

## Features

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

## Applications

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

# 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 .....	IP 64
Shaft/Bushing .....	IP 65

### 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) .....	Inquire for availability, minimum order quantity and price.
Hardware .....	One lockwasher and one mounting nut is shipped with each potentiometer.

<sup>1</sup>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

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### 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>

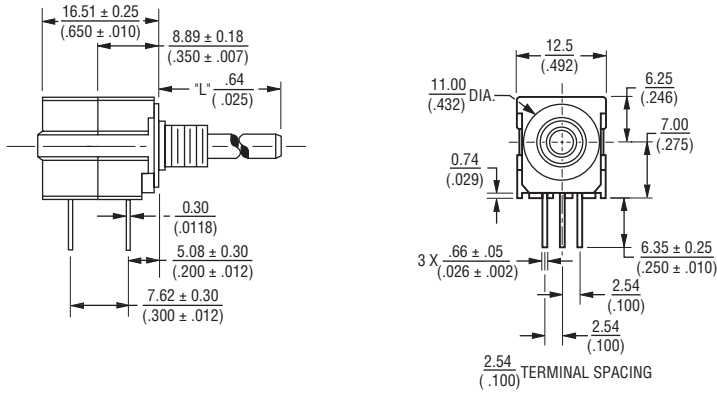
Vibration .....	8 G
Contact Resistance .....	30 milliohms maximum
Contact Bounce .....	0.1 milliseconds maximum
Shock .....	20 G
Contact Resistance .....	30 milliohms maximum
Contact Bounce .....	0.1 milliseconds maximum
Rotational Life @ Rated Power .....	50,000 cycles
Contact Resistance .....	100 milliohms 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>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

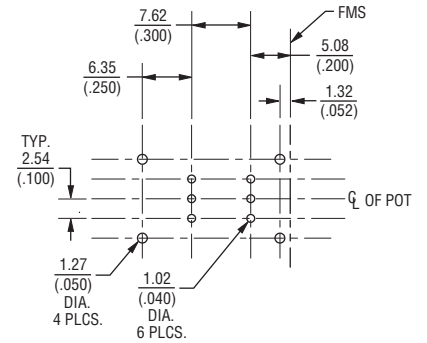
# 56 - Sealed 1/2 " (12.5 mm) Panel Control w/Rotary Switch

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## Product Dimensions

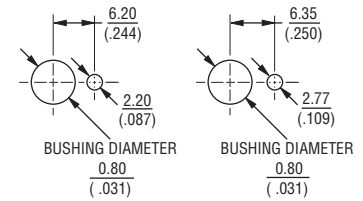


## Recommended PCB Layout



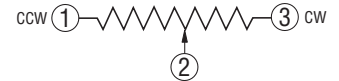
(Double Module Front and Rear Bracket Shown)

## Suggested Panel Layouts

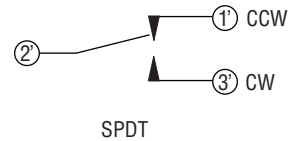


The Model 56 can be used with either of the two panel layouts shown.

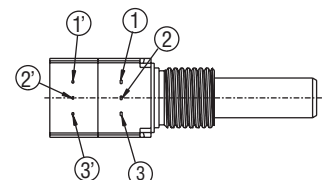
## Electrical Schematic



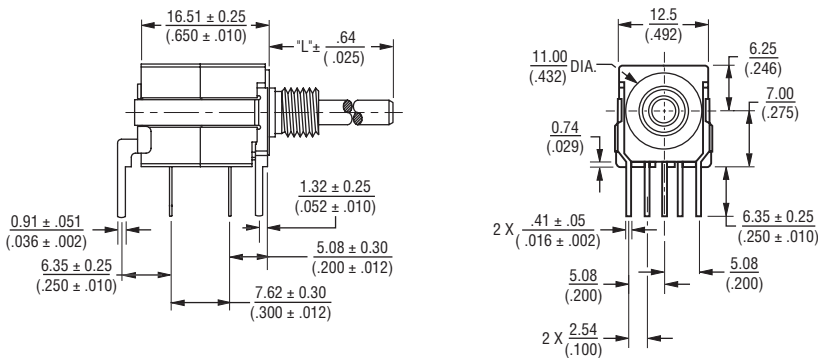
## Switch Configuration



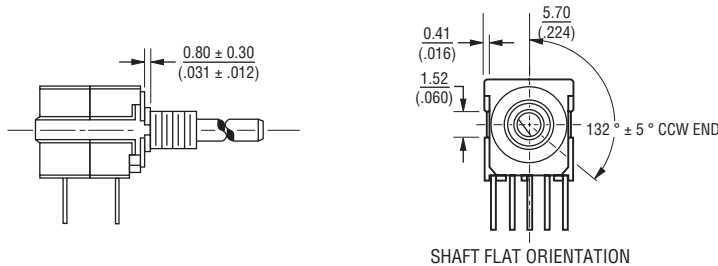
## Terminal Layout



## PACKAGE DIMENSIONS W/PCB MOUNTING BRACKET



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



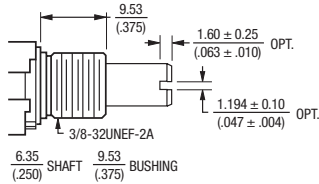
FOR TOLERANCES SHOWN: XX =  $\pm \frac{.25}{.010}$   
 XXX =  $\pm \frac{.13}{.005}$   
 SHAFT DIMENSIONS  $\pm \frac{.80}{(1/32)}$

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

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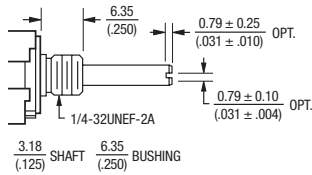


## Shaft/Bushing Styles



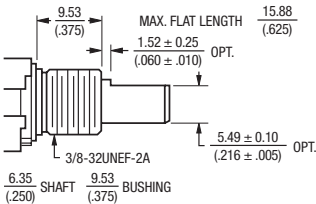
**A Style Bushing**

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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