

SERIES 61M
Optically Coupled for Simulated
Mechanical Rotary Switch Output

FEATURES

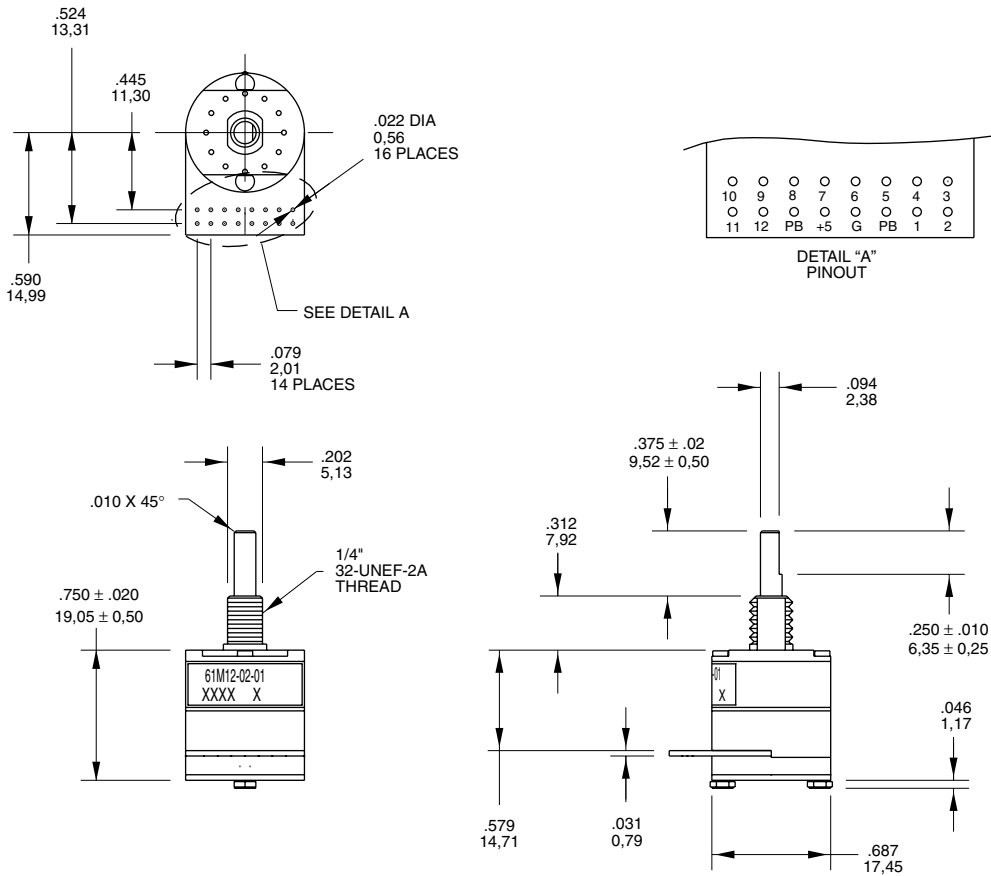
- Optical Alternative to Rotary Contacts
- One Pulse Per Detent Position Per Rotation
- Long Life of a Million Cycles
- With or Without Pushbutton
- Continuous Rotation and Fixed Stops Available
- Rugged Construction
- 8, 10 and 12 Positions Available

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).

Optical and Mechanical Encoders

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

SWITCH SCHEMATIC

N.O. PUSHBUTTON

Note: External pull-up resistors required for operation. 20k Ω 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

Pushbutton 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
- Pushbutton Travel:** .010/.025

Mechanical Ratings

- Life Expectancy:** 1 million cycles of operation; (1 cycle=360° rotation and return)
- Rotational Torque:** 10 in-oz. \pm 3 in-oz. customs also available.
- 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 \pm .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

Series
"M" Style

Angle of Throw: Detent

- 08 = 45° or 8 positions
- 10 = 36° or 10 positions
- 12 = 30° 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.