

Which system is best for my application?

The LPC should be thought of as an all-around stabilizer system which is appropriate for nearly all applications. Its 4mm aperture and small optics module, make it easy to align and operate. The 5KHz noise reduction bandwidth removes thermal drift and 60Hz noise sources which tend to dominate the laser noise spectrum. Combined with the microprocessor controlled electronics the LPC is an easy to use and versatile system.

Users wanting noise reduction at higher frequencies should consider the LS-PRO. The LS-PRO is optimum for users who are acquiring data at a high rate. With similar low speed behavior as the LPC, the LS-PRO extends the noise reduction capabilities up to 2 MHz to remove noise sources typically caused by switch-mode power supplies and other high frequency sources.

We are happy to discuss your particular requirements to help you choose the best system for your application.

Can The LPC-NIR be used with femtosecond Ti:Sapphire lasers?

Yes, Many of our Ti:Sapphire LPC users ask us about the pulse width broadening (caused by dispersion) from the LPC. We have customers using 20 femtosecond Ti:Sapphire lasers but they generally operate them at pulse widths greater than 100 femtoseconds.

The pulse broadening effect on femtosecond lasers is related to the thickness of the glass that the beam must travel through. Any material which the beam passes through will increase the pulse width. We have been unable to get information on the exact value of the pulse width broadening from our customers and we are unable to calculate this value.

The effect will be dominated by the "glass" which the beam passes through, this includes about 12mm of BK-7, 5mm each of FK-5 and Calcite (polarizer), 1.4 mm Corning 7059F (cell). The remaining materials; LC, AR coatings, and polyimide, will not have significant effects. This totals approximately 24mm of material which is significantly less than any other AO or EO modulator system available.

How is the damage threshold of the LPC affected by short pulse width lasers?

The specification for the damage threshold (CW or average power) of the LPC-NIR is 31(W/cm²). The pulse energy threshold is very high and in all cases damage will occur from average power levels and not from individual pulse energies. This is true with pulse widths as short as femtoseconds.

Can you provide a LPC which will use feedback signal from my own detector?

BEOC can provide a system to work with nearly any stable detector output. In addition, the standard current input can be modified to accept a voltage input as an option. We have designed systems using PMTs, fiber optic based detectors and others. Our input voltage option, [LPC-VIO](#), allows you to input a voltage from an external detector.

How reliable are the Liquid Crystal cell (LC) modulators?

As long as power density specifications are not exceeded, the lifetime of a LC cell is nearly indefinite. We have OEM systems which are used on Semiconductor fabrication lines in 24-7 environments which have operated for more than 15 years without any cell degradation.

Can the LPC stabilize multi line lasers?

The LPC should be operated at only one wavelength. If you have multiple lines we would suggest that you use an interference filter to pass only the desired line. The silicon photodiode feedback element is not linear over the wavelength range. This will cause instabilities if all lines are passed through the LPC simultaneously

Can the LPC be used while scanning a range of wavelengths?

The LPC uses a Si feedback detector. The detectors response is not flat over the wavelength range so this must be taken into account when scanning a laser. The response however will be stable and repeatable. The maximum change in response will be about .1%/nm in the NIR range.

Can the LS-PRO be used as a fast electronic shutter?

Unfortunately, the LS-PRO is not capable of being shuttered quickly. The high speed drive of the LS-PRO has a drive level of only about 15V giving a modulation capability of about 10-15%. This is far beyond the noise fluctuations of lasers and is sufficient for noise reduction capabilities but not for use as a shutter.

Do you still manufacture the CR series of stabilizers originally sold by Thorlabs?

These products (CR100, CR200a, CR200b, CR300) were built as an OEM product for Thorlabs and are no longer available for individual purchase. We recommend the the LPC as a replacement unit for the CR 200 series stabilizers. In OEM quantities, we have the ability to provide similar custom applications to suit your particular needs. Please contact us for details.