

BEI PSSC's optical dither scanner is an innovative tip-tilt mechanism which moves an optical element to precisely controlled angular positions under servo control. The dither scanner unit consists of four independent voice coil actuators and four linear optical encoders. The product is stable over time and temperature and uses precision flex joints to guide the movement. The unit is ideal for adding precision dithering to an optical system so that advanced convolution algorithms can be used to enhance the resolution of the resulting images.

Suggested uses:

- Assist in improving resolution of an existing Focal Plane Array
- Increase effective field of view of a FPA
- Image stitching incorporated with dither scanning can compensate for faulty/dead pixels
- Allows for the use of smaller FPA's which results in decreased power consumption

Features

- Self-contained low power servo and drive electronics including four voice coil actuators and four linear optical encoders
- High reliability for military applications
- Designed for military airborne operational environment

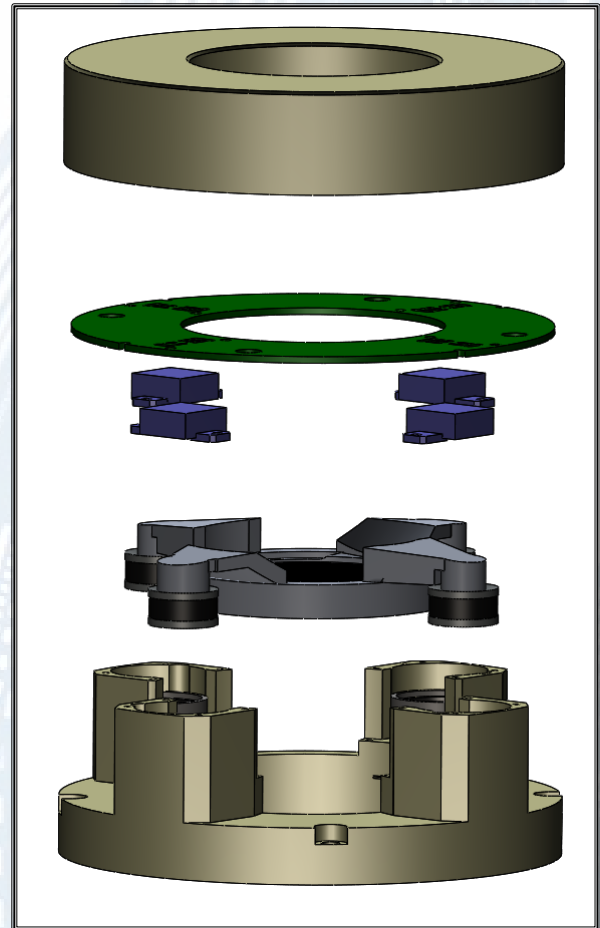
Specification Summary

- Commanded resolution & accuracy in 25 μ rad steps with a total range of $> \pm 15$ mrad in each axis for all operating environmental conditions
- ≤ 9 ms step and settle rate
- Input Power
 - Separate supplies for motor and logic
- Diameter
- Clear Aperture
- Height
- Weight
- Temperature Range
 - Operating -40°C to +71°C
 - Storage -54°C to +85°C
- Material Outgassing per NASA RP 1124

Multiple
form
factors
available

Design Capabilities:

By their nature, nutating scanners such as this are custom designs. In order to procure a device like this BEI Precision needs to know the payload weight, size, desired motion profile, duty cycle, power and mounting constraints. These devices can be made to operate with precision over wide temperature ranges, in vibration and shock environments, at high altitude, space, or in demanding military environments. In units such as the one shown here, the optical element is precisely located between an optic and a thermally managed mosaic detector in a Dewar. Our team of experienced designers can provide your program with high performance motion by tailoring the design of an angular scanner to the particular needs of your application. High angular resolution, high motion bandwidth, and high mass payload capabilities are all within reach. Robust design techniques are used to assure that in production the units will not only be very precise, but also will be affordable. Input and output formats can be customized. Generally, output position data will be serial and provision is made for discrete signals to synchronize the motion of the unit to external mechanicals. Several diagnostic and test modes are provided to allow for trouble shooting capability in the field if required.



Environment:

Mechanical Shock	Exceeds 60 g
Random Vibration	Exceeds 10 grms
Gunfire Vibration	Capable
EMI	Designed to meet MIL-STD-461

Reliability:

Hi-Rel Option	Burn-in, Screening, Quality Conformance inspection available on request.
MTBF	> 300,000 hrs, A _{IF} environment, MIL-HDBK-217
Design Life	> 30 years