

## PRODUCT DESCRIPTION

The PSI-1600 series is a family of high-performance microwave photonic links intended for antenna remoting or RF/IF signal distribution in military systems, satellite communications, radio astronomy, optical delay lines, cellular/wireless base stations or other applications. The PSI-1601 is a unique amplifierless link offering wide dynamic range at a modest price. Also available are amplified versions; the PSI-1602 includes amplification at the TX module to optimize noise figure, the PSI-1603 employs amplification only at the

PSI-1600 Features	Benefit
Microwave bandwidth, low noise figure, wide dynamic range	Application flexibility and signal integrity; enables replacement of lossy, heavy copper transmission lines
Signal transport over low-loss (0.25dB/km) optical fiber	Optimizes system size, weight and power
Compact size, low power consumption and high reliability	Lowest total cost to install and operate

RX module and the PSI-1604 includes amplification at both link ends, yielding +34dB of insertion gain. All links feature very wide bandwidth of up to 12 GHz and low power consumption. This performance is



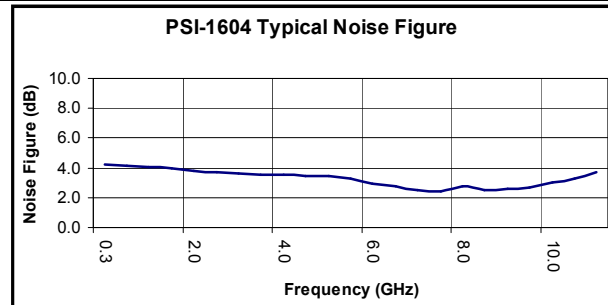
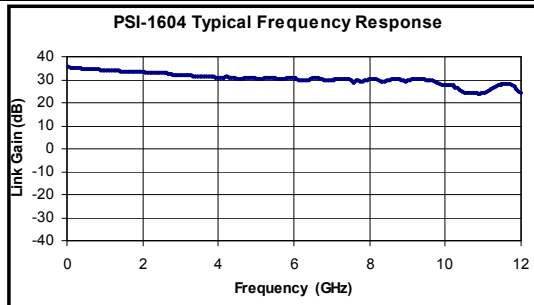
achieved through a transmitter employing a precisely controlled electro-absorption modulator laser. The separate receiver module contains a sensitive, microwave bandwidth InGaAs photodiode. All modules are constructed in laboratory-grade housings and shipped with AC power supplies. Custom packaging and gain configurations are also available. For more information, please contact us at info@photonicsinc.com.

## Applications

- Radio over fiber
- Radio Astronomy
- Remote antenna distribution
- Phased array radar
- Cellular antenna farms
- Optical delay lines
- SATCOM
- TCDL

## Typical Performance, 25°C @ Mid-band

Parameter	PSI-1601 Link	PSI-1602 Link w/ pre-amp	PSI-1603 Link w/ post-amp	PSI-1604 Link w/ pre & post-amp
Operating bandwidth	.045-12 GHz	.1-12 GHz	.1-12 GHz	.1-12 GHz
Noise figure	35 dB	6 dB	36 dB	7 dB
Gain	-30 dB	2 dB	2 dB	34 dB
1-dB compression output	-25 dBm	-25 dBm	7 dBm	7 dBm
IP3 output power	0 dBm	-6 dBm	24 dBm	22 dBm
Spur-free dynamic range (in 1 Hz)	112 dB	106 dB	106 dB	103 dB
VSWR	<2:1	<2.2:1	<2.2:1	<2.2:1
Bias power, TX module	<8 W	<11 W	<8 W	<11 W
Bias power, RX module	35 mW	35 mW	3.5 W	3.5 W



# PSI-1600 SERIES MICROWAVE PHOTONIC LINKS

## RF AND ELECTRICAL CHARACTERISTICS

Parameter	Min	Max	Units
Bandwidth	0.045	12	GHz
RF port impedance	50, all ports		Ohms
Receiver input equivalent noise		20	pA/Hz
Amplitude flatness, any 100 MHz		± 0.5	dB
AC power (60 Hz)	100	240	VAC

## OPTICAL CHARACTERISTICS

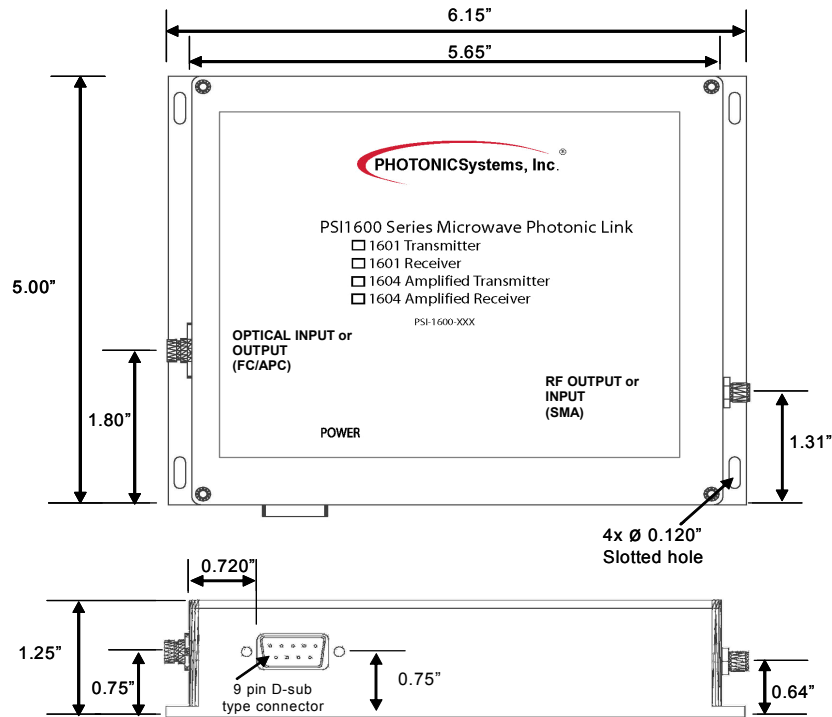
Parameter	Min	Max	Units
Wavelength	1520	1575	nm
TX optical power	0.5	10	mW
RX optical input power	0	20	dBm
Receiver responsivity	0.85		A/W
Connector return loss		-40	dB
Fiber type between TX and RX (user supplied)	Single mode; Corning SMF-28 or equivalent		--
Fiber span @ 1dB degradation in noise figure	3		km

## ABSOLUTE MAXIMUM RATINGS

Parameter	Min	Max	Units
Operating Temperature (within specs)	0	50	°C
Operating Temperature (no damage)	-20	60	°C
Storage Temperature	-40	80	°C
Humidity	0	95	%
RF input (Amplified TX at max gain)		-6	dBm
RF input (Unamplified TX)		+25	dBm
Optical power into receiver		+13	dBm

## PHYSICAL CHARACTERISTICS

Parameter	Attribute
RF Connectors, all ports	SMA Female
DC connector	9 pin D-sub
Fiber optic connector	FC/APC



### PSI-1600 Series Modules

This module is used for both transmitter and receiver photonic link modules, including amplified and amplifierless versions.