SPIN TACT™
BY AMPHENOL

Fiber Optic Rotary Joints (FORJ)

Amphenol's SPIN TACT™ sets the standard for advanced Slip Rings & Rotary Joints. Our innovative (patented) designs ensure unmatched performance in any environment.

Engineered for **Excellence** – Backed by **Amphenol**'s decades of interconnect expertise to deliver high-reliability solutions.

Amphenol's SPIN TACT™— Fiber Optic Rotary Joints (FORJs)

High-Reliability Optical Transmission for Dynamic, Mission-Critical Platforms Amphenol SPIN TACT™ Fiber Optic Rotary Joints (FORJs) deliver continuous, high-speed, and uninterrupted optical data transmission across rotating interfaces in some of the world's most demanding environments. Designed specifically for defense, aerospace, and marine applications, these advanced rotary joints are engineered to meet stringent military specifications and operational performance expectations under extreme conditions.

Rotary systems require reliable, lossless optical signal transmission as they rotate, often within complex integrated assemblies such as EO/IR sensor turrets, shipboard surveillance systems, radar antennas, and subsea data links. SPIN TACT™ FORJs enable the seamless transfer of optical signals across these moving interfaces, ensuring high bandwidth and EMI-immune communication links.

Product Overview

Amphenol's SPIN TACT™ FORJ product line is available in a wide range of configurations from single-channel to multi-channel solutions, supporting various fiber types and wavelengths. Our designs are ruggedized for harsh environments and optimized for compact form factors and lightweight performance-critical assemblies. Whether integrated into land vehicles, airborne platforms, marine surveillance systems, or subsea vehicles, SPIN TACT™ FORJs guarantee continuous, high-integrity optical signal transfer across rotating interfaces — with minimal insertion loss and high return loss, ensuring mission-critical data flows without interruption.

Key Performance Features

- Single-Channel to Multi-Channel FORJ Configurations
- Supports Single-mode (SM) and Multi-mode (MM) fiber types
- Wavelength compatibility: 850 nm, 1310 nm, 1550 nm (custom options available)
- Low Insertion Loss: typically <2.5 dB per channel (application-dependent)
- High Return Loss: typically >50 dB (SM) / >35 dB (MM)
- Continuous 360° rotation capability without signal degradation
- Compact and ruggedized enclosures for space-limited, harsh environments
- Custom hybrid integration with electrical, RF, fluid, and power slip ring assemblies.

Military-Grade Performance Compliance

Amphenol SPIN TACT™ FORJs are engineered and qualified to meet or exceed key military performance standards for harsh environment fiber optic connectivity, including:

- MIL-DTL-83526: General requirements for fiber optic connectors used in military systems.
- MIL-STD-810G/H: Environmental engineering considerations and laboratory tests.
- Shock: Method 516.7, Procedure I (Functional Shock).
- Vibration: Method 514.7, Procedures I and II (Random and Sine Vibration)Temperature cycling: Method 503.7.
- Salt Fog Resistance: Method 509.7 (for marine applications).
- MIL-STD-167-1A: Vibration (for shipboard applications).
- MIL-STD-461G: EMI/EMC compatibility (when integrated into hybrid solutions).

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 operating conditions.

Applications

Defence & Aerospace

SPIN TACT™ FORJs are extensively deployed in advanced military and aerospace systems where continuous 360° rotation and uninterrupted optical signal transmission are vital. Typical applications include:

- Turreted Electro-Optical/Infrared (EO/IR) Systems
- Vehicle-mounted and airborne sensor systems
- Situational awareness and targeting payloads

- Gimbal-mounted Surveillance & Reconnaissance Systems
- UAV optical payloads
- Airborne targeting systems

- Rotary Wing Aircraft
- Optical data links for radar, video, and sensor systems

- Missile Launch & Control Systems
- High-speed data transmission during rotational manoeuvres

- Radar & Tactical Communication Systems
- Shipborne and ground-based radar units with rotating antennae

- Satellite Ground Control Systems
- Optical interfaces in satellite dish assemblies and control consoles

Marine & Naval Systems

SPIN TACT™ FORJs are equally effective in maritime environments, with robust sealing, corrosion-resistant materials, and qualification for salt fog and subsea use. Applications include:

- Shipboard Surveillance & Sensor Masts
- Mast-mounted EO/IR sensors
- Periscope and optical communication systems

- Autonomous Underwater Vehicles (AUVs) & Remotely Operated Vehicles (ROVs)
- High-bandwidth umbilical data transmission
- Hybrid optical/power data link systems

- Towed Array Sonar Systems
- Optical data transfer between vessel and towed sonar arrays

- Subsea Communications
- Submerged rotary junctions for underwater data collection systems

Technical Specifications

Parameter	Specification
Number of Channels	1 to 100 (standard); custom options available
Operating Wavelength	850 nm / 1310 nm / 1550 nm / custom
Insertion Loss	<2.5 dB (typical)
Return Loss	>50 dB (SM), >35 dB (MM)
Maximum Rotational Speed	Up to 500 RPM (application-specific)
Rotational Life	>200 Million Cycles
Operating Temperature	-40°C to +85°C
Environmental Standards	MIL-STD-810G/H, MIL-STD-167-1A, MIL-STD-461G
Sealing	Up to IP68 (marine models)
Connector Interface Options	MIL-DTL-83526, MIL-DTL-38999, ST, LC, SC, FC, custom
Housing Materials	Stainless steel, marine bronze, hard anodized aluminium

More Offerings

Slipring – RFRJ – FORJ – Media - Hybrid Solutions

Slipring

- +1500 Amps Current.
- High speed data- 3G-HDI, USB 3.1 Gen 1, GbE etc.
- +200 electrical channels.
- High RPM up to 20k RPM.
- Concealed wires/cables.
- High isolation.
- With or w/o centre bores.
- Low torque, extended life.
- Ensures stable operation with minimal friction and wear.

RF Rotary Joints

- Patented designs.
- Multi-Channel & Multi Band Solution.
- Low loss solution.
- Light weight, compact.
- Customisation.
- Hybrid solutions.
- High power.
- Low torque, extended life.

WG & Media Rotary Joints

- Low Loss
- Broadband & High-Frequency solution.
- High Power handling.
- Multi-Channel solutions.
- Leak-Proof & High Pressure-Tolerant.
- Rugged & Sealed Construction.
- Smooth Rotation & Long Service Life.
- Hybrid Configurations.

Custom Integration & Hybrid Solutions

Amphenol SPIN TACT™ specializes in custom rotary solutions, offering integrated hybrid rotary assemblies that combine:
Fiber Optic Rotary Joints (FORJs)
Electrical Slip Rings
RF Rotary Joints
WG Rotary Joints
Fluid and Hydraulic Rotary Unions/Joints
These integrated assemblies minimize system footprint and optimize reliability for sophisticated multi-function rotary interfaces found in defence and aerospace platforms.

Why Choose Amphenol's SPIN TACT™?

Made in India- Made for the World and as part of the globally recognized Amphenol Corporation, SPIN TACT™ combines decades of interconnect expertise with cutting-edge rotary technology, providing solutions trusted by defense ministries, aerospace OEMs, and marine platform integrators worldwide.
Our products offer:

- Proven field reliability under extreme operational conditions
- Industry-leading optical performance consistency
- Flexible, customizable designs tailored to platform-specific requirements
- Global engineering and service support for military and marine programs
- Patented designs

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A World of Slipring & Rotary Joint Solutions.

Contact us for more info:

www.amphenol-in.com