

# **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**

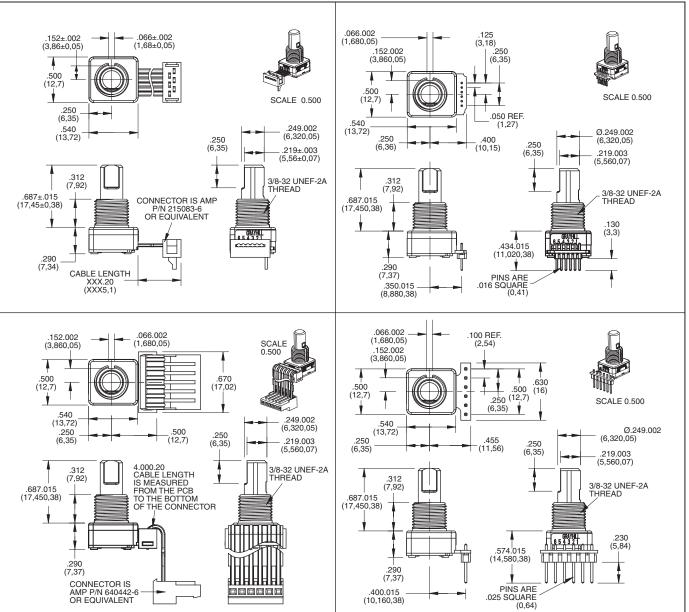
## **APPLICATIONS**

- Global Positioning/Driver Information Systems
- Medical Equipment

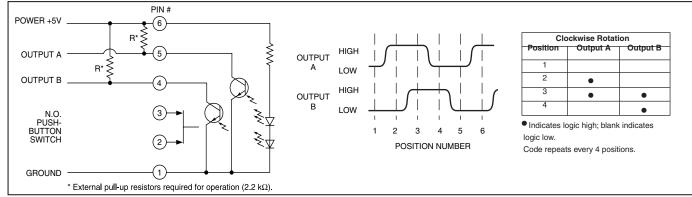


**DIMENSIONS** in inches (and millimeters)

Unless otherwise specified, standard tolerance is ±.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 guadrature, 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

Hiah 1/2 Million Cycles 1 cycle is a rotation through all positions and a full return

AVERAGE ROTATIONAL TORQUE SPECIFICATIONS				
	LOW ±0.50 IN-OZ	MEDIUM ±1.40 IN-OZ	HIGH ±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±150 grams, 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

<u>Grayhill</u>

Code Rotor: Delrin 100

Printed Circuit Boards: NEMA grade FR-4, double clad with copper, plated with gold over nickel

Infrared Emiting 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, phoshor bronze (pin versions only) Strain Relief: Glass filled thermoplastic (.100 center cable versions only)

#### **OPTIONS**

Termination

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

Angle of Throw		C = .050 Center Ribbon Cable with Connector
45=45° for Code Change and 8 Detent Positions		S = .050 Center Ribbon Cable with .100 Stripped End
30=30° for Code Change and 12 Detent Positions		P = .050 Center Pins with .130 Length
22=22.5° for Code Change and 16 Detent Positions		CH = .100 Center Ribbon Cable with Connector
18=18° for Code Change and 20 Detent Positions	62SXX-XX-0	SH = .100 Center Ribbon Cable with .100 Stripped End
15=15° for Code Change and 24 Detent Positions		PH = .100 Center Pins with .230 Length
11=11.25° for Code Change and 32 Detent Positions		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.
Rotational Torque Option		
N = Non-detent		Pushbutton Option
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)		0 = NO PUSHBUTTON 4 = 400 Grams
		9 = 950 Grams 3 = 300 Grams
		5 = 510 Grams 2 = 200 Grams