

SERIES 62S Compact 1/2" Package

FEATURES

- Compact Size
- Requires Minimal Behind Panel Space
- 1 Million Rotational Cycles for Low and Medium Torque, 1/2 Million for High
- 3 Million Rotations for Non-Detent Styles
- Optional Integral Pushbutton
- Choices of Cable Length and Terminations

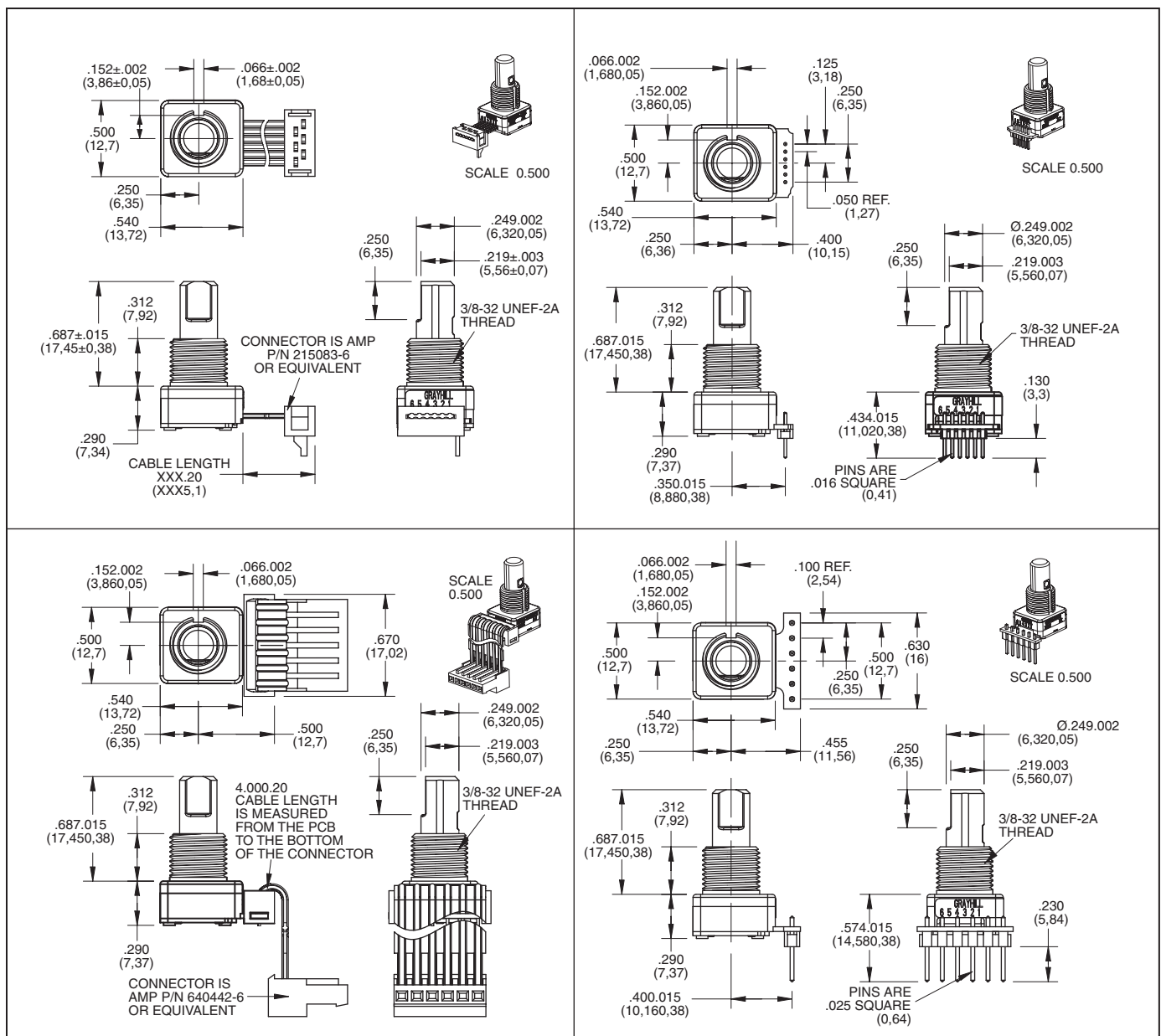
APPLICATIONS

- Global Positioning/Driver Information Systems
- Medical Equipment

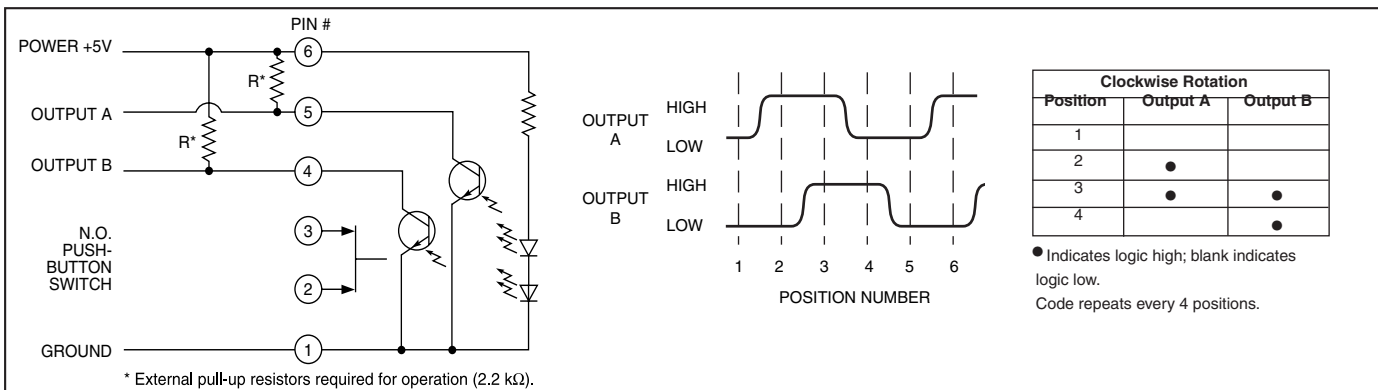


DIMENSIONS in inches (and millimeters)

Unless otherwise specified, standard tolerance is ± 0.010 (0,25)



CIRCUITRY, TRUTH TABLE, AND WAVEFORM Standard Quadrature 2-Bit Code



SPECIFICATIONS

Environmental Specifications

Operating Temp. Range: -40°C to 85°C**Storage Temp. Range:** -55°C to 100°C**Humidity:** 96 Hours at 90–95% humidity at 40°C**Mechanical Vibration:** Harmonic motion with amplitude of 15G's, within a varied frequency of 10 to 2000 Hz**Mechanical Shock:** Test 1: 100G for 6 mS, half sine wave with a velocity change of 12.3 ft/s; Test 2: 100G for 6 mS, sawtooth wave with a velocity change of 9.7 ft/s

Rotary Electrical and Mechanical Specifications

Operating Voltage: 5.00 ±0.25 Vdc**Supply Current:** 25mA max at 5.25Vdc**Output:** Open collector phototransistor, external pull up resistors are required**Output Code:** 2-Bit quadrature, channel A leads channel B by 90° electrically during clockwise rotation of the shaft**Logic Output Characteristics:**

Logic High shall be no less than 3.8 Vdc

Logic Low shall be no greater than 0.8Vdc

Minimum Sink Current: 2.0 mA**Power Consumption:** 132mW maximum (includes power in 2 pull-up resistors)**Mechanical Life:**

Non-Detent 3 Million Cycles

Low & Medium 1 Million Cycles

High 1/2 Million Cycles

1 cycle is a rotation through all positions and a full return

AVERAGE ROTATIONAL TORQUE SPECIFICATIONS

	LOW	MEDIUM	HIGH
	±0.56 IN-OZ	±1.40 IN-OZ	±1.60 IN-OZ
8 POSITION	1.10	1.85	2.75
12 POSITION	1.00	1.70	2.95
16 POSITION	1.40	2.35	3.40
20 POSITION	1.35	2.05	2.80
24 POSITION	1.25	1.95	2.95
32 POSITION	0.95	1.40	2.15

Torque shall be within 50% of initial value throughout life

Mounting Torque: 15 in-lbs maximum**Shaft Push-Out Force:** 45 lbs minimum**Shaft Pull-Out Force:** 45 lbs minimum**Terminal Strength:** 15 lbs minimum terminal

pull-out force for cable or header termination

Solderability: 95% free of pin holes and voids

Pushbutton Electrical & Mechanical Specifications

Rating: 10 mA at 5 Vdc**Contact Resistance:** <10Ω**Life:** 3 million actuations minimum**Contact Bounce:** <4 ms Make, <10 ms Break**Actuation Force:** 9-950±150grams, 5-510±150 grams, 4-400±100 grams, 3-300±90 grams, 2-200±75 grams**Shaft Travel:** .025±.010 inch

Materials and Finishes

Bushing: Zamak 2**Shaft:** Aluminum or Zamak 2**Retaining Ring:** Stainless steel**Pushbutton Actuator:** Zytel 70G33L**Detent Spring:** Music wire**Detent Ball:** Stainless steel**Code Housing:** Polyamide polymer, nylon 6/10 alloy UL94HB**Code Rotor:** Delrin 100**Printed Circuit Boards:** NEMA grade FR-4, double clad with copper, plated with gold over nickel**Infrared Emitting Diode Chips:** Gallium aluminum arsenide**Silicon Phototransistor Chips:** Gold and Aluminum Alloys**Resistor:** Metal oxide on ceramic substrate**Solder Pins:** Brass, plated with tin**Pushbutton Dome:** Stainless steel**Backplate:** Stainless steel**Cable:** Copper stranded with topcoat in PVC insulation (Cable version only)**Connector (.050 Center):** PA4.6 with tin over nickel plated phosphor bronze**Connector (.100 Center):** Nylon UL94V-2, tin plated copper alloy**Label:** TT406 Thermal transfer cast film**Solder:** Sn/Ag/Cu, Lead-Free, No Clean**Lubricating Grease:** NYE nyogel 774L**Hex Nut:** Nickel, plated with brass**Lockwasher:** Stainless steel**Header:** Hi-Temp glass filled thermoplastic UL94V-0, phosphor bronze (pin versions only)**Strain Relief:** Glass filled thermoplastic (.100 center cable versions only)

OPTIONS

Contact Grayhill for custom terminations, shaft and bushing configurations, rotational torque pushbutton force, and code output. Control knobs are also available.

ORDERING INFORMATION

Angle of Throw

45=45° for Code Change and 8 Detent Positions
 30=30° for Code Change and 12 Detent Positions
 22=22.5° for Code Change and 16 Detent Positions
 18=18° for Code Change and 20 Detent Positions
 15=15° for Code Change and 24 Detent Positions
 11=11.25° for Code Change and 32 Detent Positions

Rotational Torque Option

N = Non-detent
 L = Low Torque (available with 0, 4, 5, 9 pushbutton only)
 M = Medium Torque (available with 0, 5, 9 pushbutton only)
 H = High Torque (available with 0, 9 pushbutton only)

Termination

C = .050 Center Ribbon Cable with Connector
 S = .050 Center Ribbon Cable with .100 Stripped End
 P = .050 Center Pins with .130 Length
 CH = .100 Center Ribbon Cable with Connector
 SH = .100 Center Ribbon Cable with .100 Stripped End
 PH = .100 Center Pins with .230 Length

Cable Length

Cable Termination: 040=4.0in or 040in. Cable is terminated with Amp Connector P/N 3-640442-6
 See Amp Mateability Guide for mating connector details.

Pushbutton Option

0 = NO PUSHBUTTON 4 = 400 Grams
 9 = 950 Grams 3 = 300 Grams
 5 = 510 Grams 2 = 200 Grams

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