

# Non-Contacting Hall Effect Single Turn Position Sensor



## 6120 Series

**Features:**

- 7/8" diameter
- Non-contacting
- Hall Effect
- Single turn
- Multiple styles available
- Custom models available



**Description:**

The BI Technologies line of single-turn non-contacting hall-effect position sensors is 7/8" in diameter. Custom models are available. The hall-effect technology used makes this set of position sensors ideal for harsh environments where shock levels, vibration and temperature.

**Applications:**

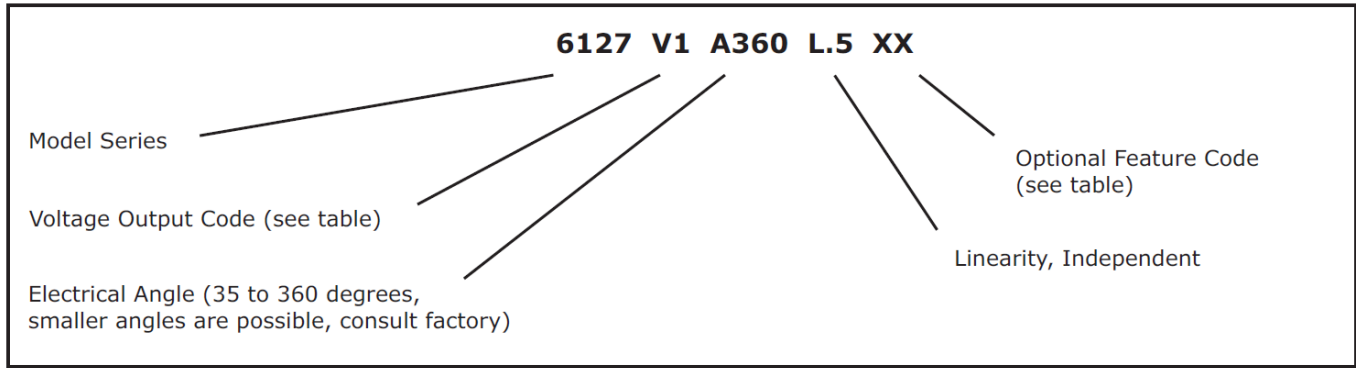
- Industrial grade joystick
- HVAC controls

### Model Styles Available

|      |                          |
|------|--------------------------|
| 6121 | 1/8" Shaft, 1/4" Bushing |
| 6124 | 6mm Shaft, 3/8" Bushing  |
| 6126 | 1/8" Shaft, 3/8" Bushing |
| 6127 | 1/4" Shaft, 3/8" Bushing |

Custom models are available; Contact Customer Service for special features

### Ordering Information



General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

## 6120 Series



### Electrical Specifications<sup>1</sup>

|   |  |
|---|--|
| Output voltage                            | 0.25 Vdc to 4.75 Vdc typical (see Feature Codes table)                       |
| Output overvoltage limits                 | 10 Vdc to -0.3 Vdc; output may be shorted to ground or supply without damage |
| Output current                            | ±8 mA max.   |
| Output load                               | 1 kΩ min., 10 kΩ typical   |
| Input voltage                             | 4.5 to 5.5 Vdc   |
| Supply voltage absolute limits            | 20 Vdc max., -10 Vdc min.  |
| Independent linearity <sup>2</sup>        | ±0.5% (0.25% available)  |
| Hysteresis                                | 0.2% max.  |
| Resolution                                | 0.088° for 360° travel, 0.011° for 45° travel                                |
| Supply current                            | 7.5 mA typical, 11 mA max.   |
| Dielectric strength                       | 750 V rms  |
| Insulation resistance                     | 1,000 megΩ min.  |
| Electrostatic discharge (ESD)             | Passes 2 kV human body model and 15 kV air discharge                         |
| Bulk current injection (BCI)              | Passes 2-500 MHz at 200 mA   |
| Actual electrical travel                  | 360° typical (see ordering information)                                      |
| Temperature coefficient of output voltage | ±20 ppm/°C   |

### Mechanical Specifications

|                                |   |
|--------------------------------|---|
| Total mechanical travel        | 360° continuous (320° with stop feature)      |
| Bearing                        | Bearing bronze bushing                        |
| Weight                         | 0.6 oz. typical                               |
| Static stop strength           | 40 in. oz.                                    |
| Panel nut tightening torque    | 25 in. lb. max.                               |
| Supply voltage absolute limits | 20 Vdc max., -10 Vdc min.                     |
| Independent linearity          | ±0.5% (0.25% available)                       |
| Hysteresis                     | 0.2% max.                                     |
| Resolution                     | 0.088° for 360° travel, 0.011° for 45° travel |

<sup>1</sup> Specifications subject to change without notice.

<sup>2</sup> Linearity is measured between 1% and 99% of input voltage.

#### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

## 6120 Series



### Environmental Specifications

|                              |   |
|------------------------------|---|
| Operating temperature range  | -40°C to +125°C                         |
| Shock                        | Per MIL R-39023, 6 ms saw-tooth 100 G's |
| Vibration                    | Per MIL R-39023, 10 G's, 100 to 500 Hz  |
| Moisture resistance, powered | Per MIL 202G, method 106G               |
| Rotational life              | 10 million shaft revolutions            |
| Storage temperature range    | -55°C to +125°C                         |

### Feature Codes

| Voltage Output Codes <sup>1</sup> |                         | Optional Feature Codes <sup>2</sup> |                               |
|-----------------------------------|-------------------------|-------------------------------------|-------------------------------|
| V0                                | ≤ 0.15 Vdc to ≥ 4.8 Vdc | LT                                  | Linearity Data                |
| V1                                | 0.2 Vdc to 4.8 Vdc      | SL                                  | Shaft Lock 6127 only          |
| V2                                | 0.25 Vdc to 4.75 Vdc    | ST                                  | Stop (320°)                   |
| V3                                | 0.5 Vdc to 4.5 Vdc      | FS                                  | Flatted Shaft                 |
| V4                                | 0.75 Vdc to 4.25 Vdc    | PS                                  | Plain Shaft                   |
| V5                                | 1 Vdc to 4 Vdc          | CW                                  | Reverse Direction             |
|                                   |                         | ES                                  | Seal (IP66) 6124 or 6127 only |

<sup>1</sup>When V0 is used the angle specified is the theoretical angle over which the output would vary if the output could actually reach 0% and 100% of Vdc.

<sup>2</sup>When multiple feature codes are used, the P/N shall be in the same sequence as listed in this table (top to bottom).

#### General Note

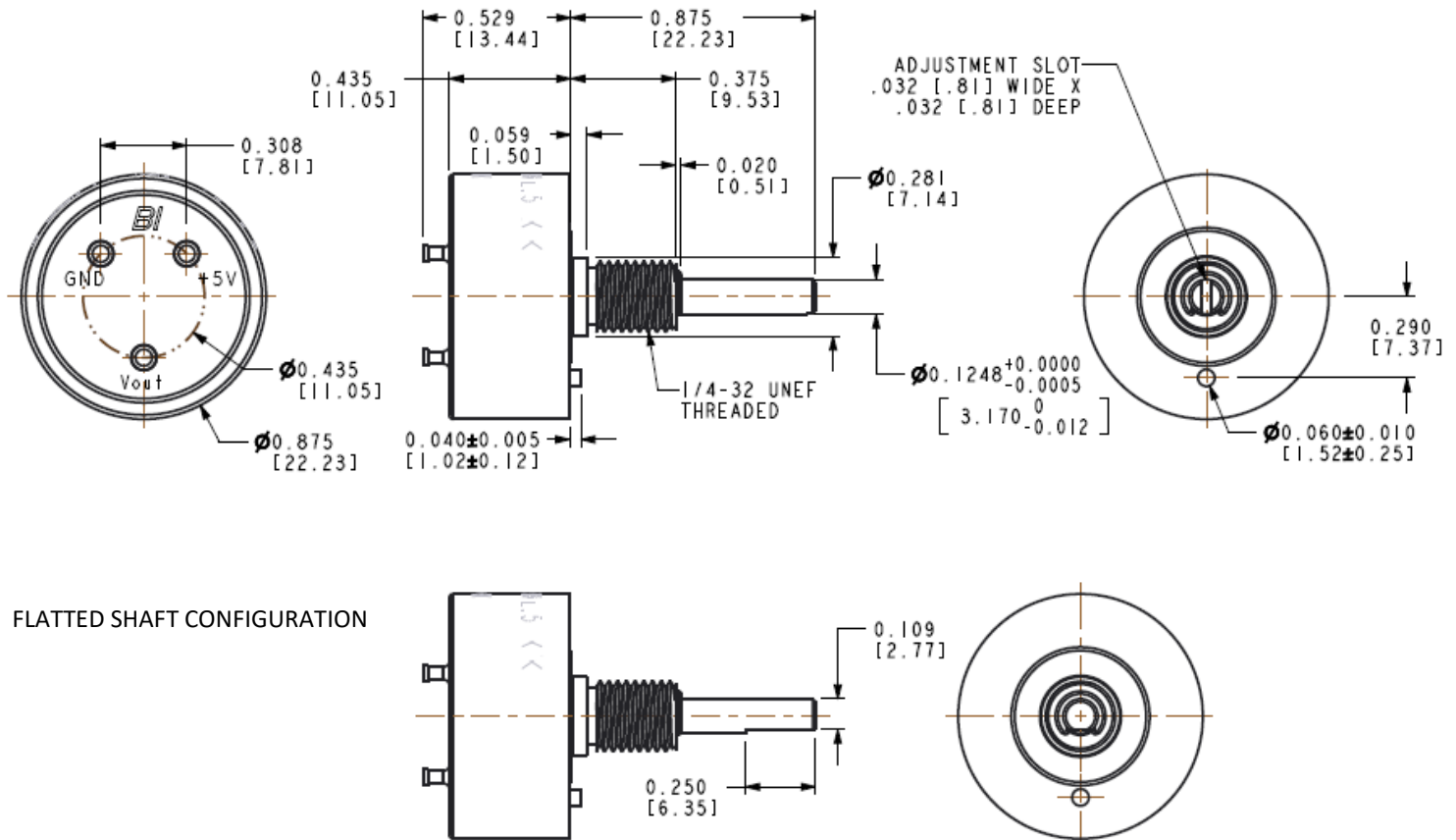
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

## 6120 Series



### Outline Drawings—6121



#### NOTES:

1. UNITS SHIPPED WITH NUT AND INTERNAL TOOTH LOCKWASHER (NOT SHOWN).
2. FOR SLOTTED OR FLATTED SHAFT, OUTPUT IS AT 50% IN POSITION SHOWN.
3. DIMENSION: INCHES [mm]
4. TOLERANCES:  $\pm 0.015$  [.38] UNLESS NOTED.

#### General Note

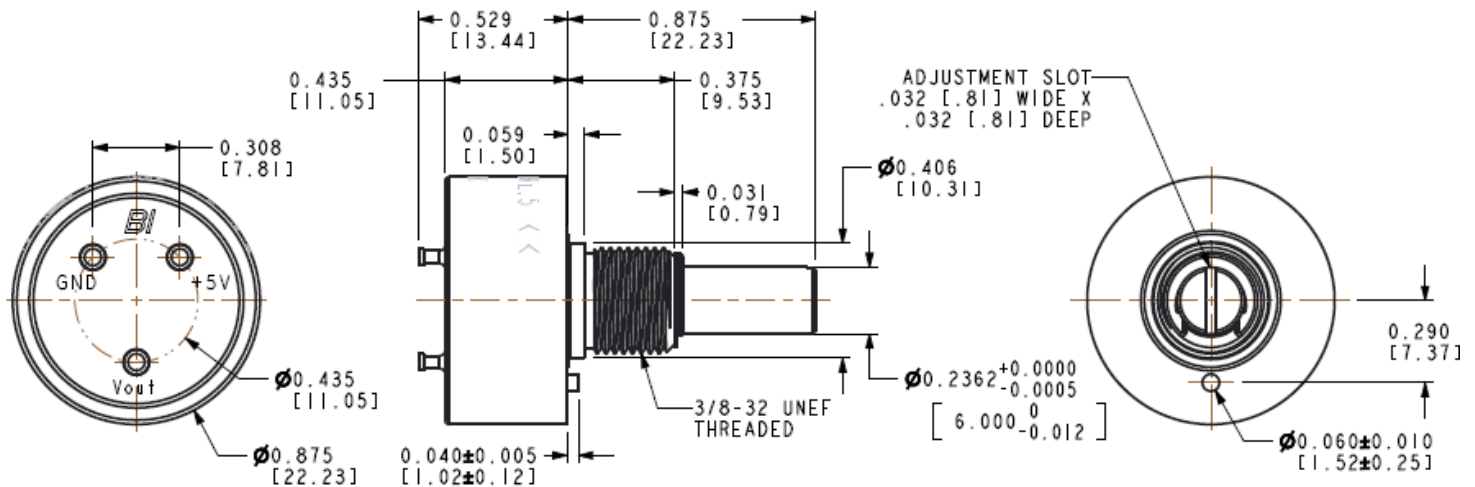
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

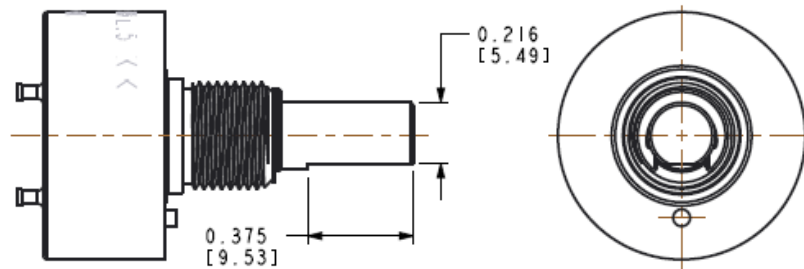
## 6120 Series



### Outline Drawings—6124



#### FLATTED SHAFT CONFIGURATION



#### NOTES:

1. UNITS SHIPPED WITH NUT AND INTERNAL TOOTH LOCKWASHER (NOT SHOWN).
2. FOR SLOTTED OR FLATTED SHAFT, OUTPUT IS AT 50% IN POSITION SHOWN.
3. DIMENSION: INCHES [mm]
4. TOLERANCES: ±0.015 [.38] UNLESS NOTED.

#### General Note

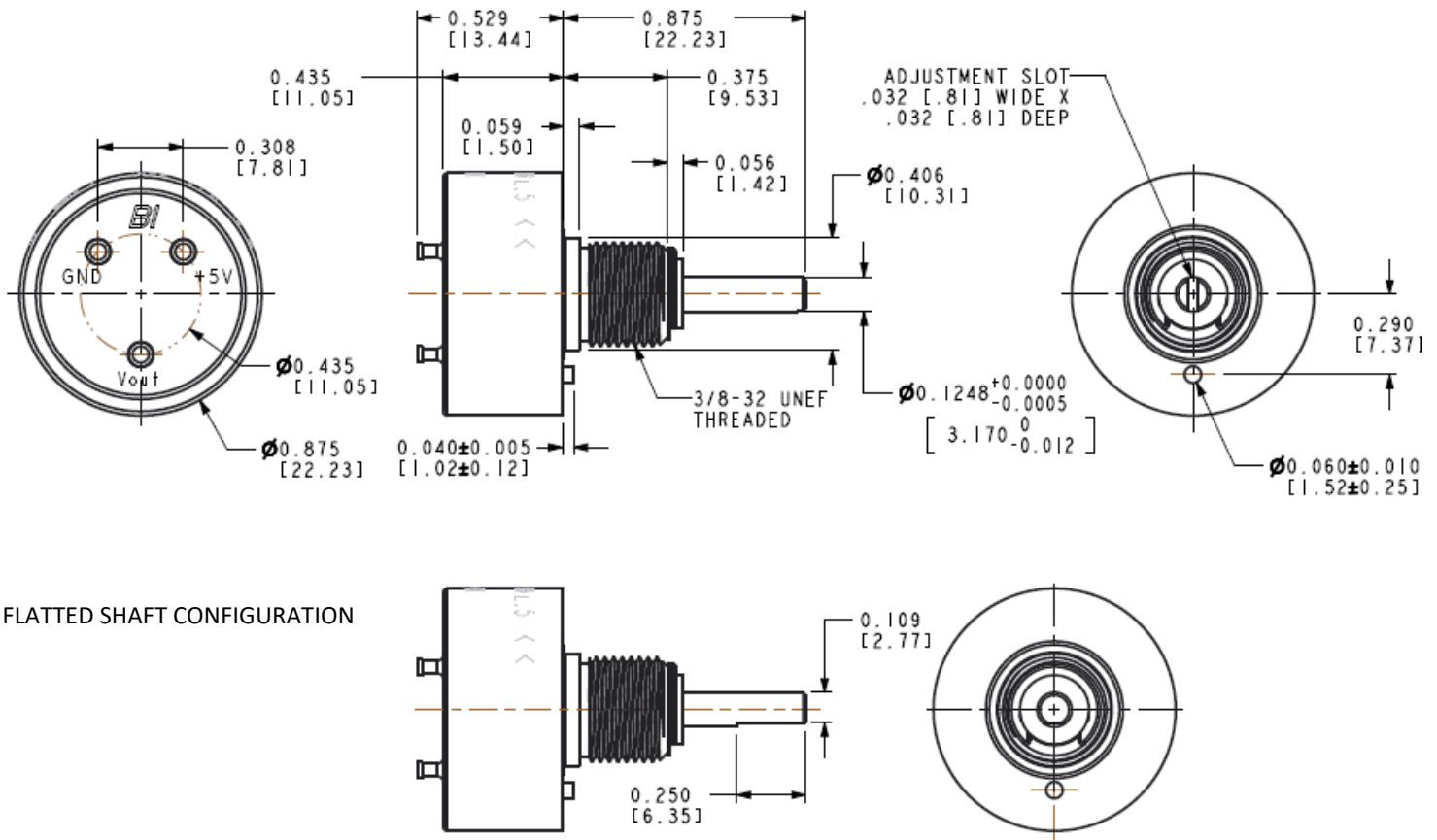
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

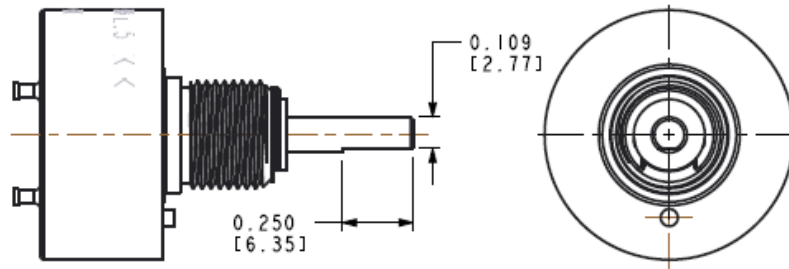
## 6120 Series



### Outline Drawings—6126



#### FLATTED SHAFT CONFIGURATION



#### NOTES:

1. UNITS SHIPPED WITH NUT AND INTERNAL TOOTH LOCKWASHER (NOT SHOWN).
2. FOR SLOTTED OR FLATTED SHAFT, OUTPUT IS AT 50% IN POSITION SHOWN.
3. DIMENSION: INCHES [mm]
4. TOLERANCES:  $\pm 0.015$  [.38] UNLESS NOTED.

#### General Note

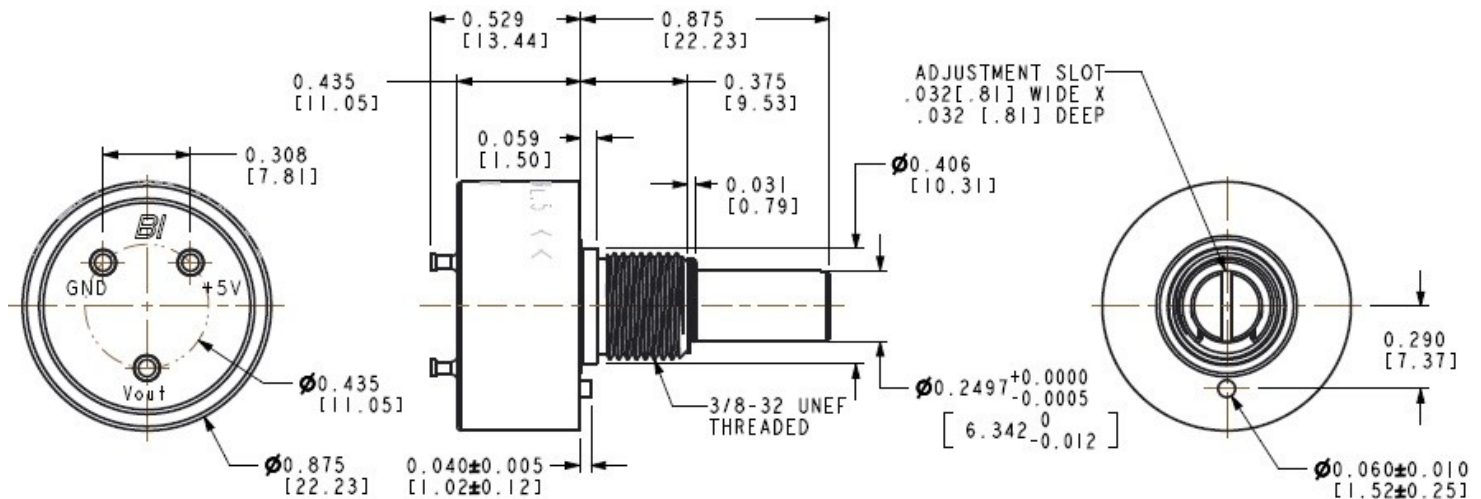
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Non-Contacting Hall Effect Single Turn Position Sensor

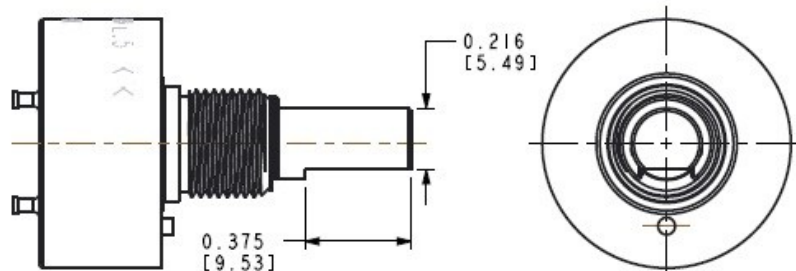
## 6120 Series



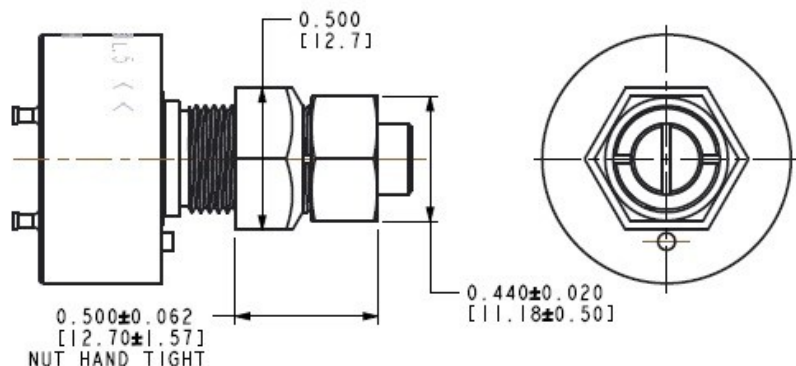
### Outline Drawings—6127



#### FLATTED SHAFT CONFIGURATION



#### SHAFT LOCK CONFIGURATION



#### NOTES:

1. UNITS SHIPPED WITH NUT AND INTERNAL TOOTH LOCKWASHER (NOT SHOWN).
2. FOR SLOTTED OR FLATTED SHAFT, OUTPUT IS AT 50% IN POSITION SHOWN.
3. DIMENSION: INCHES [mm]
4. TOLERANCES: ±.015 [.38] UNLESS NOTED.

#### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[TT Electronics:](#)

[6127V1A120L.5FS](#) [6127V1A320L.5ST](#)