

OEM photodiode components

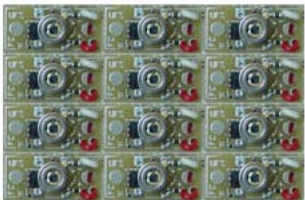
PHOTODIODE AMPLIFIERS PHOTODETECTORS DC POWER

PHOTOCONDUCTIVE / PHOTOVOLTAIC SMA PACKAGE / LEADS

HIGH GAIN WIDE BANDWIDTH ULTRA LOW NOISE

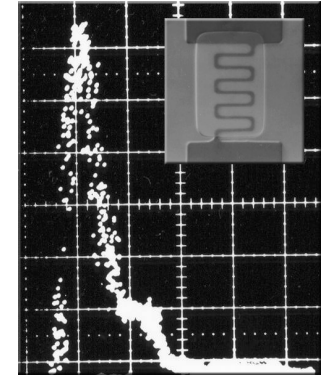
BIAS : FIXED OR ADJUSTABLE

FC / SMA / ST RECEPTACLES



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NOTE: All wide bandwidth amplifiers (for > 1 MHz apps.) are designed for ultra-low capacitance (ideally 1-2 pF; 10 pF max.) photodiodes. Please ensure that your photodiode meets this specification prior to purchase. All units are fully tested prior to shipment. Please note that all OEM photodiode amplifiers listed here are non-returnable items. Your purchase of these products is final. Assembly and solder of photodiodes to these amplifiers requires strict “ESD” safe tools, environment, and handling.

WE SHIP WORLDWIDE – FedEX, UPS, & DHL

*** All SMA connectorized models available with enclosure, switch, 3.5-mm power entry for ±15 VDC operation ([BPU728](#)) with internal regulation, and power LED.

“ SPEED & FUNCTION ” Photodiode Amplifier Selection Guide: (Click on Model #)

[CONTACT SALES](#)

PHOTODIODE AMPLIFIERS						
AMPLIFIER ► SPEED (Gain) ▼	MULTIFUNCTION 3 – STAGE	MULTIFUNCTION AC / DC	SUB-MINI (SIDE Mt.)	SUB-MINI (CENTER Mt.)	GENERAL PURPOSE	GENERAL PURPOSE
600 MHz (0.5 kV/A)		TIA030 ^{1,3,4} / UCB101 ^{2,3,4}				
300 MHz (1 kV/A)		TIA070 ^{1,3,4} / UCB203 ^{2,3,4}	MGB122 ^{1,3} / MNA111 ^{1,4}	MFQ187 ^{3,5,6} / MKZ173 ^{4,5,6}		JPL007 ^{1,4} / BKL017 ^{2,4}
150 MHz (1 kV/A)	MIT001 ^{1,3,4} / CIT027 ^{2,3,4}				WGA101 ^{1,3} / KUL004 ^{2,3}	
150 MHz (2 kV/A)		TIA080 ^{1,3,4} / UCB307 ^{2,3,4}				JPL143 ^{1,4} / BKL123 ^{2,4}
60 MHz (5 kV/A)						JPL215 ^{1,4} / BKL327 ^{2,4}
30 MHz (10 kV/A)			MGB233 ^{1,3} / MNA202 ^{1,4}	MFQ233 ^{3,5,6} / MKZ293 ^{4,5,6}		
15 MHz (10 kV/A)	MIT001 ^{1,3,4} / CIT027 ^{2,3,4}				WGA020 ^{1,3} / KUL026 ^{2,3}	
3 MHz (100 kV/A)			MGB355 ^{1,3} / MNA303 ^{1,4}	MFQ377 ^{3,5,6} / MKZ367 ^{4,5,6}		
1.5 MHz (100 kV/A)	MIT001 ^{1,3,4} / CIT027 ^{2,3,4} MIT333 ^{1,3,4} / CIT444 ^{2,3,4}				WGA033 ^{1,3} / KUL048 ^{2,3}	
300 kHz (1 MV/A)			MGB527 ^{1,3}	MFQ788 ^{3,5,6}		
150 kHz (1 MV/A)	MIT333 ^{1,3,4} / CIT444 ^{2,3,4}				WGA073 ^{1,3} / KUL052 ^{2,3}	
30 kHz (10 MV/A)			MGB623 ^{1,3}	MFQ808 ^{3,5,6}		
15 kHz (10 MV/A)	MIT333 ^{1,3,4} / CIT444 ^{2,3,4}				WGA087 ^{1,3} / KUL087 ^{2,3}	
30 kHz (LOG)	LGA337 ^{1,7} / LMU778 ^{2,7}					

¹ SOLDER LEADS

² SMA CONNECTOR

³ PHOTOVOLTAIC

⁴ PHOTOCONDUCTIVE

⁵ LEAD INSERTION

⁶ FC FIBER CPLR. OPT.

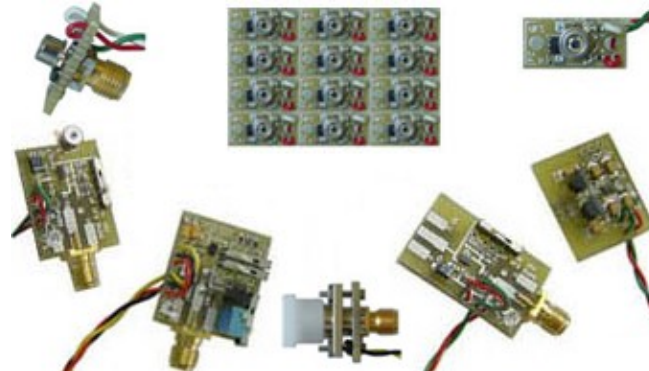
⁷ LOG AMPLIFIED

ULTRAFAST SENSORS – PHOTODIODE AMPLIFIERS

We offer a variety of amplifier types for low level signals from various photodetectors. The **MIT** series are fully flexible and can be applied to virtually any photodiode in any spectrum, with adjustable (switched) gain and flexible bias. The **CIT** series is similar in function but the form is specifically for standard connectorized (Type B: pin-cathode and case-anode) photodiodes. The **WGA** series applies to photovoltaic photodiodes, requiring no applied bias. The **TIA / UCB** 600 MHz series can be utilized for ultra-high-speed photodiodes, requiring an applied bias in the 1.5 – 10 V range. The **MNA**, **MGB**, **MKZ**, and **MFQ** series are micro-miniature package photodetectors, with specific models available for both photovoltaic and photoconductive photodiodes, in center or side mount configurations. The **KUL / BKL** series are ideal for connectorized photodiodes. All amplifiers require user supplied external bias and are ideal for OEM applications and integration within optical systems. The voltage sources are ± 5 VDC, 15 VDC or 5 VDC, with low current requirements. In particular we also offer the **SSP** single supply voltage – to – split supply convertor for ease of integration in single voltage end-user OEM systems. All amplifiers are available as matched pairs and multi-channel amplified photodetector arrays on a single board. These components are exposed and require ESD precautions, and shielded enclosure to prevent stray optical and electrical interference. These products are non-returnable.

NOTE: The high bandwidth (> 1 MHz) photodiode amplifiers are designed for ultra-low capacitance (ideally 1-2 pF; 10 pF max.) photodiodes. Please ensure that your photodiode meets this important specification prior to purchase. All modules have strict regulated power requirements of ± 5 VDC or +5VDC (± 15 VDC for TIA, UCB, LGA, LMU), and exceeding these voltages can result in permanent damage to the amplifier and your photodiode. All units are fully tested prior to shipment. Assembly and solder or SMA mounting of your photodiodes to these amplifiers should be done *once only*, and requires strict “ESD” safe tools, environment and handling. The amplifiers also should be mated *once only* to external SMA equipment. Repeated connection and disconnection may compromise the structural integrity of the module. All amplifiers have on board transient protection and power line filtering, with on board mounting (SAE 2-56) capability, if required. Please note that all OEM photodiode amplifiers listed here are non-returnable items. Your purchase of these products is final..

NOTE: Please [contact](#) us about mounting your photodiodes in any of our packages. This service is available for \$25.00.



MULTI-INSTRUMENT WIDEBAND AMPLIFIERS FOR PHOTODIODES (Solderable): MIT

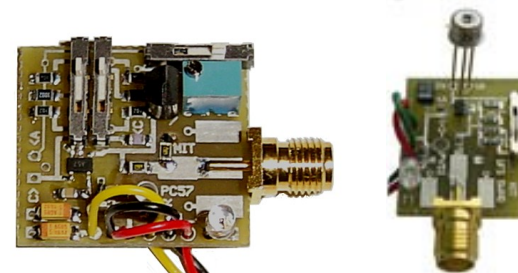
The **MIT** series are full-function, wide bandwidth, ultra low noise PCB amplifier modules with on-board facilities for virtually any available photodiode type, operating in any spectrum. These ultimate comprehensive photodiode amplifier boards feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder tabs for ruggedness with case ground port
- Three on-board switchable gain settings of 1, 10, and 100 kV/A or 0.1, 1, 10 MV/A
- Max amplifier bandwidth to 150 MHz
- On-board switchable bias settings of 0 VDC, – 5 VDC, or adjustable photodiode reverse bias of 1.5 – 3.5 VDC (0V for MIT537)
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Available as multi-channel 1D amplifier arrays on a single board
- Standard ± 5 V DC power, (+5 VDC for MIT537) models with input filter and transient protection

The **MIT** series precision amplifiers which allow you to connect and amplify *any* photodiode type operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The switchable bias settings across the photodiode are 0 V, –5 V, and adjustable with a 12-turn trimpot for the range of 1.5 – 3.5 VDC (reverse) with 10 mV resolution. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. Shielded enclosure is required.

SPECIFICATIONS [MIT]:

MODEL	MIT001	MIT333	MIT337
Photodiode Type	Any, Solder	Any, Solder	Any, Solder
Gain	1, 10, 100 kV/A	0.1, 1, 10 MV/A	0.1, 1, 10 MV/A
Amplifier Bandwidth	150 MHz max.	1.5 MHz max.	1.5 MHz max.
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 1.5 fA/rt.Hz	< 4 fA/rt.Hz	< 4 fA/rt.Hz
Volt. Noise	< 5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	5 V (BP-5)
PD Bias (V)	0, – 5, 1.5 – 3.5 V (Reg.)	0, – 5, 1.5 – 3.5 V (Reg.)	0
Adj. Res.	10 mV	10 mV	–
PCB (in. x in.)	1.025 x 0.925	1.025 x 0.925	1.025 x 0.925
Price (US/\$)	525.00	575.00	550.00
* SMA-BNC (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	1,100.00	1,200.00	1,150.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

MULTI-INSTRUMENT WIDEBAND AMPLIFIERS FOR PHOTODIODES (SMA Connector): CIT

The **CIT** series are full-function, wide bandwidth, ultra low noise PCB amplifier modules with on-board facilities for virtually any available photodiode type with SMA connector termination. These ultimate comprehensive photodiode amplifier boards feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- SMA-connectorized photodiode terminal for ruggedness
- Three on-board switchable gain settings of 1, 10, and 100 kV/A or 0.1, 1, 10 MV/A
- Max Amplifier Bandwidth to 150 MHz
- On-board switchable bias settings of 0 VDC, – 5 VDC, or adjustable reverse bias of 1.5 – 3.5 VDC (0V for CIT678)
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Available as multi-channel 1D amplifier arrays on a single board
- Standard ± 5 V DC power, (+5 VDC for CIT678) models with input filter and transient protection

The **CIT** series precision amplifiers which allow you to connect and amplify *any* photodiode type with SMA (Cathode = pin, Anode = case, Type B) termination, operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The switchable bias settings across the photodiode are 0 V, –5 V, and adjustable with a 12-turn trimpot for the range of 1.5 – 3.5 VDC (reverse) with 10 mV resolution. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [CIT]:

MODEL	CIT027	CIT444	CIT678
Photodiode Type	Any, SMA	Any, SMA	Any, SMA
Gain	1, 10, 100 kV/A	0.1, 1, 10 MV/A	0.1, 1, 10 MV/A
Amplifier Bandwidth	150 MHz max.	1.5 MHz max.	1.5 MHz max.
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 1.5 fA/rt.Hz	< 4 fA/rt.Hz	< 4 fA/rt.Hz
Volt. Noise	< 5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz
DC Power	± 5 V (or BPD205)	± 5 V (or BPD205)	5 V (BP-5)
Photodiode Bias	0, – 5, 1.5 – 3.5 V (Rev.)	0, – 5, 1.5 – 3.5 V (Rev.)	0
Adj. Res.	10 mV	10 mV	–
PCB (in. x in.)	1.29 x 0.925	1.29 x 0.925	1.29 x 0.925
Price (US/\$)	550.00	600.00	575.00
* SMA-BNC (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	1,150.00	1,250.00	1,200.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

ULTRA-WIDE BANDWIDTH AC / DC AMPLIFIERS FOR PHOTODIODES (Solderable): TIA

The **TIA** series are unique ultra-wide bandwidth PCB amplifier modules for high-speed low-capacitance photodiodes with fixed gain and flexible bias requirements. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder terminals for ruggedness
- Individual gain ranges from 0.5 kV/A to 2 kV/A
- Max Amplifier Bandwidth to 600 MHz
- AC or DC switched photodiode coupling
- Photodiode anode reverse bias (switched) 1.5 – 10 VDC, – 5 VDC, 0 V
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Standard ± 15 VDC unregulated power with input filter and transient protection

The **TIA** series precision amplifiers which allow you to connect and amplify *any* photoconductive detector operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The adjustable reverse bias across the photodiode is regulated, with a 12-turn trimpot in the range of 1.5 – 10 VDC (reverse) with 10 mV resolution, and 5 V-RB or 0V are also possible. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 15 VDC unregulated power supply. These components are exposed, require ESD precautions when handling, shielded enclosure to prevent stray optical and electrical interference, and are non-returnable.

SPECIFICATIONS [TIA]:

MODEL	TIA030	TIA070	TIA080
Photodiode Type	ANY (1-5 pF)	ANY (1-5 pF)	ANY (1-5 pF)
Gain	0.5 kV/A	1 kV/A	2 kV/A
Bandwidth	600 MHz (DC)	300 MHz (DC)	150 MHz (DC)
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1 nV/rt.Hz	< 1 nV/rt.Hz
DC Pwr.	± 15 V (BPD715)	± 15 V (BPD715)	± 15 V (BPD715)
PD Bias (V)	1.5 – 10 / 5 / 0	1.5 – 10 / 5 / 0	1.5 – 10 / 5 / 0
Adj. Res. (mV)	10 mV	10 mV	10 mV
PCB (in. x in.)	1.5 x 1.25	1.5 x 1.25	1.5 x 1.25
Price (US/\$)	450.00	400.00	400.00
* SMA-BNC (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	950.00	850.00	850.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

ULTRA-WIDE BANDWIDTH AC / DC AMPLIFIERS FOR PHOTODIODES (SMA Connector): UCB

The **UCB** series are unique ultra-wide bandwidth PCB amplifier modules for high-speed low-capacitance photodiodes with fixed gain and flexible bias requirements. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- SMA packaged photodiode (pin = cathode, body = anode)
- Individual gain ranges from 0.5 kV/A to 2 kV/A
- Max Amplifier Bandwidth to 600 MHz
- AC or DC switched photodiode coupling
- Photodiode anode reverse bias (switched) 1.5 – 10 VDC, – 5 VDC, 0 V
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Standard ± 15 VDC unregulated power with input filter and transient protection

The **UCB** series precision amplifiers which allow you to connect and amplify *any* photoconductive detector operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The adjustable reverse bias across the photodiode is regulated, with a 12-turn trimpot in the range of 1.5 – 10 VDC (reverse) with 10 mV resolution, and 5 V-RB or 0V are also possible. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 15 VDC unregulated power supply. These components are exposed, require ESD precautions when handling, shielded enclosure to prevent stray optical and electrical interference, and are non-returnable.

SPECIFICATIONS [UCB]:

MODEL	UCB101	UCB203	UCB307
Photodiode Type	ANY (1-5 pF)	ANY (1-5 pF)	ANY (1-5 pF)
Gain	0.5 kV/A	1 kV/A	2 kV/A
Bandwidth	600 MHz (DC)	300 MHz (DC)	150 MHz (DC)
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1 nV/rt.Hz	< 1 nV/rt.Hz
DC Pwr.	± 15 V (BPD715)	± 15 V (BPD715)	± 15 V (BPD715)
PD Bias (V)	1.5 – 10 / 5 / 0	1.5 – 10 / 5 / 0	1.5 – 10 / 5 / 0
Adj. Res. (mV)	10 mV	10 mV	10 mV
PCB (in. x in.)	1.5 x 1.25	1.5 x 1.25	1.5 x 1.25
Price (US/\$)	475.00	425.00	425.00
* SMA-BNC (US/\$)	8.50	8.50	8.50
Matched Pair(US/\$)	1,000.00	900.00	900.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

LOGARITHMIC COMPRESSION PHOTODIODE AMPLIFIERS (Solder and SMA): LGA, LMU

The **LGA** and **LMU** series are full-function PCB, low noise logarithmic compression amplifier modules with on-board facilities for virtually any available photodiode type, operating in any spectrum. The amplifier output is proportional to $\log(I_{\text{photo}}/I_{\text{reference}})$, where $I_{\text{reference}}$ has three switched settings for optimum performance. These photodiode amplifier boards feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder tabs or SMA connector for ruggedness with case ground port
- Three on-board switchable reference current settings of 10, 100, and 1000 nA
- Three on-board bandwidth/stability settings for operation to > 30 kHz
- Photocurrent range of 1 nA – 1 mA with output $\sim \log(I_{\text{photo}}/I_{\text{reference}})$
- On-board switchable photodiode bias settings of 0 VDC, – 10 VDC, or adjustable reverse bias of 1.5 – 5 VDC
- 50- Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Available as multi-channel 1D amplifier arrays on a single board
- Standard ± 15 VDC power models with input filter and transient protection

The **LGA** and **LMU** precision amplifiers allow you to connect and amplify *any* photodiode type operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The switchable bias settings across the photodiode are 0 V, –10 V, and adjustable with a 12-turn trimpot for the range of 1.5 – 5 VDC (reverse) with 10 mV resolution. The SMA electrical-output connector has compatibility with standard test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. These components are exposed, require ESD precautions when handling, shielded enclosure to prevent stray optical and electrical interference, and are non-returnable.

SPECIFICATIONS [**LGA, LMU**]:

MODEL	LGA337	LMU778
Photodiode Type	Any, Solder	Any, SMA
Ireference (nA)	10, 100, or 1000	10, 100, or 1000
Amplifier Bandwidth	30 kHz	30 kHz
Bandwidth Settings	3-Switched	3-Switched
Output Connector	SMA-F	SMA-F
Curr. Noise	< 4 fA/rt.Hz	< 4 fA/rt.Hz
Volt. Noise	< 30 nV/rt.Hz	< 30 nV/rt.Hz
DC Power	± 15 V (or BPD715)	± 15 V (or BPD715)
Photodiode Bias	0, - 10, 1.5 - 5 V (Rev.)	0, - 10, 1.5 - 5 V (Rev.)
Adj. Res.	10 mV	10 mV
PCB (in. x in.)	1.025 x 0.925	1.025 x 0.925
Price (US/\$)	600.00	650.00
* SMA-BNC (US/\$)	8.50	8.50
Matched Pair (US/\$)	1,250.00	1,350.00
Delivery (weeks)	1	1

* SMA-BNC adapter optional

[CONTACT SALES](#)

SUB-MINIATURE AMPLIFIERS FOR PHOTOVOLTAIC DETECTORS (Solderable / Side Mount): MGB

The **MGB** series are sub-miniature, low cost, ultra low noise PCB amplifier modules for any zero-bias photovoltaic photodiodes. They feature:

- Convenient sub-miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder terminals (side mount) for ruggedness
- Individual gain ranges from 1kV/A to 10MV/A
- Max Amplifier Bandwidth to 300 MHz
- Photodiode bias of 0 VDC
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation and as multi-channel arrays
- Standard ± 5 VDC / [15 VDC](#) or 5 VDC power with input filters and transient protection

The **MGB** series precision amplifiers which allow you to connect and amplify *any* zero-bias photovoltaic photodiode operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any standard ± 5 VDC / [15 VDC](#) (5 V for high-gain models) DC power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [MGB]:

MODEL	MGB122	MGB233	MGB355	MGB527	MGB623
Photodiode Type	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic
Gain	1 kV/A	10 kV/A	100 kV/A	1 MV/A	10 MV/A
Amplifier Bandwidth	300 MHz	30 MHz	3 MHz	0.3 MHz	0.03 MHz
Output Imp. (Ω)	50	50	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 1.5 fA/rt.Hz	< 4 fA/rt.Hz	< 4 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1.5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)	5 V (BP-5)	5 V (BP-5)
PD Bias (V)	0 V	0 V	0 V	0 V	0 V
PCB (in. x in.)	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325
Price (US/\$)	275.00	250.00	250.00	285.00	285.00
* SMA-BNC (US/\$)	8.50	8.50	8.50	8.50	8.50
Matched Pair (US/\$)	600.00	550.00	550.00	620.00	620.00
Delivery (weeks)	1	1	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

SUB-MINIATURE AMPLIFIERS FOR PHOTOCONDUCTIVE DETECTORS (Solderable / Side Mount): MNA

The **MNA** series are sub-miniature, low cost, ultra low noise PCB amplifier modules for any photoconductive photodiodes, requiring an applied bias. They feature:

- Convenient sub-miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder terminals (side mount) for ruggedness
- Individual gain ranges from 1 kV/A to 100 kV/A
- Max Amplifier Bandwidth to 300 MHz
- Photodiode reverse bias of – 5 VDC
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation and arrays
- Standard ± 5 VDC / [15 VDC](#) power with input filters and transient protection

The **MNA** series precision amplifiers which allow you to connect and amplify *any* photoconductive photodiode (requiring 5-V reverse bias) operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any standard ± 5 VDC / [15 VDC](#) power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [MNA]:

MODEL	MNA111	MNA202	MNA303
Photodiode Type	Photoconductive	Photoconductive	Photoconductive
Gain	1 kV/A	10 kV/A	100 kV/A
Bandwidth	300 MHz	30 MHz	3 MHz
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 1.5 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1.5 nV/rt.Hz	< 5 nV/rt.Hz
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)
PD Bias (V)	– 5 V	– 5 V	– 5 V
PCB (in. x in.)	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325
Price (US/\$)	275.00	250.00	250.00
* SMA-BNC (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	600.00	550.00	550.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

SUB-MINIATURE AMPLIFIERS FOR PHOTOVOLTAIC DETECTORS (0.017 Insertion Holes / Center Mount / FC Fiber Connector): MFQ

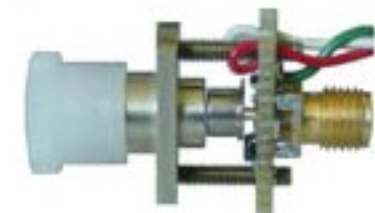
The **MFQ** series are sub-miniature, low cost, ultra low noise PCB amplifier modules for any zero-bias photovoltaic photodiodes, and free space or FC-fiber connector compatibility. They have 0.017-in lead insertion holes centered on the package for solderless compatibility with packaged photodiodes. They require low capacitance photodiodes (< 10 pF; 1-2 pF rec.). They feature:

- Convenient sub-miniature modular PCB-based OEM construction with 0.017-in insertion holes (0.1-in spacing) for photodiode leads
- FC fiber connector compatibility
- Individual gain ranges from 1kV/A to 10MV/A
- Max Amplifier Bandwidth to 300 MHz
- Photodiode bias of 0 VDC
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation, and as multi-channel amplifier arrays on a single board
- Standard ± 5 VDC / [15 VDC](#) or 5 VDC power with input filters and transient protection

The **MFQ** series precision amplifiers allow you to connect and amplify *any* zero-bias photovoltaic detector, operating in any spectrum. An optional FC fiber connector is available if necessary. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with most test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any standard ± 5 VDC / [15 VDC](#) (5 V for high-gain models) power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [MFQ]:

MODEL	MFQ187	MFQ233	MFQ377	MFQ788	MFQ808
Photodiode Type	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic
Gain	1 kV/A	10 kV/A	100 kV/A	1 MV/A	10 MV/A
Amplifier Bandwidth	300 MHz	30 MHz	3 MHz	0.3 MHz	0.03 MHz
Output Imp. (Ω)	50	50	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 1.5 fA/rt.Hz	< 4 fA/rt.Hz	< 4 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1.5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz	< 5 nV/rt.Hz
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)	5 V (BP-5)	5 V (BP-5)
PD Bias (V)	0 V	0 V	0 V	0 V	0 V
PCB (in. x in.)	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325
Price (US/\$)	275.00	250.00	250.00	285.00	285.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50	8.50	8.50
FC/PC (TO-18) (US/\$)	55.00 / 100.00 (2)	55.00 / 100.00 (2)	55.00 / 100.00 (2)	55.00 / 100.00 (2)	55.00 / 100.00 (2)
Matched Pair (US/\$)	600.00	550.00	550.00	620.00	620.00
Delivery (weeks)	1	1	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

SUB-MINIATURE AMPLIFIERS FOR PHOTOCONDUCTIVE DETECTORS (0.017 Insertion Holes / Center Mount / FC Fiber Connector): MKZ

The **MKZ** series are sub-miniature, low cost, ultra low noise PCB amplifier modules for any photoconductive photodiodes, requiring an applied bias, and free space or FC-fiber connector compatibility. They have 0.017-in lead insertion holes centered on the package for solderless compatibility with packaged photodiodes. They require low capacitance photodiodes (< 10 pF; 1-2 pF recc.). They feature:

- Convenient sub-miniature modular PCB-based OEM construction with 0.017-in insertion holes (0.1-in spacing) for photodiode leads
- FC fiber connector compatibility
- Individual gain ranges from 1kV/A to 100 kV/A
- Max Amplifier Bandwidth to 300 MHz
- Photodiode reverse bias of – 5 VDC
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation, and as multi-channel amplifier arrays on a single board
- Standard ± 5 VDC / [15 VDC](#) power with input filters and transient protection

The **MKZ** series precision amplifiers allow you to connect and amplify *any* photoconductive detector (requiring 5-V reverse bias) operating in any spectrum. An optional FC fiber connector is available if necessary. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with most test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has integrated transient protection for the amplifier and the photodiode. The amplifier operates with any standard ± 5 VDC / [15 VDC](#) power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [MKZ]:

MODEL	MKZ173	MKZ293	MKZ367
Photodiode Type	Photoconductive	Photoconductive	Photoconductive
Gain	1 kV/A	10 kV/A	100 kV/A
Amplifier Bandwidth	300 MHz	30 MHz	3 MHz
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Curr. Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 1.5 fA/rt.Hz
Volt. Noise	< 1 nV/rt.Hz	< 1.5 nV/rt.Hz	< 5 nV/rt.Hz
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)
PD Bias (V)	– 5 V	– 5 V	– 5 V
PCB (in. x in.)	0.675 x 0.325	0.675 x 0.325	0.675 x 0.325
Price (US/\$)	275.00	250.00	250.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50
FC/PC (TO-18) (US/\$)	55.00 / 100.00 (2)	55.00 / 100.00 (2)	55.00 / 100.00 (2)
Matched Pair (US/\$)	600.00	550.00	550.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

AMPLIFIERS FOR PHOTOVOLTAIC DETECTORS (Solderable): WGA

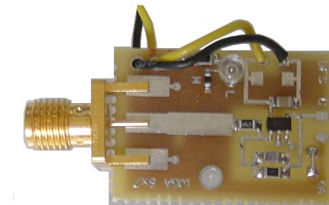
The **WGA** series are unique, low cost, ultra low noise PCB amplifier modules for any photovoltaic photodiodes requiring no applied bias. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder terminals for ruggedness
- Individual gain ranges from 1 kV/A to 10 MV/A
- Max Bandwidth to 150 MHz
- 50-Ω output impedance with SMA and optional BNC compatibility*
- Standard ± 5 VDC / [15 VDC](#) or 5 VDC power with input filter and transient protection

The **WGA** series precision amplifiers which allow you to connect and amplify *any* photovoltaic detector operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 5 VDC / [15 VDC](#) (5 V for high-gain models) DC power supply or battery. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [WGA]:

MODEL	WGA001	WGA020	WGA033	WGA073	WGA087
Photodiode Type	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic
Gain	1 kV/A	10 kV/A	100 kV/A	1 MV/A	10 MV/A
Amplifier Bandwidth	150 MHz	15 MHz	1.5 MHz	0.15 MHz	0.015 MHz
Output Imp. (Ω)	50	50	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F	SMA-F	SMA-F
Current Noise fA/rt.Hz	< 2,500	< 2,500	< 1.5	< 4	< 4
Voltage Noise nV/rt.Hz	< 1	< 1.5	< 5	< 5	< 5
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)	5 V (BP-5)	5 V (BP-5)
PCB (in. x in.)	1 x 0.75	1 x 0.75	1 x 0.75	1 x 0.75	1 x 0.75
Price (US/\$)	250.00	250.00	250.00	250.00	250.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50	8.50	8.50
Matched Pair (US/\$)	550.00	550.00	550.00	550.00	550.00
Delivery (weeks)	1	1	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

AMPLIFIERS FOR PHOTOCONDUCTIVE DETECTORS (Solderable): JPL

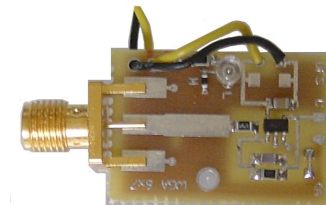
The **JPL** series are unique, low cost, ultra low noise, wide bandwidth PCB amplifier modules for any photoconductive photodiodes requiring 5 V reverse bias. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- Photodiode-lead solder terminals for ruggedness
- Individual gain ranges of 1 kV/A, 2 kV/A, and 5 kV/A
- Max Amplifier Bandwidth to 300 MHz
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation
- Available as multi-channel 1D amplifier arrays on a single board
- Standard ± 5 V power with input filter and transient protection

The **JPL** series precision amplifiers which allow you to connect and amplify *any* photoconductive photodiode operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The SMA electrical-output connector has an internal 50-Ω termination, compatible with test equipment. An SMA-BNC adapter for BNC connectivity is optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 5 VDC power supply or battery. These components are exposed, require ESD precautions when handling, shielded enclosure to prevent stray optical and electrical interference, and are non-returnable.

SPECIFICATIONS [JPL]:

MODEL	JPL007	JPL143	JPL215
Photodiode Type	Photoconductive	Photoconductive	Photoconductive
Gain	1 kV/A	2 kV/A	5 kV/A
Amplifier Bandwidth	300 MHz	150 MHz	60 MHz
Output Imp. (Ω)	50	50	50
Output Connector	SMA-F	SMA-F	SMA-F
Current Noise fA/rt.Hz	< 2,500	< 2,500	< 1.5
Voltage Noise nV/rt.Hz	< 1	< 1.5	< 5
DC Pwr.	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)
PCB (in. x in.)	1 x 0.75	1 x 0.75	1 x 0.75
Price (US/\$)	300.00	275.00	275.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	650.00	600.00	600.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

TRANSIMPEDANCE AMPLIFIER MODULES (SMA-Connectorized Photovoltaic Photodiodes): KUL

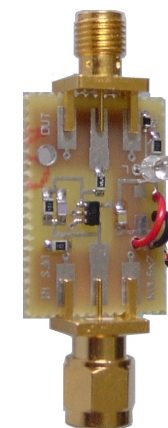
The **KUL** series are compact, low cost, ultra low noise PCB amplifier modules for connectorized photodiodes. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- SMA-M (BNC with opt. adapter) input for the photodiode
- Individual gain ranges from 1kV/A to 10MV/A
- Max Bandwidth to 150 MHz
- 50-Ω output impedance with SMA and optional BNC compatibility*
- Available as “matched pair” modules for instrumentation and multi channel 1D arrays
- Standard ± 5 VDC / [15 VDC](#) or 5 VDC power with input filter and transient protection

The **KUL** series precision amplifiers which allow you to connect and amplify *any* connectorized (SMA; Cathode = pin, Anode = case, Type B) photovoltaic detector operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The amplifier input is an SMA-M type for easy mating without adapters. The SMA-F electrical-output connector has an internal 50-Ω termination, compatible with test equipment. SMA-BNC adapters for BNC connectivity for the photodiode and the output are optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 5 VDC / [15 VDC](#) (5 V for high-gain models) DC power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [KUL]:

MODEL	KUL004	KUL026	KUL048	KUL052	KUL087
Photodiode Type	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic	Photovoltaic
Gain	1 kV/A	10 kV/A	100 kV/A	1 MV/A	10 MV/A
Bandwidth	150 MHz	15 MHz	1.5 MHz	0.15 MHz	0.015 MHz
Input Impedance (Ω)	2.3 M, 1.7 pF	4.7 M, 1.8 pF	10 ¹² , 4.5 pF	10 ¹³ , 2.5 pF	10 ¹³ , 2.5 pF
Input RF Connector	SMA-M	SMA-M	SMA-M	SMA-M	SMA-M
Output Impedance (Ω)	50	50	50	50	50
RF Connector	SMA-F	SMA-F	SMA-F	SMA-F	SMA-F
Current Noise fA/rt.Hz	< 2,500	< 2,500	< 1.5	< 4	< 4
Voltage Noise nV/rt.Hz	< 1	< 1.5	< 5	< 5	< 5
DC Power	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)	5 V (BP-5)	5 V (BP-5)
PCB (in. x in.)	1 x 0.75	1 x 0.75	1 x 0.75	1 x 0.75	1 x 0.75
Price (US/\$)	275.00	275.00	275.00	275.00	275.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50	8.50	8.50
Matched Pair (US/\$)	600.00	600.00	600.00	600.00	600.00
Delivery (weeks)	1	1	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

TRANSIMPEDANCE AMPLIFIER MODULES (SMA-Connectorized Photoconductive Photodiodes): BKL

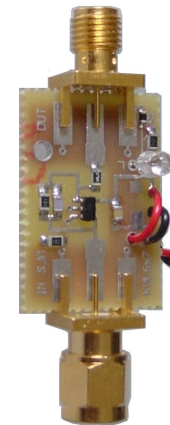
The **BKL** series are compact, low cost, ultra low noise PCB amplifier modules for connectorized photoconductive photodiodes. They feature:

- Miniature modular PCB-based OEM construction for low capacitance photodiodes (< 10 pF; 1-2 pF recc.)
- SMA-M (BNC with opt. adapter) input for the photodiode
- Individual gain ranges from 1 kV/A to 5 kV/A
- Max Amplifier Bandwidth to 300 MHz
- Photodiode reverse bias of – 5 VDC
- 50-Ω output impedance with SMA and optional BNC compatibility
- Available as “matched pair” modules for instrumentation and multi-channel 1D amplifier arrays

The **BKL** series precision amplifiers which allow you to connect and amplify *any* connectorized (SMA; Cathode = pin, Anode = case, Type B) photoconductive detector operating in any spectrum. They utilize surface mount components for small compact size and high speed operation. The amplifier input is an SMA-M type for easy mating without adapters. The SMA-F electrical-output connector has an internal 50-Ω termination, compatible with test equipment. SMA-BNC adapters for BNC connectivity for the photodiode and the output are optional with each module. These amplifier modules are available in matched pairs, assembled with hand selected components, for instrumentation. Each module has an on-board LED power indicator, and integrated transient protection for the amplifier and the photodiode. The amplifier operates with any ± 5 VDC power supply. These components are exposed, require ESD precautions when handling, shielded enclosure, and are non-returnable.

SPECIFICATIONS [BKL]:

MODEL	BKL017	BKL123	BKL327
Photodiode Type	Photoconductive	Photoconductive	Photoconductive
Gain	1 kV/A	2 kV/A	5 kV/A
Amplifier Bandwidth	300 MHz	150 MHz	60 MHz
Input Impedance (Ω)	2.3 M, 1.7 pF	4.7 M, 1.8 pF	10 ¹² , 4.5 pF
Input RF Connector	SMA-M	SMA-M	SMA-M
Output Impedance (Ω)	50	50	50
RF Connector	SMA-F	SMA-F	SMA-F
Current Noise	< 2,500 fA/rt.Hz	< 2,500 fA/rt.Hz	< 1.5 fA/rt.Hz
Voltage Noise	< 1 nV/rt.Hz	< 1.5 nV/rt.Hz	< 5 nV/rt.Hz
DC Power	± 5 V (BPD205)	± 5 V (BPD205)	± 5 V (BPD205)
Photodiode Bias	- 5 V	- 5 V	- 5 V
PCB (in. x in.)	1 x 0.75	1 x 0.75	1 x 0.75
Price (US/\$)	275.00	275.00	275.00
* SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50
Matched Pair (US/\$)	600.00	600.00	600.00
Delivery (weeks)	1	1	1



[CONTACT SALES](#)

* SMA-BNC adapter optional

OEM MINIATURE AMPLIFIED PHOTODETECTOR MODULES: PFV, UVP, CGR, LIC, IRE

▶ [2600 – 190 nm] : InGaAs for NIR / SWIR and Si for IR-Vis-UV / UV+

The **PFVxxx** (Si:IR-Vis.-UV), **UVPxxx** (Si:IR-Vis.-UV+), **CGRxxx** (InGaAs:NIR), **LICxxx** (InGaAs:NIR), **IRExxx** (InGaAs:SWIR) are amplified sub-miniature OEM-format free space or fiber-coupled photodetectors, consisting of high-spec photodiodes DC-coupled to high-performance amplifiers. These units occupy minimal space, have mounting facilities, and are ideal for virtually any application or measurement of low-to-high power CW, pulsed, modulated, or heterodyne laser sources. The photodiodes are selected for low noise, wide bandwidth, high responsivity, and broad spectral range. Each photodiode features a coated free-space entrance window or a receptacle with ball lens for fiber coupling in FC format. Fixed gains in the range of 0.5 kV/A – 10 MV/A, and bandwidths to 600 MHz are available. The photodiode bias is fixed (0, or 5 VR) according to model and application. The external power requirements are model dependent at regulated $\pm 5\text{VDC}$ or $+ 5\text{VDC}$ applied by solderable leads. Compatibility with test equipment is facilitated by 50- Ω output impedance at the SMA RF-output connector, and an SMA-BNC adapter is optional. All OEM-format amplified photodetector models are available as matched pairs, assembled with hand-selected matching internal components, and also available in multi-dimensional arrays for convenience. These devices are exposed, require ESD-preventative handling, shielded enclosure to prevent interference from stray electrical or optical noise, and are non-returnable consumables. All units are fully tested prior to shipment.



NOTE: ALL bare OEM photodetector products listed in the following pages have on-board mounting capability (SAE 2-56), if required. Mating of cables, connectors, or adapters to the SMA output connector, and the FC / SMA / ST connector (for fiber coupled modules), should be made ONCE ONLY. Repeated connection and disconnection may compromise the structural integrity of the module. All modules have strict regulated power requirements of $\pm 5\text{VDC}$ or $+ 5\text{VDC}$ ([BPD205](#)) with current requirements in the range of 1 – 20 mA. Exceeding these specifications can result in permanent damage to the amplifier and the photodiode. The amplifiers have on-board facilities for transient protection and power line filtering. Please note that all models listed here are non-returnable items. Your purchase of these modules is final. Assembly of these units requires strict ESD-safe tools, environment, and handling.

SPECIFICATIONS [PFV, UVP] :

MODEL	PFVxxx ¹	PFVxxx ¹	UVPxxx
Photodiode	Planar Si-1	Planar Si- 3* / 2	UV Si
Active Area (µm units)	125	100* / 200	1000
Spectrum (nm)	1100 – 350	1000 – 320	1100 – 190
Responsivity (A/W)	0.5 @ 830 nm	0.5 @ 750 nm	0.12 @ 254 nm
Model / Price (USD)	010 360.00, [2k/150]	001* 1,995.00,	111 445.00, [10k/15]
[GAIN / BANDWIDTH MHz]	105 360.00, [10k/15]	[0.5k/2000] FS AC	275 445.00, [1M/0.15]
	130 360.00, [100k/1.5]	003 950.00, [0.1k/1000]	444 445.00, [10M/0.015]
	335 360.00, [1M/0.15]	004 550.00, [0.5k/600]	
	788 385.00, [10M/0.015]	006 385.00, [1k/300]	
Optical Coupling	Free Space / Fiber ¹	Free Space / Fiber ¹	Free Space
Output / Impedance	SMA / 50 Ω	SMA / 50 Ω	SMA / 50 Ω
Reg. Power (BPD205)	± 5VDC or + 5VDC	± 5VDC	± 5VDC or + 5VDC
Fiber Coupler ¹	55.00	55.00	
SMA-BNC Adptr.	8.50	8.50	8.50
Delivery (wks)	1 [U]	1 [H]	1 [H]

¹ FC

[CONTACT SALES](#)

SPECIFICATIONS [**CGR, LIC, IRE**] :

MODEL	CGRxxx¹	LICxxx¹	IRExxx¹
Photodiode	Planar InGaAs-1	Large Area InGaAs	SWIR InGaAs
Active Area (µm units)	125	300	300
Spectrum (nm)	1800 – 800	1800 – 800	2600 – 1200
Responsivity (A/W)	0.9 @ 1310 nm 0.95 @ 1550 nm	0.9 @ 1310 nm 0.95 @ 1550 nm	1.05 @ 2300 nm
Model / Price (USD) [GAIN / BANDWIDTH MHz]	003 2,195.00, [0.5k/2700] AC 005 1,150.00, [0.1k/1000] 007 575.00, [0.5k/600] 009 435.00, [1k/300] 020 415.00, [2k/150] 148 415.00, [10k/15] 293 415.00, [100k/1.5] 378 415.00, [1M/0.15] 987 435.00, [10M/0.015]	137 445.00, [10k/15] 311 445.00, [1M/0.15] 718 445.00, [10M/0.015]	078 550.00, [10k/15] 127 550.00, [1M/0.15] 257 550.00, [10M/0.015]
Optical Coupling	Free Space / Fiber ¹	Free Space / Fiber ¹	Free Space / Fiber ¹
Output / Impedance	SMA / 50 Ω	SMA / 50 Ω	SMA / 50 Ω
Reg. Power (BPD205)	± 5VDC or + 5VDC	± 5VDC or + 5VDC	± 5VDC or + 5VDC
Fiber Coupler ¹	55.00	55.00	55.00
SMA-BNC Adptr.	8.50	8.50	8.50
Delivery (wks)	1 [U]	1 [U]	1 [H]

¹ FC

[CONTACT SALES](#)

OEM RUGGED AMPLIFIED PHOTODETECTOR MODULES: SIV, USI, INT, NEI, ENR

▶
[2600 – 190 nm] : InGaAs for NIR / SWIR and Si for IR-Vis-UV / UV+

The **SIVxxx** (Si:IR-Vis.-UV), **USIxxx** (Si:IR-Vis.-UV+), **INTxxx** (InGaAs:NIR), **NEIxxx** (InGaAs:NIR), **ENRxxx** (InGaAs:SWIR) are amplified miniature-rugged OEM-format fiber-coupled photodetectors, consisting of high-spec photodiodes DC-coupled to high-performance amplifiers. These units occupy minimal space, have mounting facilities, and are ideal for virtually any application or measurement of low-to-high power CW, pulsed, modulated, or heterodyne laser sources. The photodiodes are selected for low noise, wide bandwidth, high responsivity, and broad spectral range. Each photodiode features a receptacle with ball lens for fiber coupling in FC, SMA, or ST formats or a coated free-space entrance window. Fixed gains in the range of 0.5 kV/A – 10 MV/A, and bandwidths to 600 MHz are available. The photodiode bias is fixed (0, or 5 VR) according to model and application. The external power requirements are model dependent at regulated $\pm 5\text{VDC}$ or $+ 5\text{VDC}$ applied by solderable leads. Compatibility with test equipment is facilitated by 50- Ω output impedance at the SMA RF-output connector, and an SMA-BNC adapter is optional. All OEM-format amplified photodetector models are available as matched pairs, assembled with hand-selected matching internal components, and also available in multi-dimensional arrays for convenience. These devices are exposed, require ESD-preventative handling, shielded enclosure to prevent interference from stray electrical or optical noise, and are non-returnable consumables. All units are fully tested prior to shipment.



NOTE: ALL bare OEM photodetector products listed in the following pages have on-board mounting capability (SAE 2-56), if required. Mating of cables, connectors, or adapters to the SMA output connector, and the FC / SMA / ST connector (for fiber coupled modules), should be made ONCE ONLY. Repeated connection and disconnection may compromise the structural integrity of the module. All modules have strict regulated power requirements of $\pm 5\text{VDC}$ or $+ 5\text{VDC}$ ([BPD205](#)) with current requirements in the range of 1 – 20 mA. Exceeding these specifications can result in permanent damage to the amplifier and the photodiode. The amplifiers have on-board facilities for transient protection and power line filtering. Please note that all models listed here are non-returnable items. Your purchase of these modules is final. Assembly of these units requires strict ESD-safe tools, environment, and handling.

SPECIFICATIONS [**SIV, USI**] :

MODEL	SIVxxx¹	SIVxxx¹	USIxxx
Photodiode	Planar Si-1	Planar Si- 3* / 2	UV Si
Active Area (µm units)	125	100* / 200	1000
Spectrum (nm)	1100 – 350	1000 – 320	1100 – 190
Responsivity (A/W)	0.5 @ 830 nm	0.5 @ 750 nm	0.12 @ 254 nm
Model / Price (USD) [GAIN / BANDWIDTH MHz]	013 425.00, [2k/150] 108 425.00, [10k/15] 137 425.00, [100k/1.5] 338 425.00, [1M/0.15] 783 450.00, [10M/0.015]	001* 2,095.00, [0.5k/2000] FS AC 002 1000.00, [0.1k/1000] 003 605.00, [0.5k/600] 005 450.00, [1k/300]	117 480.00, [10k/15] 278 480.00, [1M/0.15] 447 480.00, [10M/0.015]
Optical Coupling	Fiber ¹	Fiber ¹	Free Space ¹
Output / Impedance	SMA / 50 Ω	SMA / 50 Ω	SMA / 50 Ω
Reg. Power (BPD205)	± 5VDC or + 5VDC	± 5VDC	± 5VDC or + 5VDC
Fiber Coupler ¹	Included	Included	
SMA-BNC Adptr.	8.50	8.50	8.50
Delivery (wks)	1 [U]	1 [H]	1 [H]

¹ FC / SMA / ST

[CONTACT SALES](#)

SPECIFICATIONS [INT, NEI, ENR] :

MODEL	INTxxx ¹	NEIxxx ¹	ENRxxx ¹
Photodiode	Planar InGaAs-1	Large Area InGaAs	SWIR InGaAs
Active Area (µm units)	125	300	300
Spectrum (nm)	1800 – 800	1800 – 800	2600 – 1200
Responsivity (A/W)	0.9 @ 1310 nm 0.95 @ 1550 nm	0.9 @ 1310 nm 0.95 @ 1550 nm	1.05 @ 2300 nm
Model / Price (USD) [GAIN / BANDWIDTH MHz]	004 2,295.00, [0.5k/2700] AC 006 1,250.00, [0.1k/1000] 008 650.00, [0.5k/600] 010 500.00, [1k/300] 025 480.00, [2k/150] 152 480.00, [10k/15] 223 480.00, [100k/1.5] 373 480.00, [1M/0.15] 973 500.00, [10M/0.015]	178 520.00, [10k/15] 381 520.00, [1M/0.15] 731 520.00, [10M/0.015]	071 625.00, [10k/15] 134 625.00, [1M/0.15] 273 625.00, [10M/0.015]
Optical Coupling	Fiber ¹	Fiber ¹	Fiber ¹
Output / Impedance	SMA / 50 Ω	SMA / 50 Ω	SMA / 50 Ω
Reg. Power (BPD205)	± 5VDC or + 5VDC	± 5VDC or + 5VDC	± 5VDC or + 5VDC
Fiber Coupler ¹	Included	Included	Included
SMA-BNC Adptr.	8.50	8.50	8.50
Delivery (wks)	1 [U]	1 [U]	1 [H]

¹ FC / SMA / ST

[CONTACT SALES](#)

OEM ULTRA-HI GAIN, WIDE BANDWIDTH [APD-REPLACEMENT] PIN PHOTODETECTOR MODULES: GSH, HIR, IRW

▶ **[2600 – 350 nm] : InGaAs for NIR / SWIR and Si for IR-Vis-UV**

The **GSH**, **HIR**, and **IRW** series are high-sensitivity, dual-amplified, wide bandwidth Si and InGaAs PIN photodetector OEM modules for precision applications in the IR-Vis.-UV, the NIR and the SWIR spectra. They feature:

- Full-function *miniature modular-unit* construction
- 2600 – 350 nm spectral coverage
- Broad IR-Vis-UV [1100 – 350 nm], NIR [1800 – 800 nm] or SWIR [2600 – 1200 nm] spectra
- Individual modules with nanowatt sensitivity and 600 MHz max. bandwidth
- Free space or SM/MM – fiber coupling lens in FC receptacle
- Pre-configured gain settings with adjustable signal coupling (AC/DC), and photodiode bias
- Matched 50-Ω output impedance with SMA and optional BNC compatibility
- Regulated ± 15VDC external power requirement
- Available as “matched pair” modules for instrumentation
- SAE 8-32 and ISO M4 mounting threads

This line of precision OEM photodetectors couples ultra-low noise photodiodes with ultra-low noise, high-gain, wideband amplifiers. The modules may be considered as avalanche photodetector (APD) replacements, providing benefits in ease of use, cost, low voltage ± 15VDC operation, small size, and convenience. Each model is AC/DC-coupled, and the high-gain settings/configurations are preset. The photodiodes feature coated broadband optical windows for the free-space versions or receptacles with lenses (FC) for the fiber coupled versions, with user selectable bias adjustment (–1.25 to –10V). These modules are useful for measurements of any low power CW, modulated, or pulsed optical sources in the IR-Vis.-UV, or NIR / SWIR spectra. All modules are available as matched pairs, assembled with hand selected components, for instrumentation. An SMA-BNC adapter for BNC connectivity is optional with each module. The module has integrated transient protection for the amplifiers and the photodiode. These photodetector modules require [external power](#).

SPECIFICATIONS [**GSH Series**]:

MODEL	GSH017^{1*}	GSH031^{1*}	GSH125^{1*}	GSH317^{1*}	GSH512^{1*}
Photodiode	Planar Si	Planar Si	Planar Si	Planar Si	Planar Si
Active Area (µmD)	125	125	125	125	125
Spectral Range (nm)	1100 to 350 [FS]	1100 to 350 [FS]	1100 to 350 [FS]	1100 to 350 [FS]	1100 to 350 [FS]
Stage 1 Gain/Bandwidth	500 V/A / 600 MHz	1000 V/A / 300 MHz	2000 V/A / 150 MHz	5000 V/A / 60 MHz	10 kV/A / 30 MHz
Stage 2 Gain/Bandwidth	12X / 600 MHz	20X / 300 MHz	30X / 150 MHz	25X / 60 MHz	50X / 30 MHz
Max. Gain	6000 V/A	20 kV/A	60 kV/A	125 kV/A	500 kV/A
Max. Noise (pW/rt.Hz)	TBA	TBA	TBA	TBA	TBA
Output Impedance (Ω)	50	50	50	50	50
Optical Coupling	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*
RF Coupling	SMA**	SMA**	SMA**	SMA**	SMA**
Photodiode Power	Multi Regulated	Multi Regulated	Multi Regulated	Multi Regulated	Multi Regulated
Price (US/\$)	850.00	850.00	850.00	1,250.00	1,250.00
External Power (± 15VDC)	BPU728	BPU728	BPU728	BPU728	BPU728
*Fiber Cplr. (US/\$)	55.00	55.00	55.00	55.00	55.00
**SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50	8.50	8.50
Matched Pair (US/\$)		1,950.00 [FS]	2,050.00 [FS]		
Delivery (weeks)	1	1	1	1	1

* FC available

** SMA-BNC adapter optional

¹ AC/DC Coupling at Gain Block and Output

[CONTACT SALES](#)

SPECIFICATIONS [**HIR Series**]:

MODEL	HIR071^{1*}	HIR088^{1*}	HIR137^{1*}	HIR387^{1*}	HIR621^{1*}
Photodiode	Planar InGaAs	Planar InGaAs	Planar InGaAs	Planar InGaAs	Planar InGaAs
Active Area (µmD)	70	70	70	70	70
Spectral Range (nm)	1800 to 800	1800 to 800	1800 to 800	1800 to 800	1800 to 800
Stage 1 Gain/Bandwidth	500 V/A / 600 MHz	1000 V/A / 300 MHz	2000 V/A / 150 MHz	5000 V/A / 60 MHz	10 kV/A / 30 MHz
Stage 2 Gain/Bandwidth	12X / 600 MHz	20X / 300 MHz	30X / 150 MHz	25X / 60 MHz	50X / 30 MHz
Max. Gain	6000 V/A	20 kV/A	60 kV/A	125 kV/A	500 kV/A
Max. Noise (pW/rt.Hz)	TBA	TBA	TBA	TBA	TBA
Output Impedance (Ω)	50	50	50	50	50
Optical Coupling	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*	Free space / Fiber*
RF Coupling	SMA**	SMA**	SMA**	SMA**	SMA**
Photodiode Power	Multi Regulated	Multi Regulated	Multi Regulated	Multi Regulated	Multi Regulated
Price (US/\$)	950.00	950.00	950.00	1,350.00	1,350.00
External Power (± 15VDC)	BPU728	BPU728	BPU728	BPU728	BPU728
*Fiber Cplr. (US/\$)	55.00	55.00	55.00	55.00	55.00
**SMA-BNC Adptr. (US/\$)	8.50	8.50	8.50	8.50	8.50
Matched Pair (US/\$)		2,050.00 [FS]	2,150.00 [FS]		
Delivery (weeks)	1	1	1	1	1

* FC available

** SMA-BNC adapter optional

¹ AC/DC Coupling at Gain Block and Output

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SPECIFICATIONS [**IRW Series**]:

MODEL	IRW313^{1*}	IRW771^{1*}
Photodiode	Planar InGaAs	Planar InGaAs
Active Area (µmD)	300	300
Spectral Range (nm)	2600 to 1200	2600 to 1200
Stage 1 Gain/Bandwidth	5000 V/A / 60 MHz	10 kV/A / 30 MHz
Stage 2 Gain/Bandwidth	25X / 60 MHz	50X / 30 MHz
Max. Gain	125 kV/A	500 kV/A
Max. Noise (pW/rt.Hz)	TBA	TBA
Output Impedance (Ω)	50	50
Optical Coupling	Free space / Fiber*	Free space / Fiber*
RF Coupling	SMA**	SMA**
Photodiode Power	Multi Regulated	Multi Regulated
Price (US/\$)	1,750.00	1,950.00
External Power (± 15VDC)	BPU728	BPU728
*Fiber Cplr. (US/\$)	55.00	55.00
**SMA-BNC Adptr. (US/\$)	8.50	8.50
Matched Pair (US/\$)		
Delivery (weeks)	1	1

* FC available

** SMA-BNC adapter optional

¹ **AC/DC Coupling at Gain Block and Output**

[CONTACT SALES](#)

OEM LOGARITHMIC COMPRESSION AMPLIFIED PHOTODETECTOR MODULES: ILV, USL, RLR, LEG

▶ [2600 – 190 nm] : InGaAs for NIR / SWIR and Si for IR-Vis-UV / UV+

Log-amplified OEM-format photodetectors for low frequency measurements of optical signals with ultra-wide dynamic range. Features include:

- Full-function, miniature OEM construction
- Broad IR-Vis-UV [1100 – 350 nm], UV+ [190 nm], NIR [1800 – 800 nm], or SWIR [2600 – 1200 nm] spectra
- Free space or SM/MM fiber [FC, SMA, ST]
- Large photosensitive areas with regulated and filtered bias
- Logarithmic compression amplifier for $V_{out} \sim 0.5 \text{ Log } [I_p / I_{ref}]$
- Adjustable amplifier sensitivity and bandwidth, and reference currents
- Available as “Matched Pair” modules for instrumentation
- External $\pm 15\text{VDC}$ power supply leads

The OEM logarithmic compression amplified photodetector modules produce a $\pm 10\text{V}$ output proportional to the log of the ratio of the input photocurrent to a user selected reference current, sensing power over a wide dynamic range of nW – mW. Each module includes:

- [1] Three switchable photodiode bias settings, allowing performance adjustments for optimal noise and bandwidth for particular power levels and ranges.
- [2] Three amplifier bandwidth – signal level compensation settings to allow the log-compression amplifier to operate at optimized sensitivity for low noise performance.
- [3] Three reference current settings (1 μA , 100 nA, 10 nA) to optimize relative photocurrent levels and dynamic range.

The photodiodes are selected for low noise, wide bandwidth, high responsivity, and broad spectral range. Each photodiode features a coated free-space entrance window or a receptacle with ball lens for fiber coupling in FC, SMA, or ST formats. The photodiode bias can be adjusted for optimum gain-bandwidth performance (LEG at fixed 0 or 1 V). Compatibility with test equipment is facilitated by 50- Ω output impedance at the SMA RF output connector, and an SMA-BNC adapter is optional. An LED power indicator is provided and the units require regulated $\pm 15\text{VDC}$ power. An external power source ([BPD715](#)) is optional with each module. All OEM log-amplified photodetector models are available as matched pairs, assembled with hand-selected matching internal components. The power is regulated and filtered, has transient protection with integral device protection, and provides stable long term operation.

SPECIFICATIONS [OEM LOG Amplified Photodetectors] :

MODEL	ILV303¹	USL801	RLR703¹	LEG100¹
Photodiode	Large Area Si-1	UV Si	Large Area InGaAs	SWIR InGaAs
Active Area (µm units)	1000	1000	300	300
Amplifier Bandwidth	30 kHz	30 kHz	30 kHz	30 kHz
Spectrum (nm)	1100 – 350	1100 – 190	1800 – 800	2600 – 1200
Responsivity (A/W)	0.5 @ 970 nm	0.12 @ 254 nm	0.95 @ 1550 nm	1.05 @ 2300 nm
Photocurrent Range	1 nA – 1 mA	1 nA – 1 mA	1 nA – 1 mA	1 nA – 1 mA
Output Signal Range	± 10 V	± 10 V	± 10 V	± 10 V
Optical Coupling	Free Space / Fiber ¹	Free Space	Free Space / Fiber ¹	Free Space / Fiber ¹
Price (USD)	750.00	850.00	950.00	1,150.00
Power (or BPU715)	± 15 VDC Reg.	± 15 VDC Reg.	± 15 VDC Reg.	± 15 VDC Reg.
Fiber Coupler ¹	55.00		55.00	55.00
SMA-BNC Adptr.	8.50	8.50	8.50	8.50
Delivery (wks)	1 [H]	1 [H]	1 [U]	1 [H]

¹ FC / SMA / ST

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OEM AMPLIFIED RGB Si PHOTODETECTORS



Si for Red / Green / Blue

The Si **RGBxxx** series are amplified sub-miniature OEM-format, free-space photodetectors. The Si RGB photodiodes are mounted on a compact PCB base and coupled to an ultra low noise amplifier, with built in 50-Ω termination, power line filtering, and transient protection. Fixed and adjustable gains of 10K, 1M and 10M are available, and all modules have an additional 10-dB switchable boost circuit. The DC power (± 15 V) is applied through solderable leads. These miniature modules are ideal for analog RGB optical signal measurements and occupy very little space. They feature photodiodes with ultra-low noise and high responsivity, and are available in matched module pairs, assembled with hand selected components, for instrumentation. They are also available as multi-channel amplified photodetector arrays on a single board. These devices are exposed, require ESD precautions when handling, shielded enclosure to prevent stray optical and electrical interference, and are non-returnable.

An external [battery pack BPD728](#) is optional with each detector. The voltage from the supply is super regulated and filtered, has negligible drift and noise, and integrated device protection.

SPECIFICATIONS [**RGB Series**]:

MODEL	RGB013	RGB078	RGB183	RGB371
Photodiodes (Area)	RED-Si (300 µm x 1000 µm) GREEN -Si (300 µm x 1000 µm) BLUE -Si (300 µm x 1000 µm)	RED-Si (300 µm x 1000 µm) GREEN -Si (300 µm x 1000 µm) BLUE -Si (300 µm x 1000 µm)	RED-Si (300 µm x 1000 µm) GREEN -Si (300 µm x 1000 µm) BLUE -Si (300 µm x 1000 µm)	RED-Si (300 µm x 1000 µm) GREEN -Si (300 µm x 1000 µm) BLUE -Si (300 µm x 1000 µm)
Operating Modes	RED-Si : 0, 5, 1.5 – 10 (adj.) GREEN-Si : 0, 5, 1.5 – 10 (adj.) BLUE-Si : 0, 5, 1.5 – 10 (adj.)	RED-Si : 0, 5, 1.5 – 10 (adj.) GREEN-Si : 0, 5, 1.5 – 10 (adj.) BLUE-Si : 0, 5, 1.5 – 10 (adj.)	RED-Si : 0, 5, 1.5 – 10 (adj.) GREEN-Si : 0, 5, 1.5 – 10 (adj.) BLUE-Si : 0, 5, 1.5 – 10 (adj.)	RED-Si : 0, 5, 1.5 – 10 (adj.) GREEN-Si : 0, 5, 1.5 – 10 (adj.) BLUE-Si : 0, 5, 1.5 – 10 (adj.)
Spectral Range (nm)	RED-Si : 720 – 590 nm GREEN -Si : 600 – 480 nm BLUE -Si : 540 – 400 nm	RED-Si : 720 – 590 nm GREEN -Si : 600 – 480 nm BLUE -Si : 540 – 400 nm	RED-Si : 720 – 590 nm GREEN -Si : 600 – 480 nm BLUE -Si : 540 – 400 nm	RED-Si : 720 – 590 nm GREEN -Si : 600 – 480 nm BLUE -Si : 540 – 400 nm
Amplifier Gain / Bandwidth	10 MV/A / 0.015 MHz	1 M V/A / 0.15 MHz	10 kV/A / 15 MHz	10 kV/A / 15 MHz 1 M V/A / 0.15 MHz 10 MV/A / 0.015 MHz
Optical Coupling	Free space	Free space	Free space	Free space
RF Coupling (Output)	SMA x 3 **	SMA x 3 **	SMA x 3 **	SMA x 3 **
External Power	± 15 VDC (or BPU728)	± 15 VDC (or BPU728)	± 15 VDC (or BPU728)	± 15 VDC (or BPU728)
Price (US/\$)	995.00	995.00	995.00	1,395.00
**SMA-BNC Adptr. (US/\$)	25.00	25.00	25.00	25.00
Matched Pair (US/\$)	2,040.00	2,040.00	2,040.00	3,040.00
Delivery (weeks)	1 – 2	1 – 2	1 – 2	1 – 2

* FC available only

** SMA-BNC adapter optional

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OEM AMPLIFIED 16-ELEMENT PHOTODETECTOR ARRAY MODULES WITH FIXED OR ADJUSTABLE GAIN & DAQ: PMA, PAS

▶ **[1100 – 320 nm] : Si for IR-Vis-UV**

Amplified photodetector arrays with *fixed or adjustable gain-bandwidth* for high-frequency position sensing and spectroscopy. Features include:

- Full-function, PCB-OEM construction
- Broad IR-Vis-UV [1100 – 320 nm] spectrum
- 16 element free space coupled
- Large photosensitive areas with regulated and filtered bias
- Gain ranges from 10 kV/A – 10 MV/A or Adjustable (switched) gain / bandwidth settings for each element
- Second stage 10dB gain selection
- OEM format for easy integration with standard DB 37 connector or equivalent [SMA outputs optional]
- Pin-for-pin compatibility with optional 16-Ch / 16-Bit DAQ board and LabVIEW Software
- Available as “Matched Pair” modules for instrumentation
- External ± 15 VDC power

These amplified photodetector arrays have 16 independent low noise, high responsivity elements with sensitivity down to 320 nm in the UV. They are ideal for high-to-low frequency applications in position sensing and spectroscopy. They have fixed or switched multiple gain-bandwidth settings, for high-to-low frequency applications in position sensing and spectroscopy. The photodiode bias on the fixed gain models is fixed for stable operation. The photodiode bias on the adjustable gain models is fully adjustable for optimal operation. Compatibility with test equipment is facilitated by 50- Ω output impedance for each channel terminated at a standard DB connector (or equivalent), compatible with most DAQ boards. All amplified photodetector array models are available as matched pairs, assembled with hand-selected matching components. [External regulated \$\pm 15\$ VDC power supply](#) is required.

SPECIFICATIONS [PMA] :

MODEL	PMA251	PMA180	PMA017	PMA003
Photodiode Array	Large Area Si-Array	Large Area Si-Array	Large Area Si-Array	Large Area Si-Array
Active Area (µm units)	2000 x 700	2000 x 700	2000 x 700	2000 x 700
Amplifier Bandwidth	0.015 MHz	0.15 MHz	15 MHz	30 MHz
Spectrum (nm)	1100 – 320	1100 – 320	1100 – 320	1100 – 320
Responsivity (A/W)	0.7 @ 970 nm	0.7 @ 970 nm	0.7 @ 970 nm	0.7 @ 970 nm
Photodiode Bias (VR)	0 V	5 V	5 V	12 V
Amplifier Gain (V/A)	10 M	1 M	10 k	10 k
Optical Coupling	Free Space	Free Space	Free Space	Free Space
Price (USD)	2,695.00	2,495.00	2,695.00	2,995.00
Power (or PS-15TH)	± 15 VDC Reg.	± 15 VDC Reg.	± 15 VDC Reg.	± 15 VDC Reg.
SMA Outputs [x16]	250.00	250.00	250.00	250.00
16 Ch 16 Bit DAQ Sys	795.00	795.00	795.00	795.00
Delivery (wks)	1 [H]	1 [H]	1 [H]	1 [H]

SPECIFICATIONS [PAS] :

MODEL	PAS307	PAS131	PAS008
Photodiode Array	Large Area Si-Array	Large Area Si-Array	Large Area Si-Array
Active Area (µm units)	2000 x 700	2000 x 700	2000 x 700
Gain / Bandwidth	10 M / 0.015 MHz 5 M / 0.030 MHz 1 M / 0.15 MHz	10 k / 30 MHz 20 k / 15 MHz 40 k / 7.5 MHz	10 k / 30 MHz 0.5 M / 0.6 MHz 10 M / 0.030 MHz
Spectrum (nm)	1100 – 320	1100 – 320	1100 – 320
Responsivity (A/W)	0.7 @ 970 nm	0.7 @ 970 nm	0.7 @ 970 nm
Photodiode Bias (VR)	0 V, 5V, 1.5 – 5 V	0 V, 10V, 1.5 – 12 V	0 V, 5V, 1.5 – 12 V
Optical Coupling	Free Space	Free Space	Free Space
Price (USD)	3,995.00	3,995.00	4,995.00
Power (or PS-15TH)	± 15 VDC Reg.	± 15 VDC Reg.	± 15 VDC Reg.
SMA Outputs [x16]	250.00	250.00	250.00
16 Ch 16 Bit DAQ Sys	795.00	795.00	795.00
Delivery (wks)	1 [H]	1 [H]	1 [H]

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PICOSECOND PHOTODETECTORS IN FIBER COUPLED FC, SMA, ST RECEPTACLES: FCX, GCR, LIR

▶ [2600 – 320 nm] : InGaAs for NIR / SWIR and Si for IR-Vis-UV

The **FCX** and **GCR** are Si (1100 – 350 nm) and NIR InGaAs (1800 – 800 nm) photodiodes, respectively. The **LIR** operates in the SWIR InGaAs spectrum (2600 – 1200 nm). The photodiodes are packaged in fiber coupling receptacles, in FC, SMA, or ST formats, for single mode (SM) and multi-mode (MM) fiber compatibility. These photodiodes are selected for low noise, wide bandwidth, high responsivity, and broad spectral range. The photodiode bias requirements are as specified and a case ground pin is available. We have several additional GHz / picosecond photodiodes available in both free space and fiber coupled versions. Please [contact us](#) with your requirements. Optional [power supplies](#) are available.

SPECIFICATIONS [FCX] :

MODEL	FCX033-XX ¹	FCX052-XX ¹	FCX073-XX ¹
NIR Photodiode	Planar Si-1	Planar Si-2	Planar Si-3
Active Area (µm units)	125	200	100
Response Speed	0.6 ns	0.1 ns	0.045 ns
Spectrum (nm)	1100 – 350	1100 – 320	1100 – 320
Responsivity (A/W)	0.5 @ 830 nm	0.5 @ 750 nm	0.45 @ 750 nm
Photodiode Bias (VR)	5	1 – 10 (max)	1 – 5 (max)
Dark Current (pA)	< 30 @ 5V	< 10 @ 5V	< 10 @ 5V
Optical Coupling	SM/MM Fiber ¹	SM/MM Fiber ¹	SM/MM Fiber ¹
Price (USD)	100.00	145.00	250.00
Delivery (wks)	1	1	1

¹ FC / SMA / ST

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SPECIFICATIONS [**GCR**] :

MODEL	GCR077-XX¹	GCR081-XX¹	GCR103-XX¹
NIR Photodiode	Planar InGaAs-1	Planar InGaAs-2	Planar InGaAs-3
Active Area (µm units)	70	100	80
Response Speed	0.2 ns	0.1 ns	0.045 ns
Spectrum (nm)	1800 – 800	1800 – 800	1800 – 800
Responsivity (A/W)	0.9 @ 1310 nm 0.95 @ 1550 nm	0.9 @ 1310 nm 0.95 @ 1550 nm	0.9 @ 1310 nm 0.95 @ 1550 nm
Photodiode Bias (VR)	5	5	5
Dark Current (pA)	< 30 @ 5V	< 1 nA @ 5V	< 100 @ 5V
Optical Coupling	SM/MM Fiber ¹	SM/MM Fiber ¹	SM/MM Fiber ¹
Price (USD)	125.00	175.00	275.00
Delivery (wks)	1	1	1

¹ FC / SMA / ST

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SPECIFICATIONS [**LIR**] :

MODEL	LIR031-XX¹
NIR Photodiode	SWIR InGaAs
Active Area (µm units)	300
Response Speed	3 ns
Spectrum (nm)	2600 – 1200
Responsivity (A/W)	1.05 @ 2300 nm
Photodiode Bias (VR)	1 (max)
Dark Current (pA)	2 µA @ 1V
Optical Coupling	SM/MM Fiber ¹
Price (USD)	275.00
Delivery (wks)	1

¹ FC / SMA / ST

[CONTACT SALES](#)

ULTRAFAST SENSORS – PS SERIES, PRECISION VOLTAGE SOURCES

The key to successful sensor measurements lies in noise-free, zero-drift, transient-proof power supplies. We offer super-regulated *adjustable* **PS** and *fixed* **BP** series precision voltage sources which feature:

- Exceptional stability and ultra-low ripple
- Adjustable across wide voltage ranges, or fixed single/dual/multi supplies
- Full device protection from ESD and transients
- Digital LCD voltage indicator with 0.1-V resolution for AC / precision-DC models
- Inline direct or ma-to-V converted current monitor with LED indicator
- 115 or 230 VAC power or lithium battery for long term use and stability
- 10-turn potentiometer (25-turn trimpot on BP3787) for high resolution setting (LCD display) (optional)
- High current option on some models.



The **PS** and **BP** series comprises the world's best power supplies for operating microwave amplifiers, laser diodes, LEDs, strain gages, sensors, and photodetectors. The input circuit contains a filter to eliminate stray transients. The voltage output is super-regulated in a proprietary circuit and refiltered for further noise reduction. Each supply has multi-level transient suppression and ESD protection for sensitive devices. A 10-turn precision potentiometer (option HR) enables precise adjustment of the output voltage to 10 mV accuracy.

The voltage is available at a BNC (**PS**) or 3.5-mm (**BP**) port on the supply. A series inline current monitor (**PS**) is also available on some modules at a separate BNC port. This monitor is particularly useful for photodetectors or lasers to measure diode current. For example, to optimize the position of an optical beam on a high-speed photodetector, the photocurrent can be monitored on a Keithley 485 picoammeter.

Specifications for the *Battery-Powered*, **PS Series** Supplies:

MODEL	PS-10A
Supply Type	Precision voltage source
Voltage Range (V)	1.5 – 9 (adj.)
Current Limit (mA)	100
Ripple (μ V)	5
Drift (μ V/min)	10
Power Source	9V-1200 mA-hr lithium
Current Monitor	Inline
Price (US)	200.00
Option: Hi Resolution	R = 10 turn adj.
Price (US)	100.00



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Specifications for the *AC-Powered*, **PS Series** Supplies:

MODEL	PS-05T*	PS-15T*	PS-15A	PS-15AD**	PS-30A / 30AD ***
Supply Type	Prec. voltage source	Prec. voltage source	Prec. voltage source	Dual prec. voltage source	Prec. voltage source
Voltage Range (V)	± 5 VDC	± 15 VDC	1.5 – 15 (adj./ min.)	1.5 – 15 (adj.)** + 15 (const.)	1.5 – 30 (adj.) [± 15 VDC for 30AD]
Current Limit (mA)	100	100	100	200 (total)	100
Ripple (rms-V @ Vout)	< 0.0001 V @ 5 VDC	< 0.0001 V @ 15 VDC	< 0.0001 V @ 15 VDC	< 0.0001 V @ 15 VDC	< 0.0001 V @ 30 VDC
Power Source (specify)	AC (115 or 230 V)	AC (115 or 230 V)	AC (115 or 230 V)	AC (115 or 230 V)	AC (115 or 230 V)
Current Monitor	– NA –	– NA –	100 mA = 1 V	** 1 mA = 1 V	100 mA = 1 V
Price (US/\$)	395.00	395.00	450.00	600.00	500.00[30A], 550.00[30AD]
Option: High Current	C = 500 mA	C = 500 mA	C = 500 mA	C = 500 mA	C = 500 mA
Price (US/\$)	125.00	125.00	125.00	125.00	125.00
Option: Hi Resolution	– NA –	– NA –	R = 10 turn adj.	R = 10 turn adj.	R = 10 turn adj.
Price (US/\$)	– NA –	– NA –	100.00	100.00	100.00

Note*: The PS-05T and the PS-15T have a 3.5-mm stereo audio jack (female) connector for the output voltages.

Note**: The PS-15AD is specifically designed for amplified devices. It has high current capability and has *dual* voltage outputs, one a constant 15 VDC source for an amplifier or device, and also** an adjustable 1-15 VDC source for a photodetector with current monitor circuitry.

Note***: The PS-30AD is configured as an adjustable 1.5 – 30 VDC supply, together with a ± 15 VDC supply through a 3.5-mm stereo jack, making it compatible with our amplified photodetectors and dual balanced photodetectors. The PS-30AD has a BNC-F connector for the 1.5 – 30 VDC supply, and a 3.5-mm stereo audio jack (female) connector for the ± 15 VDC supply. The two supplies (adjustable 1.5 – 30 and the ± 15 VDC) on the PS-30AD should not be used simultaneously

Specifications for the High-Voltage AC-powered **PS-100A** are as follows :

MODEL	PS-100A*
Supply Type	Prec. voltage source
Voltage Range (V)	1.5 – 100 [10-turn ad.]
Current Limit (mA)	100
Ripple (rms-V @ Vout)	< 0.005 V @ 100 VDC
Power Source (specify)	AC (115 or 230 V)
Current Monitor	100 mA = 1 V
Price (US/\$)	1,195.00
Option: High Current	C = 300 mA
Price (US/\$)	125.00

NOTE*: The PS-100A is designed to output very high voltages. Extra precaution is absolutely essential to avoid all contact with hazardous voltage levels. The PS-100A has several built-in features to facilitate safe laboratory usage:

[1] the output voltage is read directly on a large front panel LCD display.

[2] A 10-turn voltage adjustment potentiometer is provided. The potentiometer must always be reduced to the minimum position (1.5 V on the LCD display) after each use.

[3] This unit is equipped with a rear panel AC power switch and a front-panel latching output voltage switch.

It is highly recommended that all electrical connections at the output be made and verified prior to connecting and switching AC (line/mains) power to the unit..

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The **BP** Series are single / dual / multi-voltage lithium battery based regulated power units for portable photodetector operation.

- ▶ **BP-5** + 5 VDC 100 mA output
- BPD205** ± 5 VDC 100 mA outputs
- BPD715** ± 15 VDC 100 mA outputs
- BP3787** ± 5 VDC, ± 15 VDC, & ± 1.5 – 15 VDC 100 mA output.s (single source)
- BPU209** ± 9 VDC, UNREGULATED outputs
- BPU728** ± 18 VDC, UNREGULATED outputs

Each power supply in the **BPD/3** functions as a pass through voltage regulator, which accepts any unregulated input voltages to ± 30 VDC and provides regulated outputs at corresponding ratings. The input and output jacks are compatible with standard 3.5 mm stereo plugs. The multi-voltage adjustable unit **BP3787** has in addition 25-turn trim adjustments for ± 1.5 – 15 VDC outputs.

SPECIFICATIONS [Battery Powered **BP/BPD/BP3 Series**] :

MODEL	BP-05	BPD205	BPD715	BP3787
Supply Type	Precision Voltage	Precision Voltage	Precision Voltage	Precision Voltage
Voltages	+ 5 VDC	± 5 VDC	± 15 VDC	± 5 VDC ± 15 VDC ± 1.5 – 15 VDC
Current Limit (mA)	100	100	100	100 (Total)
Ripple (mV)	0.1 rms	0.1 rms	0.1 rms	0.1 rms
Output Connectors	BNC	3.5 mm	3.5 mm	3.5 mm
Input Connector	– NA –	3.5 mm	3.5 mm	3.5 mm
Power Source	Lithium 9 V x 1	Lithium 9 V x 2	Lithium 9 V x 4	Lithium 9 V x 4
Price (USD)	210.00	225.00	235.00	295.00
Spare Battery	12.50	23.00	46.00	46.00
Delivery (wks)	1 [S]	1 [S]	1 [S]	1 [S]

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SPECIFICATIONS [Battery Powered **BPU Series**] :

MODEL	BPU209	BPU728
Supply Type	Unregulated Source	Unregulated Source
Voltages	± 9 VDC	± 18 VDC
Power (mA-hr)	1200	1200
Power Source	Lithium 9 V x 2	Lithium 9 V x 4
Price (USD)	215.00	225.00
Spare Battery	23.00	46.00
Delivery (wks)	1 [S]	1 [S]

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FIXED AND ADJUSTABLE REGULATED VOLTAGE CONVERTOR MODULES: SSP, DRP

Stable voltage regulators for photodetectors and precision instrumentation

The **SSP / DRP** modules are compact DC-DC voltage convertors modules for photodetectors and amplifiers. The features include:

- Encased modular construction with 3.5-mm audio connector for use with photodetector and amplifier systems
- Single to split supply operation on SSP with stable virtual ground
- Independent regulated outputs
- Precision regulated and filtered $\pm 5 / \pm 15 / \pm 1.5 - 15$ VDC power for low current applications
- Minimum standard $+ / \pm 30$ VDC input power

Each module makes it easy to interface end-user single or dual voltage systems to multi-voltage photodiode amplifiers and photodetectors. It can accept any input voltage to $+ / \pm 32$ VDC, and provide stable regulated $\pm 5 / \pm 15 / \pm 1.5 - 15$ VDC low current outputs for low noise operation. These units are ideal for low current applications. Each unit is perfectly matched to a wide array of our devices.

The SSP / DRP modules makes it easy to integrate OEM components within a system where a single/dual fixed supply is present and a variety of voltages are required to operate a variety of photodetectors, sensors, and amplifiers. The SSP module provides a virtual ground split supply from a single source for operating photodiode amplifiers in battery operated environments with floating ground.

SPECIFICATIONS [**SSP, DRP**] :

MODEL	SSP137 ¹	DRP183
Input Voltage (max)	+ 32 VDC	± 32 VDC
	± 5 VDC	± 5 VDC
Output Voltages	± 15 VDC	± 15 VDC
	$\pm 1.5 - 15$ VDC	$\pm 1.5 - 15$ VDC
Current Limit (mA)	100 (Total)	100 (Total)
Module (in)	2.4 x 1.85 x 1	2.4 x 1.85 x 1
IN / OUT Connectors	3.5 mm	3.5 mm
Price (USD)	99.00	99.00
Delivery (wks)	1 [S]	1 [S]

¹ Virtual ground for battery operated photodiodes

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NOTES



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packaging, and careless general handling they could be compromised by ESD and other external forces and may not perform to factory specifications. Please make sure of full compatibility of these OEM components with your systems prior to purchase.

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* All documents (RFQ, PR, PO, INV, etc.) are submitted electronically

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