

LASERMETRICS[®] Division

FASTPULSE TECHNOLOGY, INC.

220 Midland Avenue • Saddle Brook, NJ 07663

Tel: (973)478-5757 • Fax: (973)478-6115

WebSite • <http://www.lasermetrics.com>

5046SC SYSTEMS

FOR LASER PULSE

EXTRACTION, GATING & CHOPPING

- Self-contained HV Power Supplies
- No Exposed High Voltage
- 3-5 Nanosecond Rise & Fall Times

- Up to 5 kHz Selection/Gating Rates
- KD*P or Lithium Niobate Pockels Cells
- Meets U.S. & CE Mark EMC Requirements

The Series 5046SC system incorporates high voltage supplies, an electro-optic light modulator and high speed switching drivers in a single, EMI/RFI shielded enclosure. Only +24 volts DC and two externally generated trigger signals are required for operation. The systems are highly reliable, completely solid state and meet all requirements of U.S. and European EMC standards.

5046SC systems can operate over a wide range of voltages. They are capable of producing quarter and halfwave retardation voltages over an optical spectrum of 300 nm to more than 2000 nm with appropriate light modulators. Output pulse amplitude is adjustable by a front panel potentiometer.

Exhibiting optical rise and fall times as fast as 3 nanoseconds (depending on load), 5046SC Systems are exceptionally useful for regenerative amplifier switch-out, laser pulse slicing, mode locked pulse gating, cavity dumping and Q-switching. The systems are valuable for both intracavity and extracavity applications and offer the latest technology in reliable, lowest radiated noise, solid state, high voltage switching design. They are used by several OEM laser manufacturers in their regenerative laser systems.

Series 5046SC Systems can be configured for a variety of applications. An extensive selection of components and operating parameters are available. Optical switching is accomplished by Series 3900 or 3910 Lithium Niobate or Series 1000 KD*P Pockels cells manufactured by Lasermetrics to match the electrical characteristics of the 5046 High Voltage Driver.



Maximum system repetition rate is determined by the Pockels cell capacitance and maximum power supply high voltage. For a Model 1059 Pockels cell (KD*P crystal, 5 pf) and nominal 7 kV maximum, the repetition rate is limited to about 2 kHz. At shorter wavelengths and lower operating voltages, repetition rates of 5 kHz are attainable. Higher repetition rates are possible under certain conditions. Our engineering staff will work with you to optimize a system for your particular application.

KD*P Pockels cells with sol gel AR crystal coatings exhibit a damage threshold in the range of 20 GW/cm² with laser pulse widths less than 100 ps.

Lithium niobate devices (Series 3900 and 3910) have a damage threshold in the range of 1 GW/cm² for a <100 ps pulse width. Series 3910 Lithium Niobate cell crystals are acoustically damped to minimize piezoelectric ringing and increase the frequency modulation range. Series 3910 devices are electrically and optically similar to 3900 Series devices of similar aperture.

CONTINUED - OVER

SERIES 5046SC SYSTEMS

5046SC Systems are self-contained with the Optical Head Assembly packaged in a shielded enclosure. Unshielded, open configurations for end user packaging are also available. A typical shielded system consists of the following elements:

- 5046SC HV-PFN Module with internal HV Power Supplies
- Q1059P Series KD*P or 3910 Series Lithium Niobate Pockels Cell with AR coatings
- MG-145 Precision Pitch & Azimuth Gimbal (with Pockels cell mounted)
- Cover & Cable Set
- Optional Glan-Air or Dielectric Film Polarizers are available

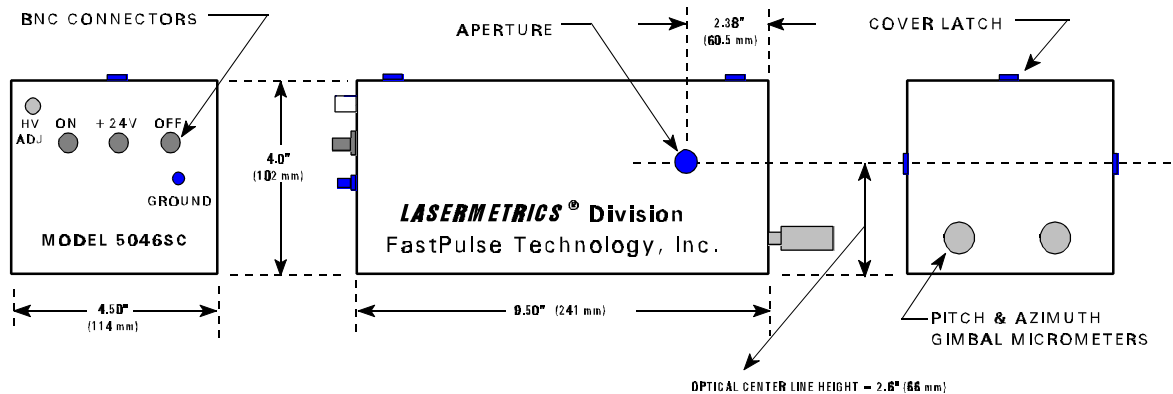
Contact our Engineering Sales Group for alternatives and options to match your application

TYPICAL SPECIFICATIONS

¹ Useful Optical Wavelength Range:	300 to 2200 nm
Optical Rise and Fall Times (10 to 90%):	3 to 4 ns (Q1059P Series Pockels cells)
Optical Pulse Width Range:	< 10 ns to 1 μ s
Repetition Rate, single shot to:	2 kHz ($\frac{1}{2}$ wave retardation with a Q1059P modulator at 1064 nm)
Jitter, System Input to Output:	< 1 ns
Input-Output Propagation Delay Time:	< 35 ns
Trigger Input Impedance:	50 ohms
Trigger Input Pulse Voltage (ON & OFF):	2 to 5 volts
Trigger Input Pulse Width (ON & OFF):	50 ns to 500 ns
Power Required for user supplied DC voltage	+ 24 VDC @ up to 1.5 amperes
Dimensions: 5046SC	4H X 4.5W X 9.5L, inches
² 5046SCM	4H X 4.5W X 8.25L, inches

1. Wavelength range is dependent on choice of electro-optic modulator and crystal material. For instance, for operation at 1064 nm with 20 watts average power but with peak power densities of less than 250 MW/cm², the Series 3900 LiNbO₃ modulators would be likely candidates. The Model Q1059PSG(λ) is standard.

2. The **5046SCM** has a 2.0" optical beam height with an aperture centered 2.0" inches from the end bearing the micrometers. Overall enclosure length of the 5046SCM is 8.25". **Gimbal adjusting screws are internal, there are no external micrometer handles.**



5046SC SYSTEM – DRIVER MODULE / OPTICAL HEAD ASSEMBLY

GRAPHICS\5046SC-HEADASSY.WPG

