

MP-8000-22 Series Low NF Unamplified Microwave Fiber Optic Transmitter

22 GHz Low Noise Figure Unamplified Fiber Optic Transmitter



Broadband Microwave Fiber Optic Transmitter Modules Enable Low Noise Photonic Links

The MP-8000-22-UTX RF/Fiber Optic Transmitter modules are designed to provide electrical-to-optical (E/O) conversion of broadband RF signals over a frequency range of 10 MHz to 22 GHz.

The utilization of the MP-8000-22-UTX, in conjunction with the appropriate MP-8000-RX-02 RF/Fiber Optic Receiver, forms a broadband link capable of supporting the transmission of RF signals over singlemode optical fiber for use in a wide array of scientific and communication applications. The link applications include antenna remoting, SATCOM, RF delay lines, telemetry tracking, and point-to-point RF transmission.

The transmitter utilizes a high efficiency Mach-Zehnder Lithium Niobate (LiNbO₃) electro optic modulator, coupled with a high power Distributed Feedback (DFB) laser diode centered at 1550 nm or on customer specified ITU wavelengths. Use of a X-cut modulator ensures near zero chirp characteristics that enables long fiber lengths and predictable dispersion compensation. The laser temperature stability is microprocessor controlled using a thermal electric cooler and an advanced ditherless bias control loop. These features, coupled with the MP-8000-RX-02's companion Photonic Receiver's incorporation of a high-speed, low distortion PIN photodiode detector, assures low noise and high dynamic range link performance over varying frequency, temperature, and optical loss budgets.

The MP-8000-22-UTX series Transmitter application modules have advanced Built-In-Test (BIT) diagnostic capabilities which provides remote status and monitoring of critical parameters such as transmitted optical power, system power, modulator bias, temperature, amplifier current, attenuator setting and a summary alarm status.

Information: Call us toll-free at 888-868-8967 or email info@b2bphotronics.com

Applications:

- SATCOM Interfacility Links
- Microwave Antenna Remoting
- Electronic Counter Measure Systems
- Test and Measurement Applications
- Wideband Delay Line Applications
- Phased array Antenna Systems
- Secure Communication Systems

Features:

- 10 MHz to 22 GHz Bandwidth
- X-Cut LiNbO₃ Modulator
- Extended Operating Temperature
- High Optical Output +20 mW
- High Speed Noise free Bias Loop
- Single Fiber DWDM Operation
- Small Form Factor Flange Mount
- Hot Swappable, Plug-In Module
- Compatible with MPS-1911 and MPS-1914 Rack Chassis Systems



1914 Plug-In Style Module

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General Specifications

Optical

Parameter	Min	Typ	Max	Unit	Notes
Operational Wavelength	1545	1550	1555	nm	ITU Grid Available
Optical Output Power	10	13	17	mW	20mW Output Available
Optical Fiber Type	Single Mode SMF-28				Or Equivalent
Optical Connector Type	FC/APC, SC/APC, E2000, PC/APC, AVIM				Others Available
Optical Back Reflection	-55			dB	

Electrical - RF

Parameter	Min	Typ	Max	Unit	Notes
Frequency Response	0.01		22	GHz	DC Coupled versions Available
Input/Output RF Impedance	50			Ohms	
Input/Output VSWR			2.0:1		
RF Connector Type	2.92 mm (K) female				Others Available
RF Link Gain		-17		dB	Higher Link Gains Available
RF Link Gain Flatness		+/- 2		dB	1 to 22 GHz Bandwidth ⁽²⁾
			+/- 1	dB	Over any 500 MHz Bandwidth
RF Link Noise Figure		+33		dB	
Input 1dB Compression Point		+17		dBm	IP1dB
Input Third Order Compression Point		+25		dB	IIP3
Spur Free Dynamic Range		111		dB*Hz ^{2/3}	SFDR
RF Input Power			+25.0	mA	No Damage

Mechanical and Environmental

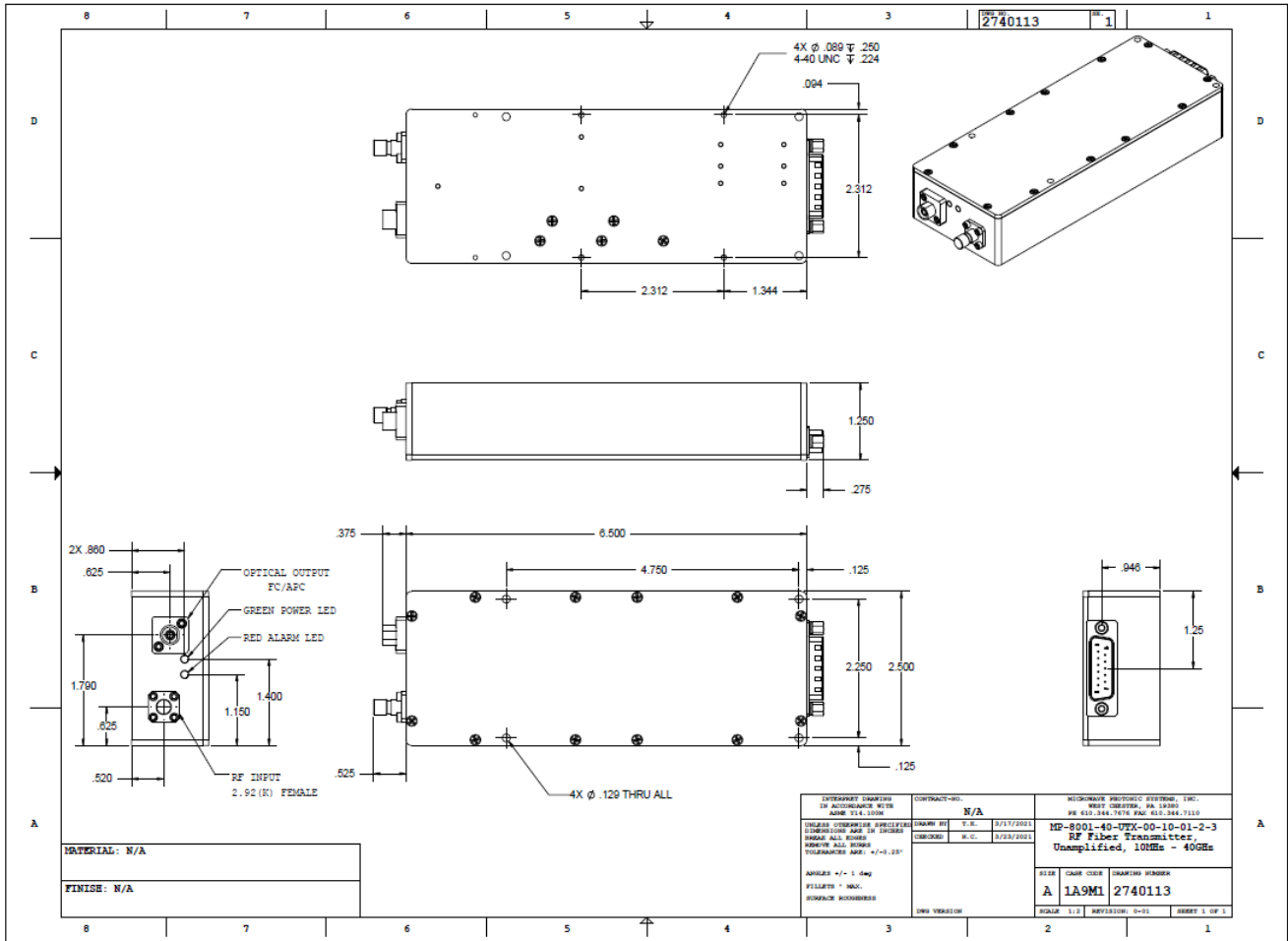
Parameter	Min	Typ	Max	Unit	Notes
Power Supply	10	15	24	VDC	
Power Consumption		2.5	6	Watts	
Operating Temperature	-20		+70	°C	Extended Range Available
Storage Temperature	-45		+85	°C	
Operating Humidity			95	%	Non-Condensing
Operating Altitude			50,000	ft	3 Places
Dimensions	6.5 x 2.5 x 1.25 165.1 x 50.8 x 31.75			in mm	Flange Mount
Local Alarms	LED: Power and BIT Fault (Plugin Units)				
Remote Alarms	Open Collector, RS-232				
Power & I/O Connector	DB15 Male				Flange Mount

Note (1) : Performance stated with TX output applied to MP-8000-RX Receiver Module through a 1 meter optical jumper

Note (2) : Gain Equalized Versions Available

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Outline Drawing



DB15 Male Pinout
(Flange Mount)

Pin	Function	Notes	Pin	Function	Notes
1	Power Return		9	Signal Return	
2	Open Collector Alarm		10	Analog Monitor	
3	RS-232_RX Data		11	RS-422_RS-485_TA	
4	RS-232_TX Data		12	RS-422_RS-485_TB	
5	RS-422_RS-485_RA		13	RS-422_RS-485_RB	
6	Discrete I/O_A0	L=0-0.8 VDC H=2.5-7VDC	14	Discrete I/O_A1	L=0-0.8 VDC H=2.5-7VDC
7	Discrete I/O_A2	L=0-0.8 VDC H=2.5-7VDC	15	Discrete I/O_A3	L=0-0.8 VDC H=2.5-7VDC
8	Input Power	+9 to +24VDC			

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Part Number Generator

MP-8000-22-UTX | C | O | W | CN | CT

Example PN: **MP-8000-22-UTX-00-10-15-01-2-3**

Standard Configuration
 10mW Optical Output
 1550+/- 5nm Optical Wavelength
 FC/APC Optical Connector
 Flange Mount Case

C Configuration

00 = Standard
 01 = DC Coupled (DC-22G)
 XX = Custom

O Optical Output

10 = 10mW
 20 = 20mW

W Wavelength

01 = 1550 +/- 5 nm
 28 = 1554.94 nm
 29 = 1554.13 nm
 30 = 1553.33 nm
 31 = 1552.52 nm
 32 = 1551.72 nm
 33 = 1550.92 nm
 34 = 1550.12 nm
 35 = 1549.32 nm
 36 = 1548.51 nm
 37 = 1547.72 nm
 XX = ITU Wavelength

CN Connector

0 = None
 2 = FC/APC
 4 = SC/APC
 6 = Special
 7 = LC/APC
 8 = AVIM / APC

CT Case Type

1 = MPS-1911 Plug-In
 2 = MPS-1914 Plug-In
 3 = 6.25" x 2.5" x 1.25"

Typical Performance Curves

