

Low-Noise Current Amplifier
Fixed-Gain Mini-Module

Features

- Compact 40 x 42 x 13 mm
- Frequency Response Independent of Detector-Capacitance (up to 10 nF)
- Low Noise per Bandwidth

Applications

- Photodiode- and Photomultiplier-Preamplifier
- Ionisation Detectors
- Impedance Measurement
- STM Microscopy

The A120X Series are state-of-the-art low-noise transimpedance preamplifier modules for current sources like photodiodes, tunnel contacts or ionisation chambers. They offer high gain and low noise in an ultra-compact housing.

Due to their small footprint these modules can be mounted very near to the detector. This reduces noise pickup and input capacitance to a minimum.

Model	A1201	A1202	A1203	A1204	A1205
Gain ±2%	10 ⁷ V/A	10 ⁸ V/A	10 ⁹ V/A	10 ¹⁰ V/A	10 ¹¹ V/A
Bandwidth ±10%	DC – 500 kHz	DC – 50 kHz	DC – 5 kHz	DC – 400 Hz	DC – 40 Hz
Input Current Noise (typ.)	70 fA/√Hz @10 kHz	20 fA/√Hz @1 kHz	7 fA/√Hz @200 Hz	2 fA/√Hz @40 Hz	0.7 fA/√Hz @10 Hz
Input Bias Current (typ.)	2 pA	2 pA	2 pA	10 fA	10 fA
Input Bias Current Drift	x1.8 / 10 °C	x1.8 / 10 °C	x1.8 / 10 °C	x2 / 10 °C	x2 / 10 °C
Input Voltage Noise (typ.)	5nV @ 10kHz	6nV @ 1kHz	8nV @ 200Hz	50nV @ 40Hz	90nV @ 10Hz
Input Offset Voltage max.	1 mV	1 mV	1 mV	1 mV	1 mV
Input Impedance (DC)	50 Ω	50 Ω	50 Ω	1 kΩ	1 kΩ
Max. Source Capacitance	1 nF	10 nF	10 nF	10 nF	10 nF

All characteristics are for ±15 V power supply and 25 °C ambient temperature.

Model A120X Series Data Sheet

Common Characteristics	
Nonlinearity	< 0.1% (A1205: < 1%)
Output Voltage Range	± 10 V (>10 k Ω Load)
Output Impedance	50 Ω
Max. Output Current	± 10 mA
Power Supply Voltage	± 15 V
Power Supply Current	± 30 mA typ.
Shield	Tin-Plated Steel
Weight	20 gr.
Storage Temperature	-20 .. +80 °C
Operating Temperature	10 .. 50 °C

Absolute Maximum Ratings	
Input Voltage	± 5 V
Power Supply Voltage	± 20 V

Ordering Information		
Ordering Code: A120X-YZ		
X = Gain:	Y = Input Configuration:	Z = Output and Supply Configuration:
1 = 10^7 V/A	A = SMA Connector	S = 5 Pin Header
2 = 10^8 V/A	B = SMB Connector	N = Without Connector, open solder pads
3 = 10^9 V/A		
4 = 10^{10} V/A		
5 = 10^{11} V/A		

Ordering Code Example:

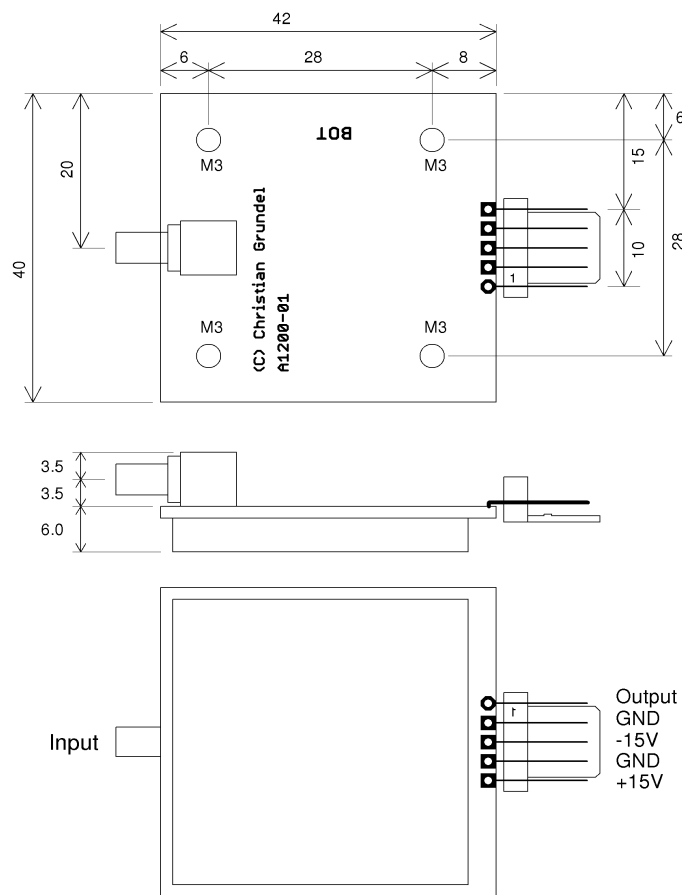
A1203-BS = Gain 10^9 V/A, Input with SMB Connector, Output and Supply with 5 Pin Header

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Connections	
Input	SMA or SMB Connector
Output and Power Supply	5 Pin Header (2.54 mm Pitch): Pin 1 = Output Pin 2 = Ground Pin 3 = -15V Negative Supply Pin 4 = Ground Pin 5 = +15V Positive Supply

Dimensions



A120X Series Dimensions are in mm

The module can be fastened by means of four M3 threads. Do not drive the screws in more than 4 mm, otherwise mechanical damage may occur.

The output header 5 pin 2.54 mm pitch with friction lock is Molex KK compatible.