

# Acousto-Optic Deflectors

An acousto-optic modulator (AO) allows to diffract a laser beam going through a crystal from the incidence angle (order 0) to another angle (order 1, see schematic layout at the back of this page). The output angle depends on the material but is also proportional to the laser wavelength and to the RF frequency applied to drive the device. By applying and/or changing that frequency, the laser beam angle can be moved (scan, random access ...) while there is no mechanical moving part in the system. Two devices used together allow for XY scanning. High frequency stability and linearity is required from the driving electronics. Controlling the driver RF power allows for beam intensity control and modulation simultaneously with angle control.

Model number	Spectral Range (µm) *	Material	Resolution (T.dF)	Aperture Time (µs)	RF Bandwidth (MHz)	Central Frequency (MHz)
IMD80DH**	0.44 - 0.85	PbMoO4	6	0.8	8	80
1205C-2	0.44 - 0.85	PbMoO4	16	0.55	30	80
1205C2-804	0.75 - 0.85	PbMoO4	66	1.6	40	80
1206C	0.44 - 0.85	PbMoO4	13	0.27	50	110
1250BS-926	1.06	PbMoO4	70	1	70	145
OPP-834	0.44 - 0.63	PbMoO4	520	5.2	100	200
LS-55V	0.36 - 0.63	TeO2	450	11.3	40	80
LS55-NIR	0.75 - 0.85	TeO2	450	11.3	40	80
OAD90	0.36 - 0.85	TeO2	920	23	40***	70***
LS110	0.48 - 0.85	TeO2	1100	22.7	50	100
LS110-NIR	1.06 - 1.55	TeO2	550	22.7	25	50
LS110-XY	0.44 - 0.85	TeO2	750 x 750	15	50	100
LS110XY-NIR	1.06 - 1.55	TeO2	375 x 375	15	25	50
OAD27-XY	0.36 - 0.85	TeO2	270 x 270	5.4	50***	100***
1207B3	2.5 - 11	Germanium	33	2.1	16	40
1207B6-BS	2.5 - 11	Germanium	50	2.5	20	40
LS-600	2.5 - 11	Germanium	180 (544)	4.5 (13.6)	40	70
LS-50XY	2.5 - 11	Germanium	50 x 50	1.27	40	70

\* Depending on selected anti reflection coating

\*\* Integrated digital electronic control

\*\*\* Depending on selected wavelength

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## Drivers for AO deflectors

Model	Type	Frequency (MHz)	Linearity *	RF Output Power (W)
D321	Driver	30 - 50	+/- 1%	1 - 1.6
D301B/D322B	Driver	57 - 103	+/- 1%	1 - 1.6
D302B/D323B	Driver	82 - 138	+/- 1%	1 - 1.6
D325	Driver	150 - 300	+/- 1%	1

\* See AOTF data sheet for 0.1% linearity VCO drivers

## Amplifiers for AO deflector drivers

Model	Type	Frequency	Output Power (W)	Gain (dB)
RFA-105	Amplifier	30 - 200	7	9
RFA-108	Amplifier	10 - 150	8	10
RFA-118	Amplifier	30 - 150	18	12
RFA-1108	Amplifier	10 - 150	8	40
RFA-1150	Amplifier	30 - 95	50	57

