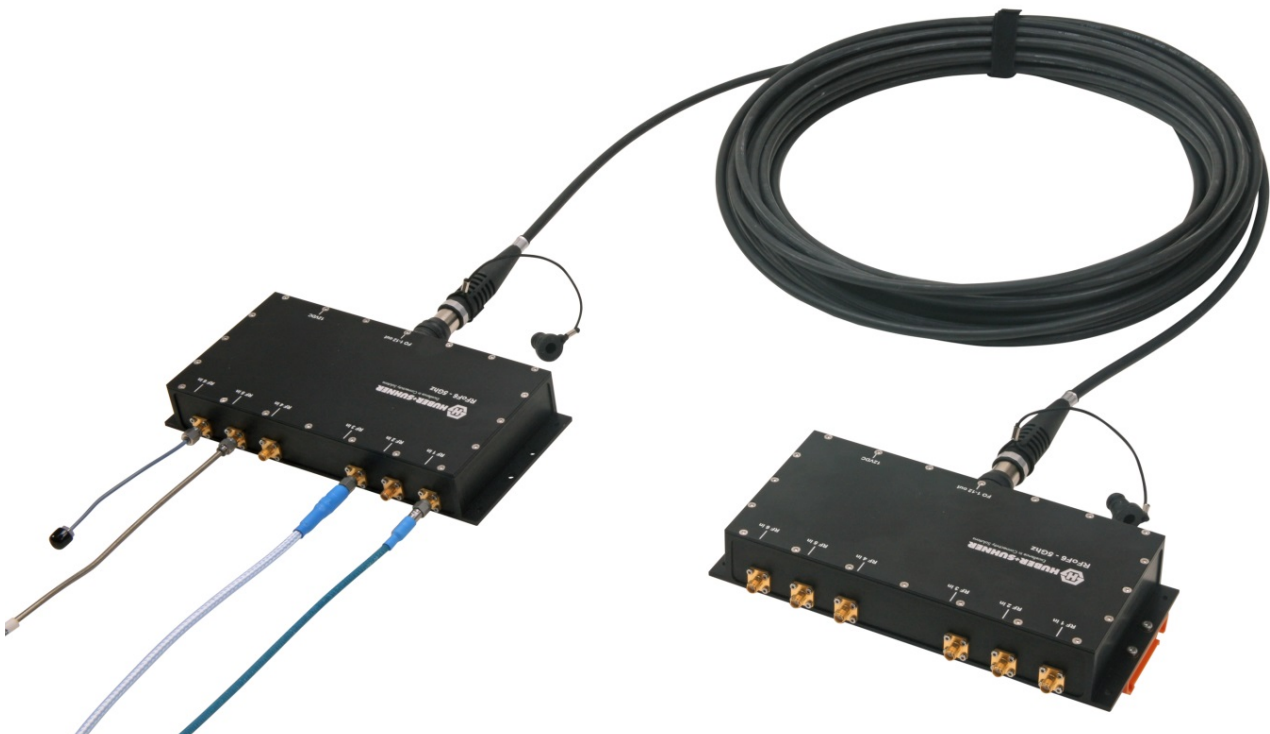


# WHITE PAPER

## We're all over!

Edition 2015



**We're all over!**

The market is evolving at a significant pace. With customers requiring that new solutions and systems combine various technologies, HUBER+SUHNER has positioned itself to be able to provide our customers with end-to-end-solutions.

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## 1 RF over Fiber

The RF-over-Fiber series provides HUBER+SUHNER with the bridge required to offer its customers hybrid-technology solutions. This newly launched product series enables the use of Radio Frequency and Fiber Optics in a single system. With these two technologies forming a part of HUBER+SUHNER's core technology offering, we are using our vast experience and expertise to deliver best-in-class conversion modules for best-in-class system solutions within the Aerospace and Defense markets. The benefits of combining both Radio Frequency and Fiber Optics into a single solution are the following:

- No changes are required to existing RF infrastructures
- Fiber optics increases security within a system (no EMI and no interception)
- Systems are protected against EMP
- Connectivity is faster
- Systems have less loss (attenuation)
- Systems require less cabling and are lighter in weight
- Installations, maintenance and troubleshooting are simplified

HUBER+SUHNER is focusing on three areas of conversion, namely:

### 1.1 RF-over-Fiber (RFoF)



Driven by the philosophy of providing high density RF connectivity, whilst significantly reducing cable footprints; our single mode, simplex system is both flexible and perfect for harsh environments. Flexibility is achieved by providing our customers with RF connectivity options, whilst the scalability of the systems enable an unlimited RF connectivity density. The use of the HUBER+SUHNER RADOX<sup>®</sup> fiber optic assemblies, with Q-ODC-12 connectivity, ensures that the system is able to be deployed in any environment. The standard RFoF modules are available in 6 and 12 ports and cover a wide frequency range of 10 MHz to 5 GHz. The system is capable of covering distances of more than 100 km

and is perfect for antenna remoting, airframes and other applications requiring secure, fast, low loss, light-weight and high-density connectivity.

## 1.2 GPS-over-Fiber (GPSoF)



The GPSoF modules are focused on distributing a single GPS signal source into multiple systems. This approach eliminates variations in signal data such as time synchronization into various independent, yet connected, systems. The small form factor of the GPSoF modules ensures that the systems are able to be implemented in both fixed as well as mobile structures (such as shelters, vehicles and naval vessels). The standard GPSoF modules are available as a single port system; as well as a 1 port transmitter combined with a 4 port receiver. The system is capable of covering both L1 and L2 bands and, with the exception of the GPS receiver, HUBER+SUHNER is able to provide all of the

connectivity required for customer solutions from its existing product portfolios (from the antenna to the connectivity into the GPS receiver). Ideal for antenna remoting and signal distribution applications.

## 1.3 LAN-over-Fiber (LANoF)



With the use of multimedia continuing to increase within the operations landscape (from planning to de-briefing), the modules are focused on providing Gigabit connectivity within diverse and challenging environments. Again, the use of our RADOX<sup>®</sup> fiber optic assembly with Q-ODC-12 ensures that the exposed portions of the system remain functional within harsh environments, whilst the M12 connectivity within a mobile structure (shelter or

vehicle) remains robust and functional within environments exposed to, for example, intense vibration. The standard LANoF modules are available in 6 and 12 ports and can be easily integrated into server racks and network clusters. The LANoF system is ideal for mobile applications that require remote identification, remote diagnostics, remote software distribution and data replication.

## 2 Applications

### 2.1 Shelters (RFoF)

Shelter connectivity illustrates perfectly the benefits of an RF-over-Fiber system. Highly mobile and deployed in harsh environments, connectivity as well as the security of the control centre are key elements of RF-over-Fiber within an antenna remoting system. The use of fiber optic cables, within a traditional RF system, makes it possible to position the shelters far away from the antennas, whilst ensuring that the links between the antennas and the shelter remain secure. The use of fiber optic cables further supports the mobility of the application by reducing the cable footprint as well as light-weighting the solution. This dramatically simplifies and speeds up the installation and maintenance of the system. The use of our RADOX<sup>®</sup> fiber optic cable within the system ensures continuous and superior performance in challenging environments. The fiber optic cable's immunity to EMI and EMP provide the important finishing touches to this high performing and secure system solution.

In addition to the RF-over-Fiber solution, HUBER+SUHNER covers all additional connectivity requirements within a shelter. Our antennas, lightning protectors and military qualified cable assemblies are well-known and widely used in defense applications worldwide.

### 2.2 Aircraft (RFoF)

The integration RF-over-Fiber solutions within airframe applications is growing rapidly. High density RF connectivity and light-weighting are key elements that are optimally addressed by the RF-over-Fiber solution. Often requiring upwards of 50 RF connections between various sensors, antennas and systems, the HUBER+SUHNER RF-over-Fiber products provide flexibility by ensuring that the solution is easily scalable. For example, the use of five 12 Port modules easily covers the requirement of 50 RF connections; whilst even providing reserve capacity for future connectivity increases. The use of five modules means that only five cables are required to cover the entire connectivity demand. This not only significantly decreases the overall cable footprint within the aircraft, but also significantly reduces weight.

The light-weighting of the solution, whilst retaining optimal performance, allows for the weight to be used somewhere else in the aircraft; or for the total weight of the aircraft to be reduced. The reduction of the weight of the aircraft offers better fuel efficiency, which either save costs or provides the capability to extend the time and range of a mission.

Additional information: [aerospacedefense.hubersuhner.com](https://aerospacedefense.hubersuhner.com)