

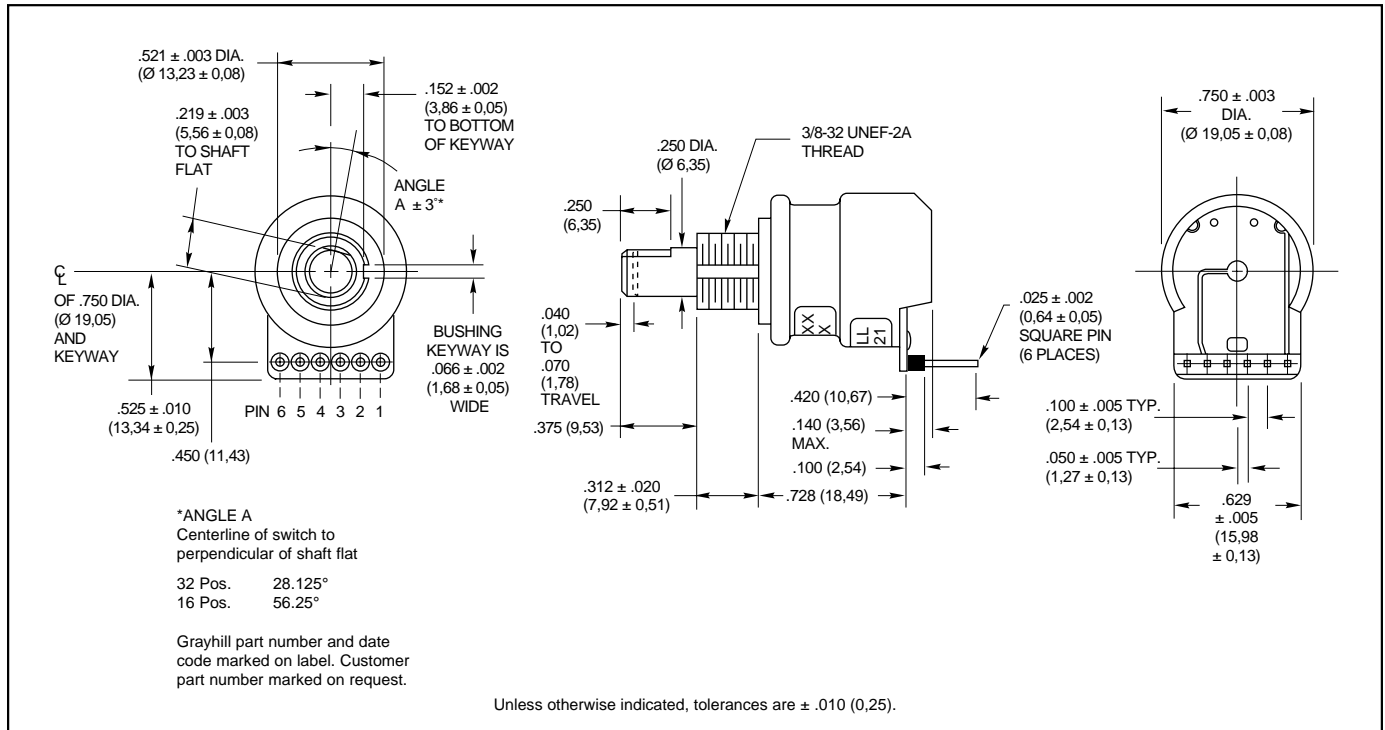
## SERIES 61C 16 or 32 Position with Pushbutton

### FEATURES

- Competitively Priced to Similar Electromechanical Switches
- Optically Coupled For More Than A Million Trouble-Free Rotations
- Has Data Entry Pushbutton Switch Activated By Switch Shaft
- Compatible With CMOS, TTL and HCMOS Logic
- Operationally Used to Move Display Icon and Input Data
- Used to Set Radio Frequency, Drill Depth, RPM, etc.



### DIMENSIONS In inches (and millimeters)



**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**

**61C22-01-04-02**

- 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

Custom knobs available, see page I-57.

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

**ACCESSORIES**

See page I-41.