

**Variable-Gain Static Charge Amplifier with Reset**

**Features**

- Variable Gain from  $10^4$  to  $10^{10}$  V/C
- Bandwidth DC - 10 kHz
- Very Low Input Bias Current < 100 fA
- Frequency Response independent of Detector Capacitance (up to 1  $\mu$ F)
- Compact 105 x 34 x 164 mm

**Applications**

- Piezo Ceramics
- Capacitive Pickups
- Impedance Measurement
- Q/V Characterization
- Surface Charge Measurement
- Dose Integration of Ionisation Chambers

The A7530 is a charge amplifier with very low input bias current, enabling quasi static measurements. Low baseline drift enables integration times up to hours. The gain is switchable over 7 decades from  $10^4$  to  $10^{10}$  V/C. Gain and reset are remotely controllable via 4 galvanically isolated TTL bits. Local manual gain control is also provided, and the amplifier can be reseted via a local push-button as well.

Input pulse currents of up to 500 mA peak can be integrated without loss of linearity. The input is protected against transient discharge voltages of up to 1 kV out of 100 pF. To use remote control, manual gain selection switch has to be set to 0. The linear regulated power supply NT3-E is available as a suitable accessory.

Gain Selection							
Gain [V/C]	$10^4$	$10^5$	$10^6$	$10^7$	$10^8$	$10^9$	$10^{10}$
Charge for Full Scale Output [C]	$10^{-3}$	$10^{-4}$	$10^{-5}$	$10^{-6}$	$10^{-7}$	$10^{-8}$	$10^{-9}$
Manual Switch Position	0	1	2	3	4	5	6
Bit Code (Pin 3,2,1 of D-Sub-9)	000	001	010	011	100	101	110

Common Characteristics	
Gain Accuracy	$\pm 1\%$
Nonlinearity	< 0.1%
Bandwidth	DC – 10 kHz
Rise Time	35 $\mu$ s (10% – 90%)
Hold Time	min 100 s (1% Droop)
Input Bias Current	< 100 fA
Input Bias Current Drift	$\times 2 / 10^\circ\text{C}$

## Model A7530 Data Sheet

<b>Common Characteristics</b>	
Input Impedance	1 $\Omega$ virtual, quasi-DC
Input Offset Voltage	< 0.1 mV
Output Offset after Reset	< 0.1 mV
Output Voltage Noise	< 1 mVpp
Output Voltage Range	$\pm 11$ V (>1 k $\Omega$ Load)
Output Impedance	50 $\Omega$
Max. Output Current	$\pm 20$ mA
Gain Indicator	7 red LEDs
Digital Control Voltage	0 – 0.8 V for logical L 2 – 15 V for logical H
Power Supply Voltage	$\pm 15$ V
Power Supply Current	+25 / -10 mA typ.
Case	Anodized Aluminum 105 x 34 x 164 mm
Weight	500 g
Storage Temperature	-20 .. +80 $^{\circ}$ C
Operating Temperature	10 .. 50 $^{\circ}$ C

All characteristics are for  $\pm 15$  V power supply and 25  $^{\circ}$ C ambient temperature.

<b>Absolute Maximum Ratings</b>	
Input Voltage	$\pm 20$ Vdc max
Input Current	20 mA rms max averaged over 1 second
Power Supply Voltage	$\pm 20$ V max
Digital Control Voltage	+20 V max / -5 V min

Input is protected against transient discharge voltages of up to 1 kV out of 100 pF.

<b>Connections</b>	
Input	BNC Connector
Output	BNC Connector
Control	D-Sub-9 Connector female (optoisolated): Pin 1 = Gain Bit 0 Pin 2 = Gain Bit 1 Pin 3 = Gain Bit 2 Pin 5 = Reset (H = active) Pin 6 = Digital Ground All other Pins are not connected.
Power Supply	M8 Connector Pin 1 = +15V Positive Supply Pin 3 = -15V Negative Supply Pin 4 = Ground

