

ENERGY / PROCESS INDUSTRIES / TRANSPORTATION

SIGNAL & POWER TRANSFER SYSTEMS



SIGNAL & POWER TRANSFER SYSTEMS (SPTS)

Signal & Power Transfer Systems transmit Signals, Power & Data from static to rotating parts. They are the all important interface ensuring successful equipment operation.

MERSEN OFFERS 4 RELIABLE TECHNOLOGIES:



These 4 technologies can be combined into hybrid systems, utilizing the technical advantages of each system to meet the requirements of almost any rotating application.

MERSEN SPTS FEATURE COMPARISON

| Type of transfer system | Max. rotation speed (rpm) | Current transfer | Signal transfer | Data transfer | Life time (Rotations) | Hollow shaft | | Vibration sensitive | Contactless | |
|-------------------------------|------------------------------------|---------------------|--------------------|---------------|--------------------------|-----------------|-----|------------------------|-------------|--|
| CARBON BRUSH | 2,000 | Y | Y | < 0.5 Mbit | 100X10 ⁶ | Y | YES | N | N | EASY POWER TRANSFER, NEED MAINTENANCE TO REMOVE CARBON DUST / TO REPLACE BRUSHES |
| CAPACITIVE | 3,000 | Y | Y | < 1,000 Mbit | 200X10 ⁶ | Y | LOW | N | Y | LOW MAINTENANCE DUE TO NON-CONTACT TECHNOLOGY |
| FIBER OPTIC | 2,500 | N | Y | < 10,000 Mbit | 200X10 ⁶ | N | LOW | Y | Y | LOW MAINTENANCE DUE TO NON-CONTACT TECHNOLOGY, SENSITIVE AGAINST VIBRATION, PERIPHERAL DEVICES (MULTIPLEXER) NECESSARY |
| GOLD WIRE | 50 | Y | Y | < 10 Mbit | 80X10 ⁶ | Y | YES | N | N | NEED MAINTENANCE TO LUBRICATE THE WIRES ONCE A YEAR / NOT RECOMMENDED WHEN HARD SHOCKS OR VIBRATIONS OCCUR |



Layouts Tailored to Your Needs with Adapted Design Options:

- Special seals for IP protection
- Special surface treatments
- Angular encoders, resolvers, or incremental encoders
- Medium feedthroughs
- Plug & play connectors or contact clamps
- Direct connections to the circuit boards
- Self regulated integrated to heaters
- Temperature sensors



WHY CAN YOU TRUST MERSEN?

- As an integrated supplier, Mersen has the ability to design and manufacture complete Signal & Power Transfer Systems (SPTS), as well as offer maintenance, technical support and training, both on-site and at our plants. We maintain a network of experts who supply their technical expertise in signal and power transfer.
- Mersen has over 120 years experience in solutions for electrical rotating machinery acquired in the Industry, Energy, and Transportation fields. As a market leader, we master the science of tribology and have an excellent knowledge of power and signal transfer, enabling us to use adapted transfer technologies. Alongside standard products, we can develop customized solutions for each specific requirement, working in cooperation with our customers' engineering departments to reach the highest levels of customer satisfaction.
- With manufacturing facilities located all over the world, we can offer our customers proximity of service, especially through our dedicated production plant in Austria.
- Mersen's SPTS are developed, tested and field-proven for optimum performance in a variety of load and environmental conditions.



SUCCESS THROUGH OPTIMIZATION AND DEVELOPMENT

- Our objective: create innovative Signal and Power Transfer Systems and continue to improve our solutions on a daily basis.
- International R&D Team: high level PhDs, engineers and technicians, each of them specialized in a specific area of competence.
- Worldwide academic network: Mersen benefits from an extended network of partners (universities, external laboratories...) with whom we work to continually innovate our Signal & Power Transfer Systems.

MERSEN, YOUR SOLUTION PROVIDER

Mersen offers 4 different technologies that can be combined for reliable and high quality Signal & Power Transfer Systems

FINE-TUNED SOLUTIONS MEETING CUSTOMERS' EXPECTATIONS

High-quality materials, precision bearings, robust housings, and state-of-the-art electronics are some of the components that make up a quality transmission system.

With focus on the standard transmission of different currents and signals, Mersen's SPTS can also be fine-tuned to deal with the specific demands of today's equipment.

Our SPTS are designed and manufactured in compliance with international standards (DIN, IEC, UL, CSA...). Our extensive laboratory testing capabilities and our partnership with external laboratories and universities also enable us to test them according to customers' specifications (IP protection, shock and vibration, service life time, humidity...)

O1 CARBON BRUSH SYSTEMS

YOUR BENEFITS

- Optimal cost-efficiency
- Mersen manufactured and field-proven premium carbon brushes and material combinations
- Resistance to harsh environmental conditions
- Long lifetime
- Easy adaptation to different slip ring diameters ("hollow shaft")
- Low and easy maintenance (carbon dust collection system an option)
- Speed up to 3,000 rpm (depending on slip ring diameter)



SIGNAL CIRCUITS

Analog and digital signals

POWER CIRCUITS 1 A to 200 A at voltages up to 690 V

MAIN APPLICATIONS Industry, wind turbines, material handling systems, cranes...

- HYBRID SYSTEMS

Hybrid systems are flexible solutions offering reliability in the transfer of both high frequency signals and high power.

- Fine-tuned modular systems meeting the individual needs of our customers
- Combination of well established carbon brush systems for power circuits and maintenance free contactless systems for data transfer
- Low maintenance transfer
- Reduced TCO (Total Cost of Ownership)
- Long life time (100 million revolutions)
- Near field transmission (less electromagnetic impact)
- Very low bit error rate (BER ≤1 x 10⁻¹²)
- Plug & Play system, no need for auxiliary interface electronics to adapt to standard industrial bus systems
- Possibility to have a hollow shaft configuration





YOUR BENEFITS

- Maintenance free
- Reduced TCO (Total Cost of Ownership)
- Non-contact: no wear, no pollution (dust)
- Long life time (200 million revolutions)
- Near field transmission (low electromagnetic impact)
- Very low bit error rate (BER $\leq 1 \times 10^{-12}$)
- Plug & Play system, no need of auxiliary interface electronics to adapt to standard industrial bus systems
- Possibility to have a hollow shaft configuration
- Self diagnostic
- Speed up to 3,000 rpm, higher on demand



SIGNAL CIRCUITS

High reliability of data transmission up to 1 Gbit. Able to transfer all standard protocols (CAN Bus, Ethernet, Profinet). Multichannel, possibility to combine different types of protocols (for example Ethernet with CAN)

POWER CIRCUITS

Wind turbines, food industry, machine tools, robotics, scientific equipment, medical, aerospace, military, energy...



SIGNAL CIRCUITS

Analog and digital signals (RS232 / RS422 / RS485 protocols) CAN, Ethernet, Profibus

POWER CIRCUITS

1 A to 200 A at voltage up to 690 V

MAIN APPLICATIONS

Industry, wind turbines, material handling systems, cranes...

03 FIBER OPTIC SYSTEMS

YOUR BENEFITS

- Maintenance free
- High-speed data transfer
- Data transfer in Electro Magnetic Interference (EMI) sensitive environments
- No need for an external power supply
- Speeds from 100 rpm to 2,500 rpm
- Reduced space
- Minimum lifetime 200 million revolutions for one channel and 100 million revolutions for multichannel

SIGNAL CIRCUITS:

Very high frequencies (up to 10 Gbit) Single or Multi-channel up to 20 channels, more or demand

MAIN APPLICATIONS

Those requiring very high data transmission rates and high reliability with many transmission channels (wind turbines, medical, military, industry, science...)





YOUR BENEFITS

- Slip ring / wire contact system, both with noble metal coatings
- The pressure of each and every wire is individually calibrated to guarantee constant and uninterrupted contact with the slip ring track, allowing high quality signal to noise transmission.
- Complete range from nickel/nickel contact systems to gold/gold contact systems for high-end requirements and high reliability, even in the harshest environments
- Low and easy maintenance with quick access (all wires are grouped together in individual retainers which are mounted on both sides of the slip rings)
- Speeds up to 50 rpm (depending on slip ring diameter)
- Possibility to have a hollow shaft configuration

SIGNAL CIRCUITS:

Analog and low level digital signals on request

POWER CIRCUITS:

1 A to 100 A at voltages up to 690 V (higher voltages on request)

MAIN APPLICATIONS:

Systems requiring high reliability and safety with long maintenance intervals such as wind turbines, material handling, ship propulsion, cranes, motion controls, surveillance cameras...















GLOBAL EXPERT IN ELECTRICAL POWER AND ADVANCED MATERIALS

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