

Rotary Precision Potentiometers

Optional Rotary Electrical Characteristics

LINEARITY OR CONFORMITY

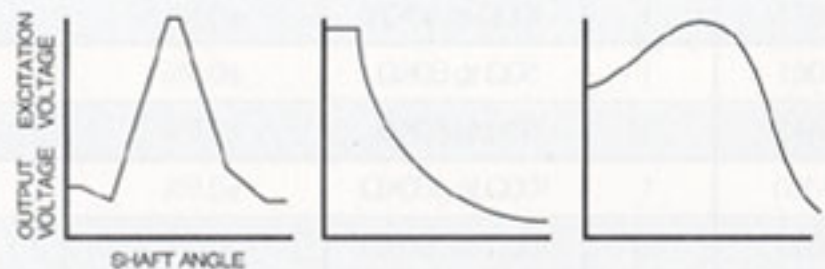
Unless otherwise indicated the linearity shown on the catalog sheets is Independent Linearity. Terminal, index point, absolute and other linearity or conformity types are available to your order.

MATCHING FUNCTIONS (TRACKING AND/OR PHASING)

Unless otherwise indicated all cups in a ganged unit are phased for the simultaneous output of 50% of excitation voltage to an accuracy equal to the Linearity tolerance. Electrical output matching between cups, the output of one cup as a function of the output of another cup rather than just as a function of shaft rotation, and similar output relationships are available to suit. Tracking tolerances are nominally 2x the linearity tolerances.

NON-LINEAR OUTPUTS

Standard potentiometers are available with sinusoidal function outputs (See Pages 6 & 7); two independent outputs are provided, +sine and +cosine. If desired, as many as four independent outputs corresponding to +sine, +cosine, -sine and -cosine can be supplied from a single cup. A wide variety of other non-linear output potentiometers are available to your order. Typical types are shown at right:



LOAD COMPENSATION

Where desired, potentiometers of the linear or non-linear type can be compensated during manufacture for the errors introduced by electrical loading of the wiper, thereby eliminating such errors from the system.

TAPS

Taps can be provided at locations to suit. Unless otherwise indicated, tap location is defined in terms of voltage ratio, e.g., a center tap is defined as existing at 50% of the excitation voltage. Alternatively, a tap can be specified as being located so many degrees from a given voltage output angle, e.g., from the start of the Electrical Function Angle where the output voltage ratio is zero. Unless otherwise indicated, the tap is located to the same accuracy as the Linearity tolerance.

Two types of taps are available, depending upon the application or, more directly, upon the relative amount of current being

drawn through it. Zero-width taps are used as voltage reference points, where the current being drawn through the taps is less than 10% of the excitation current or 4 ma., whichever is less. Zero-Width taps have a minimum resistance between wiper and tap equal to approximately 4% of the terminal resistance. Zero-resistance taps are used as voltage excitation points, where a relatively large current is being drawn through the tap. Zero-resistance taps have a resistance (approximately 2-5 ohms) and have a maximum width and a current carrying capacity as indicated below:

MAXIMUM TAP WIDTH FOR ZERO-RESISTANCE TAPS

DIAMETER	SINGLE-TURN	MULTI-TURN	MAXIMUM TAP CURRENT
1/2"	6°	10°	50 ma.
7/8"	3°	5°	50 ma.
1 3/32"	2.5°		50 ma.
1 7/16"/1 1/2"	2.0°		50 ma.
1 3/4"	1.75°	2°	50 ma.
2"	1.5°	2°	50 ma.
3"	0.6°		65 ma.
5"	0.3°		80 ma.

* Except Model 7810 where the maximum tap width is 36°.

WATTAGE

The power dissipation shown on the individual specification page is the unit's rated power under ambient conditions, (25°C). All units will dissipate rated power to 85°C, then derate linearity to zero power at 125°C.

OTHER TYPICAL SPECIAL ELECTRICAL CHARACTERISTICS

1. Brush-to-case insulation breakdown to 1500V.
2. Doubling or tripling of wattage ratings.
3. Minimum brush-to-case capacitance
4. Multiple outputs from single cups.
5. Integral wing resistors of matched temperature coefficients.
6. Integral electrical interconnections between cups in gang.