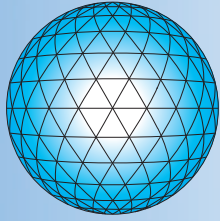


Apem开关 Apem钮子开关 Apem按钮开关 DIP开关 法国APEM switch说明书 法国品牌Apem代理商进口旋转编码开关
Apem摇头开关 Apem船型开关 进口翘板开关 进口急停开关 进口钥匙开关 进口摇头开关 进口按键开关 防水金属开关



APEM

A world of switching capabilities

2011
2012



Index



By series

AS	D 20	Q	I 2	4400	A 94
AV	B 127	S (rocker)	D 10	4600	A 94
A01	G 6	S (toggle) and SF	A 13	4700-4800	B 172
A1	G 5	SP	B 77	5000	A 22
A02	G 16	SR	D 10	5100	A 34
A03	G 25	TG	E 6	5100Z	A 36
B	I 5	TG SMT	E 4	5200	A 31
CR36	F 3	TL	A 7	5200MIWR	A 37
CR65	F 5	TL SMT	A 5	5200W	A 38
DA	F 11	TP	B 8	5200WW	A 40
DP	F 10	TP SMT	B 6	5200Y	A 42
DS	F 8	TR	D 5	5200Z	A 35
D162	C 3	TR SMT	D 3	5300	A 34
FM	D 41	V (keys)	B 199	5400	A 33
G	E 9	VL	I 3	5400W	A 39
IA	B 73	ZL	A 3	5400WW	A 41
IB-IS	B 32	ZP	B 4	5500	A 28
IF	B 76	1000	A 85	55000 VDE	A 52
IKE	F 15	10400	B 97	5600	A 26
IKH	F 17	10600	A 60	5600M	A 29
IKN	F 12	11000	A 63	5700	A 28
IP	B 22	1200	B 162	57000 VDE	D 37
IR	B 54	1200M	B 166	5900	A 33
IT	B 159	12000	A 71	5900Z	A 36
IZ	B 36	12000X778	A 78	660	A 106
KG	D 75	13000	B 99	600H	A 100
KI	D 70	13000X778	B 107	600NH	A 105
KL	D 61	1400N	B 169	6000	A 116
KR	D 52	1500	A 88	7000	D 23
LPI	B 191	1600	A 91	8000	B 83
NK	E 3	1700	A 91	9100-9200-9500	B 14
P36	F 3	18000	B 112	9400-9600	B 89
PBA	B 175	21000N	A 55	Security caps	I 6
PHAP33	C 4	25000N	E 15	Sealing boots	H 2
PHAP40	B 125	2600	D 44	Custom products	J 2
PR (keys)	B 199	3500	A 108		
PT65	F 5	3600NF	A 113		



Contents

PRODUCTION PROCESS - APPROVALS - NEW PRODUCTS

4 to 8



TOGGLE SWITCHES

A

ZL	Tiny, metal bushing.....	A 3	1000	Industrial, metal lever, economy range.....	A 85
SMT TL	Tiny, SMT, washable	A 5	1500	Industrial, insulated lever and bushing.....	A 88
TL	Tiny, washable	A 7	1600/1700	Industrial, metal or insulated lever	A 91
S and SF	Miniature, washable	A 13	4600/4400	Industrial, insulated or metal lever	A 94
5000	Miniature, the widest range (includes 55000)	A 22	600H	Industrial, metal lever	A 100
21000N	Miniature, low profile	A 55	600NH	Industrial, insulated lever.....	A 105
10600	Professional miniature, bushing Ø 10 (.393)	A 60	660	Industrial, metal lever, four pole	A 106
11000	Professional miniature, bushing Ø 6,35 (1/4)	A 63	3500	High performance industrial, environmentally sealed	A 108
12000	Professional miniature, bushing Ø 11,9 (15/32)	A 71	3600NF	Industrial, sealed for outdoor applications.....	A 113
12000X778	High performance miniature, bushing Ø 11,9 (15/32)	A 78	6000	Industrial for military applications.	A 116



PUSHBUTTON SWITCHES

B

ZP	Tiny, metal bushing, momentary	B 4	13000	Professional miniature, quick-break, momentary	B 99
SMT TP	Tiny, SMT, washable, momentary	B 6	13000X778	High performance miniature, mom. ...	B 107
TP	Tiny, washable, momentary	B 8	18000	Miniature, snap-action momentary ..	B 112
9100/200/500	Subminiature, momentary	B 14	PHAP40	Miniature, momentary or latching ...	B 125
IP	Miniature for harsh environments, mom. or latching, illuminated or not	B 22	AV	Industrial, anti-vandal and security, mom. or latching New models! ...	B 127
IB / IS	Miniature, sealed, momentary	B 32	IT	Industrial, mains, 6000V dielectric strength, latching	B 159
IZ	Miniature, rear mount, sealed, mom. or latching, illuminated or not New!	B 36	1200	Industrial, mom., round plunger	B 162
IR	Miniature, sealed, mom. or latching, illuminated or not New!	B 54	1200M/ 1200MR	Robust industrial, momentary, round metal plunger	B 166
IA	Miniature, low profile, for harsh env. ...	B 73	1400N	Industrial, momentary, snap-in mounting, square plunger	B 169
IF	Miniature, sealed, mom., large actuator. B	76	4700/4800	Industrial, mom. or alternate action ..	B 172
SP	Miniature, washable, snap-action, mom. B	77	PBA	Piezo New models!	B 175
8000	Miniature, mom. or alternate action ...	B 83	LPI	Tactile, with large actuator New! ...	B 191
9400-9600	Miniature, mom. or alternate action ...	B 89	PR / V	Stainless steel keys New!	B 199
10400	Professional miniature, bushing Ø 10, momentary	B 97			



TACT SWITCHES

C

D162	SMT New!	C 3
PHAP33	SMT	C 4
PHAP33	Through-hole.....	C 13

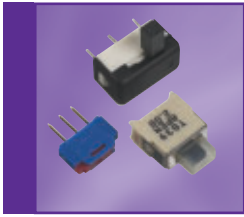


Contents



ROCKER AND PADDLE SWITCHES D

SMT TR	Tiny, SMT, washable	D 3	2600	Industrial, illuminated or not	D 44
TR	Tiny, washable	D 5	KR	Industrial, sealed, unique rocker New!	D 52
S and SR	Miniature, washable	D 10	KL	Industrial, locking, sealed New!	D 61
AS	Miniature, snap-in	D 20	KI	LED indicators, sealed New!	D 70
7000	Miniature (includes 57000)	D 23	KG	Industrial, sealed, illum. or not	D 75
FM	Industrial, snap-in	D 41	K range	Symbols and accessories	D 80



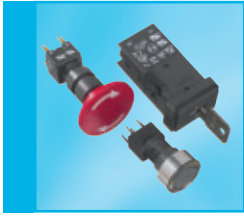
SLIDE SWITCHES E

NK	Subminiature	E 3	G	Miniature, telecom grade	E 9
SMT TG	Tiny, SMT, washable	E 4	25000N	Miniature, professional	E 15
TG	Tiny, standard or washable	E 6			



DIP AND CODED ROTARY SWITCHES F

P36/CR36	Low profile coded rotary, SMT or through-hole	F 3	DA	Right angle DIP	F 11
PT65/CR65	Coded rotary, through-hole	F 5	IKN	Low profile DIP, SMT or through-hole	F 12
DS/DSR	Standard DIP	F 8	IKE	DIP, SMT or through-hole New!	F 15
DP/DPL	Piano DIP	F 10	IKH	Half pitch DIP, SMT, very low profile	F 17



INDUSTRIAL CONTROLS G

	Distinctive features and specifications	G 3	A02	Pushbutton, rotary lever, keylock & emergency stop switches - Indicators - Panel cut-out Ø 22 (.866) or 30 (1.181)	G 16
A1	Engraved aluminium flush mounting pushbuttons & indicators - Panel cut-out Ø 22 (.866)	G 5	A03	Compact pushbuttons and indicators Panel cut-out Ø 22 (.866) or 30 (1.181)	G 25
A01	Pushbutton, rotary lever, keylock & emergency stop switches - Indicators - Panel cut-out Ø 16 (.630)	G 6			



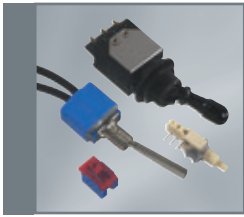
SEALING BOOTS H

For toggle, pushbutton and rocker switches
New models H 2



INDICATORS / ACCESSORIES / HARDWARE I

Q	Panel mount LED indicators up to 220VAC New!	I 2	B	15A and 25A terminal posts	I 5
VL	Panel mount LED indicators	I 3	20 to 500	Security caps New models!	I 6
				Hardware	I 12



CUSTOM PRODUCTS J

TECHNICAL INFORMATION, ROHS COMPLIANCE, GLOSSARY, ADDRESSES & OTHER PRODUCTS

End of catalogue

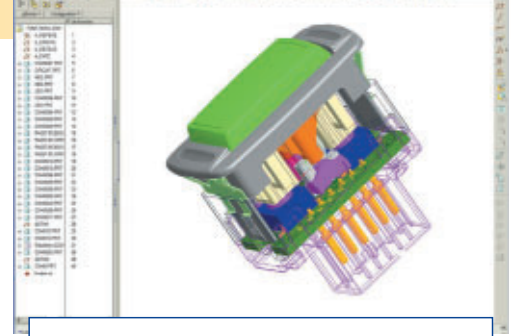
Production process

APEM, vertically integrated manufacturing

Design and development capabilities



CAD/CAM stations



Graphic design

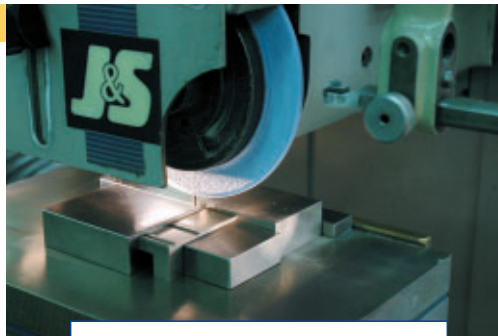


Fabrication of tooling



Qualification

Tooling and automatic assembly



Grinding machine



Electro-erosion



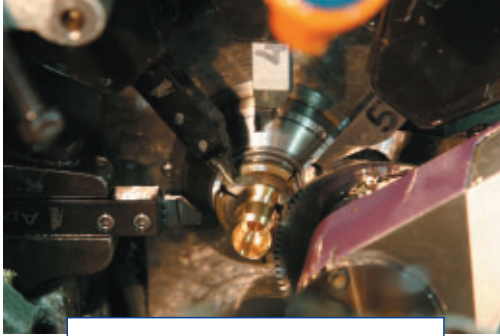
Tooling



Milling

Production process

From raw material transformation to finished products, through the design and production of tooling, APEM controls all phases of production.



Screw machining



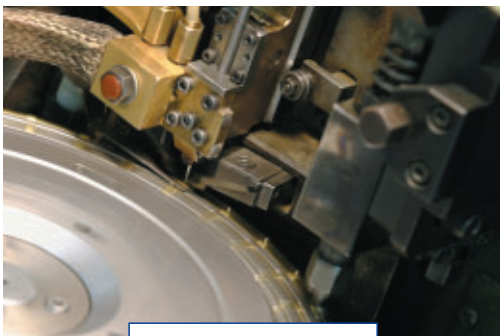
Stamping



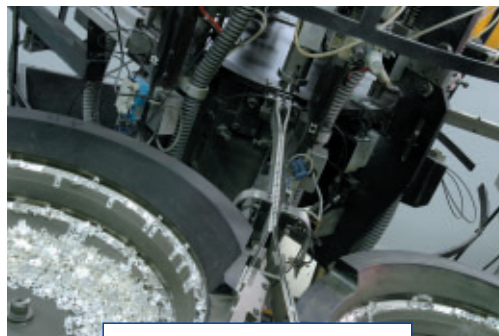
Plating



Moulding



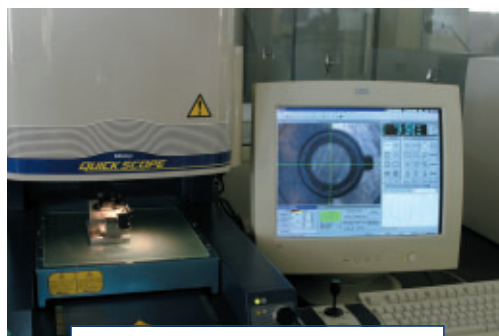
Soldering



Assembly



Marking



Testing

**Switch
manufacturing
process**

Approvals

QUALITY SYSTEM CERTIFICATES

ISO 9001 - 2008 version
AFAQ No 1992/776f



FACTORIES

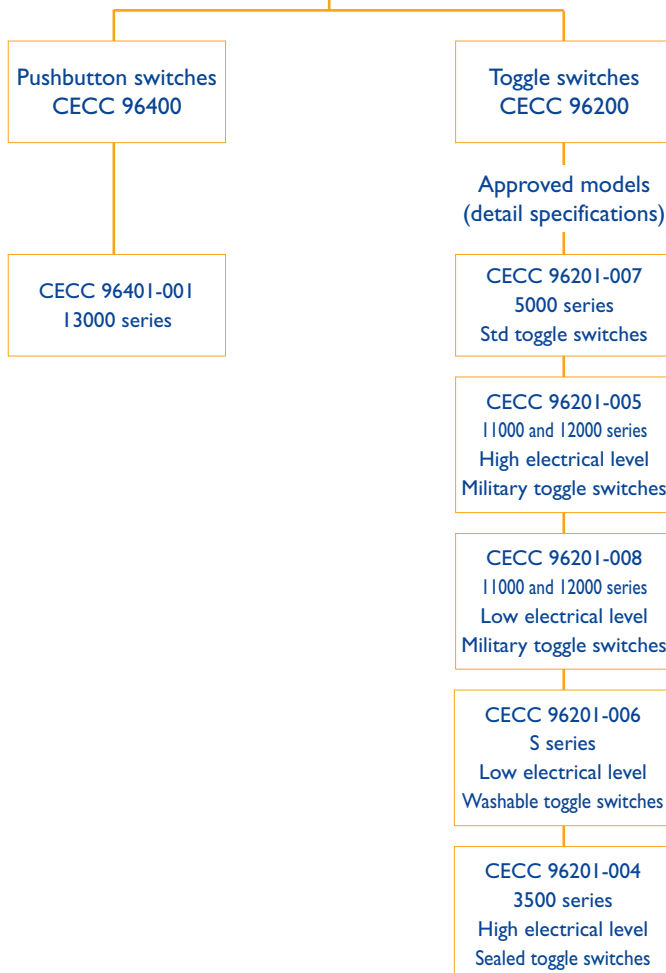
- Caussade (miniature switches)
- Montpezat (industrial switches)
- Montauban (membrane and specific switch panels)

EUROPEAN STANDARDS



Generic specification
CECC 96000

Intermediate specifications



See our cross reference list MCL02 for CECC models.

APEM factories and test laboratories are qualified by :

SNQ Service National de Qualité - No 121
LCIE Laboratoire Central des Industries Electriques

E CECC-IECQ (European)- No 008-95
Standard : CECC 96000

UL Underwriters Laboratories

CSA Canadian Standards Association

NF NF - Normes françaises

VDE VDE - Germany

Other product qualifications

Ex ATEX - PBA series - No INERIS08ATEXQ408







PREFERENTIAL LISTS

NATO — User code No F7507

Consult factory for details of listed models.

Approvals

The SEV, NEMKO, SEMKO and FEMKO approvals are now covered by the new European standard EN 61058-1, which is recognized by all European countries. For our products, the approvals are usually delivered by the French agency (NF) or the German agency (VDE).

SERIES	SAFETY STANDARDS					QUALITY STD
	USE - France NF - EN 61058-1	VDE - Germany DIN - EN 61058-1	UL - U.S.A. UL 1054	CSA - Canada C22.2 N° 55	BSAB - U.K. CEC 24	CECC (European) No. 96000 CECC 96000
						
	EN 61058-1	EN 61058-1				
A01-A02		•	•	•	•	
AS			•	•		
AV			•	•		
FM		•	•			
IP-IB-IS			•			
S			•			•
SP			•			
KG		•				
10400						•
10600						•
11000						•
1200	•		•	•		
12000						•
13000			•			•
1500			•			
2200			•	•		
25000N			•			
2600	•	•	•	•		
3500						•
3600			•			
4100-4200			•	•		
4600		•	•	•		
4400		•				
4700		•	•	•		
4800		•				
5000			•	•		•
55000		•	•	•		
57000		•	•	•		
600H	•	•	•	•		
600NH	•	•	•	•		
7000			•	•		
8000			•			

Availability : consult factory for details of approved models.

LAB TEST

APEM's laboratory is approved by the National Standard Office (SNQ) as well as Underwriters Laboratories (UL). Qualification tests and periodical tests are conducted according to European Standard (CECC 96000), International Standards (IEC 1020, IEC 512, IEC 68...) and other safety standards like UL 1054, CSA 55, CEE 24, EN 61058-1.

CECC - IEC TYPICAL TESTS

Visual examination:	IEC 512-2 test 1a	Shock:	IEC 512-4 test 6c
Outline dimensions:	IEC 512-2 test 1b	Climatic sequence:	IEC 512-6 test 11a
Functional operation:	CECC 96000 - § 4-3-1-7	Insulation resistance:	CECC 96000 § 4-3-3-1
Initial contact resistance:	IEC 512-2 test 2a or 2b	Voltage proof:	CECC 96000 § 4-3-4-1
Impact on actuator:	CECC 96000 § 4-3-7-1	Temperature rise (if applicable):	IEC 512-3 test 5a
Robustness of actuator:	CECC 96000 § 4-3-8-1	Soldering:	IEC 512-6
Robustness of mounting:	CECC 96000 § 4-3-8-2	Operating force:	IEC 512-7 test 13c
Robustness of terminals:	IEC 512-8 test 16f	Sealing (air leakage):	IEC 68-2-17 test Qa
Mechanical endurance:	IEC 512-5 test 9a and CECC96000 § 4-3-9-1	Sealing water proof:	CECC 96000 § 4-3-14-2
Electrical endurance:	IEC 512-5 test 9c	Sealing immersion proof:	IEC 68-2-17 test Qf
Electrical overload:	IEC 512-5 test 10a	Sealing (bubble test):	IEC 68-2-17 test Qc
Damp heat, steady state:	IEC 512-6 test 11c	Low air pressure (if required):	IEC 512-6 test 11k
Rapid change of temperature:	IEC 512-6 test 11d	Corrosion (salt resist) (if required):	IEC 512-6 test 11f
Vibration:	IEC 512-4 test 6d	Dry heat:	IEC 512-6 test 11i
Bump (if required):	IEC 512-4 test 6b	Cold:	IEC 512-6 test 11j

CE All switches approved according to EN 61058-1 are compatible with CE marked equipment.

New products

New series, new developments



IZ series

- Rear panel mounting
- Metal or plastic bushing
- Momentary or latching
- Round actuator
- Illuminated or non-illuminated

Section B



IR series

- Up to 5A
- Screw version
- Momentary or latching
- Square or round actuator
- Illuminated or non illuminated

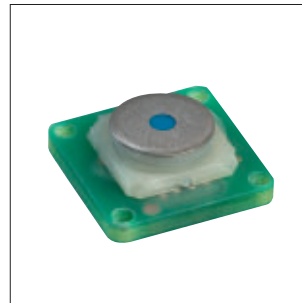
Section B



PBA series

- Dia. 19 mm models
- New LED colours
- New shapes
- ATEX versions

Section B



PR and V series

- Stainless steel keys
- Rear mounting
- Custom marking

Section B



LPI series

- Large ergonomic actuator
- Low behind-panel depth
- Stylish design
- Front or rear mounting
- EN81-70 compliant

Section B



KR series

- Unique rocker design
- Wide choice of colours
- Laser etched symbols
- Illuminated or non-illuminated



KL series

- Locking rocker switches
- Patented intuitive ergonomics
- Laser etched symbols
- Illuminated or non-illuminated

Section D



KI series

- LED indicators
- Wide choice of LEDs
- Laser etched symbols
- Long life expectancy

Section D

New models

- AV series : dia. 22 mm AV with overmolded actuator (AV3S)
- AV series : NO/NC illuminated models (AV3 - AV9)
- AV series : alternate action model (AV...4700)
- D162 series : SMT tact switches
- IKE series : SMT or through-hole DIP switches (replacing IKD)
- Sealing boots : joystick type, boots for the LPI and KG series
- Security caps : 7 new models
- Custom products : limit switch, pendant switch...

Section B

Section B

Section B

Section C

Section F

Section H

Section I

Section J

Pushbutton switches












B

Section B

ZP	Tiny, metal bushing, momentary	B 4
SMT TP	Tiny, SMT, washable, momentary	B 6
TP	Tiny, washable, momentary	B 8
9100-9200-9500	Subminiature, momentary	B 14
IP	Miniature for harsh environments, mom./latching, ill. or not	B 22
IB-IS	Miniature, sealed, momentary	B 32
IZ <i>New!</i>	Miniature, rear mount, sealed, mom./latching, illum. or not	B 36
IR <i>New!</i>	Miniature, sealed, mom./latching, illuminated or not	B 54
IA	Miniature, low profile, for harsh environments	B 73
IF	Miniature, sealed, momentary, Ø 25 (.984) actuator	B 76
SP	Miniature, washable, snap-action, momentary	B 77
8000	Miniature, momentary or alternate action	B 83
9400-9600	Miniature, momentary or alternate action	B 89
10400	Professional miniature, bushing Ø 10 (.393), momentary	B 97
13000	Professional miniature, quick-break, momentary	B 99
13000X778	High performance miniature, momentary	B 107
18000	Miniature, snap-action, momentary	B 112
PHAP40	Miniature, momentary or latching	B 125
AV	Industrial, anti-vandal and security, mom. or latching illuminated or not <i>New models!</i>	B 127
IT	Industrial, mains, 6000V dielectric strength, latching	B 159
1200	Industrial, momentary, round plunger	B 162
1200M-1200MR	Robust industrial, momentary, round metal plunger	B 166
1400N	Industrial, momentary, snap-in mounting, square plunger	B 169
4700/4800	Industrial, momentary or alternate action	B 172
PBA	Piezo <i>New models!</i>	B 175
LPI <i>New!</i>	Tactile with large actuator	B 191
PR/V <i>New!</i>	Stainless steel keys	B 199









Selection guide

Pushbutton switches

								
Series	ZP	SMT TP	TP	9500	IP	IP latching	IB-IS	IZ metal
Page	B-4	B-6	B-8	B-14	B-22	B-28	B-32	B-36
Poles	1	1	1,2	1	1	1	1	1
Maximum current	500mA 48VDC	0,4VA 20V AC/DC	0,5A 48V AC/DC	100mA 30VDC	5A 28VDC	4A 12VDC	100mA 50VDC	100mA 24VDC
Illuminated						X		X
Bushing dimension								
Ø4 (.157)				X				
Ø4,83 (10-48)	X							
Ø12 (.472)					X	X	X	
Ø16 (.629)								X
Mounting options								
Horizontal SMT		X						
Vertical right angle SMT		X						
Vertical Through hole	X		X	X	X	X	X	X
Horizontal Through hole			X					
Vert. right angle Through hole			X	X				
Panel	X			X	X	X	X	X
Snap-in							X	
Terminal options								
PCB	X	X	X	X	X	X	X	X
Solder lugs	X			X	X	X	X	X
Quick-connect					X	X	X	X
Screw								X
Flying leads					X	X		X
Sealing	No	Process	Process	Optional	IP67	IP67	IP67	IP67
								
Series	IZ metal latching	IZ plastic	IZ plastic latching	IR standard	IR microswitch	IR latching	IA	IF
Page	B-41	B-46	B-50	B-55	B-61	B-67	B-73	B-76
Poles	1	1	1	1	1	1	1	1
Maximum current	100mA 24VDC	2A 250VAC 200mA 250VAC	100mA 24VDC	2A 250VAC 200mA 250VAC	5A 250VAC	100mA 24VDC	2A 24VDC	100mA 50VDC
Illuminated	X	X	X	X	X	X		
Bushing dimension								
Ø12 (.472)								
Ø16 (.629)	X	X	X	X	X	X	X	X
Mounting options								
Vertical Through hole	X	X	X	X		X		
Horizontal Through hole								
Vert. right angle Through hole								
Panel	X	X	X	X	X	X	X	X
Snap-in								X
Terminal options								
PCB	X	X	X	X		X		
Solder lugs	X	X	X	X	X	X		
Quick-connect	X	X	X	X	X	X		X
Screw		X		X				
Flying leads	X	X	X	X		X	X	
Sealing	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67

Selection guide

Pushbutton switches

								
Series	SP	8000	9400-9600	10400	13000	13000X778	18000	PHAP40
Page	B-77	B-83	B-89	B-97	B-99	B-107	B-112	B-125
Poles	1,2	1,2	1	1,2	1,2	2	1,2	2
Maximum current	1A 30VDC	3A 250VAC 4A 130VDC	1A 30VDC	2A 250VAC 3A 24VDC	2A 250VAC 4A 30VDC	2A 250VAC 4A 30VDC	7A 30VDC	100mA 30VDC
Bushing dimension								
Ø6,35 (1/4)	X	X	X		X		X	
Ø10 (.393)				X				
Ø11,9 (15/32)		X	X		X	X		
Mounting options								
Vertical Through hole	X	X	X		X	X	X	X
Horizontal Through hole	X	X			X		X	
Vert. right angle Through hole	X						X	
Panel	X	X	X	X	X	X	X	
Snap-in							X	
Terminal options								
PCB	X	X	X					
Solder lugs		X	X	X	X	X	X	
Quick-connect			X					
Sealing	Process sealed	Optional	Optional	No	Optional	IP67	No	No

								
Series	AV	IT	1200	1400N	4700-4800	PBA	LPI	PR & V
Page	B-127	B-159	B-162	B-169	B-172	B-175	B-191	B-199
Poles	1,2	2	1	1	1,2	1	1	1
Maximum current	5A 250VAC	1,5A 250VAC	4A 250VAC 4A 24VDC	6A 12VDC	3A 250VAC	1A 24VDC	5A 12VDC 100mA 12VDC	50mA 24VDC
Bushing dimension								
Ø12 (.472)			X		X			
Ø16 (.629)	X					X		
Ø19 (.748)	X							
Ø22 (.866)	X					X		
Ø24 (.944)	X							
Ø38 (1.496)							X	
Ø44 (1.732)							X	
Mounting options								
Vertical Through hole	X			X	X			
Horizontal Through hole		X						
Vert. right angle Through hole								
Panel	X		X	X	X	X	X	X
Snap-in				X				
Terminal options								
Solder lugs	X		X	X	X			
Quick connect	X		X	X	X			
Screw	X		X					
Flying leads						X		
Connector								X
Sealing	Optional	No	No	No	No	IP68, IP69K	IP53	IP65

ZP series

Tiny pushbutton switches - metal bushing

Distinctive features - Specifications - Overview



☐ Ø 4,83 mm threaded bushing

☐ Solder lug and straight PC terminals

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - gold plated contacts : 0,4VA 20V max. AC or DC
 - silver plated contacts : 0,5A 48V max. AC or DC
- Minimum load : 10mA 50mV - 10µA 5VDC
- Contact resistance : 50 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength: 1.000 Vrms 50 Hz min. between terminals and frame
500 Vrms 50 Hz min. between terminals
- Electrical life at full load :
 - gold plated contacts : 60.000 cycles
 - silver plated contacts: 20.000 cycles

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : thermoplastic UL94-V0
- Bushing : zamac, tin plated
- Contacts and terminals :
 - 0** : brass, gold plated (standard)
 - 1** : brass, silver plated
 - 3** : brass, gold plated (1,27 micron gold)
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Travel :
 - function 2 (ON-MOM) : 1,2 mm (.047) ± 0,3 (.11)
 - function 3 (OFF-MOM) : 1 mm (.039) ± 0,3 (.11)
- Strength of terminals : pull-out force 10N max.
- Torque : 1Nm max. applied between the 2 nuts
- Max. panel thickness : 1,5 mm (.059) with 2 nuts
- Operating temperature : -30°C to +85°C
- Moisture : 21 days 95 % (NFC 20-603 - IEC 68-2-3)

SOLDERING

- Hand soldering : 280°C max. for 5 seconds max.
- Wave soldering : 260°C max. for 5 seconds max.

SERIES	Number of poles	Electrical functions	Terminals	Contact and terminal materials	Bushing
ZP	3 Single pole	2 ON - MOM 3 OFF - MOM	S0 Solder lug PO Straight PC	0 Brass, gold plated 1 Brass, silver plated 3 Brass, gold plated (1,27 micron gold)	01 Threaded, with flat

Dimensions : First dimensions are in mm while inches are shown as bracketed numbers.



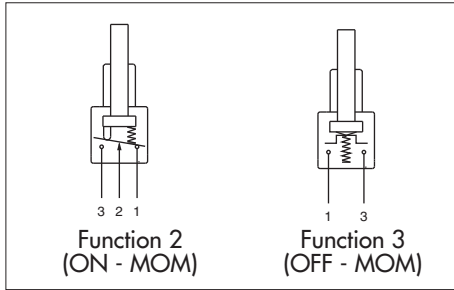
Packaging unit : 100 pieces



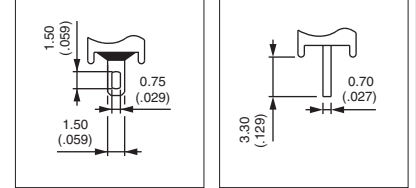
Mounting accessories : Standard hardware supplied with all models : 2 hex nuts 7 mm (.275) across flats P/N U5731, 1 locking ring P/N U5831 and 1 lockwasher P/N U5841.

ZP series

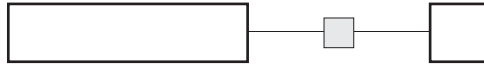
Tiny pushbutton switches - metal bushing



- Single pole
- Gold plated or silver plated contacts
- Epoxy sealed terminals



MODEL STRUCTURE



Shown in function 2 (ON-MOM)

Solder lug terminals : ZP..S0

→ Flat



ZP32S0



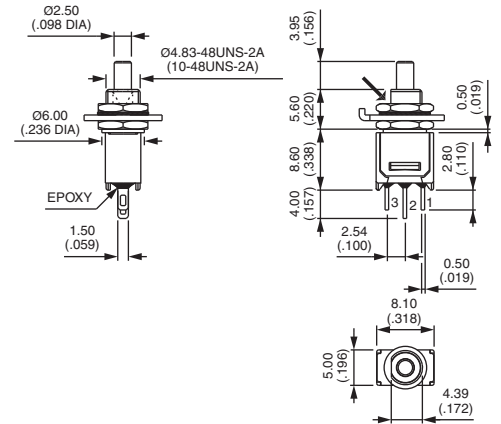
ON

MOM

ZP33S0

OFF

MOM



Straight PC terminals : ZP..P0

→ Flat



ZP32P0



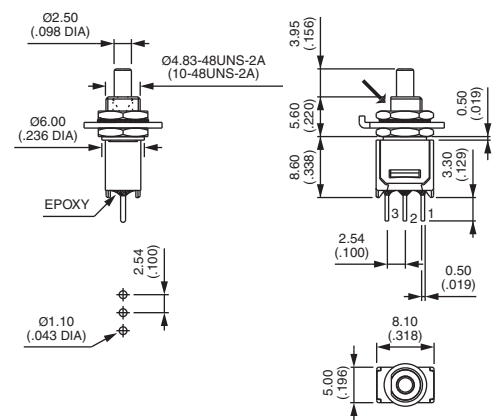
ON

MOM

ZP33P0

OFF

MOM

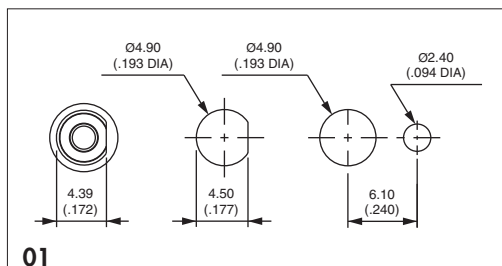
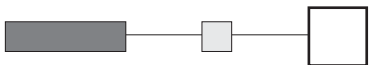


CONTACT & TERMINAL MATERIALS



0 : Brass, gold plated (standard) - 1 : Brass, silver plated - 3 : Brass, gold plated (1,27µ gold)

BUSHING



01

SMT TP series

Surface mount tiny washable pushbutton switches

Distinctive features and specifications



- Entirely designed for surface mount
- Tape and reel packaging
- Reflow solderable
 - High temperature plastic materials
 - Tin plated ground plate
 - Terminal coating : tin alloy over nickel plating
 - Terminals turned to the outside, preventing the shadow effect in infrared soldering and permitting visual inspection of solder joints
 - Distance between case and circuit : 0,55 mm (.021)
 - End stackable with 10,16 mm (.40) pitch
 - Available with positioning pins to ensure switch orientation during the reflow process and increasing switch mechanical resistance
- Protected against electrostatic discharges (ESD) up to 10 KV
- Washable
 - Construction withstands cleaning processes, including hot water under pressure

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 0,4VA 20V max. AC or DC
- Minimum load : 10mA 50mV or 10µA 5VDC
- Initial contact resistance : 50 mΩ max
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms. 50 Hz min. between terminals and frame
500 Vrms. 50 Hz min. between terminals
- Electrical life at full load : 60.000 cycles
 - Static resistance : 10 KV (Schaffner equipment)

GENERAL SPECIFICATIONS

- Actuator travel : function 2 : 1 mm (.039) - function 3 : 0,8 mm (.031)
- Operating temperature : -40°C to +85°C
- Moisture resistance : 21 days per IEC 512-6 test 11c
- Vibration resistance : 10-500 Hz / 10 g per IEC 512-4 test 6d
- Shock resistance : 50 g per IEC 512-4 test 6c

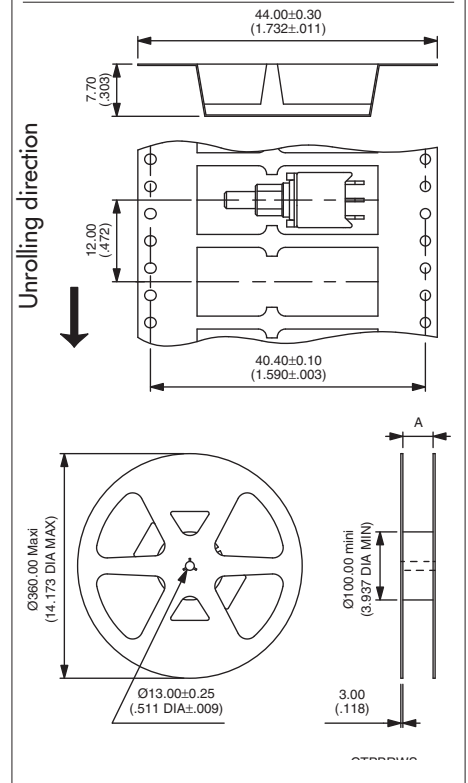
MATERIALS

- Case : high temperature plastic material UL94-V0
- Actuator : high temperature plastic material UL94-V0
- Ground plate and positioning pins : steel, tin plated
- Contacts : brass, gold plated
 - Terminals : brass, with pure tin plating over nickel barrier

SOLDERING AND CLEANING

- Reflow soldering : infrared, vapor phase or infrared convection
- Washable per IEA-RS448-2 :
 - water + detergent - preferred
 - solvents
- Further information on reflow soldering : see end of catalogue.

PACKAGING



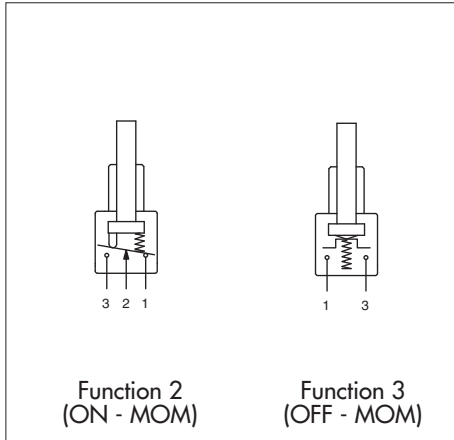
Tape width	24.00 (.944)	44.00 (1.732)
Reel (dimension A)	24.40+2.00/0.00 (.960+.078/.000)	44.40+2.00/0.00 (1.748+.078/.000)

Standard packaging unit : 700 pieces
Tape meeting international standard IEC -
Publication 286-3 (EIA481A)
Start leader : 400 mm min.

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

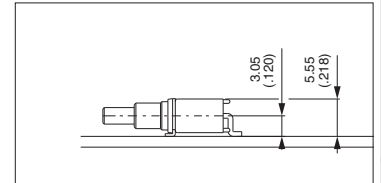
SMT TP series

Surface mount tiny washable pushbutton switches



- With or without positioning pins
- Single pole

Also available for vertical mounting. On request.



Pushbutton switches



TP32WS83500

TP33WS83500

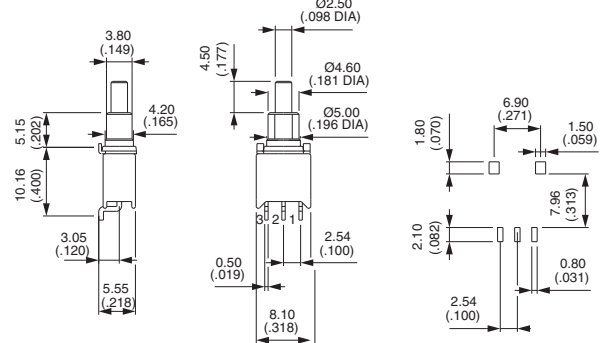


ON

MOM

OFF

MOM



Shown in function 2

Pushbutton switches - with positioning pins



TP32WS83565

TP33WS83565

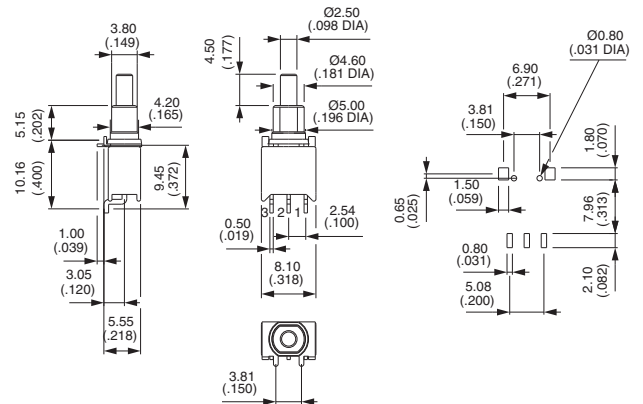


ON

MOM

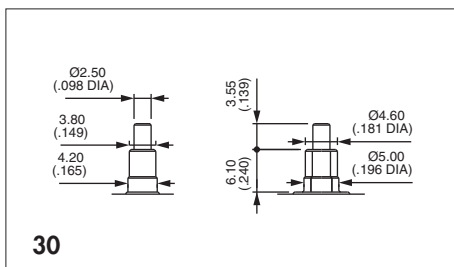
OFF

MOM



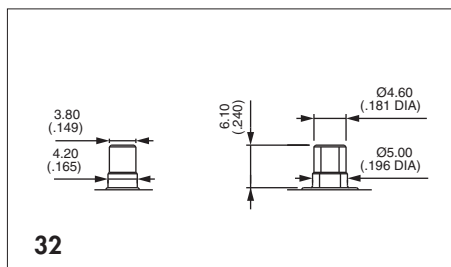
Shown in function 2

PLUNGER OPTIONS



30

Short
Replace 35 with 30 in the above P/N's



32

Flush
Replace 35 with 32 in the above P/N's.

TP series

Tiny washable momentary pushbutton switches

Distinctive features and specifications



- Process sealed**
 - Single piece case
 - O-ring seal between actuator and bushing
 - Epoxy sealed terminals
- Wide variety of contact materials**
- Same PCB layout as TL, TR and TG tiny switches**

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - gold plated contacts : 0,4VA 20V max. AC or DC
 - silver plated contacts : 0,5A 48V max. AC or DC
- Minimum load : 10mA 50mV - 10µA 5VDC
- Contact resistance : 50 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals and frame
 - 500 Vrms 50 Hz min. between terminals
- Electrical life at full load :
 - gold plated contacts : 60.000 cycles
 - silver plated contacts : 20.000 cycles

GENERAL SPECIFICATIONS

- Total travel :
 - function 2 : 1 mm (.039)
 - function 3 : 0,8 mm (.031)
- Strength of terminals : pull-out force - 10N max.
- Operating temperature : -30°C to +85°C
- Moisture : 21 days 95 % (NFC 20-603 - IEC 68-2-3)
- Cleaning : solvents or water + detergent
- Wave soldering : 260°C - 5 sec.

MATERIALS

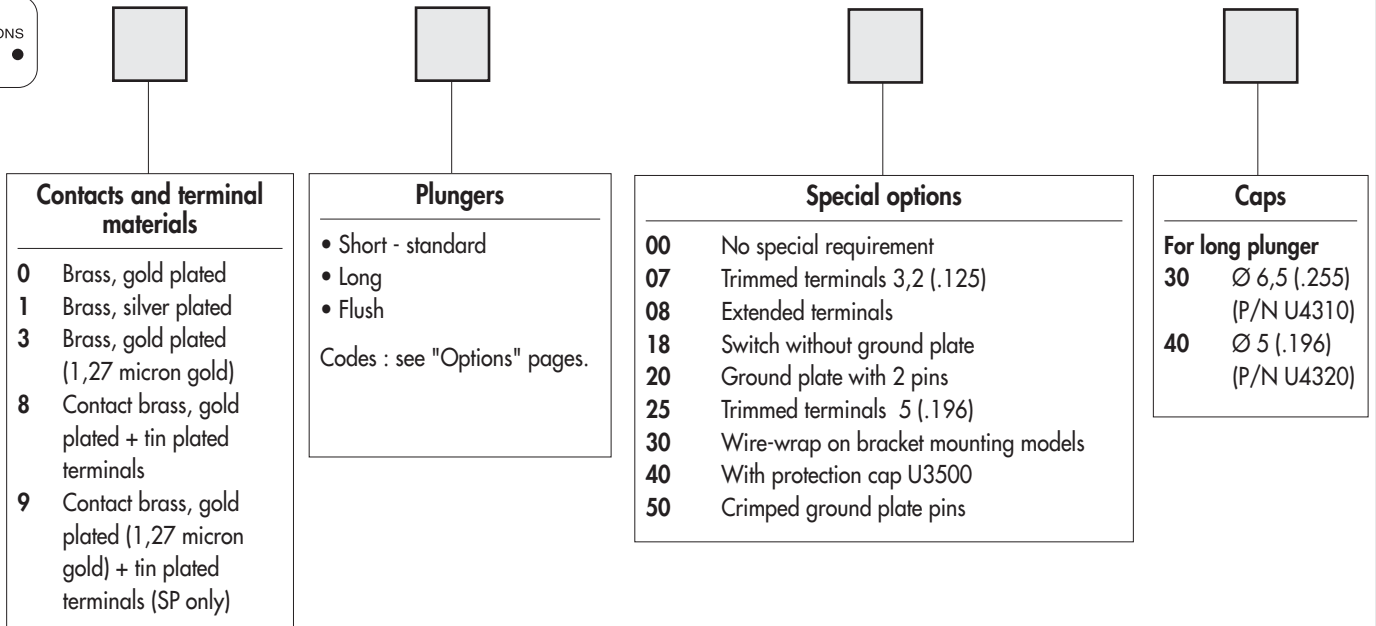
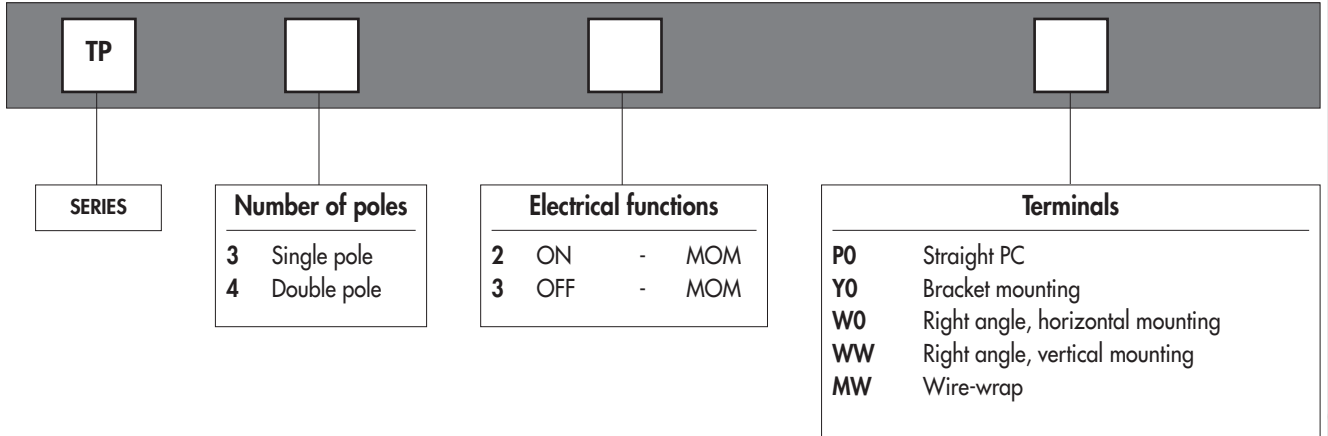
- Case : PBT
- Actuator : polyamide, glass filled
- Contacts and terminals :
 - 0 : brass, gold plated
 - 1 : brass, silver plated
 - 3 : brass, gold plated (1,27 micron gold)
 - 8 : contact brass, gold plated + tin plated terminals
 - 9 : contact brass, gold plated (1,27 micron gold) + tin plated terminals
- Terminal seal : epoxy

B

TP series

Tiny washable momentary pushbutton switches

Overview



ABOUT THIS SERIES

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

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



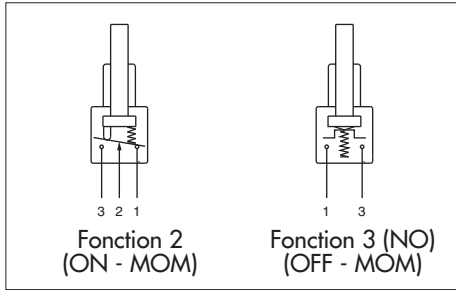
NOTICE : please note that not all combinations of above numbers are available. Refer to the following pages for further information.



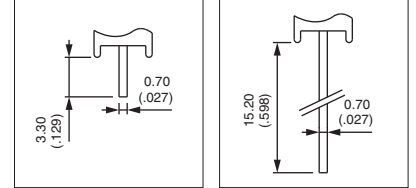
Packaging unit : 100 pieces, except for models with WW terminals (50 pieces).

TP series

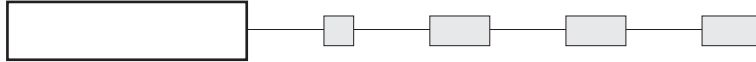
Tiny washable momentary pushbutton switches



- Straight PC, right angle or wire-wrap terminals
- 1 and 2 pole configurations



MODEL STRUCTURE

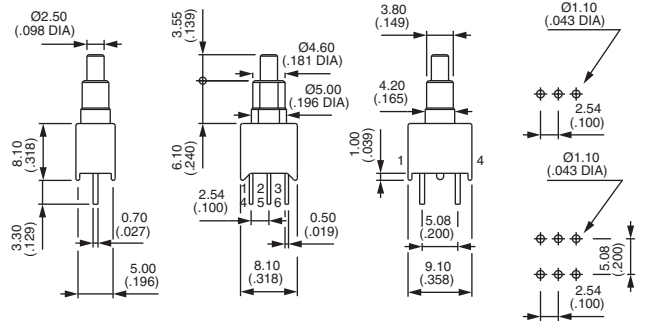


Shown in function 2, with standard plunger

Straight PC terminals : TP..P0



Single pole	Double pole	ON	MOM
TP32P0	TP42P0	ON	MOM
TP33P0	TP43P0	OFF	MOM

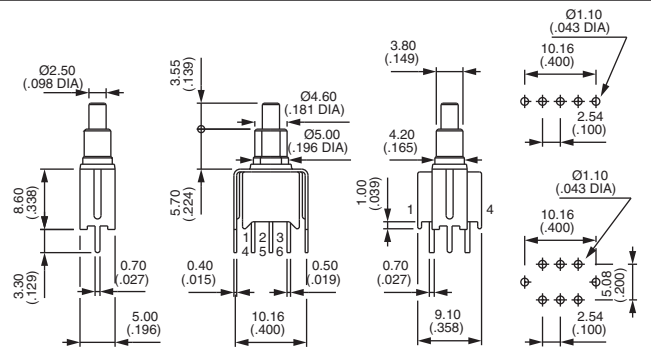


Function 3 has two terminals only (3 and 1) per pole

Straight terminals - bracket mounting : TP..Y0



Single pole	Double pole	ON	MOM
TP32Y0	TP42Y0	ON	MOM
TP33Y0	TP43Y0	OFF	MOM

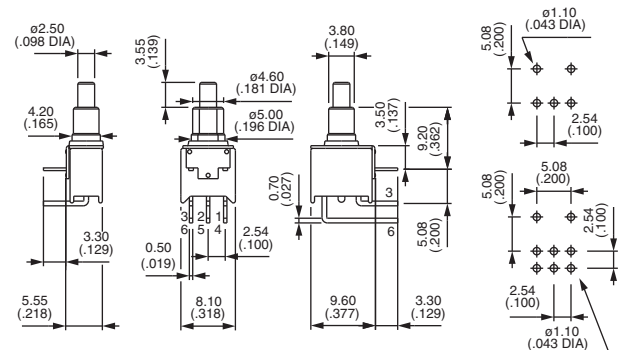


Function 3 has two terminals only (3 and 1) per pole

Right angle terminals - horizontal mounting : TP..W0



Single pole	Double pole	ON	MOM
TP32W0	TP42W0	ON	MOM
TP33W0	TP43W0	OFF	MOM



Function 3 has two terminals only (3 and 1) per pole



TP series

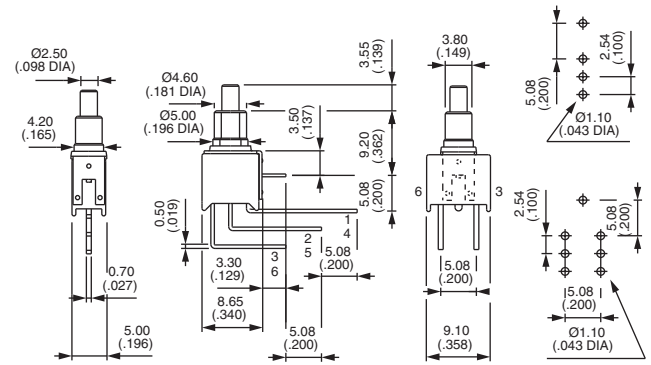
Tiny washable momentary pushbutton switches

Shown in function 2, with standard plunger

Right angle terminals - vertical mounting : TP..WW



Single pole	Double pole		
TP32WW	TP42WW	ON	MOM
TP33WW	TP43WW	OFF	MOM

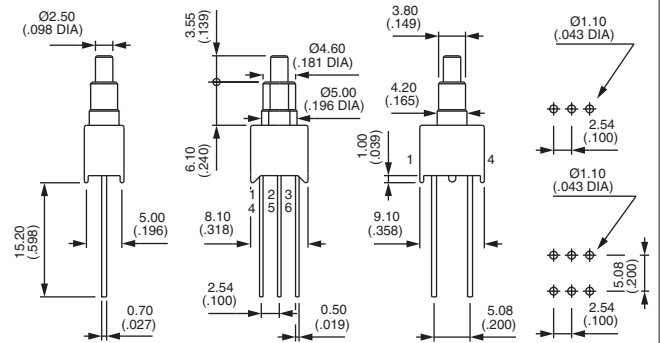


Function 3 has two terminals only (3 and 1) per pole

Wire-wrap terminals : TP..MW

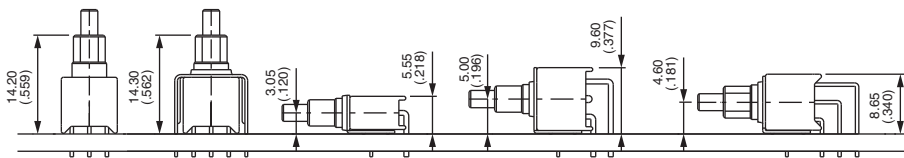


Single pole	Double pole		
TP32MW	TP42MW	ON	MOM
TP33MW	TP43MW	OFF	MOM



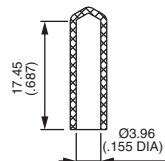
Function 3 has two terminals only (3 and 1) per pole

PCB MOUNTING



CAP FOR PCB PROCESSING

Provide additional protection during PCB processing.
Supplied separately. For cap mounted on the switch, see special option 40.
Material : vinyl



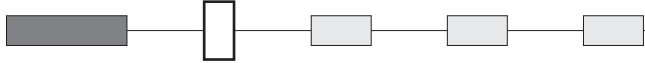
U3502

TP series

Tiny washable momentary pushbutton switches



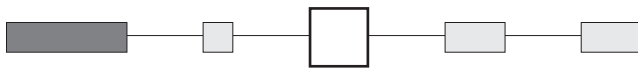
CONTACT AND TERMINAL MATERIALS



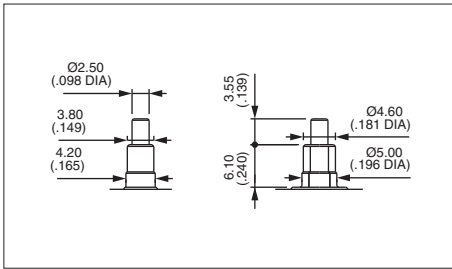
- 0 Brass, gold plated
- 1 Brass, silver plated
- 3 Brass, gold plated (1,27 micron gold)
- 8 Contact brass, gold plated + tin plated terminals
- 9 Contact brass, gold plated (1,27 micron gold) + tin plated terminals (single pole only)

B

PLUNGERS



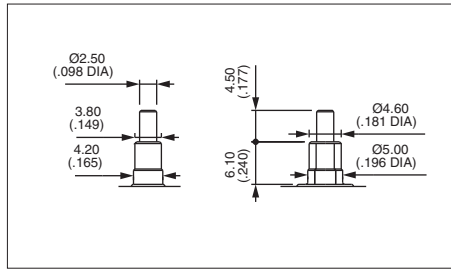
Standard plunger colour is black.



Short - standard

With blue
case
30

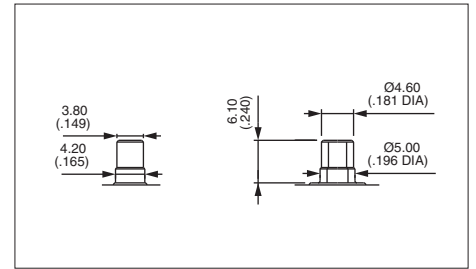
With black
case
80



Long

With blue
case
35

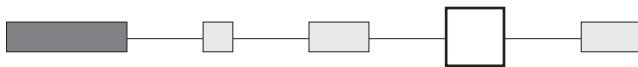
With black
case
85



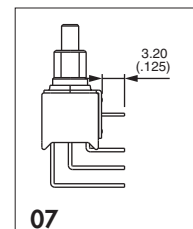
Flush

With black
case
82

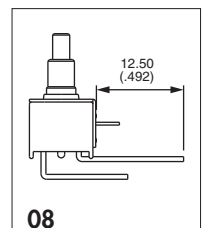
SPECIAL OPTIONS



- 00 No special requirement
- 07 **Trimmed terminals** - length 3,2 mm (.125) for TP..WW models only
- 08 **Extended terminals** for TP..WO models only



07



08

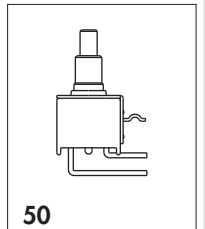
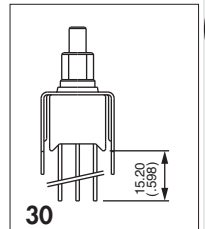
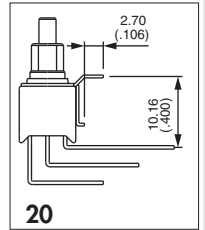
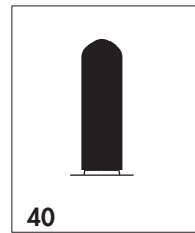
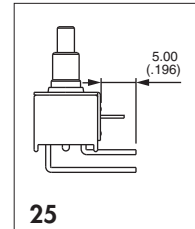
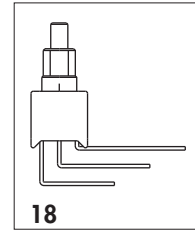
TP series

Tiny washable momentary pushbutton switches

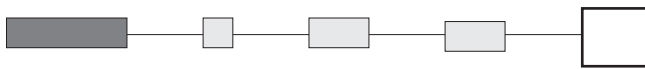


SPECIAL OPTIONS (continued)

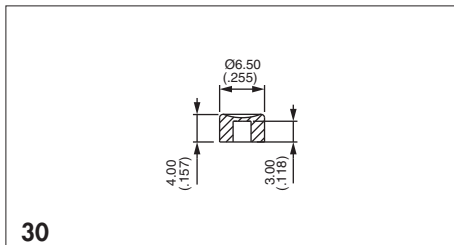
- 18** Switch **without ground plate** for TP..WW models only
- 20** **Ground plate with 2 pins** for TP..WW models only
- 25** **Trimmed terminals** - length 5 mm (.196) for all models, except TP..WW
- 30** **Wire-wrap terminals** on models with mounting **bracket**
- 40** With cap U3500 mounted over plunger and bushing
Further protects the switch during PCB processing
- 50** **Crimping of ground plate pins.**
Retains switch on PC during handling and wave soldering.
For models TP..WO, TP..WW and TP..YO single and double pole.



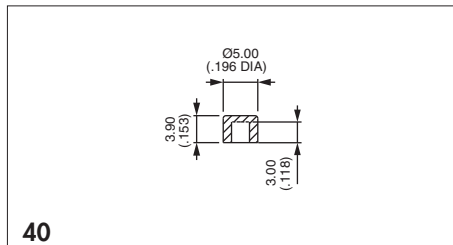
CAPS



Blank Without cap



30
P/N U4310 - for long plunger only



40
P/N U4320 - for long plunger only

To order caps separately, use their part number (U...).

Cap colours	
Replace "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange

9000 series

Subminiature momentary pushbutton switches

Distinctive features and specifications



- Panel and PC mount models, horizontal or vertical
- Self-cleaning and butt action contacts
- Several plunger options

B

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 30VDC
- Initial contact resistance : 30 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 500 Vrms 50 Hz min. between terminals
 1.000 Vrms 50 Hz min. between terminals and frame
- Electrical life at full load :
 9100 - 9200N and 9500N : 250.000 cycles
 9200 - 9500 : 100.000 cycles

MATERIALS

- Case : Pa6T
- Actuator : polyamide, glass filled
- Bushing : brass, nickel plated
- Contacts :
CD : brass, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

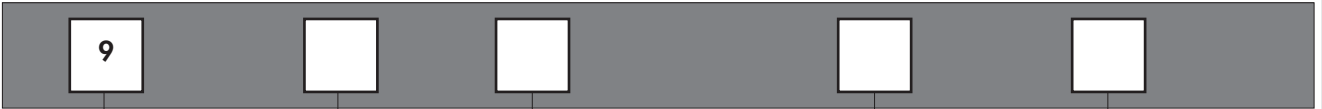
- Torque : 0,5 Nm (.590 Ft.lb) max. applied to nut
- Operating temperature : -30°C to +65°C
- Panel thickness : 1,50 mm (.059) max.
- Travels : see table below
 Tolerance : +/- 0,3 mm (.011)

	9533-9233	9532-9232	9533N 9233N-9133
Total travel	1,10 (.043)	1,80 (.070)	1 (.039)
Pre-travel	0,80 (.031)	1,00 (.039)	-
Over travel	0,30 (.011)	0,75 (.029)	-

9000 series

Subminiature momentary pushbutton switches

Overview



SERIES

9

Number of poles
3 Single pole

Electrical functions
2 Normally closed (NC)
3 Normally open (NO)

Terminals, case and bushing

Case height 8 (.314)	
2	Straight terminals - threaded bushing
2..Y	Tall bracket - plain bushing
2..WW	Right angle terminals - plain bushing
5	Solder lugs - threaded bushing
Case height 6,1 (.240)	
1	Straight terminals - threaded bushing - 7,10 (.279) PCB to panel
1..Y	Short bracket - plain bushing
1..WW	Right angle terminals - plain bushing
2..N	Straight terminals - threaded bushing - 8,90 (.350) PCB to panel
2..NY	Tall bracket - plain bushing
5..N	Solder lugs - threaded bushing



Contact materials
CD Gold plated brass (standard)



Sealing
Blank Epoxy sealed terminals standard
K Front panel sealing by two O-rings



Plunger
Blank Standard
-0 Flush
-4 Long



Caps
For plunger -4
U4310 Height 4 (.157)
U4320 Height 3,9 (.153)



Mounting bezel
U4922
For 9500 model only.

ABOUT THIS SERIES

On the following pages, you will find successively :
- model structure of switches
- their 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.



Sealing boots are available to protect the switches. They are presented in section H.



Mounting accessories : standard hardware supplied with all threaded bushing models : 1 nickel plated hex nut 5 (.196) across flats, part number U544. This nut is presented after model structure of switches.



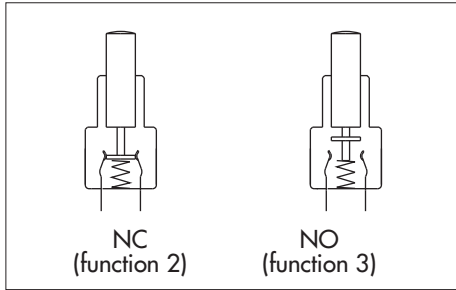
Packaging unit : 100 pieces.

B

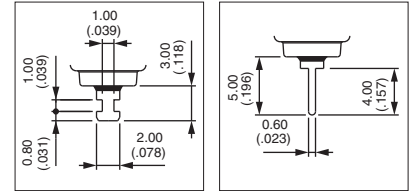
9000 series

Subminiature momentary pushbutton switches

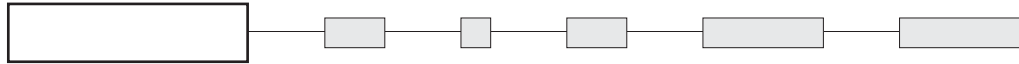
Solder lug or straight PC terminals : 9500 - 9200 - 9200Y



- Case height 8 (.314)
- With over travel
- Self-cleaning contacts
- Epoxy sealed terminals standard

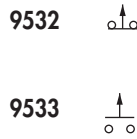


MODEL STRUCTURE



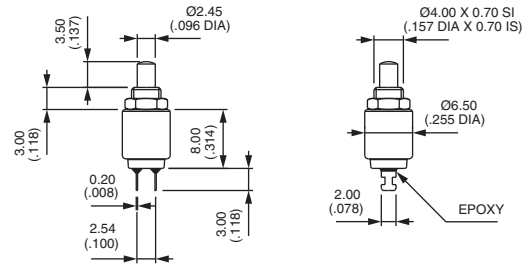
B

Threaded bushing - solder lugs : 9500

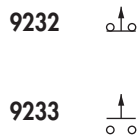


Normally Closed

Normally Open

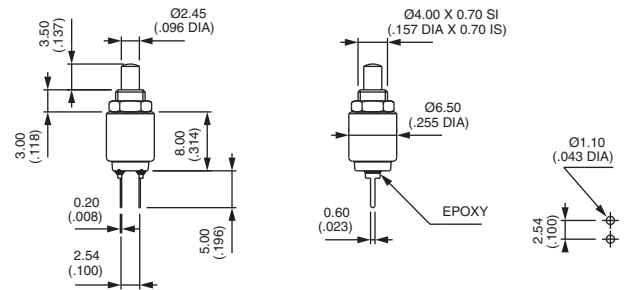


Threaded bushing - straight PC terminals : 9200

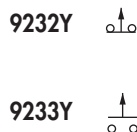


Normally Closed

Normally Open

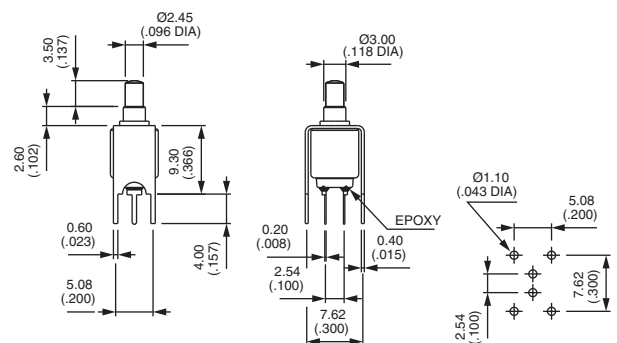


Straight PC terminals - bracket mounting : 9200Y



Normally Closed

Normally Open





9000 series

Subminiature momentary pushbutton switches

Right angle terminals : 9200WW

Right angle terminals : 9200WW

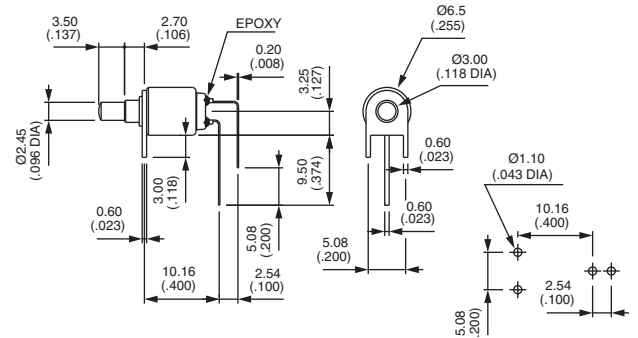


9232WW 

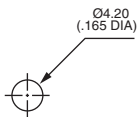
Normally Closed

9233WW 

Normally Open



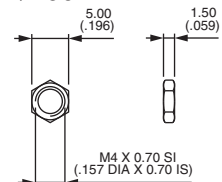
PANEL CUT-OUT



For threaded bushing models.

STANDARD HARDWARE

9500 - 9200



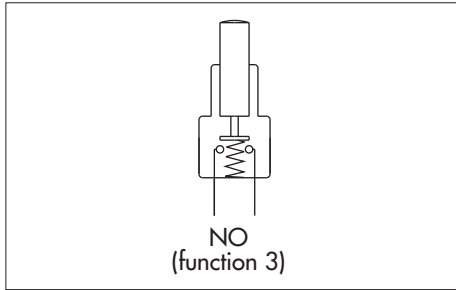
U544 (nickel plated)

B

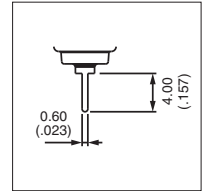
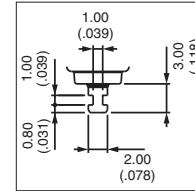
9000 series

Subminiature momentary pushbutton switches

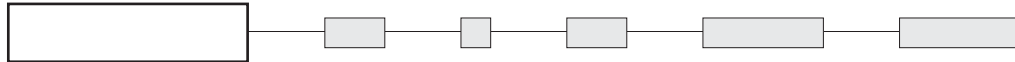
Solder lug or straight PC terminals : 9500N - 9200N - 9100



- Case height 6,1 (.240)
- Epoxy sealed terminals
- Butt action contacts



MODEL STRUCTURE



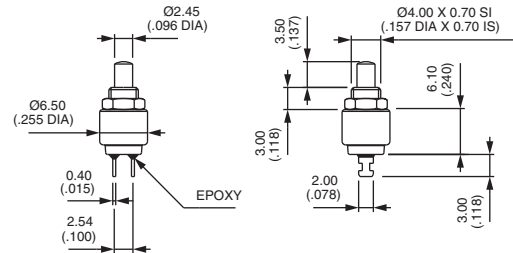
Threaded bushing - solder lugs : 9500N



9533N



Normally Open



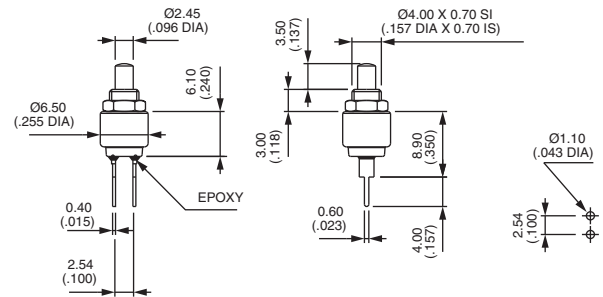
Threaded bushing - straight PC terminals - 8,90 (.350) PCB to panel



9233N



Normally Open



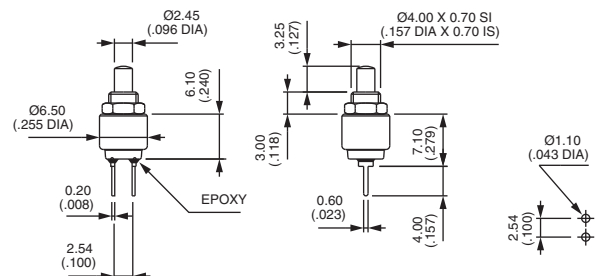
Threaded bushing - straight PC terminals - 7,10 (.279) PCB to panel



9133



Normally Open





9000 series

Subminiature momentary pushbutton switches

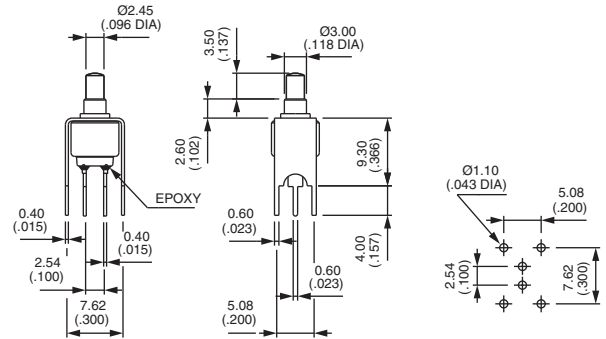
Straight PC or right angle terminals : 9200NY - 9100Y - 9100WW

Straight PC terminals - tall bracket : 9200NY



9233NY

Normally Open

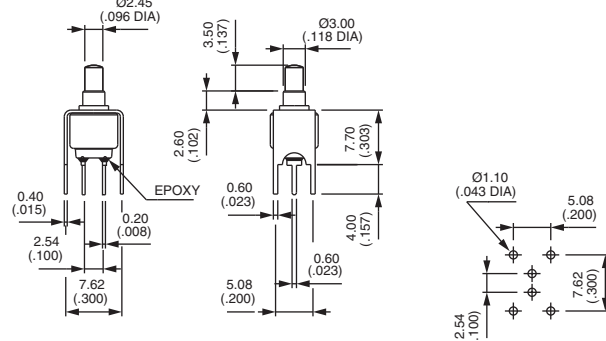


Straight PC terminals - short bracket : 9100Y



9133Y

Normally Open

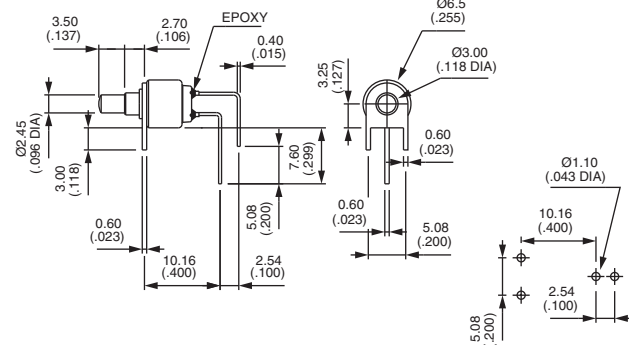


Right angle terminals - vertical : 9100WW

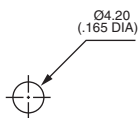


9133WW

Normally Open

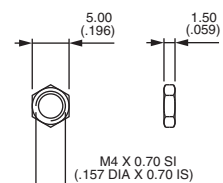


PANEL CUT-OUT



STANDARD HARDWARE

9500N - 9200N - 9100



U544 (nickel plated)

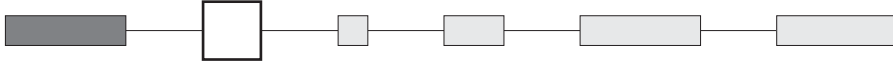
For threaded bushing models.

9000 series

Subminiature momentary pushbutton switches

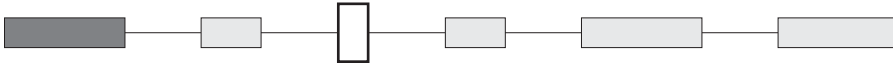


CONTACT MATERIALS



CD Gold plated brass (standard)

SEALING

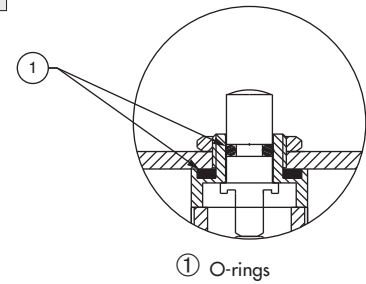


Blank Epoxy sealed terminals standard

K Front panel sealing by two O-rings. Protects the switch against water and dust. Panel seal withstands 0,1 bar pressure.

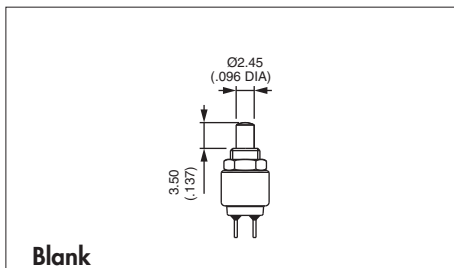
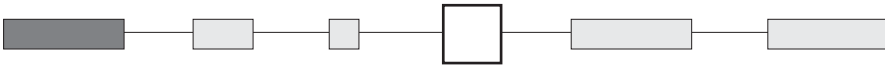


Option K for models 9533N, 9233N and 9133 only.



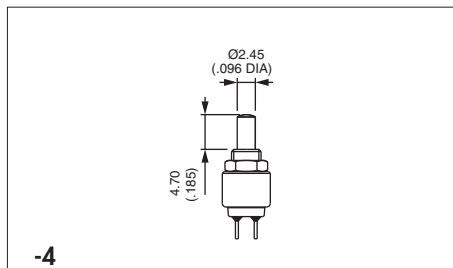
① O-rings

PLUNGERS



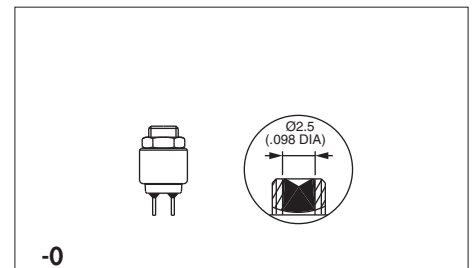
Blank

Standard



-4

Long



-0

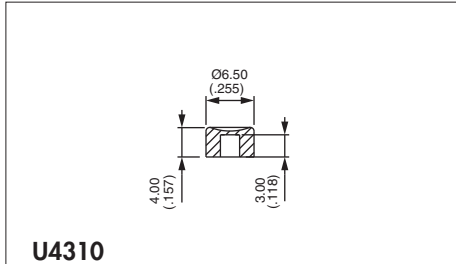
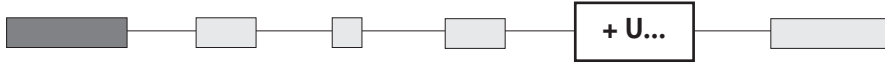
Flush



9000 series

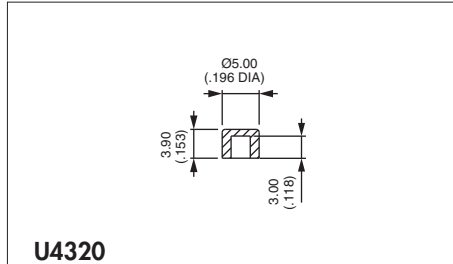
Subminiature momentary pushbutton switches

CAPS



U4310

For use with plunger -4 only



U4320

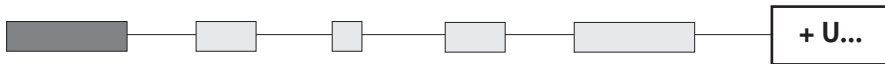
For use with plunger -4 only

Cap colours

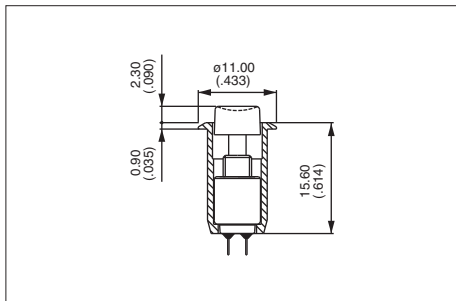
Replace "0" by number

1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange

MOUNTING BEZEL



For 9500 model (case height 8 mm) only



Shown with cap U570.

The mounting bezel U4922 has been designed to facilitate the mounting of the 9500 series pushbutton switch onto a panel. The switch + bezel assembly is snapped into the equipment through the front of the panel, then electrically connected by solder lug terminals.

Panel cut-out : $\varnothing 8,15 \text{ mm} \pm 0,05$
(.320 DIA \pm .002)

B

IP series

Pushbutton switches for harsh environments - bushing Ø 12 mm - momentary

Distinctive features and specifications



- Illuminated or non-illuminated
- Tactile feedback
- Wide variety of configurations
- Flat round actuator for optional marking
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
IP69K according to DIN 40050-9 (non-illuminated) with cap U5125
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Robustness (non-illuminated) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load (gold plated silver contacts):
5A 28VDC, 70.000 cycles
0,2A 48VDC, 500.000 cycles
0,5A 48VAC, 500.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms
- Contact bounce : 10 ms

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2,1V	2,3V
Yellow (LOY)	20mA	2,1V	2,3V
Green (LOG)	20mA	2,1V	2,3V
Blue (LOB)	20mA	3,2V	3,8V
White (LOW)	20mA	3,35V	4,25V

A resistor must be series-connected by the user.
Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

GENERAL SPECIFICATIONS

- Panel thickness : 1,5 mm (.059) min.
4 mm (.157 max.)
- Total travel :
Funct. 3 : 1,7 mm (.067) +/- 0,3 mm
Funct. 5 : 1,3 mm (.051) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamac), black painted
- Contacts : silver, gold plated (std) brass, gold plated (for option 104)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

AGENCY APPROVAL



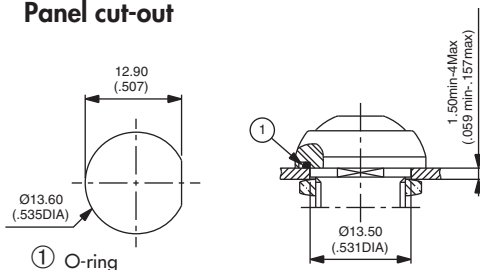
2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

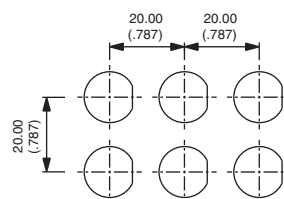
Marking : to order switches marked UL, complete ordering format.

MOUNTING

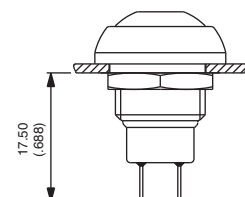
Panel cut-out



Matrix mounting



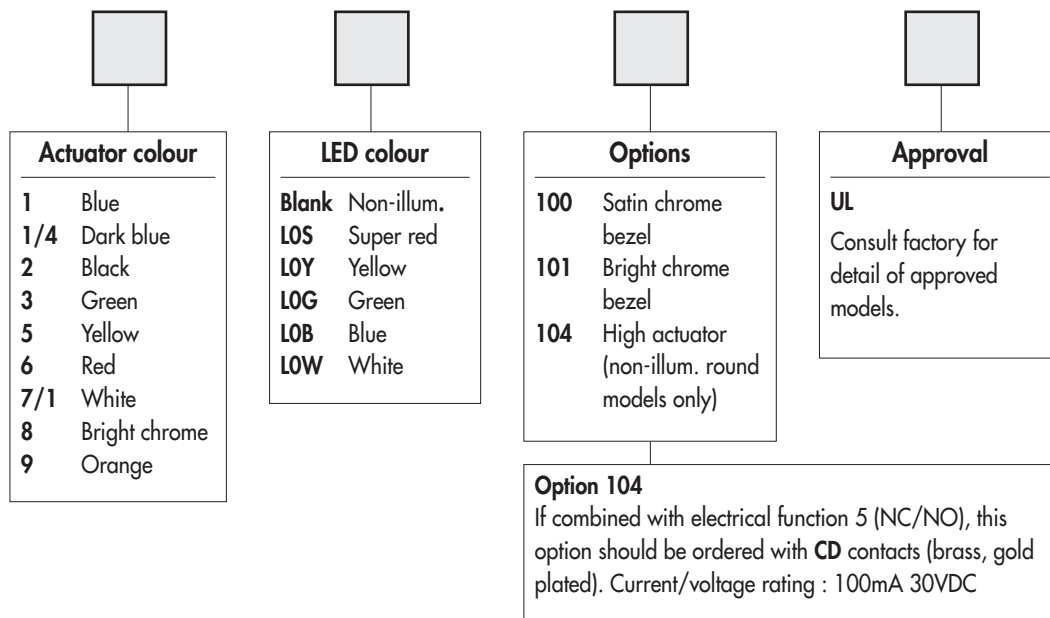
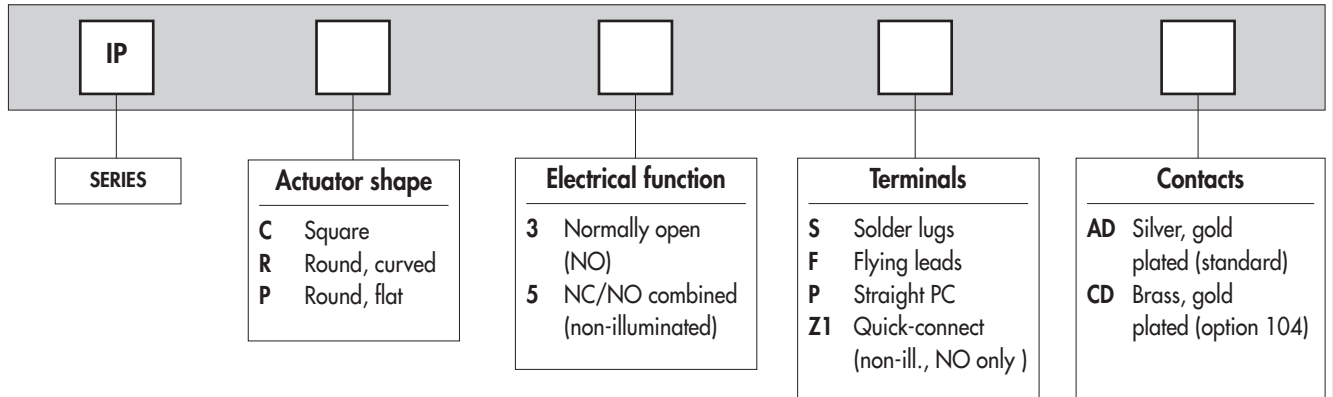
Back of panel space requirement



IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - momentary

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.



A sealing boot is available to protect the switches against frost and sand. It is presented after the IA series and in section H.



Mounting accessories : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-ring. Hex nut part number U166.

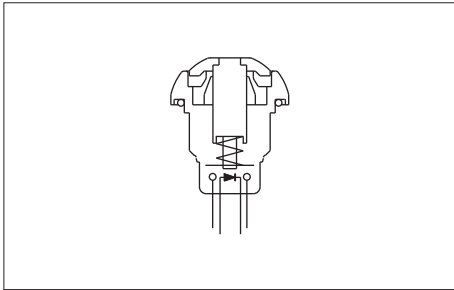


Packaging unit : 25 pieces

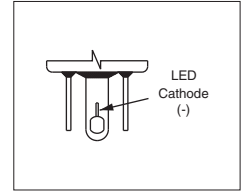
IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - momentary

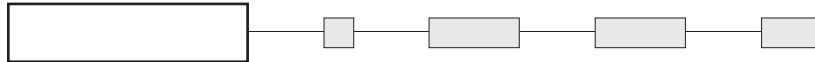
Square - illuminated



- High brightness illumination
- Five LED colours
- Tin plated LED terminals



MODEL STRUCTURE



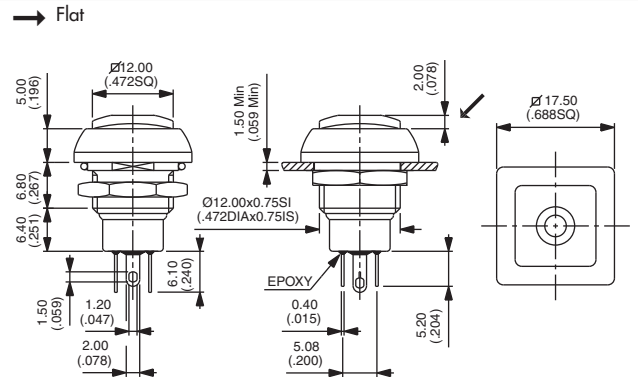
Solder lug terminals



IPC3SAD



Normally Open



Also available with straight PC terminals : **IPC3PAD**
 LED colour is indicated by the bottom of the switch.

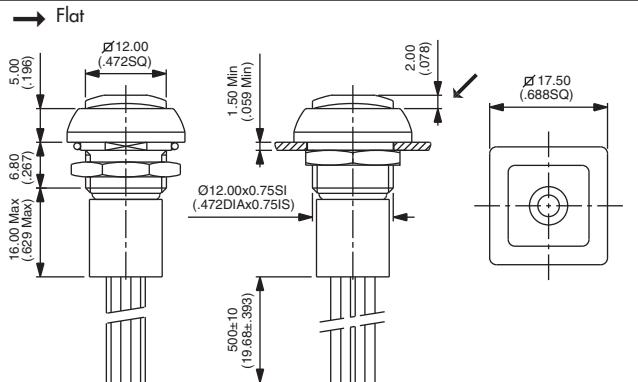
Sealed flying lead terminals



IPC3FAD

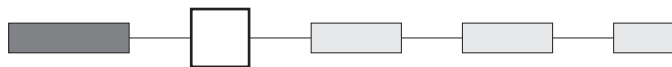


Normally Open



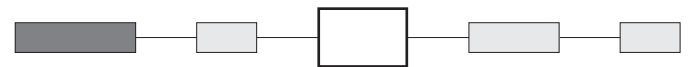
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

ACTUATOR COLOUR



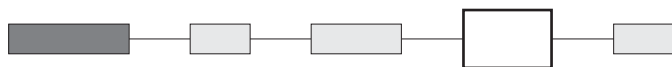
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



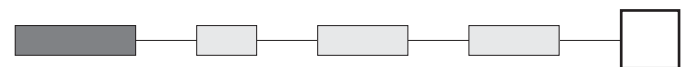
LOS : red - LOY : yellow - LOG : green - LOB : blue
 LOW : white

OPTIONS



100 : Satin chrome bezel
 101 : Bright chrome bezel

APPROVAL



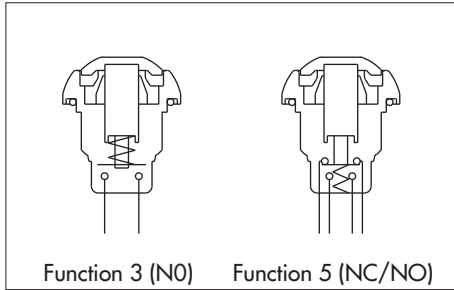
UL

Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

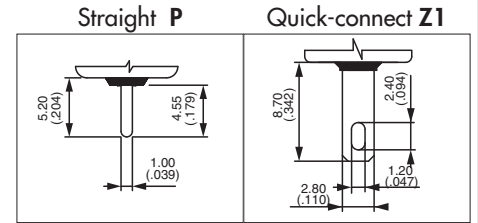
IP series

Pushbutton switches for harsh environments - bushing $\varnothing 12$ mm - momentary

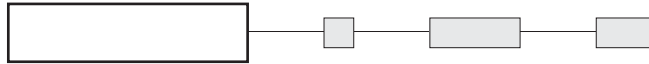
Square - non-illuminated



- Double function (NC/NO combined) with a short behind-panel depth



MODEL STRUCTURE



Solder lug terminals



IPC3SAD



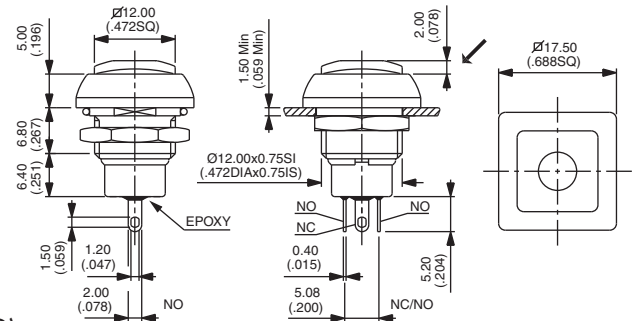
Normally Open

IPC5SAD



NC/NO combined

→ Flat



Also available with straight PC terminals : **IPC3PAD** (NO) or **IPC5PAD** (NC/NO) and quick-connect terminals : **IPC3Z1AD** (NO only)

Sealed flying lead terminals



IPC3FAD



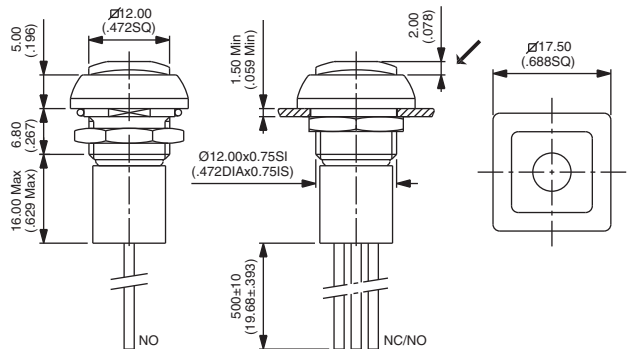
Normally Open

IPC5FAD



NC/NO combined

→ Flat



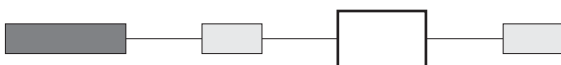
Wire colours (NC/NO) : black : NO, blue : NC

ACTUATOR COLOUR



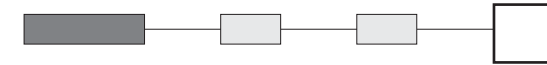
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



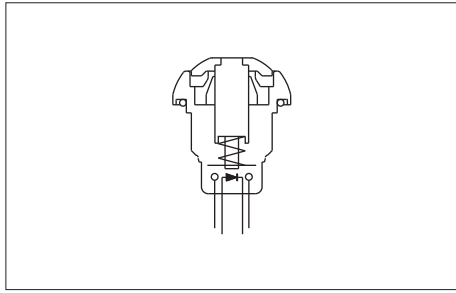
UL

Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

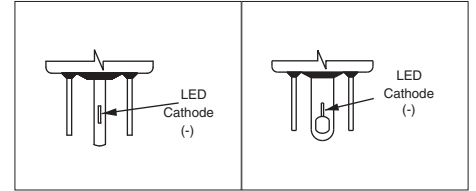
IP series

Pushbutton switches for harsh environments - bushing Ø 12 mm - momentary

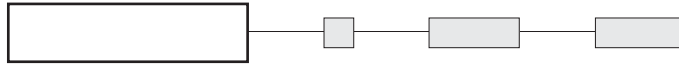
Round - illuminated



- High brightness illumination
- Five LED colours
- Tin plated LED terminals



MODEL STRUCTURE



B

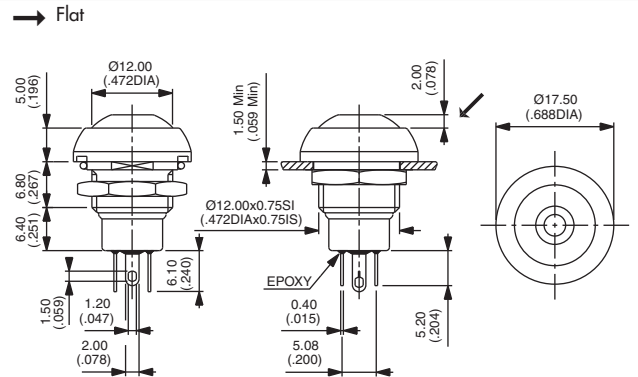
Solder lug terminals



IPR3SAD



Normally Open



Also available with straight PC terminals : IPR3PAD
LED colour is indicated by the bottom of the switch.

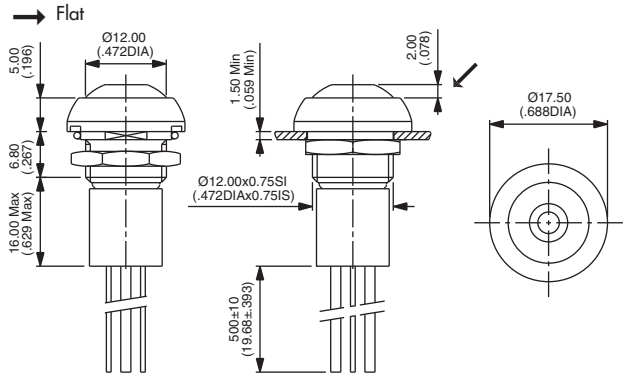
Sealed flying lead terminals



IPR3FAD

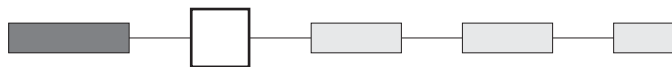


Normally Open



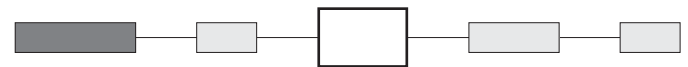
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

ACTUATOR COLOUR



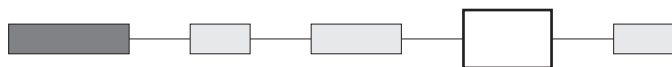
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



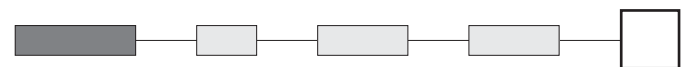
LOS : red - LOY : yellow - LOG : green - LOB : blue
LOW : white

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



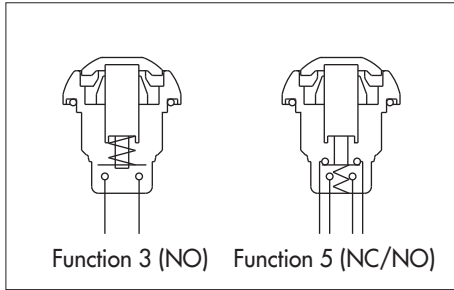
UL

Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

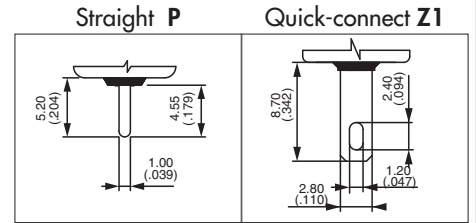
IP series

Pushbutton switches for harsh environments - bushing $\varnothing 12$ mm - momentary

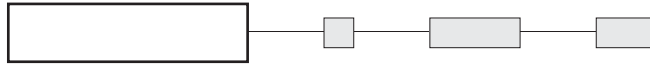
Round - non-illuminated



- Double function (NC/NO combined) with a short behind-panel depth



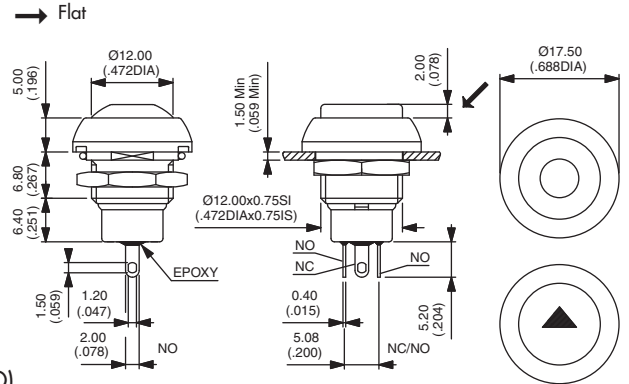
MODEL STRUCTURE



Solder lug terminals



- Curved actuator, NO
IPR3SAD
- Curved actuator, NC/NO
IPR5SAD
- Flat actuator, NO
IPP3SAD
- Flat actuator, NC/NO
IPP5SAD

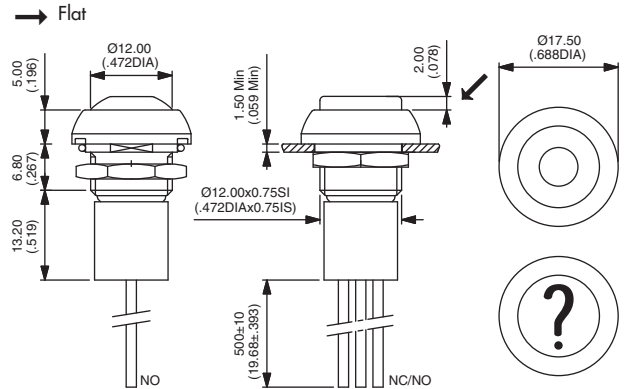


Also available with straight PC terminals : **IP•3PAD** (NO) or **IP•5PAD** (NC/NO) and quick-connect terminals : **IP•3Z1AD** (NO only)

Sealed flying lead terminals



- Curved actuator, NO
IPR3FAD
- Curved actuator, NC/NO
IPR5FAD
- Flat actuator, NO
IPP3FAD
- Flat actuator, NC/NO
IPP5FAD



Wire colours (NC/NO) : black : NO, blue : NC

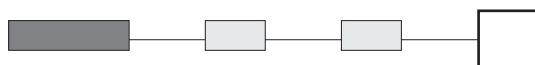
ACTUATOR COLOUR



- 1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
- 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

Actuator marking available on IPP models (symbol 10 mm max.). On request.

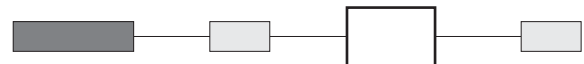
APPROVAL



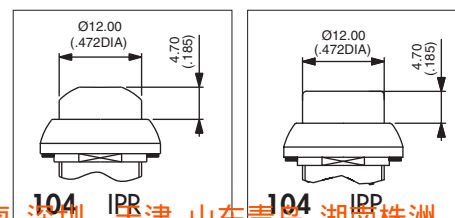
UL

Consult factory for details of approved models. To order switches marked UL complete above box with "UL"

OPTIONS



- 100 : Satin chrome bezel
- 101 : Bright chrome bezel
- 104 : High actuator - If combined with function 5 (NC/NO), order with CD contacts (instead of AD contacts).



IP series

Pushbutton switches for harsh environments - bushing Ø 12 mm - latching

Distinctive features and specifications



- Latching action**
Actuator remains in the low position when "ON".
- Illuminated or non-illuminated**
- Compact**
Behind-panel depth less than 20 mm (.787)
- Flat round actuator for optional marking**
- Sealed to IP67**

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Robustness (non-illuminated) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
4A 12VDC, 200.000 cycles
1A 48VDC, 200.000 cycles
2A 48VDC, 100.000 cycles
3A 48VDC, 75.000 cycles
1A 72VDC, 15.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals
1.000 VAC rms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.
Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

GENERAL SPECIFICATIONS

- Panel thickness : 1,5 mm (.059) min.
5,5 mm (.217) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5 N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

- Case : thermoplastic, UL 94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamak), black painted
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

AGENCY APPROVAL



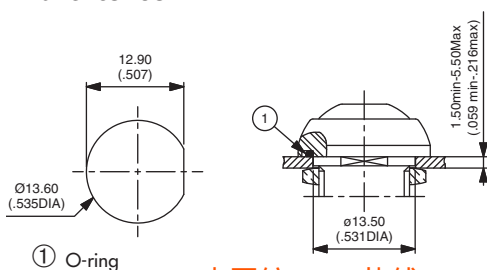
2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

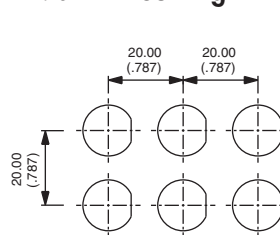
Marking : to order switches marked UL, complete appropriate box of ordering format.

MOUNTING

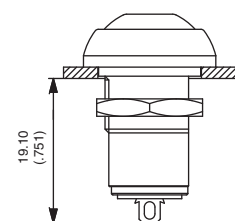
Panel cut-out



Matrix mounting



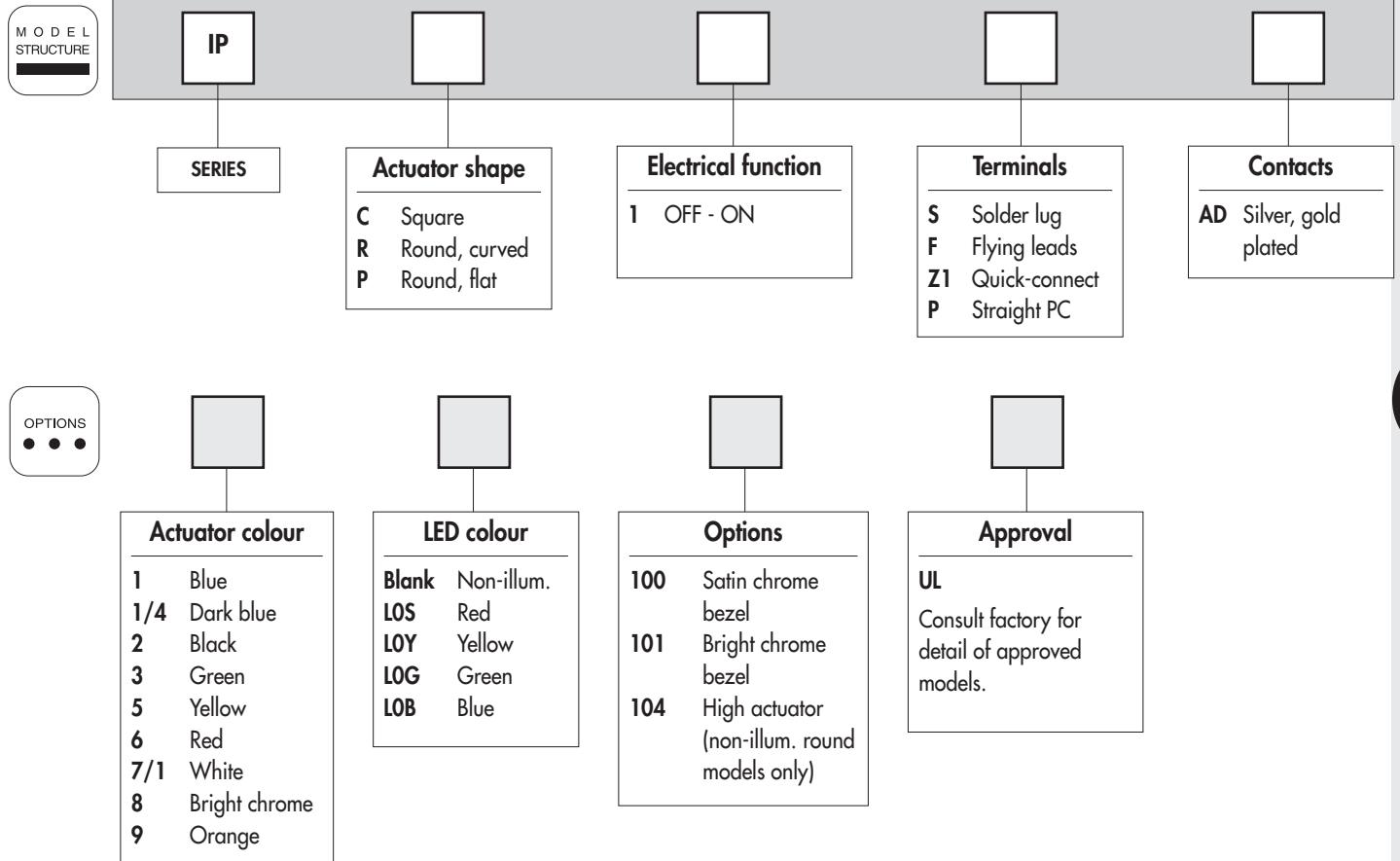
Back of panel space requirement



IP series

Pushbutton switches for harsh environments - bushing Ø 12 mm - latching

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.



A sealing boot is available to protect the switches against frost and sand (P/N U5125).
It is presented after the IA series and in section H.



Mounting accessories : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-Ring.

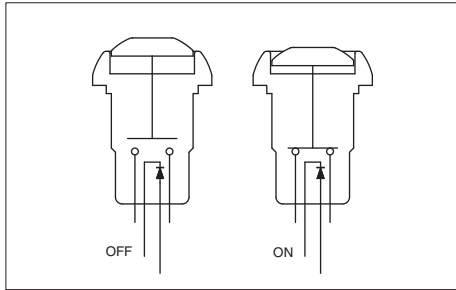


Packaging unit : 25 pieces

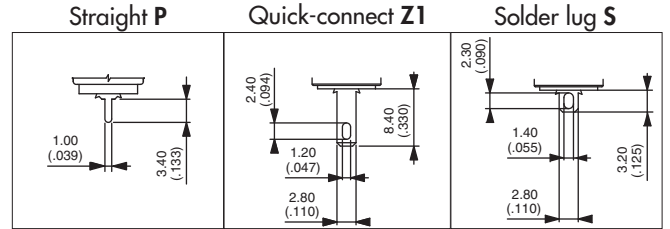
IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - latching

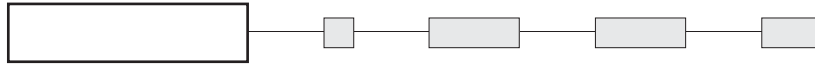
Square or round - illuminated



- Four LED colours
- Tin plated LED terminals



MODEL STRUCTURE



Square models

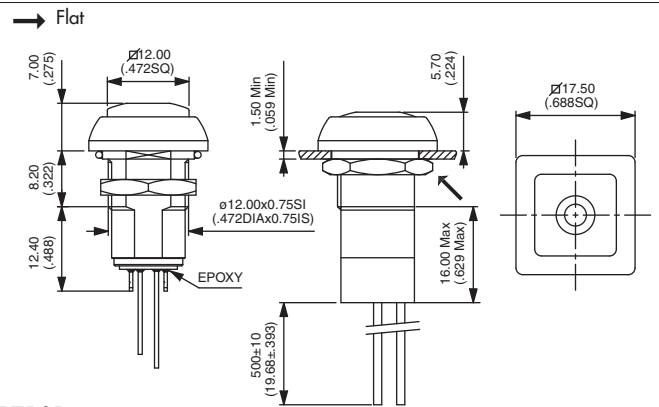


Solder lug terminals
IPC1SAD

OFF - ON

Flying lead terminals
IPC1FAD

OFF - ON



Also available with straight PC : **IPC1PAD** or quick-connect terminals : **IPC1Z1AD**

Round models

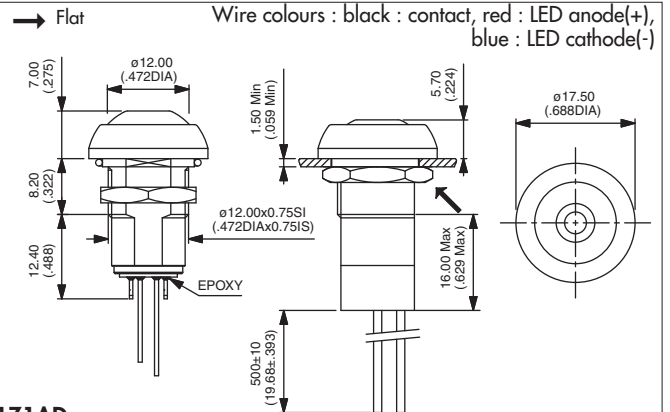


Solder lug terminals
IPR1SAD

OFF - ON

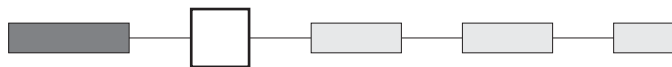
Flying lead terminals
IPR1FAD

OFF - ON



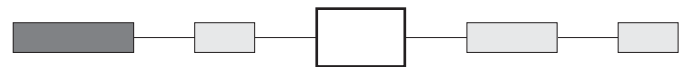
Also available with straight PC : **IPR1PAD** or quick-connect terminals : **IPR1Z1AD**

ACTUATOR COLOUR



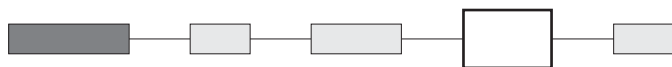
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



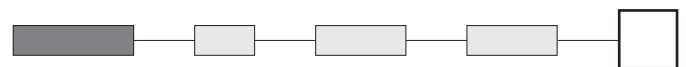
LOS : red - LOY : yellow - LOG : green - LOB : blue

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



UL

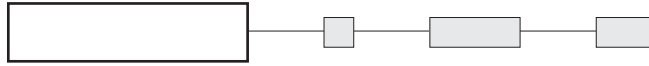
Consult factory for details of approved models. To order switches marked UL, complete above box with "UL"

IP series

Pushbutton switches for harsh environments - bushing $\varnothing 12$ mm - latching

Square or round - non-illuminated

MODEL STRUCTURE



Square models



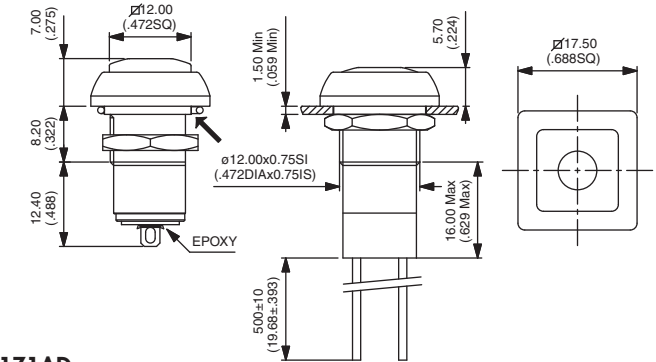
Solder lug terminals
IPC1SAD

OFF - ON

Flying lead terminals
IPC1FAD

OFF - ON

→ Flat



Also available with straight PC : **IPC1PAD** or quick-connect terminals : **IPC1Z1AD**

Round models



CURVED ACTUATOR

Solder lug terminals
IPR1SAD

OFF - ON

Flying lead terminals
IPR1FAD

OFF - ON

FLAT ACTUATOR

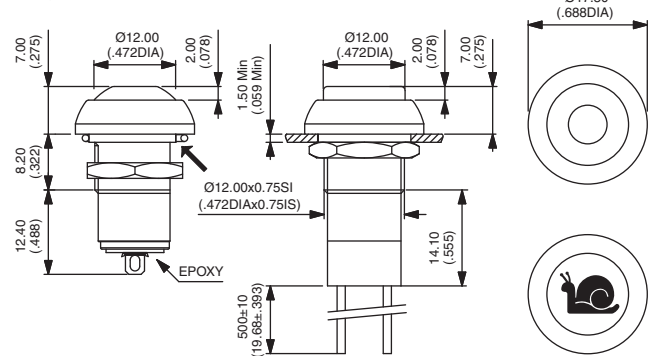
Solder lug terminals
IPP1SAD

OFF - ON

Flying lead terminals
IPP1FAD

OFF - ON

→ Flat



Also available with straight PC : **IP•1PAD** or quick-connect terminals : **IP•1Z1AD**

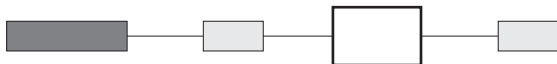
ACTUATOR COLOUR

Actuator marking available on IPP models (symbol 10 mm max.). On request.



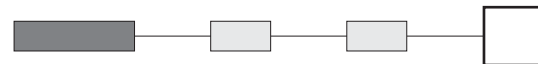
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel
104 : High actuator (for round model only)

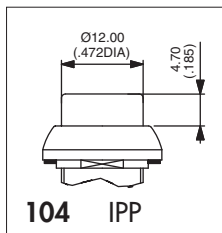
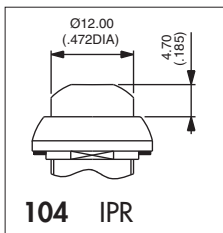
APPROVAL



UL

Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete above box with "UL".



IB and IS series

Sealed pushbutton switches - bushing Ø 12 mm - momentary

Distinctive features and specifications



- Snap-in and threaded bushing models
- Compact, light in weight
 - Behind-panel depth of 13 mm (.512) only
 - 50 % reduction in weight compared to metallic models
- Tactile feedback
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500 Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver, gold plated
- Terminal seal : epoxy

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
400mA 32VAC - 100mA 50VDC - 125mA 125VAC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms
- Electrical life at full load : 500.000 cycles

AGENCY APPROVAL



2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete appropriate box of ordering format.

GENERAL SPECIFICATIONS

- Panel thickness :
 - IB series : 0,8 mm (.031) min. - 1,8 mm (.071) max.
 - IS series : 1,5 mm (.059) min. - 4 mm (.157) max.
- Total travel : 1,9 mm (.074) +/- 0,3 mm
- Typical operating force : 7N +/- 3N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 300°C max. for 3 seconds

**Example of custom switch:
see end of the series.**

Panel mounting : see next pages.

IB and IS series

Sealed pushbutton switches - bushing Ø 12 mm - momentary

Overview



SERIES

IB	Snap-in
IS	Threaded bushing

Actuator shape

R	Round, curved
P	Round, flat

Electrical function

3	Normally open (NO)
----------	--------------------

Terminals

S	Solder lug
Z1	Quick-connect 2,8 x 0,5 mm
P	Straight PC

Contacts

AD	Silver, gold plated
-----------	---------------------



Actuator colour

1	Blue
1/4	Dark blue
2	Black
3	Green
5	Yellow
6	Red
7/1	White
8	Bright chrome
9	Orange
A	Satin chrome

Bezel finish

00	Black (std)
08	Bright chrome (IS only)
10	White
20	Satin chrome (IS only)

Option

104	High actuator
------------	---------------

Approval

UL	Consult factory for detail of approved models.
-----------	------------------------------------------------

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.



A sealing boot is available to protect the switches against frost and sand. It is presented after the IA series and in section H.



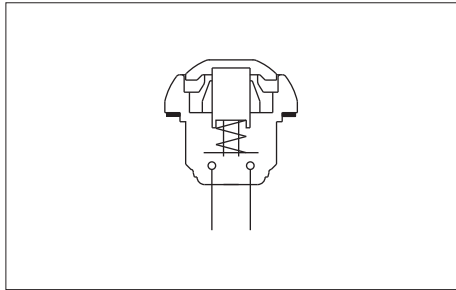
Mounting accessories : Standard hardware supplied : 1 flat seal (IB series)
1 hex nut 14 mm (.551) across flats and 1 flat seal (IS series). Hex nut part number U166.



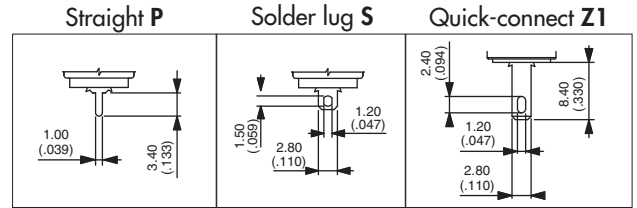
Packaging unit : 50 pieces

IB and IS series

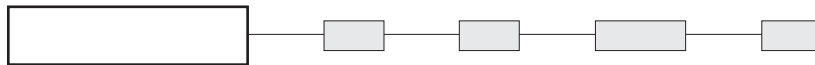
Sealed pushbutton switches - bushing Ø 12 mm - momentary



- Ten actuator colours
- Curved or flat actuator
- Antirotation bushing



MODEL STRUCTURE





B

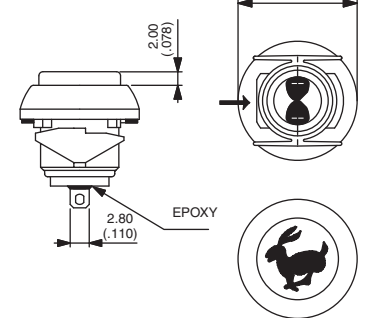
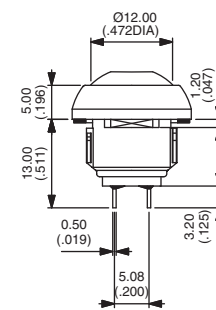
Snap-in mounting - solder lugs

→ Flat

Panel thickness : 0,8 mm to 1,8 mm



- Curved actuator
IBR3SAD  Normally open
- Flat actuator
IBP3SAD  Normally open





Also available with straight PC : **IBR•3PAD** or quick-connect terminals : **IB•3Z1AD**

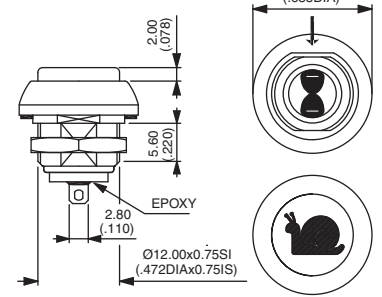
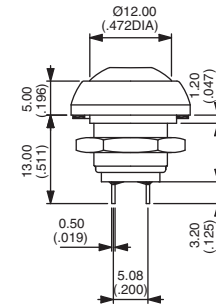
Mounting by threaded bushing - solder lugs

→ Flat

Panel thickness : 1,5 mm to 4 mm



- Curved actuator
ISR3SAD  Normally open
- Flat actuator
ISP3SAD  Normally open

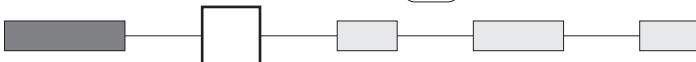


Also available with straight PC : **IS•3PAD** or quick-connect terminals : **IS•3Z1AD**

ACTUATOR COLOUR



Actuator marking available on IBP and ISP models (symbol 10 mm max.). On request.



- 1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome
 9 : orange - A : satin chrome

BUSHING AND BEZEL FINISH

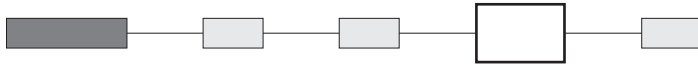


- 00 : Black (standard)
 08 : Bright chrome (IS series only)
 10 : White
 20 : Satin chrome (IS series only)

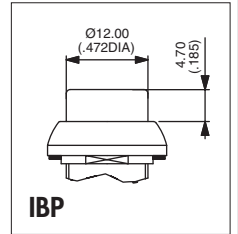
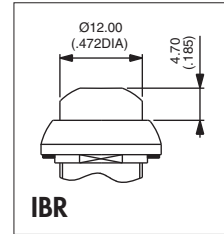
IB and IS series

Sealed pushbutton switches - bushing \varnothing 12 mm - momentary

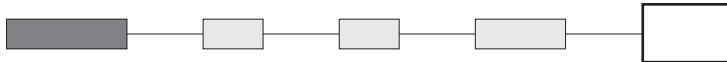
ACTUATOR OPTION



104 : High actuator



APPROVAL



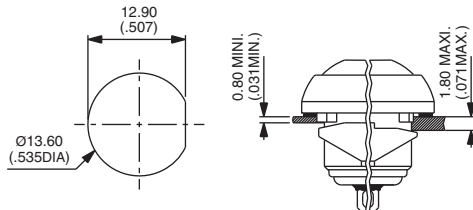
UL

Availability : consult factory for details of approved models.

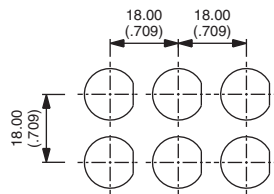
Marking : to order switches marked UL, complete above box with "UL".

IB SERIES MOUNTING

Panel cut-out

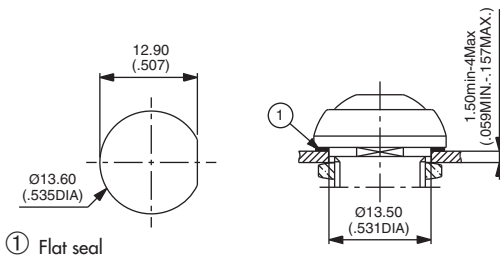


Matrix mounting

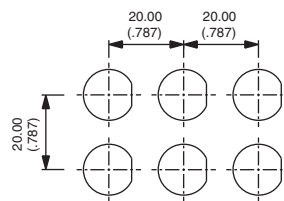


IS SERIES MOUNTING

Panel cut-out



Matrix mounting



Example of custom switch



ISR3FADB22X1248-01

- Painted bushing and actuator, soft feel
- Flying leads (55 mm) + connector
- Overmolded rear part

IZ series

New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

Distinctive features and specifications



- Rear mounting for easier installation
- Momentary metal models
- Fixed or variable panel thickness
- Screw version available up to 4A
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - Gold plated silver contacts (code 4) : 200mA 48VDC - 200mA 250VAC
 - Silver contacts (code 2) - screw terminals : 2A 250VAC - 4A 48VDC
- Electrical life at full load : 500.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms 50 Hz

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2,1V	2,3V
Yellow (LOY)	20mA	2,1V	2,3V
Green (LOG)	20mA	2,1V	2,3V
Blue (LOB)	20mA	3,2V	3,8V
White (LOW)	20mA	3,35V	4,25V

A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$$

On flying lead versions, the LED resistor can be integrated by APEM on request.

GENERAL SPECIFICATIONS

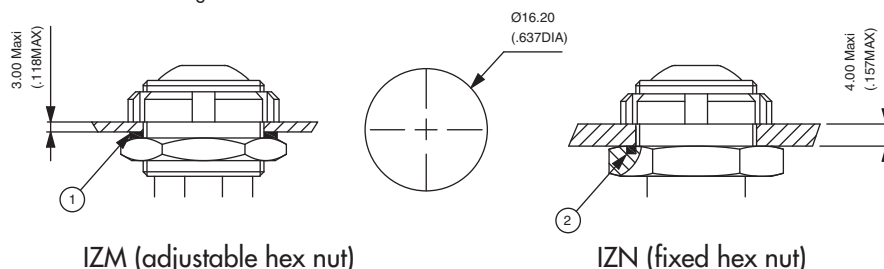
- Panel thickness :
 - IZM : 3 mm (.118) max.
 - IZN : 4 mm (.157) max.
- Total travel : 1,8 mm (.070) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : IZN : 1 Nm max.
IZM : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

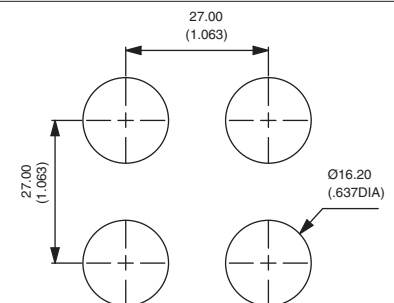
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : brass, nickel plated
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

- ① Flat seal ② O-ring



MATRIX MOUNTING

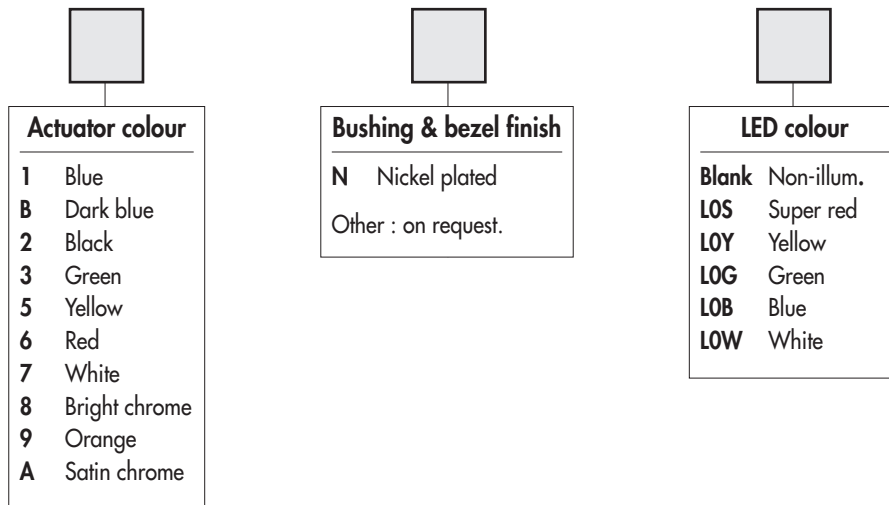
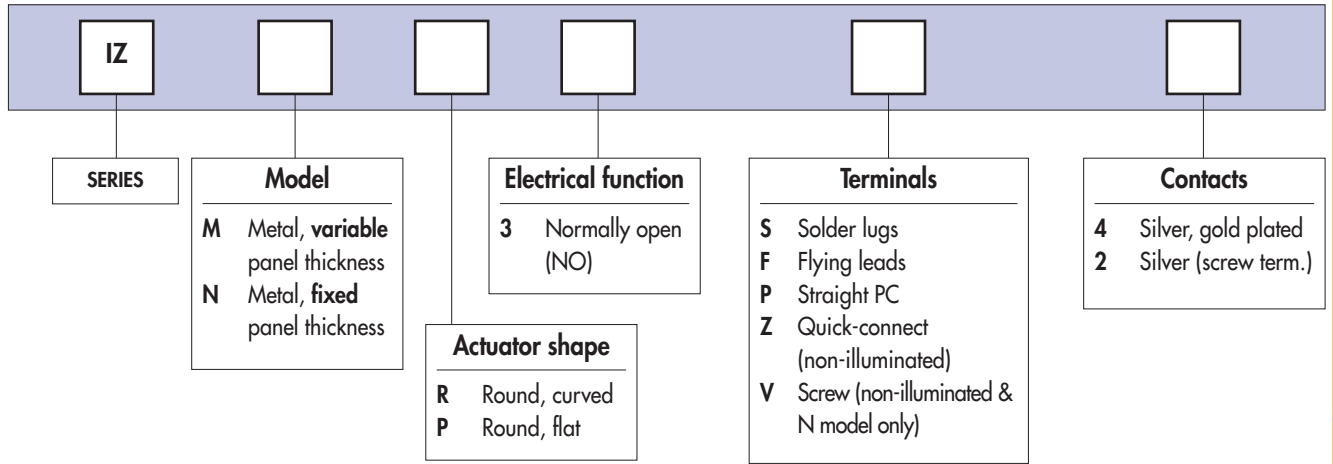
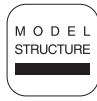


New!

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

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.



Mounting accessories : Standard hardware supplied :
 - IZM : 1 castellated nickel plated brass nut U6915 + 1 silicone flat seal + 1 hex nut 19 mm (.748) across flats U4116.
 - IZN : 1 castellated nickel plated brass nut U6915 + 1 O-ring



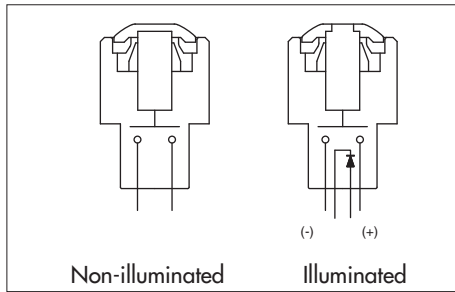
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

IZ series

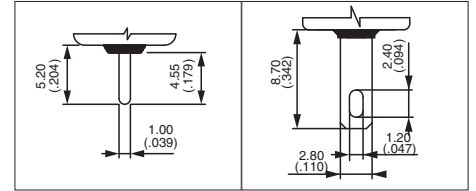
New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

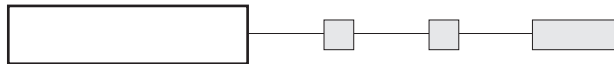
For variable panel thickness : IZM



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



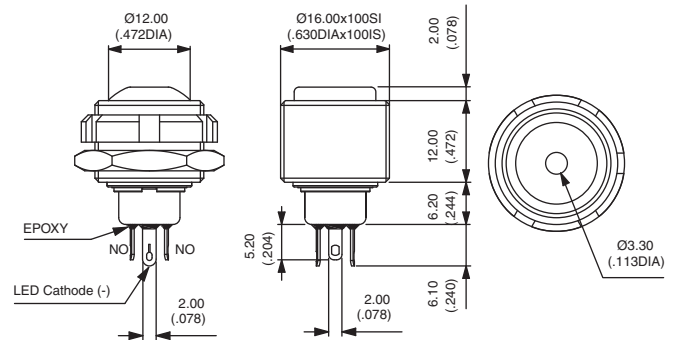
Plunger marking available on IZMP models (symbol 10 mm max.). On request.

Illuminated - solder lug terminals



Curved actuator
IZMR3S4 Normally Open

Flat actuator
IZMP3S4 Normally Open



Also available with straight PC terminals : **IZM•3P4**.
LED colour is indicated by the bottom of the switch.

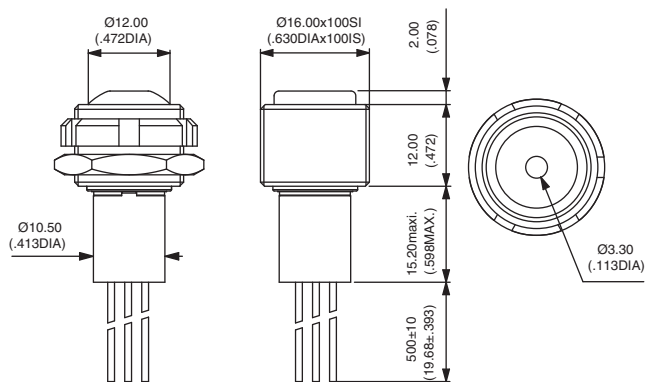
Illuminated - flying lead terminals



Curved actuator
IZMR3F4 Normally Open

Flat actuator
IZMP3F4 Normally Open

Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)

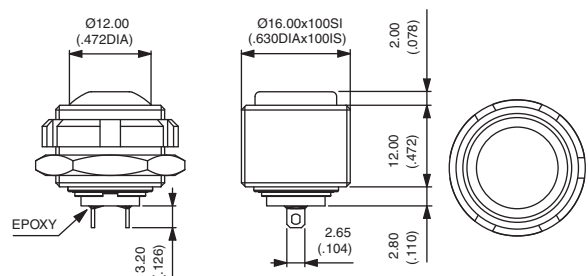


Non-illuminated - solder lug terminals



Curved actuator
IZMR3S4 Normally Open

Flat actuator
IZMP3S4 Normally Open



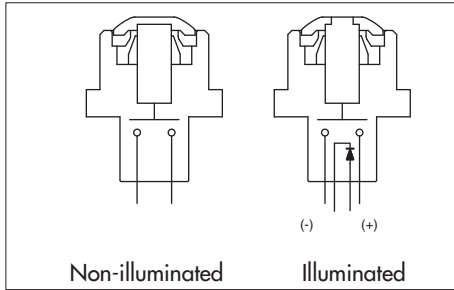
Also available with straight PC terminals :
IZM•3P4 and quick-connect terminals : **IZM•3Z4**.

New!

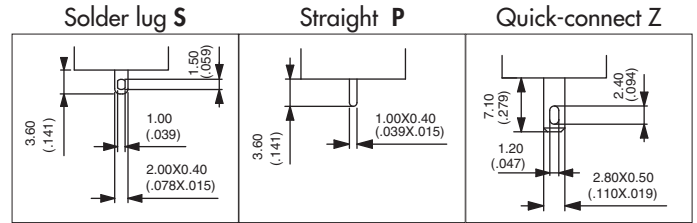
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

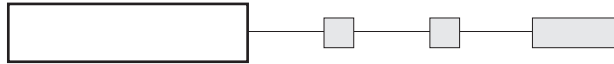
For fixed panel thickness : IZN



- Five LED colours
- Tin plated LED terminals



MODEL STRUCTURE



Plunger marking available on IZNP models (symbol 10 mm max.). On request.

Illuminated - solder lug terminals

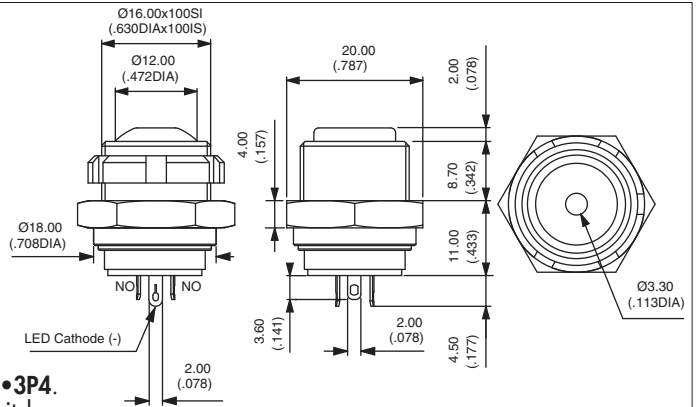


GOLD PLATED CONTACTS

Curved actuator
IZNR3S4 Normally Open

Flat actuator
IZNP3S4 Normally Open

Also available with straight PC terminals : **IZN•3P4**.
LED colour is indicated by the bottom of the switch.



Illuminated - sealed flying lead terminals

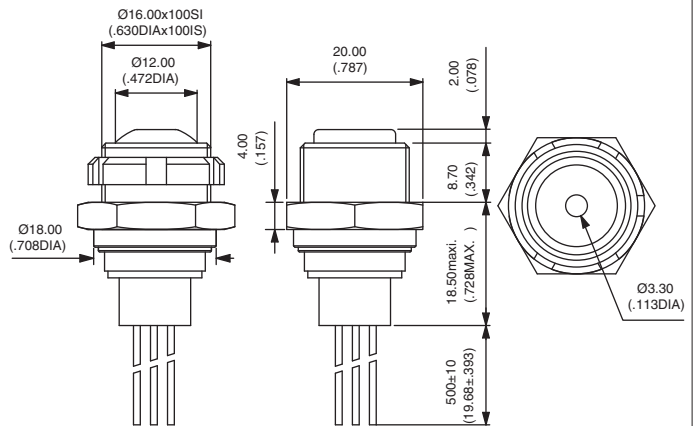


GOLD PLATED CONTACTS

Curved actuator
IZNR3F4 Normally Open

Flat actuator
IZNP3F4 Normally Open

Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)



Non-illuminated - solder lug terminals

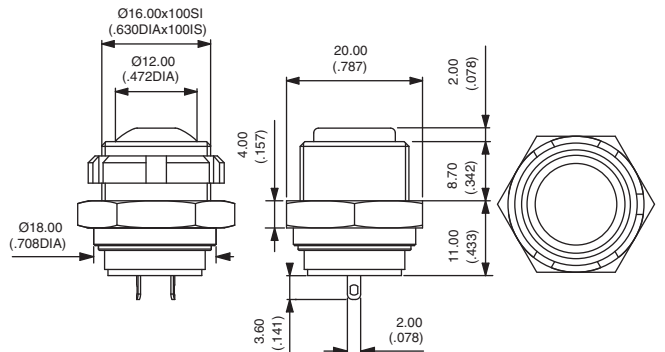


GOLD PLATED CONTACTS

Curved actuator
IZNR3S4 Normally Open

Flat actuator
IZNP3S4 Normally Open

Also available with straight PC terminals :
IZN•3P4 and quick-connect terminals : **IZN•3Z4**.



IZ series

New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

For fixed panel thickness : IZN - options

Non-illuminated - screw terminals

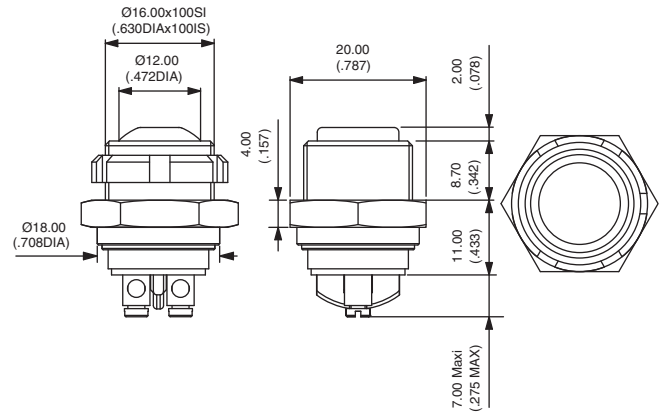


SILVER CONTACTS

Curved actuator
IZNR3V2



Flat actuator
IZNP3V2



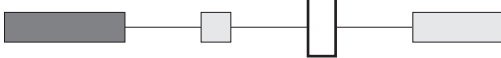
B

ACTUATOR COLOUR



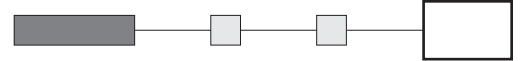
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
 A : satin chrome

BUSHING AND BEZEL COLOUR



N : nickel plated (standard)
 Other : on request.

LED COLOUR



Blank : non-illuminated
 LOS : super red - LOY : yellow - LOG : green
 LOB : blue - LOW : white

New!

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

Distinctive features and specifications



- Rear mounting for easier installation
- Latching action metal models
- Fixed or variable panel thickness
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Robustness (non-illuminated) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals
1.000 Vrms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$$

On flying lead versions, the LED resistor can be integrated by APEM on request.

GENERAL SPECIFICATIONS

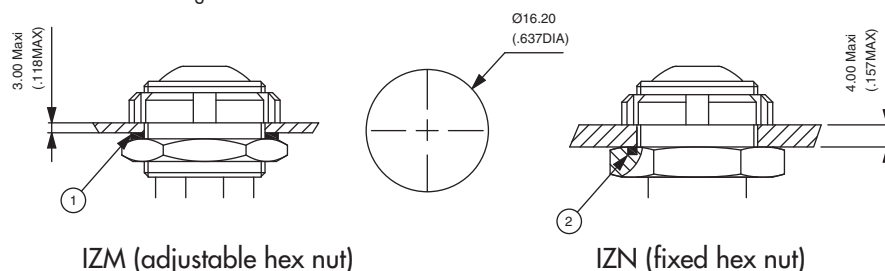
- Panel thickness :
- IZM : 3 mm (.118) max.
- IZN : 4 mm (.157) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : IZN : 1 Nm max.
IZM : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

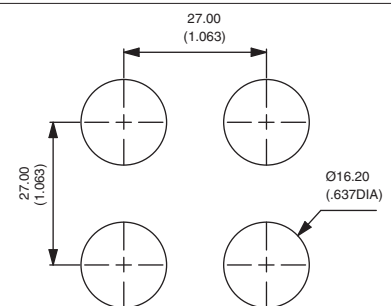
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : brass, nickel plated
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

- ① Flat seal ② O-ring



MATRIX MOUNTING

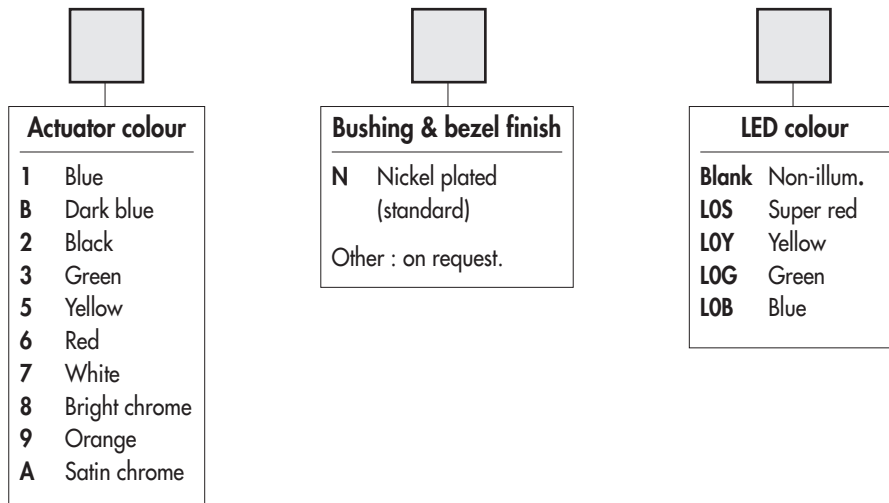
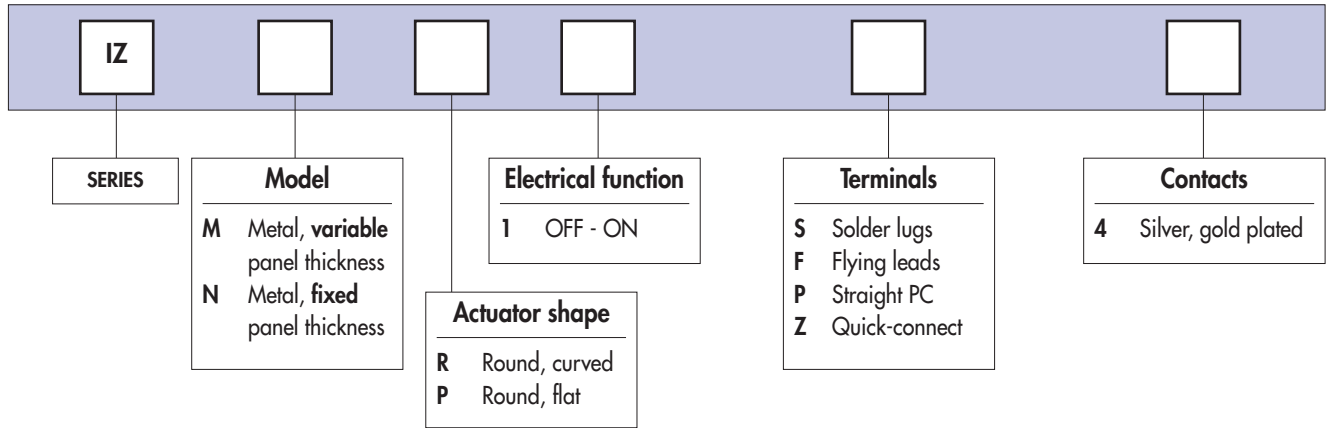


IZ series

New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

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.



Mounting accessories : Standard hardware supplied :
 - IZN : 1 castellated nickel plated brass nut U6915 + 1 O-ring
 - IZM : 1 castellated nickel plated brass nut U6915 + 1 silicone flat seal + 1 hex nut 19 mm (.748) across flats U4116.



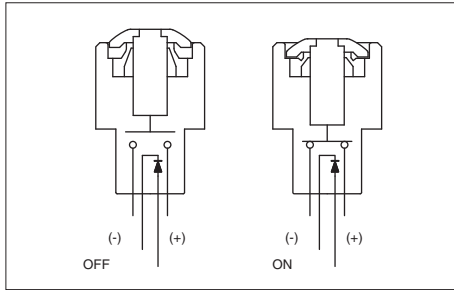
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

New!

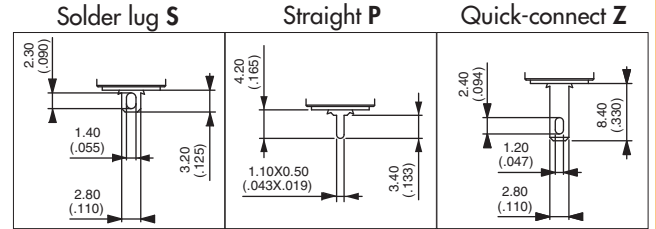
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

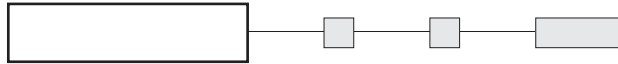
For variable panel thickness : IZM



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



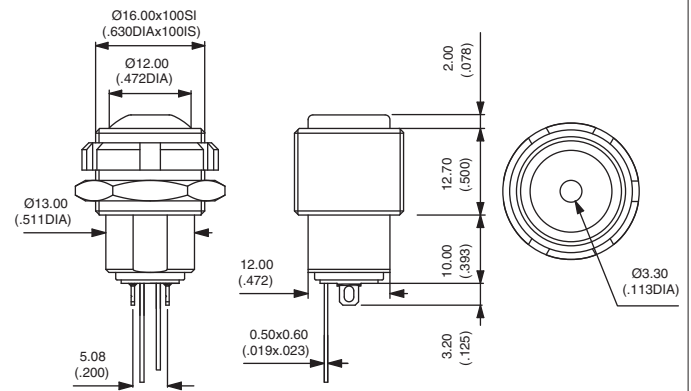
Plunger marking available on IZMP models (symbol 10 mm max.). On request.

Illuminated - solder lug terminals



- Curved actuator **IZMR1S4** OFF - ON
- Flat actuator **IZMP1S4** OFF - ON

Also available with straight PC terminals : **IZM•1P4** & quick-connect terminals : **IZM•1Z4**.

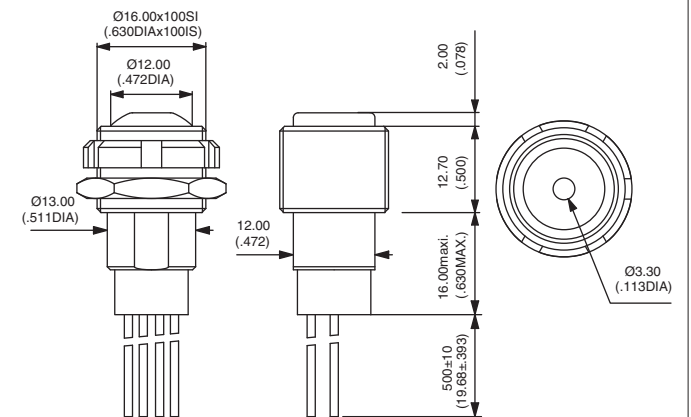


Illuminated - flying lead terminals



- Curved actuator **IZMR1F4** OFF - ON
- Flat actuator **IZMP1F4** OFF - ON

Wire colours : black : contact, red : LED anode(+), blue : LED cathode (-)

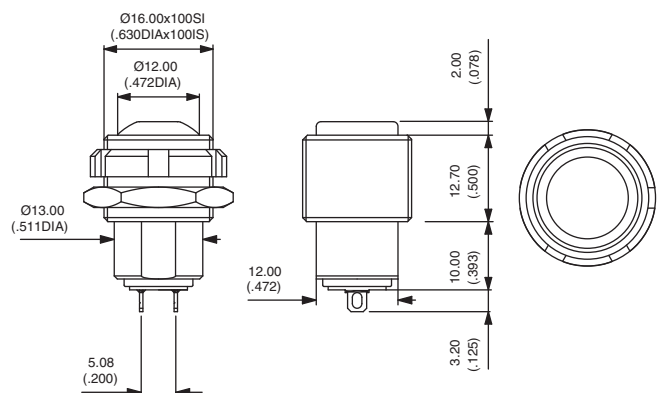


Non-illuminated - solder lug terminals



- Curved actuator **IZMR1S4** OFF - ON
- Flat actuator **IZMP1S4** OFF - ON

Also available with straight PC terminals : **IZM•1P4** & quick-connect terminals : **IZM•1Z4**.

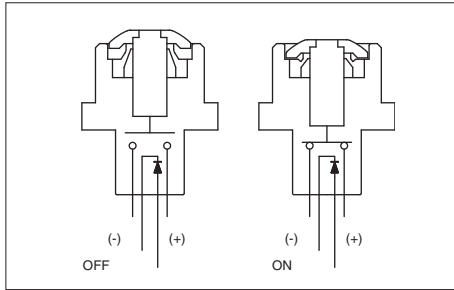


IZ series

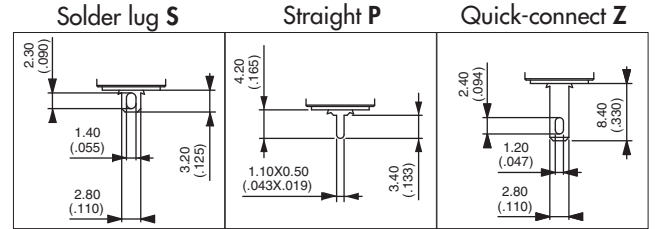
New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

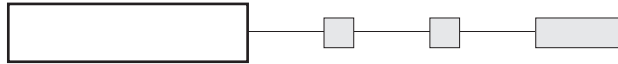
For fixed panel thickness : IZN



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



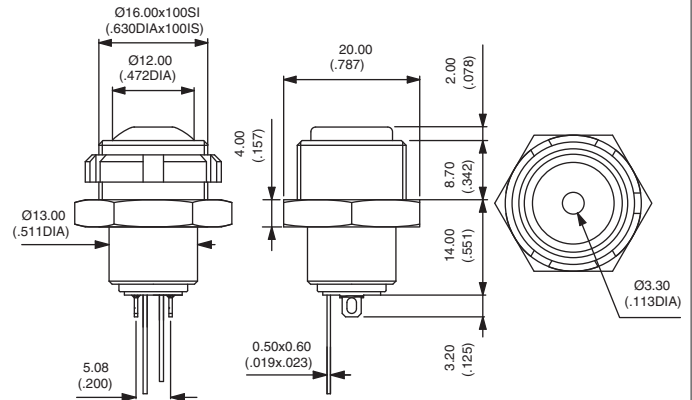
Plunger marking available on IZNP models (symbol 10 mm max.). On request.

Illuminated - solder lug terminals



- Curved actuator **IZNR1S4** OFF - ON
- Flat actuator **IZNP1S4** OFF - ON

Also available with straight PC terminals : **IZN•1P4** & quick-connect terminals : **IZN•1Z4**.

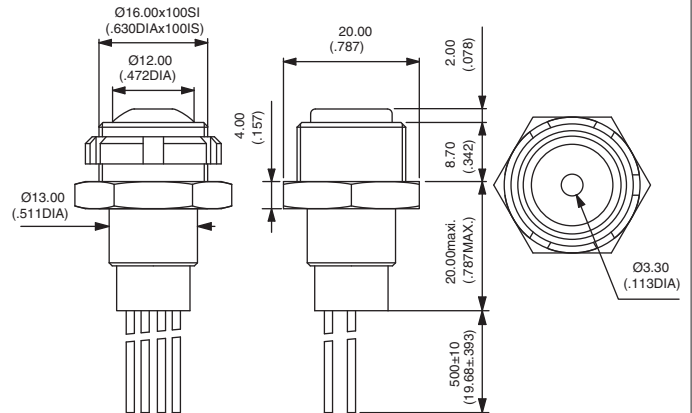


Illuminated - flying lead terminals



- Curved actuator **IZNR1F4** OFF - ON
- Flat actuator **IZNP1F4** OFF - ON

Wire colours : black : contact, red : LED anode(+), blue : LED cathode (-)

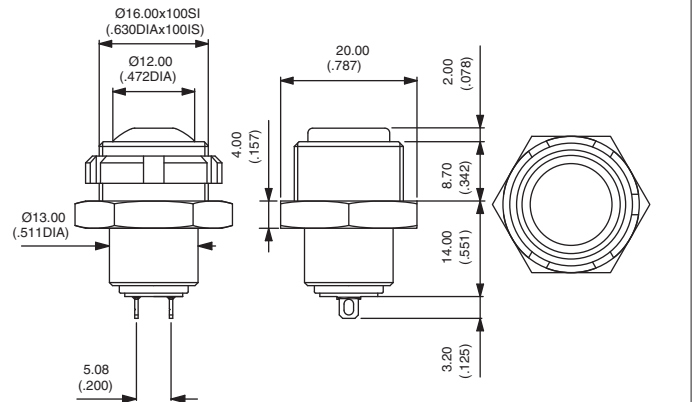


Non-illuminated - solder lug terminals



- Curved actuator **IZNR1S4** OFF - ON
- Flat actuator **IZNP1S4** OFF - ON

Also available with straight PC terminals : **IZN•1P4** & quick-connect terminals : **IZN•1Z4**.



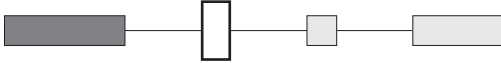
New!

IZ series

Rear mounted sealed pushbutton switches - bushing \varnothing 16 mm - metal - latching

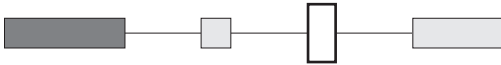
Options

ACTUATOR COLOUR



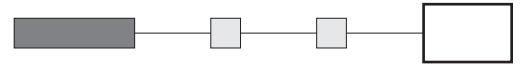
1 : blue - **B** : dark blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **8** : bright chrome - **9** : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



N : nickel plated (standard)
Other : on request.

LED COLOUR



Blank : non-illuminated
LOS : super red - **LOY** : yellow - **LOG** : green
LOB : blue

B

IZ series

New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

Distinctive features and specifications



- Rear mounting for easier installation
- Momentary models
- Screw version available up to 4A
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 3 mm (.118) max.
- Total travel : 1,8 mm (.070) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - Gold plated silver contacts (code 4) : 200mA 48VDC - 200mA 250VAC
 - Silver contacts (code 2) - screw terminals : 2A 250VAC - 4A 48VDC
- Electrical life at full load : 500.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms 50 Hz

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2,1V	2,3V
Yellow (LOY)	20mA	2,1V	2,3V
Green (LOG)	20mA	2,1V	2,3V
Blue (LOB)	20mA	3,2V	3,8V
White (LOW)	20mA	3,35V	4,25V

A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$$

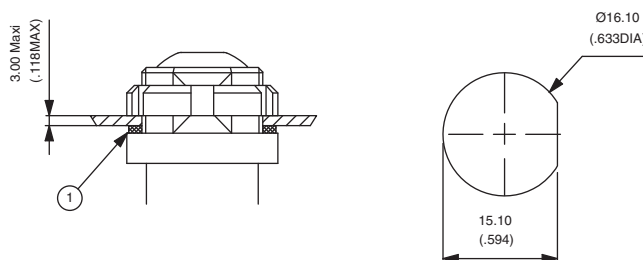
On flying lead versions, the LED resistor can be integrated by APEM on request.

MATERIALS

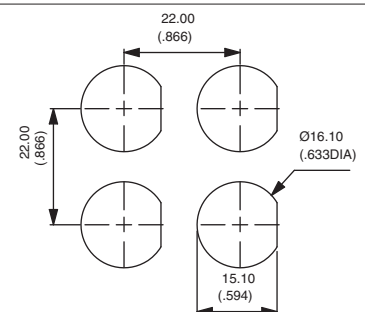
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING

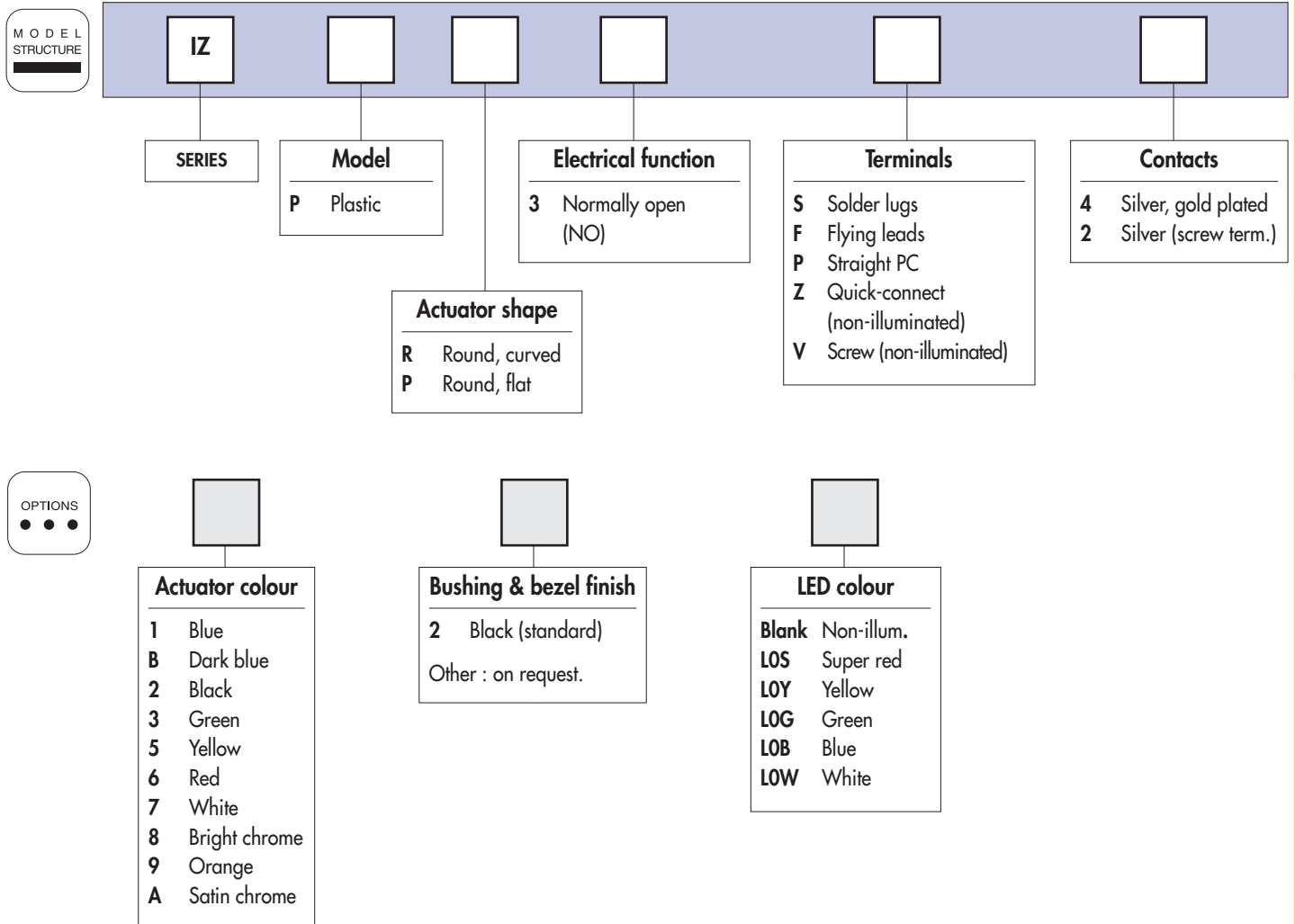


New!

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

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.



Mounting accessories : Standard hardware supplied : 1 castellated black plastic nut U4249 and 1 silicone flat seal.



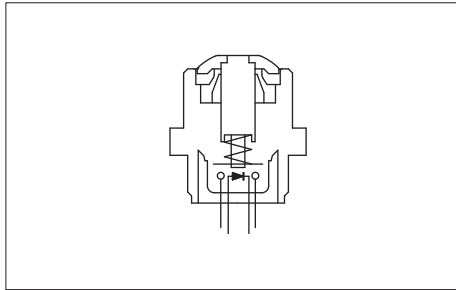
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

IZ series

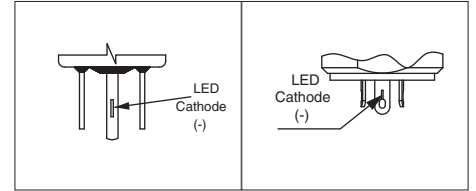
New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

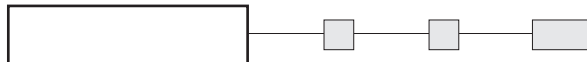
Illuminated



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



Plunger marking available on IZPP models (symbol 10 mm max.). On request.

Solder lug terminals



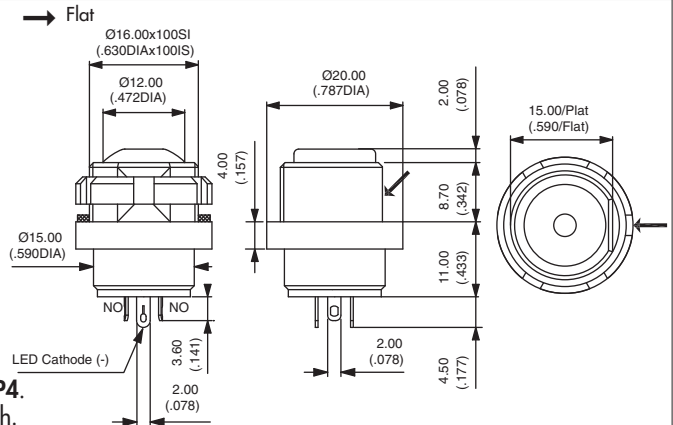
Curved actuator
IZPR3S4

Normally Open

Flat actuator
IZPP3S4

Normally Open

Also available with straight PC terminals : **IZP•3P4**.
LED colour is indicated by the bottom of the switch.



Flying lead terminals - momentary



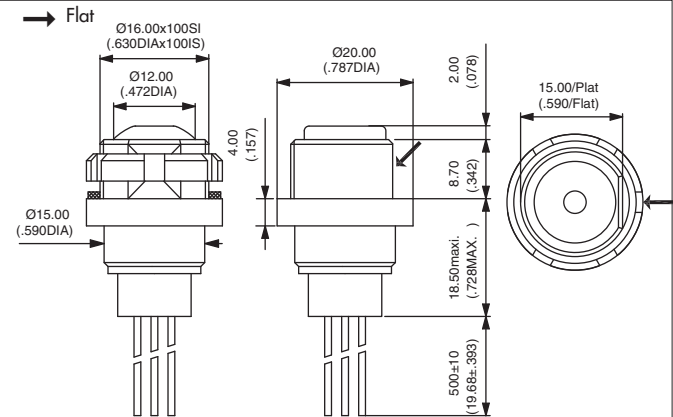
Curved actuator
IZPR3F4

Normally Open

Flat actuator
IZPP3F4

Normally Open

Wire colours : black : NO contact,
red : LED anode(+), blue : LED cathode (-)

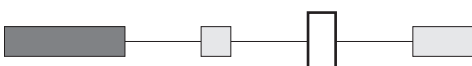


ACTUATOR COLOUR



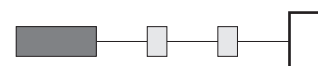
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

LED COLOUR



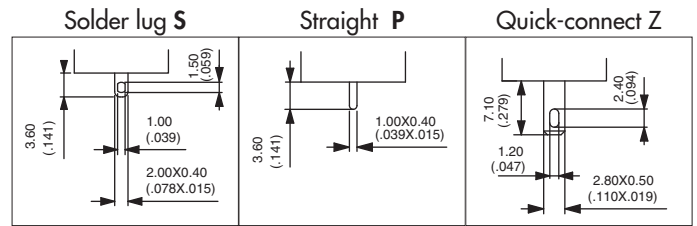
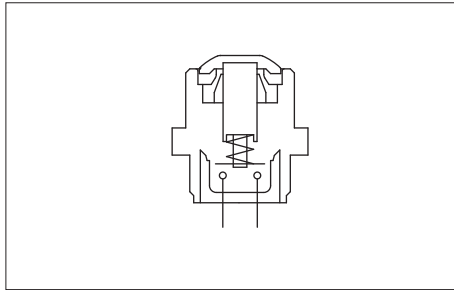
LOS : super red - LOY : yellow - LOG : green
LOB : blue - LOW : white

New!

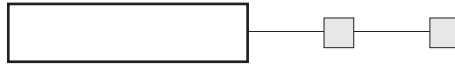
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

Non-illuminated



MODEL STRUCTURE



Plunger marking available on IZPP models (symbol 12 mm max.). On request.

Solder lug terminals - gold plated contacts



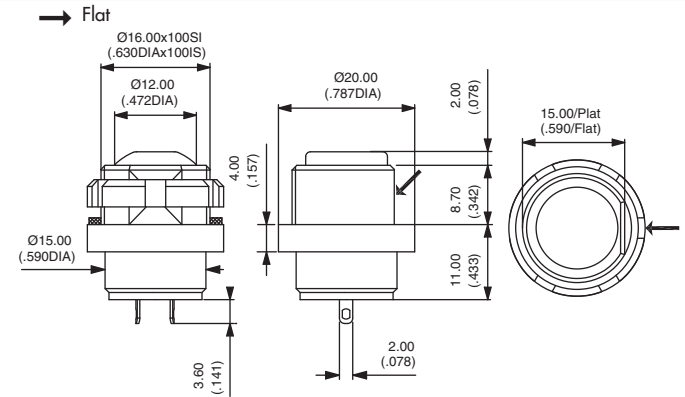
Curved actuator
IZPR3S4



Flat actuator
IZPP3S4



Also available with straight PC terminals : **IZP•3P4** and quick-connect terminals : **IZP•3Z4**.



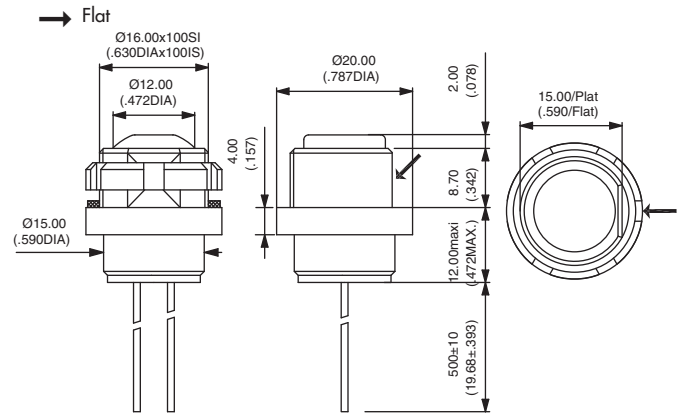
Sealed flying lead terminals - gold plated contacts



Curved actuator
IZPR3F4



Flat actuator
IZPP3F4



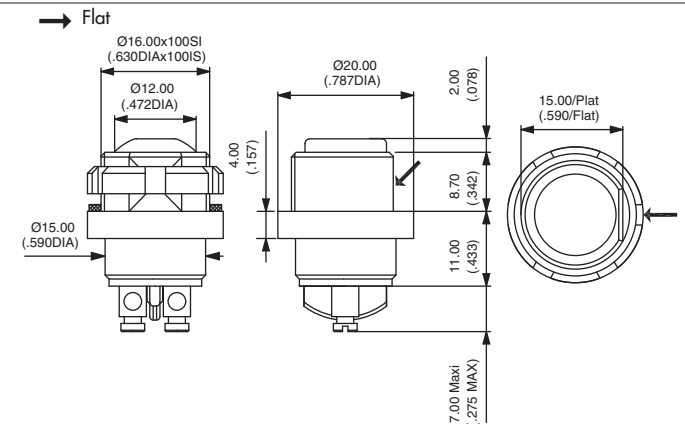
Screw terminals - silver contacts



Curved actuator
IZPR3V2



Flat actuator
IZPP3V2



Actuator colour and bushing/bezel colour : select the desired codes on previous page

IZ series

New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

Distinctive features and specifications



- Rear mounting for easier installation
- Latching action models
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 3 mm (.118) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$$

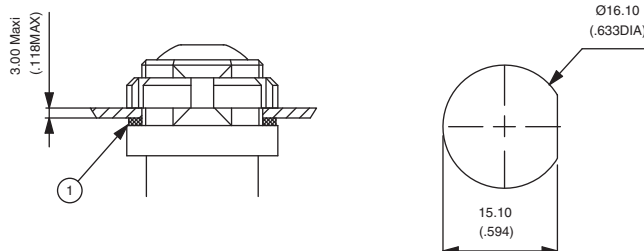
On flying lead versions, the LED resistor can be integrated by APEM on request.

MATERIALS

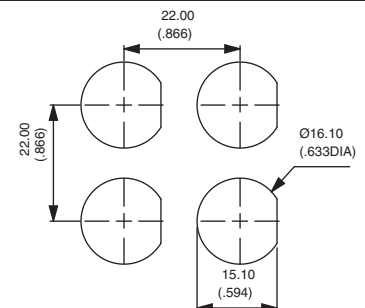
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING

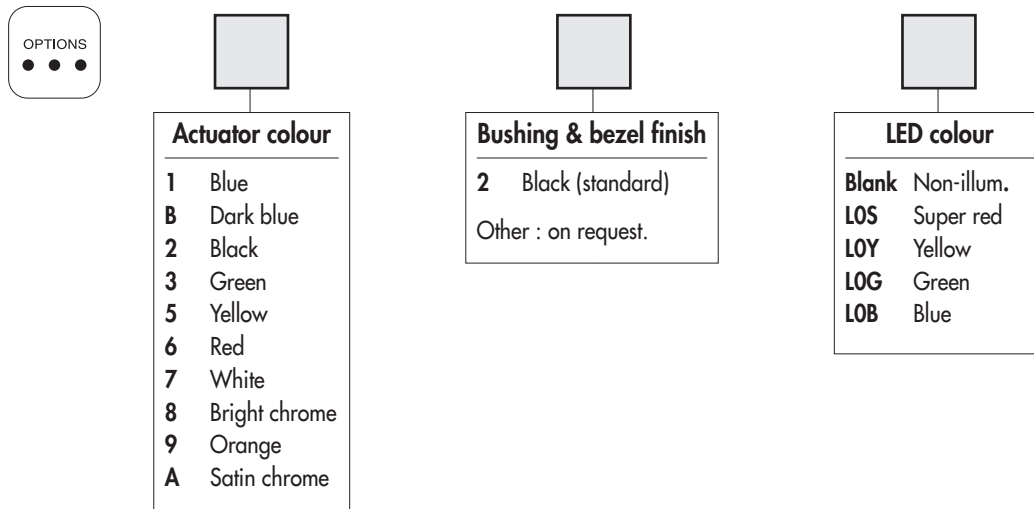
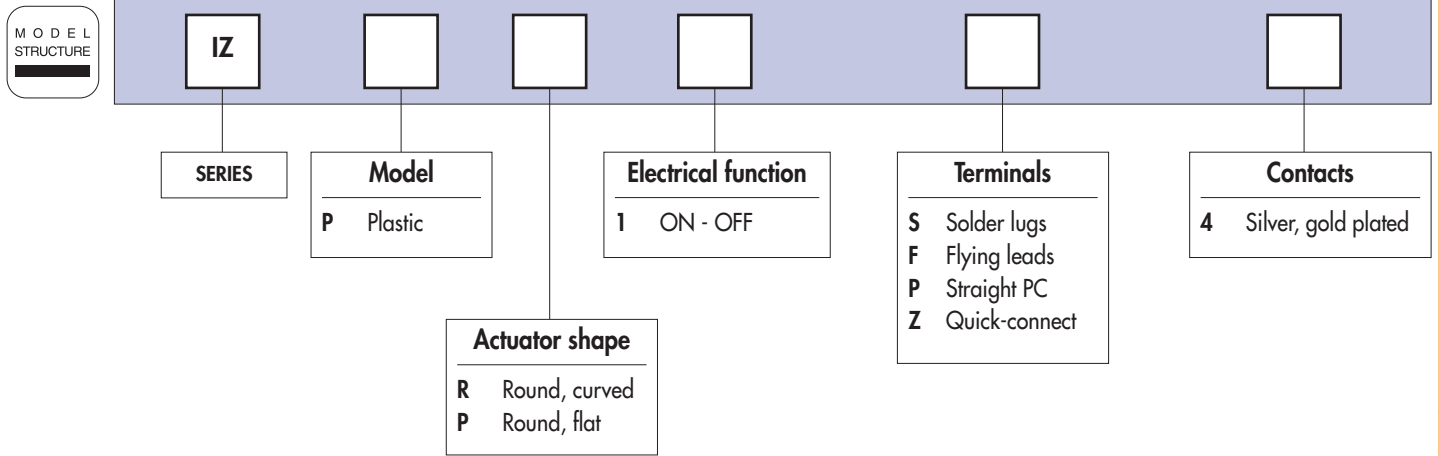


New!

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

Distinctive features and specifications



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.



Mounting accessories : Standard hardware supplied : 1 castellated black plastic nut U4249 and 1 silicone flat seal.



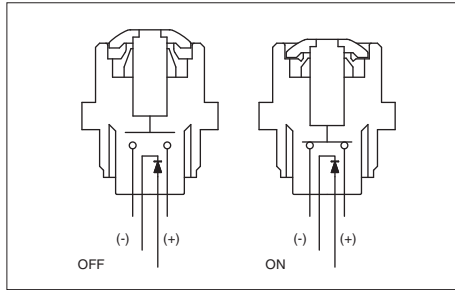
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

IZ series

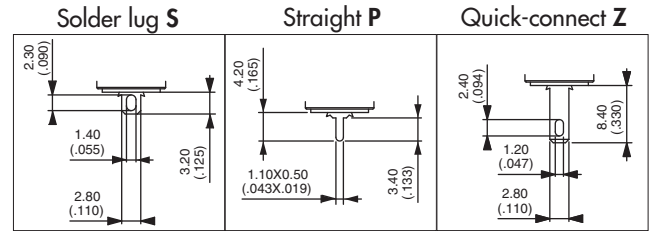
New!

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

Illuminated



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



Plunger marking available on IZPP models (symbol 10 mm max.). On request.

Solder lug terminals



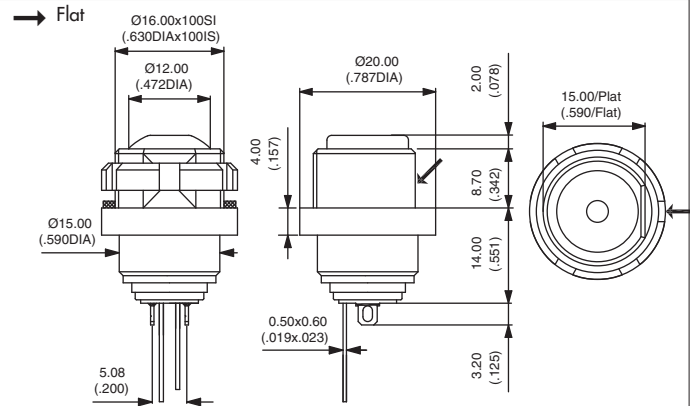
Curved actuator
IZPR1S4

ON - OFF

Flat actuator
IZPP1S4

ON - OFF

Also available with straight PC terminals :
IZP•1P4 and quick-connect terminals : **IZP•1Z4**.



Sealed flying lead terminals



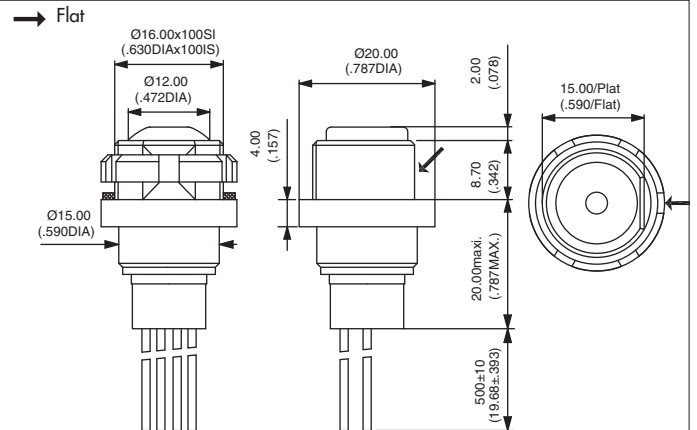
Curved actuator
IZPR1F4

ON - OFF

Flat actuator
IZPP1F4

ON - OFF

Wire colours : black : NO contact,
red : LED anode(+), blue : LED cathode (-)

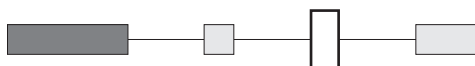


ACTUATOR COLOUR



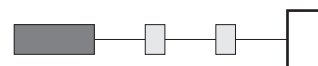
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

LED COLOUR



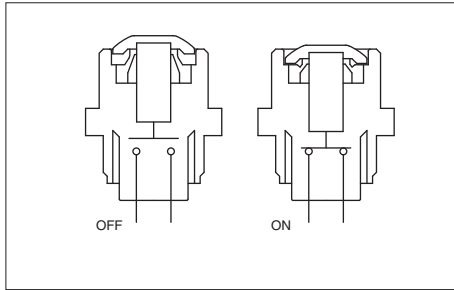
LOS : super red - LOY : yellow - LOG : green
LOB : blue

New!

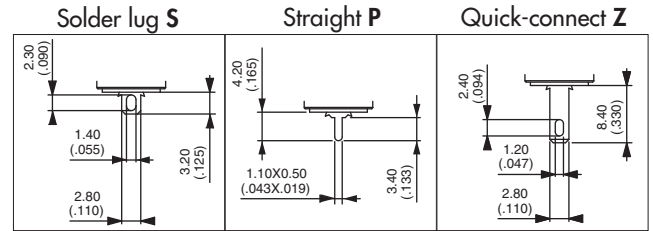
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

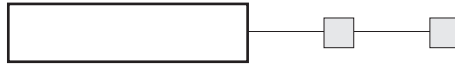
Non-illuminated



• Gold plated contacts



MODEL STRUCTURE



Plunger marking available on IZPP models (symbol 10 mm max.). On request.

Solder lug terminals



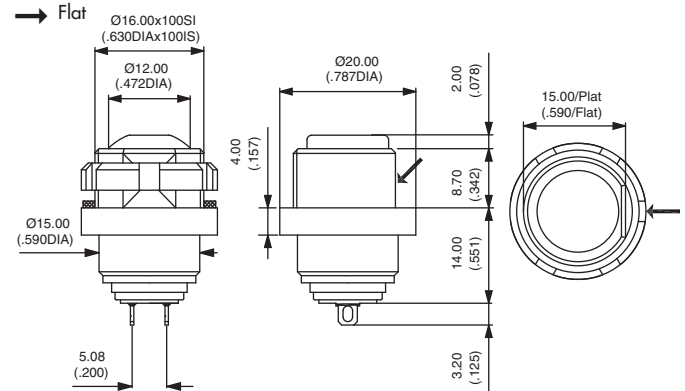
Curved actuator
IZPR1S4

ON - OFF

Flat actuator
IZPP1S4

ON - OFF

Also available with straight PC terminals : **IZP•1P4** and quick-connect terminals : **IZP•1Z4**.



Sealed flying lead terminals

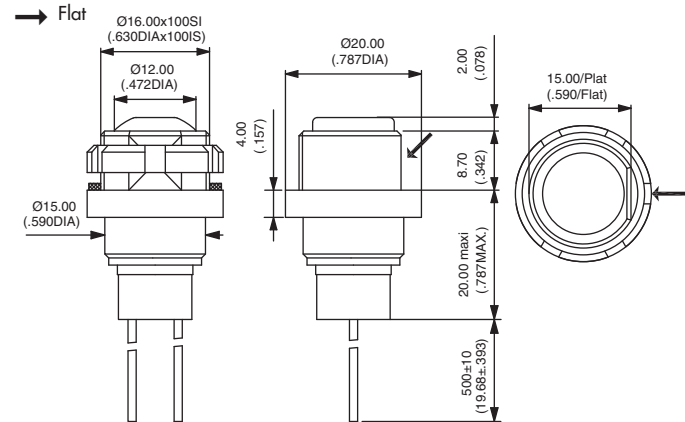


Curved actuator
IZPR1F4

ON - OFF

Flat actuator
IZPP1F4

ON - OFF



ACTUATOR COLOUR



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

IR series

New!

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary

Distinctive features

The IR series is a range of sealed momentary pushbutton switches with dia. 16 mm bushing. This series is divided into 2 families : standard models and microswitch technology models.

Common features

- Sealed to IP67
- Illuminated or non-illuminated
- Tactile feedback
- Square or round actuator
- Wide choice of bezel and actuator colours
- Wide choice of illumination colours

Standard versions

- Numerous terminal options : solder, flying lead, straight PC, quick-connect, screw
- Screw versions withstanding up to 4A
- Electrical function : NO (2 terminals)



NO - Screw terminals



NO - Illuminated
Wire lead terminals



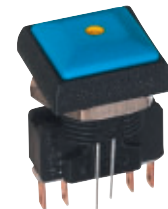
NO - Solder lug
terminals

Microswitch versions

- Withstanding up to 5A
- Two electrical functions :
NC+NO (3 terminals)
NC/NO combined (4 terminals)



NC+NO - 3 terminals



NC/NO - 4 terminals - Illuminated

Optional marking

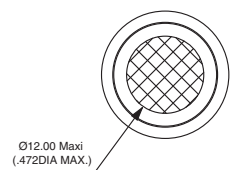
Actuator marking is available on request for models with flat round actuator.



Standard version

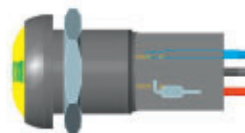


Microswitch version



Integrated resistor

On wire lead illuminated versions, the LED resistor can be integrated in the product by APEM. On request.



New!

IR series

Sealed pushbutton switches - bushing Ø 16 mm - momentary - standard version

Distinctive features and specifications



- Screw version up to 4A
- Tactile feedback
- Sealed to IP67
- Illuminated or non-illuminated
- Flat round actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - Gold plated silver contacts (code 4) : 200mA 48VDC - 200mA 250VAC
 - Silver contacts (code 2) - screw terminals : 2A 250VAC - 4A 48VDC
- Electrical life at full load : 500.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2,1V	2,3V
Yellow (LOY)	20mA	2,1V	2,3V
Green (LOG)	20mA	2,1V	2,3V
Blue (LOB)	20mA	3,2V	3,8V
White (LOW)	20mA	3,35V	4,25V

A resistor must be series-connected by the user.

Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

On flying lead versions, the LED resistor can be integrated by APEM on request.

GENERAL SPECIFICATIONS

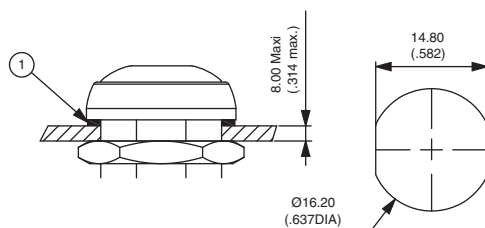
- Panel thickness : 8 mm (.314) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

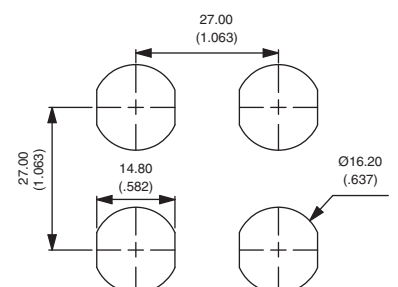
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING

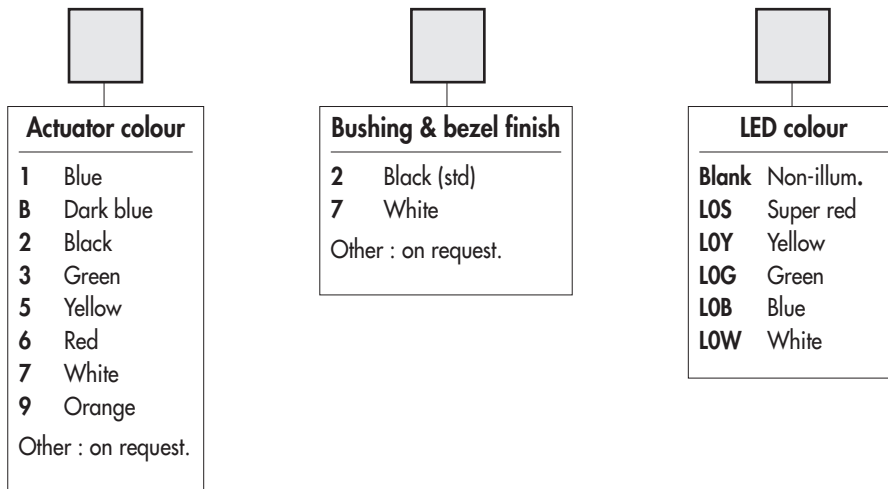
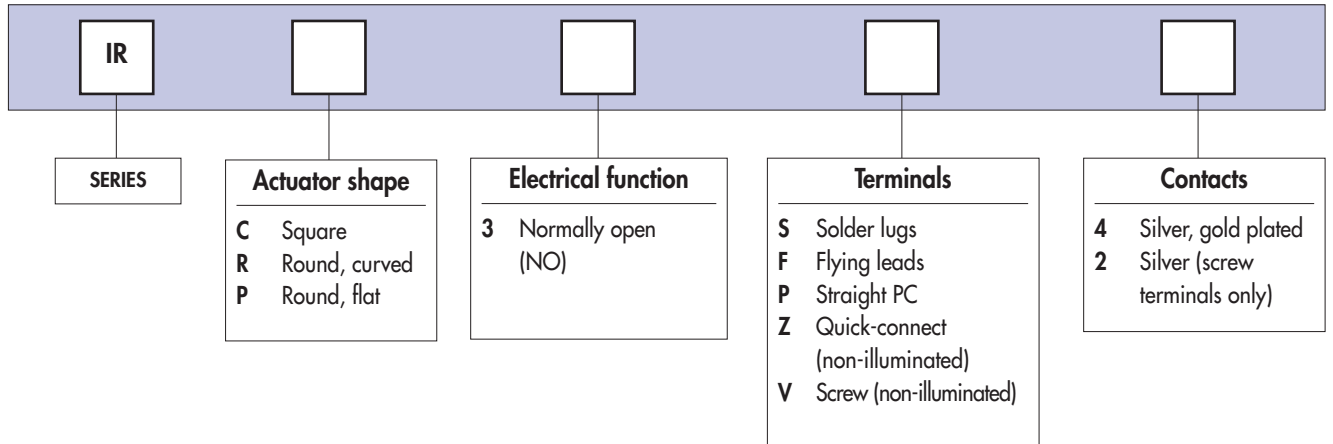


IR series

New!

Sealed pushbutton switches - bushing Ø 16 mm - momentary - standard version

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



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



Mounting accessories : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal
 Hex nut P/N U4116.



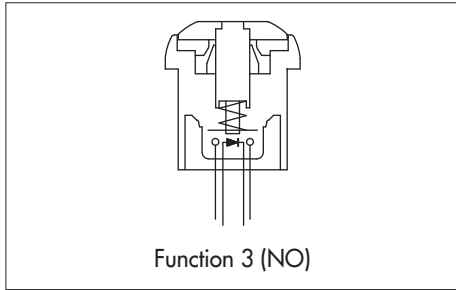
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

New!

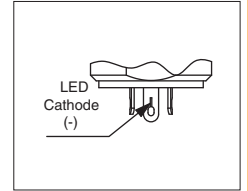
IR series

Sealed pushbutton switches - bushing Ø 16 mm - momentary - standard version

Round - illuminated



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



Actuator marking available on IRP models (symbol 12 mm max.). On request.

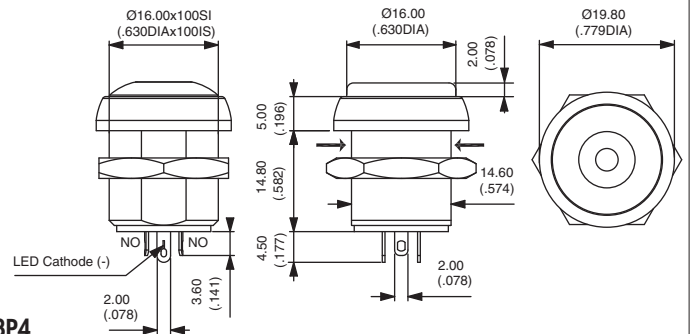
Solder lug terminals

→ Flat



Curved actuator
IRR3S4 Normally Open

Flat actuator
IRP3S4 Normally Open



Also available with straight PC terminals : **IR•3P4**.
LED colour is indicated by the bottom of the switch.

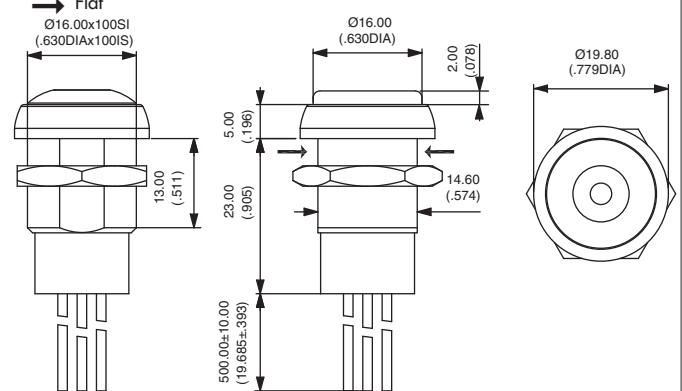
Sealed flying lead terminals

→ Flat



Curved actuator
IRR3F4 Normally Open

Flat actuator
IRP3F4 Normally Open



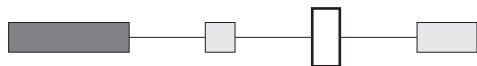
Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)

ACTUATOR COLOUR



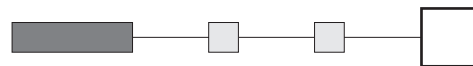
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR



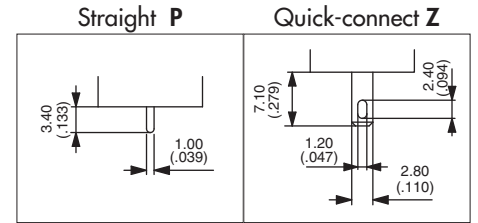
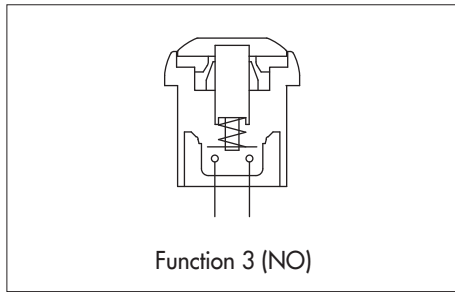
LOS : super red - LOY : yellow - LOG : green - LOB : blue
LOW : white

IR series

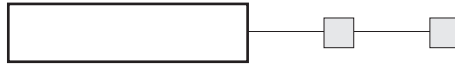
New!

Sealed pushbutton switches - bushing Ø 16 mm - momentary - standard version

Round - non-illuminated



MODEL STRUCTURE



Actuator marking available on IRP models (symbol 12 mm max.). On request.

Solder lug terminals - gold plated contacts



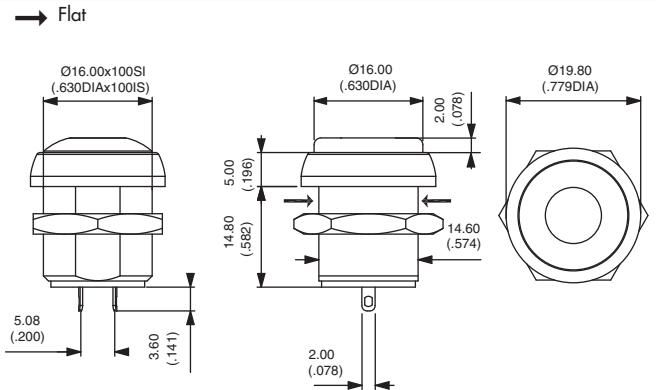
Curved actuator
IRR3S4



Flat actuator
IRP3S4



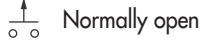
Also available with straight PC terminals :
IR•3P4 and quick-connect terminals : **IR•3Z4**.



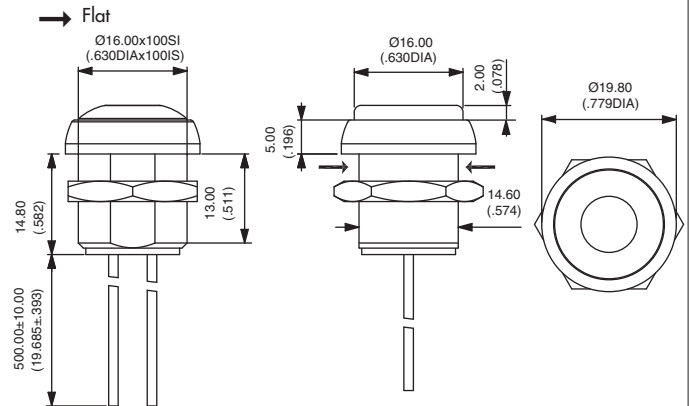
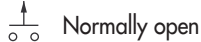
Sealed flying lead terminals - gold plated contacts



Curved actuator
IRR3F4



Flat actuator
IRP3F4



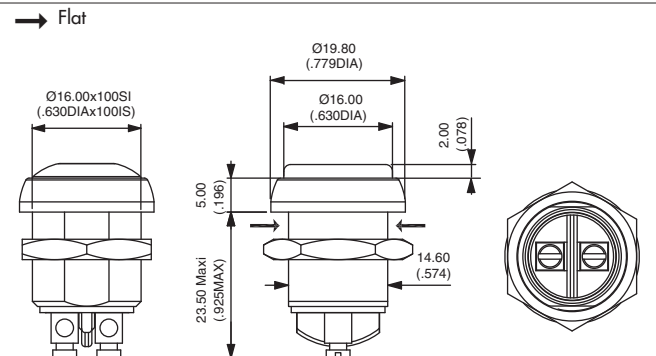
Screw terminals - silver contacts



Curved actuator
IRR3V2



Flat actuator
IRP3V2



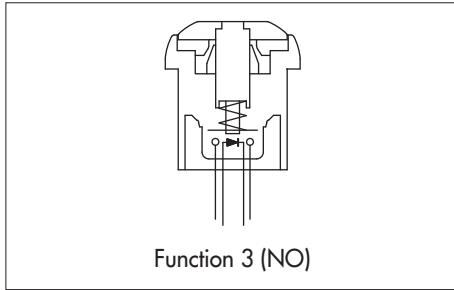
Actuator colour and bushing/bezel finish : select the desired codes on previous page

New!

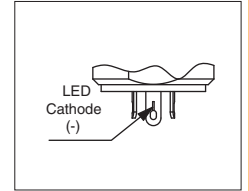
IR series

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - standard version

Square - illuminated



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



Solder lug terminals

→ Flat

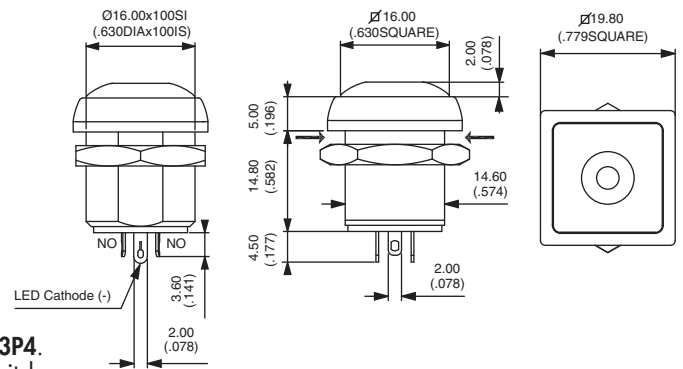


IRC3S4



Normally Open

Also available with straight PC terminals: **IRC3P4**.
LED colour is indicated by the bottom of the switch.



Sealed flying lead terminals

→ Flat

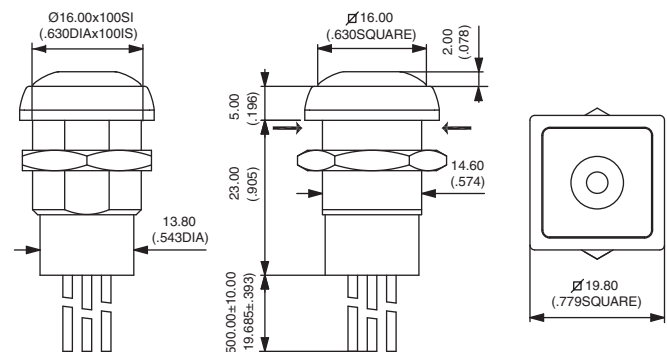


IRC3F4



Normally Open

Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)

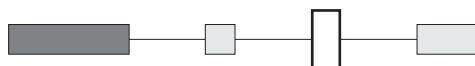


ACTUATOR COLOUR



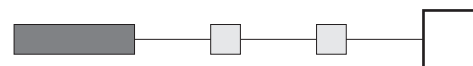
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR



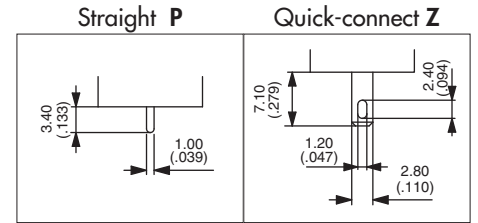
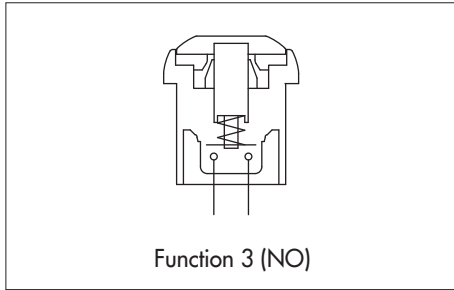
LOS : super red - LOY : yellow - LOG : green - LOB : blue
LOW : white

IR series

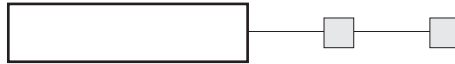
New!

Sealed pushbutton switches - bushing Ø 16 mm - momentary - standard version

Square - non-illuminated



MODEL STRUCTURE



Solder lug terminals - gold plated contacts

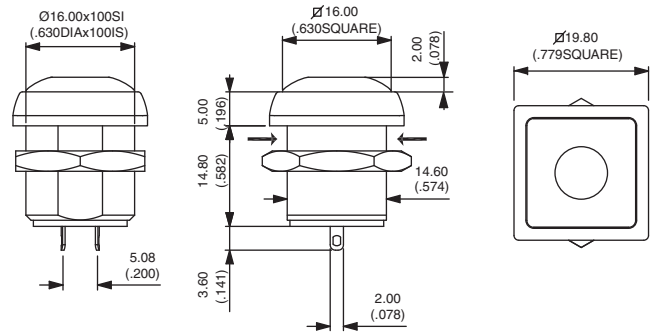


IRC3S4



Normally Open

→ Flat



Also available with straight PC terminals : IRC3P4 or quick-connect terminals : IRC3Z4.

Sealed flying lead terminals - gold plated contacts

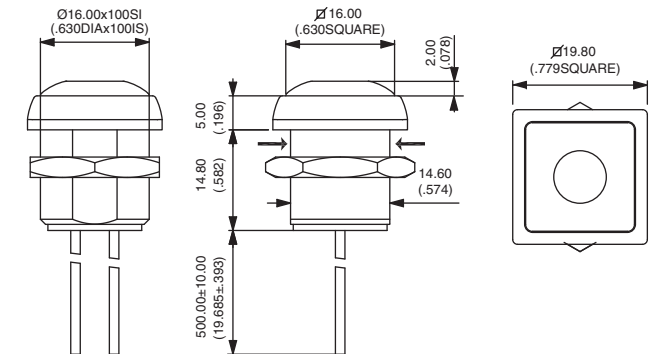


IRC3F4



Normally Open

→ Flat



Screw terminals - silver contacts

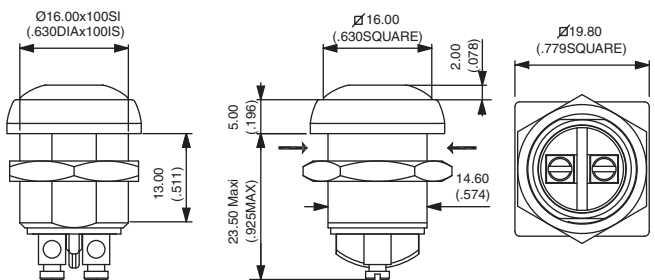


IRC3V2



Normally Open

→ Flat



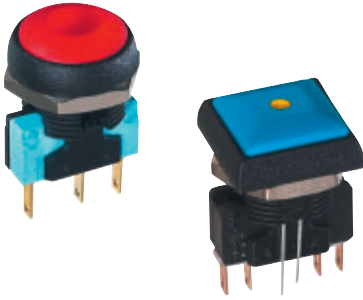
Actuator colour and bushing/bezel finish : select the desired codes on previous page

New!

IR series

Sealed pushbutton switches - bushing Ø 16 mm - momentary - microswitch version

Distinctive features and specifications



- Microswitch technology up to 5A
- Tactile feedback
- Sealed to IP67
- Illuminated or non-illuminated
- Flat round actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -20°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
5A 250VAC, 50.000 cycles (function 7)
5A 250VAC, 25.000 cycles (function 8)
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 750 Vrms between terminals
2.000 Vrms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2V	2,5V
Yellow (LOY)	20mA	2V	2,5V
Green (LOG)	10mA	2V	2,5V
Blue (LOB)	10mA	3,3V	3,8V

A resistor must be series-connected by the user.
Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

GENERAL SPECIFICATIONS

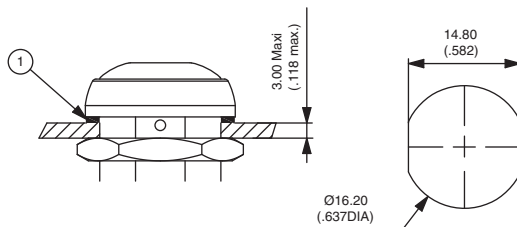
- Panel thickness : 3 mm (.118) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

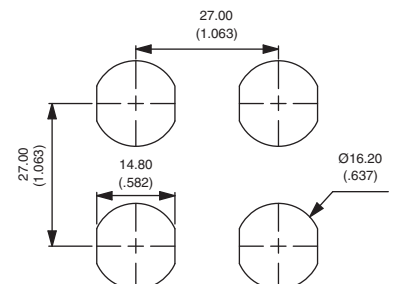
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver
- Lens : polycarbonate

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING

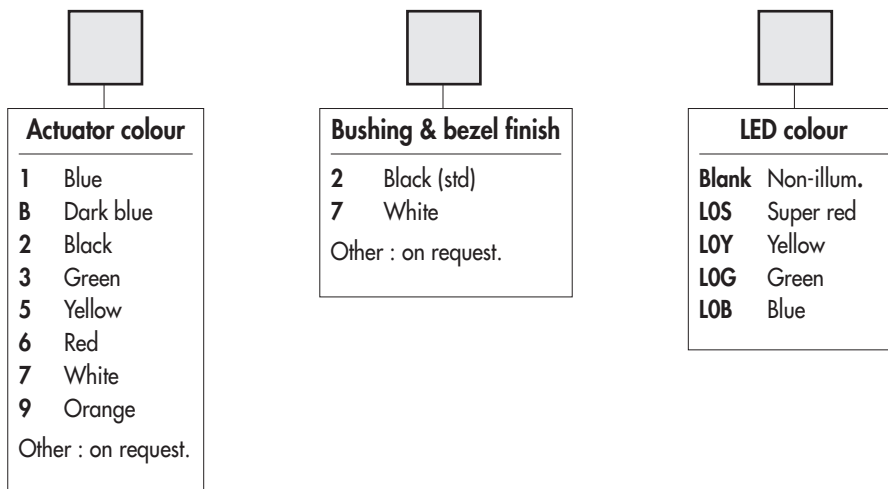
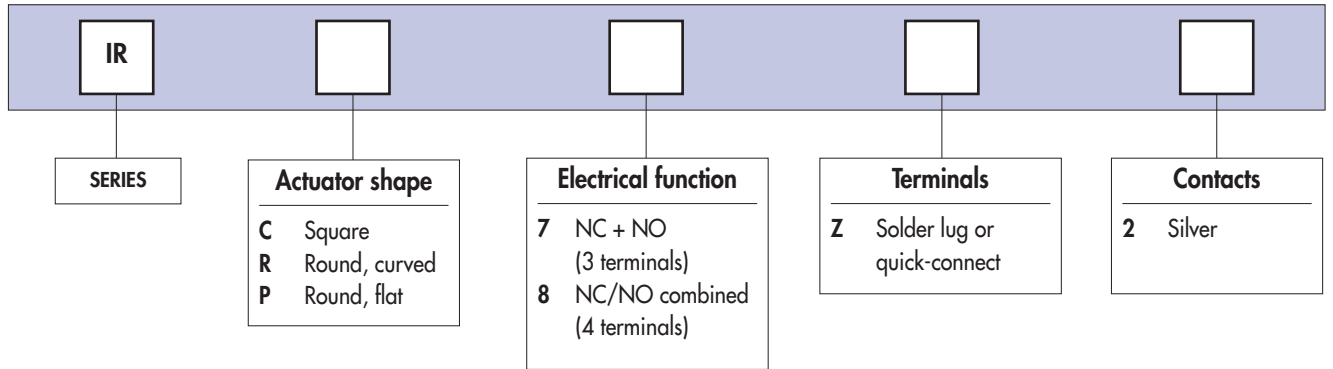


IR series

New!

Sealed pushbutton switches - bushing Ø 16 mm - momentary - microswitch version

Overview



The IR series for high currents is based on a microswitch. Please note that this microswitch is supplied separately.

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



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



Mounting accessories : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal.
 Hex nut P/N : U4116



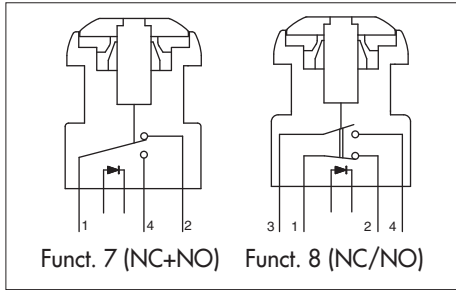
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

New!

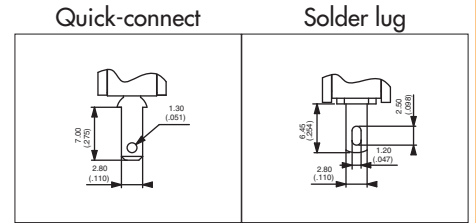
IR series

Sealed pushbutton switches - bushing Ø 16 mm - momentary - microswitch version

Round - illuminated

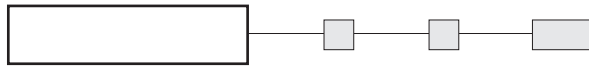


- Four LED colours
- Tin plated LED terminals
- Silver contacts



Funct. 7 (3 terminals) Funct. 8 (4 terminals)

MODEL STRUCTURE

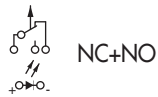


Actuator marking available on IRP models (symbol 12 mm max.). On request.

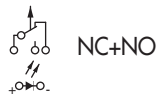
Quick-connect terminals - NC+NO - 3 terminals



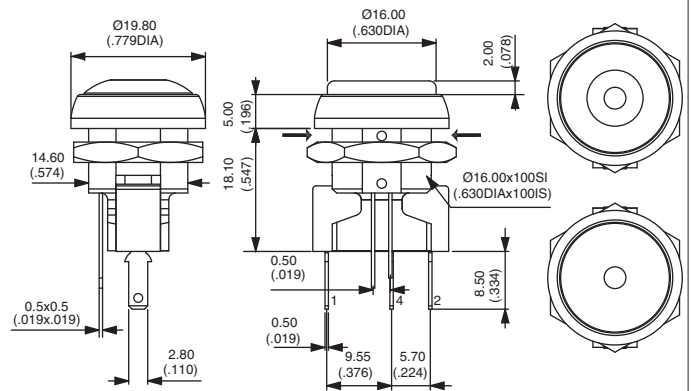
Curved actuator
IRR7Z2



Flat actuator
IRP7Z2



→ Flat



Solder lug terminals - NC/NO - 4 terminals



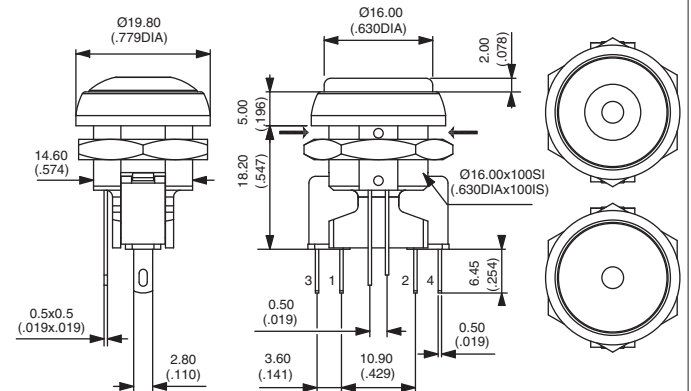
Curved actuator
IRR8Z2



Flat actuator
IRP8Z2



→ Flat



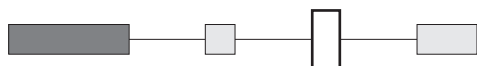
Terminals should be used as solder lugs only.

ACTUATOR COLOUR



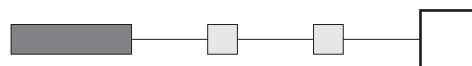
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR



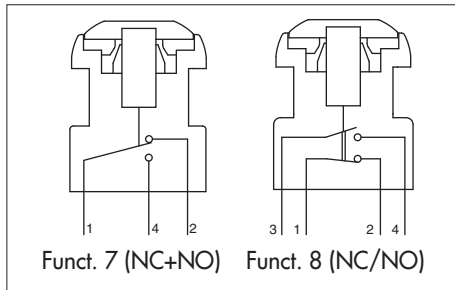
LOS : super red - LOY : yellow - LOG : green - LOB : blue

IR series

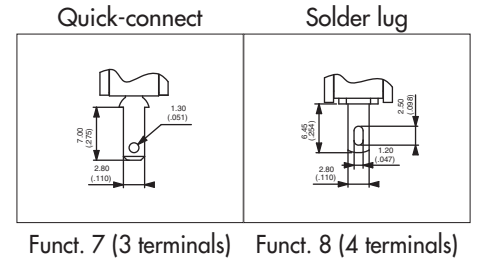
New!

Sealed pushbutton switches - bushing Ø 16 mm - momentary - microswitch version

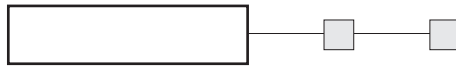
Round - non-illuminated



• Silver contacts



MODEL STRUCTURE



Actuator marking available on IRP models (symbol 12 mm max.). On request.

Quick-connect terminals - NC+NO - 3 terminals



Curved actuator
IRR7Z2



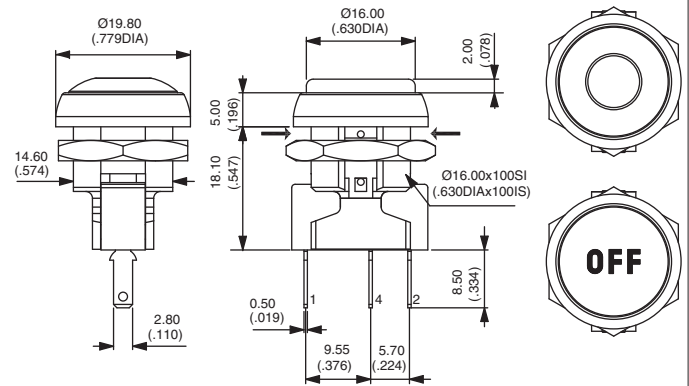
NC+NO

Flat actuator
IRP7Z2



NC+NO

→ Flat



Solder lug terminals - NC/NO - 4 terminals



Curved actuator
IRR8Z2



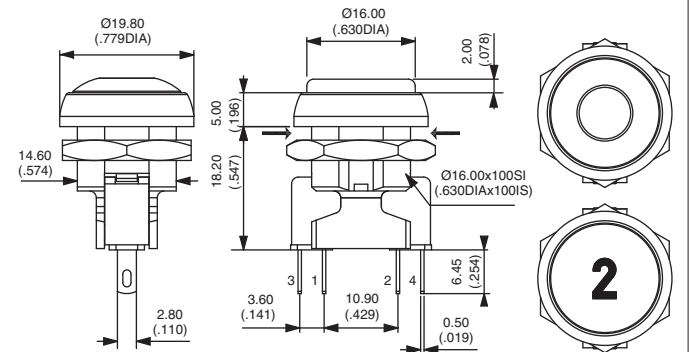
NC/NO combined

Flat actuator
IRP8Z2



NC/NO combined

→ Flat



Terminals should be used as solder lugs only.

ACTUATOR COLOUR



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

BUSHING AND BEZEL FINISH



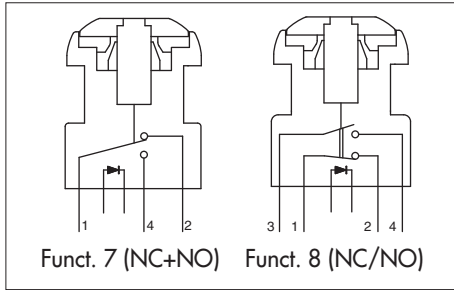
2 : black (standard) - 7 : white

New!

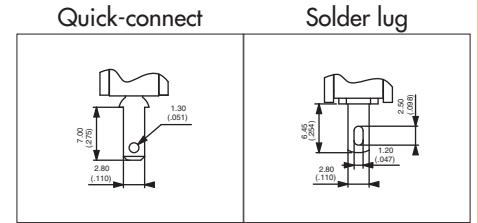
IR series

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - microswitch version

Square - illuminated

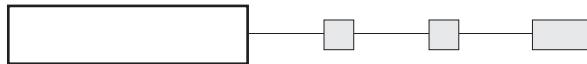


- Four LED colours
- Tin plated LED terminals
- Silver contacts



Funct. 7 (3 terminals) Funct. 8 (4 terminals)

MODEL STRUCTURE



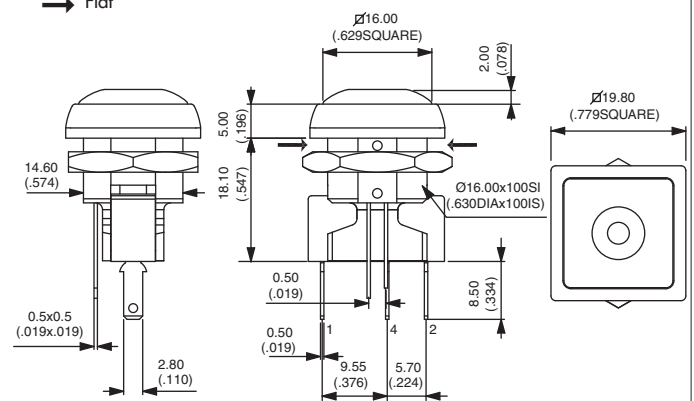
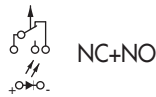
B

Quick-connect terminals - NC+NO - 3 terminals

→ Flat



IRC7Z2

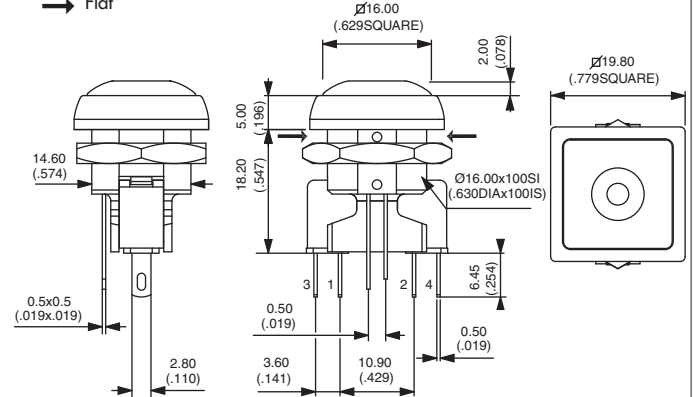


Solder lug terminals - NC/NO - 4 terminals

→ Flat



IRC8Z2



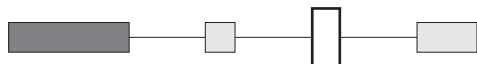
Terminals should be used as solder lugs only.

ACTUATOR COLOUR



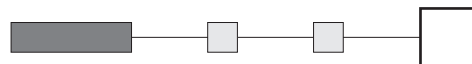
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR



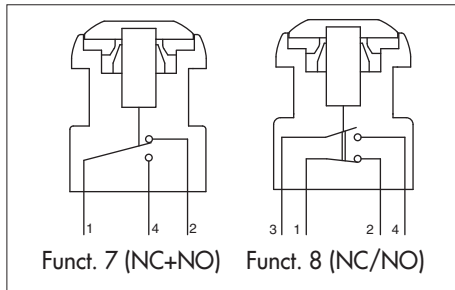
LOS : super red - LOY : yellow - LOG : green - LOB : blue

IR series

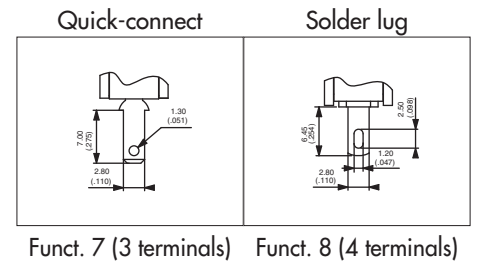
New!

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - microswitch version

Square - non-illuminated



• Silver contacts



MODEL STRUCTURE



B

Quick-connect terminals - NC+NO - 3 terminals

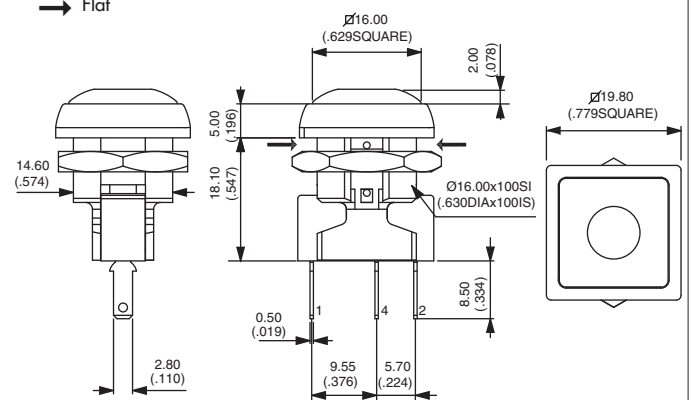
→ Flat



IRC7Z2



NC+NO



Solder lug terminals - NC/NO - 4 terminals

→ Flat

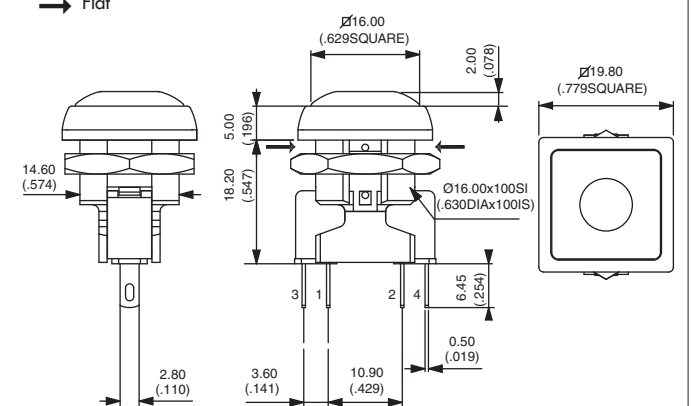


IRC8Z2



NC/NO combined

Terminals should be used as solder lugs only.



ACTUATOR COLOUR



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

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

New!

IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

Distinctive features and specifications



- Latching action models
- Sealed to IP67
- Illuminated or non-illuminated
- Flat round actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 8 mm (.314) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals

MATERIALS

- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20,
section 0,6 mm²
- LED wire : AWG26,
section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

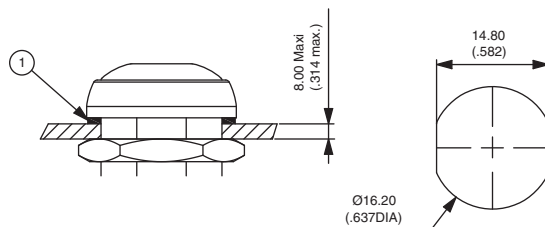
A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$$

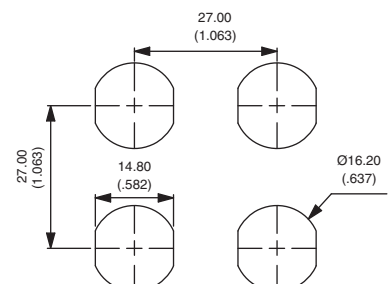
On flying lead versions, the LED resistor can be integrated by APEM on request.

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING

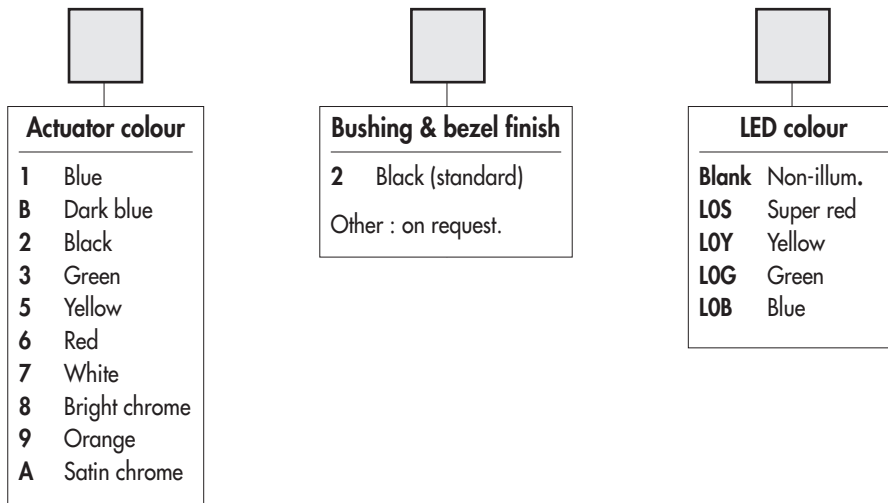
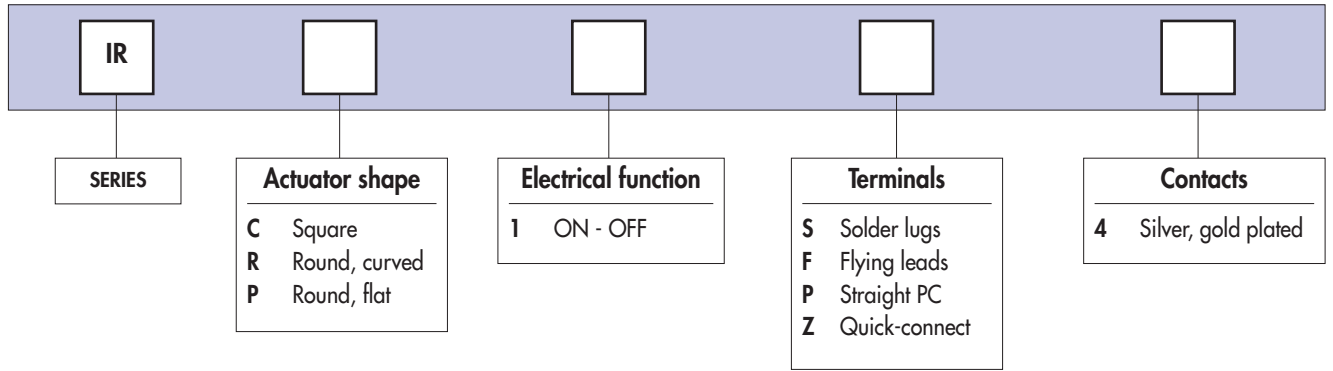


IR series

New!

Sealed pushbutton switches - bushing Ø 16 mm - latching

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.



Mounting accessories : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal
Hex nut P/N U4116.



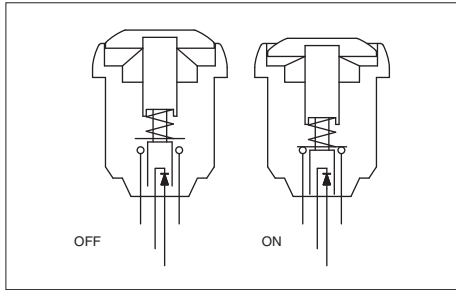
Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

New!

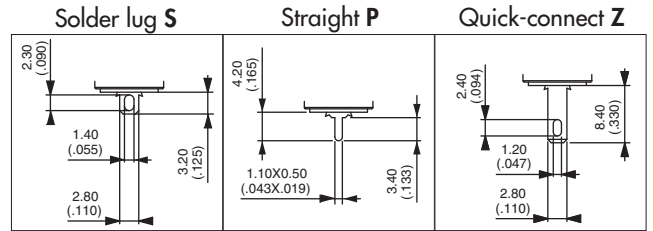
IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

Round - illuminated



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



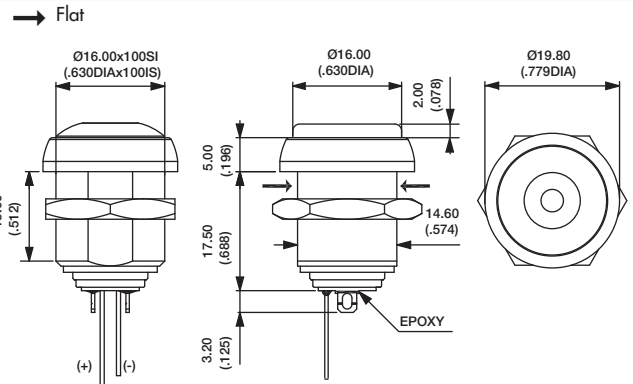
Plunger marking available on IRP models (symbol 12 mm max.). On request.

Solder lug terminals



- | | |
|----------------------------------|----------|
| Curved actuator
IRR1S4 | OFF - ON |
| Flat actuator
IRP1S4 | OFF - ON |

Also available with straight PC terminals : **IR•1P4**
& quick-connect terminals : **IR•1Z4**.

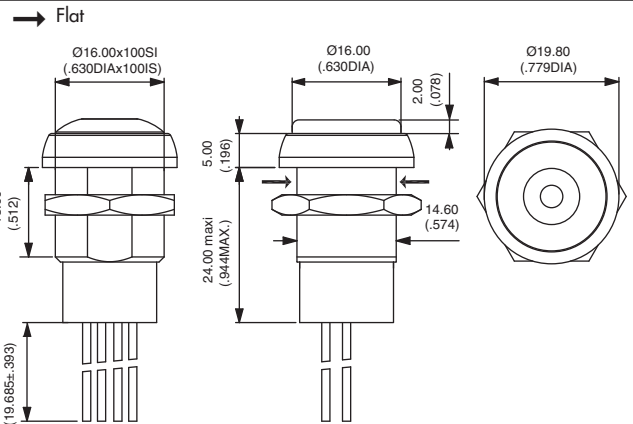


Sealed flying lead terminals

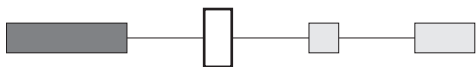


- | | |
|----------------------------------|----------|
| Curved actuator
IRR1F4 | OFF - ON |
| Flat actuator
IRP1F4 | OFF - ON |

Wire colours : black : contact,
red : LED anode (+), blue : LED cathode (-)

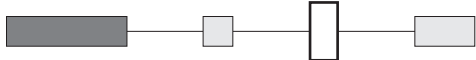


ACTUATOR COLOUR



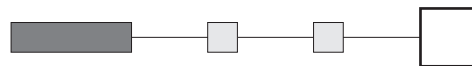
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR



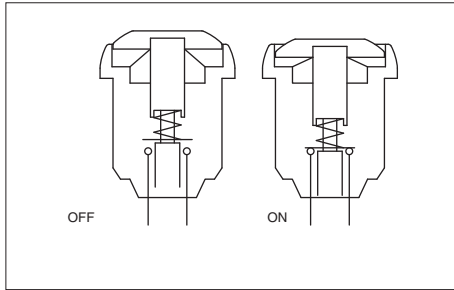
LOS : super red - LOY : yellow - LOG : green - LOB : blue

IR series

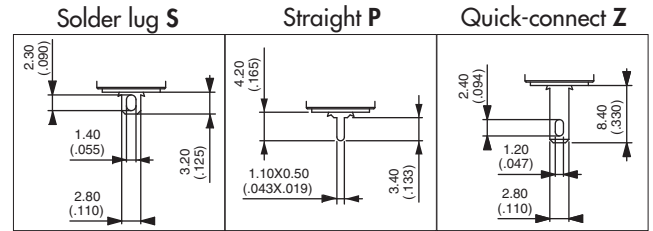
New!

Sealed pushbutton switches - bushing Ø 16 mm - latching

Round - non-illuminated



• Gold plated contacts



MODEL STRUCTURE



Plunger marking available on IRP models (symbol 12 mm max.). On request.

Solder lug terminals



Curved actuator
IRR1S4

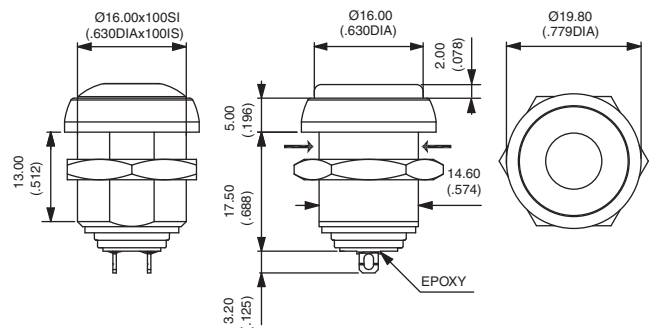
OFF - ON

Flat actuator
IRP1S4

OFF - ON

Also available with straight PC terminals : **IR•1P4**
& quick-connect terminals : **IR•1Z4**.

→ Flat



Sealed flying lead terminals



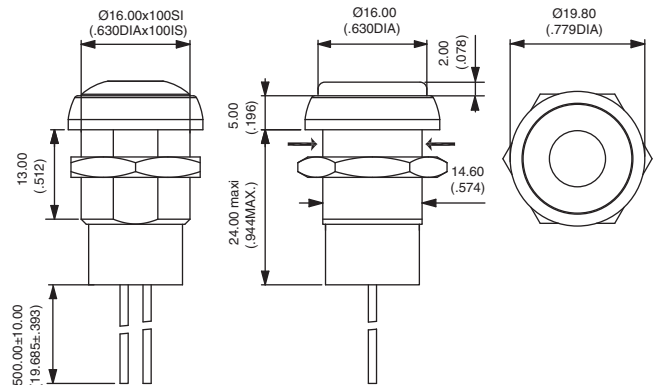
Curved actuator
IRR1F4

OFF - ON

Flat actuator
IRP1F4

OFF - ON

→ Flat



ACTUATOR COLOUR



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH



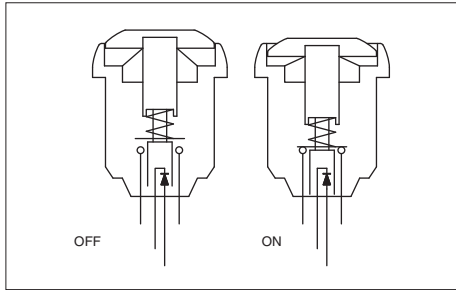
2 : black (standard)

New!

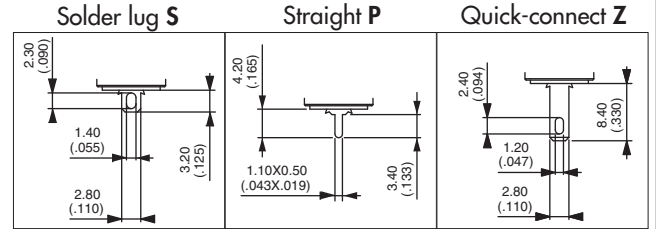
IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

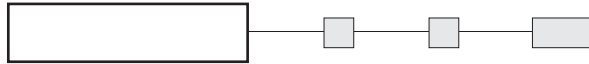
Square - illuminated



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL STRUCTURE



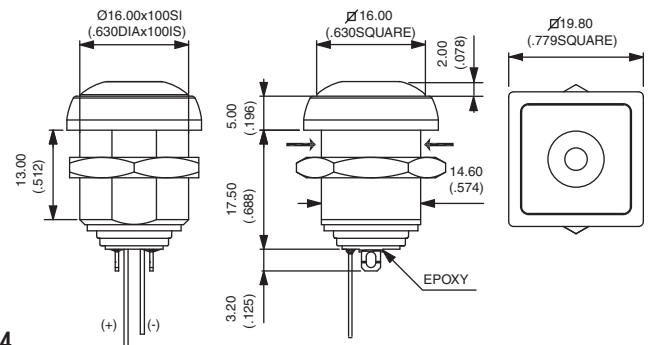
Solder lug terminals



Curved actuator
IRC154

OFF - ON

→ Flat



Also available with straight PC terminals : **IRC1P4**
& quick-connect terminals : **IRC1Z4**.

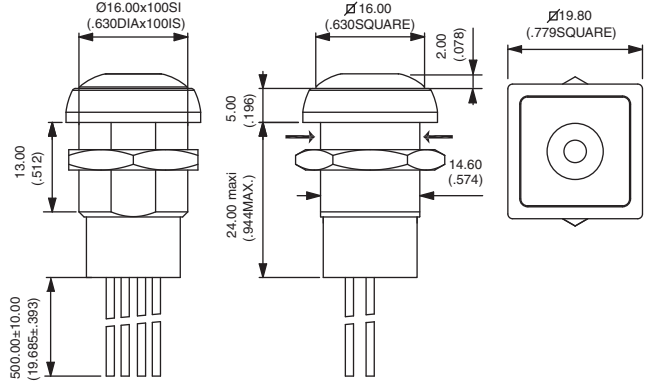
Sealed flying lead terminals



Curved actuator
IRC1F4

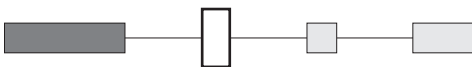
OFF - ON

→ Flat



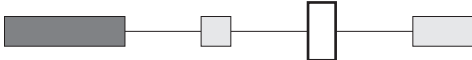
Wire colours : black : contact,
red : LED anode(+), blue : LED cathode (-)

ACTUATOR COLOUR



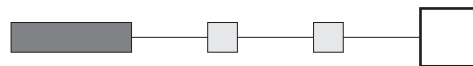
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR



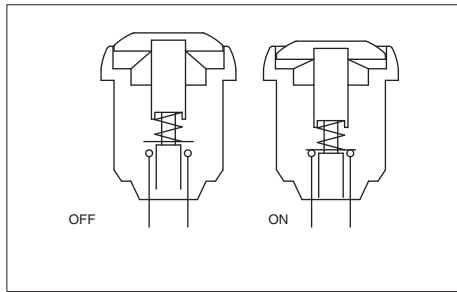
LOS : super red - LOY : yellow - LOG : green - LOB : blue

IR series

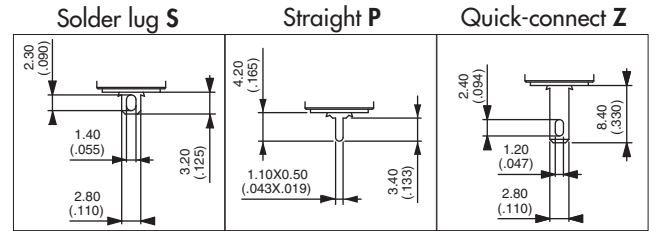
New!

Sealed pushbutton switches - bushing Ø 16 mm - latching

Square - non-illuminated



- Gold plated contacts



MODEL STRUCTURE



B

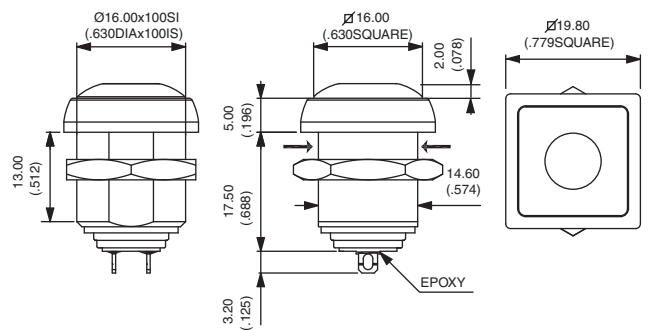
Solder lug terminals



Curved actuator
IRC154

OFF - ON

→ Flat



Also available with straight PC terminals : **IRC1P4**
& quick-connect terminals : **IRC1Z4**.

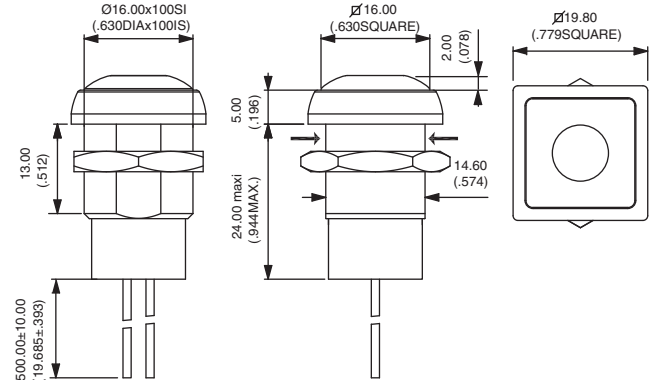
Sealed flying lead terminals



Curved actuator
IRC1F4

OFF - ON

→ Flat



ACTUATOR COLOUR



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH



2 : black (standard)

IA series

Low profile pushbutton switches for harsh environments - bushing Ø 16 mm - momentary

Distinctive features - Specifications - Overview



- Resistant to frost, sand and hydrocarbons
- Tactile feedback
- Front panel sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing (see drawing opposite) : IP67
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -20°C to +65°C

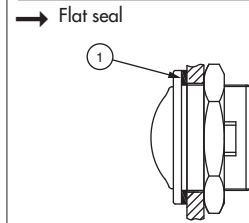
ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 24VDC
- Initial contact resistance : 100mΩ max.
- Insulation resistance : 100 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms
- Electrical life at full load : 1.000.000 cycles
- Panel thickness : 7 mm (.276) max.
- Total travel : 1,5 mm (.059) +/- 0,3 mm
- Typical operating force : 7N +/- 2N
- Mechanical life : 1.000.000 cycles
- **Torque : 0,5 to 1Nm max. applied to nut**

MATERIALS

- Case/bushing : thermoplastic
- Actuator : polyurethane
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm².
- Terminal seal : epoxy

PANEL MOUNTING



IA						
SERIES	Actuator shape	Electrical function	Terminals	Contacts	Acuator colours	Case colour
	R round	3 Normally open (NO) 5 NC/NO combined	F Flying leads	1 Silver, gold plated	1 Blue 2 Black 3 Green 5 Yellow 6 Red 7/1 White 9 Orange	00 Black

Dimensions : First dimensions are in mm while inches are shown as bracketed numbers.



A **sealing boot** is available to protect the switches against frost and sand. See end of this catalogue.



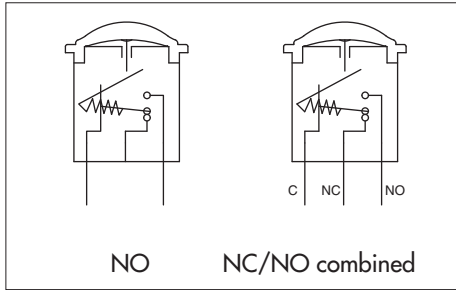
Mounting accessories : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal. Knurled nut U3327 available on request.



Packaging unit : 25 pieces

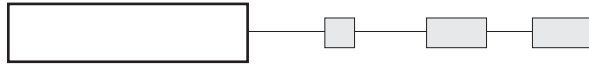
IA series

Low profile pushbutton switches for harsh environments - bushing Ø 16 mm - momentary



- Panel cut-out Ø 16,2 mm (.657)
- Min. pitch for matrix mounting :
 - with standard hex nut : 27 x 27 mm (1.062 x 1.062)
 - with knurled nut U3327: 20 x 20 mm (.787x.787)

MODEL STRUCTURE



NO model has 2 terminals only.

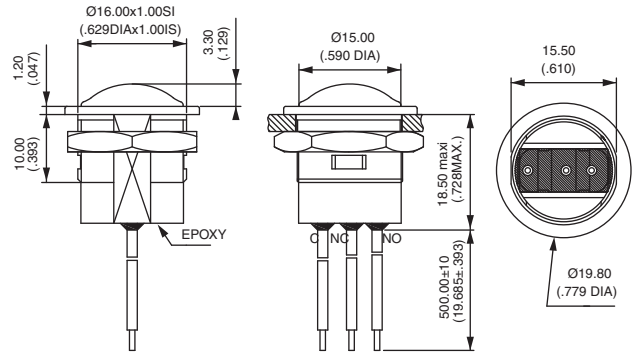
Models



Normally open (NO)
IAR3F



NC/NO combined
IAR5F



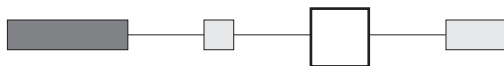
Wire colours (NC/NO) : black = common, brown = NC, blue = NO

CONTACT MATERIAL



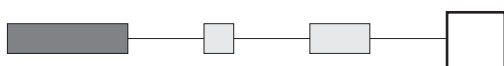
1 Silver, gold plated

ACTUATOR COLOUR



1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 9 : orange

CASE COLOUR



00 : black

"I" range

Sealed pushbutton switches IP-IB-IS-IZ-IR-IA

Sealing features

Degree of protection provided by the enclosures of electric appliances according to IEC 60529, DIN 40050 and NFC 20-010.

SEALING IP67

IP

(Ingress Protection)

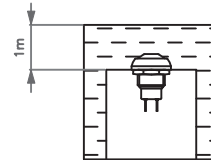
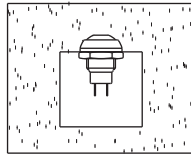
6

Totally protected against dust

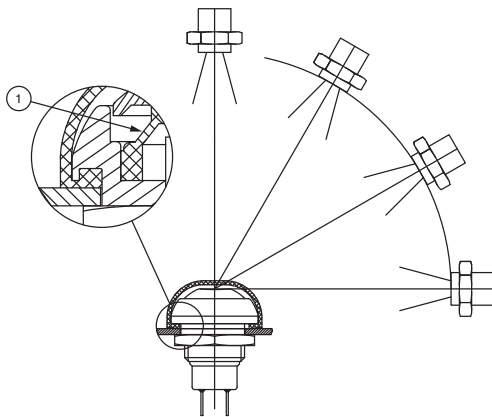
7

Protected against the effects of immersion up to 1 m water (30 mn)

The illustrations show non-illuminated models.



SEALING IP69K



High pressure, high temperature wash down

IP69K test conditions

- Pressure : 80 - 120 bars
- Distance : 15 cm
- Temperature : 80°C ± 5°C
- Flow : 14 - 16 l/mn
- Duration : 30 seconds per position

① Elastomeric membrane

ADDITIONAL SEALING FOR IP-IB-IS SERIES

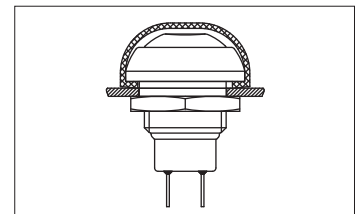
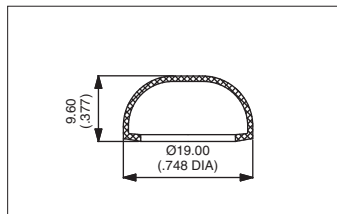
For ROUND plungers only, illuminated or non-illuminated.

By silicone boot for protection against frost and abrasion by sand. Order separately.

- transparent : **U5125**
- blue : **U5125-1**
- black : **U5125-2**
- red : **U5125-6**

Operating temperature : -40°C to +85°C
Life expectancy : 500.000 cycles

Note : the flat seal should not be used in this case.

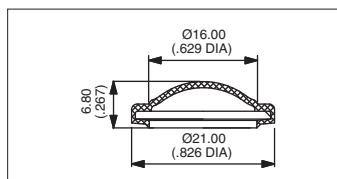


ADDITIONAL SEALING FOR IA SERIES

By silicone boot. Order separately.

- Black : **U6602**
- Yellow : **U6605**
- Red : **U6606**

Operating temperature : -40°C to +85°C
Life expectancy : 1.000.000 cycles



IF series

Sealed pushbutton switches with Ø 25 mm actuator - bushing dia. 16 mm

- Can be operated with gloved hands
- Snap-in and threaded bushing models
- Resistant to frost
- Sealed to IP54 or IP67

ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
400mA 32VAC - 100mA 50VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 VAC rms. between terminals and frame
1.500 VAC between terminals
- Electrical life at full load : 500.000 cycles
- Panel thickness :
- Snap-in models : 0,8 mm (.031) min. - 2,5 mm (.098) max.
- Threaded bushing models : 0,8 mm (.031) min. - 5 mm (.196) max.
- Total travel : 4 mm (.157)
- Typical operating force : 6,5 N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 seconds

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : polyamide 12, rubber filled
- Bushing/bezel : polyamide 6/6
- Contacts : solid silver, gold plated
- Terminal seal : epoxy

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing (switches mounted on panel) :
. IP67 (threaded bushing models)
. IP54 (snap-in models)
- Operating temperature :
-20°C to +85°C

IF

SERIES

Mounting

- B** Snap-in
- S** Threaded bushing

Electrical function

- 3** Normally open (NO)

Terminals

- Z1** Quick-connect or solder
2,8 x 0,5 mm

Contacts

- AD** Solid silver, gold plated

Actuator colour

- | | |
|----------------------|------------------|
| 1 Blue | 5 Yellow |
| 1/4 Dark blue | 6 Red |
| 2 Black | 7/1 White |
| 3 Green | 9 Orange |
- Grey RAL7040 : on request

Case colour


- 00** Black
- 20** Red

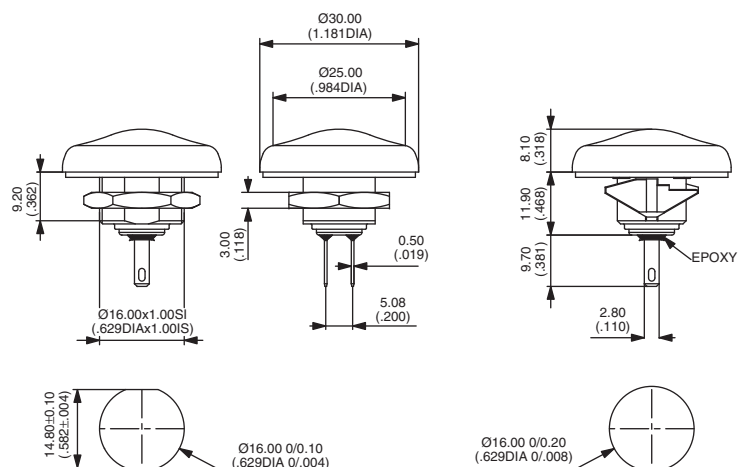
Models




Snap-in
IFB3Z1AD  NO



Threaded bushing
IFS3Z1AD  NO



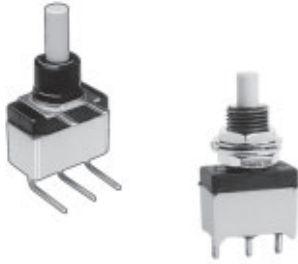
 **Mounting accessories** : Standard hardware supplied : 1 flat seal (IFB series)
1 flat seal and 1 hex nut 19 mm (.748) across flats (IFS series) . The hex nut is presented in section I (part number 10-621).

 **Packaging unit** : 20 pieces

SP series

Washable snap-action pushbutton switches

Distinctive features and specifications



❑ Process sealed

- Secure assembly of the two case parts
- Internally sealed bushing
- Epoxy sealed terminals

❑ Process compatible (plain bushing models)

- Wave solderable
- Washable

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - gold plated brass contacts : 100mA 30VDC
 - silver or gold plated silver contacts : 1A 120VAC - 1A 30VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1.000 MΩ min.
- Dielectric strength : 1.000 Vrms 50 Hz min.
- Electrical life : 60.000 cycles

MATERIALS

- Case and cover : UL94-V0, polyamide, glass filled or PES
- Actuator : polyamide, glass filled
- Contacts
 - 0 : brass, gold plated
 - 1 : silver
 - 2 : silver, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Torque : 0,25 Nm (.18 Ft.lb) applied to nut (threaded bushing)
- Total travel : 0,50 mm (.019)
- Mechanical strength :
 - Terminals are strengthened by a bracket or a ground plate ensuring the rigidity of the switch on the board. Actuator strength is 10N max.
- Operating temperature : -20°C to +85°C
- Storage temperature : -40°C to +85°C
- Moisture :
 - The insulating materials employed and the complete seal permit the switches to withstand a 56 days moisture test (IEC 68-2-3).
- Soldering - thermal shock (plain bushing models only) :
 - The switches are especially designed for flow soldering at 260°C during 5 seconds owing to high temperature polymer parts.
- Iron soldering (threaded bushing models) : 300°C max., 5 seconds max.
- Solderability : The switches are tested at 235°C according to IEC 68-2-20 after accelerated aging.

AGENCY APPROVAL



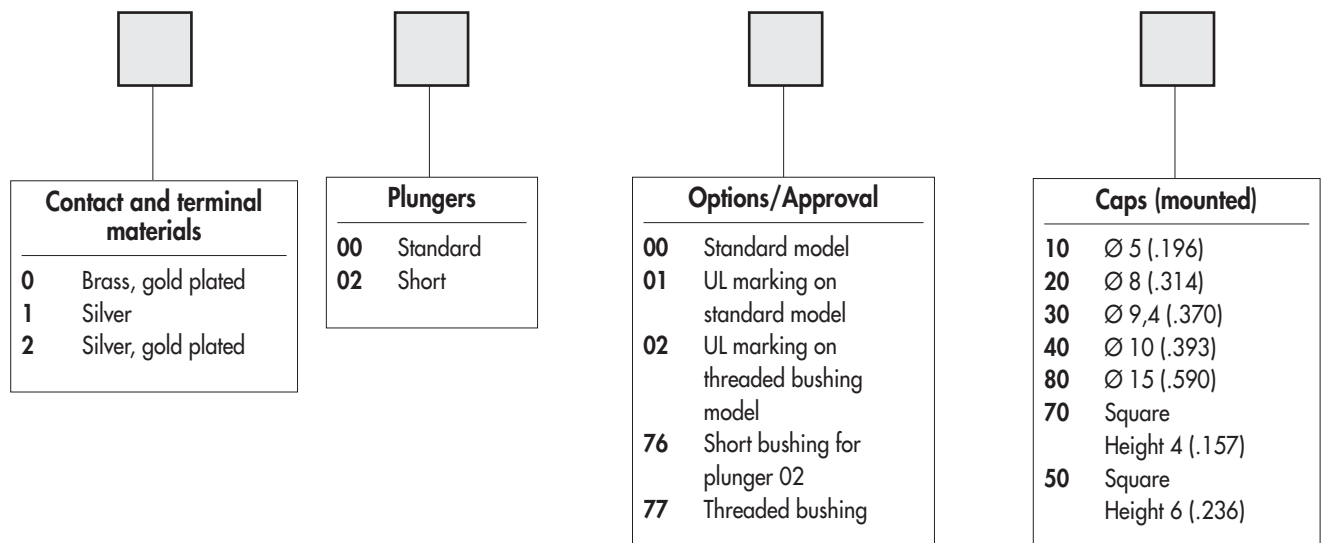
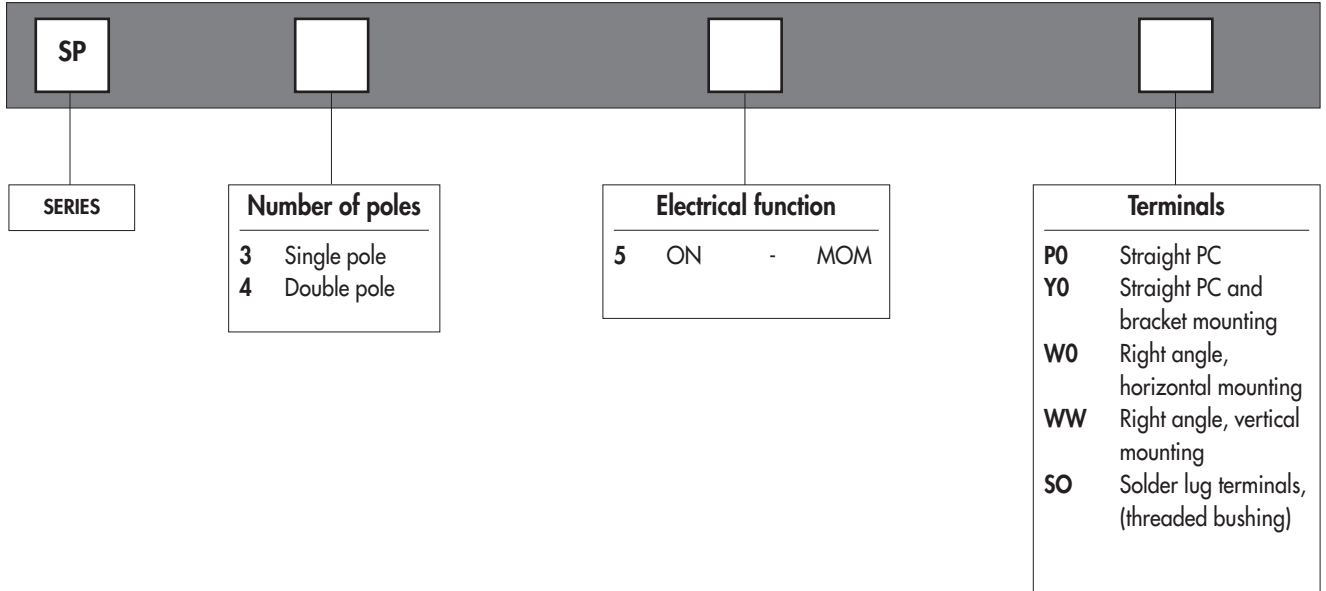
Availability : all models with silver or gold plated silver contacts.

Marking : to order switches marked UL , complete appropriate box of ordering format.

SP series

Washable snap-action pushbutton switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as above

Specifications are on previous page.

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



Mounting accessories : standard hardware supplied with all models with Ø 6,35 (1/4) threaded bushing :

2 hex nuts 8 mm (.314) across flats, 1 locking ring and 1 lockwasher.

Standard and special hardware available are presented in section I.



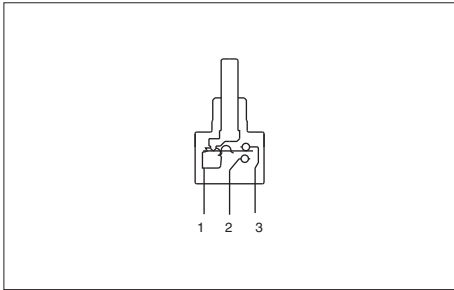
Packaging unit : 25 or 50 pieces depending on model.



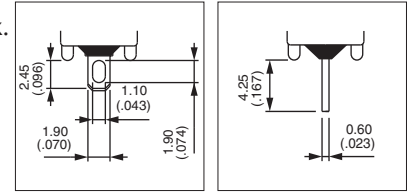
SP series

Washable snap-action pushbutton switches

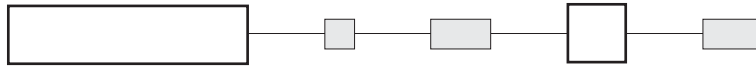
Plain or threaded bushing



- Solder lug, straight PC or right angle terminals
- Features of threaded bushing models :
 - max. torque : 0,25 Nm (.18 Ft.lb)
 - iron soldering : 300°C max., 5 seconds max.
- 1 and 2 pole configurations



MODEL STRUCTURE



Shown with standard plunger

Plain bushing - straight PC terminals

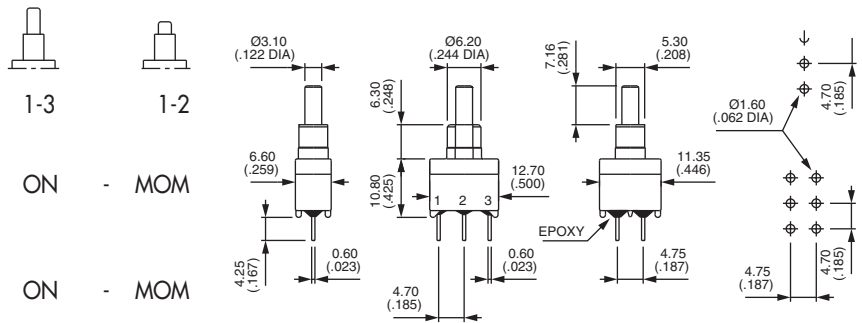


Single pole

SP35P0... 00

Double pole

SP45P0... 00



Plain bushing - bracket mounting

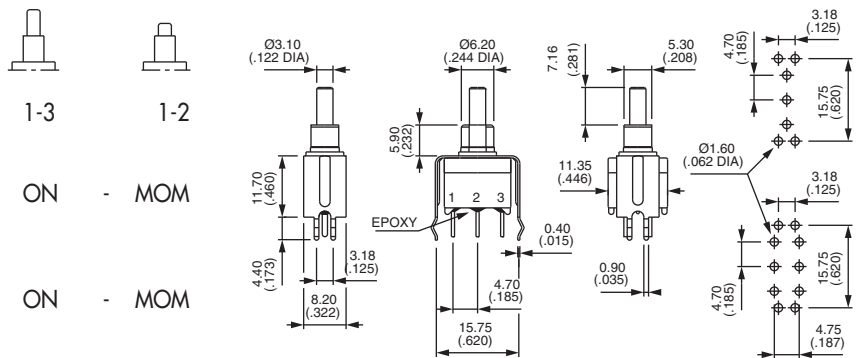


Single pole

SP35Y0... 00

Double pole

SP45Y0... 00



Plain bushing - right angle terminals - horizontal

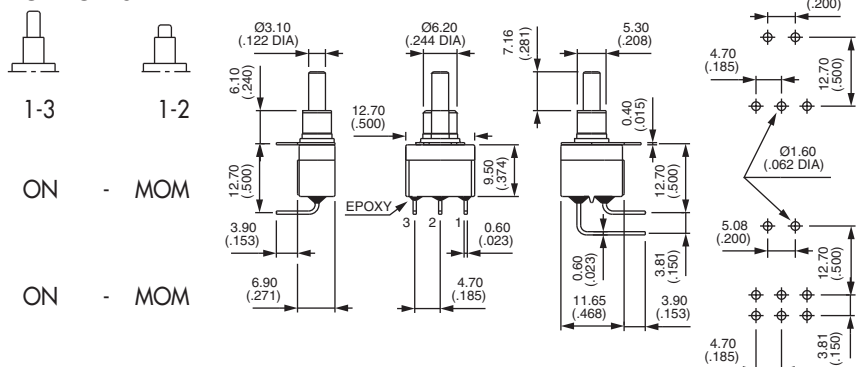


Single pole

SP35W0... 00

Double pole

SP45W0... 00



SP series

Washable snap-action pushbutton switches

Plain or threaded bushing



Shown with standard plunger

Plain bushing - right angle terminals - vertical



Single pole

SP35WW... 00

Double pole

SP45WW... 00



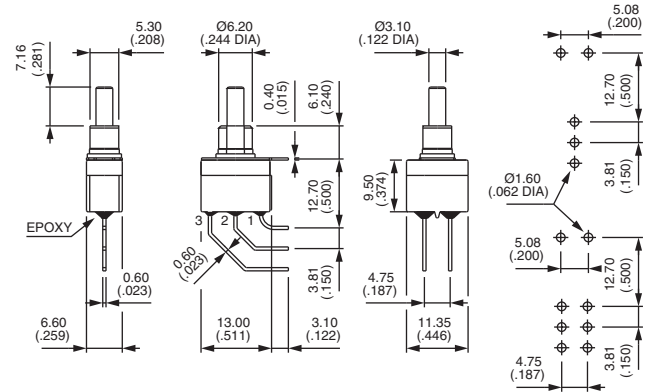
1-3



1-2

ON - MOM

ON - MOM



Threaded bushing - solder lug terminals

→ Keyway



Single pole

SP35S0... 77

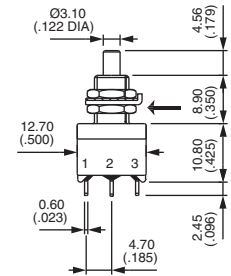
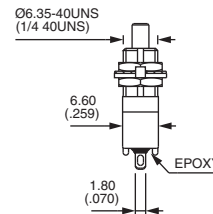


1-3



1-2

ON - MOM



Threaded bushing - straight PC terminals

→ Keyway



Single pole

SP35P0... 77

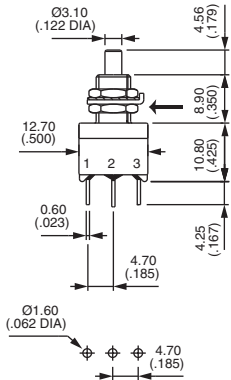
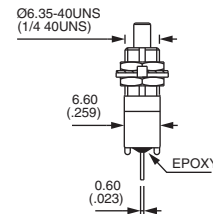


1-3

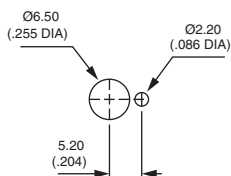


1-2

ON - MOM



PANEL CUT-OUT

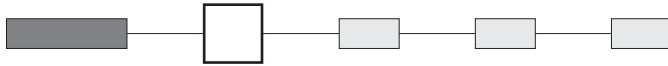




SP series

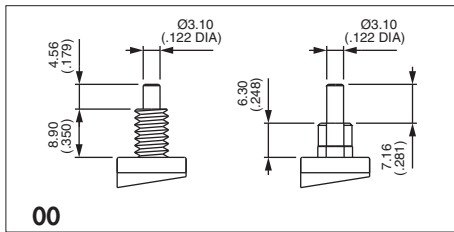
Washable snap-action pushbutton switches

CONTACT AND TERMINAL MATERIALS

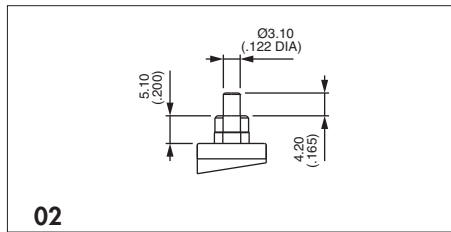


- 0 Brass, gold plated
- 1 Silver
- 2 Silver, gold plated

PLUNGERS

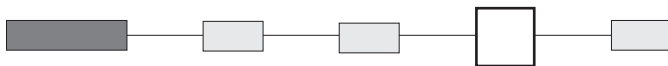


00
Standard plunger



02
Short (for models with plain bushing, single pole only)
Order with option 76 below.

OPTIONS / AGENCY APPROVAL



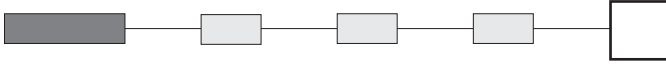
- 00 Standard model
- 01 UL marking for standard model
- 02 UL marking for threaded bushing model (single pole models only)
- 76 Short plain bushing for 02 plunger (single pole models only)
- 77 Threaded bushing (included in model numbers on previous page)

SP series

Washable snap-action pushbutton switches

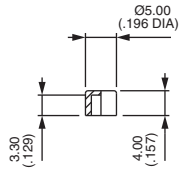


CAPS

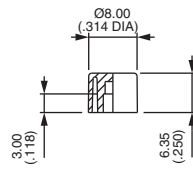


Blank Without cap

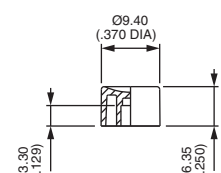
10
P/N U2400



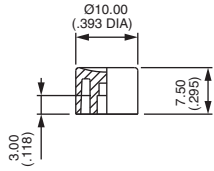
20
P/N U2510



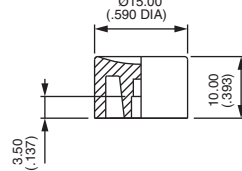
30
P/N U2130



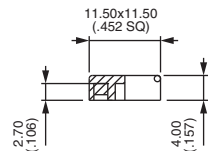
40
Standard - P/N U2900



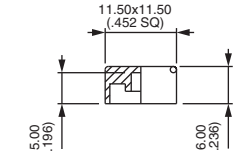
80
P/N U3400
Not available with plunger 02



70
Square - P/N U910



50
Square - P/N U2340
Not available with plunger 02



Cap colours	
Replace last "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange

To order caps separately, use their P/N (U...) (for threaded bushing order only separately).

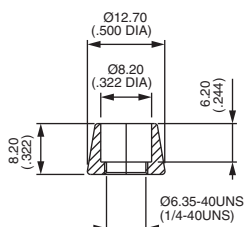
DRESS NUTS

Chrome plated

For threaded bushing models only.

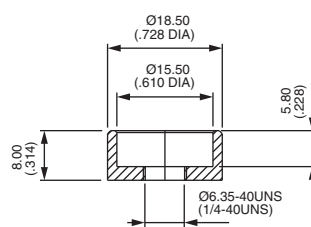
U1636

For cap U2510



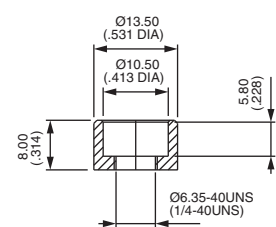
U825

For cap U3400



U840

For cap U2900



Dress nuts are to be ordered separately.

8000 series

Momentary or alternate action pushbutton switches

Distinctive features and specifications



□ Bushing \varnothing 6,35 (1/4) and \varnothing 11,9 (15/32)

□ UL approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts : 3A 250VAC - 6A 125VAC - 4A 30VDC
 - gold plated contacts : 0,4VA max. 20VAC or DC
- Initial contact resistance : 10 m Ω max.
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 30.000 cycles at full load

MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Housing : stainless steel
- Contacts
 - A : silver
 - AD : silver, gold plated
 - CD : brass, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Torque : 1,25 Nm (.922 Ft.lb) max. applied to nut
- Total travel : 2,70 mm (.106)
- Operating temperature : -40°C to +85°C

AGENCY APPROVAL



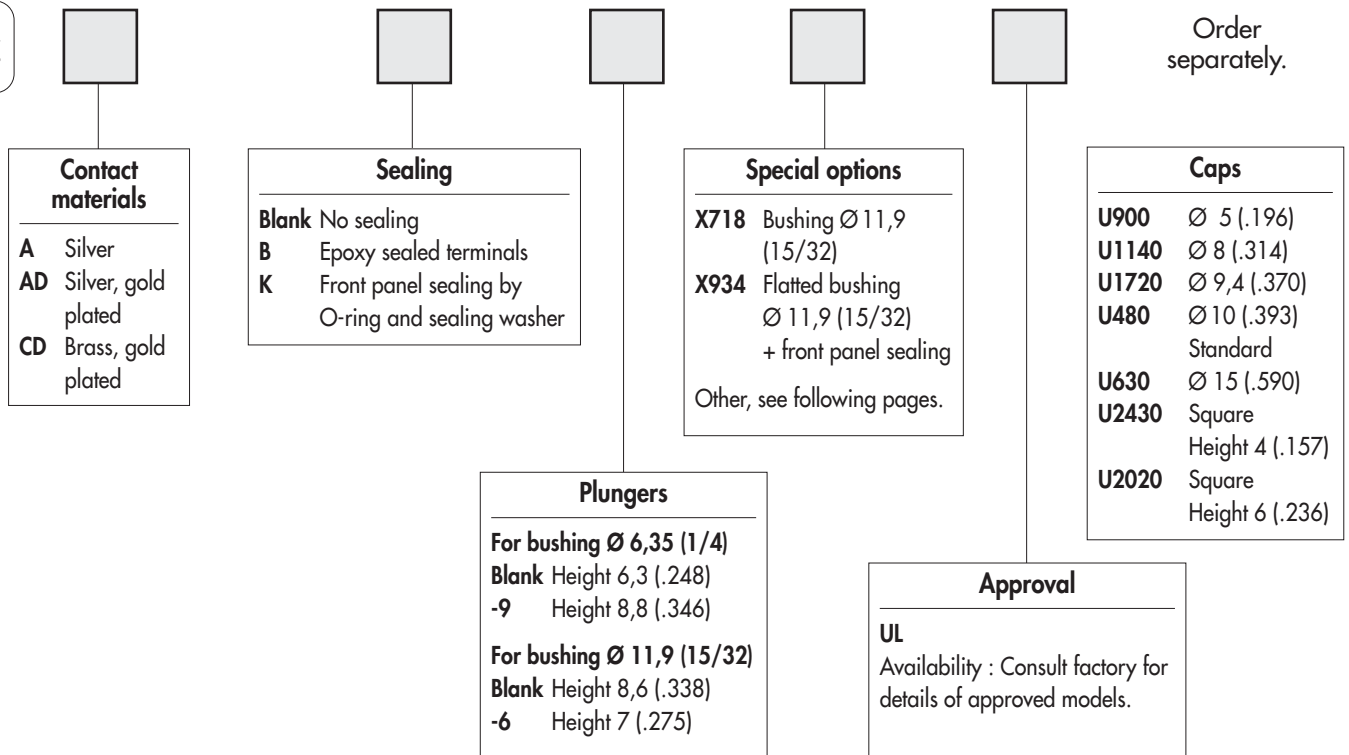
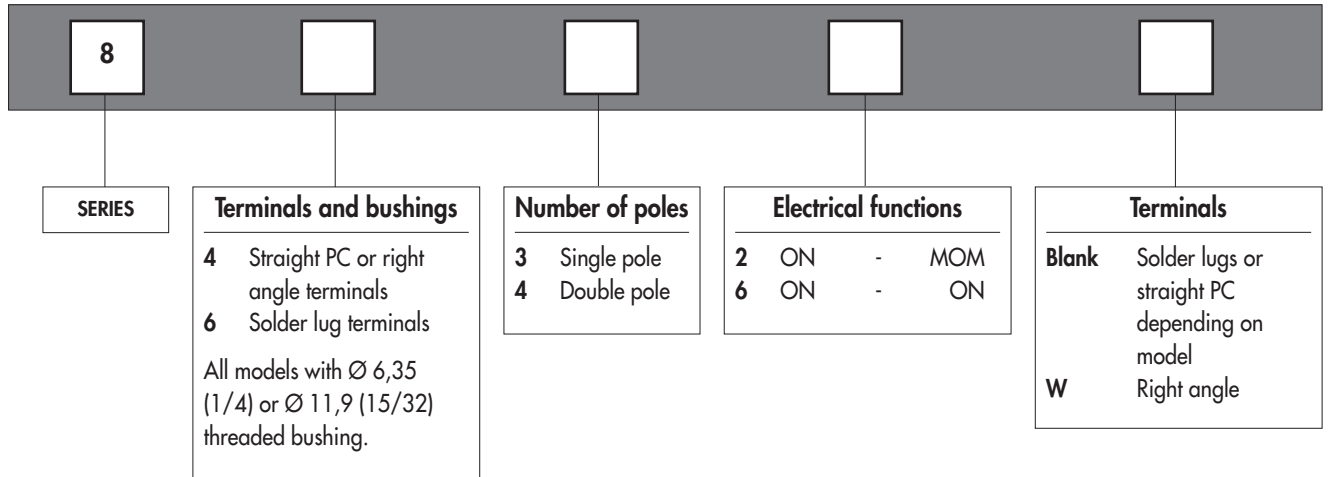
Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete appropriate box of ordering format.

8000 series

Momentary or alternate action pushbutton switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart

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



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 2 hex nuts 8 mm (.314) across flats, 1 locking ring and 1 lockwasher. Standard and special hardware available are presented in section I.



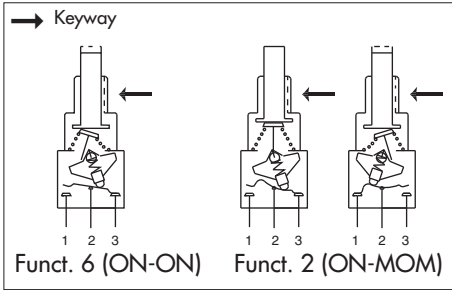
Packaging unit : 50 pieces, except 8000W (25 pieces).



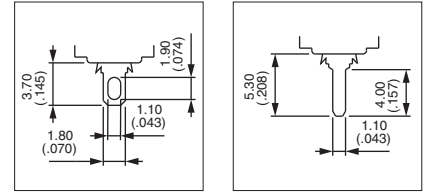
8000 series

Momentary or alternate action pushbutton switches

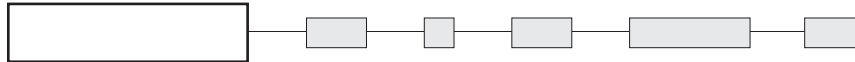
Threaded bushing $\varnothing 6,35 (1/4)$



- Solder lug, straight PC or right angle terminals
- 1 and 2 pole configurations
- Button returns in upper position after actuation.



MODEL STRUCTURE



Shown with standard plunger

Solder lug terminals : 8600



Single pole
8632
8636

Double pole
8642
8646



ON

MOM

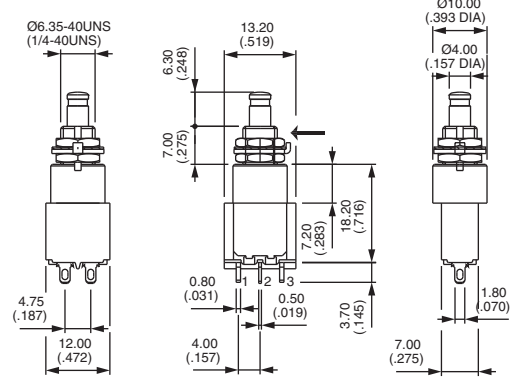
2-3

1-2

ON

MOM

→ Keyway



Straight PC terminals : 8400



Single pole
8432
8436

Double pole
8442
8446



ON

MOM

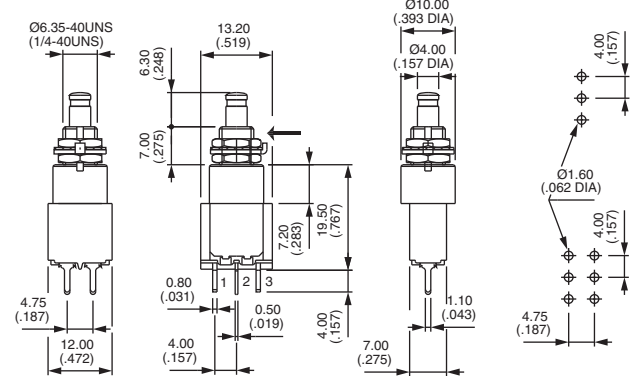
2-3

1-2

ON

MOM

→ Keyway

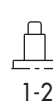


Right angle terminals - horizontal : 8400W



Single pole
8432W
8436W

Double pole
8442W
8446W



ON

MOM

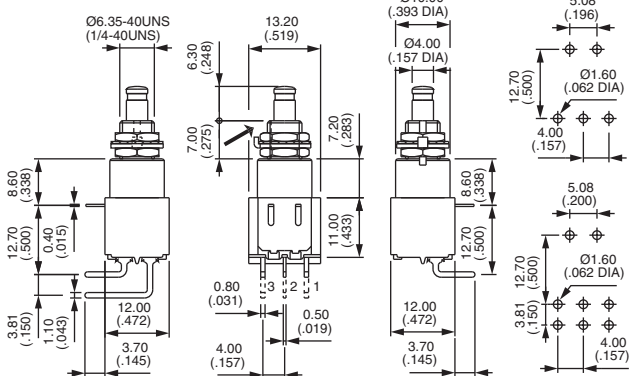
2-3

1-2

ON

MOM

→ Keyway

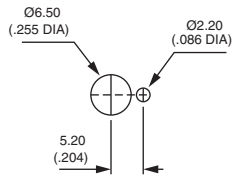


8000 series

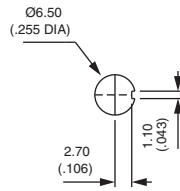
Momentary or alternate action pushbutton switches



PANEL CUT-OUT



Standard



With K sealing option

B

CONTACT MATERIALS



- A Silver
- AD Silver, gold plated
- CD Brass, gold plated

SEALING



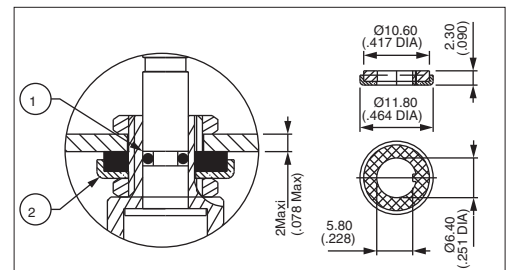
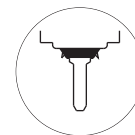
Blank No sealing

B Epoxy sealed terminals

K Front panel sealing by one O-ring and sealing washer. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

KB Combined sealings

Sealing boot : see section H.



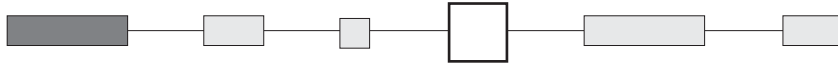
- ① O-ring
- ② Sealing washer



8000 series

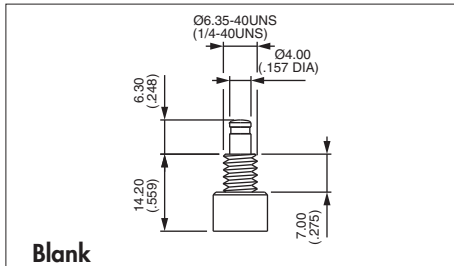
Momentary or alternate action pushbutton switches

PLUNGERS

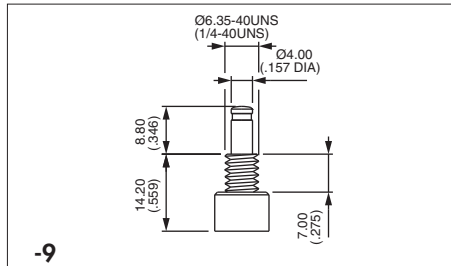


For $\varnothing 6,35$ (1/4) bushing

Dash compulsory before plunger code.

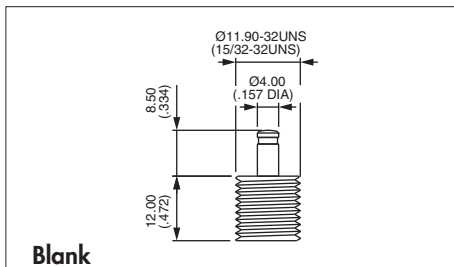


Blank
Standard

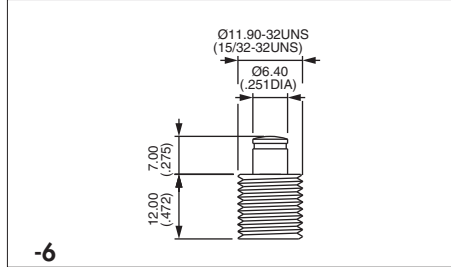


-9

For $\varnothing 11,9$ (15/32) bushing (X718 models)

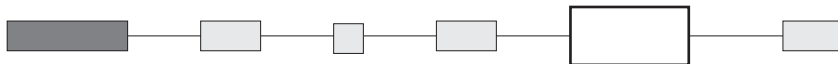


Blank



-6

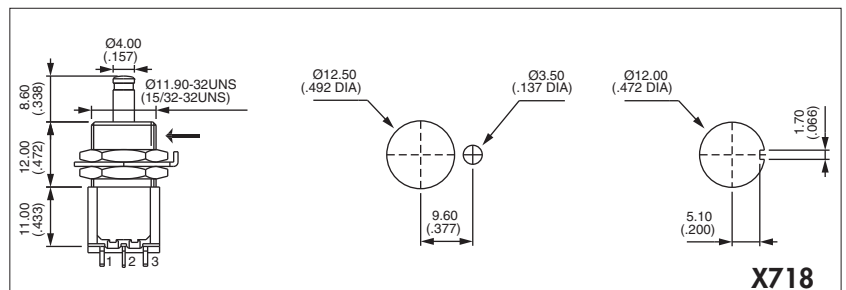
SPECIAL OPTIONS



X601 Silver plated brass contacts
Current/voltage rating for an electrical life of 20.000 cycles :
0,2A 250VAC - 0,4A 125VAC - 0,5A 30VDC.
Minimum quantity : 5.000 pieces per model and shipment.

→ Keyway or flat

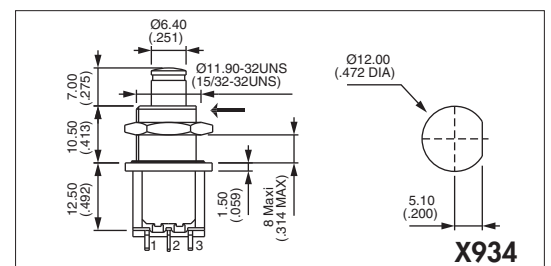
X718 Bushing $\varnothing 11,9$ (15/32)
For all basic models (solder lug straight PC or right angle terminals)
Available with plungers 13 and 6.
K sealing option available.



X718

X748 Snap-in mounting. Consult factory
Panel cut-out 15 x 12,5 (.59 x .492)

X934 Flatted bushing $\varnothing 11,9$ (15/32) + sealing by two O-rings
(for plunger -6 only)



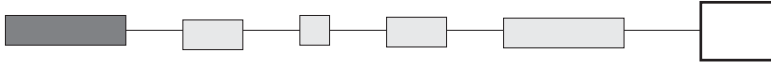
X934

8000 series

Momentary or alternate action pushbutton switches



APPROVAL



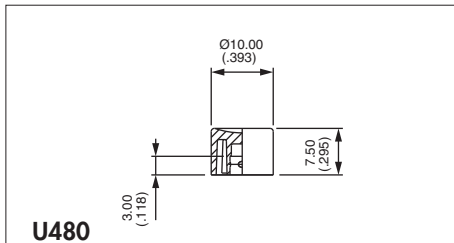
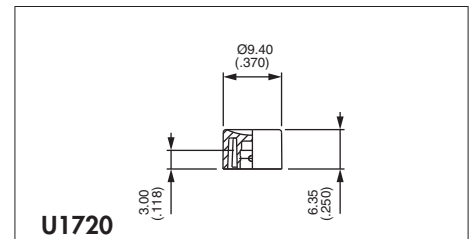
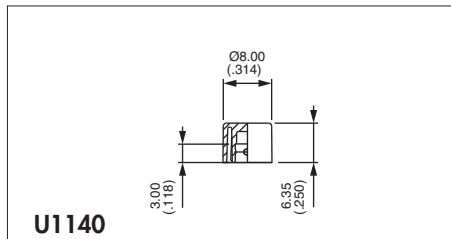
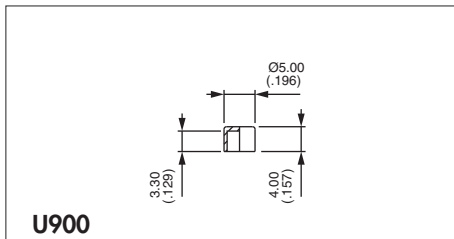
UL

Availability : consult factory for details of approved models.
Marking : to order switches marked UL, complete above box with "UL".

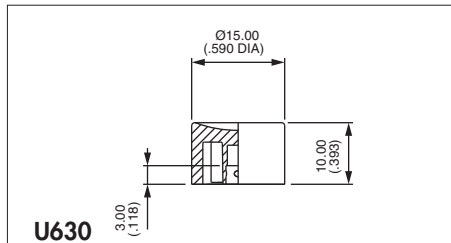
CAPS

Order separately.

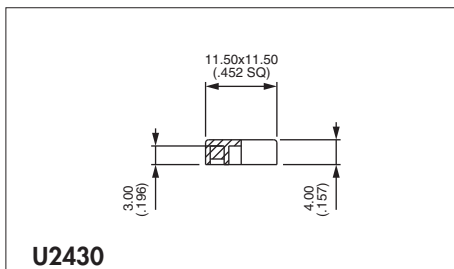
The caps below are for Ø 4 mm plungers (-13 and -9), except U2600.



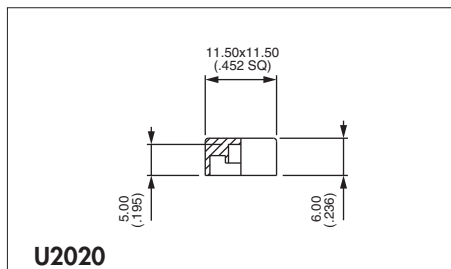
Standard



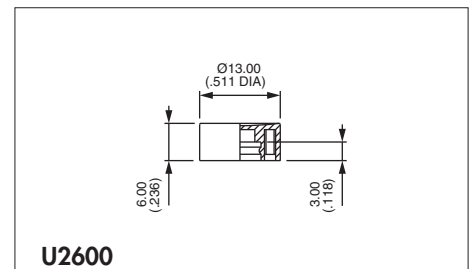
Cap colours	
Replace last "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange



Square



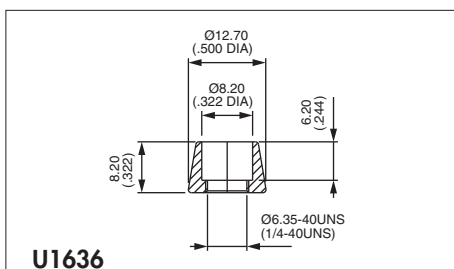
Square



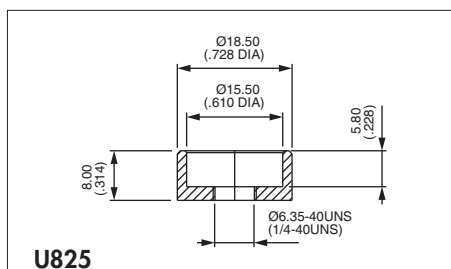
For large plunger -6 only.

DRESS NUTS

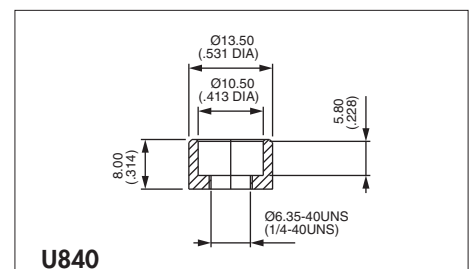
Chrome plated. Order separately.



For cap U1140



For cap U630



For cap U480

9000 series

Momentary pushbutton switches

Distinctive features and specifications



- Two case lengths
- Three electrical functions
- Sealing options
- Model X1146 with Ø 16 (.630) bushing

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contact (A) : 0,3A 250VAC - 0,6A 125VAC - 1A 30VDC
 - gold plated contacts (CD) : 100mA 30VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals
 - 1.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 250.000 cycles

MATERIALS

- Case : thermoplastique UL94-V0
- Actuator : polyamide, glass filled
- Bushing : brass, nickel plated
- Contacts :
 - A : silver
 - CD : brass, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Total travel :

9600-9400-9400Y		9600N-9400N
Functions 3 and 5	Function 2	Function 3
1,3 mm	2 mm	0,9 mm

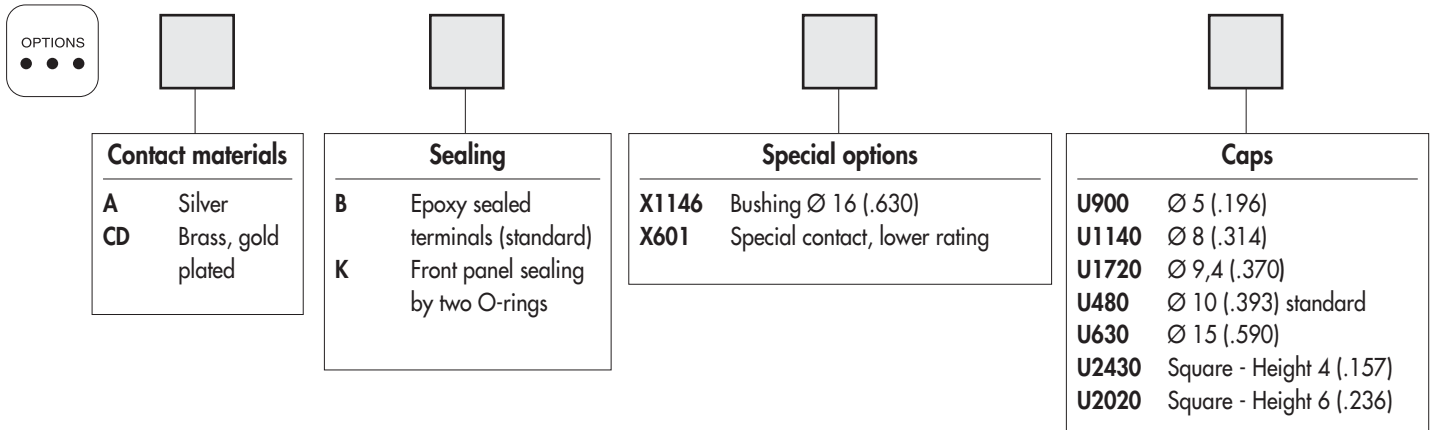
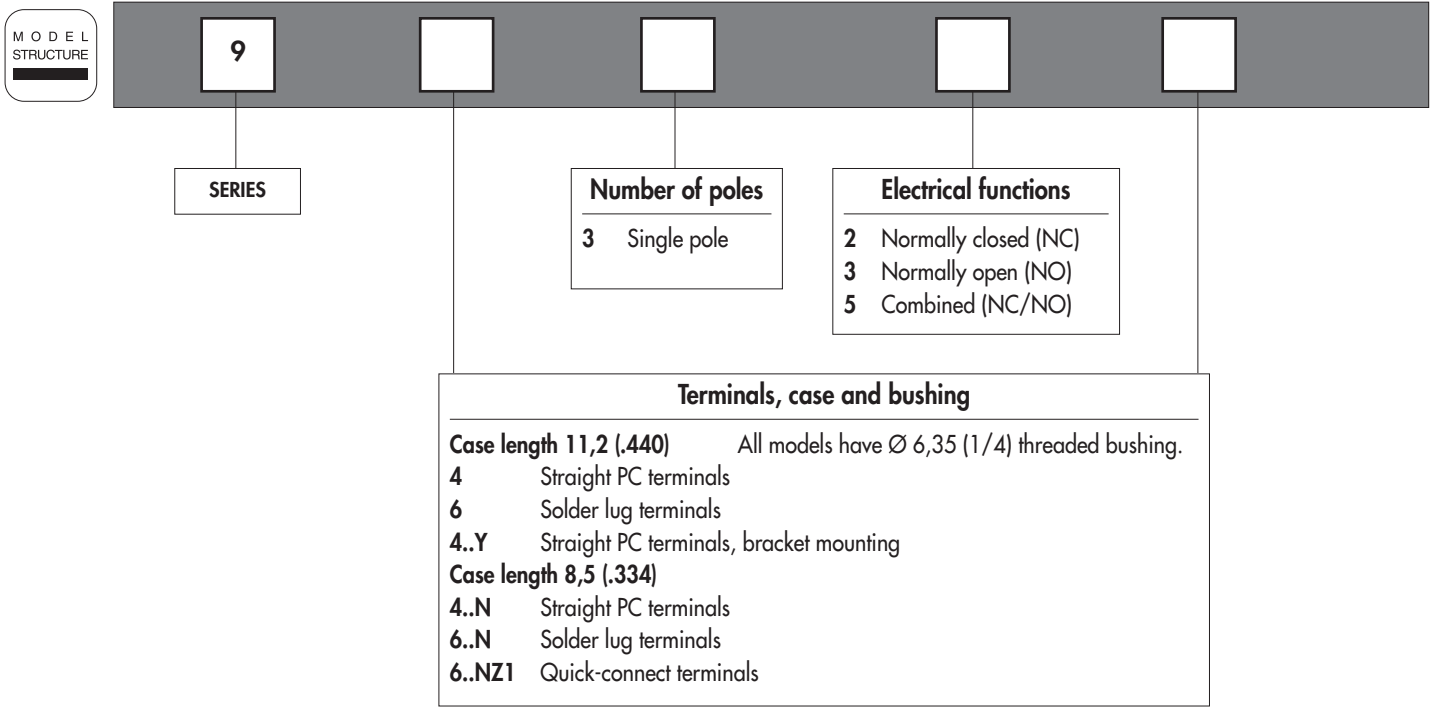
- Torque : 1,25 Nm (.922 Ft.lb) max. applied to nut
- Operating temperature : -30°C to +65°C

B

9000 series

Momentary pushbutton switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- their 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.



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all switches : 2 hex nuts 8 mm (.314) across flats and 1 lockwasher. Standard and special hardware available are presented in section I.



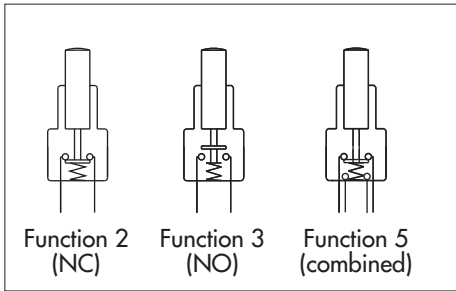
Packaging unit : 50 pieces, except for 9400Y (25 pieces)



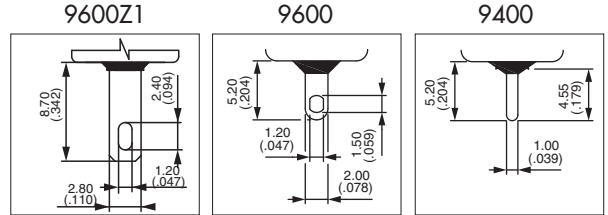
9000 series

Momentary pushbutton switches

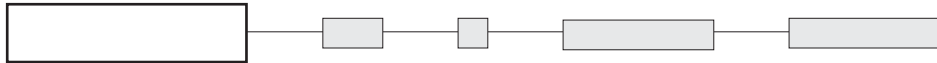
9600 - 9400 - 9400Y



- Single pole
- Solder lug or straight PC terminals
- Epoxy sealed terminals



MODEL STRUCTURE



Solder lug terminals - case length 11,2 (.440) : 9600

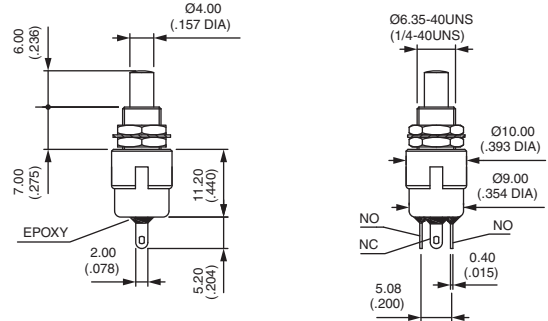


9632B

Normally Closed

9635B

Combined function



For Normally Open (function 3), see next page.

Straight PC terminals - case length 11,2 (.440) : 9400



9432B

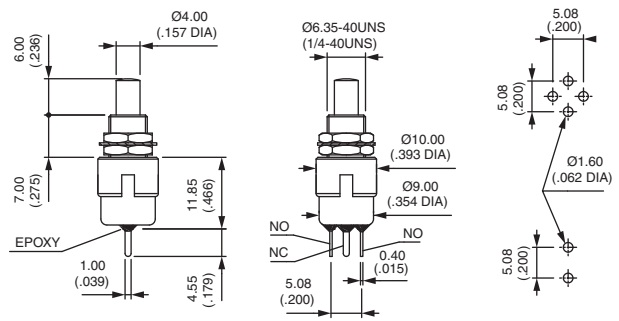
Normally Closed

9433B

Normally Open

9435B

Combined function



Bracket mounting - case length 11,2 (.440) : 9400Y



9432YB

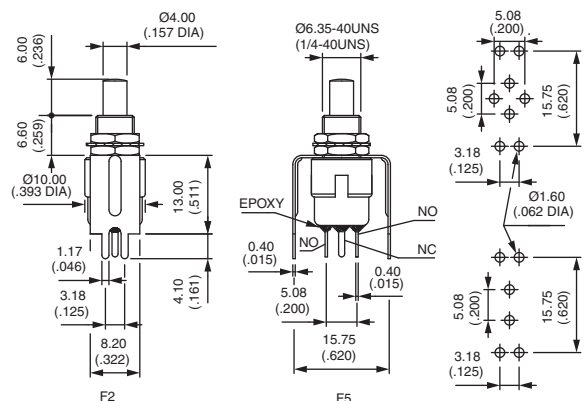
Normally Closed

9433YB

Normally Open

9435YB

Combined function

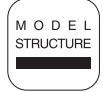


The bracket is not fastened to the switch.

9000 series

Momentary pushbutton switches

9600N - 9400N

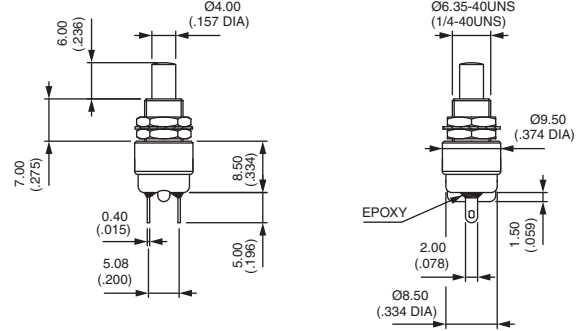


Solder lug terminals - case length 8,5 (.334) : 9600N



9633NB

Normally Open



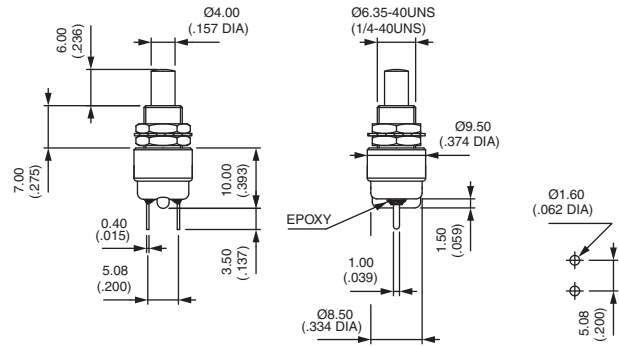
Also available with quick-connect terminals 2,8 x 0,5 mm : 9633NZ1

Straight PC terminals - case length 8,5 (.334) : 9400N

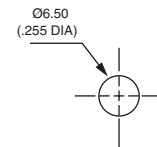


9433NB

Normally Open



PANEL CUT-OUT

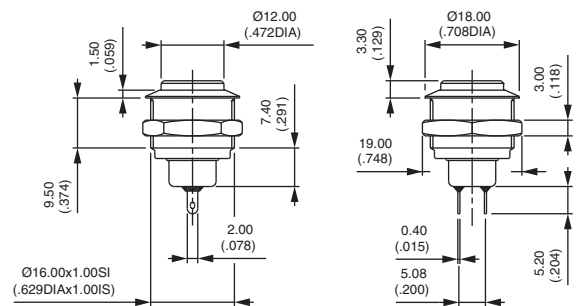


Bushing Ø 16 (.630) - metal button : 9633•X1146



Silver contacts
9633AX1146 Normally open

Gold plated silver contacts
9633ADX1146 Normally open



Panel cut-out : Ø 16,2 (.637)

Max. current/voltage rating. : 0,3A 250VAC - 1A 30VDC

Epoxy sealed terminals. Options of the following pages not applicable.

Hex nut 19 (.748) across flats



9000 series

Momentary pushbutton switches

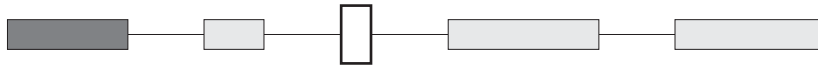
CONTACT MATERIALS



- A** Silver
- CD** Brass, gold plated

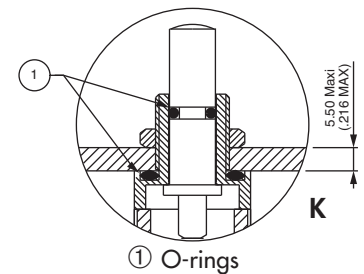
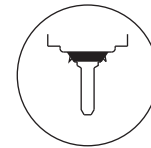
Special contact, lower rating : see X601 under "Special options".

SEALING



- B** Epoxy sealed terminals
- K** Front panel sealing by two O-rings. Protects the switch against water and dust. Panel seal withstands 0,1 bar pressure and remains tight even when switch is operated.
- KB** Combined sealings

Sealing boots : see section H.



SPECIAL OPTIONS



- X601** **Silver plated brass contacts**
 Current/voltage rating for an electrical life of 20.000 cycles :
 0,2A 250VAC - 0,4A 125VAC - 0,5A 30VDC.
 Minimum quantity : 5.000 pieces per model and shipment.

- X1146** **Model with dia. 16 (.630) bushing and metal plunger**
 See previous page.

9000 series

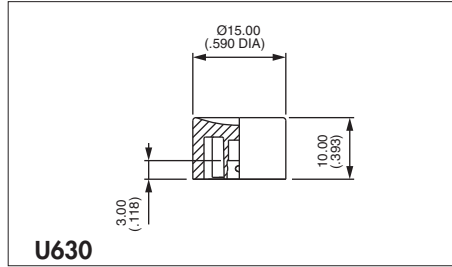
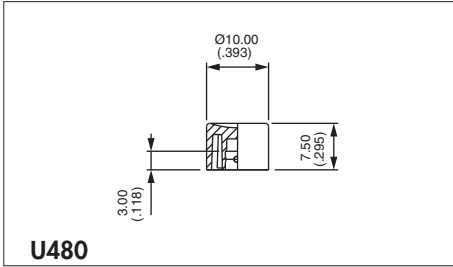
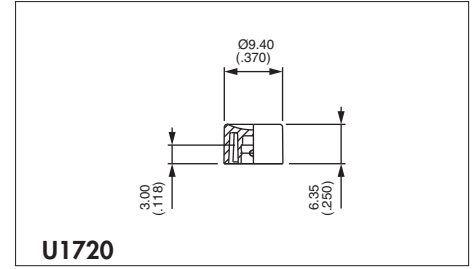
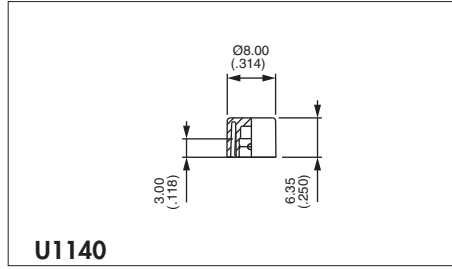
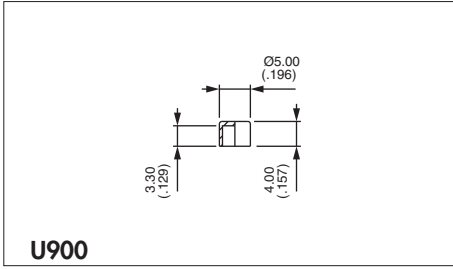
Momentary pushbutton switches

OPTIONS

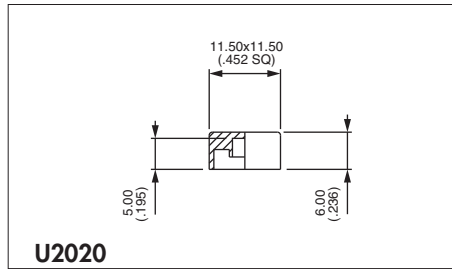
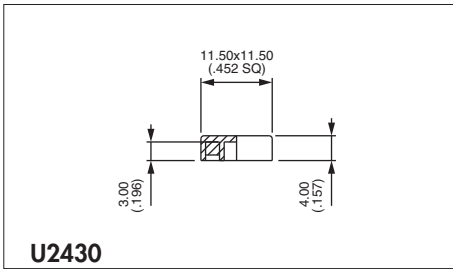
CAPS



B

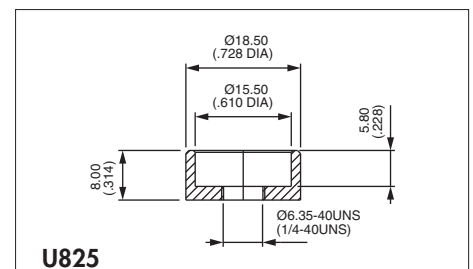
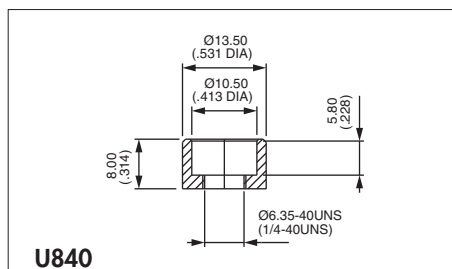
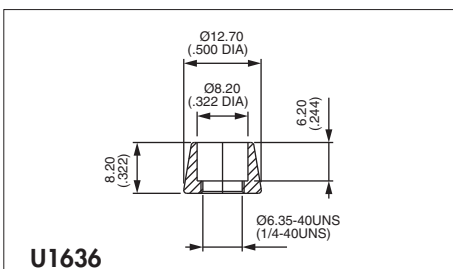


Cap colours	
Replace last "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange



DRESS NUTS

Chrome plated. Order separately.



9000 series

Alternate action or momentary pushbutton switches

Distinctive features and specifications

Bushing Ø 6,35 (1/4) and 11,9 (15/32)

Two electrical functions

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load and electrical life :
 - silver contacts (A) : 0,5A 250VAC - 1A 28VDC - 250.000 cycles
 1,5A 250VAC - 3A 28VDC - 10.000 cycles
 - gold plated contacts (CD) : 0,4VA 20V max. AC or DC
- Initial contact resistance : 10 mΩ max. at 0,1A 3VDC
- Insulation resistance : 10.000 MΩ min.
- Dielectric strength :
 1.000 Vrms 50 Hz min.

MATERIALS

- Case : diallylphthalate
- Actuator : nylon
 black for series 9630M
 white for series 9631
- Bushing : brass, nickel plated
- Contacts :
 A : silver
 CD : brass, gold plated
- Terminal seal : epoxy

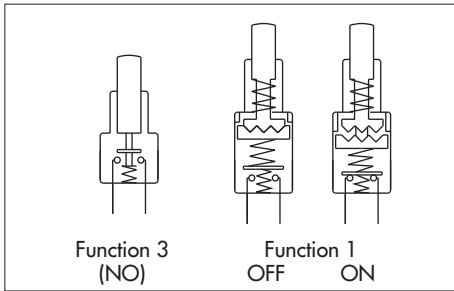
GENERAL SPECIFICATIONS

- Operating temperature : -30°C to +85°C
- Travels : see table below.

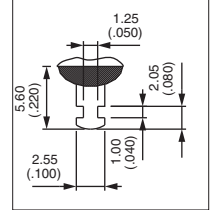
MODELS	9631	9633M
Total travel	3,48 (.137)	2,79 (.110)
Pre-travel	0,66 (.026)	-
Over travel	2,69 (.106)	0,51 (.020)

9000 series

Alternate action or momentary pushbutton switches



- Single pole
- Solder lug terminals
- Epoxy sealed terminals

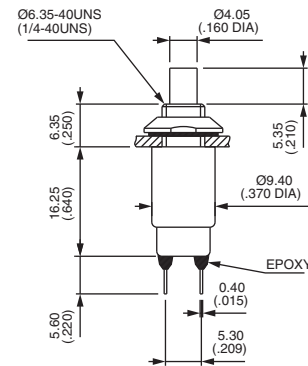


B

Bushing Ø 6,35 (1/4) - Alternate action - tactile feedback



Gold plated contacts 9631CDB	ON	-	OFF
Silver contacts 9631AB	ON	-	OFF

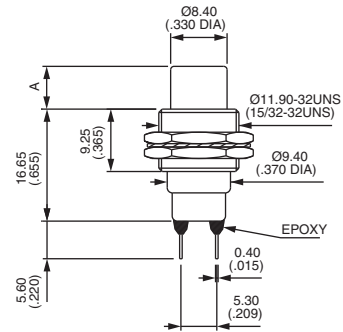


Standard hardware : 1 conic nut and 1 lockwasher

Bushing Ø 11,9 (15/32) - front or rear mounting - NO



9633MCDB		Normally open
-----------------	--	---------------



MODEL	A
9633M	6.35 (.250)

Standard hardware : 2 hex nuts 14 mm (.551) across flats and 1 lockwasher

10400 series

Professional pushbutton switches - threaded bushing Ø 10 (.393)

Distinctive features and specifications



☐ CECC approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
2A 220VAC - 3A 110VAC - 3A 24VDC
- Minimum load : 100µA 10mV
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
1.000 Veff. 50 Hz min. between terminals of the same pole
2.000 Veff. 50 Hz min. between terminals and frame
2.000 Veff. 50 Hz min. between terminals of adjacent poles
- Electrical life : 50.000 cycles

MATERIALS

- Case : diallyphthalate (DAP)
- Actuator : brass, chrome plated
- Bushing : brass, nickel plated
- Housing : brass, nickel plated
- Contacts :
- silver
- gold plated silver
- Terminal seal : epoxy

APPROVAL



CECC 96401-001

Availability : consult factory for details of approved models.

Marking : to order switches marked CECC, add "CECC" to model number.

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.106 Ft.lb)
max. applied to nut
- Operating temperature :
-40°C to +85°C
- Max. panel thickness :
3,5 mm (.138)

ABOUT THIS SERIES

Complete part numbers are shown on the following page.

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



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 knurled nut, 1 hex nut, 1 locking ring and 1 lockwasher. They are presented in section I.



Packaging unit : 25 pieces.

13000 series

Professional quick-break momentary pushbutton switches

Distinctive features and specifications



- PC and panel mount models
- Bushing \varnothing 6,35 (1/4) and 11,9 (15/32)
- UL and CECC approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A-AD2) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold plated contacts (CD) : 100mA 30V
- Minimum load (AD2-CD contacts) : 10mA 50mV, 10 μ A 5V min.
- Initial contact resistance : 10 m Ω max.
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between poles and between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :

Contacts	Max. current/voltage rating	Number of cycles
A	2A 250VAC - 4A 125VAC - 4A 30VDC	50.000
AD2	2A 250VAC - 4A 125 VAC - 4A 30VDC (gold plating : 100mA 30VDC max.)	20.000
CD	100mA 30VDC	50.000
	Low level or mechanical life	150.000

MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Housing : brass, nickel plated
- Contacts : **A** : silver
AD2 : silver, gold plated
 (2 micron gold)
CD : brass, gold plated
- Terminal seal : epoxy

Note : AD2 contacts can be used for high level applications. In this case, the gold layer is considered only as a protection against oxidation during storage.

GENERAL SPECIFICATIONS

- Torque : 1,25 Nm (.922 Ft.lb)
max. applied to nut
- Standard panel thickness : 2 mm (.078) max.
- Total travel : 2 mm (.078)
- Operating temperature :
-40°C to +85°C

13000 series

Professional quick-break momentary pushbutton switches

Specifications

RELIABILITY - RUN-IN TEST

Upon request, each individual switch can be submitted to a low level run-in test of 50 or 250 cycles to ensure suitability for special applications requiring a very high level of reliability (military, space, etc.).

AGENCY APPROVALS



CECC 96401-001

Designed to **MIL** specifications

Availability :

UL : all models with silver or gold plated silver contacts

CECC : consult factory for details of approved models.

Marking : to order switches marked UL or CECC, complete appropriate box of ordering format.

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



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 2 hex nuts 8 mm (.314) across flats, 1 locking ring and 1 lockwasher.

Standard and special hardware available are presented in section I.



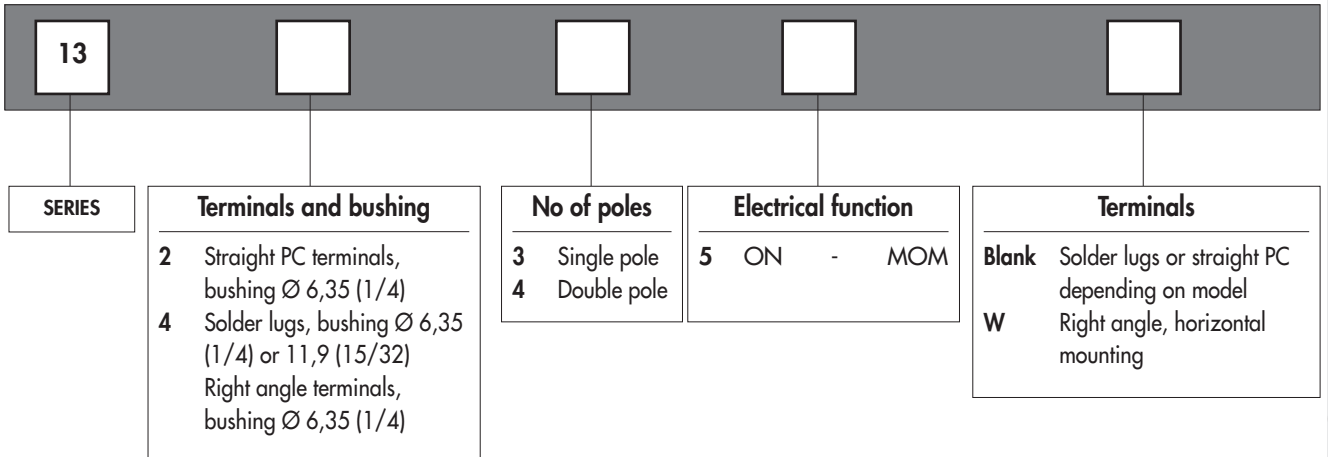
Packaging unit : 50 pieces.

13000 series

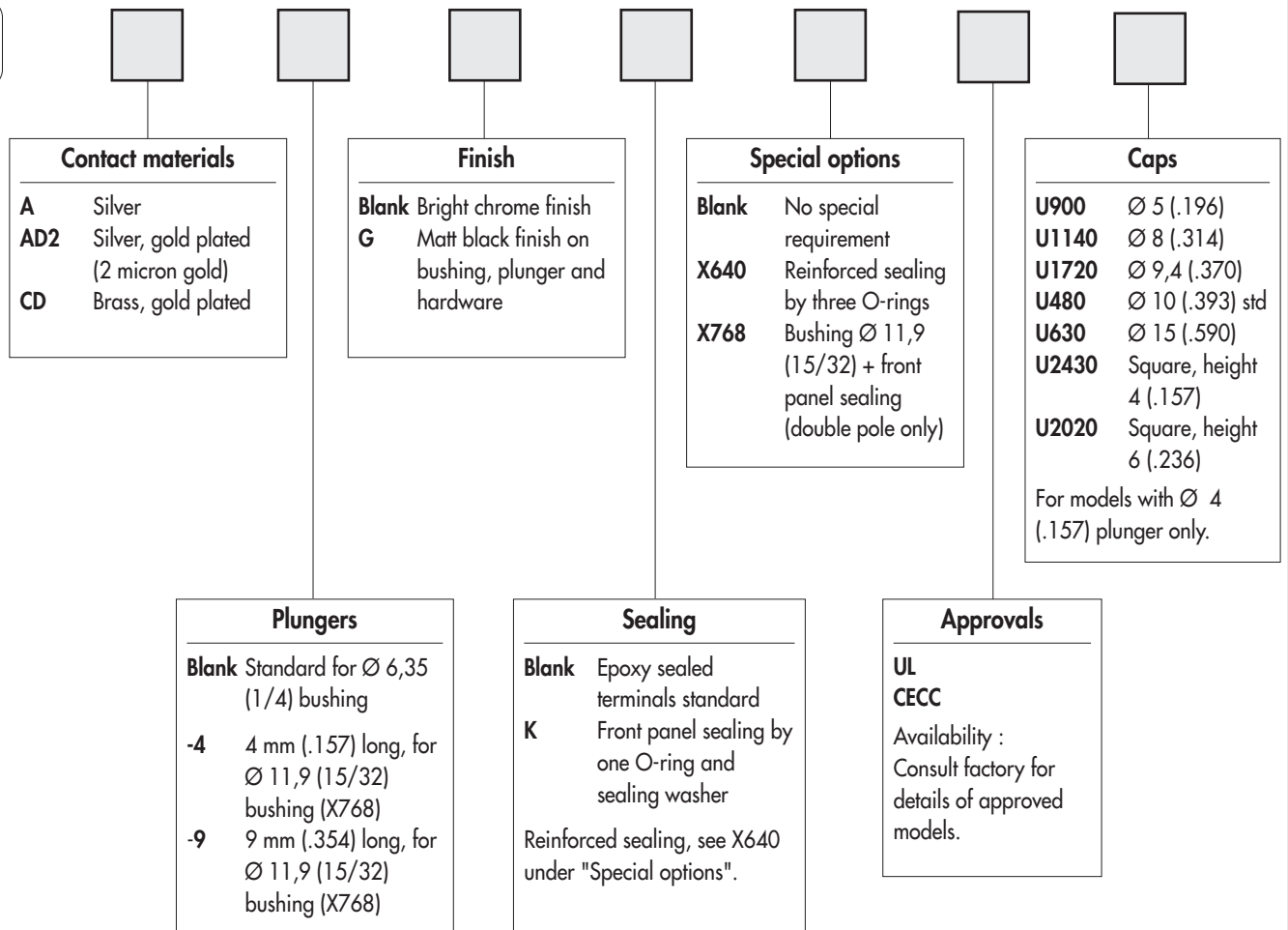
Professional quick-break momentary pushbutton switches

Overview

MODEL
STRUCTURE



OPTIONS



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

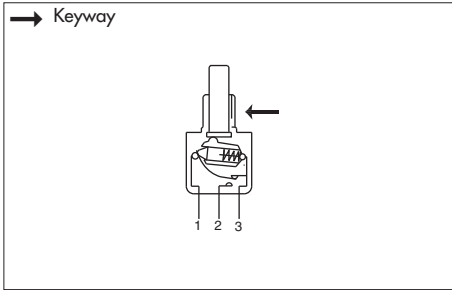
ABOUT THIS SERIES

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

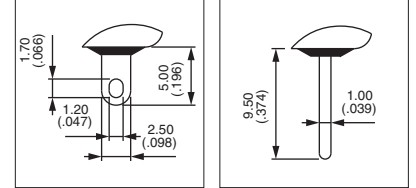
13000 series

Professional quick-break momentary pushbutton switches

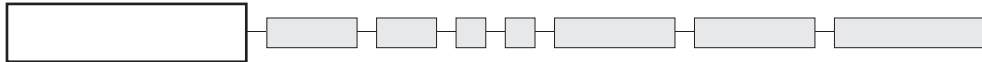
Solder lug terminals : 13400 - Straight PC terminals : 13200



- Threaded bushing $\varnothing 6,35$ mm (1/4)
- Epoxy sealed terminals standard



MODEL STRUCTURE



Solder lug terminals : 13400

→ Keyway



Single pole
13435

Double pole
13445



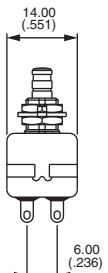
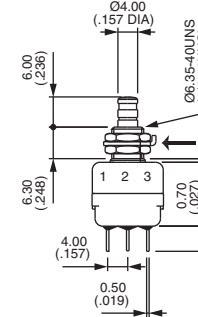
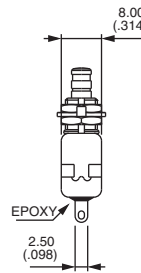
1-3

ON



1-2

MOM



Straight PC terminals : 13200

→ Keyway



Single pole
13235

Double pole
13245



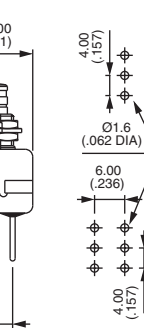
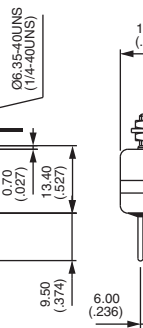
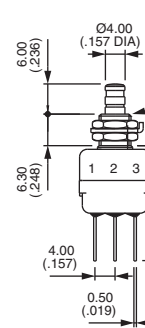
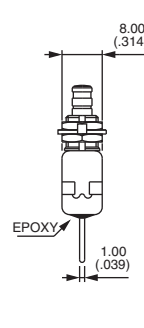
1-3

ON



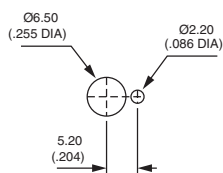
1-2

MOM

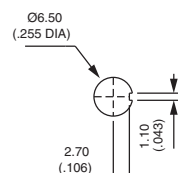


PANEL CUT-OUT

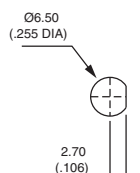
13400 - 13200



Standard



With K
sealing option



With X640
sealing option



13000 series

Professional quick-break momentary pushbutton switches

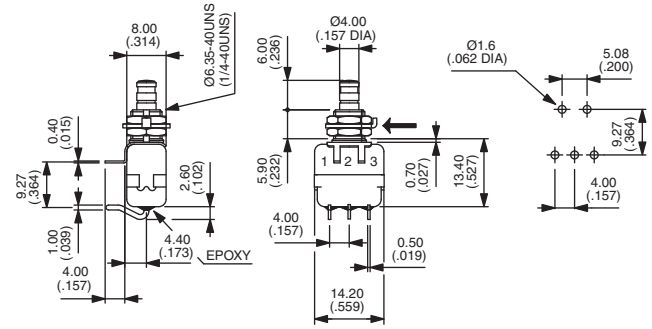
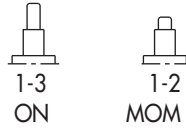
Right angle terminals : 13400W

Right angle terminals - single pole

→ Keyway

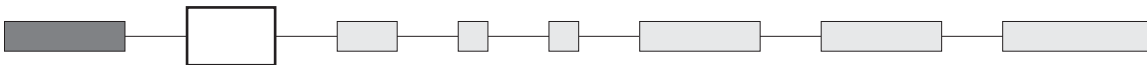


13435W



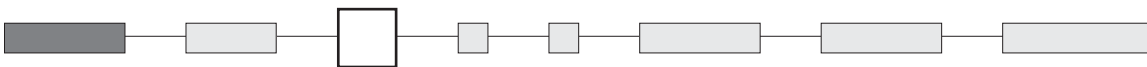
Panel cut-out, see previous page.

CONTACT MATERIALS



- A Silver
- AD2 Silver, gold plated (2 micron gold)
- CD Brass, gold plated

PLUNGER



Dash compulsory before plunger code.

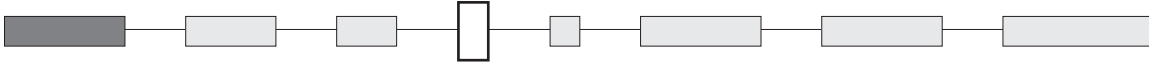
- Blank Standard plunger for Ø 6,35 (1/4) bushing
- 4 4 mm (.157) long plunger for Ø 11,9 (15/32) bushing (X768 option)
- 9 9 mm (.354) long plunger for Ø 11,9 (15/32) bushing (X768 option)

13000 series

Professional quick-break momentary pushbutton switches



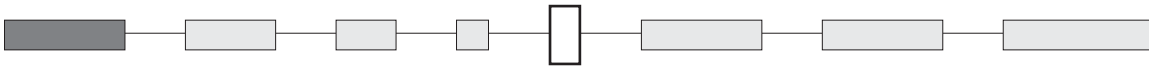
FINISH



Blank Bright chrome finish

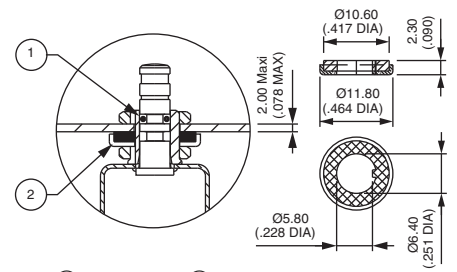
G Matt black finish on bushing, actuator and hardware

SEALING



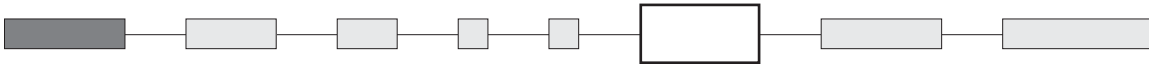
K Front panel sealing by one O-ring and sealing washer. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

Reinforced sealing : see X640 under "Special options".



① O-ring ② Sealing washer

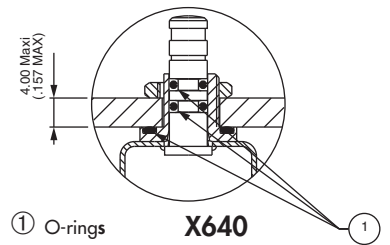
SPECIAL OPTIONS



X640 Front panel sealing by three O-rings. Flatted bush for precise orientation. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

Available on models with Ø 6,35 (1/4) bushing only.

X935 C-ring on plunger for positive stop



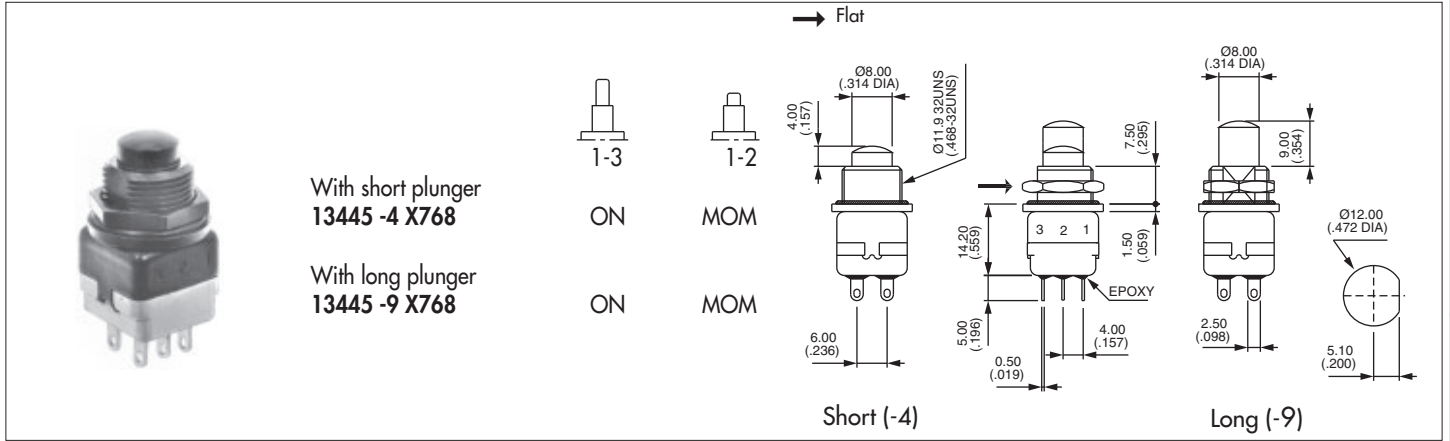
① O-rings **X640** ①



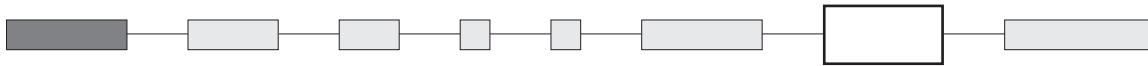
13000 series

Professional quick-break momentary pushbutton switches

X768 Sealed switch with $\varnothing 11,9$ (15/32) flatted bushing. Chrome plated actuator. Solder lug terminals, double pole. Contact and finish options available.



AGENCY APPROVALS



UL

CECC CECC 96401-001

Availability :

UL : all models with silver or gold plated silver contacts
 CECC : consult factory for details of approved models.

Marking : to order switches marked UL or CECC, please complete above box with desired approval.

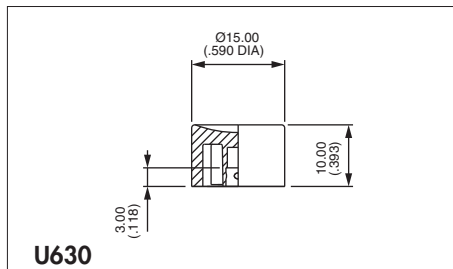
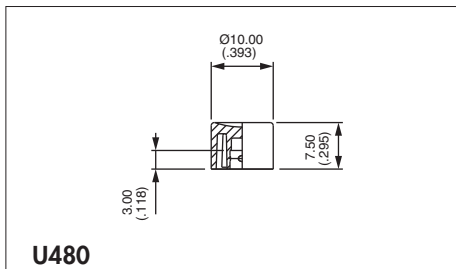
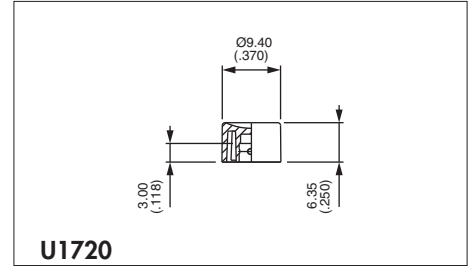
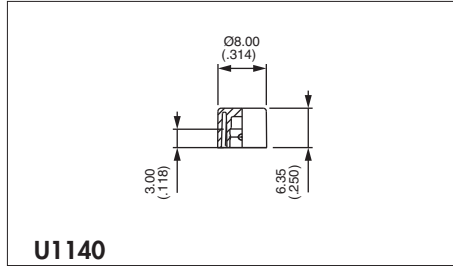
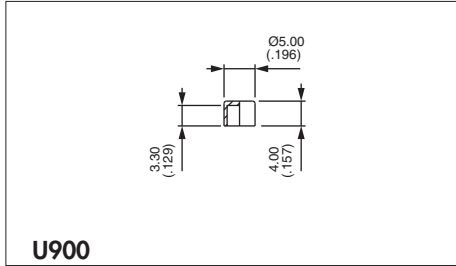
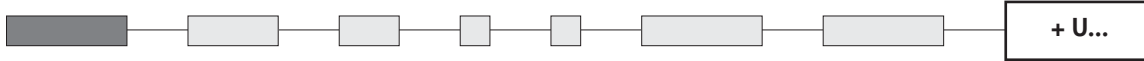
Blank : no agency approval required.

13000 series

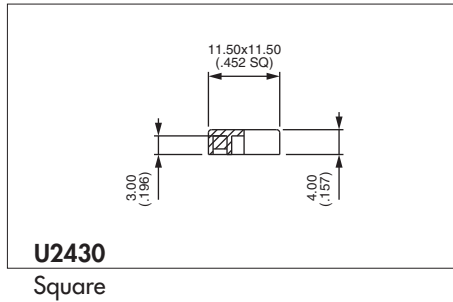
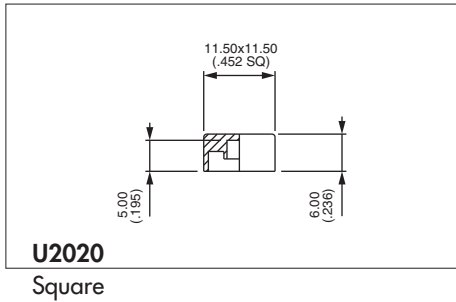
Professional quick-break momentary pushbutton switches



CAPS



For models with \varnothing 6,35 (1/4) bushing only.



Cap colours

Replace last "0" by number

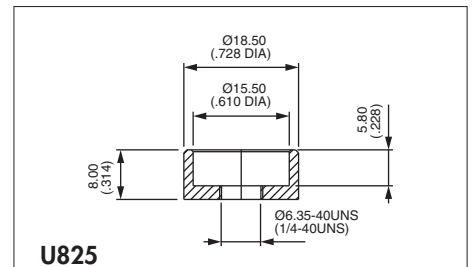
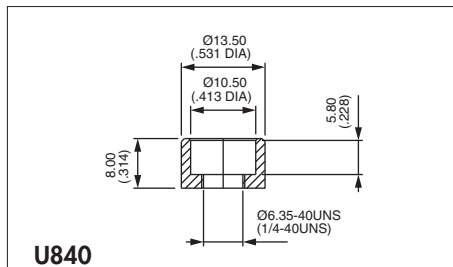
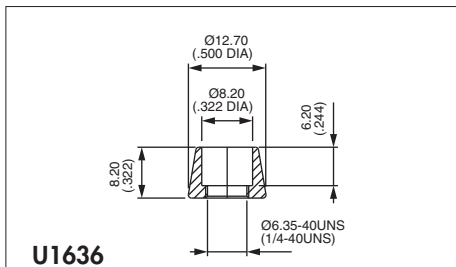
- 1 blue
- 1/4 dark blue
- 2 black
- 3 green
- 4 grey
- 5 yellow
- 6 red
- 7 ivory
- 7/1 white
- 9 orange

DRESS NUTS

Chrome plated



For models with \varnothing 6,35 (1/4) bushing only.



Dress nuts are to be ordered separately.

13000X778 series

High performance pushbutton switches - threaded bushing $\varnothing 11,9$ (15/32)

Distinctive features

□ Agency approvals



CECC 96401-001

This range of professional switches is suitable for use in military and other high specification environments.



□ Contacts

Highly reliable contacts suitable for low level applications (10mA 50mV, 10 μ A 5VDC min.) or power applications (2A 250VAC, 4A 125VAC, 4A 30VDC max.)

□ Double shell case

For high mechanical strength and high electrical insulation.



□ Compact size

The small rear end of the switch allows space savings behind the panel.

□ Finish

Matt black finish on body, bushing, plunger and hardware.

□ Full sealing

Panel sealed to IP 67, these switches are frontal sealed by three O-rings and have full rear end sealing.

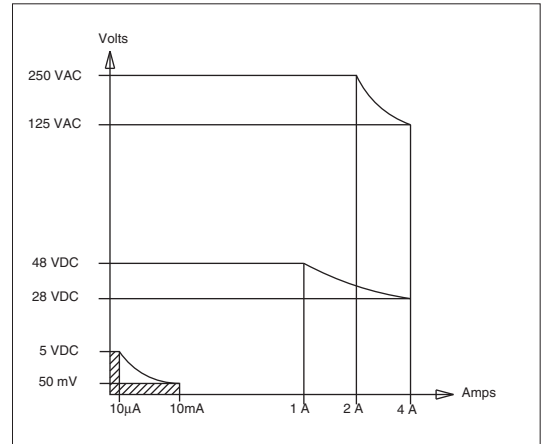
13000X778 series

High performance pushbutton switches - threaded bushing \varnothing 11,9 (15/32)

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 250VAC - 4A 125VAC - 4A 28VDC
- Minimum load : 10mA 50mV, 10 μ A 5VDC
 When used above 300mA 28VDC, the gold plating is removed on contact areas and is considered only as a protection against oxidation during storage.
- Initial contact resistance : 10 m Ω max.
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 1.000 Vrms 50 Hz min. between terminals
 2.000 Vrms 50 Hz min. between poles
 2.000 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :
 - At 2A 250VAC - 4A 28VDC : 10.000 cycles
 - At low level (50mV 10mA) : 150.000 cycles

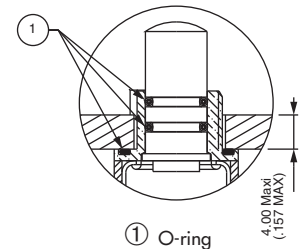


MATERIALS

- Case : diallylphthalate (DAP) with PBT external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : silver inlay - gold plated over nickel barrier

SEALING

- Front panel sealing by three O-rings
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



GENERAL SPECIFICATIONS

- Total travel : 2 mm (.078)
- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Shock test : 50g - 11ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10g (IEC68-2-6)
- Operating temperature : -40°C to +85°C
- Humidity test : 56 days, 93 % R.H., 40°C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)

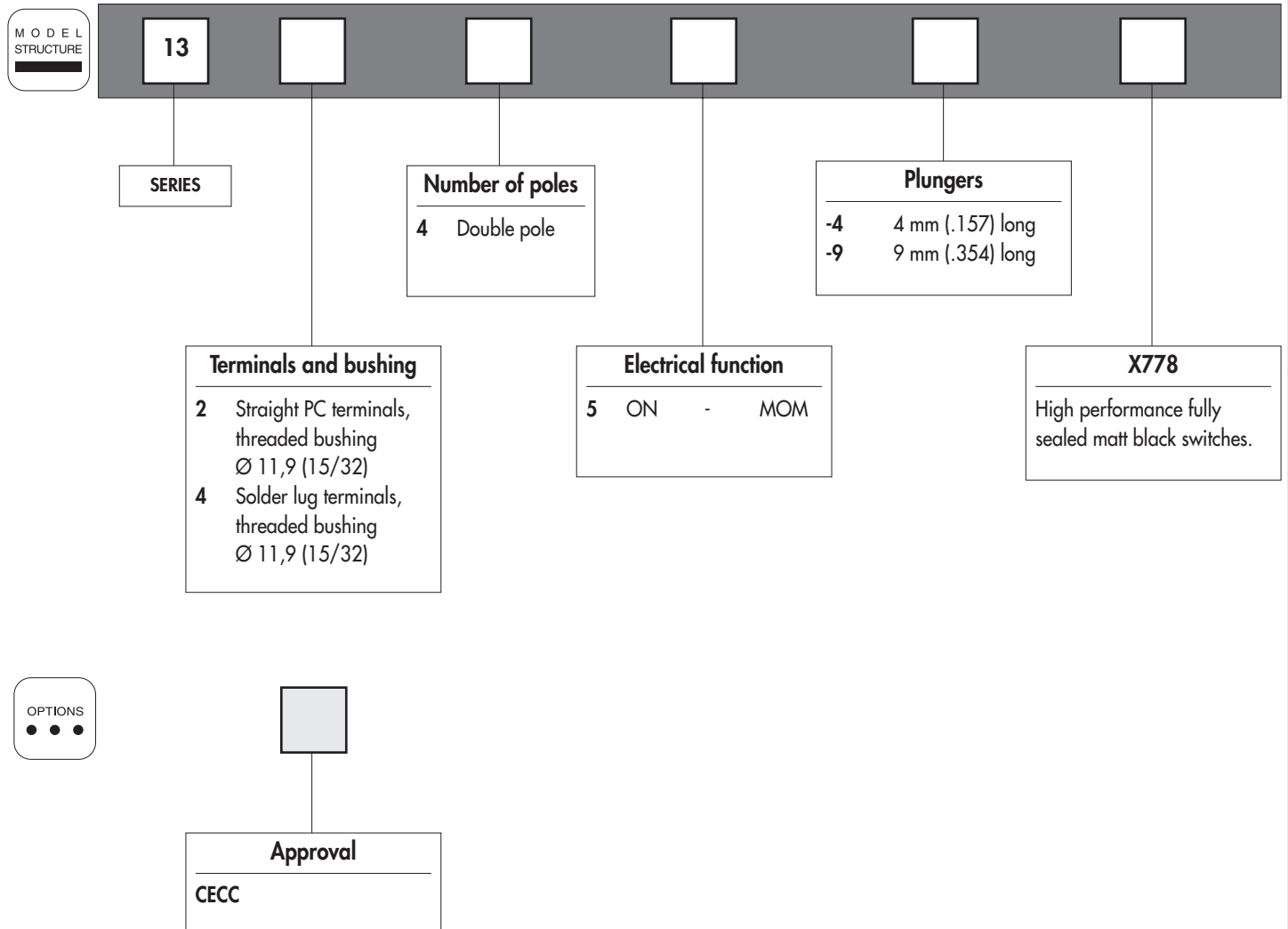
APPROVALS

Many models within this range have full CECC approval. To order switches marked CECC, complete appropriate box of ordering format.

13000X778 series

High performance pushbutton switches - threaded bushing Ø 11,9 (15/32)

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart

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



Sealing boots can be used to further protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut 14 (.551) across flats, part number U41. This nut is presented after model structure of switches.



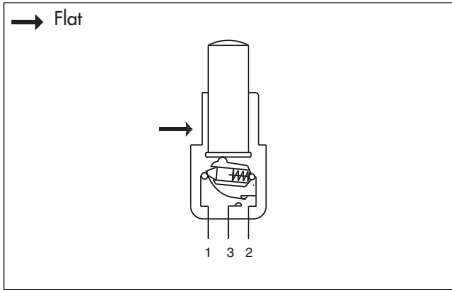
Security cap available to prevent inadvertent plunger operation. See section I.

Packaging unit : 25 pieces

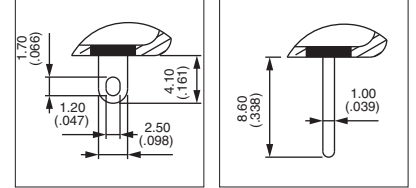
13000X778 series

High performance pushbutton switches - threaded bushing $\varnothing 11,9$ (15/32)

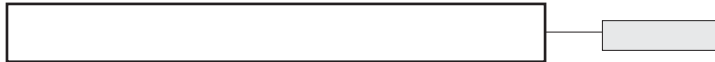
Fully sealed - matt black



• Quick-break momentary pushbutton switches



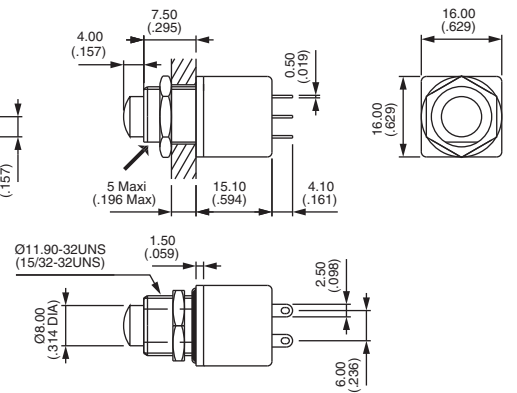
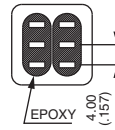
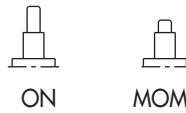
MODEL STRUCTURE



Solder lug terminals - double pole - 4 mm (.157) plunger → Flat



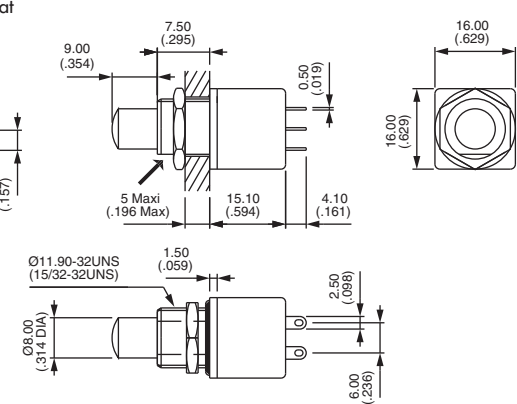
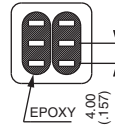
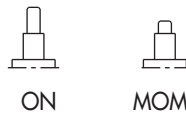
13445-4X778



Solder lug terminals - double pole - 9 mm (.354) plunger → Flat



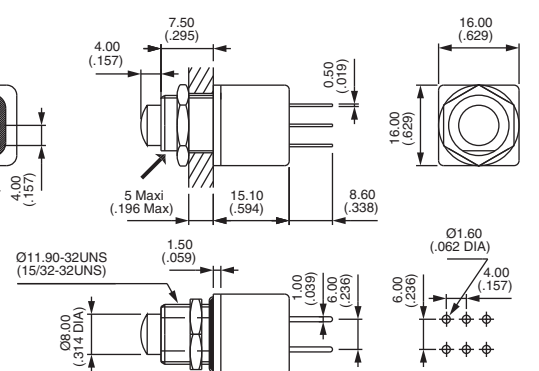
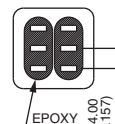
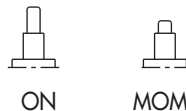
13445-9X778



Straight PC terminals - double pole - 4 mm (.157) plunger → Flat



13245-4X778



13000X778 series

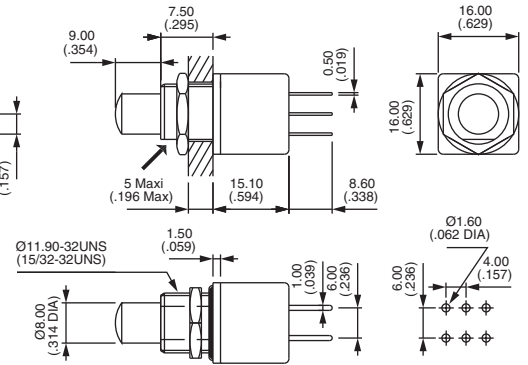
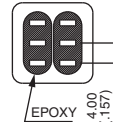
High performance pushbutton switches - threaded bushing \varnothing 11,9 (15/32)

Fully sealed - matt black

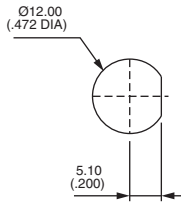
Straight PC terminals - double pole - 9 mm (.354) plunger \rightarrow Flat



13245-9X778

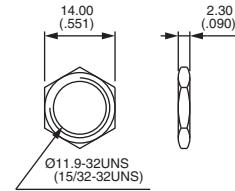


PANEL CUT-OUT



STANDARD HARDWARE

Hex nut



U41 (matt black)

POSITIONS AND CONNECTIONS

FUNCTION	BUTTON POSITION AND CONNECTIONS		TERMINAL IDENTIFICATION
	I	II	
13245 13445	ON A 1-2 B 1-2	MOM A 1-3 B 1-3	\rightarrow Flat

AGENCY APPROVAL



CECC CECC 96401-001

Marking : to order switches marked CECC, please complete above box with "CECC".
 Blank : no agency approval required.

18000 series

Snap-action momentary pushbutton switches

Distinctive features and specifications



- Panel and PC mount models
- Snap-in panel mounting version
- Tactile feedback

B

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - gold plated brass contacts : 100mA - 30VDC
 - gold plated silver contacts : 1A 125VAC, 1A 30VDC
 - Initial contact resistance : 50 mΩ max.
 - Insulation resistance : 1.000 MΩ min.
 - Dielectric strength : 1.000 Vrms 50 Hz min.
 - Electrical life : 60.000 cycles at full load
- Models for high currents : see 18635A and 18645A at the end of the series.

MATERIALS

- Case : PBT
- Actuator : polyamide, glass filled
- Bushing : brass, nickel plated
- Housing : stainless steel
- Bracket : tin plated steel
- Contacts
 - AD** : silver, gold plated
 - CD** : brass, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

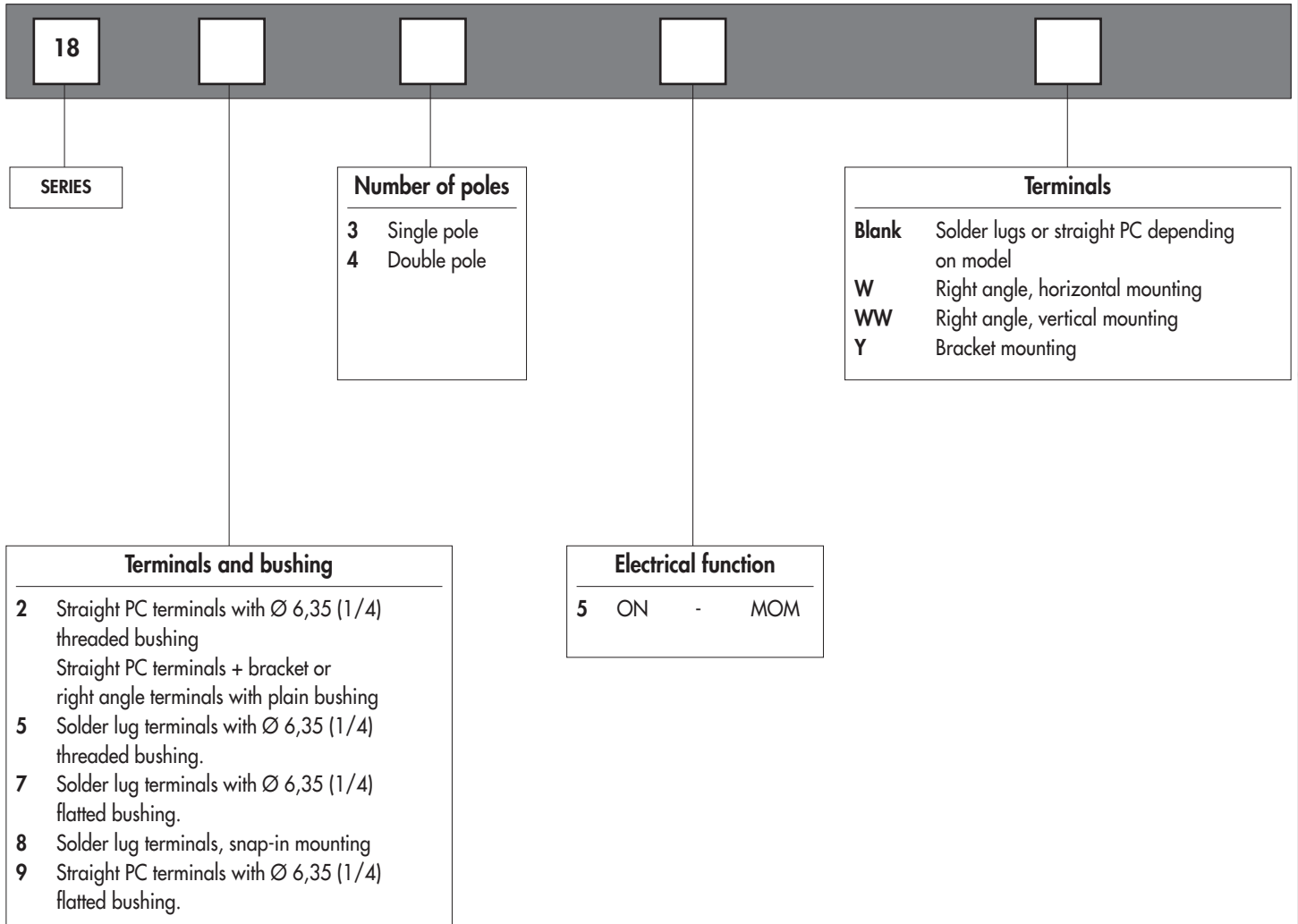
- Total travel : 0,5 mm (.019)
- Torque : 1,25 Nm (.922 Ft.lb) max. applied to nut
- Operating temperature : -30°C to +65°C
- Soldering : 300°C, 3 sec. max.



18000 series

Snap-action momentary pushbutton switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart

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

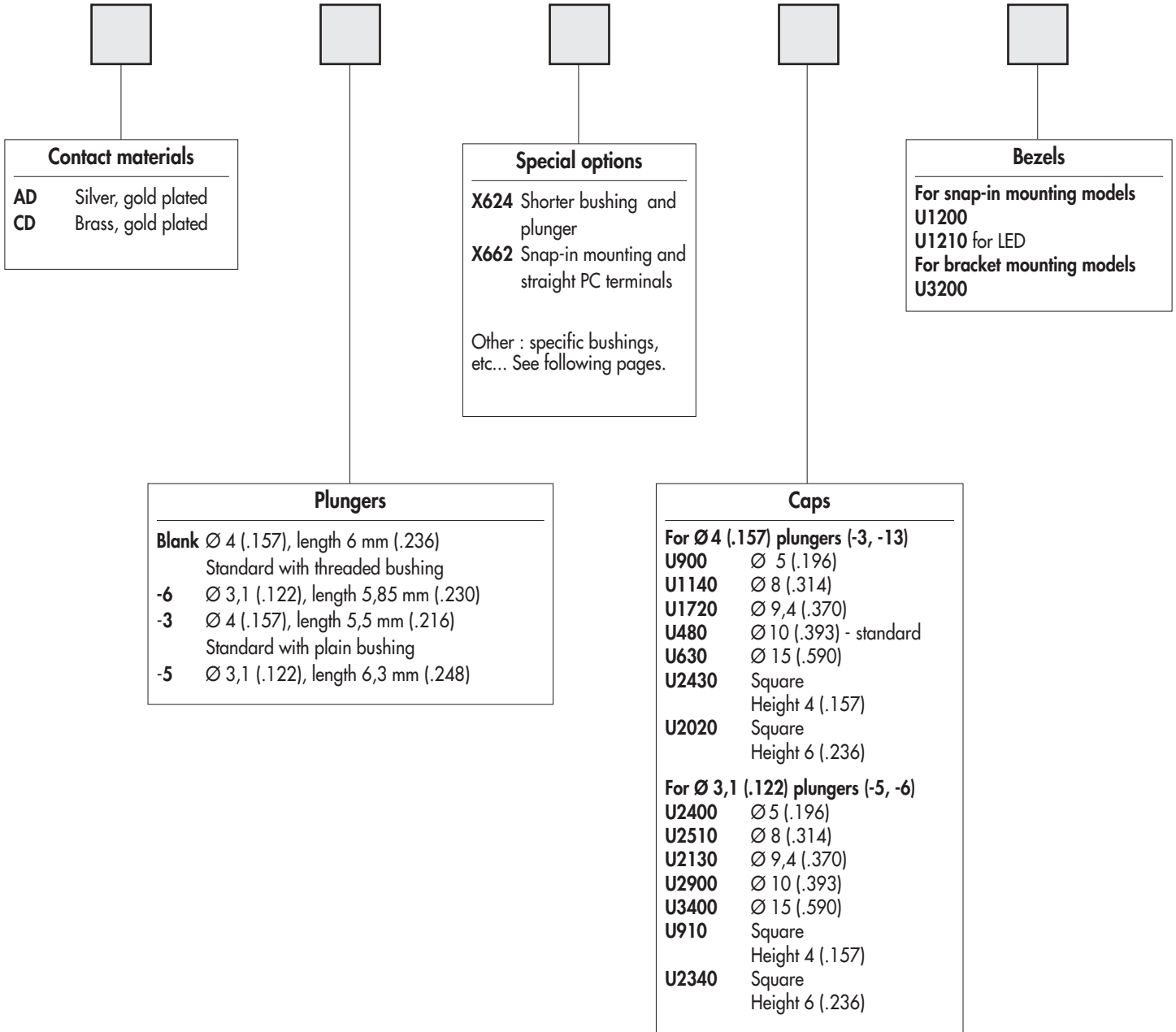


NOTICE : please note that not all combinations of above numbers are available. Refer to the following pages for further information.

18000 series

Snap-action momentary pushbutton switches

Overview



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models with Ø 6,35 (1/4) threaded bushing :
 2 hex nuts 8 mm (.314) across flats, 1 locking ring and 1 lockwasher.
 Standard and special hardware available are presented in section I.



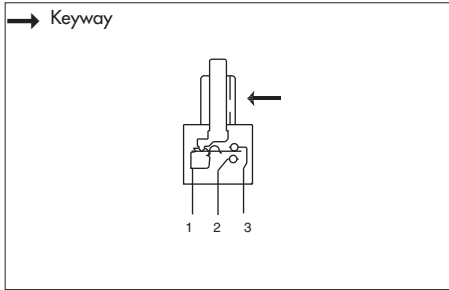
Packaging unit : 25 pieces for W, WW double pole and 18800 models
 50 pieces for other models.

MODEL
STRUCTURE

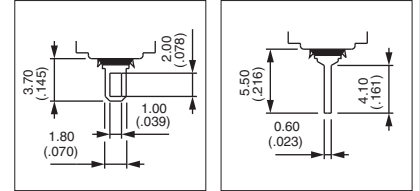
18000 series

Snap-action momentary pushbutton switches

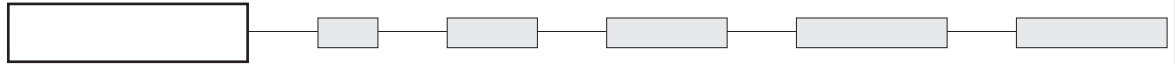
Threaded bushing $\varnothing 6,35 (1/4)$: 18500 - 18700 - 18200



- Solder lug or straight PC terminals
- Epoxy sealed terminals standard



MODEL
STRUCTURE



Shown with standard plunger

B

Solder lug terminals : 18500

→ Keyway



Single pole
18535

Double pole
18545

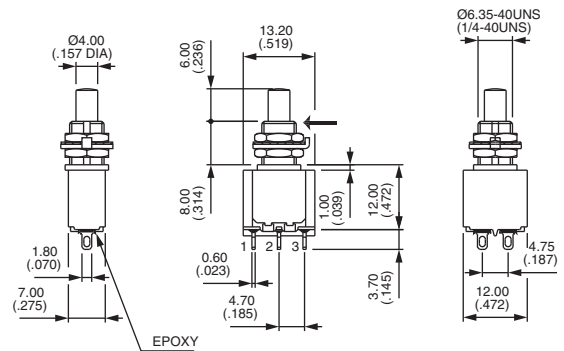


ON

MOM

ON

MOM



Flatted bushing - solder lug terminals : 18700

→ Flat



Single pole
18735

Double pole
18745

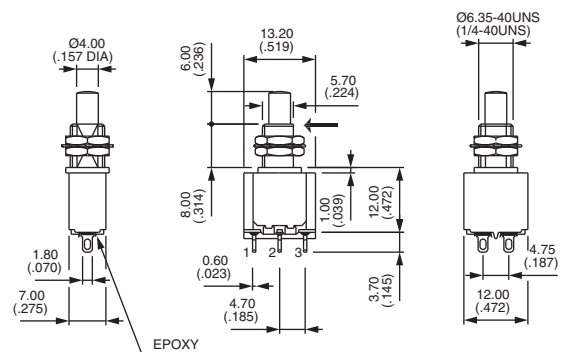


ON

MOM

ON

MOM



Straight PC terminals : 18200

→ Keyway



Single pole
18235

Double pole
18245

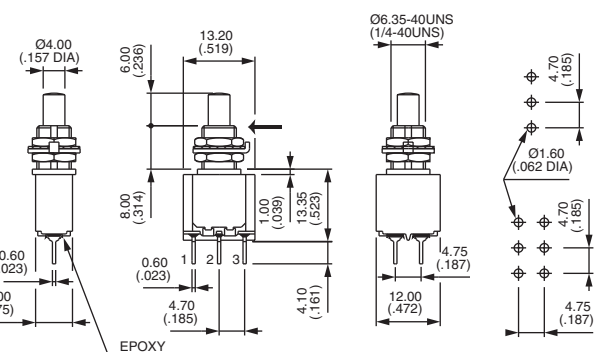


ON

MOM

ON

MOM



18000 series

Snap-action momentary pushbutton switches

Threaded bushing $\varnothing 6,35$ (1/4) : 18900 - Snap-in mounting : 18800



Flatted bushing - straight PC terminals : 18900

→ Flat



Single pole
18935

Double pole
18945



1-3

ON

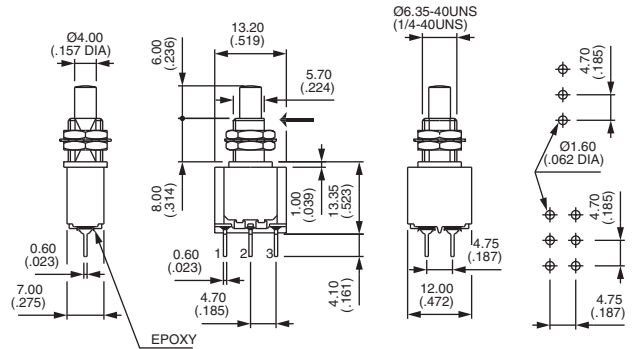


1-2

MOM

ON

MOM



Snap-in mounting - solder lug terminals : 18800

Shown with cap U910 + U1200



Single pole
18835

Double pole
18845



1-3

ON

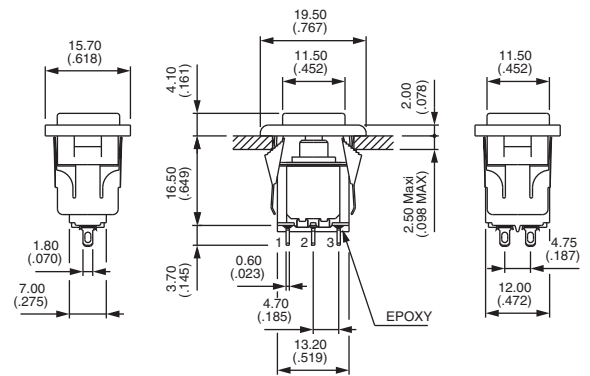


1-2

MOM

ON

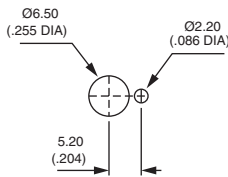
MOM



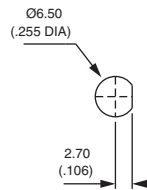
Available with straight PC terminals : see X662 under "Special options".

PANEL CUT-OUT

18500 - 18200

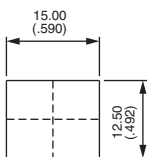


18700 - 18900

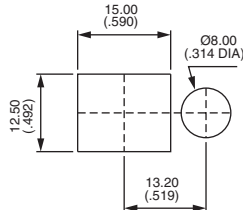


PANEL CUT-OUT

18800



With bezel **U1200**



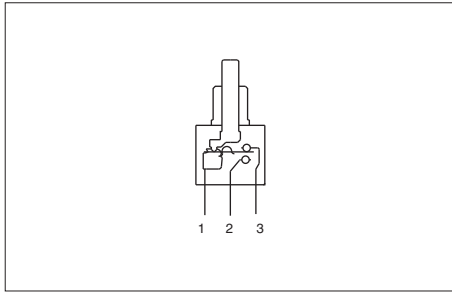
With bezel **U1210 for LED**



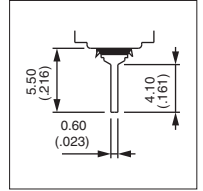
18000 series

Snap-action momentary pushbutton switches

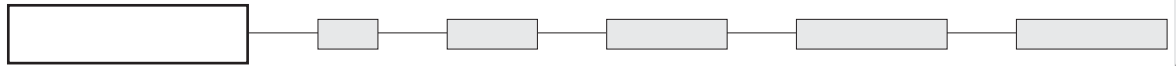
Plain bushing : 18200Y - 18200W - 18200WW



- Straight PC or right angle terminals
- Epoxy sealed terminals standard



MODEL STRUCTURE



Shown with standard plunger (-3)

B

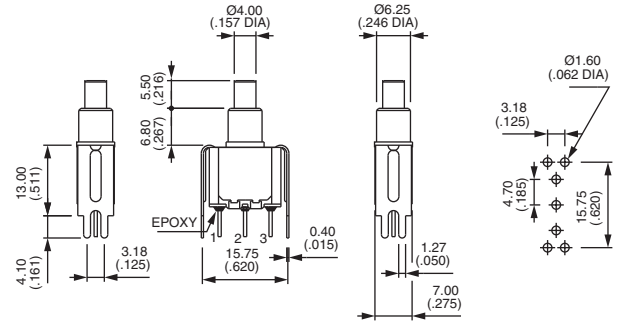
Straight PC terminals - bracket mounting - single pole 18230Y



18235Y



MOM



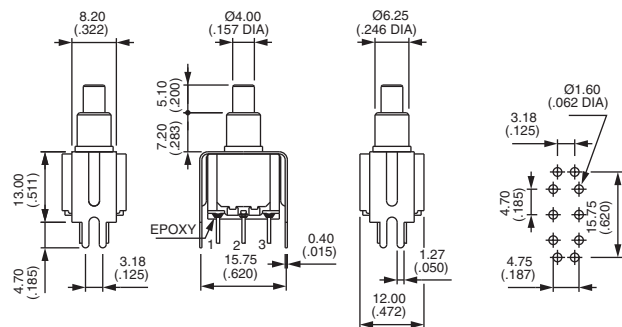
Straight PC terminals - bracket mounting - double pole 18240Y



18245Y



MOM



Right angle terminals - horizontal : 18200W



Single pole
18235W

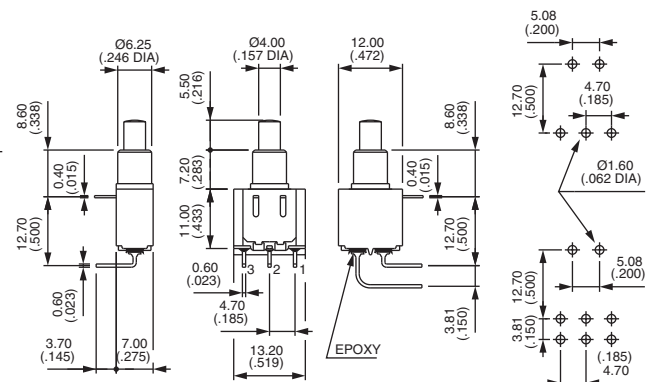


MOM

Double pole
18245W



MOM



18000 series

Snap-action momentary pushbutton switches



Right angle terminals - vertical : 18200WW



Single pole
18235WW

Double pole
18245WW



1-3

ON

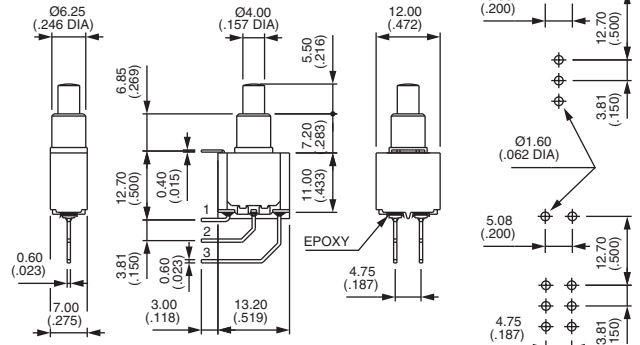


1-2

MOM

ON

MOM



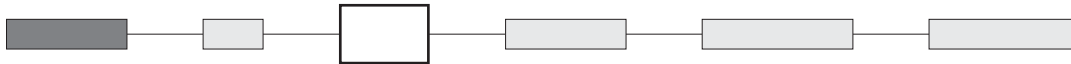
B

CONTACT MATERIALS

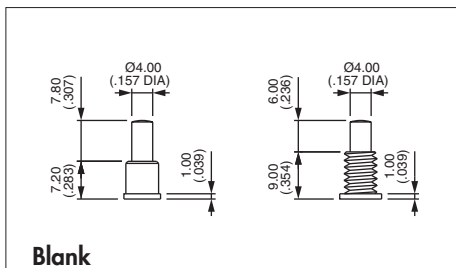


AD Silver, gold plated
 CD Brass, gold plated

PLUNGERS

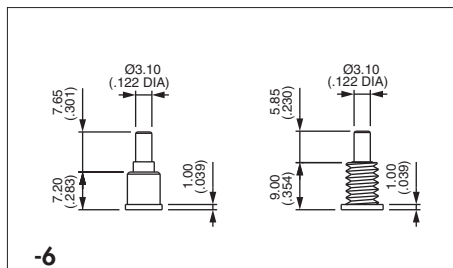


Dash compulsory before plunger code.



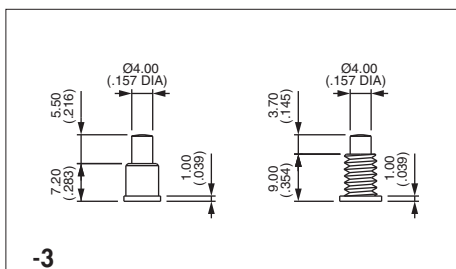
Blank

Ø 4 (.157) - standard with threaded bushing



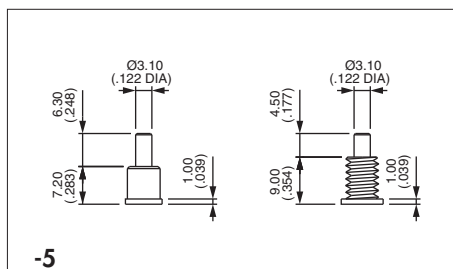
-6

Ø 3,1 (.122)



-3

Ø 4 (.157) - standard with plain bushing



-5

Ø 3,1 (.122)



18000 series

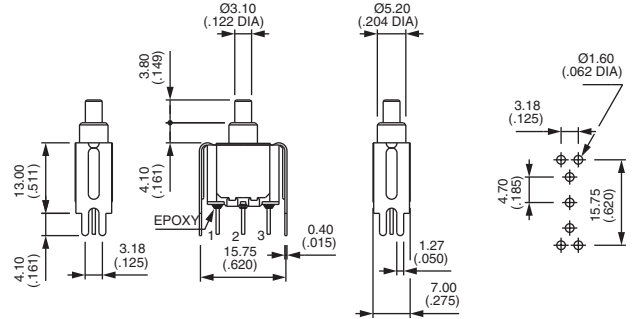
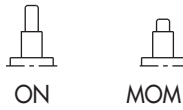
Snap-action momentary pushbutton switches

SPECIAL OPTIONS

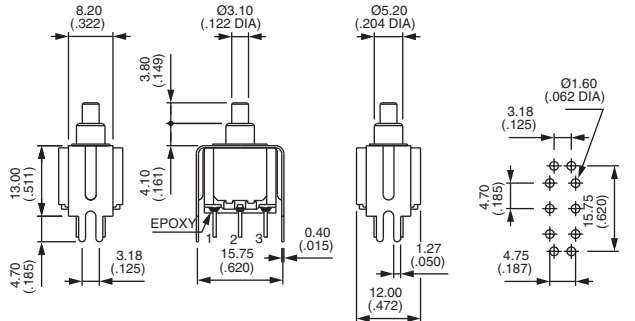
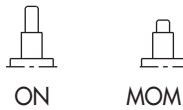


X624 Straight PC terminals - bracket mounting - with shorter bushing and plunger

Single pole
18235Y -2X624



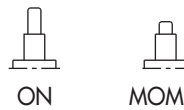
Double pole
18245Y -2X624



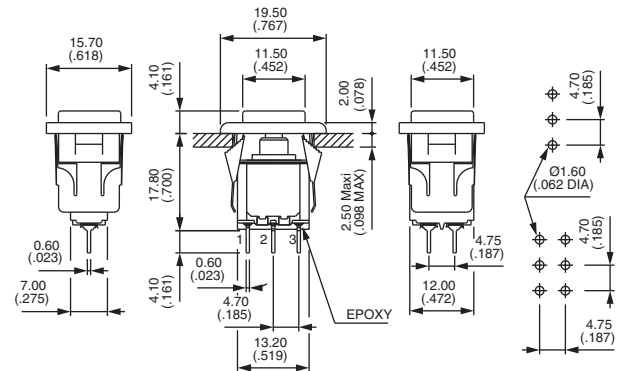
B

X662 Snap-in mounting - straight PC terminals

Single pole
18835 X662



Double pole
18845 X662



18000 series

Snap-action momentary pushbutton switches



SPECIAL OPTIONS (continued)

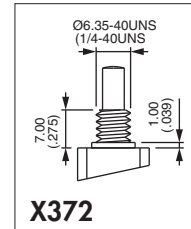


X371 Plain bushing \varnothing 6,25 mm (.246) (instead of standard threaded bushing).

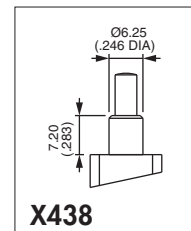
X372 Shorter threaded bushing \varnothing 6,35 (1/4). Height 7 mm (.274).

X386 Threaded bushing \varnothing 6,35 mm (1/4) to replace plain bushing on models W - WW and Y.

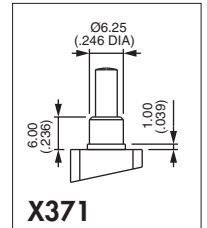
X438 Plain bushing \varnothing 6,25 mm (.246). Height 7,2 mm (.283) - without shoulder.



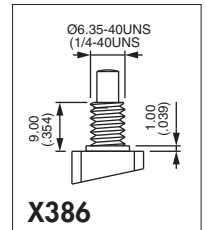
X372



X438

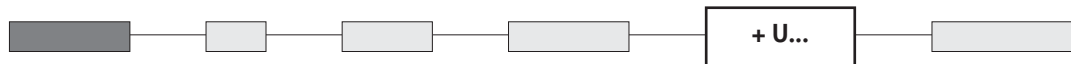


X371

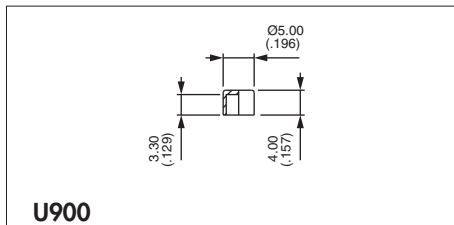


X386

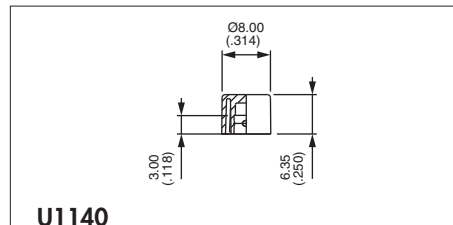
CAPS



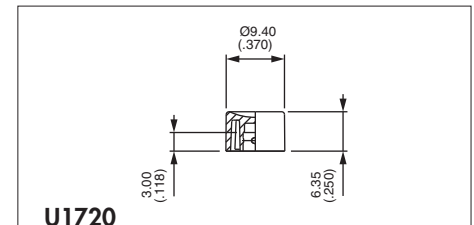
Caps for \varnothing 4 (.157) plungers (-13, -3)



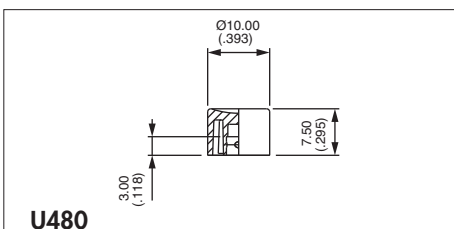
U900



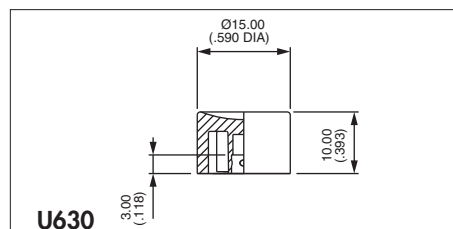
U1140



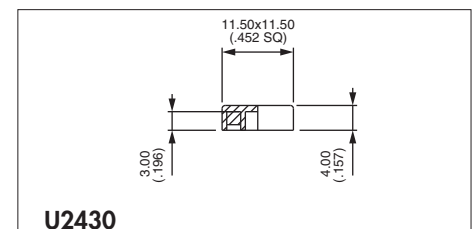
U1720



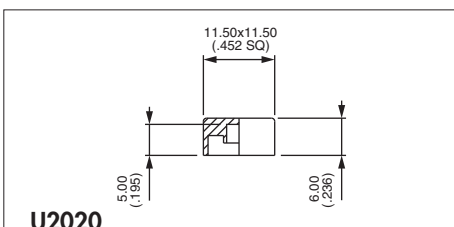
U480



U630



U2430



U2020

Square

Cap colours

Replace last "0" by number

1	blue	5	yellow
1/4	dark blue	6	red
2	black	7	ivory
3	green	7/1	white
4	grey	9	orange



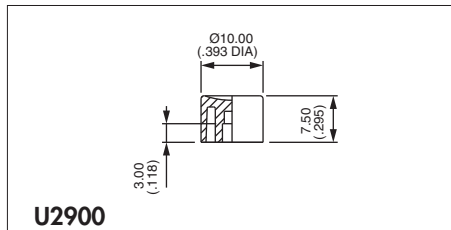
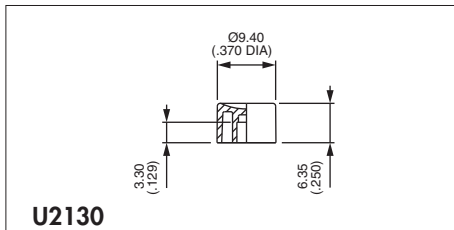
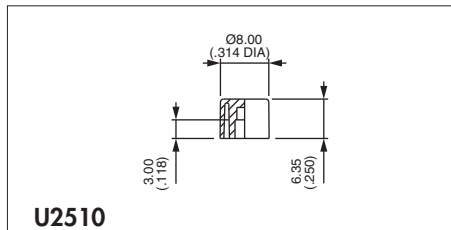
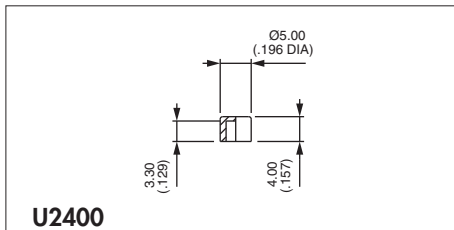
18000 series

Snap-action momentary pushbutton switches

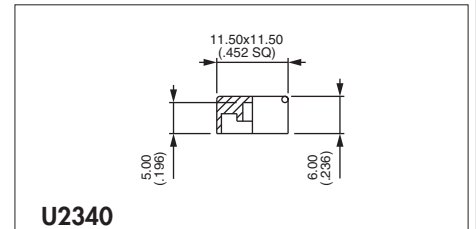
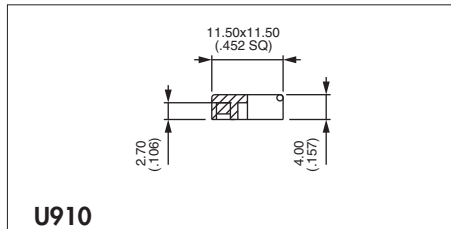
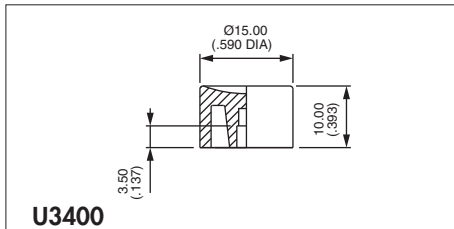
CAPS (continued)



Caps for Ø 3,1 (.122) plungers (-5, -6)



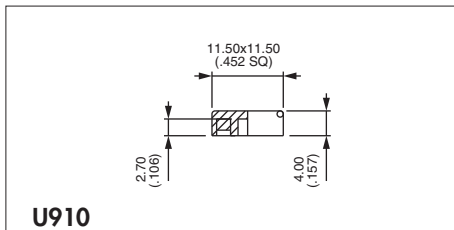
Cap colours	
Replace "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange



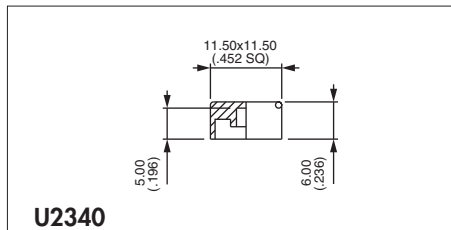
Square

Square

Caps for 18800 and 18800X662 models



Square



Square

18000 series

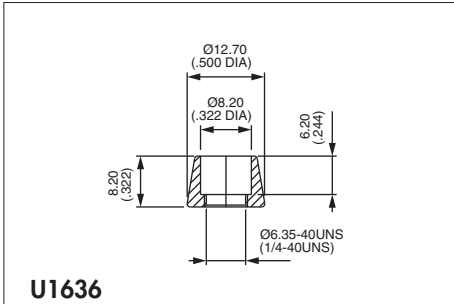
Snap-action momentary pushbutton switches



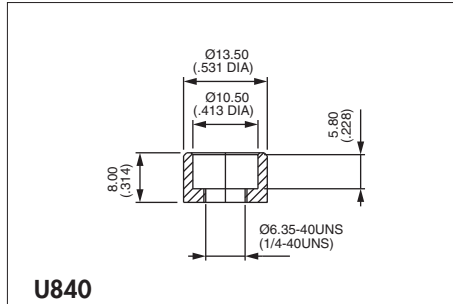
DRESS NUTS

For models with threaded bushing (18500 - 18700 - 18200 - 18900)

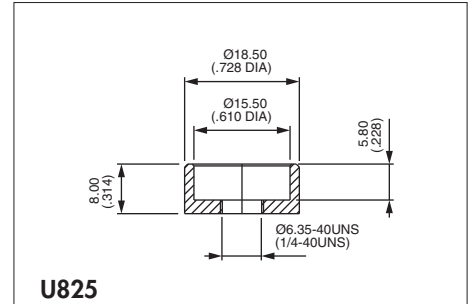
Chrome plated - Order separately.



For caps U1140 and U2510



For cap U480 and U2900

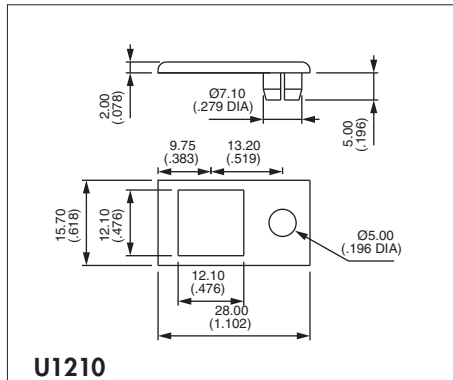
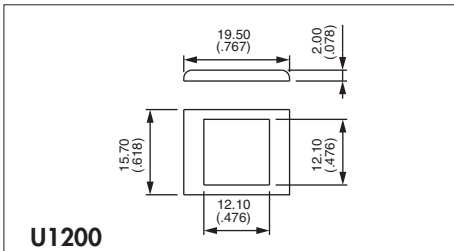


For caps U630 and U3400

BEZELS



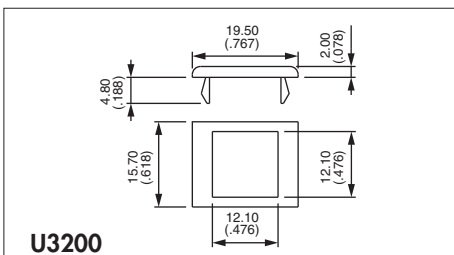
For snap-in models (18800 - 18800X662)



For LED Ø 5 - not supplied

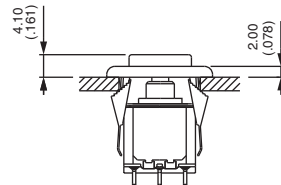
Bezel colours	
Replace last "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange

For bracket mounting models (18200Y & 18200YX624)

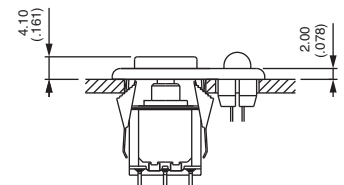


STANDARD PANEL MOUNTING

Panel thickness with bezel : 1 mm (.039) to 2,5 mm (.098)



18800 + U910 + U1200



18800 + U910 + U1210

18000 series

Snap-action momentary pushbutton switches



For high currents

Tactile feedback

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
3A 250VAC - 6A 125VAC - 7A 30VDC
- Initial contact resistance : 20 mΩ max. at 0,1A 3VDC
- Insulation resistance : 200.000 MΩ min. between terminals and frame
- Dielectric strength : 1.500 Vrms 50 Hz min.
- Electrical life : 60.000 cycles at full load

GENERAL SPECIFICATIONS

- Travel : 0,90 mm (.035) approx.
- Operating temperature :
-30°C to +85°C

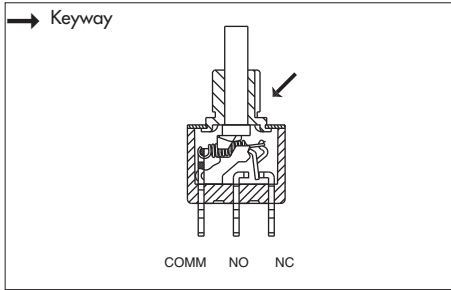
MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : glass filled polyester
- Bushing : brass, nickel plated
- Housing : stainless steel
- Contacts : silver
- Terminal seal : epoxy

B

18000 series

Snap-action momentary pushbutton switches



- Threaded bushing $\varnothing 6,35$ (1/4)
- Solder lug terminals
- Epoxy sealed terminals

MODEL STRUCTURE

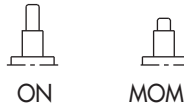


B

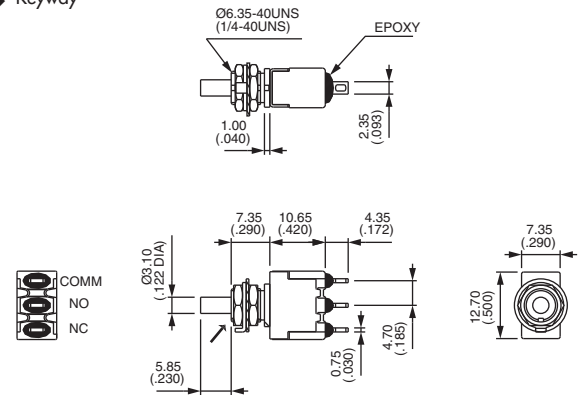
Single pole



18635A



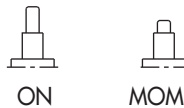
→ Keyway



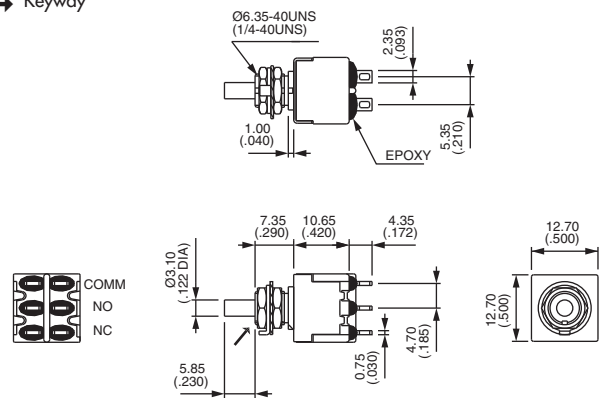
Double pole



18645A



→ Keyway

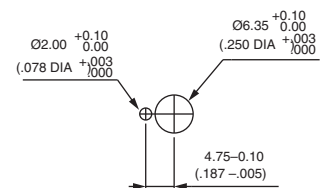


CAPS



Round	Ø	Square	Height
U2400	Ø 5 (.196)	U910	Height 4 (.157)
U2510	Ø 8 (.314)	U2340	Height 6 (.236)
U2130	Ø 9,4 (.370)		
U2900	Ø 10 (.393)		
U3400	Ø 15 (.590)		

PANEL CUT-OUT



For cap dimensions, see "Caps for $\varnothing 3,1$ (.122) plungers" on the preceding pages.

PHAP40 series

Momentary or latching action key switches

Distinctive features and specifications



- The smallest latching action switch of the range
- Audible "click"
- Models with 6 x 6 mm case on request

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 30VDC
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 100 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms min. (1 min.)
- Electrical life : 10.000 cycles

MATERIALS

- Case : polyamide
- Actuator : polyamide
- Contacts : brass, silver plated

GENERAL SPECIFICATIONS

- Travel : see next page.
- Wave soldering : 255°C, 5 seconds
- Manual soldering : 300°C ± 10°C, 3 seconds
- Operating force :
 - Model PHAP4673 : 1,4N ± 0,5N
 - Models PHAP4683W and PHAP4383V : 2N ± 0,5N
- Operating temperature : -20°C to +70°C

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

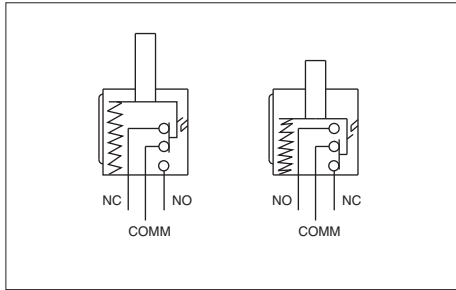


Packaging unit : 1.000 pieces.

PHAP40 series

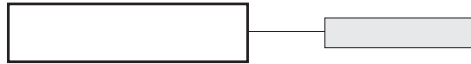
Momentary or latching action key switches

Straight PC terminals



- Double pole, double throw
- Non-shorting contacts
- Moulded-in terminals

MODEL STRUCTURE



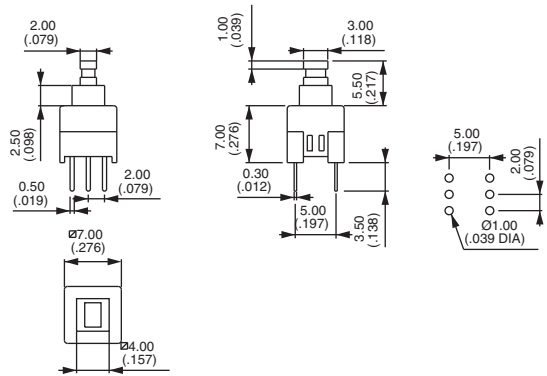
B

7 x 7 mm case



PHAP4673

ON - ON

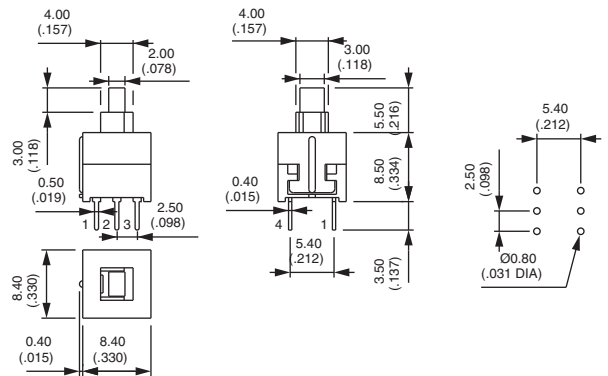
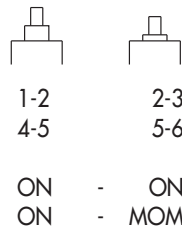


Pre-travel : 1 mm - Total travel : 1,8 mm

8,4 x 8,4 mm case

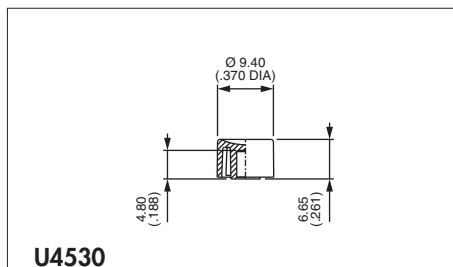
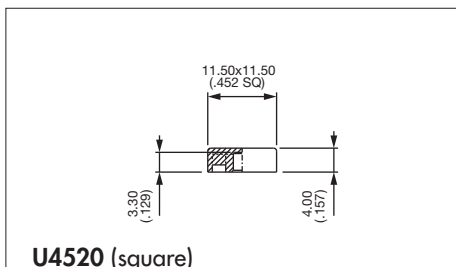


PHAP4683W
PHAP4383V *



Total travel : 2,5 mm * Audible click

CAPS



Cap colours

Replace "0" by number :

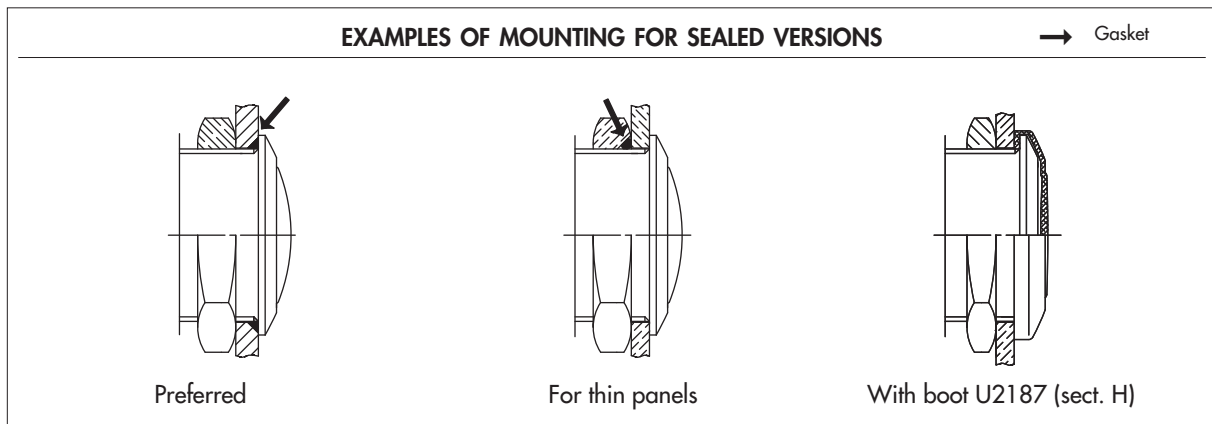
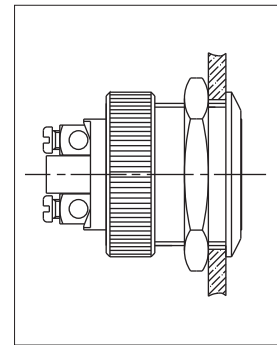
- 1 blue
- 2 black
- 3 green
- 4 grey
- 5 yellow
- 6 red
- 7 ivory
- 7/1 white
- 9 orange

AV series

Anti-vandal and security pushbutton switches

Distinctive features

- ❑ **Attractive, robust and durable**
 - Irremovable
 - **Anti-jamming construction : reduced travel to prevent insertion of foreign parts**
 - **Contact and mechanism protected against crushing**
 - Fire resistant
 - Long life
- ❑ Different bushing sizes and actuator shapes
- ❑ Sealed versions
- ❑ Degree of protection of sealed versions (switches mounted on vertical panels) : IP65 to IP67 or IP69K depending on models
- ❑ UL/CSA approved models



Packaging unit : specified on the following pages.



Mounting accessories : Standard and special hardware are presented in section I.



Sealing boots are available for models with \varnothing 19 mm (.748) bushing. See Section H.

AV series

Anti-vandal and security pushbutton switches

Selection guide

The AV series is a large range of very robust pushbutton switches, consisting of 2 families :

ANTI-VANDAL PUSHBUTTON SWITCHES (pages B-129 to B-131)

- Great robustness (impact resistance IK08 (Ø 19 mm) and IK10 (Ø 22 mm))
- Actuator and bushing : stainless steel
- Bushing Ø 19 mm (.748) or 22 mm (.866)

Actuator	Bushing Ø 19 mm (.748)			Bushing Ø 22 mm (.866)			
	flat	curved	flush	flat		curved	
Flat on bushing	no	no	no	no	yes	no	yes
48VDC	AV09100	AV19100	AV9D100	AV03100	AVM3100	AV02100	AVM2100
250VAC	AV09000	AV19000	AV9D000	AV03000	AVM3000	AV02000	AVM2000

SECURITY PUSHBUTTON SWITCHES (pages B-132 to B-158)

- Large variety of models
- Actuator and bushing : nickel plated, chrome plated or polished varnished brass, stainless steel
- Bushing diameter 16 mm (.629), 19 mm (.748), 22 mm (.866) or 24 mm (.944)
- Marking, illumination, tactile feedback
- Numerous electrical functions (momentary or maintained)

Actuator	Bushing Ø 16 mm (.629)				Page
	flat		curved		
Mounting nut	hex	knurled	hex	knurled	
Momentary (NO) tactile	AV063	AV6P3	AV163	AV6B3	B-132
Latching (on-off)	AV061	-	AV161	-	B-133

Actuator	Bushing Ø 19 mm (.748)				Page
	flat		curved		
Mounting nut	hex	knurled	hex	knurled	
Momentary (NO)	AV09•003	AV9P•003	AV19•003	AV9B•003	B-135
Momentary NC/NO	AV19LP	-	-	-	B-138
Momentary NC/NO, illum.	AV9	-	-	-	B-139
Latching (ON-ON)	AV091••EA	-	AV191••EA	-	B-141
Momentary NO tactile, illum.	AV09C7•3	-	AV19C7•3	-	B-143
Momentary NO tactile overmolded actuator, illum.	AV9S•D	-	-	-	B-145

Actuator	Bushing Ø 22 mm (.866)				Page	
	flat		curved			concave
Mounting nut	hex	knurled	hex	knurled	hex	
Momentary NO tactile overmolded actuator, illum.	AV3S•D	-	-	-	-	B-147
Momentary (NO)	AV03•003	-	AV02•003	-	-	B-149
Momentary (NC)	AV031202	-	AV021202	-	-	B-150
Alternate action	-	-	AV044700	-	-	B-150
Momentary NC/NO, illum.	AV3	-	-	-	-	B-152
Latching (on-on)	AV031••EA	-	AV021••EA	-	-	B-154
Mom. NC/NO, Ø 26 actuator	AV22LP	-	AV22LB	-	AV22LC	B-156
Mom. NC/NO, Ø 30 actuator	-	-	AV22PNA*	-	-	B-158

Actuator	Bushing Ø 24 mm (.944)			Page
	flat	curved	concave	
Momentary (NO)	AV24LP	AV24LB	AV24LC	B-157

Please contact APEM for any product not mentioned in the above tables.

AV series

Anti-vandal pushbutton switches

Distinctive features and specifications

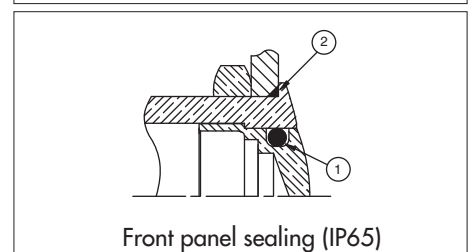
- Very robust**
Impact resistance IK08 for model Ø 19 mm (.748)
and IK10 for model Ø 22 mm (.866)
- Stainless steel actuator and bushing**
- UL-CSA approved (long case only)**

SPECIFICATIONS
<ul style="list-style-type: none"> • Max. current/voltage rating with resistive load : <ul style="list-style-type: none"> - A contacts : 4A 12VDC, 500.000 cycles - C contacts : 2A 48 VDC, 10.000 cycles • Approved ratings of models with long case and A contacts (AV..000) : UL-CSA : 4A 250VAC - 8A 125VAC - 6.000 cycles • Initial contact resistance : 10 mΩ max. • Insulation resistance : 1.000 MΩ min. at 500VDC • Dielectric strength : 2.000 Vrms 50 Hz min. between terminals and frame 2.000 Vrms 50 Hz min. between terminals • Torque : 5 Nm min.- 14 Nm max. applied to nut • Panel thickness : 1 (.039) to 11 mm (.433) max. • Operating temperature : -30°C to +70°C • Mechanical life : 1.000.000 cycles • Hand soldering : 300°C, 3 sec. max. • Packaging unit : 20 pieces (models Ø 22) or 40 pieces (models Ø 19)

MATERIALS
<ul style="list-style-type: none"> • Case : PBT • Contacts : silver (A) or brass, silver plated (C) • Bushing : stainless steel • Actuator : stainless steel

CUT-OUT
<ul style="list-style-type: none"> • Panel cut-out : Ø 19,2 mm (.755) or Ø 22,2 mm (.874) • Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

SEALING (OPTION T)



① internal gasket ② external gasket

Option N does not include ① nor ②.

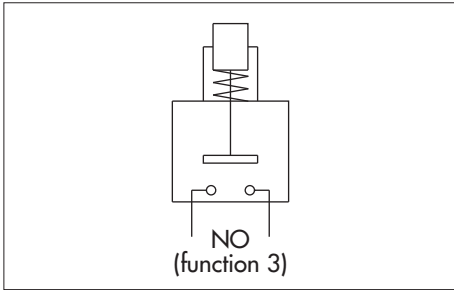
ROBUSTNESS				
	Model Ø 19 mm (.748)		Model Ø 22 mm (.866)	
Degree of protection according to EN 50102, June 95 (NFC 20-015)		IK08 Striking energy: 5 joules (5Nm)		IK10 Striking energy: 20 joules (20Nm)
	Hammer radius 25 mm		Hammer radius 50 mm	

Increased impact resistance provided by a nut or mechanical stop.

AV series

Anti-vandal pushbutton switches Ø 19 mm (.748)

Momentary (NO)



ORDER FORMAT

AV			3			40	
SERIES	Actuator type	Case	Function	Contacts	Terminals	Bush./act. material	Sealing
	09 Flat 19 Curved 9D Flush	000 Long 100 Short	3 NO	A Silver C Brass, silver pl.	9 Screw 2 Quick-connect	40 Stainless steel	N No Sealed T Sealed

B

In the following model numbers, replace • with elements selected in the above order format.

Flat actuator - short case - 48VDC - AV09100

Hex nut 22 (.866) across flats



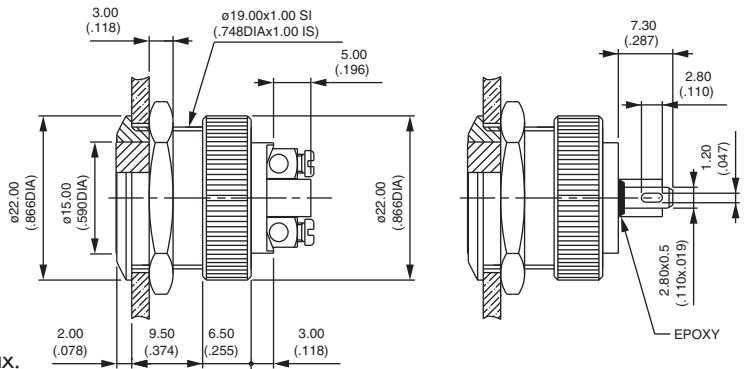
Screw terminals
AV091003•940•



Solder lug / quick-connect term.
AV091003•240•



Screw terminals for wires 1,5 mm² max.



Flat actuator - long case - 250VAC - UL/CSA - AV09000

Hex nut 22 (.866) across flats

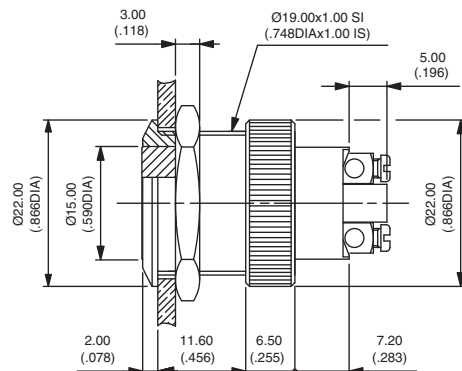


Screw terminals
AV090003A940•

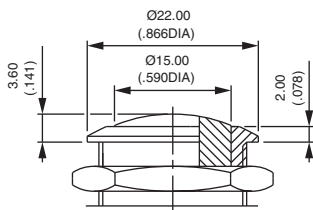


To order switches marked UL-CSA, add "UU" at the end of model number.

Screw terminals for wires 1,5 mm² max.



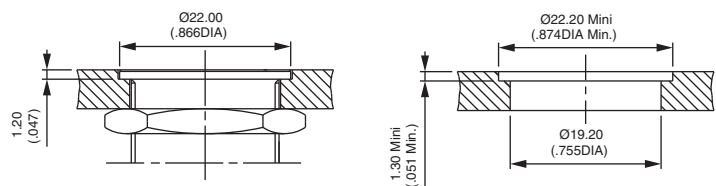
Curved actuator - AV19



Screw terminals
AV19•003•940•

Solder lug/quick-connect term. (short case)
AV191003•240•

Flush model - AV9D



Screw terminals
AV9D•003•940•

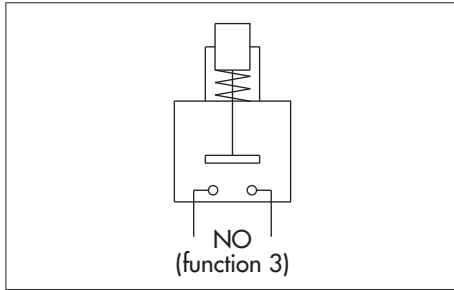
Solder lug / quick-connect terminals (short case only)
AV9D1003•240•

Panel cut-out

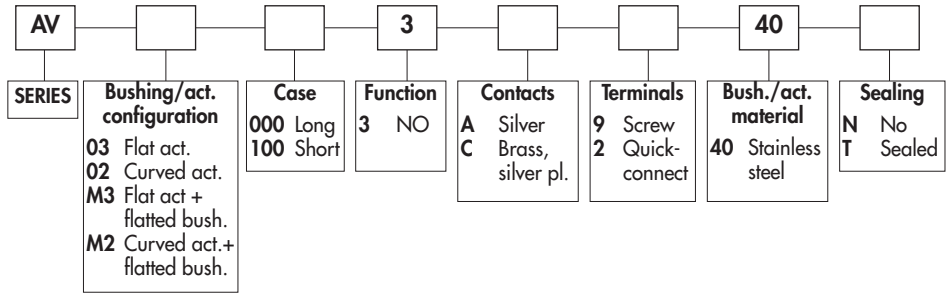
AV series

Anti-vandal pushbutton switches Ø 22 mm (.866)

Momentary (NO)



ORDER FORMAT



In the following model numbers, replace • with elements selected in the above order format.

Flat actuator - short case - 48VDC - AV03100

Hex nut 25 (.984) across flats



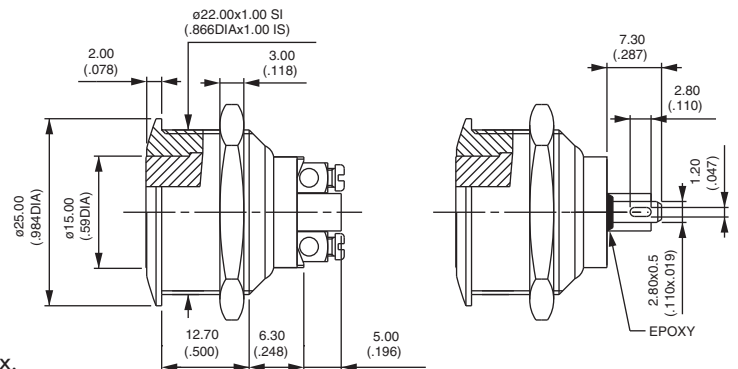
Screw terminals
AV031003•940•



Solder lug / quick-connect term.
AV031003•240•



Screw terminals for wires 1,5 mm² max.



Flat actuator - long case - 250 VAC - UL/CSA - AV03000

Hex nut 25 (.984) across flats

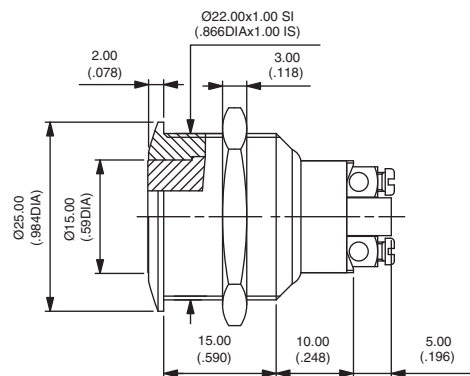


Screw terminals
AV030003A940•

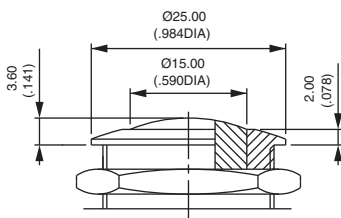


To order switches marked **UL-CSA**, add "UU" at the end of model number.

Screw terminals for wires 1,5 mm² max.



Curved actuator - AV02



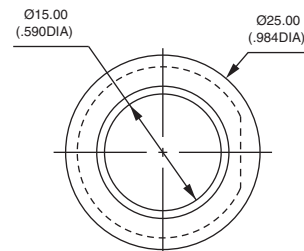
Screw terminals

AV02•003•940•

Solder lug / quick-connect (short case)

AV021003•240•

Flatted bushing - AVM3 and AVM2

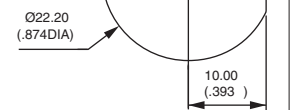


Flat actuator, screw terminals

AVM3•003•940•

Curved actuator, screw terminals

AVM2•003•940•



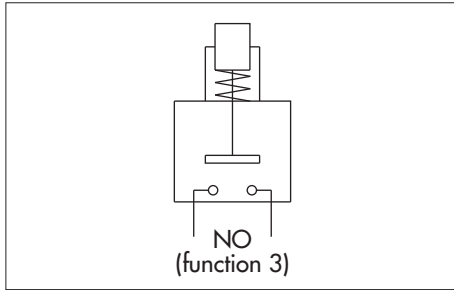
Panel cut-out

AV series

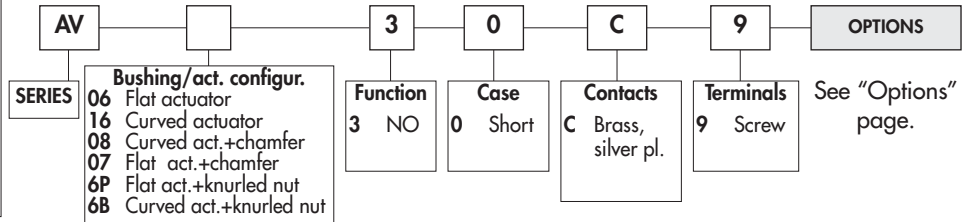


Snap action security pushbutton switches Ø 16 mm (.629)

Momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- Travel : 1,60 mm (.063) ± 0,3 mm (.011)
- Max. current/voltage rating with resistive load : 200mA 48 VDC - 100mA 48VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 50.000 cycles at 200mA 48VDC
100.000 cycles at 100mA 48VDC
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Mechanical life : 1.000.000 cycles
- Packaging unit : 60 pieces

MATERIALS

- Case : PBT
- Contacts : brass, silver plated (C)
- Bushing and actuator : see "Options" page

CUT-OUT

- Panel cut-out : Ø 16,2 mm (.637)
- Min. pitch for matrix mounting : 24 mm x 24 mm (.944 x .944) (AV6P & AV6B : 20 mm x 20 mm)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

Flat or curved actuator - screw terminals

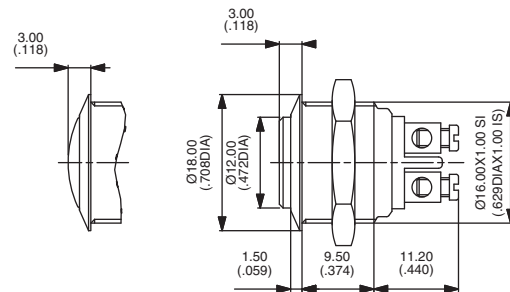
Hex nut 19 (.748) across flats



Flat actuator
AV0630C9

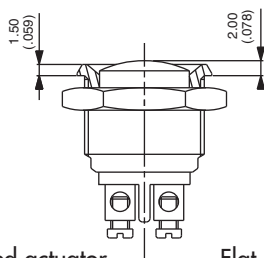


Curved actuator
AV1630C9



Screw terminals for wires 1,5 mm² max.

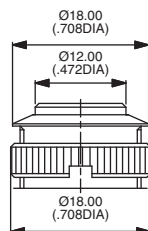
With chamfer



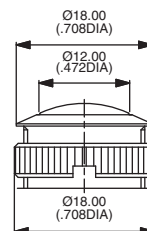
Curved actuator
AV0830C9

Flat actuator
AV0730C9

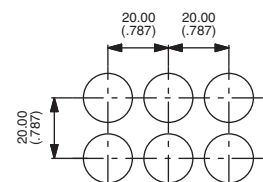
With knurled nut for matrix mounting 20 x 20 - AV6P and AV6B



Flat actuator
AV6P30C9



Curved actuator
AV6B30C9



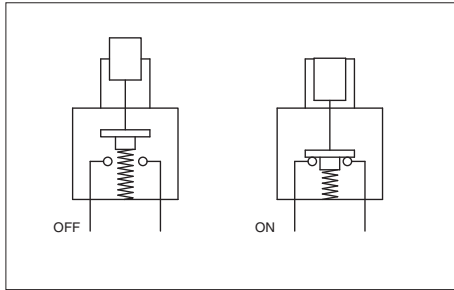
Wrench available under P/N U1990.



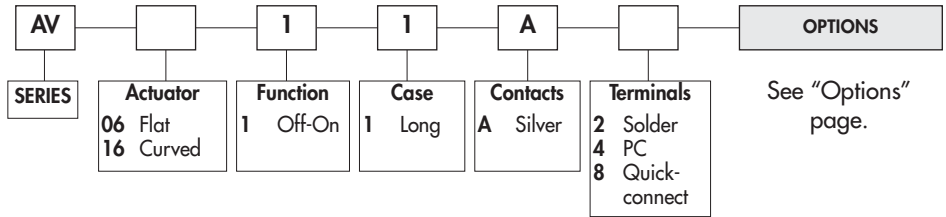
AV series

Security pushbutton switches Ø 16 mm (.629)

Latching action



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load : 1,5A 250VAC - 1A 24VDC
- Initial contact resistance : 50mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms 50 Hz min. between terminals
1 000 Vrms 50 Hz between terminals and frame
- Electrical life : 100.000 cycles at 1,5A 250VAC
40.000 cycles at 1A 24VDC
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Mechanical life : 200.000 cycles
- Hand soldering : 300°C, 5 sec. max.
- Packaging unit : 25 pieces

MATERIALS

- Case : PA-6T, UL94-V0
- Contacts : silver (A)
Gold plated silver (AD) on request
- Bushing and actuator : see "Options" page

CUT-OUT

- Panel cut-out : Ø 16,2 mm (.637)
- Min. pitch for matrix mounting : 24 mm x 24 mm (.944 x .944)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

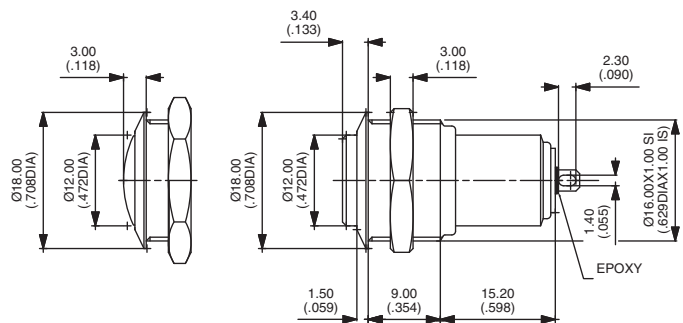
Flat or curved actuator - solder lug terminals

Hex nut 19 (.748) across flats

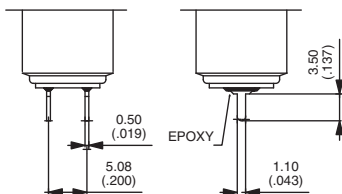


Flat actuator
AV0611A2 OFF - ON

Curved actuator
AV1611A2 OFF - ON



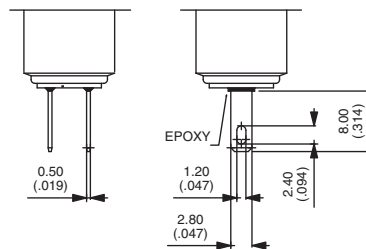
Straight PC terminals



Flat actuator
AV0611A4

Curved actuator
AV1611A4

Quick-connect terminals



Flat actuator
AV0611A8

Curved actuator
AV1611A8

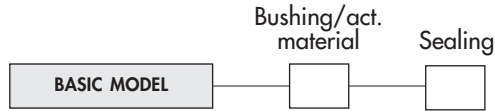
AV series



Security pushbutton switches Ø 16 mm (.629)

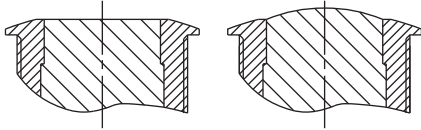
Options

After selecting basic model number, fill in last 2 boxes with desired options.



BUSHING/ACTUATOR MATERIALS

Flat or curved metal actuator



CODE	BUSHING	ACTUATOR
00 (standard)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
40	Stainless steel	Stainless steel

SEALING

- Blank** No sealing
- K** Front panel sealing (IP65)

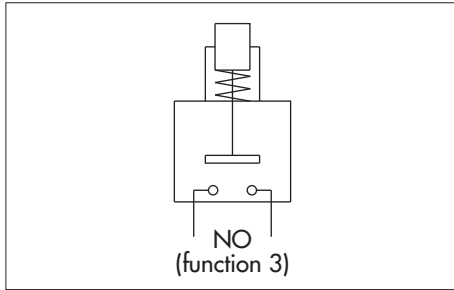
B



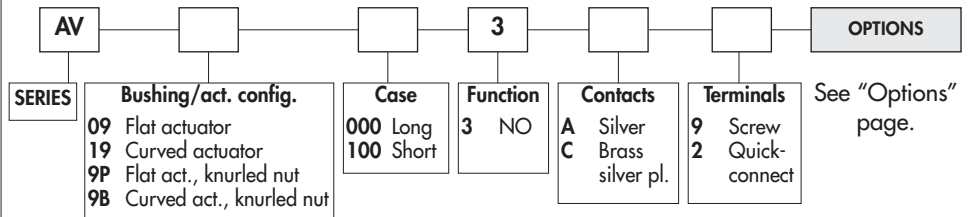
AV series

Security pushbutton switches Ø 19 mm (.748)

Momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - A contacts : 4A 12VDC, 500.000 cycles
 - C contacts : 2A 48 VDC, 10.000 cycles
- Approved ratings of models with long case and A contacts (AV..000) :
 - UL-CSA : 4A 250VAC - 8A 125VAC - 6.000 cycles
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals and frame
2.000 Vrms 50 Hz min. between terminals
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 11 mm (.433) max.
- Operating temperature : -30°C to +70°C
- Mechanical life : 1.000.000 cycles
- Hand soldering : 300°C, 3 sec. max.
- Packaging unit : 40 pieces

MATERIALS

- Case : PBT
- Contacts : silver (A) or brass, silver plated (C)
- Bushing and actuator : see "Options" page

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181) (AV9P & AV9B : 25 mm x 25 mm)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

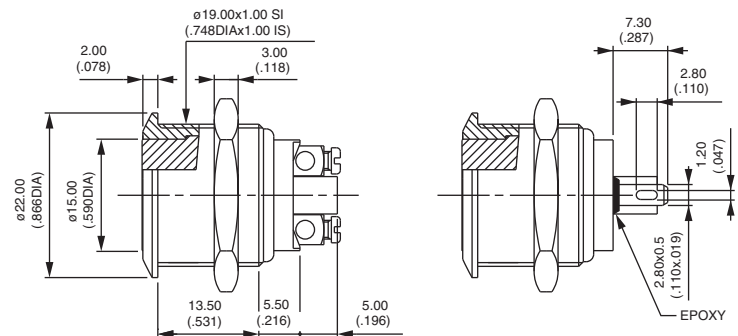
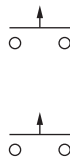
Flat actuator - short case - 48VDC - AV09100

Hex nut 22 (.866) across flats



Screw terminals
AV091003•9

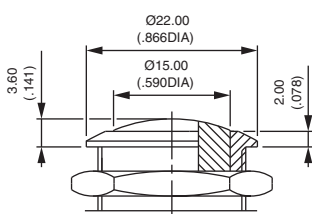
Solder lug / quick-connect term.
AV091003•2



Screw terminals for wires 1,5 mm² max.

Contacts : replace • with A (silver) or C (silver plated brass).

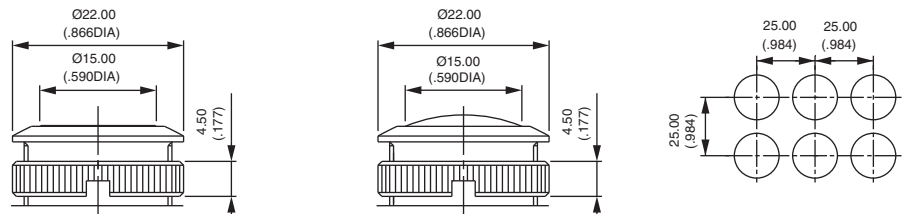
Curved actuator - short case



Screw terminals
AV191003•9

Solder lug / quick-connect terminals
AV191003•2

With knurled nut for matrix mounting 25 x 25 - AV9P and AV9B



Flat actuator, screw terminals
AV9P1003•9
Flat actuator, solder lug term.
AV9P1003•2

Curved actuator, screw terminals
AV9B1003•9
Curved actuator, solder lug term.
AV9B1003•2

Wrench available under P/N U1929

AV series

Security pushbutton switches Ø 19 mm (.748)

Momentary (NO)



Flat actuator - long case - 250VAC - UL/CSA - AV09000

Hex nut 22 (.866) across flats

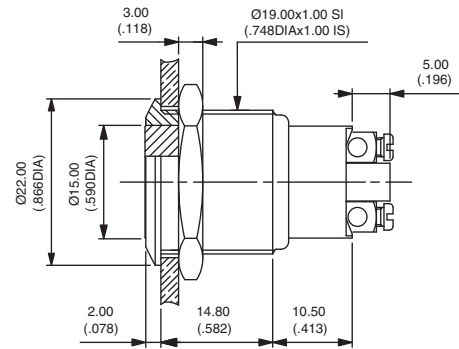


Screw terminals
AV090003A9



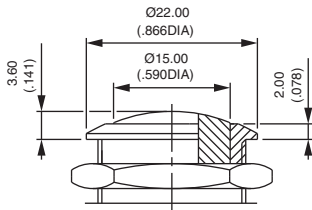
To order switches marked **UL-CSA**, add "UU" at the end of model number.

Screw terminals for wires 1,5 mm² max.



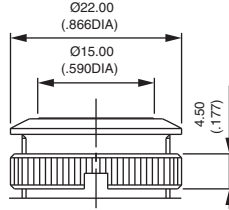
B

Curved actuator - long case

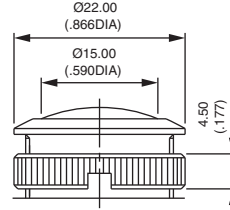


Screw terminals
AV190003A9

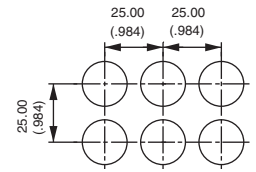
With knurled nut for matrix mounting 25 x 25 - AV9P and AV9B



Flat actuator, screw terminals
AV9P0003A9



Curved actuator, screw terminals
AV9B0003A9



Wrench available under P/N **U1929**.

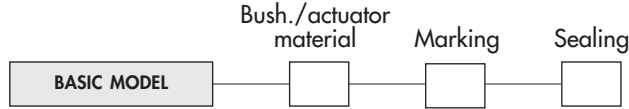


AV series

Security pushbutton switches Ø 19 mm (.748)

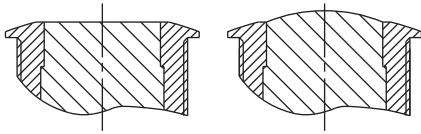
Options

After selecting basic model number, fill in last 3 boxes with desired options.



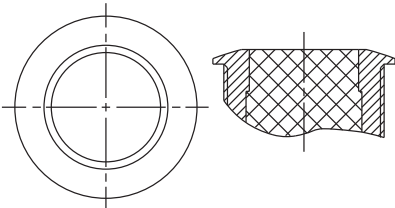
BUSHING/ACTUATOR MATERIALS

Flat or curved metal actuator



CODE	BUSHING	ACTUATOR
00 (standard)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
12	Nickel plated brass	Chrome plated brass
20	Chrome plated brass	Chrome plated brass
30	Chrome plated brass	Stainless steel
40	Stainless steel	Stainless steel
80	Varnished polished brass	Varnished polished brass

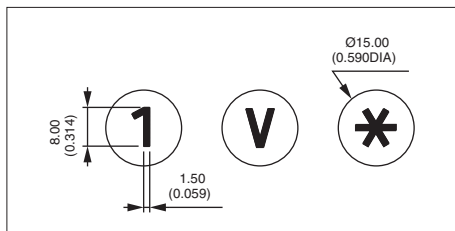
Flat thermoplastic actuator



CODE	BUSHING	ACTUATOR COLOUR
0• (standard)	Nickel plated brass	Replace • with one of the following codes.
2•	Chrome plated brass	1 : blue - 1/4 : dark blue - 2 : black - 3 : green
8•	Varnished polished brass	4 : grey - 5 : yellow - 6 : red - 7/1 : white
		9 : orange

MARKING

- By engraving on flat or curved brass actuator (stainless steel on request)
- by hot stamping on flat thermoplastic actuator



Select an option from each of the two tables below.

TYPE OF MARKING

CODE	TYPE
0 to 9	Numbers 0 to 9
X	Symbol *
Y	Symbol #
A to N	Letters A to N
P to W	Letters P to W
0	Letter O

Letter O : same code and same design as number 0.

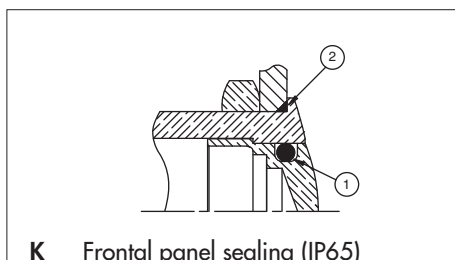
For special symbols, consult factory.
Minimum order : 500 pieces

COLOUR OF MARKING

CODE	COLOUR
Brass actuator	
0 (standard)	Same as finish
2	Black
Note : a finished product supplied in version "0" cannot be modified to version "2".	
Thermoplastic actuator	
2	Black
7	White

SEALING

Blank No sealing



- ① internal gasket
- ② external gasket

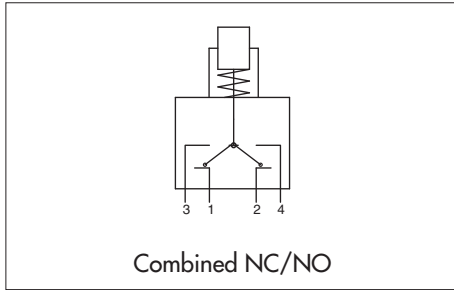
K Frontal panel sealing (IP65)

AV series

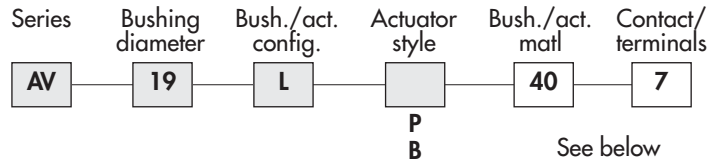
Security pushbutton switches Ø 19 mm (.748)

New!

Momentary (NC/NO)



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load :
5A 250VAC - 5A 125VAC - 6.000 cycles
5A 15VDC - 3A 30VDC - 50.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between term. and frame
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 9 mm (.354) max.
- Operating temperature : -20°C to +85°C
- Mechanical life : 1.000.000 cycles
- Front panel sealing : IP65 and IP69K
- Packaging unit : 20 pieces

MATERIALS

- Case : PA 6/6
- Contacts : silver
- Bushing : stainless steel (std)
- Actuator : stainless steel (std)

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting :
30 mm x 30 mm (1.181x1.181)

All model numbers below are for switches with standard bushing/actuator material.

BASIC MODEL

Solder lug terminals - AV19..407



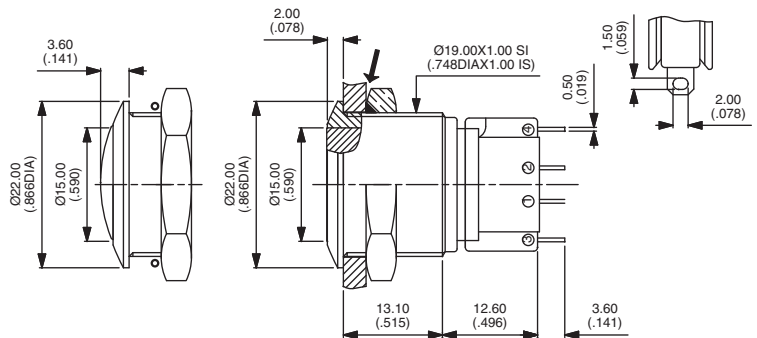
Flat actuator
AV19LP407

Curved actuator
AV19LB407



→ O-ring

Hex nut 22 (.866) across flats



BUSHING/ACTUATOR MATERIALS

For non-standard material, replace **40** with one of the following codes.

CODE	BUSHING	ACTUATOR
00	Nickel plated brass	Nickel plated brass
20	Chrome plated brass	Chrome plated brass

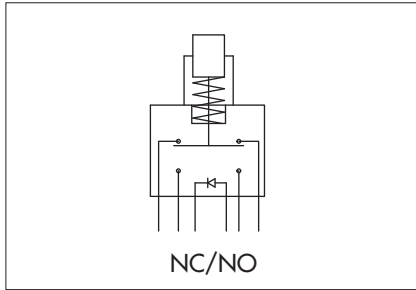


AV series

New!

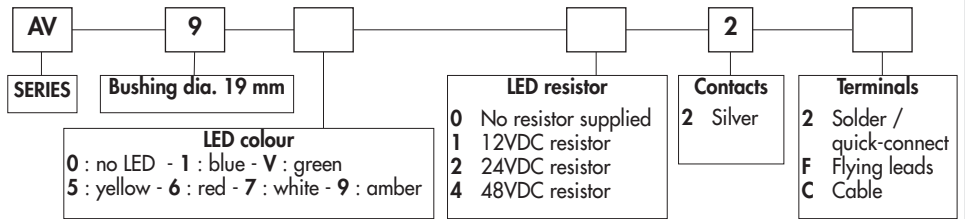
Security pushbutton switches Ø 19 mm (.748)

With illuminated ring - momentary (NC/NO)



ORDER FORMAT

Options : see next page.



SPECIFICATIONS

- Travel : 2 mm ± 0,3 mm (.003)
 - Max. current/voltage rating with resistive load : 1A 30VDC
 - LED voltage : 12VDC, 24VDC or 48VDC
(If not supplied by APEM, a resistor must be series-connected by the user)**
 - Initial contact resistance : 100 mΩ max.
 - Insulation resistance : 10 MΩ min. at 500VDC
 - Dielectric strength : 500 Vrms 50 Hz min. between terminals
1.000 Vrms 50 Hz min. between terminals and frame
 - Electrical life : 250.000 cycles at full load
 - Operating force : 5N ± 2N
 - Torque : 5 Nm min. - 14 Nm max. applied to nut
 - Panel thickness : 1 (.039) to 6 mm (.236) max.
 - Mechanical life : 1.000.000 cycles
 - Operating temperature : -20°C to +55°C
 - Hand soldering : 350°C, 5 seconds max.
 - Packaging unit : flying lead/cable models : 1 piece - other models : 40 pieces
- ** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : polyamide, glass filled
- Contacts : silver
- Bushing : see next page
- Actuator : see next page
- Elastomeric membrane : silicone
- LED

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

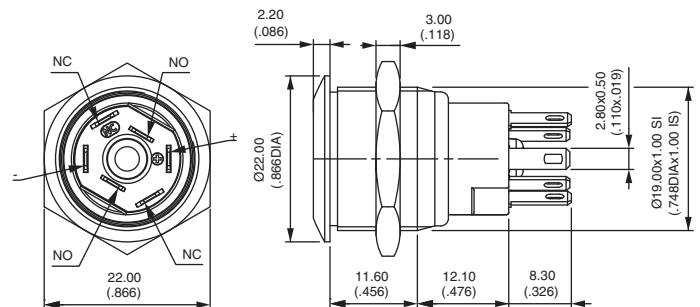
To order a product, select a basic model below and add the desired LED colour and voltage. Then select the desired options on next page.

Flat actuator - solder lug terminals

Hex nut 22 (.866) across flats



Illuminated (select LED colour above) *
AV9•022
 Non-illuminated
AV90022



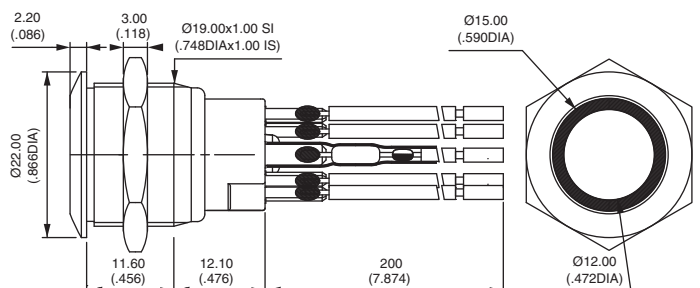
* No LED resistor supplied on this model.

Flat actuator - flying lead terminals

Hex nut 22 (.866) across flats



Illuminated (select LED colour & resistor above)
AV9••2F
 Non-illuminated
AV9002F



AV series

Security pushbutton switches Ø 19 mm (.748)

New!



With illuminated ring - momentary (NC/NO)

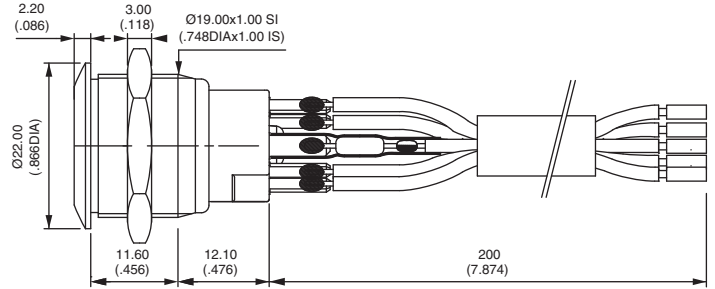
Flat actuator - cable terminals

Hex nut 22 (.866) across flats



Illuminated (select colour & resistor)
AV9••2C

Non-illuminated
AV9002C



B

After selecting basic model No., fill in last 5 boxes with desired options.



FLYING LEAD PROTECTION

- 0 No protection and/or no flying leads
- 1 Heat-shrink sleeves
- 2 Tube + epoxy

FLYING LEAD/CABLE LENGTH

- 000 No flying leads / no cable
- 020 Length 20 cm (standard)
- XXX Length in centimeters

RING COLOURS

CODE	COLOUR	CODE	COLOUR
1	Blue	6	Red
2	Black *	7	Opal white (std)
3	Green	8	Translucent
4	Grey *	9	Orange
5	Yellow		

* non-illuminated only

BUSHING/PLUNGER MATERIALS

CODE	BUSHING	ACTUATOR
00	Brass, nickel plated	Brass, nickel plated
40	Stainless steel 303	Stainless steel 303
4A	Stainless steel 304	Stainless steel 304
4B	Stainless steel 316	Stainless steel 316

Other : on request.

SEALING

Blank No sealing



K Front panel sealing (IP67)

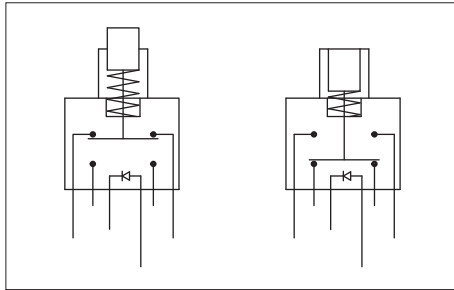
① internal membrane

② external gasket

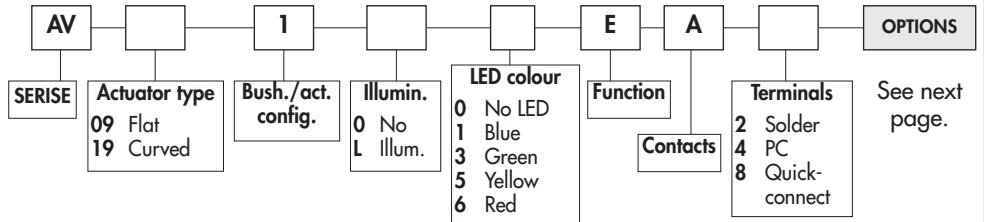
AV series

Security pushbutton switches Ø 19 mm (.748)

Latching - illuminated and non-illuminated



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 48 VDC
 - LED voltage and consumption : blue 3,5V 10mA, green : 2V 10mA yellow & red : 2V 20mA (a resistor must be series-connected by the user)**
 - Initial contact resistance : 50 mΩ max.
 - Insulation resistance : 1.000 MΩ min. at 500VDC
 - Dielectric strength : 1 000 Vrms 50 Hz min. between terminals 500 Vrms 50 Hz min. between terminals and frame
 - Electrical life : 500.000 cycles at 2A 48VDC
 - Torque : 5 Nm min.- 14 Nm max. applied to nut
 - Panel thickness : 1 (.039) to 9 mm (.354) max.
 - Operating temperature : -30°C to +70°C
 - Mechanical life : 1.000.000 cycles
 - Hand soldering : 300°C, 4 seconds max.
 - Packaging unit : 20 pieces
- ** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : PA6T UL94-V0
- Contacts : silver
- Bushing and actuator : see next page
- LED

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181 x 1.181)

To order a product, select a basic model below and add the desired options selected on next page.

Standard actuator position : the actuator is flush in the non-latched position and recessed in the latched position.

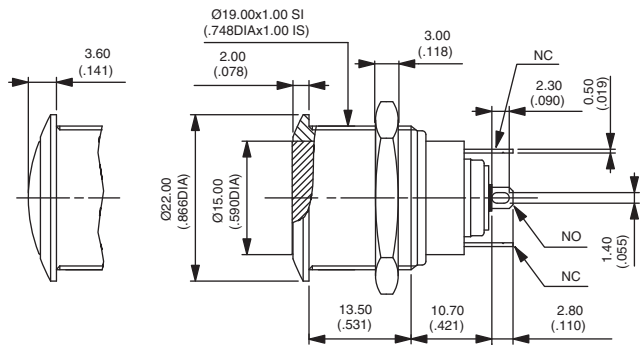
Non-illuminated - solder lug terminals

Hex nut 22 (.866) across flats



Flat actuator *
AV09100EA2 ON - ON

Curved actuator
AV19100EA2 ON - ON



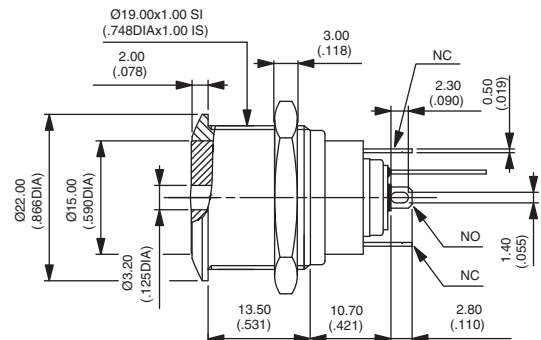
* Also available with prominent actuator in the non-latched position

Illuminated - solder lug terminals

Hex nut 22 (.866) across flats



Flat actuator
AV0911L*EA2 ON - ON



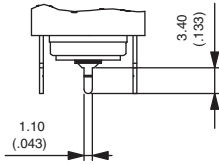
Replace • with desired LED colour.

AV series

Security pushbutton switches Ø 19 mm (.748)

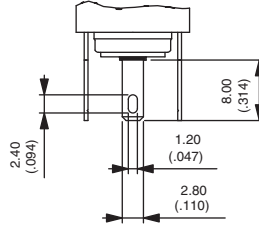
Latching - Options

Straight PC terminals



Replace 2 with 4 at the end of the model numbers shown on previous page.

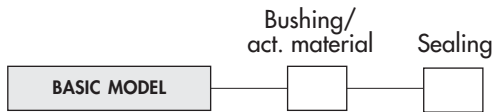
Quick-connect terminals



Replace 2 with 8 at the end of the model numbers shown on previous page.

B

After selecting basic model number, fill in last 2 boxes with desired options.

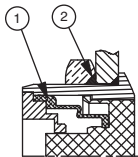


BUSHING/ACTUATOR MATERIALS

CODE	BUSHING	ACTUATOR
00 (std)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
40	Stainless steel	Stainless steel
50	Stainless steel	Nickel plated brass

SEALING

Blank No sealing



K Frontal panel sealing (IP65)

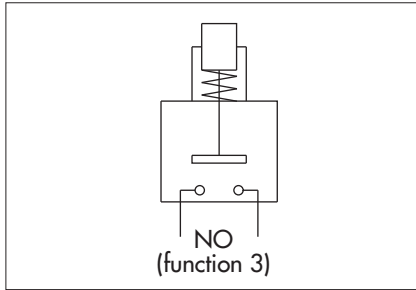
- ① elastomeric membrane
- ② external gasket



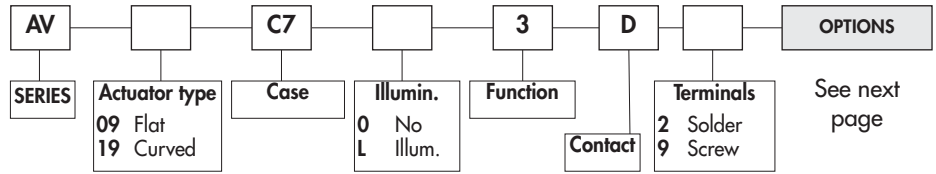
AV series

Snap-action security pushbutton switches Ø 19 mm (.748)

Illuminated and non-illuminated - momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- Travel : 0,7 mm (.027) ±0,1 mm (.003)
 - Max. current/voltage rating with resistive load : 50mA 24VDC
 - LED voltage and consumption : 2-colour LED : 2V (3V max.) 20mA
Other colours : 2V (3V max.) 10mA
A resistor must be series-connected by the user **
 - Initial contact resistance : 100 mΩ max.
 - Insulation resistance : 1.000 MΩ min. at 500VDC
 - Dielectric strength : 500 Vrms 50 Hz min. between terminals
2.000 Vrms 50 Hz min. between terminals and frame
 - Electrical life : 1.000.000 cycles at full load
 - Operating force : 7 N ±2N
 - Torque : 5 Nm min.- 14 Nm max. applied to nut
 - Panel thickness : 1 (.039) to 6 mm (.236) max.
 - Operating temperature : -30°C to +70°C
 - Hand soldering : 270°C, 3 seconds max.
 - Packaging unit : 40 pieces
- ** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : PBT UL94-V0
- Terminals : brass, gold plated
- Contacts : gold plated dome
- Bushing and actuator : see next page
- LED

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

Flat actuator - non-illuminated

Hex nut 22 (.866) across flats

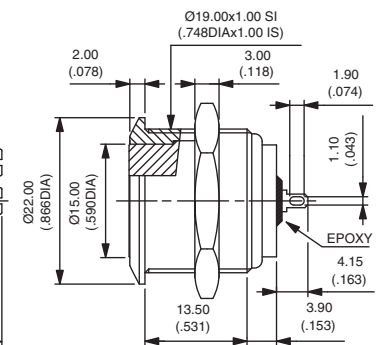
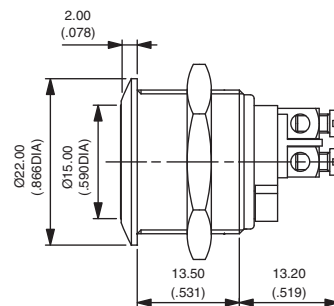


Solder lug terminals
AV09C703D2

Screw terminals
AV09C703D9



Also available with curved actuator :
AV19C703D2 or **AV19C703D9**



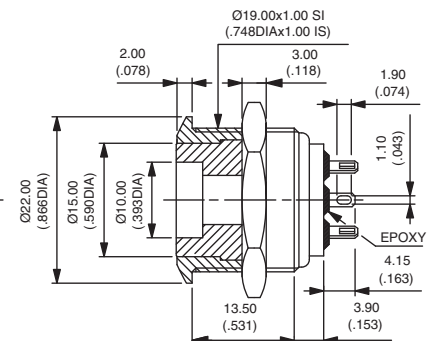
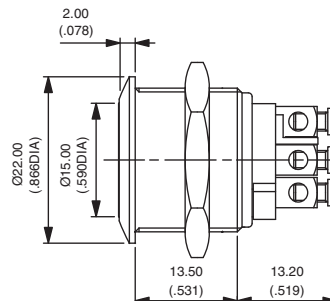
Flat actuator - illuminated

Hex nut 22 (.866) across flats



Solder lug terminals
AV09C7L3D2

Screw terminals
AV09C7L3D9



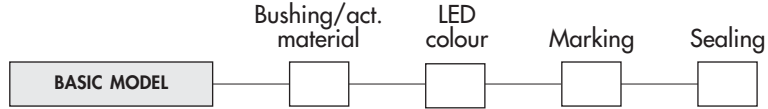
AV series



Snap-action security pushbutton switches Ø 19 mm (.748)

Options

After selecting basic model no.,
fill in last 4 boxes
with desired options.



BUSHING/ACTUATOR MATERIALS

Non-illuminated models

CODE	BUSHING	ACTUATOR
00 (std)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
30	Chrome plated brass	Stainless steel
40	Stainless steel	Stainless steel
80	Varnished polished brass	Varnished polished brass

Illuminated models

CODE	BUSHING	ACTUATOR
00 (std)	Nickel plated brass	Nickel plated brass
20	Chrome plated brass	Chrome plated brass
40	Stainless steel	Stainless steel
50	Stainless steel	Nickel plated brass
80	Varnished polished brass	Varnished polished brass

LED COLOURS

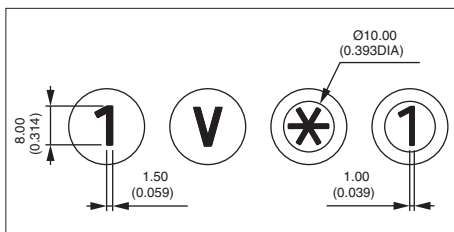
Blank No LED

1 : Blue - 3 : Green - 5 : Yellow - 6 : Red - 7 : White - 9 : Amber - 2 : Red/green

MARKING

For flat or curved actuator.

- by engraving on non-illuminated brass actuator (stainless steel on request).
- by hot stamping on thermoplastic insert (illuminated actuators)



TYPE OF MARKING

CODE	TYPE
0 to 9	Numbers 0 to 9
X	Symbol *
Y	Symbol #
A to N	Letters A to N
P to W	Letters P to W
0	Letter O

Letter O : same code and same design as number 0.

For special symbols, consult factory.
Minimum order : 500 pieces

COLOUR OF MARKING

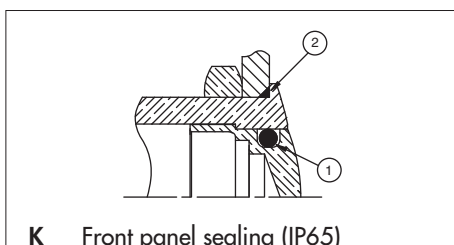
CODE	COLOUR
Non-illuminated actuators	
0 (standard)	Same as finish
2	Black

Note : a finished product supplied in version "0" cannot be modified to version "2".

Illuminated actuators	
2	Black (on white)

SEALING

Blank No sealing



① internal gasket

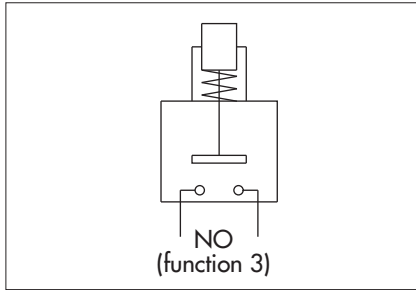
② external gasket



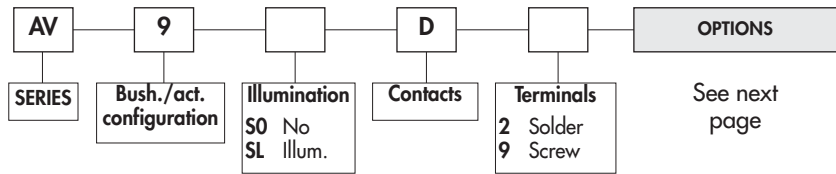
AV series

Snap-action security pushbuttons Ø 19 mm (.748) with overmolded actuator

Illuminated and non-illuminated - momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- **Travel : 0,7 mm (.027) ± 0,1 mm (.003)**
- Max. current/voltage rating with resistive load : 50mA 24VDC
- LED voltage and consumption : 2-colour LED : 2V (3V max.) 20mA
 Other colours : 2V (3V max.) 10mA
 (a resistor must be series-connected by the user)**
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms 50 Hz min. between terminals
 2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 1.000.000 cycles at full load
- Operating force : 7 N ±2N
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Hand soldering : 270°C, 3 sec. max.
- Packaging unit : 16 pieces

** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : PBT UL94-V0
- Terminals : brass, gold plated
- Contacts : gold plated dome
- Bushing : see next page
- Actuator : stainless steel, with thermoplastic overmolding
- LED

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

Flat actuator - solder lug terminals

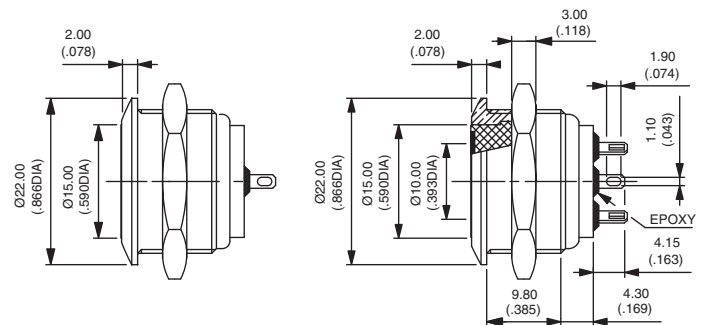
Hex nut 22 (.866) across flats



Illuminated
AV9SLD2



Non-illuminated
AV9SOD2



Also available with bushing Ø 22 (.866) : on request.

Flat actuator - screw terminals

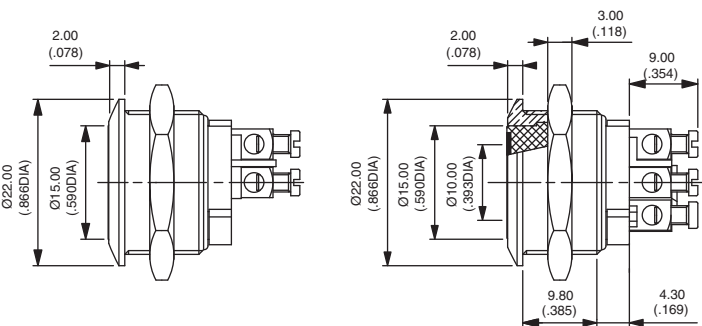
Hex nut 22 (.866) across flats



Illuminated
AV9SLD9



Non-illuminated
AV9SOD9



Also available with bushing Ø 22 (.866) : on request.

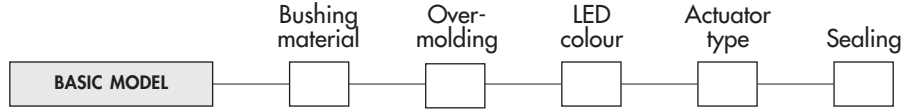
AV series



Snap-action security pushbuttons Ø 19 mm (.748) with overmolded actuator

Options

After selecting basic model no., fill in last 5 boxes with desired options.



BUSHING MATERIALS

CODE	MATERIAL
0 (std)	Nickel plated brass
2	Chrome plated brass
4	Stainless steel
5	Gold plated brass
6	Chrome plated brass, satin
7	Chrome pl. brass, matt black
8	Varnished polished brass
9	Polished brass

OVERMOLDING COLOURS

CODE	COLOUR	CODE	COLOUR
1	Blue	6	Red
2	Black *	7	White
3	Green	8	Translucent
4	Grey *	9	Orange
5	Yellow		

* non-illuminated only

LED COLOURS

CODE	COLOUR
Blank	No LED
1	Blue
2	Red/green
3 **	Green
V **	Green, high intensity
5	Yellow
6	Red
7	White
9	Amber

** To order a green LED for actuator style 002, always use code V. Other actuator styles can be ordered with LED code 3 or V.

ACTUATOR STYLES

The ring and symbols are obtained by photochemical engraving of a stainless steel insert. The insert is then overmolded in the desired colour.

The following actuator styles are available. For other types, consult factory.

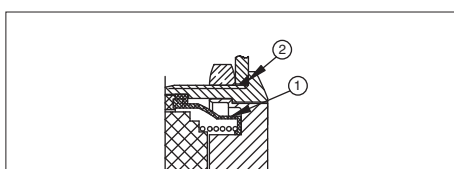
CODE	001	002	003	004	005
DESCRIPTION	Illuminated ring and disc	Illuminated ring	Arrow	Loudspeaker OFF	Opening
RING/SYMBOL					

CODE	006	008	009	010	011
DESCRIPTION	Validation	Closing	Standby	Cancel	Power
SYMBOL					

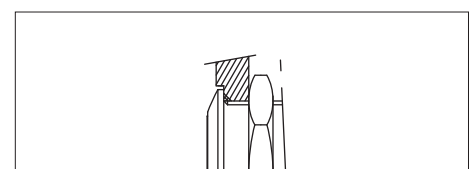
SEALING

Blank No sealing

Recommended panel mounting for IP69K



① internal membrane
② external gasket

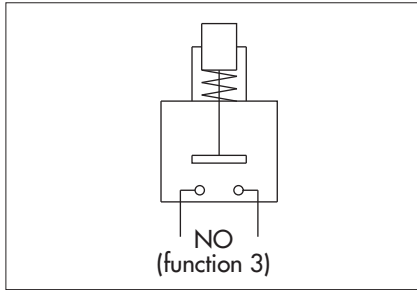


K Front panel sealing (IP69K)

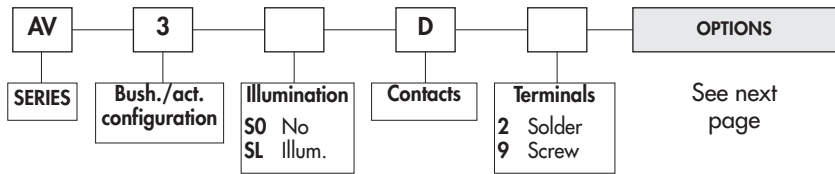
AV series

New! Snap-action security pushbuttons Ø 22 mm (.866) with overmolded actuator

Illuminated and non-illuminated - momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- **Travel : 0,7 mm (.027) ± 0,1 mm (.003)**
- Max. current/voltage rating with resistive load : 50mA 24VDC
- LED voltage and consumption : 2-colour LED : 2V (3V max.) 20mA
Other colours : 2V (3V max.) 10mA
(a resistor must be series-connected by the user)**
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms 50 Hz min. between terminals
2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 1.000.000 cycles at full load
- Operating force : 7 N ± 2N
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Hand soldering : 270°C, 3 sec. max.
- Packaging unit : 16 pieces

** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : PBT UL94-V0
- Terminals : brass, gold plated
- Contacts : gold plated dome
- Bushing : see next page
- Actuator : stainless steel, with thermoplastic overmolding
- LED

CUT-OUT

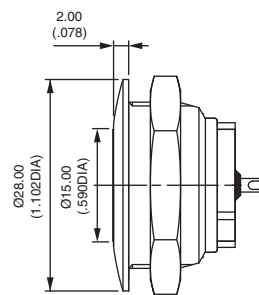
- Panel cut-out : Ø 22,2 mm (.874)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

Flat actuator - solder lug terminals

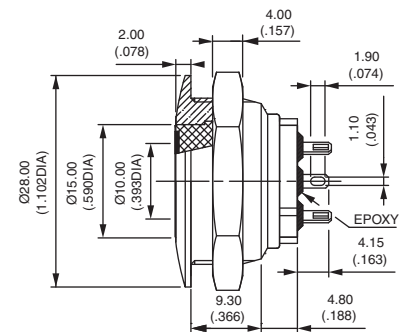


Illuminated
AV3SLD2

Non-illuminated
AV3SOD2



Hex nut 25 (.984) across flats

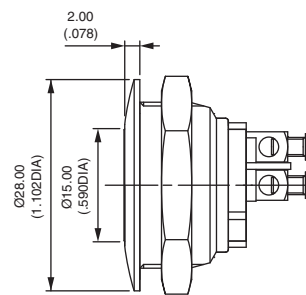


Flat actuator - screw terminals

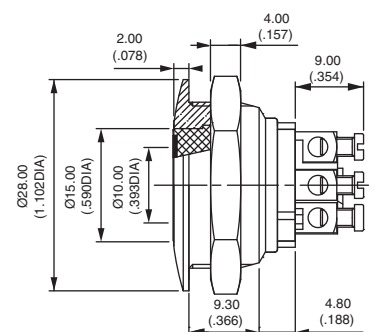


Illuminated
AV3SLD9

Non-illuminated
AV3SOD9



Hex nut 25 (.984) across flats



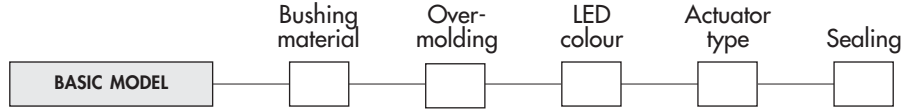
AV series

Snap-action security pushbuttons Ø 22 mm (.866) with overmolded actuator

New!

Options

After selecting basic model no., fill in last 5 boxes with desired options.



BUSHING MATERIALS

CODE	MATERIAL
0 (std)	Nickel plated brass
2	Chrome plated brass
4	Stainless steel
5	Gold plated brass
6	Chrome plated brass, satin
7	Chrome pl. brass, matt black
8	Varnished polished brass
9	Polished brass

OVERMOLDING COLOURS

CODE	COLOUR	CODE	COLOUR
1	Blue	6	Red
2	Black *	7	White
3	Green	8	Translucent
4	Grey *	9	Orange
5	Yellow		

* non-illuminated only

LED COLOURS

CODE	COLOUR
Blank	No LED
1	Blue
2	Red/green
3 **	Green
V **	Green, high intensity
5	Yellow
6	Red
7	White
9	Amber

** To order a green LED for actuator style 002, always use code V. Other actuator styles can be ordered with LED code 3 or V.

ACTUATOR STYLES

The ring and symbols are obtained by photochemical engraving of a stainless steel insert. The insert is then overmolded in the desired colour.

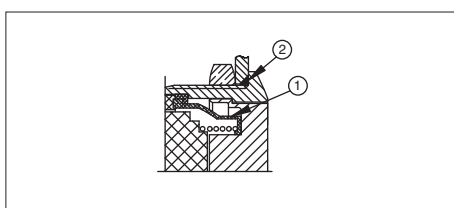
The following actuator styles are available. For other types, consult factory.

CODE	001	002	003	004	005
DESCRIPTION	Illuminated ring and disc	Illuminated ring	Arrow	Loudspeaker OFF	Opening
RING/SYMBOL					

CODE	006	008	009	010	011
DESCRIPTION	Validation	Closing	Standby	Cancel	Power
SYMBOL					

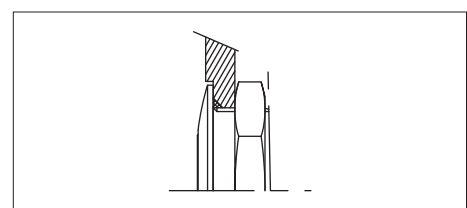
SEALING

Blank No sealing



① internal membrane
② external gasket

Recommended panel mounting for IP69K



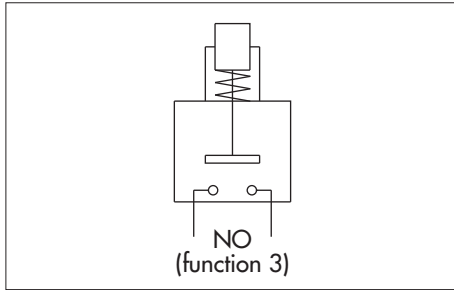
K Front panel sealing (IP69K)



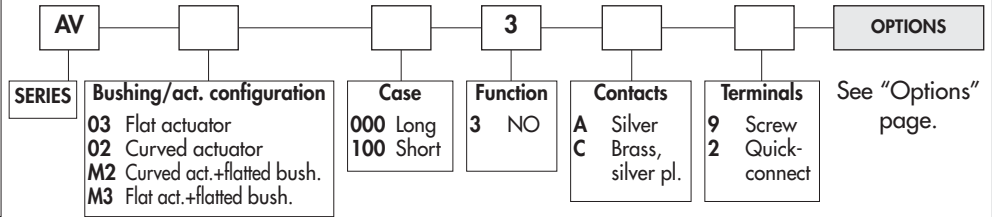
AV series

Security pushbutton switches Ø 22 mm (.866)

Momentary (NO)



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - A contacts : 4A 12VDC, 500.000 cycles
 - C contacts : 2A 48 VDC, 10.000 cycles
- Approved ratings of models with long case and A contacts (AV..000) :
 - UL-CSA : 4A 250VAC - 8A 125VAC - 6.000 cycles
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals and frame
2.000 Vrms 50 Hz min. between terminals
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 11 mm (.433) max.
- Operating temperature : -30°C to +70°C
- Mechanical life : 1.000.000 cycles
- Hand soldering : 300°C, 3 sec. max.
- Packaging unit : 20 pieces

MATERIALS

- Case : PBT
- Contacts : silver (A) or brass, silver plated (C)
- Bushing and actuator : see "Options" page

CUT-OUTS

- Panel cut-out : Ø 22,2 mm (.874)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below or on next page and add the desired options.

BASIC MODEL

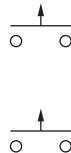
Flat actuator - short case - 48VDC - AV03100

Hex nut 25 (.984) across flats

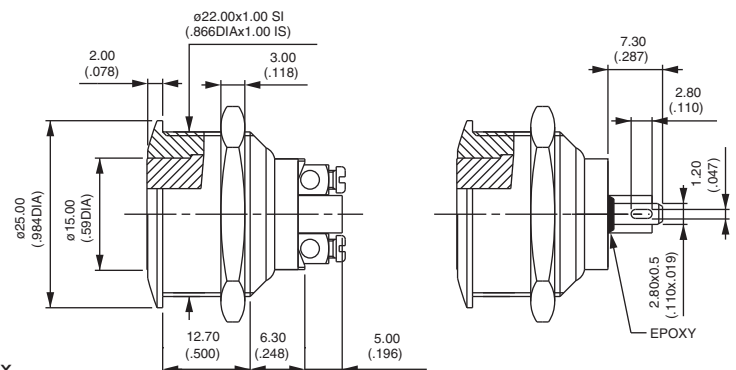


Screw terminals
AV031003•9

Solder lug /
quick-connect term.
AV031003•2

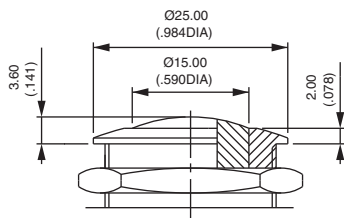


Screw terminals for wires 1,5 mm² max.



Contacts : replace • with A (silver) or C (silver plated brass).

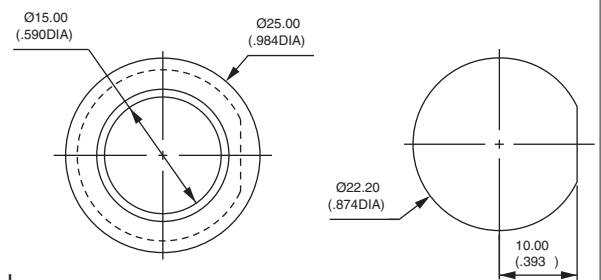
Curved actuator - short case



Screw terminals
AV021003•9

Solder lug / quick-connect terminals
AV021003•2

Flatted bushing - short case - AVM3 and AVM2



Flat actuator, screw terminals

AVM31003•9

Curved actuator, screw terminals

AVM21003•9

AV series

Security pushbutton switches Ø 22 mm (.866)

Momentary (NO) - momentary (NC) - alternate action



Flat actuator - long case - 250VAC - UL/CSA - AV03000

Hex nut 25 (.984) across flats

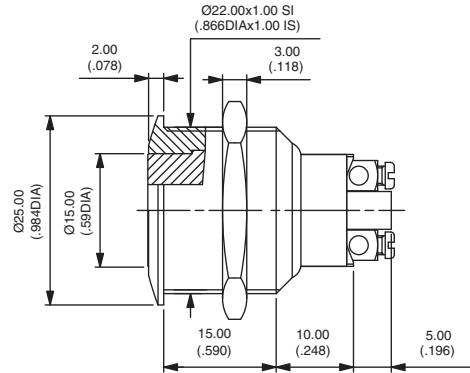


Screw terminals
AV030003A9



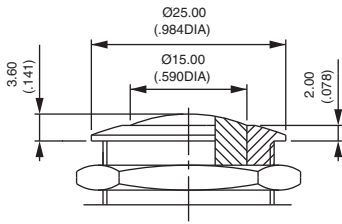
To order switches marked **UL-CSA**, add "UU" at the end of model number.

Screw terminals for wires 1,5 mm² max.



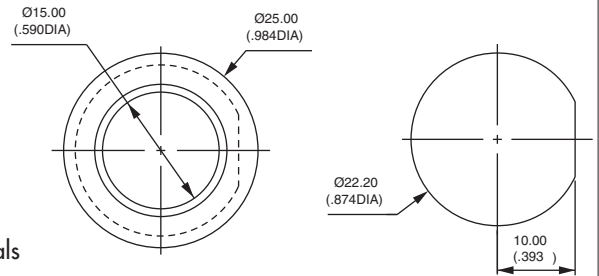
B

Curved actuator - long case



Screw terminals
AV020003A9

Flatted bushing - long case - AVM3 and AVM2



Flat actuator, screw terminals
AVM30003•9
 Curved actuator, screw terminals
AVM20003•9

MOMENTARY NORMALLY CLOSED MODEL (NC)

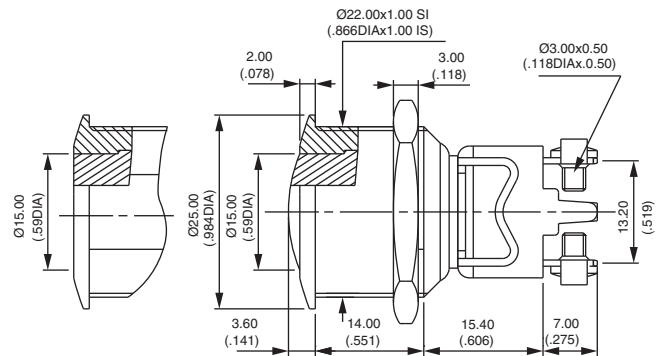
Bushing Ø 22 (.866) - AV..1200

Hex nut 25 (.984) across flats

- Single pole, screw terminals, without marking
- Silver plated copper contacts (C)
- Max. current/voltage rating with resistive load : 2A 250VAC - 3A 125VAC - 2,5A 24VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. betw. term. and frame
 2.000 Vrms. 50 Hz min. between terminals
- Electrical life : 100.000 cycles at 0,3A 24VAC or DC
 10.000 cycles at full load
- Packaging unit : 20 pieces

Flat actuator
AV031202C900

Curved actuator
AV021202C900

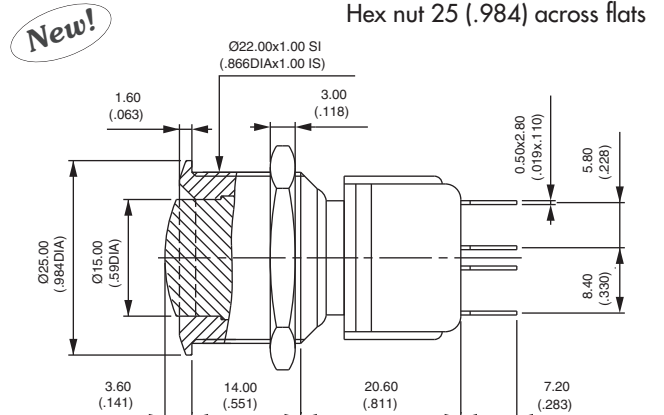


Bushing Ø 22 (.866) - alternate action - AV..4700

Hex nut 25 (.984) across flats

- Double pole, solder lug/quick-connect term., curved actuator
- Silver contacts
- Max. current/voltage rating with resistive load : 3(1,5)A 250VAC - 6A 125VAC - 3A 24VAC or DC
- Dielectric strength : 3.000 Vrms min. between terminals and frame
- Electrical life : 10.000 cycles at full load
 50.000 cycles at 1A 24VAC or DC
- Mechanical life : 100.000 cycles
- Packaging unit : 10 pieces

AV044746A200



New!

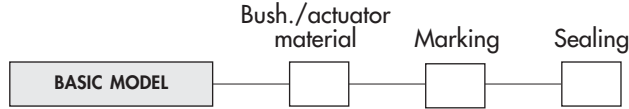


AV series

Security pushbutton switches Ø 22 mm (.866)

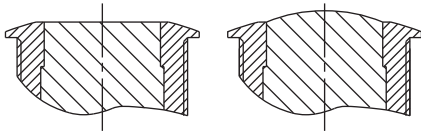
Options

After selecting basic model number, fill in last 3 boxes with desired options.



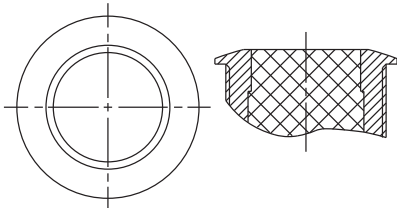
BUSHING/ACTUATOR MATERIALS

Flat or curved metal actuator



CODE	BUSHING	ACTUATOR
00 (standard)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
12	Nickel plated brass	Chrome plated brass
20	Chrome plated brass	Chrome plated brass
30	Chrome plated brass	Stainless steel
40	Stainless steel	Stainless steel
80 **	Varnished polished brass	Varnished polished brass

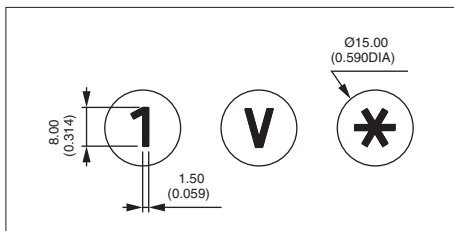
Flat thermoplastic actuator



CODE	BUSHING	ACTUATOR COLOUR
0• (standard)	Nickel plated brass	Replace • with one of the following codes.
2•	Chrome plated brass	1 : blue - 1/4 : dark blue - 2 : black - 3 : green
8•	Varnished polished brass	4 : grey - 5 : yellow - 6 : red - 7/1 : white
		9 : orange

MARKING

- By engraving on flat or curved brass actuator (stainless steel on request)
- by hot stamping on flat thermoplastic actuator



Select an option from each of the two tables below.

TYPE OF MARKING

CODE	TYPE
0 to 9	Numbers 0 to 9
X	Symbol *
Y	Symbol #
A to N	Letters A to N
P to W	Letters P to W
0	Letter O

Letter O : same code and same design as number 0.

For special symbols, consult factory.
Minimum order : 500 pieces

COLOUR OF MARKING

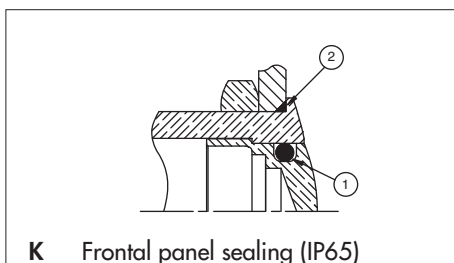
CODE	COLOUR
Brass actuator	
0 (standard)	Same as finish
2	Black

Note : a finished product supplied in version "0" cannot be modified to version "2".

CODE	COLOUR
Thermoplastic actuator	
2	Black
7	White

SEALING

Blank No sealing



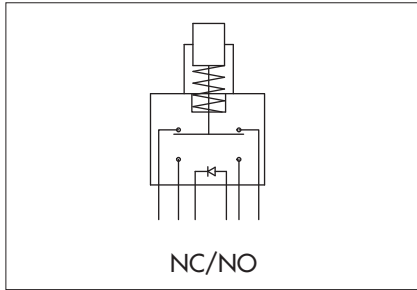
- ① internal gasket
- ② external gasket

AV series

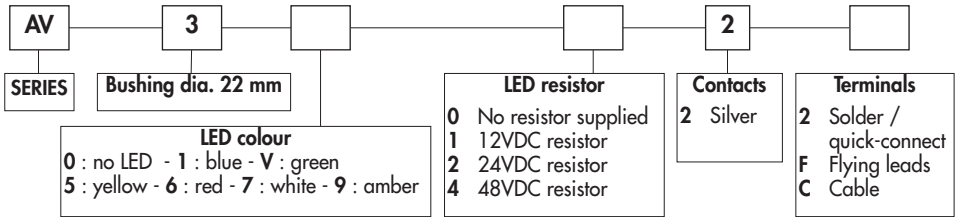
Security pushbutton switches Ø 22 mm (.866)

With illuminated ring - momentary (NC/NO)

New!



ORDER FORMAT



SPECIFICATIONS

- Travel : 2 mm ± 0,3 mm (.003)
 - Max. current/voltage rating with resistive load : 1A 30VDC
 - LED voltage : 12VDC, 24VDC or 48VDC
 (If not supplied by APEM, a resistor must be series-connected by the user)**
 - Initial contact resistance : 100 mΩ max.
 - Insulation resistance : 10 MΩ min. at 500VDC
 - Dielectric strength : 500 Vrms 50 Hz min. between terminals
 1.000 Vrms 50 Hz min. between terminals and frame
 - Electrical life : 250.000 cycles at full load
 - Operating force : 5N ± 2N
 - Torque : 5 Nm min. - 14 Nm max. applied to nut
 - Panel thickness : 1 (.039) to 6 mm (.236) max.
 - Mechanical life : 1.000.000 cycles
 - Operating temperature : -20°C to +55°C
 - Hand soldering : 350°C, 5 seconds max.
 - Packaging unit : flying lead/cable models : 1 piece - other models : 40 pieces
- ** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : polyamide, glass filled
- Contacts : silver
- Bushing : see next page
- Actuator : see next page
- Elastomeric membrane : silicone
- LED

CUT-OUT

- Panel cut-out : Ø 22,2 mm (.874)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired LED colour and voltage. Then select the desired options on next page.

Flat actuator - solder lug terminals

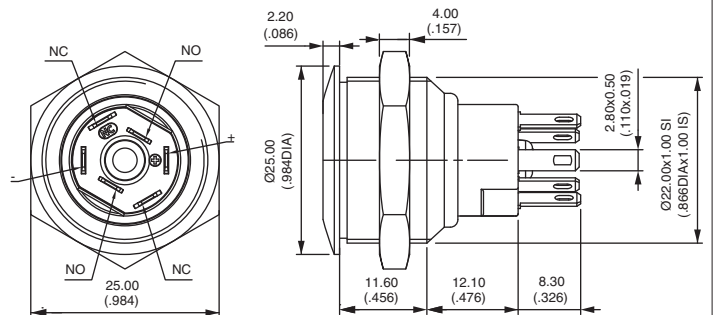
Hex nut 25 (.984) across flats



Illuminated (select LED colour above) *
AV3•022

Non-illuminated
AV30022

* No LED resistor supplied on this model.



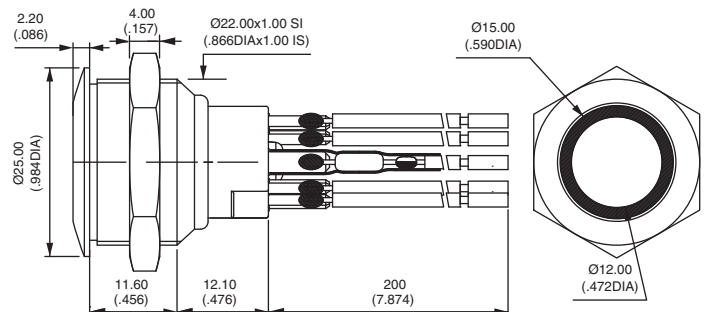
Flat actuator - flying lead terminals

Hex nut 25 (.984) across flats



Illuminated (select LED colour & resistor above)
AV3••2F

Non-illuminated
AV3002F





AV series

New!

Security pushbutton switches Ø 22 mm (.866)

With illuminated ring - momentary changeover (NC/NO)

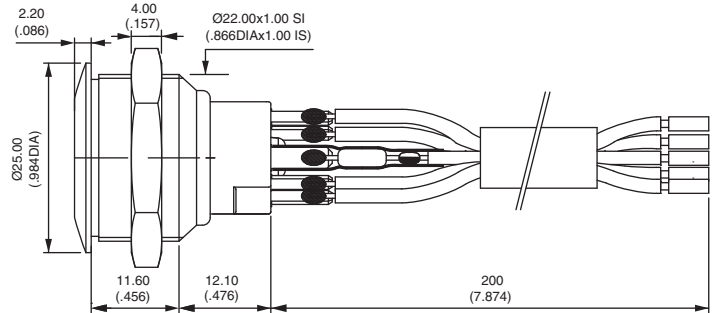
Flat actuator - cable terminals

Hex nut 25 (.984) across flats



Illuminated (select colour & resistor)
AV3••2C

Non-illuminated
AV3002C



After selecting basic model No., fill in last 5 boxes with desired options.



FLYING LEAD PROTECTION

- 0 No protection and/or no flying leads
- 1 Heat-shrink sleeves
- 2 Tube + epoxy

WIRE/CABLE LENGTH

- 000 No flying leads / no cable
- 020 Length 20 cm (7.874) - standard
- XXX Length in centimeters

RING COLOURS

CODE	COLOUR	CODE	COLOUR
1	Blue	6	Red
2	Black *	7	Opal white (std)
3	Green	8	Translucent
4	Grey *	9	Orange
5	Yellow		

* non-illuminated only

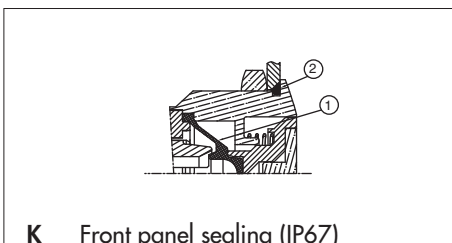
BUSHING/PLUNGER MATERIALS

CODE	BUSHING	ACTUATOR
00	Brass, nickel plated	Brass, nickel plated
40	Stainless steel 303	Stainless steel 303
4A	Stainless steel 304	Stainless steel 304
4B	Stainless steel 316	Stainless steel 316

Other : on request.

SEALING

Blank No sealing

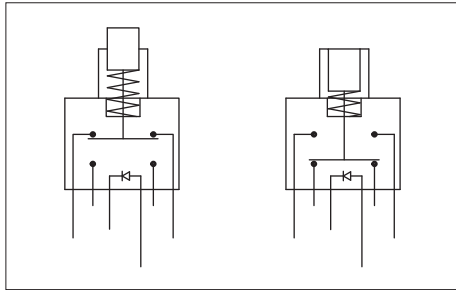


- ① internal membrane
- ② external gasket

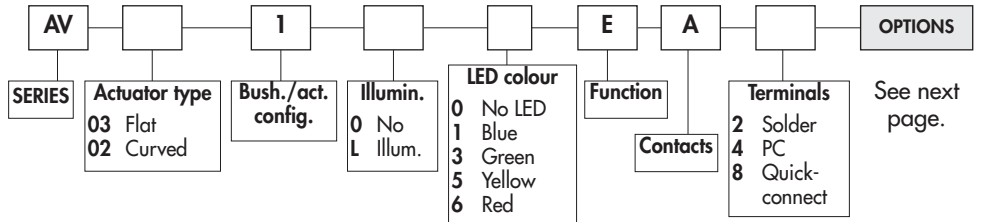
AV series

Security pushbutton switches Ø 22 mm (.866)

Latching - illuminated and non-illuminated



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 48 VDC
 - LED voltage and consumption : blue 3,5V 10mA, green : 2V 10mA yellow & red : 2V 20mA (a resistor must be series-connected by the user)**
 - Initial contact resistance : 50 mΩ max.
 - Insulation resistance : 1.000 MΩ min. at 500VDC
 - Dielectric strength : 1 000 Vrms 50 Hz min. between terminals 500 Vrms 50 Hz min. between terminals and frame
 - Electrical life : 500.000 cycles at 2A 48VDC
 - Torque : 5 Nm min.- 14 Nm max. applied to nut
 - Panel thickness : 1 (.039) to 9 mm (.354) max.
 - Operating temperature : -30°C to +70°C
 - Mechanical life : 1.000.000 cycles
 - Hand soldering : 300°C, 4 seconds max.
 - Packaging unit : 20 pieces
- ** Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

MATERIALS

- Case : PA6T UL94-V0
- Contacts : silver
- Actuator and bushing : see next page
- LED

CUT-OUT

- Panel cut-out : Ø 22,2 mm (.874)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

Standard actuator position : the actuator is flush in the non-latched position and recessed in the latched position.

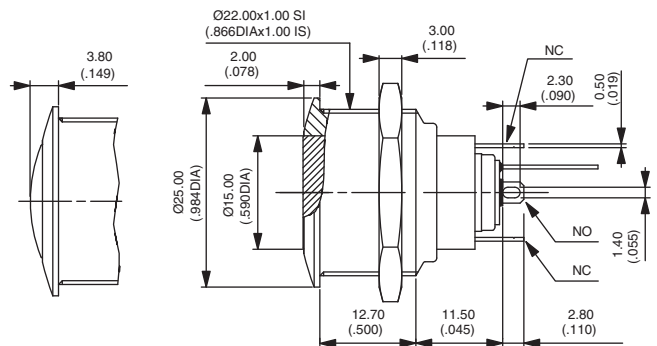
Non-illuminated - solder lug terminals

Hex nut 25 (.984) across flats



Flat actuator *
AV03100EA2 ON - ON

Curved actuator
AV02100EA2 ON - ON



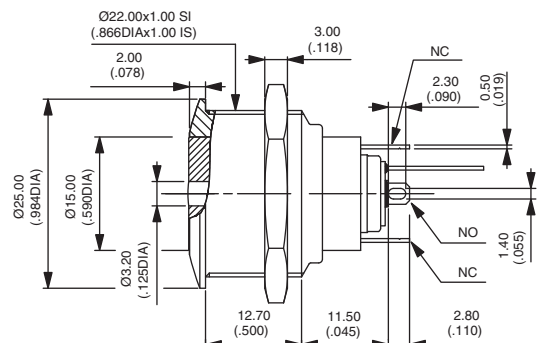
* Also available with prominent actuator in the non-latched position

Illuminated - solder lug terminals

Hex nut 25 (.984) across flats



Flat actuator
AV031L•EA2 ON - ON



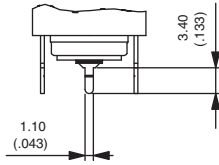
Replace • with desired LED colour.

AV series

Security pushbutton switches Ø 22 mm (.866)

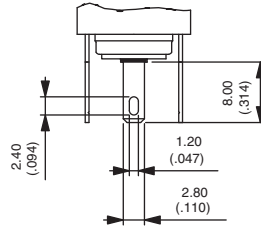
Latching - illuminated and non-illuminated

Straight PC terminals



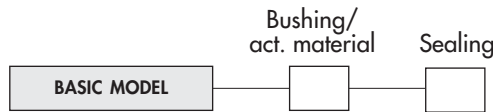
Replace 2 with 4 at the end of the model numbers shown on previous page.

Quick-connect terminals



Replace 2 with 8 at the end of the model numbers shown on previous page.

After selecting basic model number, fill in last 2 boxes with desired options.

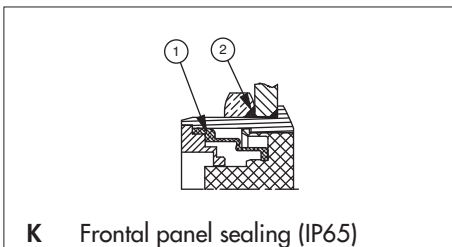


BUSHING/ACTUATOR MATERIALS

CODE	BUSHING	ACTUATOR
00 (std)	Nickel plated brass	Nickel plated brass
10	Nickel plated brass	Stainless steel
40	Stainless steel	Stainless steel
50	Stainless steel	Nickel plated brass

SEALING

Blank No sealing



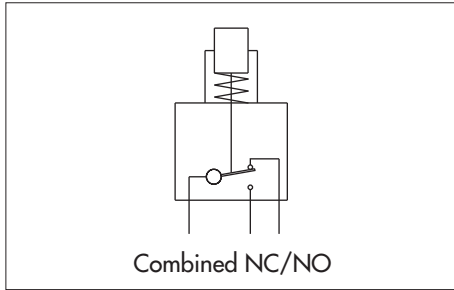
- ① elastomeric membrane
- ② external gasket

AV series

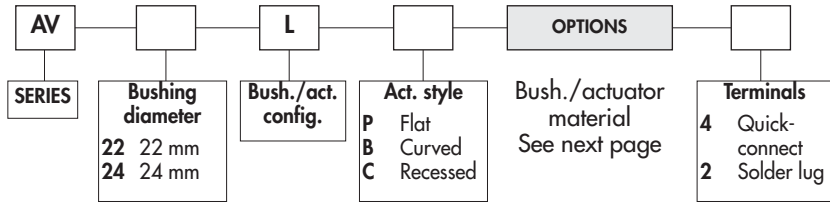


Security pushbutton switches Ø 22 mm (.866) or 24 mm (.944) with large actuator

Momentary (combined NC/NO)



ORDER FORMAT



SPECIFICATIONS

- Max. current/voltage rating with resistive load : 5A 250VAC
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 1.000.000 cycles at 1A 250VAC
100.000 cycles at full load
- Torque : 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -20°C to +55°C
- Mechanical life : 3.000.000 cycles
- Front panel sealing : IP65
- Hand soldering : 300°C, 5 sec. max.
- Packaging unit : 20 pieces (except black chrome plated : 16 pieces)

MATERIALS

- Case : polyester, glass filled
- Contacts : silver/nickel alloy
- Bushing and actuator : see next page.

CUT-OUT

- Panel cut-out : Ø 22,2 mm (.874) or Ø 24,2 mm (.952)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181) or 33 mm x 33 mm (1.299x1.299)

To order a product, select a basic model below or on next page and add the desired bushing/actuator materials.

BASIC MODEL

Flat actuator - AV22LP

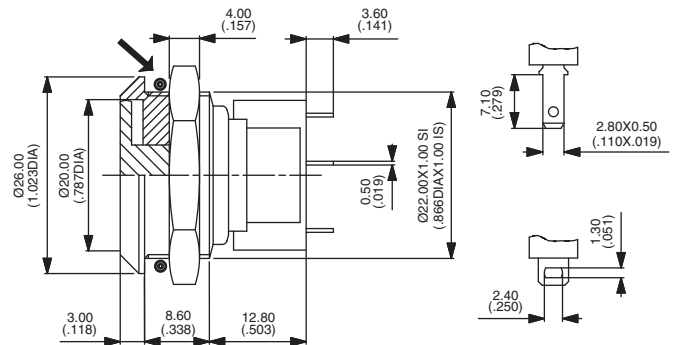


Quick-connect terminals
AV22LP••4

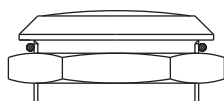
Solder lug terminals
AV22LP••2

→ O-ring

Hex nut 25 (.984) across flats

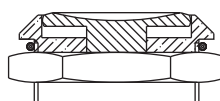


Curved actuator - AV22LB



Quick-connect terminals
AV22LB••4
Solder lug terminals
AV22LB••2

Recessed actuator - AV22LC



Quick-connect terminals
AV22LC••4
Solder lug terminals
AV22LC••2

IT 40 series

Mains pushbutton switches - 6000V dielectric strength

Distinctive features and specifications



- Mains pushbutton switches for PC boards
- Highest dielectric 6 KV
- Latchdown mechanism

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : see table below
- Insulation resistance : 10.000 MΩ min. at 500VDC
- Dielectric strength : 6.000 Vrms 50 Hz min.
(other components to be kept outside protection area A to preserve 6KV on PCB - see drawing on next page)
- Electrical life at full load : 20.000 cycles

CURRENT/VOLTAGE RATINGS	
Certified ratings	Inrush current
IEC 65 NFC 92130 (L.C.I.E. certificate)	according to UL1054
1,5/56A 250VAC 20.000 cycles	TV3 250VAC 25.000 cycles

MATERIALS

- Case and cover : polyester UL VO
- Plunger : polyamide 6-6
- Contacts : silver/nickel alloy (Ag/Ni)
- Other molded parts in UL approved materials

GENERAL SPECIFICATIONS

- Mechanical life : 50.000 cycles min.
- Operating temperature : -10°C to +85°C
- Storage temperature : -30°C to +85°C
- Total travel : 8 mm (.314)

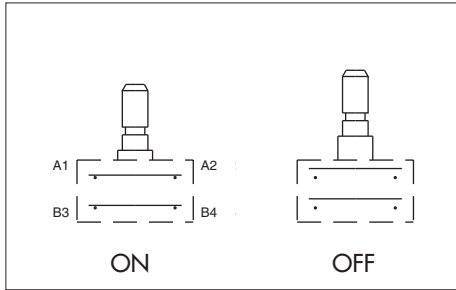
Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.



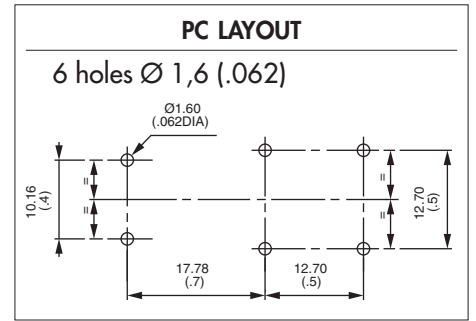
Packaging unit : 40 pieces

IT 40 series

Mains pushbutton switches - 6000V dielectric strength



• Double pole configurations



MODEL STRUCTURE



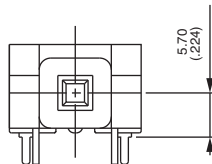
B

Distance from plunger center to PCB : 5,7 (.224)



IT4100100

ON - OFF

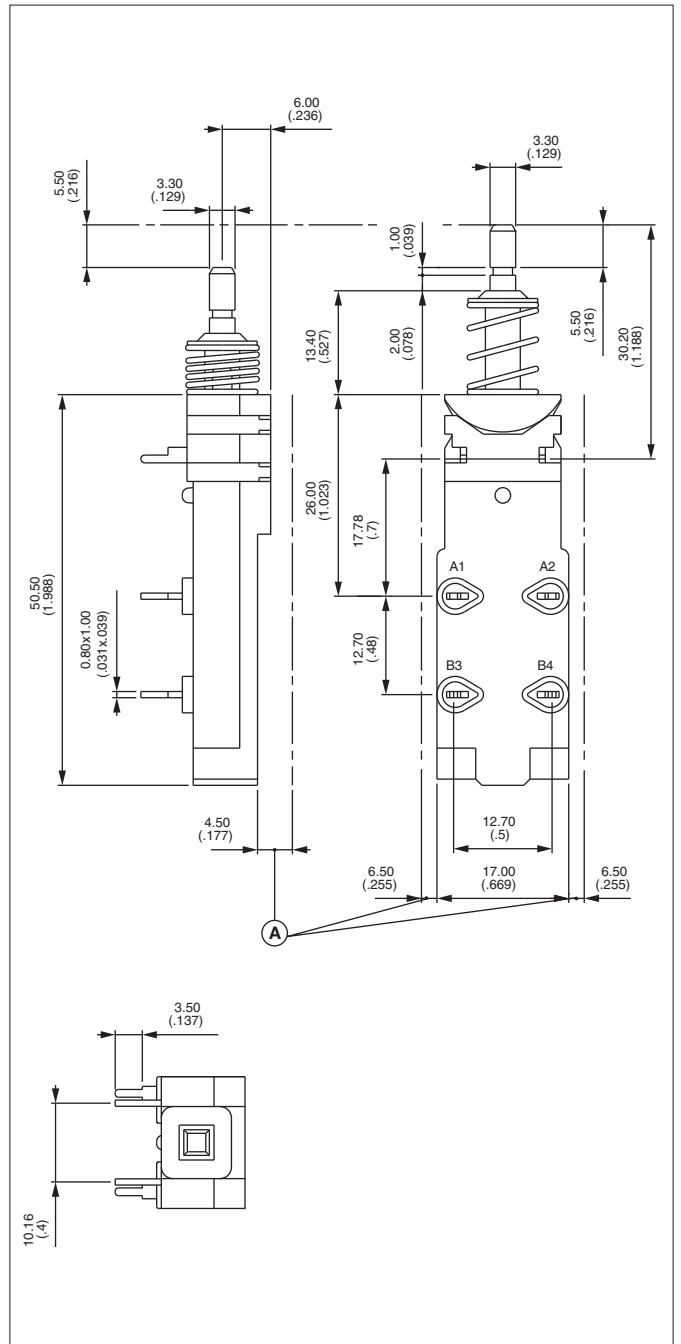
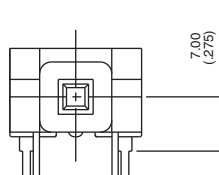


Distance from plunger center to PCB : 7 (.275)



IT4100200

ON - OFF

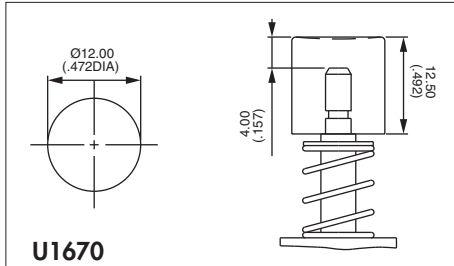




IT 40 series

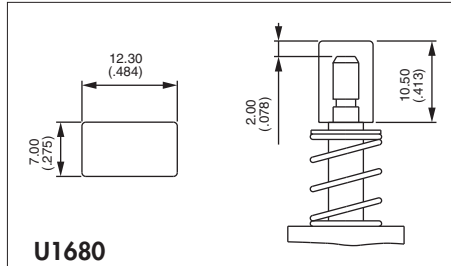
Mains pushbutton switches - 6000V dielectric strength

CAPS



U1670

Round cap



U1680

Rectangular cap

Cap colours

Replace "0" by number

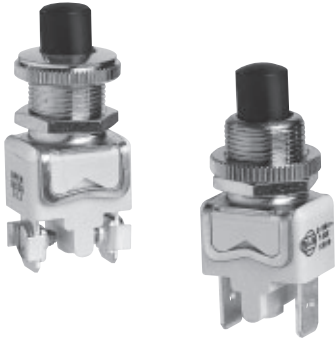
- 1 blue
- 1/4 dark blue
- 2 black
- 3 green
- 4 grey
- 5 yellow
- 6 red
- 7/1 white
- 9 orange

B

1200 series

Momentary pushbutton switches - round plunger

Distinctive features and specifications



- ❑ Butt action contacts, double break
- ❑ NF (EN 61058-1), UL and CSA approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 4A 250VAC - 8A 125VAC - 4A 24VDC - 8A 12VDC
 - silver plated copper contacts. (C) : 2A 250VAC - 3A 125VAC - 2A 24VDC - 3A 12VDC
- Initial contact resistance : 10 mΩ
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 3.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : polyamide
- Plunger : polyamide
- Bushing : brass, nickel plated
- Contacts :
 - A : silver
 - C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Total travel :
 - NO : 4,5 (.177) +/- 0,3 (.011)
 - NC : 3,5 (.137) +/- 0,3 (.011)
- Operating temperature : -20°C to +55°C

AGENCY APPROVALS



2A 250VAC or 4A 250VAC, T55/125°C
All models



4A 250VAC - 8A 125VAC
All models function 3 (NO)

Models 1233X209 and 1233X209L are standard marked NF.
To order switches marked NF, UL or CSA, complete appropriate box of ordering format.

ABOUT THIS SERIES

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



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied :
- silver contact models : 1 hex nut U166 and 1 knurled nut U411
- copper contact models : 1 hex nut U42 and 1 knurled nut U411
Standard and special hardware are presented in section I.



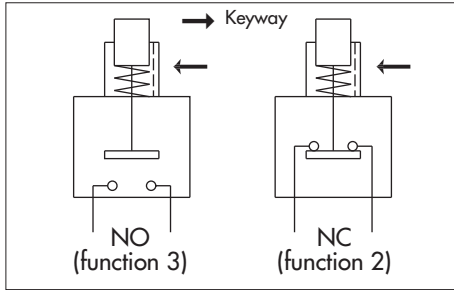
Packaging unit : 40 pieces, except model 1200.L (50 pieces).



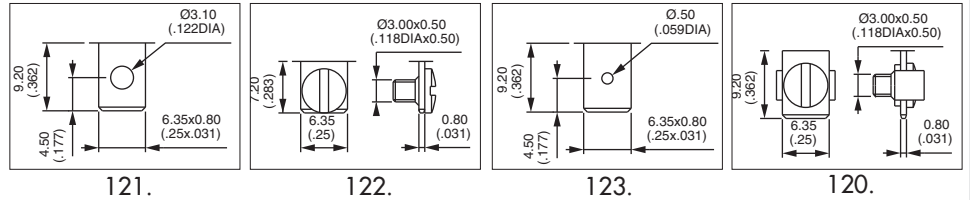
1200 series

Momentary pushbutton switches - round plunger

Solder lug/quick-connect terminals - screw terminals



- Single pole configurations
- Approved models : see following pages
- Panel cut-out : $\varnothing 12,2 (.480)$



MODEL STRUCTURE

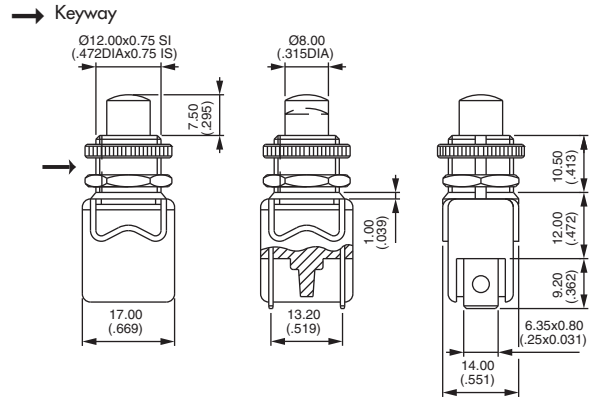


Plunger height : NO model : 7,50 mm, NC model : 5,80 mm

Solder lug/quick-connect terminals



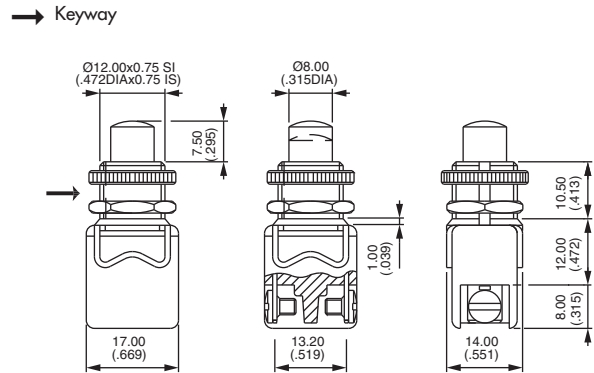
- | | | |
|------|--|-----------------|
| 1212 | | Normally Closed |
| 1213 | | Normally Open |



Screw terminals



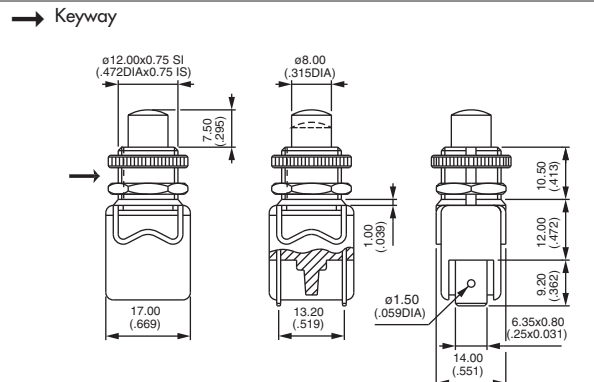
- | | | |
|------|--|-----------------|
| 1222 | | Normally Closed |
| 1223 | | Normally Open |



Normalized quick-connect terminals



- | | | |
|------|--|-----------------|
| 1232 | | Normally Closed |
| 1233 | | Normally Open |



1200 series

Momentary pushbutton switches - round plunger



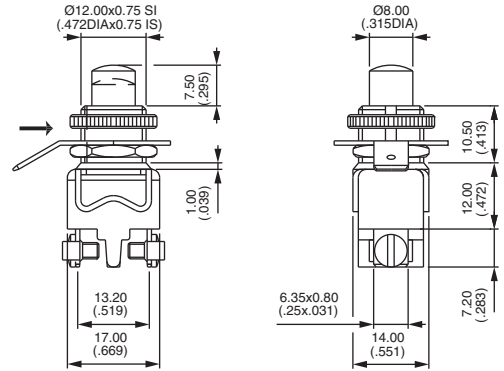
Plunger height : NO model : 7,50 mm, NC model : 5,80 mm

Straight screw terminals + clamp



1202		Normally Closed
1203		Normally Open

→ Keyway

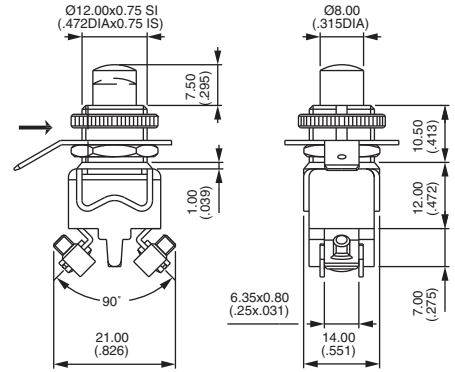


Right angle screw terminals + clamp

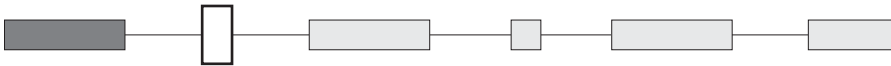


1203-7		Normally Open
--------	--	---------------

→ Keyway



CONTACT MATERIALS



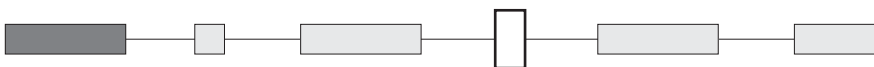
- A Silver
- C Copper, silver plated

FINISH



- LUXE Chrome plated cap nut U117 instead of knurled nut U411

PLUNGER COLOURS



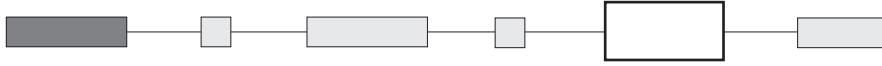
- 2 : Black - 3 : Green - 6 : Red - 7/1 : White




1200 series

Momentary pushbutton switches - round plunger


SPECIAL MODELS



X209 NF standard marked - Silver contacts

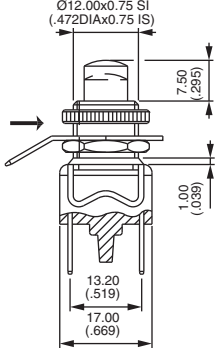
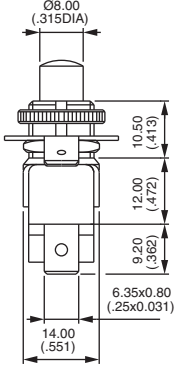


1233AX209




Normally open


→ Keyway

X209L NF standard marked - Silver contacts

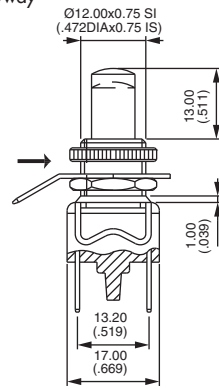
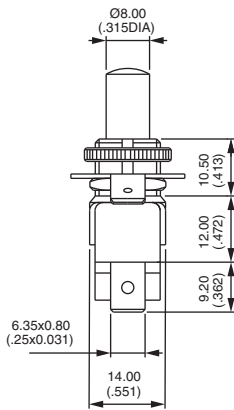


1233AX209L



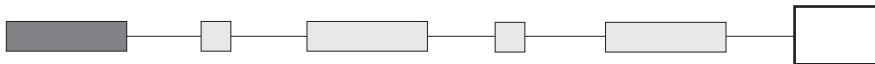
Normally open

→ Keyway

 **NOTE :** Ground connector **U187** compulsory on models X209 and X209L if the panel is not metallic or not connected to ground. Order separately : see section I.

AGENCY APPROVALS



NF All models

UL-CSA All models function 3 (NO), including X209 and X209L

Marking : to order switches marked NF, UL or CSA, complete above box with desired approvals.

1200M/MR series

Robust momentary pushbutton switches - metal plunger

Distinctive features and specifications



□ **Butt action contacts, double break**

□ **UL and CSA approved**

B

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 4A 250VAC - 8A 125VAC - 4A 24VDC - 8A 12VDC
 - silver plated copper contacts (C) : 2A 250VAC - 3A 125VAC - 2A 14VDC - 3A 12VDC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 3.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : polyamide
- Plunger : top chrome plated brass on polyamide base
- Bushing : brass, nickel plated
- Cap nut : brass, chrome plated
- Contacts : **A** : silver
C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) max.
- Total travel :
 - NO : 4,5 mm (.177) +/- 0,3 (.011)
 - NC : 3,5 mm (.137) +/- 0,3 (.011)
- Operating temperature : -20°C to +55°C

AGENCY APPROVALS



4A 250VAC - 8A 125VAC

Availability : approved models are 1213A and 1203A (M or MR)
(model 1223A is only UL approved).

Marking : to order switches marked UL or CSA, complete appropriate box of ordering format.

ABOUT THIS SERIES

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



Mounting accessories : standard hardware supplied with all models : 1 hex nut U166 and 1 conic cap nut U1866-6.
Special cap nut U1874 is presented on the following pages.



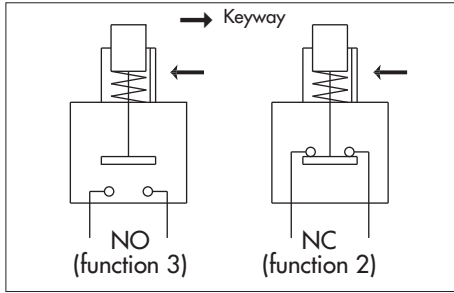
Packaging unit : 40 pieces



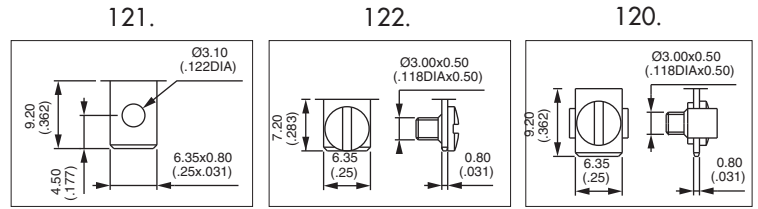
1200M/MR series

Robust momentary pushbutton switches - metal plunger

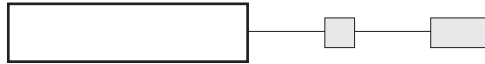
Solder lug/quick-connect terminals - screw terminals



- Flat or curved plunger
- Panel cut-out $\varnothing 12,2 (.480)$
- Single pole



MODEL STRUCTURE

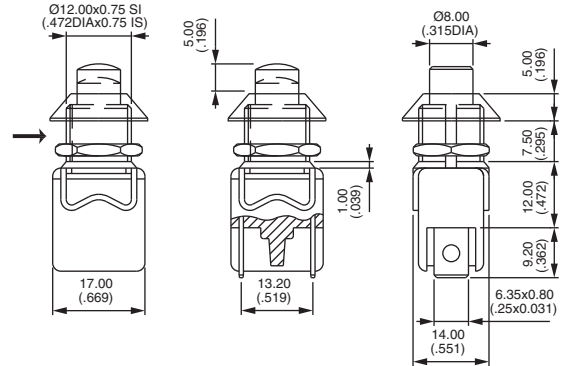


Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) → Keyway



Curved plunger Flat plunger

1212MR	1212M		NC
1213MR	1213M		NO

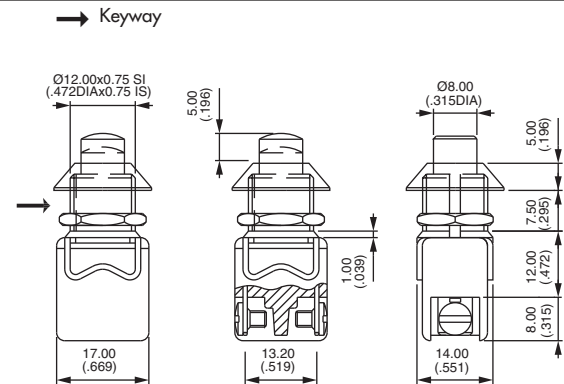


Screw terminals



Curved plunger Flat plunger

1222MR	1222M		NC
1223MR	1223M		NO

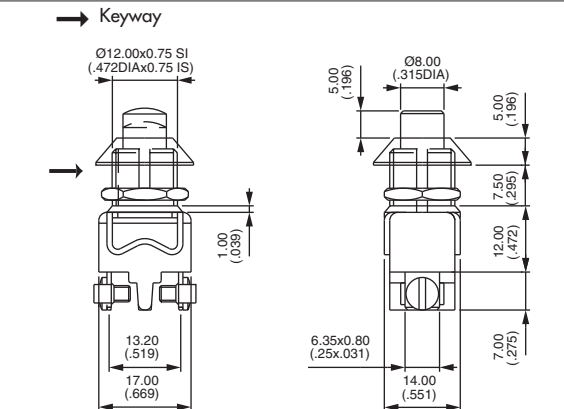


Screw terminals + clamp



Curved plunger Flat plunger

1202MR	1202M		NC
1203MR	1203M		NO



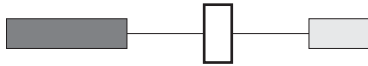
1200M/MR series

Robust momentary pushbutton switches - metal plunger

OPTIONS

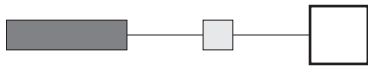


CONTACT MATERIALS



- A Silver
- C Copper, silver plated

AGENCY APPROVALS



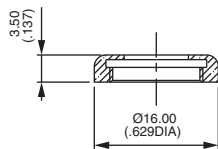
UL - CSA

Availability : approved models are 1213A and 1203A (M or MR) - model 1223A is only UL approved.

Marking : to order switches marked UL or CSA, complete above box with desired approvals.

SPECIAL CAP NUT

Chrome plated cap nut $\varnothing 16 (.629)$, flat and plain.
Can be supplied instead of standard cap nut U1866-6.
Order separately.



U1874

1400N series

Momentary pushbutton switches - snap-in mounting - square plunger

Distinctive features and specifications



Butt action contacts, double break

Solder lug, straight PC and quick-connect terminals

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 6A 12VDC
 - silver plated copper contacts (C) : 3A 12VDC
- Initial contact resistance : 10 m Ω
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 - 1.500 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between terminals and metal panel
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : polyamide
- Plunger : polyamide
- Contacts :
 - A : silver
 - C : copper, silver plated

GENERAL SPECIFICATIONS

- Panel thickness : 2 mm (.078) max.
- Operating temperature : -20°C to +55°C

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



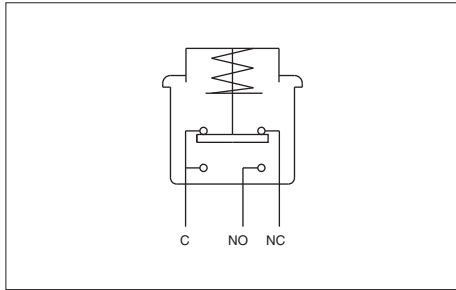
Packaging unit : 60 pieces.

1400N series

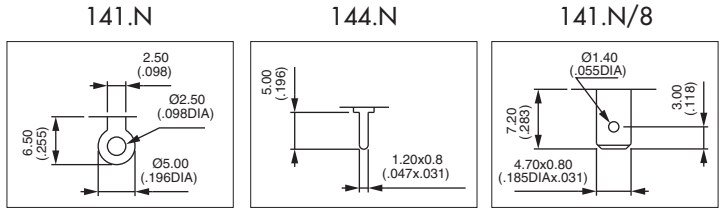


Momentary pushbutton switches - snap-in mounting - square plunger

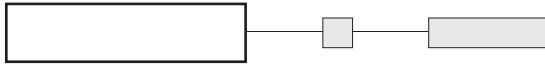
Solder lug, straight PC or quick-connect terminals



• Single pole configurations

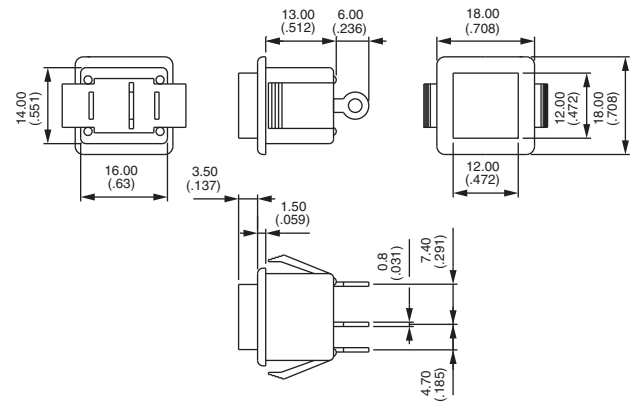
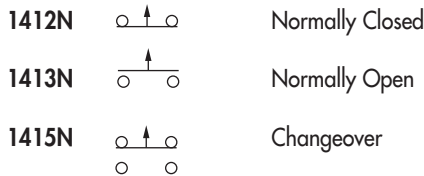


MODEL STRUCTURE

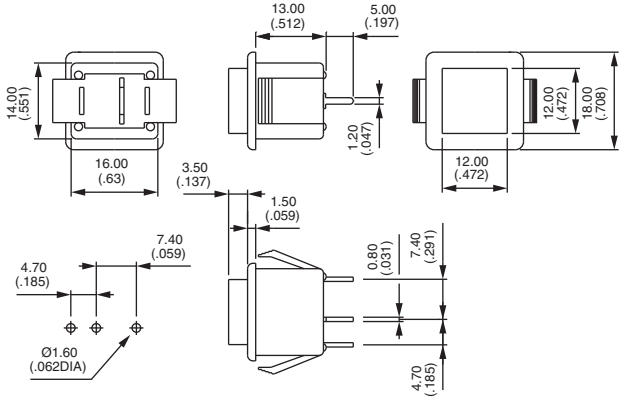
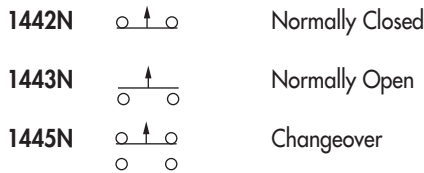


B

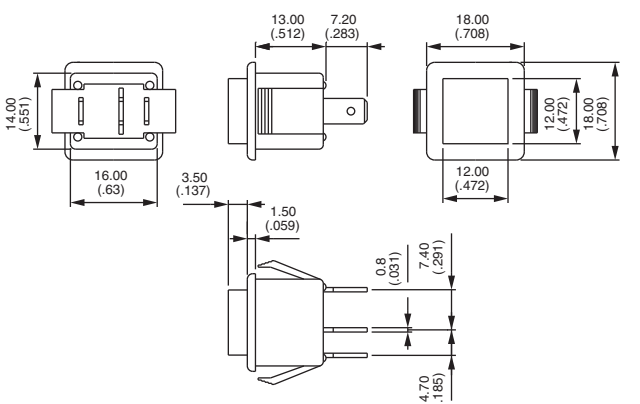
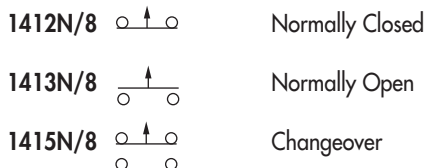
Solder lug terminals



Straight PC terminals



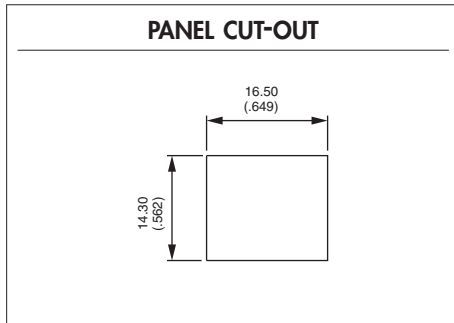
Quick-connect terminals 4,7 x 0,8 (.185 x .031)





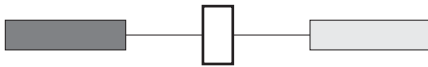
1400N series

Momentary pushbutton switches - snap-in mounting - square plunger



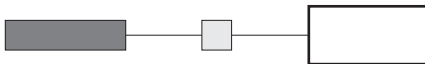
B

CONTACT MATERIALS



- A Silver
- C Copper, silver plated

PLUNGER COLOURS



- 2 Black (standard)
- 3 Green
- 6 Red
- 7 Ivory



Switch frame supplied in black.

4700 and 4800 series

Momentary or alternate action pushbutton switches

Distinctive features and specifications



Butt action contacts

UL, CSA and VDE (EN 61058-1) approved

B

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 3A 250VAC - 6A 125VAC
 - copper contacts (C) : 2A 250VAC - 4A 125VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 2.000 Vrms 50 Hz min. between terminals
3.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : melamine-phenolic
- Plunger : polyamide
- Bushing : polyamide
- Contacts : **A** : silver
C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 0,95 Nm (.70 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max. between 2 nuts
- Total travel : 4,5 mm (.177) +/- 0,5 (.019)
- Operating temperature : -20°C to +65°C
- Hand soldering : 270°C max. for 10 seconds max. - Iron Ø 3 mm (.118)

APPROVALS



Models 4731A, 4736A, 4741A, 4746A are UL, CSA and VDE (EN 61058-1) approved.

Models 4831A, 4836A, 4841A, 4846A are VDE (EN 61058-1) approved.

Marking : to order switches marked UL/CSA, complete appropriate box of ordering format. VDE is standard marked.

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



Sealing boots are available to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut U166 and 1 knurled nut U520 in the same colour as the plunger. They are presented in section I.



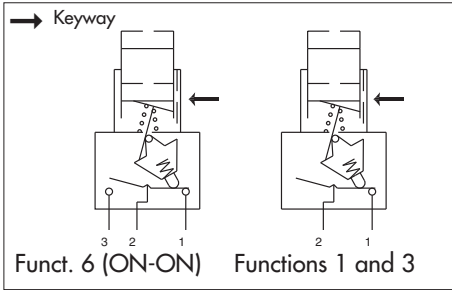
Packaging unit : single pole models : 40 pieces - Double pole models : 20 pieces.



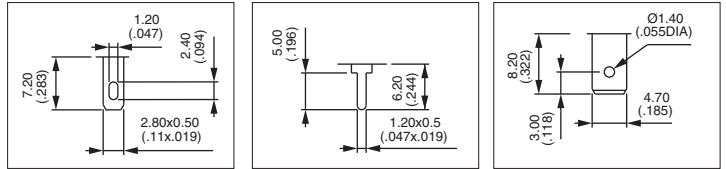
4700 and 4800 series

Momentary or alternate action pushbutton switches

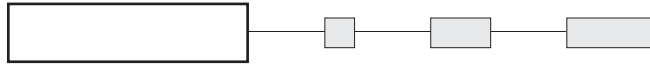
Solder lug/quick-connect or straight PC terminals



- 1 and 2 pole configurations
- Button returns in upper position after actuation.
- Panel cut-out : $\varnothing 12,2 (.480)$



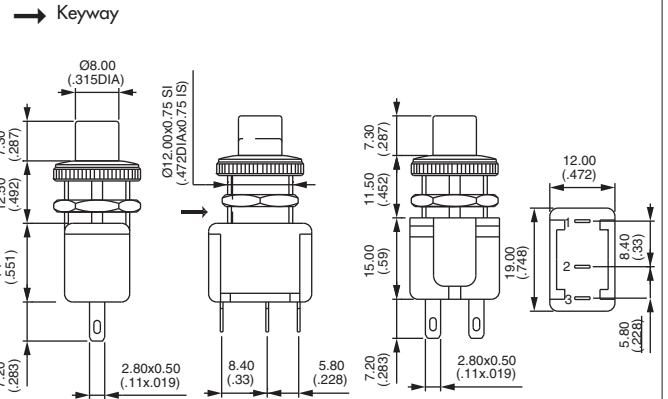
MODEL STRUCTURE



Solder lug/quick-connect terminals



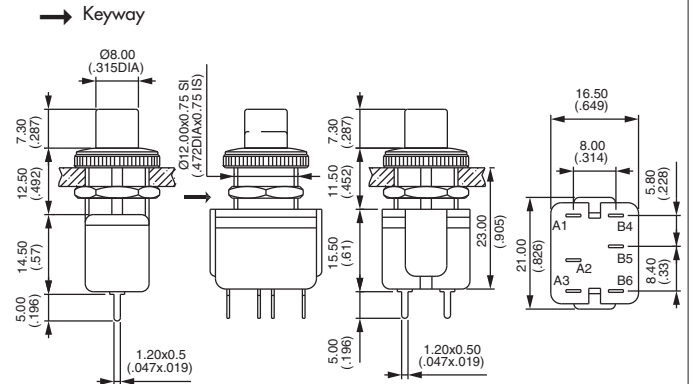
Single pole	Double pole	ON	-	OFF
4731	4741	ON	-	OFF
4736	4746	ON	-	ON
4733	4743	OFF	-	MOM



Straight PC terminals



Single pole	Double pole	ON	-	OFF
4831	4841	ON	-	OFF
4836	4846	ON	-	ON
4833	4843	OFF	-	MOM

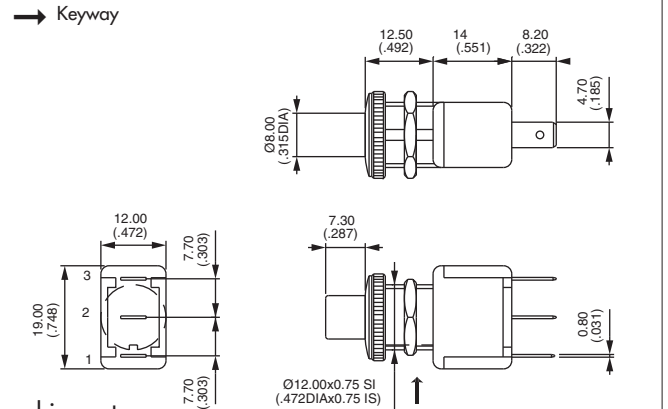


Quick-connect terminals 4,7 x 0,8 (.185 x .031)



4731/8	ON	-	OFF
4736/8	ON	-	ON
4733/8	OFF	-	MOM

Available with silver contacts only.
Minimum order : 1 000 pieces per type in one shipment.

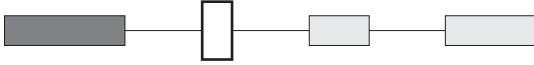


4700 and 4800 series



Momentary or alternate action pushbutton switches

CONTACT MATERIALS



- A Silver
- C Copper, silver plated (not available on models with quick-connect terminals /8)

ACTUATOR COLOURS



- 01 Blue
- 02 Black
- 03 Green
- 05 Yellow
- 06 Red
- 07/1 White
- 09 Orange

APPROVALS



UU (UL-CSA)

Availability : see specifications for details or approved models.

Marking : to order switches marked UL-CSA, complete above box with "UU".
 VDE approval is standard marked.

B

New!

PBA series

Piezo switches

Specifications

- Sealed to IP 68 and IP69K (switches mounted on panel)
- Easy to clean metal surface
- Very long life expectancy
- Ring or dot illumination

ENVIRONMENTAL SPECIFICATIONS

- Sealing : IP68 per IEC 529, IP69K per DIN 40050-9 (switches mounted on panel or not)
- Vibration resistance : 10-500 Hz / 10 g per IEC 60068-2-6
- Operating temperature : -40°C to +75°C
- EMC compatibility according to EN 61058-1 for the whole range
- EMC compatibility according to EN 61000-4 & EN61000-6-2 for model 1A (code 002)

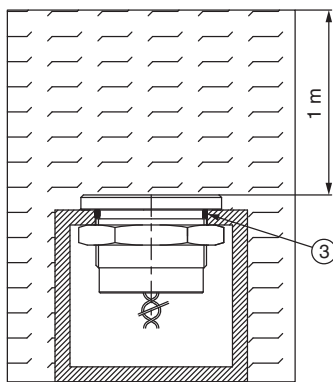
MATERIALS

- Case : aluminium, anodized or stainless steel 316L
- Multi-wire leads section 0,22 mm² length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
- PC terminals : bronze, tin plated

ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating :
 - Function A : standard 200mA 24VAC/DC - option 1A 24VAC/DC
 - Function B : standard 100mA 24VAC/DC
- Switch resistance ON : 10Ω max.
- Switch resistance OFF : 5MΩ min.
- Operating force : 2 to 6N
- Life expectancy : 50 million cycles
- LED consumption : Illuminated dot : 10mA - Illuminated ring : 20mA

SEALING IP68

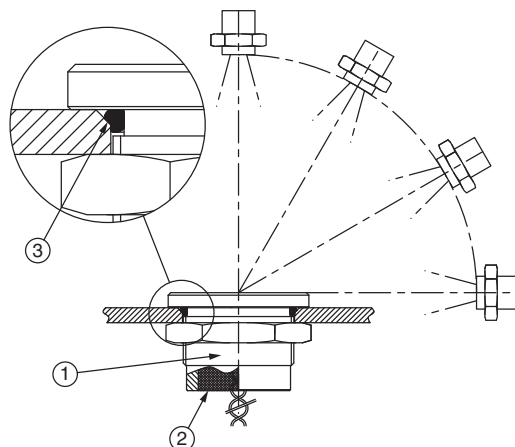


Continuous immersion in water

IP68 test conditions

Continuous immersion in water (1m, 24 hours)

SEALING IP69K



High pressure, high temperature wash down

IP69K test conditions

- Pressure : 80 - 120 bars
- Distance : 15 cm
- Temperature : 80°C ± 5°C
- Flow : 14 - 16 l/mn
- Duration : 30 seconds per position

- ① One-piece bushing
- ② Epoxy sealed terminals
- ③ O-ring

PBA series

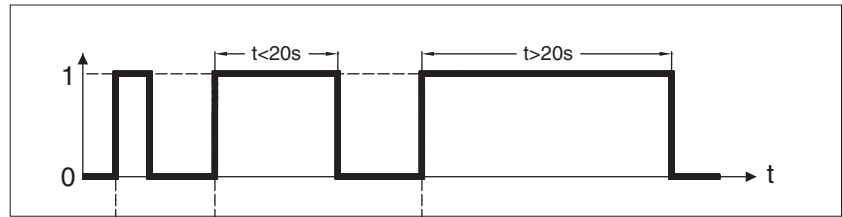
New!

Piezo switches

Electrical functions

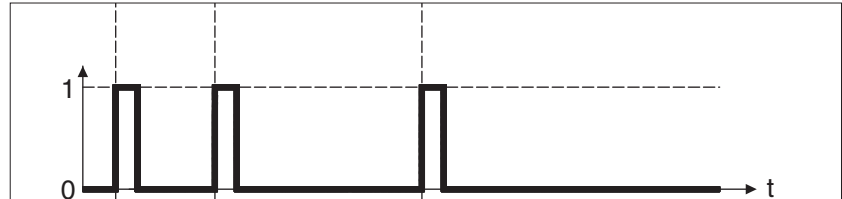
FINGER PRESSURE applied to switch

1 = pressure
 0 = no pressure

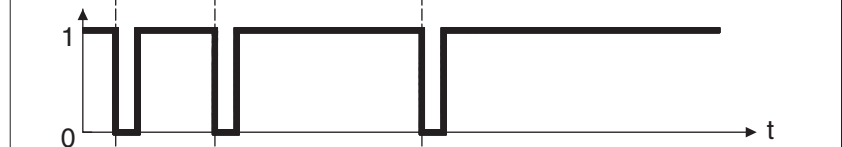


OUTPUT

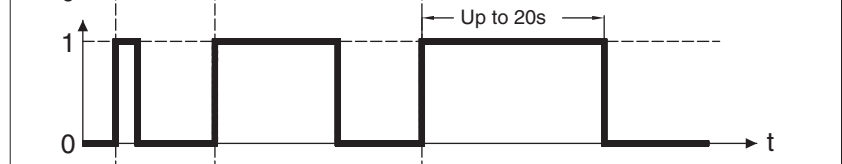
- Momentary NO (pulse)
 No external power supply required



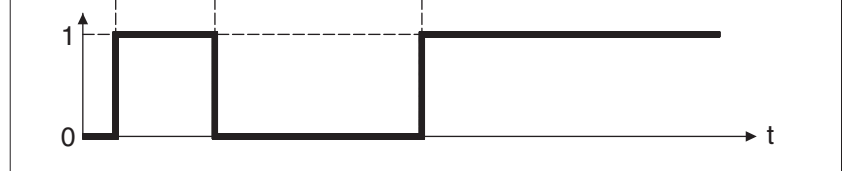
- Momentary NC (pulse)
 No external power supply required



- Momentary NO prolonged pulse
 No external power supply required



- Latching (ON - OFF)
 Requires external power supply



1 = closed output 0 = open output

Wiring diagrams

	Non-illuminated	1 LED *	2 LEDs	3 LEDs
Momentary NO				
Momentary NC				
Momentary NO prolonged pulse				
Latching (ON - OFF)				

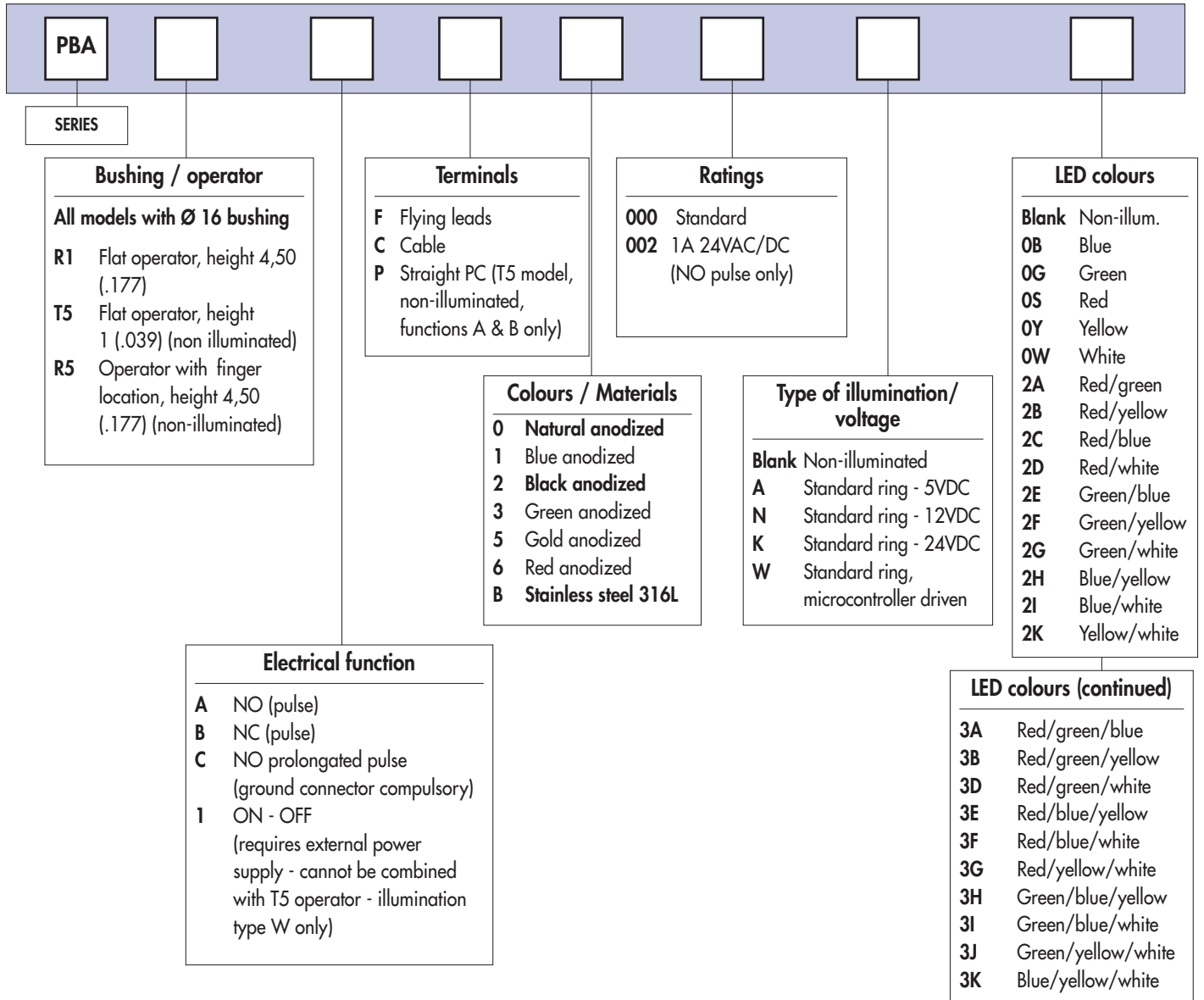
Legend: C = yellow, D = blue, B = black, A = same colour as LED * LED colour is indicated by the bottom of the product.

New!

PBA series

Piezo switches Ø 16 (.630)

Overview



For options not listed above, please contact APEM.

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.



Mounting accessories : standard hardware supplied : 1 hex nut 10-621 (19 mm ac. flats) and 1 O-ring



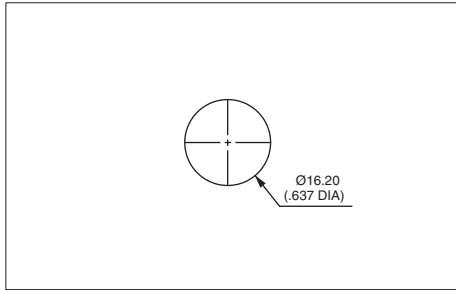
Packaging unit : 20 or 40 pieces

PBA series

New!

Piezo switches Ø 16 (.630)

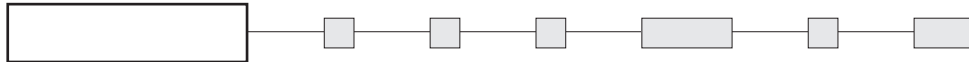
Illuminated or non-illuminated



- Operator Ø 18 mm (.708)

Shown with flying lead terminals.

MODEL STRUCTURE



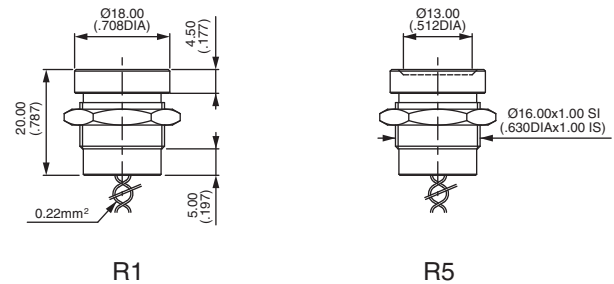
Non-illuminated, operator height 4,50 mm (.177)



PBAR1AF2000

Flat
PBAR1

With finger location
PBAR5

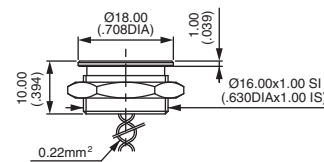


Non-illuminated, operator height 1 mm (.039)



PBAT5AF0000

Flat
PBAT5

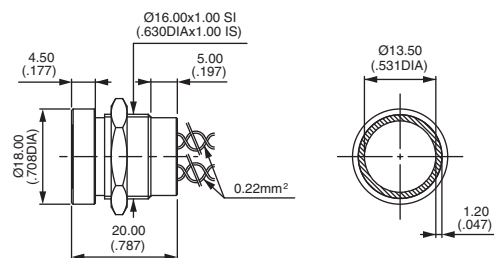


With standard illuminated ring



PBAR1AF000A0B

Flat operator, height 4,50 (.177)
PBAR1



Wire colours : see "Electrical functions" page.

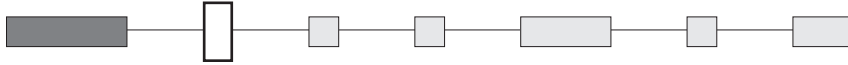
New!

PBA series

Piezo switches Ø 16 (.630)

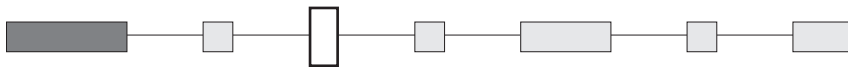
Options

ELECTRICAL FUNCTION

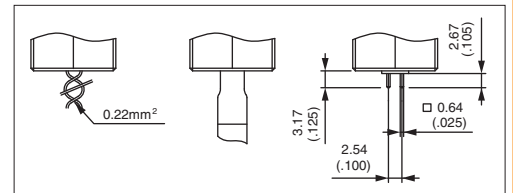


- A NO pulse
- B NC pulse
- C NO prolonged pulse - Ground connector U5735 compulsory, order separately.
- 1 ON - OFF - Requires external power supply - Cannot be combined with T5 operator. Illumination type W only.

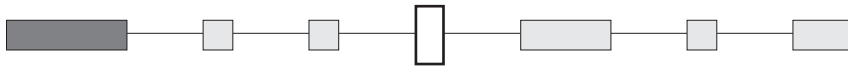
TERMINALS



- F Flying leads
- C Cable
- P Straight PC (T5 model, non-illuminated, functions A and B only)



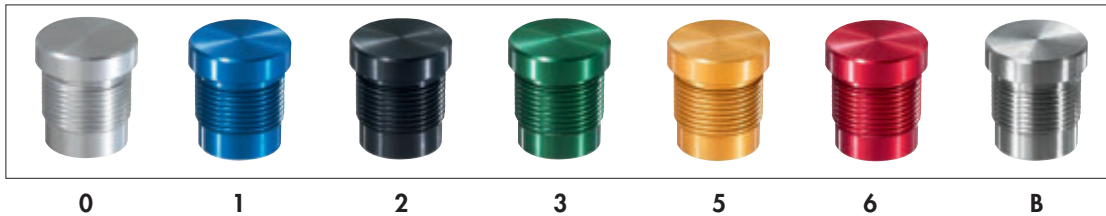
CASE COLOURS / MATERIALS



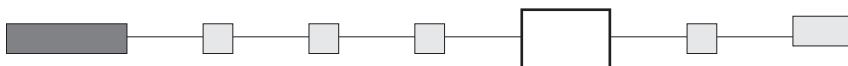
Code	Colour
0	Natural anodized aluminium
1	Blue anodized aluminium
2	Black anodised aluminium

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	Stainless steel 316L



RATINGS



- 000 Standard
- 002 1A 24VAC or DC (NO pulse only)

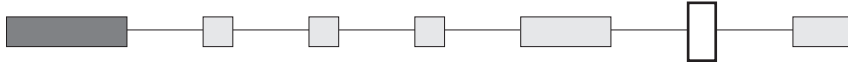
PBA series

New!

Piezo switches Ø 16 (.630)

Options

TYPE OF ILLUMINATION / VOLTAGE

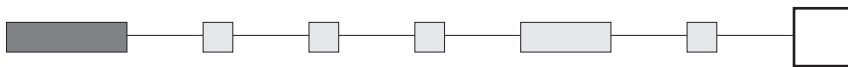


Blank : non-illuminated

	5VDC	12VDC	24VDC	Microcontroller driven
○	A	N	K	W

B

LED COLOURS



Integrated LED resistor

Blank : non-illuminated



Illuminated 1 LED *

0B : blue - **0G** : green - **0S** : red - **0Y** : yellow - **0W** : white

Illuminated 2 LEDs

2A : red/green - **2B** : red/yellow - **2C** : red/blue - **2D** : red/white - **2E** : green/blue - **2F** : green/yellow - **2G** : green/white
2H : blue/yellow - **2I** : blue/white - **2K** : yellow/white

Illuminated 3 LEDs

3A : red/green/blue - **3B** : red/green/yellow - **3D** : red/green/white - **3E** : red/blue/yellow - **3F** : red/blue/white
3G : red/yellow/white - **3H** : green/blue/yellow - **3I** : green/blue/white - **3J** : green/yellow/white - **3K** : blue/yellow/white

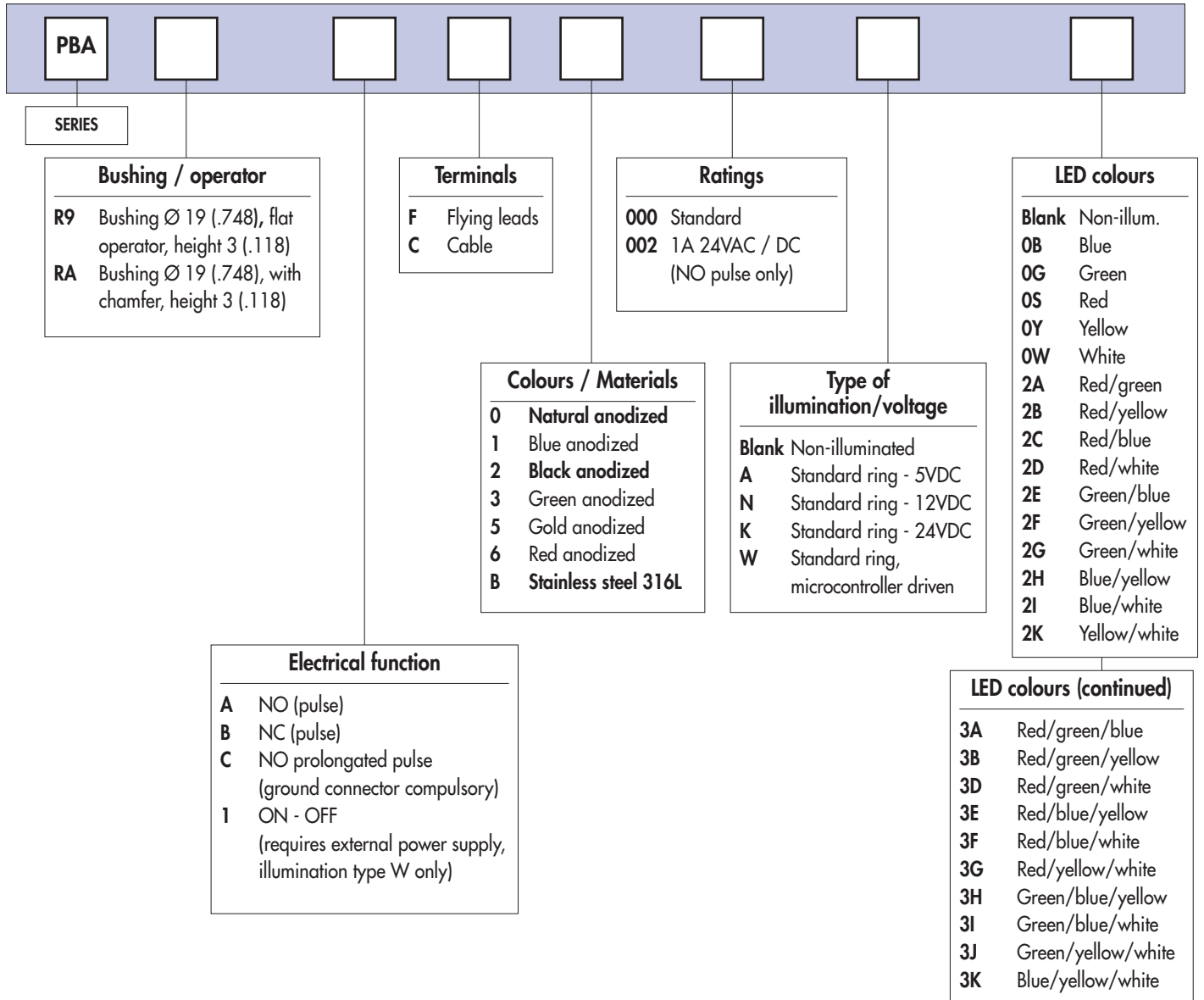
* LED colour is indicated by the bottom of the product.

New!

PBA series

Piezo switches Ø 19 (.748)

Overview



For options not listed above, please contact APEM.

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.



Mounting accessories : standard hardware supplied : 1 hex nut 10-855-0 (22 mm ac. flats) and 1 O-ring



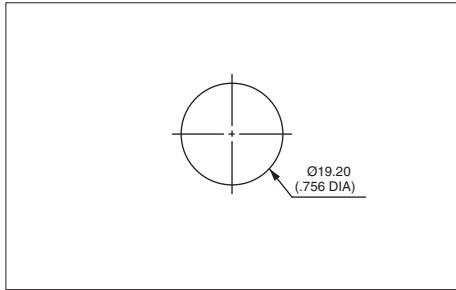
Packaging unit : 20 pieces

PBA series

New!

Piezo switches Ø 19 (.748)

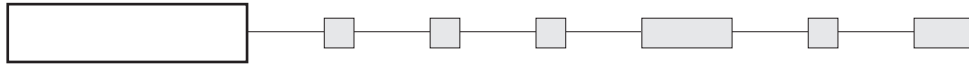
Illuminated or non-illuminated



• Operator Ø 22 mm (.866)

Shown with flying lead terminals.

MODEL STRUCTURE



B

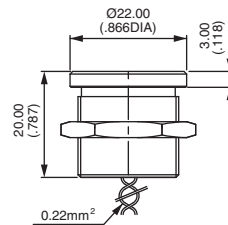
Non-illuminated - operator height 3 mm (.118)



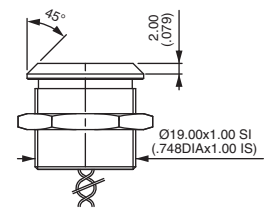
PBARAAF1000

Flat
PBAR9

With chamfer
PBARA



R9



RA

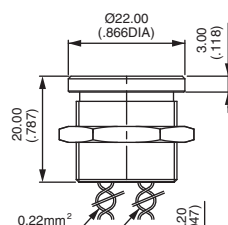
With standard illuminated ring - operator height 3 mm



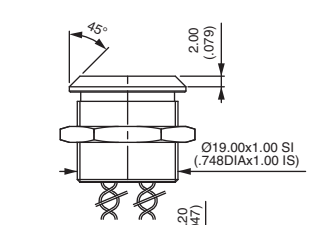
PBAR9AF0000A05

Flat
PBAR9

With chamfer
PBARA



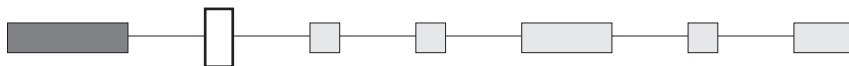
R9



RA

Wire colours : see "Electrical functions" page.

ELECTRICAL FUNCTION



- A** NO pulse
- B** NC pulse
- C** NO prolonged pulse - Ground connector U5736 compulsory, order separately.
- I** ON - OFF - Requires external power supply - Illumination type W only.

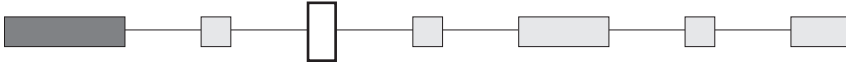
New!

PBA series

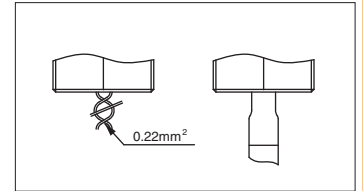
Piezo switches Ø 19 (.748)

Options

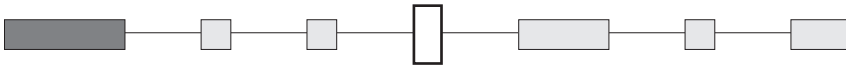
TERMINALS



F Flying leads
C Cable



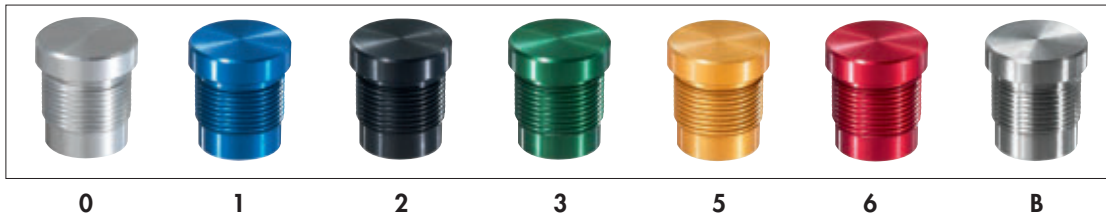
CASE COLOURS / MATERIALS



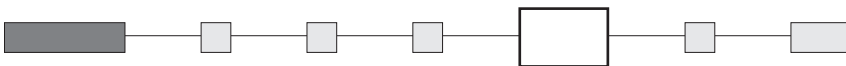
Code	Colour
0	Natural anodized aluminium
1	Blue anodized aluminium
2	Black anodised aluminium

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	Stainless steel 316L

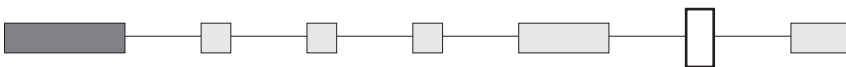


RATINGS



000 Standard
002 1A 24VAC or DC (NO pulse only)

TYPE OF ILLUMINATION / VOLTAGE



	5VDC	12VDC	24VDC	Microcontroller driven
○	A	N	K	W

B

PBA series

New!

Piezo switches Ø 19 (.748)

Options

LED COLOURS



Blank : non-illuminated



Illuminated 1 LED *

0B : blue - 0G : green - 0S : red - 0Y : yellow - 0W : white

Illuminated 2 LEDs

2A : red/green - 2B : red/yellow - 2C : red/blue - 2D : red/white - 2E : green/blue - 2F : green/yellow - 2G : green/white
2H : blue/yellow - 2I : blue/white - 2K : yellow/white

Illuminated 3 LEDs

3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white
3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

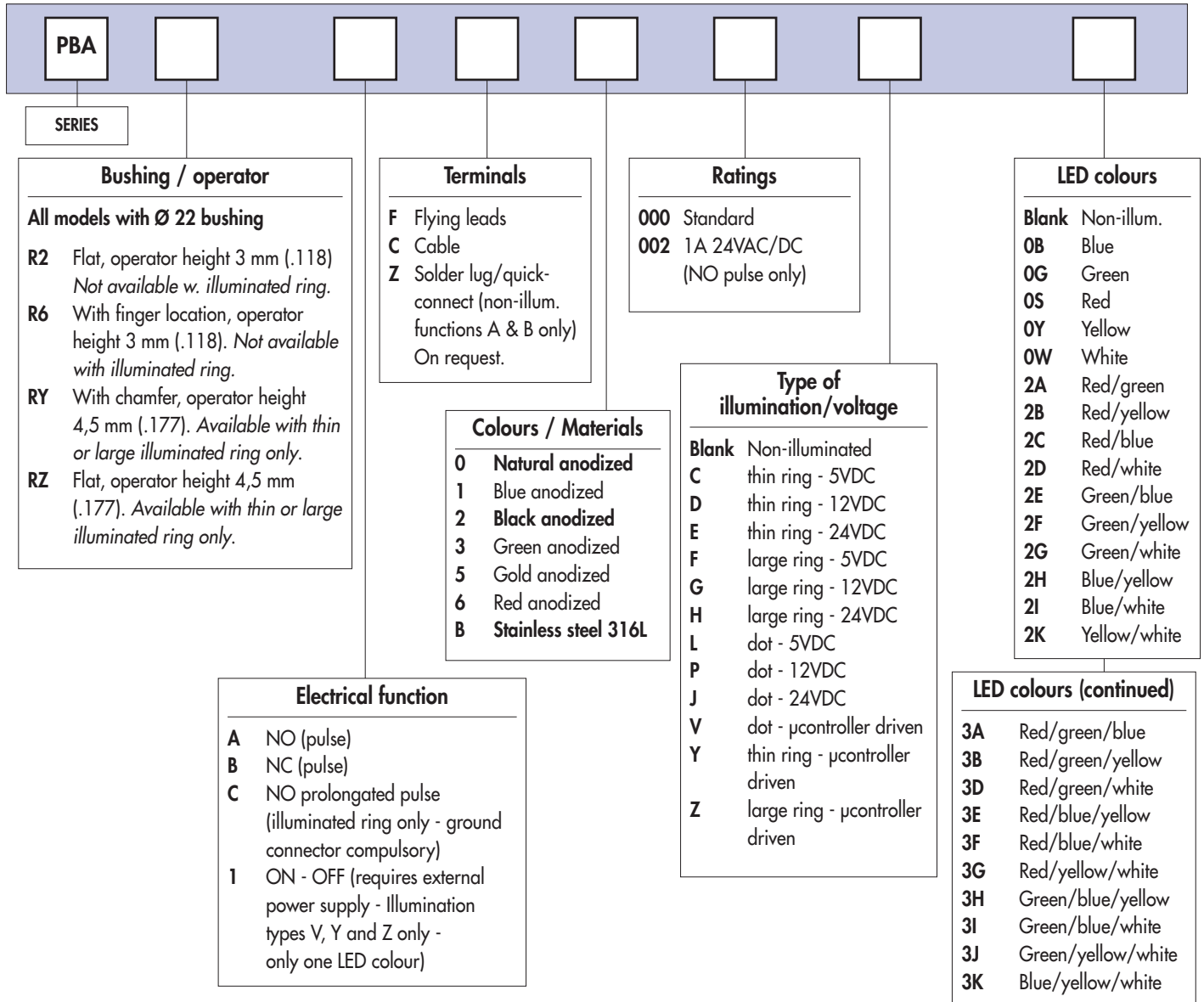
* LED colour is indicated by the bottom of the product.

New!

PBA series

Piezo switches Ø 22 (.866)

Overview



For options not listed above, please contact APEM.



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



Mounting accessories : standard hardware supplied : 1 hex nut 10-856-0 (25 mm ac. flats) and 1 O-ring



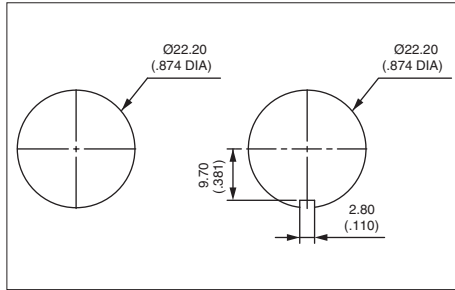
Packaging unit : 20 pieces

PBA series

New!

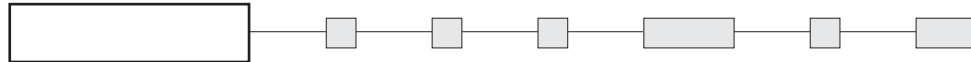
Piezo switches Ø 22 (.866)

Illuminated or non-illuminated



• Operator Ø 28 mm (1.102)

MODEL STRUCTURE



Wire colours : see "Electrical functions" page.

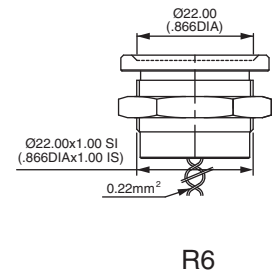
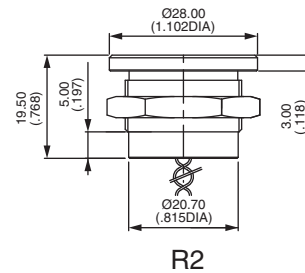
Non-illuminated - operator height 3 mm (.118)



PBAR2AF6000

Flat
PBAR2

With finger location
PBAR6



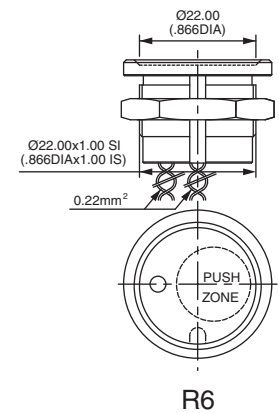
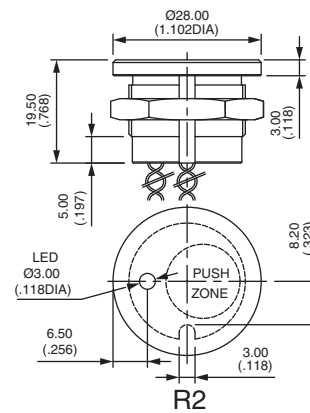
With illuminated dot - operator height 3 mm (.118)



PBAR6AF6000LOG

Flat
PBAR2

With finger location
PBAR6



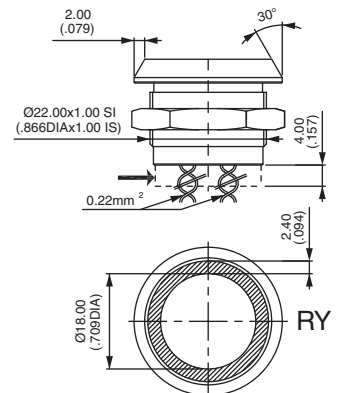
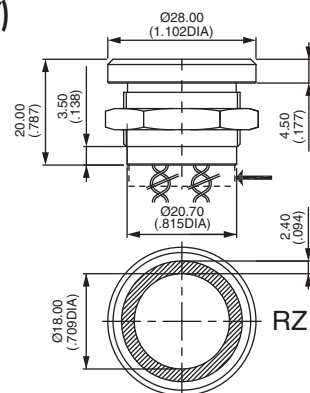
With thin illuminated ring - operator height 4,50 (.177)



PBARYAF0000COB

Flat
PBARZ

With chamfer
PBARY



→ Dimension of ON-OFF models

New!

PBA series

Piezo switches Ø 22 (.866)

Illuminated or non-illuminated

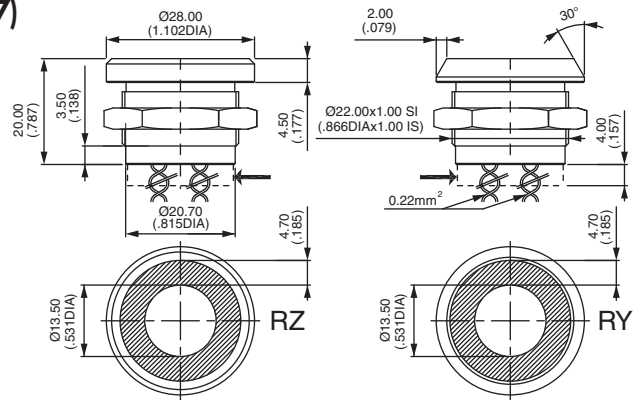
With large illuminated ring - operator height 4,50 (.177)



PBARYAF0000FOB

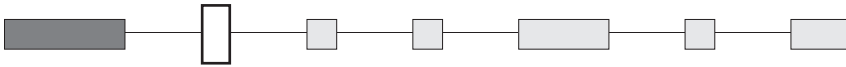
Flat
PBARZ

With chamfer
PBARY



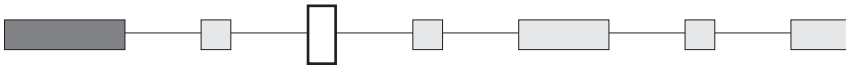
→ Dimension of ON-OFF models

ELECTRICAL FUNCTION

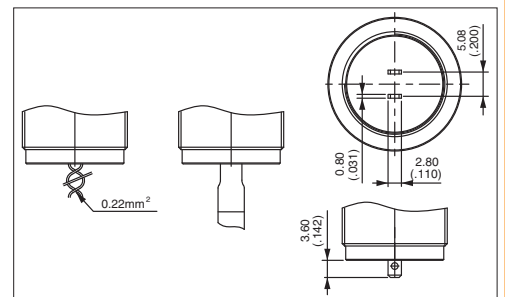


- A NO pulse
- B NC pulse
- C NO prolonged pulse (illuminated ring only) - Ground connector U5737 compulsory, order separately.
- 1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED colour only.

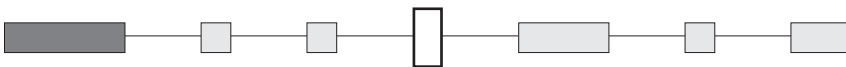
TERMINALS



- F Flying leads
- C Cable
- Z Solder lug / quick-connect (non-illuminated, functions A and B only) On request.



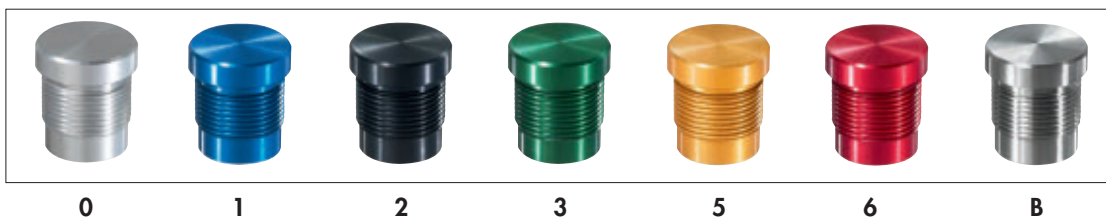
CASE COLOURS / MATERIALS



Code	Colour
0	Natural anodized aluminium
1	Blue anodized aluminium
2	Black anodised aluminium

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	Stainless steel 316L



0 1 2 3 5 6 B

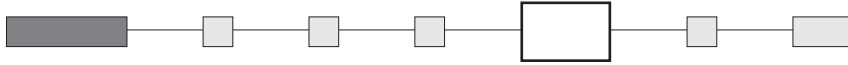
PBA series

New!

Piezo switches Ø 22 (.866)

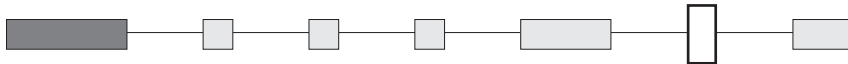
Options

RATINGS



000 Standard
 002 1A 24VAC or DC (NO pulse only)

TYPE OF ILLUMINATION / VOLTAGE



	5V	12V	24V	Microcontroller driven
○	C	D	E	Y
◉	F	G	H	Z
•	L	P	J	V

LED COLOURS



Blank : non-illuminated



OB

OG

OS

OY

OW

Illuminated 1 LED *

OB : blue - OG : green - OS : red - OY : yellow - OW : white

Illuminated 2 LEDs

2A : red/green - 2B : red/yellow - 2C : red/blue - 2D : red/white - 2E : green/blue - 2F : green/yellow - 2G : green/white
 2H : blue/yellow - 2I : blue/white - 2K : yellow/white

Illuminated 3 LEDs

3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white
 3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

* LED colour is indicated by the bottom of the product.



New!

PBA series

ATEX approved piezo switches

Distinctive features - Specifications - Overview

- Approved according to the ATEX 94/9/CE directive
- Sealed to IP66 (mounted on panel)
- Easy to clean metal surface
- Long life
- Illuminated models

ELECTRICAL SPECIFICATIONS

- Rated voltage : 5V to 24 VAC/DC max.
- Rated current : 200mA max. at 6VAC/DC
50mA max. at 24VAC/DC
(power limited to 1,2W for user group II)
- Contact resistance (ON) : 10Ω max.
- Insulation resistance (OFF) : 5MΩ min.
- Make impulse time : depending on actuating force and speed
- LED : 5VDC, 10mA to 20mA depending on model

MATERIALS

- Case : 316L stainless steel
- Terminals : multi-wire leads
0,22 mm², length 300 mm (11.81)

Standard hardware supplied: 1 hex nut 10-621 (19 mm ac. flats), 10-855-0 (22 mm ac. flats) or 10-856-0 (25 mm ac. flats), 1 O-Ring and 1 ground connector U5735, U5736 or U5737.

GENERAL SPECIFICATIONS

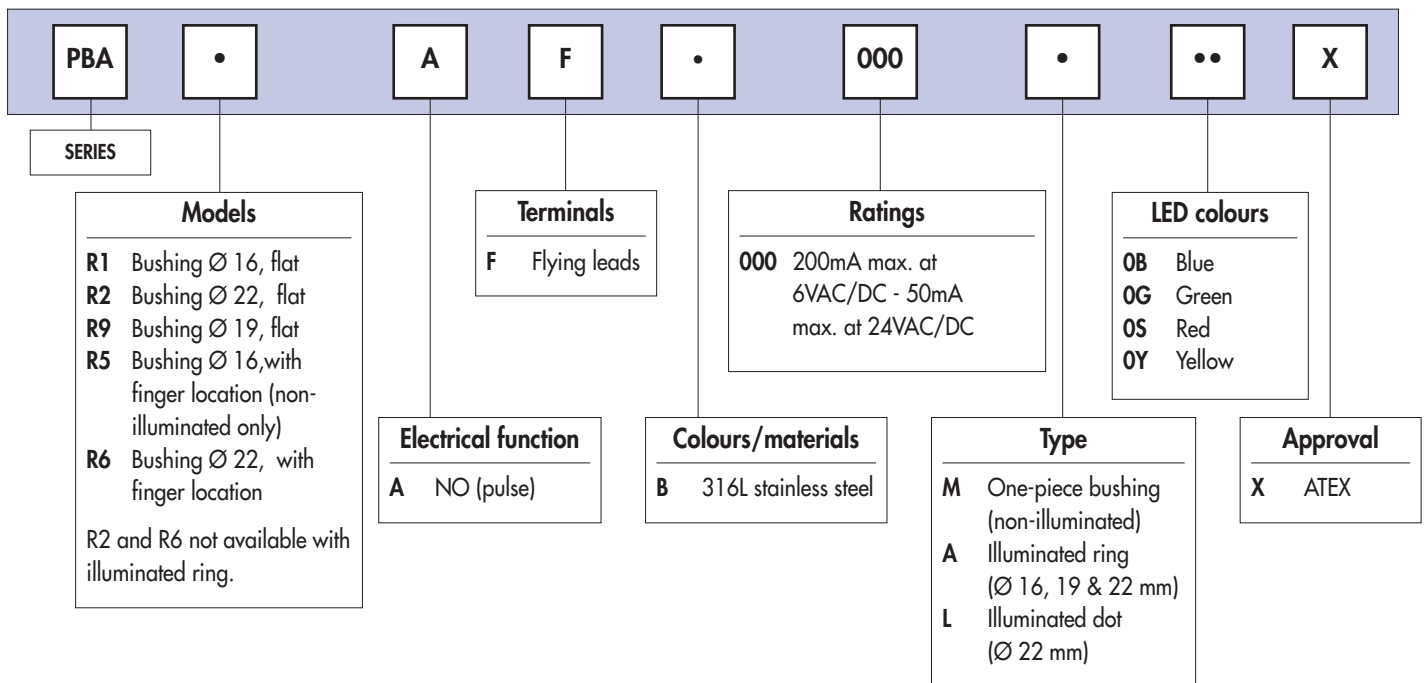
- Operating force : 2 to 6N
- Torque : 2,5 Nm max.
- Life expectancy : 50 million cycles
- Operating temperature : -40°C to +55°C
- EMC compatibility according to EN 61058-1
- In accordance with EN 60079-0, EN 60079-11, EN 61241-0, EN 61241-11, EN 60079-26 and EN 50303
- Sealing : IP66 per IEC 60529 (switches mounted on panel)

Packaging units :

- bushing Ø 16 : 40 pieces
- illuminated bushing Ø 16 : 20 pieces
- bushing Ø 19 : 20 pieces
- bushing Ø 22 : 20 pieces

Instructions for use :

see instruction notice NTPBA006.



PBA series

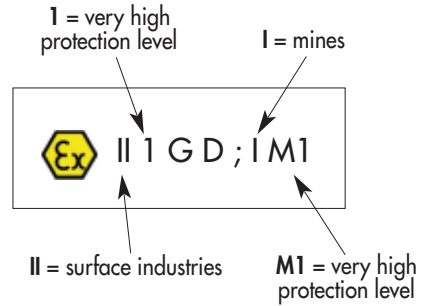
New!

ATEX approved piezo switches

Illuminated or non-illuminated



- Highest classifications
- Universal

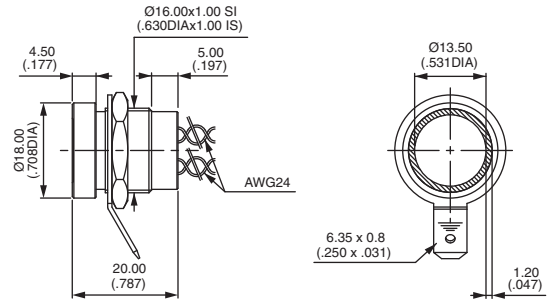


B

Dia. 16 (.630) bushing - illuminated ring



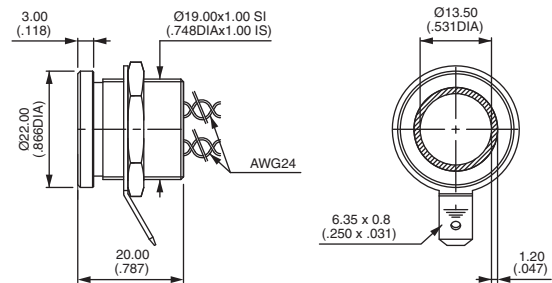
Stainless steel 316L, blue LED
PBAR1AFB000A0BX



Dia. 19 (.748) bushing - illuminated ring



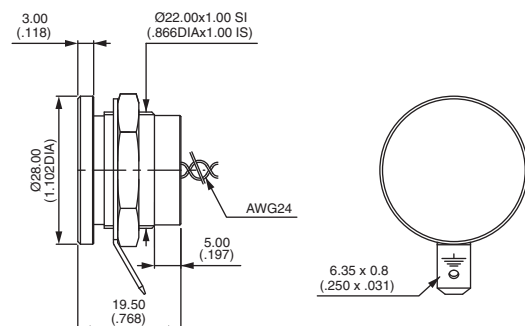
Stainless steel 316L, blue LED
PBAR9AFB000A0BX



Dia. 22 (.866) bushing - non-illuminated



Stainless steel 316L
PBAR2AFB000MX



New!

LPI series

Tactile pushbutton switches with large actuator

Distinctive features and applications



□ Common features

- Large ergonomic actuator (Ø 35 mm)
- Tactile feedback
- Low behind-panel depth (21 mm max.)
- Stylish design
- Long life

This series has been developed on a modular base in order to fit the exact needs of technicians and end-users.

□ Installation options

The LPI series has a number of features to ensure easy installation:

- Front or rear mounting
- With or without sealing
- 2 separate circuits for NO/NC 5A version
- Terminal block connector for 0,1A NO version
- 3 different LED voltages: 6V, 12V, 24V
- Integrated LED resistor

□ Aesthetic options

- Ring or dot illumination
- Wide range of LED colours
- Wide range of bezel colours
- Many different actuator types and colours

□ Applications

Because of its large actuator, this product is suited to all indoor applications where the pushbutton needs to be located quickly (access control, call information, museums, exhibitions). This product is also ideal for applications where the end-user uses gloves.

This product meets the requirements of EN81-70 and is ideal for use in all types of indoor lifts.

B

LPI series

New!

Tactile pushbutton switches with large actuator

Specifications



- Front or rear mounting
- Illuminated or non-illuminated
- Flexibility of marking
- Designed to meet the requirements of EN81-70

ELECTRICAL SPECIFICATIONS

- Snap-action, momentary function
- Mechanical life : 1.000.000 cycles min. for 5A NO/NC
5.000.000 cycles min. for 50mA NO
- Max. current/voltage rating with resistive load :

5A NO/NC version	50mA NO version
5A 12VDC - 50.000 cycles 100mA 12VDC - 1.000.000 cycles	50mA 24 VDC - 5.000.000 cycles

- Min. current with resistive load : 0,5mA at 24VDC for NO version
- Contact resistance : 100mΩ max.
- Dielectric strength : 500Vrms 50Hz between terminals
1.000 Vrms 50 Hz between terminals and ground
- Insulation resistance : 10MΩ at 500VDC
- Integrated resistors for illuminated versions
- LED current : 20mA typical for dot or ring (30mA max.)
- LED protected from reverse polarity
- Stand-by consumption : 0,5VA max.

MATERIALS

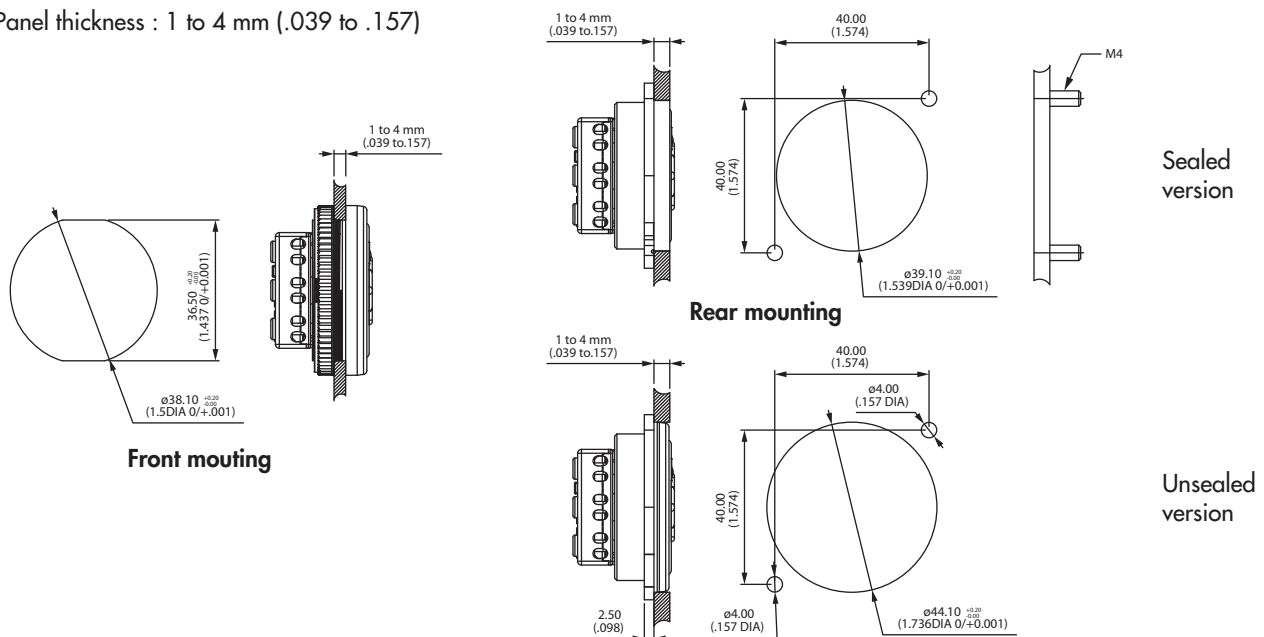
- Switch block : thermoplastic for 5A NO/NC
- Contacts :
5A NO/NC : silver, gold plated
50mA NO : silver
- Actuator crimped symbol : 304L stainless steel

MECHANICAL SPECIFICATIONS

- Environmental protection :
- IP53 for sealed version
- IP40 for unsealed version
- Impact resistance :
- IK06 for NO/NC version
- IK04 for NO version
- Operating force : 2,5 to 5N (unsealed)
- Total travel : 2 mm ±0,3 mm
- Operating temperature :
- 20°C to +65°C
- Storage temperature :
- 40°C to +70°C

PANEL CUT-OUT

Panel thickness : 1 to 4 mm (.039 to .157)



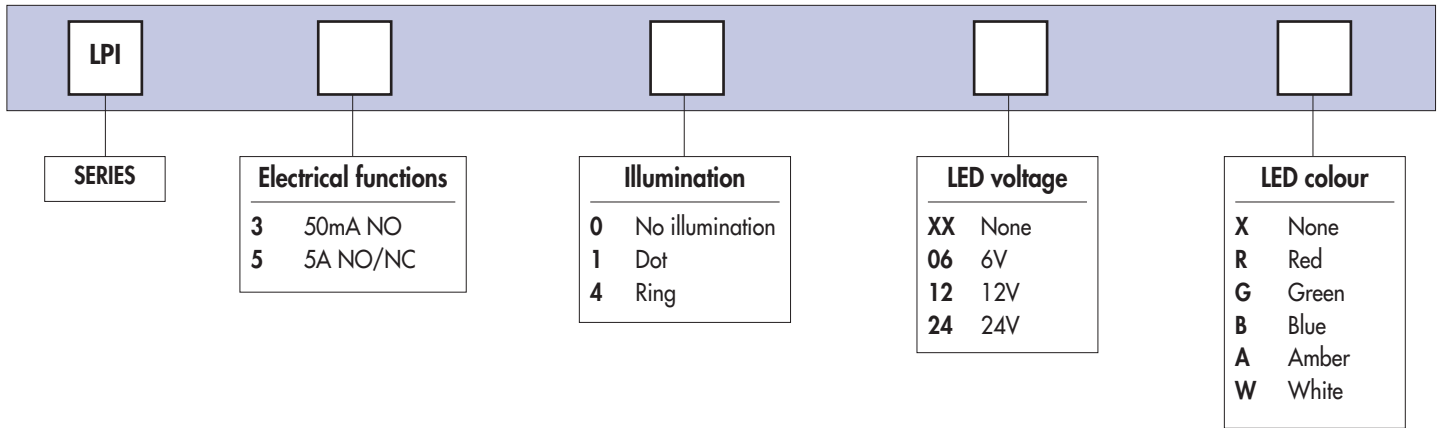
New!

LPI series

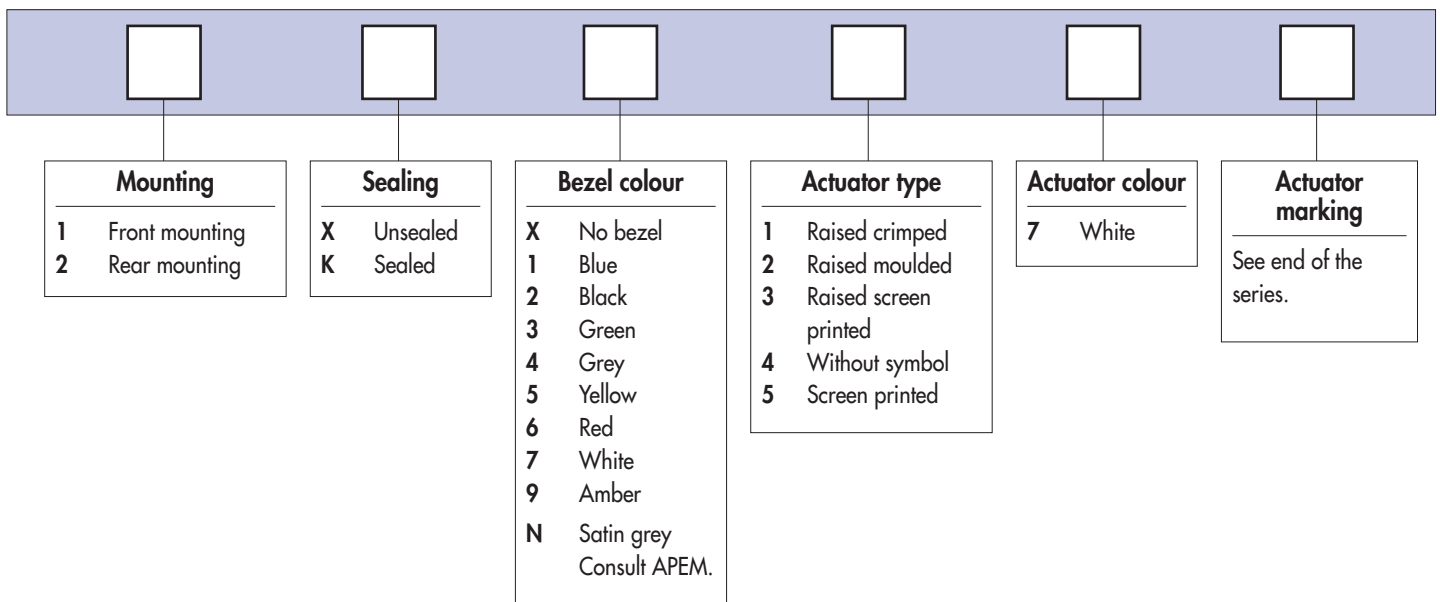
Tactile pushbutton switches with large actuator

Overview

SWITCH BLOCK



OPERATOR



ABOUT THIS SERIES

On the following pages, you will find successively switch block order numbers and operator order numbers.

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 : 15 pieces for front mounting versions - 20 pieces for rear mounting versions.



Sealing boot available to increase the sealing of LPI switches. See section H.

LPI series

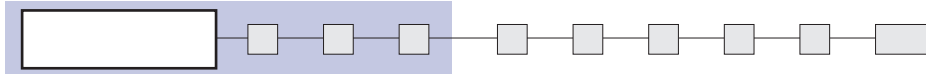
New!

Tactile pushbutton switches with large actuator

Switch block

SWITCH BLOCK

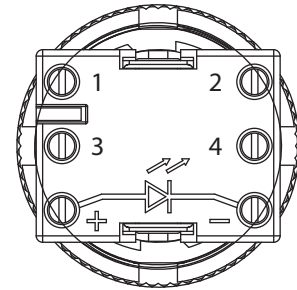
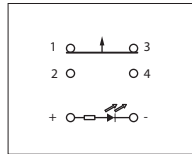
MODEL
STRUCTURE



5A momentary NC/NO combined



LPI5



Terminal block

Wire size : AWG20-15 - 0,5 to 1,5 mm²

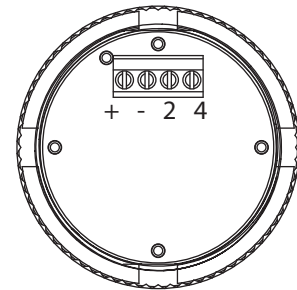
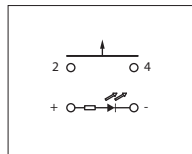
Rated torque : 0,5 Nm

Screw size : M3

50mA momentary NO



LPI3



Terminal block

Wire size : AWG28-16 - 0,5 to 1 mm²

Rated torque : 0,4 Nm

Screw size : M2

B

New!

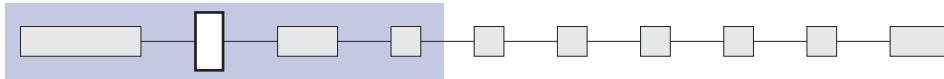
LPI series

Tactile pushbutton switches with large actuator

Switch block

ILLUMINATION

SWITCH BLOCK



- 0 Non-illuminated
- 1 Illuminated dot (1 LED)
- 4 Illuminated ring (4 LEDs)

Option 4 available only in the case of screen-printed symbol

Illuminated dot



Option 1

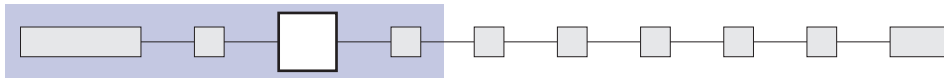
Illuminated ring



Option 4

LED VOLTAGE

SWITCH BLOCK



- XX Non-illuminated
- 06 6V
- 12 12V
- 24 24V

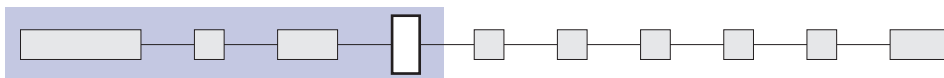


Combination with other options : see table below.

- Integrated resistors
- LED current : 20mA typical for dot or ring (30mA max.)
- LEDs protected from reverse polarity
- Stand-by consumption for illuminated product : 0,5VA max.

LED COLOUR

SWITCH BLOCK



- X Non-illuminated
- R Red
- G Green
- A Amber
- B Blue
- W White

Colours available with illuminated ring (option 4)

	Red	Green	Amber	Blue	White
LED voltage	Version 5A				
6V	No	No	No	No	No
12V	Yes	Yes	No	No	No
24V	Yes	Yes	Yes	Yes	No
LED voltage	Version 50mA				
6V	No	No	No	No	No
12V	Yes	No	Yes	No	No
24V	Yes	Yes	Yes	Yes	No

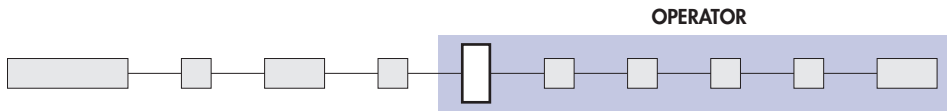
LPI series

New!

Tactile pushbutton switches with large actuator

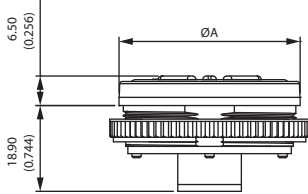
Operator

MOUNTING

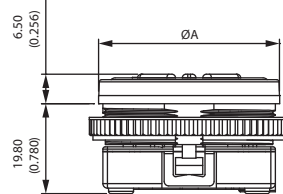


- 1 Front mounting
- 2 Rear mounting

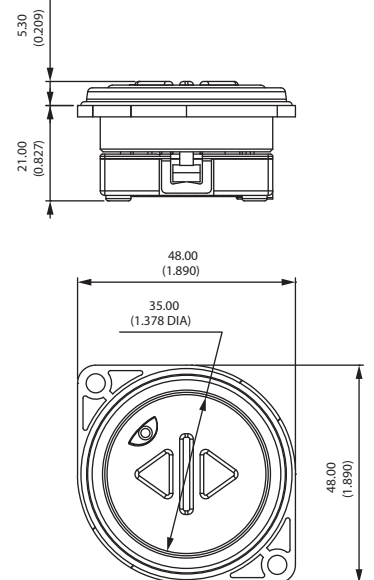
FRONT MOUNTING - 50mA version



FRONT MOUNTING - 5A version

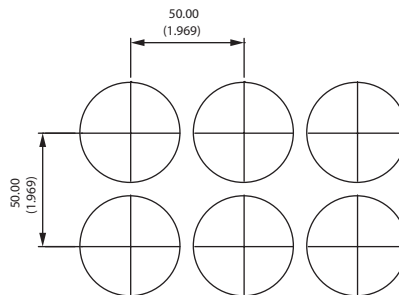


REAR MOUNTING - all versions



MATRIX MOUNTING

All versions

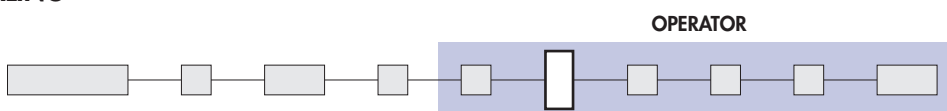


Dimension A

Sealed models : 44 mm (1.732)

Unsealed models : 39,9 mm (1.570)

SEALING



- X Unsealed
- K Sealed

Note : bezel compulsory on sealed versions.

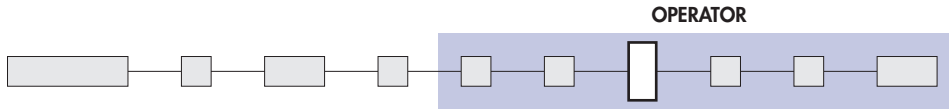
New!

LPI series

Tactile pushbutton switches with large actuator

Operator

BEZEL COLOUR



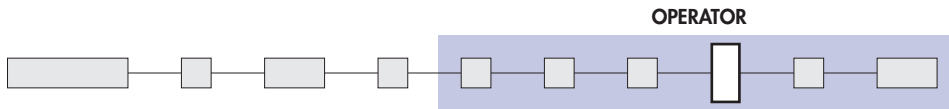
- X No bezel
- 1 Blue
- 2 Black
- 3 Green
- 4 Grey
- 5 Yellow
- 6 Red
- 7/1 White
- 9 Orange



Satin grey (option N) : consult APEM.

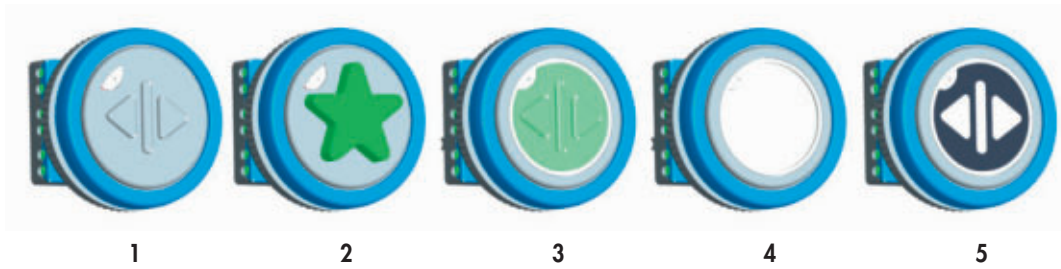
For sealed versions, the bezel is compulsory.

ACTUATOR TYPE

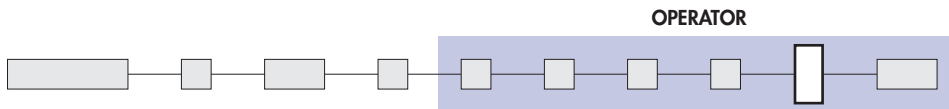


- 1 Stainless steel raised crimped symbol
- 2 Raised moulded symbol (star and bell)
- 3 Raised screen printed symbol
- 4 Without symbol
- 5 Screen printed symbol

Ring illumination available with options 3, 4 and 5 only.



ACTUATOR COLOR



- 7 White



B

LPI series

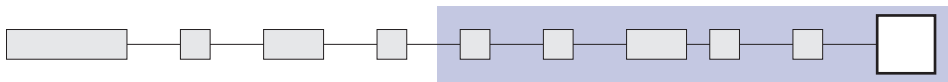
New!

Tactile pushbutton switches with large actuator

Operator

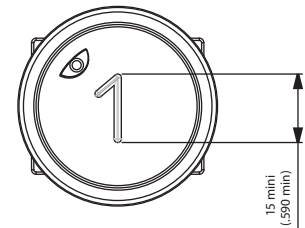
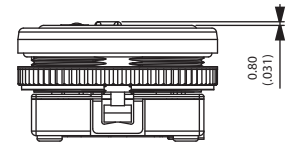
ACTUATOR MARKING

OPERATOR



CODE	SYMBOL	DESCRIPTION
XX	/	No symbol
00	0	
01	1	
02	2	
03	3	
04	4	
05	5•	With single tactile point
06	6	
07	7	
08	8	
09	9	
10		
11	-1	
12	-2	
13	-3	

CODE	SYMBOL	DESCRIPTION
14	◀▶	Open
15	▶◀	Close
16	△	Up
17	▽	Down
18	◁	Left
19	▷	Right
20	⋄	Ventilation
21	🔔	Alarm (moulded, yellow)
22	★	Exit level (moulded, green)
23	☎	Phone



Actuator type 1

	Symbol height		
	Symbol 21	Symbol 22	Other symbol
Actuator type 1	x	x	0,8 mm
Actuator type 2	0,8 mm	5 mm	x
Actuator type 3	x	x	0,8 mm
Actuator type 4	x	x	x
Actuator type 5	x	x	0 mm

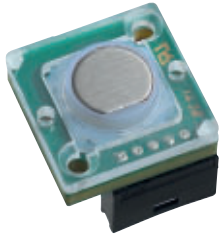
x = non available

PR and V series

New!

Stainless steel keys

Distinctive features - Specifications - Overview



- Rear mounting
- Recessed, flush or raised, depending on panel thickness
- Custom marking on request

ENVIRONMENTAL SPECIFICATIONS

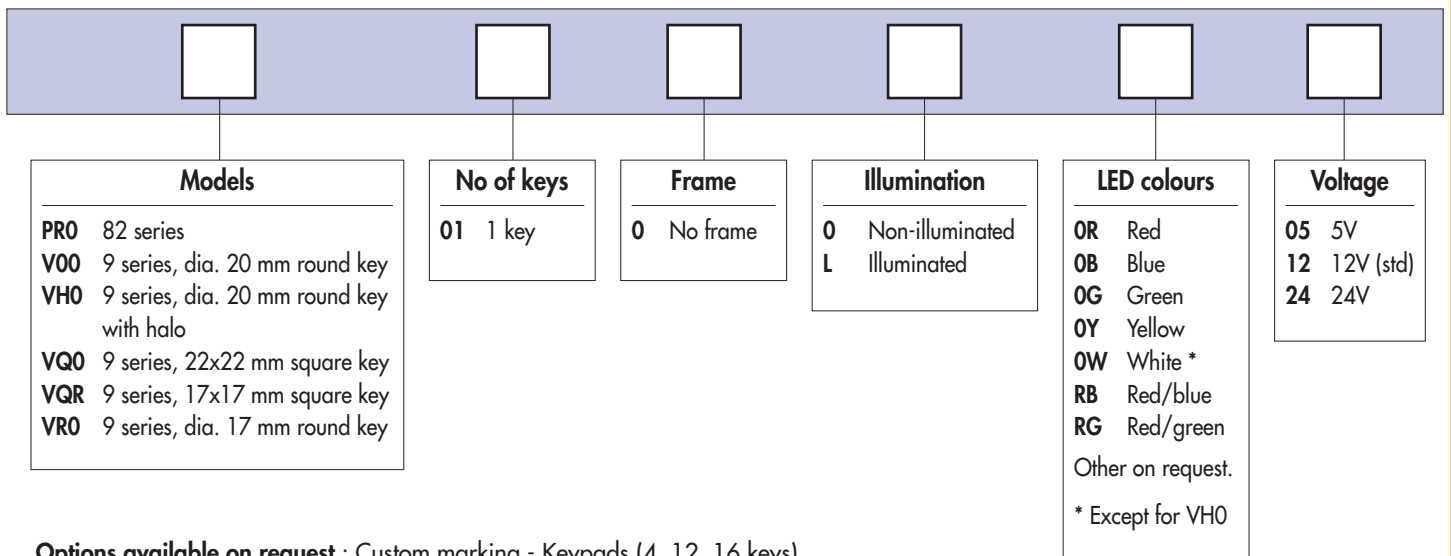
- Frontal sealing : IP65 according to NFC 21-010, IEC 60529 and DIN 40050
- Operating temperature : -20°C to +70°C
- Storage temperature : -40°C to +85°C
- Impact resistance : IK07 for PR series, IK09 for V series
- Flame resistance : 30 seconds. With lighters, matches, cigarettes (vertical position with direct flame on keys)
- Salt spray : 96 hours at +35°C NaCl 5 %
- Washable : most commonly used detergents and solvents

MATERIALS

- Keytop : 316L stainless steel
- Keys : ABS or PA6 nylon (illuminated versions)
- Key holder : ABS or PA6
- Frame : 316L stainless steel
- PCB : FR4
- Seal : 0,4 mm thick silicone
- Actuator : stainless steel snap domes AISI 304

ELECTRICAL AND GENERAL SPECIFICATIONS

- Output type : matrix
- Max. current/voltage rating : 50mA at 24VDC
- Switch resistance ON : < 10 ohms
- Switch resistance OFF : > 1 Gohm at 500V
- Operating force : 4N +/- 0,5N
- Life expectancy : > 1 million
- LED backlight : 12 VDC (standard)
- Panel thickness : 1,5 mm (.059) to 3 mm (.118) max.



Options available on request : Custom marking - Keypads (4, 12, 16 keys)

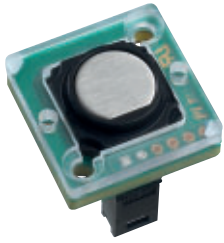
PR and V series

Stainless steel keys

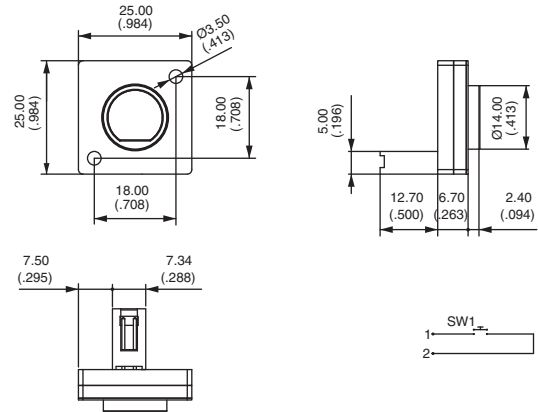
New!

Models

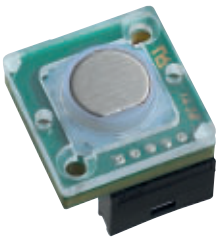
PR series



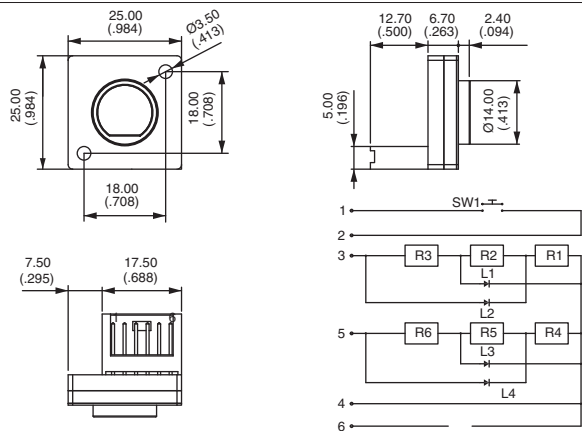
Non-illuminated
PR001



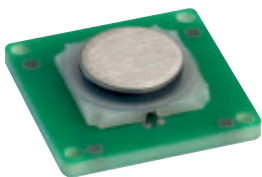
PR series - illuminated



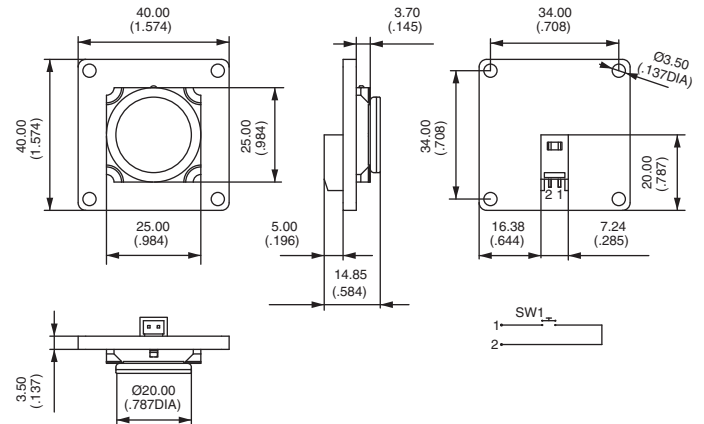
Illuminated, blue
PR0010L0B12



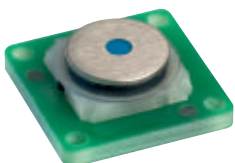
V series - dia. 20 mm round keys



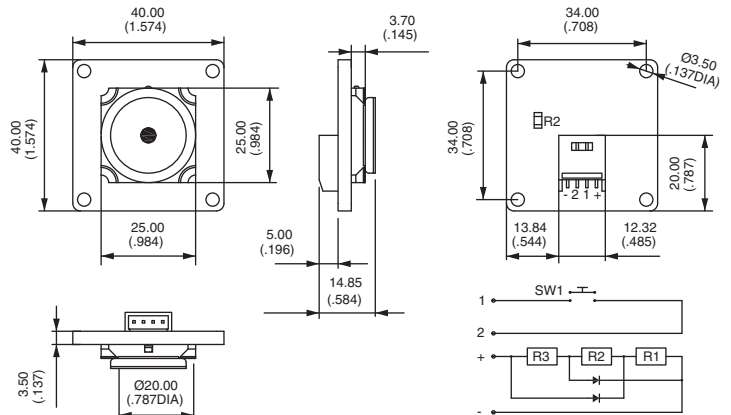
Non-illuminated
V0001



V series - dia. 20 mm round keys - illuminated



Illuminated, blue
V00010L0B12



PR and V series

New!

Stainless steel keys

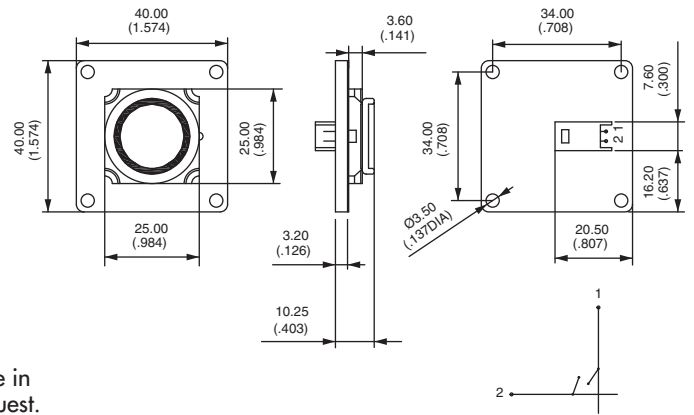
Models

V series - dia. 20 mm round keys with halo



Non-illuminated
VH001

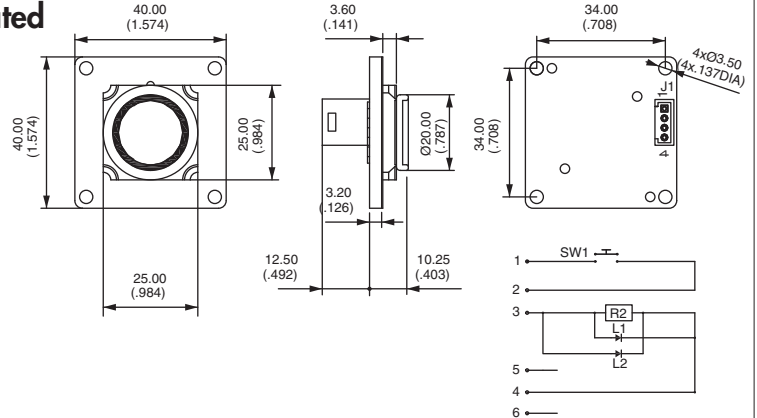
All non-illuminated versions are available in ABS black or transparent opaline on request.



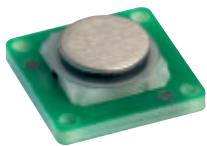
V series - dia. 20 mm keys with halo - illuminated



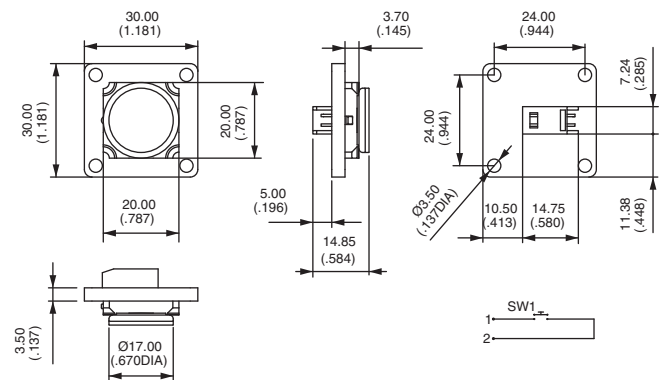
Illuminated blue
VH0010L0B12



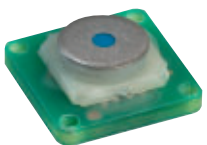
V series - dia. 17 mm round keys



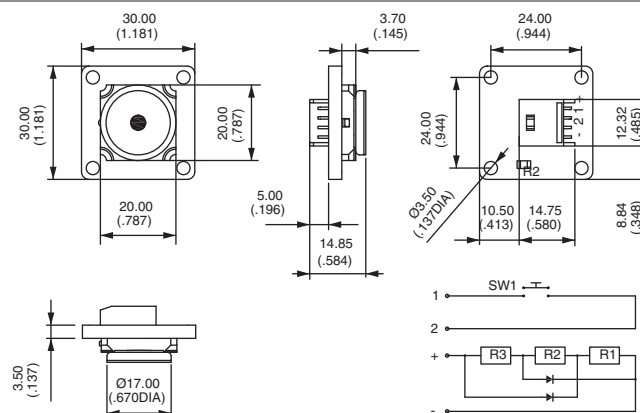
Non-illuminated
VR001



V series - dia. 17 mm round keys - illuminated



Illuminated, blue
VR0010L0B12



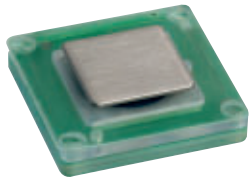
PR and V series

Stainless steel keys

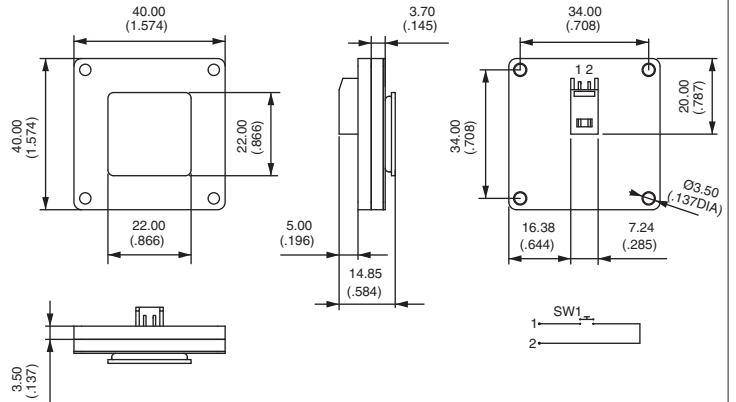
New!

Models

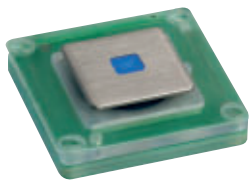
V series - 22x22 mm square keys



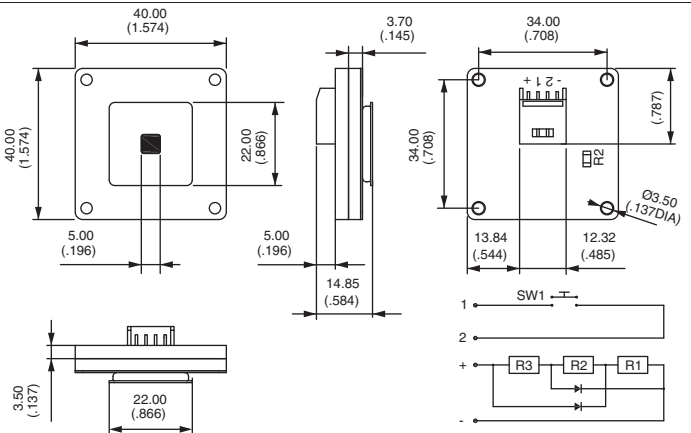
Non-illuminated
VQ001



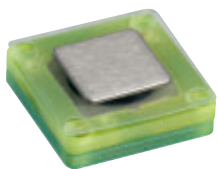
V series - 22x22 mm square keys - illuminated



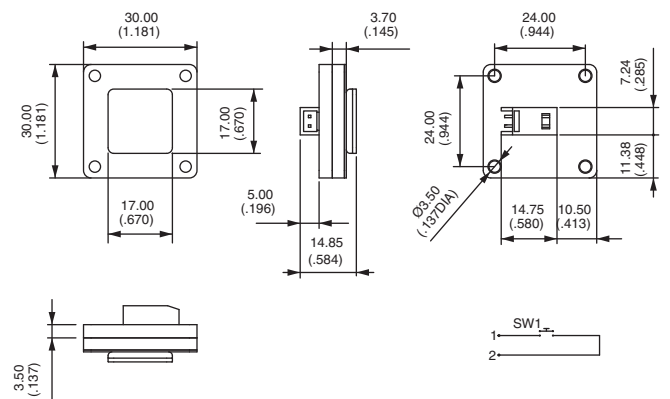
Illuminated, blue
VQ0010LOB12



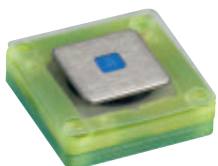
V series - 17x17 mm square keys



Non-illuminated
VQR01



V series - 17x17 mm square keys - illuminated



Illuminated, blue
VQR010LOB12

