

# SERIES 62A,D,V

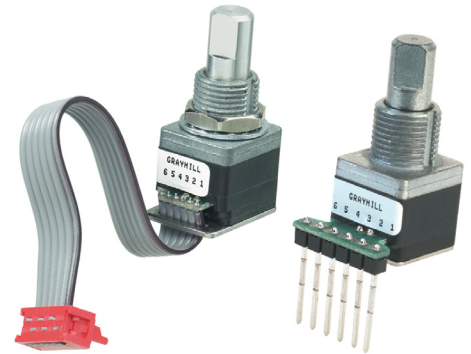
## 1/2" Package

### FEATURES

- Low cost
- Long life
- Available in 3.3 or 5.0 Vdc operating voltages
- High torque version to emphasize rotational feel
- Economical size
- Optically coupled for more than a million cycles

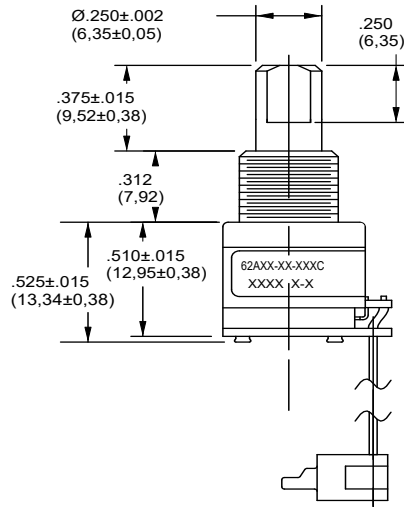
### APPLICATIONS

- Global positioning/driver information systems
- Medical equipment
- Optional integral pushbutton
- Compatible with CMOS, TTL and HCMOS logic levels
- Available in 12, 16, 20, 24 and 32 detent positions (non-detent also available)
- Choice of cable lengths and terminations



### DIMENSIONS in inches (and millimeters)

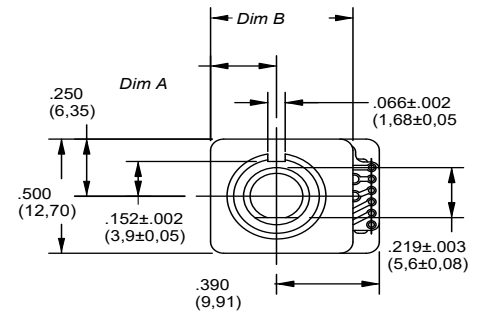
#### Cable Version



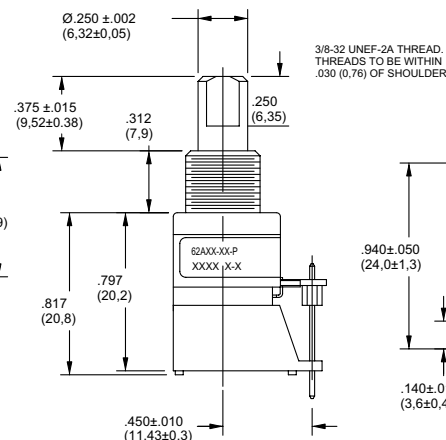
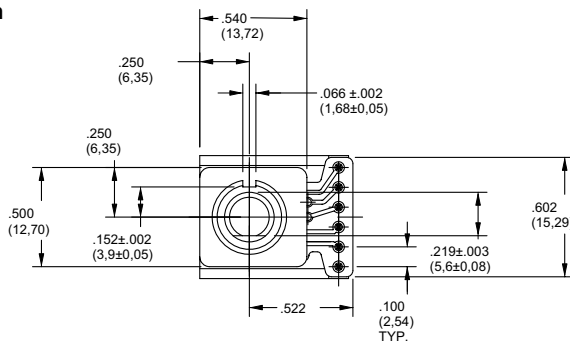
3/8-32 UNEF-2A THREAD  
THREADS TO BE WITHIN  
.030 (0,76) OF SHOULDER.

Dim A = .250 (6,35) for 62A and 62V  
.290 (7,37) for 62D

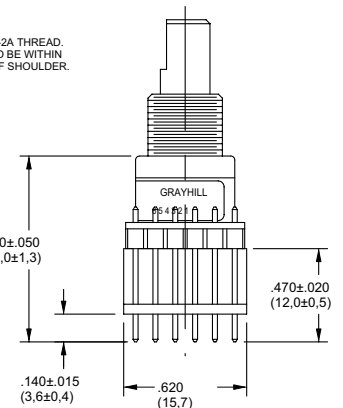
Dim B = .540 (13,72) for 62A and 62V  
.580 (14,73) for 62D

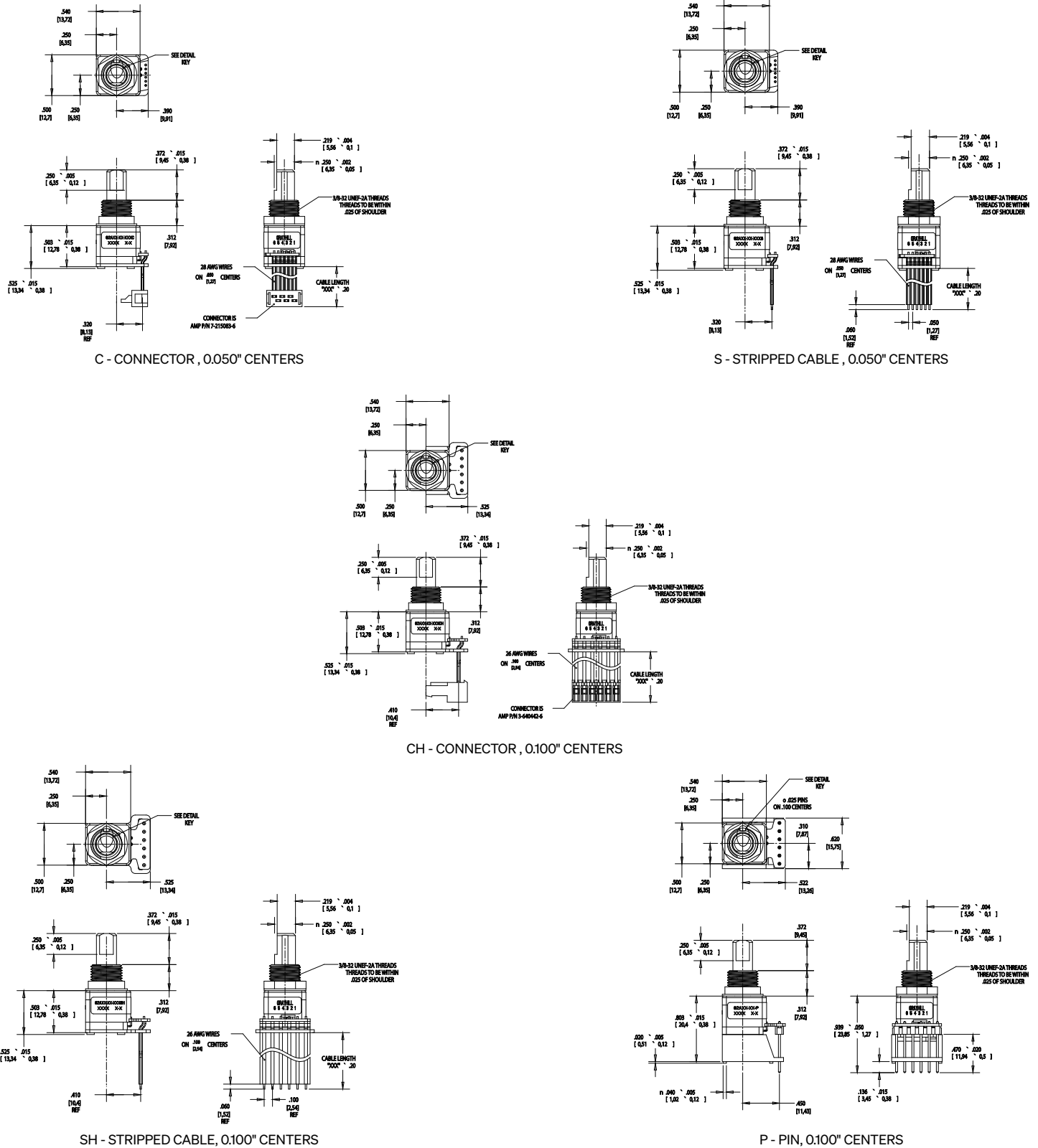


#### Pin Version



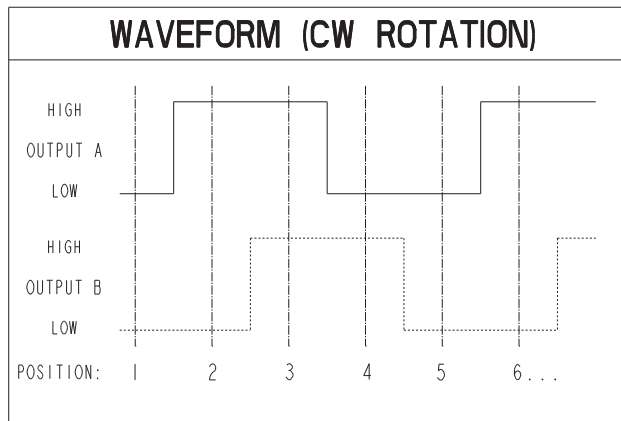
3/8-32 UNEF-2A THREAD.  
THREADS TO BE WITHIN  
.030 (0,76) OF SHOULDER.



**TERMINATION OPTIONS**


**SUPPLY CURRENT & LOGIC OUTPUT CHARACTERISTICS**

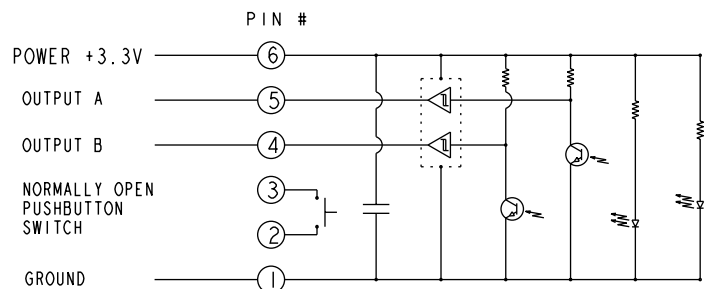
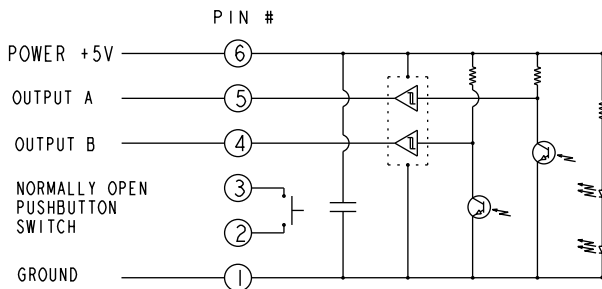
ROTARY ELECTRICAL AND MECHANICAL SPECIFICATIONS			
		A & D STYLE	V STYLE
1. CODING:		TWO BIT QUADRATURE CODED OUTPUT (SEE TRUTH TABLE).	
2. OPERATING VOLTAGE:		5.00±.25 Vdc.	3.30±.125 Vdc.
3. SUPPLY CURRENT:		30 mA MAXIMUM.	50 mA MAXIMUM.
4. LOGIC OUTPUT CHARACTERISTICS:	SMT OPTICS	PUSH-PULL OUTPUTS COMPATIBLE WITH CMOS, TTL AND HCMOS LOGIC.	
		LOGIC HIGH: $V_{OH} = 4.5 \text{ Vdc MIN AT } I_{OH} = -8.0 \text{ mA \& } V_{CC}=5.00 \text{ Vdc.}$	LOGIC HIGH: $V_{OH} = 2.8 \text{ Vdc MIN AT } I_{OH} = -8.0 \text{ mA \& } V_{CC}=3.30 \text{ Vdc.}$
		LOGIC LOW: $V_{OL} = 0.5 \text{ Vdc MAX AT } I_{OL} = 8.0 \text{ mA.}$	LOGIC LOW: $V_{OL} = 0.5 \text{ Vdc MAX AT } I_{OL} = 8.0 \text{ mA.}$

**WAVEFORM AND TRUTH TABLE: Standard Quadrature 2-Bit Code**


**TRUTH TABLE (CW ROTATION)**

POSITION	OUTPUT A	OUTPUT B
1		
2	○	
3	○	○
4		○

BLANK = LOGIC LOW    ○ = LOGIC HIGH  
CODE REPEATS EVERY FOUR POSITIONS.

**CIRCUITRY: SURFACE MOUNT OPTICS: Pushpull Outputs**




## SPECIFICATIONS

### Electrical and Mechanical Ratings

**Pushbutton Rating:** 5 Vdc, 10 mA, resistive  
**Pushbutton Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)  
**Pushbutton Life:** 3 million actuations min.  
**Pushbutton Contact Bounce:** less than 4 mS at make and less than 10 mS at break  
**Pushbutton Actuation Force:** 1000 ±300 grams  
**Pushbutton Travel:** .010/.025 inch  
**Coding:** 2-bit quadrature coded output  
**Voltage Breakdown:** 250 Vac between mutually insulated parts  
**Rotational Life:** 1,000,000 cycles minimum (One cycle is a rotation through all positions and a full return)  
**Optical Rise and Fall Times:** less than 30 mS maximum  
**Operating Torque:**  
 Style A and V: 2.0 ±1.4 in-oz. initially  
 Style D: 3.5 ±1.4 in-oz initially  
 Non-detent: less than 1.5 in-oz initially  
**Shaft Push Out Force:** 45 lbs minimum  
**Mounting Torque:** 15 in-lbs maximum  
**Terminal Strength:** 15 lbs cable pull-out force minimum  
**Operating Speed:** 100 RPM maximum  
**Axial Shaft Play:** .010 maximum

### Environmental Ratings

**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -40°C to 85°C  
**Relative Humidity:** 90-95% at 40°C for 96 hours  
**Vibration Resistance:** Harmonic motion with amplitude of 15G, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204  
**Mechanical Shock:** Test 1: 100G for 6 mS, half sine, 12.3 ft/s; Test 2: 100G for 6 mS, sawtooth, 9.7 ft/s

### Materials and Finishes

**Code Housing:** Reinforced thermoplastic  
**Shaft:** Zinc or aluminum  
**Bushing:** Zinc casting  
**Shaft Retaining Ring:** Stainless steel  
**Detent Spring:** Stainless steel  
**Printed Circuit Boards:** NEMA grade FR-4 gold over nickel or palladium  
**Terminals:** Brass, tin-plated  
**Mounting Hardware:** One brass, nickel-plated nut and zinc-plated spring steel with clear trivalent chromate finish lockwasher supplied with each switch. Nut is 0.094 inches thick by 0.435 inches across flats.

**Rotor:** Thermoplastic

**Code Housing:** Thermoplastic

**Pushbutton Dome:** Stainless steel

**Dome Retaining Disk:** Thermoplastic

**Pushbutton Housing:** Thermoplastic

**Phototransistor:** Planar Silicon NPN

**Infrared Emitter:** Gallium aluminum arsenide

**Pushbutton Contact:** Brass, nickel-plated

**Flex Cable:** 26 AWG or 28 AWG, stranded/top coated wire, PVC coated on .050 or .100" centers (cabled version)

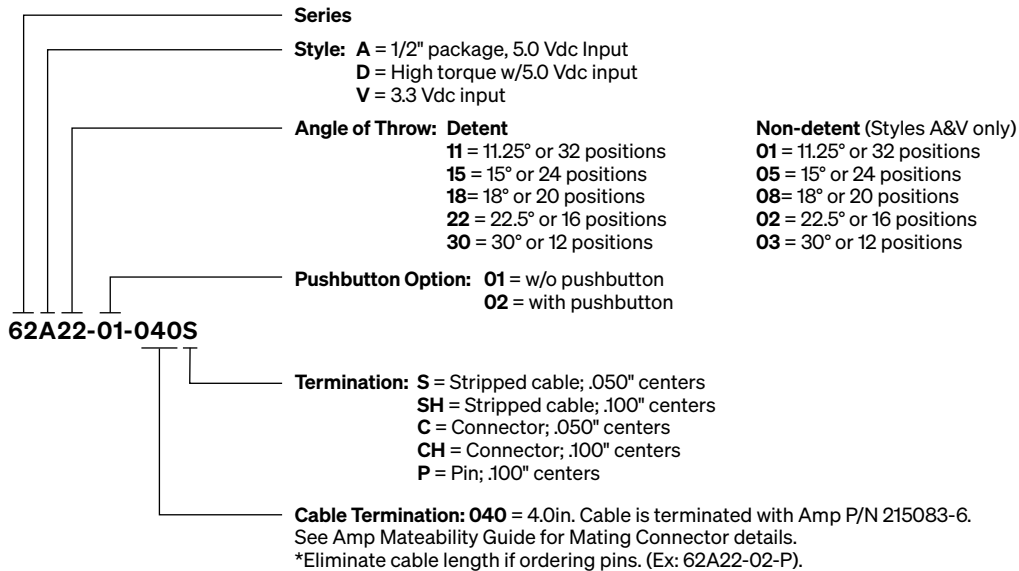
**Header Pins:** Phosphor bronze, tin-plated

**Spacer:** ABS

**Backplate/Strain Relief:** Stainless steel

## ORDERING INFORMATION

These switches have Quadrature 2-bit code output and an optional shaft actuated pushbutton switch. Custom materials, styles, colors, and markings are available. Control knobs available.



Available from your local Grayhill Distributor. For prices and discounts, contact a local Sales Office, an authorized local Distributor or Grayhill.