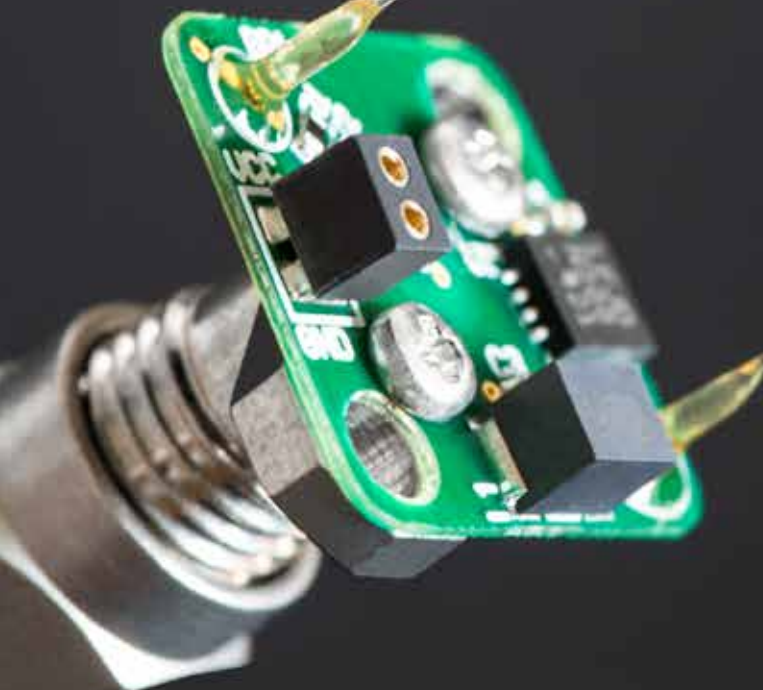




RFoF

Autonomous Wideband Photonic RFoF Time-Domain Transducer



What is RFoF1P?

RFoF1P is an autonomous single-port RF-over-Fiber transducer based on our photonic TDS probe technology operating in the 100kHz – 10 GHz frequency range. The miniature fully electrically isolated RF-over-Fiber transducer is the perfect solution for measurement applications where a traditional coaxial cable or other galvanic connection to the device-under-test is impractical or undesirable. The RFoF1P system consists of a miniaturized electro-optical transducer (SMA to optical

fiber) and a standard TDS remote unit (optical fiber to 3.5 mm connector). The transducer draws its power over fiber, thus, no external or battery power is required, allowing fully autonomous operation. The transducer can be customized and further miniaturized for original equipment manufacturer applications. All RFoF1P systems are calibrated in SPEAG's accredited laboratory and delivered with calibration certificates.

RFoF1

Wideband Photonic RFoF Time-Domain Transducer

Applications

OTA/MIMO/UWB MEASUREMENTS

Since the biggest challenge in sensitivity measurements of electrically small antennas is the elimination of cable influences, especially for measurements at lower frequencies and for antenna correlation analysis, RFoF1P is an ideal solution for these applications. The large bandwidth of the system facilitates UWB measurements as well.

EMC/EMI, SIGNAL AND POWER INTEGRITY

RFoF1P offers fully isolated high-speed, general purpose optical interconnection without the need for dedicated feed-through adaptors for use in chambers and shielded rooms. The optical medium is non-conductive and, thus, immune to electromagnetic interference.

MRI

RFoF1P is compatible with the MRI environment, e.g., allowing isolated linking to MRI receiver coils. RFoF1P also enables immune routing of weak RF signals in the presence of the strong EM fields in the vicinity of MRI scanners.

EMP/ESD/LIGHTNING TESTS

RFoF1P offers galvanically isolated connections capable of conveying RF signals in the presence of the strong EM fields generated by electromagnetic pulses and electrostatic discharges.

LOW-NOISE, LONG-DISTANCE INTERCONNECTS

For applications involving distributed antenna systems (DAS), radar arrays, and radio telescopes, RFoF1P offers a low-loss medium with minimal carrier-to-noise degradation and signal distortion. The system has built-in lightning protection for sensitive receivers.

SECURE NON-RF-EMITTING CONNECTION

Traditional RF cables can act as unintended radiators that leak sensitive data. The optical fibers of RFoF1P provide effective signal intelligence protection.

ACCURATE TIMING AND FREQUENCY REFERENCING

With its low-loss and high sensitivity, RFoF1P is perfect for in-building, tunnel, or underground GPS reference timing. Clean reference frequency signals can even be transmitted through harsh RF environments.

Features	Benefits
Full complex signal information	Frequency, amplitude, phase, time-domain waveform
Fully isolated link	Signal measurement without cable interference
Miniature size	Small enough to be mounted on top of the DUT with no increase in electrical size
High sensitivity	Conveys low-power signals, e.g., GPS
Large dynamic range	Preserves large amplitude variations of the input signal
Large bandwidth	100 kHz – 10 GHz
Standard 50 Ohm RF interface	Standard RF SMA ports connect the receiver and transmitter
Autonomous transducer operation	Enabled by power-over-fiber technology
Fully characterized/calibrated RFoF1P and remote unit	Precise and traceable measurements in demanding environments
Simple installation	Includes standard RF connectors: the TDS Remote Unit, which also acts as an optical power supply for RFoF1P, is powered by USB or PXI
Galvanically decoupled	Provides lightning and surge protection for the receiver

RFoF1P	
Input Dynamic Range	-120 dBm – 0 dBm
Frequency range (calibrated)	100 kHz – 10 GHz
Link Gain	0 dB at 1 GHz
Frequency Flatness	± 2 dB in any 1 GHz
Remote unit	Stand-alone or PXI module
LASER classification	Class 1 (IEC60825-1 2007, US FDA CDRH registration)
Physical dimensions	16 mm x 16 mm x 90 mm
Input VSWR	< 1.925:1
DANL	< -105 dBm/Hz (100 kHz – 100 MHz) < -120 dBm/Hz (100 MHz – 10 GHz)

For further information and technical specifications, visit www.speag.swiss

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