PENLINK

Radio Frequency Joints for Radar Applications

We can supply a wide range of RF components that are used in radar applications such as weather radars, airspace surveillance, science research and commercial radar stations. For a complete solution we can also integrate RF joints with slip rings and optical fiber rotary joints.

If you are interested in any of our RF components, please contact our sales team by calling +46(0)84011010 or email info@penlink.se

Radio frequency rotary joints play key roles in all radar systems in which signals are transmitted between a static platform and a constantly rotating antenna.

Penlink supply RF components for every application area of rotating radar applications. We offer custom-designed solutions for our clients. For new solutions, any combination of the various transmission methods is possible; Slip rings for transmitting high power or data can be implemented, and we can integrate optical rotary joints or ensure contact-free transmission of fast Ethernet and RF signals.

In every new development project, the focus of our work is always on maximum reliability, a long service life and virtually maintenance-free operation of the rotary joints.

Our rotary joints are flexible to use, extremely reliable and a secure investment for the future. These features and the long-standing experience of our developers and technicians have allowed us to become leaders in our segment.

Radar Application Segments

+ Weather Radar
+ Commercial Radar
+ Defense Radar

OUR SOLUTION

Weather Radar Components

For weather radar systems, we combine fiber optic rotary joints (FORJ) typically with single- and dual-channel radio frequency rotary joints for frequency ranges in S-, C- and X-band. Where in current weather radar systems a slip ring transmits data to the antenna, the FORJ brings data rates of several Gbit/s with highest reliability to weather radar systems around the globe.

OUR SOLUTION

Commercial Radar Components

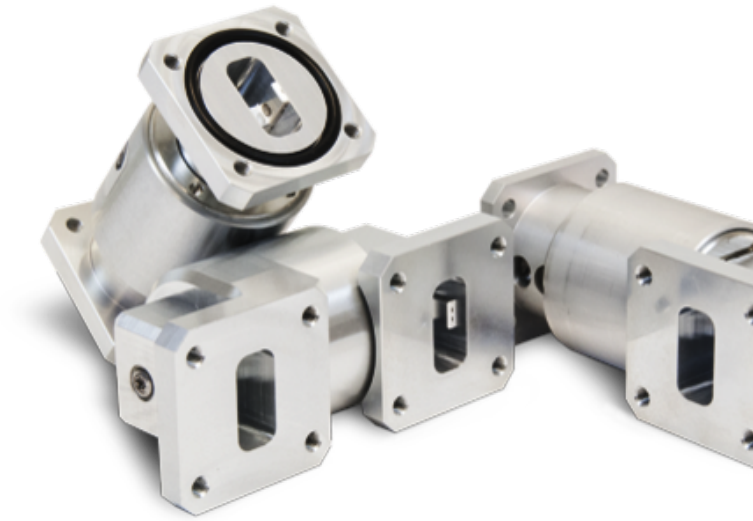
Rotary joints are used in radar systems for sea rescue services as well as in air traffic control, where they work around the clock, 365 days a year, to help monitor air traffic and thus to ensure safety.

Our rotary joints are characterized by a compact design with a long service life and an excellent electrical and mechanic performance. The multi-channel rotary joints for radar applications are available with coaxial and waveguide interfaces and in combination with encoders and slip rings.

Customized Rf Rotary Joints

Non-contacting Rotary Joints

Coaxial Contacting Rotary Joint



RF ROTARY JOINT

Contacting Solution

In contacting rotary joints, the inner and outer conductors of the stator and rotor are DC-coupled. The maximum frequency depends on the diameter of the coaxial line. These coaxial rotary joints are used for broadband applications, allowing signal transmission in the frequency range from DC up to 92 GHz.

Specially designed slip rings can also be used in some cases for low frequencies. Depending on the unit size, contacting systems of this type can transmit signals from DC up to 120 MHz.

RF ROTARY JOINT

Non-contacting Solution

Non-contacting RF rotary joints (RJ) are available in coaxial and waveguide designs for frequency ranges up to 100 GHz. They are characterized by an especially long service life.

Signal transmission is possible at a bandwidth of about 20% of the highest transmitted frequency. Non-contacting rotary joints are used for narrow-band transmission.

With special coupling structures, the same module can also be used to transmit two different frequency bands (e.g. the X and L bands).

Interface Styles

The interfaces are available in I, U and L styles. These differ in the orientation of the input and output connections of a rotary joint (at the rotor and stator).

In the I style, both are aligned with the rotational axis, in the U style both are perpendicular to the rotational axis, and in the L style one is perpendicular to the axis while the other is aligned with it.

OUR SOLUTION

Defense Radar Components

Rotary joints for military use are among the most complex and demanding rotary joints available. Before they are manufactured in series and used by the military, our rotary joints must go through long and difficult qualification programs and field tests, as well as having to meet extremely strict specifications.

Several other fields of use exist also, each of them with specific, extremely demanding requirements on the rotary joint. Virtually all applications need 360-degree space surveillance in continuous rotation, thus making the rotary joint an indispensable key component of such systems. All forces, the army, navy and air force alike, rely equally much on radar systems.

Military applications typically demand very much in terms of durability, reliability and low maintenance, and our rotary joints can be designed to meet any expectations. Since there is a growing trend to relocate the amplifier modules towards the antenna the standard range of features today also includes media lines for air or coolant in our solutions.

The military uses rotary joints in many diverse radar applications:

+ Air traffic control
+ Anti-aircraft
+ Tracking
+ Border surveillance
+ Aircraft on-board
+ Unmanned aerial vehicles (uavs)
+ Ships, submarine

PENLINK

Get in touch with us today to start your next project!

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Engineering &
Product design

Inspection &
Quality management

Simulation &
Design verification

Assembly &
Testing

Advanced
Manufacturing

Value-Added
Products & Services

We supply only the best solution for each and every industry, get in touch with us to learn more about your possibilities when working with Penlink.

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