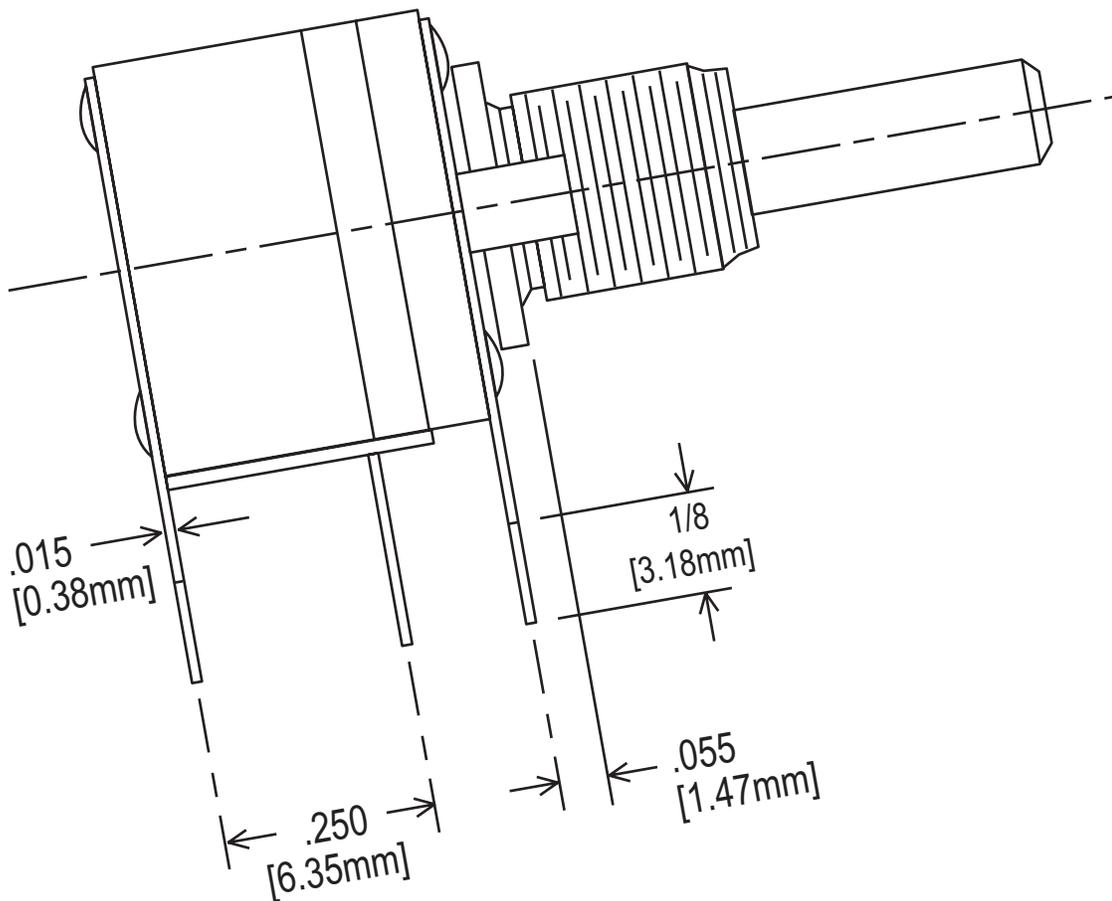


STATE ELECTRONICS

Series 70 Custom Potentiometer Designer Guide

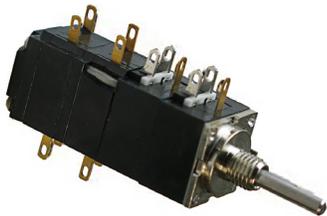


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Internet <http://www.potentiometers.com>

POT PROTOTYPES PRONTO!



Dual Potentiometer, Dual Rotary Switch,
Single Flatted 1/8" Shaft, Solder Lugs



Single Potentiometer, Single Rotary Switch,
Single Slotted 1/4" Shaft, Solder Lugs



Single Potentiometer,
Single 1/4" Shaft, Solder Lugs



Dual Potentiometer,
Dual Shaft, Solder Lugs



Dual Potentiometer,
Single 1/4" Shaft, PC Pins



Single Potentiometer,
Single Slotted 1/4" Shaft, PC Pins



Triple Potentiometer,
Single 1/8" Shaft, PC Pins



Quad Potentiometer,
Single 1/4" Shaft, Solder Lugs

Now almost any special combination potentiometer you specify can be manufactured and shipped soon after your order is received.

Since Clarosystem and Mod Pot potentiometers are modular in construction, we can produce prototype quantities of 1/2 or 5/8 inch square, conductive plastic, cermet, or hot molded carbon pots for you in just a few hours . . . and even production quantities in a matter of days with our VIP (Very Important Potentiometer) service!

Over one billion combinations of single, dual, triple, quad arrangements, push-pull or rotary switches and hundreds of shaft terminal variations can be produced.

If you need a potentiometer and you need it fast, call our product manager or fax us your requirements using the Custom Potentiometer Order Forms included in this catalog.

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Series 70, 72

Hot-Molded Carbon*, Conductive Plastic (CP), and Cermet Panel Potentiometers



Unmatched Flexibility



The **MOD POT**® Family includes:

Series 70 – Metal or Plastic Shaft – Metal Bushing.

Series 72 – Metal or Plastic Shaft – Plastic Bushing.

Features

- Modular Construction
- 50 Ohms to 10 Megohms
- Linear and Non-Linear Tapers
- Multiple Sections/Concentric Shafts
- Rotary and Push-Pull Switch Options
- Multi-Turn (Vernier) Option
- Attenuators
- 0.625 Inch (15,87 mm) Square
- 1/4" or 1/8" Shaft Diameter
- Metal or Plastic Shaft
- RoHS Compliant

Benefits

- Versatility
- Wide Resistance Range
- Versatility
- Versatility
- Versatility
- Versatility
- Versatility
- Versatility
- Moderate Size
- Versatility
- Non-Magnetic
- International Acceptance

Disclaimer

Due to the unlimited design combinations, certain designs may not perform in accordance with all of the specifications

* Hot Molded Carbon is no longer available

SPECIFICATIONS

General

Versatile Panel Potentiometer

The MOD POT[®] concept consists of standardized potentiometer modules that can be mixed and matched in over a billion combinations. Now, you can be far more imaginative with potentiometers because you can get special combinations with the ease of standards.

Allen-Bradley originated the modular potentiometer concept in response to requests from design engineers who wanted virtually unlimited variety in variable resistors for greatly increased design freedom

MOD POT[®] modules are 5/8 inch square by about 1/2 inch deep. This provides minimum center-to-center distance for compact panel mounting. You can gang resistance and switch modules in combinations of up to four modules. Select from a whole family of resistive elements, resistive values and tolerances, tapers, shafts, bushings, lug options and more. You get a virtually unlimited number of design options.

TEMPERATURE RANGE

Series	Module Type	Maximum Temp °C	Minimum Temp °C
70	Hot-Molded* or Conductive Plastic	+120°	-55°
	Cermet	+150°	-55°
72	Hot-Molded*, Conductive Plastic or Cermet	+100°	-55°
70, 72	Multi-Turn Vernier	+100°	-55°
70, 72	Switches	+100°	-55°

Hardware – Hardware is: .250 inch (6,35 mm) diameter bushing: (1) M-4748; (1) M-4721; (1) M-4761 (M-4761 is supplied only with locking bushings)

4.375 inch (9.52 mm) diameter bushing: (1) M-2898; (1) M-2786; (1) M-3638 (M- 3638 is supplied only with locking bushings)

All hardware shipped in bulk — not assembled unless otherwise specified.

Mounting Torque

Series 70 - Torque applied to the mounting nuts should not exceed 15 to 18 inch-pounds (1.7 to 2.0 N-m) for the .375 inch (9,52 mm) diameter bushing.

Series 72 - Torque applied to the mounting nuts should not exceed 7 inch-pounds (790 mN-m) for the .250 inch (6,35mm) diameter bushing or 14 inch-pounds (1580 mN-m) for the .375 inch (9,52 mm) diameter bushing.

* Hot Molded Carbon is no longer available

Turning Torque – Initially, at 25°C, the potentiometer torque will be 0.5 inch-ounce (3.5 mN-m) minimum while the maximum is:

Style	TORQUE INCH-OUNCES (mN-m)	
	Cermet and Hot-Molded Elements	CP Elements
Single	3 (21)	1.5 (11)
Dual	6 (42)	2.5 (18)
Triple	8 (56)	3.5 (25)
Quad	10 (71)	4.5 (32)

Variation within a control is 1 oz. in. maximum.

The maximum additional torque required for the multi-turn vernier drive is 10 inch-ounces (71 mN-m) on inner, coarse adjustment shaft.

Stop Torque – Minimum of 4 inch-pounds (451 mN-m) except for the Series 72 with a .125 inch (3.18 mm) diameter shaft which is 2 inch-pounds (225 mN-m) minimum. Multi-turn vernier drives have slip clutches.

Rotation –

Single	Rotation in Degrees	
	Total Mechanical (±5°)	Electrical (Nominal)
Potentiometers	300	260
Potentiometers and Rotary Switch	300	260
Potentiometers and Push-Pull Switches	305	260
Rotary Switches	25	–
Rotary Switches and Push-Pull Switches	30	–

Multi-Turn Vernier drive – Two multi-turn vernier drive modules are available with hot-molded*, cermet, and conductive plastic modules. Through a gearing arrangement, the total rotation will be changed to 16 turns or 4 turns. A ratchet clutch is provided in place of fixed stops for the fine adjustment shaft. Series 70 variable resistors may have concentric shafts. The inner concentric shaft (.078 inch (1.98 mm) diameter) may be used as a coarse adjustment shaft.

Enclosure – Dust and splash resistant. They are not immersion sealed.

Materials – Corrosion-resistant and essentially nonmagnetic. The shafts and bushings of the Series 72 are plastic.

Standard Marking – State Electronics part number and nominal total resistance are marked in two lines. Other markings are possible.

Electrical

Total resistance tolerances – Hot-Molded*, CP: ±10% or ±20%; Cermet: ±5% or ±10%.

POWER

Series	Power in Watts per Section		
	Hot-Molded* at 70° C	Cermet at 70° C	CP at 70° C
70 (single)	1.0	2.0	.5
70 (multi-section)	.5	1.0	.25
72 (single)	.5	1.0	.25
72 (dual)	.5	.5	.25

Power derating – Derate power linearly from rated temperature to zero at maximum temperature. Derate power 50 percent for non-metallic mounting. Derate 60 percent for CP elements with “A” and “B” tapers.

Derate 50 percent for hot-molded elements with “A”, “B”, “S”, and “DB” tapers. For rheostat applications, derate power directly with shaft or actuator position.

Operational

Contact resistance variation – linear taper –

Maximum value is: Hot-Molded* & Cermet: 1.5 percent of nominal resistance value or 1.5 ohms, whichever is greater. CP: 1.0 percent of nominal resistance value.

Load Life – Maximum change in total resistance as a result of a 1000 hour test at rated power across entire element at +70° C (1.5 hours “ON”, 0.5 hour “OFF”) 5 percent for cermet element, 10 percent for hot-molded* and CP elements

Environmental

Vibration – 2 percent maximum change in total resistance, 5 percent maximum change in resistance setting. (Tested per method 204, condition “C” of MIL-STD-202.). Applicable to single shaft potentiometers only.

Shock – 2 percent maximum change in total resistance, 5 percent maximum change in resistance setting. (Tested per method 213, condition “I” of MIL-STD-202.) Applicable to single shaft potentiometers only.

Humidity – Maximum change in total resistance as a result of 95 percent humidity at 40°C for 100 hours: 5 percent for cermet element, 10 percent for hot-molded and CP elements.

Temperature cycling – 3 percent maximum change in total resistance as a result of the temperature cycling test. (Five cycles at –55° C to the maximum temperature.)

* Hot Molded Carbon is no longer available

Voltage – 350 volts maximum working voltage (RMS or DC), or as determined by $E_{max} = \sqrt{PR}$, whichever is less (at sea level).

ATTENUATORS – HOT MOLDED*

Series	Bridged-T	L	Bridged-H	Straight-T
70	A	A	A	A
72	A	A	NA	NA

Consult factory for further details

A=Available

NA=Not Available

Linearity – ±5 percent independent for linear tapers with a total resistance up to 1.0 megohm.

Dielectric withstanding voltage –

Maximum continuous voltage, 350 Volts (RMS) at sea level. One second test of 1000 Volts (RMS) at sea level. 500 VAC (RMS) at 3.4 Inches (86.36mm) mercury, equivalent to 50,000 feet. ([Glossary Definition Link](#))

Insulation resistance – 1000 megohms minimum for clean and dry conditions at +25 °C.

Rotational life – 10 percent maximum change in total resistance as a result of a 100,000 mechanical cycle life test without load.

Effect of soldering – Maximum change in total resistance as a result of immersing the terminals in 350° C solder to within 0.125 inch (3,18mm) of the resistor body for 5 seconds: 1 percent for cermet element, 2 percent for hot-molded and CP elements.

Low temperature operation – Maximum change in total resistance as a result of the low temperature operation test (–55°C for two hours without load and 45 minutes with rated load): 2 percent for cermet element; 3 percent for hot-molded and CP elements.

High temperature exposure – Maximum change in total resistance as a result of the high temperature exposure test (maximum rated temperature for 1000 hours without load): 4 percent for cermet element; 10 percent for hot-molded and CP elements.

Washability – MOD POT® performance may be adversely affected if subjected to conventional after-solder boardwash processes.

Environmental (continued)

Temperature characteristics – Maximum percent temporary total resistance change from the +25° C value. See chart below.

Temperature coefficient – For cermet linear taper elements, temperature coefficient less than ±100 ppm/°C.

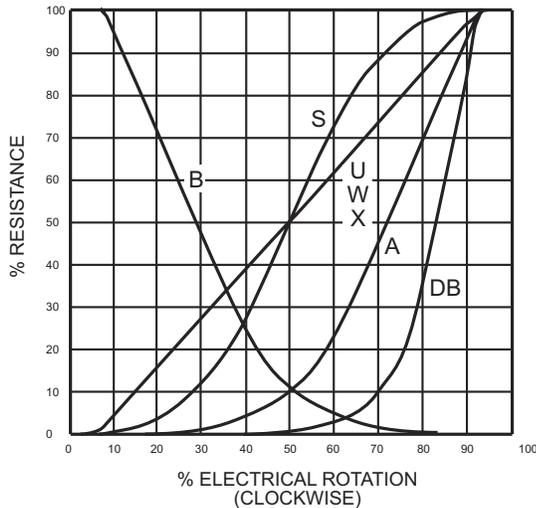
Nominal Resistance in Ohms	CP — "U" Linear Taper. °C							
	-55°	-25°	0°	+25°	+55°	+85°	+100°	+120°
100	-9.0	-6.0	-3.0	0	+3.5	+6.5	+8.0	+10
1K	±5.5	±3.0	±1.5	0	±1.5	±3.0	±4.0	±5.0
10K	+5.0	+3.0	±1.5	0	±2.0	±2.0	±2.5	±3.0
100K	+5.0	+3.0	±1.5	0	±2.0	±2.0	±2.5	±3.0
1.0 Meg	+6.0	+3.0	±2.0	0	±2.5	±3.0	±4.0	±5.0

Nominal Resistance in Ohms	HOT MOLDED* — "U" Linear Taper. °C							
	-55°	-25°	0°	+25°	+55°	+85°	+100°	+120°
100	+4.5	+2.5	+1.5	0	±1.0	±1.5	+2.0	+3.5
1K	+5.5	+3.0	+1.5	0	±1.5	±2.0	+2.5	+4.5
10K	+7.0	+3.5	+2.0	0	±1.0	±2.5	+3.0	+5.5
100K	+8.0	+4.0	+2.0	0	±1.5	±3.0	+3.5	+6.0
1.0 Meg	+10.0	+5.0	+2.5	0	±1.5	±3.5	±5.0	+7.5

For "S", "A" and "DB" tapers multiply percentage figures shown above by 1.25

* HOT MOLDED option is discontinued - for reference only

Tapers



Tapers A, DB, S, U, W and X are measured between the wiper and the counter-clockwise terminals (pin 1 and 2).

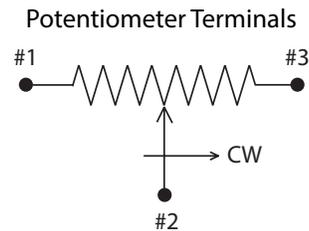
Taper B is measured between the wiper and the clockwise terminals (pin 2 and 3).

Tapers – Available in the following resistance ranges:

UNIT	TAPER	TOTAL RESISTANCE RANGE
Hot-Molded*	U	50 Ohms to 10.0 Megohms
	A, B, S, DB	250 Ohms to 10.0 Megohms
Cermet	U, W (X=5%)	100 Ohms to 5.0 Megohms
CP	U	100 Ohms to 1.0 Megohm
	A, B	250 Ohms to 1.0 Megohm

* Hot Molded Carbon is no longer available

Schematic



End Resistance

TAPER	Minimum Resistance Between Terminals:					
	Hot-Molded*		CP		Cermet	
	1 & 2	1 & 2	1 & 2	1 & 2	1 & 2	1 & 2
U	1	1	4	4	4	4
S	1	1	—	—	—	—
A	1	2	4	4	—	—
B	2	1	4	4	—	—
DB	3	2	—	—	—	—

1 Less than 0.004 percent of total resistance or less than 4 ohms, whichever is greater.

2 Less than 1 percent of total resistance or less than 4 ohms, whichever is greater.

3 Less than 4 ohms

4 Less than 2 ohms

Switches

Rotary Switch – The rotary switch consists of two sets of contacts. See Part Number Explanation for available options. When supplied on the Series 72, the rotary switch must be used with a .250 inch (6,35 mm) diameter shaft.

Push-pull Switch – A four pole switch that is operated by a .125 inch (3,18mm) diameter solid shaft. An inner concentric shaft that operated the push-pull switch only may have a diameter of .125 inch (3,18mm) or .078 inch (1,98mm). Shaft lengths are measured from the bushing mounting surface to the free end of the shaft with the shaft in the extended position. Available only on Series 70.

Ambient Temperature – -55°C to $+100^{\circ}\text{C}$

Momentary Push Switch – A push-pull switch equipped with a return spring such that the switch will return to the extended position when the actuating force is removed. Available only on Series 70.

Life – The switches will be electrically and mechanically operative after operational life test at rated current and voltage with a resistive load, per switch characteristics below.

Terminals – Switches are available with lug terminals only. They are not available with square terminals. On request, switches will be rotated 90° such that the switch terminals come out the sides of the control instead of the top and bottom.

PUSH-PULL AND MOMENTARY SWITCHES

Switch Number	Type	Voltage in Volts at 60 Hz RMS	Current in Amps	Actuating Force	Shaft Travel	Operational Life
3001	Push-Pull	125	2	7 ounces (1.9N) Min. 19 ounces (5.3N) Max.	.125 Inch (3.18mm)	25,000
3002	Momentary Push	125	2	20 ounces (5.6N) Min. 30 ounces (8.3N) Max.	.125 Inch (3.18mm)	25,000

ROTARY SWITCHES

Switch Number	Detent at	In Detent		Voltage in Volts at 60 HZ RMS	Current in Amps	Actuating Torque	Length of Throw		Operational Life
		Terminals 1 and 2 are:	Term 3 and 4 are:				Shaft Operates Switch and Pot	Shaft Operates Switch Only	
1001	CCW end	Open	Closed	125	2	Med	15°	25°	25,000
1003	CCW end	Open	Open	125	2	Med	15°	25°	25,000
2001	CW end	Open	Closed	125	2	Med	15°	25°	25,000
2003	CW end	Open	Open	125	2	Med	15°	25°	25,000
1BT1 ■	CW end	Open	Closed	125	.1	Med	15°	25°	5,000
				1	.01				
1BT3 ■	CCW end	Open	Open	125	.1	Low	15°	25°	5,000
				1	.01				
2BT1 ■	CCW end	Open	Open	125	.1	Low	15°	25°	5,000
				1	.01				
2BT3 ■	CC end	Open	Open	125	.1	Low	15°	25°	5,000
				1	.01				

Maximum of 2 rotary switches per shaft.

Med Actuating Torque = Maximum of 20 inch-ounces (5.6 N)

Low Actuation Torque = Maximum of 7.5 inch-ounces (53 mN-m). Minimum of 3.5 inch-ounces (24.7 mN-m)

■ For use with conductive plastic element modules only. (Discontinued- For Reference Only)

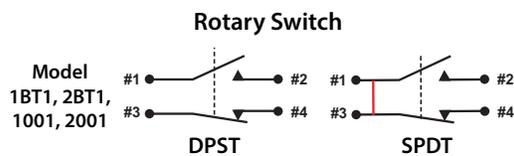


Diagram shows shaft in detent position.

Connect terminals #1 and #3 for SPDT

Red wire shown here can be added by user.

Maximum of 2 rotary switches per shaft.

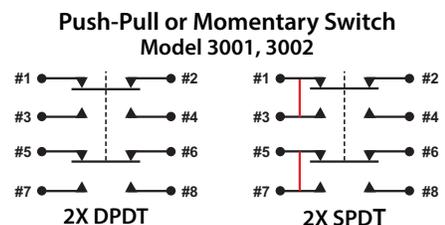
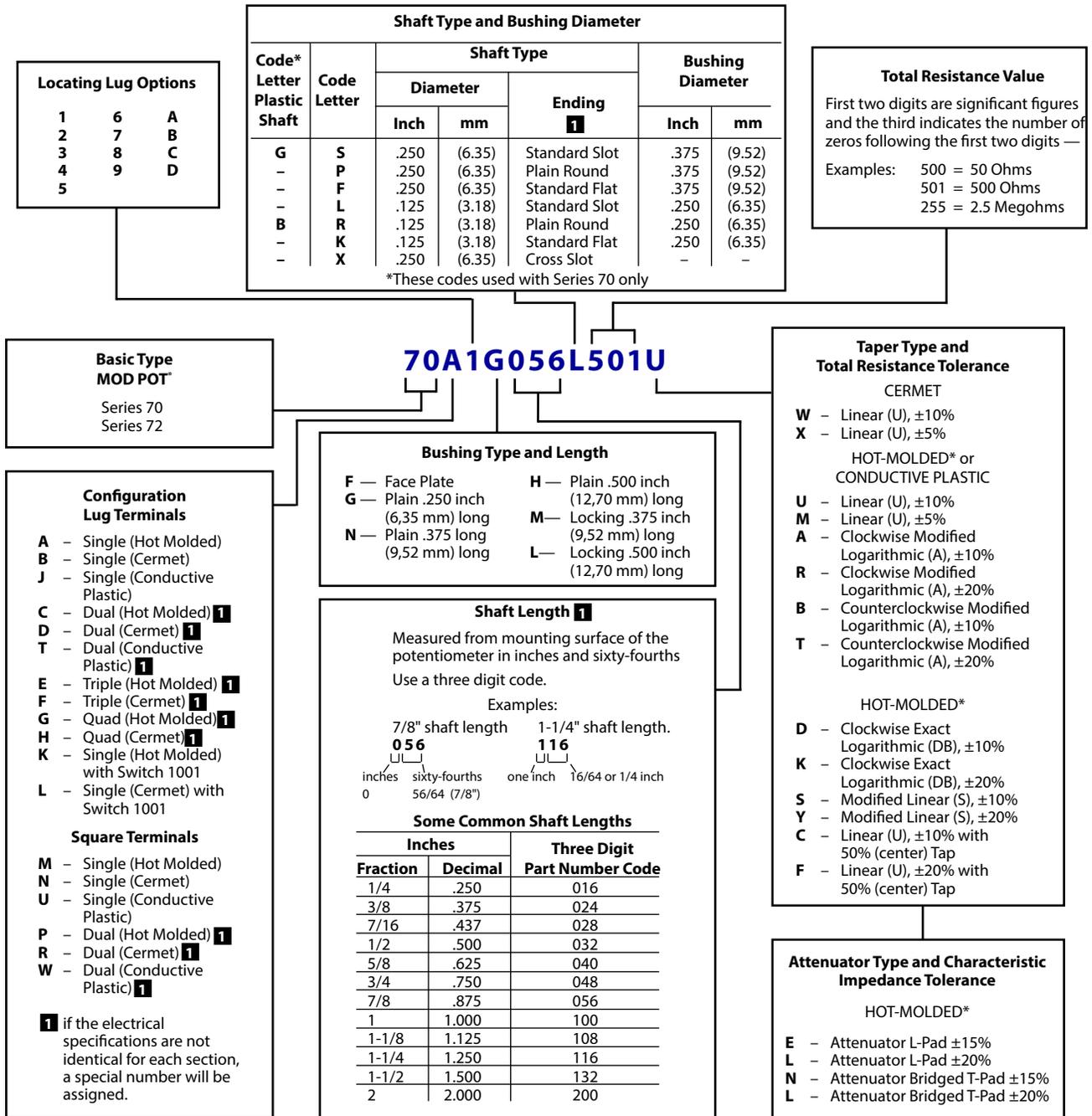


Diagram shows shaft extended
Connect terminals #1 and #3
plus terminals #5 and #7 for 2X SPDT
Red wire shown here can be added by user.

MOD POT® SERIES 70,72

Conductive Plastic (CP), Cermet, and Hot-Molded Carbon* Panel Potentiometers

Explanation of Part Numbers



1 CONCENTRIC AND SPECIAL SHAFTS REQUIRE SPECIAL PART NUMBER ISSUED BY THE FACTORY.

Disclaimer: Due to the unlimited design combinations, certain designs may not perform in accordance with all of the specifications

CAUTION: Not all part number combinations are valid. Check parameter limits in text.

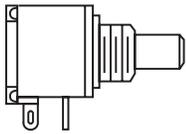
EXAMPLE: 70A1N024P501U
Invalid Bushing/Shaft Combination
Plain .375 inch (9,52 mm) long bushing with plain .375 inch (9,52 mm) long shaft.

* Hot Molded Carbon is no longer available

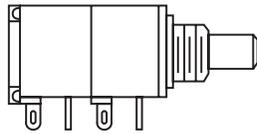
Common Combinations

The MOD POT® Potentiometer is available in single, dual, triple, and quadruple construction. This includes potentiometer, switch and multi-turn vernier drive modules. The table below lists some of the options available for single and multi-section controls. Because

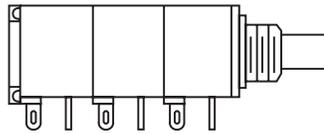
of the versatility of the MOD POT® Potentiometer, many other options are available. Momentary push switches may be used in place of push-pull switches in the listed combinations.



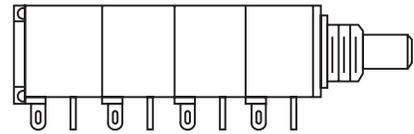
Single Unit



Dual Unit



Triple Unit



Quad Unit

	Section #1	Section #2	Section #3	Section #4	Switch Module Rotated 90°								Notes	
					Potentiometer / Solder Lugs		Potentiometer / PC Pins		Potentiometer / Solder Lugs		Potentiometer / PC Pins			
					Dwg#	Page	Dwg#	Page	Dwg#	Page	Dwg#	Page		
Single Unit	Potentiometer				1A	13	1A-PC	13						
	Rotary Switch				2A	14								
	Push-Pull Switch				3A	14								5
Dual Unit Single Shaft	Potentiometer	Potentiometer			4A	15	4A-PC	15						
	Potentiometer	Rotary Switch			5A	16	5A-PC	17	5A-90°	16	5A-PC-90°	17		4
	Potentiometer	Push-Pull Switch			5B	18	5B-PC	19	5B-90°	18	5B-PC-90°	19		5
	Vernier Drive	Potentiometer			6A	20	6A-PC	20						
Dual Unit Concentric Shaft	Potentiometer	Potentiometer			7A	21	7A-PC	21						5
	Potentiometer	Push-Pull Switch			8A	22	8A-PC	23	8A-90°	22	8A-PC-90°	23		6
	Potentiometer	Rotary Switch			9A	24	9A-PC	25	9A-90°	24	9A-PC-90°	25		5
	Vernier Drive	Potentiometer			10A	26	10A-PC	26						3,5
	Rotary Switch	Push-Pull Switch			11A	26								5
Triple Unit Single Shaft	Potentiometer	Potentiometer	Potentiometer		12A	27	12A-PC	27						5
	Potentiometer	Potentiometer	Push-Pull Switch		12B	28	12B-PC	29	12B-90°	28	12B-PC-90°	29		5
	Potentiometer	Rotary Switch	Push-Pull Switch		12C	30	12C-PC	31	12C-90°	30	12C-PC-90°	31		5
	Potentiometer	Potentiometer	Rotary Switch		13A	32	13A-PC	33	13A-90°	32	13A-PC-90°	33		5
	Potentiometer	Rotary Switch	Rotary Switch		13B	34	13B-PC	35	13B-90°	34	13B-PC-90°	35		5
	Vernier Drive	Potentiometer	Potentiometer		14A	36	14A-PC	37						5
Triple Unit Concentric Shaft	Potentiometer	Potentiometer	Potentiometer		15A	37	15A-PC	37						5
	Potentiometer	Potentiometer	Rotary Switch		16A	38	16A-PC	39	16A-90°	38	16A-PC-90°	39		5
	Potentiometer	Potentiometer	Push-Pull Switch		17A	40	17A-PC	41	17A-90°	40	17A-PC-90°	41		5
	Potentiometer	Rotary Switch	Push-Pull Switch		18A	42	18A-PC	43	18A-90°	42	18A-PC-90°	43		5
	Vernier Drive	Potentiometer	Potentiometer		19A	44	19A-PC	44						1,3,5
	Vernier Drive	Potentiometer	Rotary Switch		20A	45	20A-PC	46	20A-90°	45	20A-PC-90°	46		1,5
Quad Unit Single Shaft	Potentiometer	Potentiometer	Potentiometer	Potentiometer	23A	47	23A-PC	47						5
	Potentiometer	Potentiometer	Potentiometer	Push-Pull Switch	23B	48	23B-PC	49	23B-90°	48	23B-PC-90°	49		5
	Potentiometer	Potentiometer	Rotary Switch	Push-Pull Switch	23C	50	23C-PC	51	23C-90°	50	23C-PC-90°	51		5
	Potentiometer	Potentiometer	Potentiometer	Rotary Switch	23D	52	23B-PC	53	23B-90°	52	23B-PC-90°	53		5
	Vernier Drive	Potentiometer	Potentiometer	Potentiometer	25A	54	25A-PC	54						5
Quad Unit Concentric Shaft	Potentiometer	Potentiometer	Potentiometer	Potentiometer	26A	55	26A-PC	55						5
	Potentiometer	Potentiometer	Potentiometer	Rotary Switch	27A	56	27A-PC	57	27A-90°	56	27A-PC-90°	57		5
	Potentiometer	Rotary Switch	Potentiometer	Push-Pull Switch	28A	58	28A-PC	59	28A-90°	58	28A-PC-90°	59		1,5
	Potentiometer	Rotary Switch	Potentiometer	Rotary Switch	28B	60			28B-90°	60				1,5
	Potentiometer	Potentiometer	Rotary Switch	Rotary Switch	29A	61	29A-PC	62	29A-90°	61	29A-PC-90°	62		5
	Potentiometer	Potentiometer	Rotary Switch	Push-Pull Switch	30A	63	30A-PC	64	30A-90°	63	30A-PC-90°	64		5
	Potentiometer	Potentiometer	Potentiometer	Push-Pull Switch	31A	65	31A-PC	66	31A-90°	65	31A-PC-90°	66		5
	Vernier Drive	Potentiometer	Potentiometer	Potentiometer	32A	67	32A-PC	67						1,2,5
	Vernier Drive	Potentiometer	Potentiometer	Rotary Switch	33A	68	33A-PC	69	33A-90°	68	33A-PC-90°	69		1,2,5

NOTES:

1. The outer shaft operates Sections #1 and #2.
2. The outer shaft operates Sections #1, #2, and #3.
3. The inner shaft (.078 [1.98 mm] diameter) is for the coarse adjustment, the outer shaft for the fine adjustment.
4. Series 72 must have .250 inch (6.35 mm) diameter shaft.
5. Available in 70 Series only.

Hot Molded Carbon is no longer available

RESISTANCE MODULES – LINEAR TAPER

Element Type		Hot-Molded Carbon*		Cermet		Conductive Plastic	
Resistance Tolerance		10% or 20%		10%		10%	
Taper		(U) or (M)		(W)		(U)	
Terminal Type		Lug	Pin	Lug	Pin	Lug	Pin
Resistance (ohms)	Code						
100	101	A	-	A	A	-	-
1,000	102	A	A	A	A	A	A
10,000	103	A	A	A	A	A	A
100,000	104	A	A	A	A	A	A
1,000,000	105	A	A	A	A	A	-
10,000,000	106	A	-	*	*	*	*
200	201	A	-	A	-	-	-
2,000	202	A	A	A	A	-	-
20,000	203	A	A	A	A	A	A
200,000	204	A	A	A	A	-	-
250	251	A	-	A	A	-	-
2,500	252	A	-	A	A	A	-
25,000	253	A	A	A	A	A	A
250,000	254	A	A	A	A	-	-
2,500,000	255	A	A	A	-	*	*
50	500	A	A	*	*	*	*
500	501	A	A	A	A	-	-
5,000	502	A	A	A	A	A	A
50,000	503	A	A	A	A	A	A
500,000	504	A	A	A	A	-	-
5,000,000	505	A	-	-	-	*	*

A = Available from Distributor Stock.
 - = Special order only. Contact factory for information.
 * = Not Available.

RESISTANCE MODULES – NON-LINEAR TAPER

Element Type		Hot-Molded Carbon*		Conductive Plastic		Hot-Molded Carbon*		Conductive Plastic	
Resistance Tolerance		10%		10%		10%		10%	
Taper		(A)		(A)		(B)		(B)	
Terminal Type		Lug	Pin	Lug	Pin	Lug	Pin	Lug	Pin
Resistance (ohms)	Code								
100	101	*	*	*	*	*	*	*	*
1,000	102	A	A	-	-	A	-	-	-
10,000	103	A	A	A	A	A	A	A	-
100,000	104	A	A	-	-	A	-	A	-
1,000,000	105	A	A	A	A	A	-	A	-
200	201	*	*	*	*	*	*	*	*
2,000	202	-	-	-	-	-	-	-	-
20,000	203	A	A	-	-	-	-	-	-
200,000	204	A	-	-	-	-	-	-	-
250	251	-	-	-	-	-	-	-	-
2,500	252	-	-	-	-	A	-	-	-
25,000	253	A	A	-	-	A	A	-	-
250,000	254	A	-	A	-	-	-	-	-
2,500,000	255	-	-	*	*	A	-	*	*
500	501	A	-	-	-	-	-	-	-
5,000	502	A	A	A	-	A	-	-	-
50,000	503	A	A	-	-	A	A	A	A
500,000	504	A	A	A	-	A	-	-	-
5,000,000	505	A	-	*	*	A	-	*	*

A = Available from Distributor Stock.
 - = Typically a Stock Item. Contact State Electronics for information.
 * = Not Available.

* Hot Molded Carbon is no longer available

Standard Shaft Types

Shaft Type	Used With	Shaft Ending	
		Plain	Slotted
Metal .250 (6,35 mm) Dia. Solid	.375 (9.52 mm) Dia. Bushing Series 70	70 70 70 70	70 70 70 70
Metal .125 (3,18 mm) Dia. Solid	.250 (6.35 mm) Dia. Bushing Series 70	70 70 70 70 *	70 70 70 70 70
Plastic .250 (6,35 mm) Dia. Solid	.375 (9.52 mm) Dia. Bushing Series 70	* * * * *	* * * 70, 72 70, 72
Plastic .125 (3,18 mm) Dia. Solid	.250 (6.35 mm) Dia. Bushing Series 70	* 70, 72 70, 72 70, 72 *	* * * * *
Metal Outer Concentric	.375 (9.52 mm) Dia. Bushing Series 70	70 70	* *
Metal Outer Concentric	.250 (6.35 mm) Dia. Bushing Series 70	70	*
Metal Inner Concentric	.250 (6.35 mm) Dia. Bushing or .375 (9.52 mm) Dia. Bushing Series 70	70	*

70 = Available on Series 70. Note that Series 72 is only available as Plastic Single Shaft.
70, 72 = Available on Series 70 and 72
* = Available as a Special Order only. Contact State Electronics for information.

Popular Shaft Lengths

.250" (6.35mm)	.750" (19.05mm)	1.50" (38.1mm)
.375" (9.52mm)	.875" (22.23mm)	2.00" (50.80mm)
.4375" (11.11mm)	1.00" (25.40mm)	2.50" (63.50mm)
.500" (12.70mm)	1.125" (28.58mm)	
.625" (15.88mm)	1.25" (31.75mm)	

Standard Shaft / Bushing Combinations

Shaft Type	Shaft Diameter in Inches	
	.375" (9.52 mm) Dia. Bushing	.250" (6.35 mm) Dia. Bushing
Solid or Outer Concentric	.250" (6.35 mm)	.125" (3.18 mm)
Inner Concentric	.125" (3.18 mm) Vernier .078" (1.98 mm)	.078" (1.98 mm)

Note: Series 72 shafts and bushings are plastic.

Standard Bushings

Diameter	Type	Length		Series	
		Inches	Millimeters	70	72
—	Bushingless	No mounting bushing*		NA	A
.250 Inch (6.35 mm)	Plain	.250	6.35	A	A
		.375	9.52	A	NA
	Locking	.375	9.52	A	NA
		.500	12.70	A	NA
.375 Inch (9.52 mm)	Plain	.250	6.35	A	NA
		.375	9.52	A	A
		.500	12.70	A	NA
	Locking	.375	9.52	A	NA
		.500	12.70	A	NA

Shaft is cross slotted for screwdriver actuation. Flush with faceplate.
Mounting bushings are supplied with 32-NEF-2A thread. All bushing lengths measured from the mounting face to the end of the bushing.
A = Available. NA = Not Available.

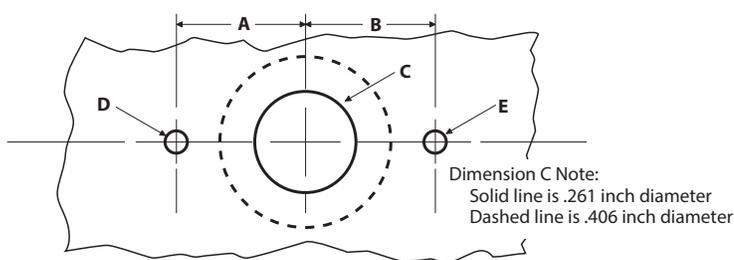
Bushing, Shaft and Hardware Dimensions are shown on Page 69-70

Ordering Information

1. Basic type (Series 70, Series 72)
2. Type of element (cermet or conductive plastic (CP)).
3. Type of terminals (resistor element only).
4. Number of sections.
5. Taper (each element on multi-section controls).
6. Total resistance value in ohms (each element on multi-section controls).
7. Tolerance percent (each element on multi-section controls) .
8. Bushing type (plain or locking).
9. Bushing length in inches or millimeters.
10. Bushing diameter .375" (9.52mm) or .250" (6.35mm)
11. Shaft ending (plain, slotted or flatted).
12. Shaft length FMS in inches or millimeters.
13. Shaft material: plastic or metal.
14. Switch type. (maximum 2 rotary switches per shaft)
15. Multi-Turn Vernier drive.
16. Locating lug option.
17. Mounting hardware.
18. Your part number, if any.
19. Marking requirement on the part.
20. Special features. (Forward complete detailed specs)

DIMENSIONS

Mounting Holes



LUG OPTION	DIMENSION "A"	DIMENSION "B"	DIMENSION "C" Minimum hole dia. for 1/4" dia. bushing	DIMENSION "C" Minimum hole dia. for 3/8" dia. bushing	DIMENSION "D" Minimum hole dia	DIMENSION "E" Minimum hole dia.
1	.305 (7,75)	*	.261 (6,63)	.406 (10,31)	.096 (2,44)	*
2	.305 (7,75)	.305 (7,75)	.261 (6,63)	.406 (10,31)	.096 (2,44)	.096 (2,44)
3	.375 (9,52)	*	.261 (6,63)	.406 (10,31)	.096 (2,44)	*
4	*	*	.261 (6,63)	.406 (10,31)	*	*
5	.375 (9,52)	.375 (9,52)	.261 (6,63)	.406 (10,31)	.096 (2,44)	.096 (2,44)
6	.437 (11,10)	*	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
7	.437 (11,10)	.437 (11,10)	.261 (6,63)	.406 (10,31)	.128 (3,24)	.128 (3,24)
8	.531 (13,49)	*	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
9	.531 (13,49)	.531 (13,49)	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
A	*	.305 (7,75)	.261 (6,63)	.406 (10,31)	*	.096 (2,44)
B	*	.375 (9,52)	.261 (6,63)	.406 (10,31)	*	.096 (2,44)
C	*	.437 (11,10)	.261 (6,63)	.406 (10,31)	*	.128 (3,24)
D	*	.531 (13,49)	.261 (6,63)	.406 (10,31)	*	.128 (3,24)

Dimension tolerance $\pm .016$ (0,40) except as specified

* = Not Required

Disclaimer: Due to the unlimited design combinations, certain designs may not perform in accordance with all of the specifications

* Hot Molded Carbon is no longer available

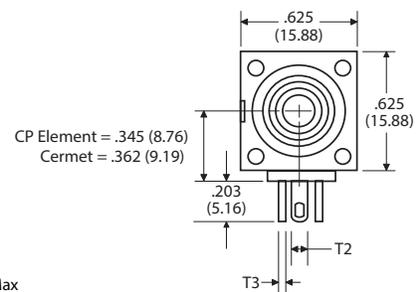
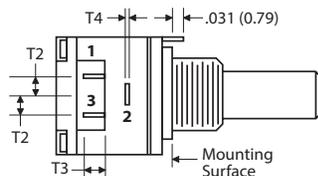
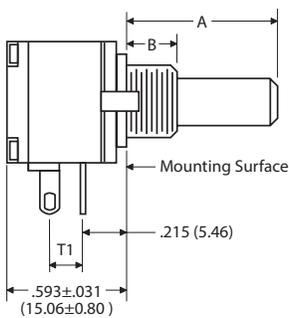
Series 70, 72 Product Drawings

The product drawings on the following pages show over 100 different configurations. Many other options are available - contact your State Electronics sales representative for information.

Section 1: Single Module..... Pg. 13
 Section 2: Dual Module, Single ShaftPg. 15
 Section 3: Dual Module, Concentric Shaft.....Pg. 21
 Section 4: Triple Module, Single ShaftPg. 27
 Section 5: Triple Module, Concentric ShaftPg. 37
 Section 6: Quad Module, Single Shaft.....Pg. 47
 Section 7: Quad Module, Concentric ShaftPg. 55

Section 1: Single module, Single Shaft

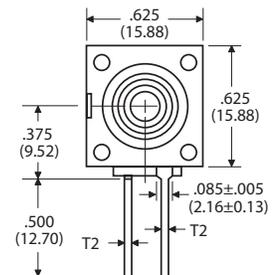
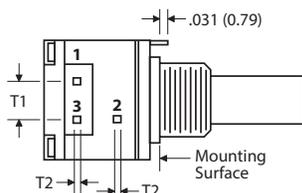
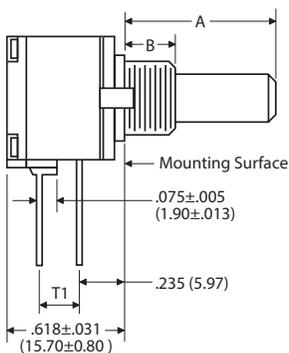
1A Single Potentiometer, Single Shaft, Solder Lugs



Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
- T2 = .100±.010 (2.54±0.25)
- T3 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T4 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

1A-PC Single Potentiometer, Single Shaft, Solder Pins



Dimension Notes:

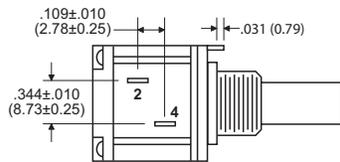
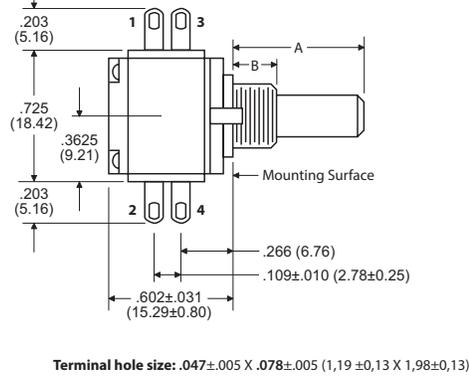
- T1 = .200±.010 (5.08±0.25)
- T2 = .025±.002 (0.64±0.05)

Notes:

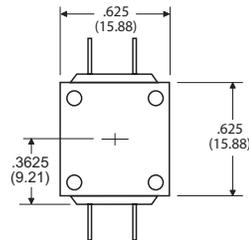
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS).
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS).
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 1: Single module, Single Shaft (continued)

2A Single Rotary Switch, Single Shaft, Solder Lugs

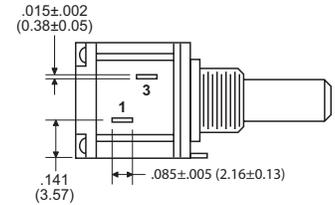


Bottom View

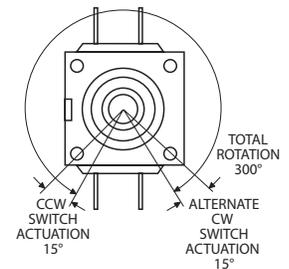


Rear View

Switch Option specifications

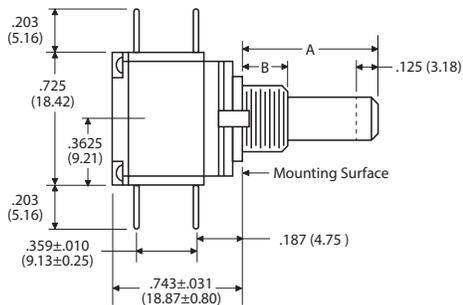


Top View



Front View

3A Single Push-Pull/Momentary Switch, Single Shaft, Solder Lugs



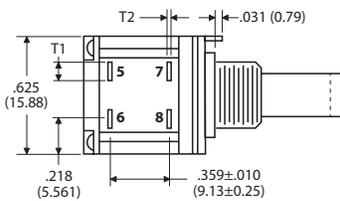
Dimension Notes:

T1 = $.085 \pm .005$ (2.16 ±0.13)

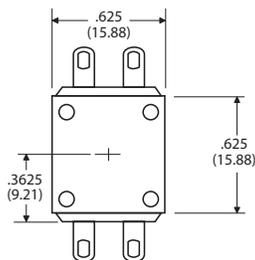
T2 = $.015 \pm .002$ (0.38 ±0.05)

Terminal hole size: $.047 \pm .005 \times .078 \pm .005$ (1,19 ±0,13 x 1,98±0,13)

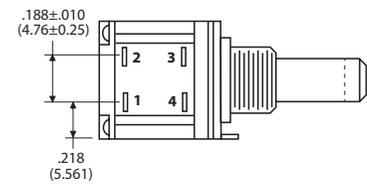
Note: Shaft length is measured in outer position



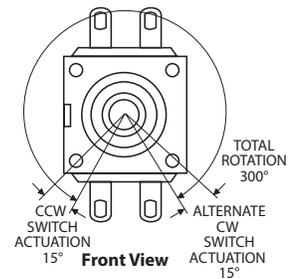
Bottom View



Rear View



Top View



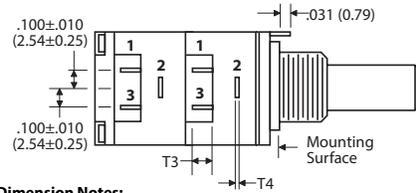
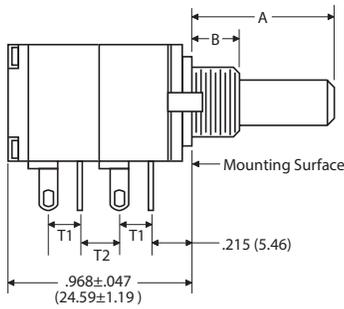
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: $.025'' \pm .001$ Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: $.015'' \pm .001$ Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: $.025'' \pm .001$ Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: $.015'' \pm .001$ Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance $\pm .016$ (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

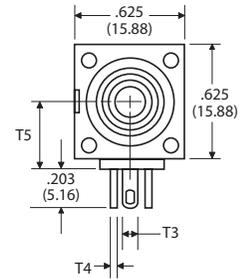
Section 2: Dual module, Single Shaft

4A Dual Potentiometer, Single Shaft, Solder Lugs

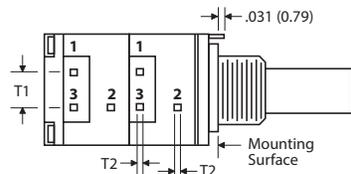
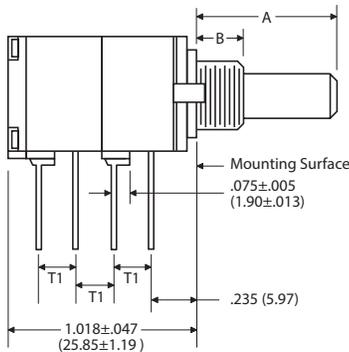


Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
 - T2 = .200±.010 (5.08±0.25)
 - T3 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T4 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
 - T5 = CP Element .345 (8.76); Cermet .362 (9.19)
- Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)**

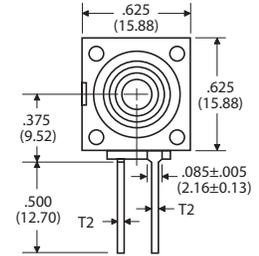


4A-PC Dual Potentiometer, Single Shaft, Solder Pins



Dimension Notes:

- T1 = .200±.010 (5.08±0.25)
- T2 = .025±.002 (0.64±0.05)

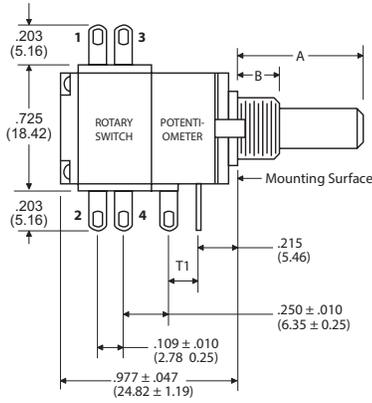


Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 2: Dual module, Single Shaft (continued)

5A Single Potentiometer, Single DPST Rotary Switch, Solder Lugs



Dimension Notes:

T1 = .175 ± .010 (4.45 ± 0.25)

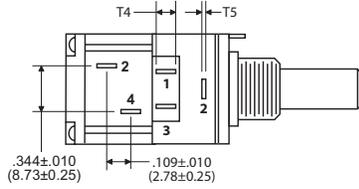
T2 = .085 ± .005 (2.16 ± 0.13)

T3 = .015 ± .002 (0.38 ± 0.05)

T4 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max

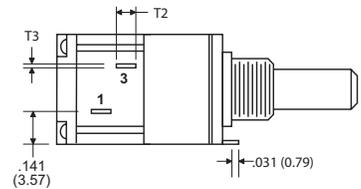
T5 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)

Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)

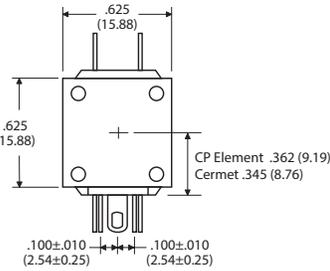


Bottom View

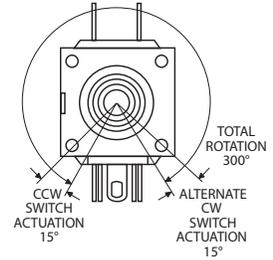
Switch Option specifications



Top View

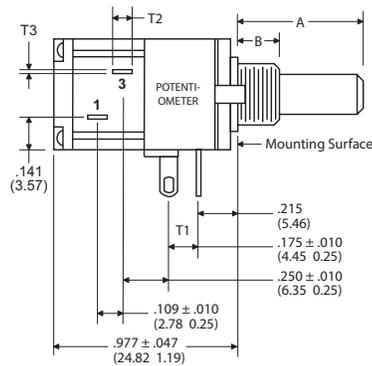


Rear View



Front View

5A-90° Single Potentiometer, Single DPST Rotary Switch, Solder Lugs (Rotated Switch Module)



Dimension Notes:

T1 = .175 ± .010 (4.45 ± 0.25)

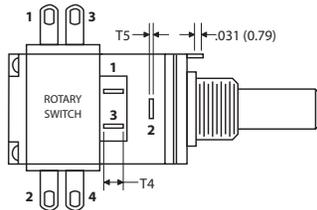
T1 = .085 ± .005 (2.16 ± 0.13)

T2 = .015 ± .002 (0.38 ± 0.05)

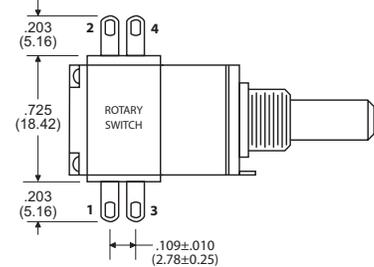
T4 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max

T5 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)

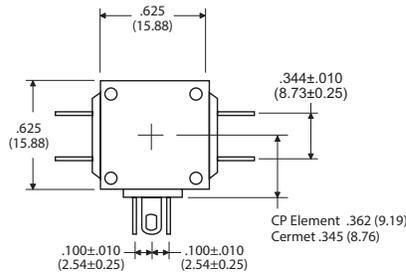
Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



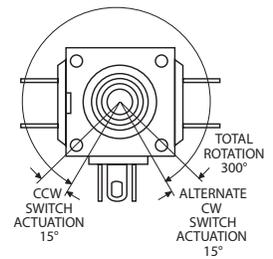
Bottom View



Top View



Rear View



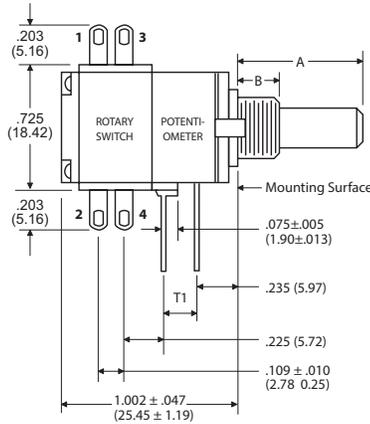
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 2: Dual module, Single Shaft (continued)

5A-PC Single Potentiometer, Single DPST Rotary Switch, PC Pins



Dimension Notes:

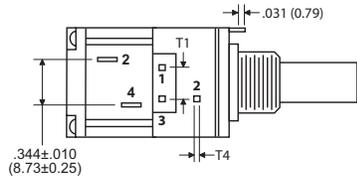
T1 = .200±.010 (5.08±0.25)

T2 = .085±.005 (2.16±0.13)

T3 = .015±.002 (0.38±0.05)

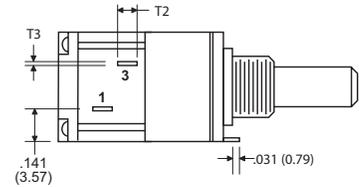
T4 = .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

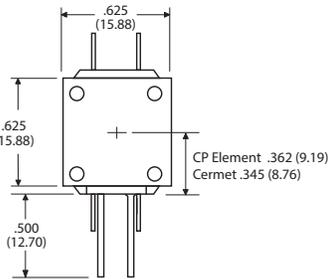


Bottom View

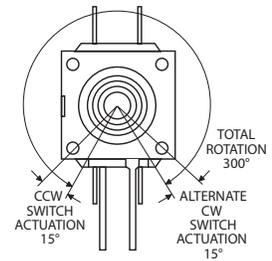
Switch Option specifications



Top View

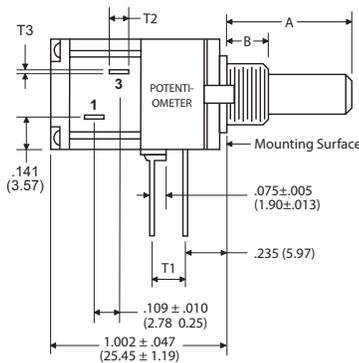


Rear View



Front View

5A-PC-90° Single Potentiometer, Single DPST Rotary Switch, PC Pins (Rotated Switch Module)



Dimension Notes:

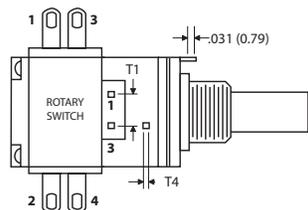
T1 = .200±.010 (5.08±0.25)

T2 = .085±.005 (2.16±0.13)

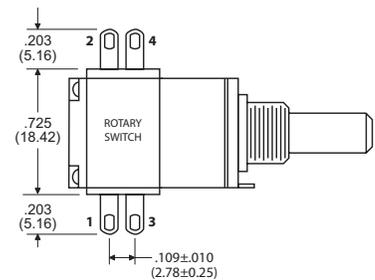
T3 = .015±.002 (0.38±0.05)

T4 = .025±.002 (0.64±0.05)

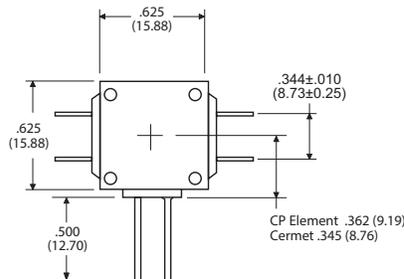
Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)



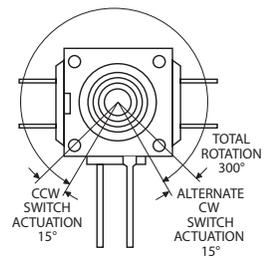
Bottom View



Top View



Rear View



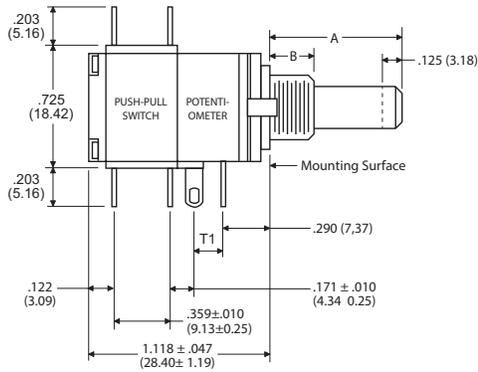
Front View

Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

Section 2: Dual module, Single Shaft (continued)

5B Single Potentiometer, Single Push-Pull Switch, Solder Lugs

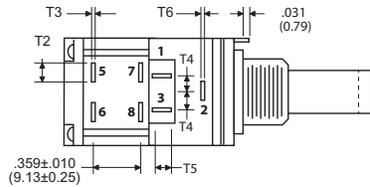


Dimension Notes:

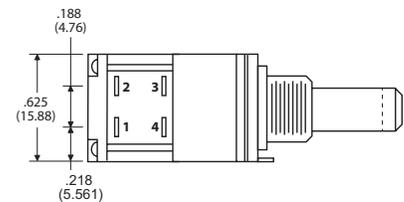
- T1 = .175±.010 (4.45 ± 0.25)
- T2 = .085±.005 (2.16±0.13)
- T3 = .015±.002 (0.38±0.05)
- T4 = .100±.010 (2.54±0.25)
- T5 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T6 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19 ± 0.13 x 1.98±0.13)

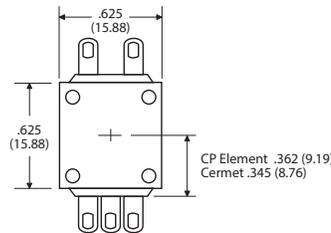
Note: Shaft length is measured in outer position



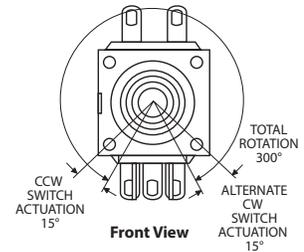
Bottom View



Top View

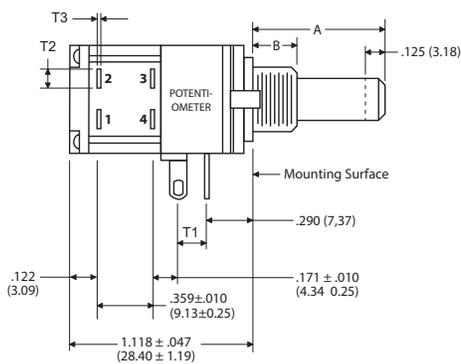


Rear View



Front View

5B-90° Single Potentiometer, Single Push-Pull Switch, Solder Lugs (Rotated Switch Module)

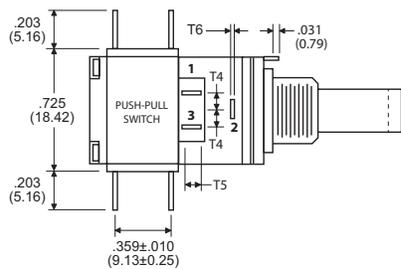


Dimension Notes:

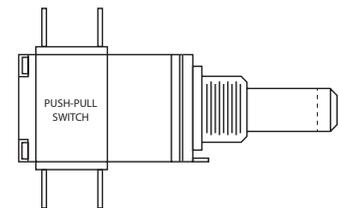
- T1 = .175±.010 (4.45 ± 0.25)
- T2 = .085±.005 (2.16±0.13)
- T3 = .015±.002 (0.38±0.05)
- T4 = .100±.010 (2.54±0.25)
- T5 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T6 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19 ± 0.13 x 1.98±0.13)

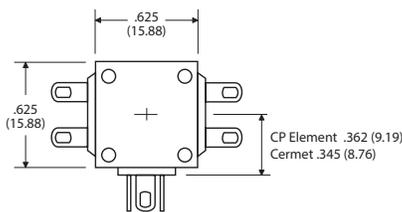
Note: Shaft length is measured in outer position



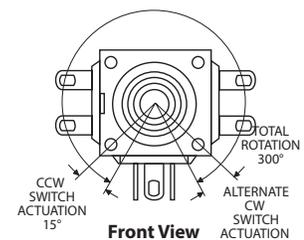
Bottom View



Top View



Rear View



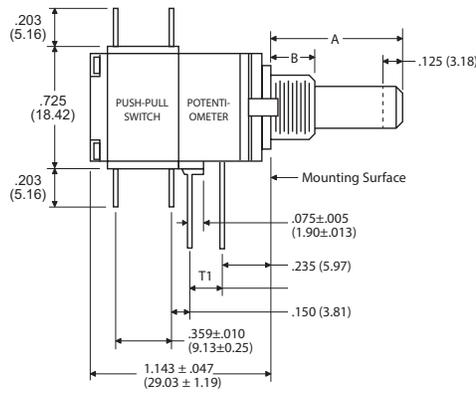
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 2: Dual module, Single Shaft (continued)

5B-PC Single Potentiometer, Single Push-Pull Switch, PC Pins



Dimension Notes:

T1 = .200±.010 (5.08±0.25)

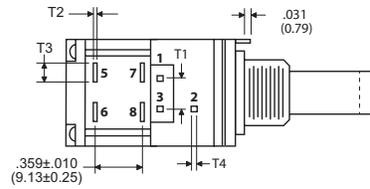
T2 = .015±.002 (0.38±0.05)

T3 = .085±.005 (2.16±0.13)

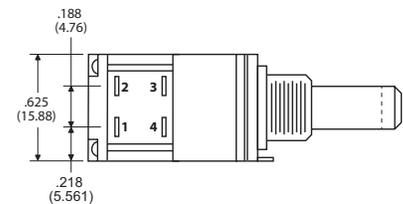
T4 = .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

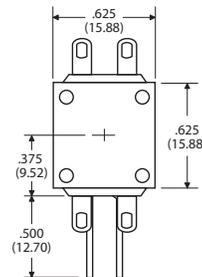
Note: Shaft length is measured in outer position



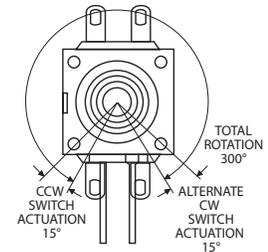
Bottom View



Top View

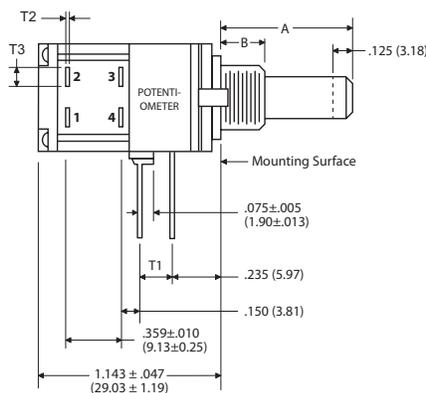


Rear View



Front View

5B-PC-90° Single Potentiometer, Single Push-Pull Switch, PC Pins (Rotated Switch Module)



Dimension Notes:

T1 = .200±.010 (5.08±0.25)

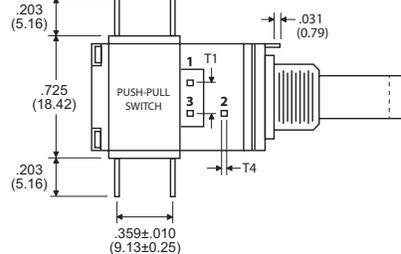
T2 = .015±.002 (0.38±0.05)

T3 = .085±.005 (2.16±0.13)

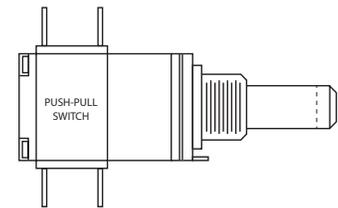
T4 = .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

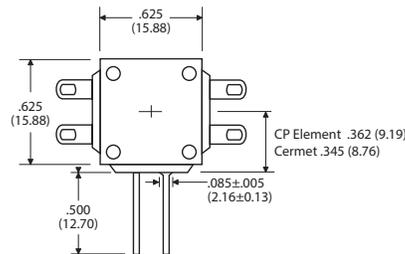
Note: Shaft length is measured in outer position



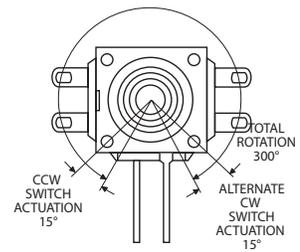
Bottom View



Top View



Rear View



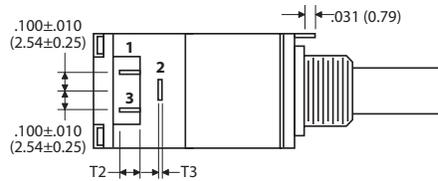
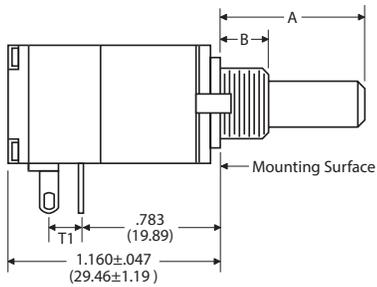
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

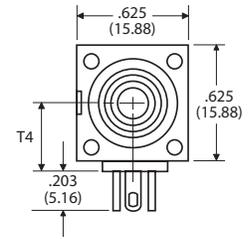
Section 2: Dual module, Single Shaft (continued)

6A Potentiometer with Multi-Turn Vernier Drive, Single Shaft, Solder Lugs

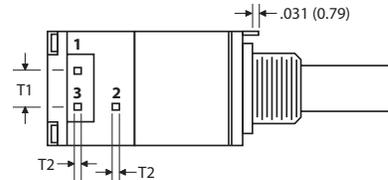
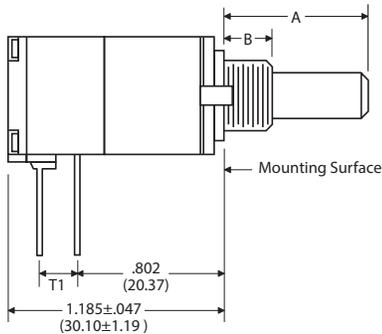


Dimension Notes:

- T1** = .175±.010 (4.45±0.25)
 - T2** = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T3** = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
 - T4** = CP Element .345 (8.76); Cermet .362 (9.19)
- Terminal hole size:** .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

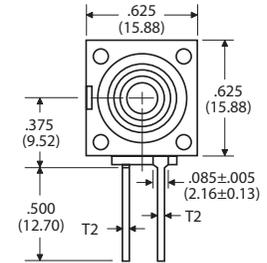


6A-PC Potentiometer with Multi-Turn Vernier Drive, Single Shaft, Solder Pins



Dimension Notes:

- T1** = .200±.010 (5.08±0.25)
- T2** = .025±.002 (0.64±0.05)

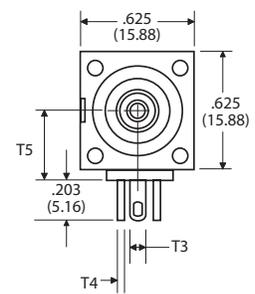
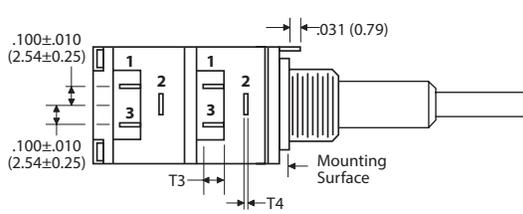
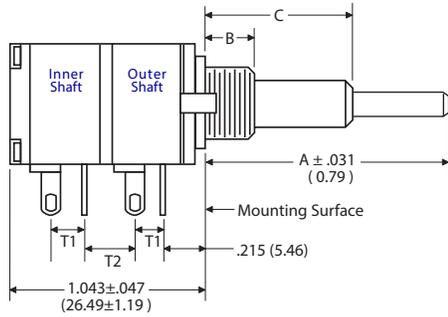


Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 3: Dual module, Concentric Shaft

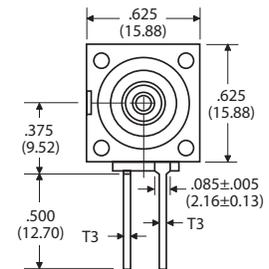
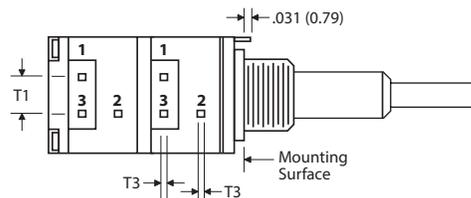
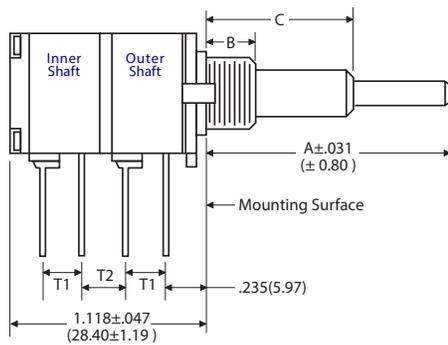
7A Dual Potentiometer, Concentric Shaft, Solder Lugs



Dimension Notes:

- T1** = .175±.010 (4.45±0.25)
 - T2** = .275±.010 (6.98±0.25)
 - T3** = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T4** = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
 - T5** = CP Element .345 (8.76); Cermet .362 (9.19)
- Terminal hole size:** .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)

7A-PC Dual Potentiometer, Concentric Shaft, Solder Pins



Dimension Notes:

- T1** = .200±.010 (5.08±0.25)
- T2** = .300±.010 (7.62±0.25)
- T3** = .025±.002 (0.64±0.05)

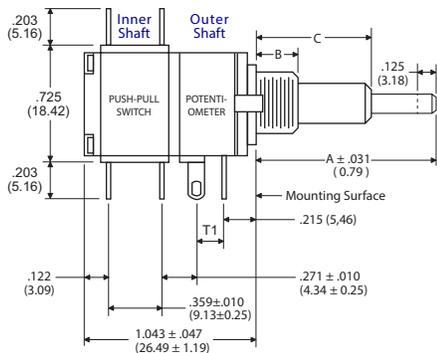
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 3: Dual module, Concentric Shaft (continued)

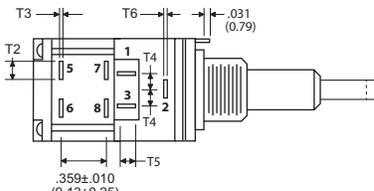
8A Single Potentiometer, Push-Pull Switch, Concentric Shaft, Solder Lugs

Switch Option specifications

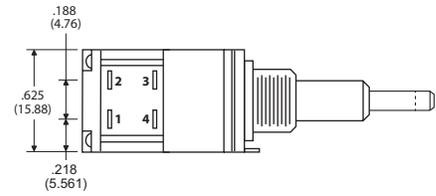


Dimension Notes:

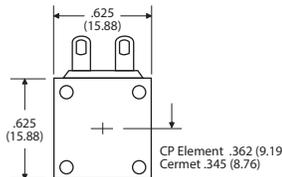
- T1 = .175 ± .010 (4.45 ± 0.25)
 - T2 = .085 ± .005 (2.16 ± 0.13)
 - T3 = .015 ± .002 (0.38 ± 0.05)
 - T4 = .100 ± .010 (2.54 ± 0.25)
 - T5 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
 - T6 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
 Note: Shaft length is measured in outer position



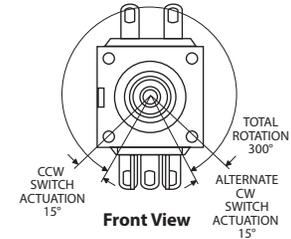
Bottom View



Top View

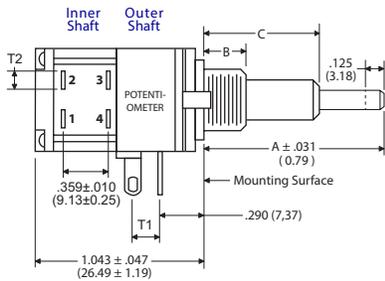


Rear View



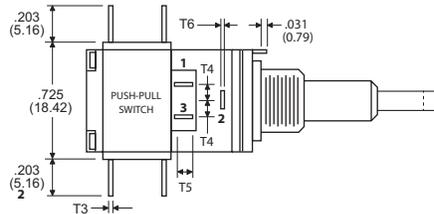
Front View

8A-90° Single Potentiometer, Push-Pull Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)

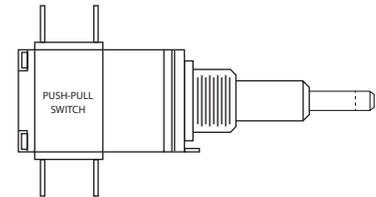


Dimension Notes:

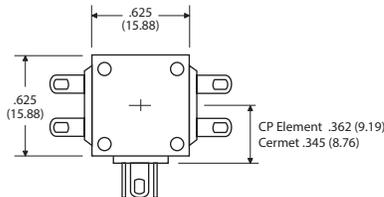
- T1 = .175 ± .010 (4.45 ± 0.25)
 - T2 = .085 ± .005 (2.16 ± 0.13)
 - T3 = .015 ± .002 (0.38 ± 0.05)
 - T4 = .100 ± .010 (2.54 ± 0.25)
 - T5 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
 - T6 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
 Note: Shaft length is measured in outer position



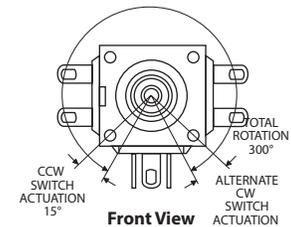
Bottom View



Top View



Rear View



Front View

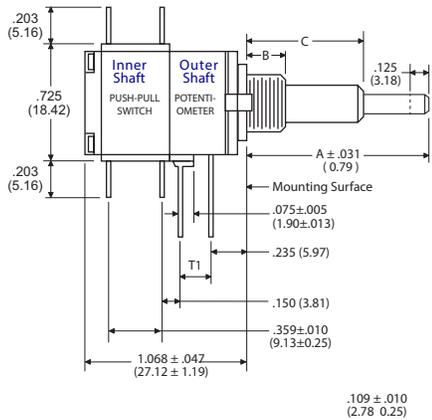
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 3: Dual module, Concentric Shaft (continued)

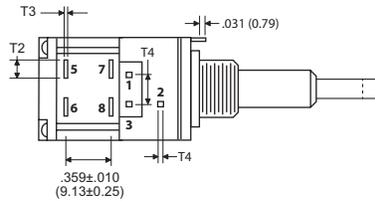
8A-PC Single Potentiometer, Push-Pull Switch, Concentric Shaft, PC Pins

Switch Option specifications

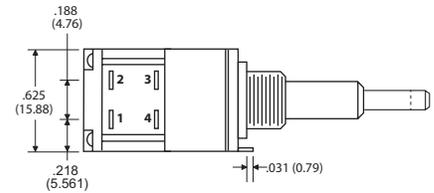


Dimension Notes:

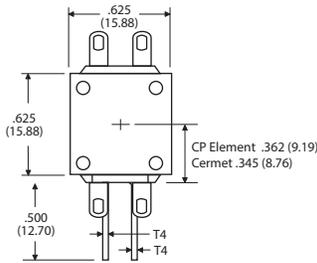
- T1 = .200 ± .010 (5.08 ± 0.25)
- T2 = .085 ± .005 (2.16 ± 0.13)
- T3 = .015 ± .002 (0.38 ± 0.05)
- T4 = .100 ± .010 (2.54 ± 0.25)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



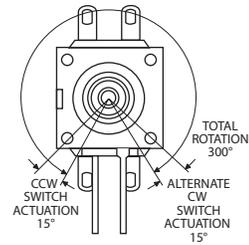
Bottom View



Top View

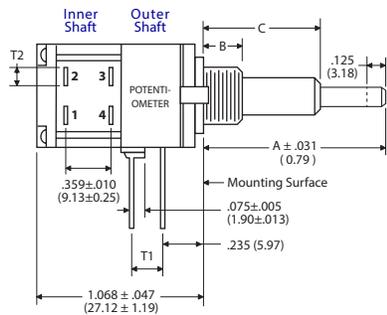


Rear View



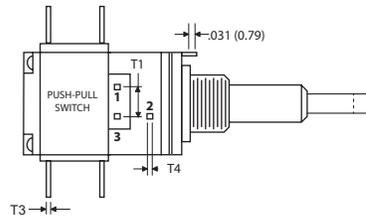
Front View

8A-PC-90° Single Potentiometer, Push-Pull Switch, Concentric Shaft, PC Pins (Rotated Switch Module)

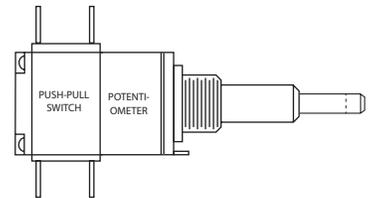


Dimension Notes:

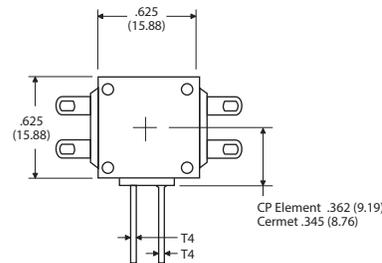
- T1 = .200 ± .010 (5.08 ± 0.25)
- T2 = .085 ± .005 (2.16 ± 0.13)
- T3 = .015 ± .002 (0.38 ± 0.05)
- T4 = .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



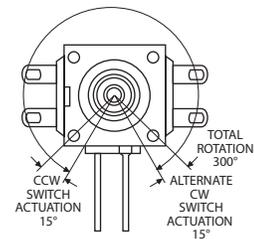
Bottom View



Top View



Rear View



Front View

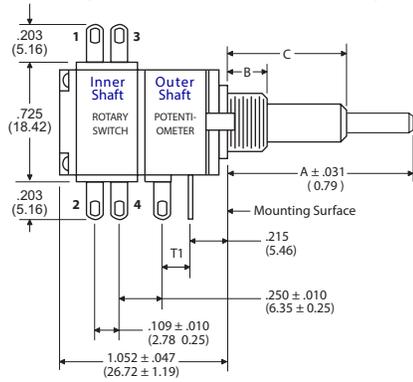
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 3: Dual module, Concentric Shaft (continued)

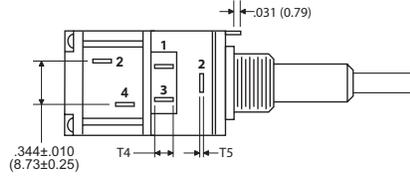
9A Single Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs

Switch Option specifications

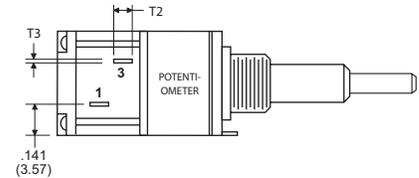


Dimension Notes:

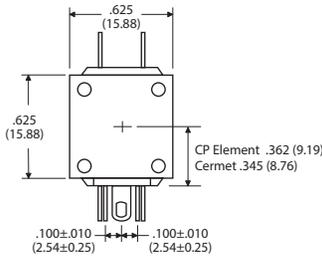
- T1 = .175 ± .010 (4.45 0.25)
- T2 = .085 ± .005 (2.16 ± 0.13)
- T3 = .015 ± .002 (0.38 ± 0.05)
- T4 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
- T5 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size:** .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
- Note:** Shaft length is measured in outer position



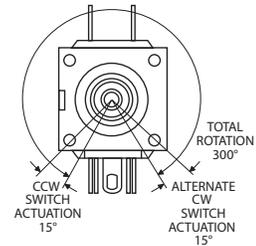
Bottom View



Top View

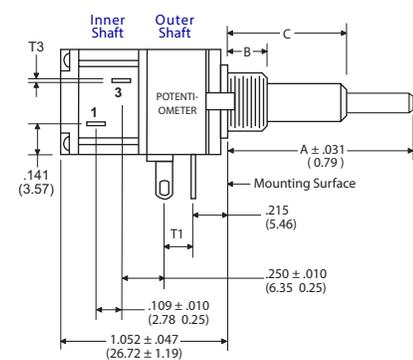


Rear View



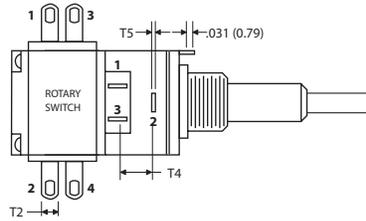
Front View

9A-90° Single Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)

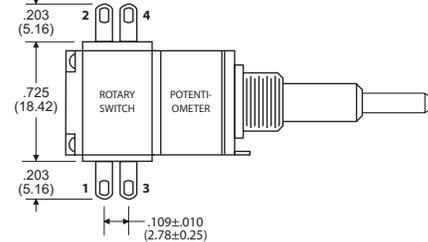


Dimension Notes:

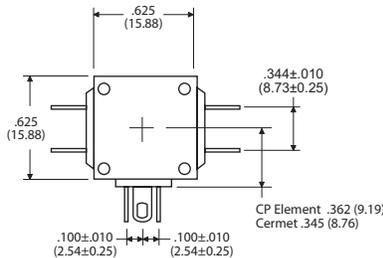
- T1 = .175 ± .010 (4.45 0.25)
- T2 = .085 ± .005 (2.16 ± 0.13)
- T3 = .015 ± .002 (0.38 ± 0.05)
- T4 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
- T5 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size:** .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
- Note:** Shaft length is measured in outer position



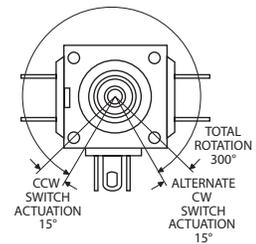
Bottom View



Top View



Rear View



Front View

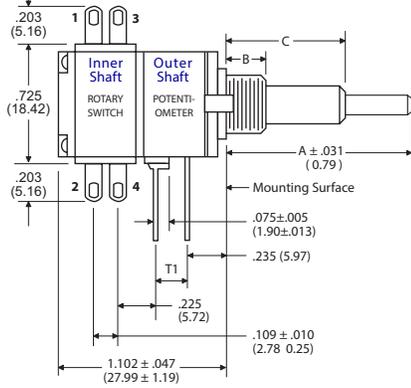
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 3: Dual module, Concentric Shaft (continued)

9A-PC Single Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs

Switch Option specifications



Dimension Notes:

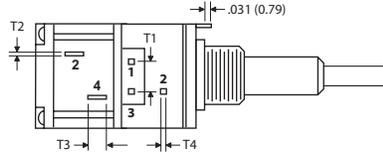
T1 = .200±.010 (5.08±0.25)

T2 = .015±.002 (0.38±0.05)

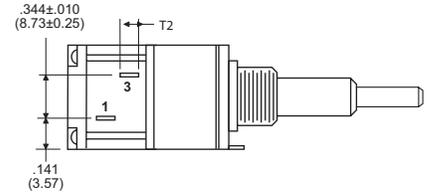
T3 = .085±.005 (2.16±0.13)

T4 = .025±.002 (0.64±0.05)

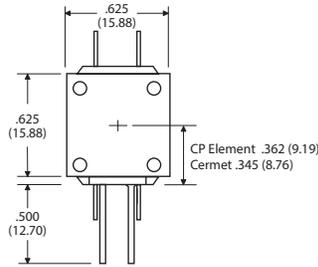
Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)



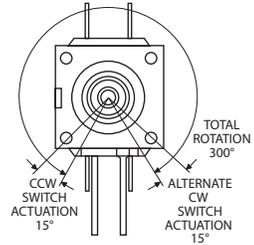
Bottom View



Top View

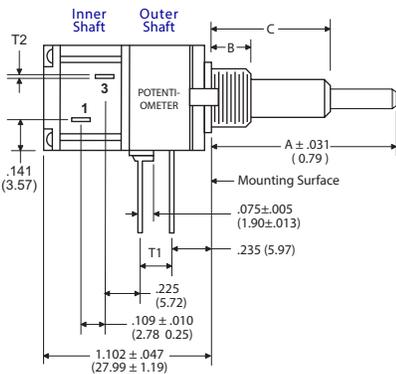


Rear View



Front View

9A-PC-90° Single Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)



Dimension Notes:

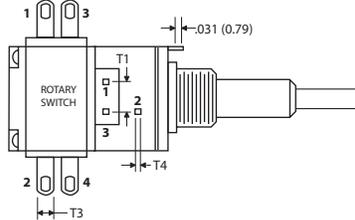
T1 = .200±.010 (5.08±0.25)

T2 = .015±.002 (0.38±0.05)

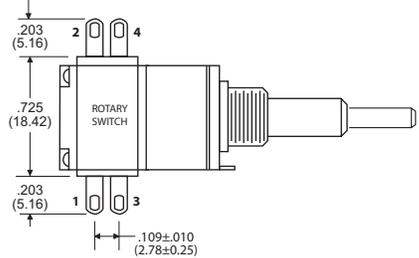
T3 = .085±.005 (2.16±0.13)

T4 = .025±.002 (0.64±0.05)

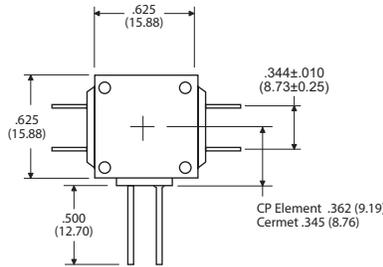
Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)



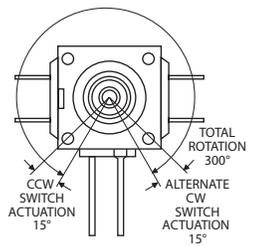
Bottom View



Top View



Rear View



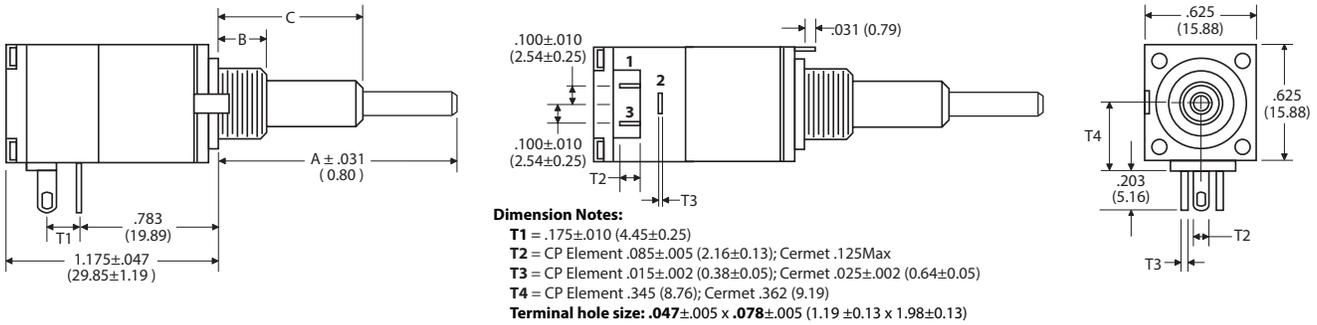
Front View

Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

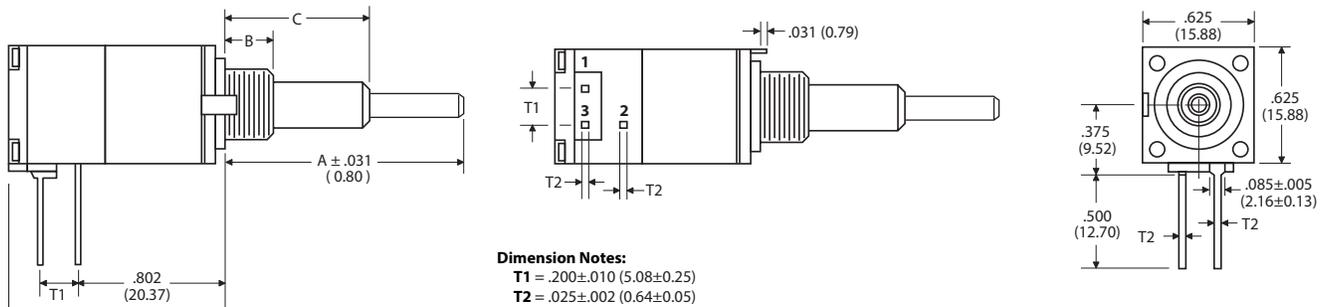
Section 3: Dual module, Concentric Shaft (continued)

10A Potentiometer with Multi-Turn Vernier Drive, Concentric Shaft, Solder Lugs



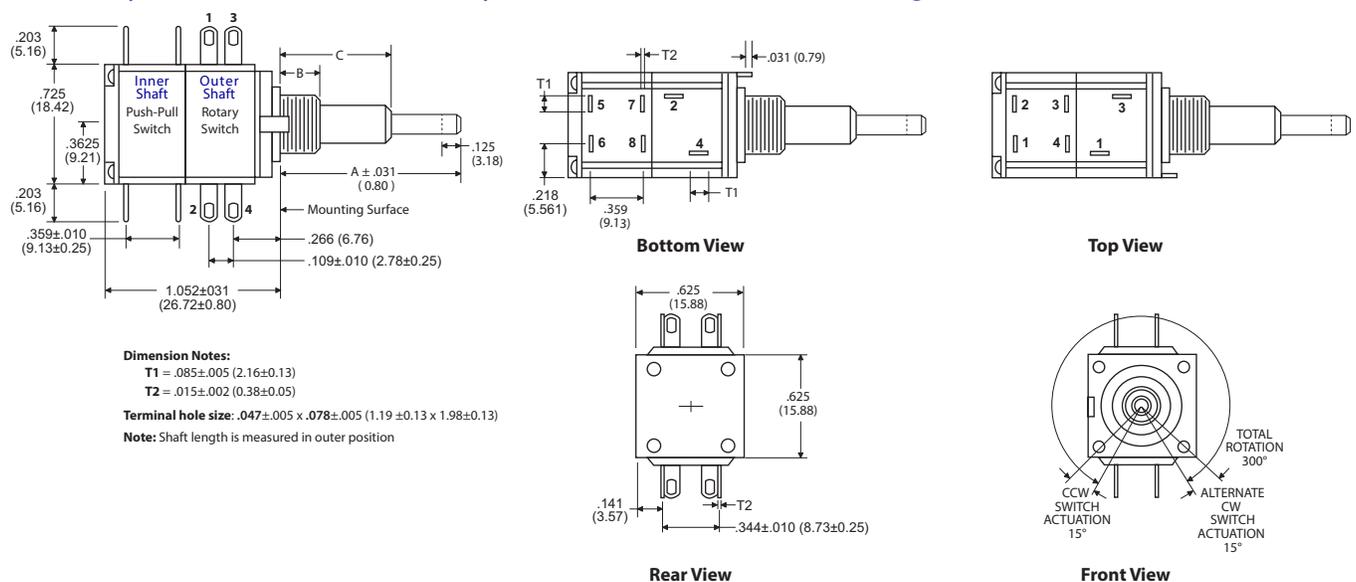
The inner shaft (.078 [1.98 mm] diameter) is for the coarse adjustment, the outer shaft for the fine adjustment.

10A-PC Potentiometer with Multi-Turn Vernier Drive, Concentric Shaft, Solder Pins



The inner shaft (.078 [1.98 mm] diameter) is for the coarse adjustment, the outer shaft for the fine adjustment.

11A Rotary Switch, Push-Pull/Momentary Switch, Concentric Shaft, Solder Lugs



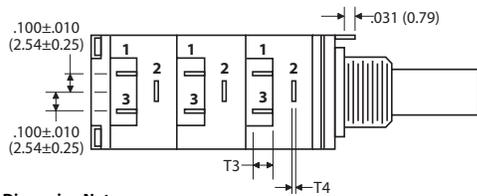
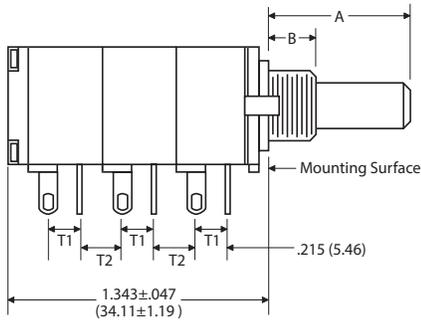
Switch Option specifications

Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

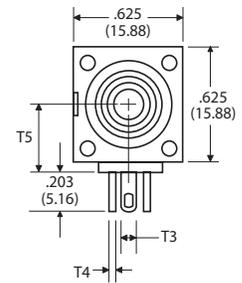
Section 4: Triple module, Single Shaft

12A Triple Potentiometer, Single Shaft, Solder Lugs

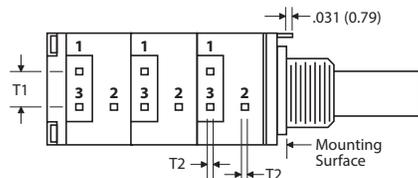
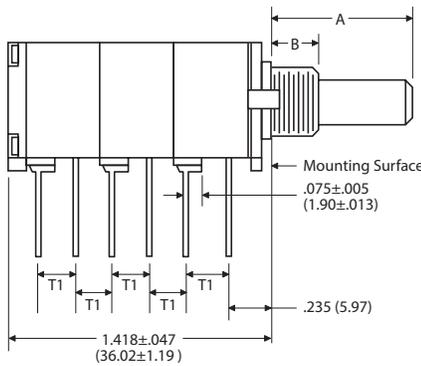


Dimension Notes:

- T1** = .175±.010 (4.45±0.25)
 - T2** = .200±.010 (5.08±0.25)
 - T3** = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T4** = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
 - T5** = CP Element .345 (8.76); Cermet .362 (9.19)
- Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)**

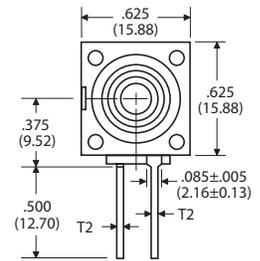


12A-PC Triple Potentiometer, Single Shaft, Solder Pins



Dimension Notes:

- T1** = .200±.010 (5.08±0.25)
- T2** = .025±.002 (0.64±0.05)



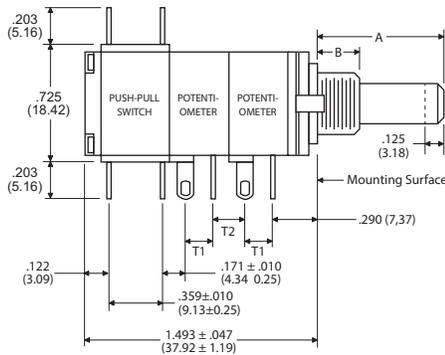
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 4: Triple module, Single Shaft (continued)

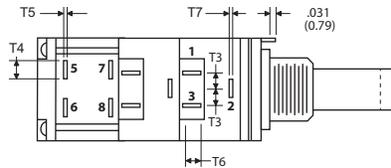
12B - Dual Potentiometer, Push-Pull Switch, Solder Lugs

Switch Option specifications

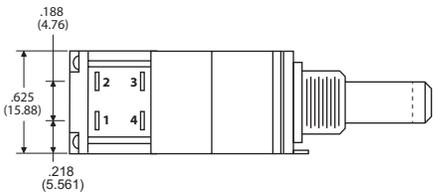


Dimension Notes:

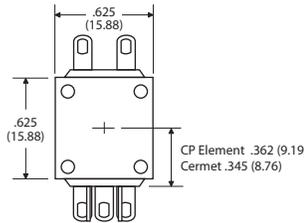
- T1 = .175±.010 (4.45±0.25)
- T2 = .200±.010 (5.08±0.25)
- T3 = .100±.010 (2.54±0.25)
- T4 = .085±.005 (2.16±0.13)
- T5 = .015±.002 (0.38±0.05)
- T6 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T7 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
- Note: Shaft length is measured in outer position



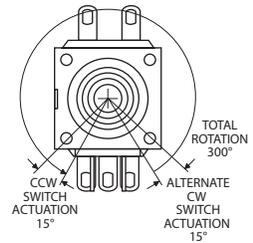
Bottom View



Top View

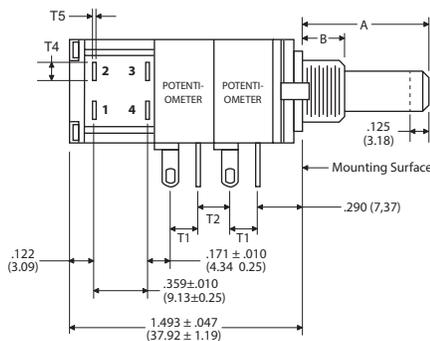


Rear View



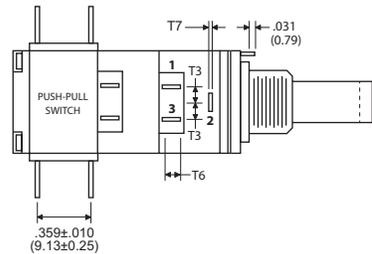
Front View

12B-90° Dual Potentiometer, Push-Pull Switch, Solder Lugs (Rotated Switch Module)

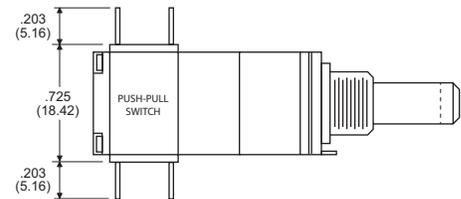


Dimension Notes:

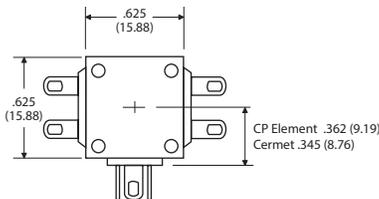
- T1 = .175±.010 (4.45±0.25)
- T2 = .200±.010 (5.08±0.25)
- T3 = .100±.010 (2.54±0.25)
- T4 = .085±.005 (2.16±0.13)
- T5 = .015±.002 (0.38±0.05)
- T6 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T7 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
- Note: Shaft length is measured in outer position



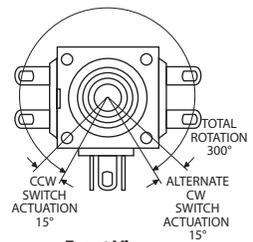
Bottom View



Top View



Rear View



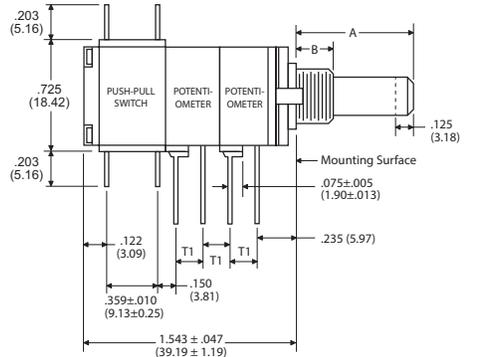
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

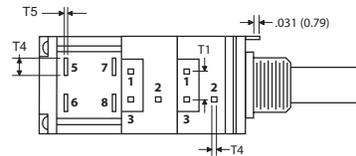
Section 4: Triple module, Single Shaft (continued)

12B-PC Dual Potentiometer, DPST Push-Pull Switch, PC Pins

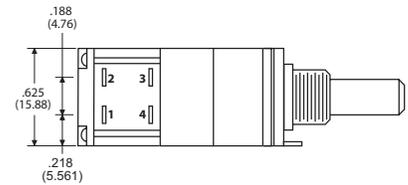


Dimension Notes:

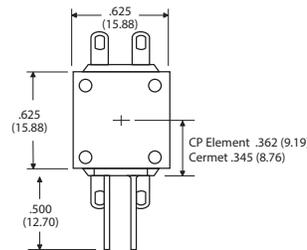
- T1 = .200 ± .010 (5.08 ± 0.25)
- T2 = .085 ± .005 (2.16 ± 0.13)
- T3 = .015 ± .002 (0.38 ± 0.05)
- T4 = .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
- Note: Shaft length is measured in outer position



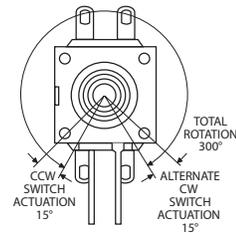
Bottom View



Top View

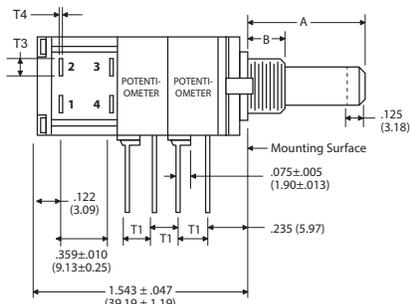


Rear View



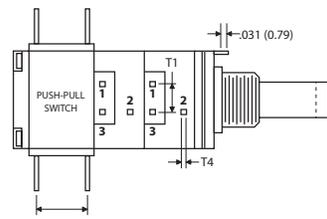
Front View

12B-PC-90° Single Potentiometer, DPST Push-Pull Switch, PC Pins (Rotated Switch Module)

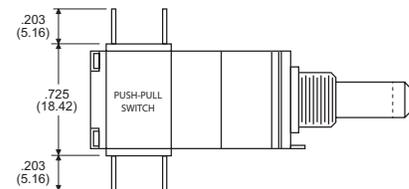


Dimension Notes:

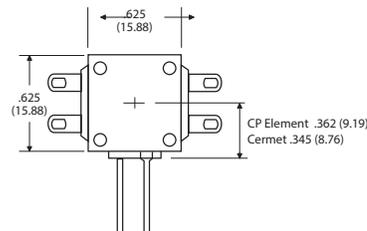
- T1 = .200 ± .010 (5.08 ± 0.25)
- T2 = .015 ± .002 (0.38 ± 0.05)
- T3 = .085 ± .005 (2.16 ± 0.13)
- T4 = .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)
- Note: Shaft length is measured in outer position



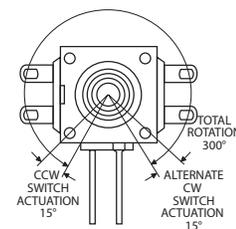
Bottom View



Top View



Rear View



Front View

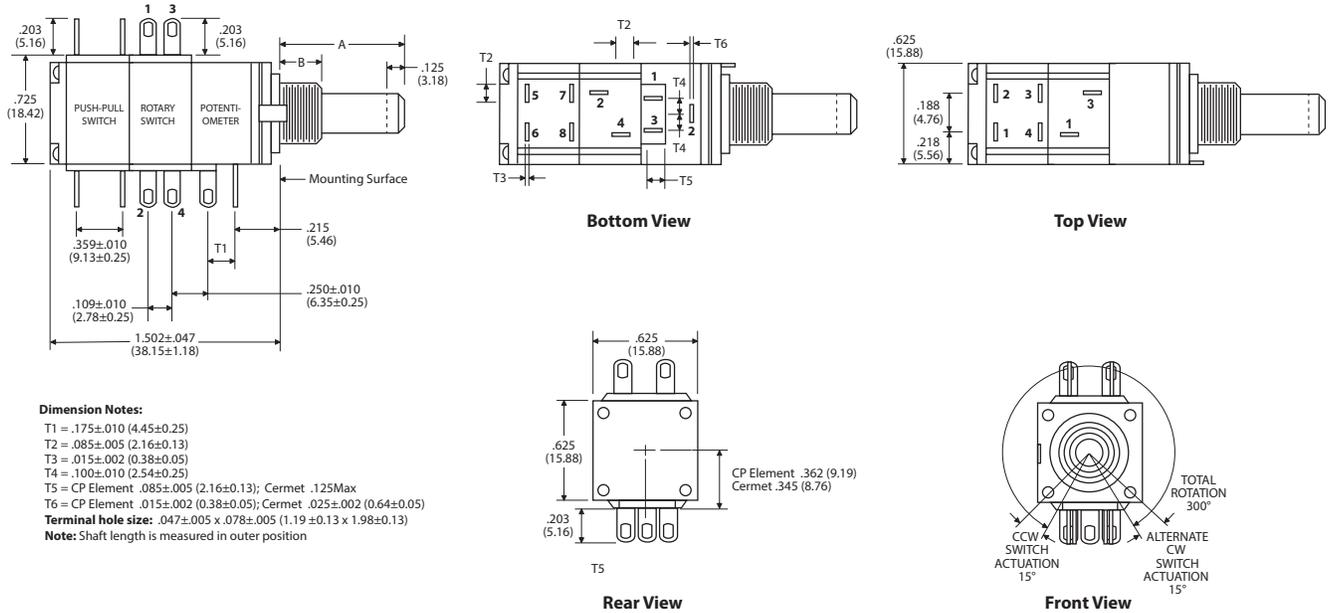
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

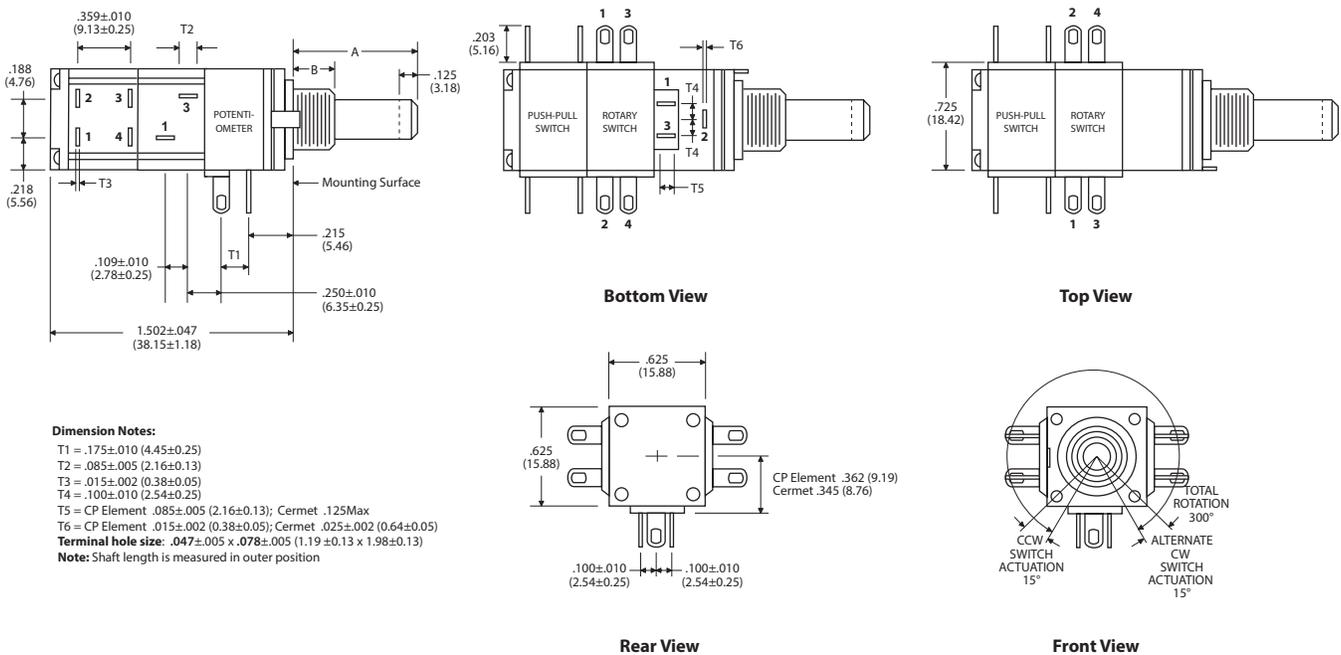
Section 4: Triple module, Single Shaft (continued)

12C Single Potentiometer, Rotary Switch, and Push-Pull Switch, Solder Lugs

Switch Option specifications



12C-90° Single Potentiometer, Rotary Switch, and Push-Pull Switch, Solder Lugs (Rotated Switch Module)



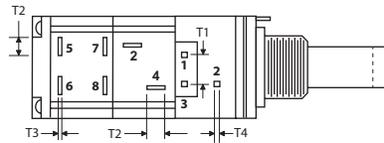
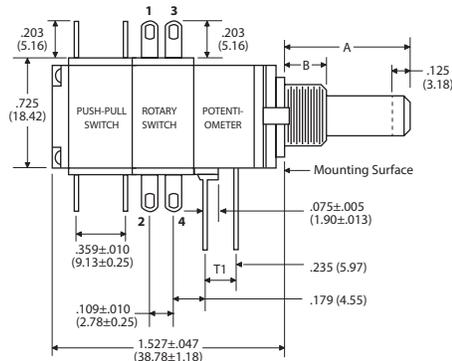
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

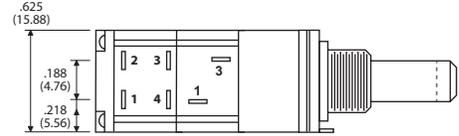
Section 4: Triple module, Single Shaft (continued)

12C-PC Single Potentiometer, Rotary Switch, and Push-Pull Switch, PC Pins

Switch Option specifications



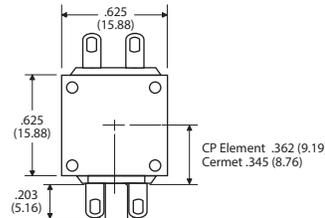
Bottom View



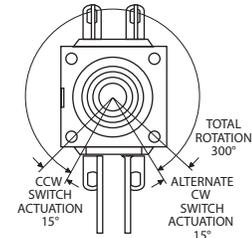
Top View

Dimension Notes:

- T1 = .200±.010 (5.08±0.25)
- T2 = .085±.005 (2.16±0.13)
- T3 = .015±.002 (0.38±0.05)
- T4 = .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)
- Note: Shaft length is measured in outer position

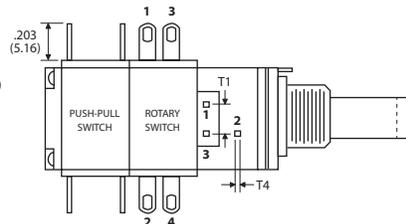
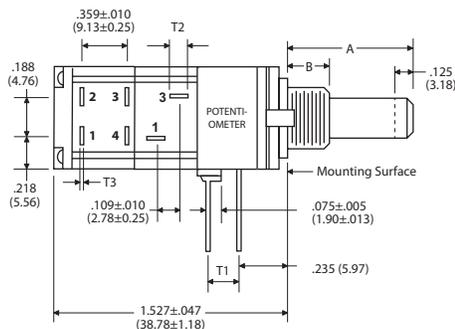


Rear View

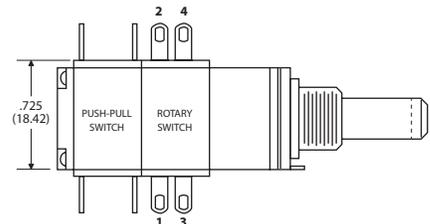


Front View

12C-PC-90° Single Potentiometer, Rotary Switch, and Push-Pull Switch, PC Pins (Rotated Switch Module)



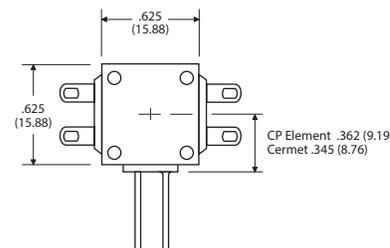
Bottom View



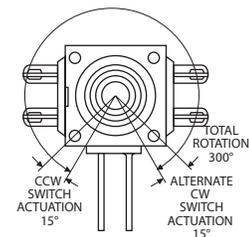
Top View

Dimension Notes:

- T1 = .200±.010 (5.08±0.25)
- T2 = .085±.005 (2.16±0.13)
- T3 = .015±.002 (0.38±0.05)
- T4 = .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)
- Note: Shaft length is measured in outer position



Rear View



Front View

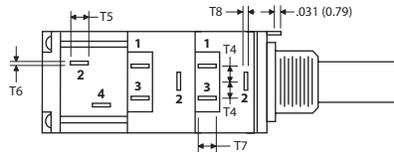
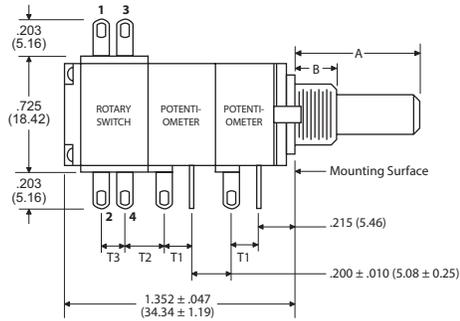
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushings, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

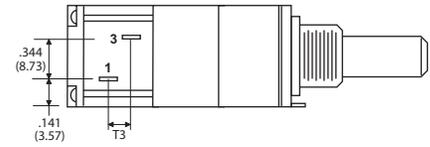
Section 4: Triple module, Single Shaft (continued)

13A - Dual Potentiometer, Single Rotary Switch, Solder Lugs

Switch Option specifications



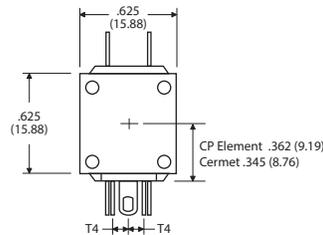
Bottom View



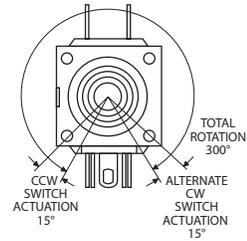
Top View

Dimension Notes:

- T1 = .175 ± .010 (4.45 ± 0.25)
- T2 = .246 ± .010 (6.25 ± 0.25)
- T3 = .109 ± .010 (2.77 ± 0.25)
- T4 = .100 ± .010 (2.54 ± 0.25)
- T5 = .085 ± .005 (2.16 ± 0.13)
- T6 = .015 ± .002 (0.38 ± 0.05)
- T7 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
- T8 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)

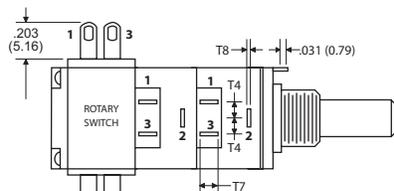
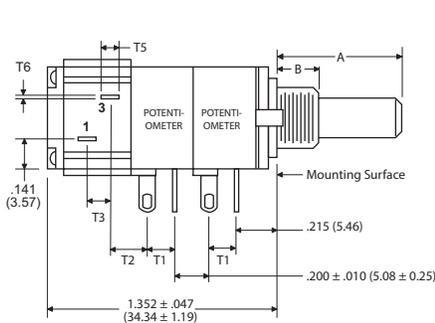


Rear View

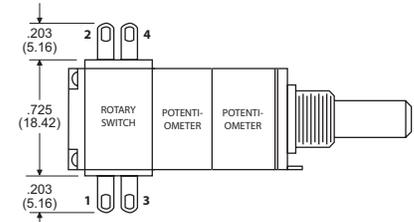


Front View

13A-90° - Dual Potentiometer, Single Rotary Switch, Solder Lugs (Rotated Switch Module)



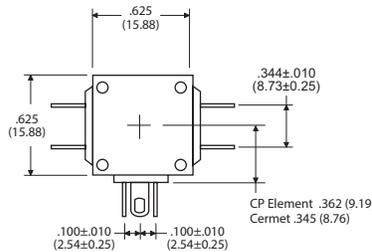
Bottom View



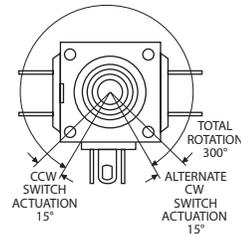
Top View

Dimension Notes:

- T1 = .175 ± .010 (4.45 ± 0.25)
- T2 = .246 ± .010 (6.25 ± 0.25)
- T3 = .109 ± .010 (2.77 ± 0.25)
- T4 = .100 ± .010 (2.54 ± 0.25)
- T5 = .085 ± .005 (2.16 ± 0.13)
- T6 = .015 ± .002 (0.38 ± 0.05)
- T7 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
- T8 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



Rear View



Front View

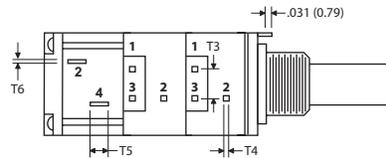
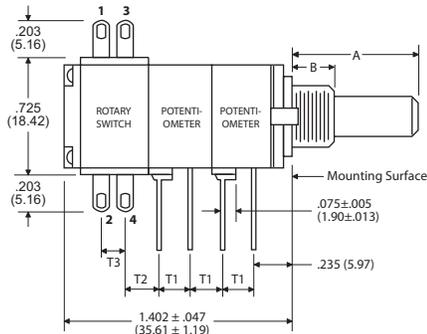
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

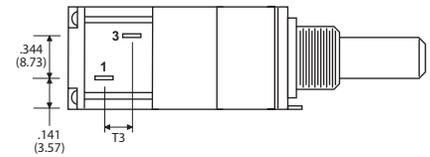
Section 4: Triple module, Single Shaft (continued)

13A-PC - Dual Potentiometer, Single Rotary Switch, PC Pins

Switch Option specifications



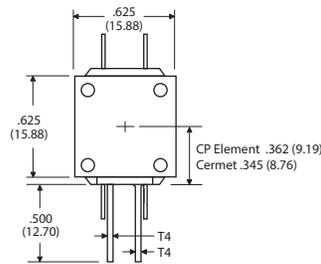
Bottom View



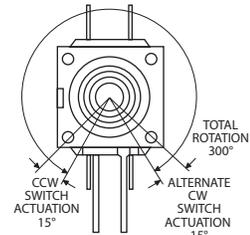
Top View

Dimension Notes:

- T1 = .200 ± .010 (5.08 ± 0.25)
 - T2 = .171 ± .010 (4.34 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .025 ± .002 (0.64 ± 0.05)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)

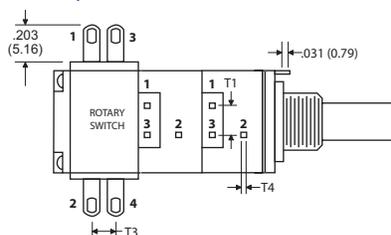
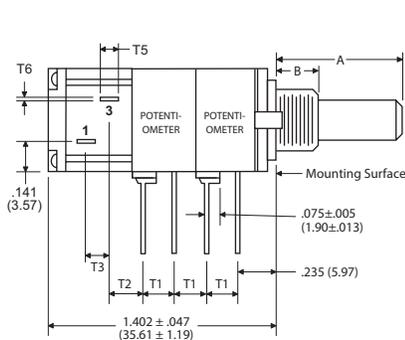


Rear View

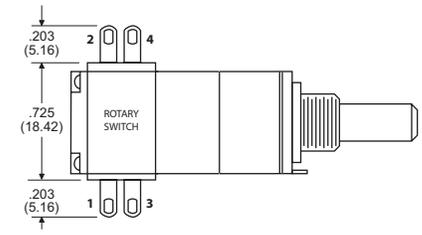


Front View

13A-PC-90° - Dual Potentiometer, Single Rotary Switch, PC Pins (Rotated Switch Module)



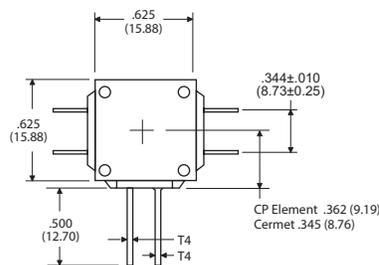
Bottom View



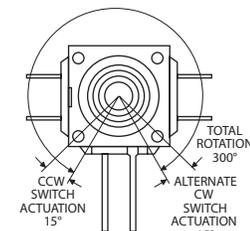
Top View

Dimension Notes:

- T1 = .200 ± .010 (5.08 ± 0.25)
 - T2 = .171 ± .010 (4.34 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .025 ± .002 (0.64 ± 0.05)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



Rear View



Front View

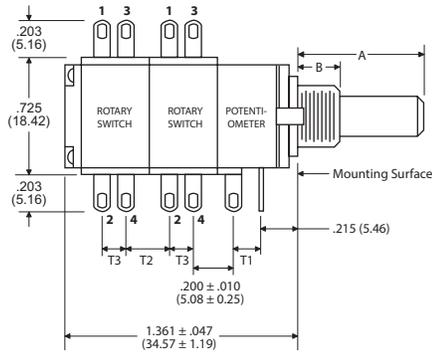
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 - 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 - 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 4: Triple module, Single Shaft (continued)

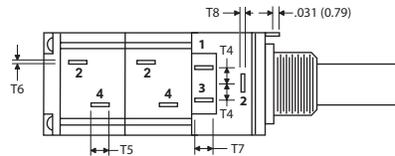
13B - Single Potentiometer, Dual Rotary Switch, Solder Lugs

Switch Option specifications

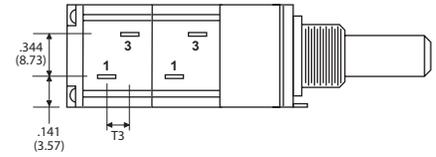


Dimension Notes:

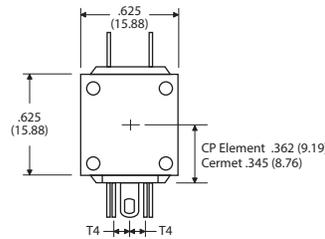
- T1 = .175 ± .010 (4.45 ± 0.25)
 - T2 = .274 ± .010 (6.96 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .100 ± .010 (2.54 ± 0.25)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
 - T7 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
 - T8 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



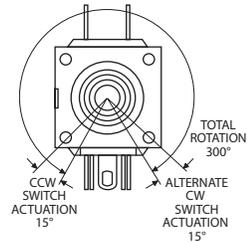
Bottom View



Top View

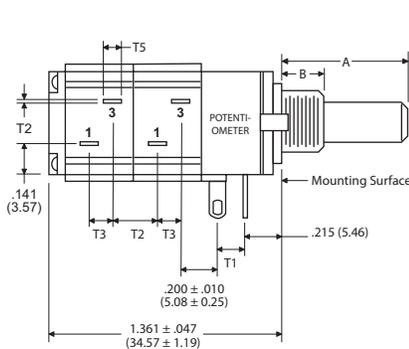


Rear View



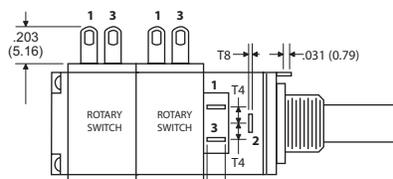
Front View

13B-90° - Single Potentiometer, Dual Rotary Switch, Solder Lugs (Rotated Switch Module)

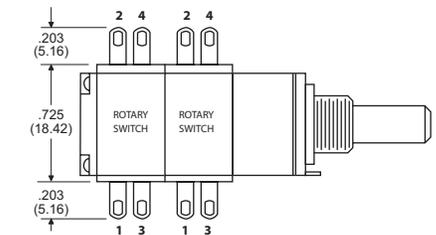


Dimension Notes:

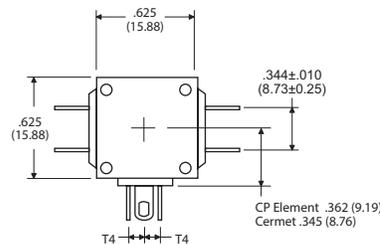
- T1 = .175 ± .010 (4.45 ± 0.25)
 - T2 = .274 ± .010 (6.96 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .100 ± .010 (2.54 ± 0.25)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
 - T7 = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125Max
 - T8 = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



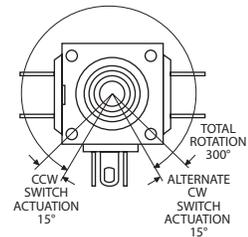
Bottom View



Top View



Rear View



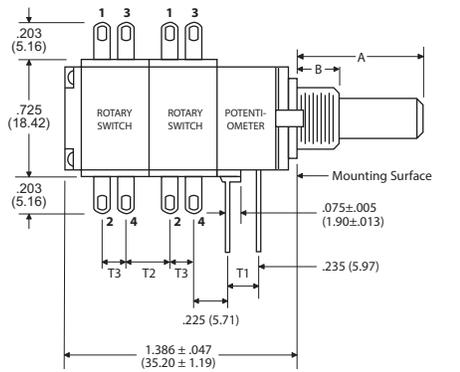
Front View

Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

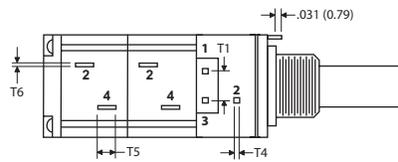
Section 4: Triple module, Single Shaft (continued)

13B-PC - Single Potentiometer, Dual Rotary Switch, PC Pins

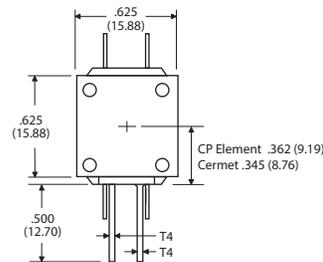


Dimension Notes:

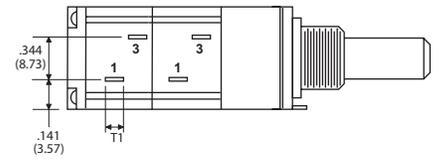
- T1 = .200 ± .010 (4.45 ± 0.25)
 - T2 = .274 ± .010 (6.96 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .025 ± .010 (2.54 ± 0.25)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



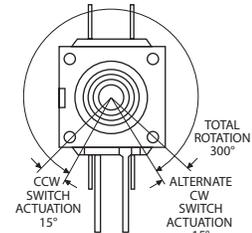
Bottom View



Rear View

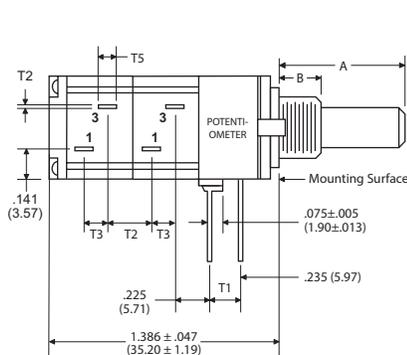


Top View



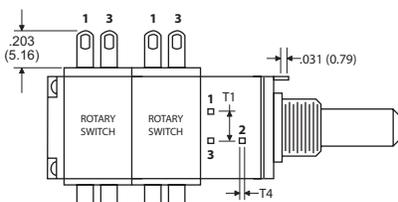
Front View

13B-PC-90° - Single Potentiometer, Dual Rotary Switch, PC Pins (Rotated Switch Module)

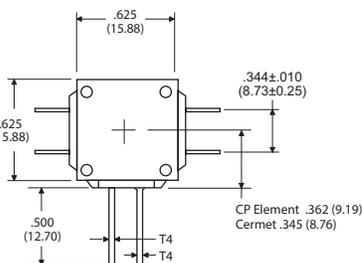


Dimension Notes:

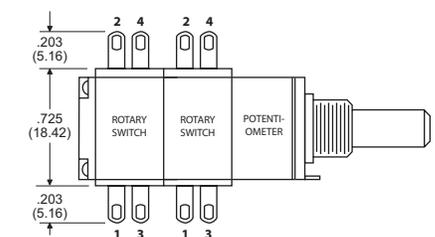
- T1 = .200 ± .010 (4.45 ± 0.25)
 - T2 = .274 ± .010 (6.96 ± 0.25)
 - T3 = .109 ± .010 (2.76 ± 0.25)
 - T4 = .025 ± .010 (2.54 ± 0.25)
 - T5 = .085 ± .005 (2.16 ± 0.13)
 - T6 = .015 ± .002 (0.38 ± 0.05)
- Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



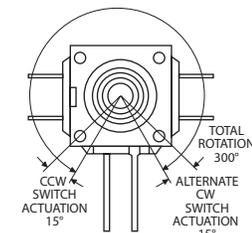
Bottom View



Rear View



Top View



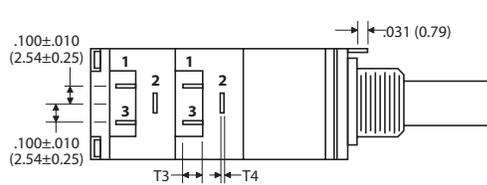
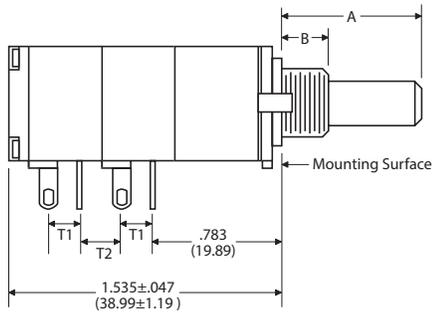
Front View

Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 4: Triple module, Single Shaft (continued)

14A Dual Potentiometer with Multi-Turn Vernier Drive, Single Shaft, Solder Lugs



Dimension Notes:

T1 = .175±.010 (4.45±0.25)

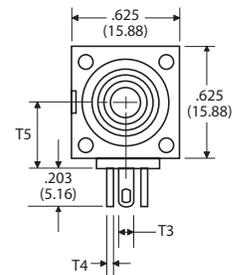
T2 = .200±.010 (5.08±0.25)

T3 = CP Element .085±.005 (2.16±0.13); Cermet .125Max

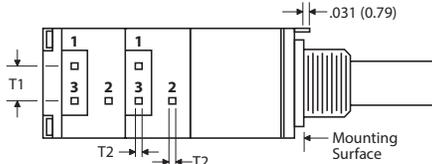
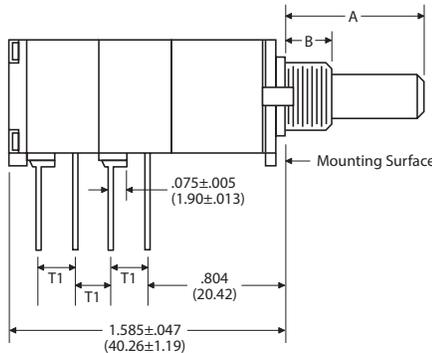
T4 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)

T5 = CP Element .345 (8.76); Cermet .362 (9.19)

Terminal hole size: .047±.005 x .078±.005 (1.19 ±0.13 x 1.98±0.13)



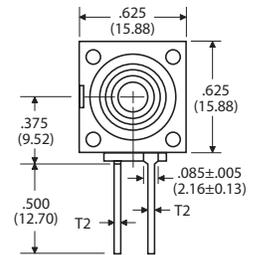
14A-PC Dual Potentiometer with Multi-Turn Vernier Drive, Single Shaft, Solder Pins



Dimension Notes:

T1 = .200±.010 (5.08±0.25)

T2 = .025±.002 (0.64±0.05)

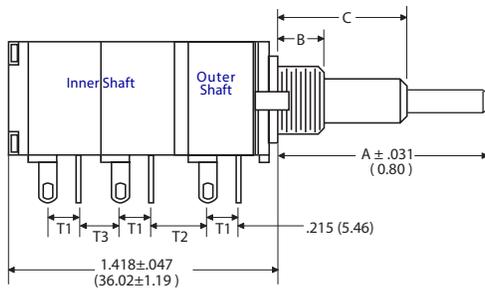


Notes:

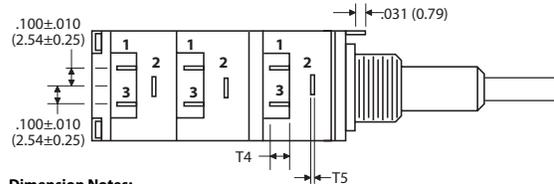
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 5: Triple module, Concentric Shaft

15A Triple Potentiometer, Concentric Shaft, Solder Lugs



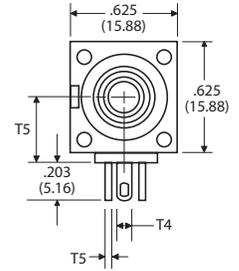
As shown, Outer Shaft operates First Section



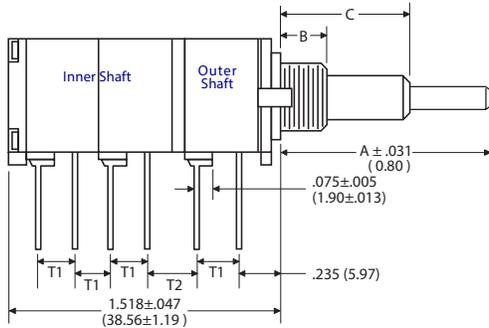
Dimension Notes:

- T1** = .175 ± .010 (4.45 ± 0.25)
- T2** = .275 ± .010 (6.98 ± 0.25)
- T3** = .200 ± .010 (5.08 ± 0.25)
- T4** = CP Element .085 ± .005 (2.16 ± 0.13); Cermet .125 Max
- T5** = CP Element .015 ± .002 (0.38 ± 0.05); Cermet .025 ± .002 (0.64 ± 0.05)
- T6** = CP Element .345 (8.76); Cermet .362 (9.19)

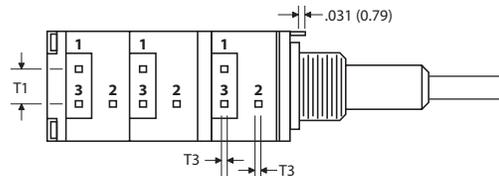
Terminal hole size: .047 ± .005 x .078 ± .005 (1.19 ± 0.13 x 1.98 ± 0.13)



15A-PC Triple Potentiometer, Concentric Shaft, Solder Pins

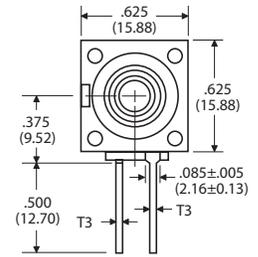


As shown, Outer Shaft operates First Section



Dimension Notes:

- T1** = .200 ± .010 (5.08 ± 0.25)
- T2** = .275 ± .010 (6.98 ± 0.25)
- T3** = .025 ± .002 (0.64 ± 0.05)



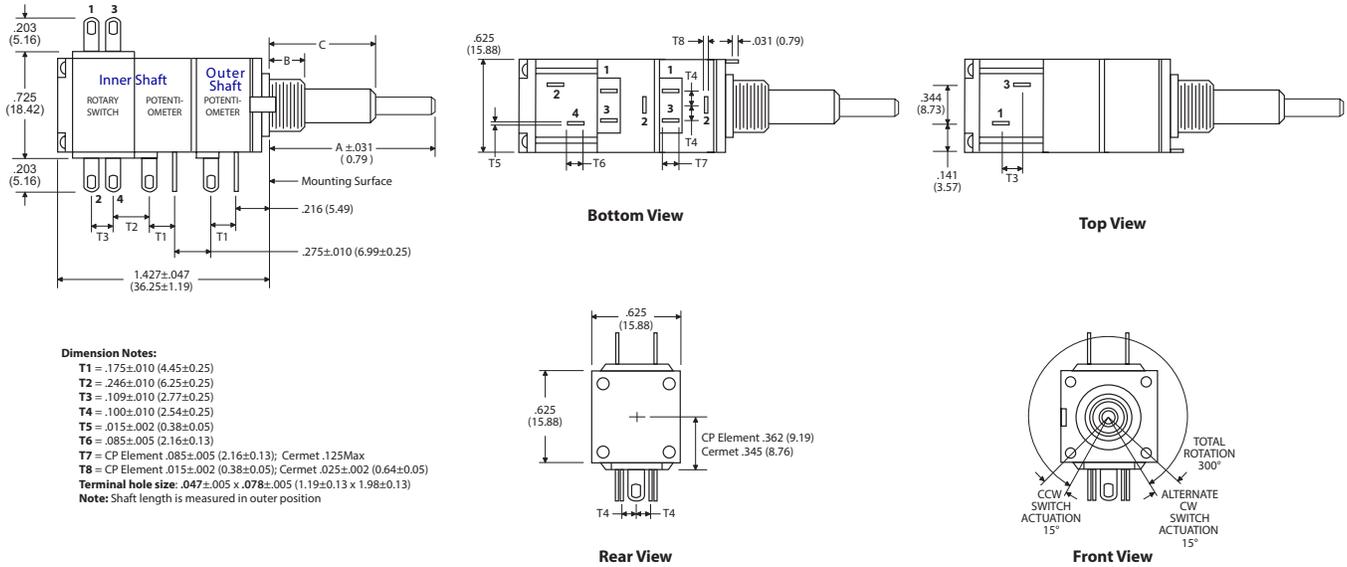
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

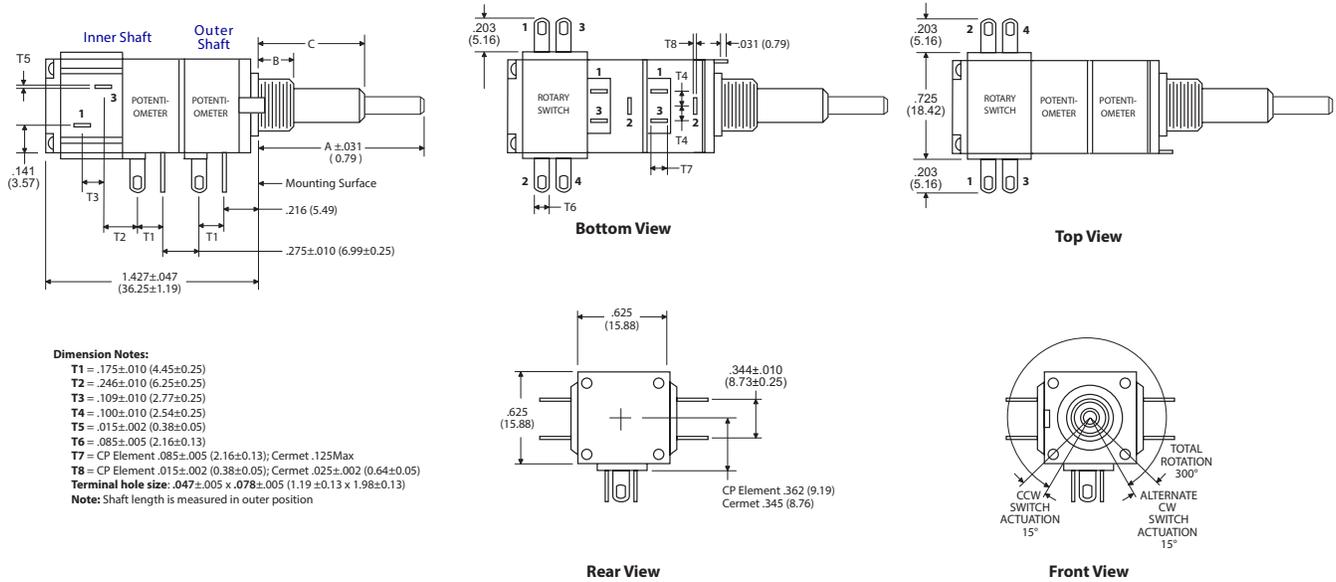
Section 5: Triple module, Concentric Shaft (continued)

16A Dual Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs

Switch Option specifications



16A-90° Dual Potentiometer, Rotary Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)



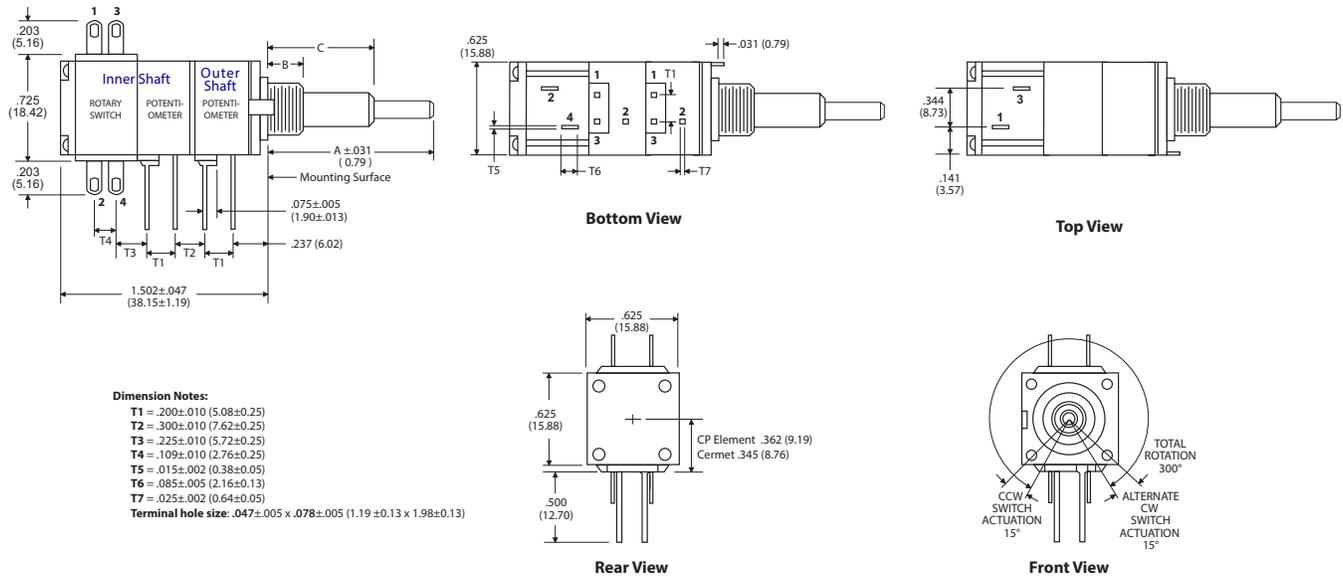
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
- Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

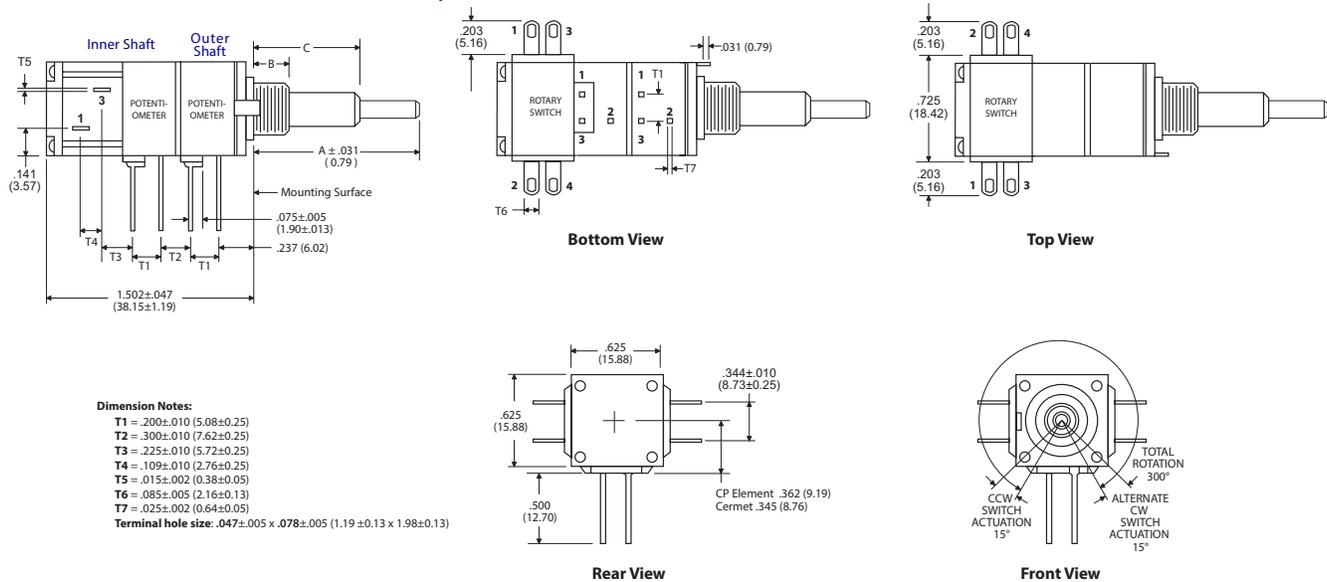
Section 5: Triple module, Concentric Shaft (continued)

16A-PC Dual Potentiometer, Rotary Switch, Concentric Shaft, PC Pins

Switch Option specifications



16A-PC-90° Dual Potentiometer, Rotary Switch, Concentric Shaft, PC Pins (Rotated Switch Module)



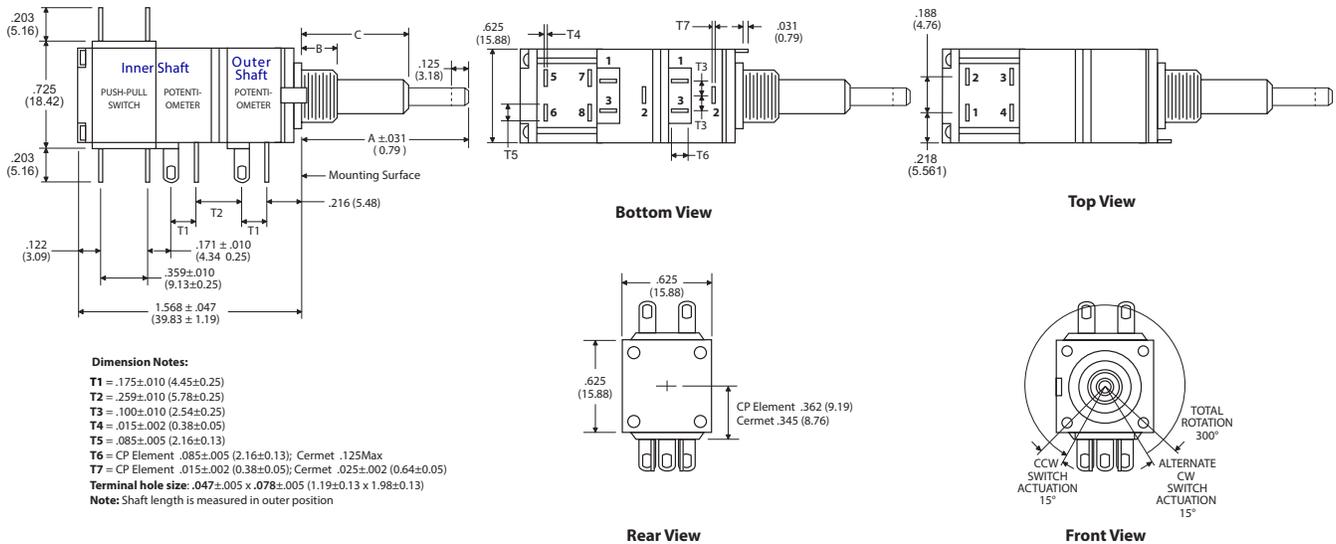
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

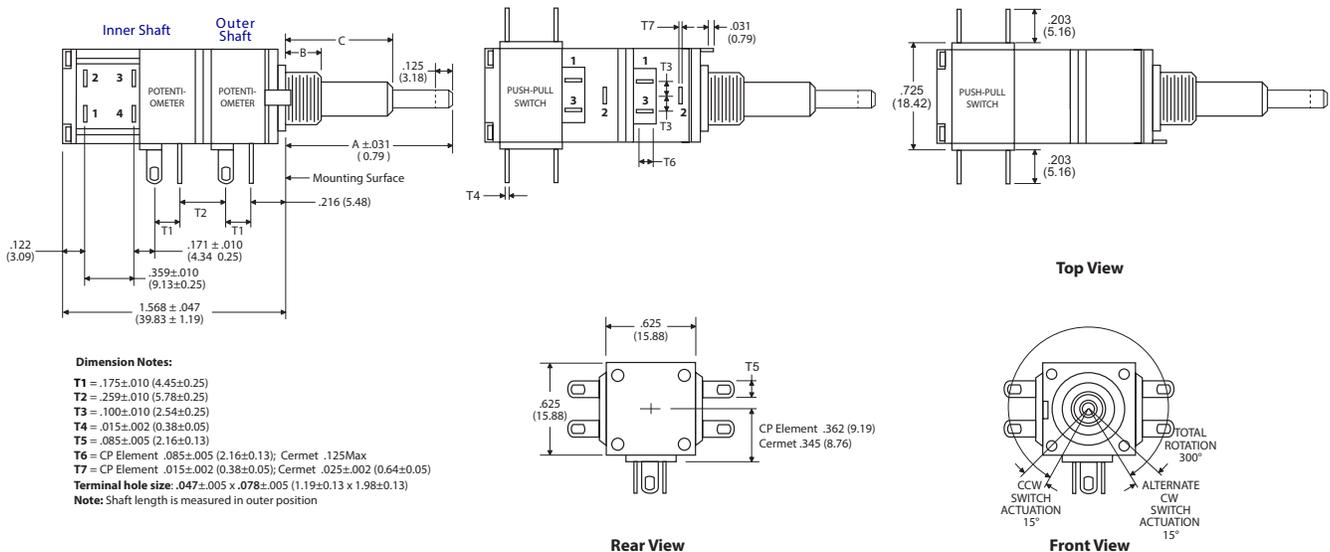
Section 5: Triple module, Concentric Shaft (continued)

17A Dual Potentiometer, Push-Pull Switch, Solder Lugs

Switch Option specifications



17A-90° Dual Potentiometer, Push-Pull Switch, Solder Lugs (Rotated Switch Module)



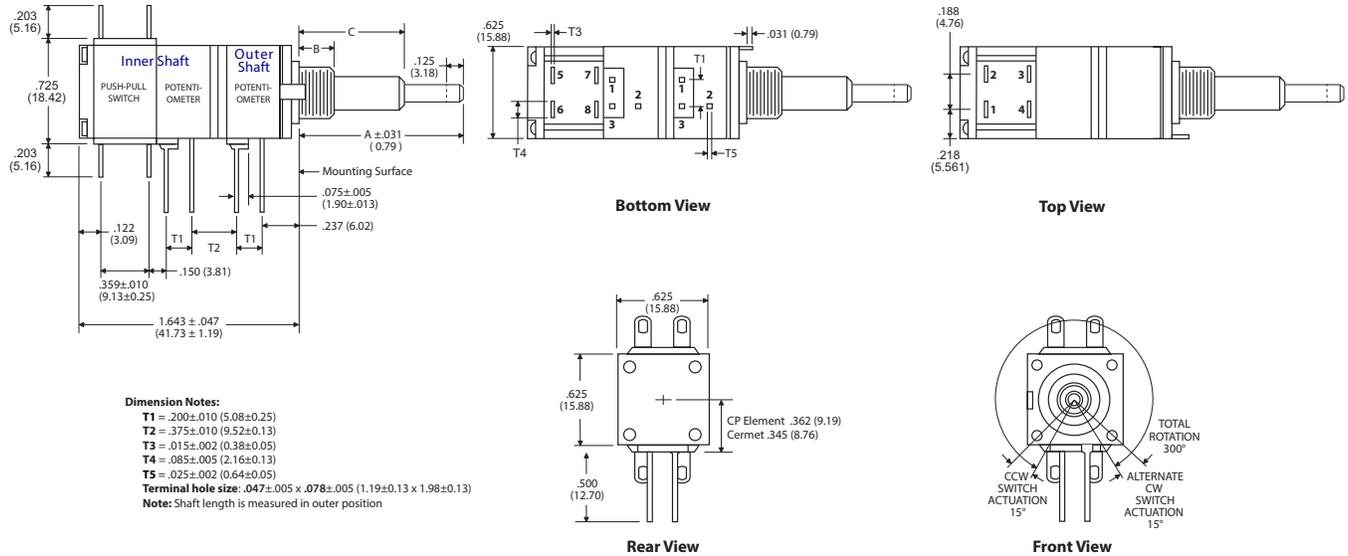
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

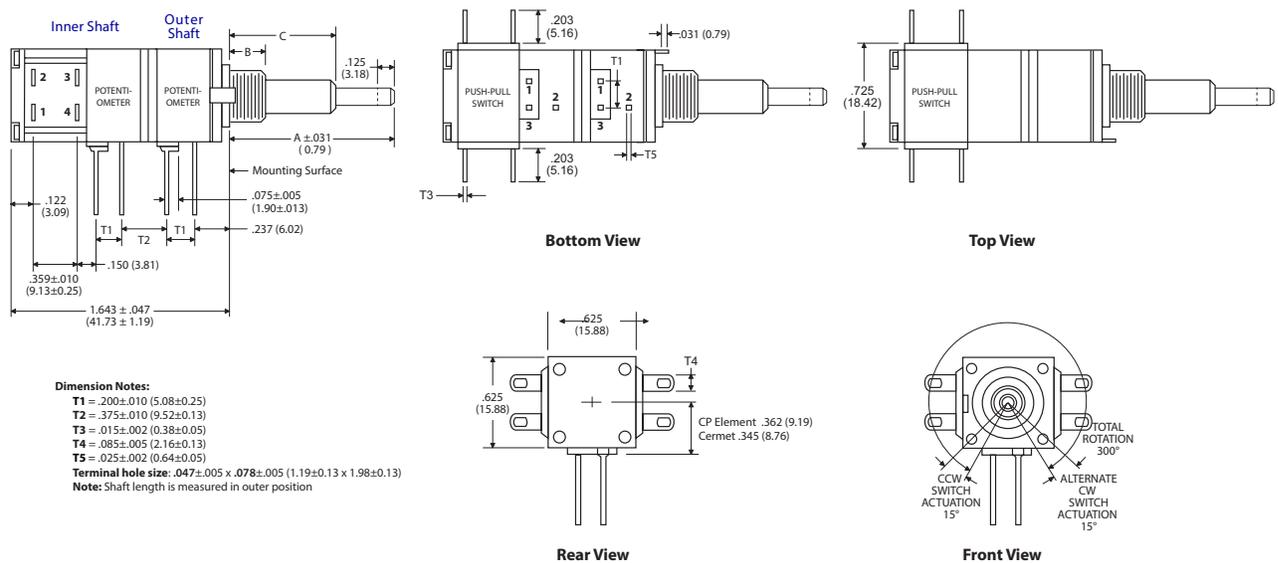
Section 5: Triple module, Concentric Shaft (continued)

17A-PC Dual Potentiometer, Push-Pull Switch, Concentric Shaft, Solder Lugs

Switch Option specifications



17A-PC-90° Dual Potentiometer, Push-Pull Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)



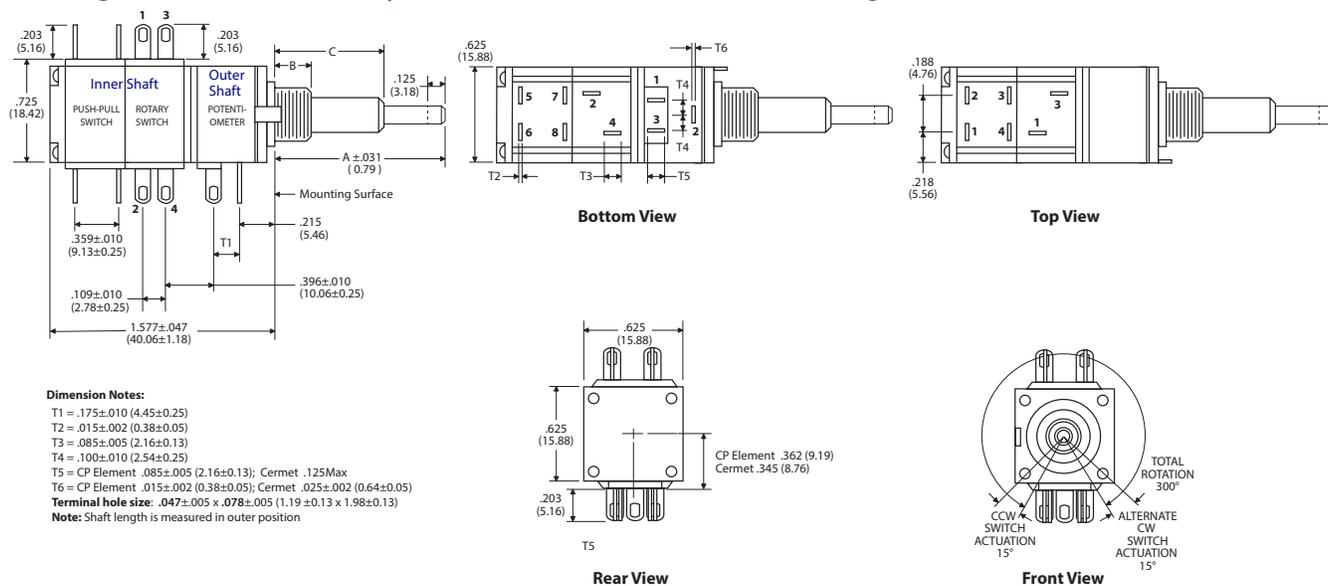
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

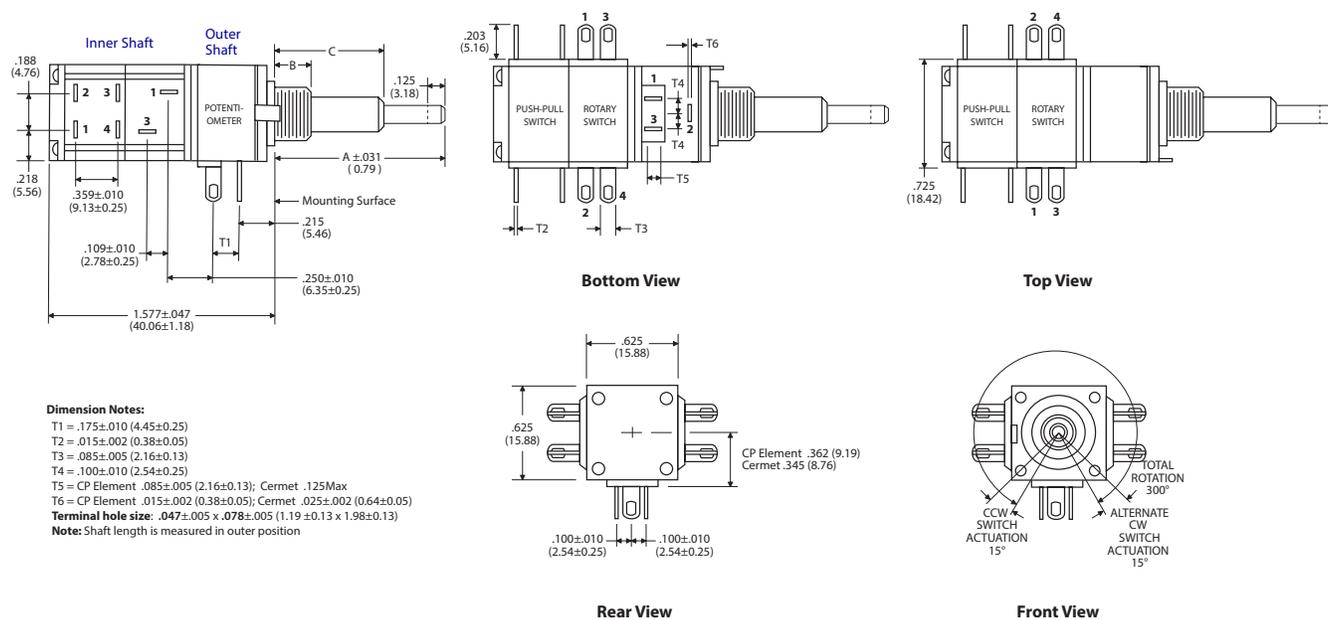
Section 5: Triple module, Concentric Shaft (continued)

18A Single Potentiometer, Rotary Switch, and Push-Pull Switch, Solder Lugs

Switch Option specifications



18A-90° Potentiometer, Rotary and Push-Pull Switch, Solder Lugs (Rotated Switch) Module



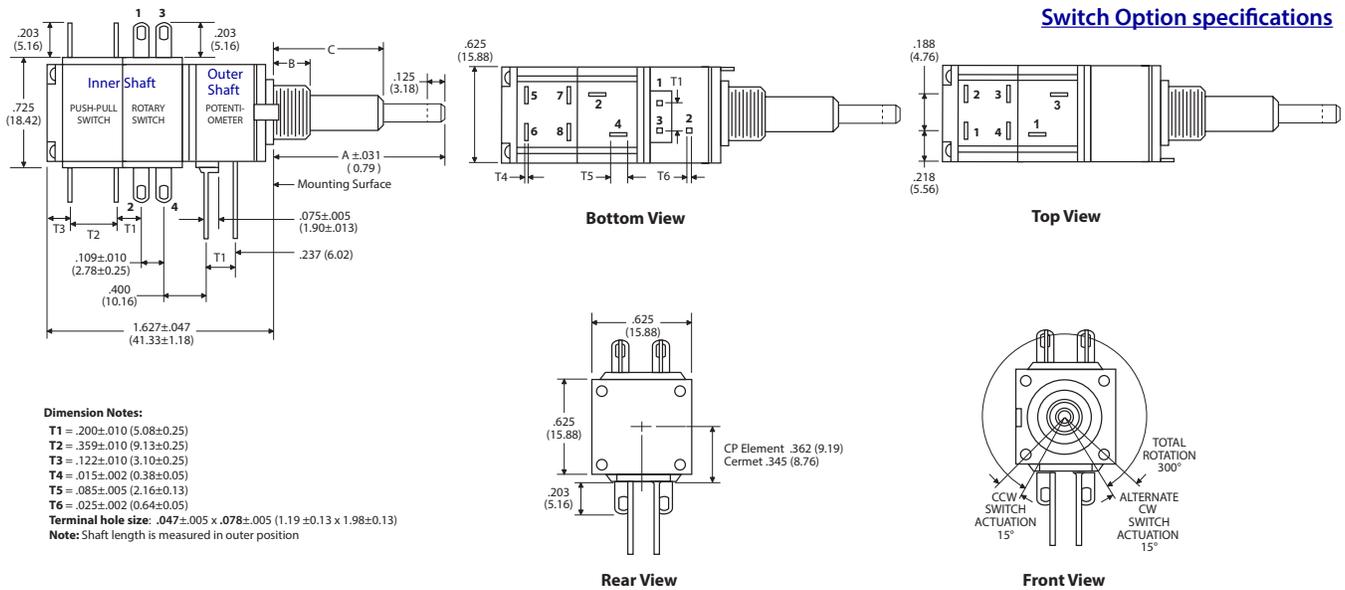
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

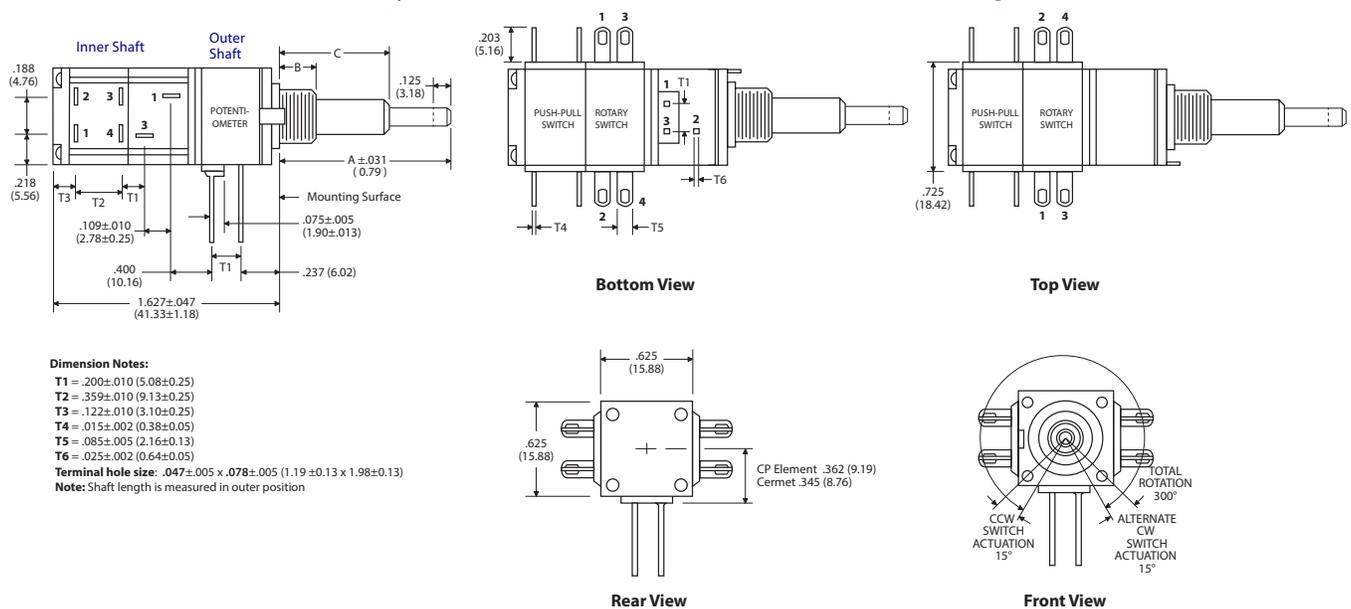
Section 5: Triple module, Concentric Shaft (continued)

18A-PC Single Potentiometer, Rotary Switch, and Push-Pull Switch, Concentric Shaft, Solder Lugs

Switch Option specifications



18A-PC-90° Potentiometer, Rotary and Push-Pull Switch, Concentric Shaft, Solder Lugs (Rotated Switch Module)

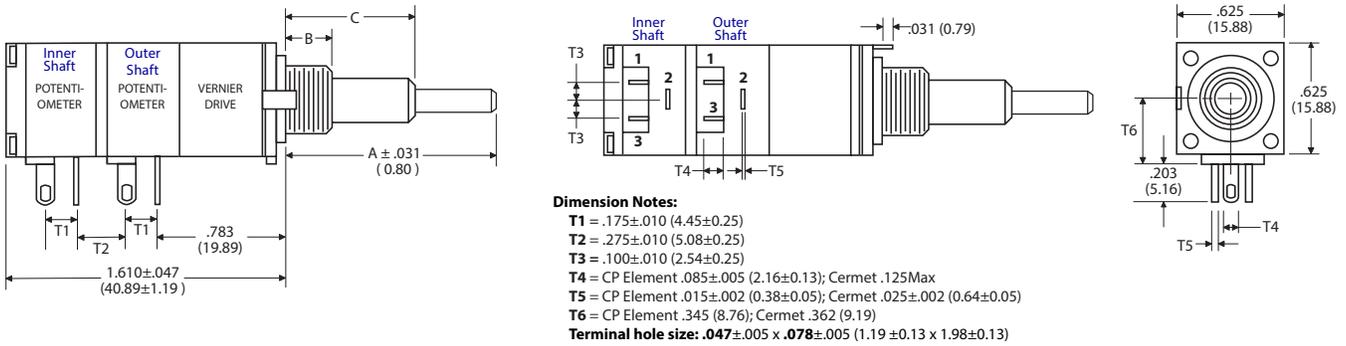


Notes:

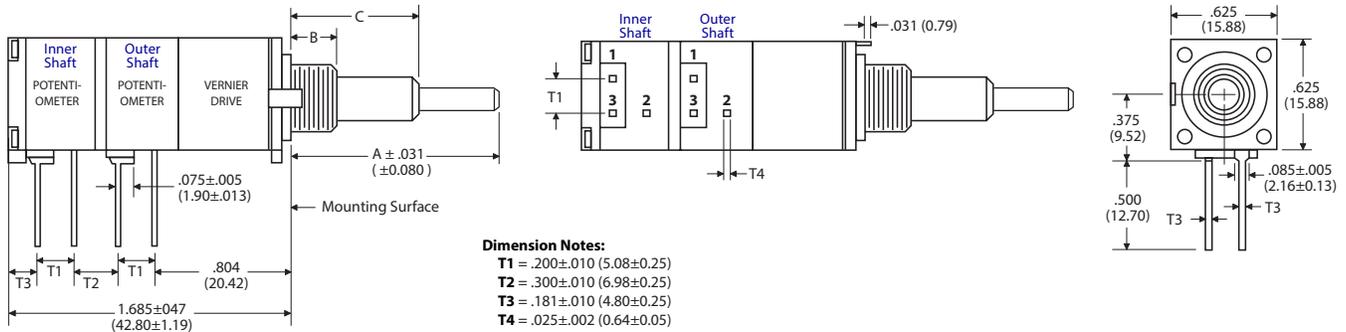
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 5: Triple module, Concentric Shaft (continued)

19A Dual Potentiometer with Multi-Turn Vernier Drive, Concentric Shaft, Solder Lugs



19A-PC Dual Potentiometer with Multi-Turn Vernier Drive, Concentric Shaft, Solder Pins



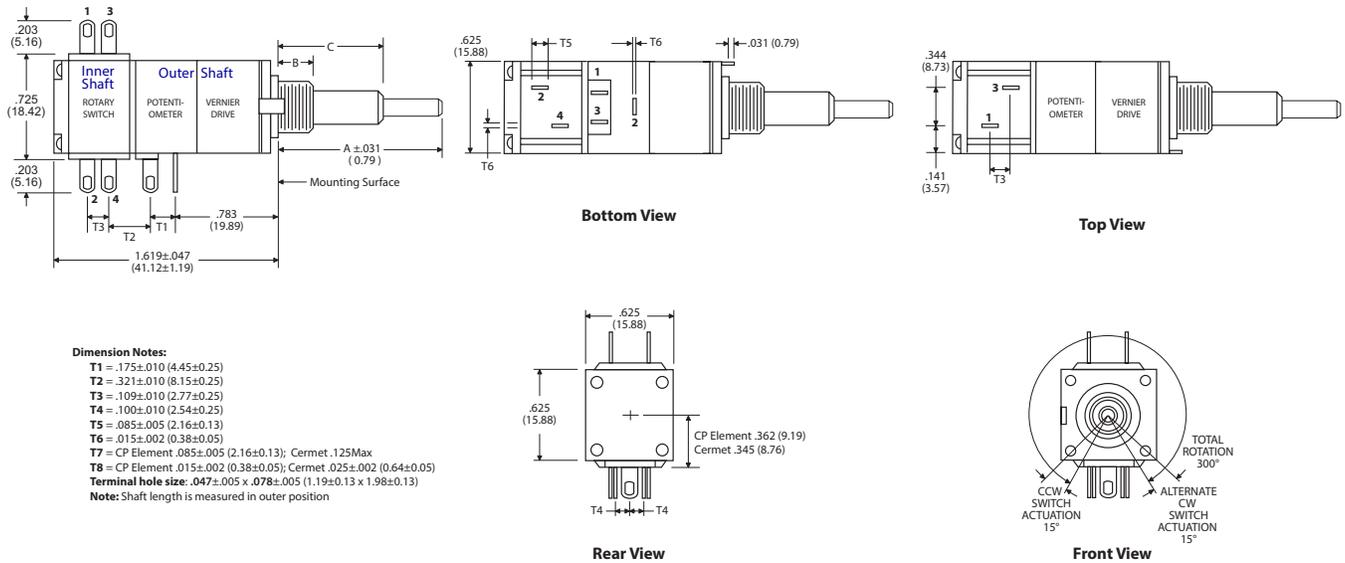
Notes:

1. Cermet Plating - Terminals 1 & 3: $.025'' \pm .001$ Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: $.015'' \pm .001$ Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: $.025'' \pm .001$ Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: $.015'' \pm .001$ Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance $\pm .016$ (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

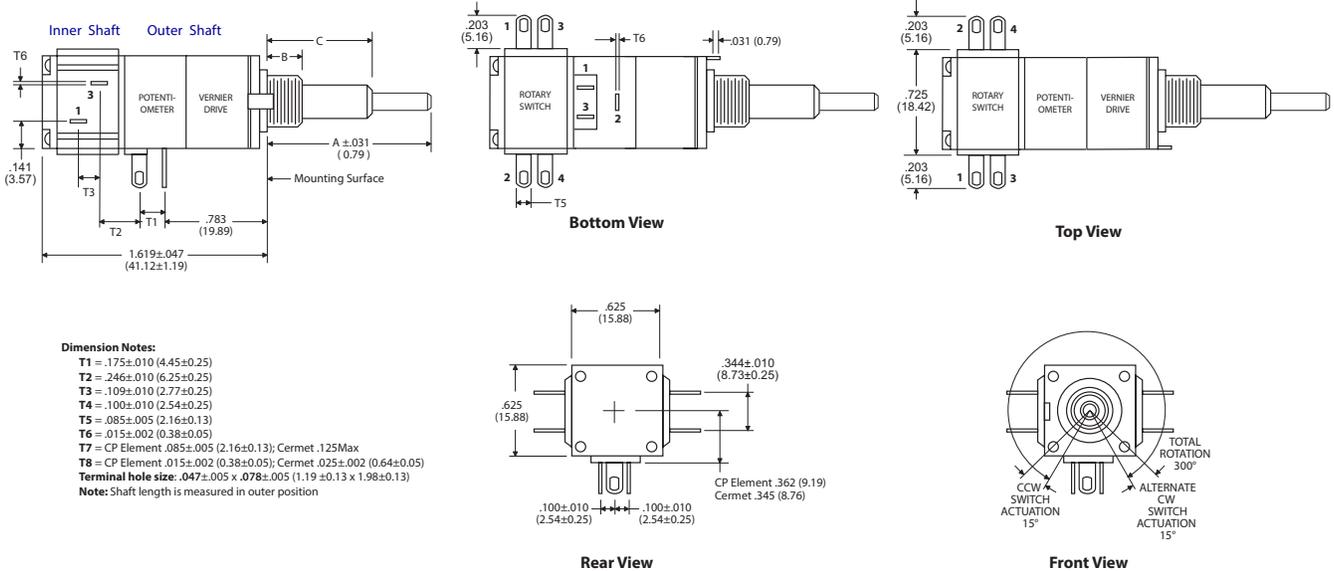
Section 5: Triple module, Concentric Shaft (continued)

[Switch Option specifications](#)

20A - Multi-Turn Vernier, Potentiometer, and Rotary Switch, Concentric Shaft, Solder Lugs



20A-90° - Multi-Turn Vernier, Potentiometer, and Rotary Switch, Concentric Shaft, Solder Lugs (Rotated Switch)



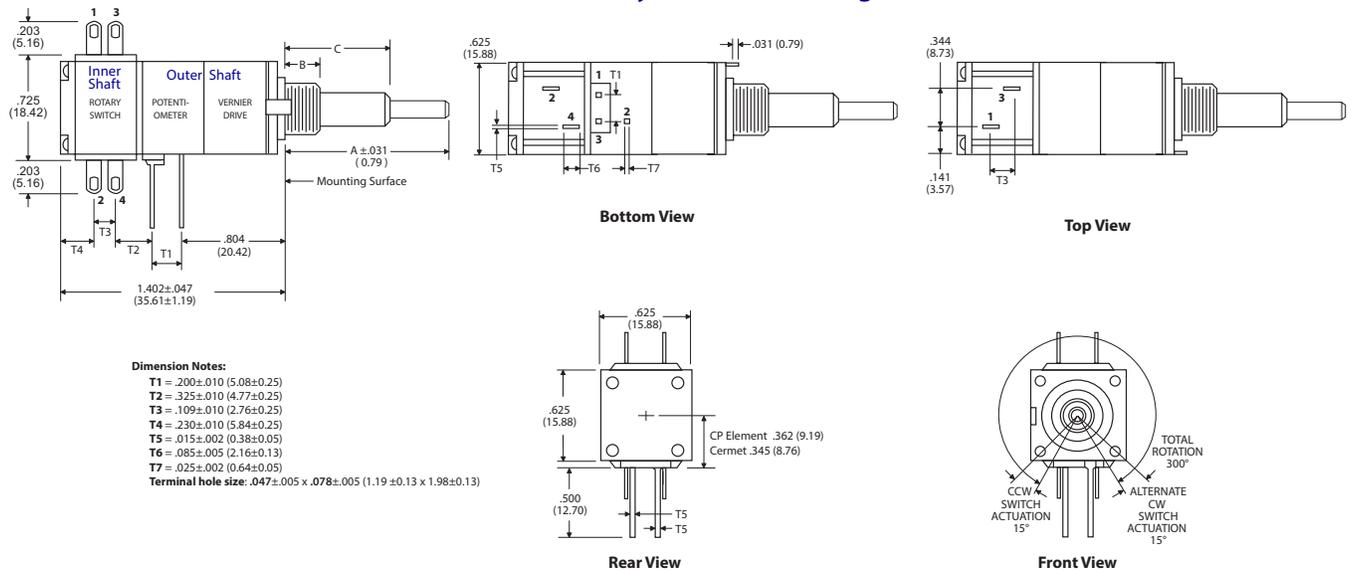
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

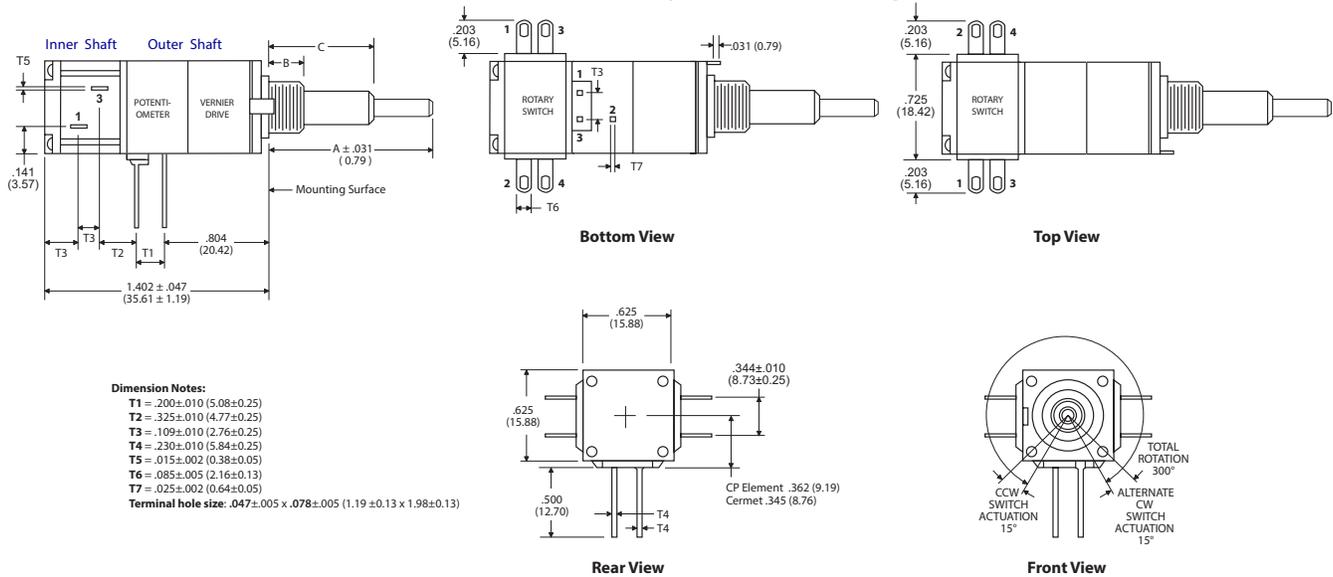
Section 5: Triple module, Concentric Shaft (continued)

20A-PC - Multi-Turn Vernier, Potentiometer, and Rotary Switch, Solder Lugs

Switch Option specifications



20A-PC-90° - Multi-Turn Vernier, Potentiometer, and Rotary Switch, Solder Lugs (Rotated Switch Module)

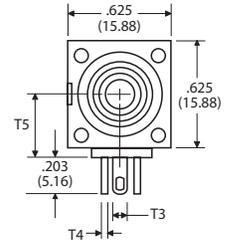
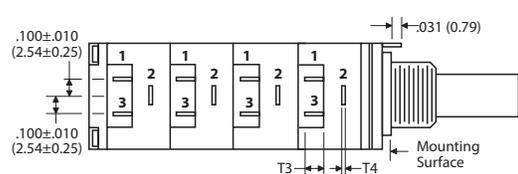
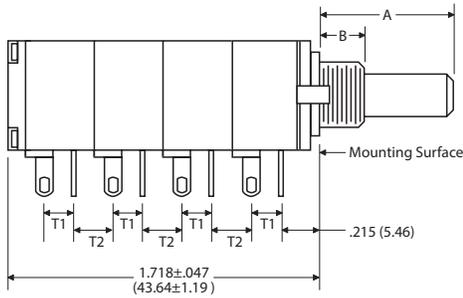


Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 6: Quad module, Single Shaft

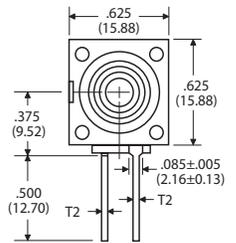
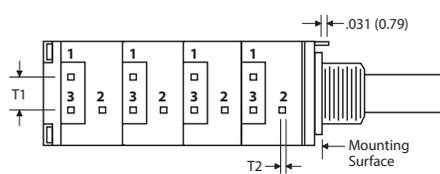
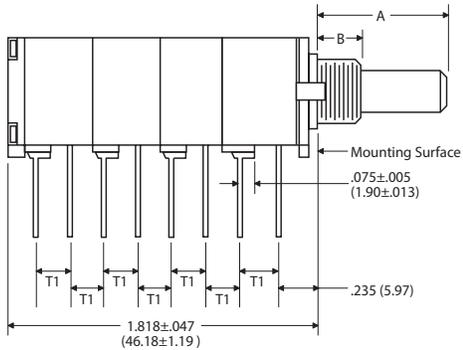
23A Quad Potentiometer, Single Shaft, Solder Lugs



Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
 - T2 = .200±.010 (5.08±0.25)
 - T3 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T4 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
 - T5 = CP Element .345 (8.76); Cermet .362 (9.19)
- Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)

23A-PC Quad Potentiometer, Single Shaft, Solder Pins



Dimension Notes:

- T1 = .200±.010 (5.08±0.25)
- T2 = .025±.002 (0.64±0.05)

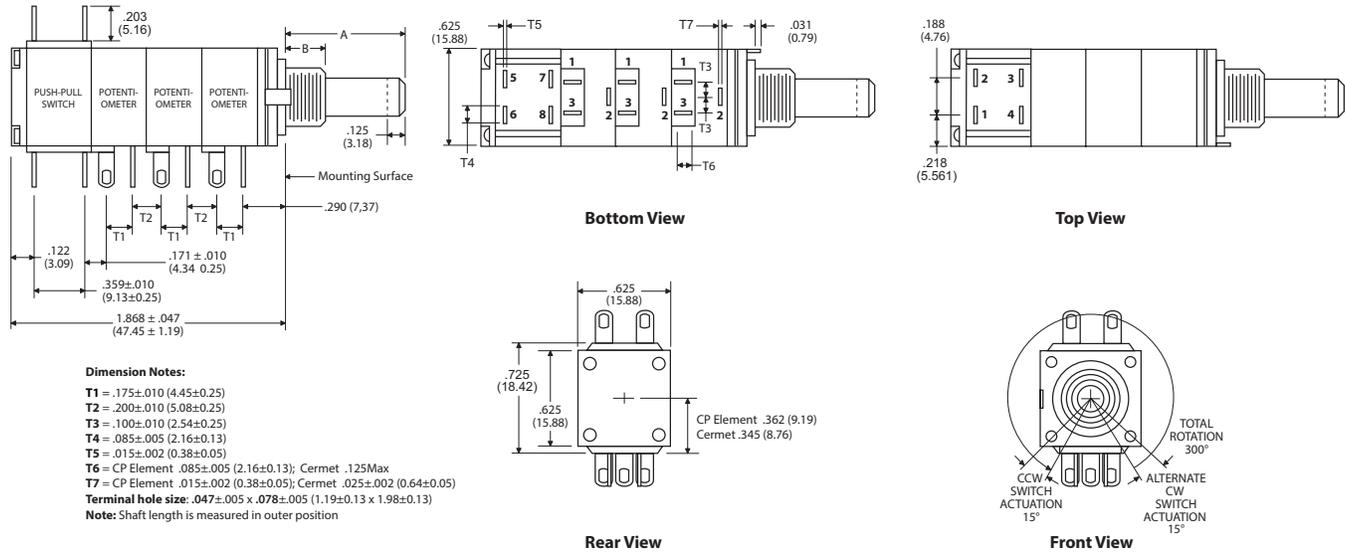
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

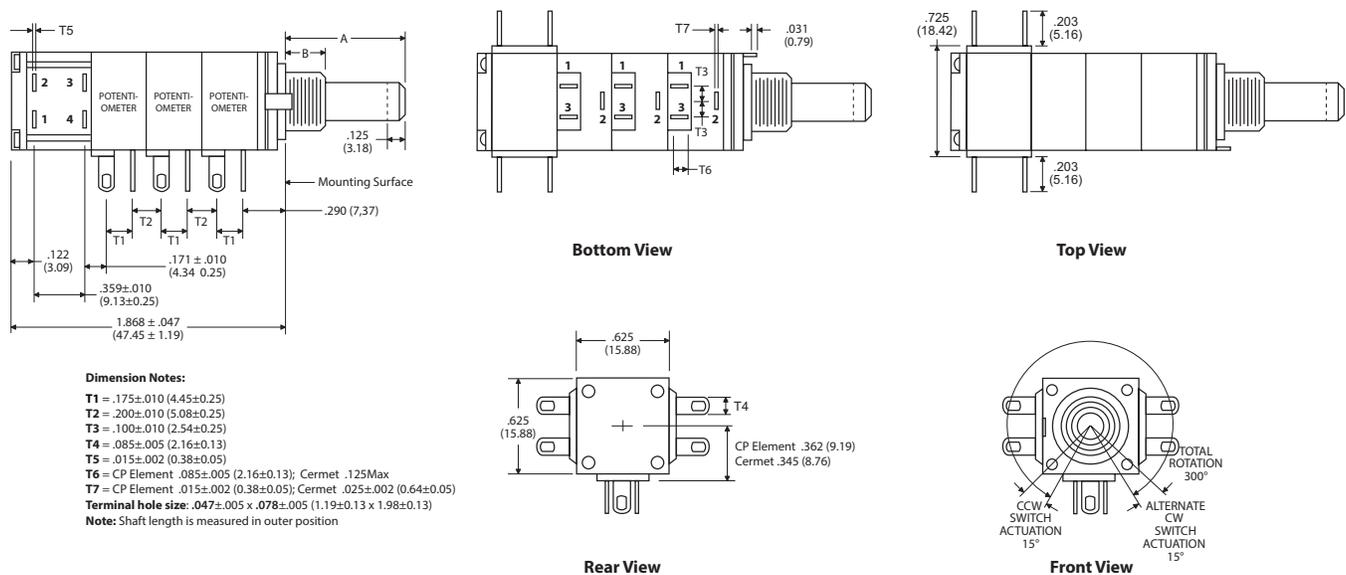
Section 6: Quad module, Single Shaft (continued)

23B - Triple Potentiometer, Push-Pull Switch, Solder Lugs

Switch Option specifications



23B-90° - Triple Potentiometer, Push-Pull Switch, Solder Lugs (Rotated Switch Module)



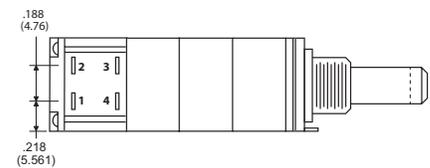
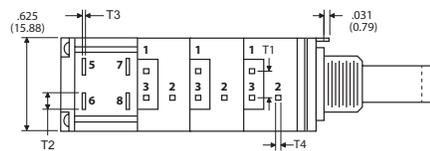
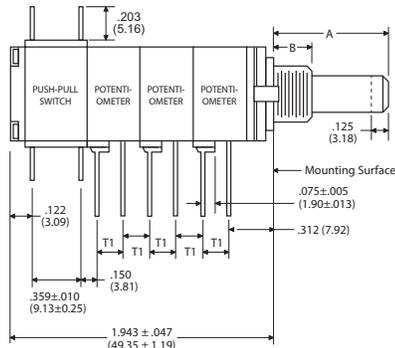
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

Section 6: Quad module, Single Shaft (continued)

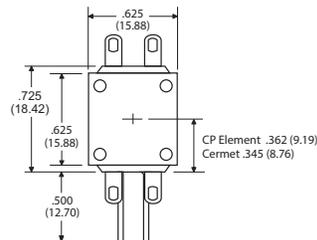
23B-PC - Triple Potentiometer, Push-Pull Switch, PC Pins

Switch Option specifications

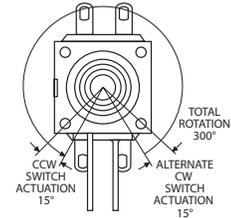


Bottom View

Top View



Rear View



Front View

Dimension Notes:

T1 = .200±.010 (5.08±0.25)

T2 = .085±.005 (2.16±0.13)

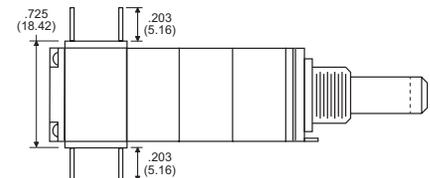
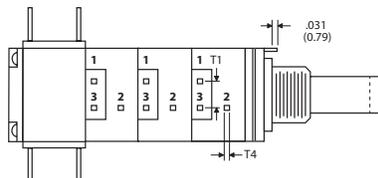
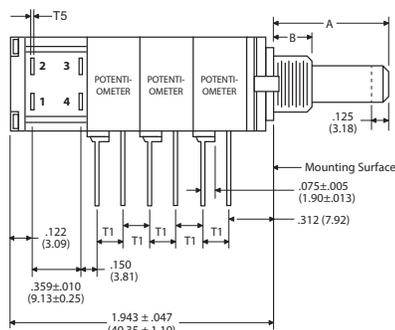
T3 = .015±.002 (0.38±0.05)

T4 = .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)

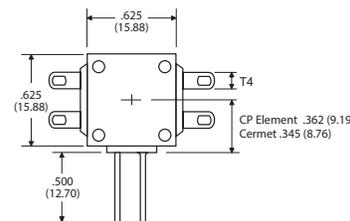
Note: Shaft length is measured in outer position

23B-PC-90° - Triple Potentiometer, Push-Pull Switch, PC Pins (Rotated Switch Module)

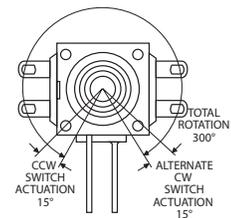


Bottom View

Top View



Rear View



Front View

Dimension Notes:

T1 = .200±.010 (5.08±0.25)

T2 = .085±.005 (2.16±0.13)

T3 = .015±.002 (0.38±0.05)

T4 = .025±.002 (0.64±0.05)

Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)

Note: Shaft length is measured in outer position

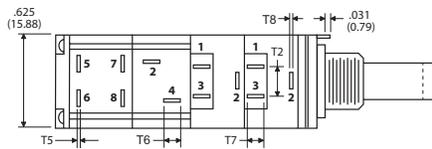
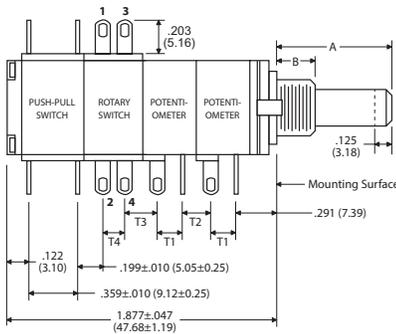
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

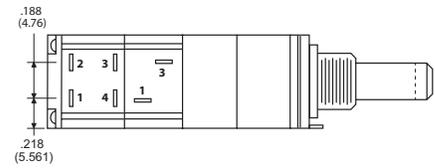
Section 6: Quad module, Single Shaft (continued)

23C - Dual Potentiometer, Rotary Switch, Push-Pull Switch, Solder Lugs

Switch Option specifications



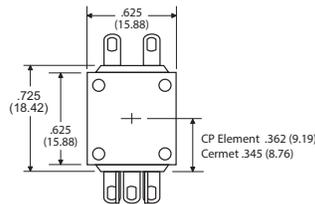
Bottom View



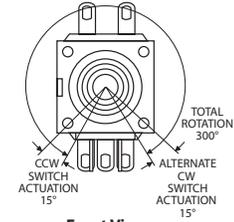
Top View

Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
 - T2 = .200±.010 (5.08±0.25)
 - T3 = .246±.010 (6.25±0.25)
 - T4 = .109±.010 (2.77±0.25)
 - T5 = .085±.005 (2.16±0.13)
 - T6 = .015±.002 (0.38±0.05)
 - T7 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T8 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
 Note: Shaft length is measured in outer position

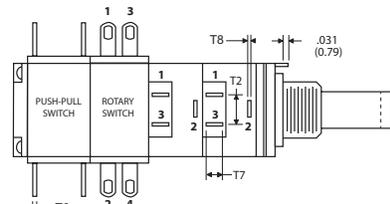
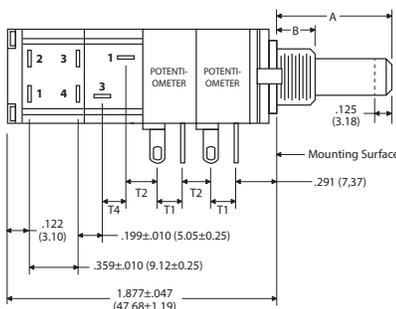


Rear View

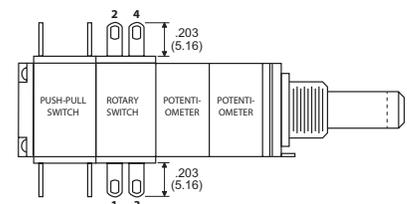


Front View

23C-90° - Dual Potentiometer, Rotary Switch, Push-Pull, Solder Lugs (Rotated Switch Modules)



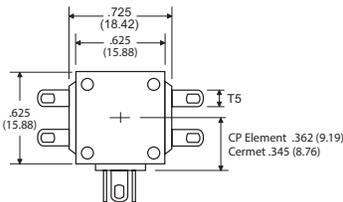
Bottom View



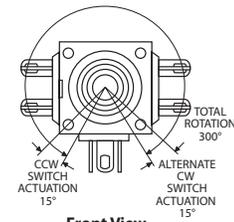
Top View

Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
 - T2 = .200±.010 (5.08±0.25)
 - T3 = .246±.010 (6.25±0.25)
 - T4 = .109±.010 (2.77±0.25)
 - T5 = .085±.005 (2.16±0.13)
 - T6 = .015±.002 (0.38±0.05)
 - T7 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
 - T8 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size: .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
 Note: Shaft length is measured in outer position



Rear View



Front View

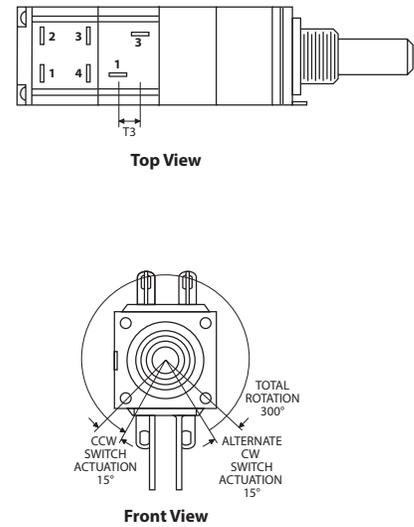
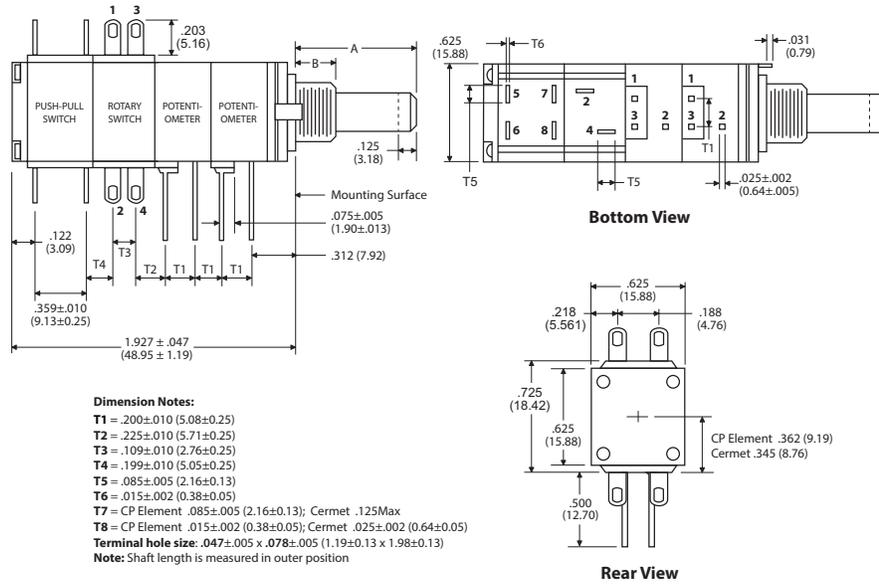
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

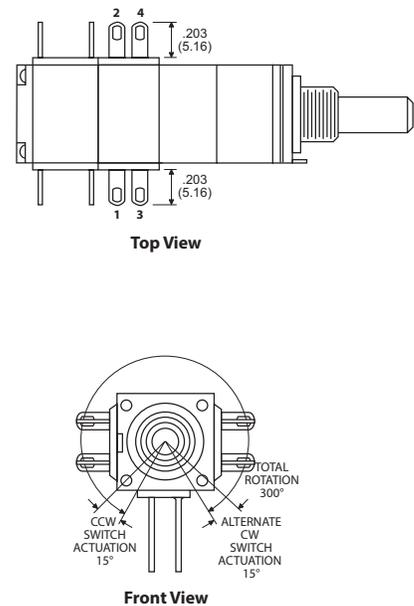
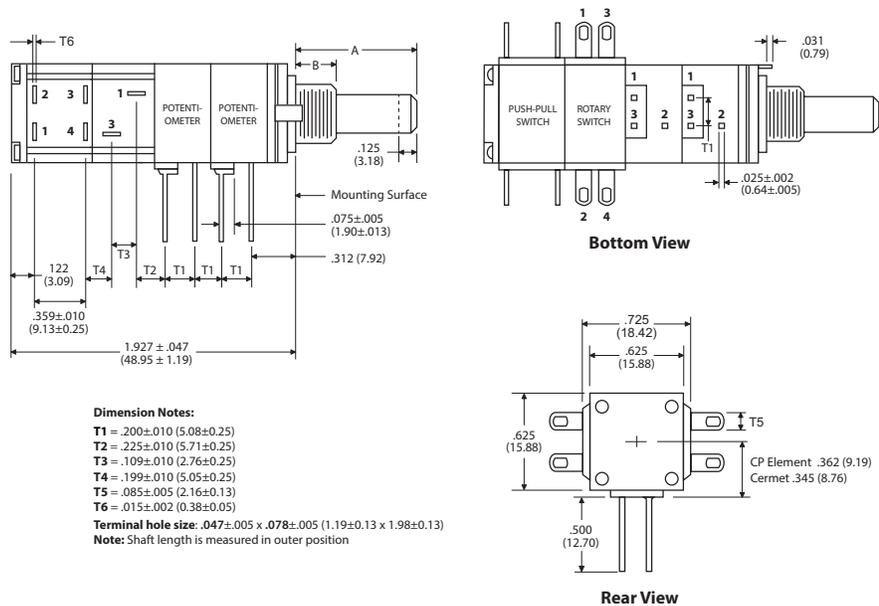
Section 6: Quad module, Single Shaft (continued)

23C-PC - Dual Potentiometer, Rotary Switch, Push-Pull, PC Pins

Switch Option specifications



23C-PC-90° - Dual Potentiometer, Rotary Switch, Push-Pull, PC Pins (Rotated Switch Module)



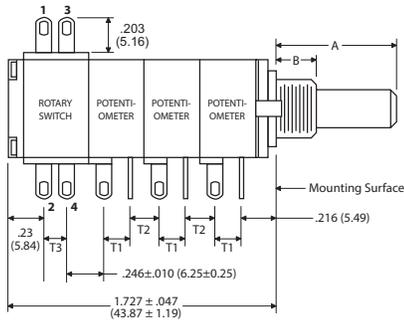
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

Section 6: Quad module, Single Shaft (continued)

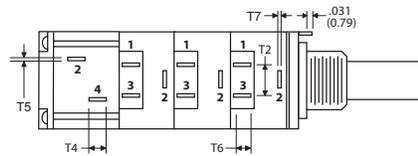
23D - Triple Potentiometer, Rotary Switch, Solder Lugs

Switch Option specifications

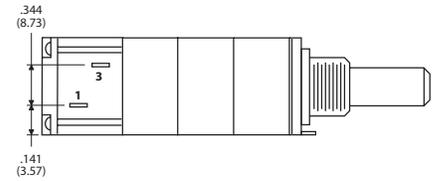


Dimension Notes:

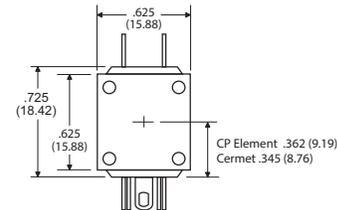
- T1** = .175±.010 (4.45±0.25)
- T2** = .200±.010 (5.08±0.25)
- T3** = .109±.010 (2.77±0.25)
- T4** = .085±.005 (2.16±0.13)
- T5** = .015±.002 (0.38±0.05)
- T6** = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T7** = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size:** .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
- Note:** Shaft length is measured in outer position



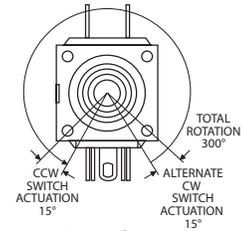
Bottom View



Top View

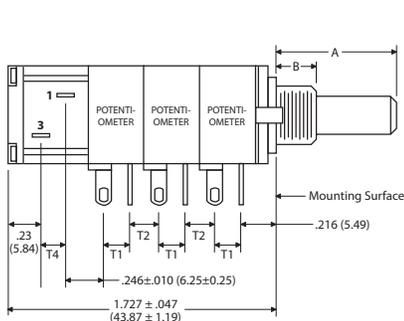


Rear View



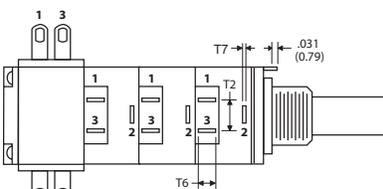
Front View

23D-90° - Triple Potentiometer, Rotary Switch, Solder Lugs (Rotated Switch Module)

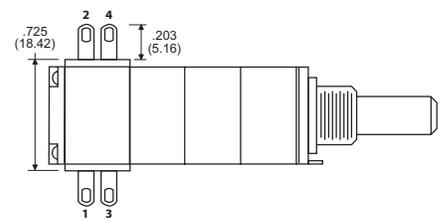


Dimension Notes:

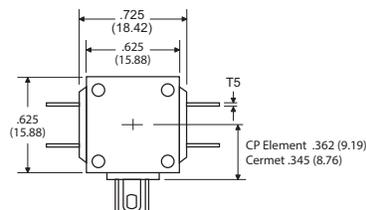
- T1** = .175±.010 (4.45±0.25)
- T2** = .200±.010 (5.08±0.25)
- T3** = .109±.010 (2.77±0.25)
- T4** = .085±.005 (2.16±0.13)
- T5** = .015±.002 (0.38±0.05)
- T6** = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T7** = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- Terminal hole size:** .047±.005 x .078±.005 (1.19±0.13 x 1.98±0.13)
- Note:** Shaft length is measured in outer position



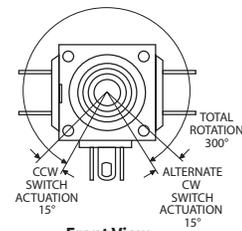
Bottom View



Top View



Rear View



Front View

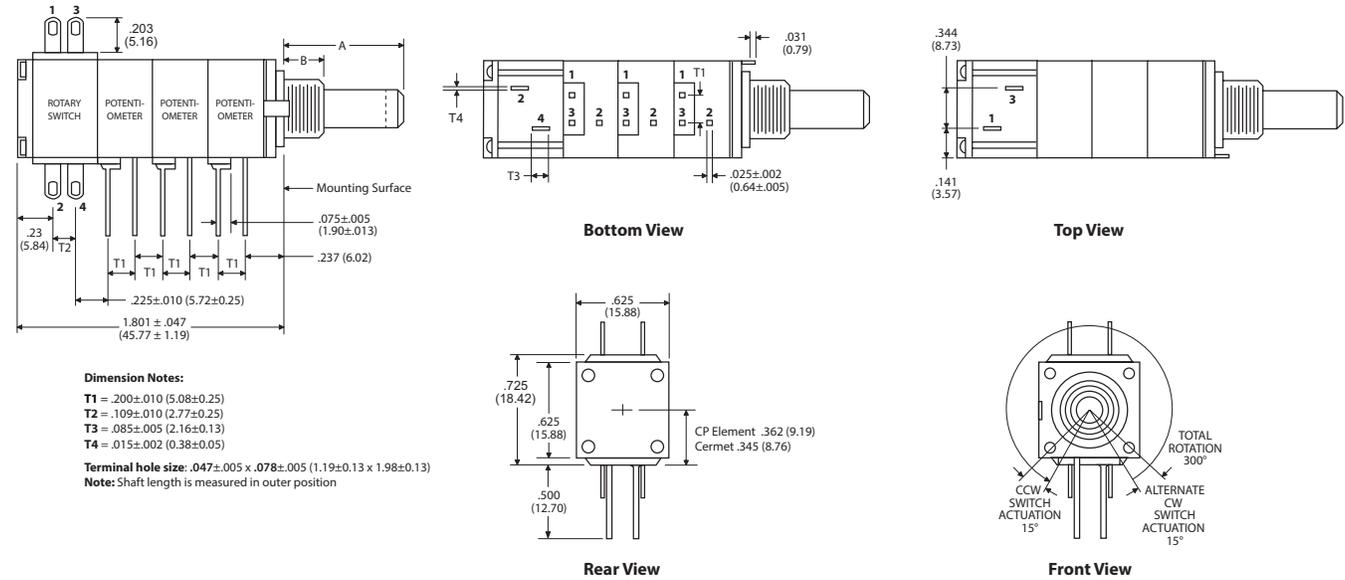
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

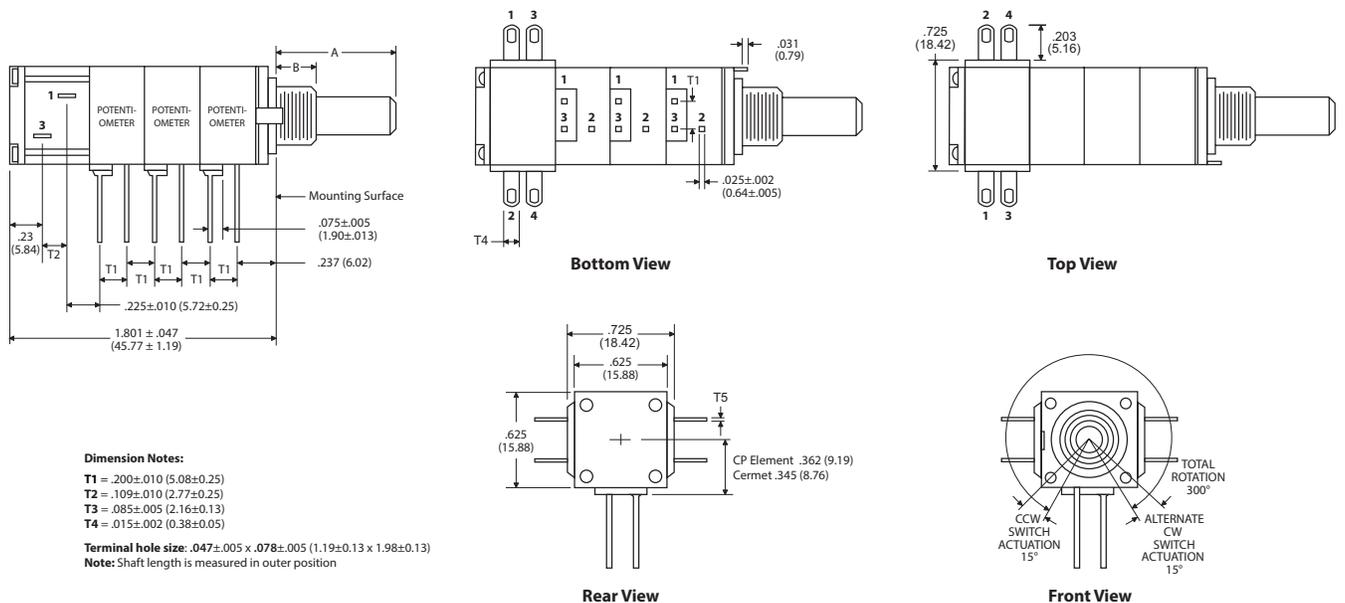
Section 6: Quad module, Single Shaft (continued)

23D-PC - Triple Potentiometer, Rotary Switch, PC Pins

Switch Option specifications



23D-PC-90° - Triple Potentiometer, Rotary Switch, PC Pins (Rotated Switch Module)

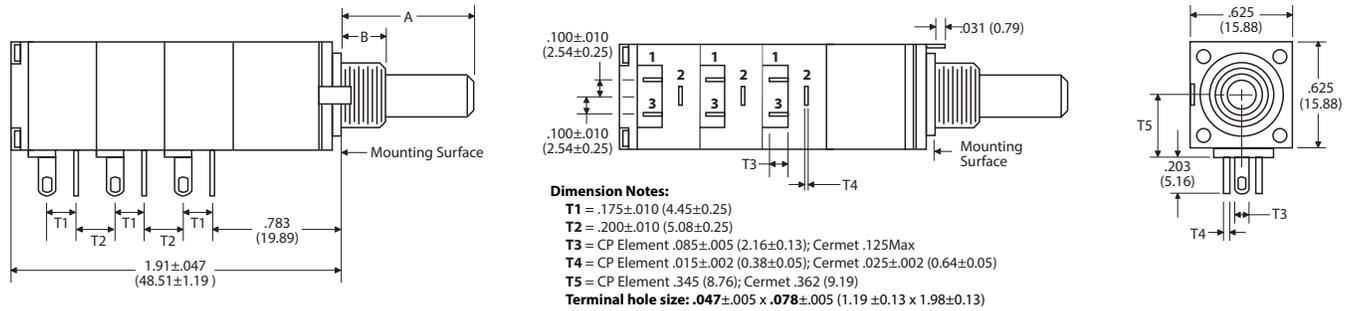


Notes:

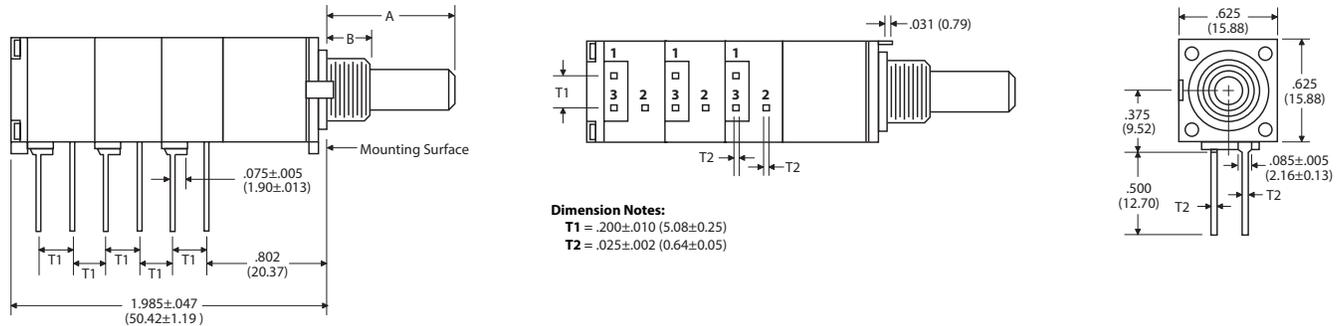
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 6: Quad module, Single Shaft (continued)

25A Triple Potentiometer with Multi-Turn Vernier Drive, Solder Lugs



25A-PC Triple Potentiometer with Multi-Turn Vernier Drive, Solder Pins

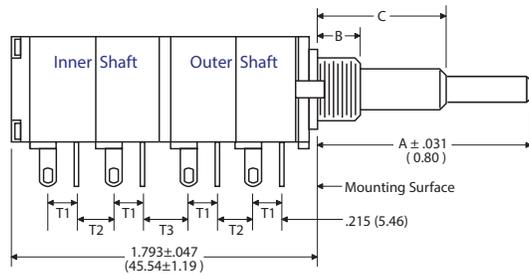


Notes:

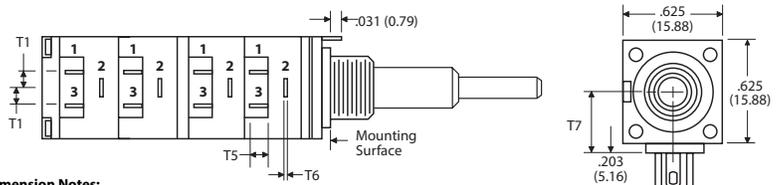
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 7: Quad module, Concentric Shaft

26A - Quad Potentiometer, Solder Lugs



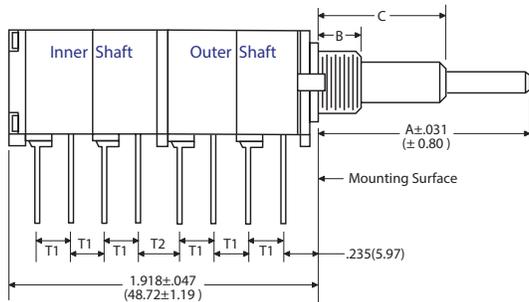
As shown, Outer Shaft operates First Two Sections



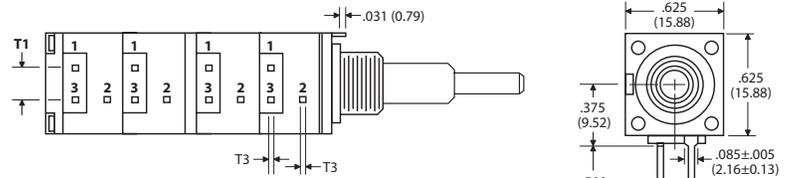
Dimension Notes:

- T1 = .175±.010 (4.45±0.25)
- T2 = .275±.010 (6.98±0.25)
- T3 = .200±.010 (5.08±0.25)
- T4 = .100±.010 (2.54±0.25)
- T5 = CP Element .085±.005 (2.16±0.13); Cermet .125Max
- T6 = CP Element .015±.002 (0.38±0.05); Cermet .025±.002 (0.64±0.05)
- T7 = CP Element .345 (8.76); Cermet .362 (9.19)

26A-PC - Quad Potentiometer, Solder Pins



As shown, Outer Shaft operates First Two Sections



Dimension Notes:

- T1 = .200±.010 (5.08±0.25)
- T2 = .275±.010 (6.98±0.25)
- T3 = .025±.002 (0.64±0.05)

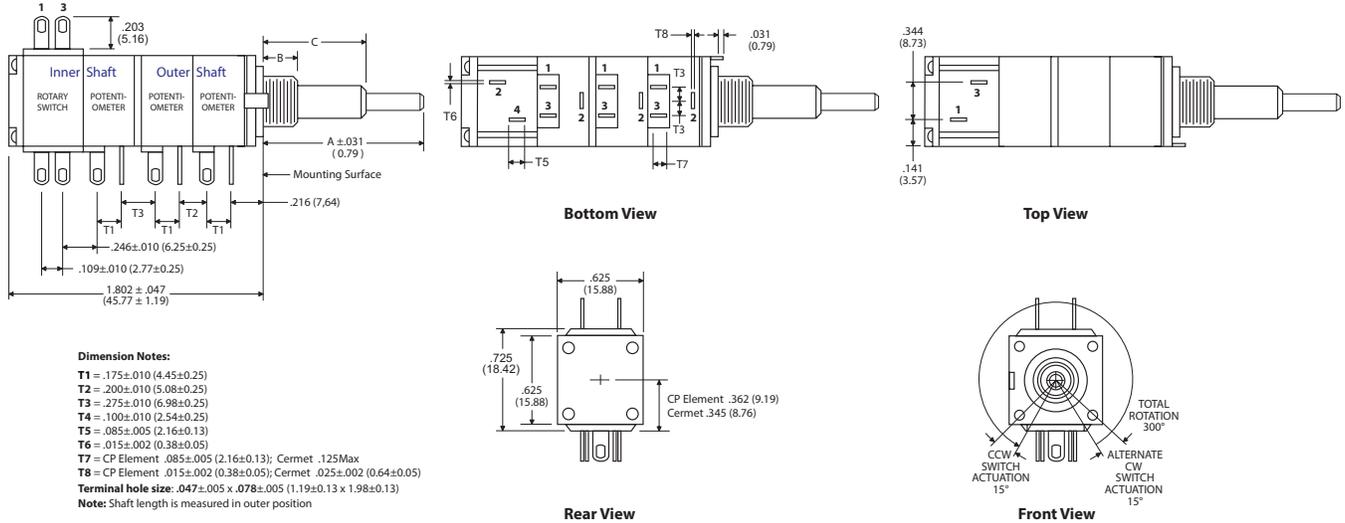
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

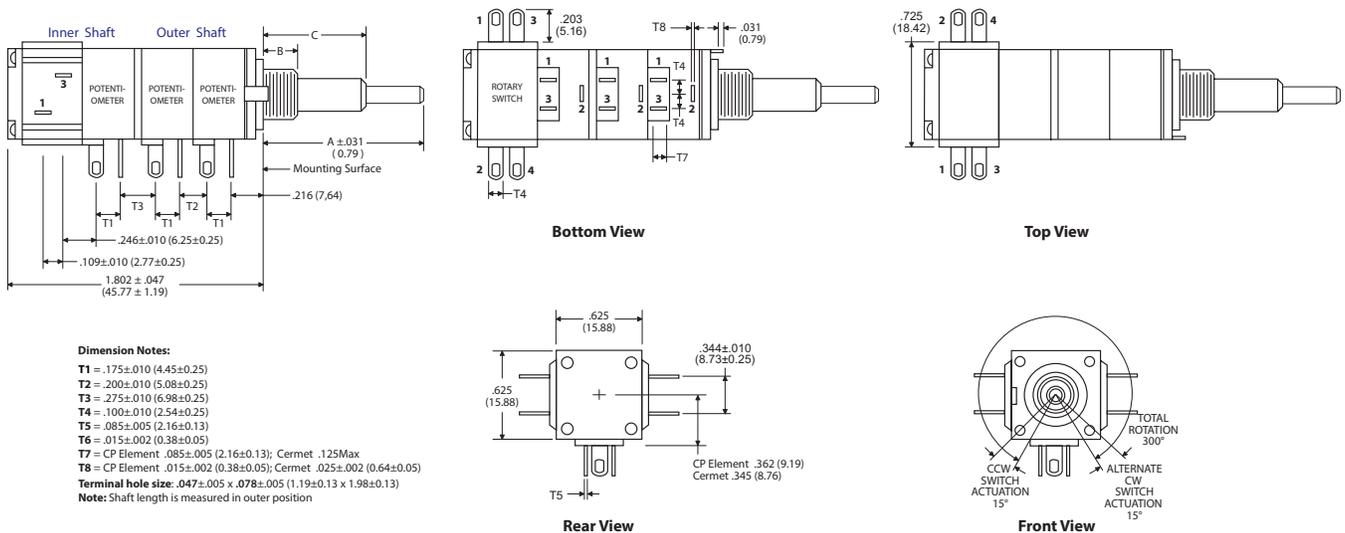
Section 7: Quad module, Concentric Shaft (continued)

27A - Triple Potentiometer, Rotary Switch, Solder Lugs

Switch Option specifications



27A-90° - Triple Potentiometer, Rotary Switch, Solder Lugs (Rotated Switch Module)



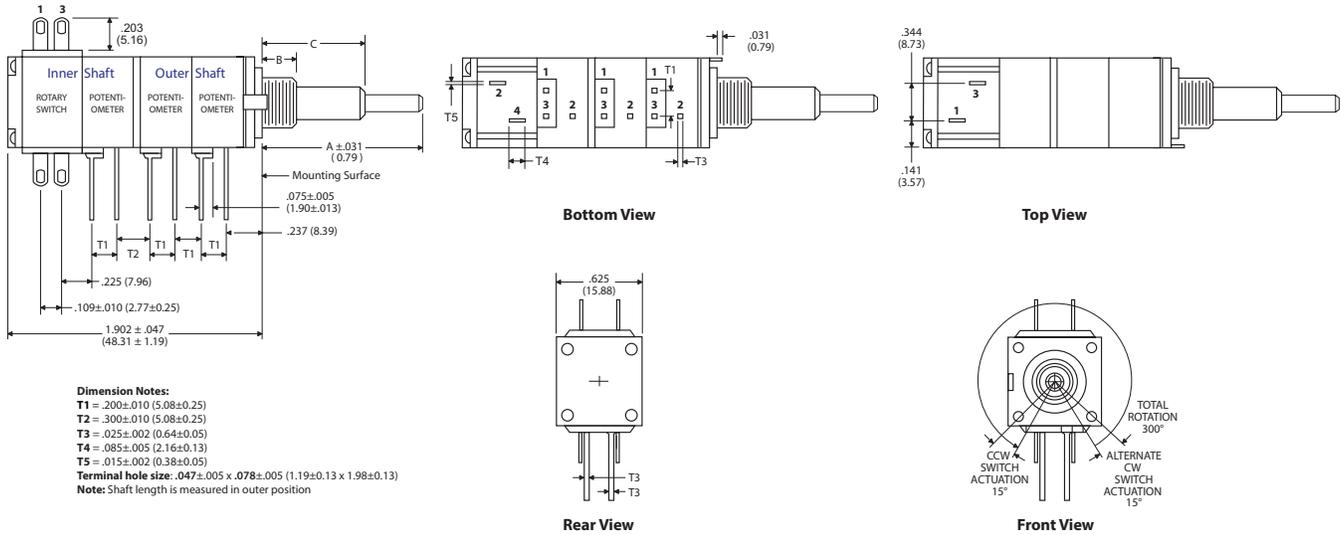
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

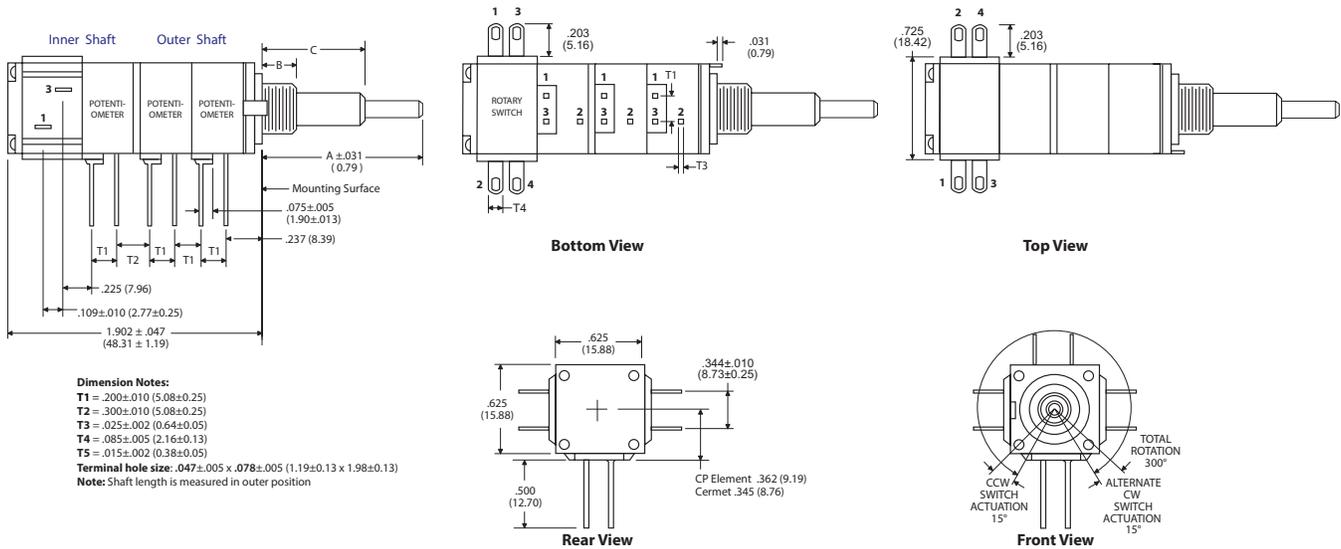
Section 7: Quad module, Concentric Shaft (continued)

27A-PC - Triple Potentiometer, Rotary Switch, PC Pins

Switch Option specifications



27A-PC-90° - Triple Potentiometer, Rotary Switch, PC Pins (Rotated Switch Module)



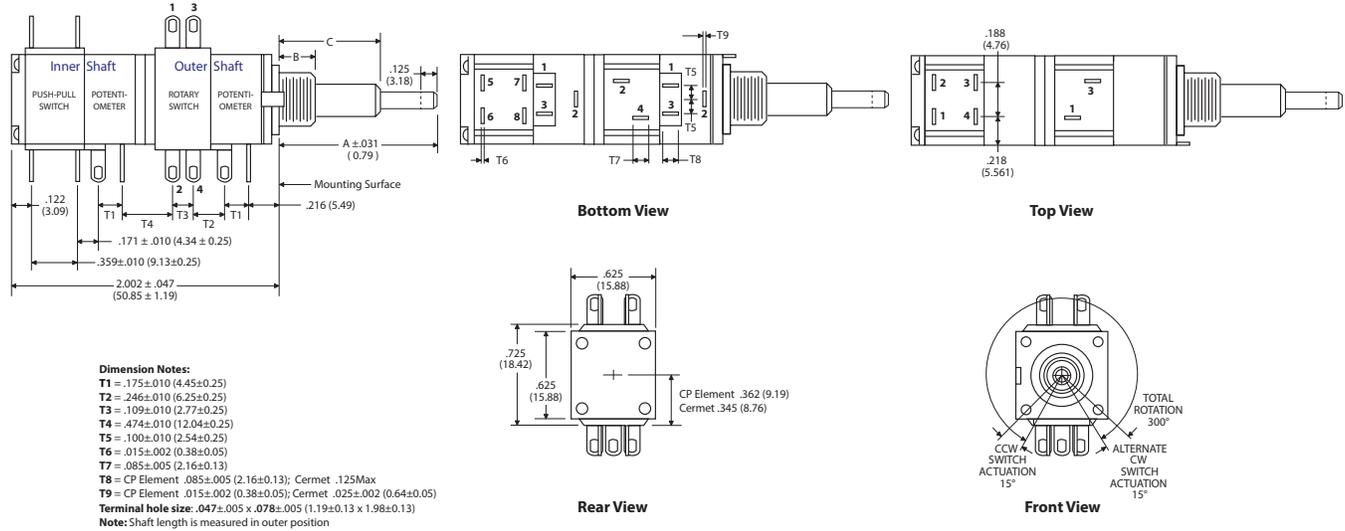
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0.40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

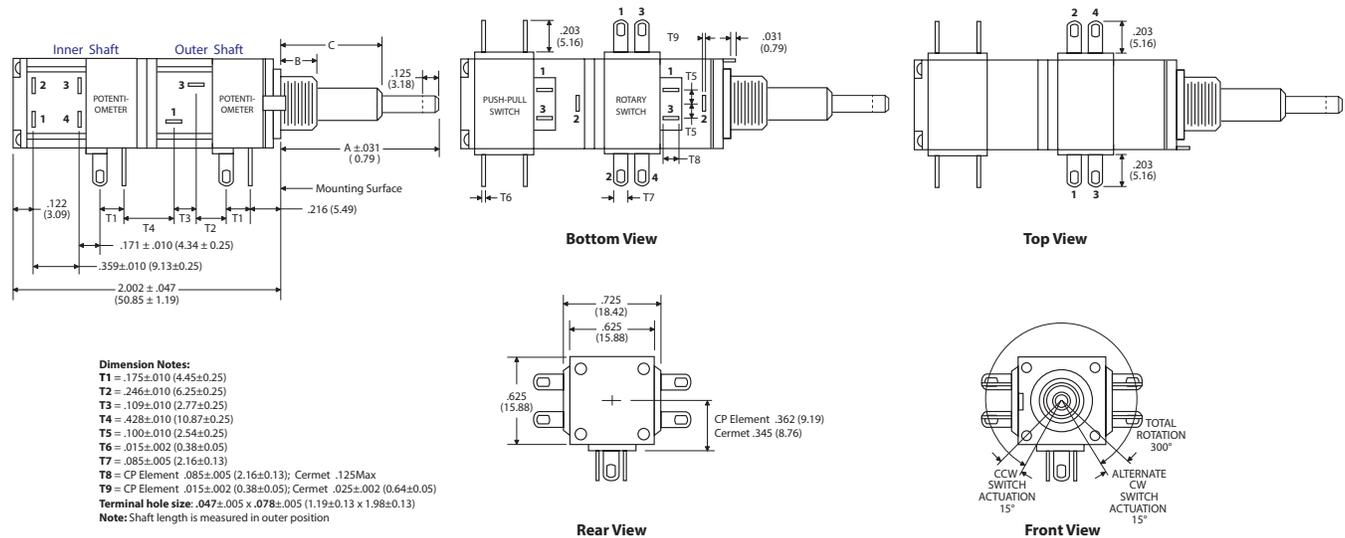
Section 7: Quad module, Concentric Shaft (continued)

28A - Potentiometer, Rotary Switch, Potentiometer, Push-Pull Switch, Solder Lugs

Switch Option specifications



28A-90° - Potentiometer, Rotary Switch, Potentiometer, Push-Pull Switch, Solder Lugs (Rotated Switch Module)



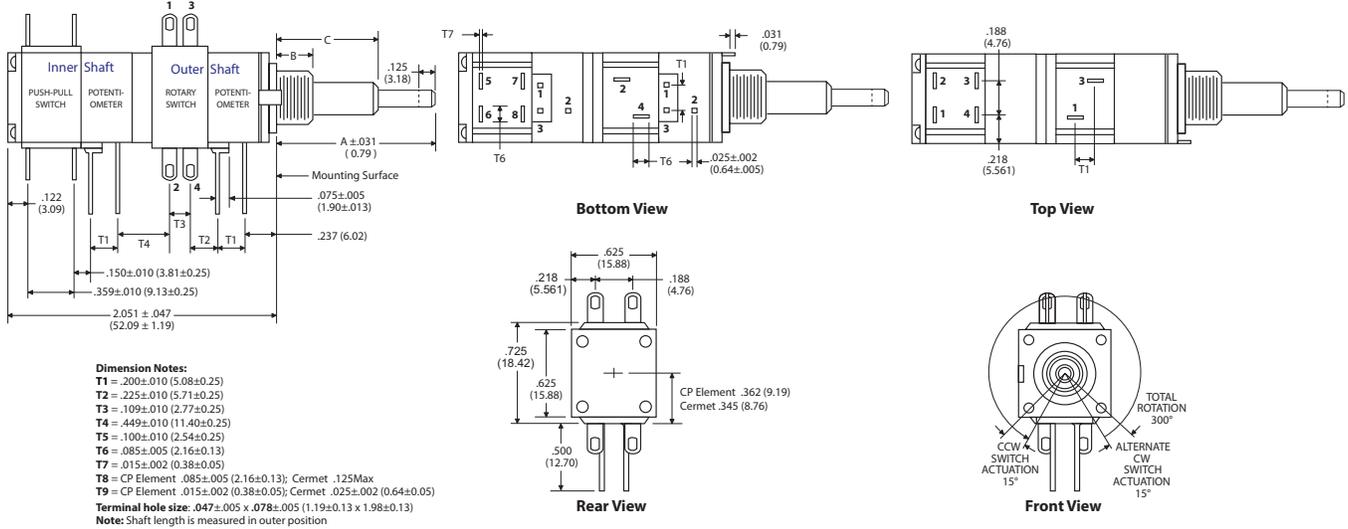
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

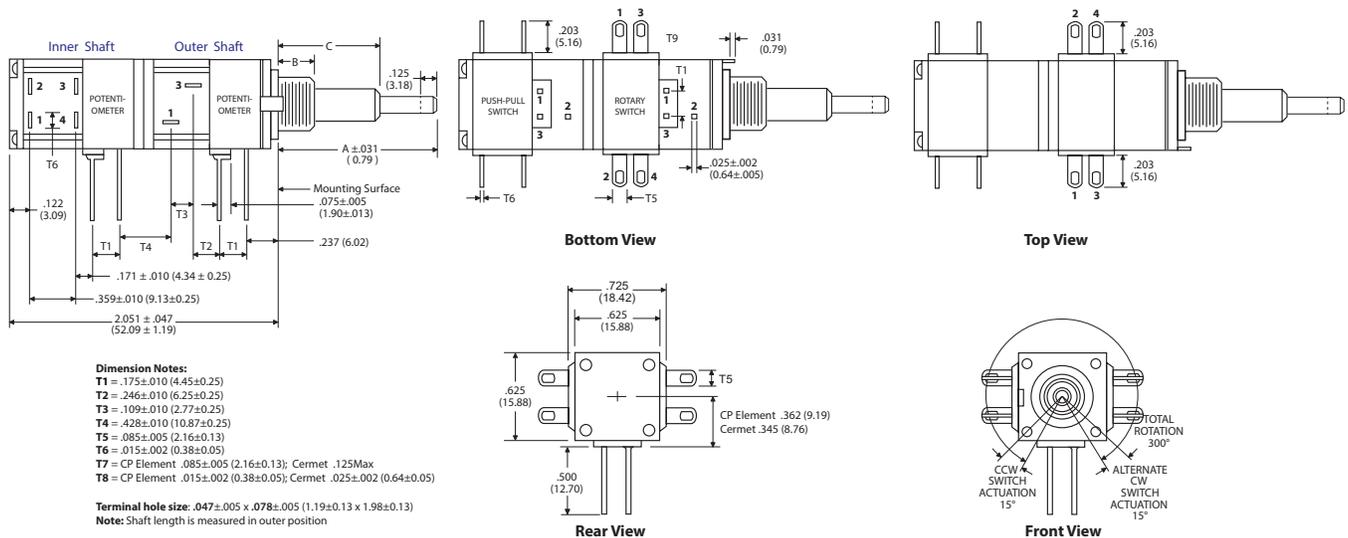
Section 7: Quad module, Concentric Shaft (continued)

28A-PC - Potentiometer, Rotary Switch, Potentiometer, Push-Pull Switch, PC Pins

Switch Option specifications



28A-PC-90° - Potentiometer, Rotary Switch, Potentiometer, Push-Pull Switch, PC Pins (Rotated Switch Module)

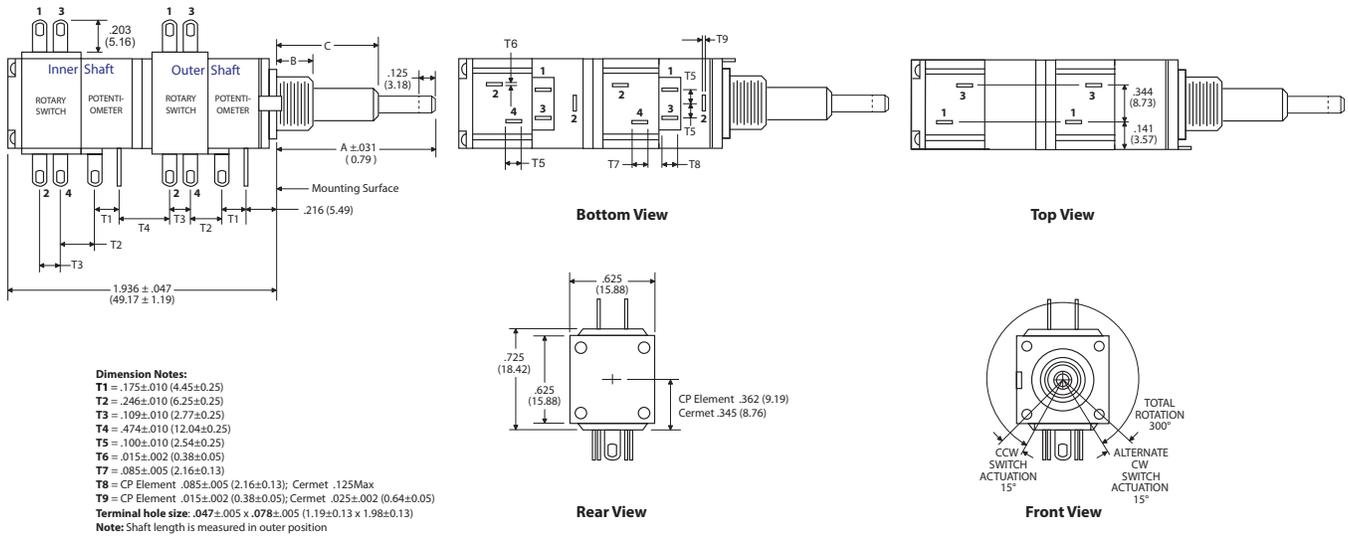


Notes:

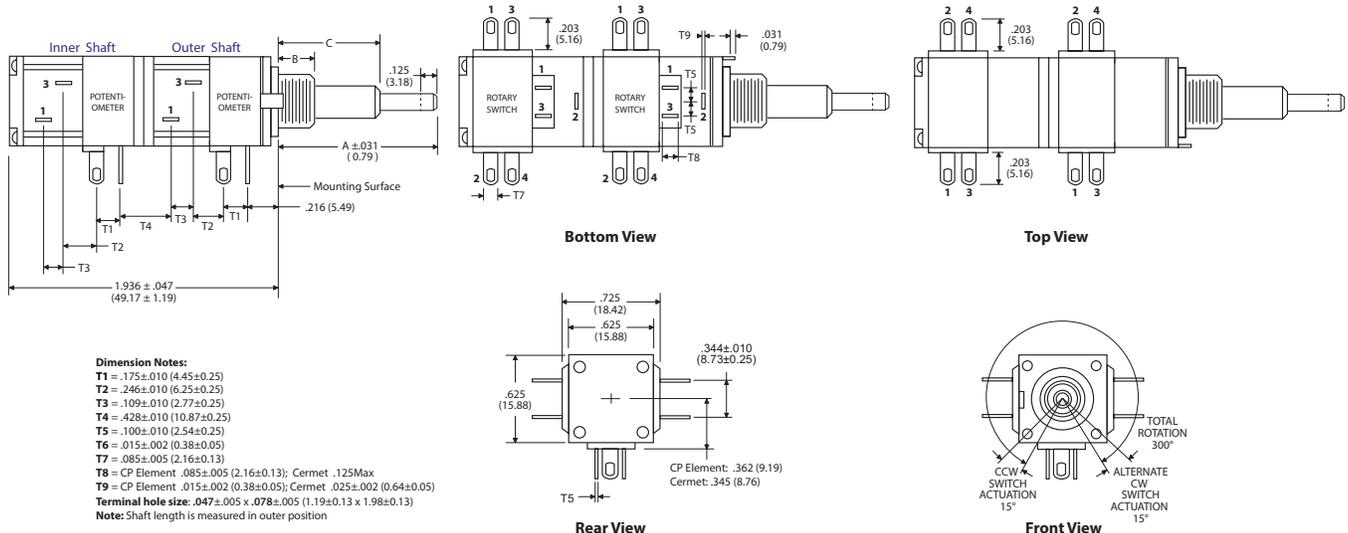
- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

28B - Potentiometer, Rotary Switch, Potentiometer, Rotary Switch, Solder Lugs

Switch Option specifications



28B-90° - Potentiometer, Rotary Switch, Potentiometer, Rotary Switch, Solder Lugs (Rotated Switch Modules)



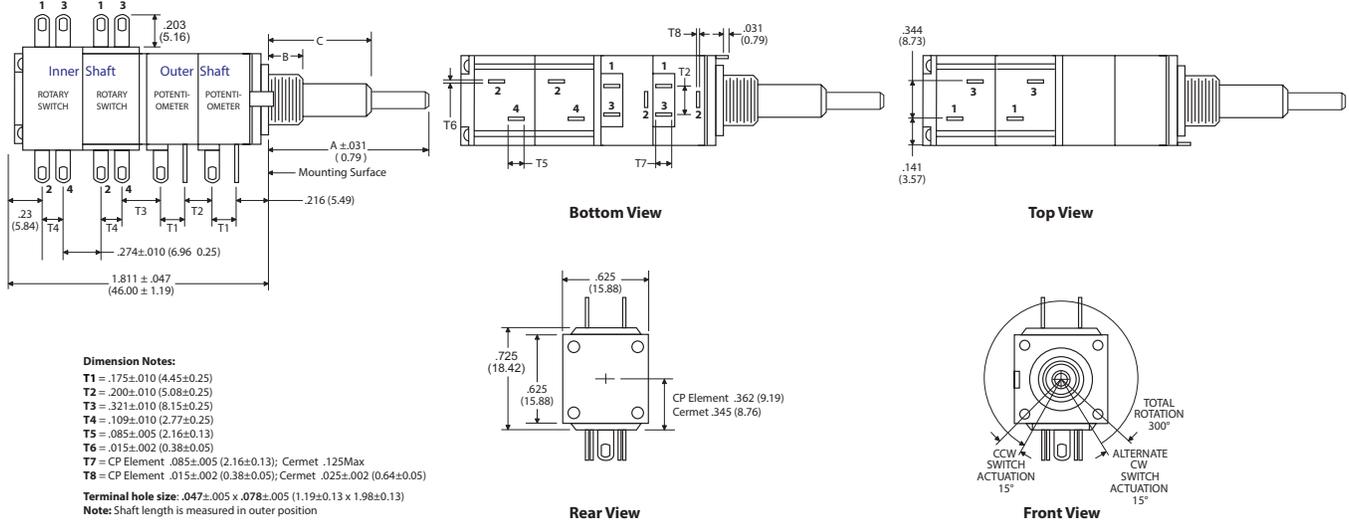
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushings, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

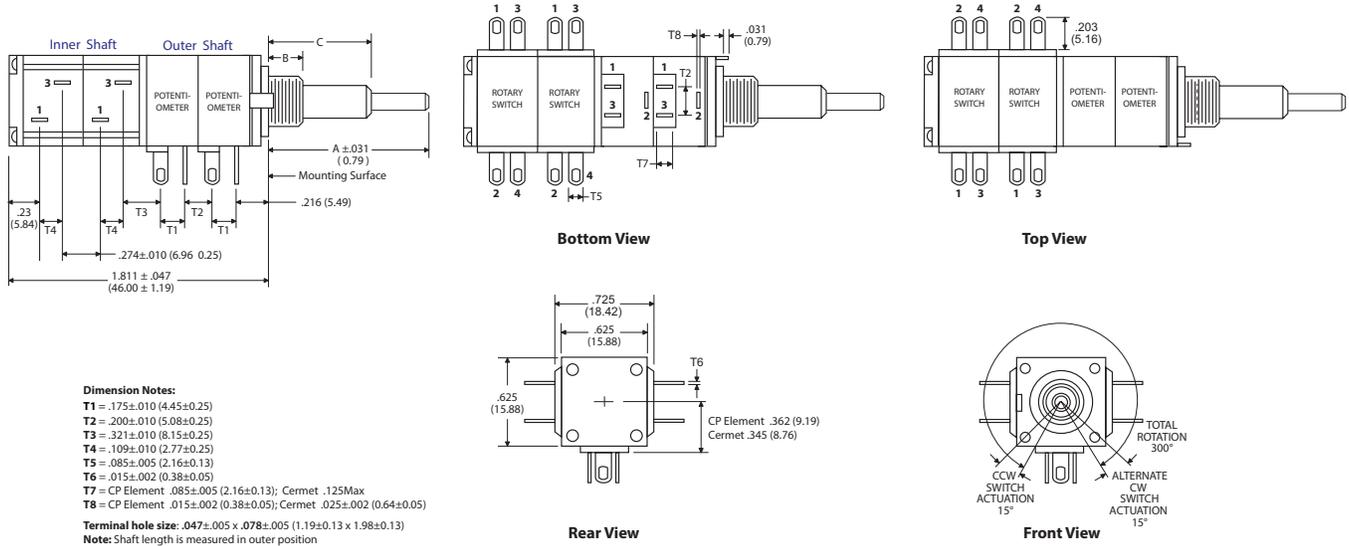
Section 7: Quad module, Concentric Shaft (continued)

29A - Dual Potentiometer, Dual Rotary Switch, Solder Lugs

Switch Option specifications



29A-90° - Dual Potentiometer, Dual Rotary Switch, Solder Lugs (Rotated Switch Modules)



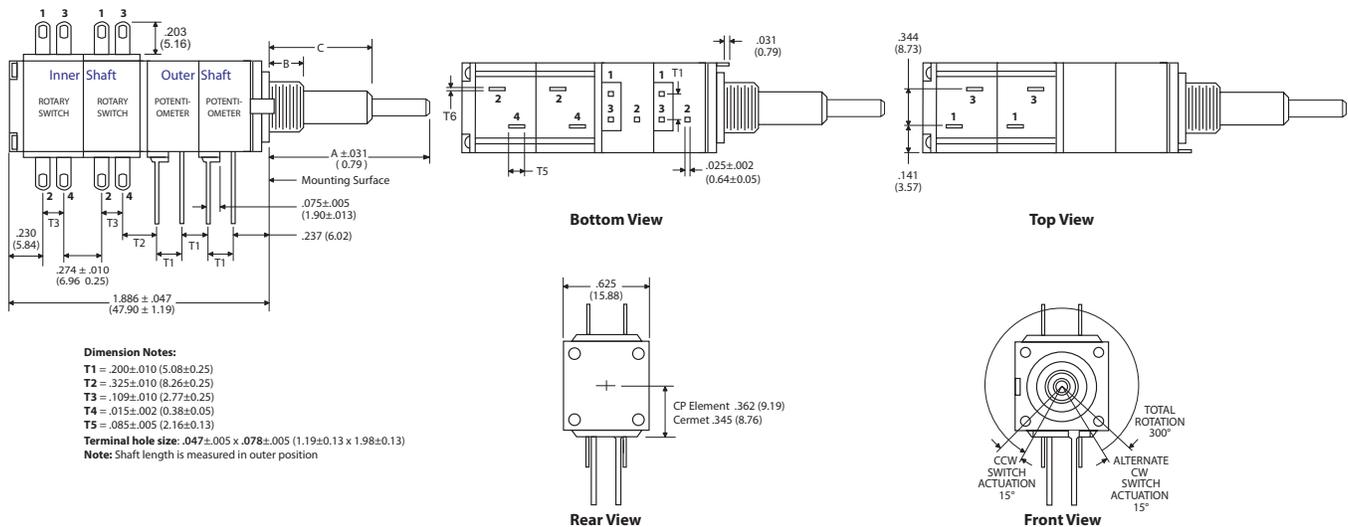
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

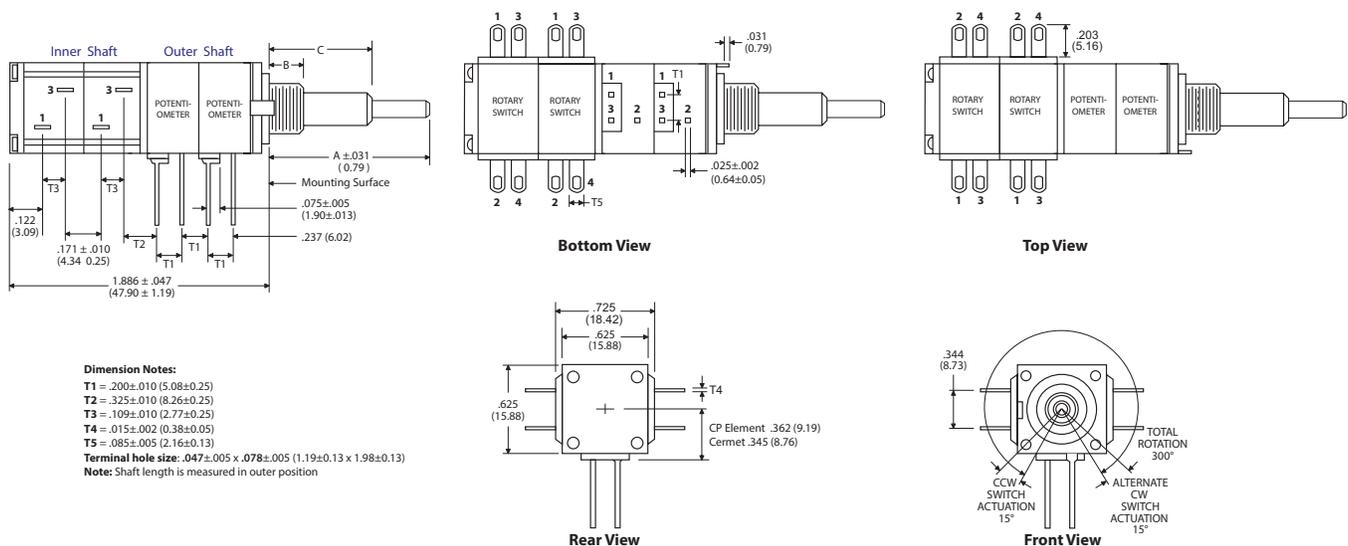
Section 7: Quad module, Concentric Shaft (continued)

29A-PC - Dual Potentiometer, Dual Rotary Switch, PC Pins

Switch Option specifications



29A-PC-90 - Dual Potentiometer, Dual Rotary Switch, PC Pins (Rotated Switch Modules)



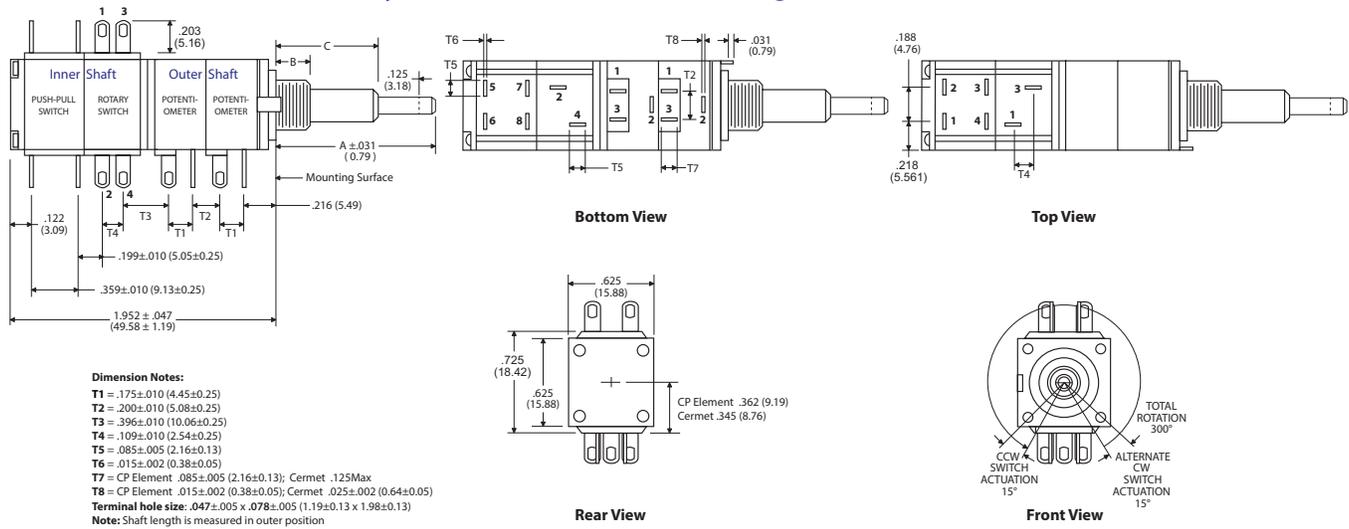
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

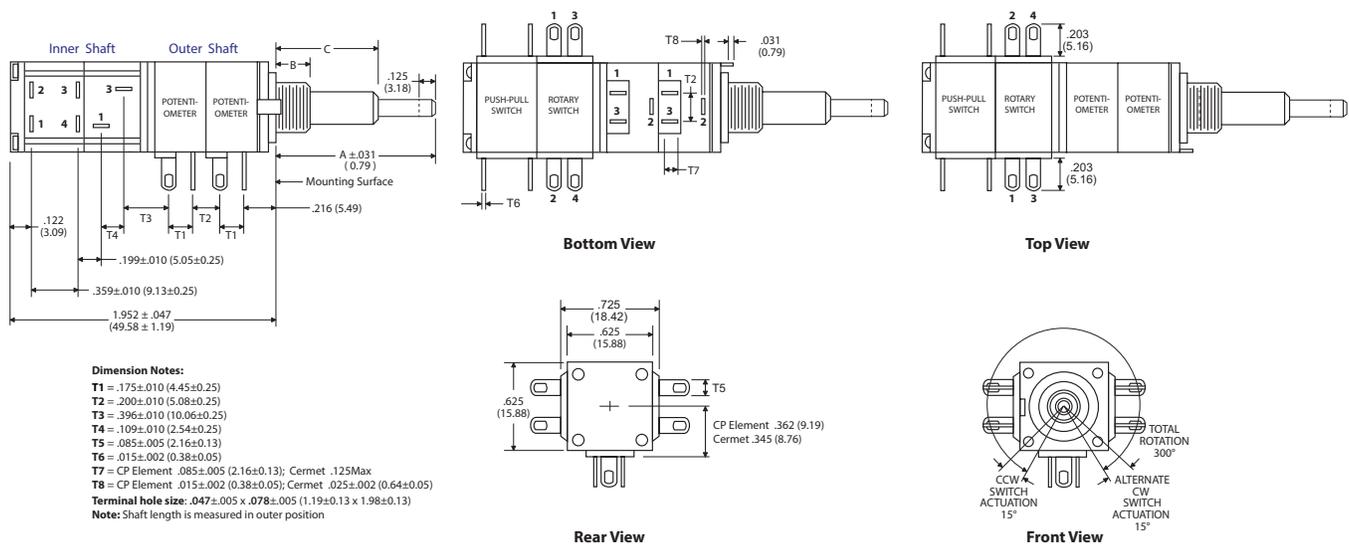
Section 7: Quad module, Concentric Shaft (continued)

30A - Dual Potentiometer, Rotary and Push-Pull Switch, Solder Lugs

[Switch Option specifications](#)



30A-90° - Dual Potentiometer, Rotary and Push-Pull Switch, Solder Lugs (Rotated Switch) Module



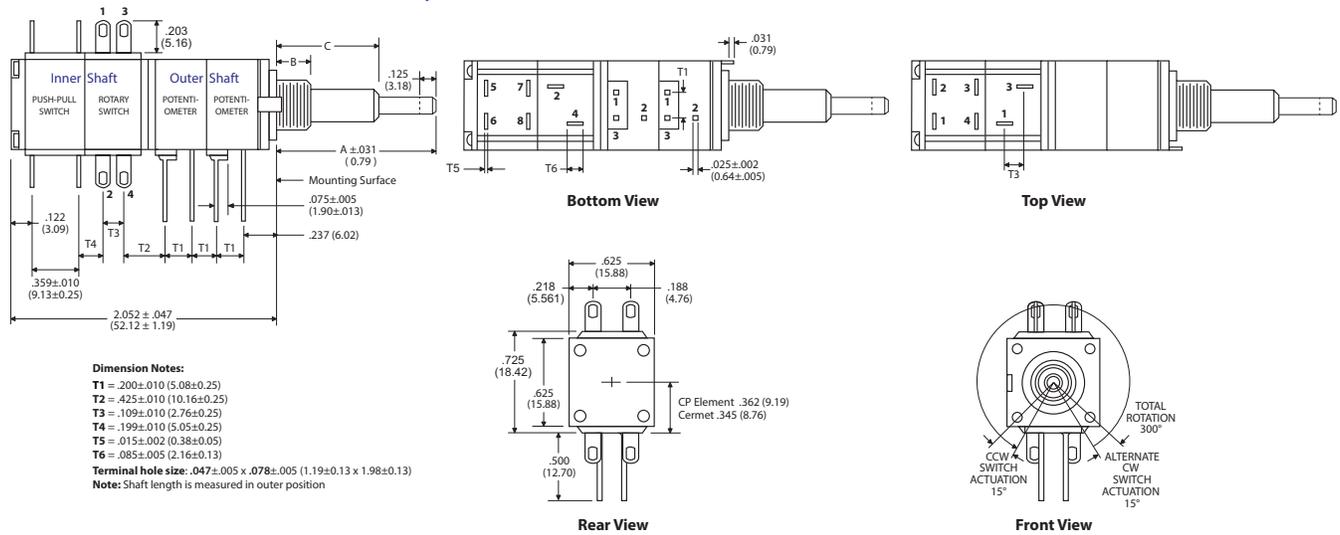
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

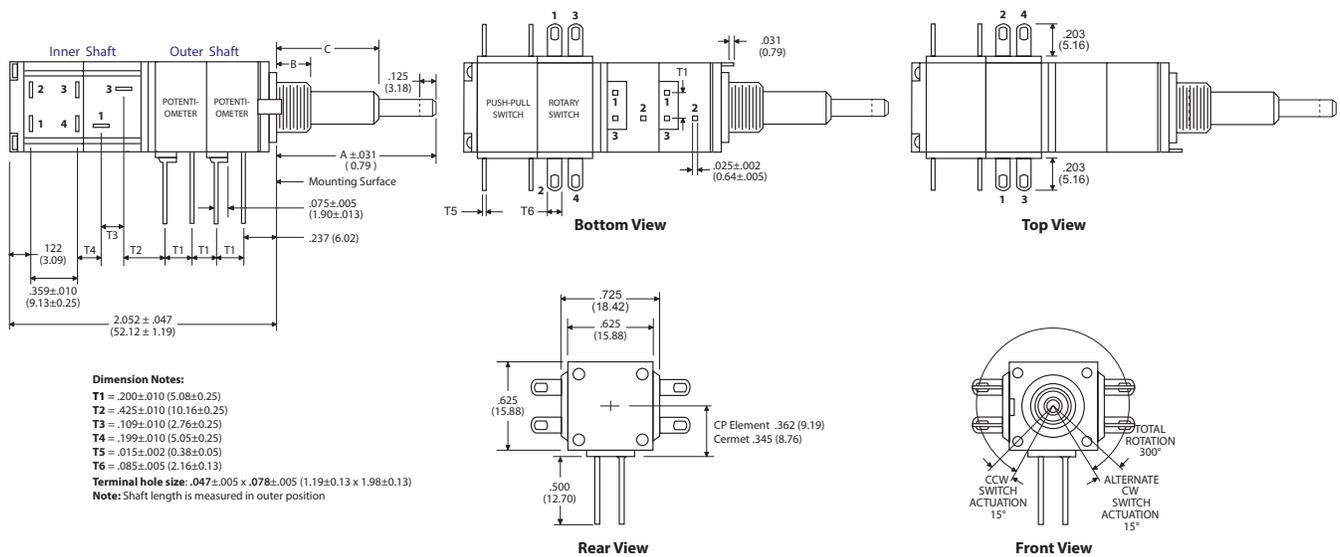
Section 7: Quad module, Concentric Shaft (continued)

30A-PC - Dual Potentiometer, Rotary and Push-Pull Switch, PC Pins

[Switch Option specifications](#)



30A-PC-90° - Potentiometer, Rotary and Push-Pull Switch, PC Pins (Rotated Switch) Module)



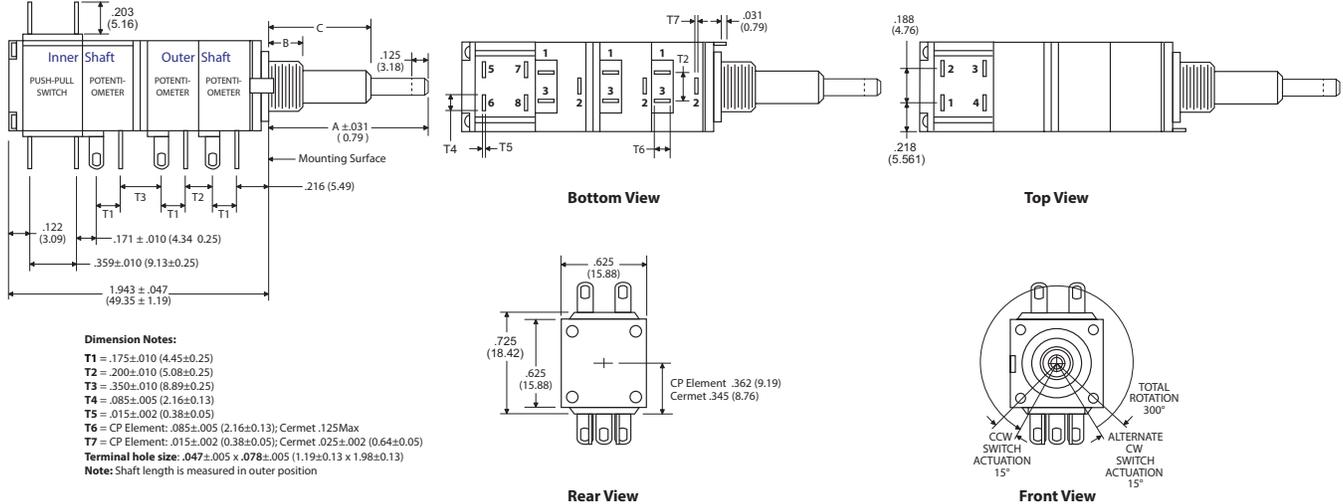
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

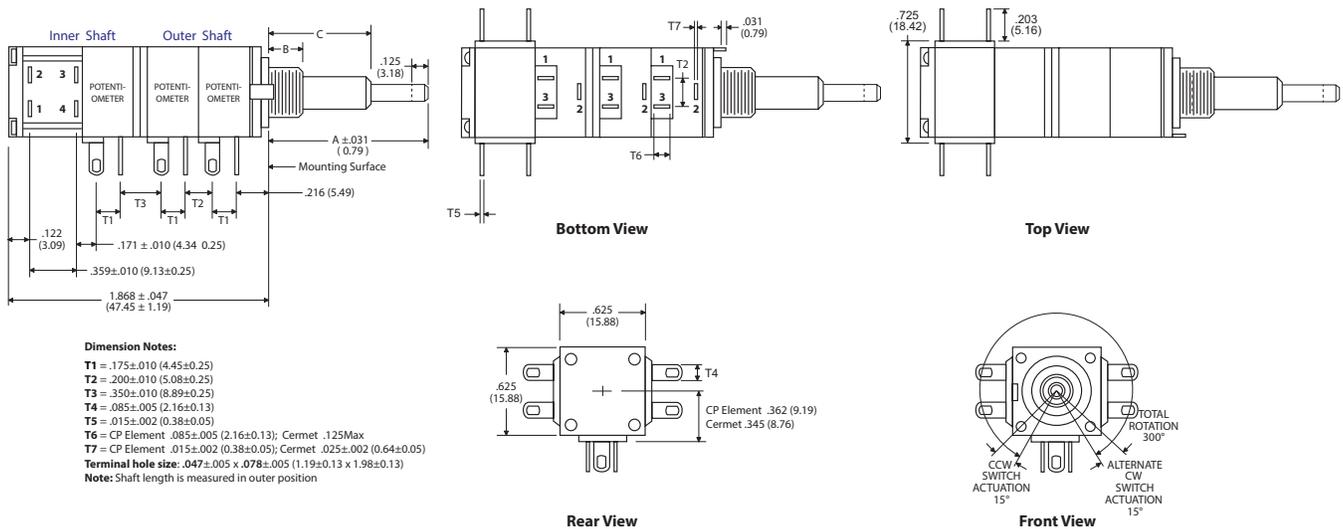
Section 7: Quad module, Concentric Shaft (continued)

31A - Triple Potentiometer, Push-Pull Switch, Solder Lugs

Switch Option specifications



31A-90° Triple Potentiometer, Push-Pull Switch, Solder Lugs (Rotated Switch Module)



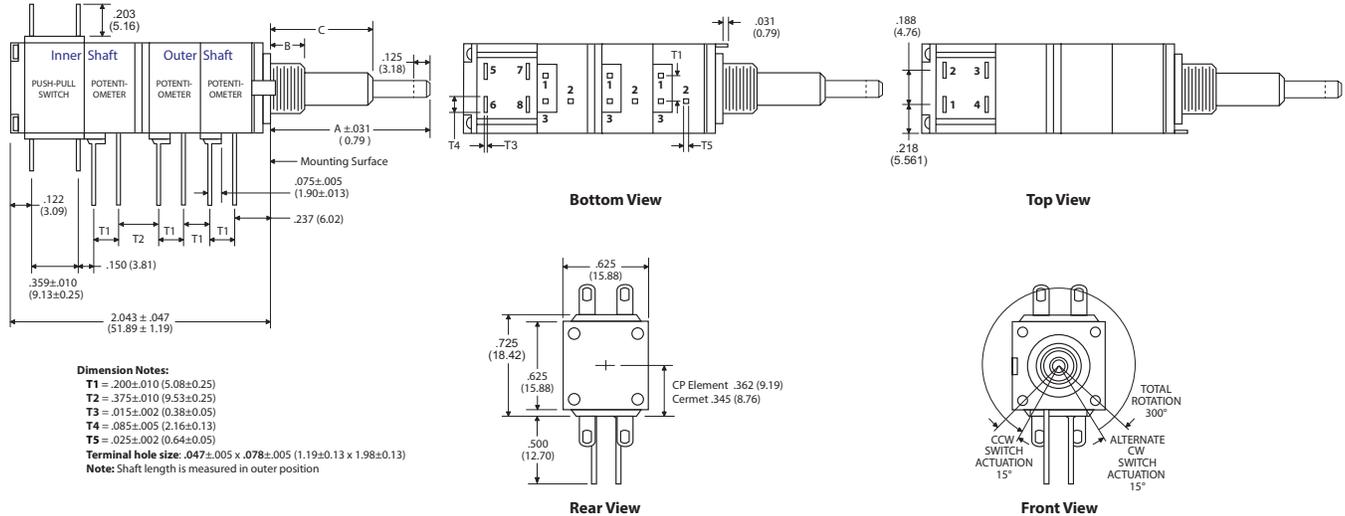
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

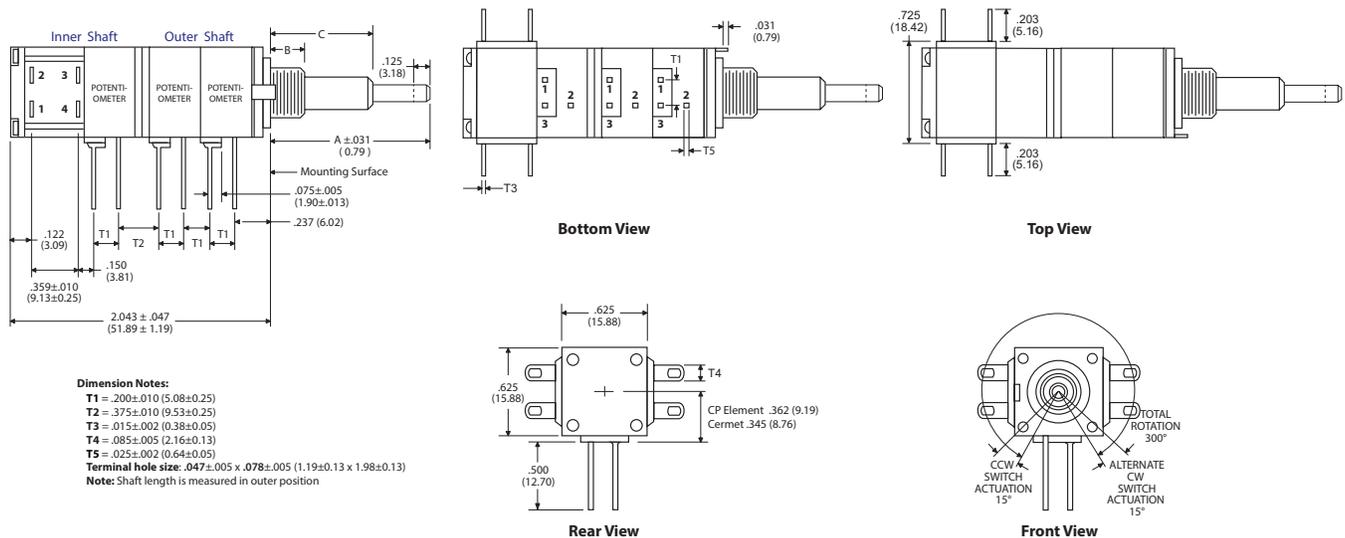
Section 7: Quad module, Concentric Shaft (continued)

31A-PC - Triple Potentiometer, Push-Pull Switch, PC Pins

Switch Option specifications



31A-PC-90° Triple Potentiometer, Push-Pull Switch, PC Pins (Rotated Switch Module)

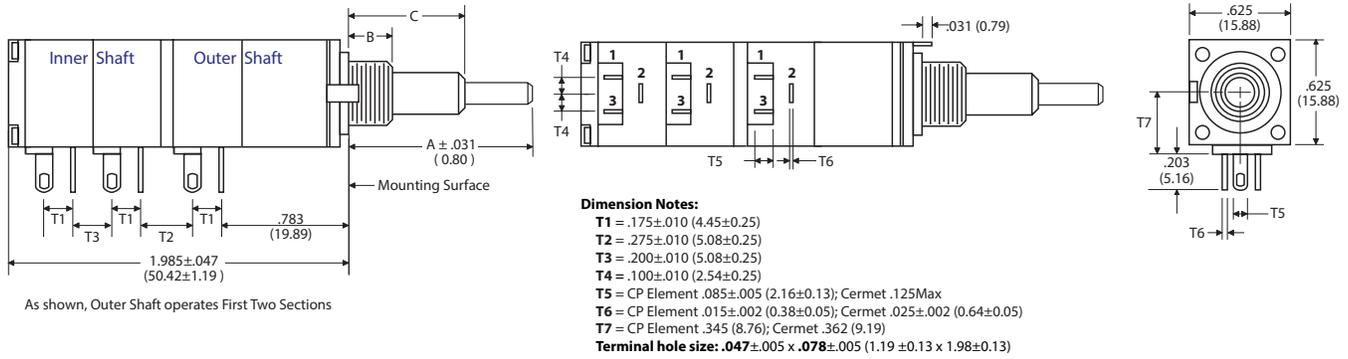


Notes:

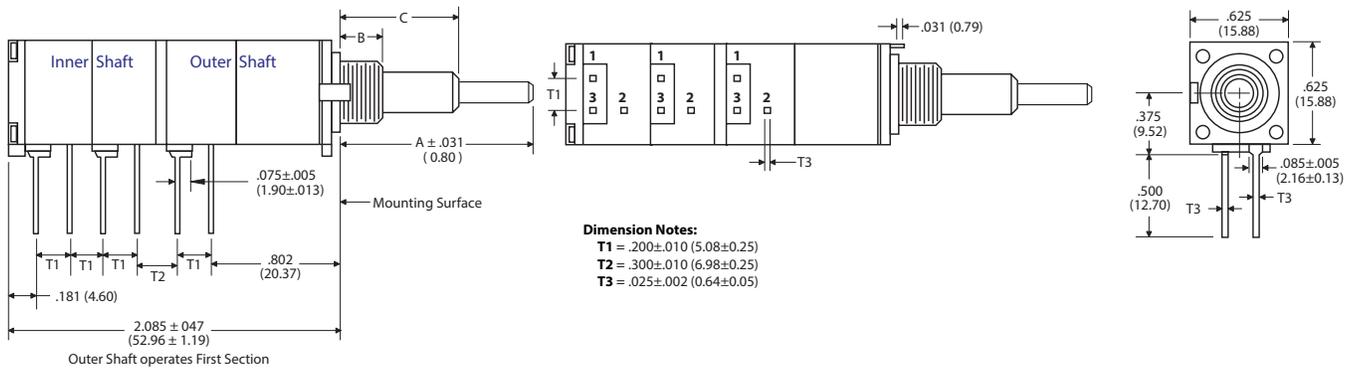
1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

Section 7: Quad module, Concentric Shaft (continued)

32A Triple Potentiometer with Multi-Turn Vernier Drive, Solder Lugs



32A-PC Triple Potentiometer with Multi-Turn Vernier Drive, Solder Pins



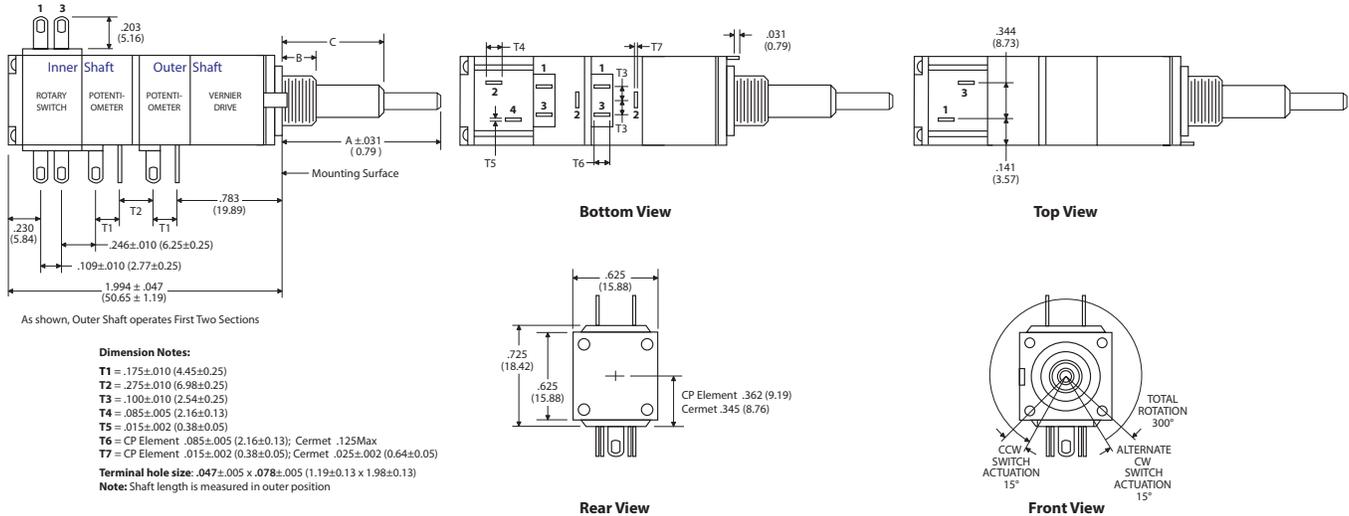
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

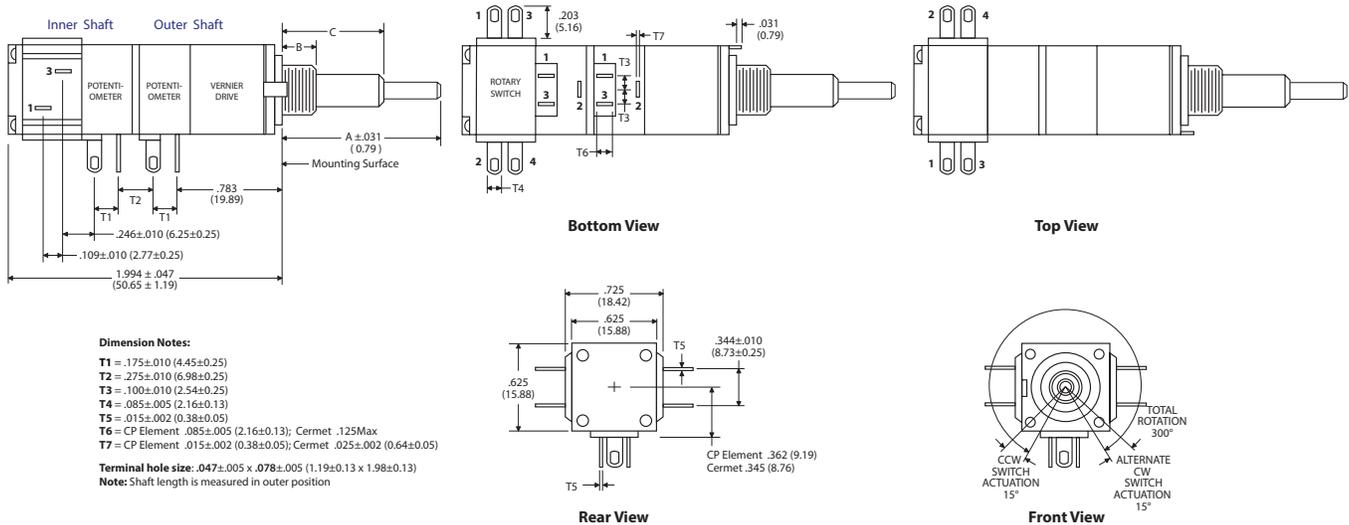
Section 7: Quad module, Concentric Shaft (continued)

33A - Dual Potentiometer with Multi-Turn Vernier Drive, Rotary Switch, Solder Lugs

[Switch Option specifications](#)



33A-90° - Dual Potentiometer with Multi-Turn Vernier Drive, Rotary Switch, Solder Lugs (Rotated Switch Module)



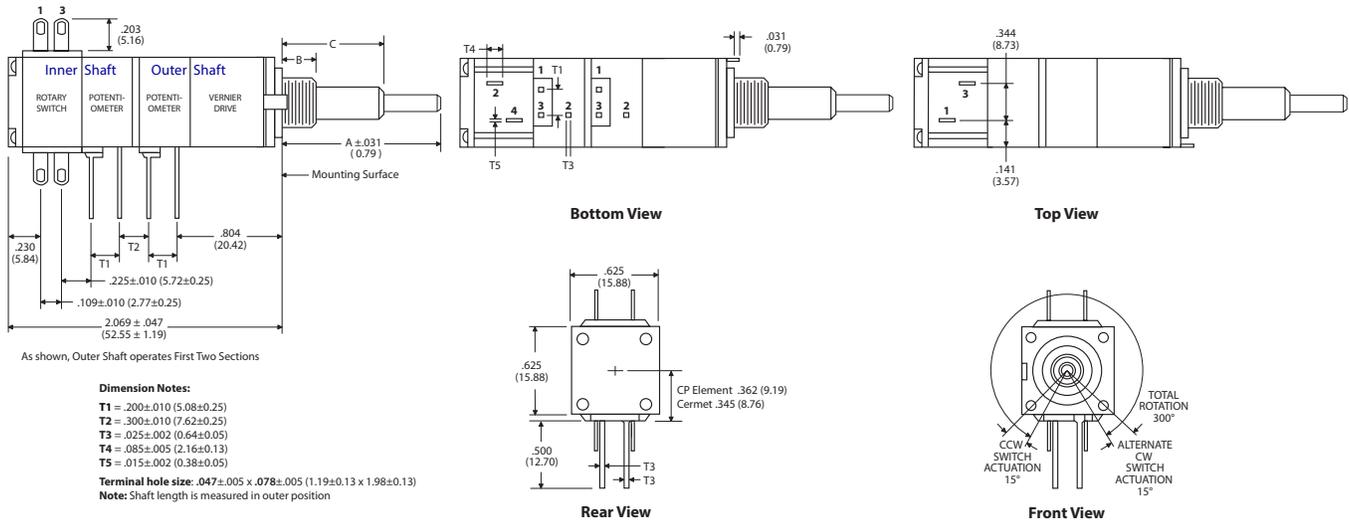
Notes:

- Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 Cermet Plating - Terminal 2: .025" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
- All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
- Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
- Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
- Terminal Numbers are for reference only. Numbers are NOT printed on the device.
- Drawings are not to scale.

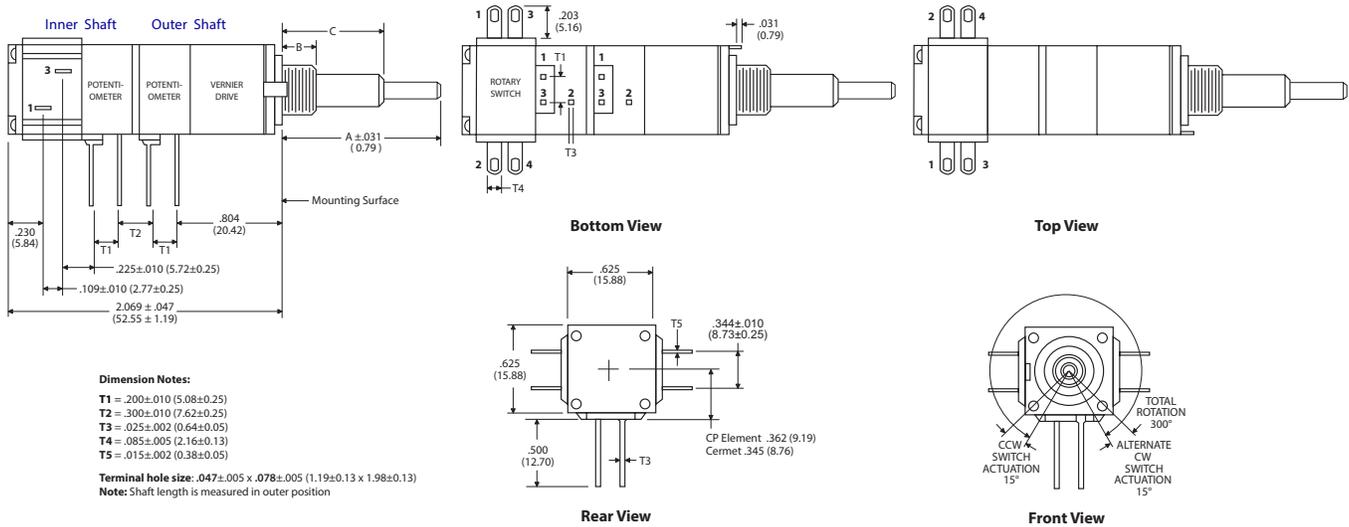
Section 7: Quad module, Concentric Shaft (continued)

33A-PC - Dual Potentiometer with Multi-Turn Vernier Drive, Rotary Switch, PC Pins

[Switch Option specifications](#)



33A-PC-90° - Dual Potentiometer with Vernier Drive, Rotary Switch, PC Pins (Rotated Switch Module)



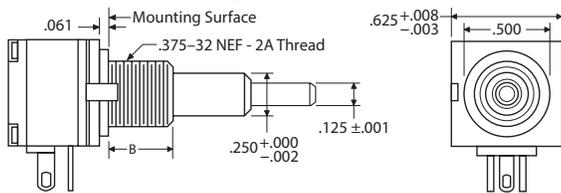
Notes:

1. Cermet Plating - Terminals 1 & 3: .025" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
 CP Plating - Terminals 1 & 3: .015" ± .001 Soft Copper CDA Alloy 110, Plate 50 – 200 Microinches Bright Tin, Whisker-Free (RoHS)
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 CP Plating - Terminal 2: .015" ± .001 Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
 Switches, All Terminals - Soft Copper CDA Alloy 110, Plate 20 Microinches Gold.
2. All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft. 1/4" dia. bushing with 1/8" dia. shaft is available. Locking bushing is also available.
3. Refer to Page 69 for [Bushing, Shaft and Hardware dimensions](#).
 Refer to Page 70 for [Locating Lug options](#).
4. Basic dimensions are in inches. Dimensions in parentheses are in millimeters. Dimensional Tolerance ±.016 (0,40), except as specified.
5. Terminal Numbers are for reference only. Numbers are NOT printed on the device.
6. Drawings are not to scale.

DIMENSIONS

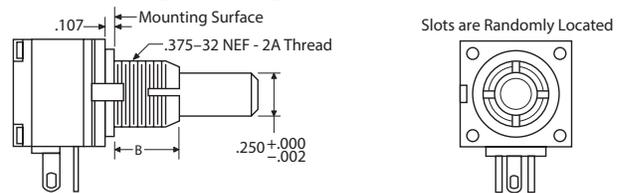
Bushing, Shaft and Hardware Dimensions

3/8" Plain Bushing



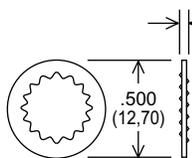
"B" STANDARD BUSHING LENGTHS .250 - .375 (6,35 - 9,53)

3/8" Locking Bushing

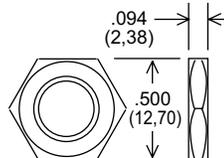


"B" STANDARD BUSHING LENGTHS .375-.500 (9,53-12,70)

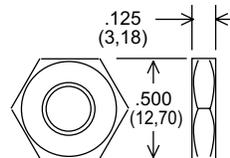
Mounting Hardware for 3/8" Bushing



**LOCK WASHER
M-2898**



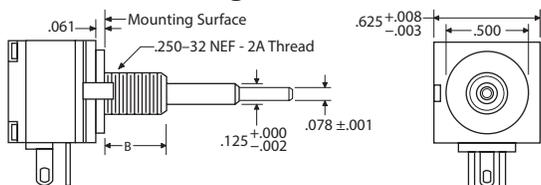
**MOUNTING NUT
M-2786**



**LOCK NUT
M3838**

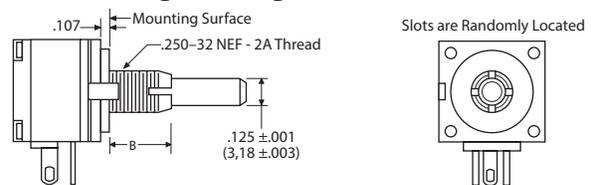
MAXIMUM MOUNTING PANEL THICKNESS:
.062-.188 (1,59-4,76)
when used with
one standard M-2898 Lock Washer
and one standard M-2786 Mounting Nut

1/4" Plain Bushing



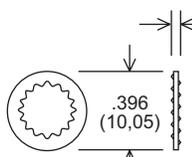
"B" STANDARD BUSHING LENGTHS .250 - .375 (6,35 - 9,53)

1/4" Locking Bushing

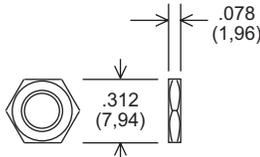


"B" STANDARD BUSHING LENGTHS .375-.500 (9,53-12,70)

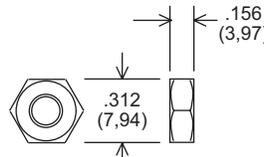
Mounting Hardware for 1/4" Bushing



**LOCKWASHER
M-4748**



**MOUNTING NUT
M-4721**



**LOCK NUT
M4761**

MAXIMUM MOUNTING PANEL THICKNESS:
.062-.188 (1,59-4,76)
when used with
one standard M-2898 Lock Washer
and one standard M-2786 Mounting Nut

Standard Bushing and Shaft Dimensions
are shown on Page 11

Dimensions

Basic dimensions are in inches.
Dimensions shown in parentheses are in millimeters.

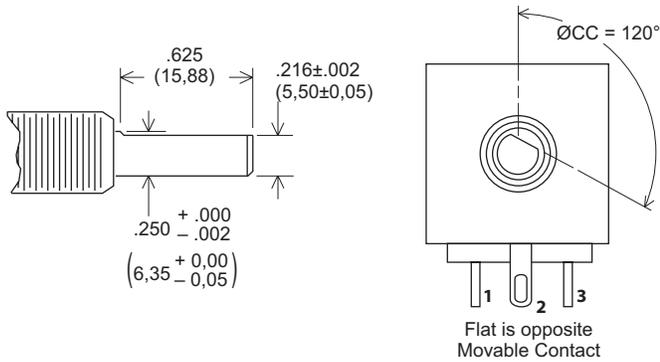
Tolerance

Dimensional tolerance ±.016 (0,40)
Angular tolerance ± 5°, except as specified

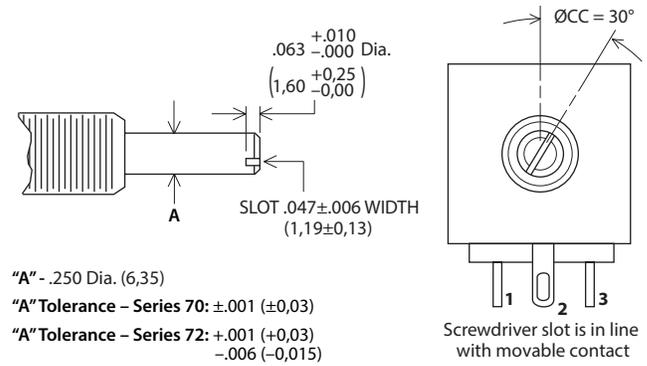
DIMENSIONS

Bushing, Shaft and Hardware Dimensions (continued)

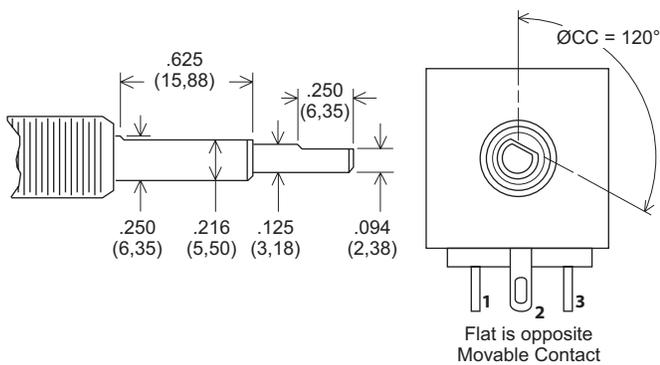
1/4" Standard Flatted Shaft



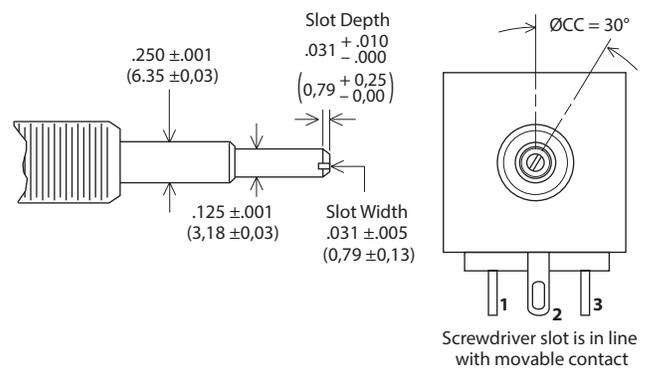
1/4" Standard Slotted Shaft



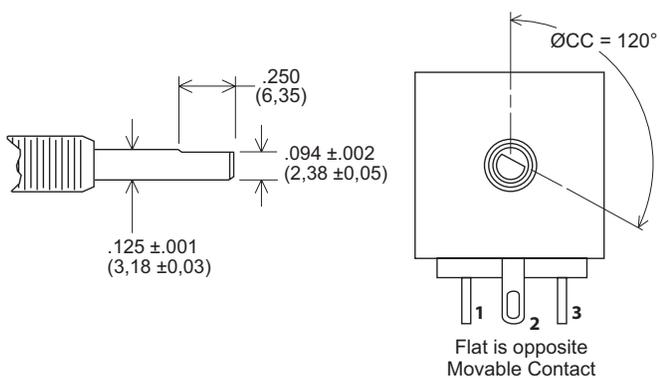
1/4" Standard Concentric Flatted Shaft



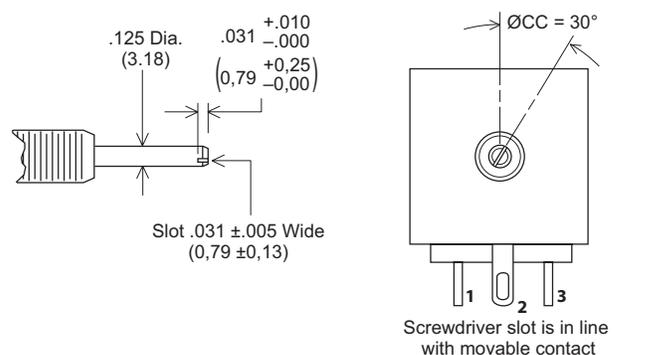
1/4" Standard Concentric Slotted Shaft



1/8" Standard Flatted Shaft



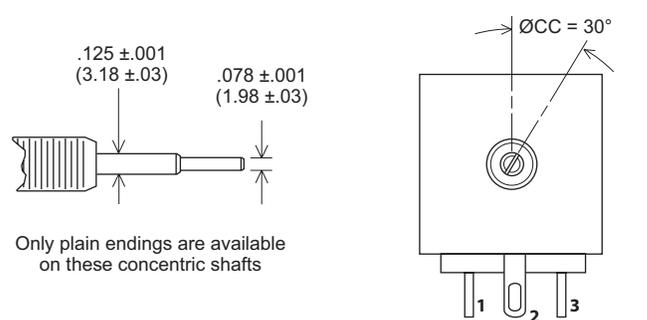
1/8" Standard Slotted Shaft



Flat will extend to within .031 (0,79) of mounting bushing where shaft length will not permit standard flat.

All shafts are shown in extreme counterclock-wise position. Angle applies to potentiometers only.

1/8" Concentric Shafts



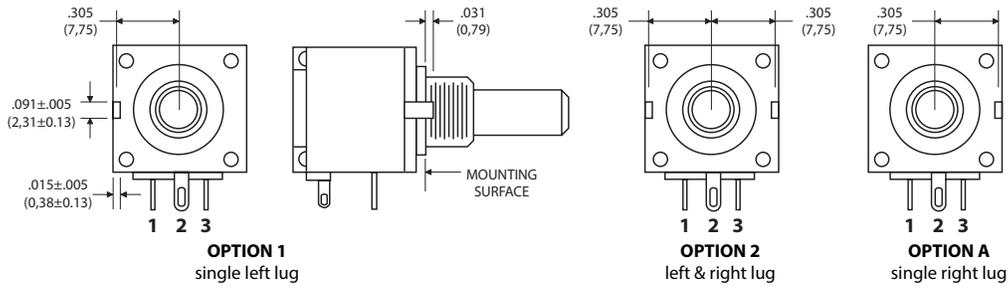
Standard Bushing and Shaft Dimensions are shown on Page 11

DIMENSIONS

Locating Lug Options – Series 70

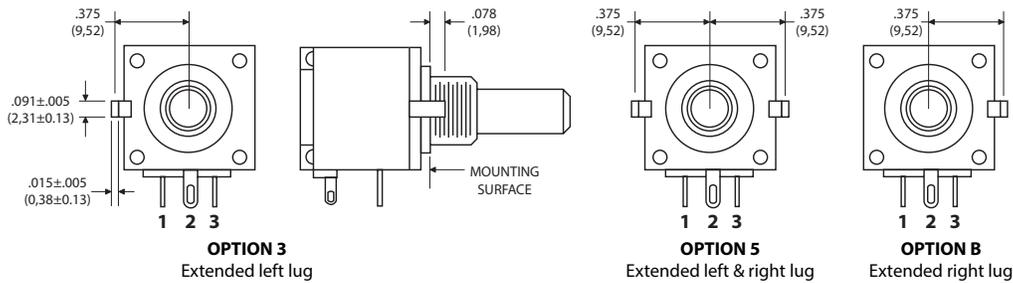
Options 1, 2 and A

Option 1 is Standard and is used unless otherwise specified



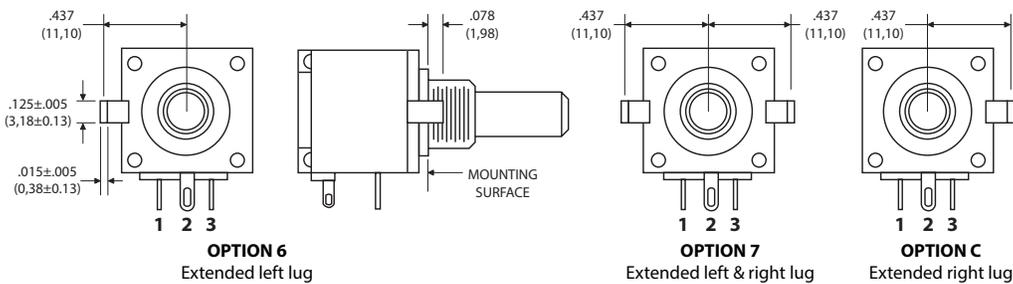
Options 3, 5 and B

Compatible with Mil-Spec RV5



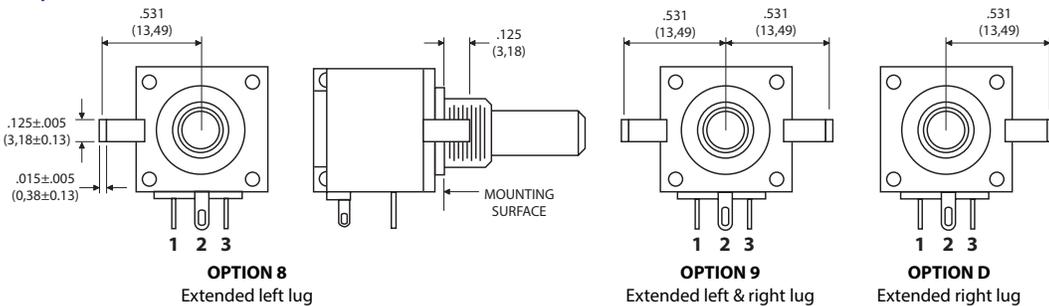
Options 6, 7 and C

No Longer Available



Options 8, 9 and D

Compatible with Mil-Spec RV4



Series	Available Lug Options
70	1,2,3,4,5,8,9,A,B,D

Note: Option 4 = No Locating Lug

Basic Dimensions in inches.

Dimensions in parentheses are in millimeters.

TOLERANCE

Dimensional Tolerance ±.016 (0,40) except as specified

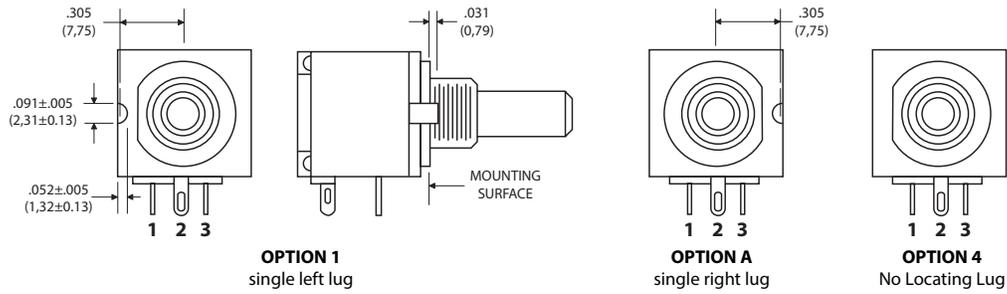
NOT TO SCALE

DIMENSIONS

Locating Lug Options – Series 72

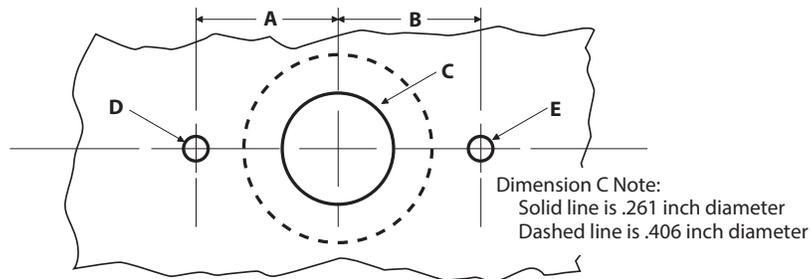
Options 1, A and 4

Option 1 is Standard and is used unless otherwise specified



Series	Available Lug Options
72	1,A,4

Mounting Holes



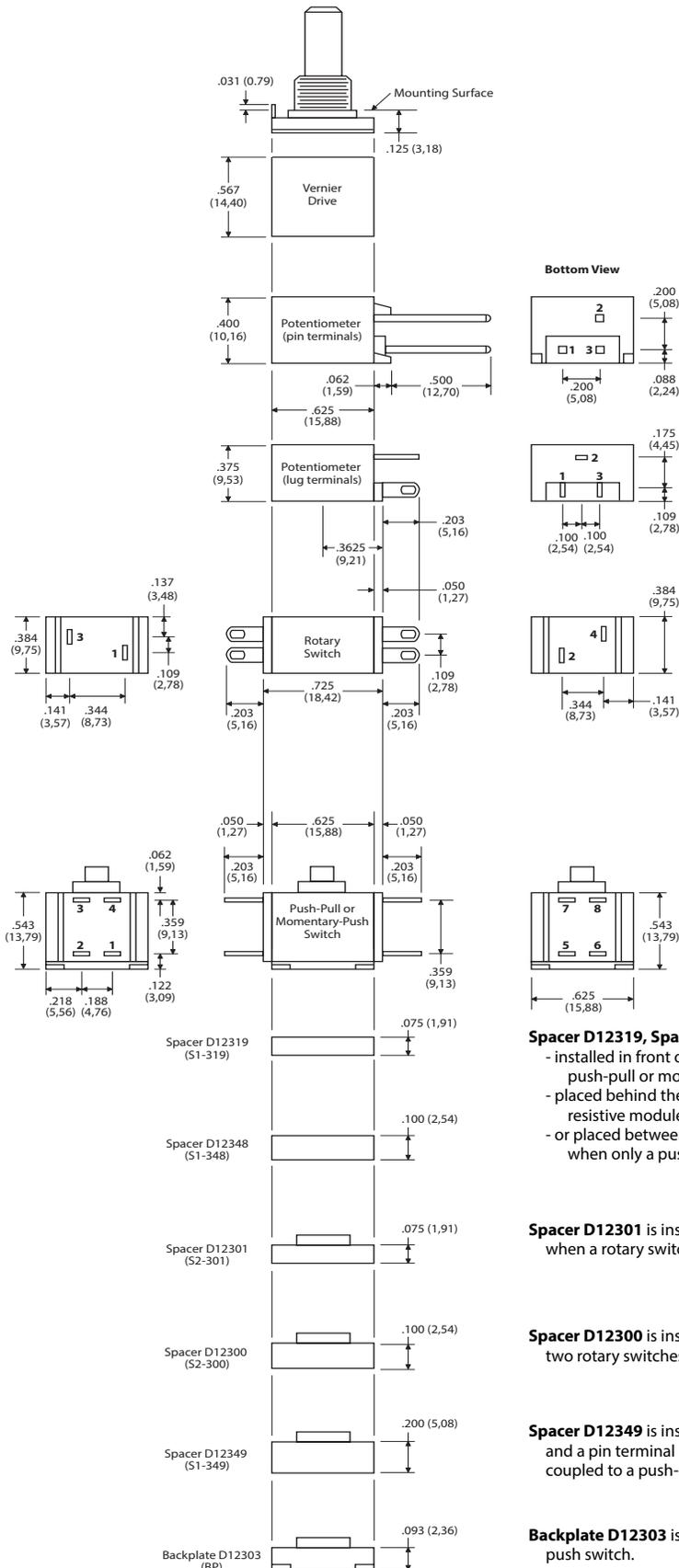
LUG OPTION	DIMENSION A	DIMENSION B	DIMENSION C Minimum hole dia. for 1/4" dia. bushing	DIMENSION C Minimum hole dia. for 3/8" dia. bushing	DIMENSION D Minimum hole dia	DIMENSION E Minimum hole dia.
1	.305 (7,75)	*	.261 (6,63)	.406 (10,31)	.096 (2,44)	*
2	.305 (7,75)	.305 (7,75)	.261 (6,63)	.406 (10,31)	.096 (2,44)	.096 (2,44)
3	.375 (9,52)	*	.261 (6,63)	.406 (10,31)	.096 (2,44)	*
4	*	*	.261 (6,63)	.406 (10,31)	*	*
5	.375 (9,52)	.375 (9,52)	.261 (6,63)	.406 (10,31)	.096 (2,44)	.096 (2,44)
6	.437 (11,10)	*	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
7	.437 (11,10)	.437 (11,10)	.261 (6,63)	.406 (10,31)	.128 (3,24)	.128 (3,24)
8	.531 (13,49)	*	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
9	.531 (13,49)	.531 (13,49)	.261 (6,63)	.406 (10,31)	.128 (3,24)	*
A	*	.305 (7,75)	.261 (6,63)	.406 (10,31)	*	.096 (2,44)
B	*	.375 (9,52)	.261 (6,63)	.406 (10,31)	*	.096 (2,44)
C	*	.437 (11,10)	.261 (6,63)	.406 (10,31)	*	.128 (3,24)
D	*	.531 (13,49)	.261 (6,63)	.406 (10,31)	*	.128 (3,24)

Dimension tolerance ± .016 (0,40)

* = Not Required

DIMENSIONS

Master Assembly Drawing



All drawings are shown with 3/8" dia. bushing with 1/4" dia. shaft.
 1/4" diameter bushing with 1/8" diameter shaft is available.
 Locking bushing is also available.

Refer to Page 70 for [Locating Lug options](#).

Multi-Turn Vernier Drive module. Only one module of this type can be included in an assembly. A Multi-Turn Vernier Drive module must always be in the front location.

Potentiometer (Pin terminal) module. Up to four modules of this type can be included in an assembly.

Potentiometer (lug terminal) module. Up to four modules of this type can be included in an assembly.

Rotary Switch module. Multiple modules of this type can be included in an assembly. This module can be assembled sideways if needed for easier access to solder lugs.

Refer to Page 70 for [Switch options](#).

Push-Pull / Momentary-Push Switch module includes backplate. Only one module of this type can be included in an assembly. This module must always be in the rear position. This module can be assembled sideways if needed for easier access to solder lugs.

Refer to Page 70 for [Switch options](#).

Spacer D12319, Spacer D12348 (without flange)

- installed in front of either first resistive module or rotary switch coupled to a push-pull or momentary push switch with solid shaft construction.
- placed behind the .075 inch flanged spacer attached to a lug terminal resistive module with concentric shaft construction
- or placed between switch and bushing assembly with solid shaft construction when only a push-pull or momentary push switch is in the build up.

Spacer D12301 is installed between either two lug terminal resistive modules or when a rotary switch follows a rotary switch with concentric shaft construction.

Spacer D12300 is installed between either two pin terminal resistive modules or two rotary switches with concentric shaft.

Spacer D12349 is installed between a pin terminal resistive and/or a rotary switch and a pin terminal resistive module and/or a rotary switch, in any combination, coupled to a push-pull or momentary push switch with concentric shaft.

Backplate D12303 is used except when last module is a push-pull or momentary push switch.

Mod Pot

Series 70 & 72

Request For Quotation

5/8" Square Modular Potentiometer
Conductive Plastic
Cermet
Hot Molded Carbon*

See power derating chart on page 5 for power ratings



36 ROUTE 10 EAST HANOVER, N.J. 07936
 TEL. 973-887-2550 Toll Free 800-631-8083

Request Quotation online at Potentiometer.com

Customer Name _____ Address _____

City, State, Zip, Country _____ Customer Part Number (When Specified) _____

STEP 1	SERIES TYPE (Circle One)	70 72																																									
STEP 2	RESISTANCE ELEMENT (Circle One)	Conductive Plastic Cermet Carbon Composition (no longer available)					<p>* Not Available on 72</p>																																				
STEP 3	TERMINALS (Circle One)	Solder Lug P.C. Pin					<p>Tapers A, DB, S, U, W and X are measured between terminals 1 and 2. Taper B is measured between terminals pin 2 and 3.</p>																																				
STEP 4	TAPER (Insert Taper Designation Letter Below Module or Modules)	Cermet Linear Linear 5% (Special Order) Conductive Plastic Linear Clockwise Modified Log Counterclockwise Modified Log	Taper W X U A B																																								
STEP 5	TOLERANCE (Insert Tolerance for each Resistance Module)	Cermet: 10% Standard (5% Special Order) Conductive Plastic: 10%						INCHES <--> METRIC CONVERSION TABLE																																			
STEP 6	RESISTANCE VALUE (Insert For Each Resistance Module)	Nominal Resistance Values in Ohms 50* 250 2K 10K 75K 500K 75* 500 2.5K 20K 100K 750K 100 750 5K 25K 200K 200 1K 7.5K 50K 250K						<table border="1"> <thead> <tr> <th>INCHES</th> <th>MM</th> <th>INCHES</th> <th>MM</th> </tr> </thead> <tbody> <tr> <td>1/8</td> <td>.123</td> <td>3/4</td> <td>.750</td> </tr> <tr> <td>1/4</td> <td>.250</td> <td>7/8</td> <td>.875</td> </tr> <tr> <td>3/16</td> <td>.312</td> <td>1</td> <td>1.000</td> </tr> <tr> <td>3/8</td> <td>.375</td> <td>1 1/8</td> <td>1.125</td> </tr> <tr> <td>7/16</td> <td>.438</td> <td>1 1/2</td> <td>1.500</td> </tr> <tr> <td>1/2</td> <td>.500</td> <td>2</td> <td>2.000</td> </tr> <tr> <td>5/8</td> <td>.625</td> <td>2 1/2</td> <td>2.500</td> </tr> </tbody> </table>				INCHES	MM	INCHES	MM	1/8	.123	3/4	.750	1/4	.250	7/8	.875	3/16	.312	1	1.000	3/8	.375	1 1/8	1.125	7/16	.438	1 1/2	1.500	1/2	.500	2	2.000	5/8	.625	2 1/2	2.500
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5/8	.625	2 1/2	2.500																																								
STEP 7	OPTIONAL MODULES (Insert Designation in Proper Module Box)	Push-Pull Switch Momentary Push Switch Rotary Action Switch Vernier Drive	Designation P M R V					* Not Available on Series 72																																			
STEP 8	BUSHING (Circle Length and Diameter)	Length (Dim. "A"-Inch) Plain, 1/4" Plain, 3/8" Locking, 3/8" Locking, 1/2"					* All Plastic on 72 1/4"x1/4" or 3/8"x3/8" only. Metal/Plastic on 73																																				
STEP 9	SHAFT* (Check Shaft Diameter Box and Circle Length) *All Plastic on 72-5 Lengths Only	Length (Dim. "B"-Inches): Maximum 2.5 Inches <input type="checkbox"/> 1/8 Inch Diameter (1/4 Inch Dia. Bushing) 5/16" 3/8" 7/16" 1/2" 5/8" 3/4" 7/8" Other <input type="checkbox"/> 1/4 Inch Diameter (3/8 Inch Dia. Bushing) 3/8" 1/2" 5/8" 3/4" ** 7/8" ** 1" 1 1/8" 1 1/8" 2" Other					Concentric Combinations <input type="checkbox"/> 1/4" Outer 1/8" Inner <input type="checkbox"/> 1/8" Outer .078" Inner Outer Shaft 5/8" 3/4" 7/8" 1" Other Inner Shaft 1" 1 1/8" 1 1/4" 1 3/8" 1 1/2" Other																																				
STEP 10	SHAFT ENDING* (Circle One)	Plain Slotted Flatted Special Plastic Shafts - 1/8" Diameter Plain End Only and 1/4" Diameter Slotted Only																																									
STEP 11	LOCATING LUG OPTIONS* (Circle One)	1* 2 3 4* 5 6 7 8 9 A* B C D Series 72 - Single Tab Only - Tab can be rotated to Positions 1, 2, 3, or 4																																									
STEP 12	MOUNTING HARDWARE (Circle One)	Standard Other (Specify)																																									
STEP 13	MARKING (Circle One)	Standard Other (Specify)																																									
STEP 14	QUANTITY					Purchase Order No.																																					

REMARKS AND/OR SPECIAL FEATURES _____

ORIGINATOR'S NAME AND PHONE: _____ DATE: _____

DISCLAIMER: Due to the unlimited design combinations, certain designs may not perform in accordance with all of the specifications

Mod-Pot™ SERIES OPTIONS

	5/8" Square / Modular Design			1/2" Square / Modular Design			
	70	72 - Plastic Bushing / Shaft Non-Magnetic Construction	5159	388	389	S127	
Technology	Conductive Plastic	Cermet	Conductive Plastic	Cermet	Conductive Plastic	Cermet	Conductive Plastic
Max Wattage Rating	1-Watt	2-Watt	1/2-Watt	1-Watt	1/2-Watt	1	1/2-Watt
Operating Temperature (°C)	-55 ° to 120 °	-55 ° to 150 °	-55 ° to 120 °	-40 ° to 125 °	-55 ° to 120 °	-55 ° to 150 °	-55 ° to 125 °
Temperature Coefficient (TC)	+/-5% (Typical)	150 PPM °C	+/-5% (Typical)	+/-10%	150 PPM °C	150 PPM °C	+/-5% (Typical)
Rotational Life	100,000		100,000		50,000	25,000	1,000,000
Sections	6		4		8		4
Center Detent	Not Available			Center or 11 Detents Only			Optional
11 - Detents	Not Available			21 Detents Not Available			
Rotary Switch - Counter Clockwise Detent	2A @125VAC			2A @125VAC; 2A @28VDC; 1A @ 250VAC			0.5A @ 30VDC SPDT
Maximum of 1-Switch per Shaft	1 SPST, N.O. + 1 SPST N.C. OR			1 SPST, N.O. + 1 SPST N.C. OR			
Rotary Switch - Clockwise Detent	2A @125VAC			2A @125VAC; 2A @28VDC; 1A @ 250VAC			No CW Detent
Maximum of 1-Switch per Shaft	1 SPST, N.O. + 1 SPST N.O			1 SPST, N.O. + 1 SPST N.O			
Push-Pull Switch (1/8" or 1/4" Dia. Shaft)	Optional			250 MA @ 30 VDC			
Push-Momentary - 1/8" Dia. Shaft	2A @125VAC			1/8" Only 1 SPST N.O. + 1 SPST N.C.			Not Available
Push-Momentary - 1/4" Dia. Shaft	2 SPST N.O. + 2 SPST N.C			1/4" Shaft - Not Available			
Push-On / Push-Off - 1/8" Dia. Shaft	Not Available			Optional 500 MA @ 30VDC DPDT			
Max Shaft Single Length - 1/8 Dia.	Metal Shaft 2.5"		Metal Shaft 2.5"		2"		2"
Max Shaft Single Length - 1/4 Dia.	Metal Shaft 2.5" Plastic Shaft - 7/8"		Metal Shaft 2.5"				
Concentric Shafts .078 / .125	6-Sections		4-Sections		Maximum 3-Sections, Outer shaft - Panel Pot Only		Not Available
Concentric Shafts .125 / .250	Any Metal Shaft Combination for Inner & Outer Shaft		Any Metal Shaft Combination for Inner & Outer Shaft		.125 / .250 Combination Not Available		
Vernier Drive	Optional		No		No		No
Internal Shaft Seal	Optional		No		Optional		Standard
IP Rated	No		IP40		No		IP67
Stop Torque	4 lb.-in.		4 lb.-in.		3 lb.-in.		2.5 lb.-in.
High Stop Torque	Not Available		Not Available		8 in / pd		Not Available
Rotational Torque Standard (Min / Max)	0.3 / 3.0 oz.-in.		0.2 to 1.5 oz.-in.		0.2 / 3.0 oz.-in.		1.5 Max oz.-in.
Rotational Torque Medium Torque Option (Min / Max)	Available - Varies with each configuration		Not Available		1 - 6 oz.-in.		Not Available
Non-Magnetic	N/A		Yes - with Plastic Shaft and Bushing & Solder Lug Terminals		N/A		N/A
Rotary Switch Actuating Torque	20 oz.-in.		2 to 7 oz.-in.		3.3 - 10.5 oz.-in.		2 oz.-in.

Note: Most parameters (wattage rating, rotational torque, etc.) are affected by the total number of sections. Download full specifications for further details.

70 Series - Resistance / Taper / Terminal

The products listed below are available, but with limited inventory.
Alternative devices are shown in the [Custom Potentiometer Selection Guide](#)

Value	Taper	Terminal	Element
100	Linear	Lug	Cermet
100	Modified Linear	Lug	Cermet
200	Linear	Lug	Cermet
200	Linear	PC Pins	Cermet
250	Linear	Lug	Cermet
250	Linear	PC Pins	Cermet
250	CW Modified Log	PC Pins	Cermet
500	Linear	PC Pins	Conductive Plastic
500	Linear	PC Pins	Cermet
500	CW Modified Log	PC Pins	Conductive Plastic
500	CCW Modified Log	PC Pins	Conductive Plastic
750	Linear	Lug	Cermet
750	Linear	PC Pins	Cermet
750	CW Modified Log	Lug	Conductive Plastic
1K	Linear	PC Pins	Conductive Plastic
1K	CW Modified Log	Lug	Conductive Plastic
1K	CW Modified Log	PC Pins	Conductive Plastic
1K	CCW Modified Log	Lug	Conductive Plastic
1K	CCW Modified Log	PC Pins	Conductive Plastic
2K	Linear	Lug	Conductive Plastic
2K	Linear	PC Pins	Cermet
2K	CCW Modified Log	Lug	Conductive Plastic
2.5K	Linear	PC Pins	Conductive Plastic
2.5K	Linear	PC Pins	Cermet
2.5K	CW Modified Log	PC Pins	Conductive Plastic
2.5K	CW Modified Log	Lug	Cermet
2.5K	CCW Modified Log	Lug	Conductive Plastic
2.5K	CCW Modified Log	PC Pins	Conductive Plastic
5K	Linear	Lug	Cermet
5K	Linear	PC Pins	Cermet
5K	CW Modified Log	PC Pins	Conductive Plastic
5K	CCW Modified Log	Lug	Cermet
7.5K	Linear	Lug	Cermet
7.5K	CW Modified Log	Lug	Conductive Plastic
7.5K	CCW Modified Log	Lug	Conductive Plastic
10K	CW Modified Log	Lug	Conductive Plastic
10K	CCW Modified Log	PC Pins	Conductive Plastic
10K	CW Exact Log (DB)	Lug	Cermet
10K	CW Log	Lug	Cermet
20K	Linear	PC Pins	Conductive Plastic
20K	Linear	PC Pins	Cermet
20K	CW Modified Log	Lug	Conductive Plastic
20K	CW Modified Log	PC Pins	Conductive Plastic
20K	CCW Modified Log	PC Pins	Conductive Plastic
25K	Linear	PC Pins	Cermet
25K	CW Modified Log	PC Pins	Conductive Plastic
25K	CW Modified Log	PC Pins	Conductive Plastic
25K	CCW Modified Log	PC Pins	Conductive Plastic

Value	Taper	Terminal	Element
50K	Linear	PC Pins	Conductive Plastic
50K	CW Modified Log	Lug	Cermet
50K	CCW Modified Log	Lug	Conductive Plastic
50K	CCW Modified Log	PC Pins	Conductive Plastic
75K	Linear	Lug	Cermet
75K	Linear	PC Pins	Cermet
75K	Linear	PC Pins	Cermet
75K	CCW Modified Log	Lug	Conductive Plastic
100K	Linear	PC Pins	Conductive Plastic
100K	Linear	PC Pins	Cermet
100K	CW Modified Log	PC Pins	Conductive Plastic
200K	Linear	Lug	Conductive Plastic
200K	Linear	PC Pins	Conductive Plastic
200K	Linear	Lug	Cermet
200K	Linear	PC Pins	Cermet
250K	Linear	Lug	Conductive Plastic
250K	Linear	Lug	Cermet
250K	Linear	PC Pins	Cermet
250K	CW Modified Log	Lug	Conductive Plastic
250K	CW Modified Log	Lug	Conductive Plastic
250K	CW Modified Log	PC Pins	Conductive Plastic
500K	Linear	PC Pins	Conductive Plastic
500K	Linear	PC Pins	Cermet
500K	CW Modified Log	PC Pins	Conductive Plastic
500K	CCW Modified Log	PC Pins	Conductive Plastic
750K	Linear	Lug	Cermet
750K	Linear	PC Pins	Cermet
1MEG	Linear	Lug	Conductive Plastic
1MEG	Linear	PC Pins	Cermet
1MEG	CW Modified Log	Lug	Conductive Plastic
1MEG	CW Modified Log	PC Pins	Conductive Plastic
2.5MEG	Linear	PC Pins	Cermet

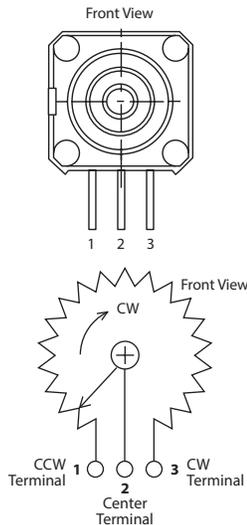
GLOSSARY OF TERMS

Input and Output Terms

Output Voltage

(e) The voltage between the wiper terminal and the designated reference point. Unless otherwise specified, the designated reference point is the CCW terminal (See 3.1).

Figure 1
Circuit and Travel Diagram



Output Ratio

(e/E) The ratio of the output voltage to the designated input reference voltage. Unless otherwise specified, the reference voltage is the total applied voltage.

Rotation and Translation

Total Mechanical Travel

The total travel of the shaft between integral stops, under the specified stop load. In potentiometers without stops, the mechanical travel is continuous.

Mechanical Overtravel - Wirewound

The shaft travel between each End Point (or Theoretical End Point for Absolute Conformity or Linearity units) and its adjacent corresponding limit of Total Mechanical Travel.

Mechanical Overtravel

The shaft travel between each Theoretical End Point and its adjacent corresponding limit of Total Mechanical Travel.

Backlash

The maximum difference in shaft position that occurs when the shaft is moved to the same actual Output Ratio point from opposite directions.

Theoretical Electrical Travel

The specified shaft travel over which the theoretical function characteristic extends between defined Output Ratio limits, as determined from the Index Point.

Electrical Overtravel - Nonwirewound

The shaft travel over which there is continuity between the wiper terminal and the resistance element beyond each end of the Theoretical Electrical Travel.

Electrical Continuity Travel

The total travel of the shaft over which electrical continuity is maintained between the wiper and the resistance element.

Tap Location

The position of a tap relative to some reference. This is commonly expressed in terms of an Output Ratio and/or a shaft position. When a shaft position is specified, the Tap Location is the center of the Effective Tap Width.

Resistance

End Resistance

The resistance measured between the wiper terminal and an end terminal with the shaft positioned at the corresponding End Point.

Temperature Coefficient Of Resistance

The unit change in resistance per degree celsius change from a reference temperature, expressed in parts per million per degree celsius as follows:

$$T.C. = \frac{R_2 - R_1}{R_1(T_2 - T_1)} \times 10^6$$

Where:

R1 = Resistance at reference temperature in ohms.

R2 = Resistance at test temperature in ohms

T1 = Reference temperature in degrees celsius.

T2 = Test temperature in degrees celsius.

Conformity and Linearity

Linearity

A specific type of conformity where the theoretical function characteristic is a straight line.

Mathematically:

$$\frac{e}{E} = f(W) \pm C = A(W) + B \pm C$$

Where:

A is the given slope; B is given intercept at W=0.

W = Angle or slope

Absolute Linearity

The maximum deviation of the actual function characteristic from a fully defined straight reference line. It is expressed as a percentage of the Total Applied Voltage and measured over the Theoretical Electrical Travel. An Index Point on the actual output is required.

The straight reference line may be fully defined by specifying the low and high theoretical end Output Ratios separated by the Theoretical Electrical Travel. Unless otherwise specified, these end Output Ratios are 0.0 and 1.0 respectively.

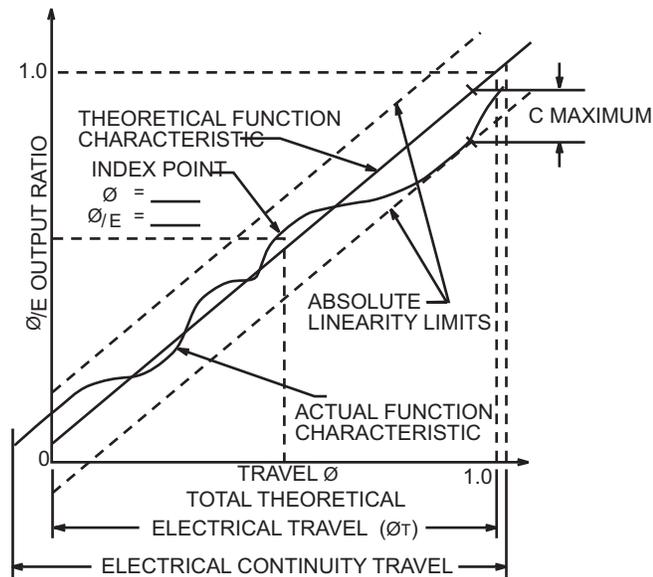
Mathematically:

$$\frac{e}{E} = A(W/W_T) + B \pm C$$

Where:

A is the given slope; B is given intercept at $W=0$.
Unless otherwise specified: $A=1$; $B=0$

Figure 2
Absolute Linearity



Independent Linearity

The maximum deviation, expressed as a percent of the Total Applied Voltage, of the actual function characteristic from a straight reference line with its slope and position chosen to minimize deviations over the Actual Electrical Travel, or any specified portion thereof.

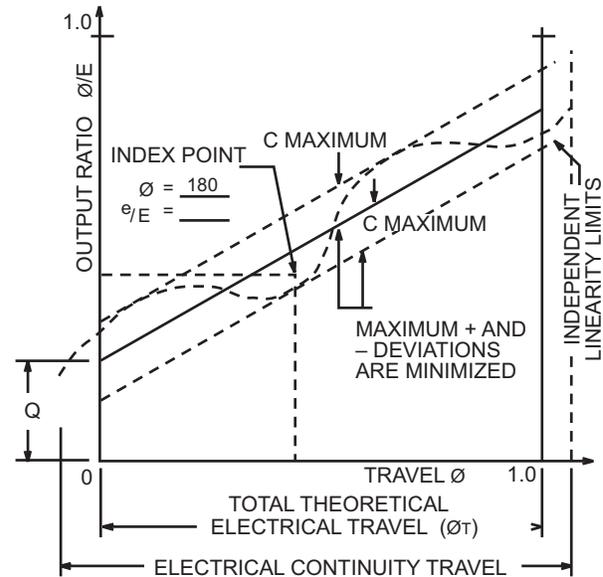
Note: End Voltage requirements, when specified, will limit the slope and position of the reference line.

Mathematically:

$$\text{Where: } \frac{e}{E} = P(W/W_A) + Q \pm C$$

P is unspecified slope; Q is unspecified intercept at $W=0$. And both are chosen to minimize C but are limited by the End Voltage requirements.

Figure 3
Independent Linearity



General Electrical Characteristics

Noise

Any spurious variation in the electrical output not present in the input, defined quantitatively in terms of an equivalent parasitic, transient resistance in ohms, appearing between the contact and the resistance element when the shaft is rotated or translated. The Equivalent Noise Resistance is defined independently of the resolution, the functional characteristics, and the total travel. The magnitude of the Equivalent Noise Resistance is the maximum departure from a specified reference line. The wiper of the potentiometer is required to be excited by a specified current and moved at a specified speed.

Output Smoothness

(Non-wirewound Potentiometers Only)

Output Smoothness is a measurement of any spurious variation in the electrical output not present in the input. It is expressed as a percentage of the Total Applied Voltage and measured for specified travel increments over the Theoretical Electrical Travel. Output Smoothness includes effects of contact resistance variations, resolution, and other micrononlinearities in the output.

Resolution

A measure of the sensitivity to which the Output Ratio of the potentiometer may be set.

Dielectric Strength

Ability to withstand under prescribed conditions, a specified potential of a given characteristic between the terminals of each cup and the exposed conducting surfaces of the potentiometer, or between the terminals of each cup and the terminals of every other cup in the gang without exceeding a specified leakage current value.

Insulation Resistance

The resistance to a specified impressed DC voltage between the terminals of each cup and the exposed conducting surfaces of the potentiometer, or between the terminals of each cup and the terminals of every other cup in the gang, under prescribed conditions.

Power Rating

The maximum power that a potentiometer can dissipate under specified conditions while meeting specified performance requirements.

Power Derating

The modification of the nominal power rating for various considerations such as Load Resistance, Output Slopes, Ganging, nonstandard environmental conditions and other factors.

Life

The number of shaft revolutions or translations obtainable under specific operating conditions and within specified allowable degradations of specific characteristics.

Mechanical Characteristics

Shaft Runout

The eccentricity of the shaft diameter with respect to the rotational axis of the shaft, measured at a specified distance from the end of the shaft. The body of the potentiometer is held fixed and the shaft is rotated with a specified load applied radially to the shaft. The eccentricity is expressed in inches, TIR.

Lateral Runout

The perpendicularity of the mounting surface with respect to the rotational axis of the shaft, measured on the mounting surface at a specified distance from the outside edge of the mounting surface. The shaft is held fixed and the body of the potentiometer is rotated with specified loads applied radially and axially to the body of the pot. The Lateral Runout is expressed in inches.

Shaft Radial Play

The total radial excursion of the shaft, measured at a specified distance from the front surface of the unit. A specified radial load is applied alternately in opposite directions at a specified point. Shaft Radial Play is expressed in inches.

Shaft End Play

The total axial excursion of the shaft, measured at the end of the shaft with a specified axial load supplied alternately in opposite directions. Shaft End Play is expressed in inches.

Starting Torque

The maximum moment in the clockwise and counterclockwise directions required to initiate shaft rotation anywhere in the Total Mechanical Travel.

Running Torque

The maximum moment in the clockwise and counterclockwise directions required to sustain uniform shaft rotation at a specified speed throughout the Total Mechanical Travel.

Moment of Inertia

The mass moment of inertia of the rotating elements of the potentiometer about their rotational axis.

Static Stop Strength

The maximum static load that can be applied to the shaft at each mechanical stop for a specified period of time without permanent change of the stop positions greater than specified.

Dynamic Stop Strength

The inertia load, at a specified shaft velocity and a specified number of impacts, that can be applied to the shaft at each stop without a permanent change of the stop position greater than specified.

General Terms and Conditions of Sale

Orders

All orders are subject to acceptance by **State Electronics**, E. Hanover, NJ. No order or contract shall be deemed accepted unless and until such acceptance is made in writing by **State Electronics**.

All agreements are more contingent upon strikes, accidents or causes of delay beyond our control

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Delivery promise is based on our best estimate of the date material will be shipped from our factory and we assume no responsibility for losses, damage or consequential damages due to delays.

Terms of Payment

On approved orders, terms are net thirty (30) days from the date of invoice. The Company may at any time, when in its opinion the financial condition of the customer warrants it, either hold or suspend credit. In cases where credit is not established or satisfactory financial information is not available, the terms are credit card or bank transfer. Each shipment will be considered a separate and independent transaction and payment should be made accordingly.

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Claims and Rejected Material

Claims for defective material must be made within 30-days of the customer's receipt of shipment. No products may be returned without a return authorization (RMA).

Country of Origin

The 388 / 389 and 70 series Mod-Pot products are assembled in the United States at our facility located in East Hanover, New Jersey, USA, using components parts manufactured by the Sensing and Control Division of Honeywell International headquartered in Morris Township, New Jersey, USA.

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