

Optical Encoders

Series 61M

Optically Coupled for Simulated Mechanical Rotary Switch Output

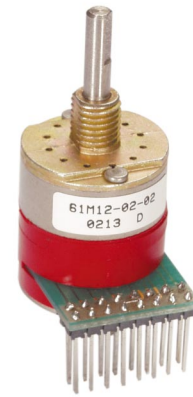


FEATURES

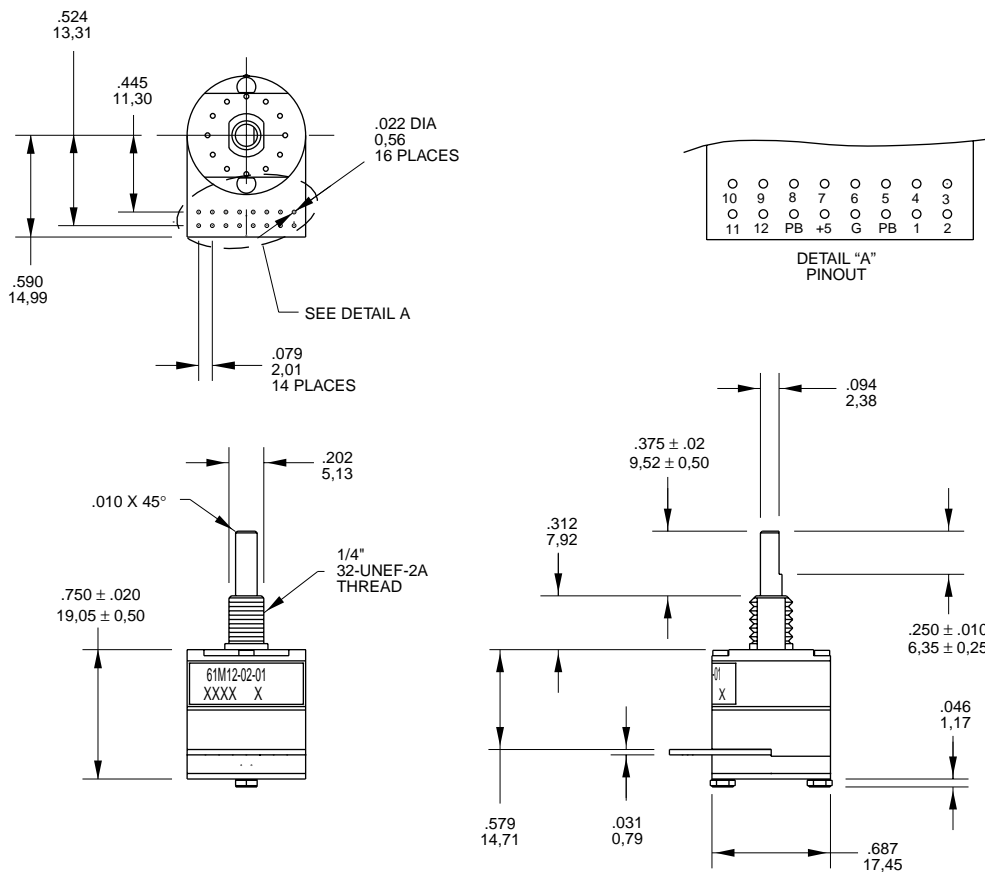
- Optical Alternative to Rotary Contacts
- One Pulse Per Detent Position Per Rotation
- Long Life of a Million Cycles
- With or Without Pushbutton
- Continuous Rotation and Fixed Stops Available
- Rugged Construction
- 8, 10 and 12 Positions Available

Applications

- Avionics
- Any application requiring rotary switch output and the increased reliability of an optical device



DIMENSIONS In inches (and millimeters)



Unless otherwise specified, standard tolerance is ±.010 (0,25).

CIRCUITRY, TRUTH TABLE, AND WAVEFORM Standard Quadrature 2-Bit Code

SWITCH SCHEMATIC

N.O. PUSHBUTTON

Note: External pull-up resistors required for operation. 20kΩ is suggested.

POSITION	PIN NUMBER											
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
1	●											
2		●										
3			●									
4				●								
5					●							
6						●						
7							●					
8								●				
9									●			
10										●		
11											●	
12												●

Note:
Blank Indicates high state
● Indicates low state
Code repeats every 12 positions

SPECIFICATIONS

Electrical Ratings

Operating Voltage: 5 Vdc, 60mA maximum, resistive

Contact Resistance: Less than 10 Ohms

Voltage Breakdown: 250 Vac between mutually insulated parts

Contact Bounce: Less than 4 mS at make and less than 10 mS at break

Actuation Life: 3,000,000 operations

Actuation Force: Maximum actuation force of 650 grams and a minimum force of 300 grams

Mechanical Ratings

Life Expectancy: 1 million cycles of operation; (1 cycle=360° rotation and return)

Rotational Torque: Various, contact Grayhill

Shaft Pushout Force: 50 lbs. minimum

Mounting Torque: 20 in.-lbs. maximum

Switch Ratings

Output: One pulse per position per rotation (360 degrees CW/CCW)

Operating Voltage: 5.0 ± .25 Vdc

Supply Current: 60mA maximum at 5 Vdc

Logic High: 3.8V minimum

Logic Low: .8V minimum

Logic Rise and Fall Time: 30mS Typ.

Environmental

Operating Temperature Range: -40°C to +85°C

Storage Temperature Range: -55°C to +100°C

Vibration: MIL-STD 202, Method 204, Condition B

Mechanical Shock: 100g's, 6 ms, Half Sine, 12.3 ft/s and 100g's, 6 ms, Sawtooth, 9.7 ft/s

Humidity: 90-95% Relative Humidity at 40°C for 96 hours

Materials and Finishes

Code Housing: Nylon (Red) Hiloy 610

Detent Housing: Stainless Steel

Rotor: Reinforced Thermoplastic, 30% Glass Filled Polyester

Bushing: Zinc Die Cast, Cadmium Plated

Shaft: Stainless Steel

Detent Balls: 302 Stainless Steel

Through Bolts: 305 Stainless Steel

Through Bolt Nuts: Stainless Steel

Printed Circuit Boards: NEMA Grade FR-4

Terminals: Copper Alloy

Aperture: Chem Etched Stainless Steel and/or Electroformed Nickel

Dome Retainer: Thermoplastic

Mounting Hardware: One Brass, cadmium-plated nut and lockwasher supplied with each switch

OPTIONS

Contact Grayhill for customer application needs.

ORDERING INFORMATION

61MXX-XX-XX

Series
"M" Style

Angle of Throw: Detent
08 = 30° or 8 positions
10 = 36° or 10 positions
12 = 45° or 12 positions

Termination: 01 = without terminal pins, 02 = with terminal pins

Pushbutton Option: 01 = without P.B., 02 = with P.B.

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., Call in CHINA (Beijing) : Phone: (010)6851-9097, Fax: (010) 6851-5578