www.schleifring.de

SCHLEIFRING

Defense

Slip ring solutions

Summary

About SCHLEIFRING

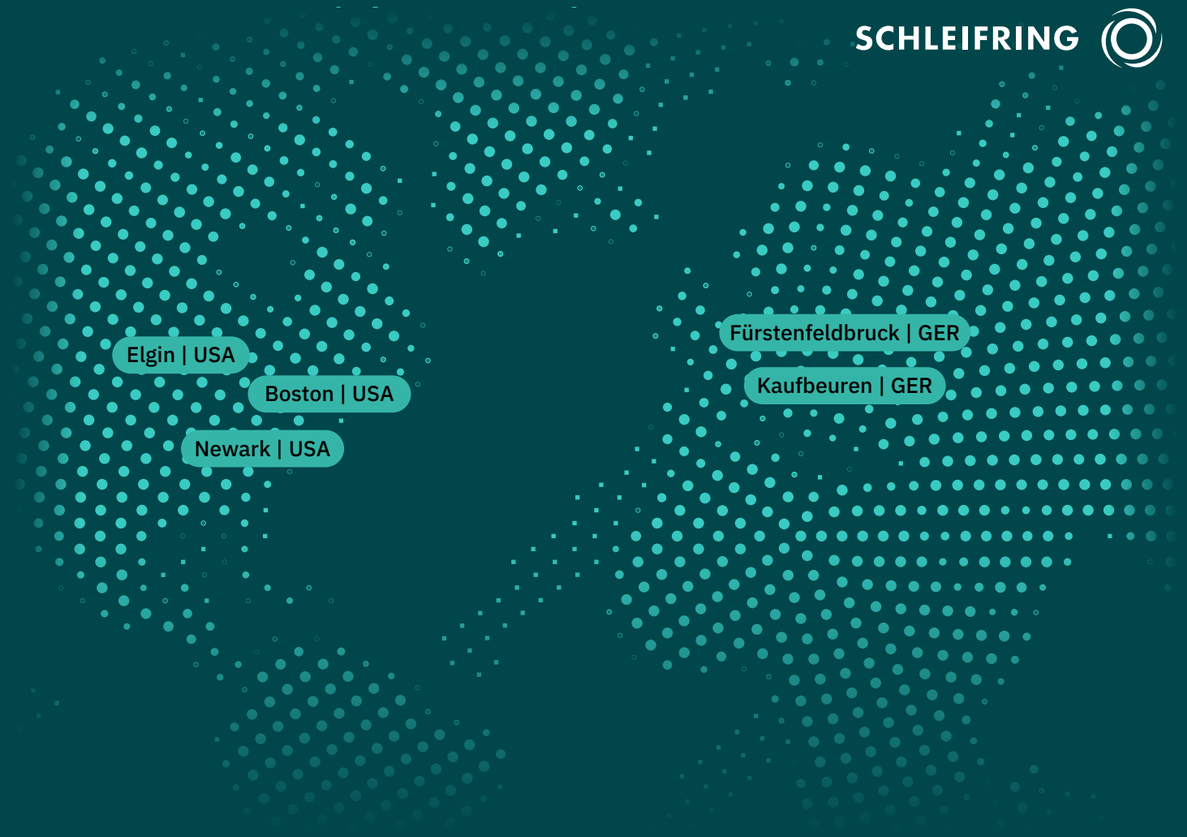
More than 3,000 customers rely on SCHLEIFRING solutions.
Our customers are specialists in complex technical products in the surveillance sector, the energy & automation industry as well as the medical sector.

With over 50 years of experience and a global network in over 50 countries, SCHLEIFRING is a trusted long-term partner and key supplier to the world's leading defense and security system integrators.

For decades, our high-performance solutions have ensured precise and reliable transmission of power, data and fluid in advanced military systems.

Whether in radar, turret or optical platforms, our customized slip rings enable seamless integration and top performance in critical defense applications.

SCHLEIFRING



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With our global footprint we offer state of the art manufacturing for our slip ring solutions in all our production sites. This enables us to serve our customers wherever it is required.

Applications

SCHLEIFRING rotating solutions operate reliably in the most demanding defense applications on land, in the air and sea. – Our slip rings are used in remote weapon stations, advanced radar systems, for airborne surveillance and on various naval vessels.

Our slip rings provide the dynamic electrical connection between static and rotating electromechanical elements. They operate as a rotary interface which continually transfers electrical power and data signals in any direction.
SCHLEIFRING products are manufactured fully customized to customer needs.

Turret systems

SCHLEIFRING technology ensures transmission of high power and high data rates for modern armored vehicles. The additional integration of fibre optics and air/liquid channels allows customization for every application.
Built to MIL standards, they deliver reliable performance for targeting, surveillance, and fire-control systems under extreme shock, vibration, and harsh environments.

Remote weapon stations

Our slip rings for remote weapon stations (RWS) provide seamless 360° transfer of high-speed data and video signals to support advanced optics, sensors, and weapon control systems.
Customized to each requirement for rugged military environments, they guarantee reliable performance and always ensure mission readiness.

Ground mobile & naval radar systems

Hybrid slip ring assemblies are engineered for continuous 24/7 operation with a low-maintenance design, ensuring maximum uptime in mission-critical defense applications. Featuring a hybrid architecture that combines high power and data, fiber optics, RF channels for IFF as well as cooling fluid transfer, they deliver reliable performance and signal integrity for rotating radar systems in the harshest environments.

EO systems

Compact slip rings for airborne electro-optic (EO/IR) systems provide reliable transmission of power, high-speed data, and HD video while focusing on lightweight designs optimized for flight.
They maintain stable connectivity for imaging and targeting payloads, even under high vibration, acceleration, and extreme environmental conditions, ensuring mission success in demanding airborne operations.

Periscopes

Our slip rings for naval periscopes and optronic masts provide seamless 360° transmission of power, high-speed data, and video signals for search, attack, and surveillance operations.
Designed for continuous operation in harsh maritime conditions, they ensure reliable performance under vibration, shock, and saltwater exposure, supporting precise targeting and situational awareness for modern naval vessels.

Naval winches

Our slip rings for shipborne sonar and towed-body winches enable reliable 360° transmission of power, data, and control signals for deployment and retrieval of sonar arrays and towed systems.
Featuring stainless steel housings and hermetic connectors, they provide continuous, low-maintenance operation in harsh maritime environments, ensuring durable performance under vibration, shock, and saltwater exposure.

Missiles

Miniature slip rings for missile applications are engineered in compact, lightweight designs to fit within tight space and weight constraints while ensuring robust performance.
Built to withstand very high rpm and extreme rotational acceleration, they provide reliable transmission of power and signals under the most demanding launch and flight conditions.

Hybrid slip ring assemblies

Leveraging decades of experience in transmission technologies, SCHLEIFRING is capable of designing and engineering customized slip ring solutions meeting every customer requirement. Our hybrid slip ring assemblies deliver all the performance you need in a single, integrated system.

All-in-one transmission solution: Seamlessly integrates electrical slip rings, fluid rotary joints, RF channels, fiber optics, and contactless systems into a single compact assembly.

Unmatched performance: Delivers high power, high-speed data, video, RF signals and fluid simultaneously, ensuring complete connectivity across rotating interfaces — perfectly suited for radar systems.

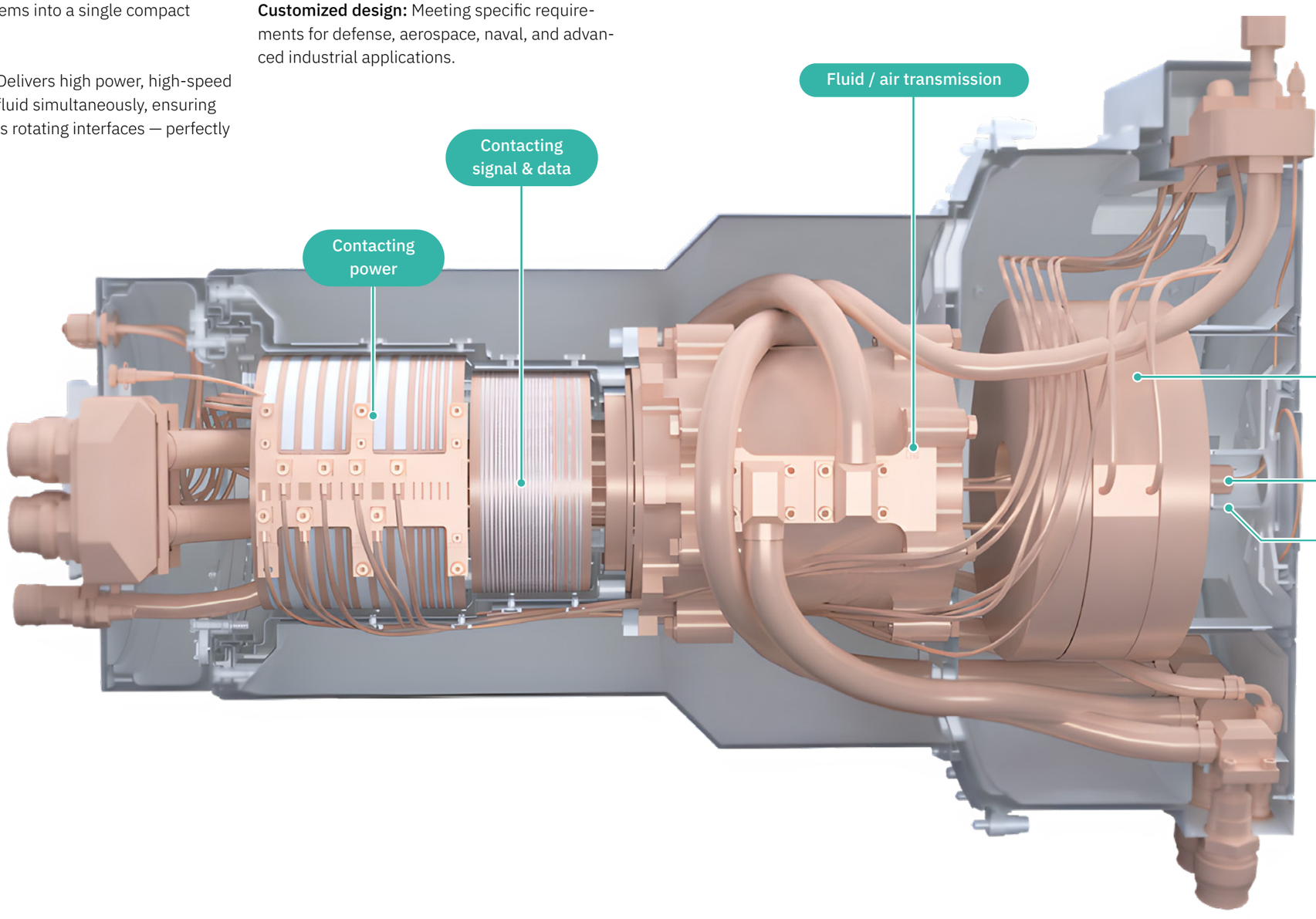
Position feedback integration: Supports encoders or resolvers for precise angular measurement and control in demanding applications.

Mission-critical reliability: Engineered for continuous 360° operation under extreme shock, vibration, and harsh environmental conditions.

Customized design: Meeting specific requirements for defense, aerospace, naval, and advanced industrial applications.

Optimized signal integrity: Maintains low-noise electrical paths, high-bandwidth fiber optic communication, and low-loss RF transmission for precise, dependable performance in radar and other high-demand systems.

Low-maintenance: Combines multiple proven technologies to minimize wear, reduce maintenance, and extend operational lifespan.



Optional features:

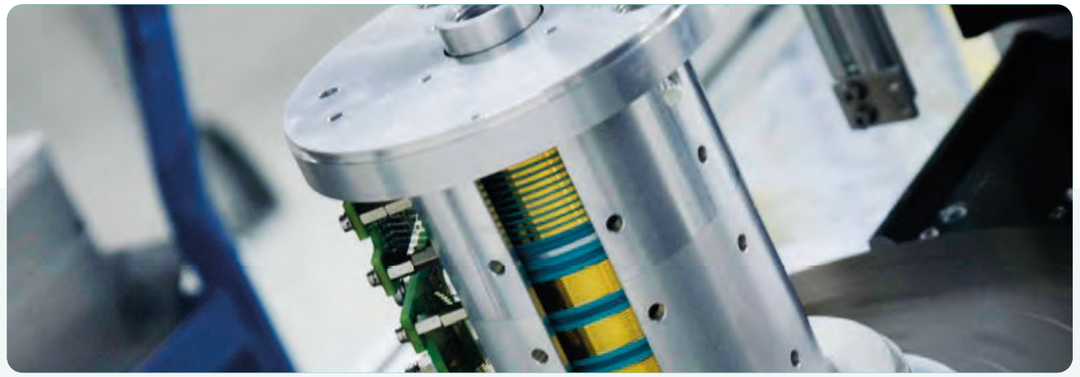
- Contactless signal / power
- Condition monitoring

Slip ring technologies

Contacting transmission

SCHLEIFRING uses different reliable contact-based technologies. Gold Wire Brushes, Multifiber Brushes and Carbon Brushes are proven for Signal, Data and Power transmission in various military applications.
Their benefits are:

- Low electrical noise and contact resistance
- High contact reliability
- Crosstalk isolation
- Reliable operation under shock, vibration and extreme temperatures
- Transmission of all common bus systems
- Transmission of high data rates up to 3 GBit/s
- Bit error rate < 10^{-9}
- Fully customizable
- Long, low-maintenance service life



	Max current	Speed	Typical lifetime
Power Tracks	up to 1000 A	up to 1000 rpm / up to 25 m/s	minimum 30 mio rev
Signal Tracks	up to 6 A	up to 1000 rpm / up to 25 m/s	minimum 30 mio rev

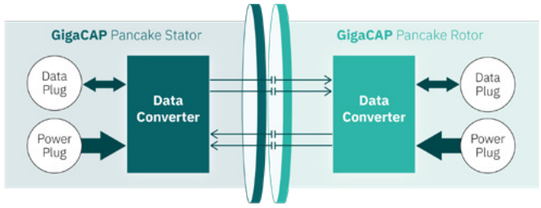
Contactless transmission

Our contactless slip rings are ideal for sensitive signal transmission like HD-Video, Ethernet, CANbus or customer-specific interfaces.
They offer:

- Maintenance-free operation
- No wear parts
- Ideal for high-speed rotation
- Bus protocol compatibility (Gigabit ethernet, Fibre channel etc.)

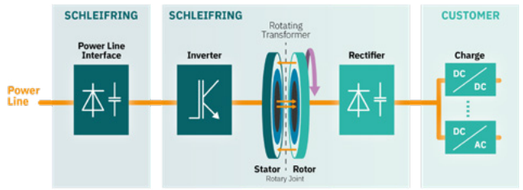
Contactless data

- Up to 10 Gb/s per channel
- Bit error rate < 10^{-12}
- Real time data (latencies <1 µs)
- Uni-/ bi-directional
- Free inner bore 20 mm to 1500 mm
- Fiber or copper interface



Contactless power

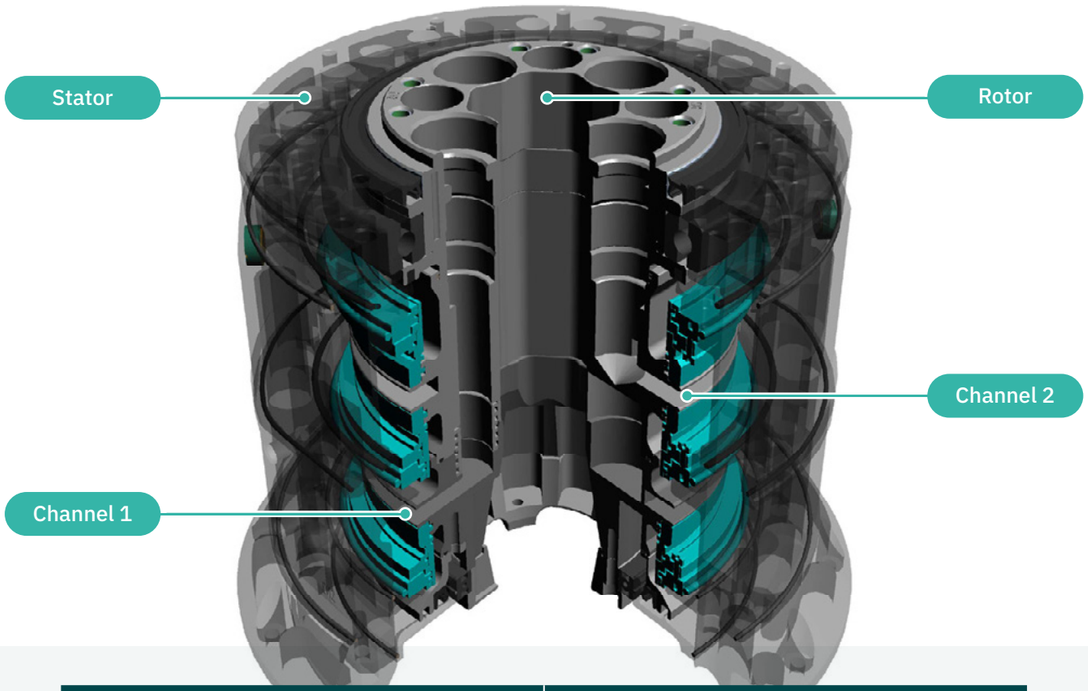
- 10 W to 2000 W / 24 VDC
- Up to 20.000 rpm
- Less than 5 % power loss
- Free inner bore
- Shock and vibration resistant
- Combination with contactless data transmission available



Customized fluid rotary joints

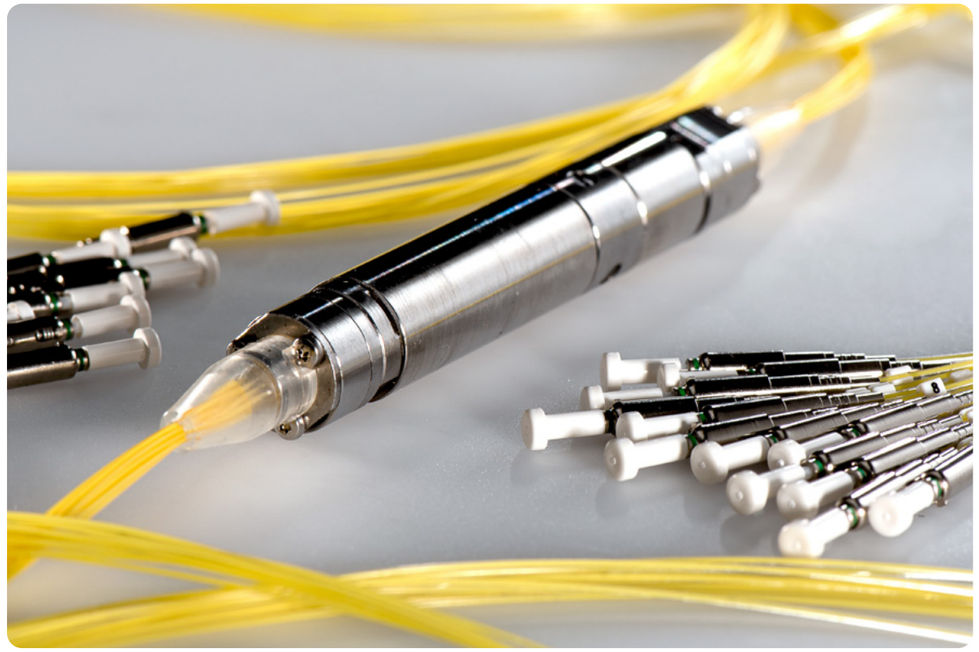
With decades of experience in manufacturing fluid rotary joints, SCHLEIFRING provides the all-in-one solution customized to your transmission application. Perfectly suited for modern active radar applications.

- Transmission of cooling fluids and air
- High pressure, high speed, high flow rates
- Integration in any SCHLEIFRING hybrid slip ring assembly or as stand-alone solution
- Leakage management system



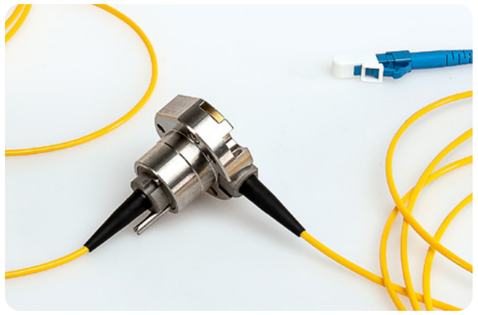
Characteristics	Value
Pressure (Inside channels)	0 to 12 bar
Flow rate	up to 1600 l/min
Nominal average torque	15 to 150 Nm
Channels	2 fluid channels optional air channel
Medium	cooling fluids
Lifetime	minimum 30 mio rev

Optical transmission



Fiber Optic Rotary Joints (FORJ) ensure passive transmission of any kind of digital or analogue optical signals, independent of the data protocol.

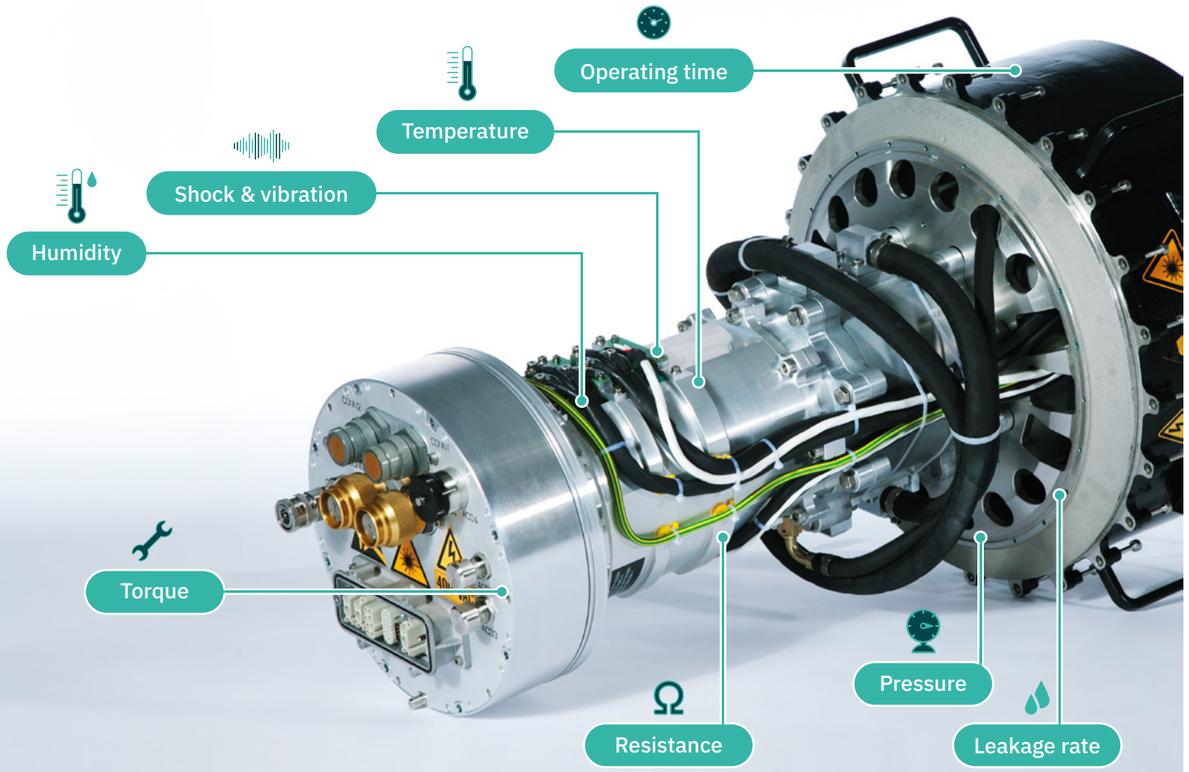
- Single-mode and multi-mode up to 60 channels
- Data rates > 10 Gb/s
- Temperature range: -55 °C to +85 °C
- Low insertion loss down to 2.0 dB
- Bit error rate < 10^{-12}
- Real time data (Latencies < 1 µs)
- Unaffected by EMI
- Housing diameter Ø 12.5 mm to Ø 60 mm



Condition monitoring system

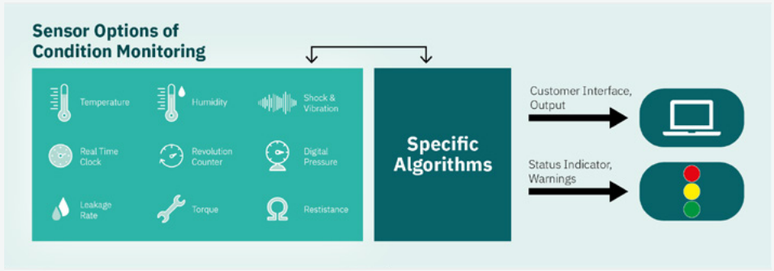
The condition monitoring system for slip ring applications by SCHLEIFRING is a real-time monitoring of system performance and enables predictive maintenance support. It is an active system that provides data reflecting the overall status of the slip ring unit.

The customer can analyze information about the environmental influences during operation due to the integration of versatile sensor data.

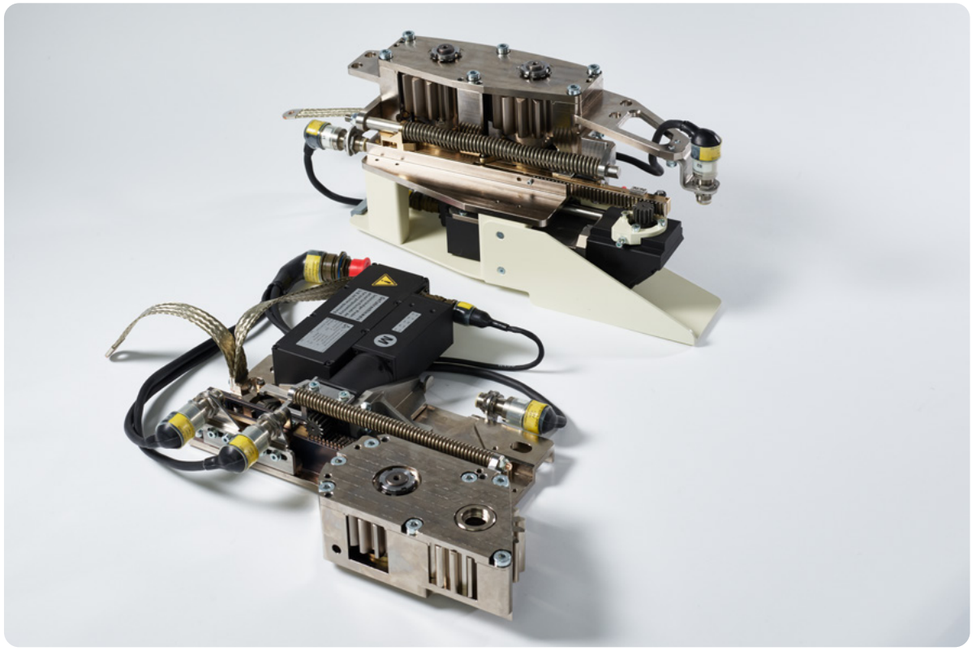


Intelligent algorithms process this data to determine the slip ring condition based on SCHLEIFRING's expertise in transmission technologies.

The system issues warnings, status indications or maintenance information as required.



Electromechanical components



With SCHLEIFRING's expertise in assembly and testing complex electromechanical products, as well as our state-of-the-art manufacturing facilities, we are capable of providing more than just the slip ring.

Our focus goes beyond the world of transmission technologies, fully dedicated to serve our customers in the best way possible. Therefore, we are ready to take on further sub-assemblies including actuators, motors, cable harnessing and electromechanical assemblies

An example of our expertise in this field is a safety relevant locking mechanism used on armored vehicles equipped with a turret.
In the event of failure, power outage or other emergencies, those mechanisms ensure that the turret and the gun are completely fixed and secured within the fraction of a second to avoid harm to soldiers and equipment.

SCHLEIFRING
Life cycle management

1. Prototyping & qualification

SCHLEIFRING supports customers from early design stages with rapid prototyping and thorough qualification. Our inhouse engineering and manufacturing enable fast iterations and validation under real-world condition

2. Manufacturing & documentation

We deliver series-ready slip ring systems produced in ISO-certified facilities. Each unit is accompanied by full documentation – from test reports to compliance certificates – customized to project needs.

3. MRO - Maintenance repair overhaul

Whether routine maintenance or complete refurbishment: our MRO services keep your systems operational and up to date. We extend products lifecycles while minimizing downtime and cost.

4. Product recycling

At end-of-life, we offer responsible recycling and disposal services. Our environmental commitment includes safe decommissioning and responsible use of natural resources.

5. On-site repair

When time is critical, our certified service technicians provide hands-on support worldwide. On-site repairs, testing and upgrades ensure fast restoration of system availability – wherever the product operates.

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