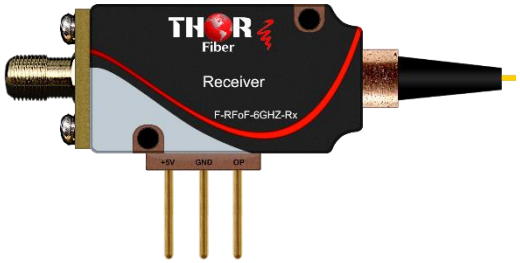
Data Sheet ： F-RFoF-6GHZ-Rx

6GHz RF over Fiber - Receiver



Analog RFoF optical Transmitter is used to convert RF signals to optical signals that can be sent and carried over long distances of fiber optic cable.

The Optical Receiver converts them back to an RF signal. The two units are connected through 1 single mode fiber up to 40Km.

RF over Fiber modules (RFoF) are commonly used in L-band, S-band satellite, radio telescopes, RF antennas distribution, broadcasting audio, and video, timing synchronization and GPS applications and other telecommunications.

It's very easy and cost effective to extend a signal from any antenna, Modulator or RF instrument, point to point or multipoint to multipoint using fiber optic splitters.

Features:

- Supper-Mini size：31.3mm*17mm*10mm（L*W*H）
- Low power consumption
- Wide operating frequency from 10MHz to 12GHz
- Flat frequency response
- Single +5V Power supply
- Have optical power monitoring function
- Excellent EMI/EMC design
- Integrated broadband amplifier(optional）

Applications

- WiMAX / 4G / 5G
- Satellite communications
- Mobile backhaul
- GPS signal transport
- All-Digital QAM network
- Data and video distribution
- Distributed antenna system

Specifications:

Parameter	Symbol	Condition	Min.	Max.	Unit
Operating Case Temperature	Topr		-20	+70	℃
Storage Temperature	Tstg		-40	+85	℃
DC Operating Voltage	Vd	+5V Pin	+4.7	+5.5	V
Saturation Input Optical Power	Ps	CW	--	10	mW
Relative Humidity	Hr		--	95	%
Pressure	Pr		86	106	kPa
ESD		Human body model		Class 1A	

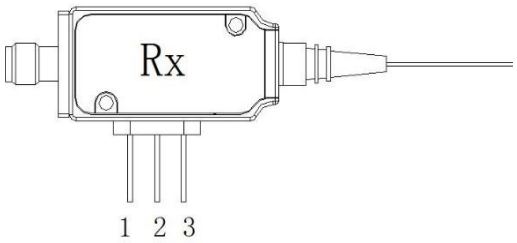
Parameter	Test Condition		MIN.	TYP.	MAX.	Unit
Frequency Range	RSC			0.01 ~ 3		GHz
	RCC			0.01 ~ 6		
	RXC			0.01 ~ 12		
Optical Wavelength				800~1650		nm
Gain (1)	RSC	Tx without amplifier Rx with amplifier	-11	-3	--	dB
		Tx without amplifier Rx without amplifier	-28	-24	--	
	RCC	Tx without amplifier Rx with amplifier	-11	-3	--	
		Tx without amplifier Rx without amplifier	-30	-26	--	
	RXC	Tx without amplifier Rx without amplifier	-30	-26	--	
Ripple of Passband (1)(2)	RSC	100MHz ~ 3GHz	--	±1.2	±2	dB
	RCC	100MHz ~ 6GHz	--	±1.5	±2.2	
	RXC	100MHz ~ 12GHz	--	±2.0	±2.5	
Input Optical Power	+25℃		--	--	10	dBm
Back Reflection			--	35	--	dB
PD Responsivity	1310nm		0.7	0.8	--	mA/mW
	1550nm		0.7	0.85	--	
RF Return loss (50 Ω)	RSC	100MHz ~ 3GHz	--	-12	-8	dB
	RCC	100MHz ~ 6GHz	--	-10	-7	
	RXC	100MHz ~ 12GHz	--	-10	-5	
Operating Current	with amplifier, RSC/RCC		--	90	120	mA
	without amplifier, RSC/RCC/RXC		--	7	10	
Operating Voltage	+5V pin		+4.8	+5	+5.2	VDC

Connector

Type	Connector
RF	SMA (50Ω), Female
Optical	FC/APC (1)
Optical Fiber Type	SMF-28(Standard)
Power	EMI Low Pass Filter, Feed Through Capacitor

Note (1): Other type optical connector available upon request.

PIN Function



Optical Receiver Top View

PIN	Name	Direction	Note
1	**+5V**	**I**	+5V DC Power
2	**GND**	**I**	GND
3	**OP**	**O**	Received Optical Power Monitor, The Voltage of **OP** See Below Explanation

The OP voltage (**Vop**, unit: V) VS received optical power (**Pop**, unit: mW) follow the formula:

Vop≈ D*Pop

The **D** factor defined as detection factor in V/mW unit. The typical range of **D** is from 0.25 V/mW to 0.5 V/mW. For example, **D**=0.375 V/mW, the OP voltage (**Vop**) VS received optical power(**Pop**) as shown in the table below:

Vop (V)	Pop (mW)
3.75	**10**
3.375	**9**
3	**8**
2.625	**7**
2.25	**6**
1.875	**5**
…	**…**
0	**0**

The user can input the known optical power **Pop** and detect the **Vop** voltage, and then calculate the approximate value of the **D** factor of an optical receiver by the formula **Vop≈ D*Pop.** In this case, the obtained **D** factor and **Vop** can be used to estimate the optical power received by the optical receiver in practical applications.

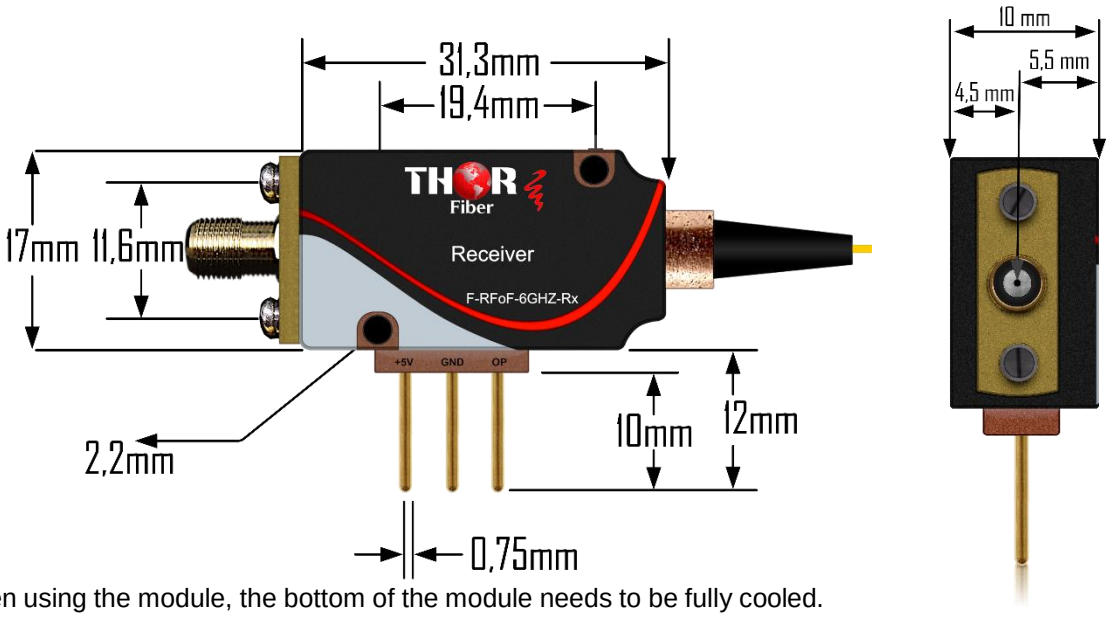
ESD Protection

The F-RFoF-6GHZ-Txmodules have electrostatics sensitivity devices, so the user has to do a good job of ESD protection when using the modules.

Heat Dissipation Requirements：

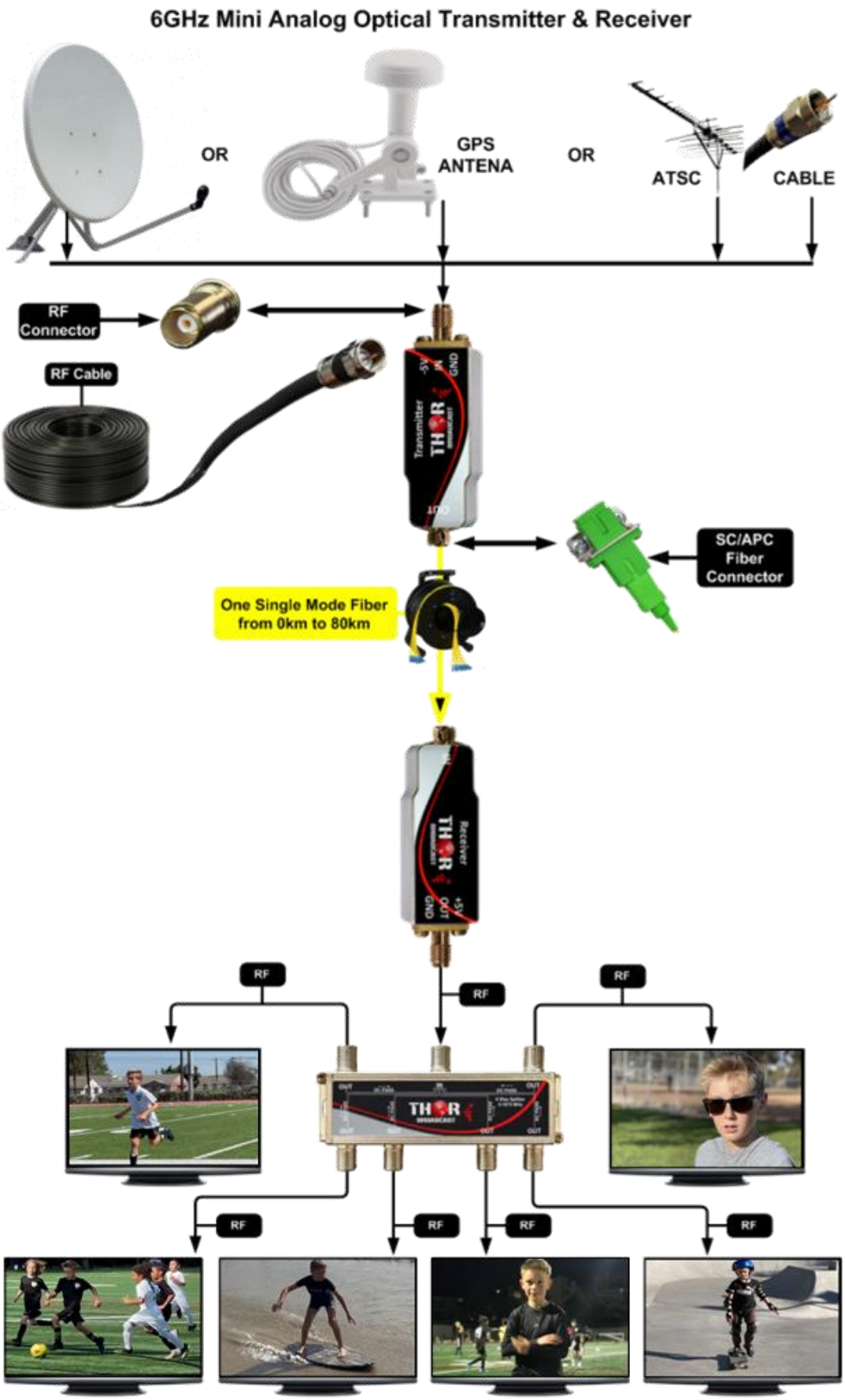
In order to ensure proper performance, heat sinking and heat removal must be provided by the user to limit maximum temperature receiver module. The bottom of the module is the preferred heat dissipation surface.

Mechanical (unit: mm)



Note: When using the module, the bottom of the module needs to be fully cooled.

Drawing:


6GHz Mini Analog Optical Transmitter & Receiver
OR
GPS ANTENA
OR
ATSC
CABLE
RF Connector
RF Cable
Transmitter
SC/APC Fiber Connector
One Single Mode Fiber from 0km to 80km
Receiver
RF
RF
RF
RF
RF
RF
RF

Model Selection:

F-RFoF-6GHZ-TX RFoF -RF over fiber 6Ghz optical Transmitter

F-RFoF-6GHZ-RX RFoF -RF over fiber 6Ghz optical Receiver