

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

Clockwise Rotation		
Position	Output A	Output B
1		
2	●	
3	●	●
4		●

● Indicates logic high; blank indicates logic low. Code repeats every 4 positions.

SPECIFICATIONS

Pushbutton Switch Ratings

Rating: 5 Vdc, 10 mA, resistive
Contact Resistance: less than 10 ohms (TTL or CMOS Compatible)
Voltage Breakdown: 250 Vac between mutually insulated parts.
Contact Bounce: Less than 4 milliseconds at make and less than 10 milliseconds at break.
Actuation Life: 3,000,000 operations.
Actuation Force: maximum actuation force of 330 grams and a minimum actuation force of 250 grams.

Encoder Ratings

Coding: 2-bit quadrature coded output.
Operating Voltage: 5.0 ±.25 Vdc
Supply Current: 30 mA maximum at 5 Vdc
Logic High: 3.8V for CMOS and 2.7V for TTL minimum.
Logic Low: 0.8V maximum
Logic Rise and Fall Times: Rise Time less

than 30 mS at 16.6 RPM. Fall Time less than 30 mS at 16.6 RPM.
Operating Torque: 1.5 in-oz ± 30% initial (1.0 in-oz ± 50% after life for 32 position only)
Rotational Life: more than 1,000,000 cycles of operation (1 cycle = 360° rotation and return)
Shaft Push Out Force: 20 lbs minimum
Mounting Torque: 10 in-lbs 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
Shock Resistance: Test 1: Tested at 100g for 6 mS, half sine, 12.3 ft/s Test 2: 100g for 6 mS, sawtooth, 9.7 ft/s

Materials and Finishes

Bushing: Reinforced thermoplastic
Shaft: Reinforced thermoplastic
Detent Balls: Steel, nickel-plated
Detent and Pushbutton Springs: Tinned music wire
Printed Circuit Boards: NEMA grade FR-4
Pushbutton Contact: Stainless steel, gold-plated
Board Terminals: Phosphor bronze, tin-plated
Mounting Hardware: One brass, cadmium-plated nut and lockwasher supplied with each switch. Nut is 0.094 inches thick by 0.562 inches across flats.
Rotor: Reinforced thermoplastic
Aperture/Dome Retainer: Lexan 141, Polycarbonate

ORDERING INFORMATION

Series
Style: C = Standard
Angle of Throw: 00 = No detent
 11 = 11.25° or 32 Positions
 22 = 22.25° or 16 Positions
Coding: 01 = Quadrature
Pushbutton Option: 01 = Without pushbutton, 02 = With pushbutton
Number of Changes per Revolution: 04 for no detent and 22.25° angle of throw
 08 for no detent and 11.25° angle of throw

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Custom knobs available, see page I-57.

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ACCESSORIES

See page I-41.