OPTICAL INTER-SATELLITE LINK

MOTORS AND RESOLVERS FOR MOTION CONTROL

MOOG

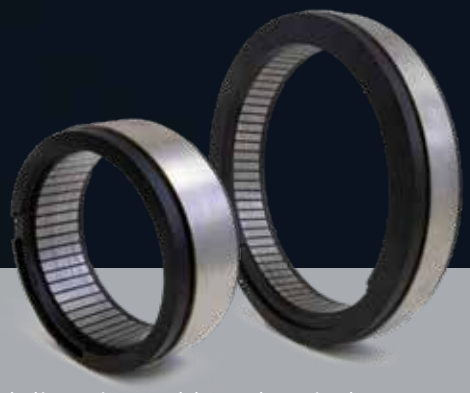
OPTICAL INTER-SATELLITE LINK

There is a huge demand for worldwide connectivity. This includes access to the Internet for everyone, including in rural areas and developing nations, managing and tracking of eCommerce, and real-time transfer of military information to make fast and accurate decisions. One of the technologies employed in meeting this demand is the use of communications satellite constellations. These constellations, when properly designed and implemented, can transfer data at high rates with low to no data drops.

One of the critical subsystems used in this transfer of data in communications satellite constellations is the optical inter-satellite link. This link is the data highway between satellites, and includes two-axis gimbaled systems that positions laser beams between satellites. Because the beams can be hundreds of miles long, high accuracy and low jitter are mandatory. This is accomplished by the use of high precision closed-loop motion control devices.

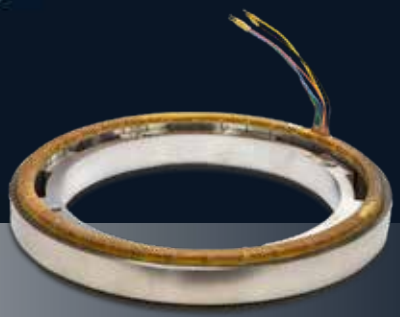
Moog offers DC permanent magnet brushless motors that are used in highly accurate positioning systems. Moog's brushless motor capabilities include slot-type configurations, producing high torque per power input, and slotless configurations with minimal torque disturbance. Moog offers motors customized for the application with minimal volume and weight.

We also offer highly accurate resolvers that are used as rotary position and rate transducers in a tightly controlled motion loop system. Our resolvers can also be customized for specific applications. Furthermore, Moog has provided brushless motors and resolvers for space applications, where low out-gassing, radiation tolerance, and wide temperature range sustainment is required.



DC BRUSHLESS FRAMELESS MOTORS

Our motors have high torque-to-power and torque-to-inertia ratios, high linearity and low electrical time constants. Moog offers several types of brushless motors that are readily adaptable for pointing mechanisms. These include our direct drive DC brushless frameless torque motors that are used in applications where wide angular excursions and high torque per volume and per weight are required. The second type is our toroidally wound brushless motors that have low torque disturbance and are typically used in limited angular excursions. The third type is our sectional motors and like the toroidally wound motors, these are used in limited rotation. Because their shape is segmented, they can be integrated in very small gimbals.



PRECISION FRAMELESS RESOLVERS

Moog offers three types of precision resolvers typically used in pointing mechanisms. Like our frameless motors, these are flat in shape, with thin widths as compared to their diameters. They can be mounted into the bearings and structures of gimbals, minimizing space and weight.

The first type is a single speed resolver that is accurate to about 3 arcminutes. The second is multispeed resolver that is used in limited angle excursions and is accurate to 10 arcseconds depending on its configuration. The third is a multiple speed resolver that combines the attributes of the single speed and the multispeed, providing a resolver with good accuracy and can operate in continuous rotation angles.

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