



496
DSP Lock-In Amplifier

496 DSP Lock-In Amplifier

- 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.

Electrical	
Channel 1 input	Voltage input to lock-in amplifier
Channel 2 input	Voltage input to lock-in amplifier
Input Range	0 to 10V
Input Impedance	100MΩ/25pf, pseudo differential
Reference Input	0- 5V
Frequency Range	10Hz - 2kHz
Dynamic Reserve	Not applicable - digital demodulation
Gain Ranges	Binary gain, 2^{-6} to 2^{14}
Gain Accuracy	±0.15%
Gain Stability	200ppm/°C
Output Stability	5ppm/°C to 500ppm/°C depending on sensitivity
Time Constant	10ms to 10s
ADC Resolution	16 bit
ADC Speed	52 kHz

Interface & Mechanical	
Interface	USB via 417/417T Unit (I ² C)
Control	Front panel/ USB
Front Panel Controlled Features	Input select, gain range select, integration time select
Dimensions	Dual width module, 3U high
Connector	BNC
Display	LCD display of signal, frequency, phase and SNR