

Manufactured from Stainless Steel, Bulgin's extensive range of vandal resistant security switches are designed with a high resistance to wear and tear, corrosion and harsh use in potentially hostile environments such as access control applications.

The front and rear panel mounted versions have three profiles –prominent, domed and low profile – with a choice of switching and IP66 & IP68 front panel sealing which combined together to meet the ergonomic, electrical and environmental demands of switch panel design.

And where the ultimate strength of steel is not needed, there is a brass, chrome plated alternative. The low profile style switches are now also available with a latching, push on - push off, action.

The illuminated versions are available in dot and ring LED indication and a variety of illumination colours including bi-colour LED's. Newer versions also feature LED illumination driven by 6V, 12V & 24V together with rear of panel sealing, these options will add that extra dimension to control panel layouts and functionality.

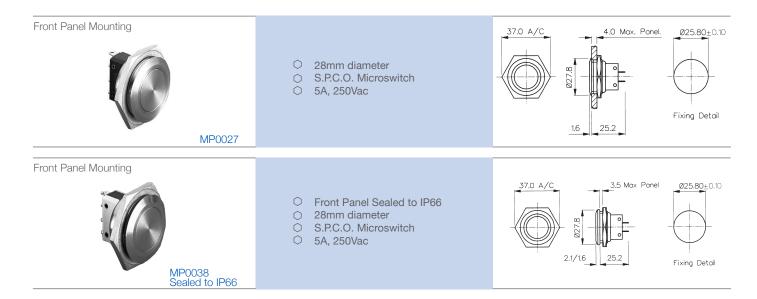


165-185 186-195 Vandal Resistant Push Button Voltage Selectors 196 197-202 Capacitive Switches Piezo Switches 203-208 12mm Switches 209-214 **Rocker Switches** 215-241 242-246 247-252 Toggle Switches Refrigerator Switches Slide Switches

### Switches Stainless Steel Low Profile Vandal Resistant

Momentary





Specifications	MP0027	MP0038
Terminations:	Solder Tags	Solder Tags
Switching:	S.P.C.O. Momentary Action (Microswitch)	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	5A, 250Vac 2A, 28Vdc	5A, 250Vac 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	>10 <sup>3</sup> MΩ	>10 <sup>3</sup> MΩ
Dielectric Strength:	>2.0kVac	>2.0kVac
Operating Temp. Range:	-20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):		Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	12.5N (typ)
Rear Nut Fixing Torque:	2.5Nm	1.13Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Fine Silver	Fine Silver
Thread size:	1.0" x 26TPI	1.0" x 26TPI
RoHS	Compliant	Compliant

Momentary





Specifications	MP0037	MP0031
Terminations:	Screw Terminals	Solder Tags
Switching:	S.P. Push to make Momentary action	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	1A, 50Vac/dc	5A, 250Vac 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	>10 <sup>5</sup> MΩ	>10 <sup>3</sup> MΩ
Dielectric Strength:	>1.0kVac	>2.0kVac
Operating Temp. Range:	–20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):	Protection Classification: IP68 EN 60529:1992+A2:2013 (Micro switch not sealed)	Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
IP68 rating 10M for 2 weeks test:	Passed	
Operations Mechanical: Electrical:	1,000,000 (min) 30,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	4.7N (typ)
Rear Nut Fixing Torque:	0.57Nm	0.57Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Silver Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Brass, Silver Plated, Silver	Fine Silver
Thread size:	0.747" x 26TPI	0.747" x 26TPI
RoHS	Compliant	Compliant





Specifications	MPI001/Termination	on/Colour/V	oltage				
Illumination style: Terminations:	Dot /28 (2.8mm tabs), /TERM or /TE (screw 1			\ \			
Switching:	Single pole, push to n	iake, tactile (rr	iomentary acti	on)			
Max. Switch Rating:	50mA, 24Vdc						
LEDs (ratings @ 20mA) Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Colour	/RD         /GN           Red         Green           900mcd         2500mcd           1.85V         3.5V           20mA         20mA           Red         Green	/AM Amber 900mcd 2.3V 20mA Amber	/BL Blue 1500mcd 3.5V 20mA Blue	/WH White 900mcd 3.6V 20mA White	/D1 Red/Green 2500mcd/5000mcd 2.05V/3.6V 20mA Black	/D4 Red/Blue 2000mcd/850mcd 2.0V/3.6V 20mA Black	/D5 Green/Blue 4000mcd/2000mcd 3.6V/3.6V 20mA Black
Illumination Voltage: Contact Resistance: Insulation Resistance: Dielectric Strength:	/no suffixNo resistor/6 $6Vdc$ /12 $12Vdc$ /24 $24Vdc$ <100m $\Omega$ >10 <sup>3</sup> M $\Omega$ Contact to Panel >2.0Contact to Contact 15	kV	opriate resisto	r must be se	eries connected by the u	iser. Voltages as above.	
Operating Temp. Range: Sealing (Front of panel only): Operations Mechanical: Electrical:	-30°C to +70°C Protection Classification: 750,000 (min) 35,000 (min)	IP66 EN60529-1	:1992 + A2:2013	8. (Micro switch	n not sealed)		
Operating Pressure: Rear Nut Fixing Torque:	12N 0.57Nm						
Screw Terminal Torque Materials	0.2Nm Max					Dual Colour L	ED Configuration
Switch assembly: Tags: Terminals: Switch Body & Button: Lens and Lens Body:	UL94V-0 rated Polyan Copper Alloy Copper Alloy Stainless Steel Polycarbonate	nide (Nylon)				/D1	+ Red Green
O ring: Internal seal: Contact Plate: Thread size:	Nitrile Silicone Gold Plated 18.97mm x 26TPl					/D4	+ Blue
ROHS	Compliant					/D5	+ Green

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Specifications	MPI002/Te	erminati	on/Colou	ır/Voltage					
Illumination style: Terminations:	Ring /28 (2.8mm /TERM or /1		terminals)						
Switching:	Single pole,			e (momenta	ry action)				
Max. Switch Rating:	50mA, 24Vc	dc							
LEDs (ratings @ 20mA) Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Colour	Red         G           900mcd         28           1.85V         3.           20mA         20	GN àreen 500mcd 5V 0mA àreen	/AM Amber 900mcd 2.3V 20mA Amber	/BL Blue 1500mcd 3.5V 20mA Blue	/WH White 900mcd 3.6V 20mA White	/D1 Red/Green 2500mcd/5000mcd 2.05V/3.6V 20mA Black	/D4 Red/Blue 2000mcd/850mcd 2.0V/3.6V 20mA Black	/D5 Green/Blue 4000mcd/2000mcd 3.6V/3.6V 20mA Black	/D6 Green/White 178mcd/450mcd 3.4V/3.2V 20mA Black
Illumination Voltage: Contact Resistance: Insulation Resistance: Dielectric Strength:	/6 /12	6Vdc 12Vdc 24Vdc Panel >2.0	DkV	appropriate	resistor mi	ust be series connec	ted by the user. Vol	tages as above.	
Operating Temp. Range: Sealing (Front of panel only): Operations Mechanical: Electrical:	–30°C to +7 Protection Cla 750,000 (mi 35,000 (min	lassification	: IP66 EN605	529-1:1992 + <i>F</i>	A2:2013. (Mi	cro switch not sealed)			
Operating Pressure: Rear Nut Fixing Torque:	12N 0.57Nm								
Screw Terminal Torque	0.2Nm Max	c						Dual Colour LED	Configuration
Materials Switch assembly: Tags: Terminals: Switch Body & Button:	UL94V-0 rat Copper Allo Copper Allo Stainless St	by by	mide (Nylor	n)				/D1 + ●	Red Green
Lens and Lens Body: O ring: Internal seal: Contact Plate:	Polycarbona Nitrile Silicone Gold Plated	ate						/D4 +	Red Blue
Thread size:	18.97mm x Compliant	26TPI						/D5 + ●	Green
								/D6	Green

White

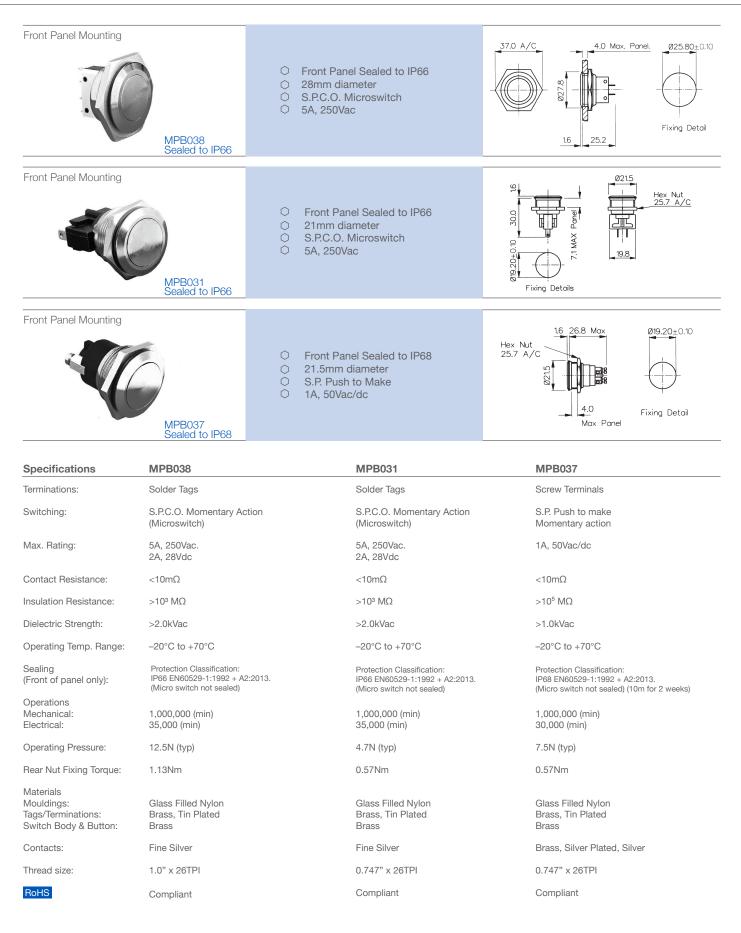
# Switches Stainless Steel Illuminated Vandal Resistant Rear of panel IP66 seal



Rear Panel Sealed - Flyin	g Leads	<ul> <li>22m</li> <li>Sing</li> <li>50m</li> <li>Red</li> <li>dua</li> <li>Brig</li> <li>Inde</li> <li>Fron</li> <li>Inte</li> <li>Trys</li> </ul>	l, Green, Am l colour illun ht daylight l ependent LE	, h to make ontact rating hber, Blue, White nination LEDs D terminals banel seal to IP6		Flying lead color	1.5	.0 300.0	Fixing Details
Rear Panel Sealed - Sold	er Tags	<ul> <li>22m</li> <li>Sing</li> <li>50m</li> <li>Red</li> <li>illun</li> <li>Brig</li> <li>Inde</li> <li>Fror</li> <li>Solo</li> <li>The</li> </ul>	l, Green, Am nination ht daylight l ependent LE	, h to make ontact rating ber, Blue & Wh LEDs D terminals banel seal to IP6			0 22 11.0 Max Panel	32.7 24.8 witch terminals unma	Ø19.2±0.1 Fixing Detail
Specifications	MPI001/Termir	nation/Colour/Vo	ltage		MPI002/	Terminatio	n/Colour/V	oltage	
Illumination style: Terminations: Switching:	Dot /FL (Flying leads) /RP (Solder tags) Single pole, push		omentary actio	on)	Ring /FL (Flying /RP (Solde Single pol	er tags)	ike, tactile (m	omentary acti	on)
Max. Switch Rating:	50mA, 24Vdc				50mA, 24Vdc				
LEDs (ratings @ 20mA) Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Colour	/RD /GN Red Greer 900mcd 2500r 1.85V 3.5V 20mA 20mA Red Greer	mcd 900mcd 2.3V A 20mA	/BL Blue 1500mcd 3.5V 20mA Blue	/WH White 900mcd 3.6V 20mA White	/RD Red 900mcd 1.85V 20mA Red	/GN Green 2500mcd 3.5V 20mA Green	/AM Amber 900mcd 2.3V 20mA Amber	/BL Blue 1500mcd 3.5V 20mA Blue	/WH White 900mcd 3.6V 20mA White
Illumination Voltage: Contact Resistance: Insulation Resistance: Dielectric Strength:		c >2.0kV			/6 /12 /24 <100mΩ >10 <sup>3</sup> MΩ Contact to		by the user. V	opriate resisto oltages as abo	or must be series ove.
Operating Temp. Range: Sealing (Front of panel only):	–30°C to +70°C Protection Classifica (Micro switch not se	ation: IP66 EN60529-1:1 ealed)	1992 + A2:2013.				P66 EN60529-1	:1992 + A2:2013	}.
Operations Mechanical: Electrical:	750,000 (min) 35,000 (min)				750,000 (r 35,000 (m				
Operating Pressure: Rear Nut Fixing Torque:	12N 0.57Nm				12N 0.57Nm				
Materials Switch assembly: Tags: Terminals: Switch Body & Button: Lens and Lens Body: O ring: Internal seal: Contact Plate: Thread size:	UL94V-0 rated Pc Copper Alloy Copper Alloy Stainless Steel Polycarbonate Nitrile Silicone Gold Plated 18.97mm x 26TPl				UL94V-0 r Copper Al Copper Al Stainless Polycarbo Nitrile Silicone Gold Plate 18.97mm	loy Steel nate	de (Nylon)		
RoHS	Compliant				Compliant	t			

### Switches Low Profile Brass Chrome Plated Vandal Resistant





### Switches Stainless Steel Large Diameter Vandal Resistant

Momentary





Specifications	MP0050	MP0050/2
Terminations:	Solder Tags	Solder Tags
Switching:	S.P.C.O. Momentary Action (Microswitch)	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	5A, 250Vac. 2A, 28Vdc	5A, 250Vac. 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	>10 <sup>3</sup> MΩ	>10 <sup>3</sup> MΩ
Dielectric Strength:	>2.0kVac	>2.0kVac
Operating Temp. Range:	–20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):	Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)	Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	4.7Nm	4.7N (typ)
Rear Nut Fixing Torque:	0.57Nm	0.57Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Fine Silver	Fine Silver
Thread size:	M27 x 1.0-6H	M27 x 1.0-6H
RoHS	Compliant	Compliant

### Switches Stainless Steel Domed Vandal Resistant





Specifications	MP0027/3	MP0038/3
Terminations:	Solder Tags	Solder Tags
Switching:	S.P.C.O. Momentary Action (Microswitch)	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	5A, 250Vac. 2A, 28Vdc	5A, 250Vac. 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	>10 <sup>3</sup> MΩ	>10 <sup>3</sup> MΩ
Dielectric Strength:	>2.0kVac	>2.0kVac
Operating Temp. Range:	–20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):		Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	12.5N (typ)
Rear Nut Fixing Torque:	2.5Nm	1.13Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Fine Silver	Fine Silver
Thread size:	1.0" x 26TPI	0.747" x 26TPI
RoHS	Compliant	Compliant

### Switches Stainless Steel Domed Vandal Resistant





Specifications	MP0037/3	MP0031/3
Terminations:	Screw Terminals	Solder Tags
Switching:	S.P. Push to make Momentary action	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	1A, 50Vac/dc	5A, 250Vac. 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	$>10^5 M\Omega$	>10 <sup>3</sup> MΩ
Dielectric Strength:	>1.0kVac	>2.0kVac
Operating Temp. Range:	-20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):	Protection Classification: IP68 EN60529-1:1992 + A2:2013. (Micro switch not sealed) (10m for 2 weeks)	Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	4.7N (typ)
Rear Nut Fixing Torque:	2.5Nm	0.57Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Brass, Silver Plated, Silver	Fine Silver
Thread size:	0.747" x 26TPI	0.747" x 26TPI
RoHS	Compliant	Compliant

### Switches Stainless Steel Prominent Button Vandal Resistant

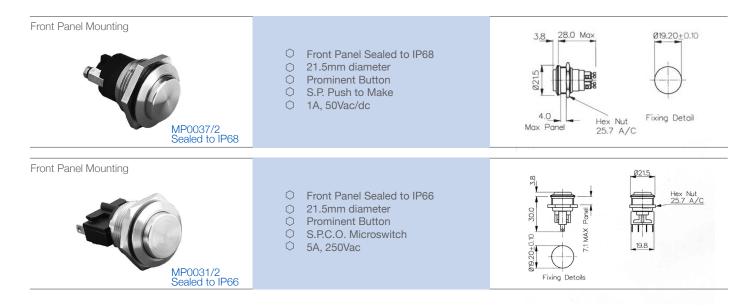




Specifications	MP0027/2	MP0038/2
Terminations:	Solder Tags	Solder Tags
Switching:	S.P.C.O. Momentary Action (Microswitch)	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	5A, 250Vac 2A, 28Vdc	5A, 250Vac. 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	>10 <sup>3</sup> MΩ	>10 <sup>3</sup> MΩ
Dielectric Strength:	>2.0kVac	>2.0kVac
Operating Temp. Range:	–20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):		Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	12.5N (typ)
Rear Nut Fixing Torque:	2.5Nm	1.13Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Fine Silver	Fine Silver
Thread size:	1.0" x 26TPI	1.0" x 26TPI
RoHS	Compliant	Compliant

### Switches Stainless Steel Prominent Button Vandal Resistant

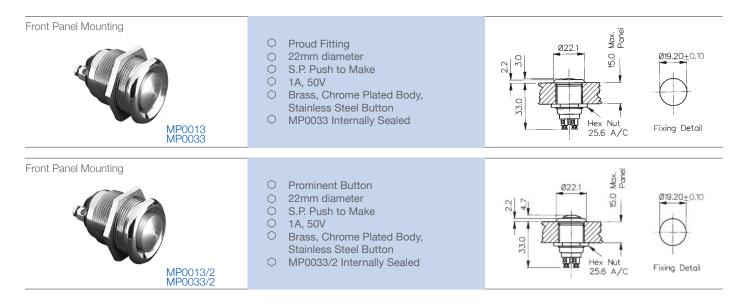




Specifications	MP0037/2	MP0031/2
Terminations:	Screw Terminals	Solder Tags
Switching:	S.P. Push to make Slow momentary action	S.P.C.O. Momentary Action (Microswitch)
Max. Rating:	1A, 50Vac/dc	5A, 250Vac. 2A, 28Vdc
Contact Resistance:	<10mΩ	<10mΩ
Insulation Resistance:	$>10^5 M\Omega$	>10 <sup>3</sup> MΩ
Dielectric Strength:	>1.0kVac	>2.0kVac
Operating Temp. Range:	-20°C to +70°C	-20°C to +70°C
Sealing (Front of panel only):	Protection Classification: IP68 EN60529-1:1992 + A2:2013. (Micro switch not sealed) (10m for 2 weeks)	Protection Classification: IP66 EN60529-1:1992 + A2:2013. (Micro switch not sealed)
Operations Mechanical: Electrical:	1,000,000 (min) 35,000 (min)	1,000,000 (min) 35,000 (min)
Operating Pressure:	7.5N (typ)	4.7N (typ)
Rear Nut Fixing Torque:	0.57Nm	0.57Nm
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Tin Plated Stainless Steel	Glass Filled Nylon Brass, Tin Plated Stainless Steel
Contacts:	Brass, Silver Plated, Silver	Fine Silver
Thread size:	0.747" x 26TPI	0.747" x 26TPI
RoHS	Compliant	Compliant

## Switches Push Button





Specifications	MP0013, MP0033	MP0013/2, MP0033/2
Terminations:	Screw Terminals	Screw Terminals
Switching:	S.P. Push to make Slow momentary action	S.P. Push to make Slow momentary action
Max. Rating:	1A, 50Vac/dc	1A, 50Vac/dc
Contact Resistance:	<15mΩ	<15mΩ
Insulation Resistance:	$>10^4 M\Omega$	>10 <sup>4</sup> MΩ
Dielectric Strength:	>2.5kVac	>2.5kVac
Operating Temp. Range:	–20°C to +85°C	-20°C to +85°C
Sealing (Front of panel only):	MP0033 only - internally sealed against ingress of water and dust	MP0033/2 only - internally sealed against ingress of water and dust
Materials Mouldings: Tags/Terminations: Switch Body & Button:	Glass Filled Nylon Brass, Silver Plated Body: Brass, Chrome Plated Button: Stainless Steel	Glass Filled Nylon Brass, Silver Plated Body: Brass, Chrome Plated Button: Stainless Steel
Contacts:	Copper, Silver Plated	Copper, Silver Plated
Thread Size:	0.747" x 26TPI	0.747" x 26TPI
RoHS	Compliant	Compliant

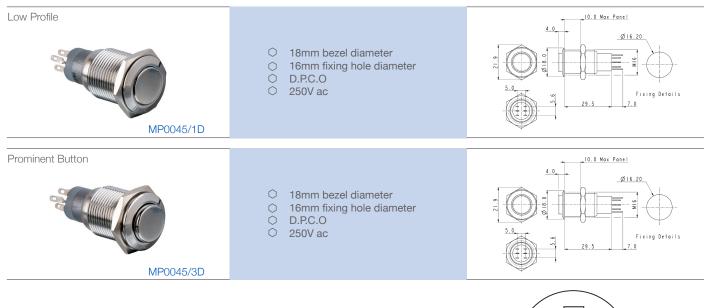
### Switches Stainless Steel - Momentary

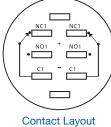


Flush Profile		🗘 16mm p		6-12	6.0 Max Panel 2.0 9 16.20 0 20.3 Fixing Details
Domed Profile					C. A. Han Dana I
		🗇 16mm p		6.1.9	6.0 Max Ponel 3.1 0.3 0.3 Fixing Details
Prominent Button		16mm p		51.9	6.0 Max Panel 3.1 0 0 0 0 0 0 0 0 0 0 0 0 0
	MP0042/3				
	MP0042/3				
Specifications	MP0042/1		MP0042/2		MP0042/3
Terminations:	MP0042/1 Screw Terminals		Screw Terminals		Screw Terminals
	MP0042/1				
Terminations:	MP0042/1 Screw Terminals		Screw Terminals		Screw Terminals
Terminations: Switching:	MP0042/1 Screw Terminals S.P. Push to make		Screw Terminals S.P. Push to make		Screw Terminals S.P. Push to make
Terminations: Switching: Max. Rating:	MP0042/1 Screw Terminals S.P. Push to make 2A, 48Vdc		Screw Terminals S.P. Push to make 2A, 48Vdc		Screw Terminals S.P. Push to make 2A, 48Vdc
Terminations: Switching: Max. Rating: Contact Resistance:	MP0042/1 Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance:	MP0042/1 Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength:	MP0042/1 Screw Terminals S.P. Push to make 2A, 48Vdc $50m\Omega$ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac		Screw Terminals S.P. Push to make 2A, 48Vdc $50m\Omega$ at 1A, 2V >10 <sup>3</sup> M $\Omega$ @ 500Vdc >2.0kVac		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical:	<b>MP0042/1</b> Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min)		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min)		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min)
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical: Electrical:	MP0042/1           Screw Terminals           S.P. Push to make           2A, 48Vdc           50mΩ at 1A, 2V           >10³ MΩ @ 500Vdc           >2.0kVac           -20°C to +55°C           1,000,000 (min)           100,000 (min)		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min)		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min)
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical: Electrical: Rear Nut Fixing Torque: Materials Mouldings: Tags/Terminations:	MP0042/1           Screw Terminals           S.P. Push to make           2A, 48Vdc           50mΩ at 1A, 2V           >10³ MΩ @ 500Vdc           >2.0kVac           -20°C to +55°C           1,000,000 (min)           100,000 (min)           12Nm           Nylon           Brass, Silver Plated		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated		Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical: Electrical: Rear Nut Fixing Torque: Materials Mouldings: Tags/Terminations: Switch Body & Button:	MP0042/1Screw TerminalsS.P. Push to make2A, 48Vdc $50m\Omega$ at 1A, 2V>103 MΩ @ 500Vdc>2.0kVac $-20^{\circ}$ C to +55°C1,000,000 (min)100,000 (min)12NmNylonBrass, Silver PlatedStainless Steel (Polished)	e	Screw Terminals S.P. Push to make 2A, $48Vdc50m\Omega at 1A, 2V>10^3 M\Omega @ 500Vdc>2.0kVac-20^{\circ}C to +55^{\circ}C1,000,000$ (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished)	illable	Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished)
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical: Electrical: Rear Nut Fixing Torque: Materials Mouldings: Tags/Terminations: Switch Body & Button: Contacts:	<b>MP0042/1</b> Screw TerminalsS.P. Push to make2A, 48Vdc $50m\Omega$ at 1A, 2V>10 <sup>3</sup> M $\Omega$ @ 500Vdc>2.0kVac $-20^{\circ}$ C to $+55^{\circ}$ C1,000,000 (min)100,000 (min)12NmNylonBrass, Silver PlatedStainless Steel (Polished)Silver	e	Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished) Silver	ilable	Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished) Silver
Terminations: Switching: Max. Rating: Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range: Operations Mechanical: Electrical: Rear Nut Fixing Torque: Materials Mouldings: Tags/Terminations: Switch Body & Button: Contacts: Thread size:	MP0042/1 Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished) Silver Gold Plated Brass version available	e	Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished) Silver Gold Plated Brass version ava	ailable	Screw Terminals S.P. Push to make 2A, 48Vdc 50mΩ at 1A, 2V >10 <sup>3</sup> MΩ @ 500Vdc >2.0kVac -20°C to +55°C 1,000,000 (min) 100,000 (min) 100,000 (min) 12Nm Nylon Brass, Silver Plated Stainless Steel (Polished) Silver Gold Plated Brass version available

### Switches Stainless Steel - Momentary





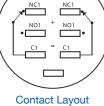


**Specifications** MP0045/1D0NN000/Sealing MP0045/3D0NN000/Sealing Terminations: Solder tags Solder tags D.P.C.O Momentary Action D.P.C.O Momentary Action Switching: Sealing: IP67 IP40 IP67 IP40 BLANK BLANK Part No. /S /S 250V ac 250V ac Max. Rating: Contact Resistance: 50mΩ max. @ 1A, 2V 50mΩ max. @ 1A, 2V >10<sup>3</sup> MΩ @ 500Vdc Insulation Resistance: >103 MQ @ 500Vdc Dielectric Strength: > 2.0kVac > 2.0kVac -20°C to +55°C Operating Temp. Range: -20°C to +55°C Operations 200,000 (min) 200,000 (min) Mechanical: 30,000 (min) 30,000 (min) Electrical: 12Nm Rear Nut Fixing Torque: 12Nm Materials Mouldings: Nylon Nylon Tags/Terminations: Brass, Silver Plated Brass, Silver Plated Switch Body & Button: Stainless Steel Stainless Steel Contacts: Silver Silver Variants: Nickel Plated Brass version available Nickel Plated Brass version available Details on request Details on request RoHS Compliant Compliant

### Switches Stainless Steel - Latching





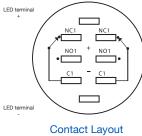


**Specifications** MP0045/1E0NN000/Sealing MP0045/3E0NN000/Sealing Solder Tags Terminations: Solder Tags D.P.C.O. - Latching Action D.P.C.O. - Latching Action Switching: Sealing: IP67 IP40 IP67 IP40 BLANK BLANK Part No. /S /S 250V ac 250V ac Max. Rating: 50mΩ max. @ 1A, 2V Contact Resistance: 50mΩ max. @ 1A, 2V Insulation Resistance: >103 MQ @ 500Vdc >103 MΩ @ 500Vdc Dielectric Strength: >2.0kVac >2.0kVac Operating Temp. Range: -20°C to +55°C –20°C to +55°C Operations Mechanical: 200,000 (min) 200,000 (min) 30,000 (min) Electrical: 30,000 (min) Rear Nut Fixing Torque: 12Nm 12Nm Materials Mouldings: Nylon Nylon Brass, Tin Plated Brass, Tin Plated Tags/Terminations: Switch Body & Button: Stainless Steel (Polished) Stainless Steel (Polished) Contacts: Silver Silver Nickel Plated Brass version Nickel Plated Brass version Thread size: Details on request Details on request RoHS Compliant Compliant

### Switches Stainless Steel Illuminated Momentary





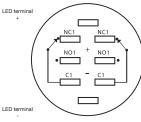


Specifications	MP0045/1D1/Colour/Voltage/Sealing	MP0045/1D2/Colour/Voltage/Sealing
Terminations:	Solder Tags	Solder Tags
Illumination:	Dot	Ring
Switching:	D.P.C.O. Momentary Action	D.P.C.O. Momentary Action
5	IP67 IP40 /S BLANK	IP67 IP40 /S BLANK
Max. Switch Rating:	3A, 250Vac	3A, 250Vac
	Red Green Amber Blue /RD /GN /AM /BL	Red Green Amber Blue /RD /GN /AM /BL
	12Vdc 220Vdc /012 /220	12Vdc 220Vdc /012 /220
Contact Resistance:	50mΩ max. @ 1A, 2Vdc	50mΩ max. @ 1A, 2Vdc
Insulation Resistance:	>10³ MΩ @ 500Vac	>10³ MΩ @ 500Vac
Dielectric Strength:	>2.0kVac	>2.0kVac
Operating Temp. Range:	–20°C to +55°C	–20°C to +55°C
	200,000 (min) 30,000 (min)	200,000 (min) 30,000 (min)
Rear Nut Fixing Torque:	12Nm	12Nm
Tags: Switch Body & Button: Variants	Nylon Brass, Silver Plated Stainless Steel (Polished) Prominent Button, details on request	Nylon Brass, Silver Plated Stainless Steel (Polished) Prominent Button, details on request
RoHS	Compliant	Compliant

### Switches Stainless Steel Illuminated Latching







**Contact Layout** 

MP0045/1E1/Colour/Voltage/Sealing MP0045/1E2/Colour/Voltage/Sealing **Specifications** Terminations: Solder Tags Solder Tags Illumination: Dot Ring Switching: D.P.C.O. Latching Action D.P.C.O. Latching Action IP67 IP40 IP40 Sealing: IP67 BLANK BLANK Part No. /S /S 3A, 250Vac Max. Switch Rating: 3A, 250Vac LEDs Amber Red Blue Red Blue Colours Green Amber Green Part No. /RD /GN /AM /BL /RD /GN /AM /BL 12Vdc 220Vdc 12Vdc 220Vdc Voltage Part No. /012 /220 /012 /220 Contact Resistance: 50mΩ max. @ 1A, 2Vdc 50mΩ max. @ 1A, 2Vdc Insulation Resistance: >103 MΩ @ 500Vac >103 MΩ @ 500Vac Dielectric Strength: >2.0kVac >2.0kVac -20°C to +55°C -20°C to +55°C Operating Temp. Range: Operations 200,000 (min) 200,000 (min) Mechanical: 30,000 (min) 30,000 (min) Electrical: Rear Nut Fixing Torque: 12Nm 12Nm Materials Mouldings: Nylon Nylon Brass, Silver Plated Brass, Silver Plated Tags: Switch Body & Button: Stainless Steel (Polished) Stainless Steel (Polished) Prominent Button, details on request Prominent Button, details on request Variants RoHS Compliant Compliant



Manufactured from Stainless Steel, Bulgin's extensive range of vandal resistant security switches are designed with a high resistance to wear and tear, corrosion and harsh use in potentially hostile environments such as access control applications.

O Front and rear panel mounted versions

- O Vandal switches available in prominent, domed and low profile
- Various switching options such as latching, push on - push off, action.
- O IP66, 68 front panel sealing options
- O Dot and ring LED illuminated versions
- O Illumination voltages 6, 12 and 24V sources,
- Variety of illumination colours and are now available with front and rear of panel sealing options.



### Switches 8300 Vandal Resistant Switches Designed to IP66





H8300RP - - -

#### **Key Features**

- O Momentary or latching action
- Ratings up to 12(12) @ 250Vac
- $\bigcirc$  Single and double pole
- Stainless steel button & bezel
- Vandal resistant construction
- Choice of body styles
- 19.2mm or 22.5mm mounting holes
- Front panel sealed to IP66
- Raised, flat or domed actuator options

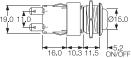
#### Approvals and specifications

- 16(4)A 250Vac T85, 1E4 (10,000 Operations)
   12(12)A 250Vac T105, 1E4 (10,000 Operations)
   8(8)A 250Vac T105, 5E4 (50,000 Operations)
   6(6)A 250Vac T125, 5E4 (50,000 Operations)
- № 12A 250Vac DP, 13A 250Vac SP 250Vac 1hp, 125Vac 1/2hp UL 85°C, file E45221, CSA file LR10990
  - In house test: 10(10)A 250Vac—Indicative rating only

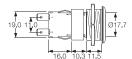
3mm contact gap. Technical data on pages 4 & 5 (switches), 6 (indicators).

#### **Dimensions**

8300RP (H terminals shown)









Terminal	Function	Actuator	Body Code
	8300 (alternate) Single pole ON - OFF 8301	R (for P body only) Raised top (stainless steel)	
	(momentary ON) Single pole ON - OFF 8350 (alternate) Double pole ● ■●	Flat top (stainless steel)	P (for R actuator only) Stainless steel, Soft profile bezel
$V \qquad X \\ \downarrow \downarrow \downarrow 4.3 \qquad 4.5 \downarrow 1.0 \qquad 17.0$	ON - OFF • • • <b>8301</b> (momentary ON) Single pole ON - OFF ↑ • • •	P	<i>∞</i> <i>∞</i> <i>∞</i> <i>∞</i> <i>∞</i> <i>∞</i>
		Domed top (stainless steel)	Stainless steel



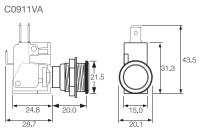


C0911VA - - -

### **Key Features**

- Snap action switches
- Ratings up to 16A, 250Vac
- Round and rectangular buttons
- Single Pole C/O Switch

### Dimensions



### Approvals and specifications

- I6(4)A 250Vac 5E4 T85
- **%1** € 16A 125/250Vac 3/4hp T85 50E3 125V 1/2 HP, 250V 3/4 HP, 0.4A 125Vdc, 0.2A 250Vdc

Approvals apply to switch mechanism only.  $\ensuremath{\boldsymbol{\mu}}$  contact gap.

Terminal	Function	Actuator	Body Code
	0911 (momentary) ON - ON	Flat top (stainless steel)	A Stainless steel Chamfer profile bezel



Bulgin's broad line of pushbutton switches are available in various sizes and configurations. This includes a variety of illumination and terminal options as well as several with high inductive power ratings suitable for motor driven applications. These switches can be found in many markets including home appliances, commercial, medical, audio and security.

- Miniature, round and rectangular push button switches available
- Ratings up to 16A, 250V ac 12(12)A 250V ac rating also available
- O Latching and momentary actions
- Choice of actuators (custom option also available)
- O Square and Round Mounting Styles



## Switches Push Button



Front Panel Mounting	MP0012/Col	Prominent Button S.P. Push to Make Screw Terminals	012.3 012.3 012.3 019.20±0.10 Hex Nut 25.6 A/C Fixing Details
Front Panel Mounting			Ø22.2
	MP0012/1/Col	Recessed Button S.P. Push to Make Screw Terminals	Hex Nut 25.6  A/C
Rear Panel Mounting			Hex Nut 11.1 A/C
	MP0016	Solder Tags 1A, 28Vac/dc	And the rest of th
Specifications	MP0012/Colour	MP0012/1/Colour	MP0016/Colour
Terminations:	Screw Terminals	Screw Terminals	Solder Tags
Switching:	S.P. Push to Make Slow Momentary Action	S.P. Push to Make Slow Momentary Action	S.P. Push to Make Slow Momentary Action
Max. Rating:	0.25A. 250Vac, 1A. 110Vac, 2A. 12Vac/dc	0.25A. 250Vac, 1A. 110Vac, 2A. 12Vac/dc	1A 28Vac/dc (non-inductive)
Contact Resistance:	<15mΩ	<15mΩ	<15mΩ
Insulation Resistance:	$>10^4 M\Omega$	$>10^4 M\Omega$	$>10^4 M\Omega$
Dielectric Strength:	>2.5kVac	>2.5kVac	>2.0kVac
Operating Temp. Range:	–20°C to +85°C	–20°C to +85°C	-20°C to +85°C
Operation Pressure (typ):	9.18 newtons	9.18 newtons	6.22 newtons
Materials Moulding: Body:	Glass Filled Nylon Brass, Brass, Chrome Plated	Glass Filled Nylon Brass, Brass, Chrome Plated	Glass Filled Nylon Brass, Brass, Chrome Plated
Contacts/Terms:	Brass, Silver Plated	Brass, Silver Plated	Brass, Silver Plated
Variant	Button Colour: Standard - Black, /RD (Red)	Button Colour: Standard - Bla /RD (Red)	ack, Button Colour: Standard - Black, /RD (Red)
RoHS	Compliant	Compliant	Compliant

### 8300 Series Push Button





### **Key Features**

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 $\bigcirc$ 

- O Miniature push button O Industry standard panel cutout 8A Inductive current rating
  - Panel cut out: 19.3 x 12.9
- O Illuminated and nonilluminated

Ratings up to 12(12)A, 250V ac (H suffix)

- Single and double pole
- $\bigcirc$ Latching and momentary
- $\bigcirc$ Slotted actuator for custom buttons

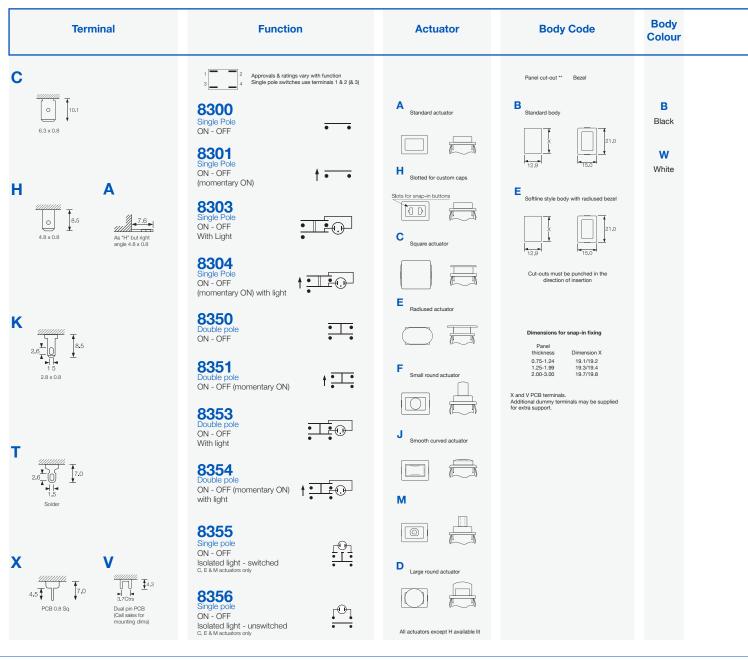
### Approvals and specifications

- 4 16(4)A 250Vac T85, 1E4 (10,000 Operations) 12(12)A 250Vac T105, 1E4 (10,000 Operations) 8(8)A 250Vac T105, 5E4 (50,000 Operations) 6(6)A 250Vac T125, 5E4 (50,000 Operations)
- **%** 8350, 8351, 8353, 8354 12A 250Vac DP, 250Vac 1hp, 125Vac 1/2hp

8300, 8301, 8303, 8304 13A 250Vac SP, 250Vac 1hp, 125Vac 1/2hp

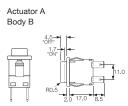
UL 85°C, file E45221, CSA file LR10990

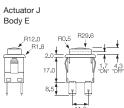
In house test: 10(10)A 250Vac-Indicative rating only 3mm contact gap.





### Dimensions





### Examples







교 H8350AB - - -고 T8350AB - - -

ਾ H8353CB - - -ਾ T8353CB - - -

Actuator Colour	Lamp Voltage	Legend	Legend Colour	Options
LIT				
A Amber	_ None			H 12(12)A 250Vac switch rating Finish Matt finish standard except on J and D
C Clear	<b>2</b> 125V Neon			actuators which are gloss Colour Call sales for custom colours A full range is available for large orders
<b>G</b> Green	<b>3</b> 250V Neon			Legend printing Select from the examples or call sales for custom legends.
R Red	<b>7</b> 12V Filament			Special buttons Some of the many options are shown Call sales for the full range
UNLIT	<b>8</b> 24V Filament			
B Black R				Snaps on to switch bodies fitted with "A" or "J" style actuators, this reduces panel thickness by 0.8mm
Red				BioCote Antimicrobial Additive Moulded components have antimicrobial properties using BioCote silver ion technology.
White				

Switches 189

### 8200 Series Push Button

8(8)A 250Vac & 12(12)A 250Vac





### **Key Features**

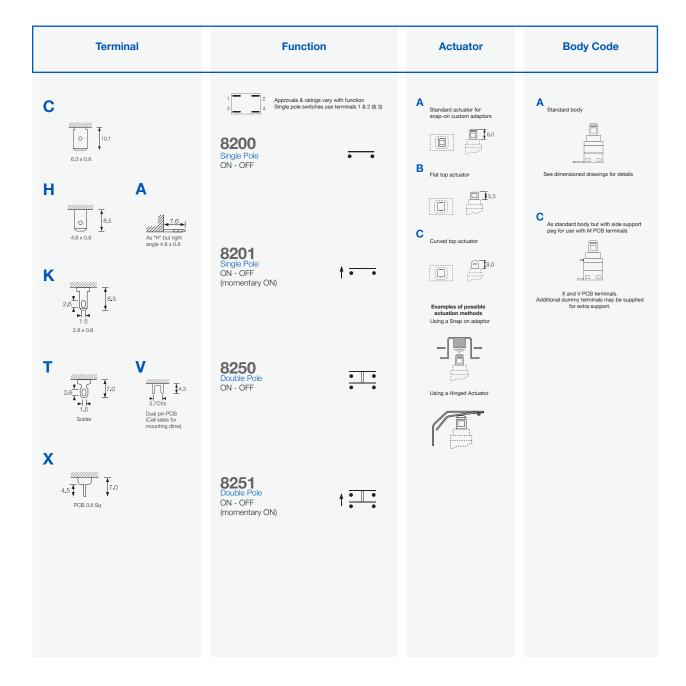
- O Miniature push button
- 8A Inductive current rating
- Ratings up to 12(12)A, 250V ac (H suffix)
- O Without button
- Sub panel mount
- Push on, solder or PCB terminals
- Latching and momentary

### Approvals and specifications

16(4)A 250Vac T85, 1E4 (10,000 Operations)
 12(12)A 250Vac T105, 1E4 (10,000 Operations)
 8(8)A 250Vac T105, 5E4 (50,000 Operations)
 6(6)A 250Vac T125, 5E4 (50,000 Operations)

12A 250Vac 250Vac 1hp, 125Vac 1/2hp N & UL 85°C, file E45221, CSA file LR10990

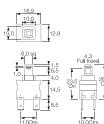
3mm contact gap.





### **Dimensions**

'A' body with 'H' 4.8 terminals



Example of possible mounting styles



'A' body with 'A' right angle 4.8 terminals

4.3 Full travel

12.9 7.6

> I.0 23. Or

14.5

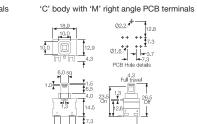
18.9

10.0

11.0Ctrs

Alternative Actuator

6 K8200AA - - -



<u>02.2</u> 12.8

**Examples** 









Impact washer resists damage from excessive operator force



C8250AA - - -with impact washer M1226

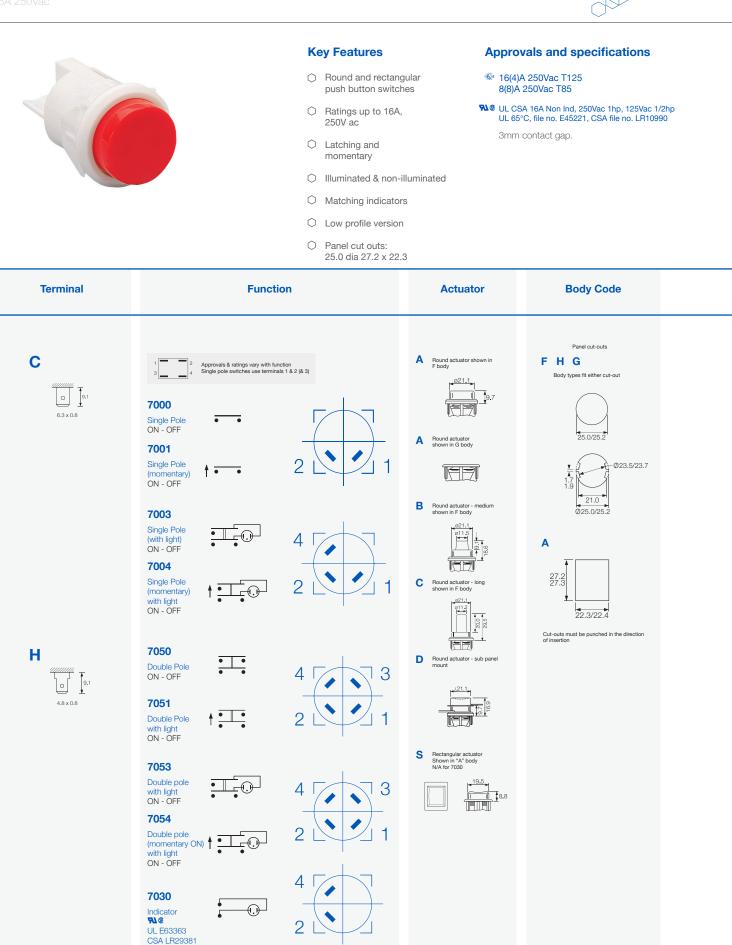
T X8201AA - - -

A8200AA - - -

= M8200AC - - -

Example of M8200AC

### 7000 Series Push Button

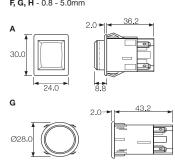


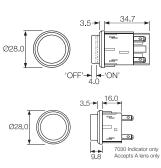
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### **Dimensions**

Panel thickness: A - 0.8 - 2.5mm F, G, H - 0.8 - 5.0mm





F

н

### Examples







C7050SA - - -



C7053AG - - -

Body Colour	Actuator Colour	Lamp Voltage	Legend	Legend Colour	Options
	LIT				Finish Matt finish is standard on bodies.
в	Α				Gloss finish is standard on actuators.
Black	Amber	None			Colour Call sales for custom colours. A full range is available for large orders.
w	С	2			Legend printing
White	Clear	125V Neon			A wide range is available or call sales for custom legends.
	G	3			Lamp voltage Call sales for details of available voltages.
	Green	250V Neon			Weatherproof housing (E) Additional housing which fits round body
	R	7			switches with an oversize housing with a clear silicone cover designed to IP65.
	Red	12V Filament			Mounting hole dia: 38.0mm
		8			
	UNLIT	24V Filament			
	в				
	Black				
	R Red				
	w				
	White				

## 0911 Push Button Switches

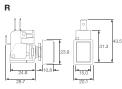


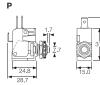
C0911KB - - -

### **Key Features**

- Snap action switches
- Ratings up to 16A, 250Vac
- O Round and rectangular buttons

### **Dimensions**





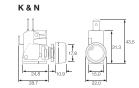
Approvals and specifications

**N (2** 16A 125/250Vac 3/4hp T85 50E3 125V 1/2 HP, 250V 3/4 HP, 0.4A 125Vdc, 0.2A 250Vdc

Approvals apply to switch mechanism only.

🚳 16(4)A 250Vac 5E4 T85

μ contact gap.



Terminal	Function	Actuator	Body Code	Options
	0911 (momentary) ON - ON	R Rectangular bezel	012.7 Panel Cut-out Panel thickness Both nuts 2.5mm No backnut 4.0mm	Call factory for custom colours
		K with satin chrome bezel		
		N with nylon bezel		







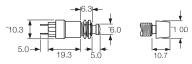


### **Key Features**

- Self wiping contacts
- Slow make & break
- O Momentary action
- Choice of switch circuits
- Choice of actuators

### **Dimensions**

### Dimensions (mm) Nylon S and L actuators

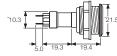


Neck thread - 40 TPI Whit. Actuator travel - 2.5 max

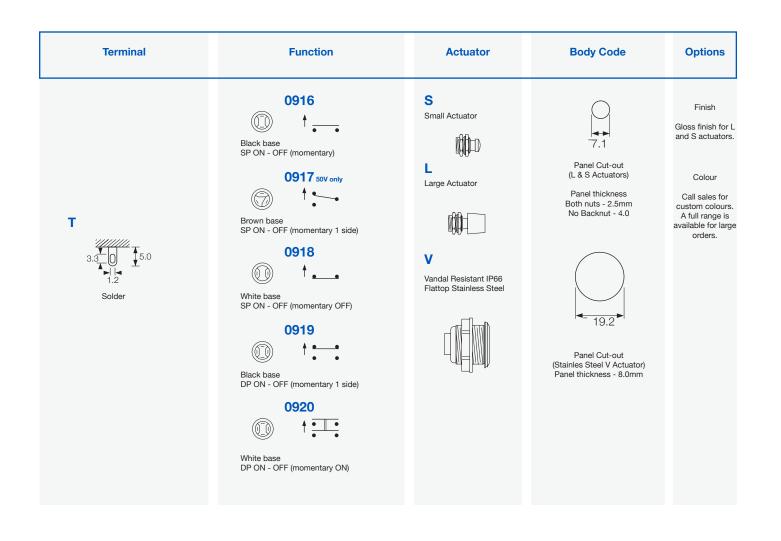
#### Approvals and specifications

In house test: 0.5A 250Vac T85 — Indicative rating only

> Stainless steel V actuator (IP66)



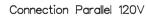
Neck thread - 26 TPI Whit. Actuator travel - 2.5 max

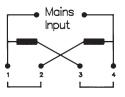


Switches Voltage Selectors

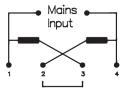








#### Connection Series 240V



Max. Rating:	6.3A, 120 / 240
Insulation Resistance:	>106 MΩ
Termination:	2.8 series tabs/s
Temperature Range:	–20°C to +85°C
Materials: Mouldings: Tags:	Glass Filled Nylo Brass, Silver Pla
Contacts:	Copper Silver A
Approvals:	A <b>(F</b>

**Specifications** 

Variants:

RoHS

106 MΩ 8 series tabs/solder tags 20°C to +85°C lass Filled Nylon UL94V-1 rass, Silver Plated opper Silver Alloy 200 **(F** 

VS0001

Other markings, details on request

2.8 series tabs/solder tags

Glass Filled Nylon UL94V-1

Other markings, details on request

Compliant

<u>A</u>

VS0002

>106 MΩ

6.3A, 120 / 240

-20°C to +85°C

Brass, Silver Plated

Copper Silver Alloy

## Switches Capacitive Switches



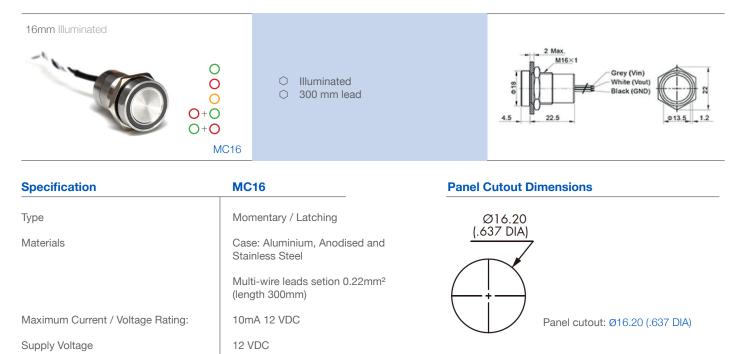
Activated by the touch of a finger, our Capacitive Switches are ideal for many repetitive applications requiring a rugged sealed and easy to use switch solution.



- Sealed to IP68 and IP69K
- O Momentary or latching functions
- Large or thin ring illumination options
- O Long life operation 50 million of cycles
- **O** 16, 19, 22 or 25mm diameter options
- O Easy to use and clean
- O Extremely robust and durable IK10 rated
- O No operating force required ideal for repetitive applications
- O Activated by the touch of a finger even with surgeon gloves
- O Natural, black and red anodised options as well as 316L stainless steels

## Capacitive Switches - 16mm





 $20 \text{m}\Omega$ 

is closed.

>50 Million

1 LED: The LED is ON when output

2 LEDS: First colour is ON when the output is open. Second colour is ON

when the output is closed.

Zero Newton's (Touch Sensitive)

### **Environmental Specification**

Sealing	IP68 (2m depth for >30mins) IP69K
Operating temperature	-25°C to +55°C
RoHS	Compliant

### **Circuit Specification**

See wiring diagrams on Part No System page

**Contact Resistance** 

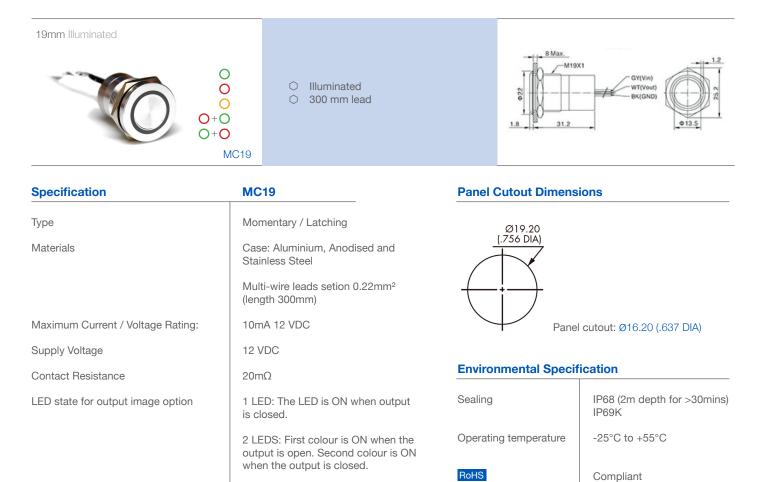
Actuating force, typically

Life cycle

LED state for output image option

## Capacitive Switches - 19mm





Zero Newton's (Touch Sensitive)

>50 Million

Actuating force, typically

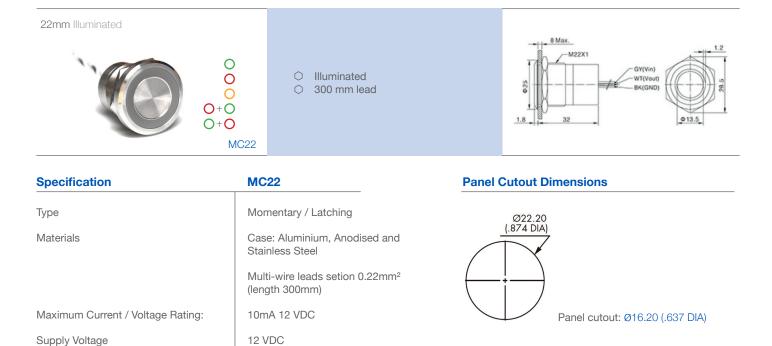
Life cycle

**Circuit Specification** 

See wiring diagrams on Part No System page

## Capacitive Switches - 22mm





 $20 \text{m}\Omega$ 

is closed.

>50 Million

1 LED: The LED is ON when output

2 LEDS: First colour is ON when the output is open. Second colour is ON

when the output is closed.

Zero Newton's (Touch Sensitive)

### **Environmental Specification**

Sealing	IP68 (2m depth for >30mins) IP69K
Operating temperature	-25°C to +55°C
RoHS	Compliant

### **Circuit Specification**

See wiring diagrams on Part No System page

**Contact Resistance** 

Actuating force, typically

Life cycle

LED state for output image option

# Capacitive Switches - 25mm

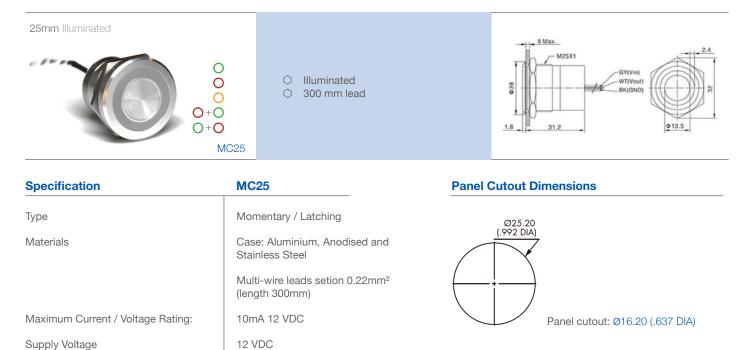
**Contact Resistance** 

Actuating force, typically

Life cycle

LED state for output image option





 $20 \text{m}\Omega$ 

is closed.

>50 Million

1 LED: The LED is ON when output

2 LEDS: First colour is ON when the output is open. Second colour is ON

when the output is closed.

Zero Newton's (Touch Sensitive)

## **Environmental Specification**

Sealing	IP68 (2m depth for >30mins) IP69K
Operating temperature	-25°C to +55°C
RoHS	Compliant

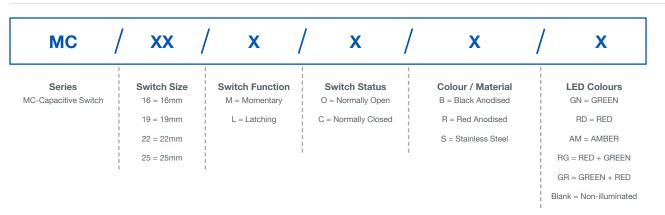
## **Circuit Specification**

See wiring diagrams on Part No System page

# Capacitive Switches Capacitive Switches - Part No System



Part No System



#### Examples:

MC16MOSRD = 16mm, Stainless Steel, Momentary Normally Open, Red Illumination MC22LOBRG = 22mm, Black Anodised, Catching Normally Open, Red and Green Illumination

#### **Circuit Specifications**

Wiring Diagrams			Legend		
	1	ED 2 LEDS		Grey Vin	
	Output Indicator	Output Indicator	Output Indicator	Black black GND White Vout	
OFF-ON (momentary)	Vin Vout ED Vout GND	Vin Vout GND	Vin Vout LED-1 LED-2 GND	Wire colours may vary. Always refer to the label on the switch.	
ON-OFF (momentary)	Vin Vout GND	Vin Vout GND	Vin Vout LED-1 GND		
OFF-ON (latching)	Vin Vout LED GND	Vin Vout GND	LED-1 Vin Vout LED-2 GND		
ON-OFF (latching)	Vin Vout UED GND	Vin Vout GND	LED-1		

#### Other switches are available upon request\*



Unlike traditional switches Piezo switches have no moving mechanical parts making them extremely durable, withstanding millions of actuations and requiring little to no maintenance.



# Piezo Switches 16mm Stainless Steel

Non Illuminated





Specification	MPZ016
Туре	Momentary
Material	Stainless Steel (Aluminium upon request)
Maximum Voltage	24V AC/DC
Switch Resistance "ON"	<1Ω
Switch Resistance "OFF"	5ΜΩ
Capacitance	100pF
Switching current (momentary)	1A Max
Switching current (prolonged)	300 mA
Switching pulse time (momentary)	up to 0.3 sec
Actuating force, typically	3-5 N
Life cycle	>10 Million

## **Environmental Specification**

Sealing	
Operating temperature	
Vibration resistance	
Shock resistance	
RoHS	

### **Circuit Specification**

16MM Stainless Steel Non Illuminated



Switch voltage Switch Current Power Supply

IP68; IP69K

-40°C to +85C°

5-500Hz/9.4m 75g (g-force)

Compliant

24V AC/DC 1A Max 24V AC/DC Piezo Switches 19mm Stainless Steel

Illuminated and Non Illuminated





Specification	MPZ019, MPZI019
Туре	Momentary
Material	Stainless Steel (Aluminium upon request)
Maximum Voltage	24V AC/DC
Switch Resistance "ON"	<1Ω
Switch Resistance "OFF"	5ΜΩ
Capacitance	100pF
Switching current (momentary)	1A Max
Switching current (prolonged)	300 mA
Switching pulse time (momentary)	up to 0.3 sec
LED Illumination	24V AC/DC
Actuating force, typically	3-5 N
Life cycle	>10 Million

Environmental Specification			
Sealing	IP68; IP69K		

Operating temperature	-40°C to +85C°	
Vibration Resistances	5-500Hz/9.4m	
Shock resistance	75g (g-force)	
RoHS	Compliant	

### **Circuit Specification**

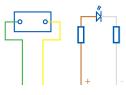
19MM Stainless Steel Non Illuminated



Switch voltage Switch Current Power Supply

24V AC/DC 1A Max 24V AC/DC

19MM Stainless Steel Illuminated



Switch voltage Switch Current Colour\* Illuminated Power Supply 24 V AC/DC 1A Max 24V AC/DC 24V AC/DC Piezo Switches 22mm Stainless Steel

Illuminated and Non Illuminated





Specification	MPZ022, MPZ1022
Туре	Momentary
Material	Stainless Steel (Aluminium upon request)
Maximum Voltage	24V AC/DC
Switch Resistance "ON"	<1Ω
Switch Resistance "OFF"	5ΜΩ
Capacitance	100pF
Switching current (momentary)	1A Max
Switching current (prolonged)	300 mA
Switching pulse time (momentary)	up to 0.3 sec
LED Illumination	24V AC/DC
Actuating force, typically	3-5 N
Life cycle	>10 Million

# **Environmental Specification**

Sealing
Operating temperature
Vibration Resistances
Shock resistance
RoHS

IP68; IP69K

-40°C to +85C°

5-500Hz/9.4m

75g (g-force)

Compliant

#### **Circuit Specification**

22MM Stainless Steel Non Illuminated



Switch Voltage 24 AC/DC Switch Current 1A Max Power Supply 24V AC/DC

#### 22MM Stainless Steel Illuminated 1 colour



Switch Voltage Switch Current Color\* Illuminated 24V AC/DC Power Supply

24V AC/DC 1 A Max 24 AC/DC

22MM Stainless Steel Illuminated 2 colour



Switch Voltage Switch Current 1A Max Color\* Illuminated 24V AC/DC Power Supply

24V AC/DC 24 AC/DC

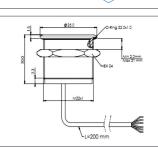
# Piezo Switches 22mm Stainless Steel Flathead

Illuminated





- O Blue Illumination
- 1 colour
- 20 cm lead



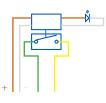
Specification	MPZI022/L	
Туре	Latching Toggle	
Material	Stainless Steel (Aluminium upon request)	
Power Supply	24V AC/DC	
Switching voltage	48V AC peak/DC	
Switch Resistance "ON"	<0.7Ω	
Switch Resistance "OFF"	>1000MΩ	
Capacitance	<90pF	
Switching current	1A Max	
LED Illumination	24V AC/DC	
Actuating force, typically	3-5 N	
Life cycle	>10 Million	

### **Environmental specification**

Sealing	IP68; IP69K	
Operating temperature	-40°C to +85C°	
Vibration Resistances	5-500Hz/9.4m	
Shock resistance	75g (g-force)	
RoHS	Compliant	

### **Circuit Specification**

22MM Stainless Steel Latching Toggle Illuminated



Power Supply Switch Voltage Switch Current Max Colour\* Illuminated 24V AC/DC 48V AC peak/ DC 1A Max 24V AC/DC



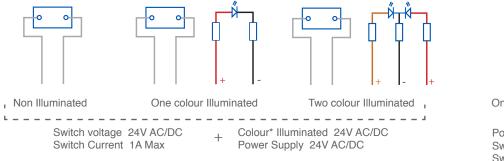
## Part No System

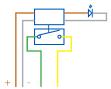
MPZ /	016	/ <b>x</b>	/ <b>xx</b>	/ <b>x</b>	/ <b>x</b>
Series MPZ - Non Illuminated MPZI- Illuminated	<b>Body Diameter</b> 016 = 16mm 019 = 19mm 022 = 22mm	<b>Profile</b> F = Flat Head G = Guided Profile	Colour BL = Blue RD = Red GN = Green D1 = Red and green	Led Voltage 24v	<b>Type</b> L = Latching Toggle (No Suffix= Momentary)

#### Examples:

MPZ022/F = Non Illuminated Piezo, 22mm, Flathead MPZI022/F/RD/24 = Illuminated Piezo, 22mm, Flathead, Red Illumination, 24 volt MPZI022/G/BL/24/L = Illuminated Piezo, 22mm, Guided Profile, Blue Illumination, 24 volt, Latching Toggle

#### **Circuit Specifications**





One colour Illuminated (Latching Toggle)

Power Supply24VSwitch Voltage48VSwitch Current1A MColour\* Illuminated24V

24V AC/DC 48V AC peak/ DC 1A Max 24V AC/DC

Other switches are available upon request\*

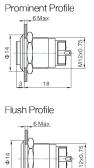
# 12mm Switches Miniature Stainless Steel Vandal Resistant

Prominent Button / Flush Profile

## MAV0120



- O Prominent and Flush Profile
- 12mm Diameter
- 🔿 2A, 36 dc
- IP67 (Front of Panel Only)





bulgin

Specification	MAV0120/3	MAV0120/1
Terminations:	P - Solder Tabs	P - Solder Tabs
Switching:	S.P. Push to make	S.P. Push to make
Max Rating:	2A, 36Vdc	2A, 36Vdc
Contact Resistance:	≥50MΩ	≥50MΩ
Insulation Resistance:	≥1000MΩ	≥1000MΩ
Dielectric Strength:	1500V, AC 50Hz, 5 Secs	1500V, AC 50Hz, 5 Secs
Operating Temp Range:	*-25°C ~ +55°C	*-25°C ~ +55°C
Operations		
Mechanical:	500,000 (min)	500,000 (min)
Electrical:	200,000 (min)	200,000 (min)
Sealing (Front of Panel Only)	IP67	IP67
Shock Resistance	IK08	IK08
Rear Nut Fixing Torque:	0.6Nm	0.6Nm
Materials		
Mouldings:	PA	PA
Tags/Terminations:	Copper, Gold Plated	Copper, Gold Plated
Switch Body & Button:	Stainless Steel	Stainless Steel
Contacts:	Silver Alloy	Silver Alloy
Thread size:	M12x0.75	M12x0.75
RoHS	Compliant	Compliant

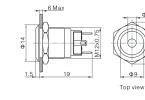
# 12mm Switches Miniature Stainless Steel Illuminated Vandal Resistant

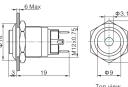
Illuminated traditional

# MAV0120

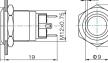


- Dot and Ring Illumination
- Prominent and Flush Profile O 12mm Diameter
- 2A, 36 dc
- O Bright daylight LEDs ○ IP67 (Front of Panel Only)
- MAV0120









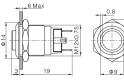
<u>1.5</u>



bulgin

Φ3.1

Φ9.





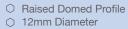
Specification	MAV0120
Terminations:	P - Solder Tabs
Switching:	S.P. Push to make
Max Rating:	2A, 36Vdc
Profile:	Prominent /3 Flush /1
Illumination Type	/1 Dot /2 Ring
LED Ratings Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Current	/RD /GN /BL /OR /AM Red Green Blue Orange Yellow 1.8V 2.8V 2.8V 1.8V 1.8V 15mA 15mA 15mA 15mA 15mA
Illumination Voltage	<ul> <li>/no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user. Voltages as above</li> <li>/12 12V</li> <li>/24 24V</li> </ul>
Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range:	≥50MΩ ≥1000MΩ 1500V, AC 50Hz, 5 Secs *-25°C ~ +55°C
Operations	
Mechanical: Electrical:	500,000 (min) 200,000 (min)
Sealing (Front of Panel Only)	IP67
Shock Resistance	IK08
Rear Nut Fixing Torque:	0.6Nm
Materials	
Mouldings: Tags/Terminations: Switch Body & Button:	PA Copper, Gold Plated Stainless Steel
Contacts:	Silver Alloy
Thread size: RoHS	M12x0.75 Compliant

# 12mm Switches Miniature Domed Metal Vandal Resistant

None Illuminated - Metal Dome

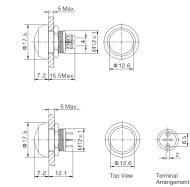
## MMP0120





- 🗘 2A, 36Vac
- IP65 or IP67 (Front of Panel Only)

MMP0120



bulgin

Specification	MMP0120/S	MMP0120/N	7.2 12.1
Terminations:	P - Solder Tabs S - Screw Terminal	P - Solder Tabs S - Screw Terminal	
Switching:	S.P. Push to make	S.P. Push to make	
Max Rating:	2A, 36Vdc	2A, 36Vdc	
Contact Resistance:	≥50MΩ	≥50MΩ	
Insulation Resistance:	≥1000MΩ	≥1000MΩ	
Dielectric Strength:	1500V, AC 50Hz, 5 Secs	1500V, AC 50Hz, 5 Secs	
Operating Temp Range:	*-25°C ~ +55°C	*-25°C ~ +55°C	
Operations			
Mechanical:	500,000 (min)	500,000 (min)	
Electrical:	200,000 (min)	200,000 (min)	
Sealing (Front of Panel Only)	IP65 or IP67	IP65 or IP67	
Shock Resistance	IK08	IK08	
Rear Nut Fixing Torque:	0.3Nm	0.3Nm	
Materials			
Mouldings:	PBT	PBT	
Tags/Terminations:	Brass, Silver Plated	Brass, Silver Plated	
Switch Body & Button:	/SS Stainless Steel	/N - Nickel Plated Brass	
Contacts:	Silver Alloy	Silver Alloy	
Thread size:	M12x1	M12x1	
RoHS	Compliant	Compliant	
Thread size:	M12x1	M12x1	

# 12mm Switches Miniature Domed PBT Pushbutton

Non Illuminated - PBT

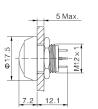
# MMP0120/A



$\bigcirc$	Raised	Domed	Profile
------------	--------	-------	---------

- O PBT Material
- 0 12mm Diameter
- 2A, 36Vac
  IP65 or IP67 (Front of Panel Only)

MMP0120/A



7.2 15.5Max.

5 Max.

M12×1

Φ12.1

Φ12

Top View

Φ17.5



Terminal Arrangement

Terminations:P - Solder Tabs S - Screw TerminalSwitching:S.P. Push to makeMax Rating:2A, 36VdcContact Resistance:>50MΩInsulation Resistance:>1000MΩDielectric Strength:1500V, AC 50Hz, 5 SecsOperating Temp Range:*-25°C ~ +55°COperations*-25°C ~ +55°CMechanical:1,000,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0,3NmMaterialsPBTTags/Terminations:Brass, Silver PlatedSwitch Body/ASwitch Button:/NBNickel Plated Brass /RDREED PBT /RDContacts:Silver AlloyThread size:M12x1EnvireSilver Alloy	Specification	MMP0120/A				
Max Rating:2A, 36VdcContact Resistance:≥50MΩInsulation Resistance:≥1000MΩDielectric Strength:1500V, AC 50Hz, 5 SecsOperating Temp Range:*-25°C ~ +55°COperations1,000,000 (min)Bechrical:200,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterialsPBTTags/Terminations:Brass, Silver PlatedSwitch Body/ASwitch Button:/NBNickel Plated Brass /RDRED PBT /GNContacts:Silver AlloyThread size:M12x1	Terminations:					
Contact Resistance:>50MΩInsulation Resistance:>1000MΩDielectric Strength:1500V, AC 50Hz, 5 SecsOperating Temp Range:*-25°C ~ +55°COperations*-25°C ~ +55°CMechanical:1,000,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterialsPBTMouldings:PBTTags/Terminations:Brass, Silver PlatedSwitch Body/ASwitch Button:/NBNickel Plated Brass /RDREED PBT /GNGentacts:Silver AlloyContacts:Silver Alloy	Switching:	S.P. Push to make				
Insulation Resistance:≥1000MΩDielectric Strength:1500V, AC 50Hz, 5 SecsOperating Temp Range:*-25°C ~ +55°COperations*-25°C ~ +55°CMechanical:1,000,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterialsPBTTags/Terminations:Brass, Silver PlatedSwitch Body/ASwitch Button:/NBNickel Plated Brass /RDRED PBT /GNGontacts:Silver AlloyThread size:M12x1	Max Rating:	2A, 36Vdc				
Dielectric Strength: 1500V, AC 50Hz, 5 Secs Operating Temp Range: *-25°C ~ +55°C Operations Mechanical: 1,000,000 (min) Electrical: 200,000 (min) Electrical: 200,000 (min) Sealing (Front of Panel Only) IP65 or IP67 Shock Resistance IK08 Rear Nut Fixing Torque: 0.3Nm Materials Mouldings: PBT Tags/Terminations: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /GN GREEN PBT /GN GREEN PBT /BL BLUE PBT /BL BLUE PBT /BL BLUE PBT /BL BLUE PBT /BL BLUE PBT /BL BLUE PBT	Contact Resistance:	≥50MΩ				
Operating Temp Range:*-25°C ~ +55°COperations1,000,000 (min)Mechanical:1,000,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterialsPBTTags/Terminations:Brass, Silver PlatedSwitch Body/ASwitch Button:/NBNickel Plated Brass /RDRED PBT /GNGREEN PBTSLUE PBT /BLContacts:Silver AlloyThread size:M12x1	Insulation Resistance:	≥1000MΩ				
Operations1,000,000 (min)Electrical:200,000 (min)Electrical:200,000 (min)Sealing (Front of Panel Only)IP65 or IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterials0.3NmMouldings:PBTTags/Terminations:Brass, Silver PlatedSwitch Body/ABlack AnodisedSwitch Button:/NBNickel Plated Brass/RDRED PBT/BLBLUE PBT/BLBLUE PBT/BKBLACK PBTContacts:Silver AlloyThread size:M12x1	Dielectric Strength:	1500V, AC 50Hz, 5 Secs				
Mechanical: 1,000,000 (min) Electrical: 200,000 (min) Sealing (Front of Panel Only) IP65 or IP67 Shock Resistance IK08 Rear Nut Fixing Torque: 0.3Nm Materials Mouldings: PBT Tags/Terminations: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /GN GREEN PBT /BL BLUE PBT /BL BLUE PBT /BK BLACK PBT	Operating Temp Range:	*-25°C ~ +55°C				
Mechanical: 1,000,000 (min) Electrical: 200,000 (min) Sealing (Front of Panel Only) IP65 or IP67 Shock Resistance IK08 Rear Nut Fixing Torque: 0.3Nm Materials Mouldings: PBT Tags/Terminations: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /GN GREEN PBT /BL BLUE PBT /BL BLUE PBT /BK BLACK PBT						
Electrical: 200,000 (min) Sealing (Front of Panel Only) IP65 or IP67 Shock Resistance IK08 Rear Nut Fixing Torque: 0.3Nm Materials Mouldings: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /GN GREEN PBT /GN GREEN PBT /BL BLUE PBT /BL BLUE PBT /BK BLACK PBT Contacts: Silver Alloy	Operations					
Sealing (Front of Panel Only) IP65 or IP67 Shock Resistance IK08 Rear Nut Fixing Torque: 0.3Nm Materials Mouldings: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /BL BLUE PBT /BL BLUE PBT /BK BLACK PBT Contacts: Silver Alloy Thread size: M12x1	Mechanical:	1,000,000 (min)				
Shock ResistanceIK08Rear Nut Fixing Torque:0.3NmMaterials0.3NmMouldings:PBTTags/Terminations:Brass, Silver PlatedSwitch Body/A Black AnodisedSwitch Button:/NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /BL BLUE PBT /BK BLACK PBTContacts:Silver AlloyThread size:M12x1	Electrical:	200,000 (min)				
Rear Nut Fixing Torque:0.3NmMaterialsPBTMouldings:PBTTags/Terminations:Brass, Silver PlatedSwitch Body/ABlack AnodisedSwitch Button:/NBNickel Plated Brass /RDRED PBT /GN/BLBLUE PBT /BLBLUE PBT /BKContacts:Silver AlloyThread size:M12x1	Sealing (Front of Panel Only)	IP65 or IP67				
Materials Mouldings: PBT Tags/Terminations: Brass, Silver Plated Switch Body /A Black Anodised Switch Button: /NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /GN GREEN PBT /BL BLUE PBT /BK BLACK PBT Contacts: Silver Alloy Thread size: M12x1	Shock Resistance	IK08				
Mouldings:       PBT         Tags/Terminations:       Brass, Silver Plated         Switch Body       /A       Black Anodised         Switch Button:       /NB       Nickel Plated Brass         /RD       RED PBT       /GN         /BL       BLUE PBT       /BL         /BK       BLACK PBT       Silver Alloy         Thread size:       M12x1	Rear Nut Fixing Torque:	0.3Nm				
Mouldings:       PBT         Tags/Terminations:       Brass, Silver Plated         Switch Body       /A       Black Anodised         Switch Button:       /NB       Nickel Plated Brass         /RD       RED PBT       /GN         /BL       BLUE PBT       /BL         /BK       BLACK PBT       Silver Alloy         Thread size:       M12x1						
Tags/Terminations:       Brass, Silver Plated         Switch Body       /A       Black Anodised         Switch Button:       /NB       Nickel Plated Brass         /RD       RED PBT         /GN       GREEN PBT         /BL       BLUE PBT         /BK       BLACK PBT         Contacts:       Silver Alloy         Thread size:       M12x1	Materials					
Switch Body/ABlack AnodisedSwitch Button:/NBNickel Plated Brass /RDRED PBT /GN/GNGREEN PBT /BLBLUE PBT /BKBLACK PBTContacts:Silver AlloyThread size:M12x1	Mouldings:	PBT				
Switch Button:     /NB     Nickel Plated Brass       /RD     RED PBT       /GN     GREEN PBT       /BL     BLUE PBT       /BK     BLACK PBT	Tags/Terminations:	Brass, Silver Plated				
/RDRED PBT/GNGREEN PBT/BLBLUE PBT/BKBLACK PBT/BKSilver AlloyThread size:M12x1	Switch Body	/A Black Anodised				
Thread size: M12x1	Switch Button:	/RD RED PBT /GN GREEN PBT /BL BLUE PBT				
	Contacts:	Silver Alloy				
Dalle	Thread size:	M12x1				
RUNS Compliant	RoHS	Compliant				

# 12mm Switches Miniature Domed Illuminated Pushbutton Stainless Steel and PBT



MMPI0120	<ul> <li>Raised Domed Profile</li> <li>Dot Illumination</li> <li>Bright daylight LEDs</li> <li>12mm Diameter</li> <li>24 36Vac</li> </ul>	5 Max.
MMPI0120	<ul> <li>2A, 36Vac</li> <li>IP65 (Front of Panel Only)</li> </ul>	7.4 16.6 Top View Terminal Arrangement

Specification	MMPI0120				
Terminations:	P - Solder Tabs				
Switching: Max Rating:	S.P. Push to make 2A, 36Vdc				
LED Ratings					
Part No. Colours	SS-RD Red	SS-GN Green	NN-RD Red	ABK-RD Red	AG-RD Red
Luminous Intensity Forward Voltage	1.8V	2.8V	1.8V	1.8V	1.8V
Forward Current Moulding Current	15mA	15mA	15mA	15mA	15mA
Illumination Voltage	/no suffix - No resistor f Voltages as above	itted. An Appropriate	e resistor must be series c	onnected by the user.	
	/12				
Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range:	≥50MΩ ≥1000MΩ 1500V, AC 50Hz, 5 Sec *-25°C ~ +55°C	S			
Operations Mechanical: Electrical:	1,000,000 (min) 200,000 (min)				
Sealing (Front of Panel Only)	IP65				
Shock Resistance	IK08				
Rear Nut Fixing Torque:	0.3Nm				
Materials					
Mouldings: Tags/Terminations: Switch Body & Button:	PBT Brass, Silver Plated Stainless Steel	Stainless Steel	Nickel Plated Brass	Black Anodized Body, Black PBT Button	Black Anodized Body, Green PBT Button
Contacts: Thread size: RoHS	Silver Alloy M12x1 Compliant				



#### 12mm Miniature Vandal Resistant Stainless Steel Switch

MAV0120	/	X	/	X	/	X	/	X	/	X
Series MAV0120		<b>Button</b> 1 = Flush 3 = Prominent		Switching Type D = Momentary		<b>Type of Illumination</b> Blank = None 1 = Dot 2 = Ring		Illumination Colour Blank = None RD = RED GN = GREEN BL = BLUE AM = AMBER/YELLOW OR = ORANGE		Lamp Voltage Blank = None 012 = 12V 024 = 24V

#### Examples:

MAV0120/3D = 12mm Prominent Actuator, Momentary, Non Illuminated MAV0120/3D1BL024 = 12mm Prominent Actuator, Momentary, Blue Dot Illuminated, 24V

MAV0120/3D2GN012 = 12mm Prominent Actuator, Momentary, Green Ring Illuminated, 12V

#### 12mm Miniature Metal/Plastic Domed Pushbutton Switch

MMPXXX	/ <b>x</b>	/ x	/ x	/ x	/ × ,	/ <b>x</b>
Series MMP0120 = Non Illuminated MMPI0120 = Illuminated	Body Material S = Stainless Steel N = Nickel Plated Brass A = Black Anodized	Button Material & Colour SS = Nickel Plated Brass RD = RED PBT GN = GREEN PBT BL = BLUE PBT BK = BLACK PBT	Sealing Blank = IP65 67 = IP67 IP67 (non-illuminated only)	Illumination Colour Blank = None RD = RED GN = GREEN BL = BLUE AM = AMBERYYELLOW OR = ORANGE	Lamp Voltage Blank = None 012 = 12V 024 = 24V Other voltages require external resistor	<b>Termination</b> S = Screw Terminals P= Solder Terminals (2.0mm x 0.5mm)

#### Examples:

MMP0120/SSSS = 12mm, Non Illuminated, All Stainless Steel, IP65, Screw Terminals MMP0120/ARD67/S = 12mm, Non Illuminated, Black anodized body, Red PBT button, IP67, screw terminals MMPI0120/NNBRD012P = 12mm, Illuminated , All Nickel Plated Brass with 12V Red Dot illumination, IP65, Pin Terminals

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