

Multichannel RF Over Fiber Link System

(100MHz ~ 6GHz, up to 8 channels bidirectional link over a single fiber)

The RF over Fiber (RFOF) Link Series is designed for high-fidelity transmission of analog and digital RF signals up to 3 GHz over distances of up to 1 km. The system converts electrical RF signals into optical signals using a directly modulated laser at the transmitter. At the receiver, a high-linearity photodiode and low-noise amplifier convert the optical signal back into an RF signal, providing a transparent and high-performance data transmission channel. This series supports all 18 CWDM wavelengths specified by the ITU, ranging from 1271 nm to 1611 nm. When paired with a CWDM multiplexer, multiple independent channels can be transmitted over a single shared fiber link. Additionally, an optional bidirectional RF communication feature enables two-way transmission over a single fiber strand using adaptors. To enhance performance, low-noise RF amplifiers and optical amplifiers can be integrated to reduce the noise figure. The system is housed in a network-ruggedized rack-mount case that includes four pluggable modules and 100-240 VAC power input. The design is highly flexible and scalable. This compact design is ideal for applications requiring cost effective and efficient multi-channel RF signal transport over fiber.



Features

- 0.01 ~ 6 GHz
- Up to 1 km
- Loss Compensation
- Analog or Digital
- Low Distortion
- Low Cost

Specifications

Parameter	Min	Typical	Max	Unit
Optical Wavelength (CWDM ITU $\pm 5\text{nm}$)	1271		1611	nm
Optical Output Power	2	3	5	dBm
Optical Receiver Sensitivity	-20			dBm
Optical Input Power	-16		-6	dBm
Optical Isolation	35			dB
RF Frequency Range	0.002		6000	MHz
Flatness		4	6	dB
RF Output Power (@-10dBm optical input)			-30	dBm
Input RF Return Loss	10	12		dB
RF Input Power	-45	-40	10	dBm
RF Isolation	60			dB
Input/Output VSWR			1.5 : 1	
Noise (0dB RF gain, 0dB optical decrease) *	-90		-130	dBm/Hz
Gain Control Adjust	-10		10	dB
Link Gain	-10	0	10	dB
Delay	60			ns
Fiber Type		SM28		
RF Impedance		50		Ω
RF Connector		SMA-F		
Power Consumption		2		W
Weight	0.5			kg
Operating Temperature	-20		50	$^{\circ}\text{C}$
Storage Temperature	-45		85	$^{\circ}\text{C}$

Applications

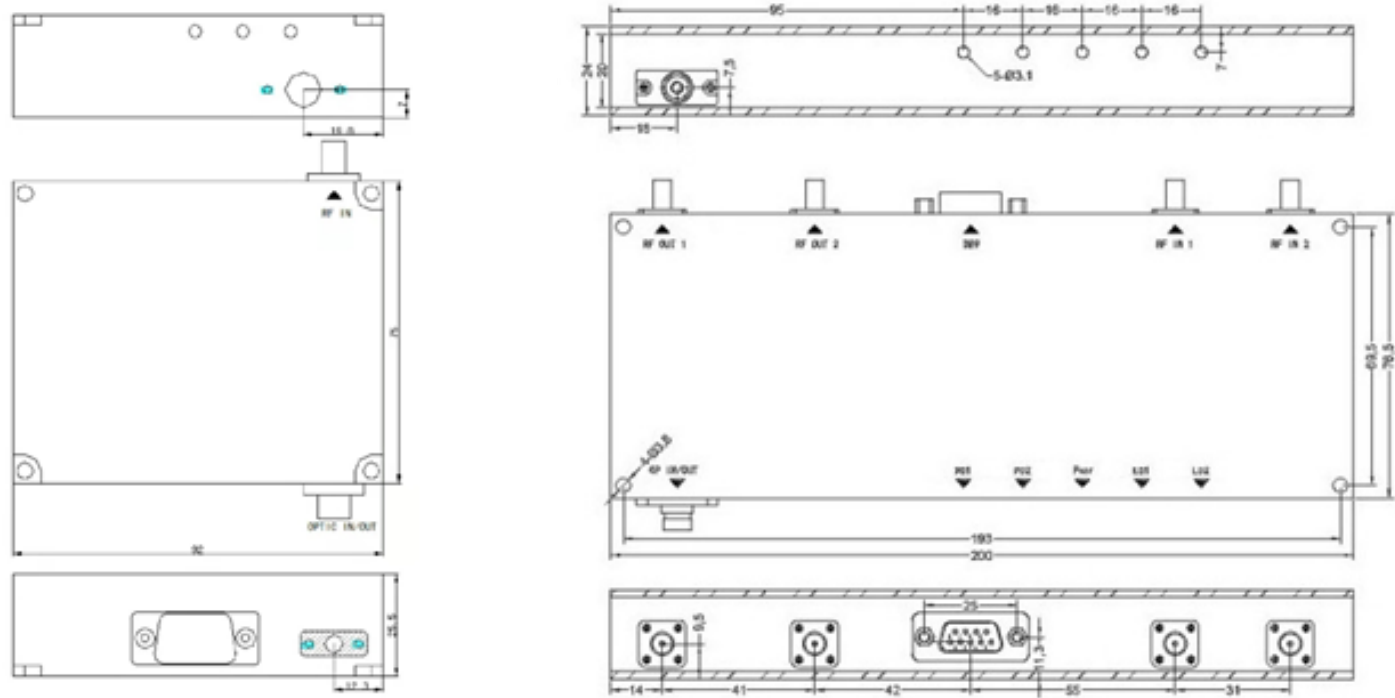
- GSM Repeater
- CDMA Repeater
- WCDMA Repeater
- PHS Repeater
- Digital TV Repeater
- Broadcast Repeater

* Adding a low noise RF amplifier can reduce the noise figure by about 15dB

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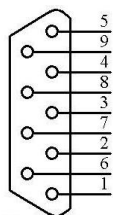
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Module Dimensions (mm)



Module Connection

- Power Supply/Alarm Connector - DB9/RS232
- Operation Power -12VDC @150mA
- RS 232 Transmission Speed – 4.8-19.2 bit/s

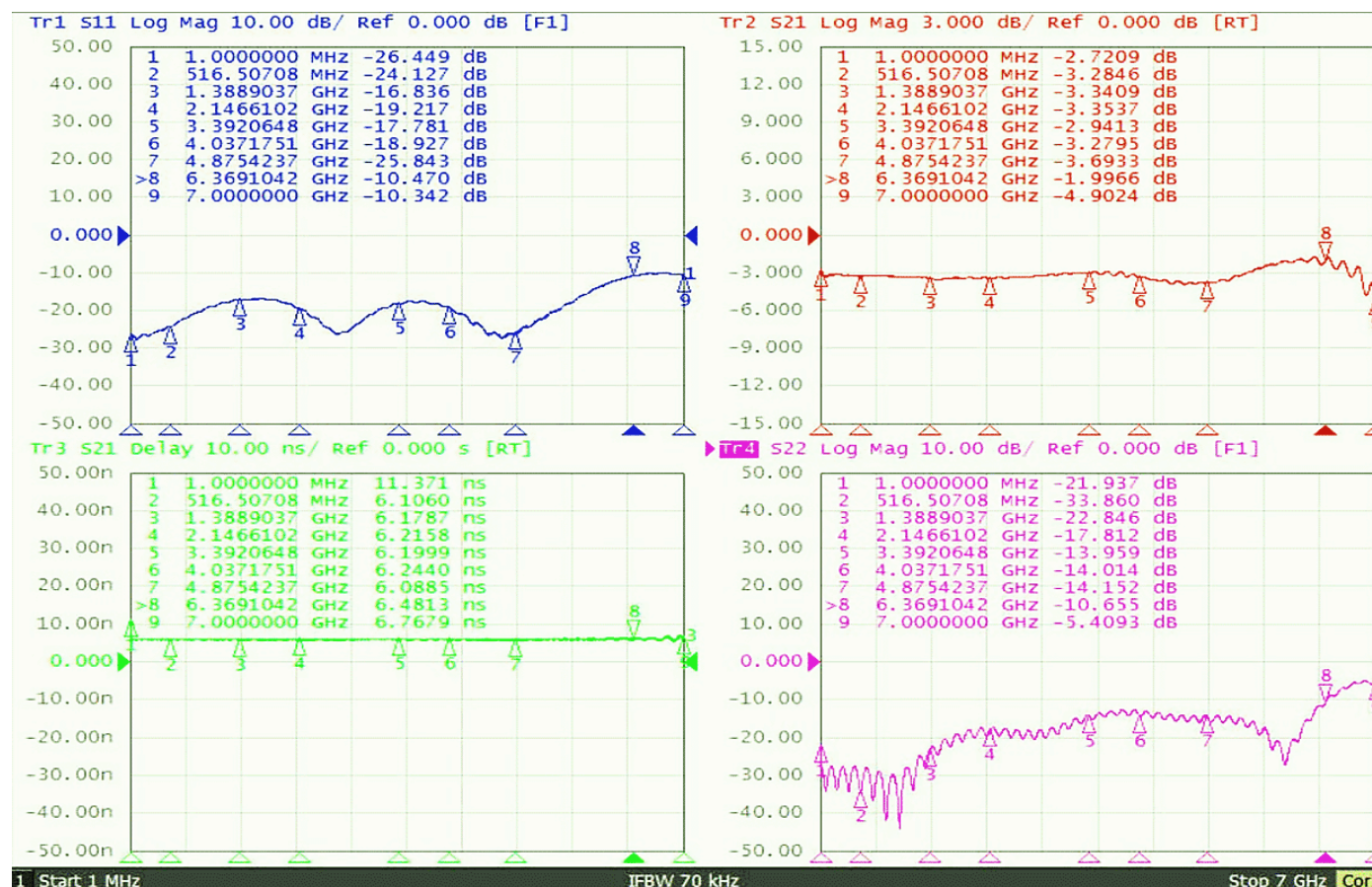


Pin	Descriptions
1	NC
2	GND
3	+12VDC @150mA
4	TTL High (2.0-5.0V) for PD Alarm; Low (0-0.8V) for work
5	TTL High (2.0-5.0V) for LD Alarm; Low (0-0.8V) for work
6	NC
7	NC
8	NC
9	NC

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Typical RF Performance



Operation Instruction

- Connect the optical connector on the front
- Connect the RF connector on the front
- Connect AC power (110-240VA) using the accompanied power cord
- Turn on the power rock switch on the back panel
- The system should function smoothly
- Any issues, please email us

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Ordering Information

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Prefix	Type	# of Channel	Package	Link Length	Directional	Low Frequency*	Fiber Connector	RF Connector
MCFO-	Transmitter = T Receiver = R Tx/Rx Pair = P Special = 0	1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8	Module = 1 1U Rack = 2	< 1km = 01 5km = 05 10km = 10 20km = 20	Unidirectional = 1 Bidirectional = 2	100MHz = 1 3MHz = 2 500kHz = 3	FC/APC = 2 FC/UPC = 3 SC/APC = 4 SC/UPC = 5 LC/APC = A LC/UPC = U Special = 0	SMA = 1 N type = 2 Special = 0

Note:

* The high cut-off frequency is 6GHz. The low end of operation frequency is related to amplifier cost, the lower, the more expensive.