

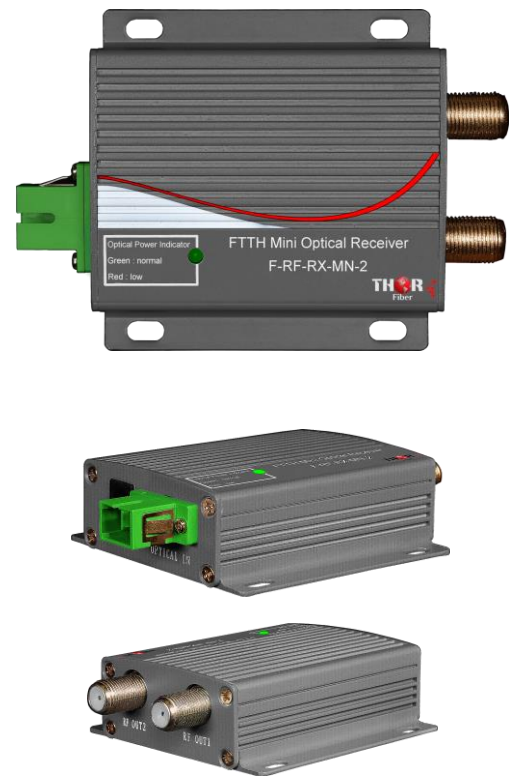
THOR BROADCAST

User Manual

TRANSMITTER



RECEIVER



**Optical Mini CATV RF
Transmitter & Receiver 45-1000Mhz**

F-RF-TX-MN-2Mw

F-RF-RX-MN-2

A Note from Thor Broadcast about this Manual

Intended Audience

This user manual has been written to help people who have to use, integrate and to install the product. Some chapters require some prerequisite knowledge in electronics and especially in broadcast technologies and standards.

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Chapter 1 - Introduction

1.1 Product Overview

TRANSMITTER:

The Thor Fiber Optical Mini CATV RF 45-900Mhz Transmitter is mainly used for transmitting long distance optical fiber transmission of CATV RF - Analog or digital QAM or ATSC Television Digital TV, telephone and data transmission. It's application for digital signal transmission of video and data in the cable television and communications industry. The transmission range can vary from 5km to 30km. It comes equipped with an advanced DFB laser that readily provides exceptionally high performance and RF power, as well as automatic processing technology developed by our company. Finally it has a built-in micro-computer that automatically monitors the control system and guarantees excellent performance of the equipment.

RECEIVER:

The Thor Fiber Mini FTTH optical receiver F-RF-RFMN-2 is specifically designed for FTTH networks. These ultra compact Fiber-To-The-Home optical receivers were designed and engineered to ensure compatibility for any type of FTTH network structure in mind. It has small compact housing, mini-internal circuit structure that still remains a high performance, low cost receiver that is economical for any project. It can be used for any application of HFC network fiber to the home (FTTH) because of it's form factor and output power. These units have a wide range for receiving optical power, high output level and low power consumption. They are the ideal pieces for any optical fiber network which can provide a highly reliable, digital video frequency and data bi-directional transmission for the HFC network. It could be use to send CATV RF point to point or point to multipoint.

This unit comes in a kit: part of the Thor Fiber MIni Transmitter / Receiver kit with [F-RF-TX-MN-2Mw](#)

1.2 Key features**TRANSMITTER:**

- 45-1000MHz working bandwidth
- High performance DFB coaxial laser that has a great linking performance and stable output
- Advanced CPU processing and with an auto monitoring system to supervise the operational status which leads to a longer life of the laser
- Low power loss design(less than 8W) which creates a very low operational temperature

RECEIVER:

- Designed for FTTH (Fiber To The Home) Networks
- Excellent linearity and flatness
- Converts Optical signal to electrical RF 45-10000Mhz
- Analog NTSC/PAL, Digital QAM, ATSC, DVB-T ,
- 20dBmV RF output power at Optical Input: -0 dBm
- Dual Coaxial output for easy deployment for multiple devices
- Wide range of optical input power
- Single-mode fiber
- Ultra low noise technology
- Smaller size and easy to install
- Red-LED for power indication
- Color-LED for optical power indication
- Built-in filter

1.3 Specifications

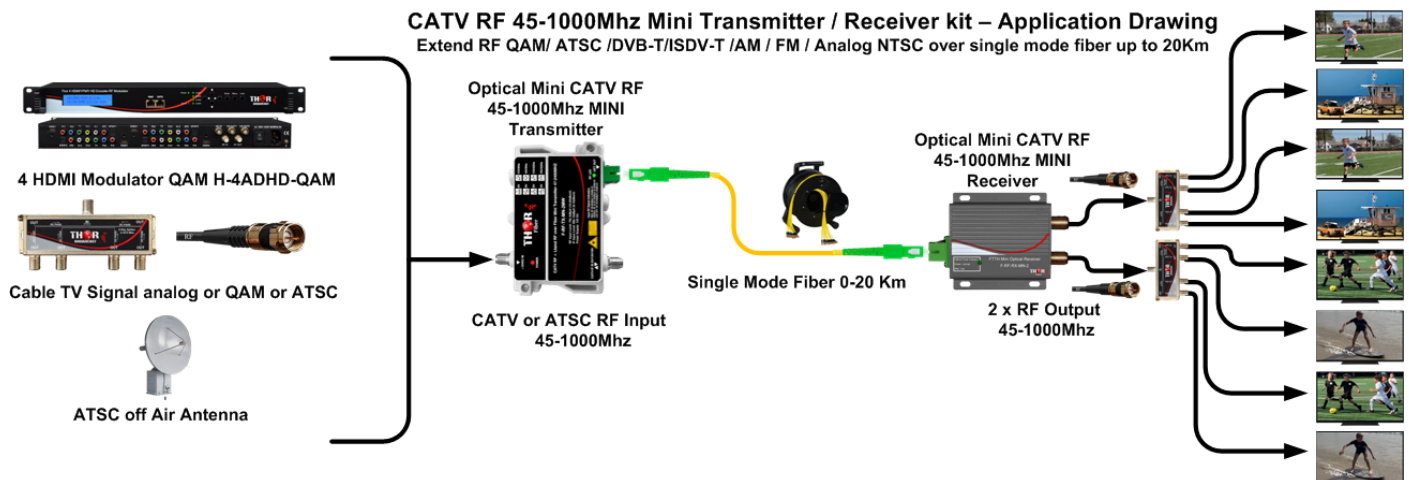
TRANSMITTER:

Item	Unit	Technical specification
Wavelength	nm	1310nm ± 20
Laser type		DFB laser
Optical modulation type		Direct optical strength modulation
Optical connector type		SC/APC IMPORTANT NOTE*** (it is very important to interface our unit with SC/APC - Angle Polished Connector to avoid any light reflections. If your fiber is terminated with the SC, ST, FC /PC flat connector, you need to use an optical jumper from PC type to SC/APC for proper conversion.)
Frequency range	MHz	45-862/1000
RF input level	dBuV	72~82
Flatness in band	dB	±0.75
Rf input resistance		75
Input reflection loss	dB	≥16
Link C/N	dB	≥51
Link C/CSO	dB	≥60
Link C/CTB	dB	≥65
AGC controlling range	dB	±5
MGC controlling	dB	0~10
Power Supply	V	DC 12 V/1 A
Power Loss	W	≤ 8
Dimension	mm	140 x 90 x 26

RECEIVER:

Technical Parameters	
Light wavelength	1100 ~1600nm
Operating Wavelength	1550 nm ± 20nm ,built-in for filtering 1490 nm signal and remain 1550 nm signal to photo-diode
Optical input power range	0dBm to ~-15dBm (digital) & 0dBm to ~-10dBm (analog)
Frequency range	45MHz-1GHz
Output level	Output range: 65-75dBμV (Optical Input: -6 dBm) Output range: 70-80dBμV (Optical Input: -2 dBm)
Flatness	±1dB
Slope	5dB ± 2dB
Return loss	16dB
Noise figure	47.5dB
CTB	≥65dB
CSO	≥65dB
MER	38
Power Consumption	≥ 0.6W
Test Conditions	60 CH (PAL-D), Pin -6dBm, 1 EDFA with noise figure 5dB, 25Km, Composite OMI 18.5%
Output impedance	75 Ω
Output port number	1
RF connector	F (female)
Responsibility	≥ 0.9 A/W @ 1550nm
Optical return loss	≥ 55 dB
LED indicator	Alarm LED: Green on: receive power in range (about -6 to 0 dBm) Red: low (<-8dBm) or lost signal Power LED: Red = Power on
Power Adapter	Input Voltage: 90-250V AC@50-60Hz Output Voltage uncertainty ≤ 3% without load Output Voltage: Continuous current ≥ 90% nominal current; ±5% nominal DC Voltage; Ripple Voltage (Vpp) ≤150mV Voltage surge arrester equipment's integrated.
Housing material	Stainless Metal with wall-mount Flange
Working environment	Operating temperature -20 + 55 °C
Size (W)*(D)*(H)	36*76.5*23mm

1.4 Principle Chart



1.5 Quick Installation guide

The Mini Transmitter and Mini Receiver set are plug and play devices if the RF input power to the TX and optical power Input to the RX are in the specified range.

- **TX RF INPUT 15-25dBmV (75-85dBuV)**
- **RX Optical INPUT should be +2 - 6dBm**

TRANSMITTER:

- 1) Connect Power Supply to the Transmitter
- 2) Connect CATV RF Input to the F port connector - Please note, the RF Power should be Between 15-25dBmV (75-85 dBμV)
- 3) Connect fiber optic cable to the Mini Transmitter Output - The Connector type MUST be SC/APC, never use SC/PC (Blue flat connector)

NEVER LOOK DIRECTLY INTO THE UNITS OPTICAL OUTPUT (you could burn your eye)

- 4) For short distance, point to point transmission, please plug 5db fiber optic attenuator, included in the box. (if the transmitter is used with a fiber optic splitter, the attenuator is not needed due to splitters insertion loss).
The fiber loss is about 0.35db/km in 1310nm wavelength there is also some slight loss in path panel junctions typically 0.1 -0.5db per junction
- 5) The TX should show "ON" on the LCD, meaning it is transmitting and outputting an optical signal.

RECEIVER:

- 1) Connect POWER Supply to the Receiver, "No Light Input" or "Level too Low" the LED will be RED
- 2) Connect CATV RF cable to the F port connector - RF Output, the output will be about 22dBmV (82 dBuV)
- 3) Connect fiber optic cable to the Mini Receiver INPUT – The Connector type MUST be SC/APC, never use SC/PC (Blue flat connector)

NEVER LOOK DIRECTLY TO THE FIBER JUMPER. (You will burn your eye)

- 4) The Optical level by the receiver should be about +2 to -6dBm
The Light turns Red when RF Signal Input is Lower then 80dBμV (>20dBmV)
- 5) The LED should turn from RED to GREEN when RF Signal Input is Between 60~80dBμV (0-20dBmV)
- 5a) The RED LED means no Link Light detector RF Signal Input is larger than 60dBμV (>0dBmV)
- 5b) The red light might also mean saturation, LEVEL TOO HIGH, it is easy to determine when you plug in the optical jumper the unit will go from **RED** to **GREEN** to **RED** again, it means the optical level is higher than +2dbm , the receiver will still work correctly if this level will be not higher than +5dbm, If higher then +5, please add 5db attenuator included with your purchase.

