

16, 24, or 32 Position, Optional Pushbutton

- Positions Screen Cursor
- More Friendly than Keyboards
- Permits Visual Concentration
- Economic Touchscreen Alternative
- Pushbutton for Entry Function
- Detent for Tactile Feedback and Minimal Backlash
- Optical Coupled for Long Life
- Rugged Construction



Display Input

The Series 61 rotary encoder switch can move cursor or icon on a display. Use the rotary and pushbutton switch to simply select a menu item and enter it, or write more elaborate display software. Use the Series 61 to input limit settings for a monitored function. Change an item on a checklist to a new value while viewing the remainder of the list.

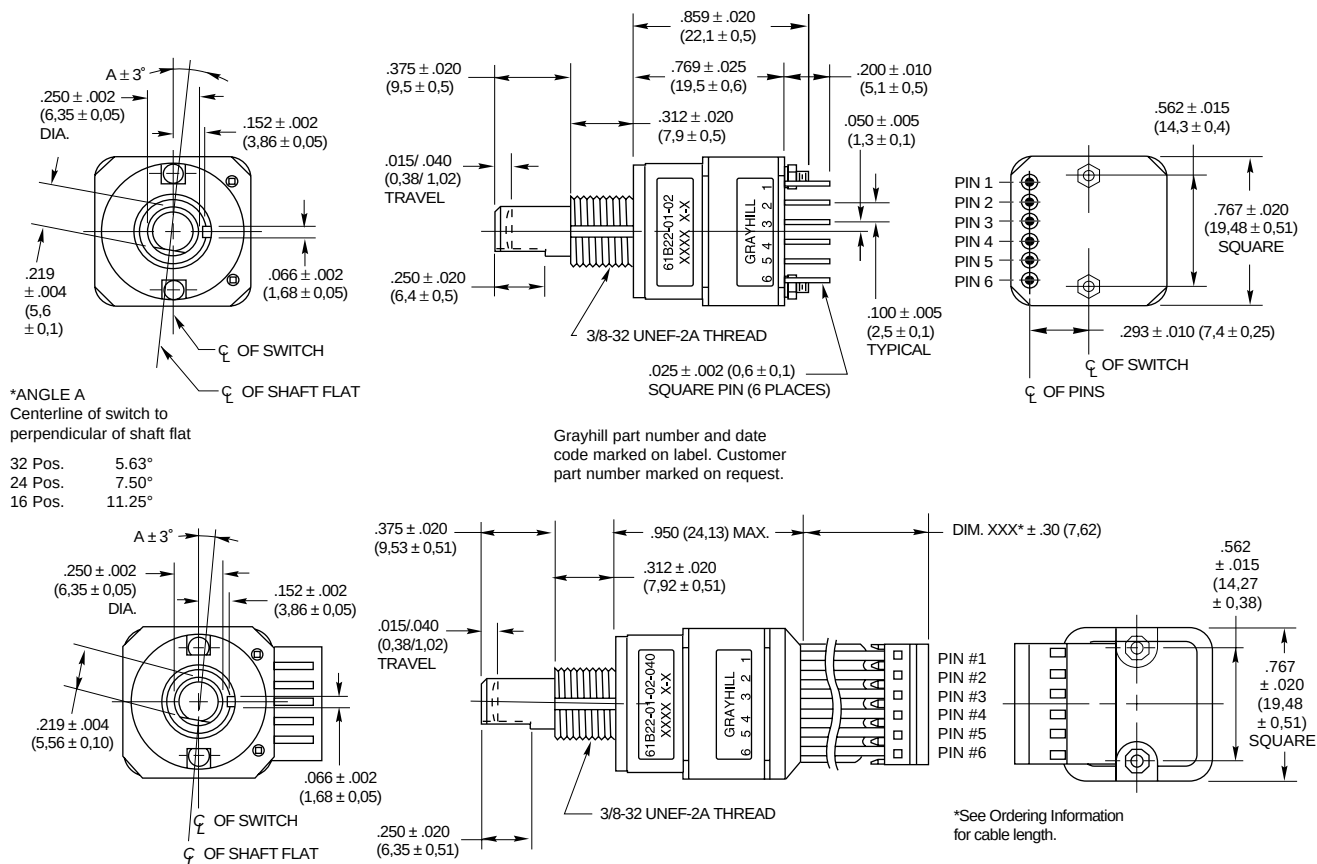
Incremental Input

Use the Series 61 with an interface chip to provide step by step input for setting radio frequency, drill depth, RPM, etc. These changes are usually a few steps, and you need not turn the switch several revolutions for the desired value. Some examples are as follows:

- Robot Position
- Radio Tuning
- Motor Control
- Volume Setting
- Limit Setting

DIMENSIONS In inches (and millimeters)

Diagram illustrates a 16-position switch with integral pushbutton switch.



Unless otherwise indicated, tolerances are $\pm .010$ (0,25).

SPECIFICATIONS

Pushbutton Switch Ratings

Rating: 5 Vdc, 10 mA, Resistive

Contact Resistance: less than 10 (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 615 grams and a minimum actuation force of 415 grams.

Encoder Ratings

Coding: 2-bit quadrature coded output

Operating Voltage: 5 $\pm$.25 Vdc

Supply Current: 30 mA maximum at 5 Vdc

Logic High: 3.8V 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: 2.0 $\pm$.75 in-oz

Rotational Life: more than 1,000,000 cycles of operation (1 cycle = 360° rotation and return)

Shaft Push Out Force: 50 lbs minimum

Mounting Torque: 15 in-lbs maximum

Environmental Ratings

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

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

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: 100g for 6 mS half sine wave with velocity change of 12.3 ft/s. Test 2: 100g for 6 mS, sawtooth wave with velocity change of 9.7 ft/s.

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

Materials and Finishes

Detent Cover: Thermosetting plastic

Bushing: Zinc casting, cadmium-plated per QQP-416, Class 2, Type II

Shaft: Reinforced thermoplastic *Note: Earlier versions may have electropolished stainless steel shafts (still available in customs only).*

Detent Balls: Passivated, stainless steel

Detent Spring: Tinned music wire

Printed Circuit Boards: NEMA Grade FR-4

Board Terminals: Copper alloy, CDA No. 725

Through Bolts: Stainless steel, unplated

Through Bolt Nuts: Stainless steel

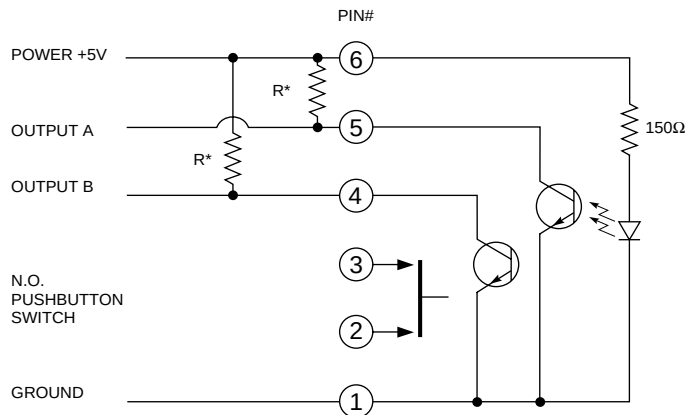
Switch Assembly Cover and Code Rotor: PBT polyester thermoplastic

Mounting Hardware: One brass, cadmium-plated nut and lockwasher supplied with each switch. Nut is 0.094" thick by 0.562" across flats.

Strain Relief: PBT polyester thermoplastic (cable version only)

Cable: 26 AWG, stranded/tinned wire, PVC coated on .100 (2,54) centers (cable version only)

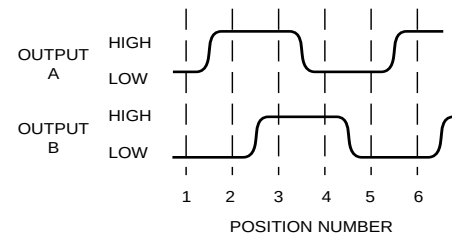
CIRCUITRY, TRUTH TABLE, AND WAVEFORM: Standard Quadrature 2-Bit Code



*EXTERNAL PULL UP RESISTORS REQUIRED FOR OPERATION. 8.2 kΩ IS SUGGESTED FOR TTL; 3.3 kΩ IS SUGGESTED FOR CMOS

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

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



ORDERING INFORMATION



Series

Style: B = Standard, unsealed

Angle of Throw: 11 = 11.25° or 32 Positions

15 = 15° or 24 Positions

22 = 22.25° or 16 Positions

Coding: 01 = Quadrature

Pushbutton Option: 01 = Without pushbutton, 02 = With pushbutton

Termination: Blank (no dash or numbers) = pins as described in drawing

Cable Termination 020 = 2.0 inches minimum to 250 = 25 inches maximum. Provided in increments of 1/2 inch. Example 035 = 3.5", 060 = 6 inches. Cable is terminated with standard Amp Connector 640442-6. Use any 6 position, .100 center header to mate with the cable assembly. Contact Grayhill

Custom shaft and bushing lengths, shaft/panel seal, and additional supply voltages are available through Grayhill only. Control 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.