Model 8150 Series

Hall Effect, Non-Contacting Position Sensor

Features:

- Non-contact technology provides clean outputs without sliding contact noise
- Absolute position output through multiple turns
- ± 0.50% independent linearity (± 0.25% is available)
- 10 million shaft rotations minimum life
- Ratiometric output
- 12 mA max current
- -40°C to +125°C operating temperature
- Lead-free
- RoHS 2 compliant

Designed to operate reliably in demanding conditions, the MagnePot 8150 series are available in three, five, and ten turn models. Incorporating Hall effect non-contacting technology means they do not wear out, as in contacting devices, and there is no degradation of the output signal over life, making them ideal for applications where minimal maintenance is required.

The 8150 family features a bushing mount with a 7/8” diameter package and a minimum of 10 million shaft rotations. Servo mount is also available. Optional models with sealed shafts and rear lids for protection from severe environments are also possible. A supply voltage of 5 Vdc is required and the ratiometric output can go from 4% to 96% of the supply voltage. Other output voltage options are also available. These sensors are operational from -40°C to 125°C.

Applications:

- Joystick controls
- Factory automation
- Medical device positioning
- Vision system position feedback
- Targeting systems
- Aircraft flight and panel controls
- Rotary position sensing
- Motion control feedback

Model Styles Available

8151	1/8” shaft, 1/4” bushing
8153	1/8” shaft, servo mount
8154	6 mm shaft, 3/8” bushing
8156	1/4” shaft, 3/8” bushing

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Electrical

Input voltage	4.5 to 5.5 Vdc nominal
Output voltage	0.2 Vdc (4%) to 4.8 Vdc (96%) 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	±15mA maximum
Output load	1 kΩ min., 10 kΩ typical
Supply voltage absolute limits	20 Vdc max., -10 Vdc minimum
Independent linearity	±0.5% (0.25% available)
Hysteresis	10° maximum (10 turn), 5° maximum (5 turn), 3° maximum (3 turn)
Resolution	0.88° for 3600° travel, 0.44° for 1800° travel, 0.27° for 1080° travel
Supply current	8.5 mA typical, 12 mA maximum
Dielectric strength	750 V rms
Insulation resistance	1,000 MegΩ minimum
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	Same as mechanical travel
Temperature coefficient of output voltage	±20 ppm/°C

Mechanical

Total mechanical travel	Up to 3600° continuous
Bearing	Bushing models use bronze sleeve, servo model uses two ball bearings
Weight	0.7 oz. nominal
Panel nut tightening torque	25 in. lb. maximum
Start/run torque (ES option adds 0.5 oz.-in.)	< 0.1 oz.-in.

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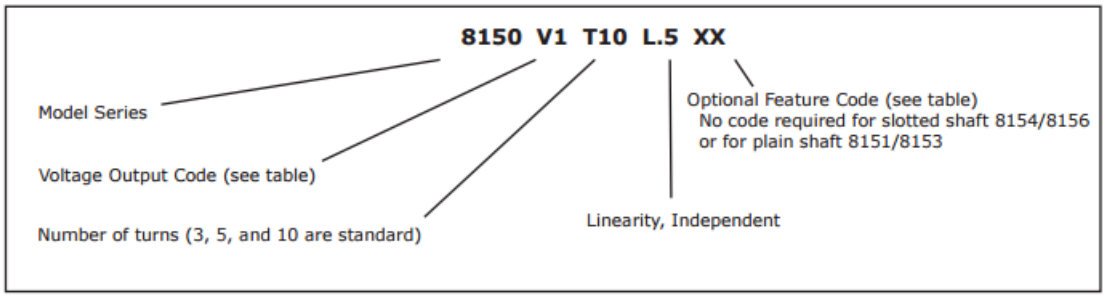
Environmental

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	8153: 50 million shaft revolutions with side load < 0.33 lb, 100 million with side load < 0.25 lb All other models: 10 million shaft revolutions with up to 8 oz. side load
Storage temperature range	-55°C to +125°C
Ingress protection rating (IP code)	IP50, IP66 available as option (feature code ES)

Ordering Information



Codes

Voltage Output Codes	
V0	≤ 3% to ≥ 96%
V1	4% to 96%
V2	5% to 95%
V3	10% to 90%
V4	15% to 85%
V5	20% to 80%

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 V_{CC}.

Optional Feature Codes	
No code	8151, 8153 plain shaft; 8154, 8156 slotted shaft
SS	Slotted shaft (8151, 8153 only; not used for 8154, 8156)
FS	Flatted shaft
LT	Linearity data
SL	Shaft lock (8156 only)
CW	Reverse direction
HT	High torque (8156 only)
ES	Seal IP66 (8154, 8156 only)

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

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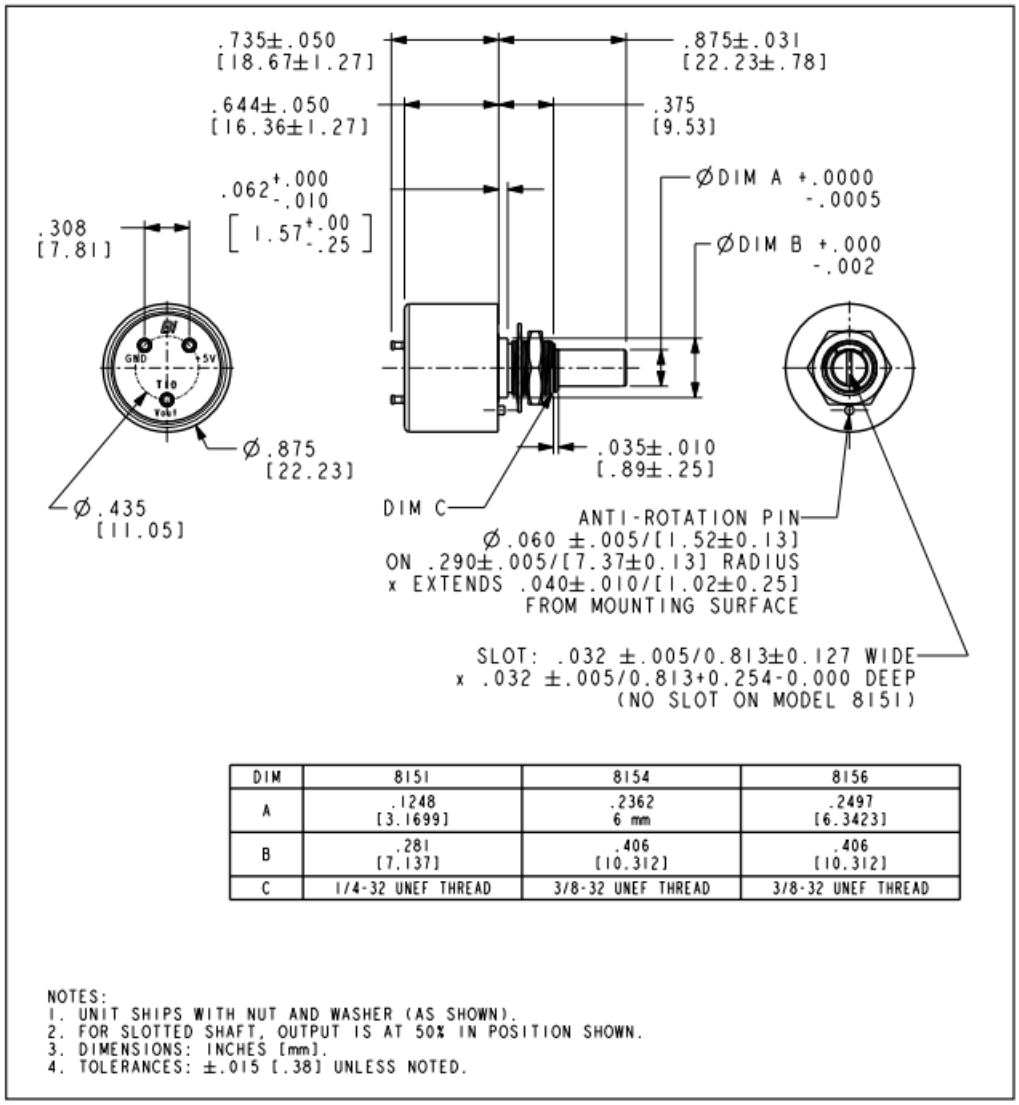
Matching Turns Counting Dials

8151: RBJ, 2601, 2641
8154, 8156: RB, 2126, 2606, 2606S, 2607, 2607S, 2626, 2627, 2646, 2646S, 2647, 2647S

Outline Drawing (bushing mounts)



DIM	8151	8154	8156
A	.1248 [3.1699]	.2362 6 mm	.2497 [6.3423]
B	.281 [7.137]	.406 [10.312]	.406 [10.312]
C	1/4-32 UNEF THREAD	3/8-32 UNEF THREAD	3/8-32 UNEF THREAD

NOTES:
1. UNIT SHIPS WITH NUT AND WASHER (AS SHOWN).
2. FOR SLOTTED SHAFT, OUTPUT IS AT 50% IN POSITION SHOWN.
3. DIMENSIONS: INCHES [mm].
4. TOLERANCES: ±.015 [.38] UNLESS NOTED.

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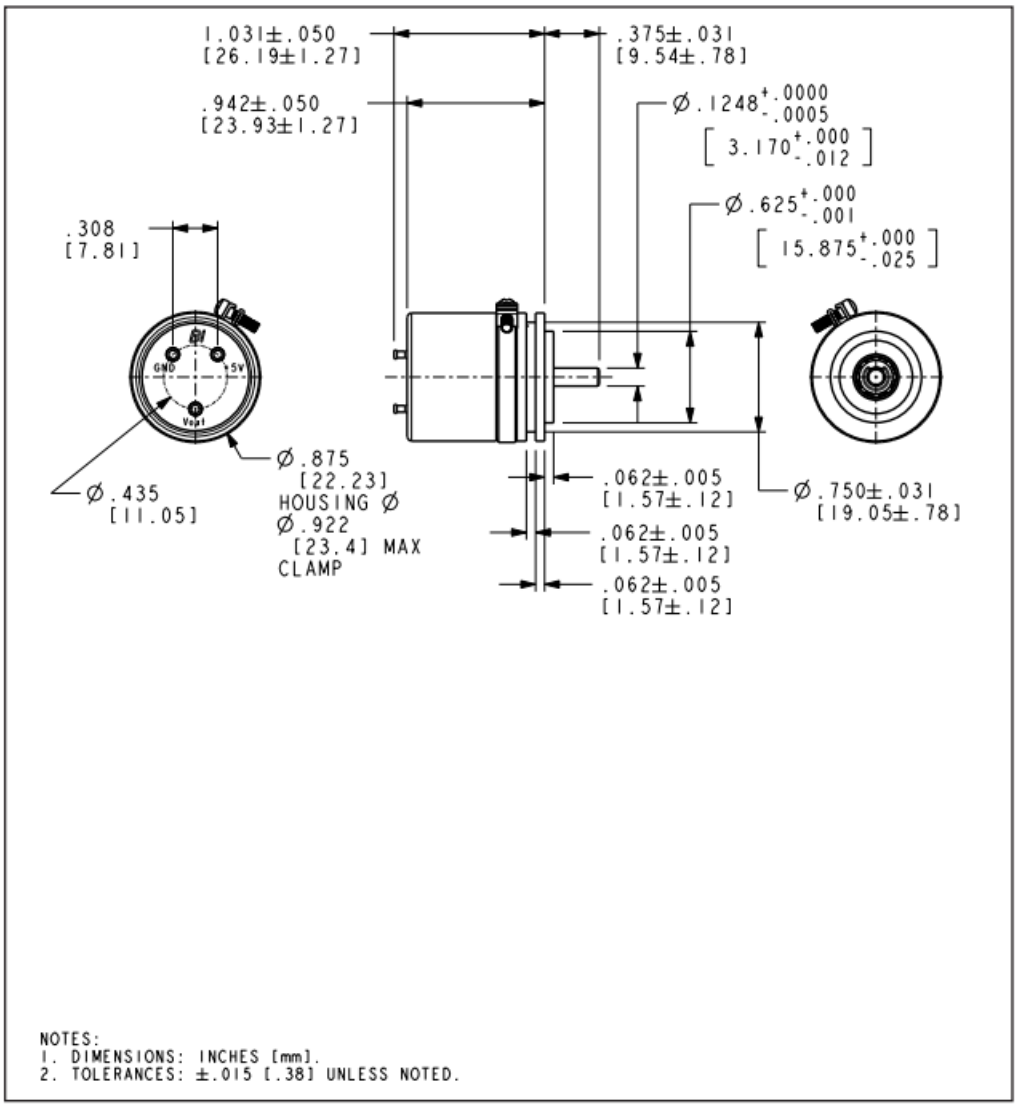
Outline Drawing (8153 servo mount)



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