



## SERIES 62H

### High Torque, Concentric Shaft

#### FEATURES

- High rotational torque provides positive tactile feedback
- Optically coupled for more than a million cycles
- Optional integral pushbutton
- Compatible with CMOS, TTL, and HCMOS logic
- Available in 8, 12, and 16 detent positions
- Choice of cable length and terminations

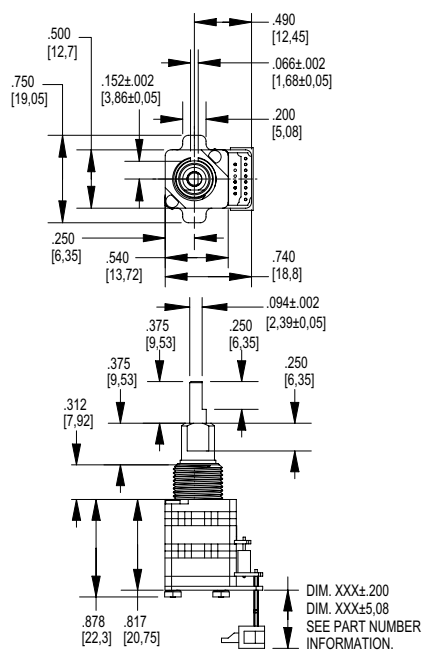
#### APPLICATIONS

- Avionics
- Agriculture and Construction
- Military

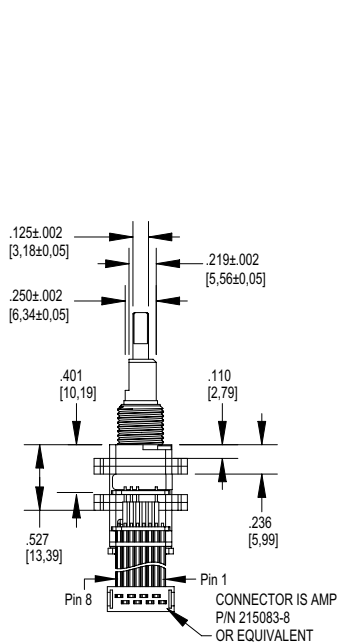


#### DIMENSIONS in inches (and millimeters)

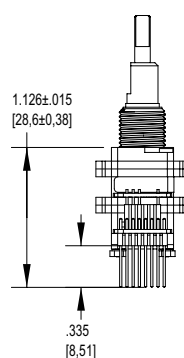
Unless otherwise specified, standard tolerance is  $\pm .010$  (0,25)



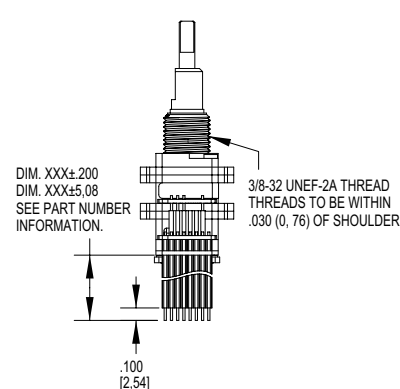
#### Cable Version



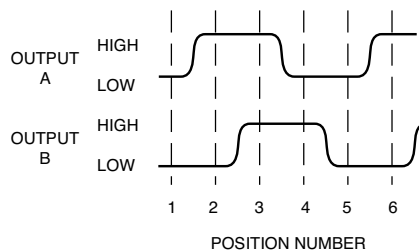
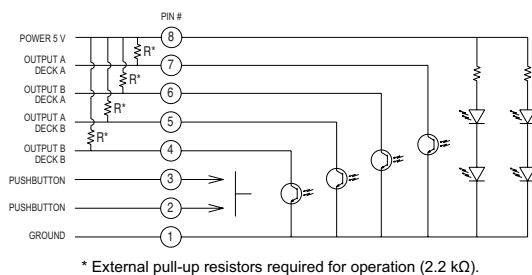
#### Pin Version



#### Stripped Version



#### CIRCUITRY, WAVEFORM, AND TRUTH TABLE



| Clockwise Rotation |          |          |
|--------------------|----------|----------|
| Position           | Output A | Output B |
| 1                  | ○        | ○        |
| 2                  | ●        | ○        |
| 3                  | ●        | ●        |
| 4                  | ○        | ●        |

○ Indicates logic low  
● Indicates logic high  
Code repeats every four positions.

## SPECIFICATIONS

### Pushbutton Switch Ratings

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Rating             | At 5 Vdc, 10 mA, resistive                          |
| Contact Resistance | Less than 10 ohms (TTL or CMOS compatible)          |
| Pushbutton Life    | 3 million actuations minimum                        |
| Voltage Breakdown  | 250 Vac between mutually insulated parts            |
| Contact Bounce     | Less than 4 mS at make and less than 10 mS at break |
| Actuation Force    | 1100±300 g                                          |
| Shaft Travel       | .025±.010 inch                                      |

### Encoder Ratings

|                              |                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------|
| Coding                       | 2-bit quadrature coded output                                                                    |
| Operating Voltage            | 5.0±.25 Vdc                                                                                      |
| Supply Current               | 50 mA maximum @ 5.0 Vdc                                                                          |
| Logic Output Characteristics | Logic High: 3.0 Vdc minimum<br>Logic Low: 1.0 Vdc maximum                                        |
| Mechanical Life              | 1,000,000 cycles minimum<br><i>1 cycle is a rotation through all positions and a full return</i> |
| Minimum Sink Current         | 2.0 mA for 5 Vdc                                                                                 |
| Power Consumption            | 150 mW maximum                                                                                   |
| Output                       | Open collector phototransistor                                                                   |
| Logic Rise and Fall Times    | Less than 30 mS maximum                                                                          |
| Operating Torque             | 5.0 in-oz±1.5 in-oz initial                                                                      |
| Shaft Push-Out Force         | 45 lbs minimum                                                                                   |
| Mounting Torque              | 15 in-lbs maximum                                                                                |
| Terminal Strength            | 15 lbs cable pull-out force minimum                                                              |
| Operating Speed              | 100 RPM 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 hrs |
| Mechanical Shock            | Test 1: 100 G, 6 mS, half sine, 12.3 ft/s<br>Test 2: 100 G, 6 mS, sawtooth, 9.7 ft/s      |
| Relative Humidity           | 90-95% at 40 °C for 96 hrs                                                                |

### Materials and Finishes

|                         |                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code Housing            | Reinforced thermoplastic                                                                                                                                                            |
| Shafts                  | Stainless steel                                                                                                                                                                     |
| Bushing                 | Zinc casting                                                                                                                                                                        |
| Pushbutton Actuator     | Thermoplastic                                                                                                                                                                       |
| Shaft Retaining Rings   | Stainless steel                                                                                                                                                                     |
| Detent Spring           | High carbon steel                                                                                                                                                                   |
| Detent Ball             | Stainless steel                                                                                                                                                                     |
| Detent Section          | Reinforced thermoplastic                                                                                                                                                            |
| Printed Circuit Boards  | NEMA grade FR-4 gold over nickel or palladium                                                                                                                                       |
| Terminals               | Brass, tin-plated                                                                                                                                                                   |
| Mounting Hardware       | One brass, nickel-plated nut and zinc-plated spring steel with clear trivalent chromate finish lockwasher supplied with each switch<br>(Nut is 0.094" thick by 0.433" across flats) |
| Rotor                   | Thermoplastic                                                                                                                                                                       |
| Pushbutton Dome         | Stainless steel                                                                                                                                                                     |
| Phototransistor         | Planar silicon NPN                                                                                                                                                                  |
| Infrared Emitter        | Gallium aluminum arsenide                                                                                                                                                           |
| Flex Cable              | 28 AWG, stranded/top coated wire, PVC coated on .050" or .100" centers (cabled version)                                                                                             |
| Header Pins             | Brass, tin-plated                                                                                                                                                                   |
| Spacer                  | Reinforced thermoplastic                                                                                                                                                            |
| Shim                    | Stainless steel                                                                                                                                                                     |
| Backplate/Strain Relief | Stainless steel                                                                                                                                                                     |
| Lockwashers             | Stainless steel                                                                                                                                                                     |
| Hex Nuts                | Stainless steel                                                                                                                                                                     |
| Studs                   | Stainless steel                                                                                                                                                                     |

## ORDERING INFORMATION

