

## SERIES 62S Compact 1/2" Package

#### **FEATURES**

- Compact Size, Requires Minimal Behind Panel Space
- 1 Million Rotational Cycles, 3 Million for Non-Detent Styles
- Optional Integral Pushbutton
- Choices of Cable Length and Terminations

#### **APPLICATIONS**

 Global Positioning/Driver Information Systems

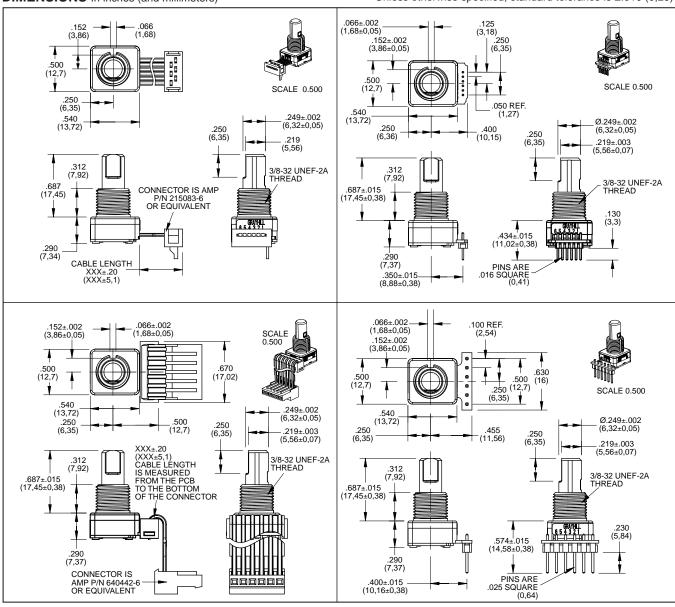
Medical Equipment



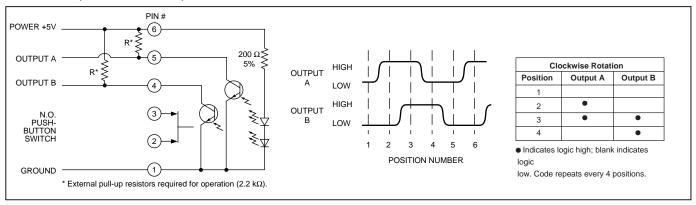


## **DIMENSIONS** In inches (and millimeters)

Unless otherwise specified, standard tolerance is ±.010 (0,25)



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



#### SPECIFICATIONS

#### **Environmental Specifications**

Operating Temperture Range: -40°C to 85°C Storage Temperature 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: 30mA maximum at 5Vdc 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 3.0 Vdc Logic Low shall be no greater than 1.0 Vdc

Minimum Sink Current: 2.0 mA
Power Consumption: 150 mW maximum
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: H-3.60±1.60 in-oz, M-2.20±1.40 in-oz, L-1.20±0.50 in-oz, N-<0.50 in-oz initially, torque shall be within 50% of initial value throughout life Mounting Torque: 15 in-oz 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 and 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±250 grams, 5-510±110 grams, 4-400±100 grams, 3-300±90

grams, 2-200±75 grams **Shaft Travel:** .020±.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 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/lead

plated phosphor bronze

Connector (.100 Center): Nylon UL94V-2, tin

plated copper alloy

**Label:** TT406 Thermal transfer cast film **Solder:** 60/40 Tin lead, no clean – low residue flux

lux

Lubricating Grease: NYE nyogel 774L Hex Nut: Nickel, plated with brass Lockwasher: Stainless steel

**Header:** Hi-Temp glass filled thermoplastic UL94V-0, phoshor bronze (pinned 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

