

Data Sheet – Draft version

RF-over-Fiber RFoF1 – 160 MHz LPN

Description

The low phase noise RF-over-Fiber link (RFoF1 – 160 MHz) converts an analog RF signal into an optical signal and also converts the optical-signal back to an RF signal. The modules 85116085 and 85116078 offer excellent stability and particularly low jitter/phase noise.



Item Number	Part Description
85116085	RFoF1 - 160 MHz (TX)
85116078	RFoF1 - 160 MHz (RX)

Electrical Data

Parameters	Value		Remarks		
	Min.	Typ.		Max.	
All specifications at 25°C case temperature T _c , unless otherwise specified					
Frequency range	MHz	150	160	170	
Gain	dB	4	5	7	low phase noise operation
Input power range	dBm	-5	+5	+7	low phase noise operation
Nominal input power	dBm		+5		
Max. input power for no damage	dBm	+20			
VSWR (RF input and output)	-			2	
Supply voltage transmitter	VDC	+11	+12	+16	max. 250 mA Reverse polarity protection is implemented
Supply voltage receiver	VDC	+11	+12	+16	max. 140 mA Reverse polarity protection is implemented
Phase noise	0.1 Hz offset	dBc/Hz			-111 ^{*)}
	1 Hz offset	dBc/Hz			-126 ^{*)}
	10 Hz offset	dBc/Hz			-130
	100 Hz offset	dBc/Hz		-141	-139
	1 kHz offset	dBc/Hz		-151	-145
	10 kHz offset	dBc/Hz		-154	-149
	100 kHz offset	dBc/Hz		-159	-154
	1 MHz offset	dBc/Hz		-161	-158
10 MHz offset	dBc/Hz		-161	-159	
RFoF Link gain variation over temperature					to be verified
0°C – 60°C	dB		-2.0		
15°C – 30°C	dB		-0.2		
RF input impedance	Ohm		50		
RF connectors:			SMA (female)		

Optical Data

Parameters	Value		Remarks
	Min.	Typ.	
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	6	10
Side mode suppression ratio	dB	30	40

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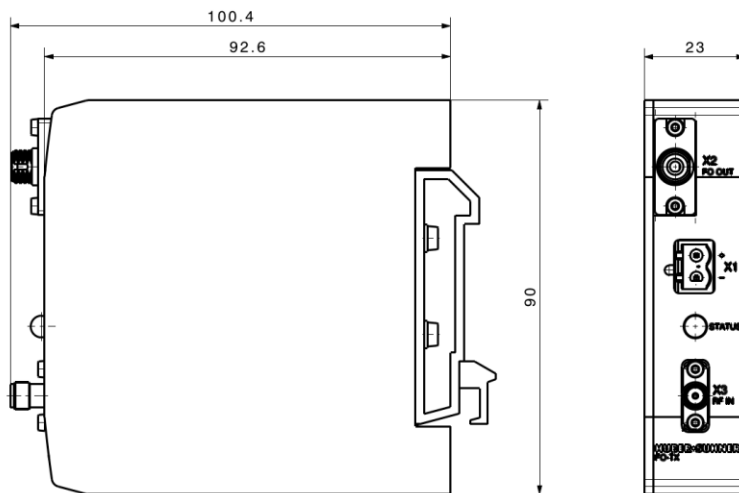
Environmental Data

Parameters	Value	Remarks	
		Min.	Max.
Temperature range	operating °C	0	+60
	storage °C	-40	+85
IP		40	
Humidity RFoF TX	temperature range is +15°C to +30°C. Humidity: Maximum of 44% @ 23°C.		
Humidity RFoF RX	temperature range is +20.5°C to +59°C. Humidity: Maximum of 44% @ 31°C		

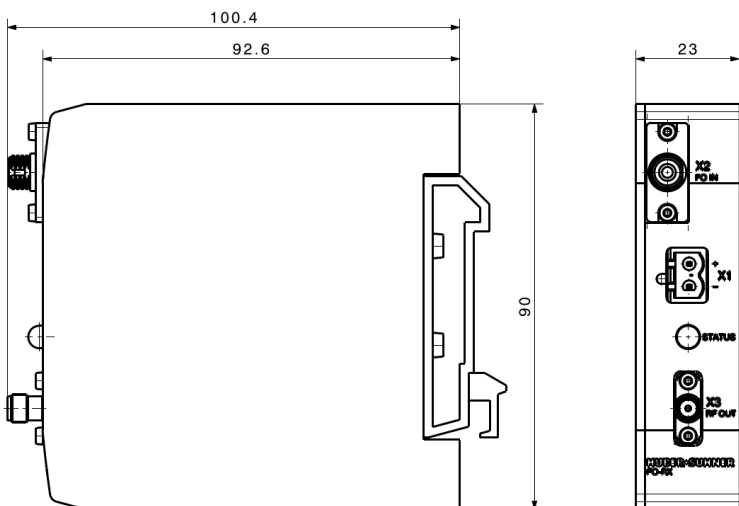
Dimensions (mm)

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

RFoF1 – 160MHz LN (TX)



RFoF1 – 160MHz LN (RX)



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Status light

Light	Status
NO light	Module not powered
RED	Module powered No or to low optical power sent (TX module) or received (RX module) -> alarm.
GREEN	Module powered sufficiently high optical power sent (TX module) or received (RX module) -> normal operation

Qualifications:

Standard	Method	Remarks
MIL-STD-461G - CE102	Conducted Emissions, Radio Frequency Potentials, Power Leads. (Referencing Figure CE102-1)	to be tested
MIL-STD-461G - RE102	Radiated Emissions, Electric Field. (Ground Army limit) from 2MHz to 45MHz.	to be tested
EN 61000-6-2	Electromagnetic compatibility (EMC)	
EN 55032	Electromagnetic compatibility of multimedia equipment Emission Requirements	
EN 62368-1	Audio/video, information and communication technology equipment Part 1: Safety requirements	

Additional

Topic	Calculation	Remarks						
<ul style="list-style-type: none"> Laser class 1 acc. IEC 60825-1 2007 2nd ed. and AS/NZS IEC 60825.1-2014 MTBF: 	<table border="1"> <thead> <tr> <th>Failure Rate (FITs)</th> <th>Predicted MTBF (hours)</th> <th>Predicted MTBF (years)</th> </tr> </thead> <tbody> <tr> <td>8979</td> <td>111369</td> <td>12.7</td> </tr> </tbody> </table>	Failure Rate (FITs)	Predicted MTBF (hours)	Predicted MTBF (years)	8979	111369	12.7	
Failure Rate (FITs)	Predicted MTBF (hours)	Predicted MTBF (years)						
8979	111369	12.7						
<ul style="list-style-type: none"> RoHS compliant DIN 35 brackets are delivered with each module. 								

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/>