

## Electro-optic components and systems

### Noise Eaters

Significantly lowers noise intensity in laser beams



The LASS-II (Laser Amplitude Stabilization System) is an electro-optic feedback loop designed to reduce amplitude variations commonly associated with most gas lasers. This system is capable of significantly enhancing the signal/noise ratio of the laser over a much broader bandwidth than typical optically coupled current modulation of the plasma tube. Both an internal and external reference input is provided, allowing analog programming of the laser throughput. This is particularly convenient for

use in recording systems where laser power must be varied as a function of position on the recording medium (i.e. video disc, flat bed recorders, etc.). The system is composed of three separable units, the feedback electronics, power supply and electro-optic modulator with integrated beam-splitter and photodiode amplifier.

### LASS-II Performance Specifications:

Wavelength	514nm, laser power 50mw, $l_o = .5 l_{max}$
Laser Power	50mw, $l_o = .5 l_{max}$
Beam Diameter	1.4mm ( $1/e^2$ ) TEMOO
Noise Reduction	1/1 @ 500kHz (Int. Ref. Mode) 5/1 @ 100kHz 18/1 @ 50kHz 100/1 @ 10kHz 200/1 @ 1kHz 250/1 @ 200hz
Noise Floor	458nm, -100db Relative to F.S.
D.C. Stability – Short Term	<1% Relative to Full Scale (@.5lmax, T=0 -> 1hr.
External Input Impedance	1k nominal
External Input Voltage	0 -> +1 V Max
Electrical Input Power	-20W (100-230 Vac)
The amount of light for calibration	@633nm – 300uw
Output of beam-splitter to diode	@514nm – 450uw

### POLYTEC GmbH

Büro Berlin Schwarzschildstraße 1 D - 12489 Berlin GERMANY  
Tel: +49 (30) 63 92 51 40 Fax: +49 (30) 63 92 51 41

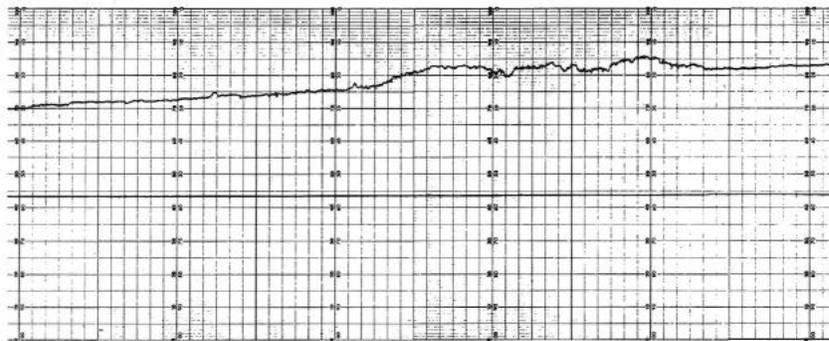
wl@polytec.de  
www.polytec.de

	@488nm – 540uw @458nm – 820uw *Two different types of beam splitters are available to optimize efficiency and finesse
Static Transmission	85% (excluding beam-splitter)
Useable Aperture	2.5mm square *
Optical Bandwidth	400-800nm **
Max. Throughput Power	3.5w/mm2 TEM00

\*Large Aperture 3.5mm is available on special order and is suggested for large frame Argon/Krypton lasers.

\*\* Both UV & IR on special order.

### Long Term DC Stability details



t=0 →

#### LONG TERM DC STABILITY

UPPER TRACE = Detected, unstabilized laser input.  
LOWER TRACE = Detected output of Lase II.

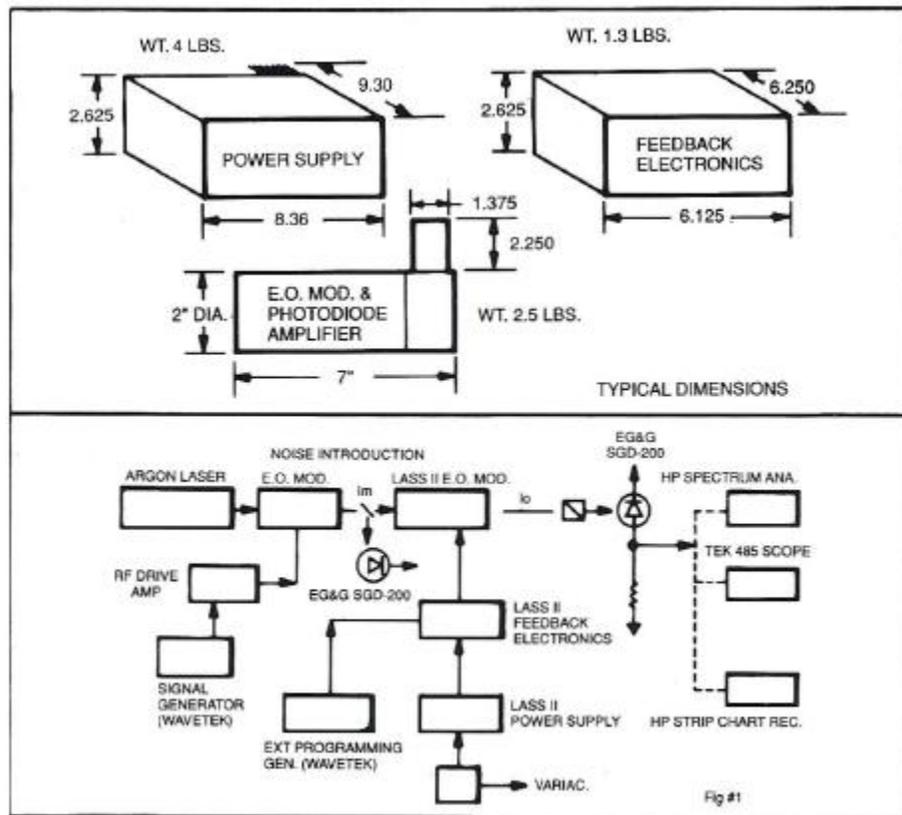
Sensitivity - 50mv full span  
(.5mv/minor div.)

Detector output @ chart recorder,  
upper = 100mv; lower = 200mv full  
scale (100mv @ .51o).

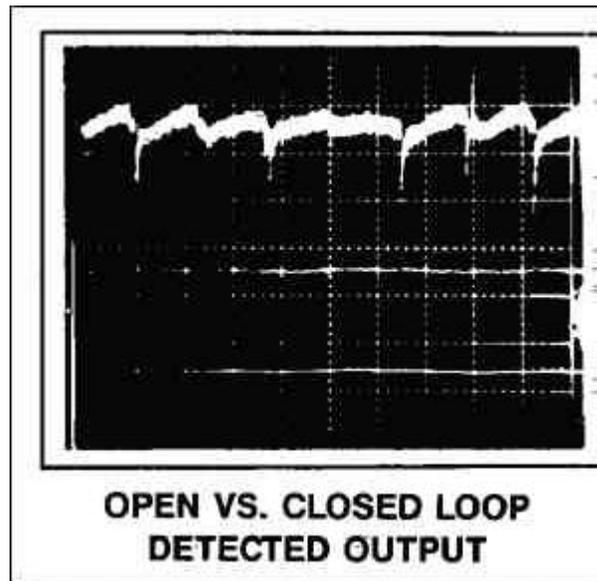
Recorder D.C. offset used to center  
both traces.

Horizontal scale = 1cm/min.

The below diagram illustrates the configuration of the LASS-II System.



The picture below illustrates the open vs closed loop output.



IDC	1.0V
Top Trace	AC Coupled, 10mv/DIV, 1msec/DIV.
Middle Trace	AC Coupled, 5mv/DIV
Bottom Trace	Detector without laser