

MP-9000-40 Series Low Noise Microwave Fiber Optic Transmitter

## New SWaP-C Optimized Broadband Fiber Optic Transmitter



### New “Disruptive” Optical Conversion Technology Enables Industry Leading Transmitter Performance in a Miniaturized Package!

The MP-9000-40 microwave fiber optic transmitters represent the next generation of RF Over Fiber electrical-to-optical (E/O) transducers. The MP-9000-40 product family supports broadband RF signals over a frequency range of 0.01 to 40 GHz.

These new transmitters leverage a newly developed, disruptive, electric to optical (E/O) conversion technology. The use of this new technology, along with MPS proprietary RF circuits, reduces system noise figures while also reducing the physical size and cost of the transmitter.

These new transmitters are especially useful in high density applications such as Phased Array, aerospace and DWDM multi-wavelength applications.

The MP-9000 series of externally modulated transmitters represents the “next generation” in electrical to optical conversion products.

These features, coupled with the MP-8000-RX’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-9000-40 series application modules have advanced Built-In-Test (BIT) diagnostic capabilities which provides remote status and monitoring of critical parameters.

Information: Call us toll-free at 888-868-8967 or email [info@b2bphotonics.com](mailto:info@b2bphotonics.com)

#### Applications:

- Inter-facility Links
- Microwave Antenna Remoting
- Electronic Counter Measure Systems
- Test and Measurement Applications
- Wideband Delay Line Applications
- Phased array Antenna Systems
- Secure Communication Systems
- Signal Processing Systems
- Phased Antenna Arrays

#### Features:

- DC to 40 GHz Bandwidth
- High Efficiency / Low Noise
- Wide Operating Temperature
- High Optical Output +10 mW
- Fiber Lengths > 100kms
- 5”x2.5”x1.25” Form Factor
- Hot Swappable, Plug-In Module
- Compatible with MPS-1911 and MPS 1914 Rack Chassis Systems



1911 Plug-In Style Module



1914 Plug-In Style Module

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## General Specifications

### Optical

| Parameter               | Min                                 | Typ  | Max  | Unit | Notes            |
|-------------------------|-------------------------------------|------|------|------|------------------|
| Operational Wavelength  | 1545                                | 1550 | 1555 | nm   |                  |
| Optical Output Power    | 9                                   | 11   | 15   | mW   |                  |
| 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               |       | 40    | GHz                  |                            |
| Input/Output RF Impedance           | 50                 |       |       | Ohms                 |                            |
| Input/Output VSWR                   |                    | 2:1   | 2.5:1 |                      |                            |
| RF Connector Type                   | 2.92 mm (K) female |       |       |                      |                            |
| RF Link Gain                        | -26                | -21   |       | dB                   |                            |
| RF Link Gain Flatness               |                    | +/- 4 |       | dB                   | 0.1 to 40 GHz Bandwidth    |
|                                     |                    |       | +/- 1 | dB                   | Over any 500 MHz Bandwidth |
| RF Link Noise Figure                |                    | +29   |       | dB                   |                            |
| Input 1dB Compression Point         |                    | +14   |       | dBm                  | IP1dB                      |
| Input Third Order Compression Point |                    | +23   |       | dBm                  | IIP3                       |
| Spur Free Dynamic Range             |                    | 110   |       | dB*Hz <sup>2/3</sup> | SFDR                       |
| RF Input Power                      |                    |       | +23.0 | dBm                  | No Damage                  |

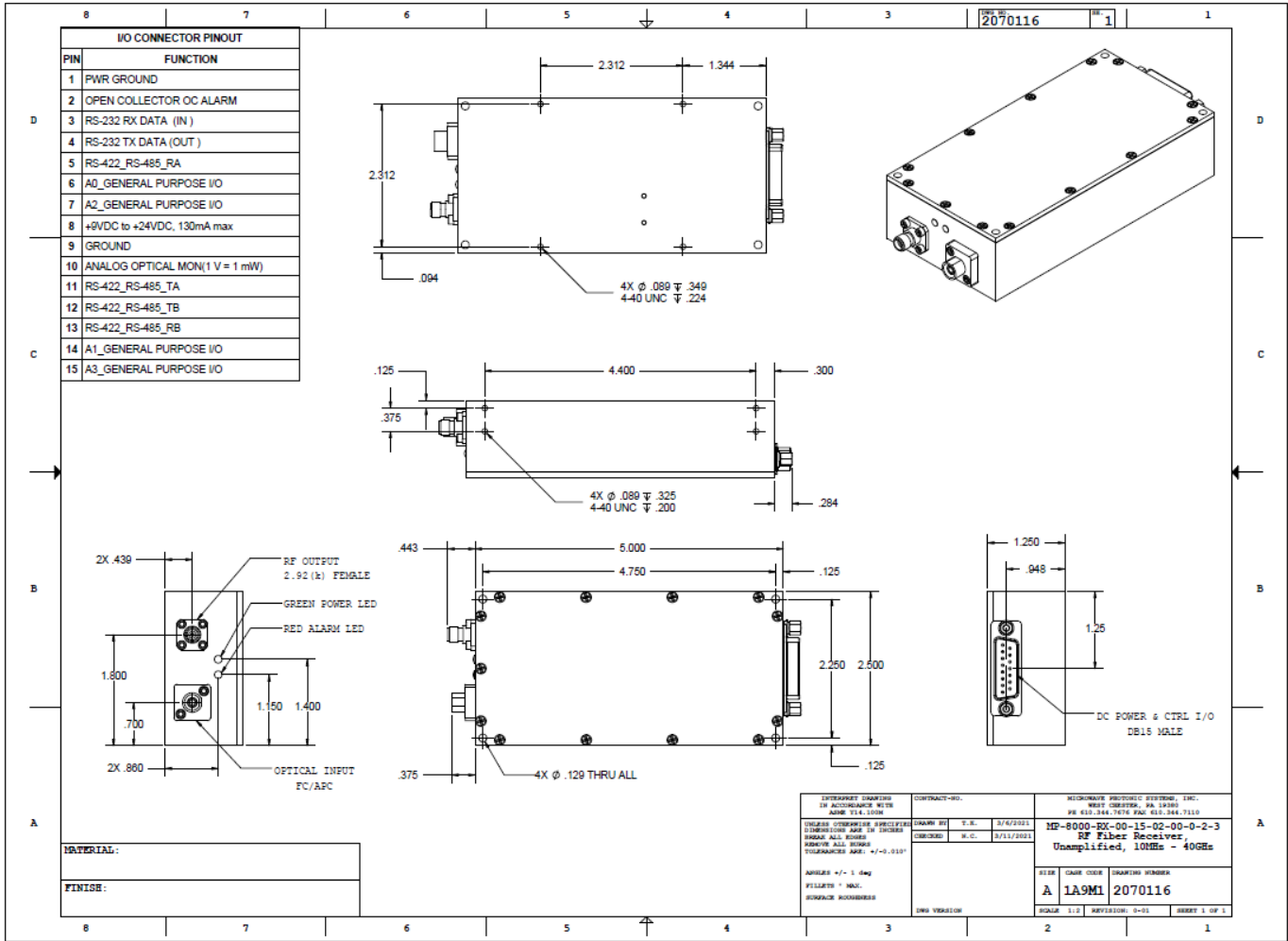
### Mechanical and Environmental

| Parameter             | Min                                     | Typ | Max    | Unit     | Notes          |
|-----------------------|---|-----|--------|----------|----------------|
| Power Supply          | 10                                      | 15  | 24     | VDC      | 6 Watts        |
| Operating Temperature | 0                                       |     | +50    | °C       | Baseplate      |
| Storage Temperature   | -45                                     |     | +85    | °C       |                |
| Operating Humidity    |   |     | 95     | %        | Non-Condensing |
| Operating Altitude    |   |     | 50,000 | ft       |                |
| Dimensions            | 5 x 2.5 x 1.25<br>127 x 50.8 x 31.75    |     |        | in<br>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 Optical Output applied to a MP-8000-RX-00-15-02-00-0-2-3 Receiver Module

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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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MP-9000-40 Series Low Noise Microwave Fiber Optic Transmitter

Part Number Generator

MP-9000-40-UTX | C | O | W | CN | CT

Example PN: **MP-9000-40-UTX-00-10-01-2-3**

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

**C** Configuration  
 00 = Standard  
 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

