# SERIES 62A,V,D

1/2" Package

#### **FEATURES**

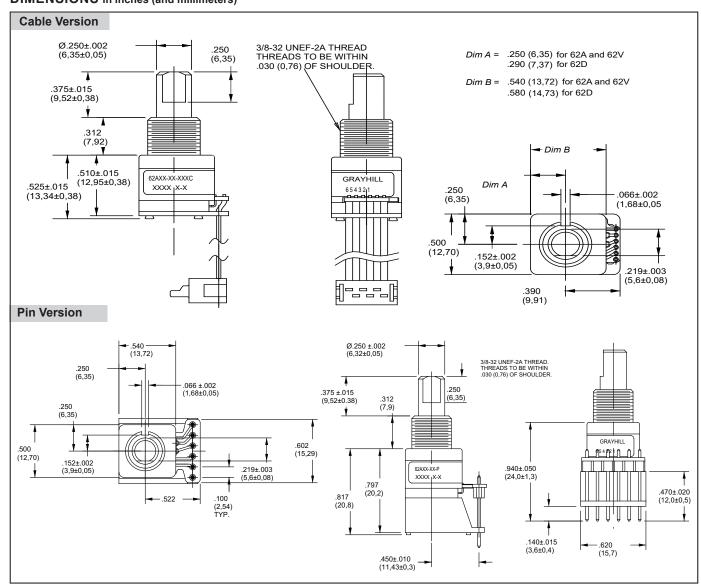
- Low Cost
- Long Life
- Available in 3.3 or 5.0 Vdc Operating Voltages
- High Torque Version to Emphasize Rotational Feel
- Economical Size
- Optically Coupled for More than a Million Cycles
- · Optional Integral Pushbutton
- Compatible with CMOS, TTL and HCMOS Logic Levels
- Available in 12,16, 20, 24 and 32 Detent Positions (Non-detent also available)
- Choice of Cable Lengths and Terminations



### **APPLICATIONS**

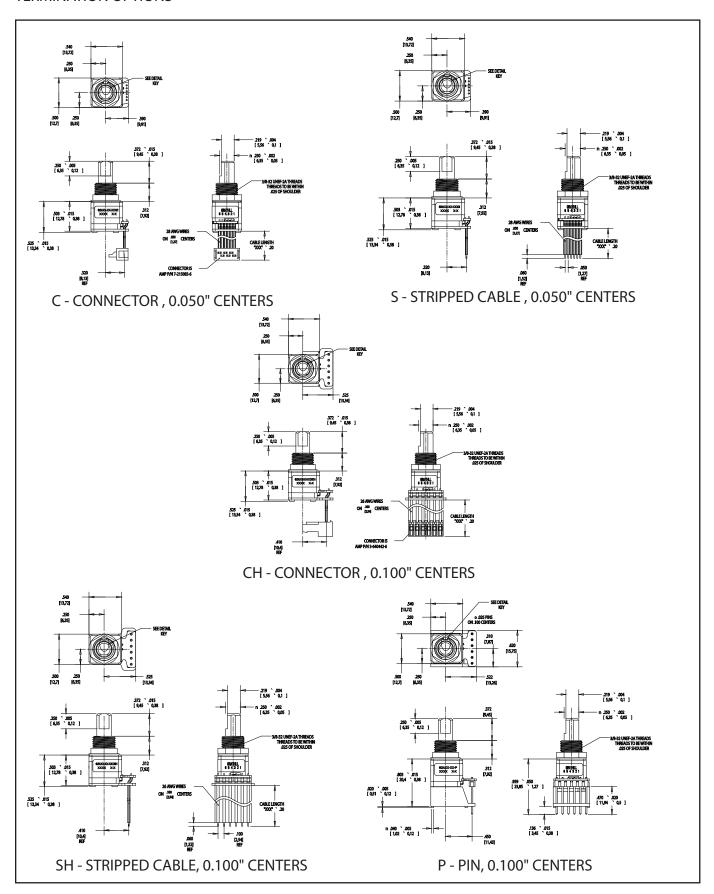
 Global Positioning/Driver Information Systems

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





# **TERMINATION OPTIONS**

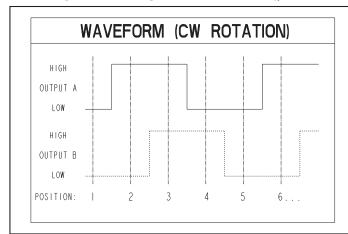


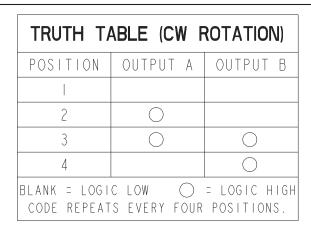


#### **SUPPLY CURRENT & LOGIC OUTPUT CHARACTERISTICS**

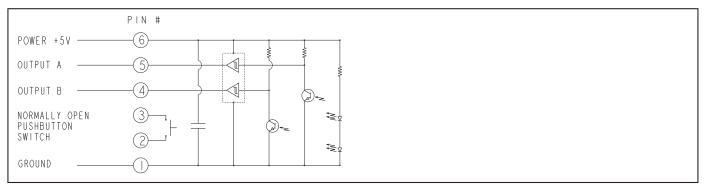
		A & D STYLE	V STYLE
OPERATING VOLTAGE:		5.00±.25 Vdc.	3.30±.∣25 Vdc.
SUPPLY CURRENT:		30 mA MAXIMUM.	50 mA MAXIMUM.
LOGIC OUTPUT CHARACTERISTICS:	SMT OPTICS	PUSH-PULL OUTPUTS COMPATIBLE WITH CMOS, TTL AND HCMOS LOGIC.	
		LOGIC HIGH: V <sub>OH</sub> = 4.5 Vdc MIN AT I <sub>OH</sub> = -8.0 mA & V <sub>cc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

# WAVEFORM AND TRUTH TABLE Standard Quadrature 2-Bit Code

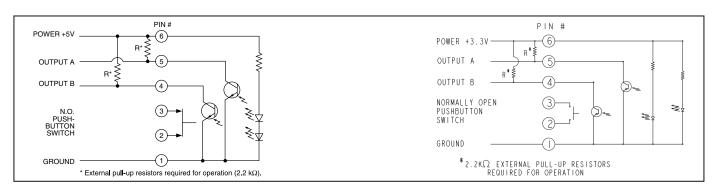




# CIRCUITRY: SURFACE MOUNT OPTICS Pushpull Outputs (62A22, 62A15, 62A11)



## CIRCUITRY: WIREBOND OPTICS Open Collector Outputs (All Others)





#### **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** 

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

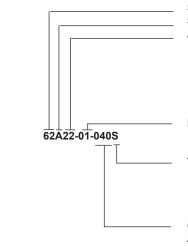
version)

Header Pins: Phospher bronze, tin-plated

Spacer: ABS

Backplate/Strain Relief: Stainless steel

### 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

 $30 = 30^{\circ}$  or 12 positions

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

Non-detent (Styles A&V only)

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 Terminination: 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.