



QUANTUM TECHNOLOGY, INC.

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**SERIES 10
HIGH SPEED IR
EO MODULATORS
DATA SHEET 741**

HIGH SPEED IR MODULATORS MODEL SERIES 10

QUANTUM TECHNOLOGY designs and manufactures a wide variety of E-O modulation systems for modulating laser beams with the highest degree of efficiency. These systems are available with full accessories. These include wideband E-O driver electronics, autobias controls, feedback networks, polarizing optics and modulators with bandwidths up to 1000 MHz. These systems offer the widest selection of integrated drivers and E-O modulators for optical bandwidths from UV (Crystal BBO down to 200 nm) through to the mid IR (4500 nm). BBO is an excellent crystal for use in the UV, KD*P in the visible (300 nm to 1100 nm) and Lithium Tantalate (LTA) in the mid IR region (600 nm to 4500 nm). These LTA modulators are transverse devices in which the electrodes are applied along Z direction and beam passes along Y direction of the crystal. Quantum Technology designs and manufactures custom modulation systems with BBO modulators in the UV or special band widths DC to 100 MHz or 1 MHz to 1000 MHz. CW power density should be limited to 200 W/cm² at 1064 nm and about 0.1 W/cm² at 633 nm for 0.8 mm beam (LTA crystals).



Modulators of the transverse type require E-O crystals of good optical transmission, excellent dielectric properties, low strain, availability of large sizes, and ultimately, a low drive power. These qualifications are met by these three E-O materials. Performance parameters for these modulators are listed in the table below. Please refer to the data sheets on Pockels cells and Modulators: 718, 719, 720, 722, 729, 738 and 752. Please also refer to data sheet 724, 725 and 747 on modulator drivers for desired bandwidths from DC to 100 MHz.

LTA HIGH SPEED MODULATOR SPECIFICATIONS

Modulator Model	10	11	12	14	13	15
Crystal Material	LTA - Lithium Tantalate					
Transmission (%)	85	85	80	85	80	85
Half-wave Voltage @633nm	72	110	58	116	110	220
@1064nm	121	186	98	195	185	370
Crystal size - mm ³ : (Number of crystals)	1x1x20 (X2)	1x1x13 (X2)	3.2x3.2x40 (X4)	3.2x3.2x40 (X2)	4.5x4.5x30 (X4)	4.5x4.5x30 (X2)
Aperture (mm)	1	1	3.2	3.2	4.5	4.5
Capacitance	N/A	N/A	80 pF	40 pF	84 pF	42 pF
Impedances Available	N/A	N/A	100 ohm	100 ohm	100 ohm	N/A
	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	N/A
Differential Propagation Delay	0.4 ns	0.26 ns	3.8 ns	1.9 ns	4.0 ns	N/A
Phase Sensitivity - mrad/V	44	29	56	28	30	15
Contrast Ratio	30:1 @ 633nm 50:1 @ 1064nm					