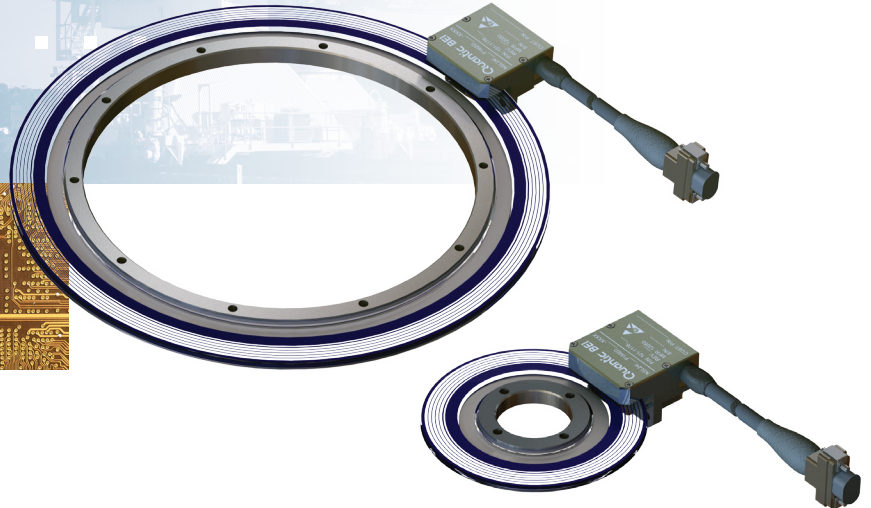
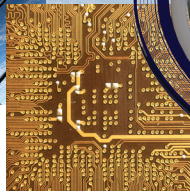


TRACKER-Lite



Features

- Modular Kit Optical Encoder
- All Electronics Contained in Read Station
- True Absolute 24-bit Position Output
- Vacuum Compatible
- Sample rate to 2 kHz
- In-Situ Auto Calibration [360° or limited angle]
- Radial alignment reporting
- Radiation tested samples to 55 krad(Si)

Applications

Commercial Space Applications
SmallSats
Mechanisms/Gimbals
Laser Communications
Satellite Constellations
Large Thru-Bore Designs

Quantic BEI's TRACKER-Lite is an evolution of our TRACKER absolute optical encoder. Packaging of the Commercial Space electronics has been optimized to minimize the weight and space claim of this minuscule 24-bit sensor. It is every bit as capable and modular as standard TRACKER, supporting code disk diameters from 3.0" (76.2 mm) to in excess of 12.0" (330.2 mm). In-situ Auto-Calibration and Radial Alignment Mode are available to support seamless integration onto host spindles.

As another member of Quantic BEI's nanoSeries line of true absolute encoders, TRACKER-Lite reports an angular position that is unaffected by power interruptions. Furthermore, no movement is required to obtain the absolute position—it is derived from ratiometric sinusoidal data tracks on each interrogation. This technique results in excellent tolerance to aging, temperature, and radiation effects.

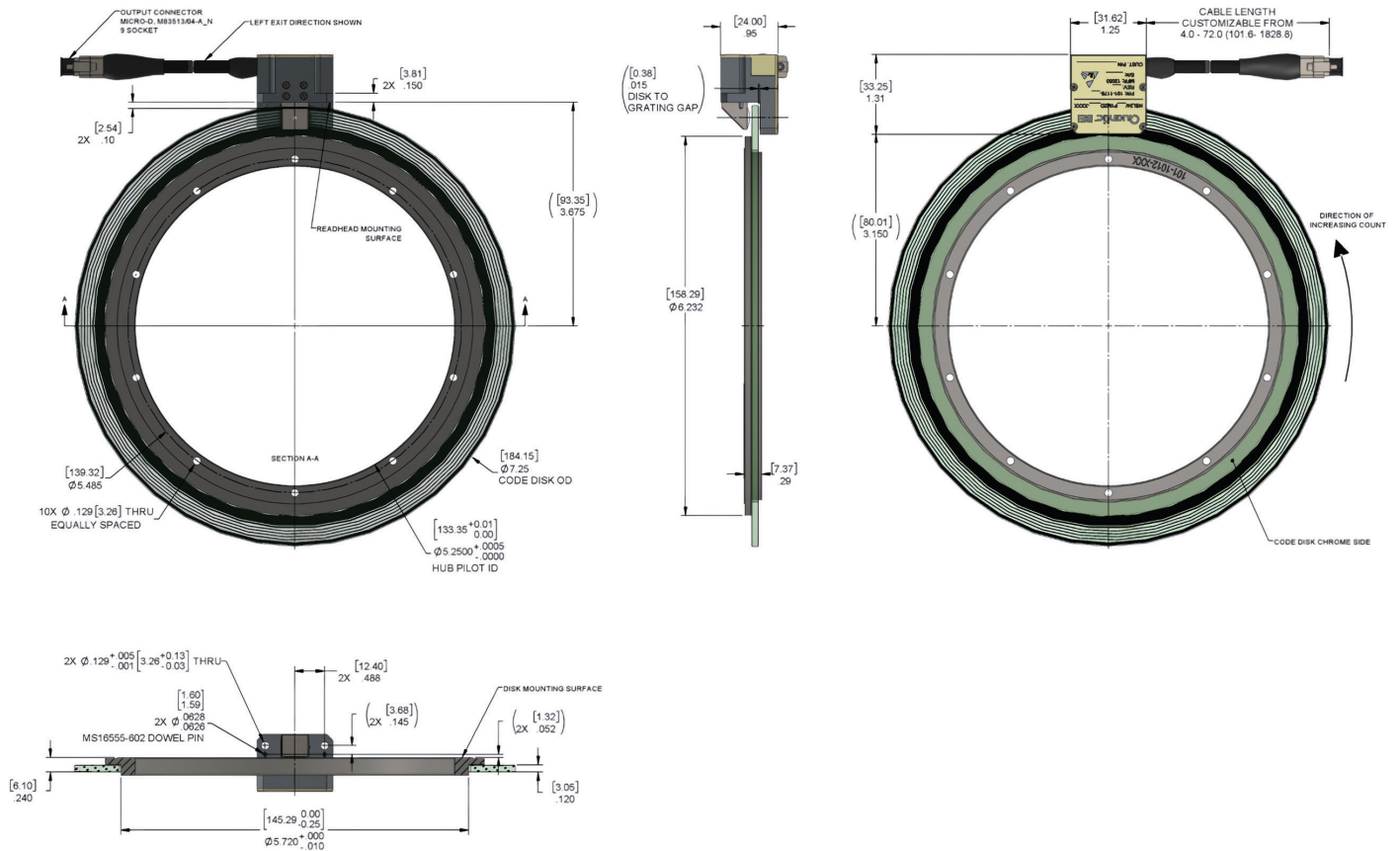
TRACKER-Lite is available in the Commercial Space Plus assurance level. With this option, the encoder is manufactured with integrated circuits from the same manufacturing lots that were used in the encoder radiation test samples. A Total Ionizing Dose test report is delivered that details the encoder radiation performance and lot/date code traceability to the ICs and photonic devices in your encoder. Specify 'CP' in the model number.



About Quantic™ BEI—For more than 60 years, Quantic™ BEI has advanced the technology of electro-mechanical sensors for motion control systems, with a focus on the singular characteristic that matters most: performance. The Quantic™ BEI portfolio includes the industry's best-in-class-resolution absolute optical encoders, scanners, oscillators and accelerometers, including specialized products from our focused business unit Quantic™ Thistle, also a standout in its field. And as a Quantic® Electronics company, we're part of an extended engineering ecosystem and powerful supply chain, defining a competitive advantage that extends to every Quantic™ BEI customer.

Readhead and Code Disk in Installed State

[7.25" Code Disk and Left-Exit Readhead Shown]



Notes:

1. See applicable outline drawing for complete dimensional specifications and mounting interface recommendations.

- | | |
|-----------------------|------------------------|
| ■ 190-0373-01 (3.00") | ■ 190-0373-06 (7.25") |
| ■ 190-0373-02 (4.00") | ■ 190-0373-08 (9.00") |
| ■ 190-0373-03 (5.00") | ■ 190-0373-10 (11.00") |
| ■ 190-0373-04 (6.00") | ■ 190-0373-11 (12.00") |

2. Unbracketed dimensions are inches and bracketed [X.XX] dimensions are millimeters.

Connector Pinout

The standard nanoSeries® TRACKER-Lite output connector is a 9-socket Micro-D Connector [M83513/04-A__N type] with the following pinout:

| Pin | Mnemonic | I/O | Description |
|-----|----------|-----|-------------------------|
| 1 | +POS | Out | Position data output |
| 6 | -POS | Out | Position data output |
| 3 | +CMD | In | Command word input |
| 8 | -CMD | In | Command word input |
| 2 | +CLK | In | Synchronous clock input |
| 7 | -CLK | In | Synchronous clock input |
| 4 | +5 VDC | — | Supply voltage |
| 9 | 5V RTN | — | Supply voltage return |
| 5 | CHAS | — | Chassis (case) ground |

I/O: LVDS or RS422

Output Protocol

Figure 1. Electrical Interface Timing Diagram (System); Timing values per Table 1 (below).

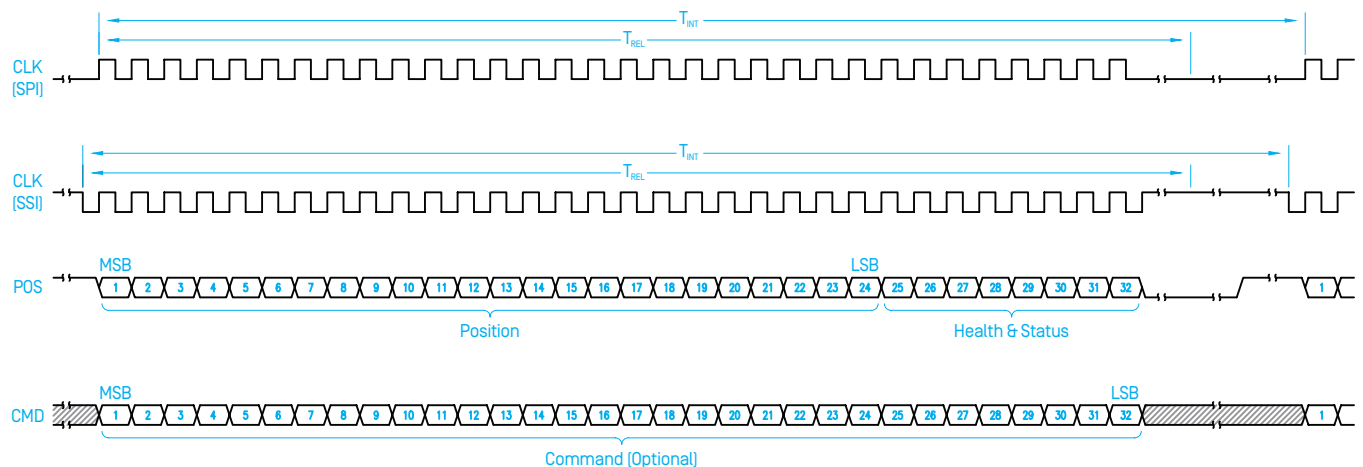


Table 1. Electrical Interface Timing Values [See 190-0323-03 for details]

| Parameter | Symbol | Min | TYP | Max | Units |
|------------------------------|-----------|------------------|------|-----|---------|
| Encoder Data Relevancy* | T_{REL} | 43 | 45.5 | 48 | μ S |
| Encoder Interrogation Period | T_{INT} | 500 [†] | — | — | μ S |
| Clock Frequency | | 1.5 | 2 | 2.5 | MHz |

* Although data is sampled within 45 μ S (typ) of the CMD pulses, it is not shifted out until the next cycle.

[†] 1000 μ s for Calibration Commands

General Specifications

| | Quanta/ Revolution | Resolution [Arc Seconds] | Accuracy [RMS] [Arc Seconds] | Speed [rps for full accuracy] |
|-----------------------------|-----------------------|---|---------------------------------|-------------------------------------|
| NST 24/xxx | 16,777,216 [24-BIT] | 0.077 [0.375 μ rad] | 2.5 ¹ | 5 max ² |
| Interrogation Rate | | 2kHz max | — | — |
| Acquisition Time | | 45.5 μ sec typ [see note Table 1] | | |
| Slew Speed [non-operating] | | 5 rps max | | |
| Operating Temperature Range | | -40°C to +85°C | | |
| Storage Temperature Range | | -55°C to +90°C | | |
| Mass, Max [grams] | | Structural Component Material³ | | Titanium Hub [M2 option] |
| | | Readhead with 36" cable | | 99 |
| | | Readhead with L" cable | | 50.3 + 1.35 (L) |
| | | 3.00" Disk/Hub | | 44 |
| | | 4.00" Disk/Hub | | 72 |
| | | 5.00" Disk/Hub | | 98 |
| | | 6.00" Disk/Hub | | 166 |
| | | 7.25" Disk/Hub | | 210 |
| | | 9.00" Disk/Hub | | 310 |
| | | 11.00" Disk/Hub | | 414 |
| | | 12.00" Disk/Hub | | 457 |
| Input Power | | 4.5 to 5.7 VDC at <40 mADC | | |
| Altitude | | Vacuum-compatible [all materials < 1.0% TML and < 0.1% CVCM] | | |
| Vibration | | 29.28 grms per MIL-STD-202, TM 2014, Condition I, Profile H | | |
| Shock | | 50 g at 11 ms half-sine pulse per MIL-STD-202, Method 213B, Test Condition A ⁴ | | |
| Relative Humidity | | To 99% [avoid condensation] | | |
| ESD [HBM] | | 8 kV | | |

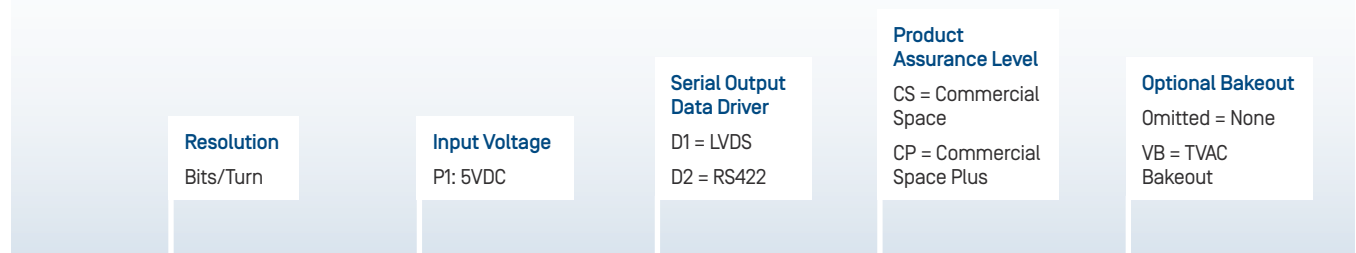
1. Does not include mounting errors.

2. TRACKER is a strobed encoder, higher speeds = greater position lag.

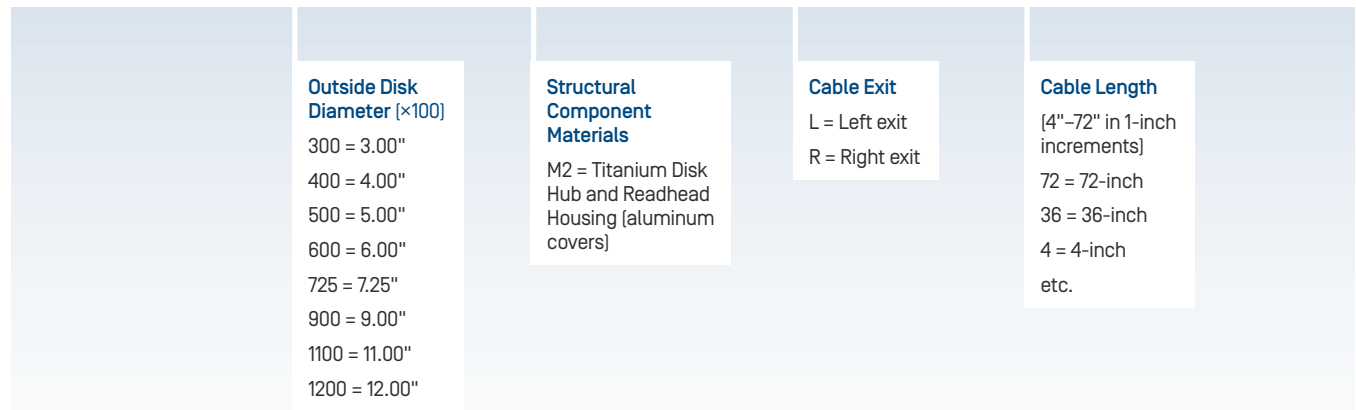
3. Structural component materials are limited to readhead housing, disk hub, and optics housing. Other components are made of aluminum.

4. Tested to this limit. Actual limit is much higher. Consult factory.

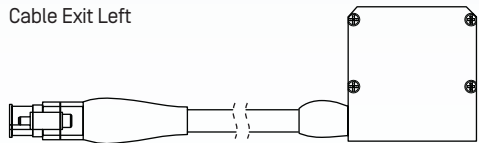
Ordering Information



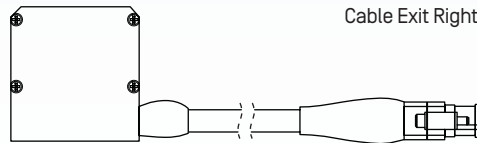
NST 24 / 300 P1 M2 D1 L CS - 72 VB



Cable Exit Left



Cable Exit Right



Special Models

Many other sizes and configurations are possible at a nominal cost. Available options (priced separately) include special materials, cable or connector variations, etc. Contact the factory for price and delivery information.

Quantic™ BEI

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Contact us for more information: quanticbei.com / phone: +1 (501)-851-4000 / fax: +1 (501)-851-5452 / sales@quanticbei.com

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