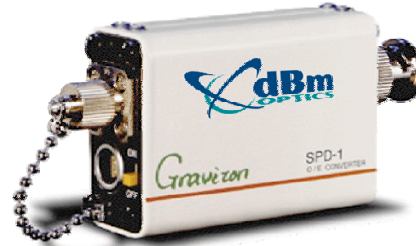


# O-to-E and E-to-O Converters

## Flexible, Affordable Lab Tool

Our line of Optical-to-Electrical and Electrical-to-Optical converters is ideal for bench research applications where low-cost, high-speed interface for a scope is desired. Our design team in Japan is among the world's best high frequency engineering talent, having designed everything from the world's best atomic collider detection equipment to ultra-high-end audio amplifiers. Signals are extremely clean.



## O-to-E Converters Selection Guide

	LPD-1	LPD-2	SPD-1	SPD-2	SPD-3	SPD-4
Wavelength	900- 1650 nm	950-1650 nm	320-1000 nm	380-1000 nm	380-950 nm	380-980 nm
Modulation Frequency	DC to 1.5GHz	DC to 1.5 GHz	DC to 1.2GHz	DC to 1.2GHz	DC to 2GHz	DC to 3GHz
Sensitivity	500 mV/mW	1000 mV/mW	500 mV/mW	1000 mV/mW	500 mV/mW	300 mV/mW
Noise	< 45 pW/√Hz	< 45 pW/√Hz	< 30 pW/√Hz	< 30 pW/√Hz	< 30 pW/√Hz	< 30 pW/√Hz

# Model LPD-1 900-1650 nm O-to-E Converter

## Flexible, Affordable Lab Tool

The LPD-1 series is an optical-to-electrical signal converter for measurements or experiments. You simply connect the LPD-1 to the input terminal of your electronic measuring system and supply power.



### Summary

- High 500 mV/mW sensitivity
- Wide range DC to 1.5 GHz
- Low Noise < 45pW/√Hz
- Compact
- Low Cost

## Model LPD-1 O-to-E Converter Specifications

Model	Description
Sensing device	InGaAs PIN Photodiode
Peak sensitivity wavelength	1550 nm
Usable wavelength range	900-1650 nm
Sensitivity	500 mV/mW @1300 nm
Optical connector	FC type receptacle
Acceptable Fiber Core Diameter	< 0.08 mm
Acceptable Fiber NA	< 0.2
Maximum Optical Power	-1 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 1.5GHz
Response flatness	+0.25 – 1.5 dB (Optical)
	+0.5 – 3.0 dB (Electrical)
Equivalent Optical Input Noise	< 45 pW/√ Hz
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93 mm x 44 mm x 20 mm
Weight	110 g

# Model LPD-2

## 950-1650 nm O-to-E Converter

### Flexible, Affordable Lab Tool

The LPD-2 series is an optical-to-electrical signal converter for measurements or experiments. Simply connect the LPD-1 to the input terminal of your electronic measuring system, and supply power.

### Summary

- High 1000mV/mW sensitivity
- Wide range DC to 1.5GHz
- Low Noise < 45pW/√Hz
- Compact
- Low Cost

### Model LPD-2 O-to-E Converter Specifications

Model	Description
Sensing device	InGaAs PIN Photodiode
Peak sensitivity wavelength	1550 nm
Usable wavelength range	950-1650 nm
Sensitivity	1000 mV/mW @1300 nm
Optical connector	FC type receptacle
Acceptable Fiber Core Diameter	< 0.5 mm
Acceptable Fiber NA	< 0.25
Maximum Optical Power	-4 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 1.5 GHz
Response flatness	+0.25 – 1.5 dB (Optical)
	+0.5 – 3.0 dB (Electrical)
Equivalent Optical Input Noise	< 45 pW/√ Hz
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93mm x 44mm x 20mm
Weight	110 g

# Model SPD-1 320-1000 nm O-to-E Converter

## Flexible, Affordable Lab Tool

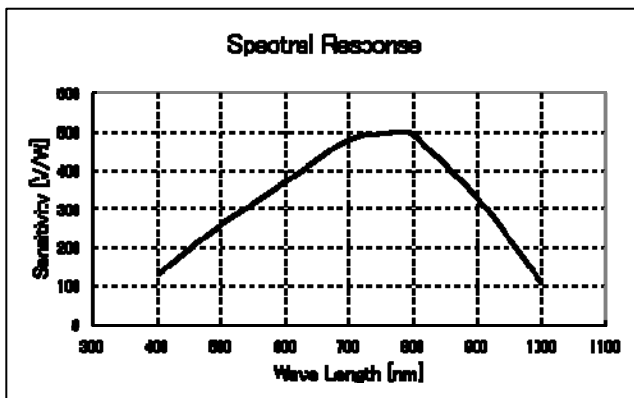
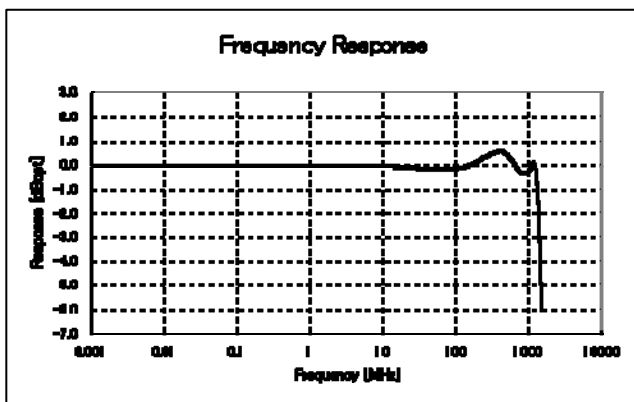
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## Summary

- High 500 mV/mW sensitivity
- Wide range DC to 1.2 GHz
- Low Noise < 30 pW/√Hz
- Compact
- Low Cost

## Model SPD-1 O-to-E Converter Specifications



Model	Description
Sensing device	Silicon PIN Photodiode
Peak sensitivity wavelength	760 nm
Usable wavelength range	320-1000 nm
Sensitivity	500 mV/mW @850 nm
Optical connector	FC type receptacle
Acceptable Core Diameter	< 0.8 mm
Acceptable Fiber NA	< 0.2
Maximum Optical Power	-1 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 1.2 GHz
Response flatness	Within 1 dB (Optical)
Equivalent Optical Input Noise	< 30 pW/ √ Hz (< 200MHz)
	< 45 pW/ √ Hz (< 600MHz)
	< 60 pW/ √ Hz (< 1GHz)
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93 mm x 44 mm x 20 mm

# Model SPD-2

## 320-1000 nm High Gain O-to-E Converter

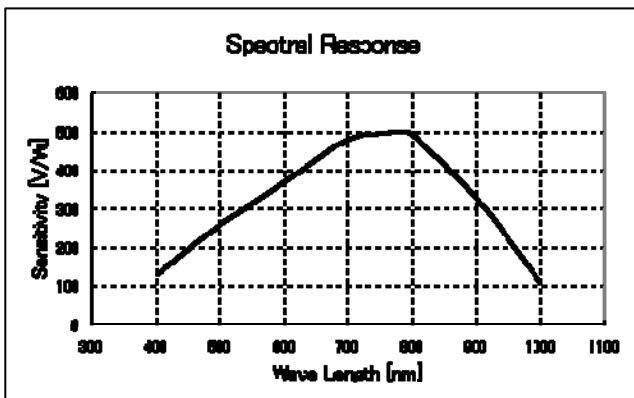
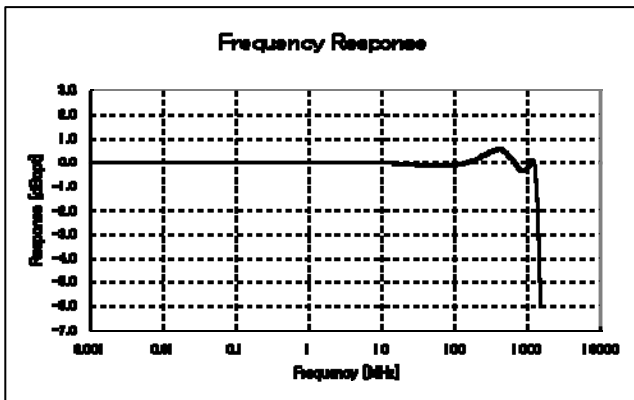
### Flexible, Affordable Lab Tool

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### Summary

- High 500 mV/mW sensitivity
- Wide range DC to 1.2 GHz
- Low Noise < 30 pW/√Hz
- Compact
- Low Cost

### Model SPD-2 O-to-E Converter Specifications



Model	Description
Sensing device	Silicon PIN Photodiode
Peak sensitivity wavelength	760 nm
Usable wavelength range	320-1000 nm
Sensitivity	1000 mV/mW @850 nm
Optical connector	FC type receptacle
Acceptable Core Diameter	< 1 mm
Acceptable Fiber NA	< 0.25
Maximum Optical Power	-4 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 1.2 GHz
Response flatness	Within 1 dB (Optical)
Equivalent Optical Input Noise	< 30 pW/ √ Hz (< 200 MHz)
	< 45 pW/ √ Hz (< 600 MHz)
	< 60 pW/ √ Hz (< 1 GHz)
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93 mm x 44 mm x 20 mm

# Model SPD-3 320-950 nm 2 GHz O-to-E Converter

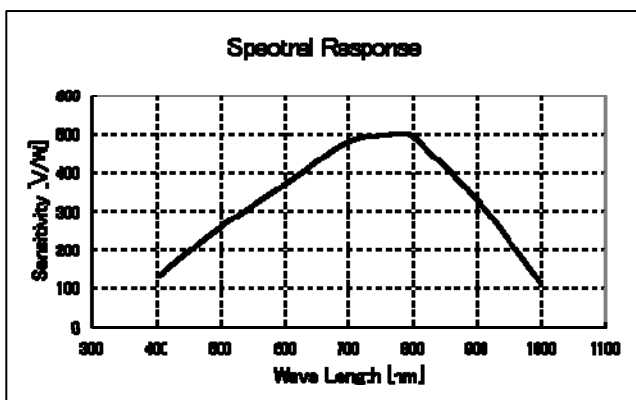
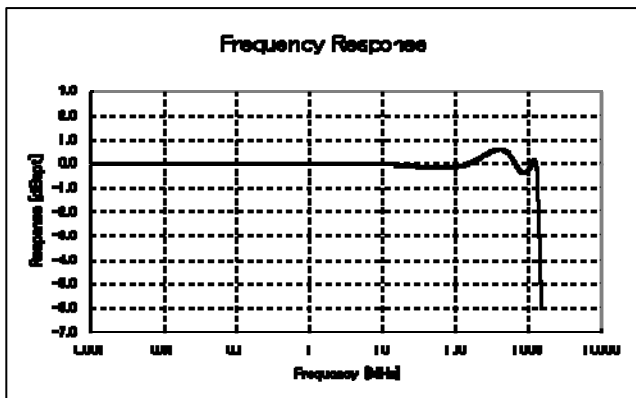
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## Summary

- High 1000mV/mW sensitivity
- Wide range DC to 2GHz
- Low Noise < 30pW/√Hz
- Compact
- Low Cost

## Model SPD-3 O-to-E Converter Specifications



Model	Description
Sensing device	Silicon PIN Photodiode
Peak sensitivity wavelength	700 nm
Usable wavelength range	320-950 nm
Sensitivity	1000 mV/mW @850 nm
Optical connector	FC type receptacle
Acceptable Core Diameter	< 0.5 mm
Acceptable Fiber NA	< 0.25
Maximum Optical Power	-1 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 2 GHz
Response flatness	Within 1 dB (Optical)
Equivalent Optical Input Noise	< 30 pW/√Hz (< 200 MHz)
	< 45 pW/√Hz (< 600 MHz)
	< 60 pW/√Hz (< 1 GHz)
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93 mm x 44 mm x 20 mm

# Model SPD-4 320-980 nm 3 GHz O-to-E Converter

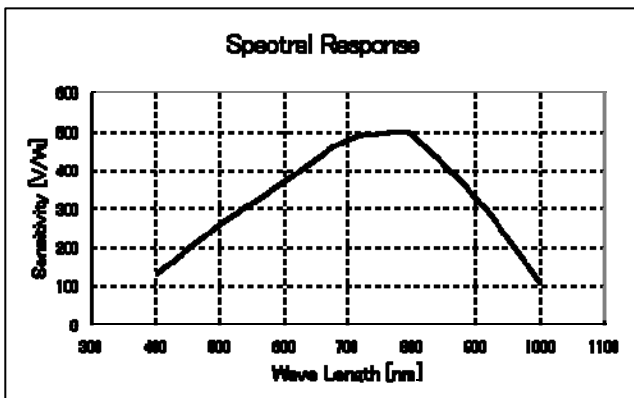
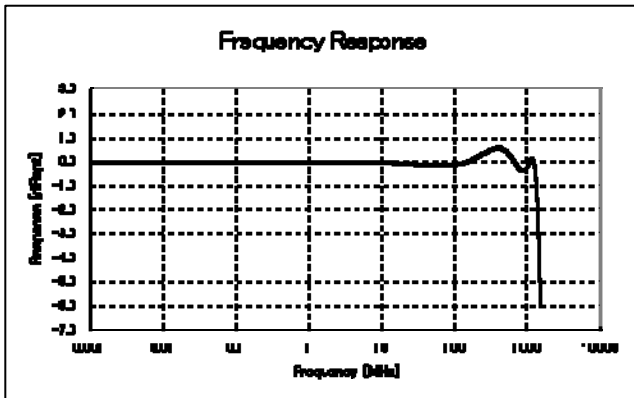
## Flexible, Affordable Lab Tool

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## Summary

- High 300mV/mW sensitivity
- Wide range DC to 3GHz
- Low Noise < 30pW/√Hz
- Compact
- Low Cost

## Model SPD-4 O-to-E Converter Specifications



Model	Description
Sensing device	Silicon PIN Photodiode
Peak sensitivity wavelength	700 nm
Usable wavelength range	320-980 nm
Sensitivity	300 mV/mW @850 nm
Optical connector	FC type receptacle
Acceptable Core Diameter	< 0.25 mm
Acceptable Fiber NA	< 0.25
Maximum Optical Power	+1 dBm
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 3 GHz
Response flatness	Within 1 dB (Optical)
Equivalent Optical Input Noise	< 30 pW/√Hz (< 200MHz)
	< 45 pW/√Hz (< 600MHz)
	< 60 pW/√Hz (< 1GHz)
Output Offset	< 0.5 mV
Supply voltage	±15 V
Maximum supply current	±120 mA
Physical dimensions	93 mm x 44 mm x 20 mm

# Model PD-780GI O-to-E Converter

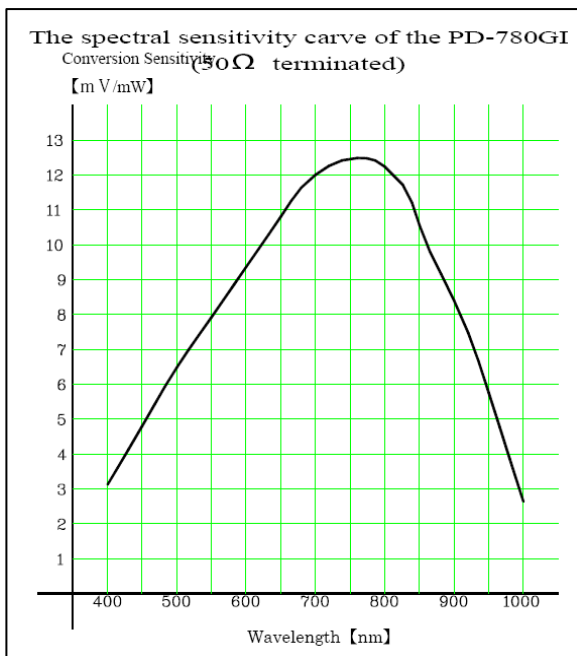
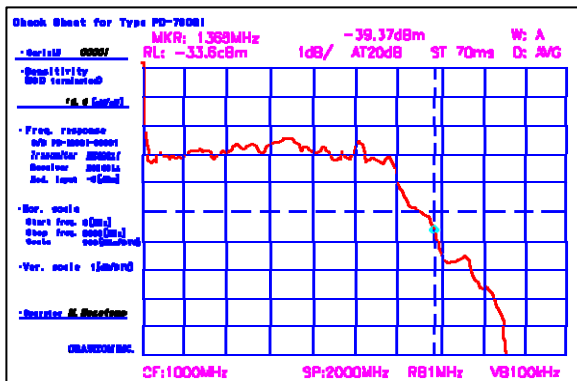
## Flexible, Affordable Lab Tool

The PD-780GI series is an optical-to-electrical signal converter for measurements or experiments. Simply connect the PD-780GI to the input terminal of your electronic measuring system, and supply power.



## Summary

- High 500mV/mW sensitivity
- Wide range DC to 1.2GHz
- Low Noise < 45pW/√Hz
- Compact
- Low Cost



## Model PD-780GI O-to-E Converter Specifications

Model	Description
Sensing device	InGaAs PIN Photodiode
Peak sensitivity wavelength	780 nm
Usable wavelength range	500-940 nm
Sensitivity	12.5 mV/mW @780 nm, min 6 mV/mW
Optical connector	FC type receptacle
Electrical Connector	BNC type plug
Output impedance	50 Ohms
Frequency range	DC to 1.2 GHz
Response flatness	+0.25/-1.5 dB (Optical) +0.5/-3 dB (Electrical)
Supply voltage	±15 V
Maximum supply current	±15 mA
Physical dimensions	27 mm x 44 mm x 20 mm
Weight	110 g



# Model LL-780GI E-to-O Converter

## Flexible, Affordable Lab Tool

The LL-780GI is an electrical-to-optical signal converter for measurements or experiments. Simply connect the LL-780GI to the output terminal of your electronic measuring system; e.g., a function generator, a sweep generator, or a network analyzer.

If you do not need optical signal modulation, you can use the LL-780GI without a modulation signal. In this case, the LL-780GI works as a CW light source. The optical power of the CW light is adjusted to provide 1 mW when you use a 50/125 GI type optical fiber cable.

A single-mode laser diode is used in a LL-780GI, so sometimes mode-hopping noise may be generated from the optical output. If you want a very low noise CW optical signal, inject a high frequency signal into the modulation input terminal.

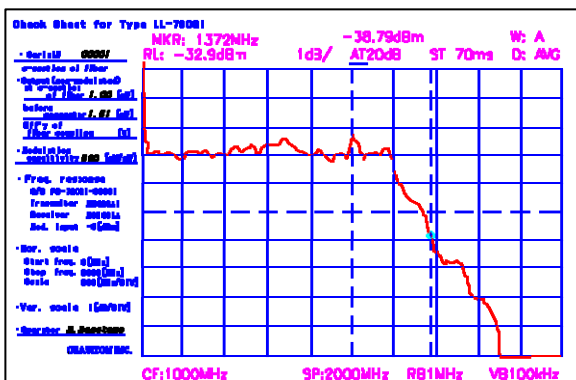
## Summary

- High 500mV/mW sensitivity
- Wide range 100KHz to 1.2GHz
- Compact
- Low Cost



## Model LL-780GI E-to-O Converter Specifications

Model	Description
Emitting device	AlGaAs/GaAs laser diode, single mode
Wavelength	780 nm
CW output power	0.25 mW using 50/125 GI fiber
Optical connector	FC type receptacle
Electrical Connector	BNC type plug
Input impedance	50 Ohms
Modulation sensitivity	< 4000 mV/mW
Frequency range	100kHz to 1200 MHz
Response flatness	Within 1.5 dB
Supply voltage	+15 V and -15 V
Maximum supply current	120 mA
Physical dimensions	93 mm x 44 mm x 20mm
Weight	110 g





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