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

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 ±0.010 (0.25).
CIRCUITRY and TRUTH TABLE

Note: External pull-up resistors required pins 1-12.

SPECIFICATIONS
Pushbutton Specifications
Rating: 10mA at 5 Vdc
Contact Resistance: Less than 10 Ohms
Contact Bounce: Less than 4 mS at make and less than 10 mS at break
Actuation Life: 3,000,000 actuations
Actuation Force: 8-850±200g, 5-550±200g
Shaft Travel: .020±.010 inch

Rotary Specifications
Rating: 5.0 ± .25 Vdc
Supply Current: 60mA maximum at 5 Vdc
Output: Open collector phototransistor, external pull-up resistors are required
Output Code: One pulse per position per rotation (360 degrees CW/CCW)
Logic High: 3.0V minimum
Logic Low: 1.0V maximum
Power Consumption: 300mW maximum

Mechanical Life: 1 million cycles of operation (1 cycle=360° rotation)
Rotational Torque: H-10.0±2.0 in*oz, L-4.0±1.5 in*oz (torque shall be within 50% of initial value throughout life)
Shaft Pushout Force: 50 lbs. minimum
Shaft Pullout Force: 50 lbs. minimum

Environmental
Operating and Storage Temperature
Range: -40°C to +85°C
Humidity: 90-95% Relative Humidity at 40°C for 96 hours
Vibration: Harmonic motion with amplitude of 15g, within a varied frequency of 10-2000 hZ
Mechanical Shock: 100g’s, 6 ms, Half Sine, 12.3 ft/s and 100g’s, 6 ms, Sawtooth, 9.7 ft/s

Materials and Finishes
Shaft: Stainless steel
Detent/Bushing Housing: Stainless steel
Code Rotor: Reinforced Thermoplastic
Stop Arm: Stainless steel
Deck Spacer: Reinforced thermoplastic
Detent Springs: Piano wire
Detent Balls: Nickel plated stainless steel
Pushbutton Actuator: Zytel 70G33L
Domes: Stainless steel
Backplate: Reinforced Thermoplastic
Printed Circuit Boards: NEMA Grade FR-4, double clad copper, gold plated over nickel
Phototransistor: Planar silicon
Infrared Emitter: Gallium aluminum arsenide
Solder Pins: Tin plated brass
Header: Hi-temp glass filled thermoplastic UL94V-0, phosphor bronze
Resistor: Metal oxide on ceramic substrate

ORDERING INFORMATION

Series
“M” Style
Angle of Throw: Detent
12 = 30° or 12 positions

Pushbutton Force: 0 = no PB, 5 = 550g, 10 = 1,000g
Rotational Torque: L = low torque, H = high torque

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