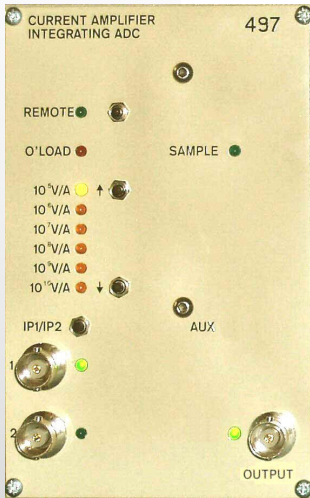


AC Pre-amplifier/DC Amplifier & Integrating ADC



The 497, combining a six-decade trans-impedance amplifier and A to D converter, has been developed to respond to two specific signal detection requirements, particularly pertinent in the testing of photovoltaic devices of various type.

In the DC mode, it can be used as the main detection electronic, incorporating both current amplifier and A to D converter. In the AC mode, it is used as a pre-amplifier for a lock-in amplifier employing current source detectors such as photomultipliers and photodiodes.

The virtual earth inputs (two) of the amplifier ensure that the detector is kept in short circuit condition, whereby no voltage is generated across the detector as a result of the photocurrent it produces. This short circuit operation enhances the linearity of detectors, reduces the effect of cable capacitance and is often a necessary condition in the determination of detector responsivity.

The 497 is a double-width module, housed within the 417/T mother unit.

Used in conjunction with the 496 lock-in amplifier, the 497 allows the user to select a combination of current and voltage gain which optimises the trade-off of noise performance versus DC current sinking.

Gain range and input in use may be selected via the USB interface, over which is passed the measurement result and range over-load/ under-load flags from the A to D converter.

Core Features

- Six decade trans-impedance amplifier
- Up to 10⁸ V/A gain
- Dual Input for use with multiple detectors
- Virtual ground input
- Integrated 14 1/2 bit integrating ADC
- 100ms ADC integration time
- Fully programmable via USB interface through 417 unit

Specification		Frequency response	
		V/A	Bandwidth (-3dB)
Inputs:	2, remotely/manually selected	10 ³	> 1MHz
Gain Ranges:	10 ³ -10 ⁸ V/A	10 ⁴	1MHz
Maximum Input:	10mA	10 ⁵	260kHz
Frequency Response:	<i>See separate table</i>	10 ⁶	30kHz
Input Impedance:	Virtual earth	10 ⁷	23kHz
Gain Accuracy:	+1%	10 ⁸	4kHz
Gain Stability	200ppm/°C		
Output Stability:	5ppm/°C to 500ppm/°C depending on sensitivity		
Interface:	USB (via 417/417T mother unit)		
Resolution	4 1/2 digit BCD (0 to 19999) i.e. > 14 bit resolution		
ADC Conversion	100ms		
ADC Input Range	-0.2V to 9.8V		
Linearity	< 0.025% departure from linearity from zero to full scale		