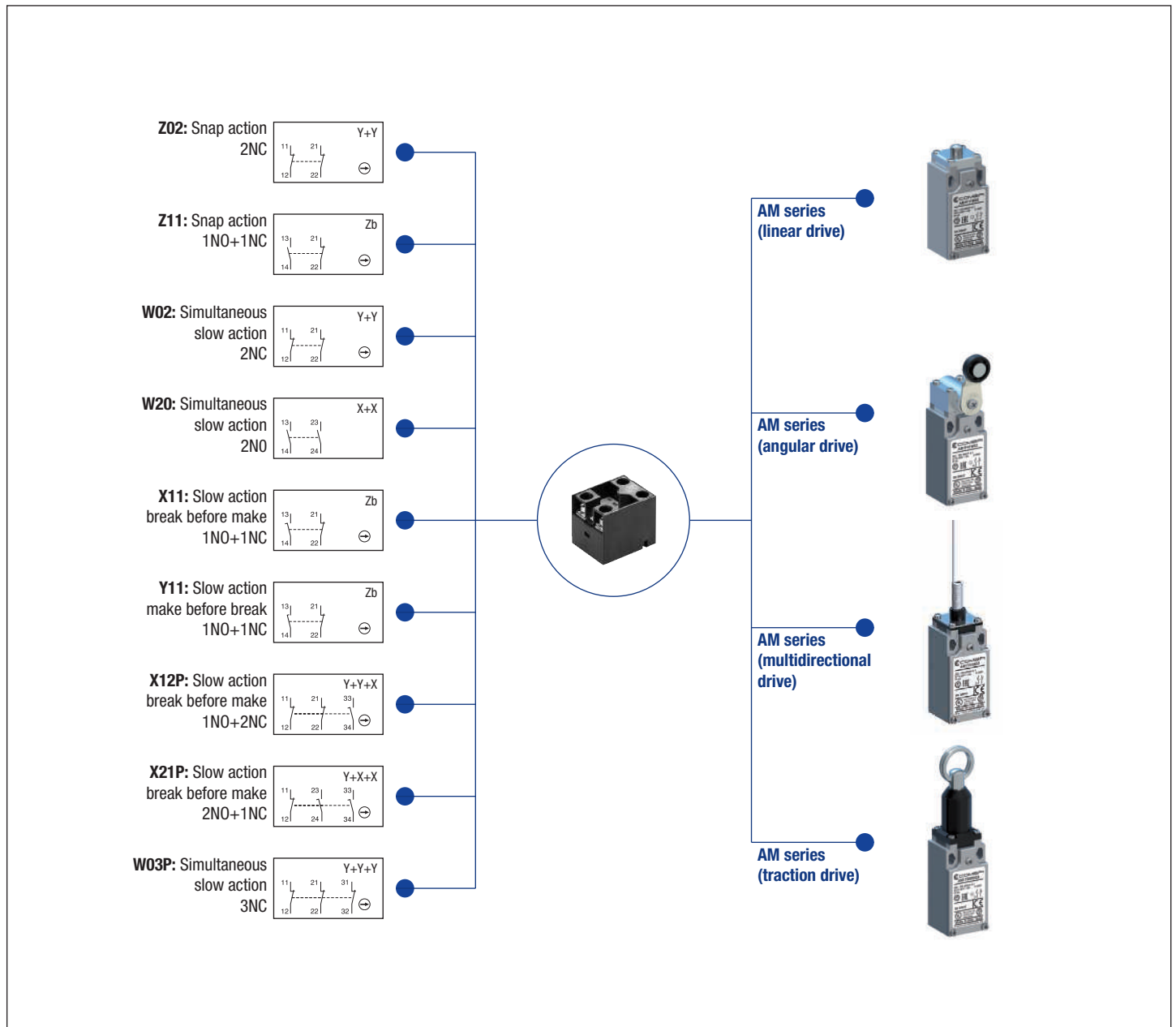
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made of zinc alloy (Zamak), offer a degree of protection of IP66.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it



Limit Switches **AM series**

Technical Data

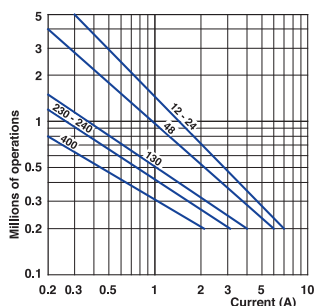
| | AM Series | |
|---|-----------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class I | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 66* | |

Electrical Data

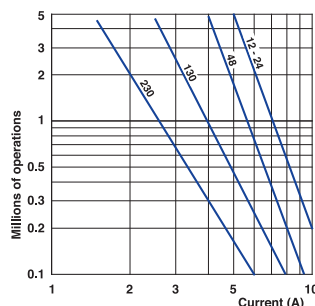
| | | |
|--|--|--|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P) A 300, Q 300 | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 0.55 0.4 |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | M3.5 (+, -) pozidriv 2 screw with cable clamp | |
| Recommended tightening torque | Metal | |
| Cover | 0,8Nm, max 0,9 | |
| Head | 0,8Nm, max 0,9 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Mechanical durability | 15 millions of operations F11; F12; T21; T2101; T30...34; T38 10 millions of operations F41...46; F51...56; F61...75 >5 millions of operations T14; T35; T36; T39; T91...93; T98 | |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

* except for F52, F5200, F55, F5500, F73, F74, T92, T93: the degree of protection is IP65

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches **AM series**

Technical Data

Technical data approved by IMQ

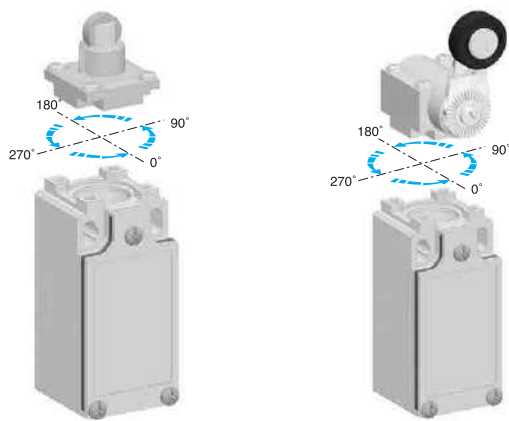
| | | |
|--|--|--------|
| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
| Degree of protection | IP 66* | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02, X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gI) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A |
| I_e / DC-13 | 24 V - d.c. | 6 A |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A |

* except for F52, F5200, F55, F5500, F73, F74, T92, T93: the degree of protection is IP65

IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Technical data approved by UL

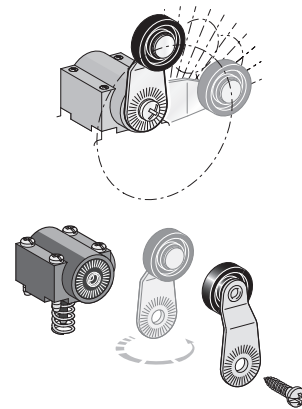
| | |
|---|-----------------------------|
| Standards | Devices conform with UL 508 |
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A300, Q300 |
| Contact blocks type X12P, X21P and W03P | |
| Utilization categories | A300, Q300 |

Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions



Plastic actuators

The operating heads used in plastic limit switches AP and DP series have the same dimensions of the ones used in the corresponding metal AM and DM series. It is therefore possible to supply "mixed" versions, that is:

- plastic operating head on metal casing
- metal operating head on plastic casing

Manual reset operating head

Limit switches equipped with special operating head with manual reset button.

For more information:



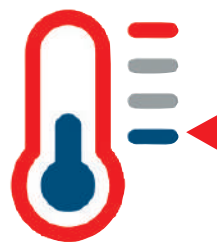
For further informations, please contact our technical department.

Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low. These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact.

To order add the digits "40" following the operating head indication in part number.

For example: AM1F11Z11 → AM1F1140Z11

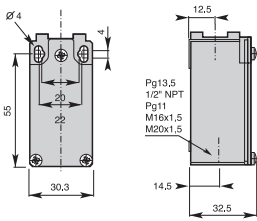


Limit Switches **AM_F/AM_T** series

Metal casing IP66 - 30 mm. width

Electrical connection:

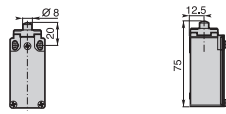
- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F11Z11 | AM•F12Z11 | AM•T14Z11 |
| X11 (1NO + 1NC) | AM•F11X11 | AM•F12X11 | AM•T14X11 |
| Y11 (1NO + 1NC) | AM•F11Y11 | AM•F12Y11 | AM•T14Y11 |
| W02 (2NC) | AM•F11W02 | AM•F12W02 | AM•T14W02 |
| W20 (2NO) | AM•F11W20 | AM•F12W20 | AM•T14W20 |
| Z02 (2NC) | AM•F11Z02 | AM•F12Z02 | AM•T14Z02 |
| X12P (1NO + 2NC) | AM•F11X12P | AM•F12X12P | AM•T14X12P |
| X21P (2NO + 1NC) | AM•F11X21P | AM•F12X21P | AM•T14X21P |
| W03P (3NC) | AM•F11W03P | AM•F12W03P | AM•T14W03P |

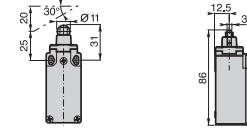
F11 - Plain Metal plunger



Conformity EN50047
Min. actuating force
Weight

15N (30N ⇄)
180 g

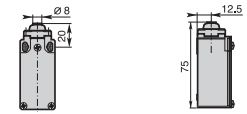
F12 - Metal roller plunger



Conformity EN50047
Min. actuating force
Weight

12N (30N ⇄)
190 g

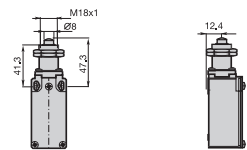
T14 - Metal plunger with dust protection cup



Conformity EN50047
Min. actuating force
Weight

15N (30N ⇄)
165 g

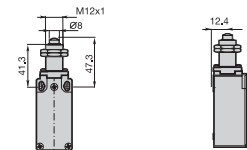
T21 - Plain plunger with M18x1 fixing nuts



Min. actuating force
Weight

15N (30N ⇄)
175 g

T2101 - Plain plunger with M12x1 fixing nuts

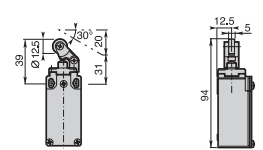


Min. actuating force
Weight

15N (30N ⇄)
175 g

T3• - Plastic roller lever

T30: on plastic plunger T31: on metal plunger



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
170 g

Contact Blocks

| | | | | |
|-------------------------|------------|--------------|------------|------------|
| Z11 (1NO + 1NC) | AM•T21Z11 | AM•T2101Z11 | AM•T30Z11 | AM•T31Z11 |
| X11 (1NO + 1NC) | AM•T21X11 | AM•T2101X11 | AM•T30X11 | AM•T31X11 |
| Y11 (1NO + 1NC) | AM•T21Y11 | AM•T2101Y11 | AM•T30Y11 | AM•T31Y11 |
| W02 (2NC) | AM•T21W02 | AM•T2101W02 | AM•T30W02 | AM•T31W02 |
| W20 (2NO) | AM•T21W20 | AM•T2101W20 | AM•T30W20 | AM•T31W20 |
| Z02 (2NC) | AM•T21Z02 | AM•T2101Z02 | AM•T30Z02 | AM•T31Z02 |
| X12P (1NO + 2NC) | AM•T21X12P | AM•T2101X12P | AM•T30X12P | AM•T31X12P |
| X21P (2NO + 1NC) | AM•T21X21P | AM•T2101X21P | AM•T30X21P | AM•T31X21P |
| W03P (3NC) | AM•T21W03P | AM•T2101W03P | AM•T30W03P | AM•T31W03P |

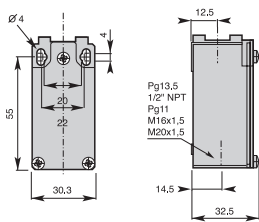
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **AM_F/AM_T** series

Metal casing IP66 - 30 mm. width

Electrical connection:

- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector

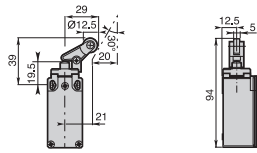


Contact Blocks

| | | | | |
|-------------------------|------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•T32Z11 | AM•T34Z11 | AM•T35Z11 | AM•T36Z11 |
| X11 (1NO + 1NC) | AM•T32X11 | AM•T34X11 | AM•T35X11 | AM•T36X11 |
| Y11 (1NO + 1NC) | AM•T32Y11 | AM•T34Y11 | AM•T35Y11 | AM•T36Y11 |
| W02 (2NC) | AM•T32W02 | AM•T34W02 | AM•T35W02 | AM•T36W02 |
| W20 (2NO) | AM•T32W20 | AM•T34W20 | AM•T35W20 | AM•T36W20 |
| Z02 (2NC) | AM•T32Z02 | AM•T34Z02 | AM•T35Z02 | AM•T36Z02 |
| X12P (1NO + 2NC) | AM•T32X12P | AM•T34X12P | AM•T35X12P | AM•T36X12P |
| X21P (2NO + 1NC) | AM•T32X21P | AM•T34X21P | AM•T35X21P | AM•T36X21P |
| W03P (3NC) | AM•T32W03P | AM•T34W03P | AM•T35W03P | AM•T36W03P |

T3• - Plastic roller lever

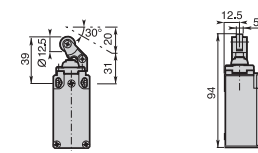
T32: on metal plunger T34: on plastic plunger



Min. actuating force
Weight

7N (24N ⇄)
175 g

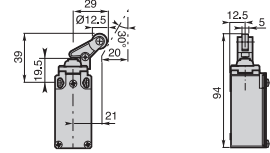
T35 - Plastic roller lever on metal plunger with dust protection cup



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
170 g

T36 - Plastic roller lever on metal plunger with dust protection cup

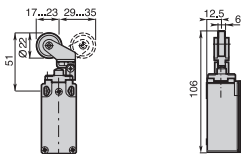


Min. actuating force
Weight

7N (24N ⇄)
175 g

T3• Adjustable plastic roller lever

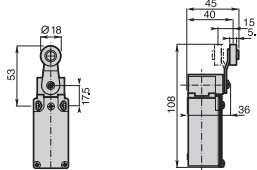
T38: on metal plunger T39: with dust protection cup



Conformity EN50047
Min. actuating force
Weight

7N (24N ⇄)
175 g

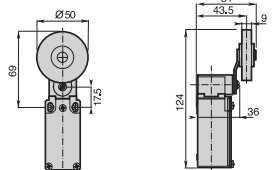
F41 - Ø 18 nylon roller lever



Conformity EN50047
Min. actuating torque
Weight

0,10Nm (0,32Nm ⇄)
235 g

F42 - Ø 50 rubber roller lever



Min. actuating torque
Weight

0,10Nm (0,32Nm ⇄)
255 g

Contact Blocks

| | | | | |
|-------------------------|------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•T38Z11 | AM•T39Z11 | AM•F41Z11 | AM•F42Z11 |
| X11 (1NO + 1NC) | AM•T38X11 | AM•T39X11 | AM•F41X11 | AM•F42X11 |
| Y11 (1NO + 1NC) | AM•T38Y11 | AM•T39Y11 | AM•F41Y11 | AM•F42Y11 |
| W02 (2NC) | AM•T38W02 | AM•T39W02 | AM•F41W02 | AM•F42W02 |
| W20 (2NO) | AM•T38W20 | AM•T39W20 | AM•F41W20 | AM•F42W20 |
| Z02 (2NC) | AM•T38Z02 | AM•T39Z02 | AM•F41Z02 | AM•F42Z02 |
| X12P (1NO + 2NC) | AM•T38X12P | AM•T39X12P | AM•F41X12P | AM•F42X12P |
| X21P (2NO + 1NC) | AM•T38X21P | AM•T39X21P | AM•F41X21P | AM•F42X21P |
| W03P (3NC) | AM•T38W03P | AM•T39W03P | AM•F41W03P | AM•F42W03P |

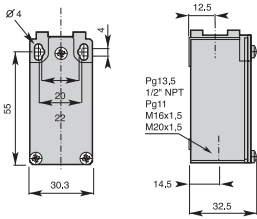
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **AM_F/AM_T** series

Metal casing IP66 - 30 mm. width

Electrical connection:

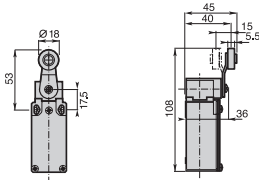
- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F43Z11 | AM•F44Z11 | AM•F45Z11 |
| X11 (1NO + 1NC) | AM•F43X11 | AM•F44X11 | AM•F45X11 |
| Y11 (1NO + 1NC) | AM•F43Y11 | AM•F44Y11 | AM•F45Y11 |
| W02 (2NC) | AM•F43W02 | AM•F44W02 | AM•F45W02 |
| W20 (2NO) | AM•F43W20 | AM•F44W20 | AM•F45W20 |
| Z02 (2NC) | AM•F43Z02 | AM•F44Z02 | AM•F45Z02 |
| X12P (1NO + 2NC) | AM•F43X12P | AM•F44X12P | AM•F45X12P |
| X21P (2NO + 1NC) | AM•F43X21P | AM•F44X21P | AM•F45X21P |
| W03P (3NC) | AM•F43W03P | AM•F44W03P | AM•F45W03P |

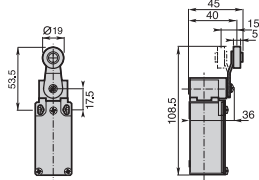
F43 - Ø 18 metal roller lever



Conformity EN50047

Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 240 g

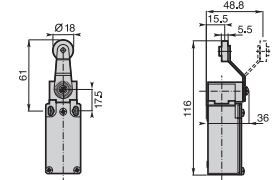
F44 - Ø 19 steel ball bearing roller lever



Conformity EN50047

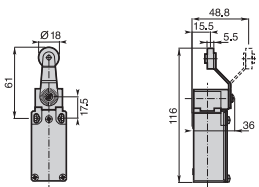
Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 240 g

F45 - Ø 18 nylon roller lever



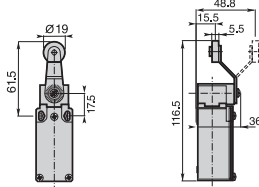
Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 250 g

F46 - Ø 18 metal roller lever



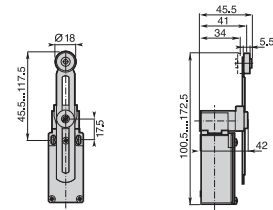
Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 255 g

F47 - Ø 19 steel ball bearing roller lever



Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 255 g

F51- Adjustable lever with Ø 18 nylon roller



Min. actuating torque 0,10Nm (0,32Nm ⇄)
Weight 250 g

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F46Z11 | AM•F47Z11 | AM•F51Z11 |
| X11 (1NO + 1NC) | AM•F46X11 | AM•F47X11 | AM•F51X11 |
| Y11 (1NO + 1NC) | AM•F46Y11 | AM•F47Y11 | AM•F51Y11 |
| W02 (2NC) | AM•F46W02 | AM•F47W02 | AM•F51W02 |
| W20 (2NO) | AM•F46W20 | AM•F47W20 | AM•F51W20 |
| Z02 (2NC) | AM•F46Z02 | AM•F47Z02 | AM•F51Z02 |
| X12P (1NO + 2NC) | AM•F46X12P | AM•F47X12P | AM•F51X12P |
| X21P (2NO + 1NC) | AM•F46X21P | AM•F47X21P | AM•F51X21P |
| W03P (3NC) | AM•F46W03P | AM•F47W03P | AM•F51W03P |

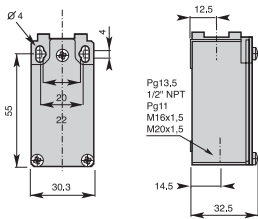
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches AM_F/AM_T series

Metal casing IP66 - 30 mm. width

Electrical connection:

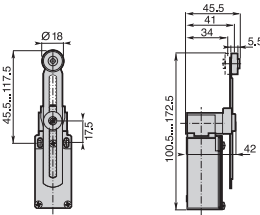
- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector



Contact Blocks

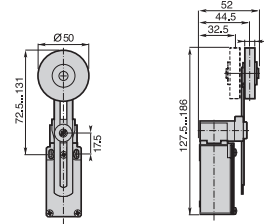
| | | | |
|-------------------------|--------------|------------|--------------|
| Z11 (1NO + 1NC) | AM•F5100Z11 | AM•F52Z11 | AM•F5200Z11 |
| X11 (1NO + 1NC) | AM•F5100X11 | AM•F52X11 | AM•F5200X11 |
| Y11 (1NO + 1NC) | AM•F5100Y11 | AM•F52Y11 | AM•F5200Y11 |
| W02 (2NC) | AM•F5100W02 | AM•F52W02 | AM•F5200W02 |
| W20 (2NO) | AM•F5100W20 | AM•F52W20 | AM•F5200W20 |
| Z02 (2NC) | AM•F5100Z02 | AM•F52Z02 | AM•F5200Z02 |
| X12P (1NO + 2NC) | AM•F5100X12P | AM•F52X12P | AM•F5200X12P |
| X21P (2NO + 1NC) | AM•F5100X21P | AM•F52X21P | AM•F5200X21P |
| W03P (3NC) | AM•F5100W03P | AM•F52W03P | AM•F5200W03P |

F5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller



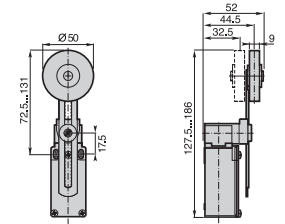
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **250 g**

F52 - Adjustable lever with Ø 50 rubber roller



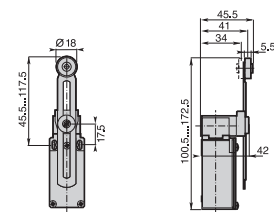
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **265 g**

F5200 - Adjustable toothed lever (step 2 mm) with Ø 50 rubber roller



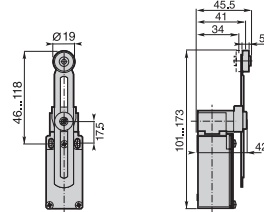
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **265 g**

F53 - Adjustable lever with Ø 18 metal roller



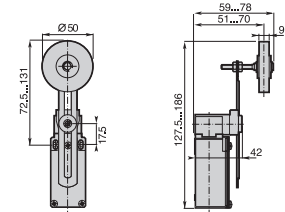
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **255 g**

F54 - Adjustable lever with Ø 19 steel ball bearing roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **255 g**

F55 - Adjustable lever with adjustable Ø 50 rubber roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **265 g**

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F53Z11 | AM•F54Z11 | AM•F55Z11 |
| X11 (1NO + 1NC) | AM•F53X11 | AM•F54X11 | AM•F55X11 |
| Y11 (1NO + 1NC) | AM•F53Y11 | AM•F54Y11 | AM•F55Y11 |
| W02 (2NC) | AM•F53W02 | AM•F54W02 | AM•F55W02 |
| W20 (2NO) | AM•F53W20 | AM•F54W20 | AM•F55W20 |
| Z02 (2NC) | AM•F53Z02 | AM•F54Z02 | AM•F55Z02 |
| X12P (1NO + 2NC) | AM•F53X12P | AM•F54X12P | AM•F55X12P |
| X21P (2NO + 1NC) | AM•F53X21P | AM•F54X21P | AM•F55X21P |
| W03P (3NC) | AM•F53W03P | AM•F54W03P | AM•F55W03P |

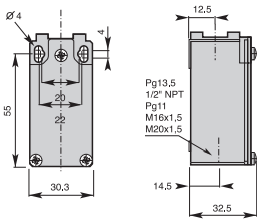
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **AM_F/AM_T** series

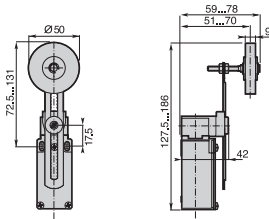
Metal casing IP66 - 30 mm. width

Electrical connection:

- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector

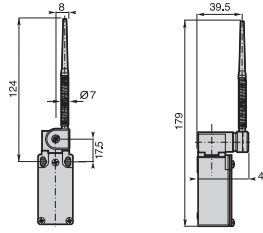


F500 - Adjustable toothed lever with \varnothing 50 rubber roller



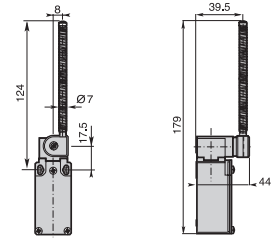
Min. actuating torque **0,10Nm (0,32Nm \ominus)**
Weight **265 g**

F61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **245 g**

F62 - Stainless steel spring actuator

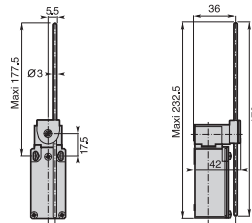


Min. actuating torque **0,10Nm**
Weight **245 g**

Contact Blocks

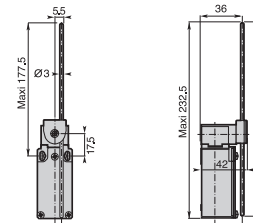
| | | | |
|-------------------------|--------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F5500Z11 | AM•F61Z11 | AM•F62Z11 |
| X11 (1NO + 1NC) | AM•F5500X11 | AM•F61X11 | AM•F62X11 |
| Y11 (1NO + 1NC) | AM•F5500Y11 | AM•F61Y11 | AM•F62Y11 |
| W02 (2NC) | AM•F5500W02 | AM•F61W02 | AM•F62W02 |
| W20 (2NO) | AM•F5500W20 | AM•F61W20 | AM•F62W20 |
| Z02 (2NC) | AM•F5500Z02 | AM•F61Z02 | AM•F62Z02 |
| X12P (1NO + 2NC) | AM•F5500X12P | AM•F61X12P | AM•F62X12P |
| X21P (2NO + 1NC) | AM•F5500X21P | AM•F61X21P | AM•F62X21P |
| W03P (3NC) | AM•F5500W03P | AM•F61W03P | AM•F62W03P |

F71 - Adjustable \varnothing 3 rod lever with stainless steel rod



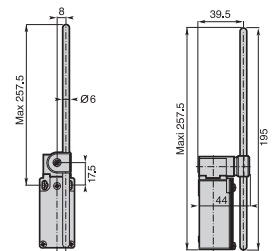
Min. actuating torque **0,10Nm (0,32Nm \ominus)**
Weight **245 g**

T72 - Adjustable \varnothing 3 rod lever with fiberglass rod



Min. actuating torque **0,10Nm (0,32Nm \ominus)**
Weight **245 g**

T73 - Adjustable \varnothing 6 rod lever with nylon rod



Min. actuating torque **0,10Nm (0,32Nm \ominus)**
Weight **255 g**

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F71Z11 | AM•F72Z11 | AM•F73Z11 |
| X11 (1NO + 1NC) | AM•F71X11 | AM•F72X11 | AM•F73X11 |
| Y11 (1NO + 1NC) | AM•F71Y11 | AM•F72Y11 | AM•F73Y11 |
| W02 (2NC) | AM•F71W02 | AM•F72W02 | AM•F73W02 |
| W20 (2NO) | AM•F71W20 | AM•F72W20 | AM•F73W20 |
| Z02 (2NC) | AM•F71Z02 | AM•F72Z02 | AM•F73Z02 |
| X12P (1NO + 2NC) | AM•F71X12P | AM•F72X12P | AM•F73X12P |
| X21P (2NO + 1NC) | AM•F71X21P | AM•F72X21P | AM•F73X21P |
| W03P (3NC) | AM•F71W03P | AM•F72W03P | AM•F73W03P |

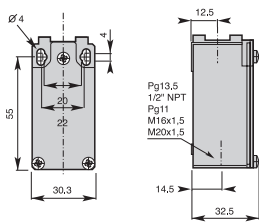
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **AM_F/AM_T** series

Metal casing IP66 - 30 mm. width

Electrical connection:

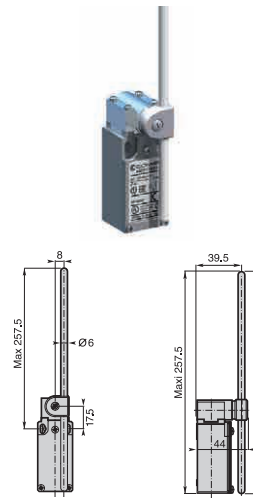
- AM1:** one cable inlet for PG 13,5 Cable Gland
- AM2:** one cable inlet by 1/2" NPT Plastic Adapter
- AM3:** one cable inlet for PG11 Cable Gland
- AM4:** one cable inlet for M16 x 1,5 Cable Gland
- AM5:** one cable inlet for M20 x 1,5 Cable Gland
- AM7:** 5 poles M12 metal connector
- AM8:** 8 poles M12 metal connector
- AM10:** 5 poles M12 plastic connector
- AM11:** 8 poles M12 plastic connector



Contact Blocks

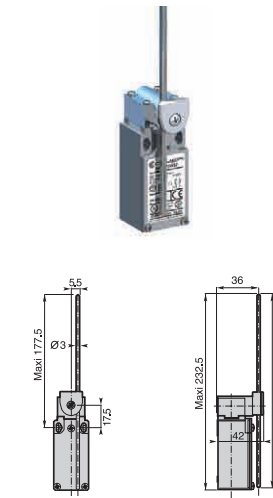
| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•F74Z11 | AM•F75Z11 | AM•T91Z11 |
| X11 (1NO + 1NC) | AM•F74X11 | AM•F75X11 | AM•T91X11 |
| Y11 (1NO + 1NC) | AM•F74Y11 | AM•F75Y11 | AM•T91Y11 |
| W02 (2NC) | AM•F74W02 | AM•F75W02 | AM•T91W02 |
| W20 (2NO) | AM•F74W20 | AM•F75W20 | AM•T91W20 |
| Z02 (2NC) | AM•F74Z02 | AM•F75Z02 | AM•T91Z02 |
| X12P (1NO + 2NC) | AM•F74X12P | AM•F75X12P | AM•T91X12P |
| X21P (2NO + 1NC) | AM•F74X21P | AM•F75X21P | AM•T91X21P |
| W03P (3NC) | AM•F74W03P | AM•F75W03P | AM•T91W03P |

F74 - Adjustable Ø 6 rod lever with fiberglass rod



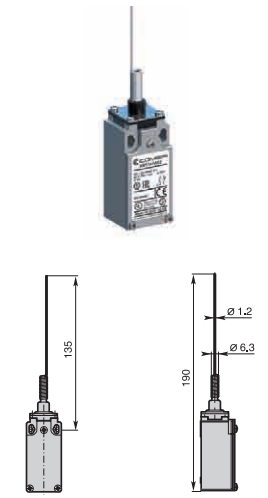
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **255 g**

T75 - Adjustable 3x3 square steel rod lever



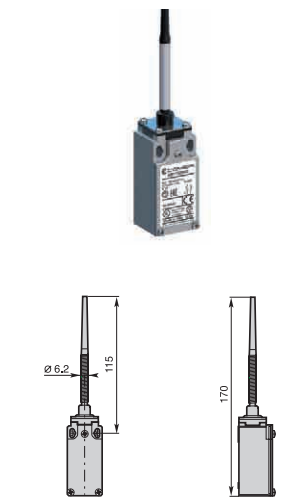
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **245 g**

T91 - Stainless steel spring multidirectional actuator



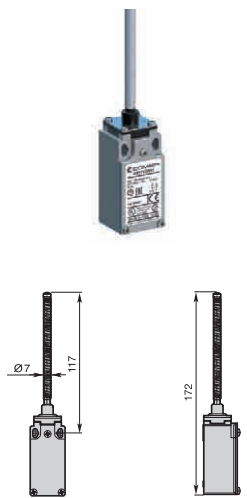
Min. actuating torque **0,12Nm**
Weight **175 g**

T92 - Multidirectional nylon actuator with stainless steel spring



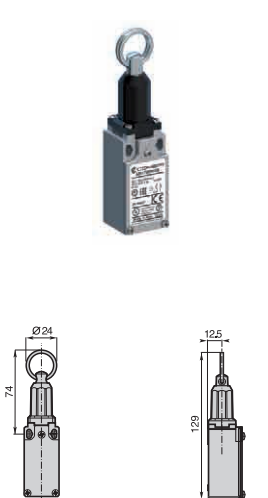
Min. actuating torque **0,12Nm**
Weight **180 g**

T93 - Stainless steel spring multidirectional actuator



Min. actuating torque **0,12Nm**
Weight **185 g**

T98 - Pull action with ring



Min. actuating force **30N**
Weight **210 g**

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | AM•T92Z11 | AM•T93Z11 | AM•T98Z11A |
| X11 (1NO + 1NC) | AM•T92X11 | AM•T93X11 | AM•T98X11A |
| Y11 (1NO + 1NC) | AM•T92Y11 | AM•T93Y11 | AM•T98Y11A |
| W02 (2NC) | AM•T92W02 | AM•T93W02 | AM•T98W02A |
| W20 (2NO) | AM•T92W20 | AM•T93W20 | AM•T98W20A |
| Z02 (2NC) | AM•T92Z02 | AM•T93Z02 | |
| X12P (1NO + 2NC) | AM•T92X12P | AM•T93X12P | |
| X21P (2NO + 1NC) | AM•T92X21P | AM•T93X21P | |
| W03P (3NC) | AM•T92W03P | AM•T93W03P | |

Operation diagrams: page 123 - All dimensions are in mm

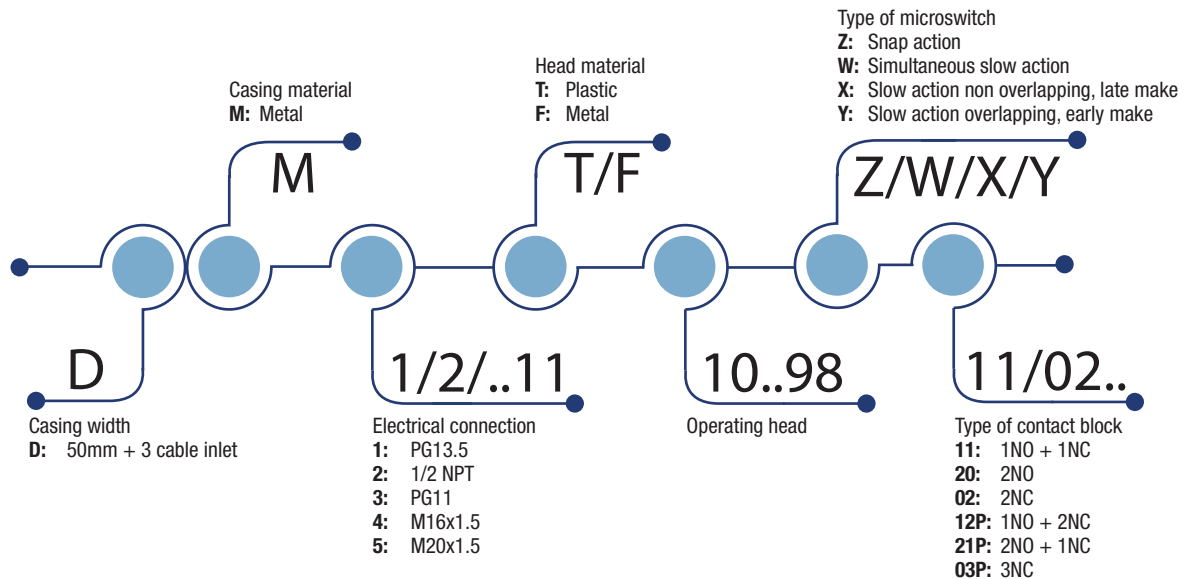
Limit Switches **DM series**

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø3 screws

03 Casing:

- 50 mm. width

04 Mounting screws

- 2 or 4 x M4 screws on top part

05 Cover

- 4 screws Ø3 pozidriv 1

06 Contact Block

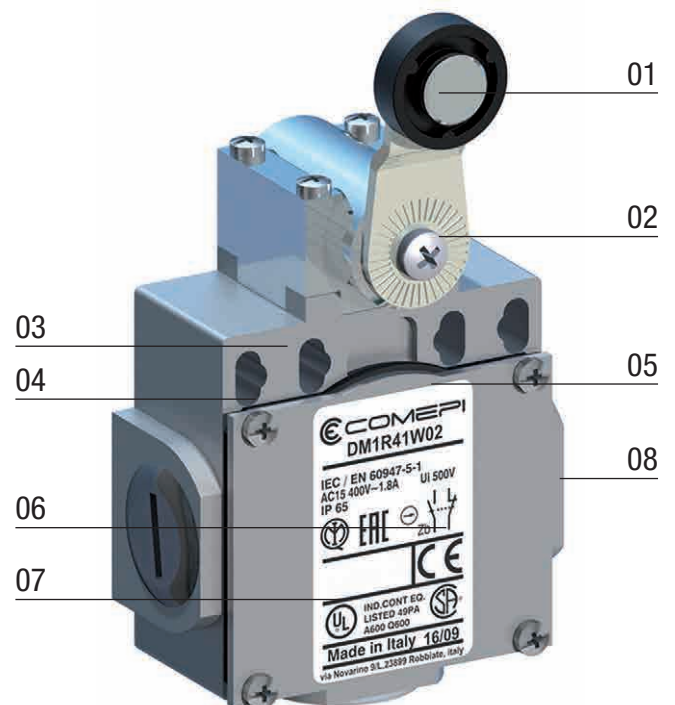
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 3 x threaded cable inlets suitable for cable gland



Limit Switches **DM series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

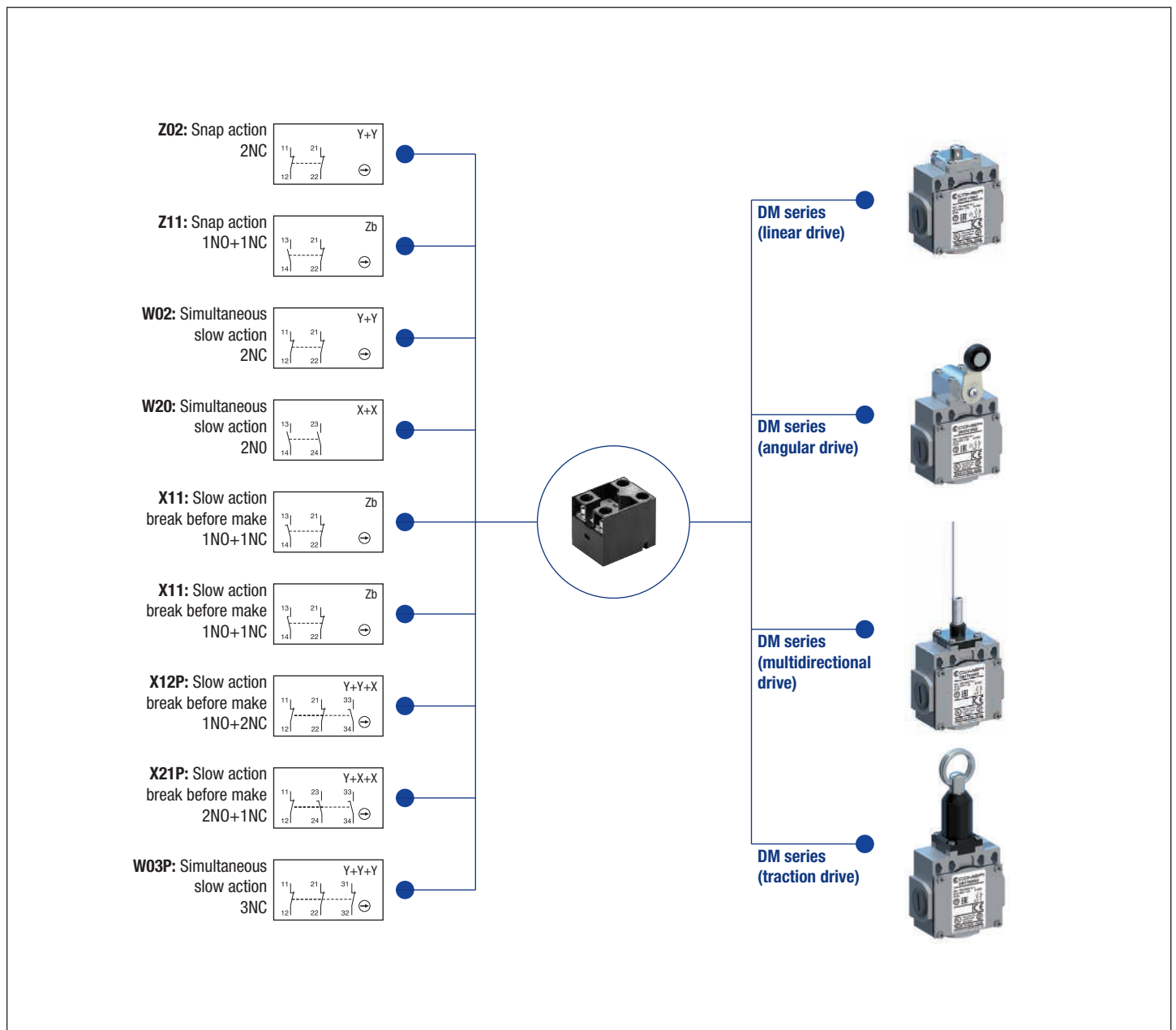
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made of zinc alloy (Zamak), offer a degree of protection of IP66.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **DM series**

Technical Data

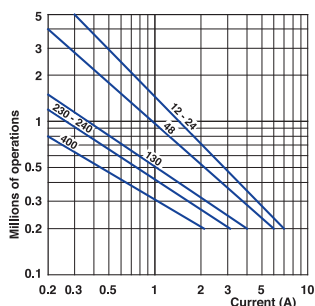
| | DM Series | |
|---|-----------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class I | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 66 | |

Electrical Data

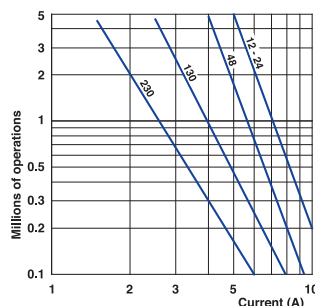
| | | |
|--|---|--|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P) A 300, Q 300 | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 0.55 0.4 |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | M3.5 (+, -) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Recommended tightening torque | Metal | |
| Cover | 0,8Nm, max 0,9 | |
| Head | 0,8Nm, max 0,9 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Mechanical durability | 15 millions of operations 10 millions of operations >5 millions of operations | F11; F12; T21; T2101; T30...34; T38 F41...46; F51...56; F61...75 T14; T35; T36; T39; T91...93; T98 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

* except for F52, F5200, F55, F5500, F73, F74, T92, T93: the degree of protection is IP65

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches **DM series**

Technical Data

Technical data approved by IMQ

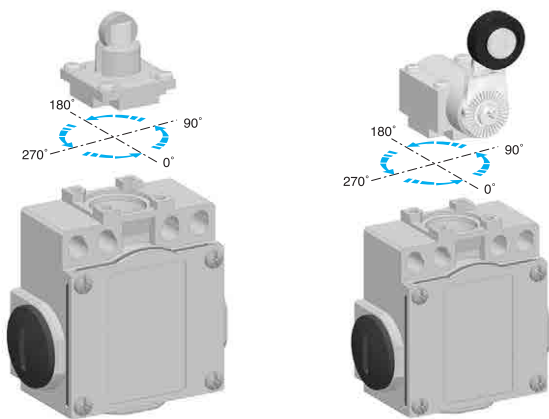
| | | |
|--|--|--------|
| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
| Degree of protection | IP 66* | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02, X12P, X21P, W03P) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A |
| I_e / DC-13 | 24 V - d.c. | 6 A |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A |

* except for F52, F5200, F55, F5500, F73, F74, T92, T93: the degree of protection is IP65

IMPLEMENTATION

Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Technical data approved by UL

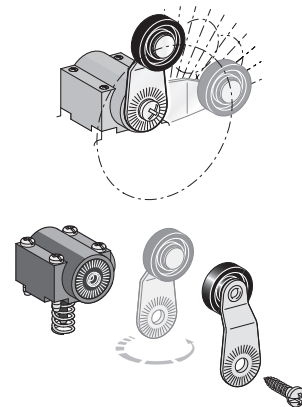
| | |
|---|-----------------------------|
| Standards | Devices conform with UL 508 |
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A300, Q300 |
| Contact blocks type X12P, X21P and W03P | |
| Utilization categories | A300, Q300 |

Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions

Plastic actuators

The operating heads used in plastic limit switches AP and DP series have the same dimensions of the ones used in the corresponding metal AM and DM series. It is therefore possible to supply "mixed" versions, that is:

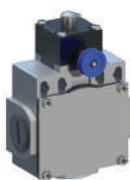
- plastic operating head on metal casing
- metal operating head on plastic casing



Manual reset operating head

Limit switches equipped with special operating head with manual reset button.

For more information:



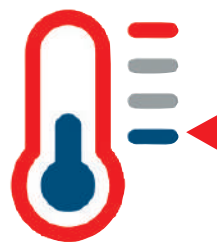
For further informations, please contact our technical department.

Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low. These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact.

To order add the digits "40" following the operating head indication in part number.

For example: DM1F11Z11 → DM1F1140Z11

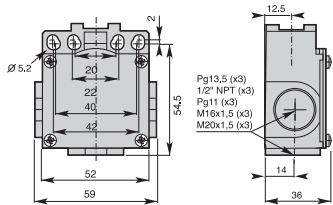


Limit Switches **DM_F/DM_T** series

Metal casing IP66 - 50 mm. width

Electrical connection:

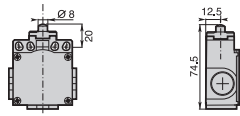
- DM1:** three cable inlets for PG 13,5 Cable Gland
- DM2:** three cable inlets for 1/2" NPT Cable Gland
- DM3:** three cable inlets for PG11 Cable Gland
- DM4:** three cable inlets for M16 x 1,5 Cable Gland
- DM5:** three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

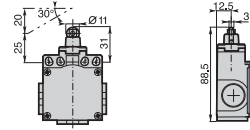
| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DM•F11Z11 | DM•F12Z11 | DM•T14Z11 |
| X11 (1NO + 1NC) | DM•F11X11 | DM•F12X11 | DM•T14X11 |
| Y11 (1NO + 1NC) | DM•F11Y11 | DM•F12Y11 | DM•T14Y11 |
| W02 (2NC) | DM•F11W02 | DM•F12W02 | DM•T14W02 |
| W20 (2NO) | DM•F11W20 | DM•F12W20 | DM•T14W20 |
| Z02 (2NC) | DM•F11Z02 | DM•F12Z02 | DM•T14Z02 |
| X12P (1NO + 2NC) | DM•F11X12P | DM•F12X12P | DM•T14X12P |
| X21P (2NO + 1NC) | DM•F11X21P | DM•F12X21P | DM•T14X21P |
| W03P (3NC) | DM•F11W03P | DM•F12W03P | DM•T14W03P |

F11 - Plain metal plunger



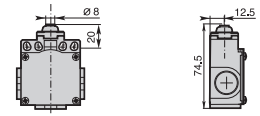
Min. actuating force
Weight **15N (30N ⇄)**
270 g

F12 - Metal roller plunger



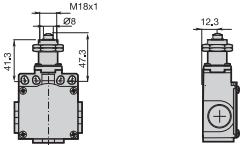
Min. actuating force
Weight **12N (30N ⇄)**
280 g

T14 - Metal plunger with dust protection cup



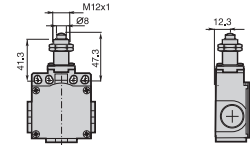
Min. actuating force
Weight **15N (30N ⇄)**
255 g

T21 - Plain plunger with M18x1 fixing nuts



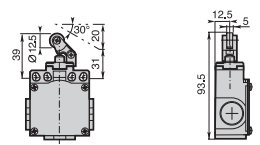
Min. actuating force
Weight **15N (30N ⇄)**
265 g

T2101 - Plain plunger with M12x1 fixing nuts



Min. actuating force
Weight **15N (30N ⇄)**
265 g

T30 - Plastic roller lever on plastic plunger



Min. actuating force
Weight **7N (24N ⇄)**
260 g

Contact Blocks

| | | | |
|-------------------------|------------|--------------|------------|
| Z11 (1NO + 1NC) | DM•T21Z11 | DM•T2101Z11 | DM•T30Z11 |
| X11 (1NO + 1NC) | DM•T21X11 | DM•T2101X11 | DM•T30X11 |
| Y11 (1NO + 1NC) | DM•T21Y11 | DM•T2101Y11 | DM•T30Y11 |
| W02 (2NC) | DM•T21W02 | DM•T2101W02 | DM•T30W02 |
| W20 (2NO) | DM•T21W20 | DM•T2101W20 | DM•T30W20 |
| Z02 (2NC) | DM•T21Z02 | DM•T2101Z02 | DM•T30Z02 |
| X12P (1NO + 2NC) | DM•T21X12P | DM•T2101X12P | DM•T30X12P |
| X21P (2NO + 1NC) | DM•T21X21P | DM•T2101X21P | DM•T30X21P |
| W03P (3NC) | DM•T21W03P | DM•T2101W03P | DM•T30W03P |

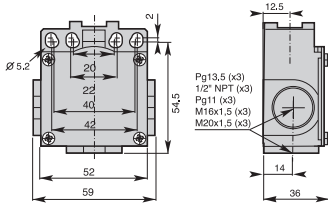
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches DM_F/DM_T series

Metal casing IP66 - 50 mm. width

Electrical connection:

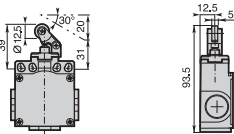
- DM1:** three cable inlets for PG 13,5 Cable Gland
- DM2:** three cable inlets for 1/2" NPT Cable Gland
- DM3:** three cable inlets for PG11 Cable Gland
- DM4:** three cable inlets for M16 x 1,5 Cable Gland
- DM5:** three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

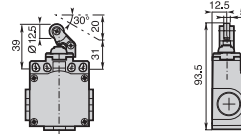
| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DM•T31Z11 | DM•T35Z11 | DM•T38Z11 |
| X11 (1NO + 1NC) | DM•T31X11 | DM•T35X11 | DM•T38X11 |
| Y11 (1NO + 1NC) | DM•T31Y11 | DM•T35Y11 | DM•T38Y11 |
| W02 (2NC) | DM•T31W02 | DM•T35W02 | DM•T38W02 |
| W20 (2NO) | DM•T31W20 | DM•T35W20 | DM•T38W20 |
| Z02 (2NC) | DM•T31Z02 | DM•T35Z02 | DM•T38Z02 |
| X12P (1NO + 2NC) | DM•T31X12P | DM•T35X12P | DM•T38X12P |
| X21P (2NO + 1NC) | DM•T31X21P | DM•T35X21P | DM•T38X21P |
| W03P (3NC) | DM•T31W03P | DM•T35W03P | DM•T38W03P |

T31 - Plastic roller lever on metal plunger



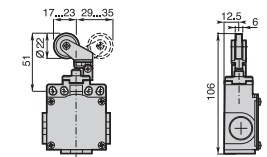
Min. actuating force
Weight **7N (24N ⇄)**
260 g

T35 - Plastic roller lever on metal plunger with dust protection cup



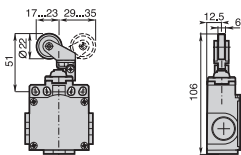
Min. actuating force
Weight **7N (24N ⇄)**
260 g

T38 - Adjustable plastic roller lever on metal plunger



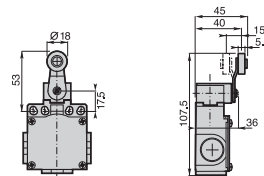
Min. actuating force
Weight **7N (24N ⇄)**
265 g

T39 - Adjustable plastic roller lever on metal plunger with dust protection cup



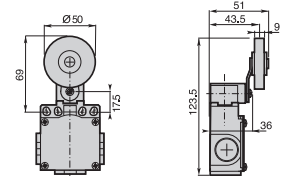
Min. actuating force
Weight **7N (24N ⇄)**
265 g

F41 - Ø 18 nylon roller



Min. actuating torque
Weight **0,10Nm (0,32Nm ⇄)**
320 g

F42 - Ø 50 rubber roller lever



Min. actuating torque
Weight **0,10Nm (0,32Nm ⇄)**
345 g

Contact Blocks

| | | | |
|-------------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DM•T39Z11 | DM•F41Z11 | DM•F42Z11 |
| X11 (1NO + 1NC) | DM•T39X11 | DM•F41X11 | DM•F42X11 |
| Y11 (1NO + 1NC) | DM•T39Y11 | DM•F41Y11 | DM•F42Y11 |
| W02 (2NC) | DM•T39W02 | DM•F41W02 | DM•F42W02 |
| W20 (2NO) | DM•T39W20 | DM•F41W20 | DM•F42W20 |
| Z02 (2NC) | DM•T39Z02 | DM•F41Z02 | DM•F42Z02 |
| X12P (1NO + 2NC) | DM•T39X12P | DM•F41X12P | DM•F42X12P |
| X21P (2NO + 1NC) | DM•T39X21P | DM•F41X21P | DM•F42X21P |
| W03P (3NC) | DM•T39W03P | DM•F41W03P | DM•F42W03P |

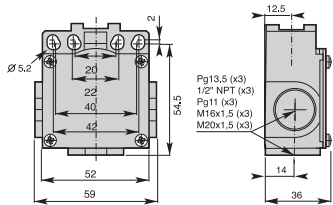
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **DM_F/DM_T** series

Metal casing IP66 - 50 mm. width

Electrical connection:

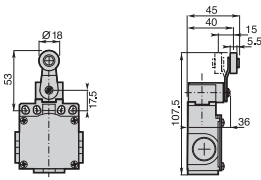
- DM1:** three cable inlets for PG 13,5 Cable Gland
- DM2:** three cable inlets for 1/2" NPT Cable Gland
- DM3:** three cable inlets for PG11 Cable Gland
- DM4:** three cable inlets for M16 x 1,5 Cable Gland
- DM5:** three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

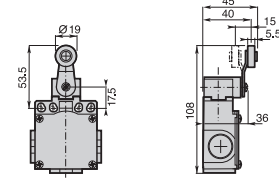
- Z11** (1NO + 1NC)
- X11** (1NO + 1NC)
- Y11** (1NO + 1NC)
- W02** (2NC)
- W20** (2NO)
- Z02** (2NC)
- X12P** (1NO + 2NC)
- X21P** (2NO + 1NC)
- W03P** (3NC)

F43 - Ø 18 metal roller lever



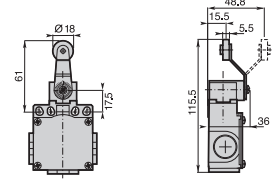
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **325 g**

F44 - Ø 19 steel ball bearing roller lever



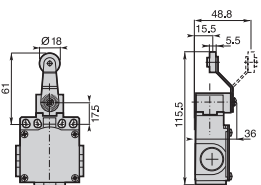
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **325 g**

F45 - Ø 18 nylon roller lever



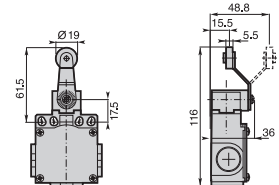
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **335 g**

F46 - Ø 18 metal roller lever



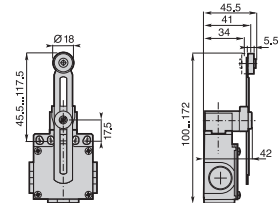
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **340 g**

F47 - Ø 19 steel ball bearing roller lever



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **340 g**

F51 - Adjustable lever with Ø 18 nylon roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **335 g**

Contact Blocks

- Z11** (1NO + 1NC)
- X11** (1NO + 1NC)
- Y11** (1NO + 1NC)
- W02** (2NC)
- W20** (2NO)
- Z02** (2NC)
- X12P** (1NO + 2NC)
- X21P** (2NO + 1NC)
- W03P** (3NC)

- DM•F46Z11
- DM•F46X11
- DM•F46Y11
- DM•F46W02
- DM•F46W20
- DM•F46Z02
- DM•F46X12P
- DM•F46X21P
- DM•F46W03P

- DM•F47Z11
- DM•F47X11
- DM•F47Y11
- DM•F47W02
- DM•F47W20
- DM•F47Z02
- DM•F47X12P
- DM•F47X21P
- DM•F47W03P

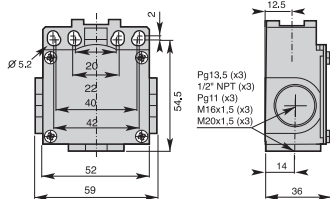
- DM•F51Z11
- DM•F51X11
- DM•F51Y11
- DM•F51W02
- DM•F51W20
- DM•F51Z02
- DM•F51X12P
- DM•F51X21P
- DM•F51W03P

Limit Switches DM_F/DM_T series

Metal casing IP66 - 50 mm. width

Electrical connection:

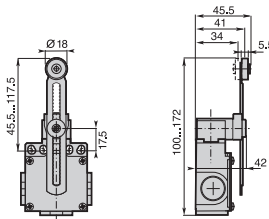
- DM1:** three cable inlets for PG 13,5 Cable Gland
- DM2:** three cable inlets for 1/2" NPT Cable Gland
- DM3:** three cable inlets for PG11 Cable Gland
- DM4:** three cable inlets for M16 x 1,5 Cable Gland
- DM5:** three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

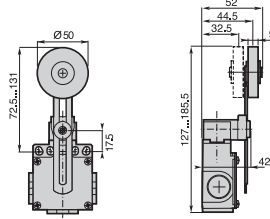
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

F100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller



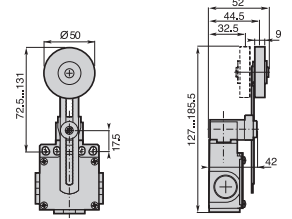
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **335 g**

F52 - Adjustable lever with Ø 50 rubber roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **355 g**

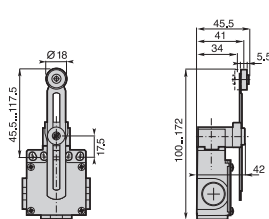
F5200 - Adjustable toothed lever (step 2 mm) with Ø 50 rubber roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **355 g**

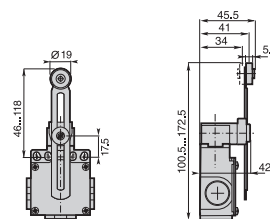
| | | | |
|------------------|--------------|------------|--------------|
| Z11 (1NO + 1NC) | DM•F5100Z11 | DM•F52Z11 | DM•F5200Z11 |
| X11 (1NO + 1NC) | DM•F5100X11 | DM•F52X11 | DM•F5200X11 |
| Y11 (1NO + 1NC) | DM•F5100Y11 | DM•F52Y11 | DM•F5200Y11 |
| W02 (2NC) | DM•F5100W02 | DM•F52W02 | DM•F5200W02 |
| W20 (2NO) | DM•F5100W20 | DM•F52W20 | DM•F5200W20 |
| Z02 (2NC) | DM•F5100Z02 | DM•F52Z02 | DM•F5200Z02 |
| X12P (1NO + 2NC) | DM•F5100X12P | DM•F52X12P | DM•F5200X12P |
| X21P (2NO + 1NC) | DM•F5100X21P | DM•F52X21P | DM•F5200X21P |
| W03P (3NC) | DM•F5100W03P | DM•F52W03P | DM•F5200W03P |

F53 - Adjustable lever with Ø 18 metal roller



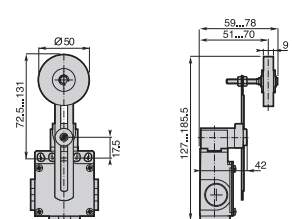
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **340 g**

F54 - Adjustable lever with Ø 19 steel ball bearing roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **340 g**

F55 - Adjustable lever with adjustable Ø 50 rubber roller



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **355 g**

Contact Blocks

| | | | |
|------------------|------------|------------|------------|
| Z11 (1NO + 1NC) | DM•F53Z11 | DM•F54Z11 | DM•F55Z11 |
| X11 (1NO + 1NC) | DM•F53X11 | DM•F54X11 | DM•F55X11 |
| Y11 (1NO + 1NC) | DM•F53Y11 | DM•F54Y11 | DM•F55Y11 |
| W02 (2NC) | DM•F53W02 | DM•F54W02 | DM•F55W02 |
| W20 (2NO) | DM•F53W20 | DM•F54W20 | DM•F55W20 |
| Z02 (2NC) | DM•F53Z02 | DM•F54Z02 | DM•F55Z02 |
| X12P (1NO + 2NC) | DM•F53X12P | DM•F54X12P | DM•F55X12P |
| X21P (2NO + 1NC) | DM•F53X21P | DM•F54X21P | DM•F55X21P |
| W03P (3NC) | DM•F53W03P | DM•F54W03P | DM•F55W03P |

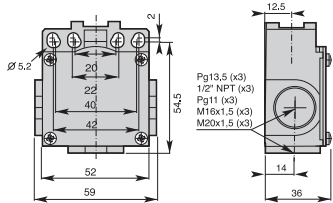
Operation diagrams: page 123 - All dimensions are in mm

Limit Switches **DM_F/DM_T** series

Metal casing IP66 - 50 mm. width

Electrical connection:

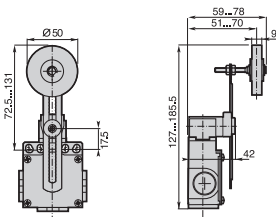
- DM1:** three cable inlets for PG 13,5 Cable Gland
DM2: three cable inlets for 1/2" NPT Cable Gland
DM3: three cable inlets for PG11 Cable Gland
DM4: three cable inlets for M16 x 1,5 Cable Gland
DM5: three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

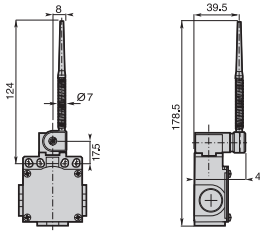
- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

F500 - Adjustable toothed lever with step 2 mm with Ø 50 rubber roller



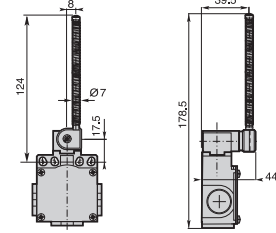
Min. actuating torque 0,10Nm (0,32Nm ⇄)
 Weight 355 g

F61 - Nylon actuator with stainless steel spring



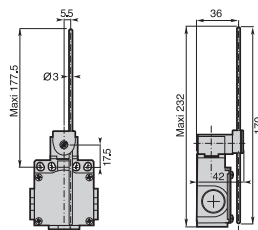
Min. actuating torque 0,10Nm
 Weight 305 g

F62 - Stainless steel spring actuator



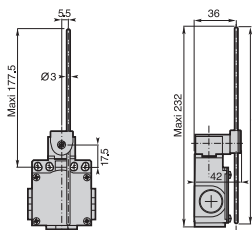
Min. actuating torque 0,10Nm
 Weight 305 g

F71 - Adjustable Ø 3 rod lever with stainless steel rod



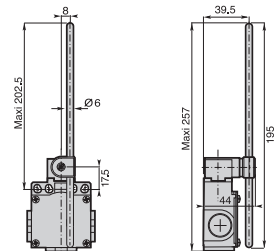
Min. actuating torque 0,10Nm (0,32Nm ⇄)
 Weight 380 g

F72 - Adjustable Ø 3 rod lever with fiberglass rod



Min. actuating torque 0,10Nm (0,32Nm ⇄)
 Weight 380 g

F73 - Adjustable Ø 6 rod lever with nylon rod



Min. actuating torque 0,10Nm (0,32Nm ⇄)
 Weight 390 g

Contact Blocks

- Z11 (1NO + 1NC)
- X11 (1NO + 1NC)
- Y11 (1NO + 1NC)
- W02 (2NC)
- W20 (2NO)
- Z02 (2NC)
- X12P (1NO + 2NC)
- X21P (2NO + 1NC)
- W03P (3NC)

- DM•F71Z11
- DM•F71X11
- DM•F71Y11
- DM•F71W02
- DM•F71W20
- DM•F71Z02
- DM•F71X12P
- DM•F71X21P
- DM•F71W03P

- DM•F72Z11
- DM•F72X11
- DM•F72Y11
- DM•F72W02
- DM•F72W20
- DM•F72Z02
- DM•F72X12P
- DM•F72X21P
- DM•F72W03P

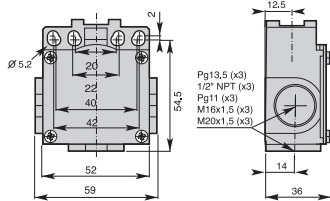
- DM•F73Z11
- DM•F73X11
- DM•F73Y11
- DM•F73W02
- DM•F73W20
- DM•F73Z02
- DM•F73X12P
- DM•F73X21P
- DM•F73W03P

Limit Switches DM_F/DM_T series

Metal casing IP66 - 50 mm. width

Electrical connection:

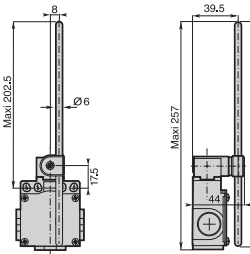
- DM1:** three cable inlets for PG 13,5 Cable Gland
- DM2:** three cable inlets for 1/2" NPT Cable Gland
- DM3:** three cable inlets for PG11 Cable Gland
- DM4:** three cable inlets for M16 x 1,5 Cable Gland
- DM5:** three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

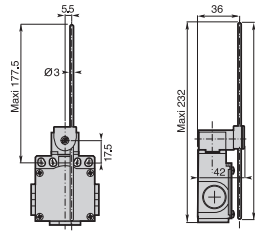
- Z11** (1NO + 1NC)
- X11** (1NO + 1NC)
- Y11** (1NO + 1NC)
- W02** (2NC)
- W20** (2NO)
- Z02** (2NC)
- X12P** (1NO + 2NC)
- X21P** (2NO + 1NC)
- W03P** (3NC)

F74 - Adjustable Ø 6 rod lever with fiberglass rod



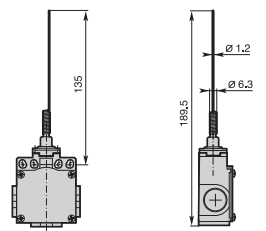
Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **390 g**

T75 - Adjustable 3x3 square steel rod lever



Min. actuating torque **0,10Nm (0,32Nm ⊖)**
Weight **380 g**

T91 - Stainless steel spring multidirectional actuator



Min. actuating torque **0,12Nm**
Weight **265 g**

DM•F74Z11

DM•F74X11

DM•F74Y11

DM•F74W02

DM•F74W20

DM•F74Z02

DM•F74X12P

DM•F74X21P

DM•F74W03P

DM•F75Z11

DM•F75X11

DM•F75Y11

DM•F75W02

DM•F75W20

DM•F75Z02

DM•F75X12P

DM•F75X21P

DM•F75W03P

DM•T91Z11

DM•T91X11

DM•T91Y11

DM•T91W02

DM•T91W20

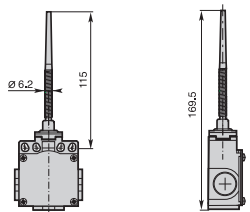
DM•T91Z02

DM•T91X12P

DM•T91X21P

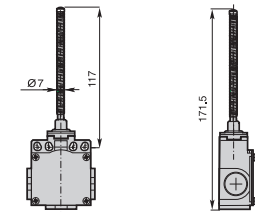
DM•T91W03P

T92 - Multidirectional nylon actuator with stainless steel spring



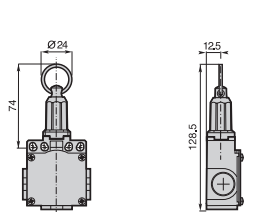
Min. actuating torque **0,12Nm**
Weight **270 g**

T93 - Stainless steel spring multidirectional actuator



Min. actuating torque **0,12Nm**
Weight **275 g**

T98 - Pull action with ring



Min. actuating force **30N**
Weight **300 g**

DM•T92Z11

DM•T92X11

DM•T92Y11

DM•T92W02

DM•T92W20

DM•T92Z02

DM•T92X12P

DM•T92X21P

DM•T92W03P

DM•T93Z11

DM•T93X11

DM•T93Y11

DM•T93W02

DM•T93W20

DM•T93Z02

DM•T93X12P

DM•T93X21P

DM•T93W03P

DM•T98Z11A

DM•T98X11A

DM•T98Y11A

DM•T98W02A

DM•T98W20A

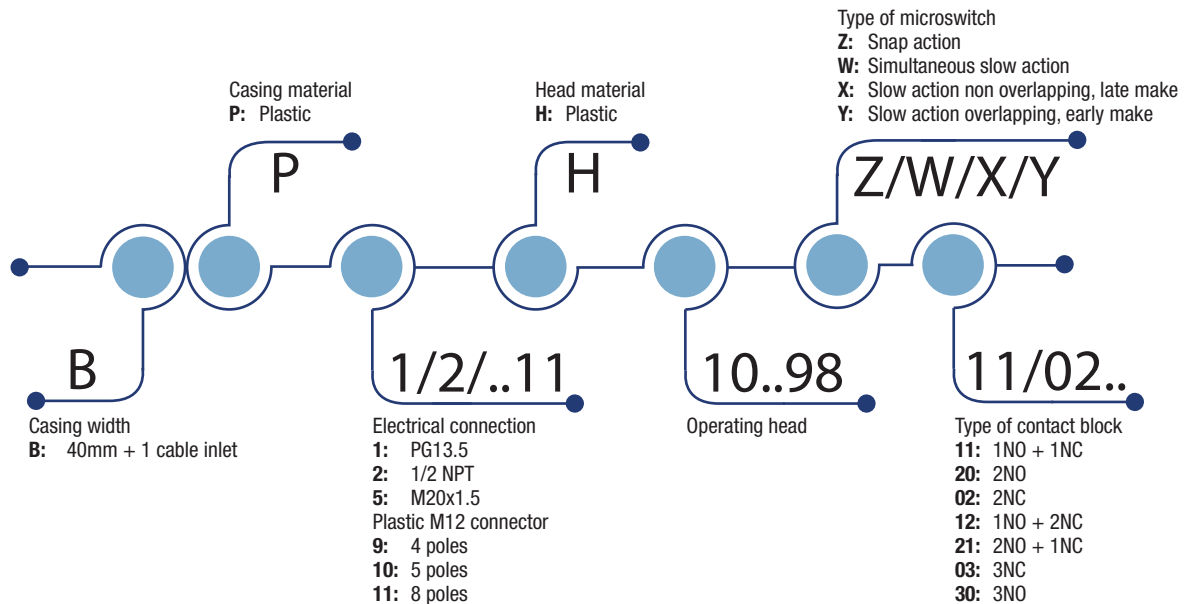
Limit Switches **BP series**

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø3 screws

03 Casing:

- 40 mm. with dimensions acc. to EN 50041

04 Mounting screws

- 2 or 4 x M5 screws on top part

05 Cover

- None

06 Contact Block

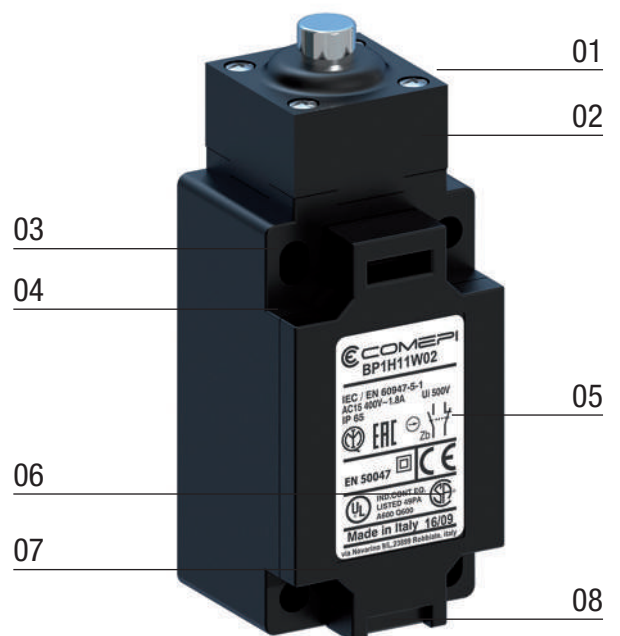
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 1 x threaded cable inlet suitable for cable gland or M12 connector



Limit Switches **BP series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

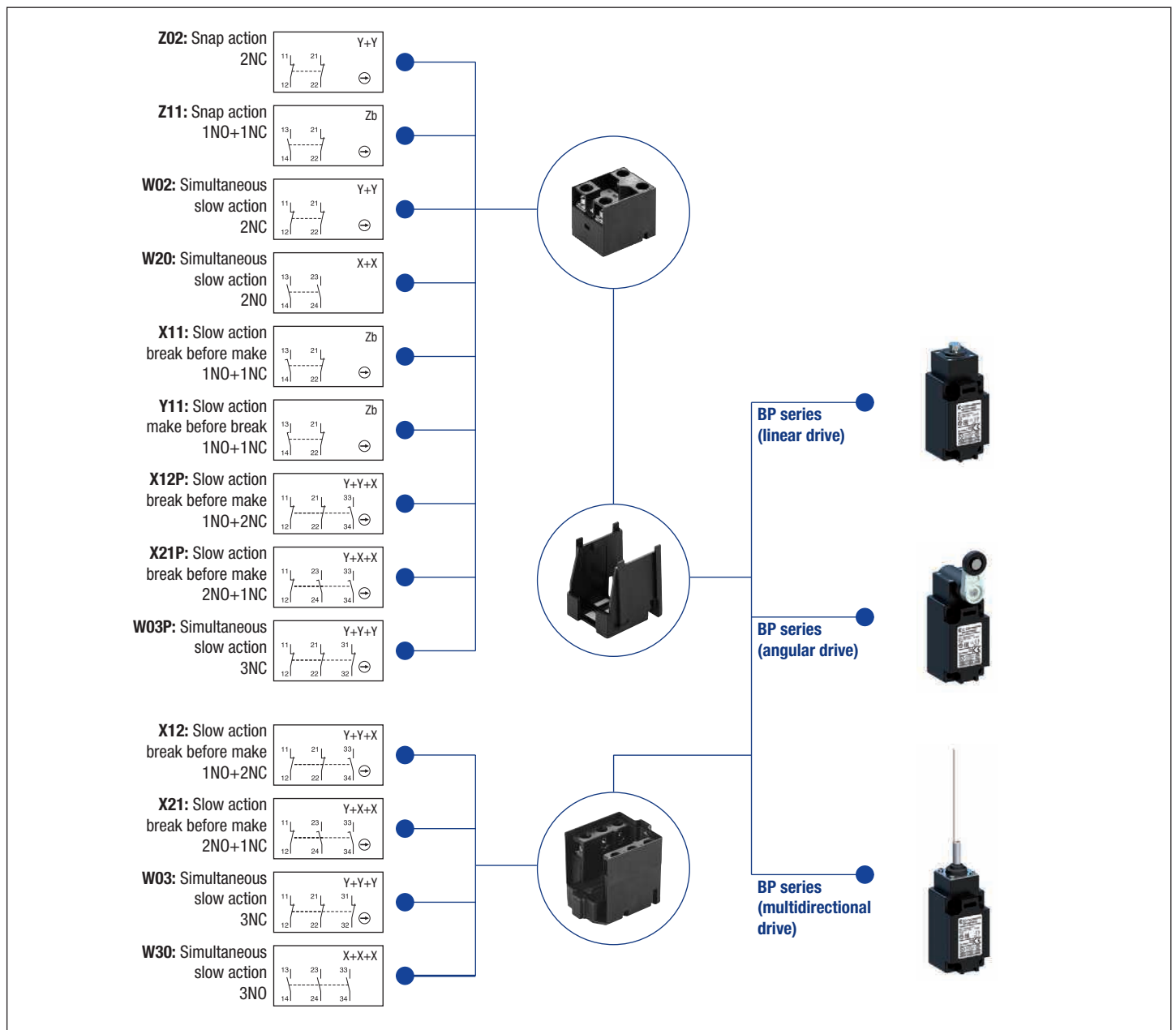
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made of reinforced UL-VO thermoplastic fiber-glass, offer double insulation \square and a degree of protection of IP65.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **BP series**

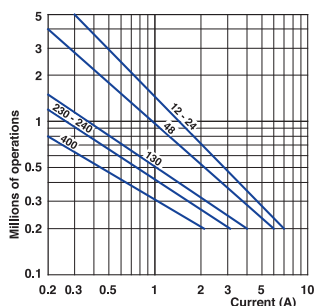
Technical Data

| | BP Series | |
|---|-----------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class II | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP65 - IP67 | |

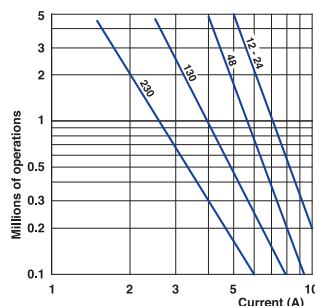
Electrical Data

| | | |
|--|---|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02) A 600, Q 600 | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 (2.8A for contacts type X12, X21, W03, W30) 0.55 0.4 (0.27A for contacts type X12, X21, W03, W30) |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | - | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Recommended tightening torque | Plastic | |
| Cover | 0,5Nm, max 0,8 | |
| Head | 0,5Nm, max 0,8 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Mechanical durability | 30 millions of operations 25 millions of operations 10 millions of operations | H11...13; H31...33 H41...44; H51...54; H61...75 H14; H19; H35...37; H91...93 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches **BP series**

Technical Data

Technical data approved by IMQ

| | | |
|--|--|--|
| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
| Degree of protection | IP 65 | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 | 24 V - d.c. | 6 A (2.8A for contacts type X12, X21, W03, W30) |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A (0.27A for contacts type X12, X21, W03, W30) |

Technical data approved by UL

| | |
|---|-----------------------------|
| Standards | Devices conform with UL 508 |
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A600, Q600 |
| Contact blocks type X12, X21, W03 and W30 | |
| Utilization categories | A600, Q600 |

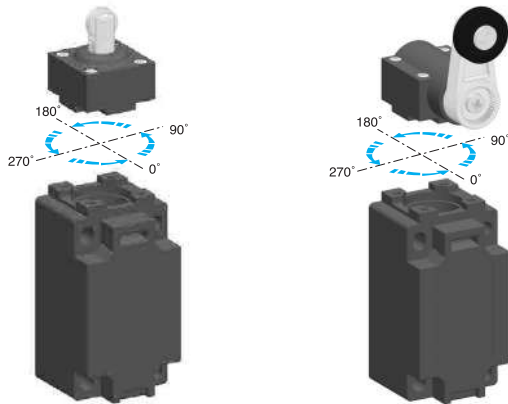
Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

IMPLEMENTATION

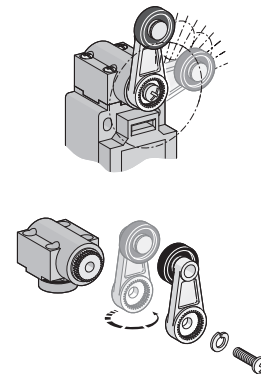
Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).

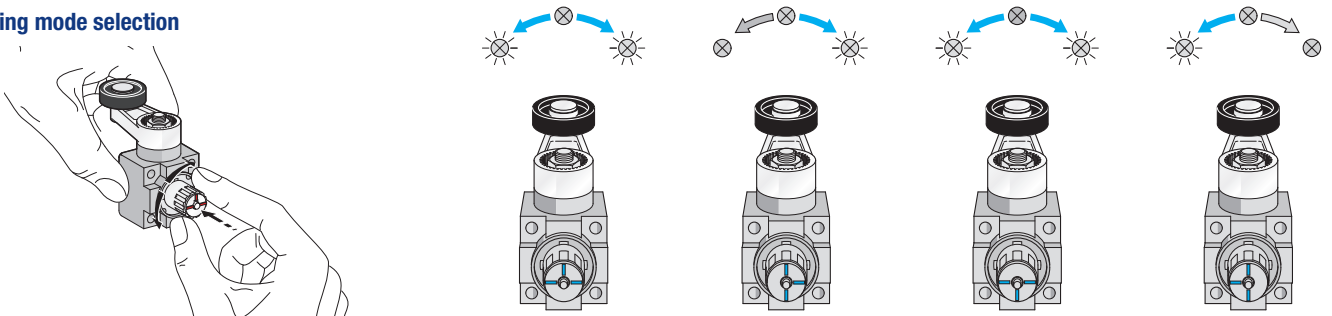


Lever adjustment

The lever of the angular actuators can be adjusted every 9° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



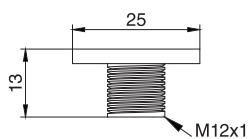
Operating mode selection



Special Versions

M12 CONNECTOR

Prewired versions with 4, 5 or 8 poles M12 male connectors. Available with plastic threaded body. See page 117 for more details.

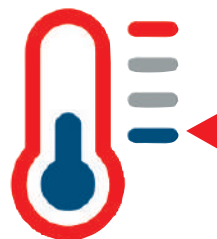


Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low.

These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact. To order add the digits "40" following the operating head indication in part number.

For example: BP1H11Z11 ▶ BP1H1140Z11

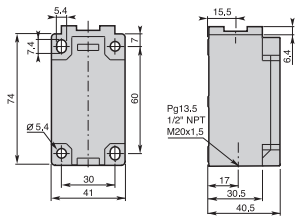


Limit Switches **BP series**

Double Insulation - Plastic Casing IP65 - 40 mm. width

Electrical connection:

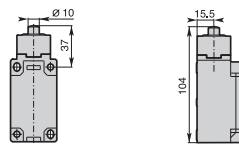
- BP1:** one cable inlet for PG 13,5 Cable Gland
- BP2:** one cable inlet for 1/2" NPT Cable Gland
- BP5:** one cable inlet for M20 x 1,5 Cable Gland
- BP9:** 4 poles M12 plastic connector
- BP10:** 5 poles M12 plastic connector
- BP11:** 8 poles M12 plastic connector



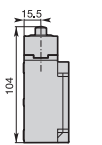
Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H11Z11 | BP•H12Z11 | BP•H13Z11 |
| X11 (1NO + 1NC) | BP•H11X11 | BP•H12X11 | BP•H13X11 |
| Y11 (1NO + 1NC) | BP•H11Y11 | BP•H12Y11 | BP•H13Y11 |
| W02 (2NC) | BP•H11W02 | BP•H12W02 | BP•H13W02 |
| W20 (2NO) | BP•H11W20 | BP•H12W20 | BP•H13W20 |
| Z02 (2NC) | BP•H11Z02 | BP•H12Z02 | BP•H13Z02 |
| X12 (1NO + 2NC) | BP•H11X12 | BP•H12X12 | BP•H13X12 |
| X21 (2NO + 1NC) | BP•H11X21 | BP•H12X21 | BP•H13X21 |
| W03 (3NC) | BP•H11W03 | BP•H12W03 | BP•H13W03 |
| W30 (3NO) | BP•H11W30 | BP•H12W30 | BP•H13W30 |

H11 - Plain steel plunger

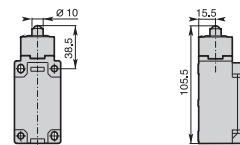


Conformity EN50041
Min. actuating force
Weight

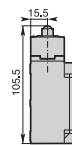


14N (40N ⇄)
145 g

H12 - Steel ball plunger

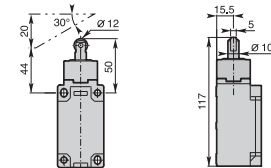


Conformity EN50041
Min. actuating force
Weight

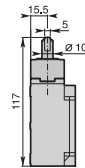


14N (40N ⇄)
145 g

H13 - Steel roller plunger

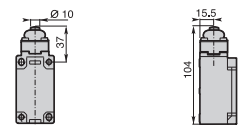


Conformity EN50041
Min. actuating force
Weight

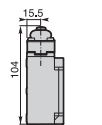


14N (40N ⇄)
150 g

H14 - Plain steel plunger with dust protection cup

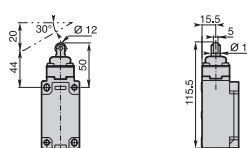


Conformity EN50041
Min. actuating force
Weight

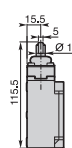


14N (40N ⇄)
145 g

H19 - Steel roller plunger with dust protection cup



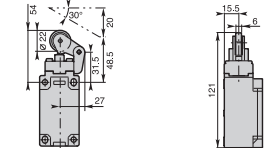
Conformity EN50041
Min. actuating force
Weight



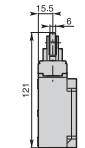
14N (40N ⇄)
150 g

H3 - One way roller

H31: Ø22 nylon roller H32: Ø22 stainless steel roller



Min. actuating force
Weight



8N (30N ⇄)
185 g

Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H14Z11 | BP•H19Z11 | BP•H31Z11 | BP•H32Z11 |
| X11 (1NO + 1NC) | BP•H14X11 | BP•H19X11 | BP•H31X11 | BP•H32X11 |
| Y11 (1NO + 1NC) | BP•H14Y11 | BP•H19Y11 | BP•H31Y11 | BP•H32Y11 |
| W02 (2NC) | BP•H14W02 | BP•H19W02 | BP•H31W02 | BP•H32W02 |
| W20 (2NO) | BP•H14W20 | BP•H19W20 | BP•H31W20 | BP•H32W20 |
| Z02 (2NC) | BP•H14Z02 | BP•H19Z02 | BP•H31Z02 | BP•H32Z02 |
| X12 (1NO + 2NC) | BP•H14X12 | BP•H19X12 | BP•H31X12 | BP•H32X12 |
| X21 (2NO + 1NC) | BP•H14X21 | BP•H19X21 | BP•H31X21 | BP•H32X21 |
| W03 (3NC) | BP•H14W03 | BP•H19W03 | BP•H31W03 | BP•H32W03 |
| W30 (3NO) | BP•H14W30 | BP•H19W30 | BP•H31W30 | BP•H32W30 |

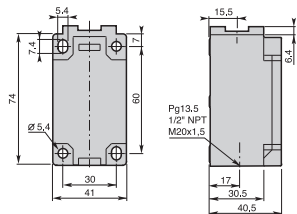
Operation diagrams: page 124 - All dimensions are in mm

Limit Switches **BP series**

Double Insulation - Plastic Casing IP65 - 40 mm. width

Electrical connection:

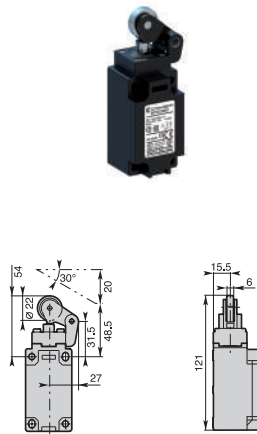
- BP1:** one cable inlet for PG 13,5 Cable Gland
- BP2:** one cable inlet for 1/2" NPT Cable Gland
- BP5:** one cable inlet for M20 x 1,5 Cable Gland
- BP9:** 4 poles M12 plastic connector
- BP10:** 5 poles M12 plastic connector
- BP11:** 8 poles M12 plastic connector



Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H33Z11 | BP•H35Z11 | BP•H36Z11 | BP•H37Z11 |
| X11 (1NO + 1NC) | BP•H33X11 | BP•H35X11 | BP•H36X11 | BP•H37X11 |
| Y11 (1NO + 1NC) | BP•H33Y11 | BP•H35Y11 | BP•H36Y11 | BP•H37Y11 |
| W02 (2NC) | BP•H33W02 | BP•H35W02 | BP•H36W02 | BP•H37W02 |
| W20 (2NO) | BP•H33W20 | BP•H35W20 | BP•H36W20 | BP•H37W20 |
| Z02 (2NC) | BP•H33Z02 | BP•H35Z02 | BP•H36Z02 | BP•H37Z02 |
| X12 (1NO + 2NC) | BP•H33X12 | BP•H35X12 | BP•H36X12 | BP•H37X12 |
| X21 (2NO + 1NC) | BP•H33X21 | BP•H35X21 | BP•H36X21 | BP•H37X21 |
| W03 (3NC) | BP•H33W03 | BP•H35W03 | BP•H36W03 | BP•H37W03 |
| W30 (3NO) | BP•H33W30 | BP•H35W30 | BP•H36W30 | BP•H37W30 |

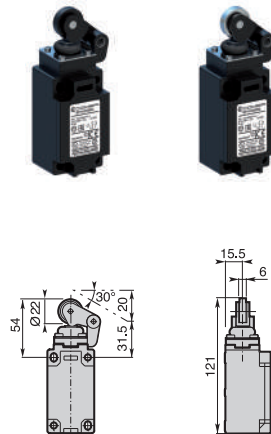
H33 - One way roller Ø22 steel ball bearing



Min. actuating force
Weight

8N (30N ⇄)
185 g

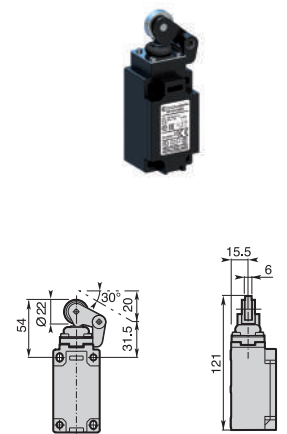
H35 - One way lever with dust protection cup H35: Ø22 nylon roller H36: Ø22 stainless steel roller



Min. actuating force
Weight

8N (30N ⇄)
180 g

H37 - One way lever with dust protection cup Ø22 steel ball bearing

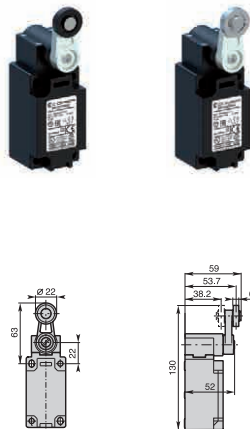


Min. actuating force
Weight

8N (30N ⇄)
180 g

H4• - Ø22 roller lever

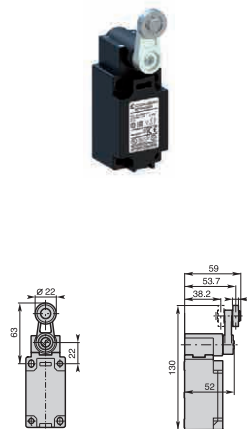
H41: nylon roller H42: stainless steel roller



Conformity EN50041
Min. actuating torque
Weight

0,15Nm (0,30Nm ⇄)
200 g

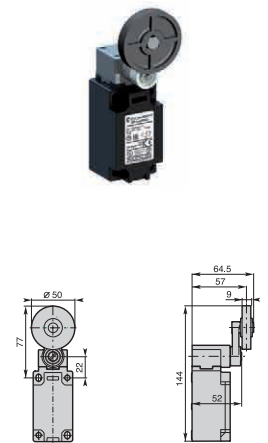
H43 - Ø22 roller lever with steel ball bearing



Conformity EN50041
Min. actuating torque
Weight

0,15Nm (0,30Nm ⇄)
200 g

H44 - Ø50 rubber roller lever



Min. actuating torque
Weight

0,15Nm (0,30Nm ⇄)
205 g

Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H41Z11 | BP•H42Z11 | BP•H43Z11 | BP•H44Z11 |
| X11 (1NO + 1NC) | BP•H41X11 | BP•H42X11 | BP•H43X11 | BP•H44X11 |
| Y11 (1NO + 1NC) | BP•H41Y11 | BP•H42Y11 | BP•H43Y11 | BP•H44Y11 |
| W02 (2NC) | BP•H41W02 | BP•H42W02 | BP•H43W02 | BP•H44W02 |
| W20 (2NO) | BP•H41W20 | BP•H42W20 | BP•H43W20 | BP•H44W20 |
| Z02 (2NC) | BP•H41Z02 | BP•H42Z02 | BP•H43Z02 | BP•H44Z02 |
| X12 (1NO + 2NC) | BP•H41X12 | BP•H42X12 | BP•H43X12 | BP•H44X12 |
| X21 (2NO + 1NC) | BP•H41X21 | BP•H42X21 | BP•H43X21 | BP•H44X21 |
| W03 (3NC) | BP•H41W03 | BP•H42W03 | BP•H43W03 | BP•H44W03 |
| W30 (3NO) | BP•H41W03 | BP•H42W30 | BP•H43W30 | BP•H44W30 |

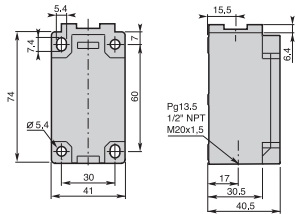
Operation diagrams: page 124 - All dimensions are in mm

Limit Switches **BP series**

Double Insulation - Plastic Casing IP65 - 40 mm. width

Electrical connection:

- BP1:** one cable inlet for PG 13,5 Cable Gland
- BP2:** one cable inlet for 1/2" NPT Cable Gland
- BP5:** one cable inlet for M20 x 1,5 Cable Gland
- BP9:** 4 poles M12 plastic connector
- BP10:** 5 poles M12 plastic connector
- BP11:** 8 poles M12 plastic connector

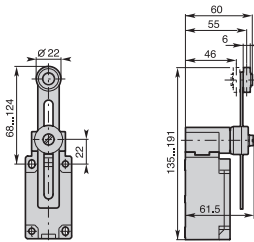


Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H51Z11 | BP•H52Z11 | BP•H53Z11 | BP•H54Z11 |
| X11 (1NO + 1NC) | BP•H51X11 | BP•H52X11 | BP•H53X11 | BP•H54X11 |
| Y11 (1NO + 1NC) | BP•H51Y11 | BP•H52Y11 | BP•H53Y11 | BP•H54Y11 |
| W02 (2NC) | BP•H51W02 | BP•H52W02 | BP•H53W02 | BP•H54W02 |
| W20 (2NO) | BP•H51W20 | BP•H52W20 | BP•H53W20 | BP•H54W20 |
| Z02 (2NC) | BP•H51Z02 | BP•H52Z02 | BP•H53Z02 | BP•H54Z02 |
| X12 (1NO + 2NC) | BP•H51X12 | BP•H52X12 | BP•H53X12 | BP•H54X12 |
| X21 (2NO + 1NC) | BP•H51X21 | BP•H52X21 | BP•H53X21 | BP•H54X21 |
| W03 (3NC) | BP•H51W03 | BP•H52W03 | BP•H53W03 | BP•H54W03 |
| W30 (3NO) | BP•H51W30 | BP•H52W30 | BP•H53W30 | BP•H54W30 |

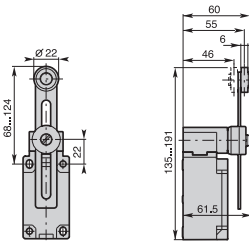
H5• - Adjustable Ø22 roller lever

H51: nylon roller H52: stainless steel roller



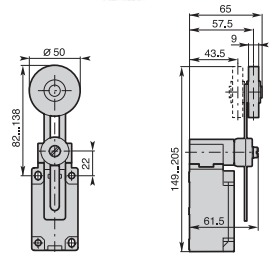
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **195 g**

H53 - Adjustable Ø22 roller lever with steel ball bearing



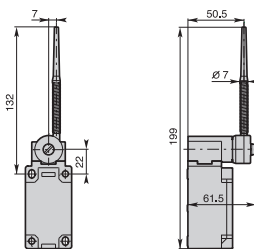
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **195 g**

H54 - Adjustable Ø50 rubber roller lever



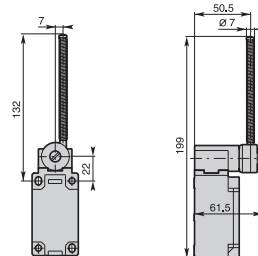
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **205 g**

H61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,15Nm**
Weight **190 g**

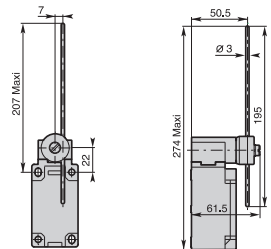
H62 - Stainless steel spring actuator



Min. actuating torque **0,15Nm**
Weight **15 g**

H7• - Adjustable Ø3 rod lever

H71: stainless steel rod H73: fiberglass rod



Conformity **EN50041**
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **185 g**

Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H61Z11 | BP•H62Z11 | BP•H71Z11 | BP•H73Z11 |
| X11 (1NO + 1NC) | BP•H61X11 | BP•H62X11 | BP•H71X11 | BP•H73X11 |
| Y11 (1NO + 1NC) | BP•H61Y11 | BP•H62Y11 | BP•H71Y11 | BP•H73Y11 |
| W02 (2NC) | BP•H61W02 | BP•H62W02 | BP•H71W02 | BP•H73W02 |
| W20 (2NO) | BP•H61W20 | BP•H62W20 | BP•H71W20 | BP•H73W20 |
| Z02 (2NC) | BP•H61Z02 | BP•H62Z02 | BP•H71Z02 | BP•H73Z02 |
| X12 (1NO + 2NC) | BP•H61X12 | BP•H62X12 | BP•H71X12 | BP•H73X12 |
| X21 (2NO + 1NC) | BP•H61X21 | BP•H62X21 | BP•H71X21 | BP•H73X21 |
| W03 (3NC) | BP•H61W03 | BP•H62W03 | BP•H71W03 | BP•H73W03 |
| W30 (3NO) | BP•H61W30 | BP•H62W30 | BP•H71W30 | BP•H73W30 |

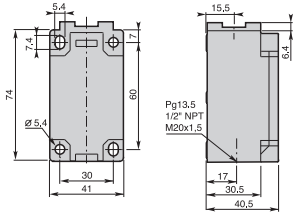
Operation diagrams: page 124 - All dimensions are in mm

Limit Switches **BP series**

Double Insulation - Plastic Casing IP65 - 40 mm. width

Electrical connection:

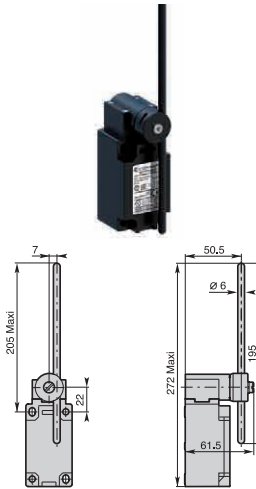
- BP1:** one cable inlet for PG 13,5 Cable Gland
- BP2:** one cable inlet for 1/2" NPT Cable Gland
- BP5:** one cable inlet for M20 x 1,5 Cable Gland
- BP9:** 4 poles M12 plastic connector
- BP10:** 5 poles M12 plastic connector
- BP11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H72Z11 | BP•H74Z11 | BP•H75Z11 |
| X11 (1NO + 1NC) | BP•H72X11 | BP•H74X11 | BP•H75X11 |
| Y11 (1NO + 1NC) | BP•H72Y11 | BP•H74Y11 | BP•H75Y11 |
| W02 (2NC) | BP•H72W02 | BP•H74W02 | BP•H75W02 |
| W20 (2NO) | BP•H72W20 | BP•H74W20 | BP•H75W20 |
| Z02 (2NC) | BP•H72Z02 | BP•H74Z02 | BP•H75Z02 |
| X12 (1NO + 2NC) | BP•H72X12 | BP•H74X12 | BP•H75X12 |
| X21 (2NO + 1NC) | BP•H72X21 | BP•H74X21 | BP•H75X21 |
| W03 (3NC) | BP•H72W03 | BP•H74W03 | BP•H75W03 |
| W30 (3NO) | BP•H72W30 | BP•H74W30 | BP•H75W30 |

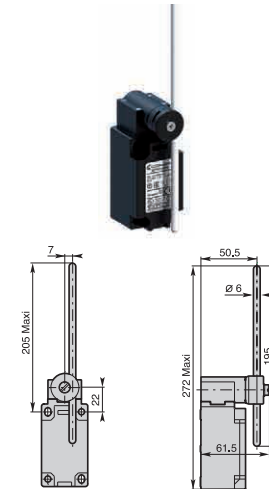
H72 - Adjustable Ø6 nylon rod lever



Conformity EN50041

Min. actuating torque 0,15Nm (0,30Nm ⇄)
Weight 185 g

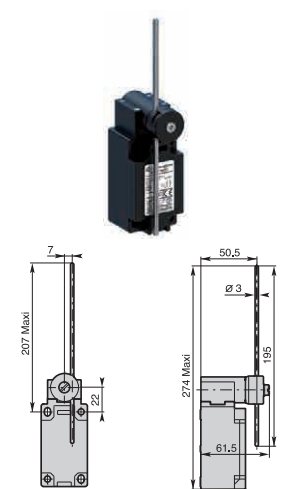
H74 - Adjustable Ø6 fiberglass rod lever



Conformity EN50041

Min. actuating torque 0,15Nm (0,30Nm ⇄)
Weight 185 g

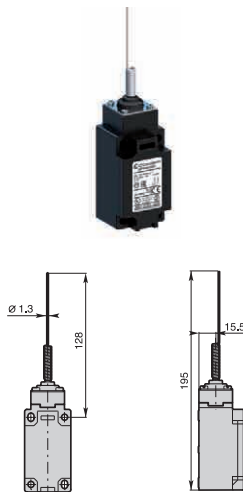
H75 - Adjustable 3x3 square steel rod lever



Conformity EN50041

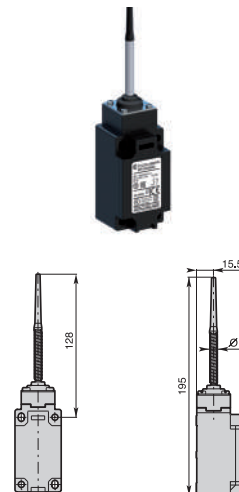
Min. actuating torque 0,15Nm (0,30Nm ⇄)
Weight 185 g

H91 - Stainless steel spring multidirectional actuator



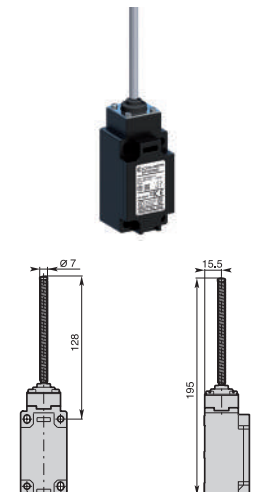
Min. actuating torque 0,18Nm
Weight 150 g

H92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque 0,18Nm
Weight 155 g

H93 - Stainless steel spring multidirectional actuator



Min. actuating torque 0,18Nm
Weight 160 g

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BP•H91Z11 | BP•H92Z11 | BP•H93Z11 |
| X11 (1NO + 1NC) | BP•H91X11 | BP•H92X11 | BP•H93X11 |
| Y11 (1NO + 1NC) | BP•H91Y11 | BP•H92Y11 | BP•H93Y11 |
| W02 (2NC) | BP•H91W02 | BP•H92W02 | BP•H93W02 |
| W20 (2NO) | BP•H91W20 | BP•H92W20 | BP•H93W20 |
| Z02 (2NC) | BP•H91Z02 | BP•H92Z02 | BP•H93Z02 |
| X12 (1NO + 2NC) | BP•H91X12 | BP•H92X12 | BP•H93X12 |
| X21 (2NO + 1NC) | BP•H91X21 | BP•H92X21 | BP•H93X21 |
| W03 (3NC) | BP•H91W03 | BP•H92W03 | BP•H93W03 |
| W30 (3NO) | BP•H91W30 | BP•H92W30 | BP•H93W30 |

Operation diagrams: page 124 - All dimensions are in mm

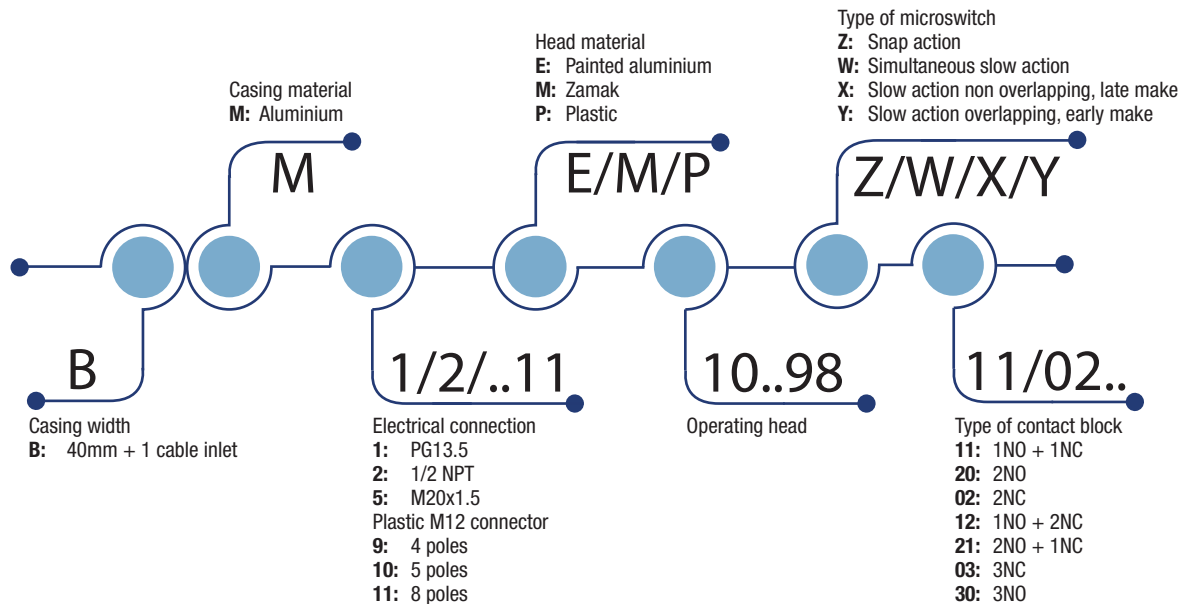
Limit Switches **BM series**

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø4 screws

03 Casing:

- 40 mm. with dimensions acc. to EN 50041

04 Mounting screws

- 2 or 4 x M5 screws on top part

05 Cover

- 2 screws 3 pozidriv 1

06 Contact Block

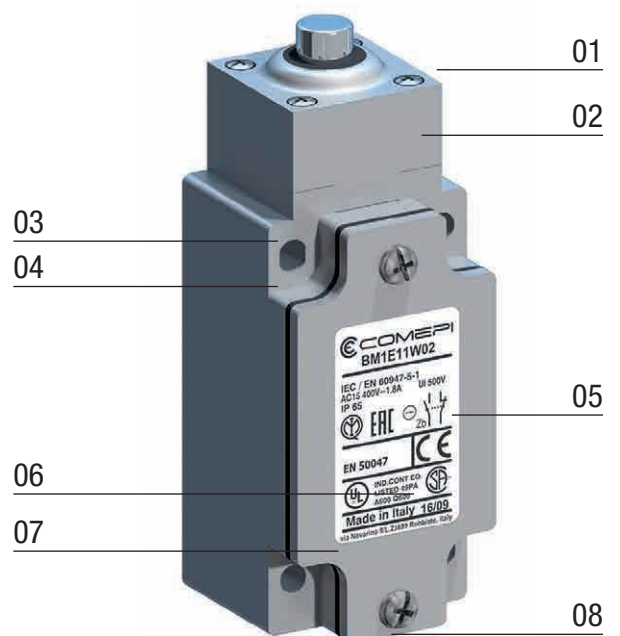
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 1 x threaded cable inlet suitable for cable gland or M12 connector



Limit Switches **BM series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

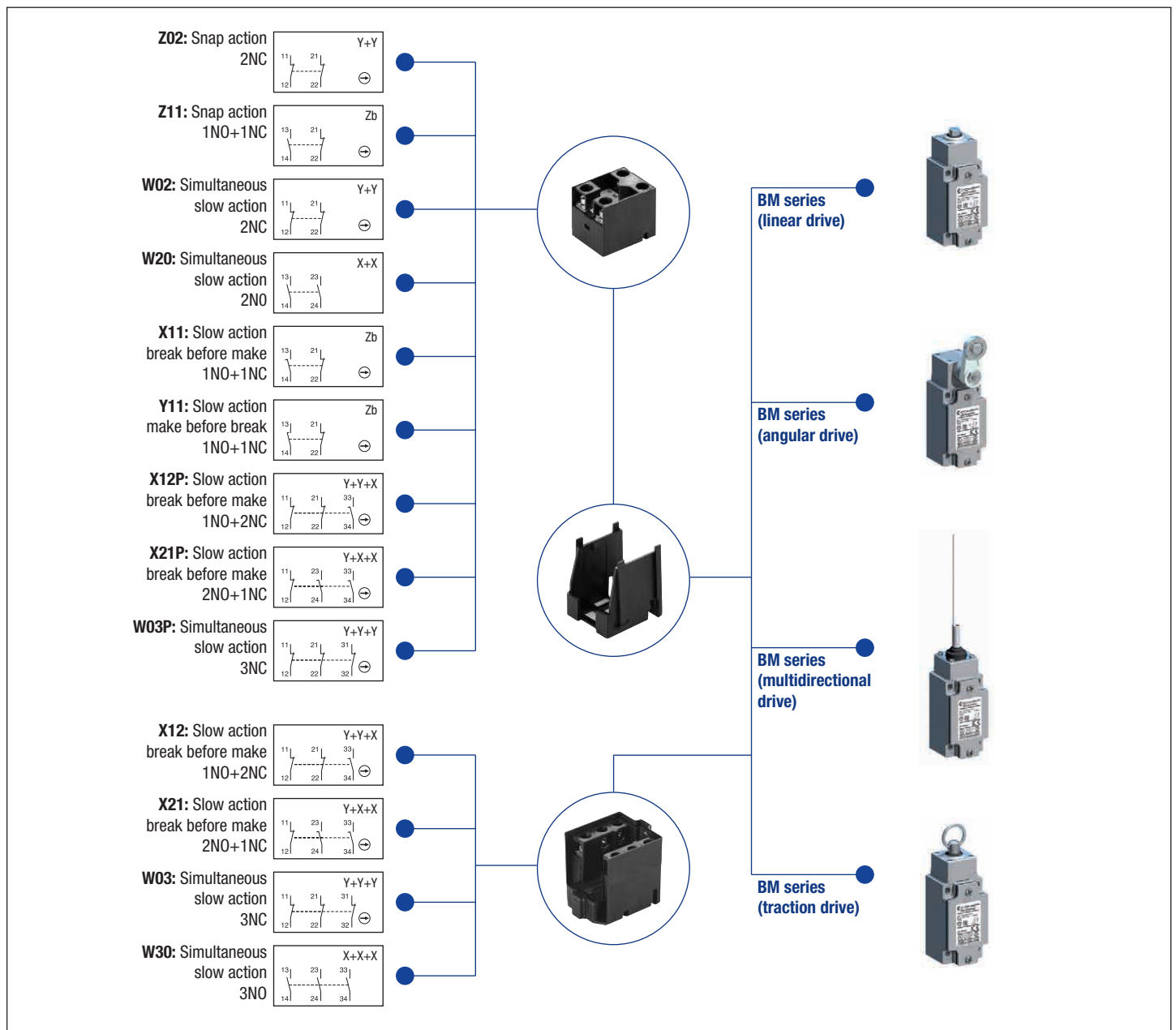
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made aluminium, are mechanically more resistant and three times lighter than the ones in zinc alloy and they offer a degree of protection of IP66.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **BM series**

Technical Data

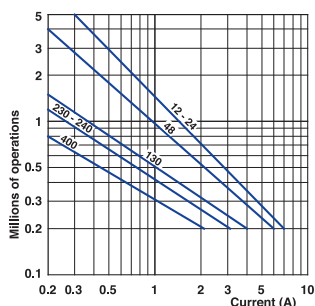
| | BM Series | |
|---|-----------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class I | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 66* | |

Electrical Data

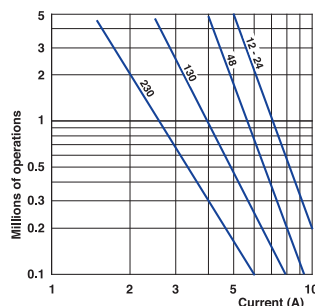
| | | |
|--|---|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02) A 600, Q 600 | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40\text{ °C}$ | A | 10 |
| Short-circuit protection $U_e < 500\text{ V a.c.}$ - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 (2.8A for contacts type X12, X21, W03, W30) 0.55 0.4 (0.27A for contacts type X12, X21, W03, W30) |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | M3.5 (+, -) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Recommended tightening torque | Metal | |
| Cover | 0,8Nm, max 0,9 | |
| Head | 0,8Nm, max 0,9 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Mechanical durability | 30 millions of operations 25 millions of operations 10 millions of operations | P11; M13; E11...13; E21...23; E31...33 M41...75; E41...75 P91...93; M14; M19; E91...93; E99 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

* except for E54, E92, E93, P92, P93, M54: the degree of protection is IP65

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches **BM series**

Technical Data

Technical data approved by IMQ

| | | |
|--|--|--|
| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
| Degree of protection | IP 66* | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 | 24 V - d.c. | 6 A (2.8A for contacts type X12, X21, W03, W30) |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A (0.27A for contacts type X12, X21, W03, W30) |

* except for E54, E92, E93, P92, P93, M54: the degree of protection is IP65

Technical data approved by UL

| | |
|---|-----------------------------|
| Standards | Devices conform with UL 508 |
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A600, Q600 |
| Contact blocks type X12, X21, W03 and W30 | |
| Utilization categories | A600, Q600 |

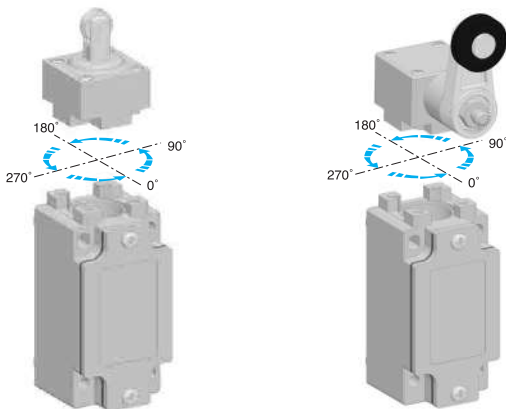
Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

IMPLEMENTATION

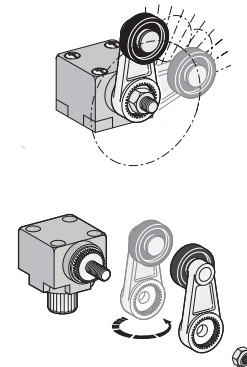
Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).

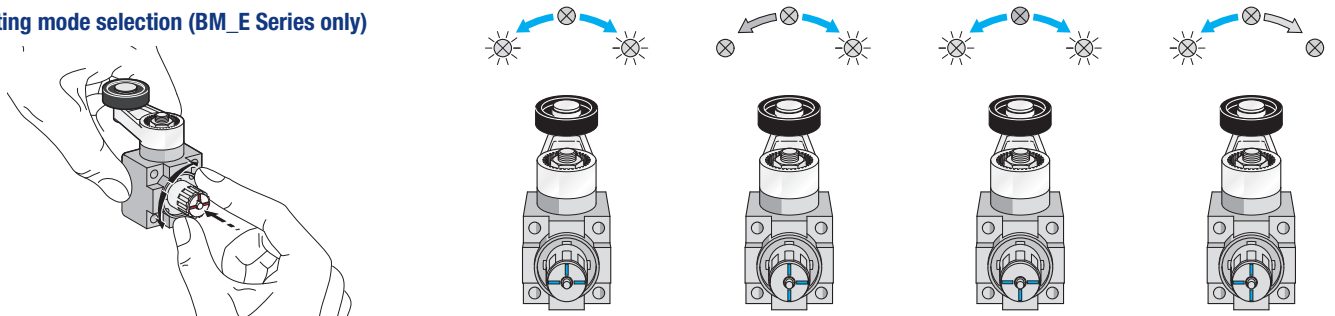


Lever adjustment

The lever of the angular actuators can be adjusted every 9° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Operating mode selection (BM_E Series only)

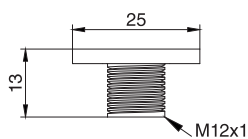


Special Versions



M12 CONNECTOR

Prewired versions with 5 or 8 poles M12 male connectors. Available with plastic threaded body. See page 117 for more details.



Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low.

These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact. To order add the digits "40" following the operating head indication in part number.

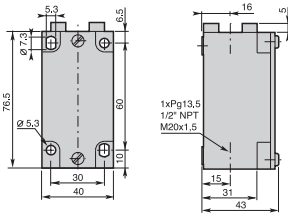
For example: BM1E11Z11 ▶ BM1E1140Z11

Limit Switches **BM_E** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

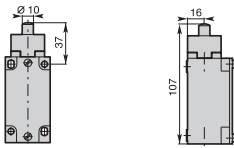
- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E11Z11 | BM•E12Z11 | BM•E13Z11 |
| X11 (1NO + 1NC) | BM•E11X11 | BM•E12X11 | BM•E13X11 |
| Y11 (1NO + 1NC) | BM•E11Y11 | BM•E12Y11 | BM•E13Y11 |
| W02 (2NC) | BM•E11W02 | BM•E12W02 | BM•E13W02 |
| W20 (2NO) | BM•E11W20 | BM•E12W20 | BM•E13W20 |
| Z02 (2NC) | BM•E11Z02 | BM•E12Z02 | BM•E13Z02 |
| X12 (1NO + 2NC) | BM•E11X12 | BM•E12X12 | BM•E13X12 |
| X21 (2NO + 1NC) | BM•E11X21 | BM•E12X21 | BM•E13X21 |
| W03 (3NC) | BM•E11W03 | BM•E12W03 | BM•E13W03 |
| W30 (3NO) | BM•E11W30 | BM•E12W30 | BM•E13W30 |

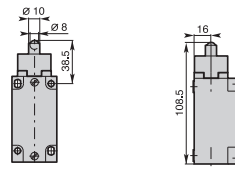
E11 - Stainless steel plain plunger



Conformity EN50041
Min. actuating force
Weight

30N (45N \ominus)
240 g

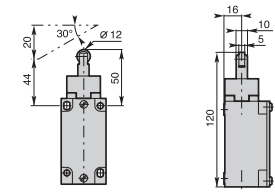
E12 - Stainless steel ball plunger



Conformity EN50041
Min. actuating force
Weight

30N (45N \ominus)
240 g

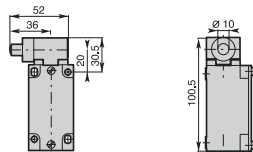
E13 - Stainless steel Ø12 roller plunger



Conformity EN50041
Min. actuating force
Weight

22N (40N \ominus)
245 g

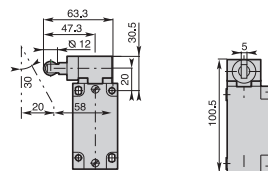
E21 - Stainless steel lateral plain plunger



Conformity EN50041
Min. actuating force
Weight

30N (50N \ominus)
260 g

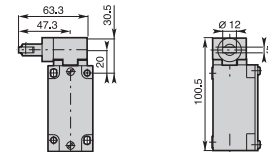
E22 - Stainless steel lateral plunger with Ø12 vertical roller



Conformity EN50041
Min. actuating force
Weight

30N (50N \ominus)
265 g

E23 - Stainless steel lateral plunger with Ø12 horizontal roller



Conformity EN50041
Min. actuating force
Weight

30N (50N \ominus)
265 g

Contact Blocks

| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E21Z11 | BM•E22Z11 | BM•E23Z11 |
| X11 (1NO + 1NC) | BM•E21X11 | BM•E22X11 | BM•E23X11 |
| Y11 (1NO + 1NC) | BM•E21Y11 | BM•E22Y11 | BM•E23Y11 |
| W02 (2NC) | BM•E21W02 | BM•E22W02 | BM•E23W02 |
| W20 (2NO) | BM•E21W20 | BM•E22W20 | BM•E23W20 |
| Z02 (2NC) | BM•E21Z02 | BM•E22Z02 | BM•E23Z02 |
| X12 (1NO + 2NC) | BM•E21X12 | BM•E22X12 | BM•E23X12 |
| X21 (2NO + 1NC) | BM•E21X21 | BM•E22X21 | BM•E23X21 |
| W03 (3NC) | BM•E21W03 | BM•E22W03 | BM•E23W03 |
| W30 (3NO) | BM•E21W30 | BM•E22W30 | BM•E23W30 |

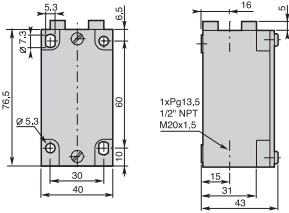
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_E** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector

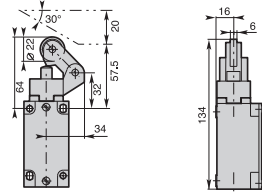


Contact Blocks

| | | | | | |
|------------------------|-----------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E31Z11 | BM•E32Z11 | BM•E33Z11 | BM•E41Z11 | BM•E42Z11 |
| X11 (1NO + 1NC) | BM•E31X11 | BM•E32X11 | BM•E33X11 | BM•E41X11 | BM•E42X11 |
| Y11 (1NO + 1NC) | BM•E31Y11 | BM•E32Y11 | BM•E33Y11 | BM•E41Y11 | BM•E42Y11 |
| W02 (2NC) | BM•E31W02 | BM•E32W02 | BM•E33W02 | BM•E41W02 | BM•E42W02 |
| W20 (2NO) | BM•E31W20 | BM•E32W20 | BM•E33W20 | BM•E41W20 | BM•E42W20 |
| Z02 (2NC) | BM•E31Z02 | BM•E32Z02 | BM•E33Z02 | BM•E41Z02 | BM•E42Z02 |
| X12 (1NO + 2NC) | BM•E31X12 | BM•E32X12 | BM•E33X12 | BM•E41X12 | BM•E42X12 |
| X21 (2NO + 1NC) | BM•E31X21 | BM•E32X21 | BM•E33X21 | BM•E41X21 | BM•E42X21 |
| W03 (3NC) | BM•E31W03 | BM•E32W03 | BM•E33W03 | BM•E41W03 | BM•E42W03 |
| W30 (3NO) | BM•E31W30 | BM•E32W30 | BM•E33W30 | BM•E41W30 | BM•E42W30 |

E3• - One way lever

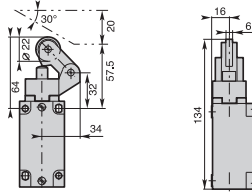
E31: Ø22 nylon roller E32: Ø22 stainless steel roller



Min. actuating force
Weight

12N (40N ⊖)
280 g

E33 - One way lever Ø22 steel ball bearing

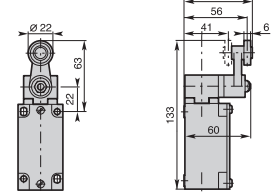


Min. actuating force
Weight

12N (40N ⊖)
280 g

E4• - Ø22 roller lever

E41: Ø22 nylon roller E42: Ø22 stainless steel roller

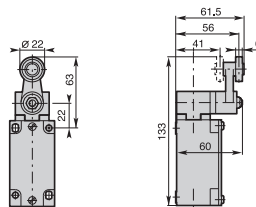


Conformity EN50041

Min. actuating torque
Weight

0,15Nm (0,30Nm ⊖)
300 g

E43 - Ø22 roller lever steel ball bearing

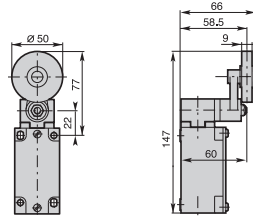


Conformity EN50041

Min. actuating torque
Weight

0,15Nm (0,30Nm ⊖)
300 g

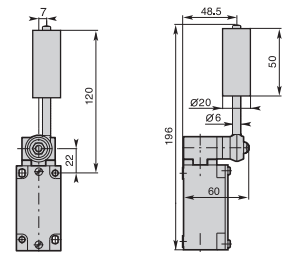
E44 - Ø50 rubber roller lever



Min. actuating torque
Weight

0,15Nm (0,30Nm ⊖)
315 g

E48 - Lever with nylon roller Ø20



Min. actuating torque
Weight

0,15Nm (0,30Nm ⊖)
340 g

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E43Z11 | BM•E44Z11 | BM•E48Z11 |
| X11 (1NO + 1NC) | BM•E43X11 | BM•E44X11 | BM•E48X11 |
| Y11 (1NO + 1NC) | BM•E43Y11 | BM•E44Y11 | BM•E48Y11 |
| W02 (2NC) | BM•E43W02 | BM•E44W02 | BM•E48W02 |
| W20 (2NO) | BM•E43W20 | BM•E44W20 | BM•E48W20 |
| Z02 (2NC) | BM•E43Z02 | BM•E44Z02 | BM•E48Z02 |
| X12 (1NO + 2NC) | BM•E43X12 | BM•E44X12 | BM•E48X12 |
| X21 (2NO + 1NC) | BM•E43X21 | BM•E44X21 | BM•E48X21 |
| W03 (3NC) | BM•E43W03 | BM•E44W03 | BM•E48W03 |
| W30 (3NO) | BM•E43W30 | BM•E44W30 | BM•E48W30 |

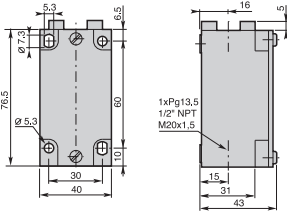
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_E** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector

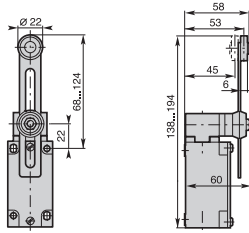


Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E51Z11 | BM•E52Z11 | BM•E53Z11 | BM•E54Z10 |
| X11 (1NO + 1NC) | BM•E51X11 | BM•E52X11 | BM•E53X11 | BM•E54X11 |
| Y11 (1NO + 1NC) | BM•E51Y11 | BM•E52Y11 | BM•E53Y11 | BM•E54Y11 |
| W02 (2NC) | BM•E51W02 | BM•E52W02 | BM•E53W02 | BM•E54W02 |
| W20 (2NO) | BM•E51W20 | BM•E52W20 | BM•E53W20 | BM•E54W20 |
| Z02 (2NC) | BM•E51Z02 | BM•E52Z02 | BM•E53Z02 | BM•E54Z02 |
| X12 (1NO + 2NC) | BM•E51X12 | BM•E52X12 | BM•E53X12 | BM•E54X12 |
| X21 (2NO + 1NC) | BM•E51X21 | BM•E52X21 | BM•E53X21 | BM•E54X21 |
| W03 (3NC) | BM•E51W03 | BM•E52W03 | BM•E53W03 | BM•E54W03 |
| W30 (3NO) | BM•E51W30 | BM•E52W30 | BM•E53W30 | BM•E54W30 |

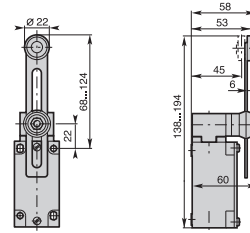
E5• - Adjustable Ø22 roller lever

E51: nylon roller E52: stainless steel roller



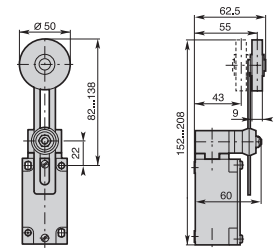
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **320 g**

E53 - Adjustable Ø22 roller lever with steel ball bearing



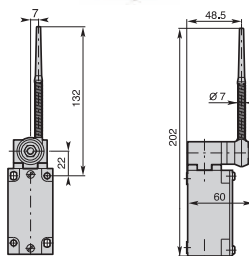
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **320 g**

E54 - Adjustable Ø50 rubber roller lever



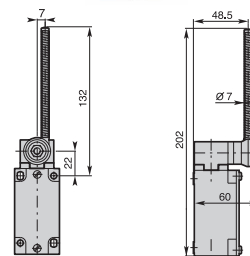
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **325 g**

E61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,15Nm**
Weight **305 g**

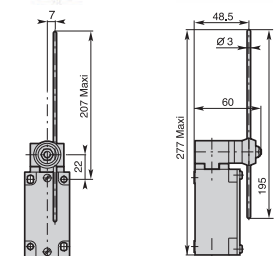
E62 - Stainless steel spring actuator



Min. actuating torque **0,15Nm**
Weight **310 g**

E7• - Adjustable Ø3 rod lever

E71: stainless steel rod E73: fiberglass rod



Conformity **EN50041**
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **305 g**

Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E61Z11 | BM•E62Z11 | BM•E71Z11 | BM•E73Z11 |
| X11 (1NO + 1NC) | BM•E61X11 | BM•E62X11 | BM•E71X11 | BM•E73X11 |
| Y11 (1NO + 1NC) | BM•E61Y11 | BM•E62Y11 | BM•E71Y11 | BM•E73Y11 |
| W02 (2NC) | BM•E61W02 | BM•E62W02 | BM•E71W02 | BM•E73W02 |
| W20 (2NO) | BM•E61W20 | BM•E62W20 | BM•E71W20 | BM•E73W20 |
| Z02 (2NC) | BM•E61Z02 | BM•E62Z02 | BM•E71Z02 | BM•E73Z02 |
| X12 (1NO + 2NC) | BM•E61X12 | BM•E62X12 | BM•E71X12 | BM•E73X12 |
| X21 (2NO + 1NC) | BM•E61X21 | BM•E62X21 | BM•E71X21 | BM•E73X21 |
| W03 (3NC) | BM•E61W03 | BM•E62W03 | BM•E71W03 | BM•E73W03 |
| W30 (3NO) | BM•E61W30 | BM•E62W30 | BM•E71W30 | BM•E73W30 |

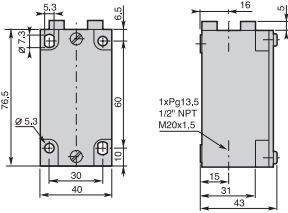
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_E** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector

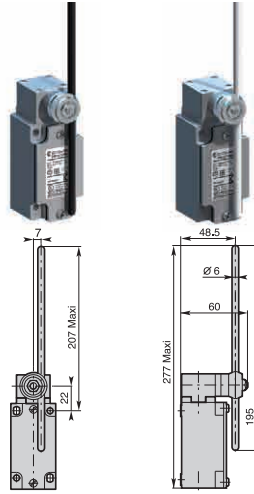


Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•E72Z11 | BM•E74Z11 | BM•E75Z11 | BM•E91Z11 |
| X11 (1NO + 1NC) | BM•E72X11 | BM•E74X11 | BM•E75X11 | BM•E91X11 |
| Y11 (1NO + 1NC) | BM•E72Y11 | BM•E74Y11 | BM•E75Y11 | BM•E91Y11 |
| W02 (2NC) | BM•E72W02 | BM•E74W02 | BM•E75W02 | BM•E91W02 |
| W20 (2NA) | BM•E72W20 | BM•E74W20 | BM•E75W20 | BM•E91W20 |
| Z02 (2NC) | BM•E72Z02 | BM•E74Z02 | BM•E75Z02 | BM•E91Z02 |
| X12 (1NO + 2NC) | BM•E72X12 | BM•E74X12 | BM•E75X12 | BM•E91X12 |
| X21 (2NO + 1NC) | BM•E72X21 | BM•E74X21 | BM•E75X21 | BM•E91X21 |
| W03 (3NC) | BM•E72W03 | BM•E74W03 | BM•E75W03 | BM•E91W03 |
| W30 (3NO) | BM•E72W30 | BM•E74W30 | BM•E75W30 | BM•E91W30 |

E7• - Adjustable rod lever

E72 - Ø6 nylon rod lever E74 - Ø6 fiberglass rod lever

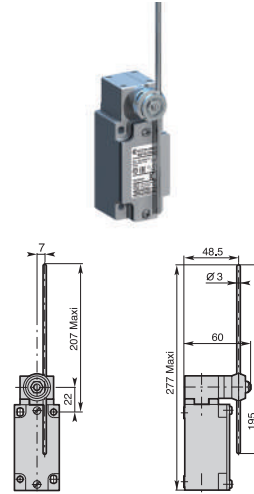


Conformity EN50041

Min. actuating torque
Weight

0,15Nm (0,30Nm ⇄)
300 g

E75 - Adjustable 3x3 square steel rod lever

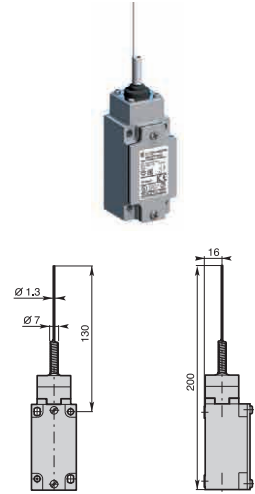


Conformity EN50041

Min. actuating torque
Weight

0,15Nm (0,30Nm ⇄)
305 g

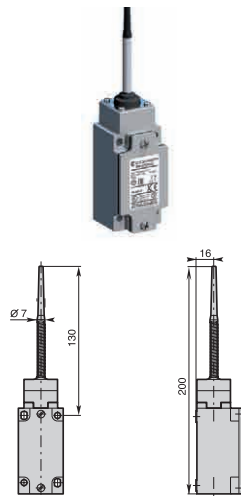
E91 - Stainless steel spring multidirectional actuator



Min. actuating torque
Weight

0,18Nm
230 g

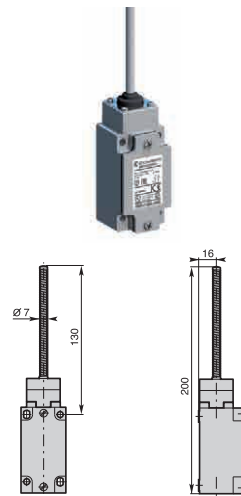
E92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque
Weight

0,18Nm
230 g

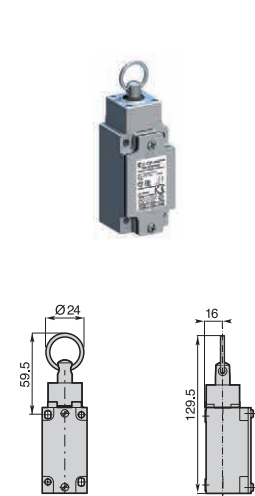
E93 - Stainless steel spring multidirectional actuator



Min. actuating torque
Weight

0,18Nm
235 g

E99 - Pull action with ring



Min. actuating force
Weight

25N
245 g

Contact Blocks

| | | | |
|------------------------|-----------|-----------|------------|
| Z11 (1NO + 1NC) | BM•E92Z11 | BM•E93Z11 | BM•E99Z11A |
| X11 (1NO + 1NC) | BM•E92X11 | BM•E93X11 | BM•E99X11A |
| Y11 (1NO + 1NC) | BM•E92Y11 | BM•E93Y11 | BM•E99Y11A |
| W02 (2NC) | BM•E92W02 | BM•E93W02 | BM•E99W02A |
| W20 (2NO) | BM•E92W20 | BM•E93W20 | BM•E99W20A |
| Z02 (2NC) | BM•E92Z02 | BM•E93Z02 | |
| X12 (1NO + 2NC) | BM•E92X12 | BM•E93X12 | BM•E99X12A |
| X21 (2NO + 1NC) | BM•E92X21 | BM•E93X21 | BM•E99X21A |
| W03 (3NC) | BM•E92W03 | BM•E93W03 | BM•E99W03A |
| W30 (3NO) | BM•E92W30 | BM•E93W30 | BM•E99W30A |

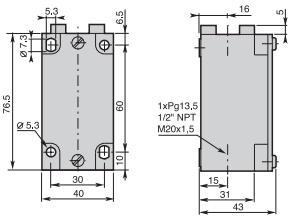
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_P** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

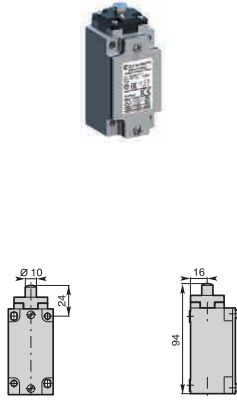
- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•P11Z11 | BM•P92Z11 | BM•P93Z11 |
| X11 (1NO + 1NC) | BM•P11X11 | BM•P92X11 | BM•P93X11 |
| Y11 (1NO + 1NC) | BM•P11Y11 | BM•P92Y11 | BM•P93Y11 |
| W02 (2NC) | BM•P11W02 | BM•P92W02 | BM•P93W02 |
| W20 (2NO) | BM•P11W20 | BM•P92W20 | BM•P93W20 |
| Z02 (2NC) | BM•P11Z02 | BM•P92Z02 | BM•P93Z02 |
| X12 (1NO + 2NC) | BM•P11X12 | BM•P92X12 | BM•P93X12 |
| X21 (2NO + 1NC) | BM•P11X21 | BM•P92X21 | BM•P93X21 |
| W03 (3NC) | BM•P11W03 | BM•P92W03 | BM•P93W03 |
| W30 (3NO) | BM•P11W30 | BM•P92W30 | BM•P93W30 |

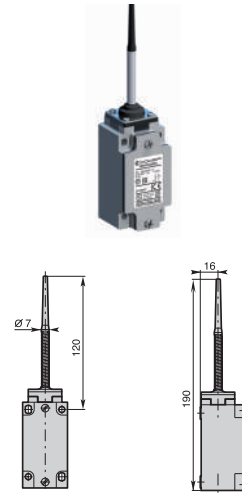
P11 - Plain plunger



Min. actuating force
Weight

30N (45N ⊖)
220 g

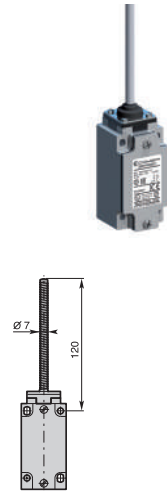
P92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque
Weight

0,18Nm
210 g

P93 - Stainless steel spring multidirectional actuator



Min. actuating torque
Weight

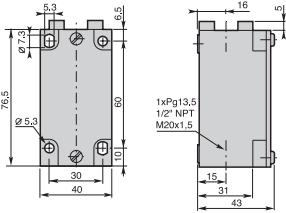
0,18Nm
215 g

Limit Switches **BM_M** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

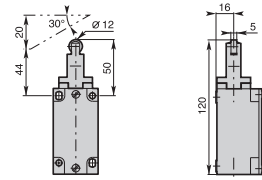
- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector



Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M13Z11 | BM•M14Z11 | BM•M19Z11 |
| X11 (1NO + 1NC) | BM•M13X11 | BM•M14X11 | BM•M19X11 |
| Y11 (1NO + 1NC) | BM•M13Y11 | BM•M14Y11 | BM•M19Y11 |
| W02 (2NC) | BM•M13W02 | BM•M14W02 | BM•M19W02 |
| W20 (2NO) | BM•M13W20 | BM•M14W20 | BM•M19W20 |
| Z02 (2NC) | BM•M13Z02 | BM•M14Z02 | BM•M19Z02 |
| X12 (1NO + 2NC) | BM•M13X12 | BM•M14X12 | BM•M19X12 |
| X21 (2NO + 1NC) | BM•M13X21 | BM•M14X21 | BM•M19X21 |
| W03 (3NC) | BM•M13W03 | BM•M14W03 | BM•M19W03 |
| W30 (3NO) | BM•M13W30 | BM•M14W30 | BM•M19W30 |

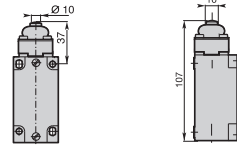
M13 - Steel roller plunger



Conformity EN50041
Min. actuating force
Weight

22N (40N \ominus)
265 g

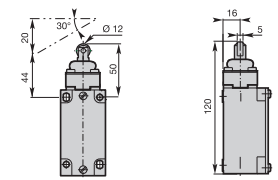
M14 - Plain steel plunger with dust protection cup



Conformity EN50041
Min. actuating force
Weight

30N (45N \ominus)
255 g

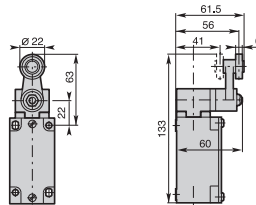
M19 - Steel roller plunger with dust protection cup



Conformity EN50041
Min. actuating force
Weight

22N (40N \ominus)
265 g

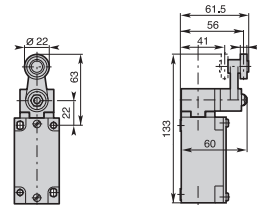
M41 - Ø22 nylon roller lever



Conformity EN50041
Min. actuating torque
Weight

0,15Nm (0,30Nm \ominus)
300 g

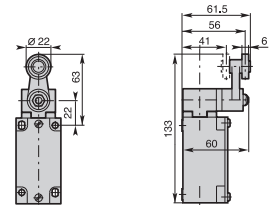
M42 - Ø22 stainless steel roller lever



Conformity EN50041
Min. actuating torque
Weight

0,15Nm (0,30Nm \ominus)
300 g

M43 - Ø22 roller lever with steel ball bearing



Conformity EN50041
Min. actuating torque
Weight

0,15Nm (0,30Nm \ominus)
300 g

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M41Z11 | BM•M42Z11 | BM•M43Z11 |
| X11 (1NO + 1NC) | BM•M41X11 | BM•M42X11 | BM•M43X11 |
| Y11 (1NO + 1NC) | BM•M41Y11 | BM•M42Y11 | BM•M43Y11 |
| W02 (2NC) | BM•M41W02 | BM•M42W02 | BM•M43W02 |
| W20 (2NO) | BM•M41W20 | BM•M42W20 | BM•M43W20 |
| Z02 (2NC) | BM•M41Z02 | BM•M42Z02 | BM•M43Z02 |
| X12 (1NO + 2NC) | BM•M41X12 | BM•M42X12 | BM•M43X12 |
| X21 (2NO + 1NC) | BM•M41X21 | BM•M42X21 | BM•M43X21 |
| W03 (3NC) | BM•M41W03 | BM•M42W03 | BM•M43W03 |
| W30 (3NO) | BM•M41W30 | BM•M42W30 | BM•M43W30 |

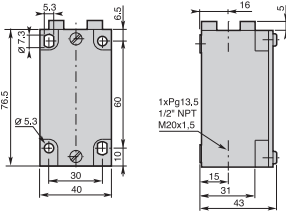
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_M** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

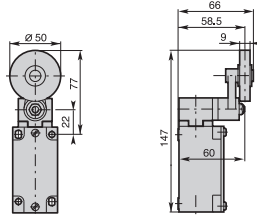
- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector



Contact Blocks

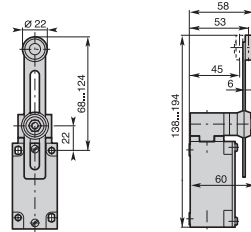
| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M44Z11 | BM•M51Z11 | BM•M52Z11 |
| X11 (1NO + 1NC) | BM•M44X11 | BM•M51X11 | BM•M52X11 |
| Y11 (1NO + 1NC) | BM•M44Y11 | BM•M51Y11 | BM•M52Y11 |
| W02 (2NC) | BM•M44W02 | BM•M51W02 | BM•M52W02 |
| W20 (2NO) | BM•M44W20 | BM•M51W20 | BM•M52W20 |
| Z02 (2NC) | BM•M44Z02 | BM•M51Z02 | BM•M52Z02 |
| X12 (1NO + 2NC) | BM•M44X12 | BM•M51X12 | BM•M52X12 |
| X21 (2NO + 1NC) | BM•M44X21 | BM•M51X21 | BM•M52X21 |
| W03 (3NC) | BM•M44W03 | BM•M51W03 | BM•M52W03 |
| W30 (3NO) | BM•M44W30 | BM•M51W30 | BM•M52W30 |

M44 - Ø50 rubber roller lever



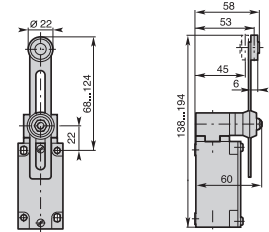
Min. actuating torque 0,15Nm (0,30Nm ⊖)
Weight 310 g

M51 - Adjustable Ø22 nylon roller lever



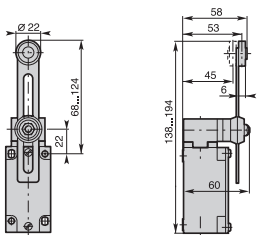
Min. actuating torque 0,15Nm (0,30Nm ⊖)
Weight 320 g

M52 - Adjustable Ø22 stainless steel roller lever



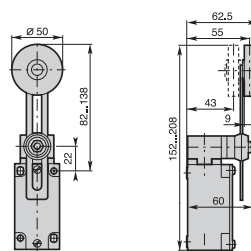
Min. actuating torque 0,15Nm (0,30Nm ⊖)
Weight 320 g

M53 - Adjustable Ø22 roller lever with steel ball bearing



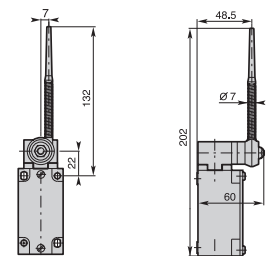
Min. actuating torque 0,15Nm (0,30Nm ⊖)
Weight 320 g

M54 - Adjustable Ø50 rubber roller lever



Min. actuating torque 0,15Nm (0,30Nm ⊖)
Weight 325 g

M61 - Nylon actuator with stainless steel spring



Min. actuating torque 0,15Nm
Weight 325 g

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M53Z11 | BM•M54Z11 | BM•M61Z11 |
| X11 (1NO + 1NC) | BM•M53X11 | BM•M54X11 | BM•M61X11 |
| Y11 (1NO + 1NC) | BM•M53Y11 | BM•M54Y11 | BM•M61Y11 |
| W02 (2NC) | BM•M53W02 | BM•M54W02 | BM•M61W02 |
| W20 (2NO) | BM•M53W20 | BM•M54W20 | BM•M61W20 |
| Z02 (2NC) | BM•M53Z02 | BM•M54Z02 | BM•M61Z02 |
| X12 (1NO + 2NC) | BM•M53X12 | BM•M54X12 | BM•M61X12 |
| X21 (2NO + 1NC) | BM•M53X21 | BM•M54X21 | BM•M61X21 |
| W03 (3NC) | BM•M53W03 | BM•M54W03 | BM•M61W03 |
| W30 (3NO) | BM•M53W30 | BM•M54W30 | BM•M61W30 |

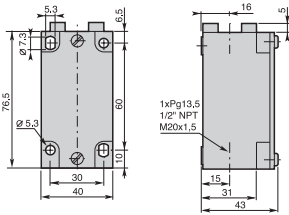
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **BM_M** series

Metal Casing IP66 - 40 mm. width

Electrical connection:

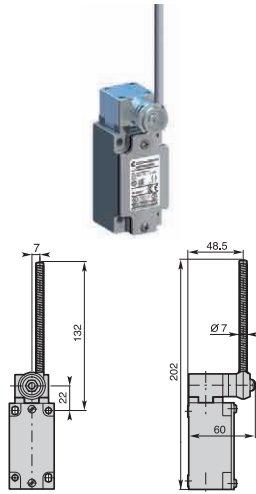
- BM1:** one cable inlet for PG 13,5 Cable Gland
- BM2:** one cable inlet for 1/2" NPT Cable Gland
- BM5:** one cable inlet for M20 x 1,5 Cable Gland
- BM10:** 5 poles M12 plastic connector
- BM11:** 8 poles M12 plastic connector



Contact Blocks

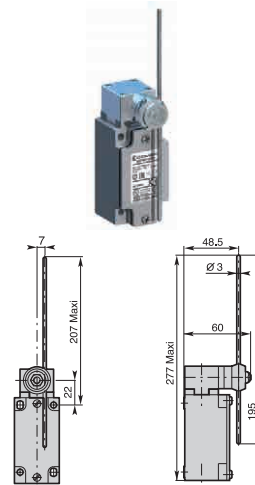
| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M62Z11 | BM•M71Z11 | BM•M72Z11 |
| X11 (1NO + 1NC) | BM•M62X11 | BM•M71X11 | BM•M72X11 |
| Y11 (1NO + 1NC) | BM•M62Y11 | BM•M71Y11 | BM•M72Y11 |
| W02 (2NC) | BM•M62W02 | BM•M71W02 | BM•M72W02 |
| W20 (2NO) | BM•M62W20 | BM•M71W20 | BM•M72W20 |
| Z02 (2NC) | BM•M62Z02 | BM•M71Z02 | BM•M72Z02 |
| X12 (1NO + 2NC) | BM•M62X12 | BM•M71X12 | BM•M72X12 |
| X21 (2NO + 1NC) | BM•M62X21 | BM•M71X21 | BM•M72X21 |
| W03 (3NC) | BM•M62W03 | BM•M71W03 | BM•M72W03 |
| W30 (3NO) | BM•M62W30 | BM•M71W30 | BM•M72W30 |

M62 - Stainless steel spring actuator



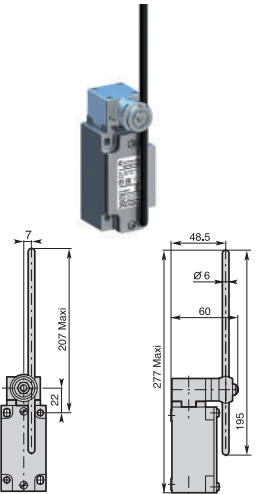
Min. actuating torque **0,15Nm**
Weight **325 g**

M71 - Adjustable Ø3 stainless steel rod lever



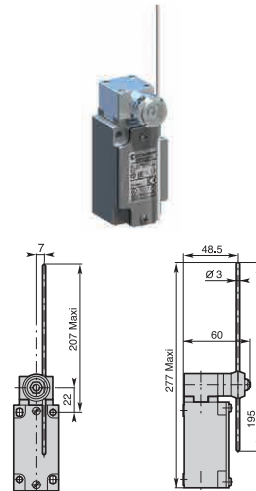
Conformity EN50041
Min. actuating torque **0,15Nm (0,30Nm ⇄)**
Weight **325 g**

M72 - Adjustable Ø6 nylon rod lever



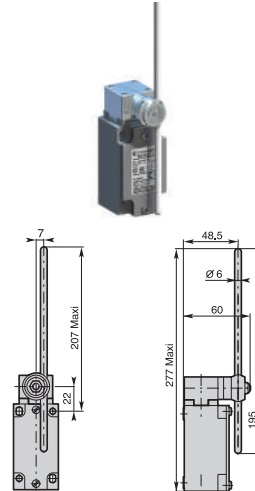
Conformity EN50041
Min. actuating torque **0,15Nm (0,30Nm ⇄)**
Weight **325 g**

M73 - Adjustable Ø3 fiberglass rod lever



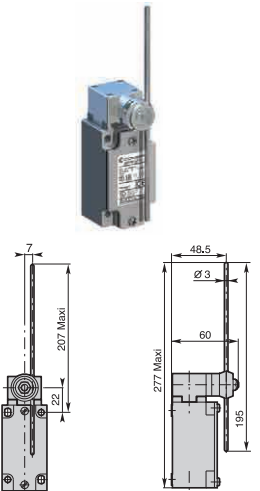
Conformity EN50041
Min. actuating torque **0,15Nm (0,30Nm ⇄)**
Weight **325 g**

M74 - Adjustable Ø6 fiberglass rod lever



Conformity EN50041
Min. actuating torque **0,15Nm (0,30Nm ⇄)**
Weight **325 g**

M75 - Adjustable 3x3 square steel rod lever



Conformity EN50041
Min. actuating torque **0,15Nm (0,30Nm ⇄)**
Weight **325 g**

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | BM•M73Z11 | BM•M74Z11 | BM•M75Z11 |
| X11 (1NO + 1NC) | BM•M73X11 | BM•M74X11 | BM•M75X11 |
| Y11 (1NO + 1NC) | BM•M73Y11 | BM•M74Y11 | BM•M75Y11 |
| W02 (2NC) | BM•M73W02 | BM•M74W02 | BM•M75W02 |
| W20 (2NO) | BM•M73W20 | BM•M74W20 | BM•M75W20 |
| Z02 (2NC) | BM•M73Z02 | BM•M74Z02 | BM•M75Z02 |
| X12 (1NO + 2NC) | BM•M73X12 | BM•M74X12 | BM•M75X12 |
| X21 (2NO + 1NC) | BM•M73X21 | BM•M74X21 | BM•M75X21 |
| W03 (3NC) | BM•M73W03 | BM•M74W03 | BM•M75W03 |
| W30 (3NO) | BM•M73W30 | BM•M74W30 | BM•M75W30 |

Operation diagrams: page 125 - All dimensions are in mm

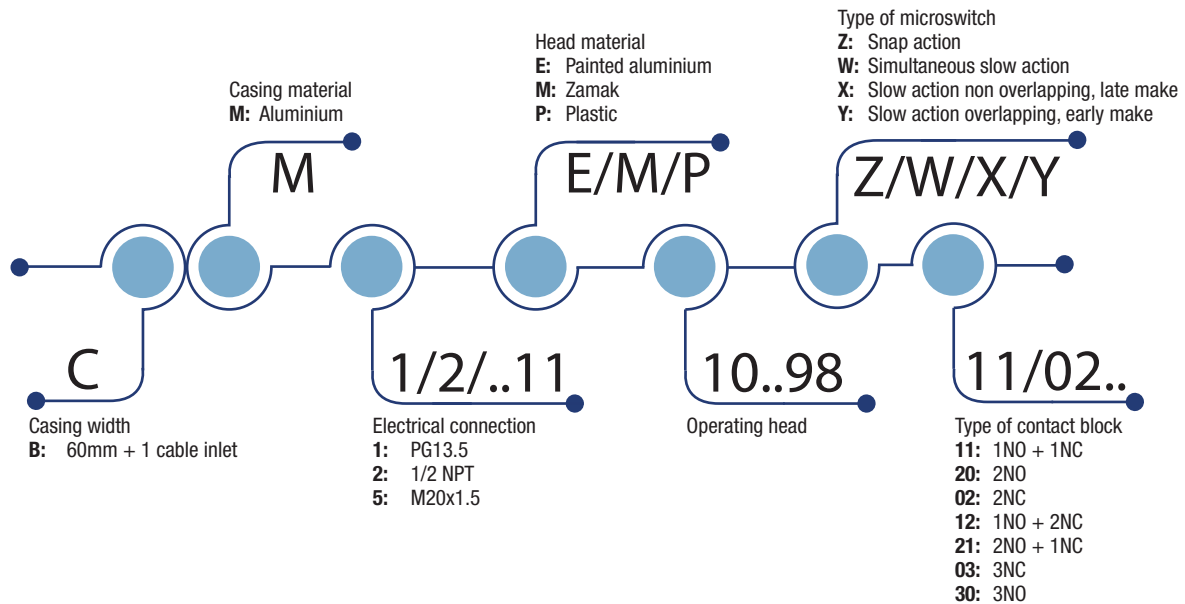
Limit Switches **CM series**

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 4 x Ø4 screws

03 Casing:

- 60 mm. with dimensions acc. to EN 50041

04 Mounting screws

- 2 x M5 screws on top part

05 Cover

- 4 screws 3 pozidriv 1

06 Contact Block

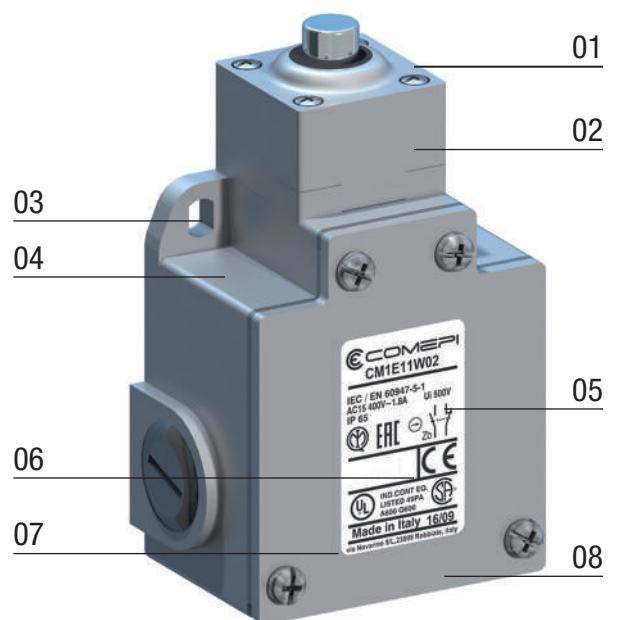
- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Block of 2 contacts: M3.5 (+, -) pozidriv 2 screw
- Block of 3 contacts: M3 (+, -) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standards

08 Electrical connection

- 3 x threaded cable inlets suitable for cable gland



Limit Switches **CM series**

Description

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.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

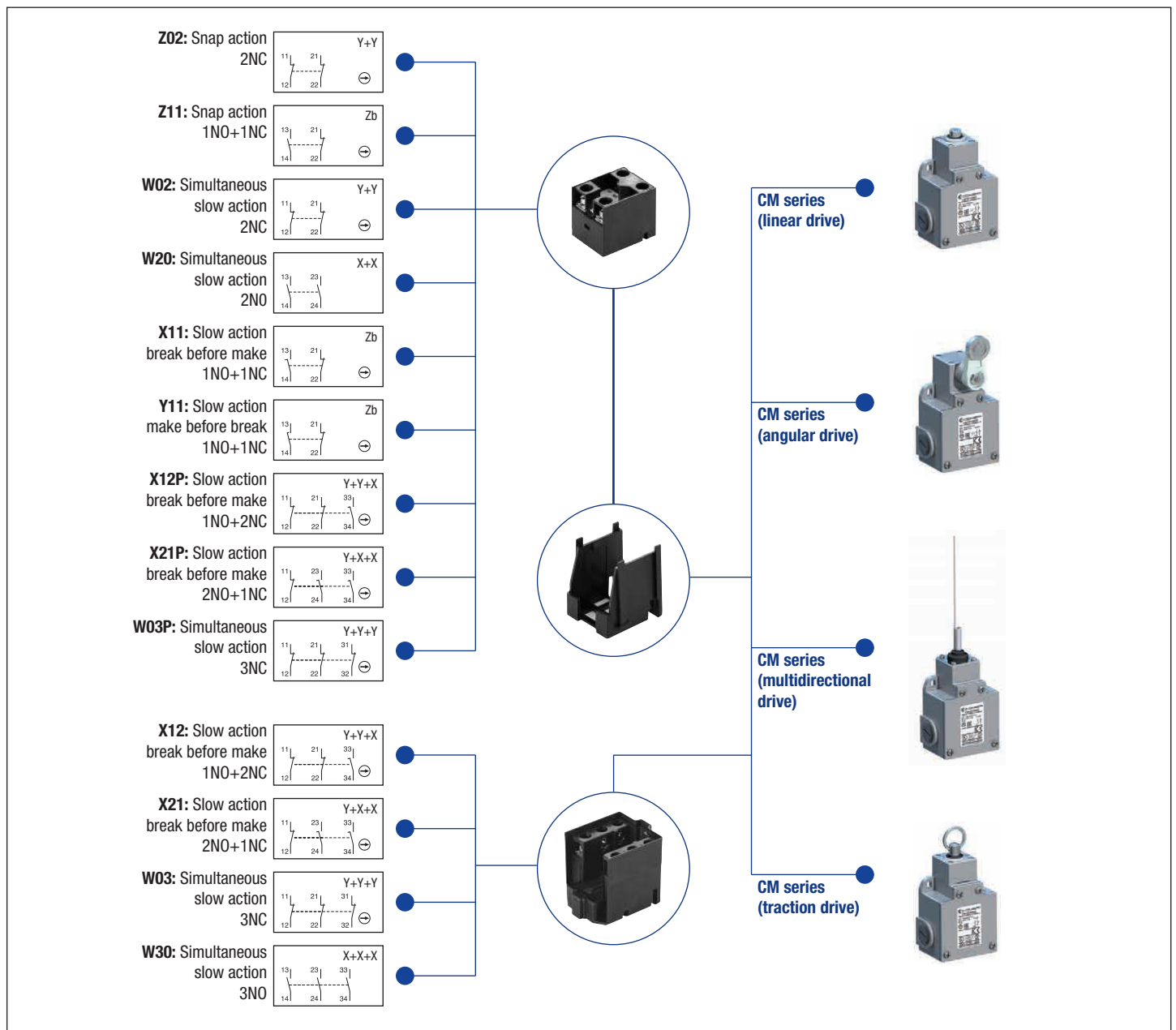
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

Limit switches, which are made aluminium, are mechanically more resistant and three times lighter than the ones in zinc alloy and they offer a degree of protection of IP66.

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **CM series**

Technical Data

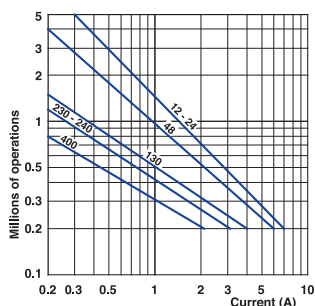
| | CM Series | |
|---|-----------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Certifications - Approvals | UL - CSA - IMQ - EAC - CCC - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 30 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class I | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 66* | |

Electrical Data

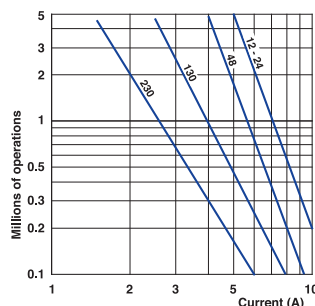
| | | |
|--|---|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | 500 V (degree of pollution 3) (400 V for contacts type Z02) A 600, Q 600 | |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C | A | 10 |
| Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses | A | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz A 120 V - 50/60 Hz A 400 V - 50/60 Hz A | 10 6 4 (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. A 125 V - d.c. A 250 V - d.c. A | 6 (2.8A for contacts type X12, X21, W03, W30) 0.55 0.4 (0.27A for contacts type X12, X21, W03, W30) |
| Switching frequency | Cycles/h | 3600 |
| Load factor | | 0.5 |
| Resistance between contacts | m Ω | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type) | |
| Terminal for protective conductor | M3.5 (+, -) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² | 0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type) |
| Terminal marking | According to IEC 60947-5-1 | |
| Recommended tightening torque | Metal | |
| Cover | 0,8Nm, max 0,9 | |
| Head | 0,8Nm, max 0,9 | |
| Microswitch | 0,8Nm, max 0,9 | |
| Mechanical durability | 30 millions of operations 25 millions of operations 10 millions of operations | P11; M13; E11...13; E21...23; E31...33 M41...75; E41...75 P91...93; M14; M19; E91...93; E99 |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | |

* except for E54, E92, E93, P92, P93, M54: the degree of protection is IP65

AC-15 - Snap action



AC-15 - Slow action



| DC-13 | 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 |

Limit Switches **CM series**

Technical Data

Technical data approved by IMQ

| | | |
|--|--|--|
| Standards | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards | |
| Degree of protection | IP 66* | |
| Rated insulation voltage U_i | 500 V (degree of pollution 3) (400V for type Z02) | |
| Rated impulse withstand voltage U_{imp} | 6 kV | |
| Conventional free air thermal current I_{th} | 10 A | |
| Short-circuit protection - gG (gl) type fuses | 10 A | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A |
| | 400 V - 50/60 Hz | 4 A (1.8A for contacts type X12, X21, W03, W30) |
| I_e / DC-13 | 24 V - d.c. | 6 A (2.8A for contacts type X12, X21, W03, W30) |
| | 125 V - d.c. | 0.55 A |
| | 250 V - d.c. | 0.4 A (0.27A for contacts type X12, X21, W03, W30) |

* except for E54, E92, E93, P92, P93, M54: the degree of protection is IP65

Technical data approved by UL

| | |
|---|-----------------------------|
| Standards | Devices conform with UL 508 |
| Contact blocks type Z11, X11, Y11, W02 and Z02 | |
| Utilization categories | A600, Q600 |
| Contact blocks type X12, X21, W03 and W30 | |
| Utilization categories | A600, Q600 |

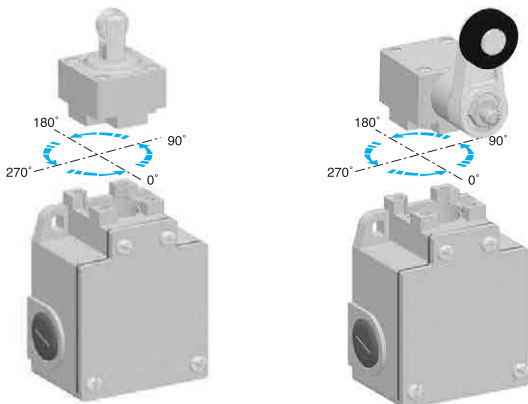
Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

IMPLEMENTATION

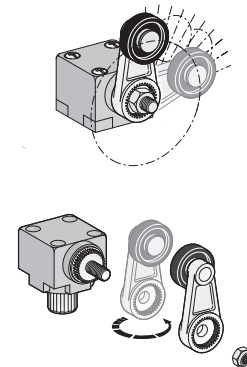
Operating head orientation

The head can be rotated each 90°. Recommended tightening torque 0,5 Nm (max 0,8 Nm).

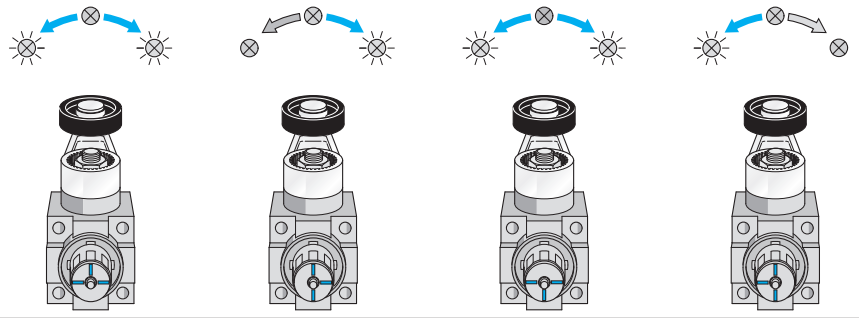
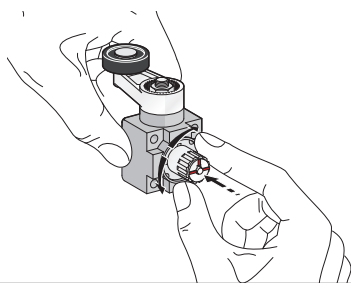


Lever adjustment

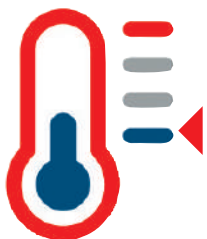
The lever of the angular actuators can be adjusted every 9° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Operating mode selection (CM_E Series only)



Special Versions



Low Temperature

The limit switches for low temperature applications are useful for refrigerated cells or equipments where the air operational temperature is very low.

These devices, made in special materials, are able to extend the operational temperature range down to -40°C, maintaining mechanical performances intact. To order add the digits "40" following the operating head indication in part number.

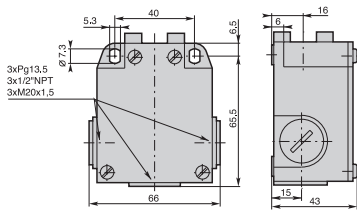
For example: CM1E11Z11 ▶ CM1E1140Z11

Limit Switches **CM_E** series

Metal Casing IP66 - 60 mm. width

Electrical connection:

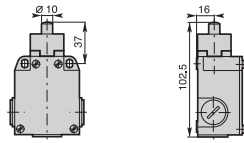
- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland



Contact Blocks

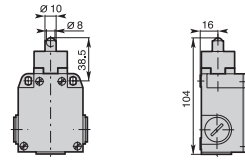
| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•E11Z11 | CM•E12Z11 | CM•E13Z11 |
| X11 (1NO + 1NC) | CM•E11X11 | CM•E12X11 | CM•E13X11 |
| Y11 (1NO + 1NC) | CM•E11Y11 | CM•E12Y11 | CM•E13Y11 |
| W02 (2NC) | CM•E11W02 | CM•E12W02 | CM•E13W02 |
| W20 (2NO) | CM•E11W20 | CM•E12W20 | CM•E13W20 |
| Z02 (2NC) | CM•E11Z02 | CM•E12Z02 | CM•E13Z02 |
| X12 (1NO + 2NC) | CM•E11X12 | CM•E12X12 | CM•E13X12 |
| X21 (2NO + 1NC) | CM•E11X21 | CM•E12X21 | CM•E13X21 |
| W03 (3NC) | CM•E11W03 | CM•E12W03 | CM•E13W03 |
| W30 (3NO) | CM•E11W30 | CM•E12W30 | CM•E13W30 |

E11 - Stainless steel plain plunger



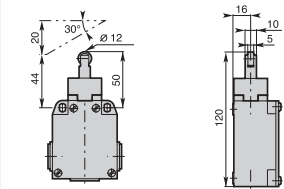
Min. actuating force
Weight 30N (45N ⊖)
265 g

E12 - Stainless steel ball plunger



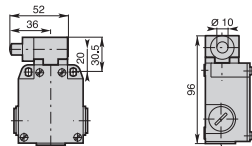
Min. actuating force
Weight 30N (45N ⊖)
265 g

E13 - Stainless steel Ø12 roller plunger



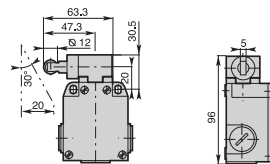
Min. actuating force
Weight 22N (40N ⊖)
270 g

E21 - Stainless steel lateral plain plunger



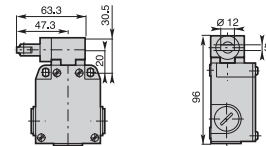
Min. actuating force
Weight 30N (50N ⊖)
285 g

E22 - Stainless steel lateral plunger with Ø12 vertical roller



Min. actuating force
Weight 30N (50N ⊖)
290 g

E23 - Stainless steel lateral plunger with Ø12 horizontal roller



Min. actuating force
Weight 30N (50N ⊖)
290 g

Contact Blocks

| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•E21Z11 | CM•E22Z11 | CM•E23Z11 |
| X11 (1NO + 1NC) | CM•E21X11 | CM•E22X11 | CM•E23X11 |
| Y11 (1NO + 1NC) | CM•E21Y11 | CM•E22Y11 | CM•E23Y11 |
| W02 (2NC) | CM•E21W02 | CM•E22W02 | CM•E23W02 |
| W20 (2NO) | CM•E21W20 | CM•E22W20 | CM•E23W20 |
| Z02 (2NC) | CM•E21Z02 | CM•E22Z02 | CM•E23Z02 |
| X12 (1NO + 2NC) | CM•E21X12 | CM•E22X12 | CM•E23X12 |
| X21 (2NO + 1NC) | CM•E21X21 | CM•E22X21 | CM•E23X21 |
| W03 (3NC) | CM•E21W03 | CM•E22W03 | CM•E23W03 |
| W30 (3NO) | CM•E21W30 | CM•E22W30 | CM•E23W30 |

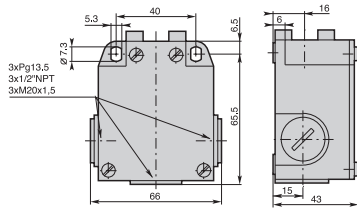
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_E** series

Metal Casing IP66 - 60 mm. width

Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

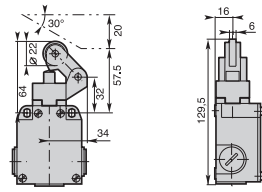


Contact Blocks

| | | | | | |
|------------------------|-----------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•E31Z11 | CM•E32Z11 | CM•E33Z11 | CM•E41Z11 | CM•E42Z11 |
| X11 (1NO + 1NC) | CM•E31X11 | CM•E32X11 | CM•E33X11 | CM•E41X11 | CM•E42X11 |
| Y11 (1NO + 1NC) | CM•E31Y11 | CM•E32Y11 | CM•E33Y11 | CM•E41Y11 | CM•E42Y11 |
| W02 (2NC) | CM•E31W02 | CM•E32W02 | CM•E33W02 | CM•E41W02 | CM•E42W02 |
| W20 (2NO) | CM•E31W20 | CM•E32W20 | CM•E33W20 | CM•E41W20 | CM•E42W20 |
| Z02 (2NC) | CM•E31Z02 | CM•E32Z02 | CM•E33Z02 | CM•E41Z02 | CM•E42Z02 |
| X12 (1NO + 2NC) | CM•E31X12 | CM•E32X12 | CM•E33X12 | CM•E41X12 | CM•E42X12 |
| X21 (2NO + 1NC) | CM•E31X21 | CM•E32X21 | CM•E33X21 | CM•E41X21 | CM•E42X21 |
| W03 (3NC) | CM•E31W03 | CM•E32W03 | CM•E33W03 | CM•E41W03 | CM•E42W03 |
| W30 (3NO) | CM•E31W30 | CM•E32W30 | CM•E33W30 | CM•E41W30 | CM•E42W30 |

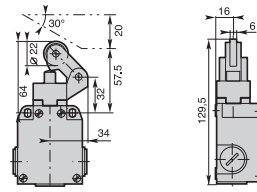
E3• - One way lever

E31: Ø22 nylon roller E32: Ø22 stainless steel roller



Min. actuating force **12N (40N ⊖)**
Weight **305 g**

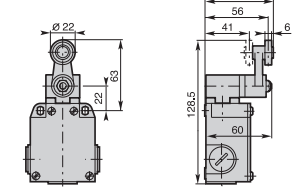
E33 - One way lever Ø22 steel ball bearing



Min. actuating force **12N (40N ⊖)**
Weight **305 g**

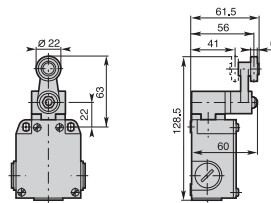
E4• - Ø22 roller lever

E41: Ø22 nylon roller E42: Ø22 stainless steel roller



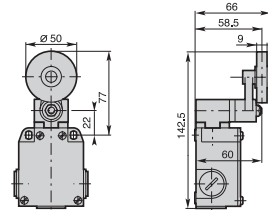
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **305 g**

E43 - Ø22 roller lever steel ball bearing



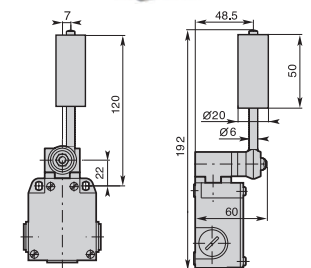
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **305 g**

E44 - Ø50 rubber roller lever



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **315 g**

E48 - Lever with nylon roller Ø20



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
Weight **340 g**

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•E43Z11 | CM•E44Z11 | CM•E48Z11 |
| X11 (1NO + 1NC) | CM•E43X11 | CM•E44X11 | CM•E48X11 |
| Y11 (1NO + 1NC) | CM•E43Y11 | CM•E44Y11 | CM•E48Y11 |
| W02 (2NC) | CM•E43W02 | CM•E44W02 | CM•E48W02 |
| W20 (2NO) | CM•E43W20 | CM•E44W20 | CM•E48W20 |
| Z02 (2NC) | CM•E43Z02 | CM•E44Z02 | CM•E48Z02 |
| X12 (1NO + 2NC) | CM•E43X12 | CM•E44X12 | CM•E48X12 |
| X21 (2NO + 1NC) | CM•E43X21 | CM•E44X21 | CM•E48X21 |
| W03 (3NC) | CM•E43W03 | CM•E44W03 | CM•E48W03 |
| W30 (3NO) | CM•E43W30 | CM•E44W30 | CM•E48W30 |

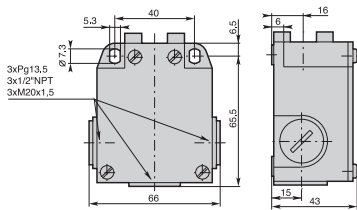
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_E** series

Metal Casing IP66 - 60 mm. width

Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

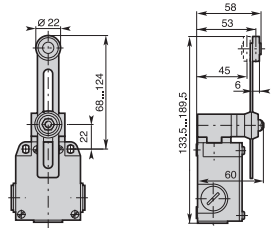
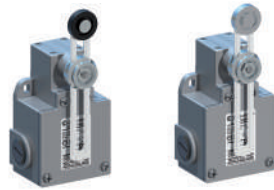


Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•E51Z11 | CM•E52Z11 | CM•E53Z11 | CM•E54Z11 |
| X11 (1NO + 1NC) | CM•E51X11 | CM•E52X11 | CM•E53X11 | CM•E54X11 |
| Y11 (1NO + 1NC) | CM•E51Y11 | CM•E52Y11 | CM•E53Y11 | CM•E54Y11 |
| W02 (2NC) | CM•E51W02 | CM•E52W02 | CM•E53W02 | CM•E54W02 |
| W20 (2NO) | CM•E51W20 | CM•E52W20 | CM•E53W20 | CM•E54W20 |
| Z02 (2NC) | CM•E51Z02 | CM•E52Z02 | CM•E53Z02 | CM•E54Z02 |
| X12 (1NO + 2NC) | CM•E51X12 | CM•E52X12 | CM•E53X12 | CM•E54X12 |
| X21 (2NO + 1NC) | CM•E51X21 | CM•E52X21 | CM•E53X21 | CM•E54X21 |
| W03 (3NC) | CM•E51W03 | CM•E52W03 | CM•E53W03 | CM•E54W03 |
| W30 (3NO) | CM•E51W30 | CM•E52W30 | CM•E53W30 | CM•E54W30 |

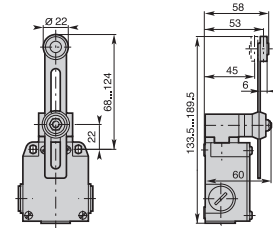
E5 - Adjustable Ø22 roller lever

E51: nylon roller E52: stainless steel roller



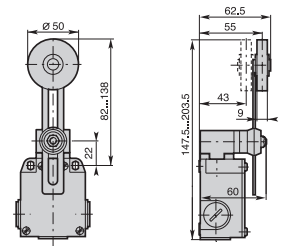
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **325 g**

E53 - Adjustable Ø22 roller lever with steel ball bearing



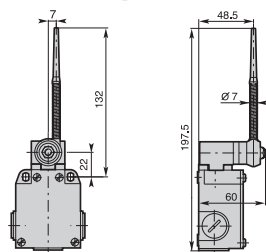
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **325 g**

E54 - Adjustable Ø50 rubber roller lever



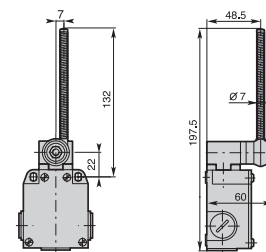
Min. actuating torque **0,15Nm**
 Weight **330 g**

E61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,15Nm**
 Weight **330 g**

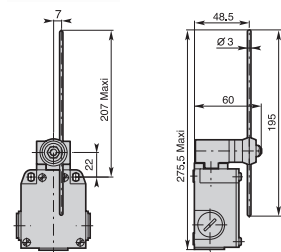
E62 - Stainless steel spring actuator



Min. actuating torque **0,15Nm**
 Weight **330 g**

E7 - Adjustable Ø3 rod lever

E71: stainless steel rod E73: fiberglass rod



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **330 g**

Contact Blocks

| | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| Z11 (1NA + 1NC) | CM•E61Z11 | CM•E62Z11 | CM•E71Z11 | CM•E73Z11 |
| X11 (1NA + 1NC) | CM•E61X11 | CM•E62X11 | CM•E71X11 | CM•E73X11 |
| Y11 (1NA + 1NC) | CM•E61Y11 | CM•E62Y11 | CM•E71Y11 | CM•E73Y11 |
| W02 (2NC) | CM•E61W02 | CM•E62W02 | CM•E71W02 | CM•E73W02 |
| W20 (2NA) | CM•E61W20 | CM•E62W20 | CM•E71W20 | CM•E73W20 |
| Z02 (2NC) | CM•E61Z02 | CM•E62Z02 | CM•E71Z02 | CM•E73Z02 |
| X12 (1NA + 2NC) | CM•E61X12 | CM•E62X12 | CM•E71X12 | CM•E73X12 |
| X21 (2NA + 1NC) | CM•E61X21 | CM•E62X21 | CM•E71X21 | CM•E73X21 |
| W03 (3NC) | CM•E61W03 | CM•E62W03 | CM•E71W03 | CM•E73W03 |
| W30 (3NA) | CM•E61W30 | CM•E62W30 | CM•E71W30 | CM•E73W30 |

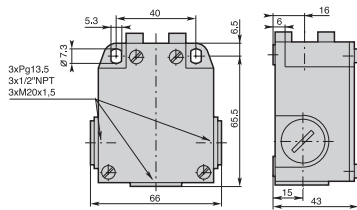
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_E** series

Metal Casing IP66 - 60 mm. width

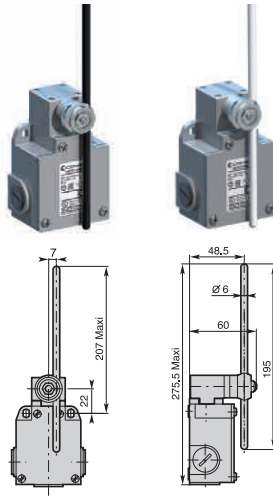
Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland



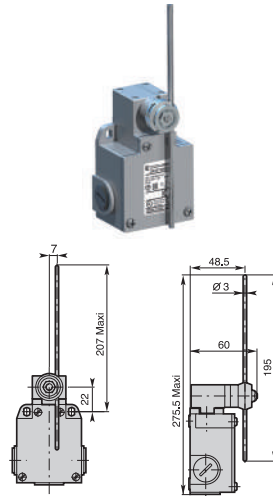
E7• - Adjustable rod lever

E72: Ø6 nylon rod lever E74: Ø6 fiberglass rod lever



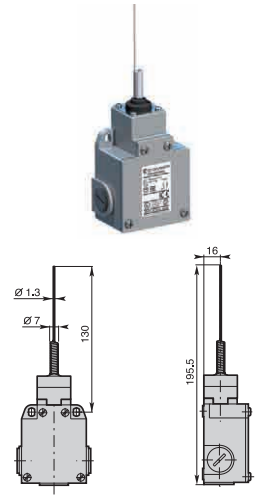
Min. actuating torque 0,15Nm (0,30Nm ⇄)
 Weight 330 g

E75 - Adjustable 3x3 square steel rod lever



Min. actuating torque 0,15Nm (0,30Nm ⇄)
 Weight 330 g

E91 - Stainless steel spring multidirectional actuator

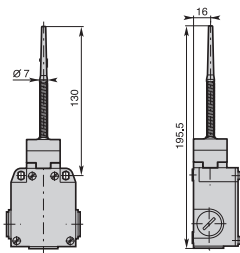


Min. actuating torque 0,18Nm
 Weight 265 g

Contact Blocks

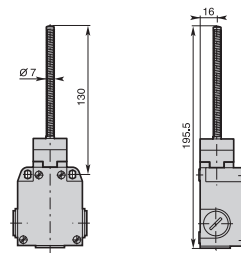
| | | | | |
|-----------------|-----------|-----------|-----------|-----------|
| Z11 (1NA + 1NC) | CM•E72Z11 | CM•E74Z11 | CM•E75Z11 | CM•E91Z11 |
| X11 (1NA + 1NC) | CM•E72X11 | CM•E74X11 | CM•E75X11 | CM•E91X11 |
| Y11 (1NA + 1NC) | CM•E72Y11 | CM•E74Y11 | CM•E75Y11 | CM•E91Y11 |
| W02 (2NC) | CM•E72W02 | CM•E74W02 | CM•E75W02 | CM•E91W02 |
| W20 (2NA) | CM•E72W20 | CM•E74W20 | CM•E75W20 | CM•E91W20 |
| Z02 (2NC) | CM•E72Z02 | CM•E74Z02 | CM•E75Z02 | CM•E91Z02 |
| X12 (1NA + 2NC) | CM•E72X12 | CM•E74X12 | CM•E75X12 | CM•E91X12 |
| X21 (2NA + 1NC) | CM•E72X21 | CM•E74X21 | CM•E75X21 | CM•E91X21 |
| W03 (3NC) | CM•E72W03 | CM•E74W03 | CM•E75W03 | CM•E91W03 |
| W30 (3NA) | CM•E72W30 | CM•E74W30 | CM•E75W30 | CM•E91W30 |

E92 - Multidirectional nylon actuator with stainless steel spring



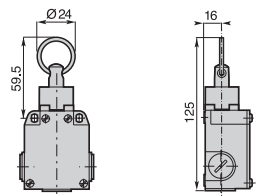
Min. actuating torque 0,18Nm
 Weight 265 g

E93 - Stainless steel spring multidirectional actuator



Min. actuating torque 0,18Nm
 Weight 270 g

E99 - Pull action with ring



Min. actuating force 25N
 Weight 270 g

Contact Blocks

| | | | |
|-----------------|-----------|-----------|------------|
| Z11 (1NO + 1NC) | CM•E92Z11 | CM•E93Z11 | CM•E99Z11A |
| X11 (1NO + 1NC) | CM•E92X11 | CM•E93X11 | CM•E99X11A |
| Y11 (1NO + 1NC) | CM•E92Y11 | CM•E93Y11 | CM•E99Y11A |
| W02 (2NC) | CM•E92W02 | CM•E93W02 | CM•E99W02A |
| W20 (2NO) | CM•E92W20 | CM•E93W20 | CM•E99W20A |
| Z02 (2NC) | CM•E92Z02 | CM•E93Z02 | |
| X12 (1NO + 2NC) | CM•E92X12 | CM•E93X12 | CM•E99X12A |
| X21 (2NO + 1NC) | CM•E92X21 | CM•E93X21 | CM•E99X21A |
| W03 (3NC) | CM•E92W03 | CM•E93W03 | CM•E99W03A |
| W30 (3NO) | CM•E92W30 | CM•E93W30 | CM•E99W30A |

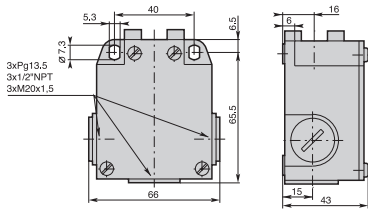
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_P** series

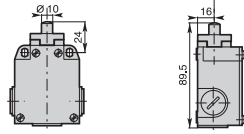
Metal Casing IP66 - 60 mm. width

Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

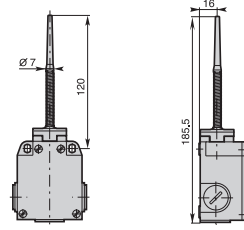


P11 - Plain plunger



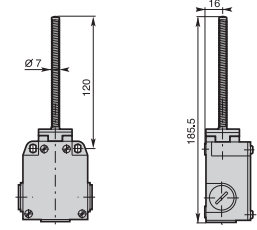
Min. actuating force
Weight **30N (45N ⊖)**
245 g

P92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque
Weight **0,18Nm**
245 g

P93 - Stainless steel spring multidirectional actuator



Min. actuating torque
Weight **0,18Nm**
250 g

Contact Blocks

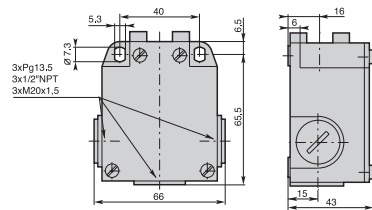
| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•P11Z11 | CM•P92Z11 | CM•P93Z11 |
| X11 (1NO + 1NC) | CM•P11X11 | CM•P92X11 | CM•P93X11 |
| Y11 (1NO + 1NC) | CM•P11Y11 | CM•P92Y11 | CM•P93Y11 |
| W02 (2NC) | CM•P11W02 | CM•P92W02 | CM•P93W02 |
| W20 (2NO) | CM•P11W20 | CM•P92W20 | CM•P93W20 |
| Z02 (2NC) | CM•P11Z02 | CM•P92Z02 | CM•P93Z02 |
| X12 (1NO + 2NC) | CM•P11X12 | CM•P92X12 | CM•P93X12 |
| X21 (2NO + 1NC) | CM•P11X21 | CM•P92X21 | CM•P93X21 |
| W03 (3NC) | CM•P11W03 | CM•P92W03 | CM•P93W03 |
| W30 (3NO) | CM•P11W30 | CM•P92W30 | CM•P93W30 |

Limit Switches **CM_M** series

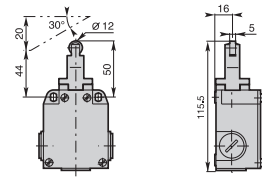
Metal Casing IP66 - 60 mm. width

Electrical connection:

CM1: three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

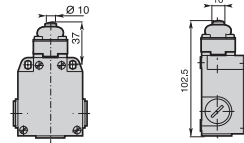


M13 - Steel roller plunger



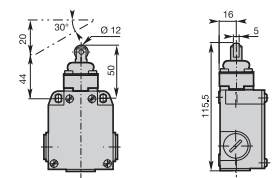
Min. actuating force **22N (40N ⊖)**
 Weight **290 g**

M14 - Plain steel plunger with dust protection cup



Min. actuating force **30N (45N ⊖)**
 Weight **280 g**

M19 - Steel roller plunger with dust protection cup

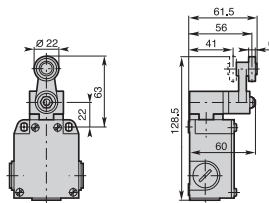


Min. actuating force **22N (40N ⊖)**
 Weight **290 g**

Contact Blocks

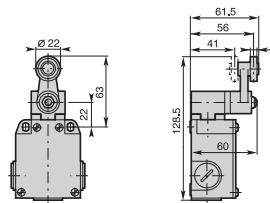
| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M13Z11 | CM•M14Z11 | CM•M19Z11 |
| X11 (1NO + 1NC) | CM•M13X11 | CM•M14X11 | CM•M19X11 |
| Y11 (1NO + 1NC) | CM•M13Y11 | CM•M14Y11 | CM•M19Y11 |
| W02 (2NC) | CM•M13W02 | CM•M14W02 | CM•M19W02 |
| W20 (2NO) | CM•M13W20 | CM•M14W20 | CM•M19W20 |
| Z02 (2NC) | CM•M13Z02 | CM•M14Z02 | CM•M19Z02 |
| X12 (1NO + 2NC) | CM•M13X12 | CM•M14X12 | CM•M19X12 |
| X21 (2NO + 1NC) | CM•M13X21 | CM•M14X21 | CM•M19X21 |
| W03 (3NC) | CM•M13W03 | CM•M14W03 | CM•M19W03 |
| W30 (3NO) | CM•M13W30 | CM•M14W30 | CM•M19W30 |

M41 - Ø22 nylon roller lever



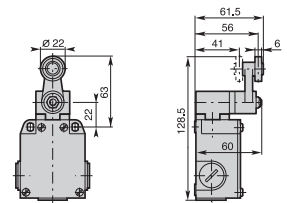
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **325 g**

M42 - Ø22 stainless steel roller lever



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **325 g**

M43 - Ø22 roller lever with steel ball bearing



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **325 g**

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M41Z11 | CM•M42Z11 | CM•M43Z11 |
| X11 (1NO + 1NC) | CM•M41X11 | CM•M42X11 | CM•M43X11 |
| Y11 (1NO + 1NC) | CM•M41Y11 | CM•M42Y11 | CM•M43Y11 |
| W02 (2NC) | CM•M41W02 | CM•M42W02 | CM•M43W02 |
| W20 (2NO) | CM•M41W20 | CM•M42W20 | CM•M43W20 |
| Z02 (2NC) | CM•M41Z02 | CM•M42Z02 | CM•M43Z02 |
| X12 (1NO + 2NC) | CM•M41X12 | CM•M42X12 | CM•M43X12 |
| X21 (2NO + 1NC) | CM•M41X21 | CM•M42X21 | CM•M43X21 |
| W03 (3NC) | CM•M41W03 | CM•M42W03 | CM•M43W03 |
| W30 (3NO) | CM•M41W30 | CM•M42W30 | CM•M43W30 |

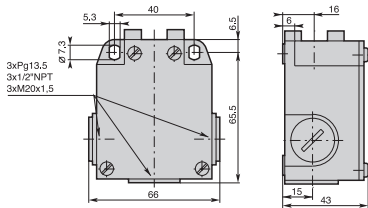
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_M** series

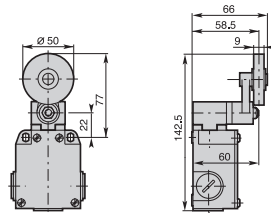
Metal Casing IP66 - 60 mm. width

Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

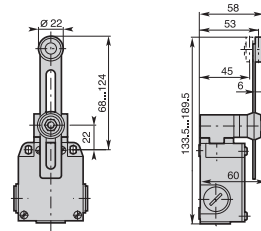


M44 - Ø50 rubber roller lever



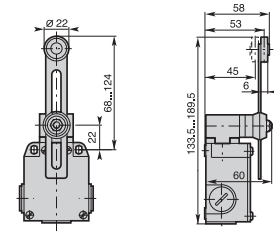
Min. actuating torque 0,15Nm (0,30Nm ⊖)
 Weight 335 g

M51 - Adjustable Ø22 nylon roller lever



Min. actuating torque 0,15Nm (0,30Nm ⊖)
 Weight 345 g

M52 - Adjustable Ø22 stainless steel roller lever

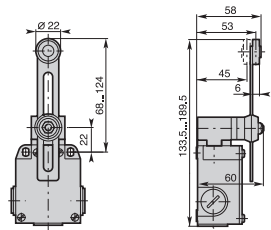


Min. actuating torque 0,15Nm (0,30Nm ⊖)
 Weight 345 g

Contact Blocks

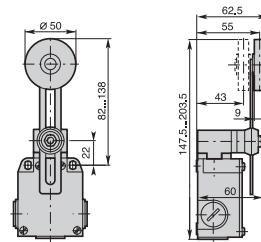
| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M44Z11 | CM•M51Z11 | CM•M52Z11 |
| X11 (1NO + 1NC) | CM•M44X11 | CM•M51X11 | CM•M52X11 |
| Y11 (1NO + 1NC) | CM•M44Y11 | CM•M51Y11 | CM•M52Y11 |
| W02 (2NC) | CM•M44W02 | CM•M51W02 | CM•M52W02 |
| W20 (2NO) | CM•M44W20 | CM•M51W20 | CM•M52W20 |
| Z02 (2NC) | CM•M44Z02 | CM•M51Z02 | CM•M52Z02 |
| X12 (1NO + 2NC) | CM•M44X12 | CM•M51X12 | CM•M52X12 |
| X21 (2NO + 1NC) | CM•M44X21 | CM•M51X21 | CM•M52X21 |
| W03 (3NC) | CM•M44W03 | CM•M51W03 | CM•M52W03 |
| W30 (3NO) | CM•M44W30 | CM•M51W30 | CM•M52W30 |

M53 - Adjustable Ø22 roller lever with steel ball bearing



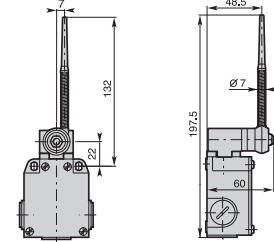
Min. actuating torque 0,15Nm (0,30Nm ⊖)
 Weight 345 g

M54 - Adjustable Ø50 rubber roller lever



Min. actuating torque 0,15Nm (0,30Nm ⊖)
 Weight 350 g

M61 - Nylon actuator with stainless steel spring



Min. actuating torque 0,15Nm
 Weight 350 g

Contact Blocks

| | | | |
|-----------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M53Z11 | CM•M54Z11 | CM•M61Z11 |
| X11 (1NO + 1NC) | CM•M53X11 | CM•M54X11 | CM•M61X11 |
| Y11 (1NO + 1NC) | CM•M53Y11 | CM•M54Y11 | CM•M61Y11 |
| W02 (2NC) | CM•M53W02 | CM•M54W02 | CM•M61W02 |
| W20 (2NO) | CM•M53W20 | CM•M54W20 | CM•M61W20 |
| Z02 (2NC) | CM•M53Z02 | CM•M54Z02 | CM•M61Z02 |
| X12 (1NO + 2NC) | CM•M53X12 | CM•M54X12 | CM•M61X12 |
| X21 (2NO + 1NC) | CM•M53X21 | CM•M54X21 | CM•M61X21 |
| W03 (3NC) | CM•M53W03 | CM•M54W03 | CM•M61W03 |
| W30 (3NO) | CM•M53W30 | CM•M54W30 | CM•M61W30 |

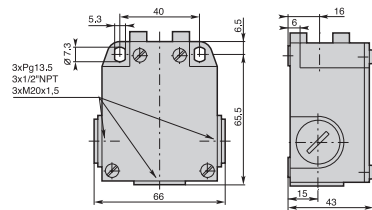
Operation diagrams: page 125 - All dimensions are in mm

Limit Switches **CM_M** series

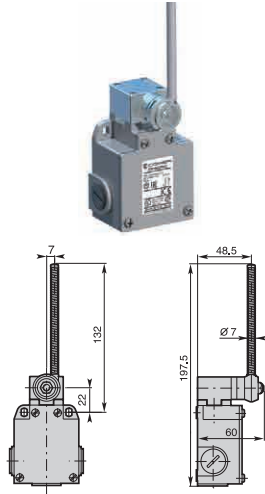
Metal Casing IP66 - 60 mm. width

Electrical connection:

- CM1:** three cable inlets for PG 13,5 Cable Gland
CM2: three cable inlets for 1/2" NPT Cable Gland
CM5: three cable inlets for M20 x 1,5 Cable Gland

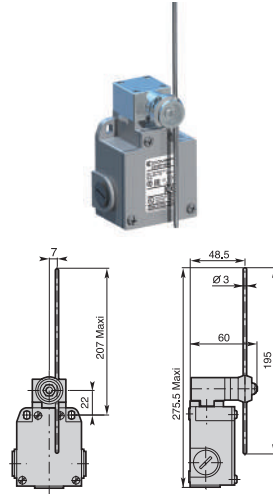


M62 - Stainless steel spring actuator



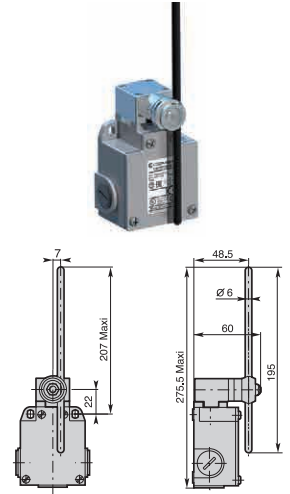
Min. actuating torque **0,15Nm**
 Weight **350 g**

M71 - Adjustable Ø3 stainless steel rod lever



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **350 g**

M72 - Adjustable Ø6 nylon rod lever

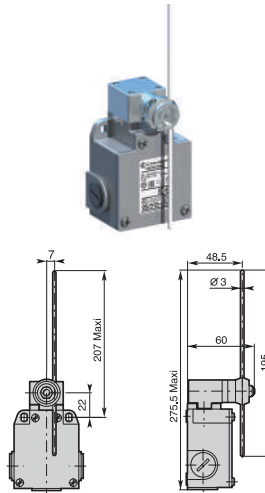


Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **350 g**

Contact Blocks

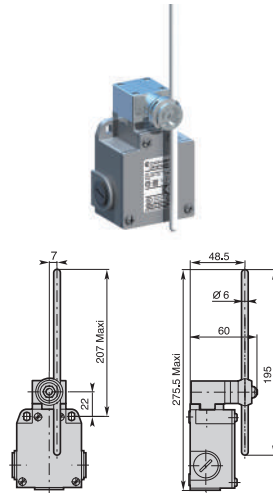
| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M62Z11 | CM•M71Z11 | CM•M72Z11 |
| X11 (1NO + 1NC) | CM•M62X11 | CM•M71X11 | CM•M72X11 |
| Y11 (1NO + 1NC) | CM•M62Y11 | CM•M71Y11 | CM•M72Y11 |
| W02 (2NC) | CM•M62W02 | CM•M71W02 | CM•M72W02 |
| W20 (2NO) | CM•M62W20 | CM•M71W20 | CM•M72W20 |
| Z02 (2NC) | CM•M62Z02 | CM•M71Z02 | CM•M72Z02 |
| X12 (1NO + 2NC) | CM•M62X12 | CM•M71X12 | CM•M72X12 |
| X21 (2NO + 1NC) | CM•M62X21 | CM•M71X21 | CM•M72X21 |
| W03 (3NC) | CM•M62W03 | CM•M71W03 | CM•M72W03 |
| W30 (3NO) | CM•M62W30 | CM•M71W30 | CM•M72W30 |

M73 - Adjustable Ø3 fiberglass rod lever



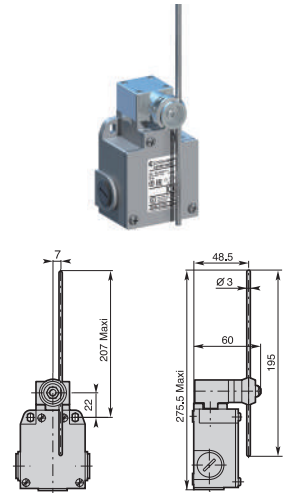
Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **350 g**

M74 - Adjustable Ø6 fiberglass rod lever



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **350 g**

M75 - Adjustable 3x3 square steel rod lever



Min. actuating torque **0,15Nm (0,30Nm ⊖)**
 Weight **350 g**

Contact Blocks

| | | | |
|------------------------|-----------|-----------|-----------|
| Z11 (1NO + 1NC) | CM•M73Z11 | CM•M74Z11 | CM•M75Z11 |
| X11 (1NO + 1NC) | CM•M73X11 | CM•M74X11 | CM•M75X11 |
| Y11 (1NO + 1NC) | CM•M73Y11 | CM•M74Y11 | CM•M75Y11 |
| W02 (2NC) | CM•M73W02 | CM•M74W02 | CM•M75W02 |
| W20 (2NO) | CM•M73W20 | CM•M74W20 | CM•M75W20 |
| Z02 (2NC) | CM•M73Z02 | CM•M74Z02 | CM•M75Z02 |
| X12 (1NO + 2NC) | CM•M73X12 | CM•M74X12 | CM•M75X12 |
| X21 (2NO + 1NC) | CM•M73X21 | CM•M74X21 | CM•M75X21 |
| W03 (3NC) | CM•M73W03 | CM•M74W03 | CM•M75W03 |
| W30 (3NO) | CM•M73W30 | CM•M74W30 | CM•M75W30 |

Operation diagrams: page 125 - All dimensions are in mm

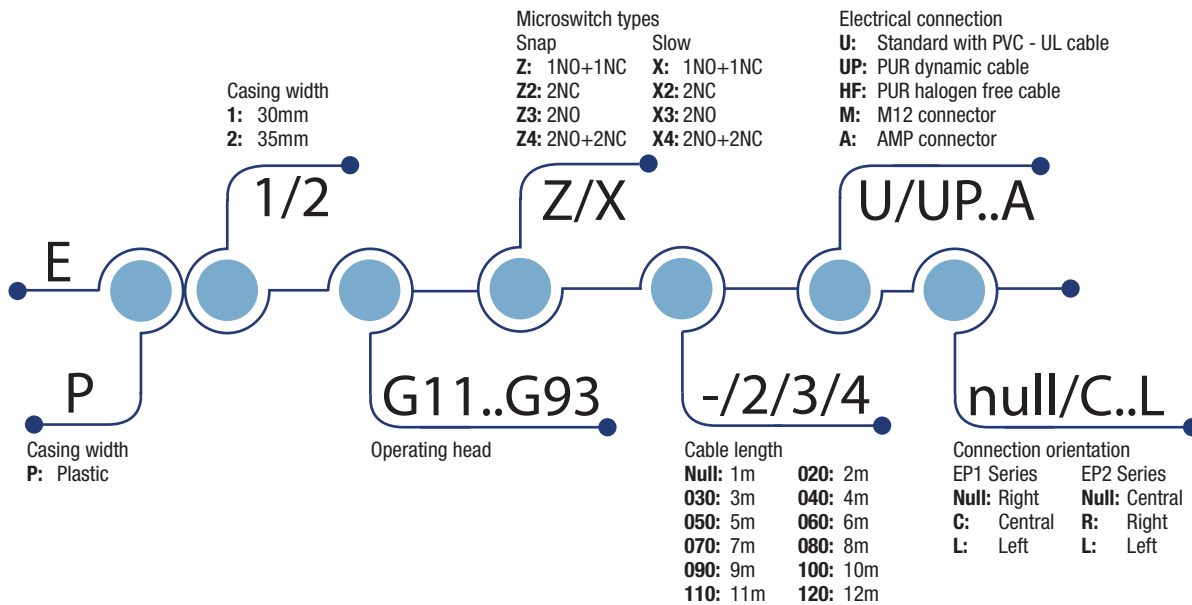
Limit Switches EP series

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 2 x Ø3 screws or 2 plug

03 Casing:

- 30 or 35 mm. width

04 Mounting screws

- 2 x M4 screws on top part

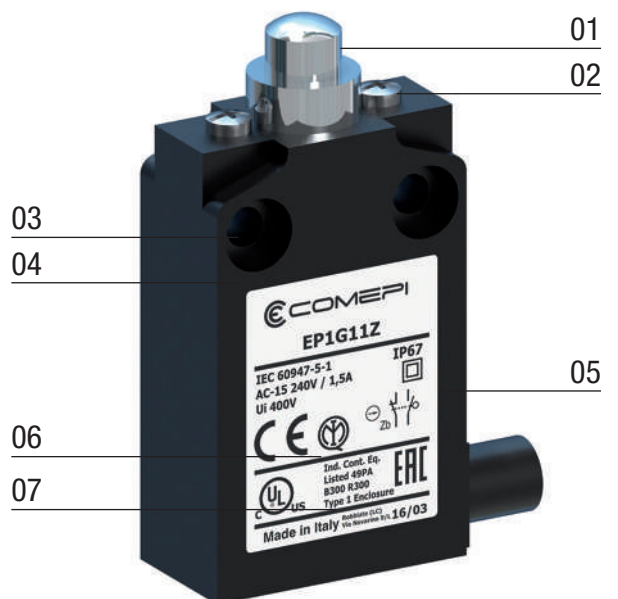
05 Epoxy resin for IP67 protection degree

06 Contact Block

- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Cable: PVC 4 x 0,75 mm²
- Special cables: Halogen Free or Dynamic PUR
- M12 connector
- AMP connector



Limit Switches **EP series**

Description

APPLICATIONS

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (up to 10 A conventional thermal current).
- Electrically separated contacts.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

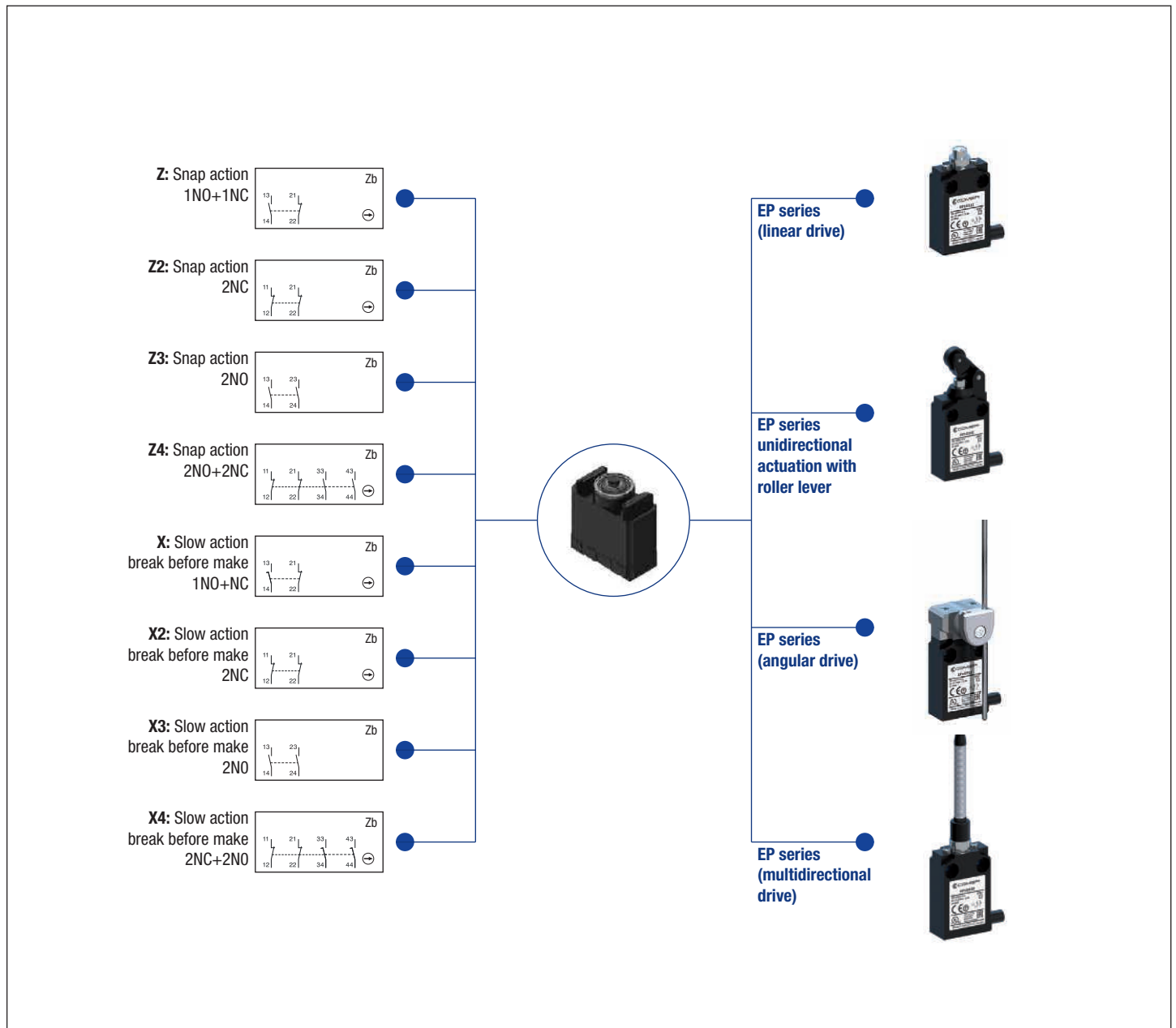
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

DESCRIPTION

These limit switches, made in thermoplastic material, sealed with epoxy resin at the base on the box, offer a degree of protection IP67. The casing come in 2 dimensions: – EP1... 30 mm. width – EP2... 35 mm. width

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches EP series

Technical Data

| | EP Series | |
|---|--------------------------------------|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 40 ... + 70 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class II | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 67 - IP 69K | |
| Degree of protection (according to UL50) | Type 1 enclosure (“indoor use only”) | |
| Switching frequency | Cycles/h | 3600 |
| Mechanical durability | 10 millions of operations | |

Electrical data - Electrical connections

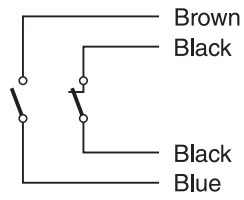
| Code | EP_U | EP_UP | EP_HF | EP_M | EP_A |
|---|--|---|--|---|--------------------------|
| Connection type | 4xAWG18 0,75mm ² PVC Style 2517 | 4xAWG18 dynamic 0,75mm ² PUR style 20668 | 4xAWG18 0,75mm ² Halogen Free PUR Style 20668 | M12 connector integrated 4x0,25mm ² | AMP connector integrated |
| Min. bend radius | 49mm | 49mm | 49mm | – | – |
| Rated insulation voltage U _i | 400V | 300V | 300V | 250V | 250V |
| Pollution degree | 3 | 3 | 3 | 3 | 3 |
| Rated impulse withstand voltage U _{imp} | 4kV | 4kV | 4kV | 2.5kV | 2.5kV |
| Conventional free air thermal current I _{th} | 10A | 10A | 10A | 4A | 4A |
| Short circuit current I _{cc} | 1kA | 1kA | 1kA | 1kA | 1kA |
| Short-circuit protection | 10A 500V type gG | 10A 500V type gG | 10A 500V type gG | 4A 500V type gG | 4A 500V type gG |
| AC15 | 24V 120V 240V | 10A 6A 3A | 10A 6A 3A | 10A 6A 3A | 4A 4A 3A |
| DC13 | 24V 125V 250V | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A |
| Approvals | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus IMQ EAC CCC UKCA | EAC UKCA |

| Code | X2/X3 | X4 | Z2/Z3 | Z4 |
|---|--|---|--|---|
| Connection type | 4xAWG18 0,75mm ² PVC Style 2517 | 8xAWG22 0,5mm ² PVC Style 2517 | 4xAWG18 0,75mm ² PVC Style 2517 | 8xAWG22 0,5mm ² PVC Style 2517 |
| Min. bend radius | 49mm | 49mm | 49mm | 49mm |
| Rated insulation voltage U _i | 250V | 250V | 250V | 250V |
| Pollution degree | 3 | 3 | 3 | 3 |
| Rated impulse withstand voltage U _{imp} | 2.5kV | 2.5kV | 2.5kV | 2.5kV |
| Conventional free air thermal current I _{th} | 4A | 4A | 4A | 4A |
| Short-circuit protection | 4A 500V type gG | 4A 500V type gG | 4A 500V type gG | 4A 500V Type gG |
| AC15 | 24V 240V | 4A 3A | 4A 3A | 4A 3A |
| DC13 | 24V 250V | 2A 0.4A | 2A 0.4A | 2A / |
| Approvals | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA |

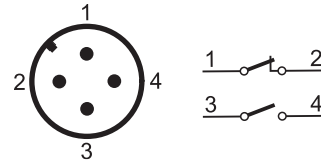
Limit Switches **EP series**

Wiring Diagram

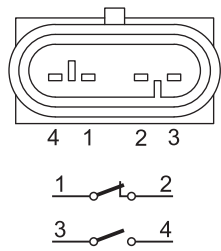
Serie EP_U / EP_UP / EP_HF



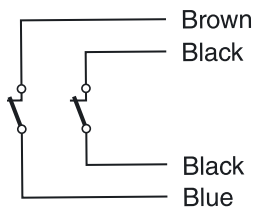
Serie EP_M



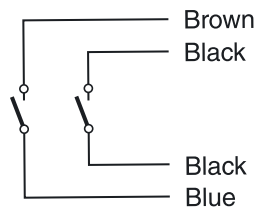
Serie EP_A



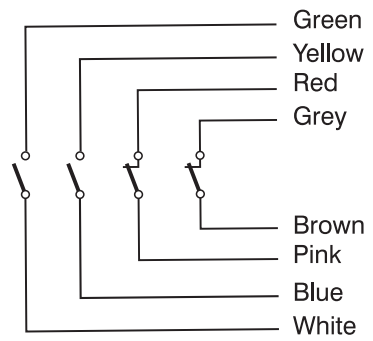
Serie EP_X2 / Z2



Serie EP_X3 / Z3



Serie EP_X4 / Z4



Limit Switches **EP series**

Technical Data



Standard PVC UL cable

All models can be supplied with a standard PVC UL cable.
To order, keep the suffix "U" of the standard
Example: EP1G11ZU



Dynamic PUR cable

A greater flexibility characterize these models compared to the UL standard, while maintaining the same features and the same electrical ratings. Moreover, the external sheath, polyurethane made, guarantees more resistance in stern working environments.
To order add the digit "P" at the end of the UL standard part number.
Example: EP1G11ZU ➔ EP1G11ZUP



Halogen free PUR cable

The absence of halogens guarantees less fumes and toxic gases released in case of fire. Moreover, the external sheath, polyurethane made, guarantees more resistance in stern working environments.
To order add the digit "HF" at the end of the part number.
Example: EP1G11ZHF



M12 connector

All the models can be supplied with M12 connector.
To order replace the "U" suffix of the standard UL version with suffix "M".
Example: EP1G11ZU ➔ EP1G11ZM



AMP connector

All the models can be supplied with AMP connector.
To order replace the "U" suffix of the standard UL version with suffix "A".
Example: EP1G11ZU ➔ EP1G11ZA

Cable connection orientation



Cable connection orientation

For EP1 Series, standard version is supplied with right electrical connection exit.
Available version with left or central exit: add respectively digit "L" or "C" at the end of the complete part number.
Example: EP1G11ZU ➔ EP1G11ZUL



For EP2 Series, standard version is supplied with central electrical connection exit.
Available version with left or right exit: add respectively digit "L" or "R" at the end of the complete part number.
Example: EP2G11ZU ➔ EP2G11ZUR

Limit Switches EP series

Technical Data

Technical data approved by IMQ

| Standards | | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards |
|--|---|--|
| Degree of protection | IP 67 - IP 69K | |
| Rated insulation voltage U_i | 400 V (degree of pollution 3) (250V for M12 connector) | |
| Rated impulse withstand voltage U_{imp} | 4 kV (2.5 kV for M12 connector) | |
| Conventional free air thermal current I_{th} | 10 A (4A for M12 connector) | |
| Short-circuit protection - gG (gl) type fuses | 10 A (4A for M12 connector) | |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A (except M12 connector) |
| | 400 V - 50/60 Hz | 3 A (except M12 connector) |
| I_e / DC-13 | 24 V - d.c. | 2.8 A |
| | 250 V - d.c. | 0.27 A |

Technical data approved by UL

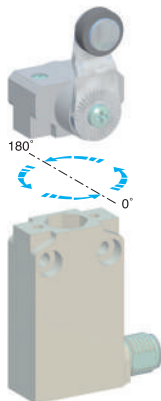
| Standards | | Devices conform with UL 508 |
|-------------------------|--|-----------------------------|
| Degree of protection: | | |
| EP Series | Type 1 enclosure ("indoor use only") | |
| EM Series | Type 4 - 4X - 6 enclosure ("outdoor use raintight - watertight - corrosion resistant") | |
| Utilization categories: | | |
| Cable versions | B300 - R300 (C300-R300) | |
| M12 connector versions | Class-2 | |

For the complete list of approved products, contact our technical department

IMPLEMENTATION

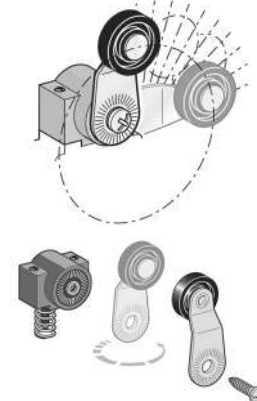
Head orientation (G41... G45)

The head can be rotated every 90°. Recommended tightening torque 0.5 Nm (max 0.8 Nm).

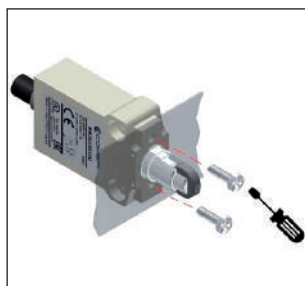


Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions



Head installation

Two different solutions are available to fix the head to the body of the switch. The standard solution is made by means of two Ø3 screws. On some models it is possible to order the switch with head fixation by means of two pins. This solution will allow a greater resistance to vibrations when needed and it makes it possible for the end user to install the limit switch directly on a panel as shown in the picture on the side.



Installation of the head every 15°

It is also possible to order a new version of the limit switch where the actuating head it can be rotated every 15°.

For further information please contact our technical office.

Limit Switches **EP1G series**

Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

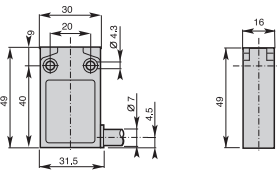
Pre-Wired

Cable: PVC 4 x 0,75 mm²

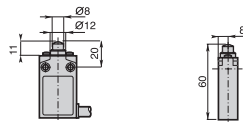
Length: 1 m.

Pre-wired

See page 78 for all the available connection variants



G11 - Plain plunger

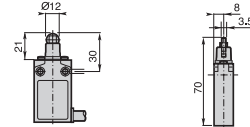


Min. actuating force
Weight

15N (30N ⊖)
125 g

G1• - Roller plunger

G12: metal roller G13: nylon roller

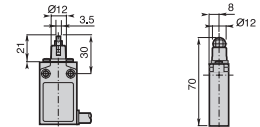


Min. actuating force
Weight

10N (30N ⊖)
130 g

G1• - Cross roller plunger

G14: metal roller G15: nylon roller



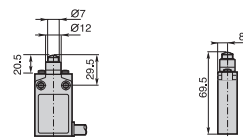
Min. actuating force
Weight

10N (30N ⊖)
130 g

Contact Blocks

| | | | | | | |
|----|--|-----------|-----------|-----------|-----------|-----------|
| Z | Snap action contacts (1NO + 1NC) | EP1G11ZU | EP1G12ZU | EP1G13ZU | EP1G14ZU | EP1G15ZU |
| Z2 | Snap action contacts (2NC) | EP1G11Z2U | EP1G12Z2U | EP1G13Z2U | EP1G14Z2U | EP1G15Z2U |
| Z3 | Snap action contacts (2NO) | EP1G11Z3U | EP1G12Z3U | EP1G13Z3U | EP1G14Z3U | EP1G15Z3U |
| Z4 | Snap action contacts (2NC + 2NO) | EP1G11Z4U | EP1G12Z4U | EP1G13Z4U | EP1G14Z4U | EP1G15Z4U |
| X | Non overlapping slow action contacts (1NO + 1NC) | EP1G11XU | EP1G12XU | EP1G13XU | EP1G14XU | EP1G15XU |
| X2 | Slow action contacts (2NC) | EP1G11X2U | EP1G12X2U | EP1G13X2U | EP1G14X2U | EP1G15X2U |
| X3 | Slow action contacts (2NO) | EP1G11X3U | EP1G12X3U | EP1G13X3U | EP1G14X3U | EP1G15X3U |
| X4 | Non overlapping slow action contacts (2NO + 2NC) | EP1G11X4U | EP1G12X4U | EP1G13X4U | EP1G14X4U | EP1G15X4U |

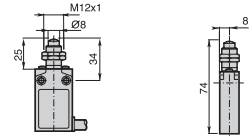
G16 - Plain plunger with dust protection cup



Min. actuating force
Weight

15N (30N ⊖)
130 g

G21 - Plain plunger with fixing nuts

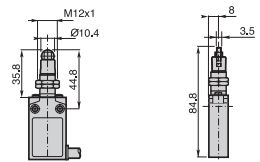


Min. actuating force
Weight

15N (30N ⊖)
140 g

G2• - Roller plunger with fixing nuts

G22: metal roller G23: nylon roller



Min. actuating force
Weight

10N (30N ⊖)
145 g

Contact Blocks

| | | | | | |
|----|--|-----------|-----------|-----------|-----------|
| Z | Snap action contacts (1NO + 1NC) | EP1G16ZU | EP1G21ZU | EP1G22ZU | EP1G23ZU |
| Z2 | Snap action contacts (2NC) | EP1G16Z2U | EP1G21Z2U | EP1G22Z2U | EP1G23Z2U |
| Z3 | Snap action contacts (2NO) | EP1G16Z3U | EP1G21Z3U | EP1G22Z3U | EP1G23Z3U |
| Z4 | Snap action contacts (2NC + 2NO) | EP1G16Z4U | EP1G21Z4U | EP1G22Z4U | EP1G23Z4U |
| X | Non overlapping slow action contacts (1NO + 1NC) | EP1G16XU | EP1G21XU | EP1G22XU | EP1G23XU |
| X2 | Slow action contacts (2NC) | EP1G16X2U | EP1G21X2U | EP1G22X2U | EP1G23X2U |
| X3 | Slow action contacts (2NO) | EP1G16X3U | EP1G21X3U | EP1G22X3U | EP1G23X3U |
| X4 | Non overlapping slow action contacts (2NO + 2NC) | EP1G16X4U | EP1G21X4U | EP1G22X4U | EP1G23X4U |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches **EP1G series**

Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

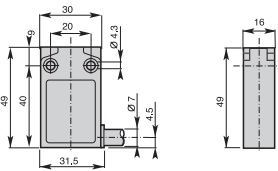
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Length: 1 m.

Pre-wired

See page 78 for all the available connection variants

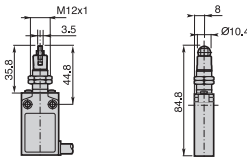


Contact Blocks

| | | | | |
|--|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G24ZU | EP1G25ZU | EP1G31ZU | EP1G32ZU |
| Z2 Snap action contacts (2NC) | EP1G24Z2U | EP1G25Z2U | EP1G31Z2U | EP1G32Z2U |
| Z3 Snap action contacts (2NO) | EP1G24Z3U | EP1G25Z3U | EP1G31Z3U | EP1G32Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G24Z4U | EP1G25Z4U | EP1G31Z4U | EP1G32Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G24XU | EP1G25XU | EP1G31XU | EP1G32XU |
| X2 Slow action contacts (2NC) | EP1G24X2U | EP1G25X2U | EP1G31X2U | EP1G32X2U |
| X3 Slow action contacts (2NO) | EP1G24X3U | EP1G25X3U | EP1G31X3U | EP1G32X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G24X4U | EP1G25X4U | EP1G31X4U | EP1G32X4U |

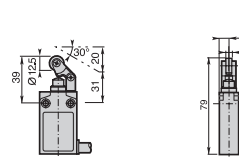
G2• - Cross roller plunger with fixing nuts

G24: metal roller G25: nylon roller



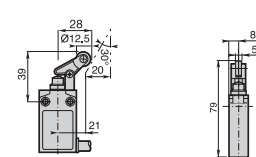
Min. actuating force **10N (30N ⇄)**
Weight **145 g**

G31 - Nylon roller lever



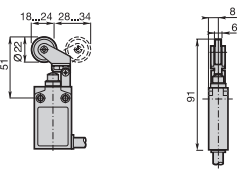
Min. actuating force **7N (24N ⇄)**
Weight **130 g**

G32 - Nylon roller lever



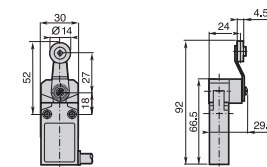
Min. actuating force **7N (24N ⇄)**
Weight **130 g**

G38 - Adjustable nylon roller lever



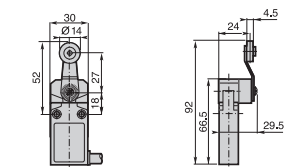
Min. actuating force **7N (24N ⇄)**
Weight **135 g**

G41 - Ø14 nylon roller lever



Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **175 g**

G42 - Ø14 metal roller lever



Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **175 g**

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G38ZU | EP1G41ZU | EP1G42ZU |
| Z2 Snap action contacts (2NC) | EP1G38Z2U | EP1G41Z2U | EP1G42Z2U |
| Z3 Snap action contacts (2NO) | EP1G38Z3U | EP1G41Z3U | EP1G42Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G38Z4U | EP1G41Z4U | EP1G42Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G38XU | EP1G41XU | EP1G42XU |
| X2 Slow action contacts (2NC) | EP1G38X2U | EP1G41X2U | EP1G42X2U |
| X3 Slow action contacts (2NO) | EP1G38X3U | EP1G41X3U | EP1G42X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G38X4U | EP1G41X4U | EP1G42X4U |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches **EP1G series**

Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

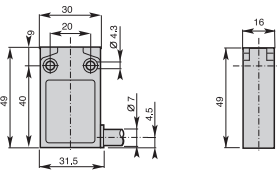
Pre-Wired

Cable: PVC 4 x 0,75 mm²

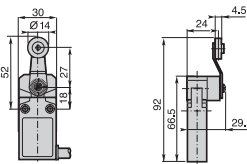
Length: 1 m.

Pre-wired

See page 78 for all the available connection variants

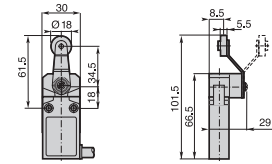


G43 - Ø14 roller lever with ball bearing



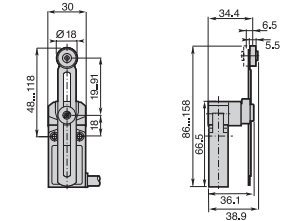
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **175 g**

G45 - Ø18 nylon roller lever



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **180 g**

G51 - Adjustable lever with Ø18 nylon roller

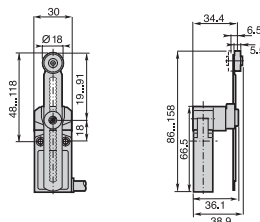


Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **190 g**

Contact Blocks

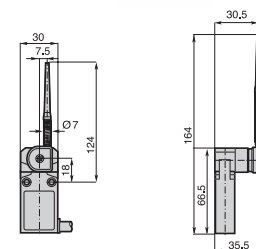
| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G43ZU | EP1G45ZU | EP1G51ZU |
| Z2 Snap action contacts (2NC) | EP1G43Z2U | EP1G45Z2U | EP1G51Z2U |
| Z3 Snap action contacts (2NO) | EP1G43Z3U | EP1G45Z3U | EP1G51Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G43Z4U | EP1G45Z4U | EP1G51Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G43XU | EP1G45XU | EP1G51XU |
| X2 Slow action contacts (2NC) | EP1G43X2U | EP1G45X2U | EP1G51X2U |
| X3 Slow action contacts (2NO) | EP1G43X3U | EP1G45X3U | EP1G51X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G43X4U | EP1G45X4U | EP1G51X4U |

G5100 - Adjustable toothed lever (step 2 mm) with Ø18 nylon roller



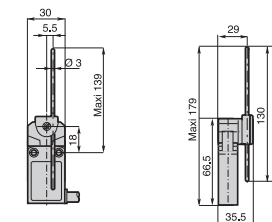
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **190 g**

G61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,08Nm**
Weight **190 g**

G71 - Adjustable Ø3 stainless steel rod lever



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **185 g**

Contact Blocks

| | | | |
|--|-------------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G5100ZU | EP1G61ZU | EP1G71ZU |
| Z2 Snap action contacts (2NC) | EP1G5100Z2U | EP1G61Z2U | EP1G71Z2U |
| Z3 Snap action contacts (2NO) | EP1G5100Z3U | EP1G61Z3U | EP1G71Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G5100Z4U | EP1G61Z4U | EP1G71Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G5100XU | EP1G61XU | EP1G71XU |
| X2 Slow action contacts (2NC) | EP1G5100X2U | EP1G61X2U | EP1G71X2U |
| X3 Slow action contacts (2NO) | EP1G5100X3U | EP1G61X3U | EP1G71X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G5100X4U | EP1G61X4U | EP1G71X4U |

Limit Switches **EP1G series**

Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

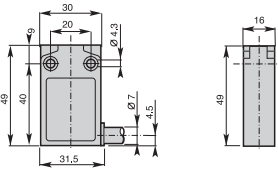
Pre-Wired

Cable: PVC 4 x 0,75 mm²

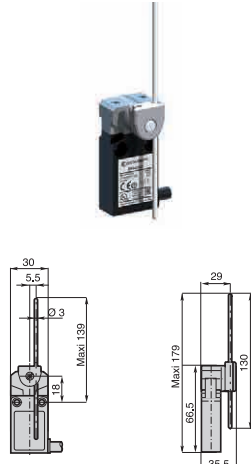
Length: 1 m.

Pre-wired

See page 78 for all the available connection variants

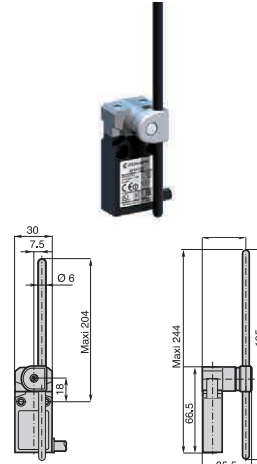


G72 - Adjustable Ø3 fiberglass rod lever



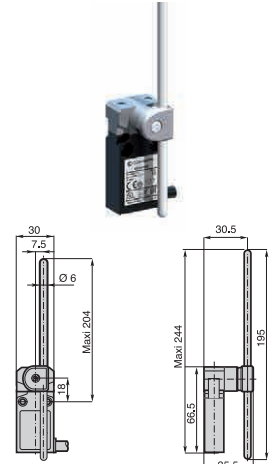
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **185 g**

G73 - Adjustable Ø6 nylon rod lever



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **200 g**

G74 - Adjustable Ø6 fiberglass rod lever

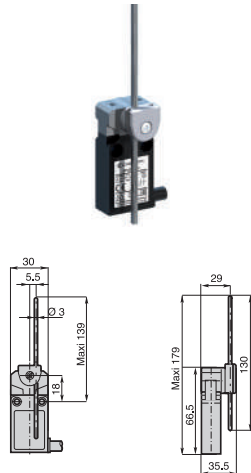


Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **200 g**

Contact Blocks

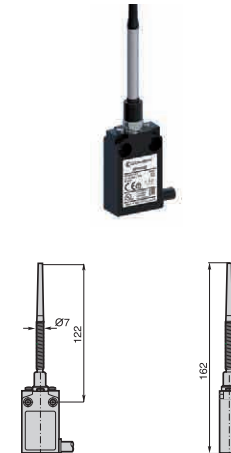
| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G72ZU | EP1G73ZU | EP1G74ZU |
| Z2 Snap action contacts (2NC) | EP1G72Z2U | EP1G73Z2U | EP1G74Z2U |
| Z3 Snap action contacts (2NO) | EP1G72Z3U | EP1G73Z3U | EP1G74Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G72Z4U | EP1G73Z4U | EP1G74Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G72XU | EP1G73XU | EP1G74XU |
| X2 Slow action contacts (2NC) | EP1G72X2U | EP1G73X2U | EP1G74X2U |
| X3 Slow action contacts (2NO) | EP1G72X3U | EP1G73X3U | EP1G74X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G72X4U | EP1G73X4U | EP1G74X4U |

G75 - Adjustable 3x3 square steel rod lever



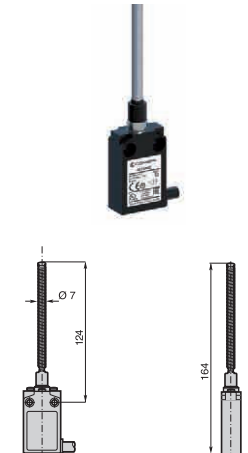
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **185 g**

G92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **195 g**

G93 - Multidirectional actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **200 g**

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP1G75ZU | EP1G92ZU | EP1G93ZU |
| Z2 Snap action contacts (2NC) | EP1G75Z2U | EP1G92Z2U | EP1G93Z2U |
| Z3 Snap action contacts (2NO) | EP1G75Z3U | EP1G92Z3U | EP1G93Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP1G75Z4U | EP1G92Z4U | EP1G93Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP1G75XU | | |
| X2 Slow action contacts (2NC) | EP1G75X2U | | |
| X3 Slow action contacts (2NO) | EP1G75X3U | | |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP1G75X4U | | |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches **EP2G series**

Pre-wired - Plastic Casing IP67 - 35 mm. width

Electrical connection:

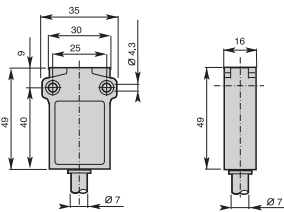
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Length: 1 m.

Pre-wired

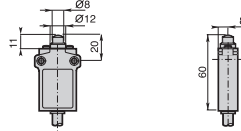
See page 78 for all the available connection variants



Contact Blocks

| | G11 - Plain plunger | G1• - Roller plunger | | G1• - Cross roller plunger | |
|--|----------------------------|-----------------------------|-------------------|-----------------------------------|-------------------|
| | | G12: metal roller | G13: nylon roller | G14: metal roller | G15: nylon roller |
| Z Snap action contacts (1NO + 1NC) | EP2G11ZU | EP2G12ZU | EP2G13ZU | EP2G14ZU | EP2G15ZU |
| Z2 Snap action contacts (2NC) | EP2G11Z2U | EP2G12Z2U | EP2G13Z2U | EP2G14Z2U | EP2G15Z2U |
| Z3 Snap action contacts (2NO) | EP2G11Z3U | EP2G12Z3U | EP2G13Z3U | EP2G14Z3U | EP2G15Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G11Z4U | EP2G12Z4U | EP2G13Z4U | EP2G14Z4U | EP2G15Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G11XU | EP2G12XU | EP2G13XU | EP2G14XU | EP2G15XU |
| X2 Slow action contacts (2NC) | EP2G11X2U | EP2G12X2U | EP2G13X2U | EP2G14X2U | EP2G15X2U |
| X3 Slow action contacts (2NO) | EP2G11X3U | EP2G12X3U | EP2G13X3U | EP2G14X3U | EP2G15X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G11X4U | EP2G12X4U | EP2G13X4U | EP2G14X4U | EP2G15X4U |

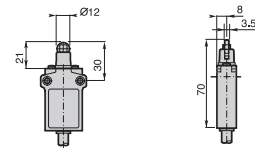
G11 - Plain plunger



Min. actuating force
Weight **15N (30N ⊖)**
125 g

G1• - Roller plunger

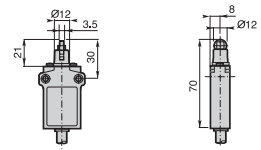
G12: metal roller G13: nylon roller



Min. actuating force
Weight **10N (30N ⊖)**
130 g

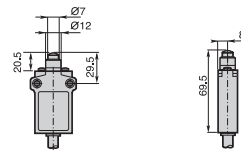
G1• - Cross roller plunger

G14: metal roller G15: nylon roller



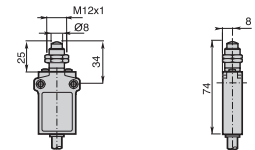
Min. actuating force
Weight **10N (30N ⊖)**
130 g

G16 - Plain plunger with dust protection cup



Min. actuating force
Weight **15N (30N ⊖)**
130 g

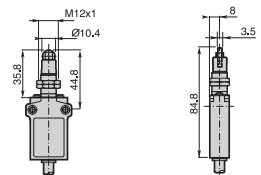
G21 - Plain plunger with fixing nuts



Min. actuating force
Weight **15N (30N ⊖)**
140 g

G2• - Roller plunger with fixing nuts

G22: metal roller G23: nylon roller



Min. actuating force
Weight **10N (30N ⊖)**
145 g

Contact Blocks

| | G16 - Plain plunger with dust protection cup | G21 - Plain plunger with fixing nuts | G2• - Roller plunger with fixing nuts | |
|--|---|---|--|-------------------|
| | | | G22: metal roller | G23: nylon roller |
| Z Snap action contacts (1NO + 1NC) | EP2G16ZU | EP2G21ZU | EP2G22ZU | EP2G23ZU |
| Z2 Snap action contacts (2NC) | EP2G16Z2U | EP2G21Z2U | EP2G22Z2U | EP2G23Z2U |
| Z3 Snap action contacts (2NO) | EP2G16Z3U | EP2G21Z3U | EP2G22Z3U | EP2G23Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G16Z4U | EP2G21Z4U | EP2G22Z4U | EP2G23Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G16XU | EP2G21XU | EP2G22XU | EP2G23XU |
| X2 Slow action contacts (2NC) | EP2G16X2U | EP2G21X2U | EP2G22X2U | EP2G23X2U |
| X3 Slow action contacts (2NO) | EP2G16X3U | EP2G21X3U | EP2G22X3U | EP2G23X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G16X4U | EP2G21X4U | EP2G22X4U | EP2G23X4U |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches **EP2G series**

Pre-wired - Plastic Casing IP67 - 35 mm. width

Electrical connection:

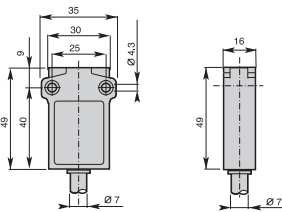
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Length: 1 m.

Pre-wired

See page 78 for all the available connection variants

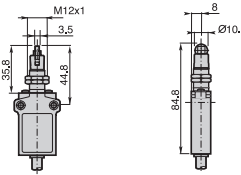


Contact Blocks

| | | | | |
|--|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G24ZU | EP2G25ZU | EP2G31ZU | EP2G32ZU |
| Z2 Snap action contacts (2NC) | EP2G24Z2U | EP2G25Z2U | EP2G31Z2U | EP2G32Z2U |
| Z3 Snap action contacts (2NO) | EP2G24Z3U | EP2G25Z3U | EP2G31Z3U | EP2G32Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G24Z4U | EP2G25Z4U | EP2G31Z4U | EP2G32Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G24XU | EP2G25XU | EP2G31XU | EP2G32XU |
| X2 Slow action contacts (2NC) | EP2G24X2U | EP2G25X2U | EP2G31X2U | EP2G32X2U |
| X3 Slow action contacts (2NO) | EP2G24X3U | EP2G25X3U | EP2G31X3U | EP2G32X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G24X4U | EP2G25X4U | EP2G31X4U | EP2G32X4U |

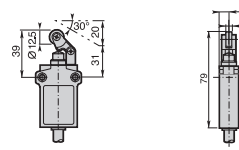
G2• - Cross roller plunger with fixing nuts

G24: metal roller G25: nylon roller



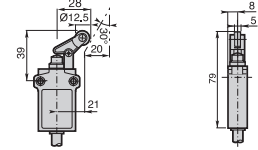
Min. actuating force **10N (30N ⊖)**
Weight **145 g**

G31 - Nylon roller lever



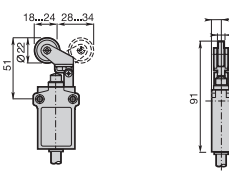
Min. actuating force **7N (24N ⊖)**
Weight **130 g**

G32 - Nylon roller lever



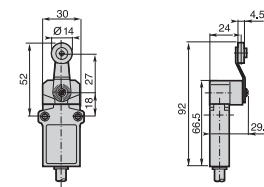
Min. actuating force **7N (24N ⊖)**
Weight **130 g**

G38 - Adjustable nylon roller lever



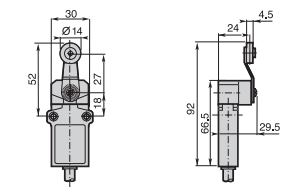
Min. actuating force **7N (24N ⊖)**
Weight **135 g**

G41 - Ø14 nylon roller lever



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **175 g**

G42 - Ø14 metal roller lever



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **175 g**

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G38ZU | EP2G41ZU | EP2G42ZU |
| Z2 Snap action contacts (2NC) | EP2G38Z2U | EP2G41Z2U | EP2G42Z2U |
| Z3 Snap action contacts (2NO) | EP2G38Z3U | EP2G41Z3U | EP2G42Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G38Z4U | EP2G41Z4U | EP2G42Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G38XU | EP2G41XU | EP2G42XU |
| X2 Slow action contacts (2NC) | EP2G38X2U | EP2G41X2U | EP2G42X2U |
| X3 Slow action contacts (2NO) | EP2G38X3U | EP2G41X3U | EP2G42X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G38X4U | EP2G41X4U | EP2G42X4U |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches **EP2G series**

Pre-wired - Plastic Casing IP67 - 35 mm. width

Electrical connection:

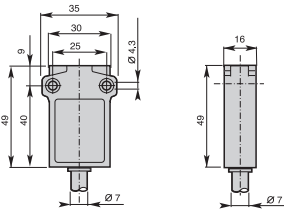
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Length: 1 m.

Pre-wired

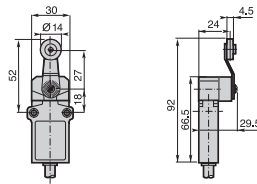
See page 78 for all the available connection variants



Contact Blocks

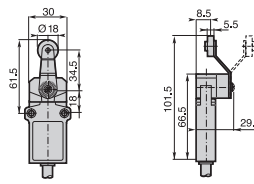
| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G43ZU | EP2G45ZU | EP2G51ZU |
| Z2 Snap action contacts (2NC) | EP2G43Z2U | EP2G45Z2U | EP2G51Z2U |
| Z3 Snap action contacts (2NO) | EP2G43Z3U | EP2G45Z3U | EP2G51Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G43Z4U | EP2G45Z4U | EP2G51Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G43XU | EP2G45XU | EP2G51XU |
| X2 Slow action contacts (2NC) | EP2G43X2U | EP2G45X2U | EP2G51X2U |
| X3 Non overlapping slow action contacts (2NO) | EP2G43X3U | EP2G45X3U | EP2G51X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G43X4U | EP2G45X4U | EP2G51X4U |

G43 - Ø14 roller lever with ball bearing



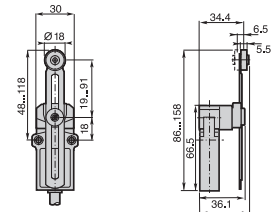
Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **175 g**

G45 - Ø18 nylon roller lever



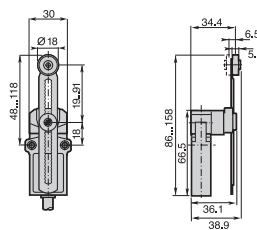
Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **180 g**

G51 - Adjustable lever with Ø18 nylon roller



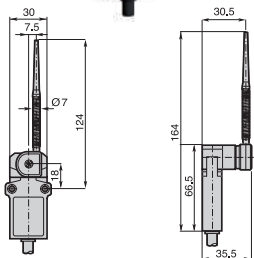
Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **190 g**

G5100 - Adjustable toothed lever (step 2 mm) with Ø18 nylon roller



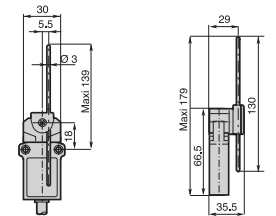
Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **190 g**

G61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **190 g**

G71 - Adjustable Ø3 stainless steel rod lever



Min. actuating torque **0,08Nm (0,28Nm ⇄)**
Weight **185 g**

Contact Blocks

| | | | |
|--|-------------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G5100ZU | EP2G61ZU | EP2G71ZU |
| Z2 Snap action contacts (2NC) | EP2G5100Z2U | EP2G61Z2U | EP2G71Z2U |
| Z3 Snap action contacts (2NO) | EP2G5100Z3U | EP2G61Z3U | EP2G71Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G5100Z4U | EP2G61Z4U | EP2G71Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G5100XU | EP2G61XU | EP2G71XU |
| X2 Slow action contacts (2NC) | EP2G5100X2U | EP2G61X2U | EP2G71X2U |
| X3 Slow action contacts (2NO) | EP2G5100X3U | EP2G61X3U | EP2G71X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G5100X4U | EP2G61X4U | EP2G71X4U |

Operation diagrams: page 126 - All dimensions are in mm

Limit Switches EP2G series

Pre-wired - Plastic Casing IP67 - 35 mm. width

Electrical connection:

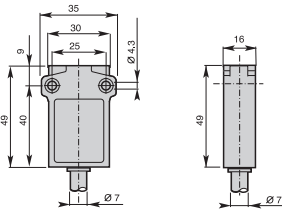
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Length: 1 m.

Pre-wired

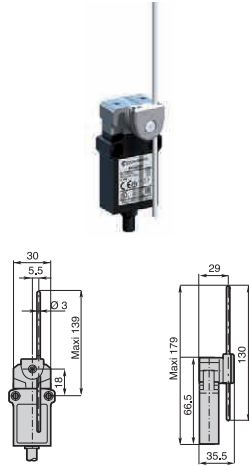
See page 78 for all the available connection variants



Contact Blocks

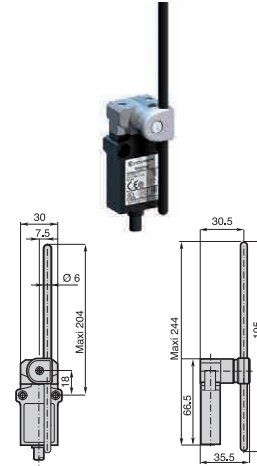
| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G72ZU | EP2G73ZU | EP2G74ZU |
| Z2 Snap action contacts (2NC) | EP2G72Z2U | EP2G73Z2U | EP2G74Z2U |
| Z3 Snap action contacts (2NO) | EP2G72Z3U | EP2G73Z3U | EP2G74Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G72Z4U | EP2G73Z4U | EP2G74Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G72XU | EP2G73XU | EP2G74XU |
| X2 Slow action contacts (2NC) | EP2G72X2U | EP2G73X2U | EP2G74X2U |
| X3 Slow action contacts (2NO) | EP2G72X3U | EP2G73X3U | EP2G74X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G72X4U | EP2G73X4U | EP2G74X4U |

G72 - Adjustable Ø3 fiberglass rod lever



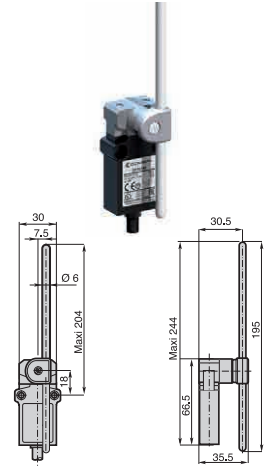
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **185 g**

G73 - Adjustable Ø6 nylon rod lever



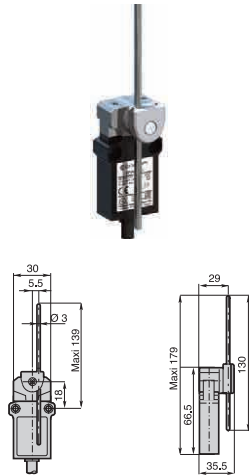
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **200 g**

G74 - Adjustable Ø6 fiberglass rod lever



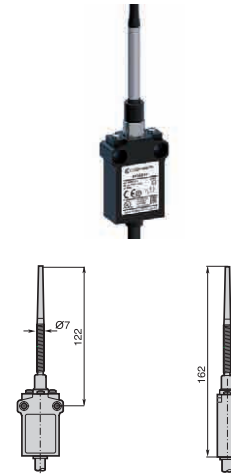
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **200 g**

G75 - Adjustable 3x3 square steel rod lever



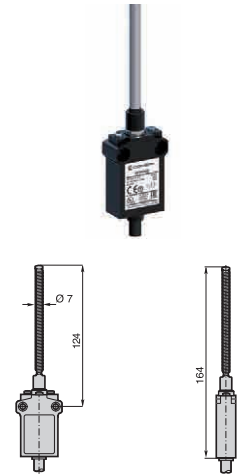
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **185 g**

G92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque **0,12Nm**
Weight **195 g**

G93 - Multidirectional actuator with stainless steel spring



Min. actuating torque **0,12Nm**
Weight **200 g**

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EP2G75ZU | EP2G92ZU | EP2G93ZU |
| Z2 Snap action contacts (2NC) | EP2G75Z2U | EP2G92Z2U | EP2G93Z2U |
| Z3 Snap action contacts (2NO) | EP2G75Z3U | EP2G92Z3U | EP2G93Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EP2G75Z4U | EP2G92Z4U | EP2G93Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EP2G75XU | | |
| X2 Slow action contacts (2NC) | EP2G75X2U | | |
| X2 Slow action contacts (2NO) | EP2G75X3U | | |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EP2G75X4U | | |

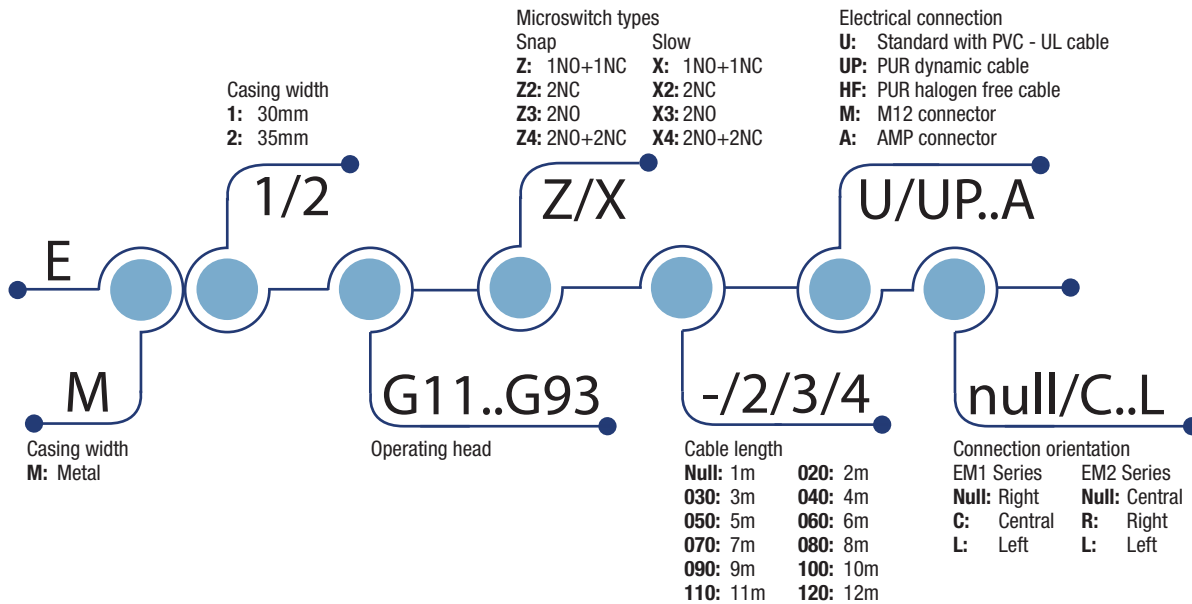
Limit Switches EM series

Summary

APPROVALS: UL 508 / CSA C22-2 N. 14 / IEC 60947-5-1



CB-SCHEME certification according to IEC 60947-5-1



HOW IS IT MADE?

01 A variety of actuators

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

02 Wide range of heads

- Assembled using 2 x Ø3 screws or 2 plug

03 Casing:

- 30 or 35 mm. width

04 Mounting screws

- 2 x M4 screws on top part

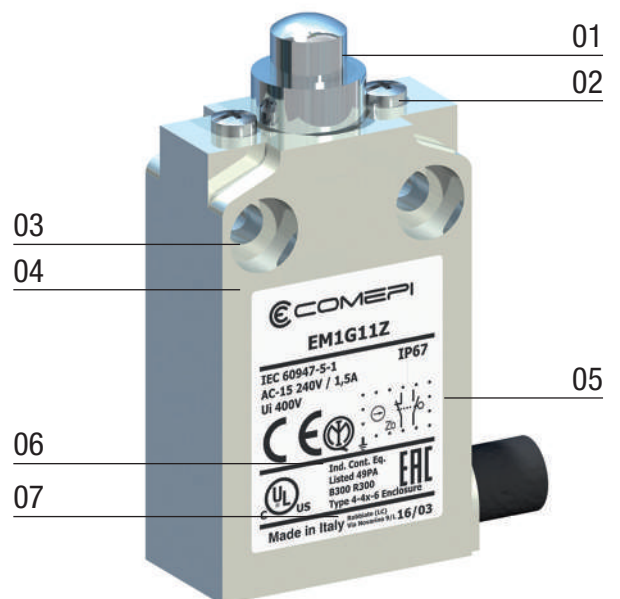
05 Epoxy resin for IP67 protection degree

06 Contact Block

- Positive opening operation
- Snap action or slow action
- Electrically separated contacts

07 Connecting terminals

- Cable: PVC 4 x 0,75 mm²
- Special cables: Halogen Free or Dynamic PUR
- M12 connector
- AMP connector



Limit Switches **EM series**

Description

APPLICATIONS

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (up to 10 A conventional thermal current).
- Electrically separated contacts.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

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

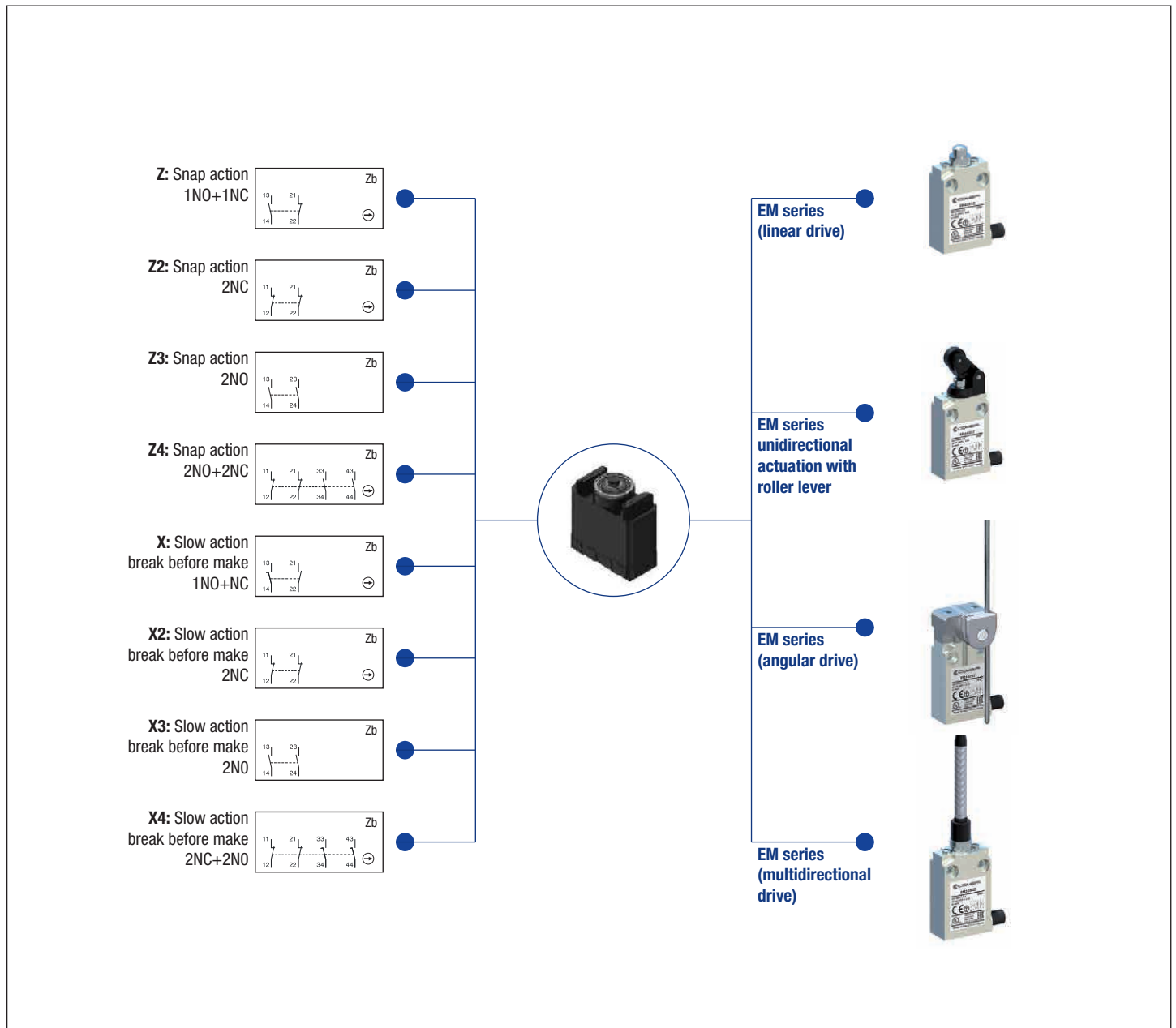
DESCRIPTION

These limit switches, made zinc alloy (Zamak), sealed with epoxy resin at the base on the box, offer a degree of protection IP67.

The casing come in 2 dimensions: – EM1... 30 mm. width – EM2... 35 mm. width

They comply with the requirements of European Directives (Low Voltage and RoHS) and are conform to European and International Standards.

The CE declaration of these products are available in the download section of website www.comepi.it or by writing to the following email address: tecnico@comepi.it
DDC02 - Limit Switches.



Limit Switches **EM series**

Technical Data

| | EM Series | |
|---|--|---------------|
| Standards | IEC 60947-5-1 EN 60947-5-1 | |
| Air temperature near the device | | |
| – during operation | °C | – 25 ... + 70 |
| – for storage | °C | – 40 ... + 70 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class I | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 67 - IP 69K | |
| Degree of protection (according to UL50) | Type 4 - 4X - 6 enclosure ("outdoor use - raintight - watertight - corrosion resistant") | |
| Switching frequency | Cycles/h | 3600 |
| Mechanical durability | 10 millions of operations | |

Electrical data - Electrical connections

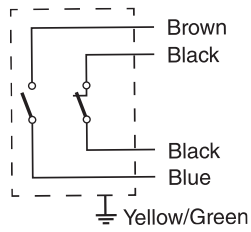
| Code | EM_U | EM_UP | EM_HF | EM_LW | EM_M | EM_A |
|---|--|---|---|--|---------------------------|------------------------|
| Cable type | 5xAWG18 0,75mm ² PVC Style 2517 | 5xAWG18 dynamic 0,75mm ² PVC Style 20668 | 5xAWG18 dynamic 0,75mm ² PVC Style 20668 | 5xAWG18 0,75mm ² Silicone cable | – | – |
| Min. bend radius | 57mm | 57mm | 57mm | 57mm | – | – |
| Rated insulation voltage U _i | 400V | 300V | 300V | 300V | 250V | 250V |
| Pollution degree | 3 | 3 | 3 | 3 | 3 | 3 |
| Rated impulse withstand voltage U _{imp} | 4kV | 4kV | 4kV | 4kV | 2.5kV | 2.5kV |
| Conventional free air thermal current I _{th} | 10A | 10A | 10A | 10A | 4A | 4A |
| Short circuit current I _{cc} | 1kA | 1kA | 1kA | 1kA | 1kA | 1kA |
| Short-circuit protection | 10A 500V type gG | 10A 500V type gG | 10A 500V type gG | 4A 500V type gG | 4A 500V type gG | 4A 500V type gG |
| AC15 | 24V 120V 240V | 10A 6A 3A | 10A 6A 3A | 10A 6A 3A | 4A 4A 3A | 4A 4A 3A |
| DC13 | 24V 125V 250V | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A | 2.8A 0.55A 0.27A |
| Approvals | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA | IMQ cULus EAC CCC UKCA | EAC UKCA |

| Code | X2/X3 | X4 | Z2/Z3 | Z4 |
|---|--|---|--|---|
| Connection type | 5xAWG18 0,75mm ² PVC Style 2517 | 9xAWG22 0,5mm ² PVC Style 2517 | 5xAWG18 0,75mm ² PVC Style 2517 | 9xAWG22 0,5mm ² PVC Style 2517 |
| Min. bend radius | 49mm | 49mm | 49mm | 49mm |
| Rated insulation voltage U _i | 250V | 250V | 250V | 250V |
| Pollution degree | 3 | 3 | 3 | 3 |
| Rated impulse withstand voltage U _{imp} | 2.5kV | 2.5kV | 2.5kV | 2.5kV |
| Conventional free air thermal current I _{th} | 4A | 4A | 4A | 4A |
| Short-circuit protection | 4A 500V type gG | 4A 500V type gG | 4A 500V type gG | 4A 500V Type gG |
| AC15 | 24V 240V | 4A 3A | 4A 3A | 4A 3A |
| DC13 | 24V 250V | 2A 0.4A | 2A 0.4A | 2A / |
| Approvals | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA | cULus EAC CCC UKCA |

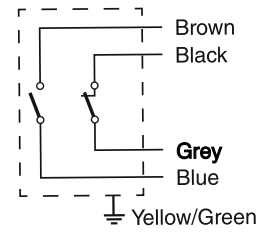
Limit Switches **EM series**

Wiring Diagram

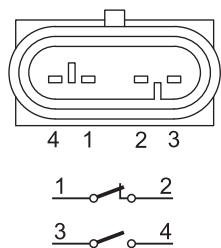
Serie EM_U / EM_UP / EM_HF



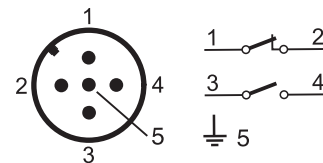
Serie EM_LW



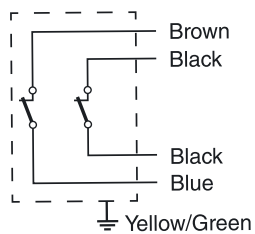
Serie EM_A



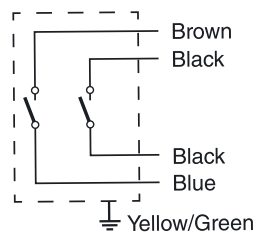
Serie EM_M



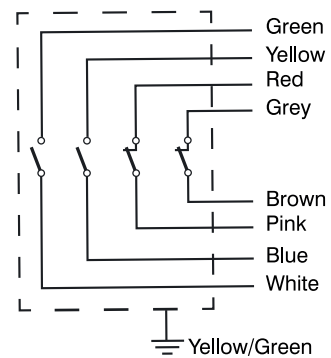
Serie EM_X2 / Z2



Serie EM_X3 / Z3

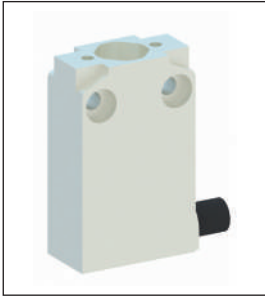


Serie EM_X4 / Z4



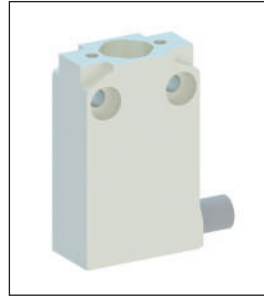
Limit Switches **EM series**

Technical Data



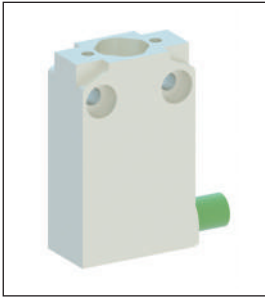
Standard PVC UL cable

All models can be supplied with a standard PVC UL cable.
To order, keep the suffix "U" of the standard
Example: EM1G11ZU



Dynamic PUR cable

greater flexibility characterize these models compared to the UL standard, while maintaining the same features and the same electrical ratings. Moreover, the external sheath, polyurethane made, guarantees more resistance in stern working environments.
To order add the digit "P" at the end of the UL standard part number.
Example: EM1G11ZU ➔ EM1G11ZUP



Halogen free PUR cable

The absence of halogens guarantees less fumes and toxic gases released in case of fire. Moreover, the external sheath, polyurethane made, guarantees more resistance in stern working environments.
To order add the digit "HF" at the end of the part number.
Example: EM1G11ZHF



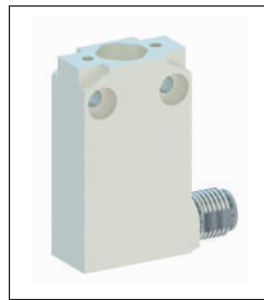
Silicone Cable

Designed to remain flexible even at low temperatures (-40°).
All the models can be supplied with silicone cable.
To order replace the "U" suffix of the standard UL version with suffix "LW".
Example: EM1G11ZU ➔ EM1G11ZLW



AMP connector

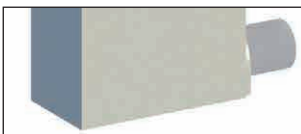
All the models can be supplied with AMP connector.
To order replace the "U" suffix of the standard UL version with suffix "A".
Example: EM1G11ZU ➔ EM1G11ZA



M12 connector

All the models can be supplied with M12 connector.
To order replace the "U" suffix of the standard UL version with suffix "M".
Example: EM1G11ZU ➔ EM1G11ZM

Cable connection orientation



Cable connection orientation

For EM1 Series, standard version is supplied with right electrical connection exit.
Available version with left or central exit: add respectively digit "L" or "C" at the end of the complete part number.
Example: EM1G11ZU ➔ EM1G11ZUL



For EM2 Series, standard version is supplied with central electrical connection exit.
Available version with left or right exit: add respectively digit "L" or "R" at the end of the complete part number.
Example: EM2G11ZU ➔ EM2G11ZUR

Limit Switches EM series

Technical Data

Technical data approved by IMQ

| Standards | | Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards |
|--|------------------|--|
| Degree of protection | | IP 67 - IP 69K |
| Rated insulation voltage U_i | | 400 V (degree of pollution 3) (250V for M12 connector) |
| Rated impulse withstand voltage U_{imp} | | 4 kV (2.5 kV for M12 connector) |
| Conventional free air thermal current I_{th} | | 10 A (4A for M12 connector) |
| Short-circuit protection - gG (gI) type fuses | | 10 A (4A for M12 connector) |
| Rated operational current | | |
| I_e / AC-15 | 24 V - 50/60 Hz | 10 A (except M12 connector) |
| | 400 V - 50/60 Hz | 3 A (except M12 connector) |
| I_e / DC-13 | 24 V - d.c. | 2.8 A |
| | 250 V - d.c. | 0.27 A |

Technical data approved by UL

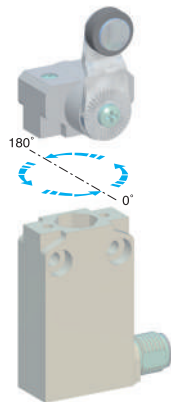
| Standards | | Devices conform with UL 508 |
|--------------------------------|--|-----------------------------|
| Degree of protection: | | |
| EP Series | Type 1 enclosure ("indoor use only") | |
| Serie Metallo EM | Type 4 - 4X - 6 enclosure ("outdoor use raintight - watertight - corrosion resistant") | |
| Utilization categories: | | |
| Cable versions | B300 - R300 (C300-R300) | |
| M12 connector versions | Class-2 | |

For the complete list of approved products, contact our technical department

IMPLEMENTATION

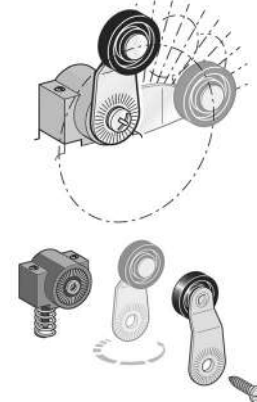
Head orientation (G41... G45)

The head can be rotated every 90°. Recommended tightening torque 0.5 Nm (max 0.8 Nm).

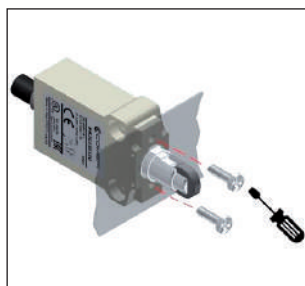


Lever adjustment

The lever of the angular actuators can be adjusted every 10° and round turned in order to obtain the maximum flexibility on the working plan. Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Special Versions



Head installation

Two different solutions are available to fix the head to the body of the switch. The standard solution is made by means of two Ø3 screws. On some models it is possible to order the switch with head fixation by means of two pins. This solution will allow a greater resistance to vibrations when needed and it makes it possible for the end user to install the limit switch directly on a panel as shown in the picture on the side..



Installation of the head every 15°

It is also possible to order a new version of the limit switch where the actuating head it can be rotated every 15°.

For further information please contact our technical office.

Limit Switches **EM1G series**

Pre-wired - Metal Casing IP67 - 30 mm. width

Electrical connection:

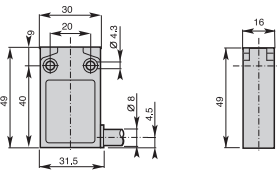
Pre-Wired

Cable: PVC 5 x 0,75 mm²

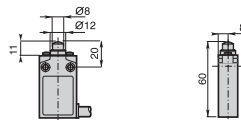
Length: 1 m.

Pre-wired

See page 92 for all the available connection variants



G11 - Plain plunger

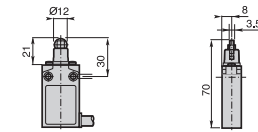


Min. actuating force
Weight

15N (30N ⇄)
175 g

G1 - Roller plunger

G12: metal roller G13: nylon roller

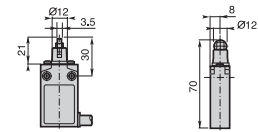


Min. actuating force
Weight

10N (30N ⇄)
180 g

G1 - Cross roller plunger

G14: metal roller G15: nylon roller



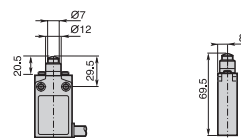
Min. actuating force
Weight

10N (30N ⇄)
180 g

Contact Blocks

| | | | | | | |
|----|--|-----------|-----------|-----------|-----------|-----------|
| Z | Snap action contacts (1NO + 1NC) | EM1G11ZU | EM1G12ZU | EM1G13ZU | EM1G14ZU | EM1G15ZU |
| Z2 | Snap action contacts (2NC) | EM1G11Z2U | EM1G12Z2U | EM1G13Z2U | EM1G14Z2U | EM1G15Z2U |
| Z3 | Snap action contacts (2NO) | EM1G11Z3U | EM1G12Z3U | EM1G13Z3U | EM1G14Z3U | EM1G15Z3U |
| Z4 | Snap action contacts (2NC + 2NO) | EM1G11Z4U | EM1G12Z4U | EM1G13Z4U | EM1G14Z4U | EM1G15Z4U |
| X | Non overlapping slow action contacts (1NO + 1NC) | EM1G11XU | EM1G12XU | EM1G13XU | EM1G14XU | EM1G15XU |
| X2 | Slow action contacts (2NC) | EM1G11X2U | EM1G12X2U | EM1G13X2U | EM1G14X2U | EM1G15X2U |
| X3 | Slow action contacts (2NO) | EM1G11X3U | EM1G12X3U | EM1G13X3U | EM1G14X3U | EM1G15X3U |
| X4 | Non overlapping slow action contacts (2NO + 2NC) | EM1G11X4U | EM1G12X4U | EM1G13X4U | EM1G14X4U | EM1G15X4U |

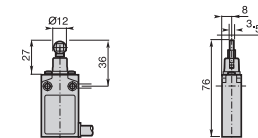
G16 - Plain plunger with dust protection cup



Min. actuating force
Weight

15N (30N ⇄)
180 g

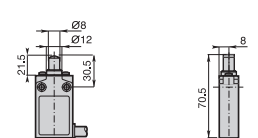
G17 - Metal roller plunger with dust protection cup



Min. actuating force
Weight

10N (30N ⇄)
190 g

G18 - Bevel plunger



Min. actuating force
Weight

10N (30N ⇄)
185 g

Contact Blocks

| | | | | |
|----|--|-----------|-----------|-----------|
| Z | Snap action contacts (1NO + 1NC) | EM1G16ZU | EM1G17ZU | EM1G18ZU |
| Z2 | Snap action contacts (2NC) | EM1G16Z2U | EM1G17Z2U | EM1G18Z2U |
| Z3 | Snap action contacts (2NO) | EM1G16Z3U | EM1G17Z3U | EM1G18Z3U |
| Z4 | Snap action contacts (2NC + 2NO) | EM1G16Z4U | EM1G17Z4U | EM1G18Z4U |
| X | Non overlapping slow action contacts (1NO + 1NC) | EM1G16XU | EM1G17XU | EM1G18XU |
| X2 | Slow action contacts (2NC) | EM1G16X2U | EM1G17X2U | EM1G18X2U |
| X3 | Slow action contacts (2NO) | EM1G16X3U | EM1G17X3U | EM1G18X3U |
| X4 | Non overlapping slow action contacts (2NO + 2NC) | EM1G16X4U | EM1G17X4U | EM1G18X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM1G series**

Pre-wired - Metal Casing IP67 - 30 mm. width

Electrical connection:

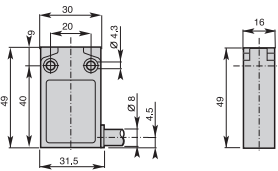
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

Pre-wired

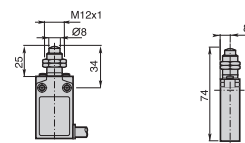
See page 92 for all the available connection variants



Contact Blocks

| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G21ZU | EM1G22ZU | EM1G23ZU | EM1G24ZU | EM1G25ZU |
| Z2 Snap action contacts (2NC) | EM1G21Z2U | EM1G22Z2U | EM1G23Z2U | EM1G24Z2U | EM1G25Z2U |
| Z3 Snap action contacts (2NO) | EM1G21Z3U | EM1G22Z3U | EM1G23Z3U | EM1G24Z3U | EM1G25Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G21Z4U | EM1G22Z4U | EM1G23Z4U | EM1G24Z4U | EM1G25Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM1G21XU | EM1G22XU | EM1G23XU | EM1G24XU | EM1G25XU |
| X2 Slow action contacts (2NC) | EM1G21X2U | EM1G22X2U | EM1G23X2U | EM1G24X2U | EM1G25X2U |
| X3 Slow action contacts (2NO) | EM1G21X3U | EM1G22X3U | EM1G23X3U | EM1G24X3U | EM1G25X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM1G21X4U | EM1G22X4U | EM1G23X4U | EM1G24X4U | EM1G25X4U |

G21 - Plain plunger with fixing nuts

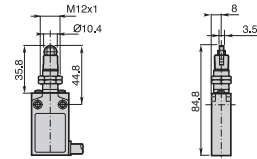


Min. actuating force
Weight

10N (30N ⊖)
190 g

G2• - Roller plunger with fixing nuts

G22: metal roller G23: nylon roller

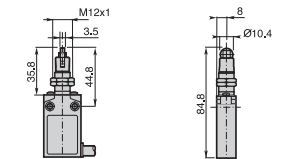


Min. actuating force
Weight

10N (30N ⊖)
195 g

G2• - Cross roller plunger with fixing nuts

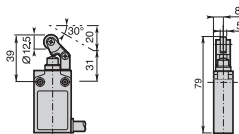
G24: metal roller G25: nylon roller



Min. actuating force
Weight

10N (30N ⊖)
195 g

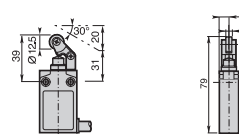
G31 - Nylon roller lever



Min. actuating force
Weight

7N (24N ⊖)
180 g

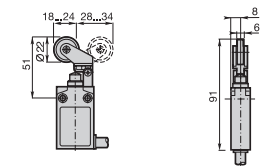
G32 - Nylon roller lever



Min. actuating force
Weight

7N (24N ⊖)
180 g

G38 - Adjustable nylon roller lever



Min. actuating force
Weight

7N (24N ⊖)
185 g

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G31ZU | EM1G32ZU | EM1G38ZU |
| Z2 Snap action contacts (2NC) | EM1G31Z2U | EM1G32Z2U | EM1G38Z2U |
| Z3 Snap action contacts (2NO) | EM1G31Z3U | EM1G32Z3U | EM1G38Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G31Z4U | EM1G32Z4U | EM1G38Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM1G31XU | EM1G32XU | EM1G38XU |
| X2 Slow action contacts (2NC) | EM1G31X2U | EM1G32X2U | EM1G38X2U |
| X3 Slow action contacts (2NO) | EM1G31X3U | EM1G32X3U | EM1G38X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM1G31X4U | EM1G32X4U | EM1G38X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM1G series**

Pre-wired - Metal Casing IP67 - 30 mm. width

Electrical connection:

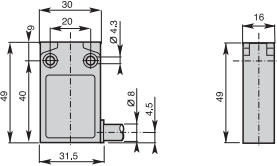
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

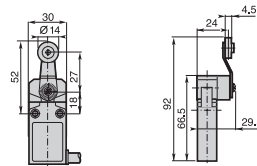
Pre-wired

See page 92 for all the available connection variants



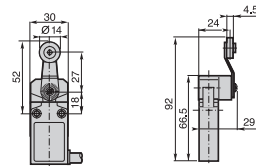
G4• - Ø14 Roller lever

G41: nylon roller G42: metal roller



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **225 g**

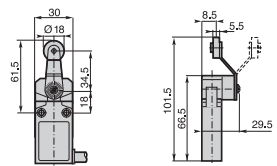
G43 - Ø14 Roller lever with ball bearing



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **225 g**

G4• - Ø18 Roller lever

G45: nylon roller G46: metal roller



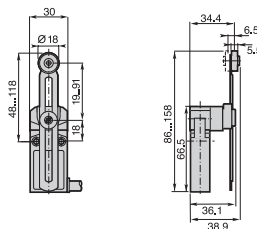
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **230 g**

Contact Blocks

| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G41ZU | EM1G42ZU | EM1G43ZU | EM1G45ZU | EM1G46ZU |
| Z2 Snap action contacts (2NC) | EM1G41Z2U | EM1G42Z2U | EM1G43Z2U | EM1G45Z2U | EM1G46Z2U |
| Z3 Snap action contacts (2NO) | EM1G41Z3U | EM1G42Z3U | EM1G43Z3U | EM1G45Z3U | EM1G46Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G41Z4U | EM1G42Z4U | EM1G43Z4U | EM1G45Z4U | EM1G46Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM1G41XU | EM1G42XU | EM1G43XU | EM1G45XU | EM1G46XU |
| X2 Slow action contacts (2NC) | EM1G41X2U | EM1G42X2U | EM1G43X2U | EM1G45X2U | EM1G46X2U |
| X3 Slow action contacts (2NO) | EM1G41X3U | EM1G42X3U | EM1G43X3U | EM1G45X3U | EM1G46X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM1G41X4U | EM1G42X4U | EM1G43X4U | EM1G45X4U | EM1G46X4U |

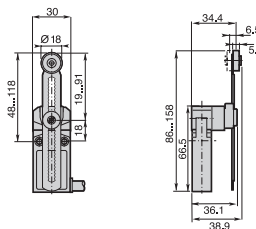
G5• - Adjustable lever with Ø18 roller

G51: nylon roller G53: metal roller



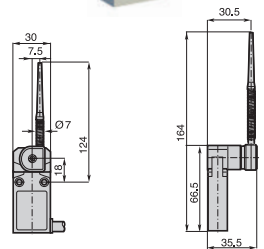
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **240 g**

G5100 - Adjustable toothed lever (step 2 mm) with Ø18 nylon roller



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **240 g**

G61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,08Nm**
Weight **240 g**

Contact Blocks

| | | | | |
|--|-----------|-----------|-------------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G51ZU | EM1G52ZU | EM1G5100ZU | EM1G61ZU |
| Z2 Snap action contacts (2NC) | EM1G51Z2U | EM1G52Z2U | EM1G5100Z2U | EM1G61Z2U |
| Z3 Snap action contacts (2NO) | EM1G51Z3U | EM1G52Z3U | EM1G5100Z3U | EM1G61Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G51Z4U | EM1G52Z4U | EM1G5100Z4U | EM1G61Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM1G51XU | EM1G52XU | EM1G5100XU | EM1G61XU |
| X2 Slow action contacts (2NC) | EM1G51X2U | EM1G52X2U | EM1G5100X2U | EM1G61X2U |
| X3 Slow action contacts (2NO) | EM1G51X3U | EM1G52X3U | EM1G5100X3U | EM1G61X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM1G51X4U | EM1G52X4U | EM1G5100X4U | EM1G61X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM1G series**

Pre-wired - Metal Casing IP67 - 30 mm. width

Electrical connection:

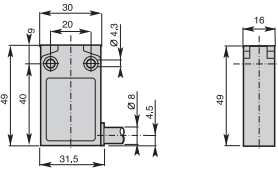
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

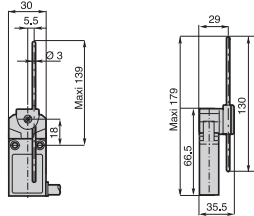
Pre-wired

See page 92 for all the available connection variants



G7• - Adjustable Ø3 rod lever

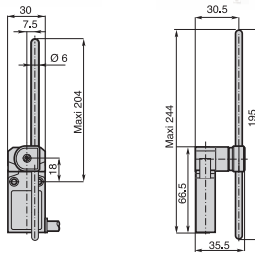
G71: stainless steel rod G72: fiberglass rod



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **235 g**

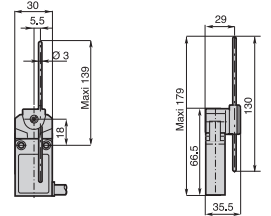
G7• - Adjustable Ø6 rod lever

G73: nylon rod G74: fiberglass rod



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **250 g**

G75 - Adjustable 3x3 square steel rod lever

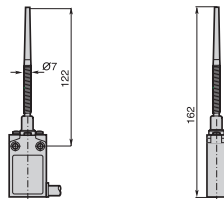


Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **235 g**

Contact Blocks

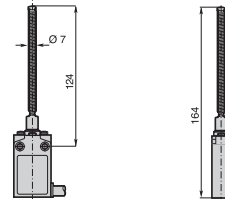
| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G71ZU | EM1G72ZU | EM1G73ZU | EM1G74ZU | EM1G75ZU |
| Z2 Snap action contacts (2NC) | EM1G71Z2U | EM1G72Z2U | EM1G73Z2U | EM1G74Z2U | EM1G75Z2U |
| Z3 Snap action contacts (2NO) | EM1G71Z3U | EM1G72Z3U | EM1G73Z3U | EM1G74Z3U | EM1G75Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G71Z4U | EM1G72Z4U | EM1G73Z4U | EM1G74Z4U | EM1G75Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM1G71XU | EM1G72XU | EM1G73XU | EM1G74XU | EM1G75XU |
| X2 Slow action contacts (2NC) | EM1G71X2U | EM1G72X2U | EM1G73X2U | EM1G74X2U | EM1G75X2U |
| X3 Slow action contacts (2NO) | EM1G71X3U | EM1G72X3U | EM1G73X3U | EM1G74X3U | EM1G75X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM1G71X4U | EM1G72X4U | EM1G73X4U | EM1G74X4U | EM1G75X4U |

G92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **245 g**

G93 - Multidirectional actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **250 g**

Contact Blocks

| | | |
|--|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM1G92ZU | EM1G93ZU |
| Z2 Snap action contacts (2NC) | EM1G92Z2U | EM1G93Z2U |
| Z3 Snap action contacts (2NO) | EM1G92Z3U | EM1G93Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM1G92Z4U | EM1G93Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | | |
| X2 Slow action contacts (2NC) | | |
| X3 Slow action contacts (2NO) | | |
| X4 Non overlapping slow action contacts (2NO + 2NC) | | |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM2G series**

Pre-wired - Metal Casing IP67 - 35 mm. width

Electrical connection:

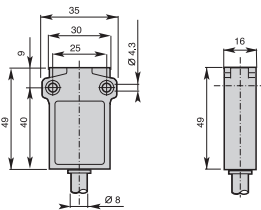
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

Pre-wired

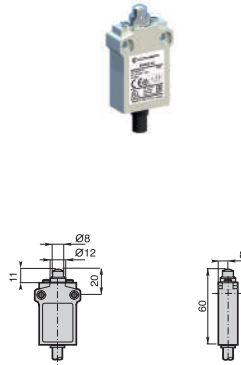
See page 92 for all the available connection variants



Contact Blocks

| | G11 - Plain plunger | G1 - Roller plunger | | G1 - Cross roller plunger | |
|--|----------------------------|----------------------------|-------------------|----------------------------------|-------------------|
| | | G12: metal roller | G13: nylon roller | G14: metal roller | G15: nylon roller |
| Z Snap action contacts (1NO + 1NC) | EM2G11ZU | EM2G12ZU | EM2G13ZU | EM2G14ZU | EM2G15ZU |
| Z2 Snap action contacts (2NC) | EM2G11Z2U | EM2G12Z2U | EM2G13Z2U | EM2G14Z2U | EM2G15Z2U |
| Z3 Snap action contacts (2NO) | EM2G11Z3U | EM2G12Z3U | EM2G13Z3U | EM2G14Z3U | EM2G15Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G11Z4U | EM2G12Z4U | EM2G13Z4U | EM2G14Z4U | EM2G15Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G11XU | EM2G12XU | EM2G13XU | EM2G14XU | EM2G15XU |
| X2 Slow action contacts (2NC) | EM2G11X2U | EM2G12X2U | EM2G13X2U | EM2G14X2U | EM2G15X2U |
| X3 Slow action contacts (2NO) | EM2G11X3U | EM2G12X3U | EM2G13X3U | EM2G14X3U | EM2G15X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G11X4U | EM2G12X4U | EM2G13X4U | EM2G14X4U | EM2G15X4U |

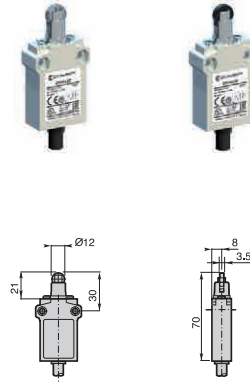
G11 - Plain plunger



Min. actuating force
Weight **15N (30N ⇄)**
180 g

G1 - Roller plunger

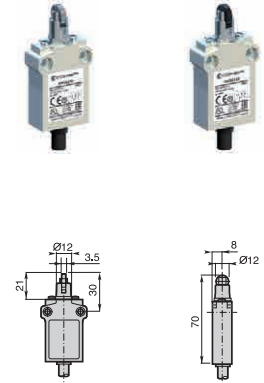
G12: metal roller G13: nylon roller



Min. actuating force
Weight **10N (30N ⇄)**
185 g

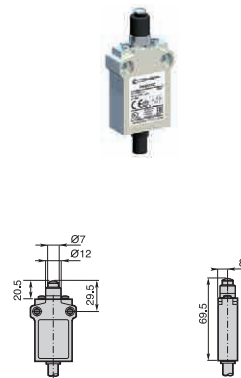
G1 - Cross roller plunger

G14: metal roller G15: nylon roller



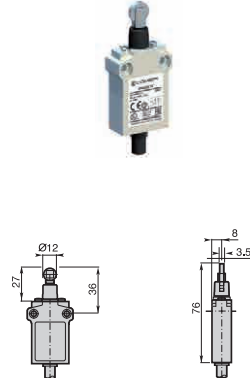
Min. actuating force
Weight **10N (30N ⇄)**
185 g

G16 - Plain plunger with dust protection cup



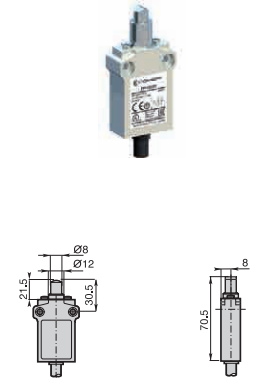
Min. actuating force
Weight **15N (30N ⇄)**
185 g

G17 - Metal roller plunger with dust protection cup



Min. actuating force
Weight **10N (30N ⇄)**
195 g

G18 - Bevel plunger



Min. actuating force
Weight **10N (30N ⇄)**
190 g

Contact Blocks

| | G16 - Plain plunger with dust protection cup | G17 - Metal roller plunger with dust protection cup | G18 - Bevel plunger |
|--|---|--|----------------------------|
| Z Snap action contacts (1NO + 1NC) | EM2G16ZU | EM2G17ZU | EM2G18ZU |
| Z2 Snap action contacts (2NC) | EM2G16Z2U | EM2G17Z2U | EM2G18Z2U |
| Z3 Snap action contacts (2NO) | EM2G16Z3U | EM2G17Z3U | EM2G18Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G16Z4U | EM2G17Z4U | EM2G18Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G16XU | EM2G17XU | EM2G18XU |
| X2 Slow action contacts (2NC) | EM2G16X2U | EM2G17X2U | EM2G18X2U |
| X3 Slow action contacts (2NO) | EM2G16X3U | EM2G17X3U | EM2G18X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G16X4U | EM2G17X4U | EM2G18X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM2G series**

Pre-wired - Metal Casing IP67 - 35 mm. width

Electrical connection:

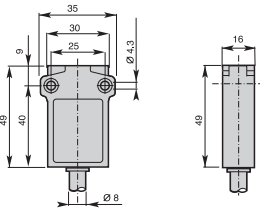
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

Pre-wired

See page 92 for all the available connection variants



Contact Blocks

| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G21ZU | EM2G22ZU | EM2G23ZU | EM2G24ZU | EM2G25ZU |
| Z2 Snap action contacts (2NC) | EM2G21Z2U | EM2G22Z2U | EM2G23Z2U | EM2G24Z2U | EM2G25Z2U |
| Z3 Snap action contacts (2NO) | EM2G21Z3U | EM2G22Z3U | EM2G23Z3U | EM2G24Z3U | EM2G25Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G21Z4U | EM2G22Z4U | EM2G23Z4U | EM2G24Z4U | EM2G25Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G21XU | EM2G22XU | EM2G23XU | EM2G24XU | EM2G25XU |
| X2 Slow action contacts (2NC) | EM2G21X2U | EM2G22X2U | EM2G23X2U | EM2G24X2U | EM2G25X2U |
| X3 Slow action contacts (2NO) | EM2G21X3U | EM2G22X3U | EM2G23X3U | EM2G24X3U | EM2G25X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G21X4U | EM2G22X4U | EM2G23X4U | EM2G24X4U | EM2G25X4U |

G21 - Roller plunger with fixing nuts

Min. actuating force 10N (30N ⊖)
Weight 195 g

G2• - Roller plunger with fixing nuts

G22: metal roller G23: nylon roller

Min. actuating force 10N (30N ⊖)
Weight 200 g

G2• - Cross roller plunger with fixing nuts

G24: metal roller G25: nylon roller

Min. actuating force 10N (30N ⊖)
Weight 200 g

G31 - Nylon roller lever

Min. actuating force 7N (24N ⊖)
Weight 185 g

G32 - Nylon roller lever

Min. actuating force 7N (24N ⊖)
Weight 185 g

G38 - Adjustable nylon roller lever

Min. actuating force 7N (24N ⊖)
Weight 190 g

Contact Blocks

| | | | |
|--|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G31ZU | EM2G32ZU | EM2G38ZU |
| Z2 Snap action contacts (2NC) | EM2G31Z2U | EM2G32Z2U | EM2G38Z2U |
| Z3 Snap action contacts (2NO) | EM2G31Z3U | EM2G32Z3U | EM2G38Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G31Z4U | EM2G32Z4U | EM2G38Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G31XU | EM2G32XU | EM2G38XU |
| X2 Slow action contacts (2NC) | EM2G31X2U | EM2G32X2U | EM2G38X2U |
| X3 Slow action contacts (2NO) | EM2G31X3U | EM2G32X3U | EM2G38X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G31X4U | EM2G32X4U | EM2G38X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM2G series**

Pre-wired - Metal Casing IP67 - 35 mm. width

Electrical connection:

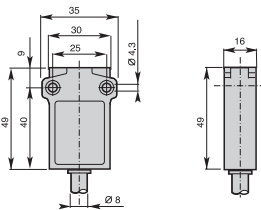
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

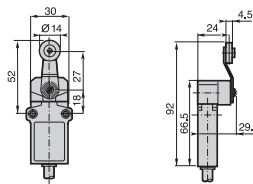
Pre-wired

See page 92 for all the available connection variants



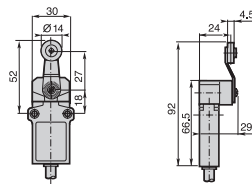
G4• - Ø14 roller lever

G41: nylon roller G42: metal roller



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **230 g**

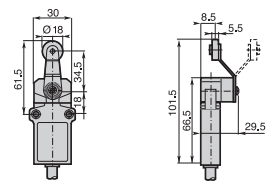
G43 - Ø14 roller lever with ball bearing



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **230 g**

G4• - Ø18 metal lever

G45: nylon roller G46: nylon roller



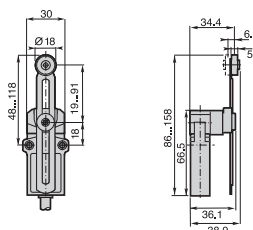
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **235 g**

Contact Blocks

| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G41ZU | EM2G42ZU | EM2G43ZU | EM2G45ZU | EM2G46ZU |
| Z2 Snap action contacts (2NC) | EM2G41Z2U | EM2G42Z2U | EM2G43Z2U | EM2G45Z2U | EM2G46Z2U |
| Z3 Snap action contacts (2NO) | EM2G41Z3U | EM2G42Z3U | EM2G43Z3U | EM2G45Z3U | EM2G46Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G41Z4U | EM2G42Z4U | EM2G43Z4U | EM2G45Z4U | EM2G46Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G41XU | EM2G42XU | EM2G43XU | EM2G45XU | EM2G46XU |
| X2 Slow action contacts (2NC) | EM2G41X2U | EM2G42X2U | EM2G43X2U | EM2G45X2U | EM2G46X2U |
| X3 Slow action contacts (2NO) | EM2G41X3U | EM2G42X3U | EM2G43X3U | EM2G45X3U | EM2G46X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G41X4U | EM2G42X4U | EM2G43X4U | EM2G45X4U | EM2G46X4U |

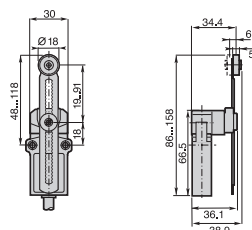
G5• - Adjustable lever with Ø18 roller

G51: nylon roller G53: metal roller



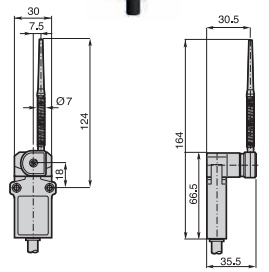
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **245 g**

G5100 - Adjustable toothed lever (stem 2 mm) with Ø18 nylon roller



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **245 g**

G61 - Nylon actuator with stainless steel spring



Min. actuating torque **0,08Nm**
Weight **245 g**

Contact Blocks

| | | | | |
|--|-----------|-----------|-------------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G51ZU | EM2G53ZU | EM2G5100ZU | EM2G61ZU |
| Z2 Snap action contacts (2NC) | EM2G51Z2U | EM2G53Z2U | EM2G5100Z2U | EM2G61Z2U |
| Z3 Snap action contacts (2NO) | EM2G51Z3U | EM2G53Z3U | EM2G5100Z3U | EM2G61Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G51Z4U | EM2G53Z4U | EM2G5100Z4U | EM2G61Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G51XU | EM2G53XU | EM2G5100XU | EM2G61XU |
| X2 Slow action contacts (2NC) | EM2G51X2U | EM2G53X2U | EM2G5100X2U | EM2G61X2U |
| X3 Slow action contacts (2NO) | EM2G51X3U | EM2G53X3U | EM2G5100X3U | EM2G61X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G51X4U | EM2G53X4U | EM2G5100X4U | EM2G61X4U |

Operation diagrams: page 127 - All dimensions are in mm

Limit Switches **EM2G series**

Pre-wired - Metal Casing IP67 - 35 mm. width

Electrical connection:

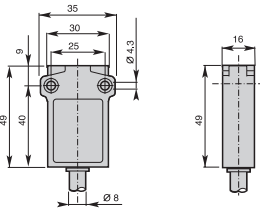
Pre-Wired

Cable: PVC 5 x 0,75 mm²

Length: 1 m.

Pre-wired

See page 92 for all the available connection variants

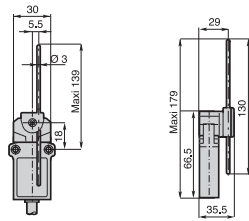


Contact Blocks

| | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G71ZU | EM2G72ZU | EM2G73ZU | EM2G74ZU | EM2G75ZU |
| Z2 Snap action contacts (2NC) | EM2G71Z2U | EM2G72Z2U | EM2G73Z2U | EM2G74Z2U | EM2G75Z2U |
| Z3 Snap action contacts (2NO) | EM2G71Z3U | EM2G72Z3U | EM2G73Z3U | EM2G74Z3U | EM2G75Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G71Z4U | EM2G72Z4U | EM2G73Z4U | EM2G74Z4U | EM2G75Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | EM2G71XU | EM2G72XU | EM2G73XU | EM2G74XU | EM2G75XU |
| X2 Slow action contacts (2NC) | EM2G71X2U | EM2G72X2U | EM2G73X2U | EM2G74X2U | EM2G75X2U |
| X3 Slow action contacts (2NO) | EM2G71X3U | EM2G72X3U | EM2G73X3U | EM2G74X3U | EM2G75X3U |
| X4 Non overlapping slow action contacts (2NO + 2NC) | EM2G71X4U | EM2G72X4U | EM2G73X4U | EM2G74X4U | EM2G75X4U |

G7• - Adjustable Ø3 rod lever

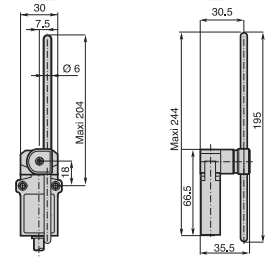
G71: Stainless steel rod G72: fiberglass rod



Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **240 g**

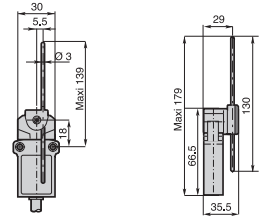
G7• - Adjustable Ø6 rod lever

G73: nylon rod G74: fiberglass rod



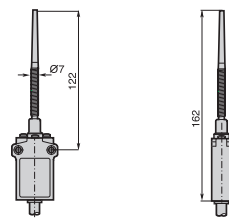
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **255 g**

G75 - Adjustable 3x3 square steel rod lever



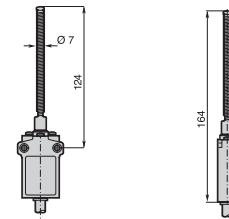
Min. actuating torque **0,08Nm (0,28Nm ⊖)**
Weight **240 g**

G92 - Multidirectional nylon actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **250 g**

G93 - Multidirectional actuator with stainless steel spring



Min. actuating torque **0,10Nm**
Weight **255 g**

Contact Blocks

| | | |
|--|-----------|-----------|
| Z Snap action contacts (1NO + 1NC) | EM2G92ZU | EM2G93ZU |
| Z2 Snap action contacts (2NC) | EM2G92Z2U | EM2G93Z2U |
| Z3 Snap action contacts (2NO) | EM2G92Z3U | EM2G93Z3U |
| Z4 Snap action contacts (2NC + 2NO) | EM2G92Z4U | EM2G93Z4U |
| X Non overlapping slow action contacts (1NO + 1NC) | | |
| X2 Slow action contacts (2NC) | | |
| X3 Slow action contacts (2NO) | | |
| X4 Non overlapping slow action contacts (2NO + 2NC) | | |

Limit Switches **GP series**

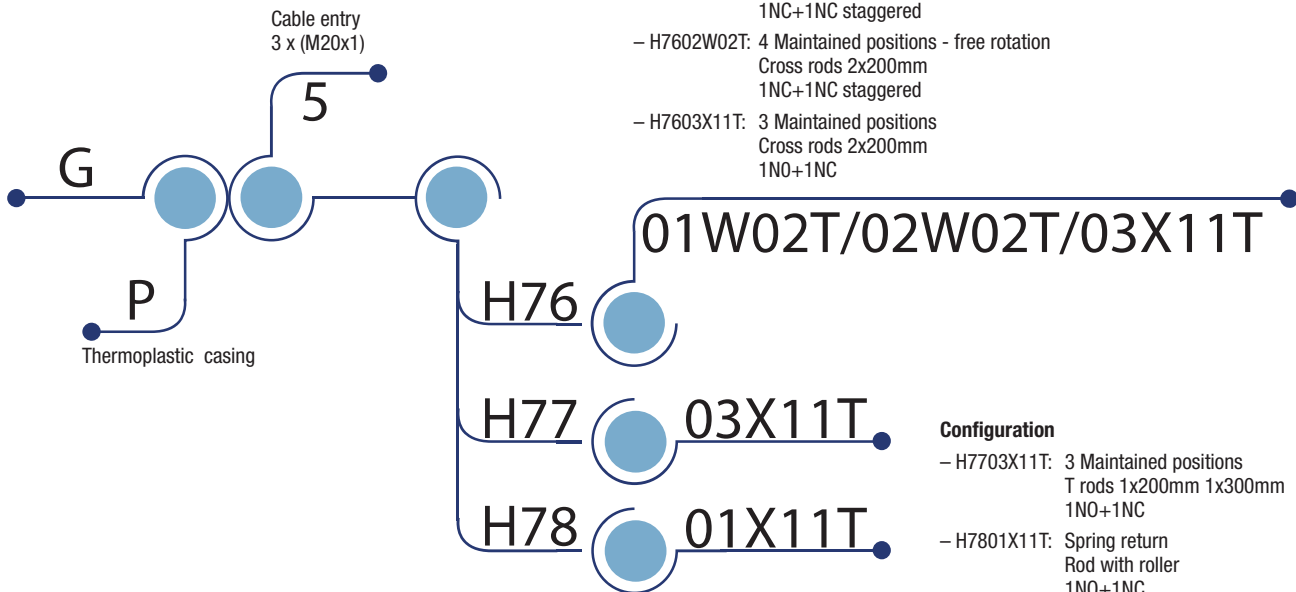
Position limit switches - Description

APPROVALS: UL 508 / CSA C22-2 N. 14



Configuration

- H7601W02T: 4 Maintained positions - stop at 180° in each direction
Cross rods 2x200mm
1NC+1NC staggered
- H7602W02T: 4 Maintained positions - free rotation
Cross rods 2x200mm
1NC+1NC staggered
- H7603X11T: 3 Maintained positions
Cross rods 2x200mm
1NO+1NC



Configuration

- H7703X11T: 3 Maintained positions
T rods 1x200mm 1x300mm
1NO+1NC
- H7801X11T: Spring return
Rod with roller
1NO+1NC



Limit Switches **GP series**

Position limit switches - Description

Simple and functional

- Limit switch with slowdown and stop function in both directions.
- NC contacts with positive opening operation suitable for safety function.

High performance

- Enclosure in thermoplastic material
- Protection degree IP66 - IP67
- Operating temperature from -53°C to +80°C
- Maximum operation speed 3m/s

Description and application

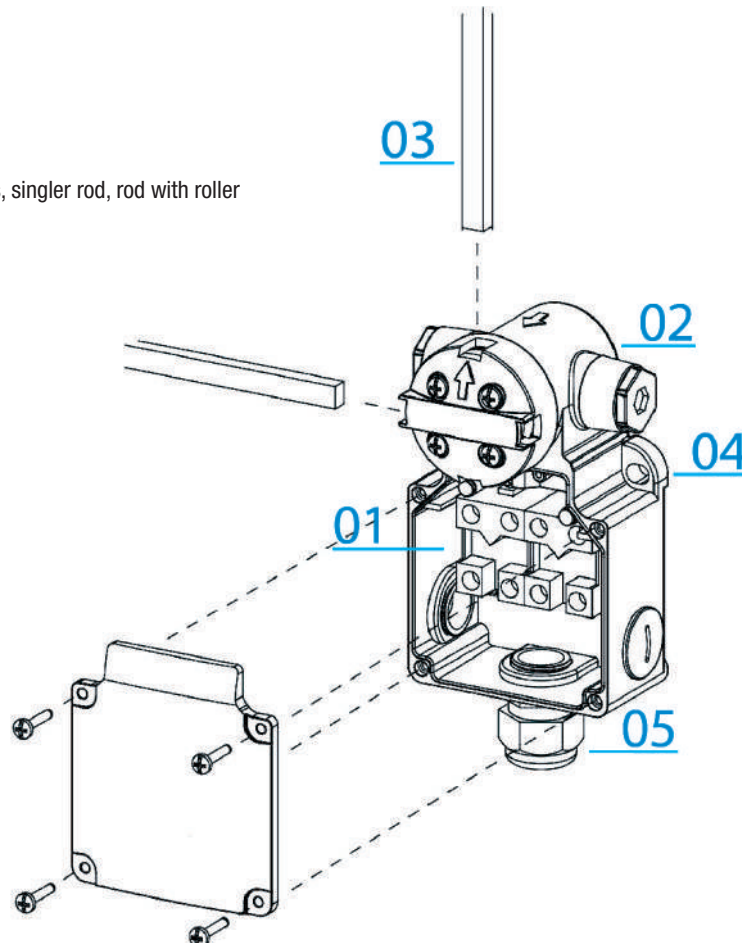
- New position limit switch designed for linear movement control (X and Y axes).
- Sturdy and reliable, GP series, is suitable for use in harsh operating conditions:
 - Bridge cranes and gantry cranes
 - Mobile cranes
 - Hoists
 - Tower cranes
 - Port cranes
 - etc ...

Options

- Cross rods with 4 maintained positions every 90°
- Cross or T rods with 3 maintained position every 90°
- Single rod or rod with roller with 65° movements and spring return
- 2 slow action switches with 1NC+1NC staggered contacts
- 2 slow action switches with 1NO+1NC contacts

How is made?

- 01** Two contact blocks
- 02** Operating head
- 03** Type of actuators: cross rods, singler rod, rod with roller
- 04** Two fixing holes
- 05** 3x cable inlets



Limit Switches **GP series**

Position limit switches - Description

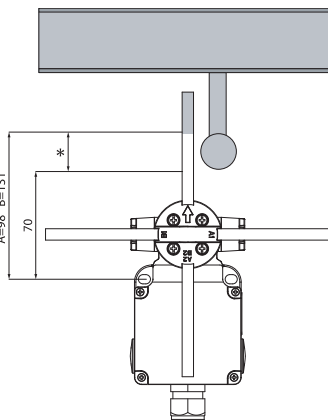
| | GP Series | |
|---|--|---------------|
| Standards | EN 60947-1, EN 60947-5-1 EN 60204-1 | |
| Certifications - Approvals | cULus - UKCA | |
| Air temperature near the device | | |
| – during operation | °C | – 53 ... + 80 |
| – for storage | °C | – 53 ... + 80 |
| Mounting positions | All positions are authorised | |
| Protection against electrical shocks (acc. to IEC 61140) | Class II | |
| Degree of protection (according to IEC 60529 and EN 60529) | IP 67 | |

Electrical Data

| | | | |
|--|---|-------------|---|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14 | | | 500 V (degree of pollution 3) A 600, Q 600 |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | | 6 |
| Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40\text{ °C}$ | A | | 10 |
| Short-circuit protection $U_e < 500\text{ V a.c.}$ - gG (gl) type fuses | A | | 10 |
| Rated operational current I_e / AC-15 (according to IEC 60947-5-1) | 24 V - 50/60 Hz 120 V - 50/60 Hz 400 V - 50/60 Hz | A A A | 10 6 4 |
| I_e / DC-13 (according to IEC 60947-5-1) | 24 V - d.c. 125 V - d.c. 250 V - d.c. | A A A | 6 0.55 0.4 |
| Switching frequency | Cycles/h | | 3600 |
| Load factor | | | 0.5 |
| Resistance between contacts | m Ω | | 25 |
| Connecting terminals | M3.5 (+, -) pozidriv 2 screw with cable clamp | | |
| Terminal for protective conductor | - | | |
| Recommended tightening torque | Plastic | | |
| Cover | 0,5Nm, max 0,8 | | |
| Head | 0,5Nm, max 0,8 | | |
| Microswitch | 0,8Nm, max 0,9 | | |
| Connecting capacity | 1 or 2 x mm ² | | 0.75 ... 2.5 |
| Terminal marking | According to IEC 60947-5-1 | | |
| Mechanical durability | 2x10 ⁶ operations @ 2A / 240 Vac | | |
| Electrical durability (according to IEC 60947-5-1) | Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below) | | |

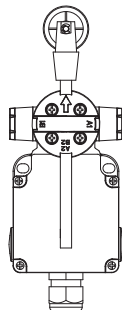
Actuating dimensions

Cross and T rods



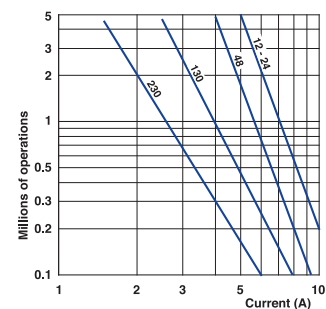
- Maintained positions every 90°
- Average angle for tripping: 48°
- Maximum impact speed: 3 m/s
- A** Rod length: 200 mm
- B** Rod length: 300 mm
- * Actuation area

Rod with roller



- Pre-travel angle for rotation contact operation: 24°
- Maximum rotation angle: 65°
- Maximum impact speed: 3 m/s

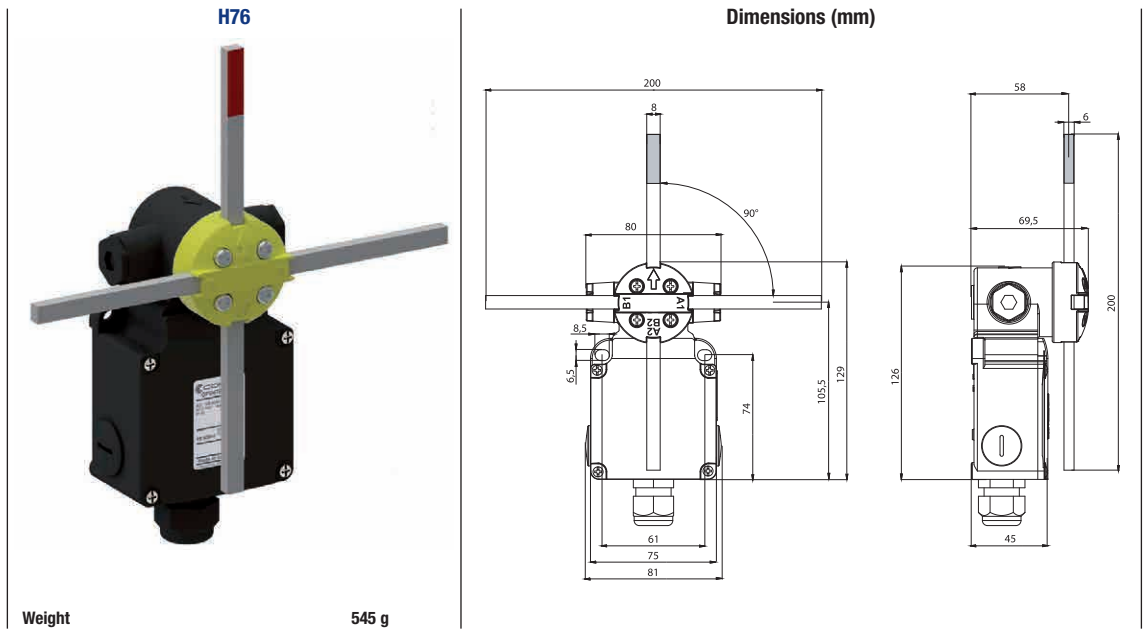
AC-15 - Slow action



| DC-13 | Slow action | |
|---------|---|------|
| | Power breaking for a durability of 5 million operating cycles | |
| Voltage | 24 V | 12 W |
| Voltage | 48 V | 9 W |
| Voltage | 110 V | 6 W |

Limit Switches **GP series**

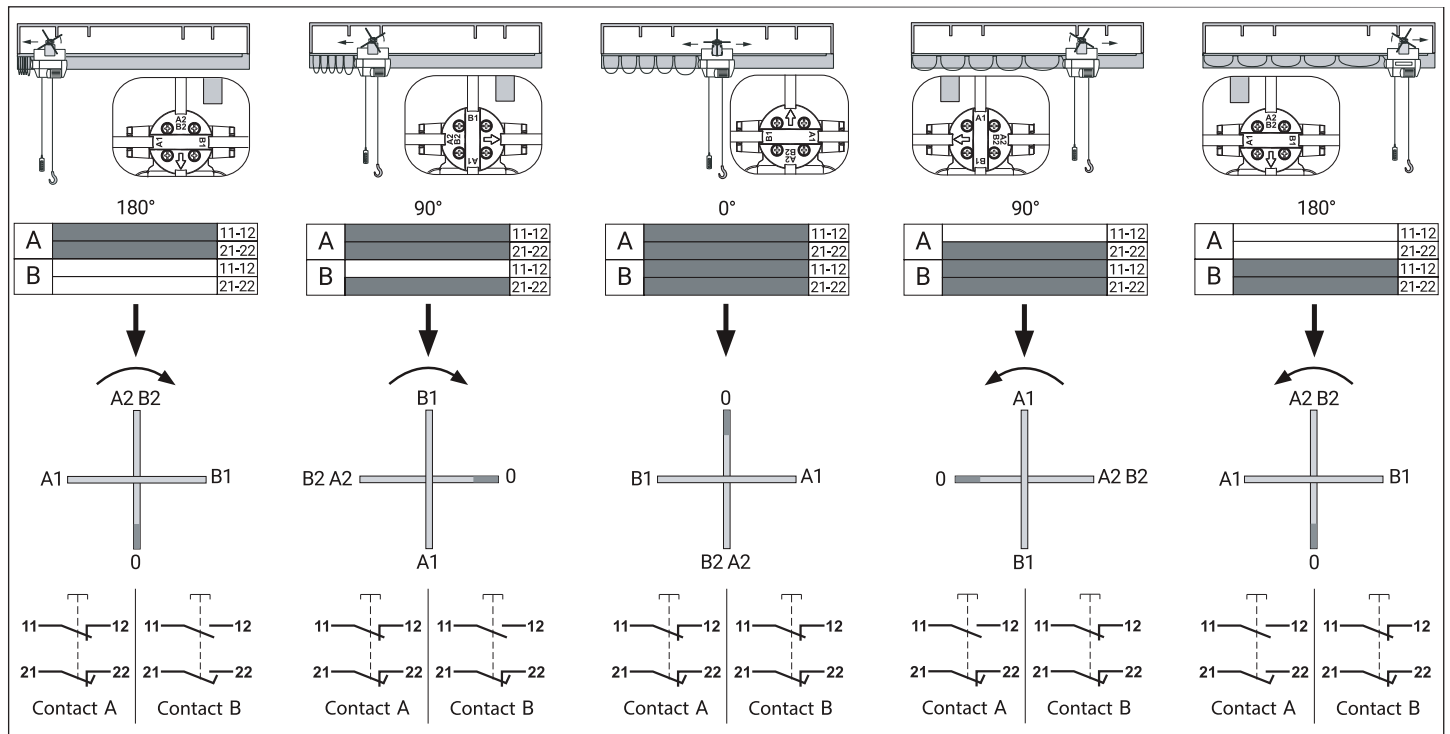
Position limit switches



Configuration

| | |
|--------------------------------|--------------|
| 4 maintained positions | GP5H7601W02T |
| Stop at 180° in each direction | |
| 4 maintained positions | GP5H7602W02T |
| Free rotation | |

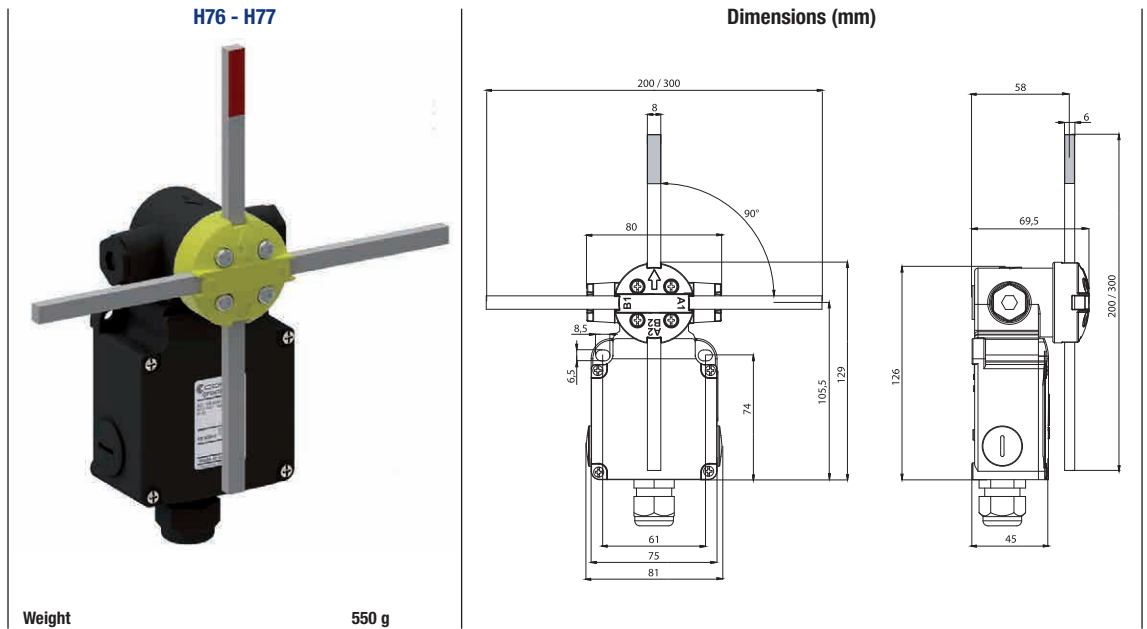
Position Limit Switches - Operation



ATTENTION: do not turn the head more than 180° in either direction for model GP5H7601W02T.

Limit Switches GP series

Position limit switches - Description



Configuration

Weight

550 g

3 maintained positions

Cross rods 2x200mm

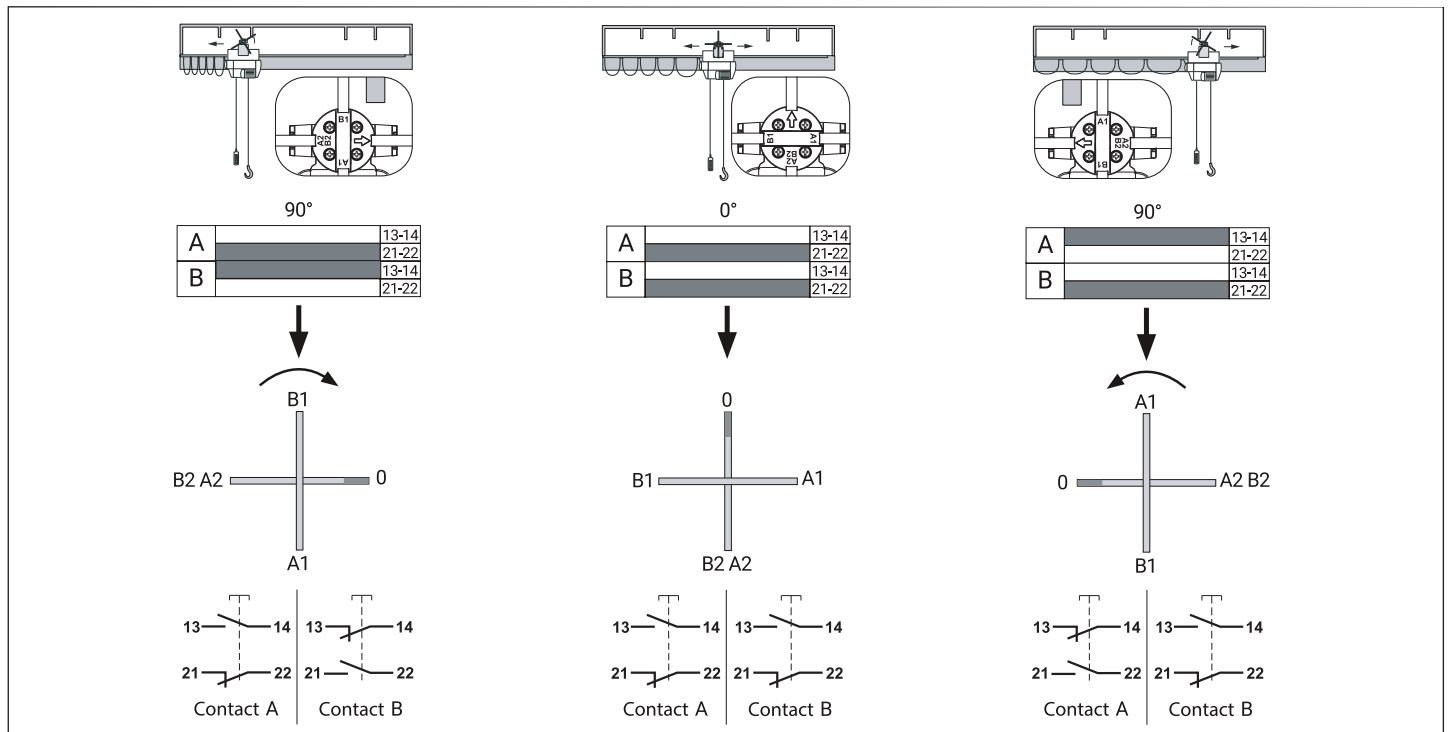
GP5H7603X11T

3 maintained position

T rods 1x200mm - 1x300mm

GP5H7703X11T

Position Limit Switches - Operation



↓ ARROW symbol marked on the head

↻ Rotation direction

ATTENTION: do not turn the head more than 90° in either direction.

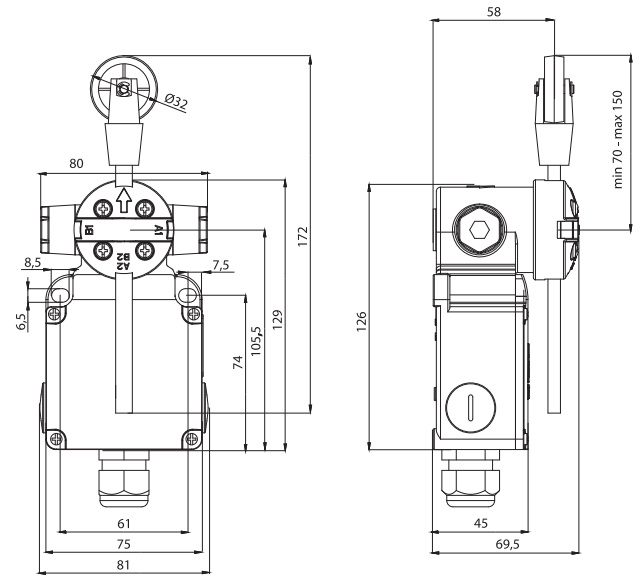
Limit Switches **GP series**

Position limit switches - Description

H78



Dimensions (mm)



Configuration

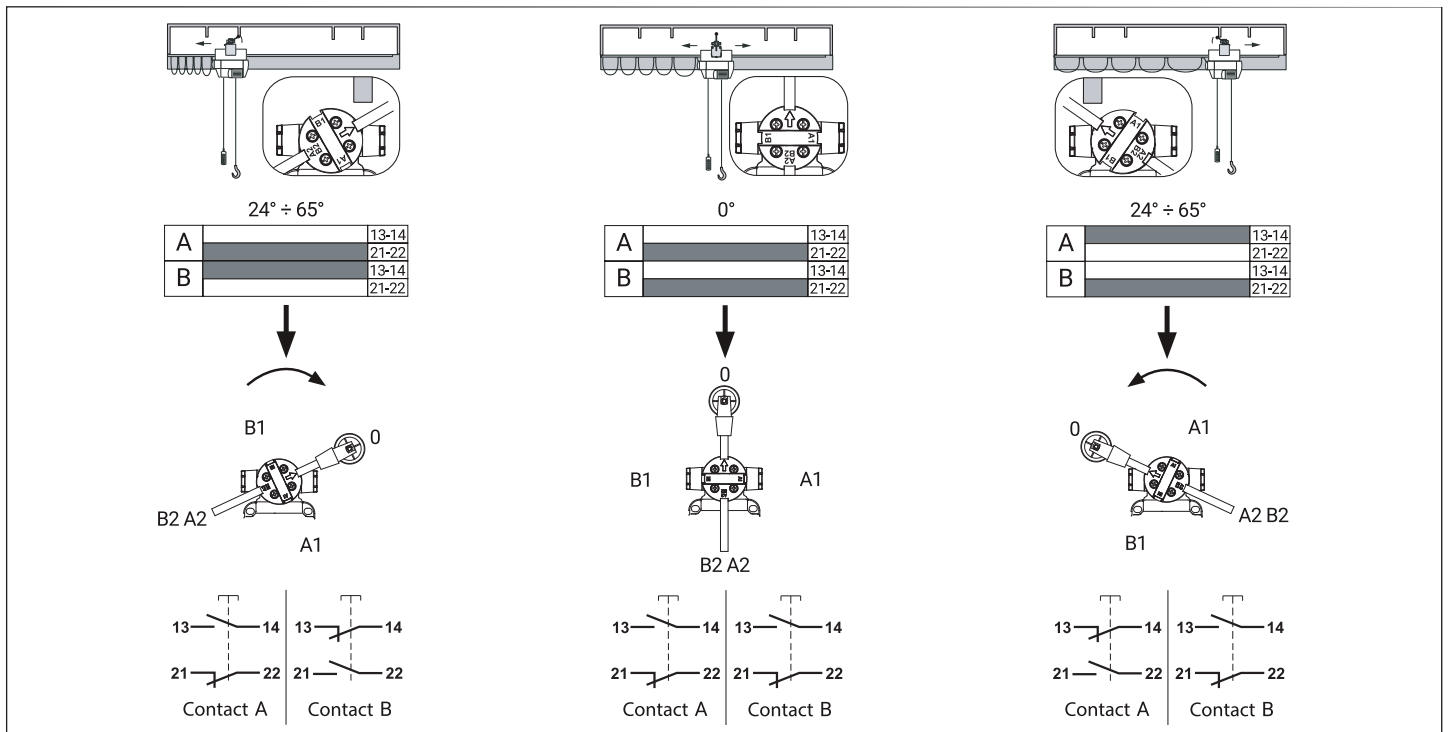
Weight

525 g

Spring return
Rod with roller

GP5H7801X11T

Position Limit Switches - Operation



↓ ARROW symbol marked on the head

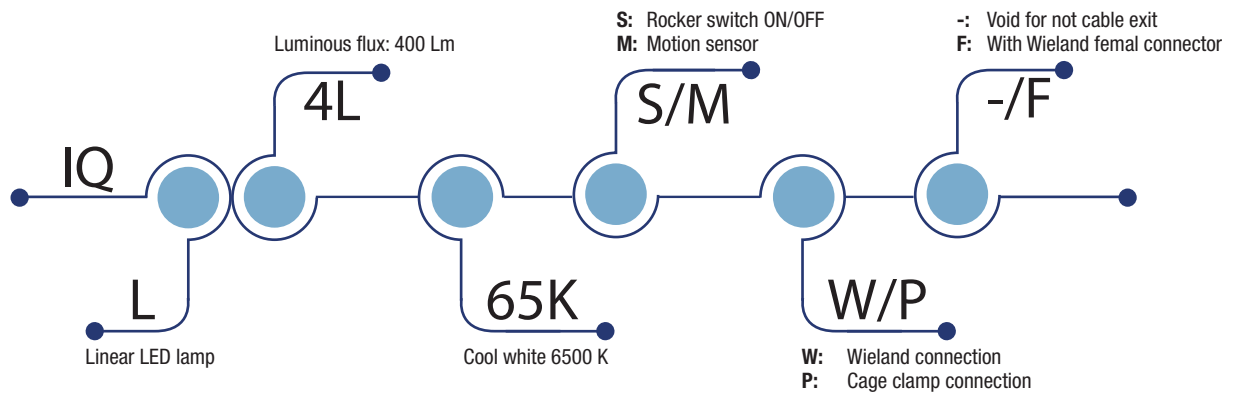
↻ Rotation direction

ATTENTION: do not turn the head more than 65° in either direction.

Control Cabinet Devices

Linear LED Lamp - Summary

APPROVALS:



example: IQL4L65KMW

MAIN FEATURES

- 01 Universal use**
 - Wide voltage range 24V-265V AC/DC
- 02 Motion sensor**
 - Movement sensor with 5 minute setting
- 03 Rocker switch on/off**
- 04 Connection options**
 - Wieland plug or cage clamp connection
- 05 Push to release**
 - Applicable to every connection type
- 06 Mounting**
 - Integrated magnets or plastic clips (provided)
- 07 Daisy chain**
 - Max 16 lamps AC / max 8 lamps DC



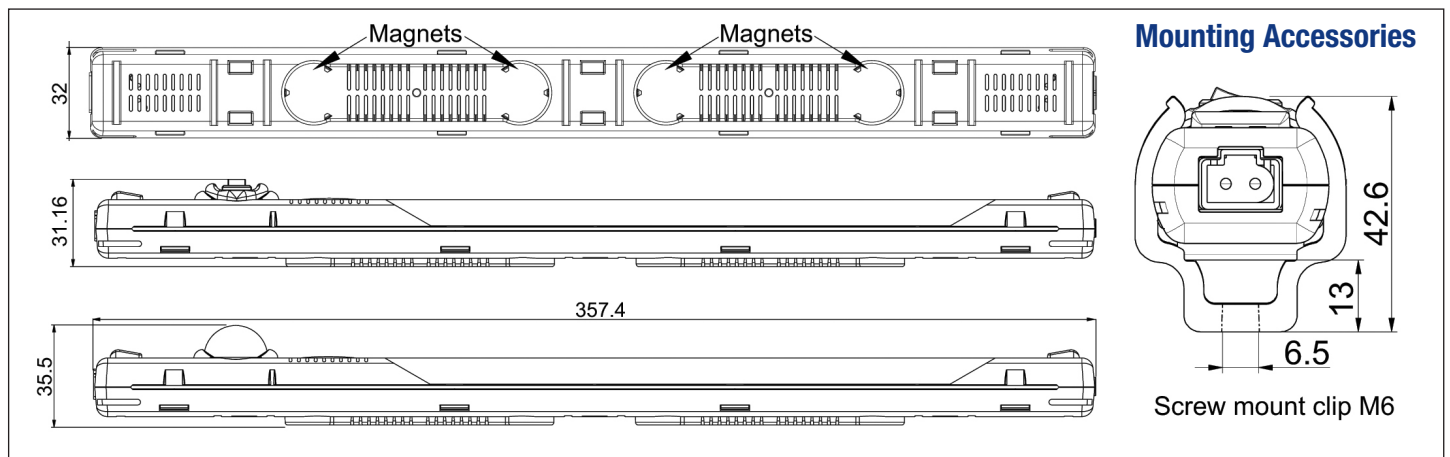
Control Cabinet Devices

Linear LED Lamp - Summary

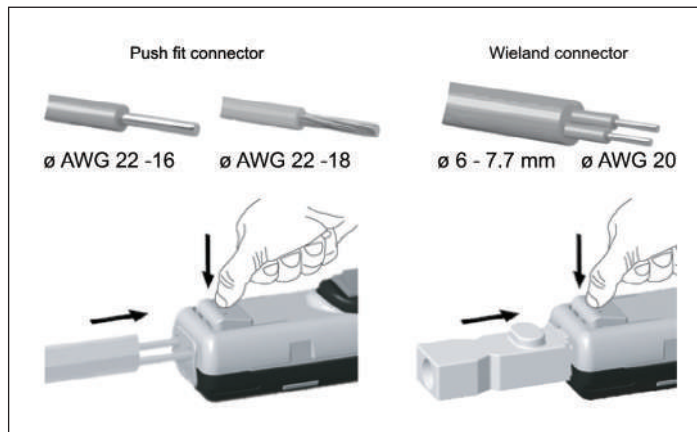
HIGH PERFORMANCE

- Light output 400Lm
- Protection degree IP20
- Operating range fro -30°C to +70°C
- Life time: 40000 hours
- Power consumption: 4W
- Wide voltage range 24V-265V AC/DC
- LED lamp type, 120° angle
- Light color: Cool white
- Temperature: 6500 K

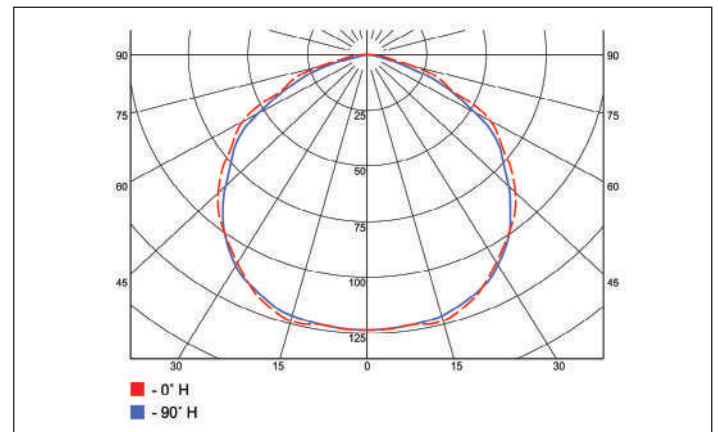
Dimensions



Mounting



Light distribution curve



Control Cabinet Devices

Flashing Device



Main features and applications

GR02 flashing device, realized by Comepi, is designed to detect voltage presence inside an electrical panel in an easy and safe way, decreasing the risk of accidents thanks to the flashing lamps that are able to make evidence of a dangerous situation.

The modularity of the device allows to integrate the flashing device in useful systems during the electrical panel maintenance: lamps or fans are now installable in a safer way.

Description

Flashing device with fixing bracket (225mm fixing distance between centers), including AP1T10Z11 limit switch and AP1R001Z11 device with yellow door closing simulation device.

Device conform to IEC 60947-5-1 standard and approved according to UL 508.

Code
GR01

Supply Voltage:

3 ~ 220÷500V / 50÷60Hz
1 ~ 110÷290V / 50÷60Hz

Description

Flashing device with fixing bracket (225mm fixing distance between centers), including AP1T10Z11 limit switch.

Device conform to IEC 60947-5-1 standard and approved according to UL 508.

Code
GR03

Supply Voltage:

3 ~ 220÷500V / 50÷60Hz
1 ~ 110÷290V / 50÷60Hz

Description

Flashing device.

Device conform to IEC 60947-5-1 standard and approved according to UL 508.

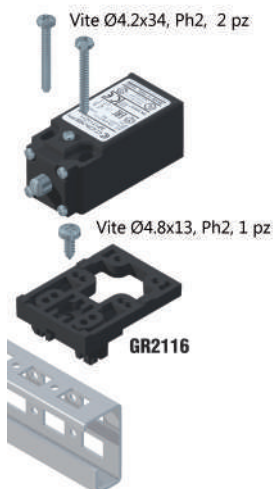
Code
GR02

Supply Voltage:

3 ~ 220÷500V / 50÷60Hz
1 ~ 110÷290V / 50÷60Hz



Accessoires



Description

Limit switch fixing kit for metal profiles (screws included)

Code
GR2116

Accessoires



Description

Fixing bracket (225mm fixing distance between centers).

Code
GR-FX1

Limit switch fixing kit for AP series limit switches (50mm fixing distance between centers – Screws included).

Code
GR2117

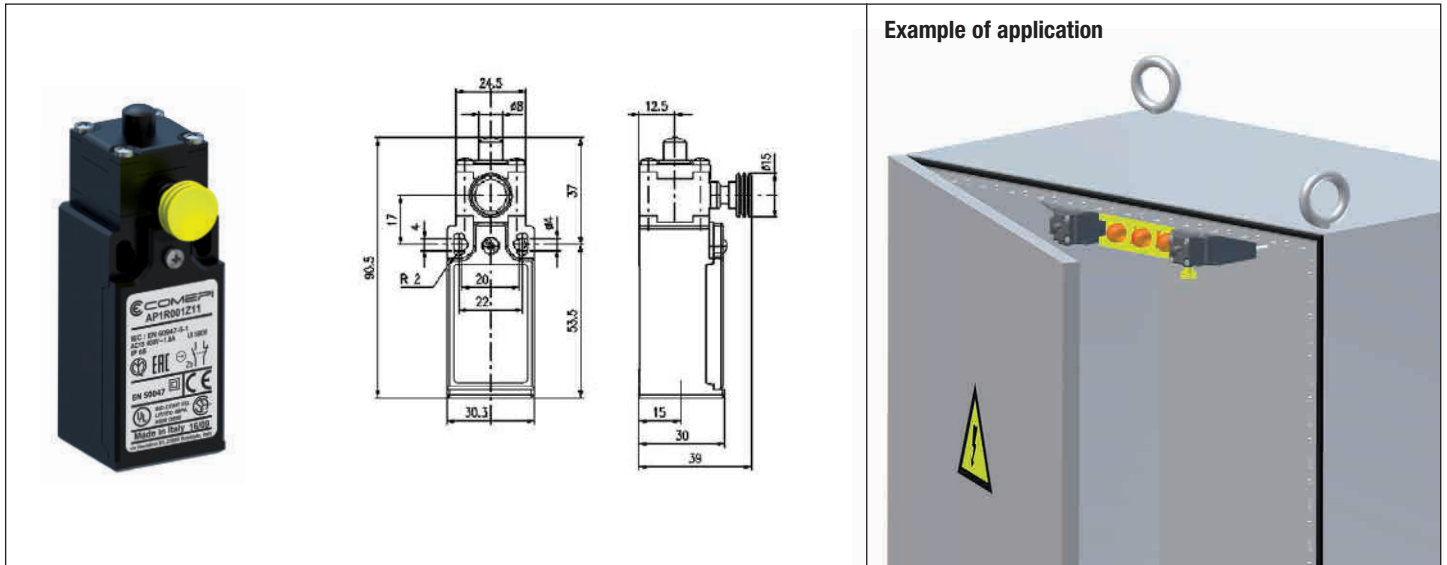
DIN rail mounting bracket for flashing device.

Code
PPK02

Control Cabinet Devices

Limit Switches

AP•R001Z11 Series



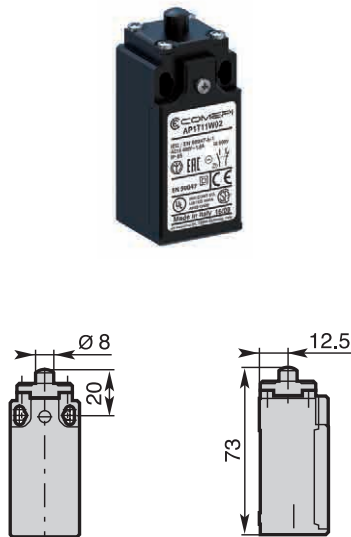
Description

This particular limit switch has been developed in order to fulfill all the requests coming from applications in which there is the necessity to simulate the change over in contacts position without acting directly, on the plunger of the switch. The use of this device is particularly useful in the realization of electrical boards in order to simulate the closing of the door simply by pushing the yellow button on the limit switch; the assigned staff will then be able to work on the internal circuit to make modifications, maintenance, etc... The conditions of normal operation are automatically restored once the door of the electric board is closed.

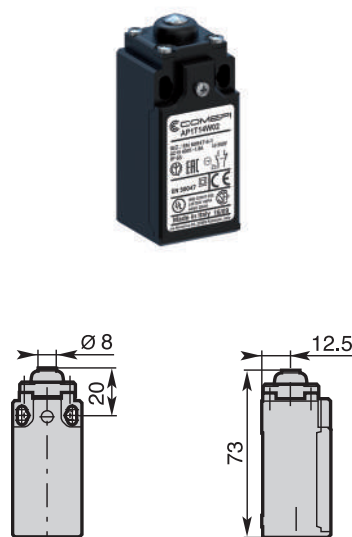
| | | |
|------|-------------|-------------|
| Z11 | (1NO + 1NC) | AP•R001Z11 |
| Z02 | (2NC) | AP•R001Z02 |
| W03P | (3NC) | AP•R001W03P |

Standard Limit Switches

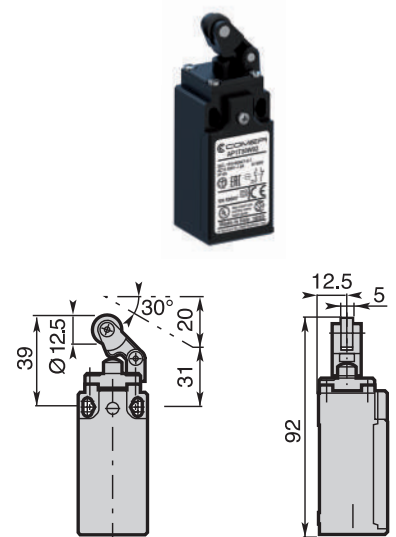
T10: nylon plunger



T14 - Metal plunger with dust protection cup



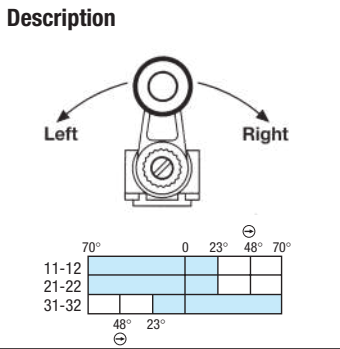
T30 - Plastic roller lever on plastic plunger



Limit Switches

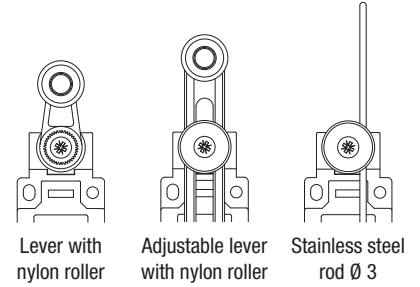
Special applications

BP•U Series 40 mm. polymeric limit switches - IP 65 □ - EN 50041 - one cable inlet



- The lever on the right open contacts 11-12 and 21-22
- The lever on the left open contacts 31-32
- Positive opening of the contacts on both the directions
- Other levers available

Cable inlets:
 Replace the symbol • with the number of the required thread
BP1: PG 13.5
BP2: 1/2" NPT
BP5: M 20 x 1,5



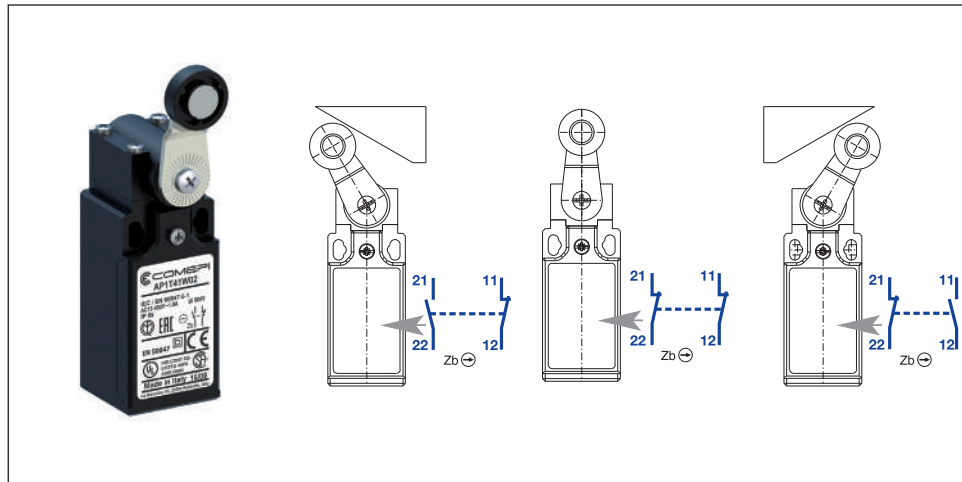
| Contact elements | | ⊕ U41 | ⊕ U51 | ⊕ U71 |
|-------------------------|--------------|--------------|--------------|--------------|
| J03 | (3NC) | BP•U41J03 | BP•U51J03 | BP•U71J03 |

AP• Series 30 mm. polymeric limit switches - IP 65 □ - EN 50047 - one cable inlet

Cable inlet: Replace the symbol • with the number of the required thread

AP1: PG 13.5 **AP2:** 1/2" NPT (with adapter) **AP3:** PG 11 **AP4:** M 16 x 1,5 **AP5:** M 20 x 1,5

AP•V41J02 Series



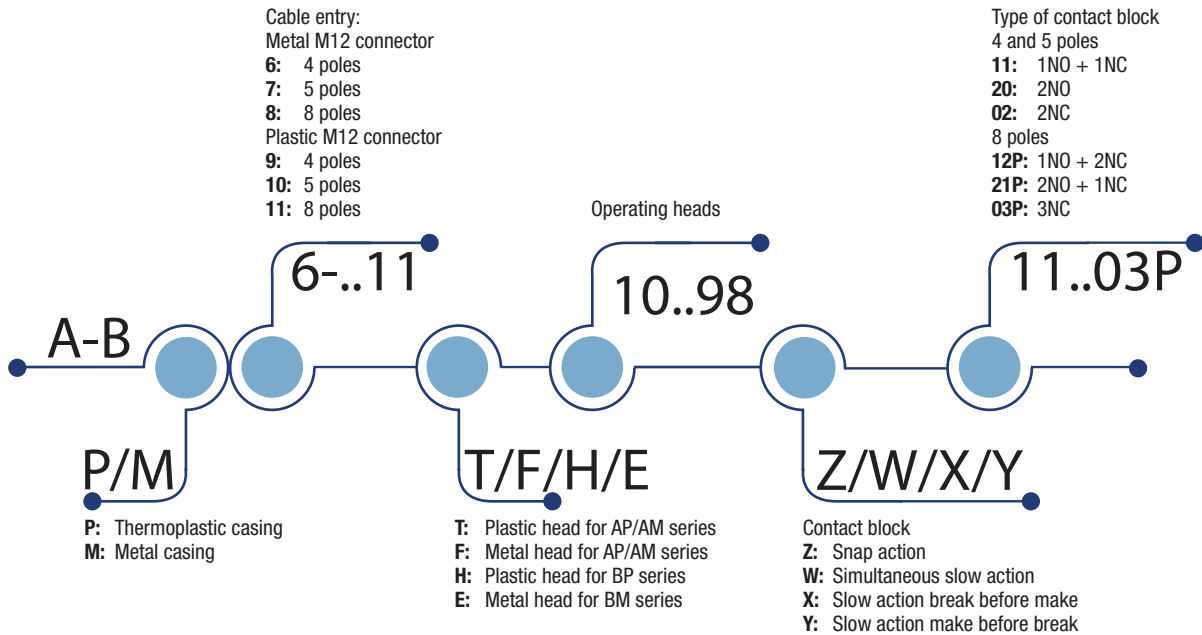
Description

The Switch is settled with 2NC contacts in free position.
 The actuation of the lever causes the opening of the contact related to the actuating direction, leaving unchanged the status of the second contact. Both contacts have positive opening operation according to IEC/EN 60947-5-1 standards.

Limit Switches with M12 Connector

Special application

APPROVALS: UL 508 / CSA C22-2 N. 14

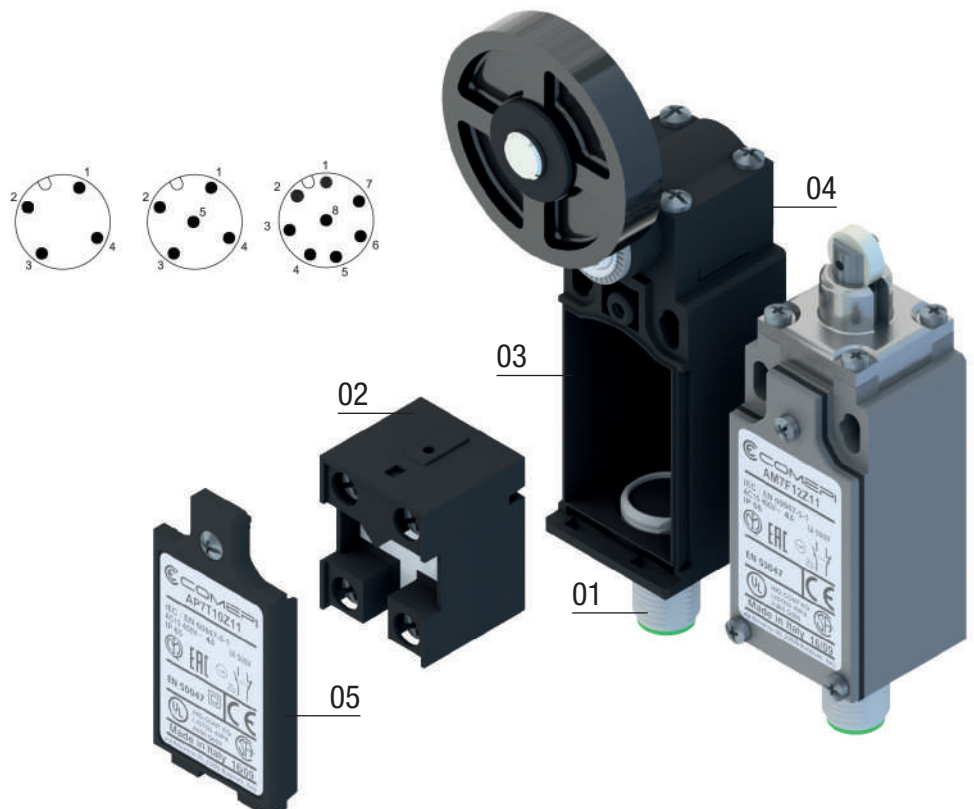


example: AM7F11Z11

The feasibility of a code number does not mean the effective actuability of a product. Please contact our sales office.

HOW IS IT MADE?

- 01 M12 Connector 4, 5 and 8 poles
- 02 Contact blocks
- 03 Casing
- 04 Operating head
- 05 Label



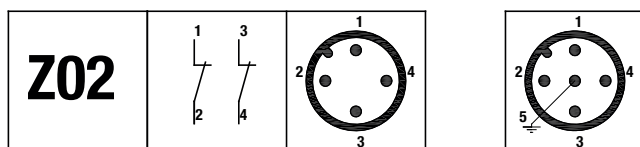
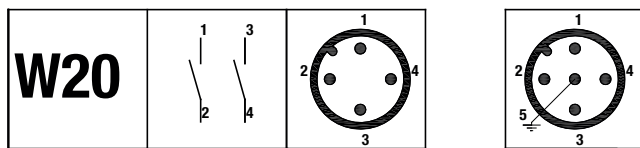
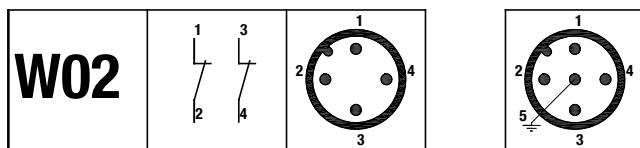
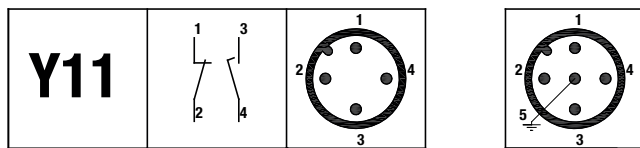
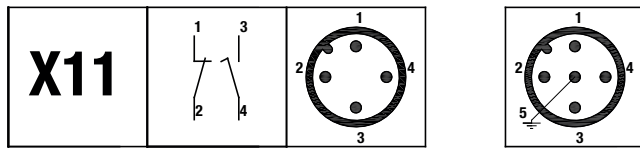
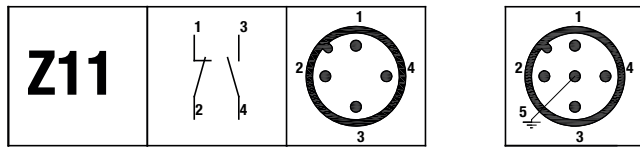
SIMPLE AND FUNCTIONAL

- Limit switch pre-wired with M12 connector 5/8 poles.
- Functionality and simplicity make this product ready to use.

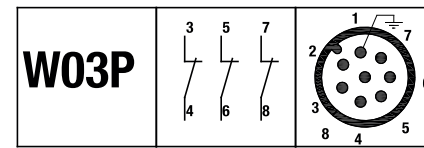
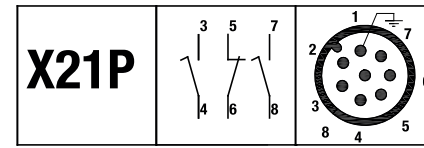
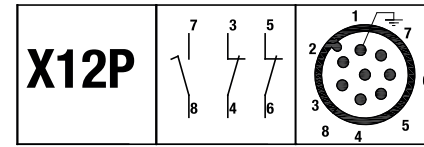
Limit Switches with **M12 Connector**

Connection diagrams

4-5 POLES CONNECTOR



8 POLES CONNECTOR



M12 Connector 4 poles

- 1 Brown
- 2 White
- 4 Black
- 3 Blue

M12 Connector 5 poles

- 1 Brown
- 2 White
- 4 Black
- 3 Blue
- 5 Gray

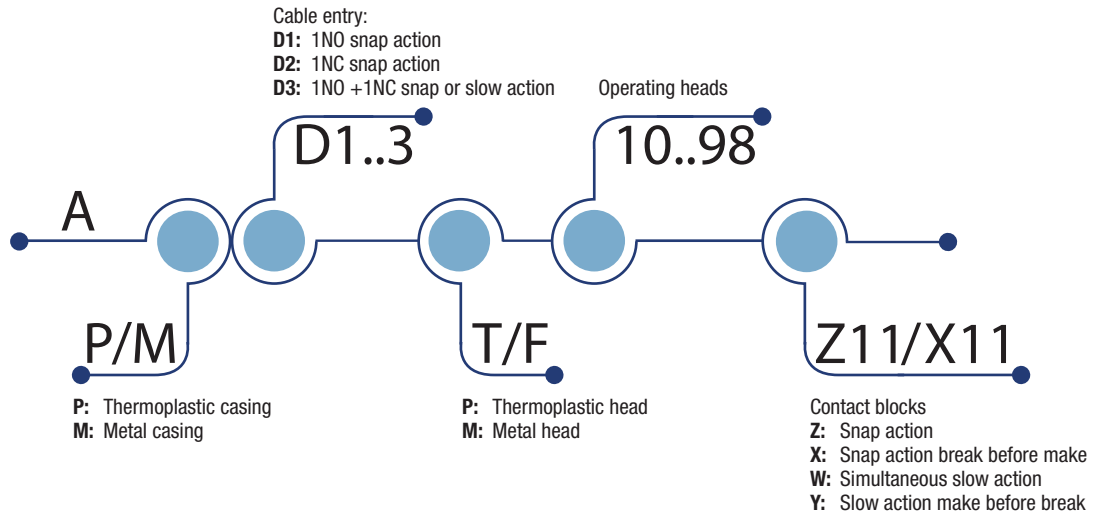
M12 Connector 8 poles

- 1 White
- 2 Brown
- 3 Green
- 4 Yellow
- 5 Gray
- 6 Pink
- 7 Blue
- 8 Red

Limit Switches with **Deutsch Connector**

Special application

APPROVALS: UL 508 / CSA C22-2 N. 14

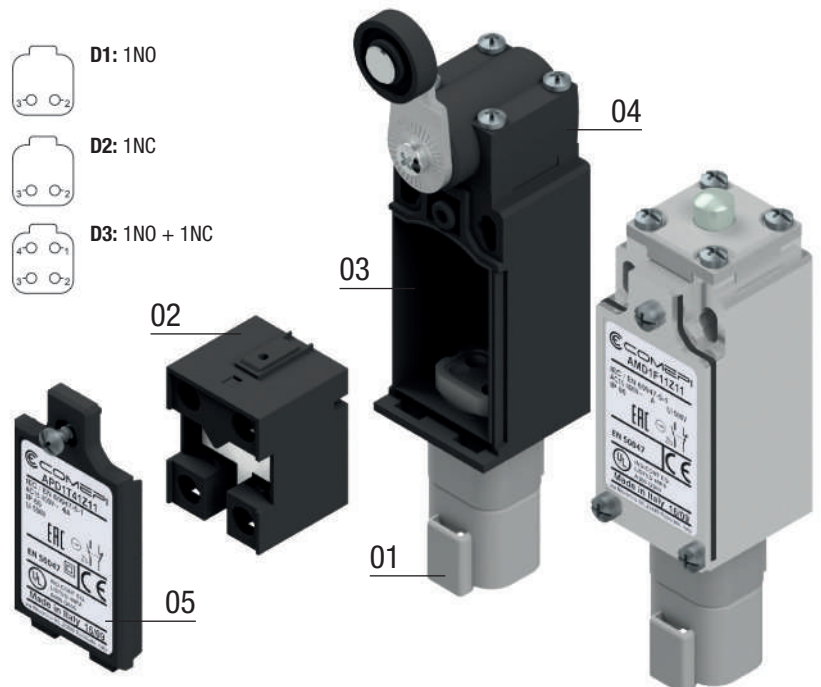


esempio: **AMD1F11Z11**

The feasibility of a code number does not mean the effective actuability of a product. Please contact our sales office.

HOW IS IT MADE?

- 01** Deutsch connector
- 02** Contact blocks
- 03** Casing
- 04** Operating head
- 05** Label



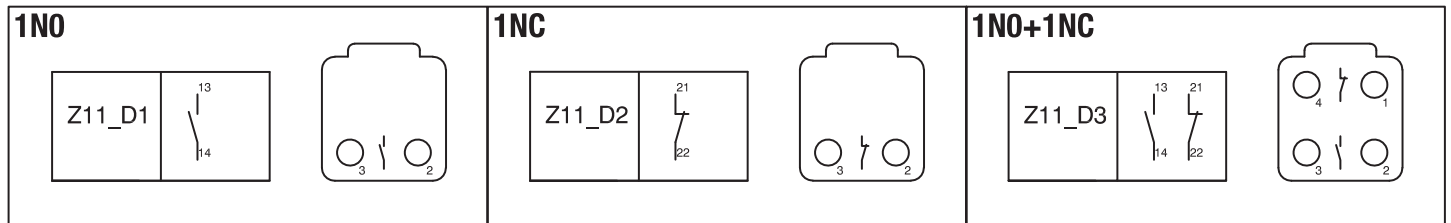
PRE-WIRED AND READY TO USE

- Pre-wired limit switch with connector integrated deutsch type DT04.
- Quick to install and suitable for harsh environmental use.
- Particularly suitable for automotive applications.

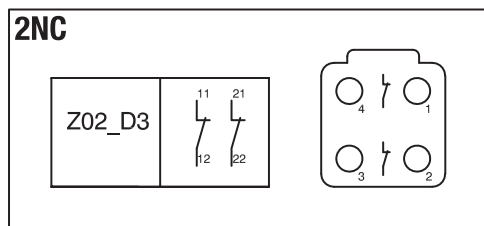
Limit Switches with **Deutsch Connector**

Connection diagrams

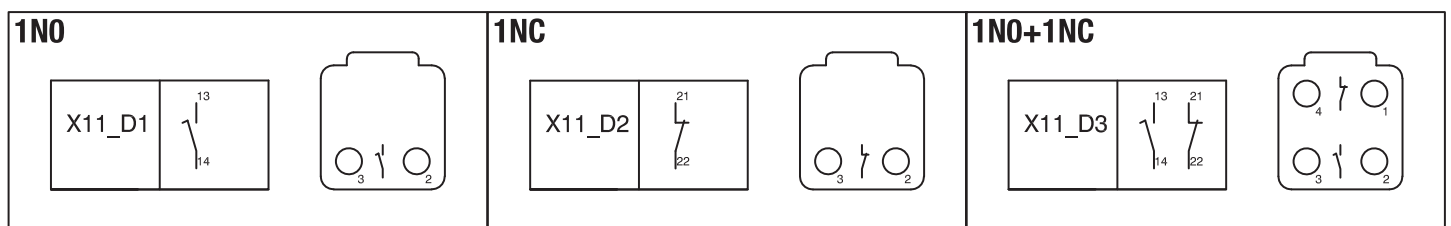
SNAP ACTION



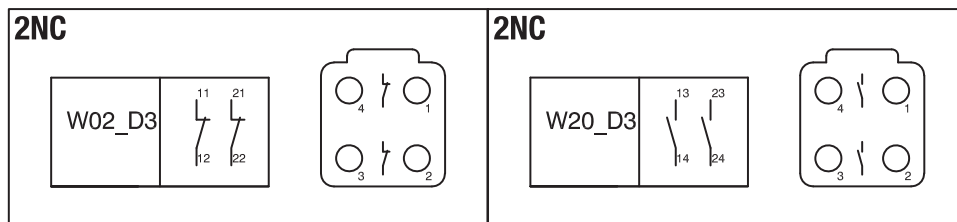
SNAP ACTION



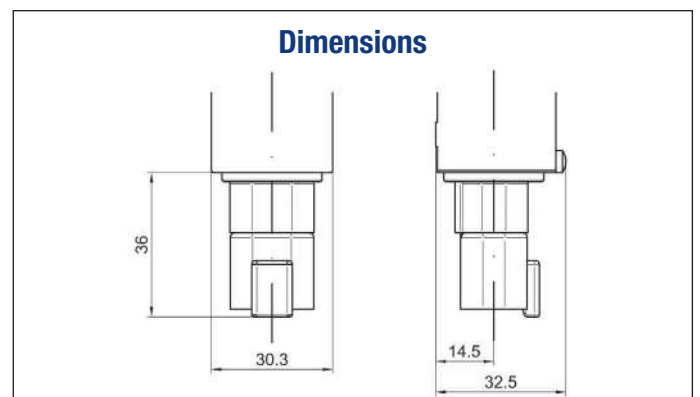
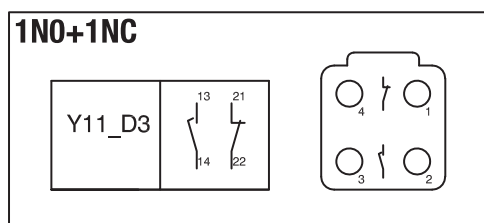
SNAP ACTION BREAK BEFORE MAKE



SIMULTANEOUS SLOW ACTION



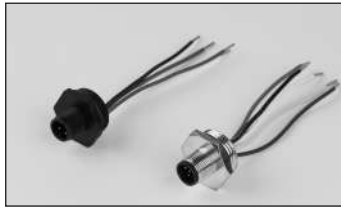
SLOW ACTION MAKE BEFORE BREAK



Limit Switches

Plastic and Metal casing - Accessories

Connectors



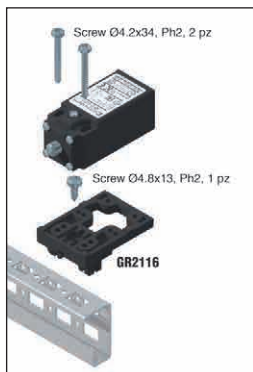
| Code | Description |
|--------------------|--|
| XX1085CO | 4 poles metal connector M16-M12 - 4 conductors |
| XX1037CO | 5 poles metal connector M16-M12 - 5 conductors |
| XX1068CO | 8 poles metal connector M16-M12 - 8 conductors |
| GR XX1101CO | 4 poles plastic connector M20-M12 - 4 conductors |
| GR XX1102CO | 5 poles plastic connector M20-M12 - 5 conductors |
| GR XX1103CO | 8 poles plastic connector M20-M12 - 8 conductors |

Cables with M12 female connector



| Code | Description |
|------------------|--|
| XX4D030SM | 4 poles PVC cable - 3m with M12 straight connector |
| XX4D050SM | 4 poles PVC cable - 5m with M12 straight connector |
| XX5D030SM | 5 poles PVC cable - 3m with M12 straight connector |
| XX5D050SM | 5 poles PVC cable - 5m with M12 straight connector |
| XX8D050SM | 8 poles PVC cable - 5m with M12 straight connector |
| XX8D030SM | 8 poles PVC cable - 3m with M12 straight connector |
| XX4A030SM | 4 poles PVC cable - 3m with M12 90° connector |
| XX4A050SM | 4 poles PVC cable - 5m with M12 90° connector |
| XX5A030SM | 5 poles PVC cable - 3m with M12 90° connector |
| XX5A050SM | 5 poles PVC cable - 5m with M12 90° connector |
| XX8A030SM | 8 poles PVC cable - 3m with M12 90° connector |
| XX8A050SM | 8 poles PVC cable - 5m with M12 90° connector |

Accessories for electric panel



| Code | Description |
|---------------|-----------------------------|
| GR2116 | Fixing kit including screws |

Accessories for electric panel



| Code | Description |
|---------------|--|
| GR2117 | 50mm pitch fixing kit for AP series limit switches |

Spacers

This accessory, made of polymer glass-reinforced resin, allows the lever to operate with a different offset.

| Image | Order Code | Compatible Heads |
|-------|---------------|-------------------------------------|
| | GR1531 | T41 ÷ T46 F41 ÷ F46 G41 ÷ G45 |

| Image | Order Code | Compatible Heads |
|-------|-----------------|-------------------------------------|
| | GR1532PI | T51 ÷ T75 F51 ÷ F75 G51 ÷ G75 |

Cable glands - Blanking plugs - Thread adapters

The use of correct cable gland (or blanking plug in case of unused cable inlets) is recommended if the product is installed in an environmental place in which a protection degree against water or dust is needed. Comepi's cable glands and blanking plugs are realized to guarantee protection degree of IP 66. Thread adapters are available in order to reach the customers' request. The adapters must always be used in case a conduit connection directly on the limit switch is needed. Different adapters can be supplied upon request.

| | Order Code | Description | Dimensions | | | | | |
|----------------------------|-------------------|--|------------|------------|------------|-----|-------|----------|
| | | | A | B | C | D | E | F |
| Cable Gland | XX 1041 CO | PG 13.5 Plastic Cable Gland | 24 | – | PG 13.5 | 10 | 24-29 | ø 6-12 |
| | XX 1028 PE | PG 11 Plastic Cable Gland | 22 | – | PG 11 | 10 | 23-28 | ø 5-10 |
| | XX 1032 CO | M 16 x 1,5 Plastic Cable Gland | 19 | – | M 16 x 1,5 | 8 | 23-28 | ø 7-10 |
| | XX 1033 CO | M20 x 1,5 Plastic Cable Gland | 25 | – | M 20 x 1,5 | 9 | 24-29 | ø 8-13 |
| | XX 1020 CO | PG 16 Plastic Cable Gland | 27 | – | PG 16 | 10 | 26-31 | ø 10-14 |
| Blanking Plug | PL 2029 PI | PG 13.5 Plastic Blanking Plug | 25 | PG 13.5 | 6 | 3.5 | – | – |
| | XT 007 | PG 11 Plastic Blanking Plug | 22 | PG 11 | 6 | 3 | – | – |
| | XX 1030 CO | M 16 x 1,5 Plastic Blanking Plug | 20 | M 16 x 1,5 | 6 | 3 | – | – |
| | XX 1031 CO | M 20 x 1,5 Plastic Blanking Plug | 24 | M 20 x 1,5 | 6 | 3,5 | – | – |
| Thread Adapters | GR 2000 | PG 11 1/2" NPT Plastic Adapter | 24 | 26 | 1/2" NPT | 17 | 8 | PG 11 |
| | GR 2000 M | Brass Intermediary Connection 1/2" NPT - 1/2" NPT | 24 | 26 | 1/2" NPT | 17 | 6 | 1/2" NPT |

Limit Switches

Specifications, Directives and Standards

The **Comepi** products listed in this catalogue are developed and manufactured according to the rules set out in IEC international publications and EN European standard.

Specifications

• International Specifications

The International Electrotechnical Commission, IEC, which is part of the International Standards Organization, ISO, publishes IEC publications which act as a basis for the world market.

• European Specifications

The European Committee for Electrotechnical Standardisation (CENELEC) publishes EN standards for low voltage industrial apparatus.

These European standards differ very little from IEC international standards and use a similar numbering system. The same is true of national standards. Contradicting national standards are withdrawn.

• Harmonised European Specifications

The European Committees for Standardisation (CEN and CENELEC) publish EN standards relating to safety of machinery.

• Specifications in Canada and the USA

These are equivalent, but differ markedly from IEC, UTE, VDE and BS specifications.

UL Underwriters Laboratories (USA)

CSA Canadian Standards Association (Canada)

Remark concerning the label issued by the UL (USA). Two levels of acceptance between devices must be distinguished.

“Recognized” Authorised to be included in equipment, if the equipment in question has been entirely mounted and wired by qualified personnel. They are not valid for use as “General purpose products” as their possibilities are limited.

They bear the mark: 

“Listed” Authorised to be included in equipment and for separate sale are “General purpose products” components in the USA.

They bear the mark: 

European Directives

The guarantee of free movement of goods within the European Community assumes elimination of any regulatory differences between the member states. European Directives set up common rules that are included in the legislation of each state while contradictory regulations are cancelled.

There are three main directives:

• Low Voltage Directive 2014/35/UE concerning electrical equipment from 50 to 1000 V a.c. and from 75 to 1500 V d.c.

This specifies that compliance with the requirements that is sets out **is acquired** once the equipment conforms to the standards harmonised at European level: EN 60947-1 and EN-60947-5-1 for **limit switches**.

• Machines Directives - 2006/42/CE defining main safety and health requirements concerning design and manufacture of the machines and other equipment including safety components in European Union countries.

• Electromagnetic Compatibility Directive 2014/30/UE concerning all electrical devices likely to create electromagnetic disturbances.

Signification of CE marking:

CE marking must not be confused with a quality label.

CE marking placed on a product is proof of conformity with the European Devices concerning the product.

CE marking is part of an administrative procedure and guarantees free movement of the product within the European Community.

Standards

• International Standards

IEC 60947-1 Low-voltage switchgear and controlgear - Part 1: General Rules (CEI EN 60947-1).

IEC 60947-5-1 Low-voltage switchgear and controlgear - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (CEI EN 60947-5-1) - Chapter 3: Special requirements for control switches with positive opening operation.

IEC 60204-1 Electrical equipment on industrial machines - Part 1: General requirements (CEI EN 60204-1).

IEC 60204-2 Electrical equipment on industrial machines - Part 2: Item designation and examples of drawings, diagrams, tables and instructions.

IEC 60529 Degrees of protection provided by enclosure (IP code) (CEI EN 60529).

Limit Switches

Specifications, Directives and Standards

- **European Standards**

- EN 50041** Low-voltage switchgear and controlgear for industrial use - Control switches - Position switches 42,5 x 80 - Dimensions and characteristics.
- EN 50047** Low-voltage switchgear and controlgear for industrial use - Control switches - Position switches 30 x 55 - Dimensions and characteristics.
- EN 60947-1** Low-voltage switchgear and controlgear for industrial use - Part 1: General rules.
- EN 60947-5-1** Low-voltage switchgear and controlgear for industrial use - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices - Chapter 3: Special requirements for control switches with positive opening operation.
- EN 60529** Degrees of protection provided by enclosures (IP code).
- EN 61058-1** Switches for appliances. Part. 1: general requirements.
- EN 60947-5-5** Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function.

- **American Standards**

- UL 508** Standard for Industrial Control Equipment.
- CSA - C22.2 No. 14-13** Industrial Control Equipment.

- **China Standards**

- GB/T14048.5** Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching element - Electromechanical control circuit devices.

Limit Switches

Plastic or Metal Casing - Terminology

Double Insulation


Class II materials, according to IEC 536, are designed with double insulation. This measure consists in doubling the functional insulation with an additional layer of insulation so as to eliminate the risk of electric shock and thus not having to protect elsewhere. No conductive part of "double insulated" material should be connected to a protective conductor.

Positive Opening Operation

A control switch, with one or more break-contact elements, has a positive opening operation when the switch actuator ensures full contact opening of the break-contact. For the part of travel that separates the contacts, there must be a positive drive, with no resilient member (e.g. springs), between the moving contacts and the point of the actuator to which the actuating force is applied.

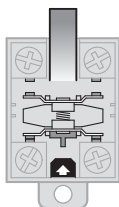
The positive opening operation does not deal with N.O. contacts.

Control switches with positive opening operation may be provided with either snap action or slow action contact elements. To use several contacts on the same control switch with positive opening operation, they must be electrically separated from each other, if not, only one may be used.

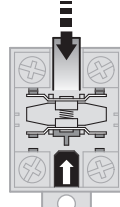
Every control switch with positive opening operation must be indelibly marked on the outside with the symbol:  .

Snap Action

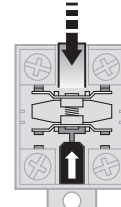
Snap action contacts are characterised by a release position that is distinct from the operating position (differential travel). Snap breaking of moving contacts is independent of the switch actuator's speed and contributes to regular electric performance even for slow switch actuator speeds.



State of rest



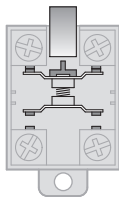
Contact change



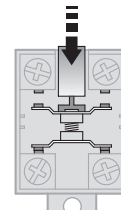
Positive opening

Slow Action

Slow action contacts are characterised by a release position that is the same as the operating position. The switch actuator's speed directly conditions the travel speed of contacts.



State of rest



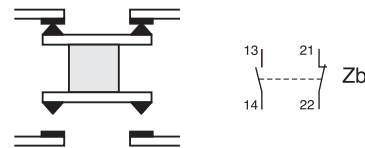
Completely closed

Contact shape according to IEC 947-5-1.

Change-over contact elements with 4 terminals must be indelibly marked with the corresponding Za or Zb symbol as in the diagrams below.



Contacts with the same polarity



The 2 moving contacts are electrically separated

Utilization Category

AC-15: switching of electromagnetic loads of electromagnets using an alternating current (>72 VA).

DC-13: switching of electromagnets using a direct current.

Terminals

Limit switches with metal casings must have a terminal, for a protective conductor, that is placed inside the casing very close to the cable inlet and must be indelibly marked.

Minimum Actuation Force/Torque

The minimum amount of force/torque that is to be applied to the switch actuator to produce a change in contact position.

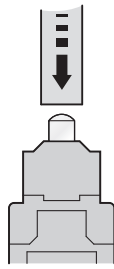
Minimum Force/Torque to achieve Positive Opening Operation

The minimum amount of force/torque that is to be applied to the switch actuator to ensure positive opening operation of the N.C. contact.

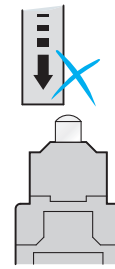
Limit Switches

Utilization Precautions

Plain Plunger

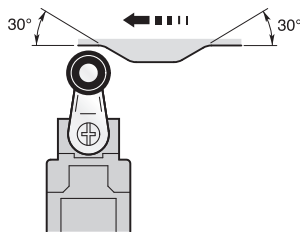


Correct

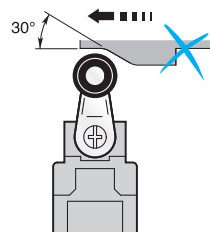


Incorrect

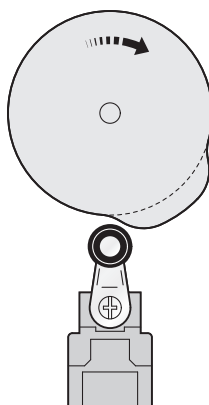
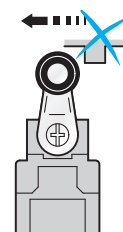
Roller Plunger or Roller Lever



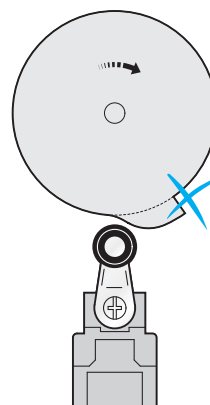
Correct



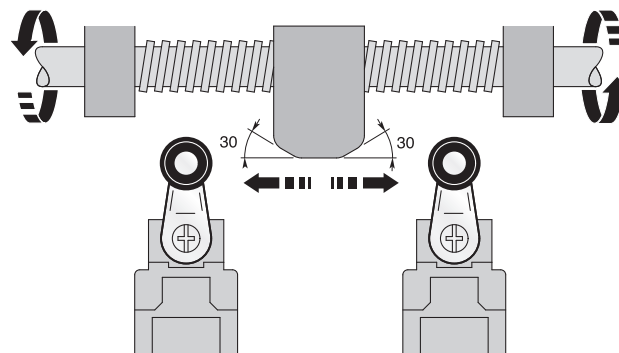
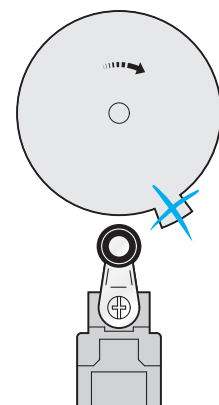
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Correct



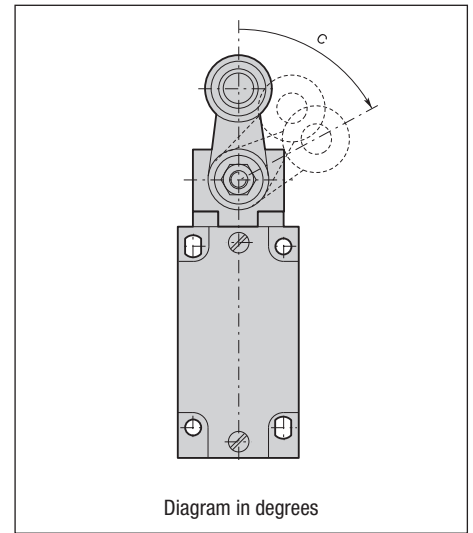
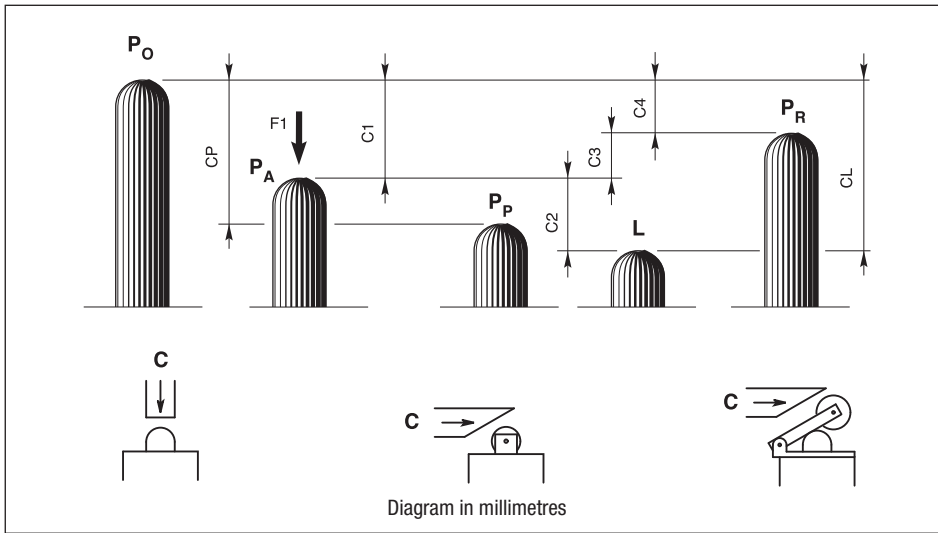
Incorrect



For a relatively slow movement of the switch actuator, a limit switch with a snap action contact block is preferred.

Limit Switches

Plastic or Metal Casing - Travel and Operation Diagrams



P₀ 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.

C₁ Pre-travel:

distance between the free position P₀ 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.

C₂ Over-travel:

distance between the operating position P_A and the max. travel position L.

C_L Max. travel:

distance between the free position P₀ and the max. travel position L.

C₃ Differential travel (C₁-C₄):

travel difference of the switch actuator between the operating position P_A and the release position P_R.

C₄ Release travel:

distance between the release position P_R and the free position P₀.

Diagram for snap action contacts:

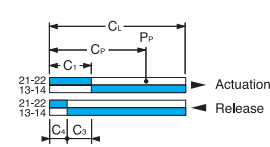
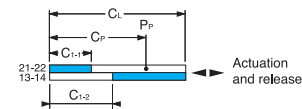


Diagram for non-overlapping slow action contacts:



Note: for slow action contacts, C₃ = 0, C₁₋₁ = pre-travel of contact 21-22, C₁₋₂ = pre-travel of contact 13-14

Examples:

BM1E13Z11

(snap action contacts)

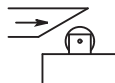
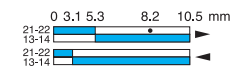


Diagram in millimetres/cam travel



BM1E41Z11

(snap action contacts)

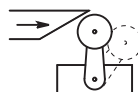
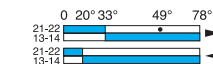


Diagram in degrees/lever rotation

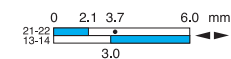


BM1E11X11

(non-overlapping slow action contacts)




























































































Diagram in millimetres/plunger travel



Limit Switches AP/DP/AM/DM series
























































Diagrams

| |  |  |  |  |  |
|---|--|--|--|---|---|
| Operating head types | T10 - T11 - T14 T21 - T2101 - F11 | T12 - T13 - F12 | T30 - T31 - T32 T34 - T35 - T36 | T38 - T39 | T41+46 T51+55 T5100+5500 T71+75 F41+46 F51+55 F5100+5500 F71+75 |
| Max actuation speed [m/s] | 0,5 | 0,3 | 1,0 | 1,0 | 1,5 |
| Z11 SNAP ACTION (1NO + 1NC) |  0 1.3 2.5 4.1 5.6 mm |  0 2.5 4.7 7.6 9.6 mm |  0 4.9 9.0 14.5 21.0 mm |  0 8.8 15.0 23.2 32.0 mm |  0 17° 31° 47° 74° |
| X11 SLOW ACTION (1NO + 1NC) |  0 1.6 3.2 5.6 mm |  0 3.2 6.0 9.6 mm |  0 6.0 10.5 21.0 mm |  0 10.6 18.5 32.0 mm |  0 21° 37° 74° |
| Y11 SLOW ACTION (1NO + 1NC) |  0 2.9 4.5 5.6 mm |  0 5.3 8.2 9.6 mm |  0 10.2 14.6 21.0 mm |  0 16.8 25.1 32.0 mm |  0 35° 51° 74° |
| W02 SLOW ACTION (2NC) |  0 1.5 3.1 5.6 mm |  0 3.0 5.9 9.6 mm |  0 5.7 10.2 21.0 mm |  0 9.6 17.8 32.0 mm |  0 19° 37° 74° |
| W20 SLOW ACTION (2NO) |  0 1.4 5.6 mm |  0 2.8 9.6 mm |  0 5.3 21.0 mm |  0 9.2 32.0 mm |  0 18° 74° |
| Z02 SNAP ACTION (2NC) |  0 1.3 2.4 4.0 5.6 mm |  0 2.5 4.5 7.4 9.6 mm |  0 5.1 8.6 13.1 21.0 mm |  0 8.8 14.6 22.8 32.0 mm |  0 17° 30° 46° 74° |
| X12P SLOW ACTION (1NO + 2NC) |  0 1.8 3.4 5.6 mm |  0 3.6 6.4 9.6 mm |  0 6.8 11.8 21.0 mm |  0 11.9 19.7 32.0 mm |  0 24° 40° 74° |
| X21P SLOW ACTION (2NO + 1NC) |  0 1.8 3.4 5.6 mm |  0 3.6 6.4 9.6 mm |  0 6.8 11.8 21.0 mm |  0 11.9 19.7 32.0 mm |  0 24° 40° 74° |
| W03P SLOW ACTION (3NC) |  0 1.8 3.4 5.6 mm |  0 3.6 6.4 9.6 mm |  0 6.8 11.8 21.0 mm |  0 11.9 19.7 32.0 mm |  0 24° 40° 74° |











| |  |  |  |  |  |
|---|---|---|---|--|--|
| Operating head types | T48 | T61 - T62 F61 - F62 | T91 - T92 - T93 | T98 | T80 |
| Max actuation speed [m/s] | 1,5 | 1,5 | 1,0 | 0,5 | 0,5 |
| Z11 SNAP ACTION (1NO + 1NC) |  0 10° 22° 38° 74° |  0 17° 31° 74° |  0 12° 23° |  0 0.9 2.0 5.6 mm | J01 SLOW ACTION (1NC)  |
| X11 SLOW ACTION (1NO + 1NC) |  0 14° 28° 74° |  0 21° 74° |  0 14° |  0 1.0 5.6 mm |  0 3 4 ∞ |
| Y11 SLOW ACTION (1NO + 1NC) |  0 26° 42° 74° |  0 35° 74° |  0 25° |  0 2.0 5.6 mm | |
| W02 SLOW ACTION (2NC) |  0 12° 28° 74° |  0 19° 74° |  0 14° |  0 2.0 5.6 mm | |
| W20 SLOW ACTION (2NO) |  0 11° 74° |  0 18° 74° |  0 13° |  0 1.8 5.6 mm | |
| Z02 SNAP ACTION (2NC) |  0 10° 31° 37° 74° |  0 17° 30° 74° |  0 12° 22° | | |
| X12P SLOW ACTION (1NO + 2NC) |  0 17° 31° 74° |  0 24° 74° |  0 16° | | |
| X21P SLOW ACTION (2NO + 1NC) |  0 17° 31° 74° |  0 24° 74° |  0 16° | | |
| W03P SLOW ACTION (3NC) |  0 17° 31° 74° |  0 24° 74° |  0 16° | | |

Limit Switches BP series

Diagrams






| |  |  |  |  |  |
|--|---|--|---|--|--|
| Operating head types | H11 - H12 - H14 | H13 - H19 | H31 - H32 - H33 | H41÷44 H51÷54 H71÷74 | H61 - H62 |
| Max actuation speed [m/s] | 0,5 | 0,5 | 1,0 | 1,5 | 1,8 |
| Z11 SNAP ACTION (1NO + 1NC) |  0 1,0 2,2 3,8 5,9 mm |  0 2,4 4,6 7,5 10,5 mm |  0 3,8 6,8 11,3 17,0 mm |  0 19° 31° 47° 90° |  0 19° 31° 90° |
| X11 SLOW ACTION (1NO + 1NC) |  0 1,3 2,9 5,9 mm |  0 3,1 6,0 10,5 mm |  0 4,9 9,4 17,0 mm |  0 21° 37° 90° |  0 21° 90° |
| Y11 SLOW ACTION (1NO + 1NC) |  0 2,4 4,0 5,9 mm |  0 5,1 8,0 10,5 mm |  0 7,6 12,1 17,0 mm |  0 34° 50° 90° |  0 34° 90° |
| W02 SLOW ACTION (2NC) |  0 1,1 2,7 5,9 mm |  0 2,8 5,7 10,5 mm |  0 4,4 8,9 17,0 mm |  0 19° 35° 90° |  0 19° 90° |
| W20 SLOW ACTION (2NO) |  0 1,0 5,9 mm |  0 2,6 10,5 mm |  0 4,0 17,0 mm |  0 18° 90° |  0 18° 90° |
| Z02 SNAP ACTION (2NC) |  0 1,0 2,0 3,6 5,9 mm |  0 2,4 4,4 7,3 10,5 mm |  0 3,8 6,6 11,1 17,0 mm |  0 19° 30° 46° 90° |  0 19° 30° 90° |
| X12 SLOW ACTION (1NO + 2NC) |  0 0,9 2,4 5,9 mm |  0 2,8 5,3 10,5 mm |  0 3,7 7,5 17,0 mm |  0 16° 33° 90° |  0 16° 90° |
| X21 SLOW ACTION (2NO + 1NC) |  0 1,0 2,5 5,9 mm |  0 2,9 5,4 10,5 mm |  0 4,0 7,6 17,0 mm |  0 17° 34° 90° |  0 17° 90° |
| W03 SLOW ACTION (3NC) |  0 0,9 2,4 5,9 mm |  0 2,8 5,3 10,5 mm |  0 3,7 7,5 17,0 mm |  0 16° 33° 90° |  0 16° 90° |
| W30 SLOW ACTION (NO) |  0 1,3 5,9 mm |  0 3,3 10,5 mm |  0 4,8 17,0 mm |  0 21° 90° |  0 21° 90° |







| Operating head types | H91 - H92 - H93 |
|--|--|
| Max actuation speed [m/s] | 1,0 |
| Z11 SNAP ACTION (1NO + 1NC) |  0 15° 27° |
| X11 SLOW ACTION (1NO + 1NC) |  0 18° 25° |
| Y11 SLOW ACTION (1NO + 1NC) |  0 30° 17° |
| W02 SLOW ACTION (2NC) |  0 17° |
| W20 SLOW ACTION (2NO) |  0 16° |
| Z02 SNAP ACTION (2NC) |  0 15° 26° |
| X12 SLOW ACTION (1NO + 2NC) |  0 15° 32° |
| X21 SLOW ACTION (2NO + 1NC) |  0 16° 32° |
| W03 SLOW ACTION (3NC) |  0 15° |
| W30 SLOW ACTION (NO) |  0 19° |

Limit Switches **BM/CM** series














































Diagrams

| |  |  |  |  |  |
|--|---|---|--|---|---|
| Operating head types | E11 - E12 P11 - M14 | E13 M13 - M19 | E21 | E22 - E23 | E31 - E32 - E33 |
| Max actuation speed [m/s] | 0,5 | 0,5 | 0,5 | 0,5 | 1,5 |
| Z11 SNAP ACTION (1NO + 1NC) | | | | | |
| X11 SLOW ACTION (1NO + 1NC) | | | | | |
| Y11 SLOW ACTION (1NO + 1NC) | | | | | |
| W02 SLOW ACTION (2NC) | | | | | |
| W20 SLOW ACTION (2NO) | | | | | |
| Z02 SNAP ACTION (2NC) | | | | | |
| X12 SLOW ACTION (1NO + 2NC) | | | | | |
| X21 SLOW ACTION (2NO + 1NC) | | | | | |
| W03 SLOW ACTION (3NC) | | | | | |
| W30 SLOW ACTION (NO) | | | | | |

| |  |  |  |  |
|--|---|---|--|---|
| Operating head types | E41÷48 E51÷54 E71÷74 M41÷44 M51÷54 M71÷74 | E61 - E62 M61 - M62 | E91 - E92 - E93 P91 - P92 - P93 | E99 |
| Max actuation speed [m/s] | 1,5 | 1,5 | 1,0 | 0,5 |
| Z11 SNAP ACTION (1NO + 1NC) | | | | |
| X11 SLOW ACTION (1NO + 1NC) | | | | |
| Y11 SLOW ACTION (1NO + 1NC) | | | | |
| W02 SLOW ACTION (2NC) | | | | |
| W20 SLOW ACTION (2NO) | | | | |
| Z02 SNAP ACTION (2NC) | | | | |
| X12 SLOW ACTION (1NO + 2NC) | | | | |
| X21 SLOW ACTION (2NO + 1NC) | | | | |
| W03 SLOW ACTION (3NC) | | | | |
| W30 SLOW ACTION (NO) | | | | |

Limit Switches EP series

Diagrams













| |  Actuator with end plunger |  Actuator with end roller plunger |  Actuator with roller lever for 1 direction |  Actuator with adjustable roller lever |  Actuator with roller/rod lever |
|--|--|---|---|--|---|
| Operating head types | G11 - G16 - G21 | G12 - G15 - G17 G22 - G25 | G31 - G32 | G38 | G41÷53 G71÷75 |
| Max actuation speed [m/s] | 0,5 | 0,1 | 1,0 | 1,0 | 1,5 |
| Z SNAP ACTION 1NO+1NC |  0 1,4 2,2 4,3 5,0 mm |  0 2,4 3,8 7,5 8,7 mm |  0 5,9 8,5 14,0 19,0 mm |  0 8,9 12,9 21,0 29,0 mm |  0 21° 32° 65° 74° |
| Z2 SNAP ACTION 2NC |  0 1,3 2,1 4 5,0 mm |  0 2,3 3,7 7 8,7 mm |  0 5,9 8,5 14 19,0mm |  0 7,6 12,2 23,3 29,0mm |  0° 10° 30° 55° 74° |
| Z3 SNAP ACTION 2NO |  0 1,3 2,1 5,0 mm |  0 2,3 3,7 8,7 mm |  0 5,9 8,5 19,0mm |  0 7,6 12,2 29,0mm |  0° 10° 30° 74° |
| Z4 SNAP ACTION 2NO+2NC |  0 1,3 2,1 4 5,0 mm |  0 2,3 3,6 7 8,7 mm |  0 5 8 15,3 19,0mm |  0 7,6 12,2 23,3 29,0mm |  0° 10° 30° 55° 74° |
| X SLOW ACTION BREAK BEFORE MAKE 1NO+1NC |  0 1,9 3,4 5,0 mm |  0 3,3 5,9 8,7 mm |  0 6,9 12,4 19,0 mm |  0 9,6 18,5 29,0 mm |  0 28° 50° 74° 48° |
| X2 SLOW ACTION BREAK BEFORE MAKE 2NC |  0 2 3 5,0 mm |  0 3,5 5,3 8,7 mm |  0 7,6 11,4 19,0mm |  0 11,6 17,4 29,0mm |  0° 26° 39° 74° |
| X3 SLOW ACTION BREAK BEFORE MAKE 2NO |  0 3,5 5,0 mm |  0 6,2 8,7 mm |  0 13,3 19,0mm |  0 20,3 29,0mm |  0° 46° 74° |
| X4 SLOW ACTION BREAK BEFORE MAKE 2NC+2NO |  0 2 3 3,5 5,0 mm |  0 3,5 5,3 6,2 8,7 mm |  0 7,6 11,4 13,3 19,0mm |  0 11,6 17,4 20,3 29,0mm |  0° 26° 46° 74° |



Actuator with steel spring






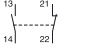



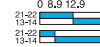
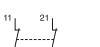
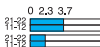


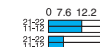
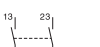




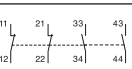
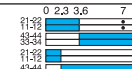
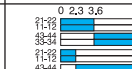
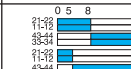
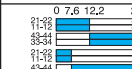
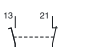
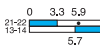


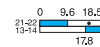
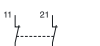



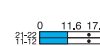
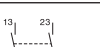
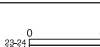


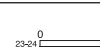
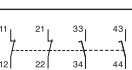
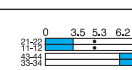
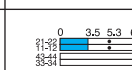
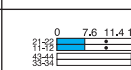
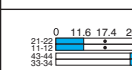








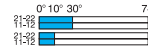
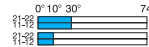
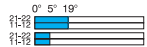
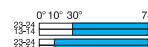
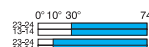
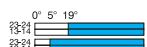
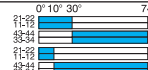
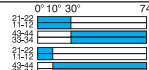
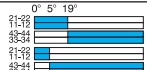
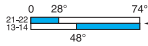
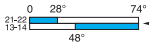
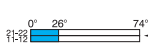
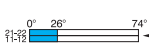
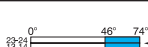
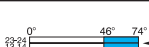
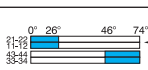
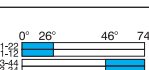
Actuator with multidirectional spring

| | G61 - G62 | G91 - G93 |
|--|---|--|
| Operating head types | | |
| Max actuation speed [m/s] | 1,5 | 1,0 |
| Z SNAP ACTION 1NO+1NC |  0 21° 32° 74° |  0 10° 20° |
| Z2 SNAP ACTION 2NC |  0° 10° 30° 74° |  0° 5° 19° |
| Z3 SNAP ACTION 2NO |  0° 10° 30° 74° |  0° 5° 19° |
| Z4 SNAP ACTION 2NO+2NC |  0° 10° 30° 74° |  0° 5° 19° |
| X SLOW ACTION BREAK BEFORE MAKE 1NO+1NC |  0 28° 74° 48° | |
| X2 SLOW ACTION BREAK BEFORE MAKE 2NC |  0° 26° 74° | |
| X3 SLOW ACTION BREAK BEFORE MAKE 2NO |  0° 46° 74° | |
| X4 SLOW ACTION BREAK BEFORE MAKE 2NC+2NO |  0° 26° 46° 74° | |

Limit Switches EM series

Diagrams

| |  |  |  |  |  |
|--|--|--|--|---|---|
| Operating head types | G11 - G16 - G21 | G12 - G15 - G17 G22 - G25 | G18 | G31 - G32 | G38 |
| Max actuation speed [m/s] | 0,5 | 0,1 | 0,5 | 1,0 | 1,0 |
| Z SNAP ACTION 1NO+1NC |  0 1,4 2,2 4,3 5,0 mm |  0 2,4 3,8 7,5 8,7 mm |  0 2,4 3,8 7,5 8,7 mm |  0 5,9 8,5 14,0 19,0 mm |  0 8,9 12,9 21,0 29,0 mm |
| Z2 SNAP ACTION 2NC |  0 1,3 2,1 4 5,0 mm |  0 2,3 3,7 7 8,7 mm |  0 2,3 3,7 7 8,7 mm |  0 5,9 8,5 14 19,0 mm |  0 7,6 12,2 23,3 29,0 mm |
| Z3 SNAP ACTION 2NO |  0 1,3 2,1 5,0 mm |  0 2,3 3,7 8,7 mm |  0 2,3 3,7 8,7 mm |  0 5,9 8,5 19,0 mm |  0 7,6 12,2 29,0 mm |
| Z4 SNAP ACTION 2NO+2NC |  0 1,3 2,1 4 5,0 mm |  0 2,3 3,6 7 8,7 mm |  0 2,3 3,6 7 8,7 mm |  0 5 8 15,3 19,0 mm |  0 7,6 12,2 23,3 29,0 mm |
| X SLOW ACTION BREAK BEFORE MAKE 1NO+1NC |  0 1,9 3,4 5,0 mm 3,2 |  0 3,3 5,9 8,7 mm 5,7 |  0 3,3 5,9 8,7 mm 5,7 |  0 6,9 12,4 19,0 mm 11,7 |  0 9,6 18,5 29,0 mm 17,8 |
| X2 SLOW ACTION BREAK BEFORE MAKE 2NC |  0 2 3 5,0 mm |  0 3,5 5,3 8,7 mm |  0 3,5 5,3 8,7 mm |  0 7,6 11,4 19,0 mm |  0 11,6 17,4 29,0 mm |
| X3 SLOW ACTION BREAK BEFORE MAKE 2NO |  0 3,5 5,0 mm |  0 6,2 8,7 mm |  0 6,2 8,7 mm |  0 13,3 19,0 mm |  0 20,3 29,0 mm |
| X4 SLOW ACTION BREAK BEFORE MAKE 2NC+2NO |  0 2 3 3,5 5,0 mm |  0 3,5 5,3 6,2 8,7 mm |  0 3,5 5,3 6,2 8,7 mm |  0 7,6 11,4 13,3 19,0 mm |  0 11,6 17,4 20,3 29,0 mm |

| |  |  |  |
|--|---|---|---|
| Operating head types | G41÷53 G71÷75 | G61 - G62 | G91 - G93 |
| Max actuation speed [m/s] | 1,5 | 1,5 | 1,0 |
| Z SNAP ACTION 1NO+1NC |  0 21° 32° 74° |  0 21° 32° 74° |  0 10° 20° |
| Z2 SNAP ACTION 2NC |  0° 10° 30° 74° |  0° 10° 30° 74° |  0° 5° 19° |
| Z3 SNAP ACTION 2NO |  0° 10° 30° 74° |  0° 10° 30° 74° |  0° 5° 19° |
| Z4 SNAP ACTION 2NO+2NC |  0° 10° 30° 74° |  0° 10° 30° 74° |  0° 5° 19° |
| X SLOW ACTION BREAK BEFORE MAKE 1NO+1NC |  0 28° 74° 48° |  0 28° 74° 48° | |
| X2 SLOW ACTION BREAK BEFORE MAKE 2NC |  0° 26° 74° |  0° 26° 74° | |
| X3 SLOW ACTION BREAK BEFORE MAKE 2NO |  0° 46° 74° |  0° 46° 74° | |
| X4 SLOW ACTION BREAK BEFORE MAKE 2NC+2NO |  0° 26° 46° 74° |  0° 26° 46° 74° | |

Notes

A large grid area for taking notes, consisting of a 30x30 grid of small squares. The grid is contained within a rounded rectangular border.

COMEPI AROUND THE WORLD

Comepi products are available all over the world, the company supplies 76 countries in 5 continents. Our focus on flexibility translates into the ability to create solutions where the market requires new application needs. Comepi has a network of agents and importers, supported by local distributors. This organization ensures global presence and support.



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