

High-voltage fiber optic circuit rotary connector



Overview

Fiber optic rotary joints in FPSO turrets SPINNER is one of the world's leading producers of high-performance rotary joints for off-shore or deep-sea appli.

Key Takeaways

High-voltage fiber optic rotary connectors combine optical signal transmission with electrical power handling, enabling reliable data and power transfer across rotating interfaces.

Overview

A fiber optic rotary joint (FORJ), also known as a fiber optic slip ring or optical rotary connector, allows optical signals to pass between a stationary and a rotating component without interruption. These devices are essential in applications where continuous rotation occurs, such as radar pedestals, wind turbines, industrial machinery, and defense systems, while maintaining high-speed, low-loss data transmission.

High-



Voltage and Hybrid Capabilities Some FORJs are designed as hybrid rotary connectors, integrating both fiber optic channels and electrical contacts. This allows them to transmit high-voltage power (up to 440VAC/DC) alongside optical signals, making them suitable for systems that require simultaneous power and data transfer. The optical fibers are inherently non-conductive, providing electrical isolation and reducing the risk of short circuits or interference, which is particularly important in high-voltage environments.

Key Features
Multi-channel support: FORJs can handle multiple optical fibers, from single-channel to over 100 channels, supporting single-mode, multi-mode, or large-core fibers. **Low insertion loss and high return loss:** Ensures minimal signal degradation and high-quality data transmission. **High-speed data transmission:** Capable of supporting data rates up to 10 Gbit/s or higher, suitable for both digital and analog signals.

Ruggedized design: Many high-voltage FORJs are built for harsh environments, with IP-rated housings, corrosion resistance, and high mechanical durability. **Smooth rotation:** Precision bearings allow continuous rotation at high speeds (up to 15,000 RPM in some designs) without signal loss. **Applications**
High-voltage fiber optic rotary connectors are used in scenarios where both optical communication and electrical power must be transmitted across a rotating interface: **Industrial automation:** Robotics, cranes, and rotating machinery requiring high-speed data and power transfer.

Defense and aerospace: Turrets, radar systems, and airborne platforms where reliability under extreme conditions is critical. **Energy systems:** Wind turbines and rotating generators where optical monitoring and electrical power coexist. **Marine and subsea systems:** Subsea vehicles and surveillance systems needing compact, high-integrity signal transfer.

Conclusion High-voltage fiber optic circuit rotary connectors provide a robust solution for transmitting both optical signals and electrical power across rotating interfaces. Their hybrid design ensures electrical isolation, high-speed data integrity, and operational reliability in demanding industrial, defense, and energy applications. Custom configurations are available to meet specific channel counts, voltage requirements, and environmental conditions.

Article Content

Fiber optic rotary joints in FPSO turrets

SPINNER is one of the world's leading producers of high-performance rotary joints for off-shore or deep-sea applications - for the reliable transmission of power and data with radio frequency or fiber optic

Fibre Optic Rotary Joints: Complete Guide | BGB

This blog will guide you through what a fibre optic rotary joint is, how it works, the different types available, and the numerous applications where they are used.

Fiber Optic Rotary Joints (FORJ)

Optical performance specifications are aligned with industry standards for fiber optic connectors per IEC 61753-1 and IEC 61754-20, ensuring reliable mating, alignment, and performance under dynamic

Fiber Optic Rotary Joints (FORJ)

Also known as optical rotary connectors or optical slip rings, FORJ applications have proliferated with the increasing adoption of fiber optic communication transmission lines.

Fiber Optic Rotary Joints

Our optical rotary joints deliver signals with low insertion loss and high return loss at high speeds. We offer fiber optic rotary joints with up to 109 channels, as well as custom-designed optical rotary joints.

Fibre-Optic Rotary Joints for Rotating Applications

Connection with glass-fibre instead of copper: Fibre-optic rotary joints from HARTING – an innovative solution for transmitting broadband data from a rotating to a static system.

Rotating Innovation: Contactless High-Speed Data Transmission

In optical processes, the most commonly used technology is based on the use of Fiber Optical Rotary Joints (FORJ), which are transmitted via fiber optic cables. This method enables high data rates, but

Fibre Optic Rotary Joints | FORJs | BGB

Our popular FORJ systems (Fibre Optic Rotary Joints) are designed & manufactured for high-speed data-transfer on many high-tech applications.

MFO107 series Fiber Optic Rotary Joints

Hybrid FORJs combine an electrical slip ring with a fiber optic rotary joint, allowing electrical, power and optical signal transfer through a single rotational joint.

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Fiber-optic communication

Modern fiber-optic communication systems generally include optical transmitters that convert electrical signals into optical signals, optical fiber cables to carry the

Fiber optic rotary joint

This guarantees the consistently high quality of these maintenance-free, optical rotary joints. We also supply combinations of fiber optic rotary joints with radio frequency (RF) rotary joints, contactless

FORJ Slip Rings, Fiber Optical Rotary Joints | B-COMMAND

Hybrid slip rings with fiber optic transmission are also known as optical slip rings or "fiber optic rotary joint" (FORJ). This version uses fiber optics as a medium for data transmission and offers the

Fibre Optic Rotary Joints: Complete Guide | BGB

In today's high-speed digital world, the need for seamless data transmission in challenging environments is greater than ever. Fibre optic rotary joints (FORJs) play a crucial role in enabling continuous data

Hybrid FORJ

Hybrid FORJs combine an electrical slip ring with a fiber optic rotary joint, allowing electrical, power and optical signal transfer through a single rotational joint. While

A magnetic rotary optical fiber connector for optogenetic experiments ...

Highlights • We have developed a rotatable fiber optic connector for optogenetic experiments in vivo. • Benchmark tests demonstrate superior performance to currently available

Fibre optic rotary joints (FORJ)

The fibre optic slip ring is used wherever fibre optic signals need to be combined with a rotary feedthrough. The low weight, high transmission power and inherent

Broadband Multimode Single-channel Optical Rotary Connector

Received: 19 August 2020 /Accepted: 21 September 2020 /Published: 30 October 2020 Abstract: Optical rotary connectors (ORC) belong to a new generation of newly created optical devices capable of

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