

**Low-Noise Charge Amplifier
Fixed-Gain Cased Module**

Features

- Compact: 84 x 55 x 24 mm
- Frequency Response independent of Detector Capacitance (up to 100 pF)
- Very Low Noise

Applications

- AFM Microscopy
- Pyro- and Piezoelectric Detectors
- Capacitive Pickups
- Charged Particle Beam Monitoring

The A6504 is a state-of-the-art low-noise charge preamplifier module for charge sources like piezoelectric transducers or capacitive pickups. It offers high gain and very low noise in a compact housing. The A6504 is designed for sinusoidal signals from ac coupled charge sources. Pulsed signals without average DC content can be amplified too.

The amplifier is not suited for sources producing an average DC current of more than about 100 pA as this would saturate the device. This cased amplifier module is well suited for everyday laboratory use. Standard BNC input and output provides convenient connections. A linear regulated power supply is available as an accessory.

Characteristics	
Gain ±1%	10^{13} V/C
Bandwidth ±10%	500 Hz – 15 MHz (Detector Capacitance ≤ 100 pF)
Input Charge Noise Density (with open input)	40×10^{-21} C/√Hz @ 1 MHz
	150×10^{-21} C/√Hz @ 30 kHz
Effective Input Impedance	500 MΩ // 7 nF
Input Voltage Noise (typ.)	1 nV/√Hz @ 100kHz
Max. Input Charge (for linear amplification)	1 pC peak-peak
Max. recommended Source Capacitance	1 nF (for linear amplification)
Non-Linearity	< 0.1%
Output Voltage Range	10 V peak-peak (>1 kΩ Load)
Output Impedance	50 Ω
Max. Output Current	± 20 mA

Characteristics	
Power Supply Voltage	± 15 V
Power Supply Current	± 30 mA typ. (no signal)
Case	Anodized Aluminum
Weight	120 g
Storage Temperature	-20 .. +80 °C
Operating Temperature	0 .. 50 °C

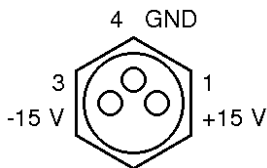
All characteristics are for ± 15 V power supply and 25 °C ambient temperature.

Absolute Maximum Ratings	
Input Voltage	20 V peak-peak
Power Supply Voltage	± 20 V

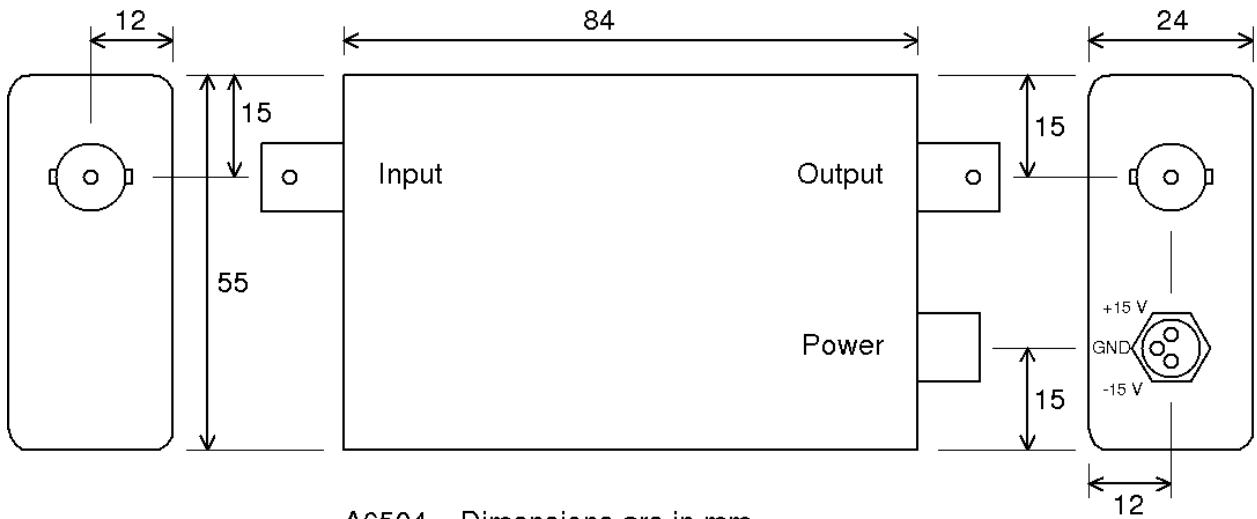
Ordering Information		
Ordering Code: A6504-Y		
	Y = Input Configuration:	
	S = BNC Connector (Standard)	
	A = SMA Connector	
	B = SMB Connector	

Ordering Code Example:
A6504-S = Input with BNC Connector

Connections	
Input	BNC, SMA or SMB Connector
Output	BNC Connector
Power Supply	M8 Connector Pin 1 = +15V Positive Supply Pin 3 = -15V Negative Supply Pin 4 = Ground



Dimensions



A6504 Dimensions are in mm

Power Supply is a female 3-pin industry standard M8-connector.