Our Products

- Small Capsule
- Mid-Sized Capsule
- Enclosed Power Thru-Bore
- Enclosed Signal Thru-Bore
- Separates
- Other

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Electro-Miniatures Corp.

Solutions Designed Around You

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Products

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Product Overview

A slip ring is an electromechanical device that allows the transmission of power and electrical signals from a stationary to a rotating structure. Also called a rotary electrical joint, collector or electric swivel, a slip ring can be used in any electromechanical system that requires unrestrained, intermittent or continuous rotation while transmitting power, analog, digital, or RF signals and/or data. It can improve mechanical performance, simplify system operation and eliminate damage-prone wires dangling from movable joints. How a slip ring works.

While the primary goal of the slip ring is to transmit power and electrical signals, the physical dimensions, operating environment, rotating speeds and economic constraints often affect the type of packaging that must be employed.

The customer's requirements and cost objectives are critical elements in driving the decisions that lead to the development of a successful slip ring design. The four key elements are:

- Electrical Specifications
- Mechanical Packaging
- Operating Environment
- Cost

Electrical Specifications

Slip rings are used to transmit power, analog, RF signals and data through a rotating member. The number of circuits, types of signals, and the electrical noise immunity requirements of the system play an important role in the determination of the physical design constraints imposed upon the slip ring design. High power circuits, for example, require larger conductive paths and greater spacing between the paths to increase dielectric strength. Analog and data circuits, while physically narrower than power circuits, also require care in their design to minimize the effects of cross-talk or interference between signal paths. For low speed, low current applications a Gold-on-Gold brush/ring contact system may be employed. This combination produces the smallest packaging configurations as shown in our small

and mid-sized capsule selections. For higher speed and current needs the incorporation of composite Silver Graphite brushes and Silver rings are used. These assemblies normally require larger package sizes and are shown under enclosed power slip rings. Using either method most slip ring circuits exhibit changes in dynamic contact resistance of approximately 5 milliohms.

Mechanical Packaging

The packaging considerations in designing a slip ring are often not as straightforward as the electrical requirements. Many slip ring designs require cabling and other rotating or non-rotating hardware to pass through the slip ring. These requirements often dictate the unit's inner diameter dimensions. Electro-Miniatures offers a variety of signal thru bore units. Other designs require a slip ring to be extremely small from a diameter stand-point, or from a height standpoint. In other cases, the space available for the slip ring is limited, requiring the slip ring components be provided as separates, or that the slip ring be integrated with a motor, position sensor, fiber optic rotary joint, or connectorized, in an integrated package. Over the years Electro-Miniatures has been challenged with many unique packaging

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l to operate under has an influence on the slip ring design in many ways. Rotational speed, temperature, pressure, corrosive materials impact the bearing selection, exterior material selection, flange mounts and even cabling choices. izes lightweight aluminum housings for its packaged slip rings. Stainless steel housing is heavier but may be necessary ing environment.