

Installation Instructions for the 640 Series Thru-Shaft Potentiometers

Honeywell

Issue A

50099567

GENERAL INFORMATION

Potentiometers convert rotary motion into a change of resistance, supplying a smooth transition of voltage or current levels. The resulting voltage output may be used to control position transducers in a wide variety of potential applications.

The 640 Series Thru-Shaft Potentiometers are actuated by a customer-provided actuator shaft instead of by a shaft/bushing integral to the sensor. The low-profile housing allows use where space is at a premium.

All versions are sealed for dust. Splash-sealed or moisture-sealed options feature O-ring seals between the rotor and housing and cover; and epoxy sealing between the leadwires, the housing and the cover.

The 640 Series are available in resistances from 1 kOhm to 1 MOhm, inclusive. Tapers include linear, log, antilog, and a 360° quadrature voltage to meet a wide range of application requirements.

A dual-contact version allows for two mechanically-tracking electrical actions, or true 360° quadrature voltage output.

Table 1. Electrical Specifications

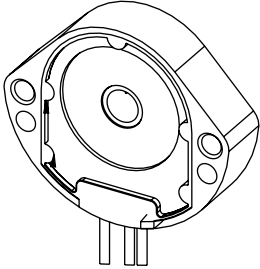
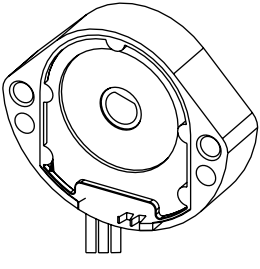
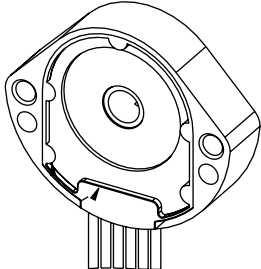
Characteristic	Parameter		
	640CS103A06NAAY 640ES103A06NAAY	640GS103B06NBAY 640GS103B06NBBY	640009M9405
	 Table 640-A	 Table 640-B	 Table 640-C
Supply voltage	350 Vdc, max.		
Dielectric withstanding voltage	500 Vac RMS		
Effective electrical travel (approx.)	80°, 170°, 350°, 155° (dual) 350° (See Order Guide tables.)		
Resistance	1 kOhm to 1 MOhm		
Resistance tolerance	±15, ±10, ±5, ±2 (laser trimmed) (See Order Guide tables.)		
Linearity (independent)	±5%	±1% (laser trimmed)	
Power	0.5 W, max.		

Table 2. Mechanical Specifications

Characteristic	Parameter		
	640CS103A06NAAY 640ES103A06NAAY	640GS103B06NBAY 640GS103B06NBBY	640009M9405
Thru hole	6,53 mm [0.25 in] dia. with 2,67 mm x 2,29 mm [0.105 in x 0.090 in] deep slot	6,53 mm [0.25 in] dia. with 5,54 mm [0.218 in] D-flat	6,53 mm [0.25 in] dia. with 2,67 mm x 2,29 mm [0.105 in x 0.090 in] deep slot
Mechanical travel with stops	90°, 180°	360°/continuous	
Stop torque	5 in lb, min.		
Rotational life	>1 million full cycles >5 million dither cycles (2 degree stroke, 60 strokes/s) result in <10% total resistance change		
Actuation torque: splash sealed moisture sealed	42 mN m [6 oz-in] (See Order Guide tables.) 71 mN m [10 oz-in] (See Order Guide tables.)		
Leadwires	20 AWG, SAE J-1560 type TXL stranded (7 x 28 AWG), 152,4 mm [6 in] long		
Material: housing, cover, rotor leadwires	reinforced thermoplastic 20 AWG, SAE J-1560 type TXL stranded (7 x 28 AWG); header connection option available		

Table 3. Environmental Specifications

Characteristic	Parameter		
	640CS103A06NAAY 640ES103A06NAAY	640GS103B06NBAY 640GS103B06NBBY	640009M9405
Operating temperature	-40 °C to 120 °C [-40 °F to 248 °F]		
Storage temperature	-40 °C to 120 °C [-40 °F to 248 °F]		
Humidity	0% to 95% non-condensing		
Shock	50 g, 11 ms		
Vibration	15 g at 50 Hz to 1000 Hz		
Sealing: dust moisture or splash ¹	All units sealed against dust O-ring seals between rotor and housing and cover; epoxy seal between wires and housing and cover.		

¹See Order Guide Tables onpp. 4-6 for operating torque differences.

Figure 1. Electrical Taper Diagrams (For reference only.)

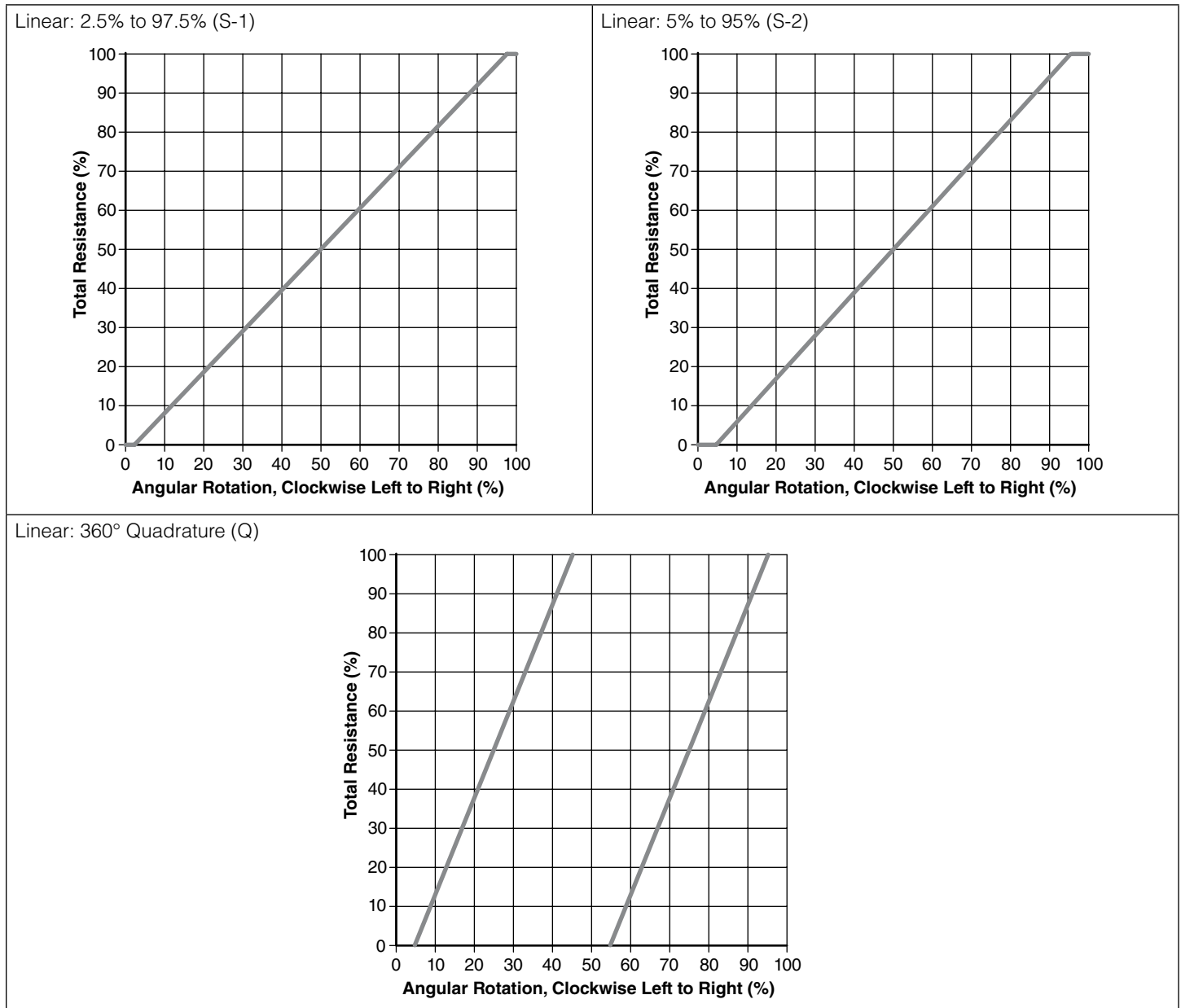


Table 640-A Order Guide

Catalog Listing	Electrical					Mechanical		Environmental	RoHS Compliant
	Resistance (Ohm)	Resistance Tolerance ($\pm\%$)	End Resistance, max. (Ohm)	Effective Electrical Travel, approx. ($\pm\%$)	Taper	Mechanical Travel (Degree)	Operating Torque (mN m [in-oz])	Sealing	
640CS103A06NAAY	10 k	15	4	170	S-1	180	71 mN m [10 in-oz]	dust and moisture	no
640ES103A06NAAY	10 k	15	4	180	S-2	90	71 mN m [10 in-oz]	dust and moisture	no

Dimensional Drawing (For reference only: mm [in].)

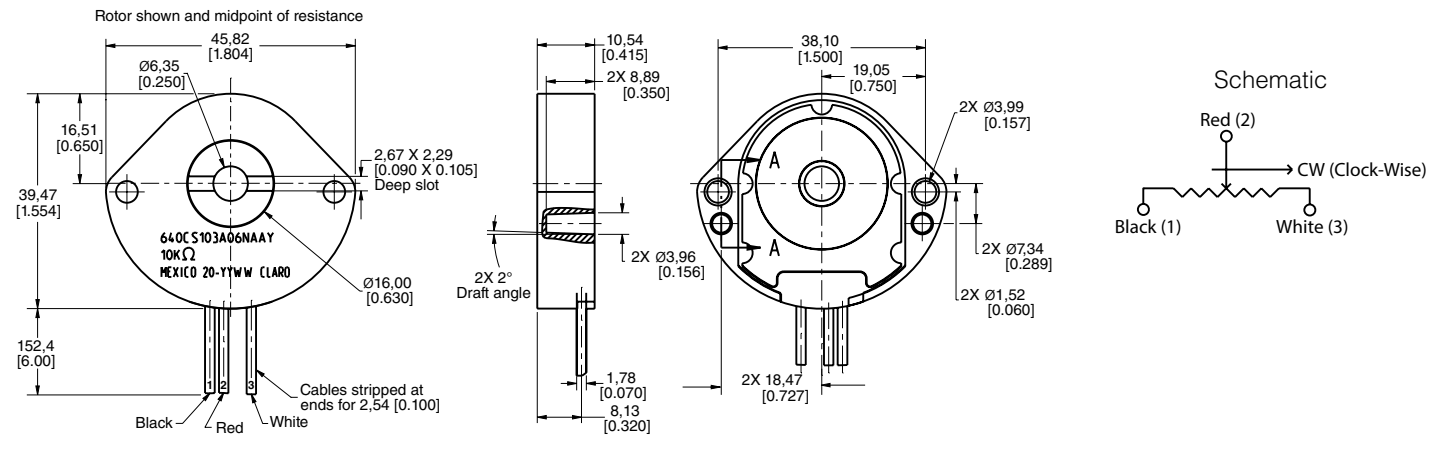
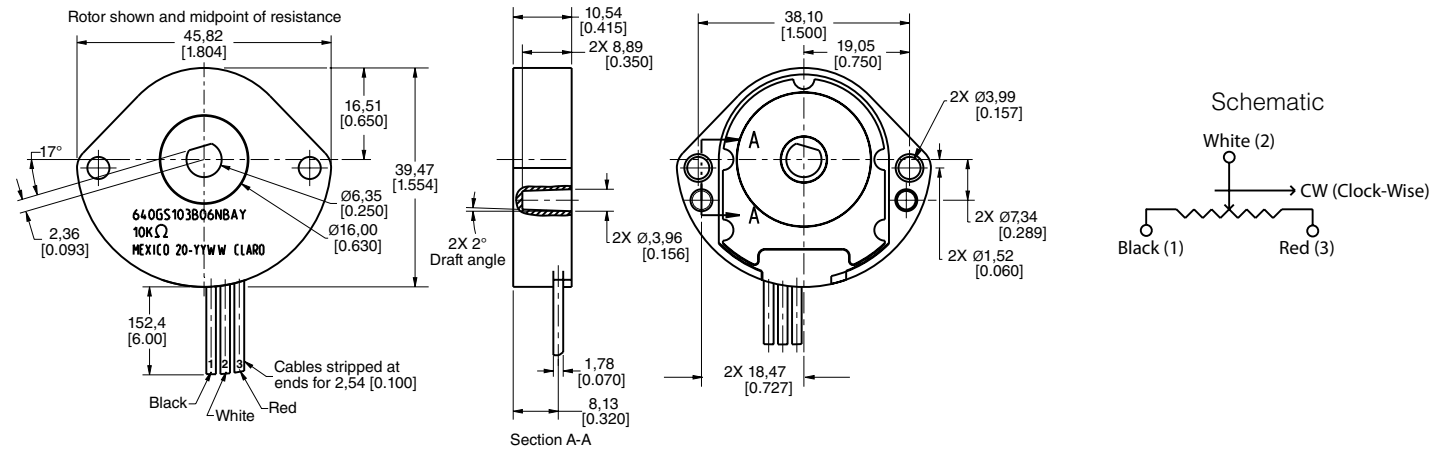


Table 640-B Order Guide

Catalog Listing	Electrical					Mechanical		Environmental	RoHS Compliant
	Resistance (Ohm)	Resistance Tolerance ($\pm\%$)	End Resistance, max. (Ohm)	Effective Electrical Travel, approx. ($\pm\%$)	Taper	Mechanical Travel (Degree)	Operating Torque (mN m [in-oz])	Sealing	
640GS103B06NBAY	10 k	10	4	170	S-1	360	71 mN m [10 in-oz]	dust and moisture	no
640GS103B06NBBY	10 k	10	4	180	S-1	360	71 mN m [10 in-oz]	dust and splash	no

Dimensional Drawing (For reference only: mm [in].)



▲ WARNING
PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

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