



# Microswitch - SERIES MP110

Series MP110



## MP110

Sealed basic snap action microswitch. A precision microswitch for high breaking capacity, the MP110 series offers IP67 protection using a wide range of interchangeable actuators.

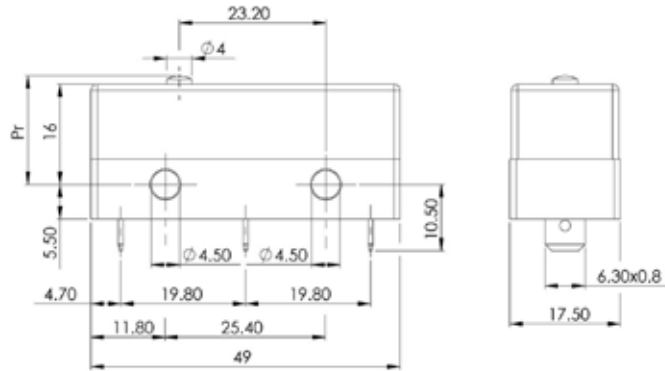
The housing is IP67 sealed using an ultrasonic welding process. AMP style solder lugs allow the use of an additional plug in socket for a complete IP67 cable solution.

A protective terminal cover with field wiring kit allows IP64 protection.

The right microswitch for industrial use when IP67 protection is needed. Changing the switch without changing the wire connection is a big plus for this switch.



# Description



## MP110

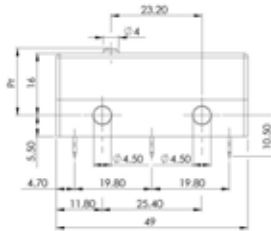
### Approval

EN 61058-1	250VAC/15A	50'000 cycles
EN 61058-1	400VAC/10A	50'000 cycles
UL 61058-1	250VAC/15A	50'000 cycles
UL 61058-1	400VAC/10A	50'000 cycles
Resistive load		

<b>Housing</b>	Plastic reinforced with glass fiber (PBT)
<b>Pin Button</b>	PC
<b>Membrane</b>	Fluorosilicone - other optional materials available
<b>Switching Circuit</b>	Change over - snap action with blade spring in copper/beryllium
<b>Contact</b>	Silver - optional gold
<b>Connection</b>	AMP solder lugs 6.35x0.80 mm, plug-in socket, protection cover
<b>Actuator</b>	Stainless steel
<b>Degree of Protection</b>	Housing IP67 Connection IP00 Protection Cover IP64 Plug-in IP67
<b>Class of Protection</b>	II
<b>Micro-switching</b>	μ
<b>Distance between Contacts</b>	0.50 mm
<b>Dimensions</b>	DIN 41 635, form EF 49 x 21.5 x 17.5 mm
<b>Actuation Force</b>	Between 0.2 to 6.0 N, depending on the lever
<b>Differential Travel</b>	0.05 mm - Optional 0.02 mm
<b>Temperature Range</b>	EN 61058-1 -40°C to +130°C UL 61058-1 -40°C to +125°C
<b>Mechanical Life</b>	50 x 10 <sup>6</sup> cycles

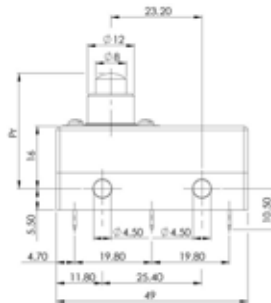
# Actuator

Type 0: Basic switch - Pin Button



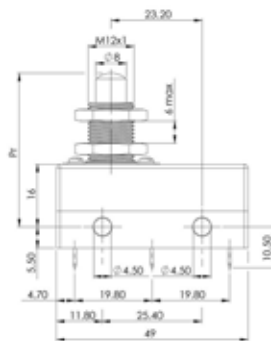
Actuating Force $F_a$ max. (N)	6.0
Release Force $F_r$ min. (N)	3.0
Free Position $P_r$ (mm)	$17.4 \pm 0.5$
Operating Position $P_a$ (mm)	$16.6 \pm 0.3$
Over-Travel $s_r$ min. (mm)	0.25
Differential Travel $s_d$ max. (mm)	0.06

Type 1S29: Telescopic



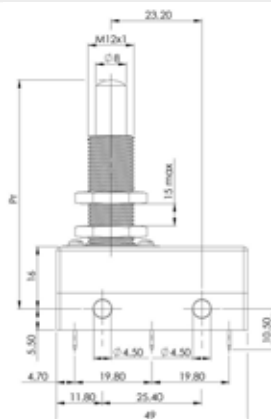
Actuating Force $F_a$ max. (N)	6.0
Release Force $F_r$ min. (N)	3.0
Free Position $P_r$ (mm)	$29.3 \pm 0.6$
Operating Position $P_a$ (mm)	$28.5 \pm 0.3$
Over-Travel $s_r$ min. (mm)	2.0
Differential Travel $s_d$ max. (mm)	0.08

Type 1A: Telescopic with Short Thread



Actuating Force $F_a$ max. (N)	6.0
Release Force $F_r$ min. (N)	3.0
Free Position $P_r$ (mm)	$39.1 \pm 0.6$
Operating Position $P_a$ (mm)	$38.4 \pm 0.3$
Over-Travel $s_r$ min. (mm)	5.0
Differential Travel $s_d$ max. (mm)	0.08

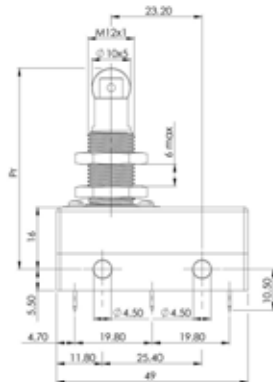
Type 1A58: Telescopic with Thread



Actuating Force $F_a$ max. (N)	6.0
Release Force $F_r$ min. (N)	2.5
Free Position $P_r$ (mm)	$58.0 \pm 1.0$
Operating Position $P_a$ (mm)	$57.3 \pm 0.3$
Over-Travel $s_r$ min. (mm)	10.0
Differential Travel $s_d$ max. (mm)	0.10

# Actuator

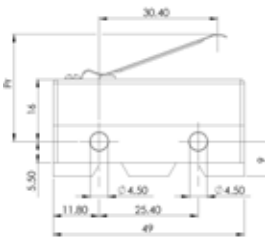
Type **1BL**: Telescopic with Roller



Actuating Force $F_a$ max. (N)	6.0
Release Force $F_r$ min. (N)	3.0
Free Position $P_r$ (mm)	$51.3 \pm 0.6$
Operating Position $P_a$ (mm)	$50.6 \pm 0.3$
Over-Travel $s_r$ min. (mm)	5.0
Differential Travel $s_d$ max. (mm)	0.08

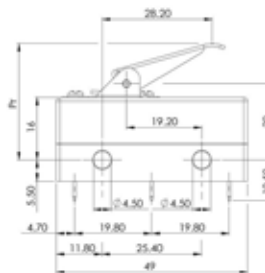
Optional: stainless steel roller, transvers roller

Type **2A**: Simple Lever - Direct Action -



Actuating Force $F_a$ max. (N)	3.5
Release Force $F_r$ min. (N)	1.0
Free Position $P_r$ (mm)	$26.0 \pm 2.0$
Operating Position $P_a$ (mm)	$19.0 \pm 2.0$
Over-Travel $s_r$ min. (mm)	2.0
Differential Travel $s_d$ max. (mm)	0.80

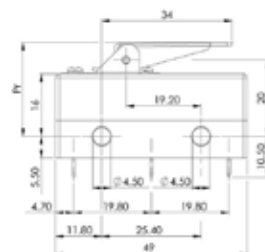
Type **3A**: Simple Lever - Indirect Action -



Actuating Force $F_a$ max. (N)	4.5
Release Force $F_r$ min. (N)	1.2
Free Position $P_r$ (mm)	$31.3 \pm 1.5$
Operating Position $P_a$ (mm)	$29.3 \pm 1.5$
Over-Travel $s_r$ min. (mm)	3.5
Differential Travel $s_d$ max. (mm)	0.50

Optional: lever mounted on opposite side

Type **3AS**: Simple lever - Indirect Action -



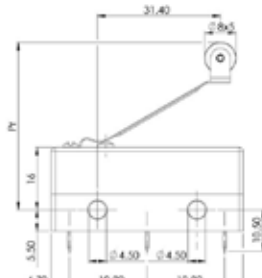
Actuating Force $F_a$ max. (N)	4.7
Release Force $F_r$ min. (N)	1.2
Free Position $P_r$ (mm)	$26.0 \pm 1.5$
Operating Position $P_a$ (mm)	$23.0 \pm 1.5$
Over-Travel $s_r$ min. (mm)	3.5
Differential Travel $s_d$ max. (mm)	0.60

Optional: lever mounted on opposite side

# Actuator

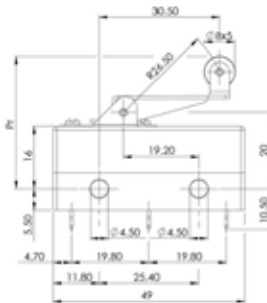
Series MP110

Type **4AL**: Simple Lever with Roller - **Direct Action** -



Actuating Force $F_a$ max. (N)	3.5
Release Force $F_r$ min. (N)	1.0
Free Position $P_r$ (mm)	$39.0 \pm 2.0$
Operating Position $P_a$ (mm)	$31.0 \pm 2.0$
Over-Travel $s_r$ min. (mm)	2.0
Differential Travel $s_d$ max. (mm)	0.80

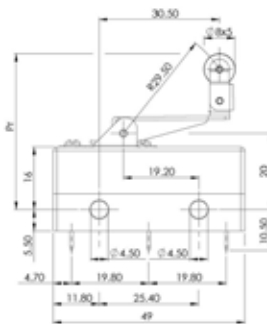
Type **5AL**: Simple Lever with Roller - **Indirect Action** -



Actuating Force $F_a$ max. (N)	4.5
Release Force $F_r$ min. (N)	1.2
Free Position $P_r$ (mm)	$35.8 \pm 1.5$
Operating Position $P_a$ (mm)	$33.0 \pm 1.5$
Over-Travel $s_r$ min. (mm)	3.5
Differential Travel $s_d$ max. (mm)	0.60

Optional: lever mounted on opposite side, stainless steel roller, transvers roller

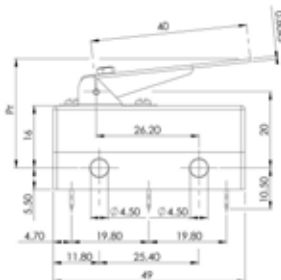
Type **6AL**: Simple Lever with Bending Roller - **Indirect Action** -



Actuating Force $F_a$ max. (N)	4.5
Release Force $F_r$ min. (N)	1.2
Free Position $P_r$ (mm)	$41.9 \pm 1.5$
Operating Position $P_a$ (mm)	$39.0 \pm 1.5$
Over-Travel $s_r$ min. (mm)	3.5
Differential Travel $s_d$ max. (mm)	0.60

Optional: lever mounted on opposite side, stainless steel roller, transvers roller

Type **7A40**: Simple Adjustable Lever - **Direct Action** -

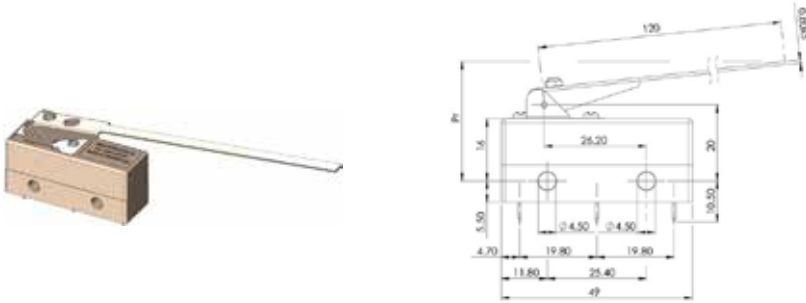


Actuating Force $F_a$ max. (N)	0.6
Release Force $F_r$ min. (N)	0.2
Free Position $P_r$ (mm)	-
Operating Position $P_a$ (mm)	Ajustable
Over-Travel $s_r$ min. (mm)	-
Differential Travel $s_d$ max. (mm)	0.80

Optional: lever mounted on opposite side

# Actuator

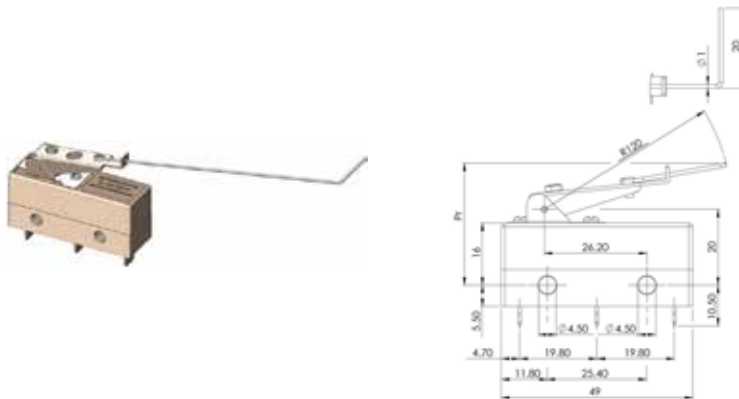
## Type 7A120: Simple Long Adjustable Lever - Direct Action -



Actuating Force $F_a$ max. (N)	0.2
Release Force $F_r$ min. (N)	0.05
Free Position $P_r$ (mm)	-
Operating Position $P_a$ (mm)	Ajustable
Over-Travel $s_r$ min. (mm)	-
Differential Travel $s_d$ max. (mm)	3.00

Optional: lever mounted on opposite side

## Type 7AC: Simple Lever with Adjustable Wire - Direct Action -



Actuating Force $F_a$ max. (N)	0.2
Release Force $F_r$ min. (N)	0.05
Free Position $P_r$ (mm)	-
Operating Position $P_a$ (mm)	Ajustable
Over-Travel $s_r$ min. (mm)	-
Differential Travel $s_d$ max. (mm)	4.00

Optional: lever mounted on opposite side

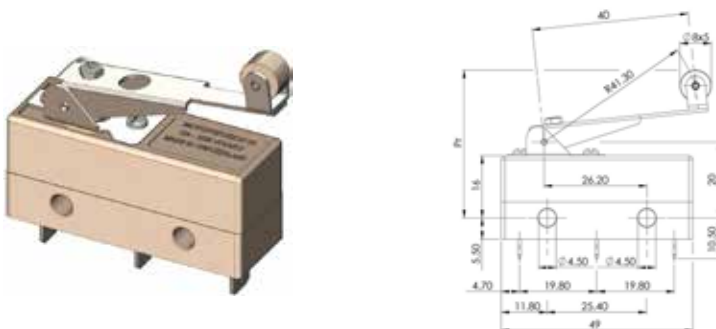
## Type 7AF/63.5/50: Simple Lever with Floater - Direct Action -



Actuating Force $F_a$ max. (N)	-
Release Force $F_r$ min. (N)	-
Free Position $P_r$ (mm)	-
Operating Position $P_a$ (mm)	Ajustable
Over-Travel $s_r$ min. (mm)	-
Differential Travel $s_d$ max. (mm)	2.00

Optional: lever mounted on opposite side

## Type 8AL40: Simple Adjustable Lever with Roller - Direct Action -



Actuating Force $F_a$ max. (N)	0.6
Release Force $F_r$ min. (N)	0.2
Free Position $P_r$ (mm)	-
Operating Position $P_a$ (mm)	Ajustable
Over-Travel $s_r$ min. (mm)	-
Differential Travel $s_d$ max. (mm)	0.80

Optional: lever mounted opposite side, stainless steel roller, transvers roller

# Electrical Circuit

	Actuator Code	Circuit		Actuator Code	Circuit
<b>Direct Action</b>	0		<b>Indirect Action</b>	3A	
	1S29				
	1A				
	1A58				
	1BL				
	2A				
	4AL				
	7A40				
	7A120				
	7AC				
	7AF/63.5/50				
	8AL40				

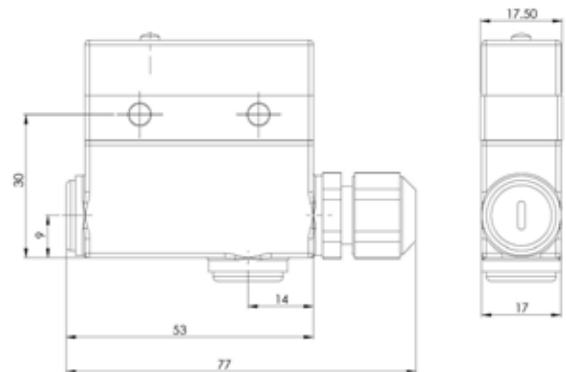
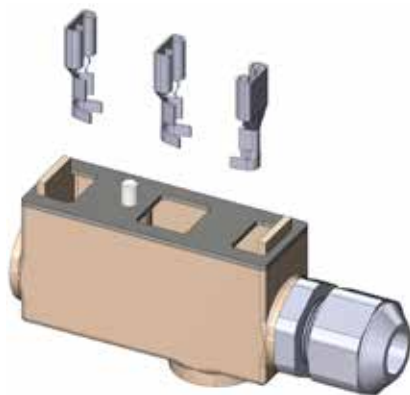
## Protection Cover MP110-Z

The protective cover MP110-Z(1) with its cable gland PG7(4) guarantees the contacts a degree of protection. A sealing gasket(2) is compressed by tightening the fixing screw M3(3).

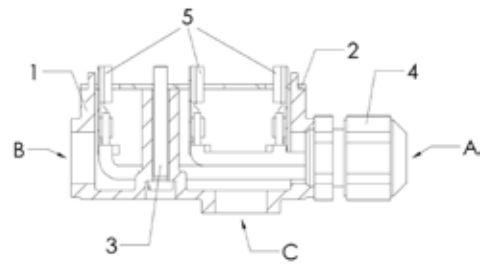
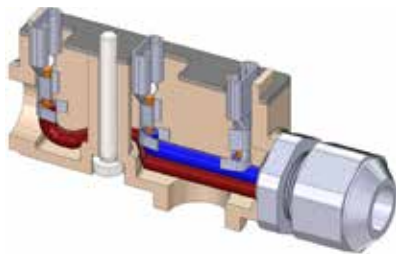
There are 3 possible cable outlets, A,B or C. The electrical connection is made with 3 clips 6.35 x 0.8 mm(5) which are crimped to the cable by the end-user.

### MP110-Z

Protection Cover IP64



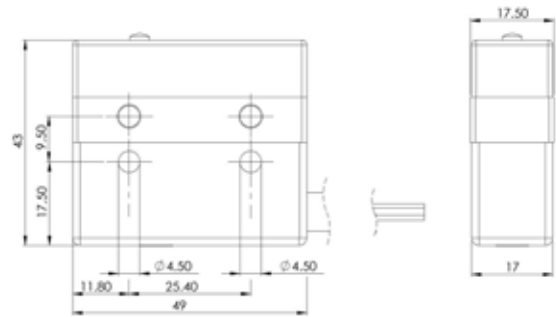
**MP110-Z**  
Protective Cover IP64 - wired



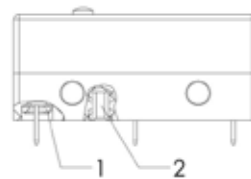
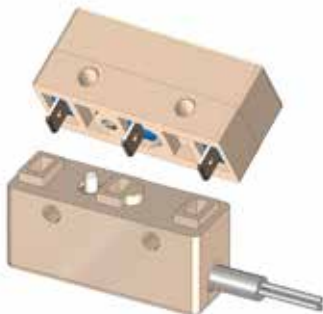
## Plug-in protection MP100../..

The plug-in socket MP100 with its sealing gasket (1) guarantees a contact protection IP67. The mounting and tightening is made with a screw M3 (2) housed in the socket. The socket is supplied with a cable of your choice directly soldered and potted into the housing.

**MP100-../..**  
Plug-in protection IP67



**MP100-../..**  
Plug-in protection IP67 - fixation





# Cable Options

## MP100-K(L)/10

Polyvinyl Chloride Cable    3 x 1 mm<sup>2</sup>    -20°C to +105°C    400VAC 10A

## MP100-K(L)/15

Polyvinyl Chloride Cable    3 x 1.5 mm<sup>2</sup>    -20°C to +105°C    250VAC 15A

## MP100-SI(L)/10

Silicone Cable    3 x 1 mm<sup>2</sup>    -40°C to +130°C    400VAC 10A

## MP100-SI(L)/15

Silicone Cable    3 x 1.5 mm<sup>2</sup>    -40°C to +130°C    250VAC 15A

## MP100-PUR(L)/10

Polyurethane Cable    3 x 1 mm<sup>2</sup>    -40°C to +90°C    400VAC 10A

## MP100-PUR(L)/15

Polyurethane Cable    3 x 1.5 mm<sup>2</sup>    -40°C to +90°C    250VAC 15A

**L:** Length of the cable in meters(m)

# Color code of wires

	Actuator Code	Circuit	Color
<b>Direct Action</b>	0		MP100-K: 1 / Brown - 2 / Black - 4 / Blue MP100-SI: 1 / Red - 2 / White - 4 / Blue MP100-PUR: 1 / Red - 2 / White - 4 / Blue
	1S29		
	1A		
	1A58		
	1BL		
	2A		
	4AL		
	7A40		
	7A120		
	7AC		
7AF/63.5/50			
8AL40			
<b>Indirect Action</b>	3A		MP100-K: 1 / Brown - 2 / Black - 4 / Blue MP100-SI: 1 / Red - 2 / White - 4 / Blue MP100-PUR: 1 / Red - 2 / White - 4 / Blue
	3AS		
	5AL		
	6AL		



# Ordering Information

		MP11	0	-	5AL	+	MP100-K2/10
<b>Contact</b>							
0:	Silver Contact						
1:	Gold Contact						
<b>Actuator</b>							
0:	Basic switch - Pin Button						
1S29:	Telescopic						
1A:	Telescopic with Short Thread						
1A58:	Telescopic with Thread						
1BL:	Telescopic with Roller						
2A:	Simple Lever - Direct Action						
3A:	Simple Lever - Indirect Action						
3AS:	Simple Lever - Indirect Action						
4AL:	Simple Lever with Roller - Direct Action						
5AL:	Simple Lever with Roller - Indirect Action						
6AL:	Simple Lever with Bending Roller - Indirect Action						
7A40:	Simple Adjustable Lever - Direct Action						
7A120:	Simple Adjustable Lever - Direct Action						
7AC:	Simple Adjustable Lever with Wire – Direct Action						
7AF /63.5/50:	Simple Lever with Floater - Direct Action						
8AL40:	Simple Adjustable Lever with Roller - Direct Action						
<b>Optional</b>							
MP110-Z	Protection Cover IP64						
MP100-K../..	Plug-in Polyvinyl Chloride Cable L(m), optional 10 or 15A						
MP100-SI../..	Plug-in Silicone Cable L(m), optional 10 or 15A						
MP100-PUR../..	Plug-in Polyurethane Cable L(m), optional 10 or 15A						

Series MP110