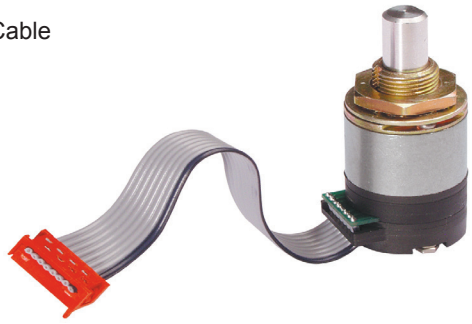
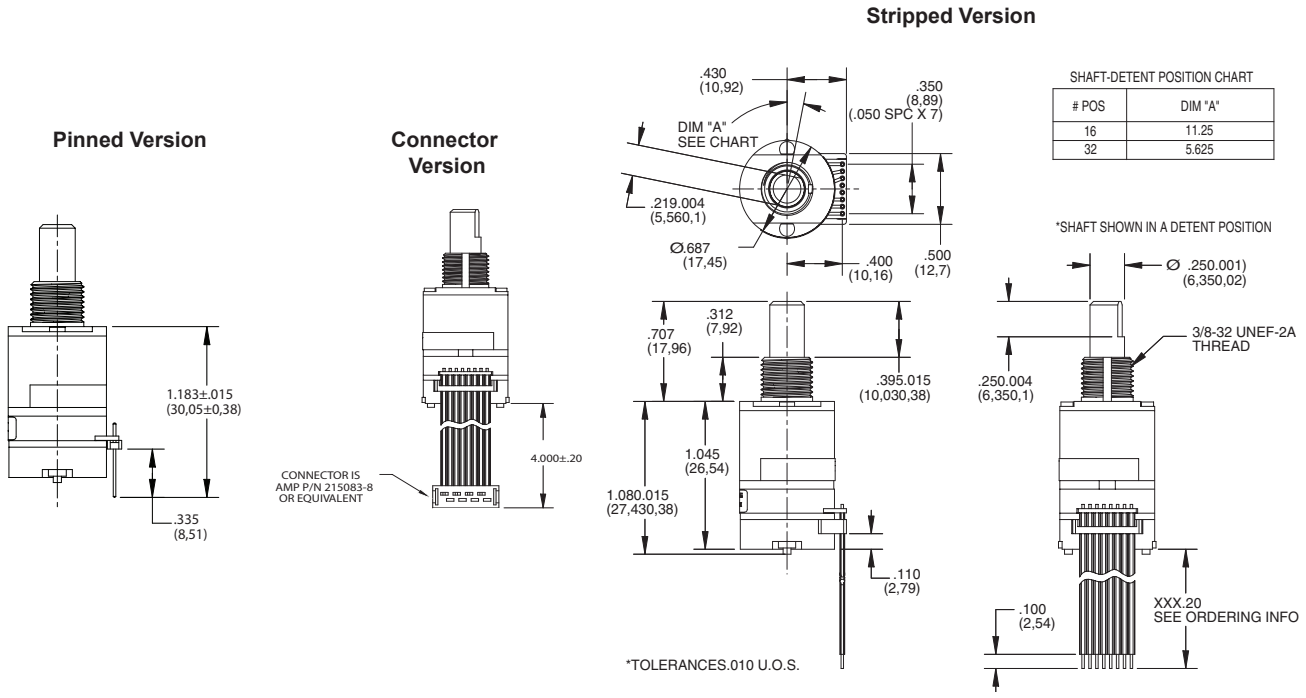
# SERIES 62B
## Push-Pull, High Torque

### FEATURES
- Multiple Switching Functions Available in One Compact Device
- Push and Pull Travel Options
- Pull Shaft Resists Accidental Actuation
- High Rotational Torque for Positive Detent Feel and Superior Tactile Feedback
- Long Life, High Reliability
- CMOS, HCMOS, and TTL Compatible
- Pin, Cable and Connector with Cable Termination Options
- Custom Modifications Available

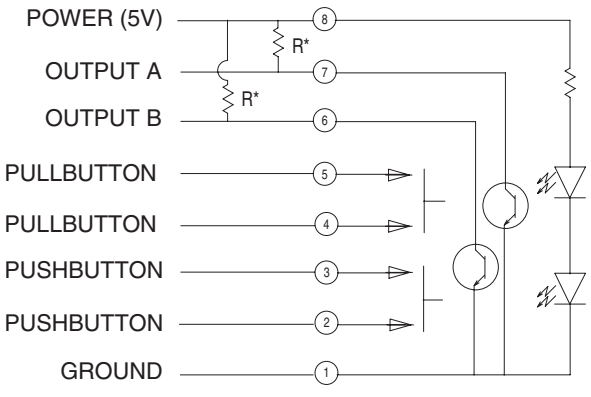
### APPLICATIONS
- Use for Menu Scrolling or Function Selection
- Avionics
- Industrial
- Medical



### DIMENSIONS in inches (and millimeters)

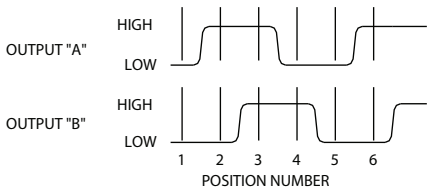



### SWITCH SCHEMATIC, WAVEFORM, AND TRUTH TABLE




*EXTERNAL 2.2k Ω PULL-UP RESISTANCE REQUIRED FOR OPERATION.

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




| Clockwise Rotation | | |
|---|---|---|
| Position | Output A | Output B |
| 1 | | |
| 2 | • | |
| 3 | • | • |
| 4 | | • |

• Indicates logic high; blank indicates logic low.
Code repeats every 4 positions.

## SPECIFICATIONS

### Environmental Specifications

**Operating Temperature 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 15 g, within a varied frequency of 10 to 2000 Hz
**Mechanical Shock:**
Test 1: 100 g for 6 ms half-sine wave with a velocity change of 12.3 ft/sec
Test 2: 100 g for 6 ms sawtooth wave with a velocity change of 9.7 ft/sec

### Rotary Electrical and Mechanical Specifications

**Operating Voltage:** 5.00±.25 Vdc
**Supply Current:** 30 mA maximum at 5 Vdc
**Output:** Open collector phototransistor, external pull-up resistors are required
**Output Code:** Two-bit quadrature, channel A leads channel B by 90° electrically during clockwise rotation of the shaft
**Logic Output Characteristics:**
Logic high signal shall be no less than 3.0 Vdc
Logic low signal shall be no greater than 1.0 Vdc
**Minimum Sink Current:** 2.0 mA
**Power Consumption:** 150 mW maximum
**Mechanical Life:** 1 million rotational cycles of operation. One cycle is a rotation through all positions and a full return
**Average Rotational Torque:** 16 position: 5.0 ± 1.5 in-oz, 32-position: 2.5 ±1 .5 in-oz. 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:** 20 lbs minimum
**Terminal Strength:** 15 lbs minimum terminal pull-out force for cable or header termination
**Solderability:** 95% free of pin holes and voids

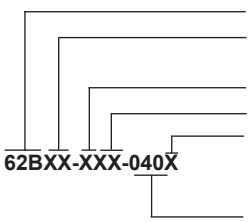
### Pull-Button/Push-Button Electrical and Mechanical Specifications

**Rating:** 10 mA at 5 Vdc
**Contact Resistance:** <10 ohms
**Life:** 3 million actuations minimum
**Contact Bounce:** <4 ms make,<10 ms break
**Actuation Force:** 1700±450 g for both push and pull-button
**Shaft Travel:** .030±.010 standard travel. .050±.010 long travel

### Materials and Finishes

**Bushing:** Zinc Diecast, Cadmium Plated per QQP-416, Class II, Type II
**Shaft:** Aluminum
**Detent Cover:** Powered Metal per SS-316N1-25
**Through Bolts:** 305 Stainless Steel
**Through Bolts Nuts:** 305 Stainless Steel
**Shaft Travel Springs:** Carbon Steel, Oil Dip Finish
**Detent Ball:** Stainless Steel
**Detent Spring:** Tinned Music Wire
**Spacer/Push Dome Retainer:** Ryton R-4
**Push Actuator:** Zytel 70G33L
**Snap Dome:** Stainless Steel
**Printed Circuit Boards:** Nema Grade FR4, Double Clad with Copper, Plated with Gold over Nickel
**Infrared Light 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
**Code Rotor:** Delrin 100
**Code Housing:** Hiloy-610
**Pull Dome Retainer:** Ryton R-4
**Pull Actuator:** Polyurethane, Isoplast 101 LGF40 Blk
**Cover:** Ryton R-4
**Cable:** Copper Standard with Topcoat in PVC Insulation (Cabled Versions Only)
**Connector:** PA4.6 with Tin over Nickel Plated Phosphor Bronze (Cable/Connector Versions)
**Label:** TT406 Thermal Transfer Cast Film
**Solder:** Sn/Ag/Cu, lead-free, no clean
**Lubricating Grease:** Nye Nyogel 774L
**Mounting Hex Nut:** Tin/Zinc Over 1/2 Hard Brass
**Lockwasher:** 8-18 Stainless Steel, Passivate Finish
**Pin Header:** Hi-Temp Glass Filled Thermoplastic UL94V-0, Phosphor Bronze (Pinned Versions Only)

## ORDERING INFORMATION




**Series**
**Angle of Throw:** 22 = 22.5° For Code Change and 16 Detent Positions.
11 = 11.25° For Code Change and 32 Detent Positions.
**Push/Pull-Button Travel:** S = Standard Travel (.030" Both Directions). L = Long Travel (.050" Both Directions)
**Push/Pull Option:** P = Pull-Button Only. PP = Push and Pull-Button
**Termination:** C = .050" Pitch Ribbon Cable with Connector
S = .050" Pitch Ribbon Cable with Stripped End
P = .050" Pitch Pin Header
**Cable Termination:** 040 = 4.0in. Cable is terminated with Amp Connector P/N 215083-6.
See Amp Mateability Guide for mating connector details.
*Eliminate cable length if ordering pins (Ex: 62B22-SP-P)

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