



## Features

- » Extremely Wideband >20GHz
- » 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

## PHOTONIC SYSTEMS INC.

900 Middlesex Turnpike  
Building 5  
Billerica, MA 01821  
USA

Phone: 978-670-4990  
Fax: 978-670-2510  
psi.sales@photonicsinc.com  
www.photonicsinc.com

## Description

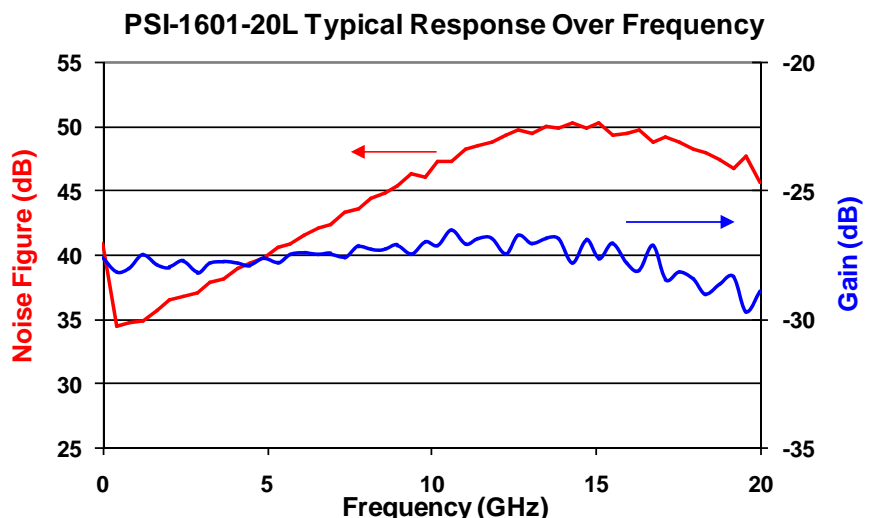
The PSI-1600-20UT is a high performance microwave photonic transmitter providing wideband electrical to optical (E/O) conversion for RF input signals up to and beyond 20GHz. Along with a PSI-1600-20UR receiver module, the PSI-1600-20UT provides a complete fiber optic link solution designed to replace 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. Part of the PSI-1600-20L series of RF over fiber links, the PSI-1600-20UT transmitter does not include any RF pre-amplification.

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

## RF Link Performance

Parameter	Condition	Min	Typ	Max	Units
Operating Frequency		0.1		20	GHz
Nominal Link Gain	@ 10 GHz	- 35	-32		dB
Noise Figure	@ 10 GHz		47	50	dB
Input IP3	@ 10 GHz	20	23		dBm
Spur Free Dynamic Range	1 Hz band @ 10GHz	98	100		dB/Hz <sup>2/3</sup>
Gain Flatness	1-20 GHz			±2	dB
	Any 100 MHz band			±0.5	dB

Note: RF link specifications with PSI-1600-20UR receiver module and a 3m fiber jumper.



### RF Characteristics

Parameter	Condition	Min	Typ	Max	Units
Maximum RF Input				+15	dBm
Input 1 dB Compression		+13			dBm
RF Input Impedance			50		$\Omega$
RF Return Loss		9.5	15		dB
RF Input Connector		SMA Female			

### Optical Characteristics

Parameter	Condition	Min	Typ	Max	Units
Wavelength	See note 3	1520	1550	1556	nm
Optical Output Power		0.5		10	mW
Optical Output Connector	See note 2	FC/APC (Others Available Upon Request)			

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

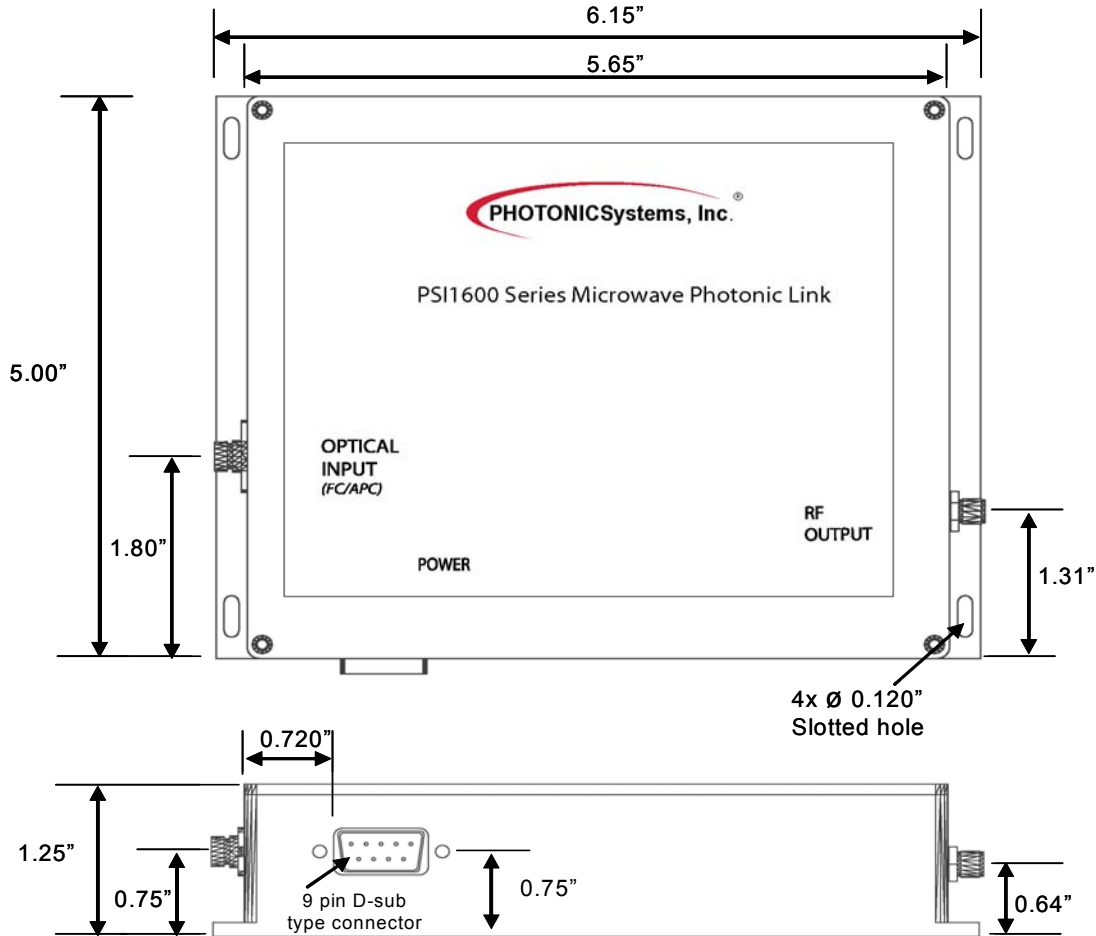
### Environmental Characteristics

Parameter	Condition	Min	Typ	Max	Units
Operating Temperature	Within Specifications	-5	25	70	$^{\circ}\text{C}$
Storage Temperature	No damage	-40		85	$^{\circ}\text{C}$
Humidity	Non-condensing	0		95	%

### DC Power and 9-pin D Connector Pin Out

Pin	Description
1	NC
2	Ground
3	+5 V <sub>DC</sub> @ 1.8A max.
4	Ground
5	-5 V <sub>DC</sub> @ 1.5A max.
6	NC
7	Ground
8	Ground
9	NC

**Mechanical Dimensions**



**Ordering Information**

PSI Part Number	Description
PSI-1600-20UT	E/O Transmitter Module (Final tested with PSI-1600-20UR)
PSI-1601-20L	RF Photonic Link Includes: <ul style="list-style-type: none"> <li>• PSI-1600-20UT Transmitter Module</li> <li>• PSI-1600-20UR Receiver Module</li> </ul>
PSI-1603-20L	RF Photonic Link Includes: <ul style="list-style-type: none"> <li>• PSI-1600-20UT Transmitter Module</li> <li>• PSI-1600-20AR Amplified Receiver Module</li> </ul>