

LEYSOP LTD

Manufacturers and suppliers of electro-optic components

UPC068 Ultra-Fast Pockels Cell



Longitudinal electric field
KD*P design

Dry or fluid filled

High power handling

High extinction ratio

>1000:1

Low optical loss

<250ps Optical rise-time

Low wave-front distortion

For most normal applications such as Q-switching and laser beam modulation, the standard EM500 and EM500M ranges of longitudinal Pockels cells are very adequate. Rise-times achievable with these devices can be easily obtained in the range of 500ps and upward with suitable electrical drive waveforms. In fact in most systems, the rise time of the electrical pulse generator into the load capacitance of the cell is the dominant factor and typical rise times are thus of the order of 3 to 5ns.

For some applications however, the shortest possible rise times are required and this is where our UPC design excels. This ultra-fast pockels cell has been designed as a matched 50 ohm impedance device. Coaxial taper geometry has been maintained throughout the device, yielding

an electrical bandwidth sufficient to sustain an electrical rise-time of ~200ps. The geometry of the crystal allows for an electric field propagation limited optical rise time of typically ~250ps or less (depending on beam diameter) when driven with a suitable source. Applications for this device include pulse slicing from CW/longer pulse sources and very importantly for cleaning up of pre-pulse and ASE artefacts from fs and ps lasers prior to extreme amplification. We can supply complete systems with ultra-fast drivers so please contact us with your requirements.

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Performance Specifications

Specification	Typical Performance	
	UPC 068	UPC068/2
Electro-optic material	>95% deuterated KD*P	>95% deuterated KD*P
Number of crystals	1	2
Dynamic half wave voltage at 1064nm	~7,200V	~3,600V
Max applied voltage	8kV	8kV
Electrical rise time	<200ps	<250ps
Optical rise time (4mm \varnothing beam)	<250ps	<300ps
Characteristic electrical impedance	50W	50W
Extinction ratio	>1000:1	>750:1
Maximum optical transmission with fluorocarbon index matching fluid	~96%	~95%
Maximum optical transmission dry construction and uncoated crystal	~91%	~84%
Maximum optical transmission dry construction with single layer AR coated crystal	~96%	~94%
Max peak input power density (10ns input pulse length)	600MWcm ⁻²	600MWcm ⁻²
Electrical connectors	HN Female	HN Female
Number of connectors	2	2