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

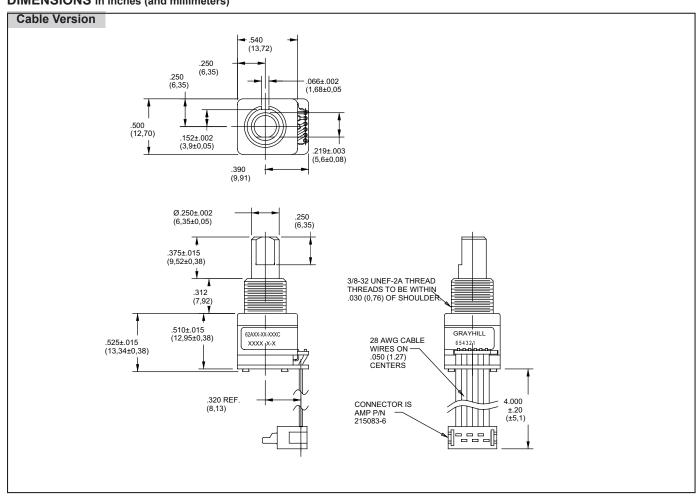
APPLICATIONS

 Global Positioning/Driver Information Systems

Medical Equipment

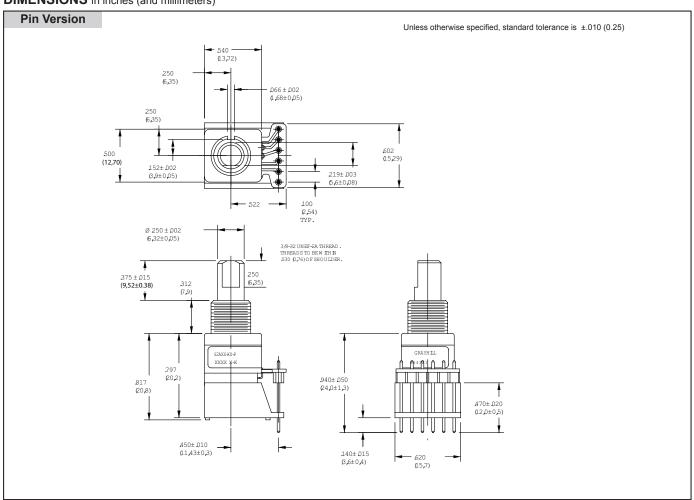


DIMENSIONS in inches (and millimeters)





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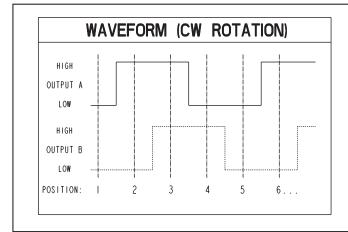


SUPPLY CURRENT & LOGIC OUTPUT CHARACTERISTICS

		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 Vdc MIN AT I _{OH} = -8.0 mA & V _{cc} =5.00 Vdc.	N / A
		LOGIC LOW: V _{OL} = 0.5 Vdc MAX AT I _{OL} = 8.0 mA.	N / A
	WIREBOND OPTICS	OPEN COLLECTOR PHOTOTRANSISTOR OUTPUT.	
		LOGIC HIGH: V _{OH} = 3.8 Vdc MIN at V _{CC} = 5.00 Vdc WITH 2.2KΩ PULL-UP RESISTOR.	LOGIC HIGH: V _{OH} = 2.3 Vdc MIN a† V _{CC} =3.30 Vdc WITH 2.2KΩ PULL-UP RESISTOR.
		LOGIC LOW: V_{0L} = 0.8 Vdc MAX AT I_{0L} = 2.0 mA WITH 2.2K Ω PULL-UP RESISTOR.	LOGIC LOW: V_{OL} = 0.8 Vdc MAX AT I_{OL} = 1.0 mA WITH 2.2K Ω PULL-UP RESISTOR.

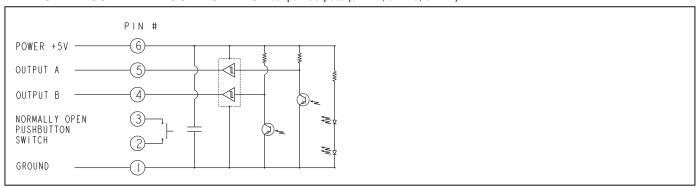


WAVEFORM AND TRUTH TABLE Standard Quadrature 2-Bit Code

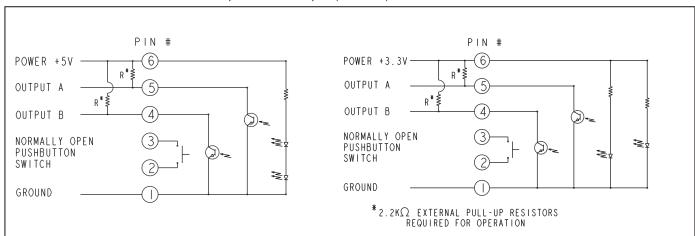


TRUTH TABLE (CW ROTATION)				
POSITION	OUTPUT A	OUTPUT B		
I				
2	0			
3	0	0		
4		0		
BLANK = LOGI CODE REPEAT	C LOW O	= LOGIC HIGH POSITIONS.		

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

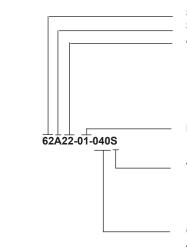
Spacer: ABS

Non-detent (Styles A&V only)

 $01 = 11.25^{\circ} \text{ or } 32 \text{ positions}$

Backplate/Strain Relief: Stainless steel

ORDERING INFORMATION



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

> $11 = 11.25^{\circ} \text{ or } 32 \text{ positions}$ $15 = 15^{\circ}$ or 24 positions 18= 18° or 20 positions

 $05 = 15^{\circ}$ or 24 positions 08= 18° or 20 positions $22 = 22.5^{\circ}$ or 16 positions $02 = 22.5^{\circ}$ or 16 positions $03 = 30^{\circ}$ or 12 positions $30 = 30^{\circ}$ 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 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.