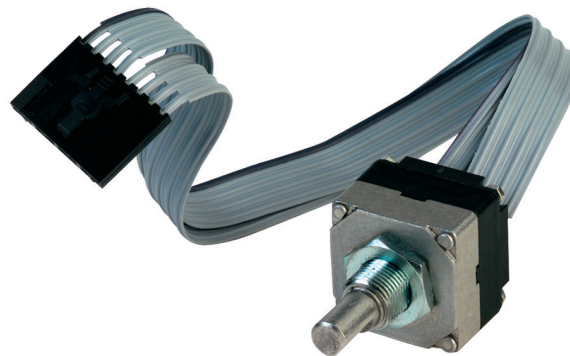


## SERIES 61A

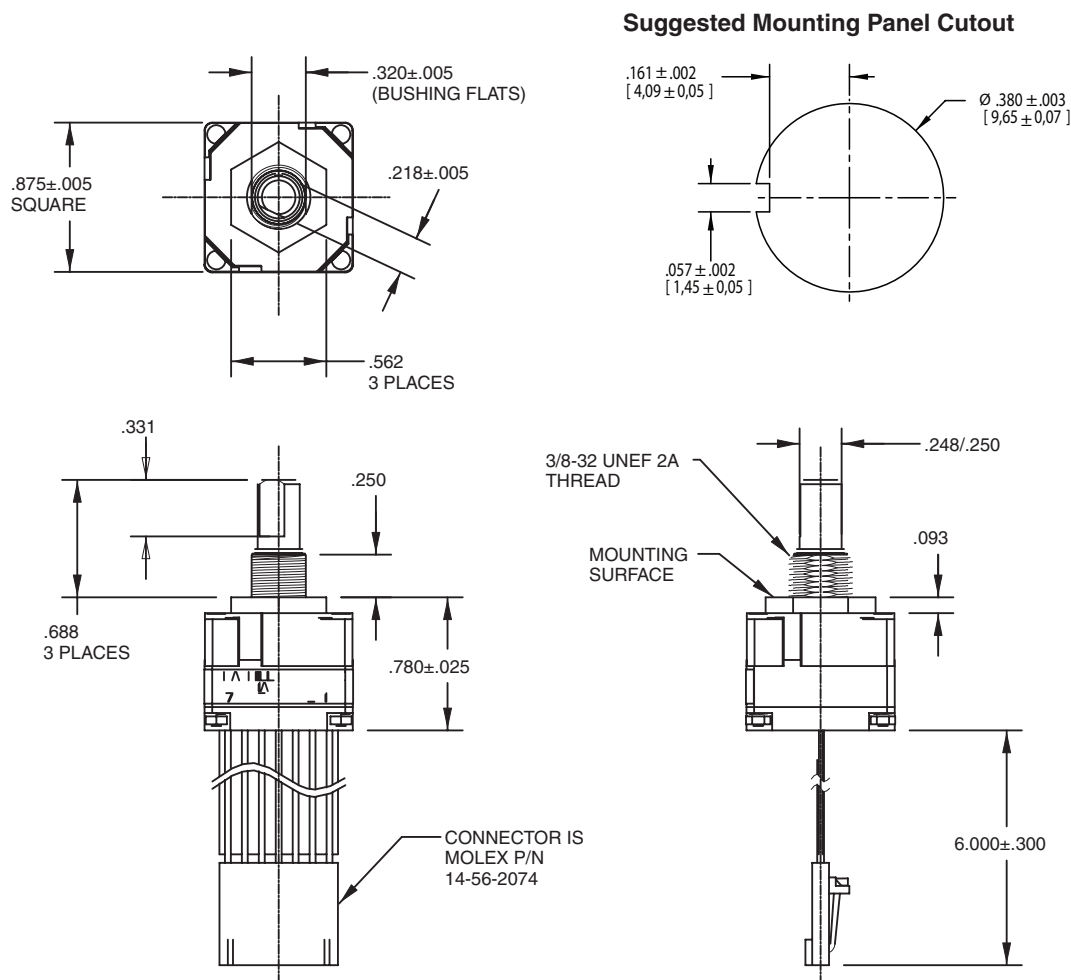
### Custom, Absolute

#### FEATURES

- Absolute Position Sensing
- 3, 4, or 5-Bit Custom Output Coding
- Available in 8, 16 and 32 detent positions
- Fixed Stops Only
- Angles of Throw to 45° (Design Specifications Will Dictate the Angle of Throw)



#### DIMENSIONS in inches (and millimeters)

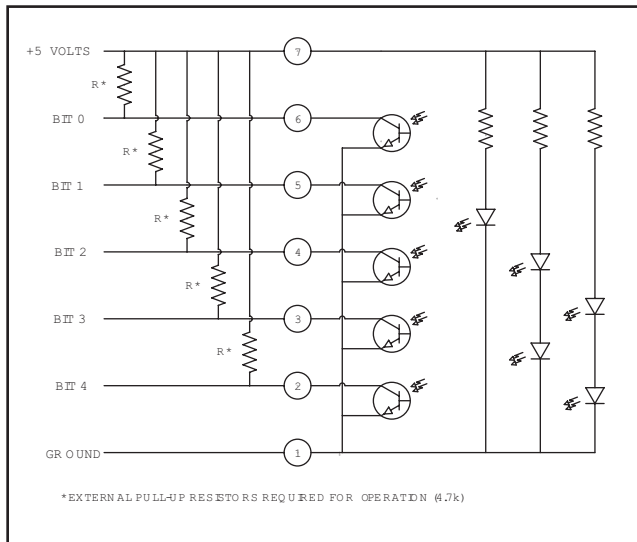


UNLESS OTHERWISE SPECIFIED, DIMENSION TOLERANCES ARE AS FOLLOWS: LINEAR  $\pm .010$  (0,25), DIAMETERS  $\pm .010$  (0,25), ANGULAR  $\pm 5$



## Optical Encoders

### CIRCUITRY



### TRUTH TABLE

#### 3 BIT, 8 POSITION

Position	B2	B3	B4
1			
2			•
3		•	•
4		•	
5	•		
6	•	•	•
7	•		•
8	•		

• INDICATES LOGIC HIGH  
BLANK INDICATES LOGIC LOW

#### 4 BIT, 16 POSITION

Position	B1	B2	B3	B4
1				
2				•
3			•	•
4			•	
5		•		
6		•	•	•
7		•		•
8		•		
9	•			
10	•	•		•
11	•	•	•	•
12	•	•	•	
13	•		•	
14	•		•	•
15	•			•
16	•			

• INDICATES LOGIC HIGH  
BLANK INDICATES LOGIC LOW

#### 5 BIT, 32 POSITION

Position	B0	B1	B2	B3	B4
1					
2					•
3				•	•
4				•	
5			•	•	
6			•	•	•
7			•	•	•
8			•		
9		•			
10		•	•		•
11		•	•	•	•
12		•	•	•	
13		•		•	
14		•		•	•
15		•			•
16		•			
17	•	•			
18	•	•			•
19	•	•		•	•
20	•	•		•	
21	•	•	•	•	
22	•	•	•	•	•
23	•	•	•	•	•
24	•	•	•		
25	•		•		
26	•		•		•
27	•		•	•	•
28	•		•	•	
29	•			•	
30	•			•	•
31	•				•
32	•				

• INDICATES LOGIC HIGH  
BLANK INDICATES LOGIC LOW

### SPECIFICATIONS

#### Ratings

**Operating Voltage:** 5 ±.25V DC

**Supply Current:** 85 mA maximum at 5V DC

**Life:** 1 million cycles of operation; 1 cycle is rotation through all positions and a full return

**Rotational Torque:** 12 ±4 in-oz (initial)

**Output High:** 3.8V minimum for CMOS & HCMOS; 2.7V minimum for TTL

**Output Low:** 0.8V maximum

**Shaft Push Out Force:** 25 lbs.

**Mounting Torque:** 10 in-lb maximum

**Load Current:** 5 mA maximum per channel

**Logic Rise and Fall Times:** 30 mSec typical

#### Environmental

**Operating Temp. Range:** -40°C to +85°C

**Storage Temp. Range:** -55°C to +100°C

**Vibration:** MIL-STD 202, method 204, cond. B

**Mechanical Shock:** 100 g's, 6 ms, half Sine 12.3 ft/s and 100 g's, 6 ms, sawtooth, 9.7 ft/s

**Humidity:** 90-95% relative humidity at 40°C for 96 hrs.

#### Materials and Finishes

**Detent Housing:** Stainless Steel

**Bushing:** Brass, tin/zinc plated

**Shaft:** Stainless steel

**Detent Balls:** Steel, nickel-plated

**Code Housings:** Nylon 6/10

**Backplate:** Nylon 6/10

**Aperture:** Chemically etched stainless steel with black oxide finish

**Rotor:** Electroformed nickel and chemically etched stainless steel with black oxide finish

**Detent Springs:** Tinned music wire

**PC Boards:** NEMA grade FR-4

**Through Bolts:** Stainless steel, unplated

**Through Bolt Nuts:** Stainless steel

**Mounting Hardware:** One brass, tin/zinc-plated nut and one stainless steel, zinc-plated lockwasher supplied with each switch. Nut is 0.094 inch thick by 0.562 inch across flats.

### ORDERING INFORMATION



#### Series

**Style:** A = Absolute position sensing

**Number of positions:** 32 = 32 positions with 10° of throw  
16 = 16 positions with 18° of throw  
8 = 8 positions with 36° of throw

**Termination:** 060 = 6.0 inches cable terminated with Molex connector P/N 14-56-2074.

Available from your local Grayhill Component Distributor.

For prices and discounts, contact a local sales office, an authorized local distributor, or Grayhill direct.