EP Limit Switches - Summary

EP
Metal
operating heads



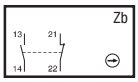
Actuator with end plunger | Actuator with end roller plunger | Actuator with roller lever | Actuator with rod lever | Actuator with multidirectional spring

EP
Thermoplastic
operating heads

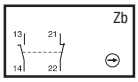


Actuator with roller lever for 1 direction

Z: Snap action 1NO+1NC



X: Slow action break before make 1NO+1NC





Contact Blocks



Actuators

Electrical connection



Cable connection:
PVC cable
PUR dynamic cable
PUR halogen free cable



M12 connector



AMP connector

Contact blocks
Type: double break, electrically separated
Approvals: UL 508 / CSA C22-2 n. 14

EP Limit Switches - 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.

Casing
• 30 or 35 mm. width casings

Mounting the casing
• 2 x M4 screws on top part

Contact Block:
• Contact configuration: 1NO + 1NC
• Positive opening operation
• Snap action or slow action
• Contacts are electrically separated

• Epoxy resin for IP67 protection degree



A variety of operating heads:
• Plain plunger
• Roller plunger
• Roller lever, adjustable or not, etc.
Assembled using 2 x ø 3 screws.

Electrical connection:
• cable: PVC 4 x 0,75 mm²
• lenght: standard 1 m
• optional: M12 connector - AMP connector

Symbols

Example:	EP1	G11	Z		U	
Structure:						

Casing:
EP1 = plastic casing 30 mm width
EP2 = plastic casing 35 mm width

Operating heads: codes G11 - G9999

Contact block
Z: Snap action 1NO + 1NC
X: Slow action non-overlapping late make 1NO + 1NC

Electrical connection orientation:

EP1 Series		EP2 Series	
Null:	Right	**Null:**	Central
C:	Central	**R:**	Right
L:	Left	**L:**	Left

Electrical connection:
U: Standard with PVC UL cable
UP: PUR dynamic cable
HF: PUR halogen free cable
M: M12 connector
A: AMP connector

Cable lenght:
Null: Standard 1m

020: 2 m	**060:** 6 m	**100:** 10 m
030: 3 m	**070:** 7 m	**110:** 11 m
040: 4 m	**080:** 8 m	**120:** 12 m
050: 5 m	**090:** 9 m	

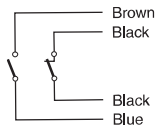
EP Limit Switches - Technical Data

		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
Degree of protection (according to UL50)		Type 1 enclosure (“indoor use only”)
Switching frequency	Cycles/h	3600
Mechanical durability		10 millions of operations

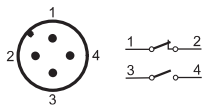
Electrical data - Electrical connections

Code		EP_U	EP_UP	EP_HF	EP_M	EP_A
Cable type		4xAWG18 PVC style 2517	4xAWG18 dynamic PUR style 20668	4xAWG18 halogen free PUR style 20549	–	–
Min. bend radius		49mm	49mm	49mm	–	–
Rated insulation voltage U_i		400V	300V	300V	250V	250V
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 protecion		10A 500V type gG	10A 500V type gG	10A 500V type gG	4A 500V type gG	4A 500V type gG
AC15	24V	10A	10A	10A	4A	4A
	120V	6A	6A	6A	4A	4A
	240V	3A	3A	3A	3A	3A
DC13	24V	2.8A	2.8A	2.8A	2.8A	2.8A
	125V	0.55A	0.55A	0.55A	0.55A	0.55A
	250V	0.27A	0.27A	0.27A	0.27A	0.27A
Approvals		cULus EAC CCC	cULus EAC	cULus EAC	cULus IMQ EAC CCC	EAC

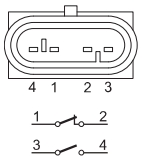
Serie EP_U / EP_UP

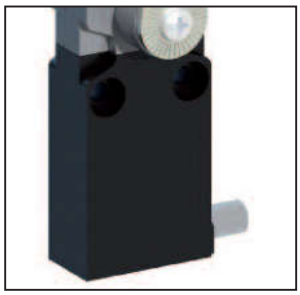


Serie EP_M



Serie EP_A





Dynamic PUR cable and Halogen free PUR cable

All EP models can be ordered with the following pre-wired cables in order to make possible a growing number of solutions and cover different kind of applications.

– **Dynamic PUR cable:** a greater flexibility characterize these models compared to the UL standard, while mantaining 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

EP Limit Switches - 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
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 400 V - 50/60 Hz	10 A (except M12 connector) 3 A (except M12 connector)
I_e / DC-13	24 V - d.c. 250 V - d.c.	2.8 A 0.27 A

Technical data approved by UL

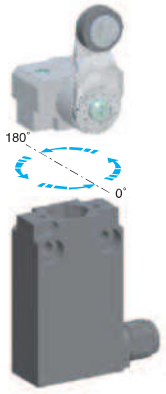
Standards	Devices conform with UL 508
Degree of protection:	
EP Series	Type 1 enclosure ("indoor use only")
EM Series	Type 4 - 4X - 6 enclosure ("outdoor use raintight - watertight - corrosion resistant")
Utilization categories:	
Cable versions	B300 - R300
M12 connector versions	Class-2

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

Implementation

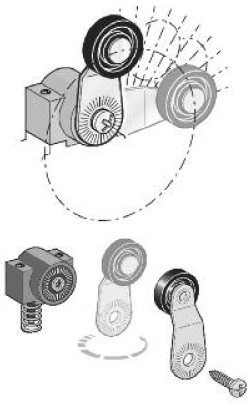
Operating head orientation

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 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



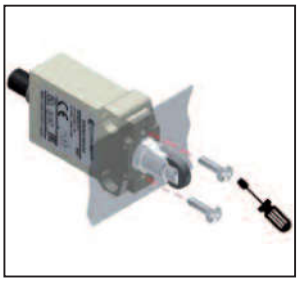


Cable connection orientation

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





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.

Please contact our technical department for further details.

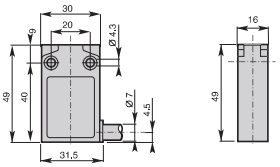
Pre-wired - Plastic Casing IP67 - 30 mm. width

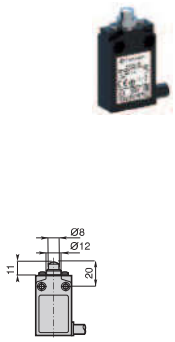
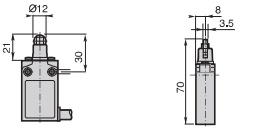
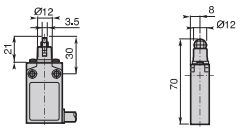
Electrical connection:

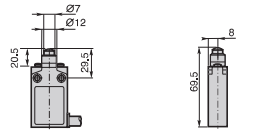
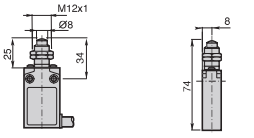
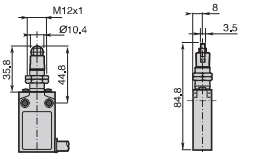
Pre-Wired

Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.



Contact Blocks	G11 - Plain plunger	G1• - Roller plunger G12: metal roller	G1• - Roller plunger G13: nylon roller	G1• - Cross roller plunger G14: metal roller	G1• - Cross roller plunger G15: nylon roller
					
					
Min. actuating force	15N (30N ⇔)	10N (30N ⇔)		10N (30N ⇔)	
Weight	125 g	130 g		130 g	
Z Snap Action Contacts (1NO + 1NC)	EP1G11ZU	EP1G12ZU	EP1G13ZU	EP1G14ZU	EP1G15ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G11XU	EP1G12XU	EP1G13XU	EP1G14XU	EP1G15ZU

Contact Blocks	G16 - Plain plunger with dust protection cup	G21 - Plain plunger with fixing nuts	G2• - Roller plunger with fixing nuts G22: metal roller	G2• - Roller plunger with fixing nuts G23: nylon roller
				
				
Min. actuating force	15N (30N ⇔)	15N (30N ⇔)	10N (30N ⇔)	
Weight	130 g	140 g	145 g	
Z Snap Action Contacts (1NO + 1NC)	EP1G16ZU	EP1G21ZU	EP1G22ZU	EP1G23ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G16XU	EP1G21XU	EP1G22XU	EP1G23XU

EP1G Series - Electrical connection

All the models can be supplied with the following electrical connection;

- **Dynamic PUR cable:** replace suffix "U" with suffix "UP" in the ordering code
- **Halogen free PUR cable:** replace suffix "U" with suffix "HF" in the ordering code
- **M12 connector:** replace suffix "U" with suffix "M" in the ordering code
- **AMP connector:** replace suffix "U" with suffix "A" in the ordering code

EXAMPLE



EP1G11ZU Standard version 1 m PVC cable
EP1G11ZUP 1 m dynamic PUR cable
EP1G11ZHF 1 m Halogen free PUR cable



EP1G11ZM
M12 connector



EP1G11ZA
AMP connector

Operation diagrams: page 108 - All dimensions are in mm

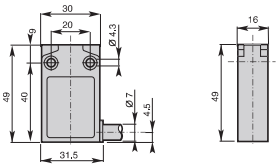
Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

Pre-Wired

Cable: PVC 4 x 0,75 mm²

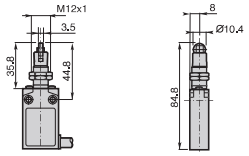
Lenght: 1 m.



G2• - Cross roller plunger with fixing nuts

G24: metal roller G25: nylon roller

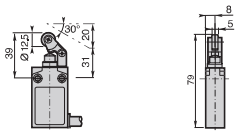




Min. actuating force	**10N (30N ⊖)**
Weight	**145 g**

G31 - Nylon roller lever

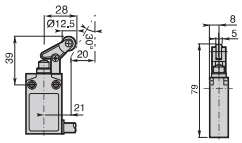




Min. actuating force	**7N (24N ⊖)**
Weight	**130 g**

G32 - Nylon roller lever



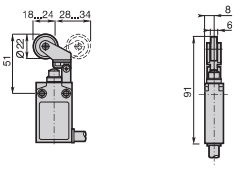


Min. actuating force	**7N (24N ⊖)**
Weight	**130 g**

Contact Blocks				
Z Snap Action Contacts (1NO + 1NC)	EP1G24ZU	EP1G25ZU	EP1G31ZU	EP1G32ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G24XU	EP1G25XU	EP1G31XU	EP1G32XU

G38 - Adjustable nylon roller lever

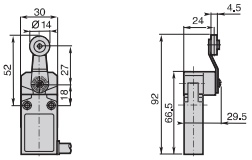




Min. actuating force	**7N (24N ⊖)**
Weight	**135 g**

G41 - Ø14 nylon roller lever

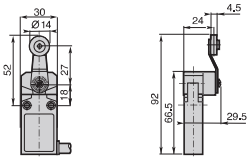




Min. actuating torque	**0,08Nm (0,28Nm ⊖)**
Weight	**175 g**

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	
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G38XU	EP1G41XU	EP1G42XU	

EP1G Series - Electrical connection

All the models can be supplied with the following electrical connection;

- **Dynamic PUR cable:** replace suffix "U" with suffix "UP" in the ordering code
- **Halogen free PUR cable:** replace suffix "U" with suffix "HF" in the ordering code
- **M12 connector:** replace suffix "U" with suffix "M" in the ordering code
- **AMP connector:** replace suffix "U" with suffix "A" in the ordering code

EXAMPLE



EP1G11ZU Standard version 1 m PVC cable
EP1G11ZUP 1 m dynamic PUR cable
EP1G11ZHF 1 m Halogen free PUR cable



EP1G11ZM
M12 connector



EP1G11ZA
AMP connector

Operation diagrams: page 108 - All dimensions are in mm

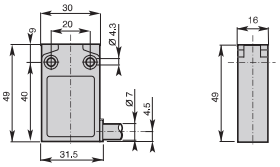
Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

Pre-Wired

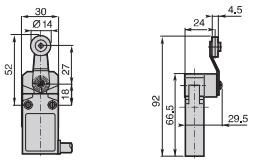
Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.



G43 - Ø14 roller lever with ball bearing

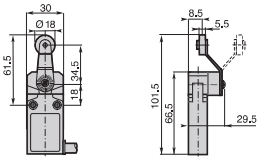




Min. actuating torque 0,08Nm (0,28Nm ⊖)
Weight 175 g

G45 - Ø18 nylon roller lever

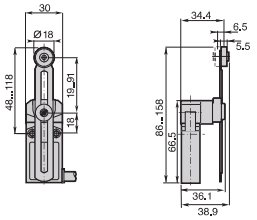




Min. actuating torque 0,08Nm (0,28Nm ⊖)
Weight 180 g

G51 - Adjustable lever with Ø18 nylon roller





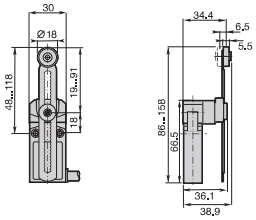
Min. actuating torque 0,08Nm (0,28Nm ⊖)
Weight 190 g

Contact Blocks

Z Snap Action Contacts (1NO + 1NC)	EP1G43ZU	EP1G45ZU	EP1G51ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G43XU	EP1G45XU	EP1G51XU

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

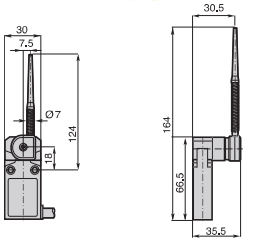




Min. actuating torque 0,08Nm (0,28Nm ⊖)
Weight 190 g

G61 - Nylon actuator with stainless steel spring

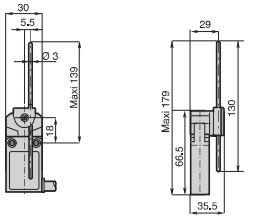




Min. actuating torque 0,08Nm
Weight 190 g

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
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G5100XU	EP1G61XU	EP1G71XU

EP1G Series - Electrical connection

All the models can be supplied with the following electrical connection;

- **Dynamic PUR cable:** replace suffix "U" with suffix "UP" in the ordering code
- **Halogen free PUR cable:** replace suffix "U" with suffix "HF" in the ordering code
- **M12 connector:** replace suffix "U" with suffix "M" in the ordering code
- **AMP connector:** replace suffix "U" with suffix "A" in the ordering code

EXAMPLE



EP1G11ZU Standard version 1 m PVC cable
EP1G11ZUP 1 m dynamic PUR cable
EP1G11ZHF 1 m Halogen free PUR cable



EP1G11ZM
M12 connector



EP1G11ZA
AMP connector

Operation diagrams: page 108 - All dimensions are in mm

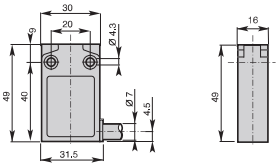
Pre-wired - Plastic Casing IP67 - 30 mm. width

Electrical connection:

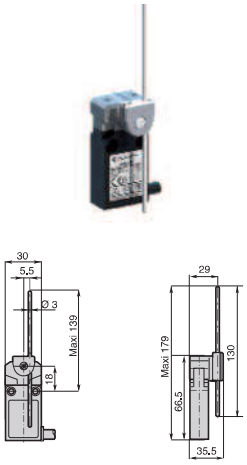
Pre-Wired

Cable: PVC 4 x 0,75 mm²

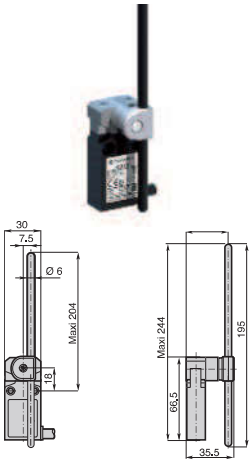
Lenght: 1 m.



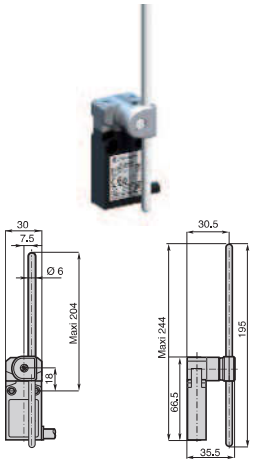
G72 - Adjustable Ø3 fiberglass rod lever



G73 - Adjustable Ø6 nylon rod lever

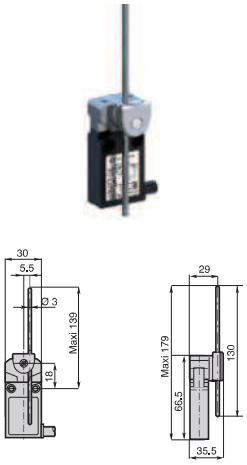


G74 - Adjustable Ø6 fiberglass rod lever

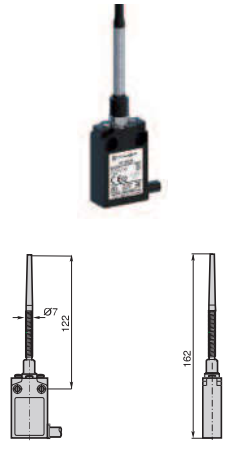


Contact Blocks	G72	G73	G74
	Min. actuating torque 0,08Nm (0,28Nm ⊖) Weight 185 g	Min. actuating torque 0,08Nm (0,28Nm ⊖) Weight 200 g	Min. actuating torque 0,08Nm (0,28Nm ⊖) Weight 200 g
Z Snap Action Contacts (1NO + 1NC)	EP1G72ZU	EP1G73ZU	EP1G74ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G72XU	EP1G73XU	EP1G74XU

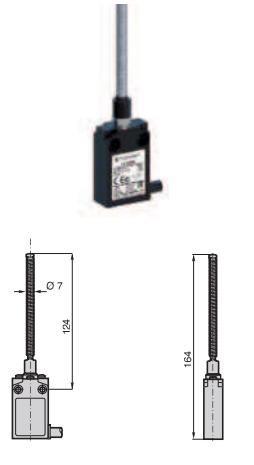
G75 - Adjustable 3x3 square steel rod lever



G92 - Multidirectional nylon actuator with stainless steel spring



G93 - Multidirectional actuator with stainless steel spring



Contact Blocks	G75	G92	G93
	Min. actuating torque 0,08Nm (0,28Nm ⊖) Weight 185 g	Min. actuating torque 0,10Nm Weight 195 g	Min. actuating torque 0,10Nm Weight 200 g
Z Snap Action Contacts (1NO + 1NC)	EP1G75ZU	EP1G92ZU	EP1G93ZU
X Non overlapping Slow Action Contacts (1NO + 1NC)	EP1G75XU	EP1G92XU	EP1G93XU

EP1G Series - Electrical connection

All the models can be supplied with the following electrical connection;

- **Dynamic PUR cable:** replace suffix "U" with suffix "UP" in the ordering code
- **Halogen free PUR cable:** replace suffix "U" with suffix "HF" in the ordering code
- **M12 connector:** replace suffix "U" with suffix "M" in the ordering code
- **AMP connector:** replace suffix "U" with suffix "A" in the ordering code

EXAMPLE



EP1G11ZU Standard version 1 m PVC cable
EP1G11ZUP 1 m dynamic PUR cable
EP1G11ZHF 1 m Halogen free PUR cable



EP1G11ZM
M12 connector



EP1G11ZA
AMP connector

Operation diagrams: page 108 - All dimensions are in mm