

**FEATURES**

- Self-Contained HV Power Supply
- Pulsed Output from 1 to 5 kV
- Rise Times <4 nanoseconds
- EMI/RFI Shielded Enclosure
- Repetition Rates to 1000 pps
- High Reliability & Small Footprint
- OEM Variations are Available



5055SC-A High Voltage Pulse Modules are intended for driving electro-optic Pockels cell Q-switches. The modules incorporate a self-contained high voltage supply which requires only +24 Volts DC input. An AC to +24VDC miniature converter is available for supplying the required +24 VDC. High voltage is adjusted to the required level by an integral miniature potentiometer. The HV Pulse Module can be triggered from conventional TTL pulse sources. Repetition rates from single shot to 1000 pulses per second are attained with the standard HV Pulse Module. Higher repetition rates, up to 5,000 pps, are available with the company's Series 5056SC modules. 5055SC-A Modules incorporate an EMI/RFI shielded enclosure with HV insulated wires terminated in pin terminals or tinned wire.

The module can provide three modes of operation:

1.) Balanced Output: Both output leads are set at the Quarter or Half Wave retardation voltage of the Pockels cell and thus the cell operates with no static DC high voltage applied. The HV output pulse switches from net zero Volts across the cell terminals to the adjustable, preset operating HV level. This zero voltage feature prevents cumulative ion migration damage which occurs in KD\*P crystals with application of continuous DC voltage.

2.) High Voltage Applied: DC high voltage, up to 5 kV can be applied to the Pockels cell; typically the 1/4 wave retardation voltage. This HV is then switched to zero volts to generate the Q-switched laser pulse. This configuration avoids the necessity for a 1/4 wave retardation plate.

3.) Capacitor Coupled Output: a DC blocking capacitor can be used to prevent application of DC voltages to the Pockels cell. This configuration is usually used for applying 1/4 wave retardation voltage pulses to the Pockels cell. Pulses rise up from a zero voltage base to the preset high voltage. A 1/4 wave retardation plate is generally required in this configuration.

Model 5055SC-A Q-switch Driver Modules are compatible with KD\*P, RTP, BBO and Lithium niobate Q-switches.

KD\*P Pockels cells (Series 1040, 1058, 1059, 1145 and 1148) are useful where large beam diameters (up to 25 mm) and peak power densities can reach 1 GW/cm<sup>2</sup> in a uniform beam cross section with no hot spots.

RTP (Rubidium Titanyl Phosphate) Pockels cells (Series 1147) are recommended for operation where high average power, freedom from piezoelectric ringing or wavelengths longer than 1100 nm are needed. Both KD\*P and RTP Pockels cells provide highest transmittance, nominally 98.5%, in the range of 800 nm to 1100 nm. RTP is useful for longer wavelengths.

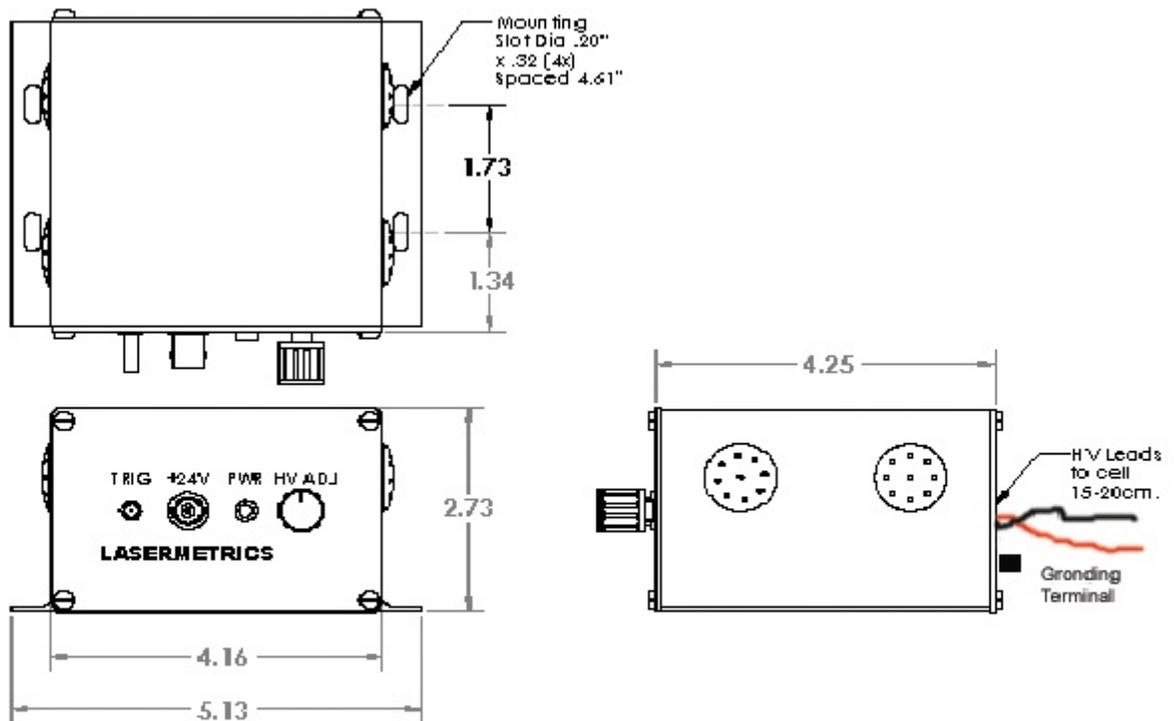
BBO (Beta Barium Borate) Pockels cells (Series 1150) are most useful in the UV--Visible wavelength range but can be a good choice for 1 micron lasers when the laser beam diameter is <2 mm diameter. BBO requires relatively high drive voltages. Reduced voltage cells are available which utilize two crystals: optically in series and electrically in parallel models. Both RTP and BBO cells may be used at the 50 Watt average power level.

Note:

Model 5055SC-A replaces the original 5055SC. It has been improved with an updated HV MOSFET circuit and higher current capable power supply.

## 5055SC-A Q-Switch Driver Module -- Nominal Specifications

HV Switching Speed, Rise Time.....	<4 nanoseconds (10%-90%)
High Voltage DC Range.....	1000 to 5000 volts
High Voltage Pulse Output Range.....	0.96 X HVDC
Output Pulse Repetition Rate.....	One Shot to 1000 pps
Output Pulse Width, nominal.....	~5 microseconds
Output Jitter, Trigger Input to HV Output.....	<2 nanoseconds
Input Trigger Level: Pulse, (SMA Connector).....	TTL Levels, (5 Volts max.)
Input - Output Intrinsic Time Delay.....	<50 nanoseconds
DC Power Input, (BNC Connector).....	+24 $\pm$ 5% volts DC, ~17 Watts
Power Supply Recommended .....	Model MW4024F (optional)
	(100/240 VAC, 50/60 Hz to +24 VDC @1.7 A)



Specifications may change to incorporate latest modifications or improvements  
 (5055SC-A-Module)-28 Jan 2014.wpd