

Programmable Phase Matched 18GHz RF over Fiber system



Key Features:

- Supports 100MHz up to 18GHz.
- Phased matched WDM system of $\pm 10^\circ$
- Gain matched response to ± 1 dB.
- Excellent High SFDR performance.
- Noise Figure < 10dB with RF low-noise pre-amplifier.
- System MDS ~ 164 dB/Hz for very low incoming signals.
- Standby mode for reduced power dissipation.
- Excellent stability under temperature/ variations from -40°C to $+70^\circ\text{C}$.
- Remote management supporting USB. with software or Ethernet web server.
- Outdoor solution, including IFL capability to control the remote side and provide gigabit ethernet transport.

Applications:

- Phased Array Radar
- Electronic Warfare
- Interferometry and DF

RFOptic presents its innovative high frequency Phased Matched RFoF system.

RFOptic WDM 18GHz RFoF multi-link system is phase matched to $\pm 10^\circ$ up to 18GHz and optionally up to 40GHz. Each of the RFoF links is comprised of a Tx unit with optional low-noise pre-amplifier and an Rx unit with optional post-amplifier. With a pre-amplifier the MDS of each RFoF link can be as low as -114 dBm @ 1MHz bandwidth. It is especially suitable for low signal wideband applications with a low Noise Figure under 10dB.

Each RFoF link can be gain matched within flatness and features good gain stability over a wide range of operating temperatures.

Remote management is available with RFOptic's Ethernet-enabled Management & Control system. Local management is provided over a USB connection. Both control interfaces provide access to diagnostic information and alarms for optical power and connection loss.

The system is available in Indoor or outdoor enclosures.

HSFDR 18GHz Phase Matched RF over Fiber System Specifications

Electrical	Unit	System Specification (typical)
Frequency Range	GHz	0.1 - 18
Gain (nominal value)	dB	0
Gain Flatness	dB	±2.5
Input P1 dB ^[1]	dBm	-8
Noise Figure ^[1,4]	dB	10
Phased matched up to 8 links with optical cable up to 100m ^[2]	deg	≤ ±8
Phased matched up to 8 links with optical cable up to 1.0Km ^[2]	deg	≤ ±10
Gain matched up to 8 links	dB	≤ ±1
SFDR ^[1]	dB/Hz ^{2/3}	110
Maximum Input No damage	dBm	20
Spurious	dBm	-90
VSWR Input / Output	dBm	2:1
Input / Output impedance	Ohm	50
Optical and Electrical		
Laser wavelengths up to 8 links	-	WDM
Optical Power in the fiber (per link)	mW	8
Optical power loss alarm	-	Yes
System Monitor & Control - Optical parameters	-	USB or HTML/REST/SNMP
Mechanical and Environmental Parameters		
Operating temperature	°C	-25 to +60
Storage temperature	°C	-45 to +85
EMC and Safety	-	CE & FCC
Environmental & EMI/EMC Safety		CE, FCC, MIL-STD-461F, DO-160G & MIL-STD-810F
MIL Qualified (Ground / Airborne /Shipborne) Chassis. Customization can be done per customer requirement		
Fiber (supplied with the system)	0.1Km 8/12 Core Rodent Deterrent Outdoor Tactical Fiber Cable	

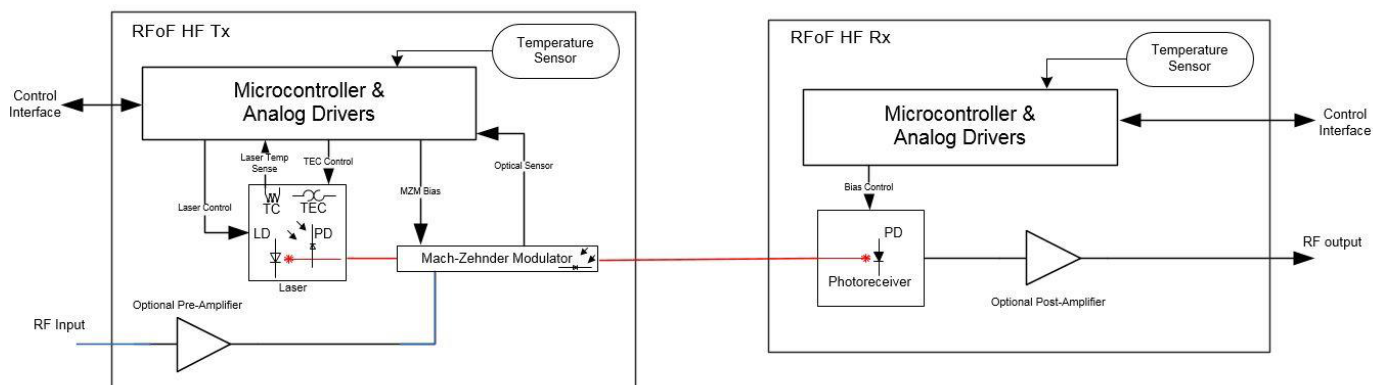
[1] Noise Figure and Input P1dB are measured at mid-band. Input IP3 and SFDR are calculated values.

[2] For full frequency band, up to 18GHz and over temperature range of -25°C to +60°C.

[3] Safety EN60950-1:2006(2nd); EMC: ETSI EN 300 386 v1.6.1 (2012-04) and FCC CFR-47part 15 Sub part B.

[4] Including a 1000m fiber connection.

HSFDR RFoF – Simplified Block Diagram



Each RFoF link is comprised of a Tx RFoF module and an Rx RFoF module. The following simplified block diagram illustrates the main components of such modules.

HSFDR Phase Matched 18GHz RF over Fiber System Test Results

Phase Matched WDM Multi-Link RFoF Sub-System

