BENTHAM

496
DSP Lock-In Amplifier

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- Dual input for use with multiple detectors
- High input impedance
- Digital signal processing
- No user phasing intervention required
- Displays magnitude, phase, frequency and SNR of signal
- Signal sampling using two high precision ADCs
- USB interface through 417 electronics

To complement our range of UV-Vis-IR spectroradiometers, employed in the characterisation of sources, detectors and materials, Bentham have introduced the 496 DSP lock-in amplifier. Using digital signal processing in lieu of the modulators, filters and amplifiers of a conventional lock-in, the 496 requires no manual intervention to set up so you can concentrate on getting on with the measurement.

The 496 lock-in amplifier is a key component of spectroradiometer systems operating in conditions where the optical signal to be measured may be confounded with a background optical signal, whether from ambient lighting, or, in the infrared, heat (or infrared radiation) emitted by instrumentation and the background.

To discriminate the two contributions, the optical signal to be measured is modulated on a known carrier wave by an optical chopper, the relative phase difference between these two waveforms must be taken account of. In the 496, the input and reference are digitised prior to determination of the components in two orthogonal states in order to take the vector sum of the two. Phasing intervention as is custom with traditional lock-in amplifier-based systems, is therefore not required.

The 496 module is housed within the 417/417T mother unit.

Specification	
Inputs:	2, remotely/manually selected
Frequency Range:	10Hz to 2kHz
Gain Ranges:	Binary gain, 2^{-6} to 2^{14}
Input Impedance:	100MΩ/25pf, pseudo differential
Dynamic Reserve:	Not applicable - digital demodulation
Gain Accuracy:	±0.15%
Gain Stability	200ppm/°C
Output Stability:	5ppm/°C to 500ppm/°C depending on sensitivity
Time Constant:	10ms to 10s
Display:	Signal, frequency, phase and SNR displayed to two decimal points
ADC Resolution:	16 bit
ADC Speed:	52 kHz
Input Range:	0 to 10V
Linearity:	< 0.025% departure from linearity from zero to full scale
Interface:	USB (via 417/417T mother unit)

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