Amphenol Slipring & Rotary Joint Solutions for Defense & Industrial Applications

Introduction

In high-performance applications where the transfer of power and signals across rotating interfaces is mission-critical, advanced slip ring technology plays a crucial role. Amphenol PCD's *SPIN TACT*® solutions offer industry-leading reliability, durability, and performance, ensuring seamless operation in defense, aerospace, industrial, and medical applications. Our innovative slip ring designs are engineered to meet the most demanding operational requirements while maintaining exceptional performance and longevity.

Key Features & Advantages

- **Rugged & Low-Maintenance Design**: Engineered with minimal moving parts for enhanced durability and extended service life.
- **Compliance with Stringent Standards**: 100% adherence to AS9100 production processes, ensuring high-quality manufacturing.
- **Hybrid & Customizable Solutions**: Supports power, RF, fiber optics (FO), and high-speed data transmission in a single unit.
- **Superior Contact Materials**: Utilizes premium materials such as gold, silver, and ruthenium plating to optimize performance and reduce wear.
- **In-House Testing & Validation**: Comprehensive testing for electrical, RF, FO, and Environmental Stress Screening (ESS) to guarantee reliability.

Advanced Technology & Materials

- **Power Transmission**: High-efficiency silver/carbon brushes with brass or silver-coated brass rings designed for robust power transfer.
- **Signal & Data Transmission**: Utilization of gold and silver-based contacts ensures high-speed, low-noise data transmission up to 1Gbps.
- **Contactless Technology**: Advanced capacitive and antenna-based solutions for ultra-high-speed data transfer in specialized applications.
- **Low Contact Resistance**: Ruthenium-plated contacts offer superior wear resistance, reducing overall maintenance costs and downtime.

SPIN TACT® Portfolio

Sliprings

1. Compact Disc Sliprings

- Low-profile design with radial ring arrangement.
- Ideal for applications requiring compact slip ring assemblies with high circuit density.

2. Micro-precision Sliprings

- Compact and lightweight, featuring gold-gold contact technology.
- Ideal for medical equipment, surveillance systems, and instrumentation.

3. Hollow Core Sliprings

- Capable of handling high power and real-time Ethernet data transmission.
- Available in standard through-hole diameters ranging from 3mm to +300mm.

4. Hybrid Slip Rings

- Integrated power, RF, and fiber optic transmission for high-performance applications.
- Suitable for defense, aerospace, and industrial automation systems.

Rotary Joints

1. RF & Waveguide Rotary Joints

- Single- and multi-channel designs for high-frequency RF transmission.
- Low plus High power with custom interface options.
- Used in Radar, SATCOM, and secure communication systems.

2. Optical Data Transmission Rotary Joints (FORJ)

- High-speed, high-bandwidth fiber optic connectivity
- Essential for EO/IR surveillance, high-speed networks, and automation

3. Hybrid Rotary Interfaces

- Seamlessly combines RF, fiber optic, and electrical slipring technologies.
- Engineered for high-performance defense, aerospace, and medical applications

4. Fluid & Pneumatic Rotary Couplings

- Enables smooth and efficient transfer of gases, coolants, and hydraulic fluids
- Designed for industrial automation, robotics, and heavy machinery

Applications

- **Defense & Aerospace**: Missile seeker gimbals, armored vehicle turrets, EO/IR trackers, radar, SATCOM, sonar, and space mechanisms.
- **Industrial & Robotics**: Semiconductor handling, wind energy, mining, automation, and packaging systems.
- **Medical & Imaging**: MRI and CT scanners, precision surgical equipment, and robotic medical systems.
- **Maritime & Naval**: Shipboard navigation, sonar, and fire control radar systems.
- **Renewable Energy**: Wind turbine slip rings designed for high power and extended service life.

Competitive Advantages

- **Extended Service Life**: Engineered for 50-300 million rotations, ensuring long-term reliability.
- **Compact Designs**: Optimized for space-constrained applications without compromising performance.
- **Industry-Leading Contact Resistance**: Ruthenium plating provides superior durability and low contact wear.
- **Comprehensive Customization**: Tailored solutions available to meet specific application requirements.
- **Designed for Global Leaders**: Trusted by leading organizations in defense, aerospace, industrial, and medical sectors.

Conclusion

Amphenol PCD's slip ring solutions deliver cutting-edge performance, durability, and versatility, making them the ideal choice for critical applications across defense, aerospace, industrial, medical, and maritime sectors. Our technology ensures efficient power and signal transmission while maintaining industry-leading reliability, even in the harshest environments.

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