



## Features

- RoHS compliant\*
- CW or CCW rotary switch
- Linear and audio tapers
- PC board and bushing mount
- Splash seal
- Metal bushing and shaft

## Additional Information

Click these links for more information:



# 56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

### Electrical Characteristics<sup>1</sup>

Standard Resistance Range	
Linear .....	1K to 500K ohms
Audio .....	1K to 500K ohms
Total Resistance Tolerance	
B & D Tapers .....	±20 %
E & S Tapers .....	±10 %
Independent Linearity .....	±5 %
Absolute Minimum Resistance .....	2 ohms maximum
Effective Electrical Angle .....	240° ±5
Contact Resistance Variation .....	±2 %
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)	
Sea Level .....	1,500 VAC minimum
70,000 .....	500 VAC minimum
Insulation Resistance .....	1,000 megohms minimum
Power Rating At 70 °C (Derate To 0 At 125 °C) (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)	
Linear Tapers.....	0.5 watt
Audio Tapers .....	0.25 watt
Theoretical Resolution.....	Essentially infinite

### Environmental Characteristics<sup>1</sup>

Operating Temperature Range .....	+1 °C to +125 °C
Storage Temperature Range .....	-55 °C to +125 °C
Temperature Coefficient Over Storage Temperature Range .....	±1,000 ppm/°C
Vibration .....	.8 G
Total Resistance Shift.....	±2 % maximum
Voltage Ratio Shift.....	±5 % maximum
Shock.....	.20 G
Total Resistance Shift.....	+2 % maximum
Voltage Ratio Shift.....	±5 % maximum
Load Life.....	1,000 hours
Total Resistance Shift.....	±10 % TRS maximum
Rotational Life (No Load).....	50,000 cycles
Total Resistance Shift.....	±10 % TRS maximum
Contact Resistance Variation .....	±2 %
Moisture Resistance (MIL-STD-202, Method 103, Condition B)	
B & E Taper .....	±10 % TRS
D & S Taper .....	±20 % TRS
IP Rating	
Entire Unit.....	IP64
Shaft/Bushing.....	IP65

### Mechanical Characteristics

Stop Strength.....	56 N-cm (5 lb.-in.)
Mechanical Angle .....	290° ±5°
Torque	
Running/Starting .....	0.2 to 1.3 N-cm (0.25 to 2.0 oz.-in.)
Mounting (Torque on Bushing) .....	1.7 to 2.0 N-m (15 to 18 lb.-in.) maximum
Weight .....	8.5 grams
Terminals .....	PC pin
Soldering Condition .....	Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025" wire diameter. Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux. Part can be wave soldered at 260 °C (500 °F) for 5 seconds, no wash process with no clean flux.
Marking.....	Manufacturer's trademark, part number, resistance value and date code.
Ganging (Multiple Section Potentiometers and Switches).....	Inquire for availability, minimum order quantity and price.
Hardware.....	Locking bushing versions are shipped with one additional locking nut (Bushings A: H-37-2 & H-38-2; Bushing C: H-37-1 & H-38-1)

<sup>1</sup>Electrical specifications tested at 200 RPM, at room ambient: +25 °C nominal.



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
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## Applications

- Test and measurement equipment
- Avionics controls
- Communications equipment
- Medical laboratory equipment

# 56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

# BOURNS®

### Initial Electrical Characteristics - Switch

Switch Type .....	SPDT (Break before make)
Power Rating (Resistive Load) .....	0.5 A @ 30 VDC
Dielectric Withstanding Voltage (MIL-STD-202, Method 301) Sea Level .....	1000 VAC minimum
Insulation Resistance .....	1000 megohms minimum
Contact Resistance .....	30 milliohms maximum
Contact Bounce .....	5 milliseconds maximum
Actuation Angle .....	35 ° maximum
Switch Travel .....	25 ° maximum
Detent Torque .....	1.3 N-cm (2.0 oz.-in) nominal

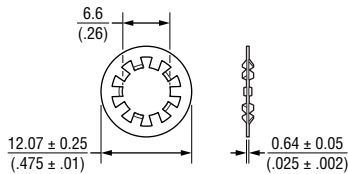
### Environmental Characteristics<sup>1</sup>

Vibration .....	8 G
Contact Resistance .....	30 milliohms maximum
Contact Bounce .....	0.1 milliseconds maximum
Shock .....	20 G
Contact Resistance .....	30 milliohms maximum
Contact Bounce .....	0.1 milliseconds maximum
Rotational Life @ Rated Power .....	50,000 cycles
Contact Resistance .....	100 milliohms maximum
Moisture Resistance (MIL-STD-202, Method 103, Condition B) Contact Resistance .....	30 milliohms maximum
Insulation Resistance (After 24 Hours @ Room Temperature - 500 VDC) .....	100 megohms minimum

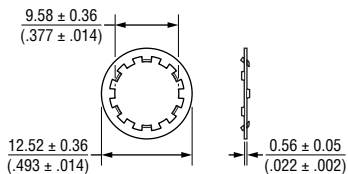
<sup>1</sup>Electrical specifications tested at 200 RPM, at room ambient: +25 °C nominal.

### Hardware

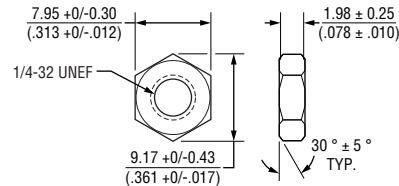
#### LOCKWASHER H-37-1



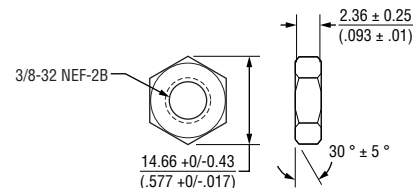
#### LOCKWASHER H-37-2



#### NUT H-38-1



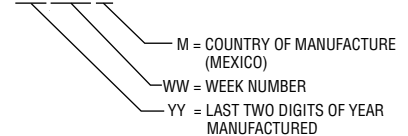
#### NUT H-38-2



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

### Date Code Description

YY WW M



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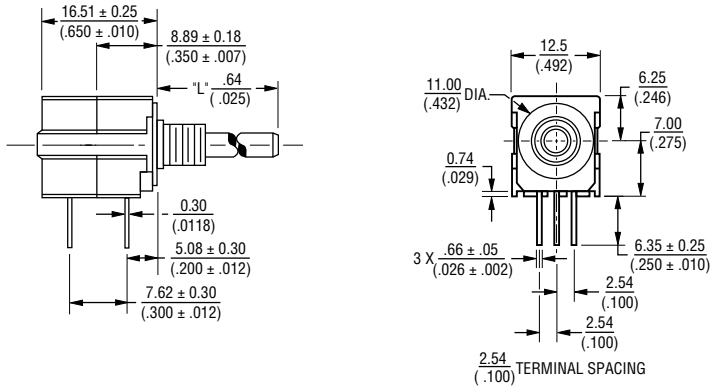
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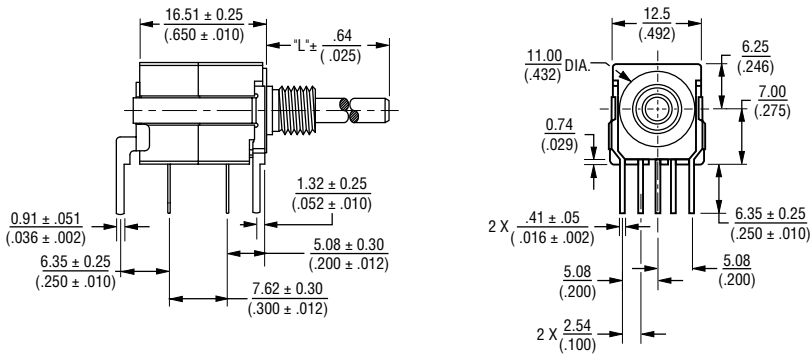
# 56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch



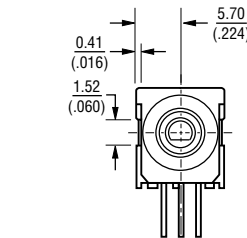
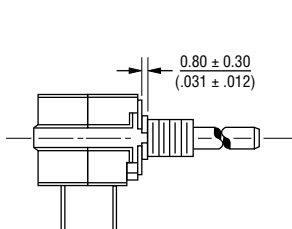
## Product Dimensions



## PACKAGE DIMENSIONS W/PCB MOUNTING BRACKET



## ANTI-ROTATION LUG (Style "A", 90° CW Shown)

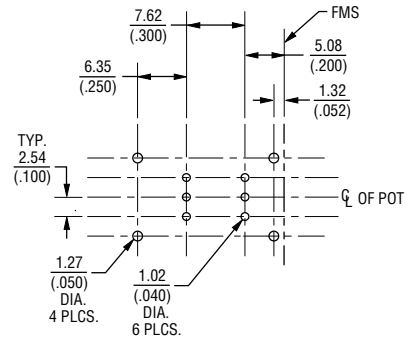


SHAFT FLAT ORIENTATION  
SHAFT FLAT SHOWN AT 50% OF MECHANICAL TRAVEL.

FOR TOLERANCES SHOWN: .XX ±  $\frac{.25}{.010}$   
 .XXX ±  $\frac{.13}{.005}$   
 SHAFT DIMENSIONS ±  $\frac{.80}{(1/32)}$

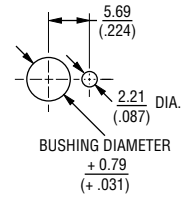
DIMENSIONS:  $\frac{MM}{(INCHES)}$

## Recommended PCB Layout

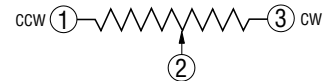


(Double Module Front and Rear Bracket Shown)

## Suggested Panel Layouts



## Electrical Schematic

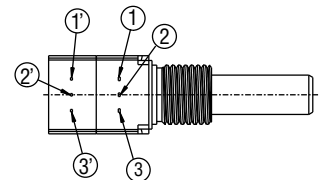


## Switch Configuration



SPDT

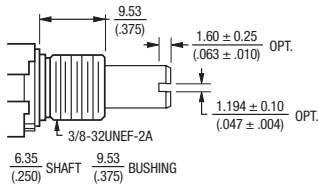
## Terminal Layout



# 56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

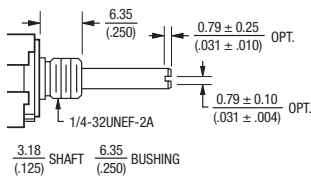


## Shaft/Bushing Styles



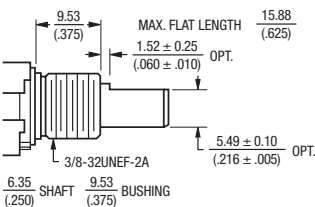
**A Style Bushing**

STD. LENGTH 'L'	
.750	(19.05)
.875	(22.23)



**C Style Bushing**

STD. LENGTH 'L'	
.750	(19.05)
.875	(22.23)



**A Style Bushing - Flatted Shaft**

STD. LENGTH 'L'	
.750	(19.05)
.875	(22.23)

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## How To Order

**56 A A D - C 28 - B 15 / R81 L**

**ANTI-ROTATION LUG / BRACKET OPTION**

Code	Description
A	AR Lug 90 °CW
D	No AR Lug or Bracket
L	Front Bracket
N	Front and Rear Bracket

**NO. OF SECTIONS**

Code	Description
A	Single plus Switch

**BUSHING DESIGNATOR**

Code	Description
A	3/8" D x 3/8" L Threaded
C	1/4" D x 1/4" L Threaded

**MODEL**

Code	Description
56	PC Terminals w/Rotary Switch

**RoHS IDENTIFIER**

Code	Description
L	Compliant

**SWITCH OPTION**

Code	Description
R80	SPDT CW
R81	SPDT CCW

**RESISTANCE CODES**

Code	Value in Ohms
10	1K
13	5K
15	10K
18	50K
20	100K
22	250K
23	500K

**ELEMENT TAPER TYPE/TOLERANCE**

Code	Description
B	Linear CP ±20 %
E	Linear CP ±10 %
D	CW Audio CP ±20 %
S	CW Audio CP ±10 %

**SHAFT LENGTH DESIGNATOR**

Code	Description
24	3/4" FMS Long
28	7/8" FMS Long

SHAFT STYLE		AVAILABLE ONLY WITH BUSHING
Code	Description	Code
B	1/4" D Slotted End	A
C	1/4" D Flatted End	A
E	1/8" D Slotted End	C

*Boldface features are Bourns standard options. All others are available with higher minimum order quantities.*



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