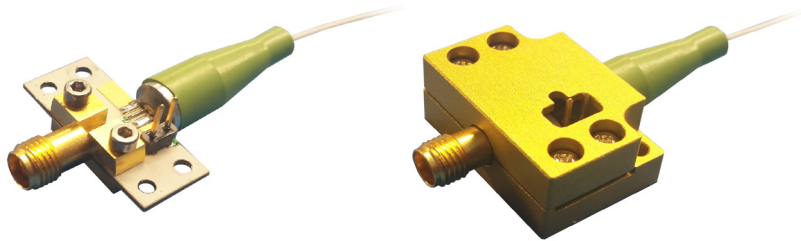


# PD-40



## 40 GHz Linear InGaAs PIN Photodetector

The Optilab PD-40 is a highly linear, 40 GHz bandwidth InGaAs PIN photodetector that is ideal for use in O/E front-ends requiring wide band frequency response. The coplanar waveguide photodiode design optimizes speed and sensitivity for the 1260 nm through 1600 nm wavelength range, and assures a 40 GHz frequency response necessary for digital and analog applications. The front-illuminated mesa-structured PIN design allows a high input power level of up to 30 mW. The PD-40 is available in a standard 2-pin package with K-connector output for ease of assembly, and can be ordered with or without the external protective housing. Contact Optilab for more information.

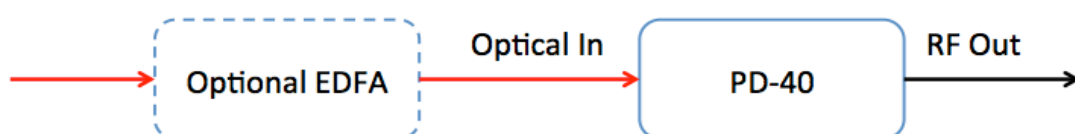
### Features

- Wide bandwidth 60 KHz to 40 GHz
- Highly Linear to 30 mW+ input power
- Operating Temperature from -10°C to +50°C
- High Current Handling up to 35 mA
- Flat frequency response, ±1 dB
- Useful Spectral Range 850 nm -1650 nm
- 1 year warranty standard

### Applications

- Analog RF over Fiber
- Optically Amplified Systems
- RZ and NRZ up to 40 Gb/s
- LIDAR Measurements
- Coherent Lightwave Systems
- Front-End O/E Converter for Test Instruments

### Functional Diagram



# 40 GHz Linear InGaAs PIN Photodetector

## OPTIONS

PD-40-x

Housing Type:

- x A, No Housing, default  
B, Legacy Housing  
C, External Housing

## TECHNICAL INFO

For technical info and support:

[sales@optilab.com](mailto:sales@optilab.com)

[www.optilab.com](http://www.optilab.com)

Optilab, LLC  
Phoenix, AZ, USA

## WEB ORDER

To order, please visit [OEQuest.com](http://OEQuest.com).



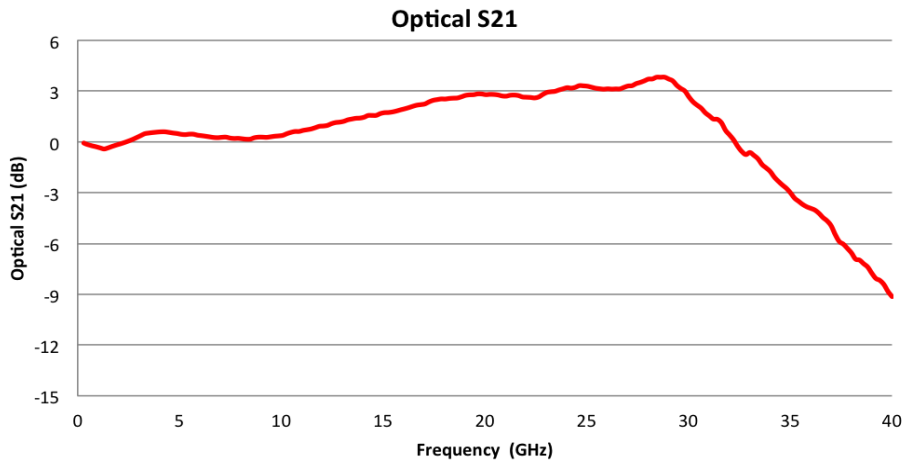
## Optilab Advantage

- Innovation
- Performance
- Quality
- Customization
- Warranty

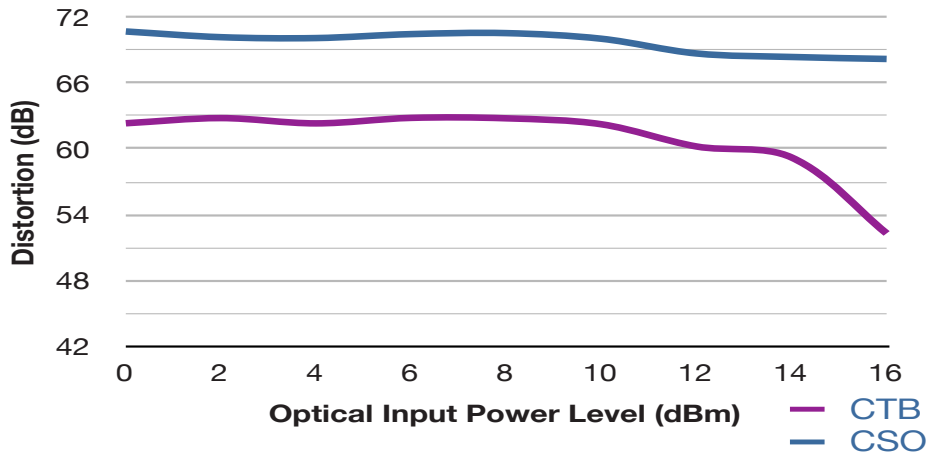
General Specifications	
Optimized Operating Wavelength	1260 nm to 1600 nm
Useful Operating Wavelength	850 nm to 1650 nm
Optical Input Level	30 mW max.
S21 3 dB Bandwidth	31 GHz min., 33 GHz typ.
S22 Characteristics	< -10 dB @ 30 GHz
Responsivity	0.80 A/W @ 1550 nm typ. 0.35 A/W @ 850 nm typ.
Dark Current @ 25° C, 5 V	10 nA typ., 100 nA max.
Optical Return Loss	-30.00 dB typ.
Optical PDL @ 1550 nm	0.05 dB max.
Optical Fiber	SMF-28
Bias Voltage	5 V typ.
Impedance	50 Ω
Coupling	AC-Coupled (DC Coupled Optional)
Analog Applications	
Useful Bandwidth	60 KHz to 40 GHz
Ripple over any 1 GHz	±1.0 dB max.
Group Delay	±7.0 ps
2nd Harmonics Distortion	-70.0 dBc max.
3rd Harmonics Distortion	-75.0 dBc max.
Digital Applications	
Sensitivity @ 10 Gb/s	-19.0 dBm
Receiving Bandwidth	Up to 40 Gb/s
Data Format	RZ, NRZ
Link Performance with LT-20	
SFDR	113 dB Hz <sup>2/3</sup>
Link Loss	-25 dB @ 10 dBm Optical Input
Mechanical Specifications	
Operating Temperature	-10° C to +50° C
Storage Temperature	-40° C to +75° C
Operating Humidity	85%
Photodiode Bias Voltage	5 V, ± 1 V DC
Package type	2-pin module with SMA Female RF connector
Dimensions	30 mm x 20 mm x 14 mm
Fiber Connector	FC/APC
Optical Fiber	SMF-28 with 900 mm Tube
Absolute Maximum Ratings	
PIN Bias Voltage	+2.0 to +7 V
Forward Current	35 mA
Optical Input Power	30 mW
Lead Soldering Temp (10 s)	250 ° C

# 40 GHz Linear InGaAs PIN Photodetector

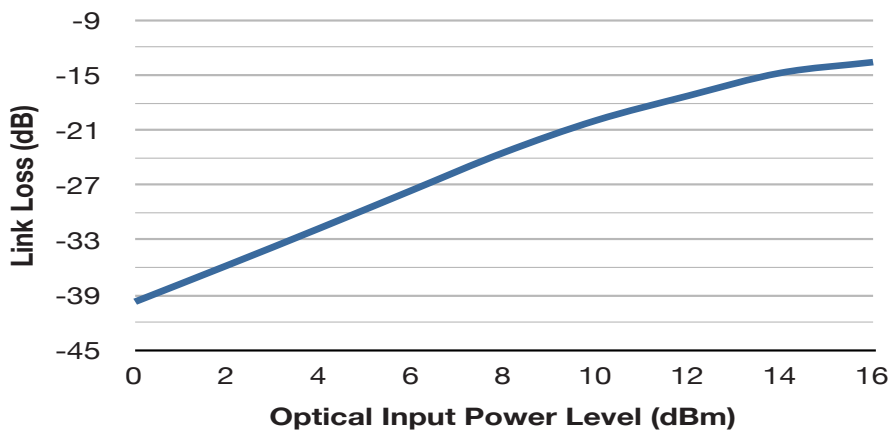
## S<sub>21</sub> O/E Response<sup>1</sup>



## CSO, CTB Linearity Measurement<sup>2</sup>



## Link Loss

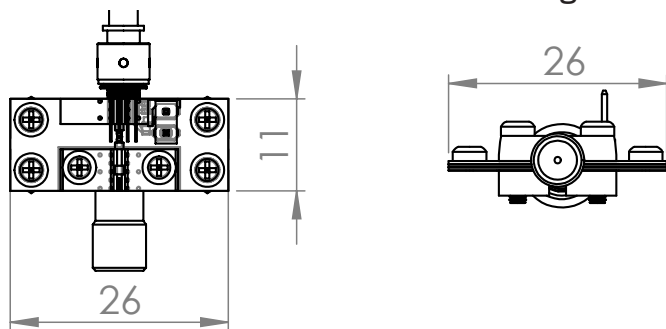


<sup>1</sup> Measured by Agilent 86030A Lightwave Component Analyzer

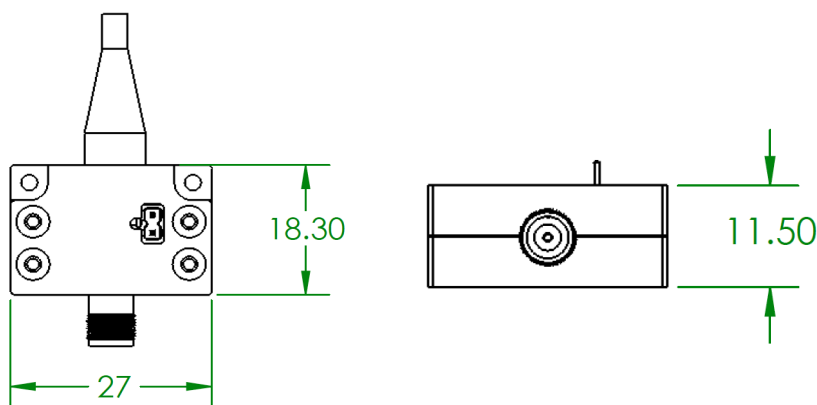
<sup>2</sup> 40 Channel Analog Channel Loading

# 40 GHz Linear InGaAs PIN Photodetector

PD-40-A Mechanical Drawing<sup>1</sup>

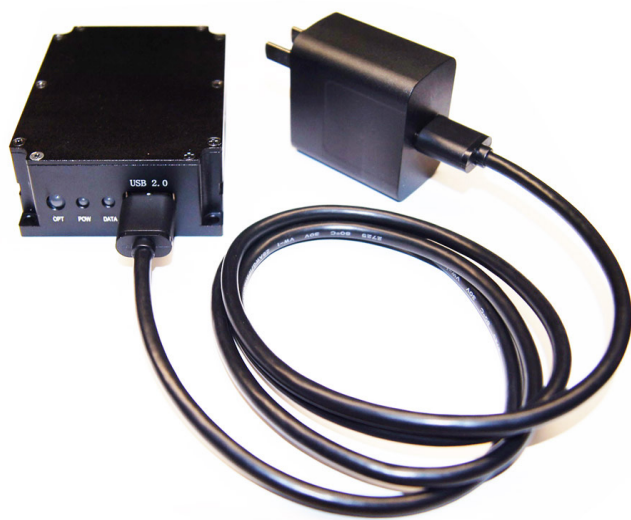


PD-40-C Mechanical Drawing w/ External Housing<sup>2</sup>



## PD-40-M Module Housing

In addition to the standard PCB and external housing options, Optilab offers a turn-key modular solution with a USB 2.0 interface, which can be operated with any standard PC platform device or with the provided AC/DC adapter. Contact Optilab for more information.



<sup>1</sup> All measurements are in Metric

<sup>2</sup> External housing is for Mechanical Protection Only

Legacy housing information available upon request