



Features

- » Wideband up to 12 GHz
- » Integrated RF Preamp
- » High Dynamic Range
- » Customization Available
- » Fully Integrated Module
- » Complete Link Option

Applications

- » Replaces Coax Cable
- » Radio Over Fiber
- » Radio Astronomy
- » Remote Antenna Sites
- » Phased Array Radar
- » EW/ECM
- » Optical Delay Lines
- » SATCOM

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Description

The PSI-1600-10AT is a high performance microwave photonic transmitter with an RF pre-amplifier providing wideband electrical to optical (E/O) conversion for RF input signals beyond 12 GHz. Along with a PSI-1600-10UR receiver module, the PSI-1600-10AT provides a complete fiber optic link solution designed to replace low loss coaxial cable or microwave repeaters for applications in military systems, satellite communications, radio astronomy, optical delay lines, cellular/wireless base stations or other RF/ Microwave related systems.

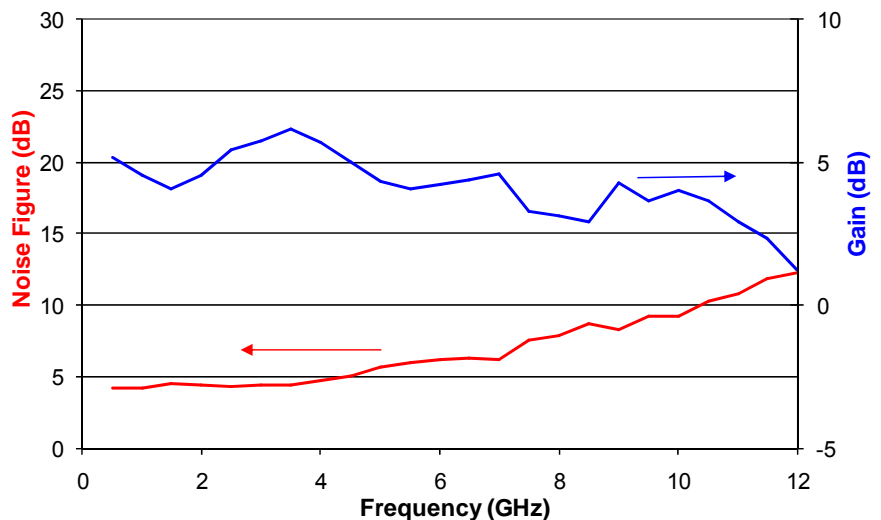
Custom RF performance, packaging, connectors and link gain configurations are also available. **Please contact PSI with your application needs.**

RF Link Performance

| Parameter | Condition | Min | Typ | Max | Units |
|-------------------------|-------------------|-----|-----|------|----------------------|
| Operating Bandwidth | | 0.1 | | 12 | GHz |
| Link Gain | @ 5 GHz | | 0 | 2 | dB |
| Noise Figure | @ 5 GHz | | 8 | 9 | dB |
| Input IP3 | @ 5 GHz | -10 | | | dBm |
| Spur Free Dynamic Range | 1 Hz band @ 10GHz | 101 | 103 | | dB/Hz ^{2/3} |
| Gain Flatness | 1-12 GHz | | | ±3 | dB |
| | Any 100 MHz band | | | ±0.5 | dB |

Note: RF link performance specifications with -15 dBm RF_{in} and using the PSI-1600-10UR receiver module

PSI-1602-10L Typical Response Over Frequency



RF Characteristics

| Parameter | Condition | Min | Typ | Max | Units |
|------------------------|------------|-----|-----|-----|----------|
| Maximum RF Input | | | | -14 | dBm |
| Input 1 dB Compression | | -18 | | | dBm |
| RF Input Impedance | | | 50 | | Ω |
| RF Return Loss | | 9.5 | 15 | | dB |
| RF Input Connector | SMA Female | | | | |

Optical Characteristics

| Parameter | Condition | Min | Typ | Max | Units |
|--------------------------|---|------|------|------|-------|
| Wavelength | | 1520 | 1550 | 1556 | nm |
| Optical Output Power | | 0.5 | | 10 | mW |
| Optical Output Connector | FC/APC Standard, please contact PSI for other options | | | | |

Notes:

1. User supplied fiber optic cable should be singlemode Corning SMF-28 or equivalent
2. To minimize distortion caused by optical reflections the optical cable return loss should be >55 dB using angled-polished connectors
3. ITU channel wavelength selection is possible, please contact PSI with requirements

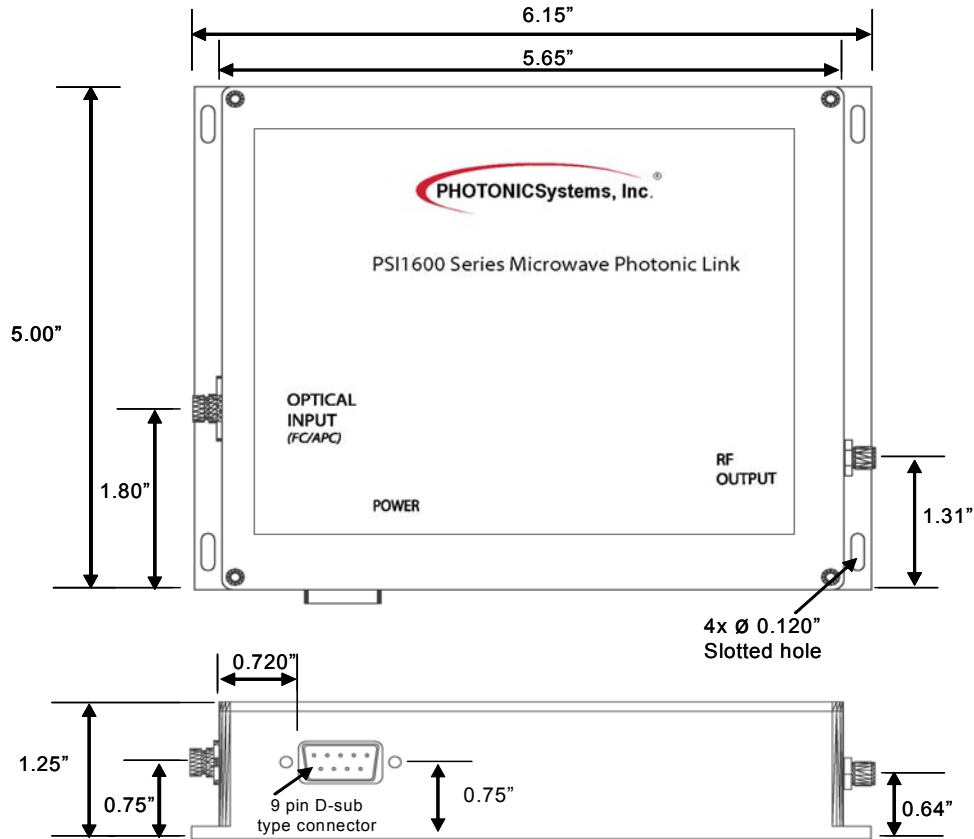
Environmental Characteristics

| Parameter | Condition | Min | Typ | Max | Units |
|-----------------------|-----------------------|-----|-----|-----|--------------------|
| Operating Temperature | Within Specifications | -5 | | 70 | $^{\circ}\text{C}$ |
| Storage Temperature | No damage | -40 | | 85 | $^{\circ}\text{C}$ |
| Humidity | | 0 | | 95 | % |

DC Power and 9-pin D-Connector Pin Out

| Pin | Description |
|-----|-----------------------------------|
| 1 | +12 V _{DC} at 300mA max. |
| 2 | Ground |
| 3 | +5 V _{DC} at 1.8 A max. |
| 4 | Ground |
| 5 | -5 V _{DC} at 1.0 A max. |
| 6 | NC |
| 7 | Ground |
| 8 | Ground |
| 9 | NC |

Mechanical Dimensions



Ordering Information

| PSI Part Number | Description |
|-----------------|--|
| PSI-1600-10AT | Amplified E/O Transmitter Module (Final tested with PSI-1600-10UR) |
| PSI-1602-10L | Microwave Photonic Link Includes : <ul style="list-style-type: none"> • PSI-1600-10AT Amplified Transmitter Module • PSI-1600-10UR Receiver Module |
| PSI-1604-10L | Microwave Photonic Link Includes : <ul style="list-style-type: none"> • PSI-1600-10AT Amplified Transmitter Module • PSI-1600-10AR Amplified Receiver Module |