

■ Introducing APEM's MP Series: Taking remote control to a new level of safety



Our MP Series
2 step pushbutton
is SIL2 -

with redundant optical
contacts for fail safe
security in the harshest
environments.



MP Switches: the choice for demanding environments including nuclear, industrial, medical, testing and mining equipment, agriculture and forestry.

Features/Options	Benefits
SIL2 <ul style="list-style-type: none"> • 2 different optical controls for each active position • 2 mechanical systems: membrane & springs 	Heightened security for employees, equipment & facilities
2 speeds Optional adjustable operating force	Versatility in applications and in use
Integrated PCB	Reduced mounting time
Push & audible click	Tactile feedback
Mechanically robust - more than 1 million cycles	Long lived
Sealed to IP68	Dust tight and protected against immersion
Replaceable cap!	Fast, no hassle wear part replacement



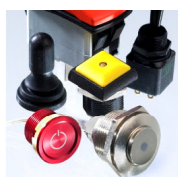
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MP Series two-step momentary pushbutton switches with optical barrier contacts are designed for control of two-speed motors.

❑ **SIL2**

Safety Integrity Level (SIL2) is a safety level defined by the IEC 61508 standard, corresponding to a high protection level for the equipment, production and employees.

The electrical and mechanical redundancy of MP pushbuttons are ensured by :

- redundant optical contacts for each active position,
- two mechanical systems (a membrane and two springs).

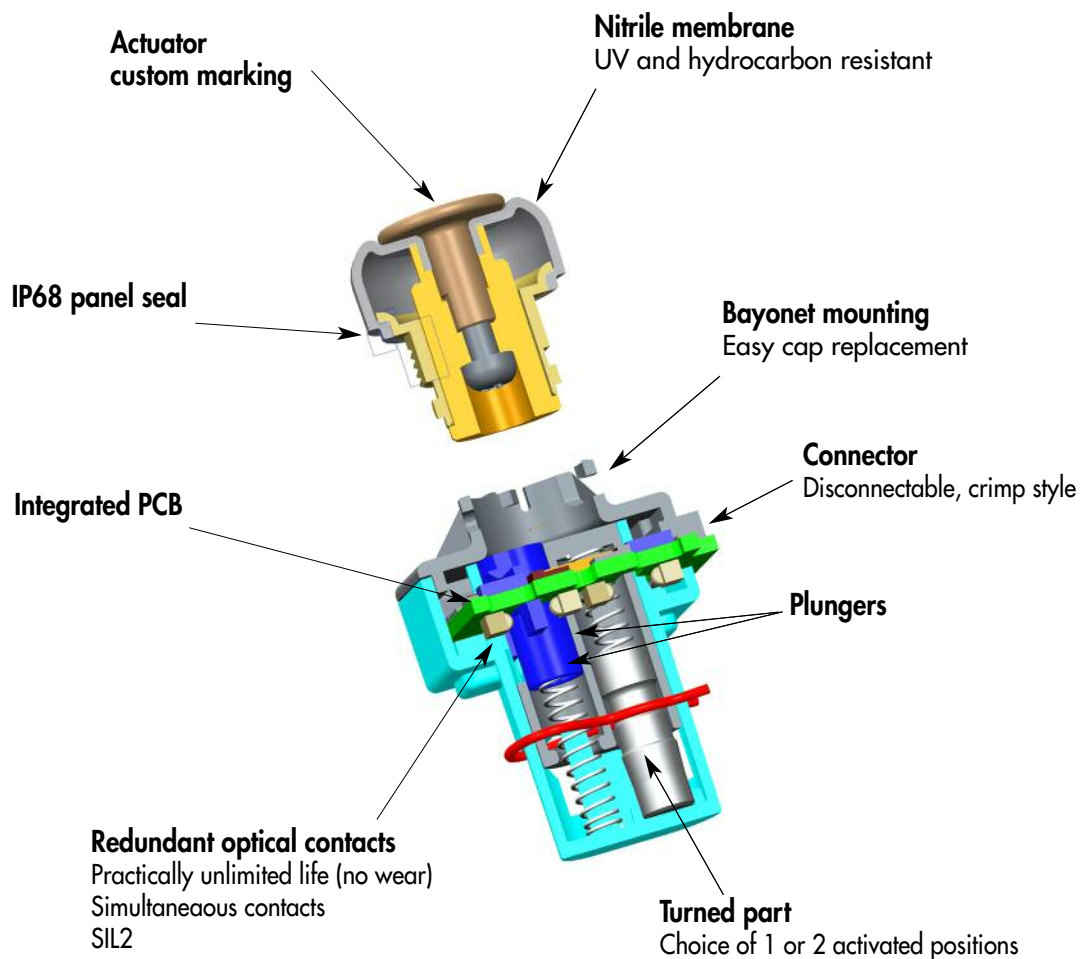
In case of mechanical or electrical failure, the pushbutton will provide a low logic signal if the equipment control system is programmed to verify output activation state.

❑ **Easy to integrate**

Disconnectable crimp style connector. The PCB is integrated in the switch.

❑ **Resistant to harsh environments**

IP68 front panel sealing and a nitrile membrane resistant to UV and hydrocarbons make MP pushbuttons ideal for harsh environment applications.



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MP series

Two-step pushbutton switches

Distinctive features and specifications



- SIL 2
- Easy to integrate
- Sealed to IP68
- UV and hydrocarbon resistant

ELECTRICAL AND GENERAL SPECIFICATIONS

- Current/voltage rating : 20mA 5VDC max. / 3,3VDC min.
- Idling current : 20 to 80mA 5VDC - 11 to 44mA 3,3VDC`
- NPN output signal : 20mA with 12VDC max. commutation voltage
- Operating force :
 - 1 step : 11,5N ± 1,5N
 - 2 steps : 14,5N ± 1,5N
- Travel :
 - 1 step : 4 mm ± 0,4 mm
 - 2 steps : 6,65 mm ± 0,4 mm
- Life expectancy : 1 million cycles on each position

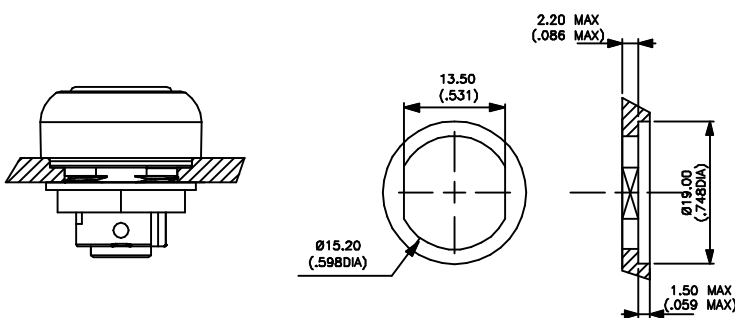
MATERIALS

- Case + plungers : POM
- Bezel membrane : UV and hydrocarbon resistant nitrile
- Bushing + actuator : polyamide 6/6
- Connector : disconnectable crimp-style

ENVIRONMENTAL SPECIFICATIONS

- SIL 2 according to IEC 61508
- Sealing to IP68 according to IEC 529
- Operating temperature : -20°C to +70°C
- Static resistance : 10KV

PANEL CUT-OUT & RECOMMENDED MOUNTING



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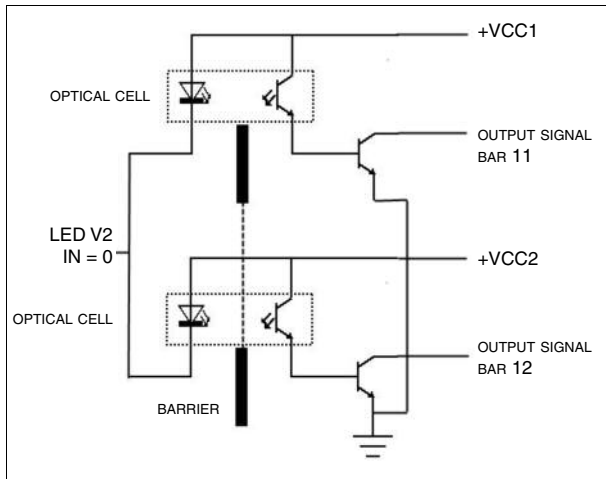
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Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.

Tolerance : The general tolerance for dimensions in this brochure is ± 0,3 (.012).

Dimensions, specifications and data shown in this brochure are subject to change without notice.

Diagram of an optical barrier redundant in position 1



MP pushbutton switches feature two active positions.

Each position is activated by redundant optical contacts.

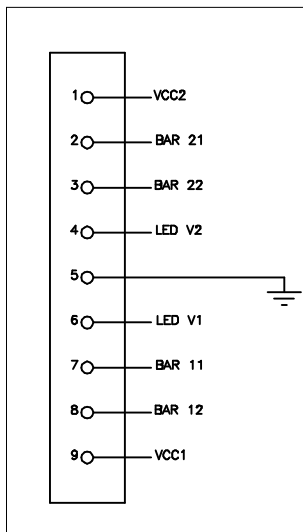
The redundant barriers have separate power supplies.

The output signal is equivalent to a NPN output signal.



The load should be connected between VCC and Output Bar Signal

Wiring diagram for connector JST SM09B-SRSS-TB

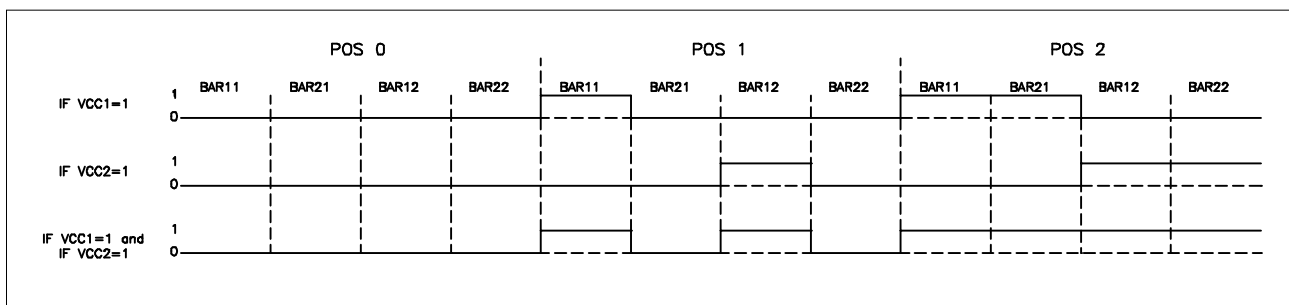


BAR 11 = output signal of step 1
 BAR 12 = output signal of step 1
 BAR 21 = output signal of step 2
 BAR 22 = output signal of step 2

VCC1 supplies the optical barriers with BAR 11 and BAR 21 outputs.
 VCC2 supplies the optical barriers with BAR 12 and BAR 22 outputs.

Optical cell inputs LED V2 and LED V1 are at zero.

Activation state of optical cells



Note : MP pushbutton switches can be used in low power mode. Please contact APEM.



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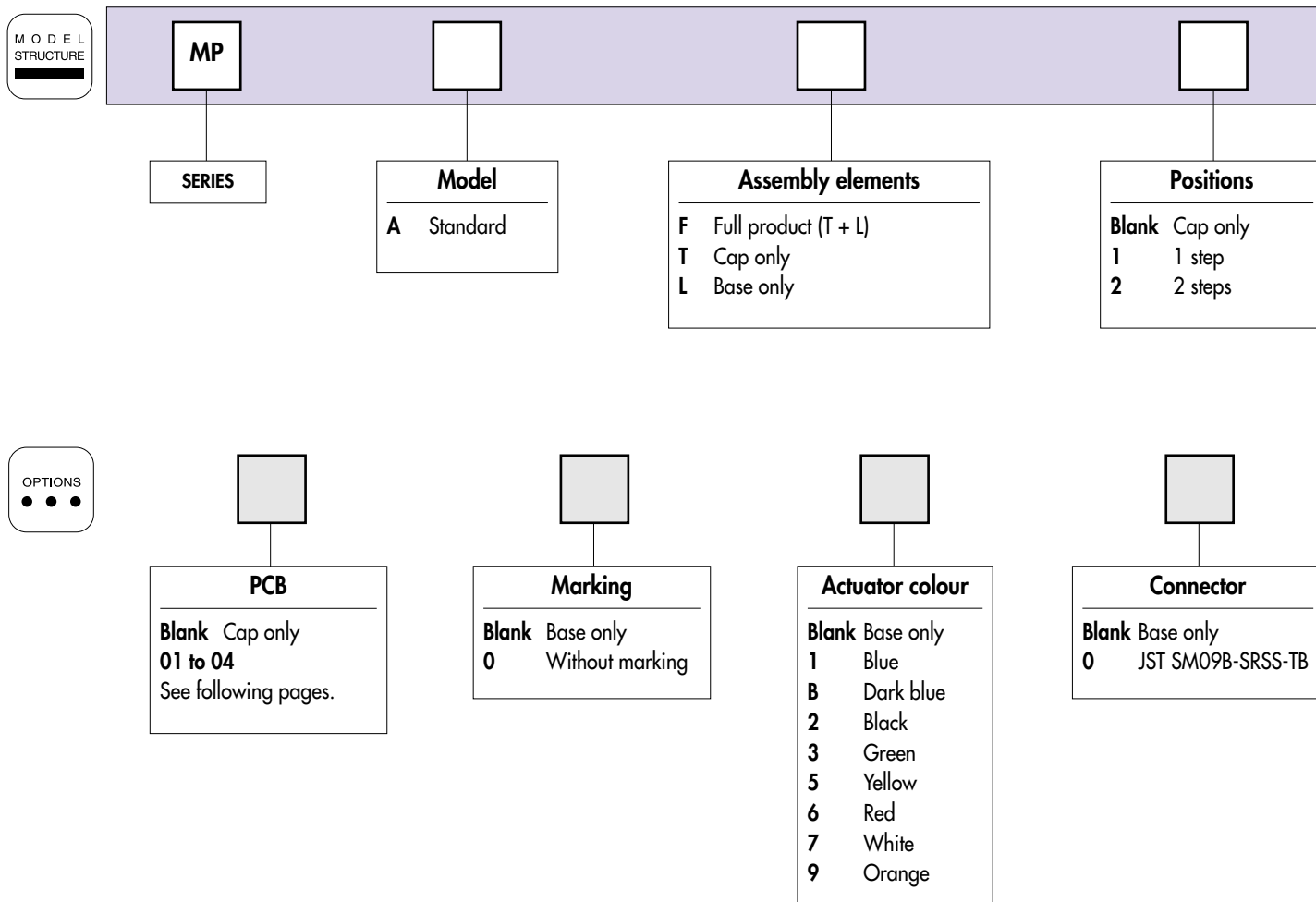
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MP series

Two-step pushbutton switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :
model structure of switches and options in the same order as in above chart

Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.



NOTICE : please note that not all combinations of above numbers are available.
Refer to the following pages for further information.



Packaging unit : 20 pieces

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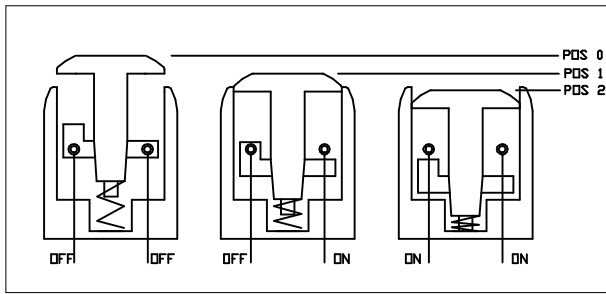
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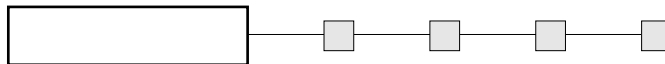


MP series

Two-step pushbutton switches



MODEL
STRUCTURE

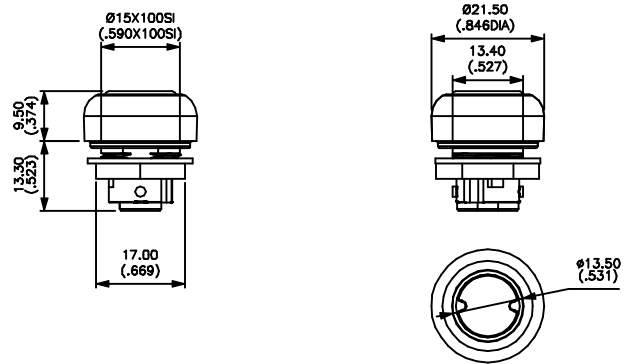


Cap only



MPAT

Add the desired actuator (see options).

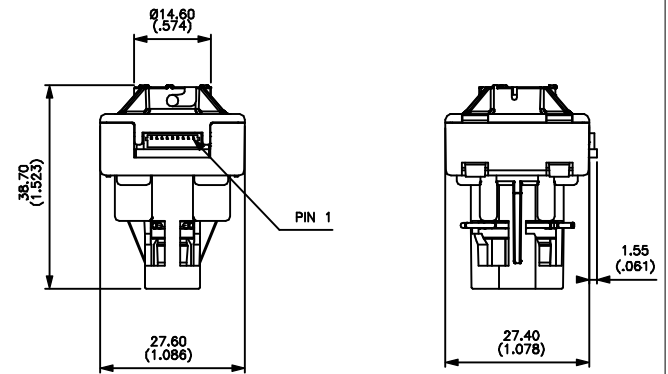


Switch base only



MPAL

Add the desired PCB (see options).



Full product

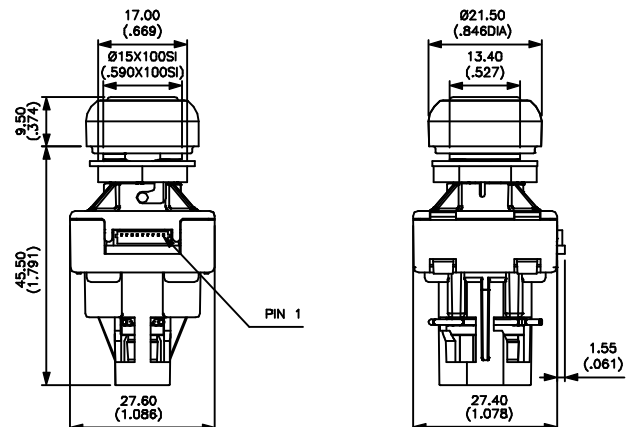


One-step switch
MPAF1

OFF MOM

Two-step switch
MPAF2

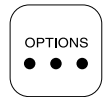
OFF MOM MOM



MP series

Two-step pushbutton switches

Options



PCB



Blank Cap only

	No of barriers	No of steps	Contact Redundancy
01	4	2	yes
02	2	1	yes
03	2	2	no
04	1	1	no

MARKING



Blank Base only

0 Without marking

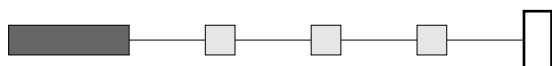
ACTUATOR COLOUR



Blank Base only

- 1** blue
- B** dark blue
- 2** black
- 3** green
- 5** yellow
- 6** red
- 7** white
- 9** orange

CONNECTOR



Blank Cap only

0 JST SM09B-SRSS-TB