

# Model 452

Spectrol

## 3" (76.2mm) Single Turn Wirewound Precision Potentiometer



### FEATURES

- 250Ω to 25K/Quad
- Servo Mount

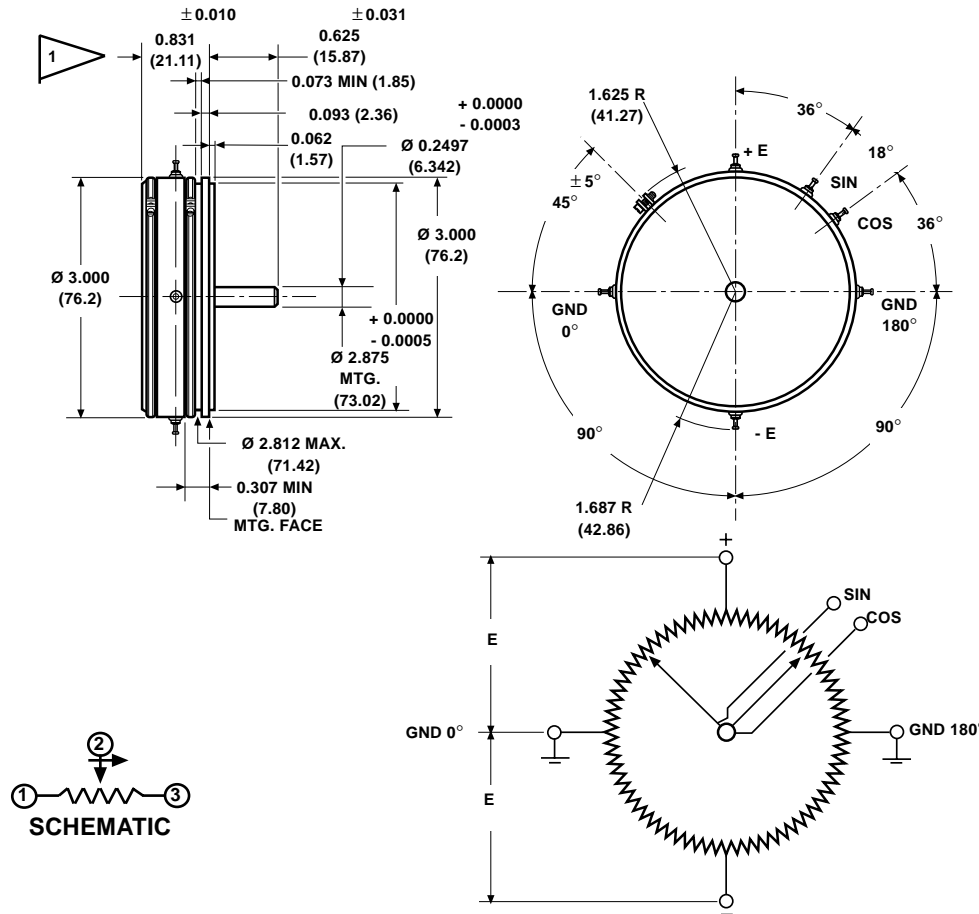
ELECTRICAL SPECIFICATIONS		
PARAMETER	STANDARD	SPECIAL
Total Resistance Tolerance:	250Ω to 25KΩ Per Quad ± 3%	– ± 1%
Output Function	E1/E = SIN θ	E2/E = COS θ
Conformity (% OF 2 E)	STD 0.5%, best practical 0.3% 250Ω < R <sub>T</sub> < 2500Ω STD 0.3%, best practical 0.2% 2500Ω < R <sub>T</sub> < 25000Ω	
Index Point	The index point is the actual voltage ratio at θ = 10° of the sine wiper of the first section	
Noise	100Ω ENR	
Electrical Rotation	360° continuous	
Power Rating Section 1 Additional Sections	125°C unit, 6.0 watts at 70°C derated to zero at 125°C 75% of the rating of section 1 (6 watts at 70°C)	
Insulation Resistance	1000MΩ minimum. 500VDC	
Dielectric Strength	1000V <sub>RMS</sub> 60Hz	
Phasing	Multiple sections are phased for simultaneous conformity	

ORDERING INFORMATION		
The Model 452 can be ordered from this data sheet with a variety of alternate characteristics, as shown above. For most rapid service on your order, please state:		
<b>452</b>	<b>3</b>	<b>XXX</b>
MODEL	TOTAL RESISTANCE PER QUAD OF EACH SECTION	NUMBER OF SECTION IN GANG
	Beginning with the section nearest the mounting end	Example - Model 452, 15K/2500Ω/250Ω, 3 sections
Example: <b>452 - 3 - XXX</b>		

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DIMENSIONS in inches (millimeters)



TOLERANCES: UNLESS OTHERWISE NOTED  
DECIMALS  $\pm 0.005$  ANGLES  $\pm 2^\circ$

ADD  $0.500 \pm 0.002$  (12.70) FOR EACH ADDITIONAL SECTION

MECHANICAL SPECIFICATIONS		
PARAMETER		
Rotation	360° continuous	
Bearing Type	Ball bearing front-bushing rear	
Ganging	6 sections maximum Terminal alignment, added sections within $\pm 10^\circ$ of section 1 terminals	
Torque (Maximums)	<b>STARTING</b>	<b>RUNNING</b>
Servo Section 1	1.9 oz - in (136,8gm - cm)	1.1 oz - in (79,2gm - cm)
Each Additional Section	1.6 oz - in (115,2gm - cm)	1.0 oz - in (72,0gm - cm)
Mechanical Runouts (Maximums):	<b>SERVO</b>	
Shaft (TIR/in)	0.002 in (0.05cm)	
Pilot Dia. (TIR)	0.002 in (0.05cm)	
Lateral (TIR)	0.004 in (0.10cm)	
Shaft End Play	0.0015 in (0.04cm)	
Shaft Radial Play	0.002 in (0.05cm)	
Moment of Inertia	10.0 gm - cm <sup>2</sup> per section maximum	
Weight:		
Single Section	7.0 oz (198.8gm)	
Each Additional Section	2.0 oz (56.8gm)	

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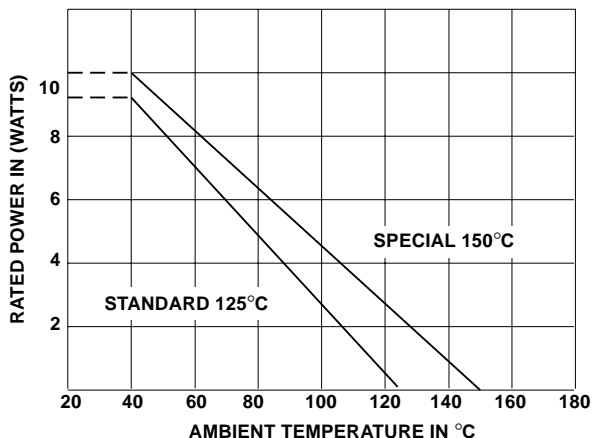
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MATERIAL SPECIFICATIONS	
Housing and Lids	Aluminum, anodized
Shaft and Clamp Rings	Stainless steel, non-magnetic non-passivated
Terminals	Brass, plated for solderability
Bearings	Stainless steel ball bearing (front) Bronze bushing (rear)

MARKING	
Unit	Units shall be marked with Spectrol Electronica model no. and on each section, resistance, conformity and terminal identification. Index point shall be marked on periphery of the first section

ENVIRONMENTAL SPECIFICATIONS	
Vibration	10g thru 2000CPS
Shock	50g
Salt Spray	96 Hours
Rotational Load Life	250, 000 shaft revolutions
Operating Temperature Range	(125°C Unit) -65°C to +125°C
Moisture Resistant	10 cycles
DEGRADATION AFTER ROTATIONAL LOAD LIFE TEST	
Conformity	Not more than 150% of the initial value
Noise	500Ω
Insulation Resistance	Not less than 100MΩ
Torque	Not more than 150% of the initial value

POWER RATING CHART  
(Ratings for cup No. 1.  
Additional cups 75% of values shown)



RESISTANCE ELEMENT DATA					
TOTAL RESISTANCE VALUES (Ω)	RESOLUTION % (PK - PK)	MAXIMUM CURRENT AT 70°C AMBIENT (mA)	MAXIMUM VOLTAGE ACROSS COIL (V)	WIRE TEMP. COEF. (ppm/°C)	WIRE RESISTIVITY (Ω/CMF)
250	0.196	154.9	38.7	± 20	800
500	0.156	110.0	54.5	± 20	800
1000	0.121	77.5	77.4	± 20	800
2500	0.093	48.9	122.5	± 20	800
5000	0.080	34.6	173.0	± 20	800
10000	0.071	24.5	245.0	± 20	800
15000	0.066	20.0	300.0	± 20	800
20000	0.063	17.3	347.0	± 20	800
25000	0.062	15.5	387.0	± 20	800