

Series 48EM

12MM MINIATURE SEALED ELECTRO-MECHANICAL

This rugged multi-option sealed pushbutton series offers the utmost in choices of mounting styles, colors, terminations, bezels, lighting and momentary or alternate-action switching. The Series 48 offers all these options in one compact package size.



APPLICATIONS

- Office equipment
- Medical equipment
- Industrial machinery
- Outdoor controls
- Mass transportation
- Food processing equipment

KEY FEATURES:

- Momentary or maintained action
- Gold contacts
- Many button colors
- Choice of LED colors (or non-lighted versions)
- Long life
- Solder, PC terminals or Wireleads
- Panel sealed to IP 67

ACTUAL SIZE

ORDERING INFORMATION:

Switch Function	Switch Termination	Module Type	Bezel Type	LED Color †	Button Color	Mounting Type	Voltage Resistor
Momentary	Solder Tabs	48-1	RB - Round, Black	N - None	RD - Red	B - Bushing	If Blank*
Maintained	Solder Tabs	48-2	SB - Square, Black	R - Red	GR - Green	S - Snap-fit	05 - 5V forward
Momentary	PC	48-5	RC - Round, Chrome	G - Green	BK - Black		
Maintained	PC	48-6	SC - Square, Chrome	Y - Yellow	BL - Blue		
Momentary	Wire Leads	48-A		A - Amber	YL - Yellow		
Maintained	Wire Leads	48-B		B - Blue	OR - Orange		
				W - White	CR - Chrome		
				RB - Red / Blue	PK - Black with Standby Symbol		
				RG - Red / Green	WH - White		

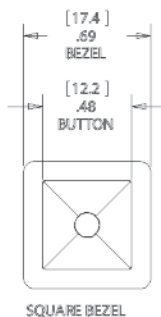
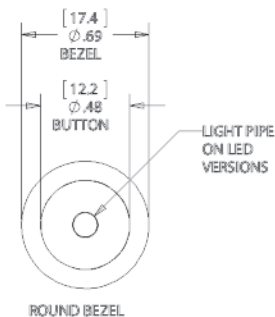
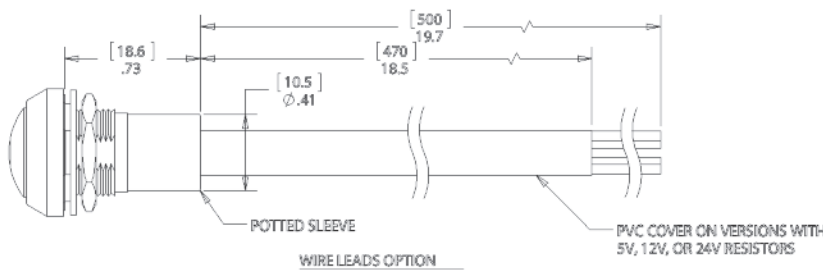
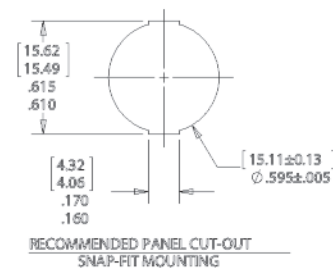
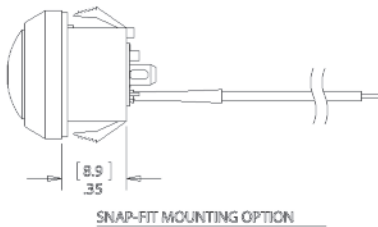
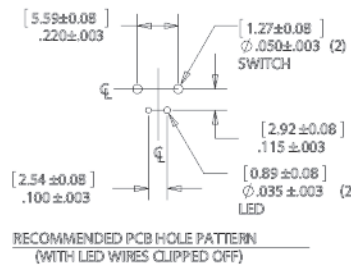
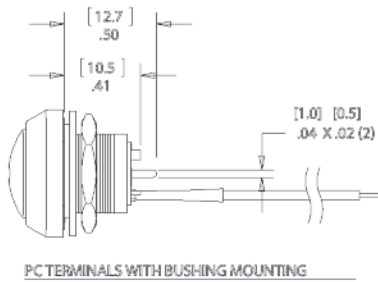
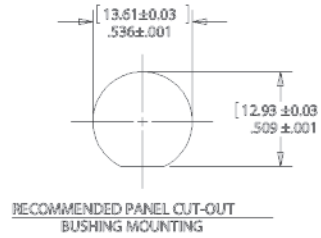
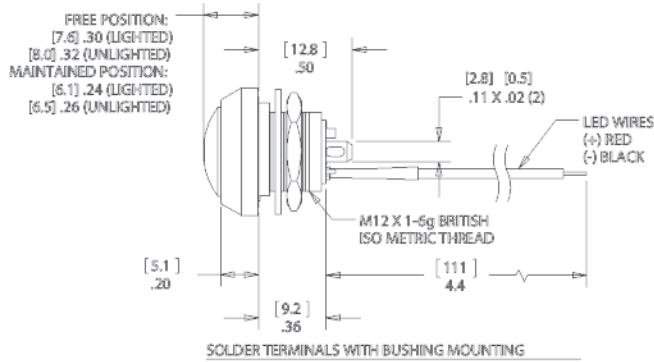
† Lighted switches come with wires on LEDs to protect from solder heat.

* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

STANDARDS / AGENCY / RATINGS:



PRODUCT DRAWINGS



[MILLIMETERS]
 [INCHES]

MECHANICAL CHARACTERISTICS

- CIRCUIT:** SPST-NO-DB (FORM X)
- BUTTON TRAVEL (NOM):** [2.3] .09
- OPERATING FORCE (NOM):** [3N] 306g
- CONTACT BOUNCE (NOM):** 1 ms
- PANEL THICKNESS:** BUSHING MOUNTING: [0.5-3.0] .02-.12
SNAP-FIT MOUNTING: [1.3-3.0] .05-.12

- NUT TORQUE (MAX):** [11.5 kgf/cm] 10 lb/in
- HARDWARE**
 BUSHING MOUNTING: BULK PACKAGED SEALING WASHER AND HEX NUT ARE INCLUDED.

ENVIRONMENTAL SPECIFICATIONS

- ACTUATOR INGRESS PROTECTION:** IP67
- OPERATING TEMPERATURE:** [-40 C to +85 C] -40 F to +185 F

ELECTRICAL SPECIFICATIONS

- CURRENT RATING (resistive):** 250mA @ 12VDC, 100K CYCLES
150mA @ 28VDC, 150K CYCLES (MOMENTARY)
100mA @ 48VDC, 100K CYCLES
10mA @ 12VDC, 1 MILLION CYCLES (MOMENTARY)
- DIELECTRIC STRENGTH:** 1,000 VAC
- INSULATION RESISTANCE:** 1G OHM
- CONTACT RESISTANCE:** 50m OHMS
- WIRE LEADS:** UL STYLE 1007
26 AWG, STRANDED

Series 48SS

12MM MINIATURE HALL-EFFECT SEALED

This rugged sealed pushbutton switch uses a Hall-Effect sensor to achieve extremely long life, up to 1,000,000 cycles momentary. This switch is suited for harsh environments where long life and reliability are needed.



APPLICATIONS

- Communications
- Data entry
- Hand-held control modules
- Outdoor controls
- Mass transport controls
- Instrumentation

KEY FEATURES:

- 1,000,000 cycles momentary
- Momentary and maintained action
- Hall-Effect technology
- Choice of LED colors (or non-lighted versions)
- Panel sealed to IP67
- Variety of Button colors
- Square and round versions available
- Solder, PC terminals or Wireleads

ACTUAL SIZE

ORDERING INFORMATION:

Switch Function	Switch Termination	Module Type	Bezel Type	LED Color †	Button Color	Mounting Type	Voltage Resistor
Momentary	Solder Tabs	48-3	RB - Round, Black	N - None	RD - Red	B - Bushing S - Snap-fit	If Blank* 05 - 5V forward
Maintained	Solder Tabs	48-4	SB - Square, Black	R - Red	GR - Green		
Momentary	PC	48-7	RC - Round, Chrome	G - Green	BK - Black		
Maintained	PC	48-6	SC - Square, Chrome	Y - Yellow	BL - Blue		
Momentary	Wire Leads	48-C		A - Amber	YL - Yellow		
Maintained	Wire Leads	48-D		B - Blue	OR - Orange		
				W - White	CR - Chrome		
				RB - Red / Blue	PK - Black with Standby Symbol		
				RG - Red / Green	WH - White		

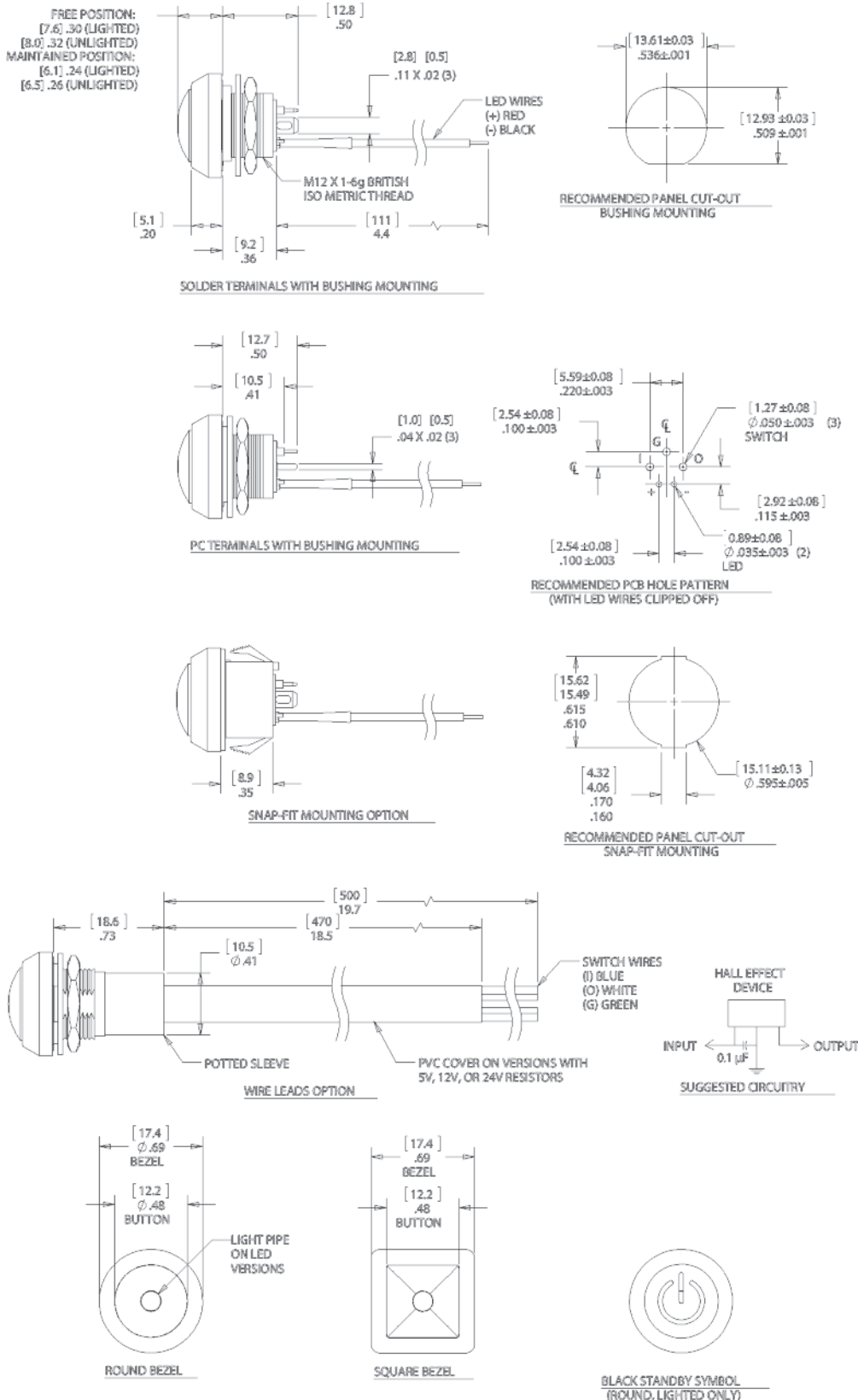
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* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

STANDARDS / AGENCY / RATINGS:



PRODUCT DRAWINGS



MECHANICAL CHARACTERISTICS

CIRCUIT:
 SPST-NO-DB (FORM X)

BUTTON TRAVEL (NOM):
 [2.3] .09

OPERATING FORCE (NOM):
 [3N] 306g

PANEL THICKNESS:
 BUSHING MOUNTING: [0.5-3.0] .02-.12
 SNAP-FIT MOUNTING: [1.3-3.0] .05-.12

NUT TORQUE (MAX):
 [11.5 kgf/cm] 10 lb/in

HARDWARE
 BUSHING MOUNTING BULK PACKAGED SEALING WASHER AND HEX NUT ARE INCLUDED.

ENVIRONMENTAL SPECIFICATIONS

ACTUATOR INGRESS PROTECTION:
 IP67

OPERATING TEMPERATURE:
 [-40 C to +85 C] -40 F to +185 F

ELECTRICAL SPECIFICATIONS

SUPPLY VOLTAGE:
 4.2V TO 24V, 26.5 MAX

SUPPLY CURRENT:
 B<Brp, Vcc=12V:
 3mA TYP to 8mA MAX
 B>Bop, Vcc=12V:
 4mA TYP to 8mA MAX

OUTPUT LOAD:
 SINKING (I out MAX = 25mA)

REVERSE BATTERY VOLTAGE:
 -30V MAX

REVERSE OUTPUT CURRENT:
 -50mA MAX

SWITCH LIFE:
 MOMENTARY: 1,000,000 CYCLES
 MAINTAINED: 50,000 CYCLES

WIRE LEADS:
 UL STYLE 1007
 26 AWG, STRANDED

(MILLIMETERS)
 INCHES

Designs and specifications are subject to change without notice due to product improvement.