BENTHAM

477
AC Current Pre-Amplifier

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- Six decade trans-impedance amplifier
- Up to 10^8 V/A gain
- Dual Input for use with multiple detectors
- Virtual ground input
- Fully programmable via USB interface through 417 unit

The 477 is used as a pre-amplifier for a lock-in amplifier in AC systems employing current source detectors such as photomultipliers and photodiodes (eg. Si, Ge, InGaAs, InSb) which, at low frequencies, give their best performance when connected to a virtual ground.

The virtual earth inputs 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.

Used in conjunction with the 496 lock-in amplifier, the 477 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.

The 477 is a single-width module housed in the 417/417T base unit.

Specification	
Inputs	2, remotely/manually selected
Gain Ranges	10^3-10^8 V/A
Maximum Input	10mA
Frequency Response	See separate table
Input Impedance:	Virtual ground
Gain Accuracy	+1%
Gain Stability	200ppm/°C
Output Stability	5ppm/°C to 500ppm/°C depending on sensitivity
Interface	USB (via 417/417T base unit)
Linearity	< 0.025% departure from linearity from zero to full scale

Frequency response	
V/A	**Bandwidth (-3dB)**
10^3	> 1MHz
10^4	1MHz
10^5	260kHz
10^6	30kHz
10^7	23kHz
10^8	4kHz

Bentham Instruments Limited - 2 Boulton Road - Reading - Berkshire - RG2 0NH - England
Tel.+44 (0)118 975 1355 Fax.+44 (0)118 931 2971
Email: sales@bentham.co.uk Website: www.bentham.co.uk