

RF-over-Fiber RFoF1 – 2 GHz LN 1310 nm

Description

The RF-over-Fiber link (RFoF1 – 2 GHz) converts an analog RF signal into an optical signal and also converts the optical-signal back to an RF signal. The modules offers excellent stability and high dynamic range for rapidly growing use in high-tech niche environments.

Features

- Wide bandwidth from 1 MHz to 2 GHz
- Single mode fiber with a max. distance of up to a few tens of km
- No external control circuits required
- Analog signal to optical convert and back
- Built-in amplifiers for high gain and low noise figure

Applications

- Replacement of long and lossy coaxial cable interconnections in communication systems (transparent optical link)
- Broadband signal transmission over short or long distances
- Radar applications
- Test environments



Order Information

Item Number	Part Description
85160189	RFoF1 - 2GHz LN 1310 (TX)
85157470	RFoF1 - 2GHz LN (RX)

Electrical Data

Parameters		Value			Remarks
		Min.	Typ.	Max.	
All specifications at 25°C case temperature T _c , unless otherwise specified					
Frequency range	MHz	950		2000	
Gain	dB	4.5	6.0	8.0	average
Gain flatness	dB		1	1.5	
Noise figure	dB		22	24	
SFDR3	dBHz ^{2/3}	112	113		
SFDR2	dBHz ^{1/2}	90			f ₁ + f ₂ (f _{1,2} = 955 MHz, 1000 MHz)
Max. input power at 1dB compression	dBm		2		950 .. 2000 MHz
Max. input power for no damage	dBm	20			
VSWR (RF input and output)	-			1.9	950 .. 2000 MHz
Input 3 rd order intercept point	dBm		19		950 .. 2000 MHz
Input 2 nd order intercept point	dBm		30		950 .. 2000 MHz
Time delay	ns		22		with 2 m test assembly
Crosstalk between two modules	dB			<-120	modules in close proximity
Supply voltage transmitter	VDC	+11	+12	+16	max. 250 mA
Supply voltage receiver	VDC	+11	+12	+16	max. 140 mA
RF input impedance	Ohm		50		
RF connectors:			SMA (female)		other interfaces on request

Optical Data

Parameters		Value			Remarks
		Min.	Typ.	Max.	
All specifications at 25°C case temperature T _c , unless otherwise specified					
Wavelength	nm		1310		
Fiber optic connectors			FC/APC		
Fiber			standard single mode 9/125 μm		
Optical power in fiber	mW		4...7		
Side mode suppression ratio	dB	30	40		

Environmental Data

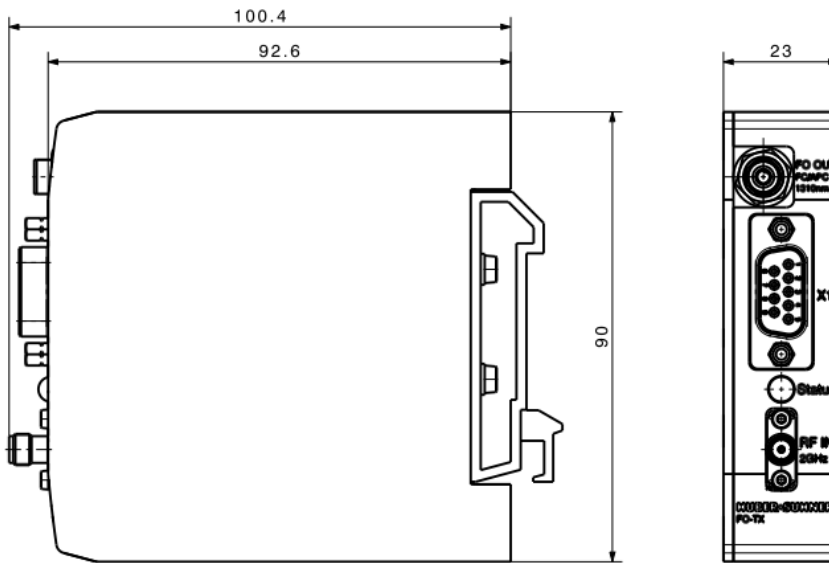
Parameters			Value			Remarks
			Min.	Typ.	Max.	
Temperature range	operating	°C	-40		+85	
	storage	°C	-40		+85	

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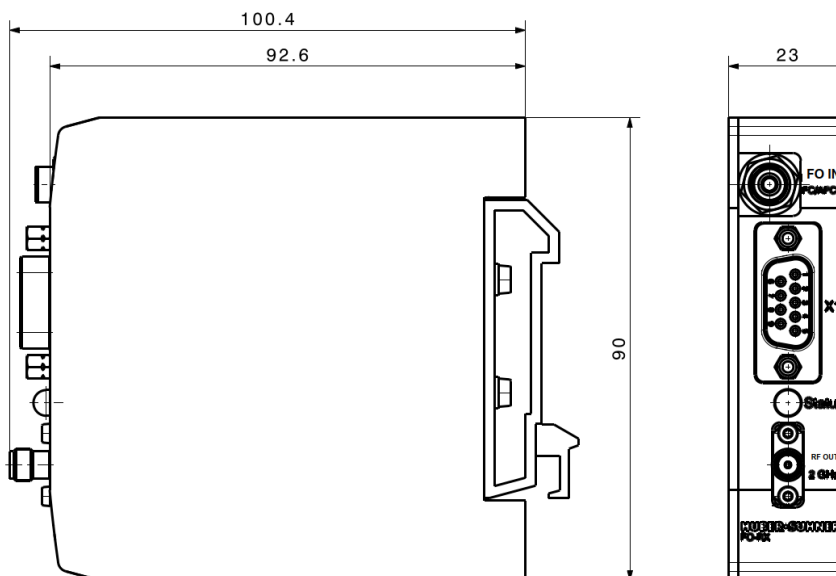
Dimensions (mm)

Parameters		Value	Remarks
Module dimensions	mm	90 x 100 x 23mm	
Module weight	g	270g	

RFoF1 – 2 GHz LN 1310 (TX)



RFoF1 – 2 GHz LN (RX)



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Control functionalities pinout

The D-Sub 9 connector on the front of the module not only provides power to the RF-Over-Fiber module. In addition information such as Optical power, TX Power Alarm and Temperature are made available as per tables below on both transmit (TX) and receiver (RX) end.



D9 Pin #	Signal Description	Signal Direction	TX		
			Voltage Range	Current	Remark
1	ground	-	-	-	connected to module / circuit board internal ground
2	+12 V DC supply	input	11 V to 16 V	<250 mA	
3	ground	-	-	-	connected to module / circuit board internal ground
4	optical power monitor	output	$V_{mon} \approx 0.1..0.2V/mW_{opt}$	max. 2 mA	voltage proportional to laser diode emitted average optical power
5	ground	-	-	-	connected to module / circuit board internal ground
6	TX optical power alarm	output	TTL (0: no alarm, 1: alarm)	± max. 25 mA	alarm active if laser power low
7	ground	-	-	-	connected to module / circuit board internal ground
8	PCB temperature	output	10 mV/°C, 750 mV@25 °C, range: -40 .. +125 °C	<50 uA (load)	
9	ground	-	-	-	connected to module / circuit board internal ground

D9 Pin #	Signal Description	Signal Direction	RX		
			Voltage Range	Current	Remark
1	ground	-	-	-	connected to module / circuit board internal ground
2	+12V DC supply	input	11 V to 16 V	<150 mA	
3	ground	-	-	-	connected to module / circuit board internal ground
4	optical power monitor	output	$V_{mon} \approx 0.6..0.8V/mW_{opt}$	max. 2 mA	voltage proportional to average optical power received at fiber-optic input
5	ground	-	-	-	connected to module / circuit board internal ground
6	RX optical power alarm	output	TTL (0: no alarm, 1: alarm)	± max. 25 mA	alarm active if received optical power low (below approx. 0.3mW)
7	ground	-	-	-	connected to module / circuit board internal ground
8	PCB temperature	output	10 mV/°C, 750 mV@25 °C, range: -40 .. +125 °C	<50 uA (load)	
9	ground	-	-	-	connected to module / circuit board internal ground

- RoHS compliant
- EMC protected
- Power supplies are supplied with each module
- DIN 35 brackets are delivered with each module. Other brackets available upon request
- MIL and other certifications are possible upon request
- Various racks and enclosures available

Important catalogue links

RF cables: <http://literature.hubersuhner.com/Technologies/Radiofrequency/RFCablesEN/>
 RF connectors: <http://literature.hubersuhner.com/Technologies/Radiofrequency/RFCConnectorsEN/>
 FO standard assemblies: <http://literature.hubersuhner.com/Technologies/Fiberoptics/FOcableassembliesEN/>

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