

## SERIES 25L

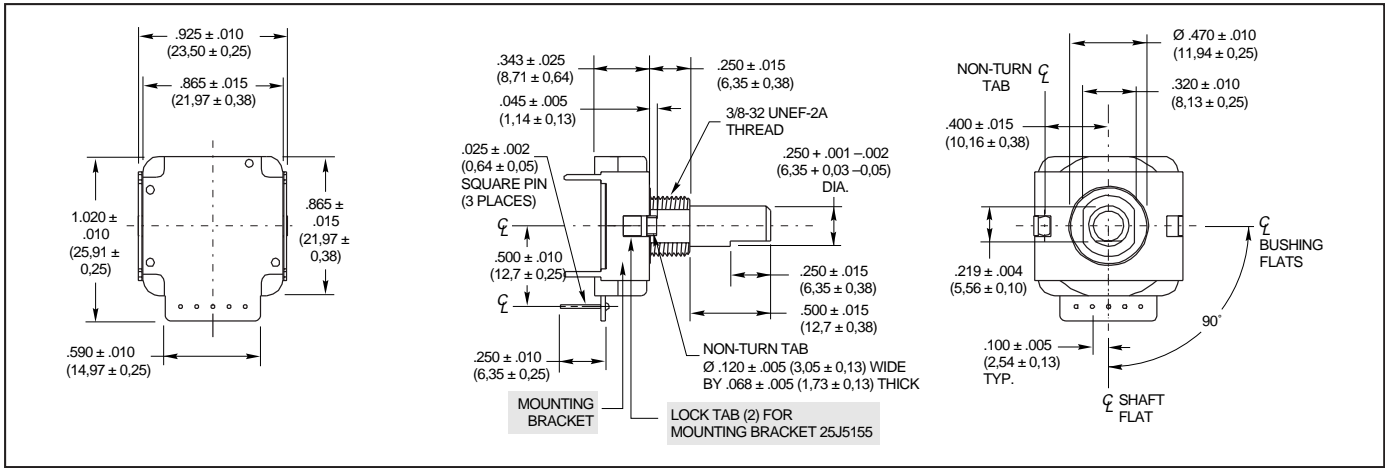
### Hex, Gray and Quadrature Code

#### FEATURES

- Price Competitive to Similar Designs
- Quality Construction and Contact Materials
- Multiple Code and Indexing Choices
- 100,000 Life Cycles
- Less than 1.0" Square
- Manufactured to ISO 9001 Standards



#### DIMENSIONS In inches (and millimeters)



#### TRUTH TABLES

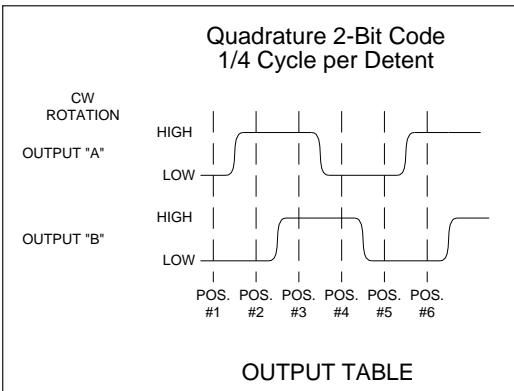
| Clockwise Rotation          |               |   |   |   |   |
|-----------------------------|---------------|---|---|---|---|
| 4-Bit Gray Code-16 Position |               |   |   |   |   |
| Switch Position             | Code Position | 1 | 2 | 4 | 8 |
| 1                           | 0             |   |   |   |   |
| 2                           | 1             | • |   |   |   |
| 3                           | 2             | • | • |   |   |
| 4                           | 3             |   | • |   |   |
| 5                           | 4             |   | • | • |   |
| 6                           | 5             | • | • | • |   |
| 7                           | 6             | • |   | • |   |
| 8                           | 7             |   |   | • |   |
| 9                           | 8             |   |   | • | • |
| 10                          | 9             | • |   | • | • |
| 11                          | 10            | • | • | • | • |
| 12                          | 11            |   | • | • | • |
| 13                          | 12            |   | • | • | • |
| 14                          | 13            | • | • | • | • |
| 15                          | 14            | • |   | • | • |
| 16                          | 15            |   |   | • | • |

| Clockwise Rotation                        |               |   |   |   |   |
|---|---------------|---|---|---|---|
| 4-Bit Binary Code Hexadecimal-16 Position |               |   |   |   |   |
| Switch Position                           | Code Position | 1 | 2 | 4 | 8 |
| 1   | 0             |   |   |   |   |
| 2   | 1             | • |   |   |   |
| 3   | 2             |   | • |   |   |
| 4   | 3             | • | • |   |   |
| 5   | 4             |   |   | • |   |
| 6   | 5             | • |   | • |   |
| 7   | 6             |   | • | • |   |
| 8   | 7             | • | • | • |   |
| 9   | 8             |   |   |   | • |
| 10  | 9             | • |   |   | • |
| 11  | 10            |   | • |   | • |
| 12  | 11            | • | • |   | • |
| 13  | 12            |   |   | • | • |
| 14  | 13            | • | • | • | • |
| 15  | 14            |   | • | • | • |
| 16  | 15            | • | • | • | • |

| Clockwise Rotation                         |            |            |
|--|------------|------------|
| Quadrature 2-Bit Code 1/4 Cycle per Detent |            |            |
| Switch Position                            | Output "A" | Output "B" |
| 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   |            | •          |
| 33   |            |            |
| 34   | •          |            |
| 35   | •          | •          |
| 36   |            | •          |

- Indicates closed circuit; blank indicates open circuit.

- Indicates closed circuit; blank indicates open circuit.



- Indicates closed circuit; blank indicates open circuit. Code repeats every 4 positions.

## SPECIFICATIONS

### Electrical Ratings

**Switching Loads:** 1.5 mA at 115 Vac, resistive;  
150 mA at 14 Vdc, resistive

**Current Carrying Capacity:** 250 mA  
maximum at 28 Vdc, resistive load

**Contact Resistance:** 75 mΩ, typical

**Insulation Resistance:** 1000 mΩ minimum  
between terminals

**Voltage Breakdown:** 1000 Vac minimum  
between terminals

**Life Expectancy:** 100,000 cycles of operation at  
rated loads. One cycle of operation is a rotation  
through all of the active positions and a return to  
the starting position.

### Mechanical Ratings

**Rotational Torque:** 2 to 6 in-oz

**Operating Temperature Range:** -65°C to +85°C

**Storage Temperature Range:** -65°C to +85°C

**Continuous Rotation:** All standard switches  
are continuous rotation. Desired stop locations  
supplied upon request.

**Anti-Rotation Device:** Integral non-turn tab,  
flatted bushing, .375" diameter, .320 double "D"  
across flats.

**Termination:** Standard is PC style, parallel to  
shaft, facing rear. Options include PC, parallel to  
shaft, facing front; PC, perpendicular to shaft.

**Panel Mounting Torque:** 10 in-lbs maximum

### Materials and Finishes

**Bushing/Housing and Shaft/Rotor:** Reinforced  
thermoplastic

**Detent Ball:** Stainless steel, nickel-plated

**Detent Spring:** Tinned music wire

**Contacts:** Beryllium copper, gold plate over  
nickel

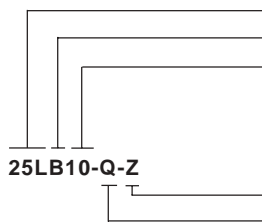
**Terminals:** Copper alloy, CDA #725, solder  
plate over nickel

**Output Board:** FR-4, copper/nickel-plated

**Mounting Hardware:** Brass, cadmium-plated  
hex nut

**Mounting Bracket:** Stainless Steel, tin-plated

## ORDERING INFORMATION



25LB10-Q-Z

\* Cadmium free

**Series:** 25L = Economical, single deck encoder

**Housing Color:** B = Black housing\*; R = Red housing

**Angle of Throw:** 10 = 10°, 36 positions; 11 = 11.25°, 32 positions;  
15 = 15°, 24 positions; 18 = 18°, 20 positions;  
22 = 22.5°, 16 positions; 30 = 30°, 12 positions;  
45 = 45°, 8 positions

**Mounting Bracket:** Z = with bracket, Blank = no bracket

**Code Output:** H = Hexadecimal available only in 22.5°

G = Gray available only in 22.5°

Q = Quadrature (2-bit)

Custom materials, styles, color and markings are available. 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.