



Optical Encoders

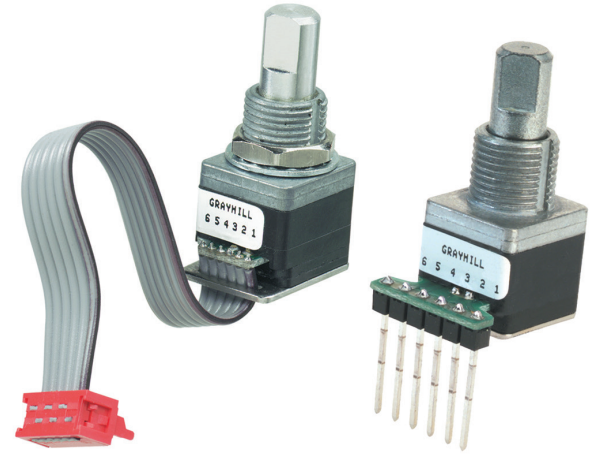
SERIES 62A, V, D 1/2" Package

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
- 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

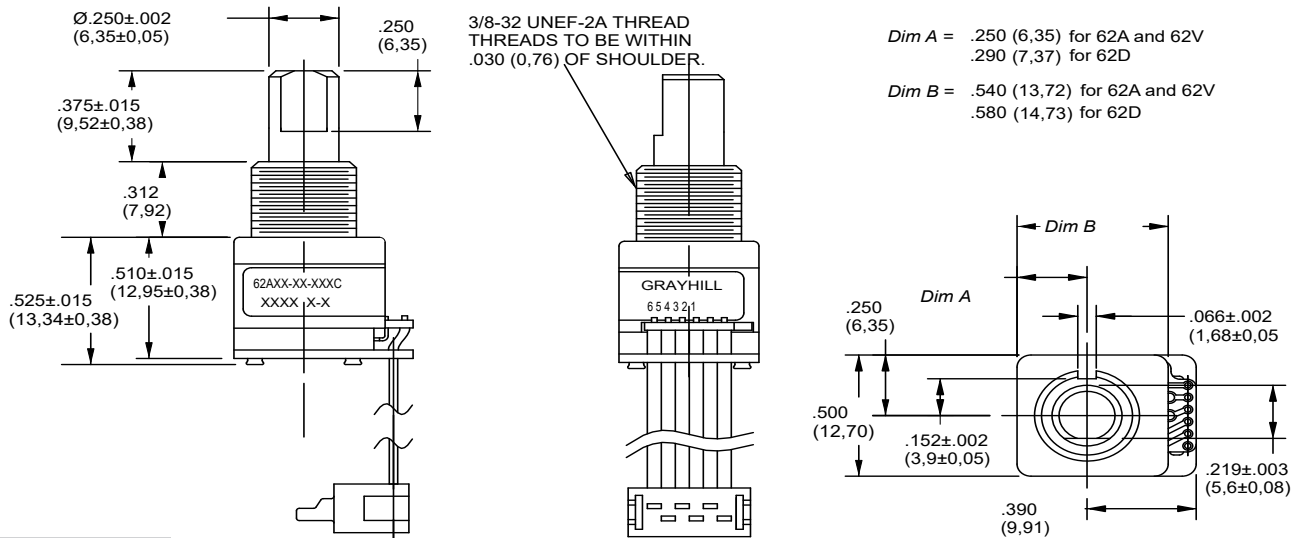
APPLICATIONS

- Global Positioning/Driver Information Systems

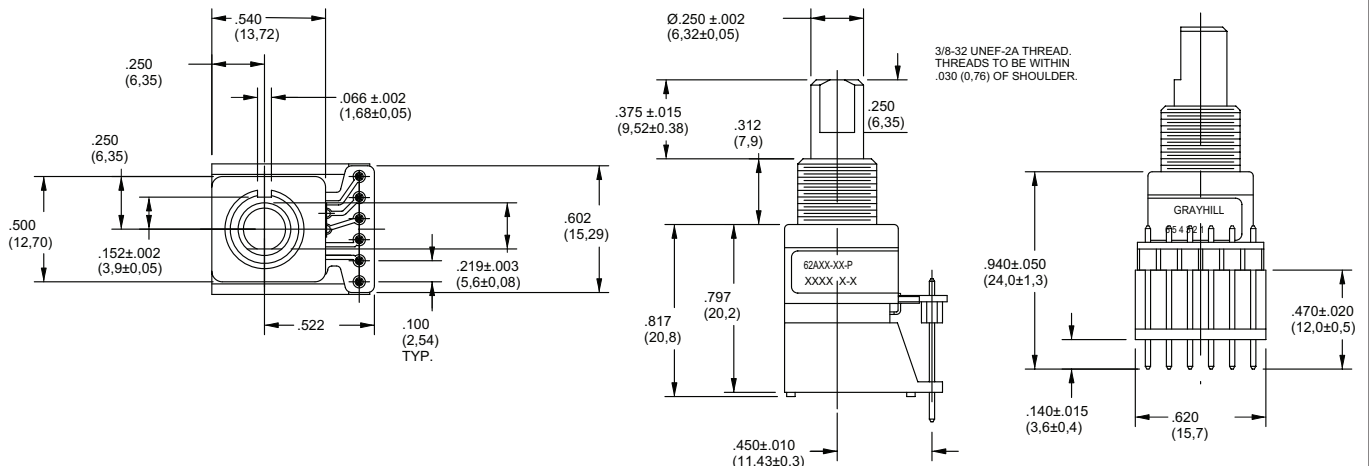


DIMENSIONS in inches (and millimeters)

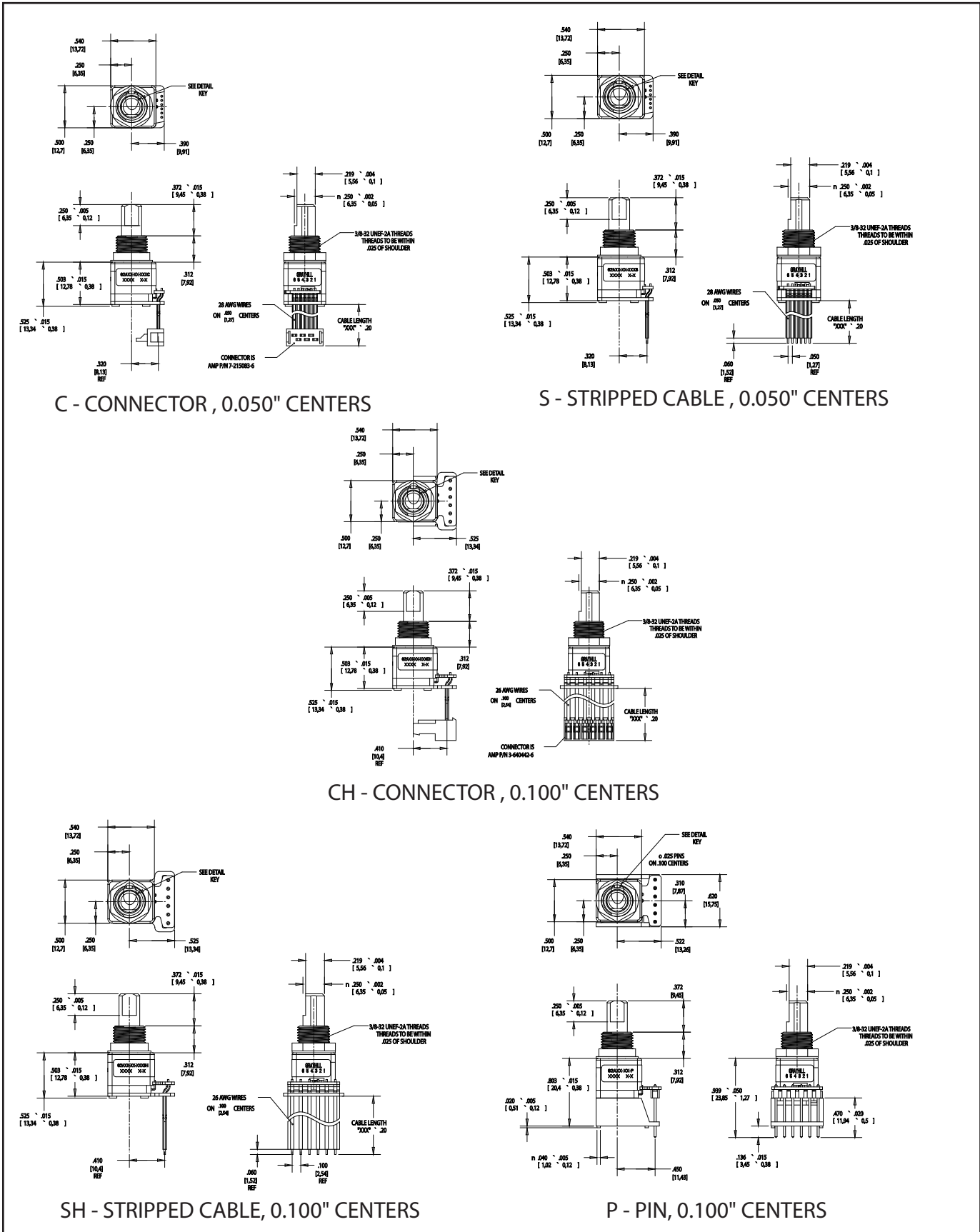
Cable Version



Pin Version



TERMINATION OPTIONS

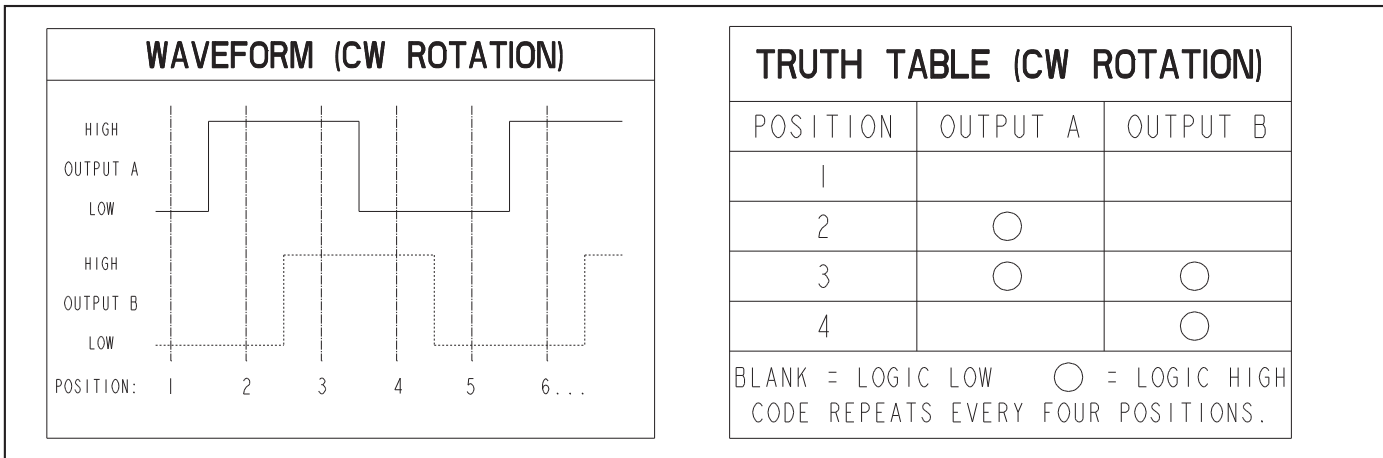


Optical and Mechanical Encoders

SUPPLY CURRENT & LOGIC OUTPUT CHARACTERISTICS

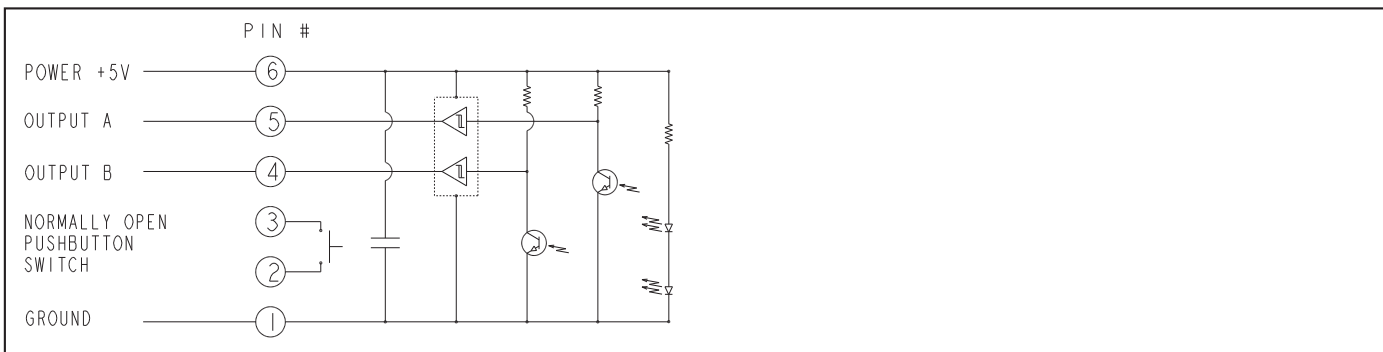
		A & D STYLE	V STYLE
OPERATING VOLTAGE:		5.00±.25 Vdc.	3.30±.125 Vdc.
SUPPLY CURRENT:		30 mA MAXIMUM.	50 mA MAXIMUM.
LOGIC OUTPUT CHARACTERISTICS:	SMT OPTICS	PUSH-PULL OUTPUTS COMPATIBLE WITH CMOS, TTL AND HCMOS LOGIC.	
		LOGIC HIGH: $V_{OH} = 4.5 \text{ Vdc MIN AT } I_{OH} = -8.0 \text{ mA \& } V_{CC} = 5.00 \text{ Vdc.}$	N/A
		LOGIC LOW: $V_{OL} = 0.5 \text{ Vdc MAX AT } I_{OL} = 8.0 \text{ mA.}$	N/A
	WIREBOND OPTICS	OPEN COLLECTOR PHOTOTRANSISTOR OUTPUT.	
		LOGIC HIGH: $V_{OH} = 3.8 \text{ Vdc MIN at } V_{CC} = 5.00 \text{ Vdc WITH } 2.2\text{k}\Omega \text{ PULL-UP RESISTOR.}$	LOGIC HIGH: $V_{OH} = 2.3 \text{ Vdc MIN at } V_{CC} = 3.30 \text{ Vdc WITH } 2.2\text{k}\Omega \text{ PULL-UP RESISTOR.}$
		LOGIC LOW: $V_{OL} = 0.8 \text{ Vdc MAX AT } I_{OL} = 2.0 \text{ mA WITH } 2.2\text{k}\Omega \text{ PULL-UP RESISTOR.}$	LOGIC LOW: $V_{OL} = 0.8 \text{ Vdc MAX AT } I_{OL} = 1.0 \text{ mA WITH } 2.2\text{k}\Omega \text{ PULL-UP RESISTOR.}$

WAVEFORM AND TRUTH TABLE Standard Quadrature 2-Bit Code



Optical and Mechanical Encoders

CIRCUITRY: SURFACE MOUNT OPTICS Pushpull Outputs (62A22, 62A15, 62A11)



CIRCUITRY: WIREBOND OPTICS Open Collector Outputs (All Others)





Optical Encoders

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

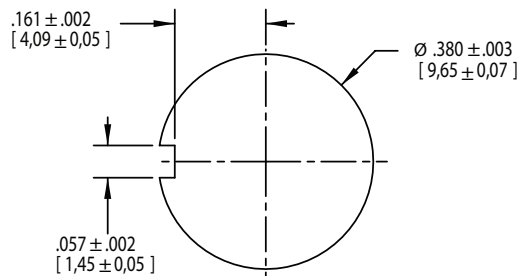
Operating Temperature Range: -40°C to 85°C
Storage Temperature Range: -55°C to 100°C
Relative Humidity: 90–95% at 40°C for 96 hours
Vibration Resistance: Harmonic motion with amplitude of 15G, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204
Mechanical Shock: Test 1: 100G for 6 mS, half sine, 12.3 ft/s; Test 2: 100G for 6 mS, sawtooth, 9.7 ft/s

Materials and Finishes

Shaft: Zamak 2
Bushing: Zamak 2
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.
Flex Cable: 28 AWG, stranded/top coated wire, PVC coated on .050 or .100" centers (cabled version)
Header Pins: Phosphor bronze, tin-plated

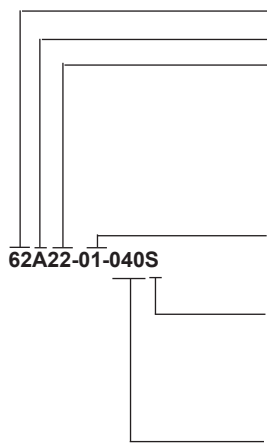
This product series is ROHS Compliant.

Suggested Mounting Panel Cutout



Optical and Mechanical Encoders

ORDERING INFORMATION



Series

Style: A = 1/2" package, 5.0 Vdc Input, D = high torque w/5.0 Vdc input, V = 3.3 Vdc input

Angle of Throw:

Detent

11 = 11.25° or 32 positions
 15 = 15° or 24 positions
 18 = 18° or 20 positions
 22 = 22.5° or 16 positions
 30 = 30° or 12 positions

Non-detent (Styles A&V only)

01 = 11.25° or 32 positions
 05 = 15° or 24 positions
 08 = 18° or 20 positions
 02 = 22.5° or 16 positions
 03 = 30° or 12 positions

Pushbutton Option: 01 = w/o pushbutton, 02 = with pushbutton

Termination:

S = Stripped cable; .050" centers
 SH = Stripped cable; .100" centers
 C = Connector; .050" centers
 CH = Connector; .100" centers
 P = Pin; .100" centers

Cable Length: Cable Termination: 040 = 4.0in. Cable is terminated with Amp P/N 215083-6. See Amp Mateability Guide for Mating Connector details.

*Eliminate cable length if ordering pins. (Ex: 62A22-02-P).

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 Component Distributor.

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