Features:
- Modular Encoder (Bearingless)
- 24 Bit Absolute Resolution
- Remote Electronics Card (Size 3U)
- 5 RPS Operating Speed Encoder
- Light Weight
- High Reliability
- High Speed Serial Output
- Auto Calibration
- Health and Status Bits
- Precision Stator Dowel Pins
- Precision Shaft Pilot Mounting
- Radial and Tangential Alignment Error Reporting

Heritage:
- TacSat-5 Momentum Control System Encoder
- Space Launch Warning
- F-35 EOTS (Electro Optical Targeting System)
- nanoSeries® Encoders
- LS 898 Series Encoders

Description:
This Modular Encoder is a modification of BEI’s standard nanoSeries® Encoder Model intended for use in space. This encoder consists of one readhead, a code disk/hub assembly, and a remote electronics PWB/Box. The unit, when mounted and interconnected properly, comprises a fully functional 24 bit encoder.

BEI’s nanoSeries® technology is the next generation of high accuracy absolute encoders. The technology employs several pairs of sine and cosine optical tracks with some powerful digital processing. This intelligent encoder can calibrate out a large degree of bearing and mounting issues, making it an ideal configuration for a kit encoder. Radial and tangential alignment error reporting feature makes precise mounting of the code disk and readhead easy and fast. For detailed information on this feature see MM-247 ARA/AIME-II nanoSeries® Encoder Alignment Mode Technical Bulletin.
Summary of Specifications:

**Mechanical:**
- Dimensions
  - Readhead: See Outline
  - Code Disk/Hub: 3 - 6" dia.
  - Remote PWB: Size 3U
- Gap, Disk to Housing: 0.015" nom.
- Base Material: Titanium
- Weight
  - Readhead (6 ft cable): 175 g typ
  - Disk and Hub: 70 g typ
  - Inertia: 8.26x10^5 kg-m^2
  - Remote PWB: 200 g typ

**Performance:**
- Accuracy: 1.0 arc-sec RMS
- Parts: GSFC EEE-INSD-002 Level 2
- Speed, Operating: 5 RPS max

**Electrical (1 Readhead System):**
- Input Power @ 5.0Vdc: 4.75 Watts max.
- Input/Output: LVDS SSI
- Interrogation Rate: 8 KHz
- Clock Frequency: 10 MHz max.

**Environment:**
- Temperature
  - Operating: -40 to 73°C (EEE-INSD-002)
  - Nonoperating: -55 to 90°C
- Vibration: See Table 1 below
- Shock: See Table 1 below
- Radiation: 30 Krad(Si) Total Dose
- Vacuum: 1E-5 TORR

**Qualification Test Results on File (TBD):**
- Functional
- Thermal
- Vibration
- Accuracy

**Analyses/Data on File (TBD):**
- Power Dissipation
- EEE Parts Stress and Derating
- Digital Circuit Timing
- Thermal
- EMI and EMC
- Radiation Effects
- Reliability Prediction
- Material Properties
- ESD Sensitivity
- Structural
- Venting
- LED Drive
- Accuracy and Resolution
- Parts Identification Data
- Humidity and Coating Properties

**Options (TBD):**
- Higher Radiation Levels
- Other Accuracy or Resolution
- Faster Operating Speed
- Other Readhead Configurations
- Remote Electronics Box rather than Card
- 16 - 45 VDC Input Power

**Notes:**
1. Specifications are generic. Consult factory for potential modifications.
2. Based on customer supplied base bearing shaft assembly.
3. Qualification test and analysis data can be supplied for similar units under cover letter.
ARA ENCODER READHEAD

See 190-0314-02 for details.
ARA Encoder Remote Assy
See 101-0967-102 for details
**Special Models:**
Many other sizes, configurations, and resolutions are possible at additional cost and lead time. Possible options include vacuum rating, radiation resistance, special materials, cable or connector variations, etc. Contact the factory for price and delivery.

**Ordering Information:**

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<table>
<thead>
<tr>
<th>nanoSeries® ARA</th>
<th>Resolution</th>
<th>Special features (TBD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA 24 / 40</td>
<td>Bits/urn</td>
<td>Serial Output Data Driver</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1 - RS485</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S2 - LVDS</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Outside Disk Diameter (x10)</th>
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</thead>
<tbody>
<tr>
<td>4.0 inch</td>
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</table>

<table>
<thead>
<tr>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1: 6 to 36 VDC</td>
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<tr>
<td>P2: 5 VDC</td>
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</table>

<table>
<thead>
<tr>
<th>Package Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1 - Kit Face Mount</td>
</tr>
<tr>
<td>K2 - Kit Flanged Mount</td>
</tr>
</tbody>
</table>
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