

Lasermetrics Models 1111 and 1112 are the fastest switching Pockels Cell Electro-Optic Modulators currently available. The Model 1111, a single crystal device and the 1112, a dual crystal model have demonstrated rise times of 40 picoseconds and 85 picoseconds respectively. They attain, within a few percent, the maximum theoretical speed possible for devices of their physical clear aperture. The Model 1112 operates at one half the voltage required by the single crystal Model 1111 by using two crystals optically in series and electrically in parallel. Both devices are configured to present a 50 Ohm impedance to the electrical driving pulse.



These Pockels Cells are made from carefully screened KD*P crystals with >98.5% deuteration, having a computer optimized cylindrical ring electrode geometry. The design minimizes drive voltage and switching speed and optimizes optical performance. Crystals are mounted in a rugged aluminum housing sealed with fused quartz windows. The design permits use of index matching fluid to minimize reflections from internal optical surfaces. This feature, in combination with high efficiency, multilayer antireflection coatings on the protective window surfaces, can provide a transmission of efficiency as high as 98%.

The 1111 and 1112 were designed for use as fast shutters for pulse chopping and isolation, and in modelocked pulse selection systems where only a single picosecond or femtosecond pulse must be gated from the pulse train. Total optical path length of the 1111 is 15 mm and that of the 1112 is 22 mm, which minimizes temporal dispersion. The devices find use in many other laser system applications requiring the ultimate in switching speed. This series is intended for use with pulsed voltages only since the equivalent electrical transmission line circuit presents a 50 Ohm impedance load to the driving voltage source.

TYPICAL SPECIFICATIONS

	Model 1111	Model 1112
Crystal Material	KD*P	KD*P
Number of Crystals	1	2
Optical Path Length, total	15 mm	22 mm
Clear Aperture	2.5 mm	2.5 mm
Half Wave Retardation Voltage @ 1064 nm	~6.5 kV	~3.3 kV
Reflection Coefficient at $t_r=140$ psec	<5%	<5%
Rise Time	<50 psec	<100 psec
Termination Impedance	50 Ohm resistance connected to modulator by a ≥ 1 meter long 50 ohm impedance cable	
Dimensions (N Type Connectors):	3.25"W including connectors X 1.875H X 2.0L in Beam direction (83 W X 48 H X 50.8 L mm)	
Weight	11 oz. (.312 kg)	