

MT110-B50A1.5-IR-Hk + MDS1C-xx

IR TUNABLE AO MODULATOR SYSTEM



TECHNICAL DATA SHEET 2014

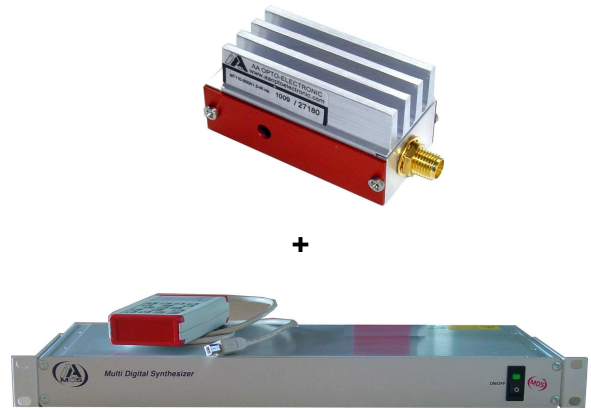
Description

This complete system has been specially designed for tuneable Ti:Sa lasers. It consists of having a modulator in association with a MDS driver in order to provide constant diffraction efficiency as well as a constant output angle whatever is the laser wavelength between 690 nm and 1064 nm.

Common application can be Stimulated Emission Depletion (STED) microscopy, multi photon imaging system and many others.

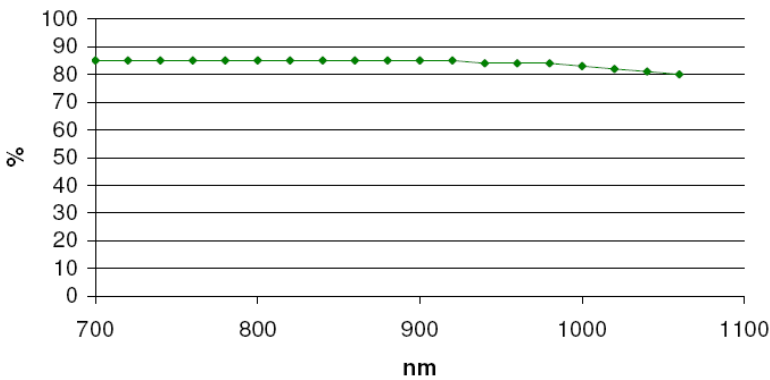
Features

- External Control/USB/RS 232
- Tuneable capabilities fro 690nm up to 1064 nm
- Constant output angle/full efficiency over whole wavelength range

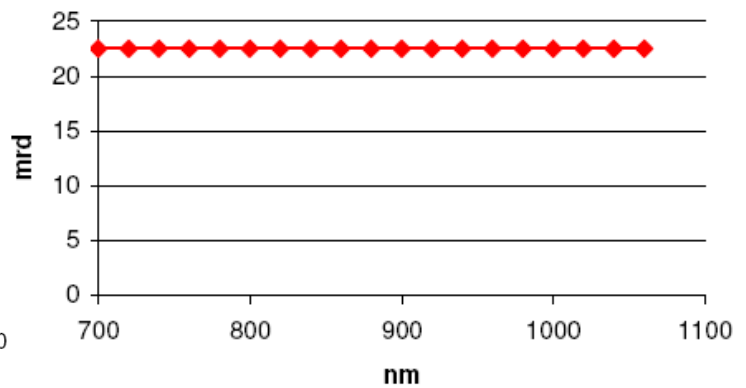


Access to your operating manual

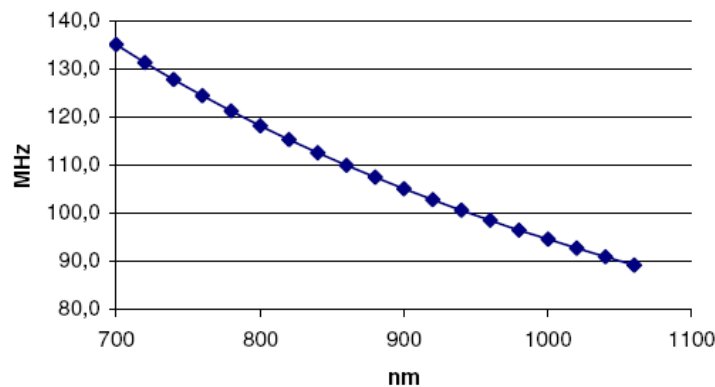
Efficiency versus wavelength without input angle readjustment



Output Angle versus wavelength



Frequency tracking versus wavelength



MT110-B50A1.5-IR-HK

Product Overview

These AO modulators work with a frequency range of 110 MHz +/- 25 MHz within the wavelength range 690 nm and 1064 nm. They are equipped with a passive heatsink and offer high speed application such as amplitude modulation.



MT110-B50A1.5-IR-Hk

Parameter	Specifications
Material-Acoustic mode-Velocity	TeO ₂ - [L] - 4200 m/s
Optical Wavelength range	690 nm to 1064 nm, AR coated
Optical Transmission	> 95
Input / Output Polarization	Linear / Linear
Active Aperture	1.5 x 2 mm ²
Carrier Frequency / Frequency shift	110 +/- 25 MHz
Separation Angle (0-1)	23 mrd
Static Extinction Ratio	> 33 dB
Rise / Fall time	160 ns / mm
Diffraction Efficiency	> 85 %
Analog Amplitude modulation bandwidth (-3 dB)	3 MHz
Max optical power density CW	> 10 W/mm ²
Input impedance	Nom 50 Ω
V.S.W.R.	Nom < 1.5/1
RF Power / Connector	< 2 / SMA
Size / Weight	(LxH) 60.1 x 28.7 x 26.5 / 50 g
Temperature stabilization	Passive Heatsink
Operating Temperature	+10 to +40 Non condensing
Storage Temperature	-40 to +50 Non condensing

Options / On request

Aperture	Wavelength	Connector	Housing
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Rise Time (T_r) is beam diameter (Φ) sensitive:

$$T_r = 0.66 \frac{\Phi}{V}$$

Amplitude modulation bandwidth (F_{-3dB}) is rise time (T_r) sensitive:

$$F_{-3dB} = \frac{0.48}{T_r}$$

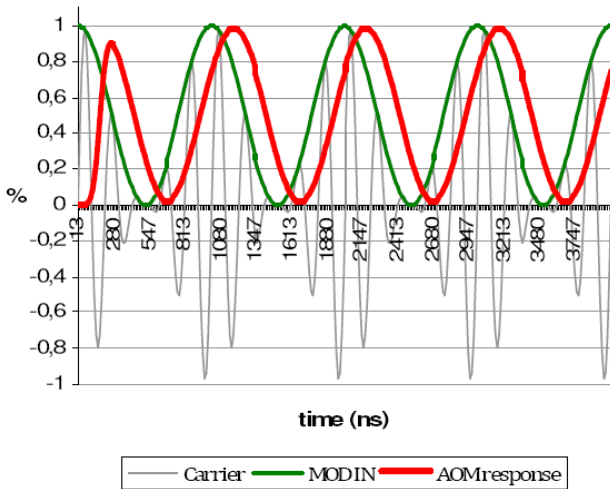
Separation angle ($\Delta\theta$) is wavelength (λ) sensitive:

$$\Delta\theta = \frac{\lambda F}{V}$$

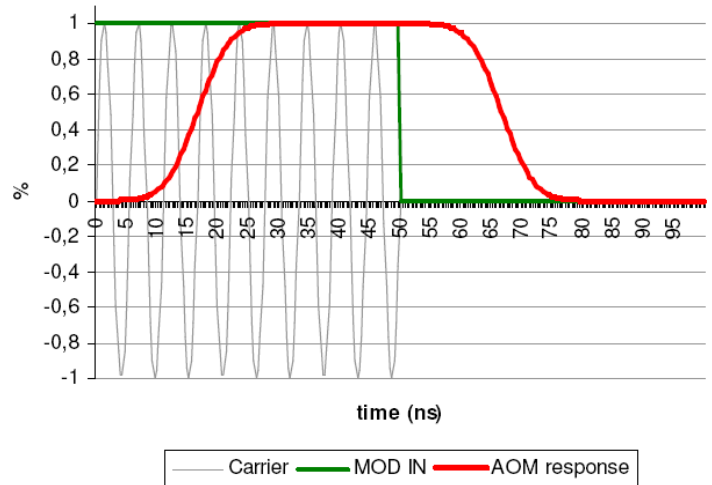
RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

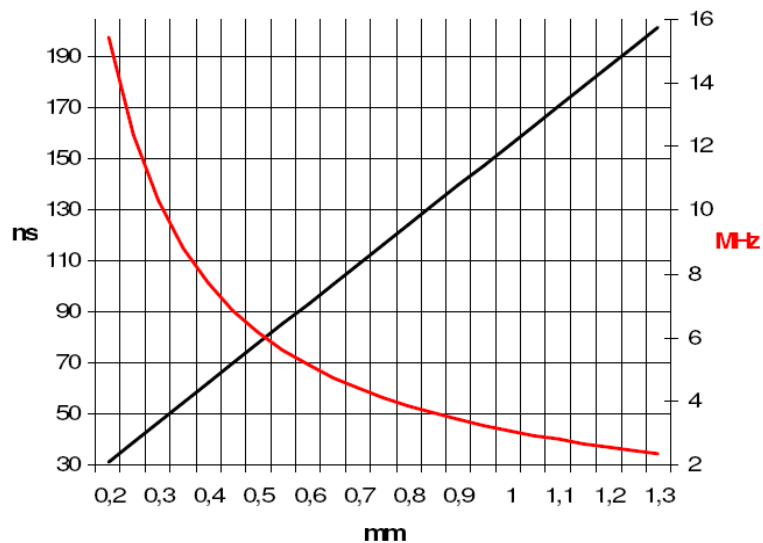
Relative Efficiency / AOMtemporal response
1 MHz with 0,7 mm beam dia



Relative Efficiency / AOM temporal response



Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter



Product Overview

The MDS1C driver is based on Direct Digital Synthesizers (DDS). They produce a tuneable, stable and accurate RF frequency signal for the Ti:Sa modulator. Its design with “on the edge” technology offers unique performance in terms of accuracy, speed and stability thanks to its internal temperature correction and high linearity design.

The built in amplifier delivers the necessary RF power to drive the acousto-optic device with reduced power consumption.

The adjustment of the driver (Frequency & power) can be done with a remote control, USB port or through the RS 232 communication.

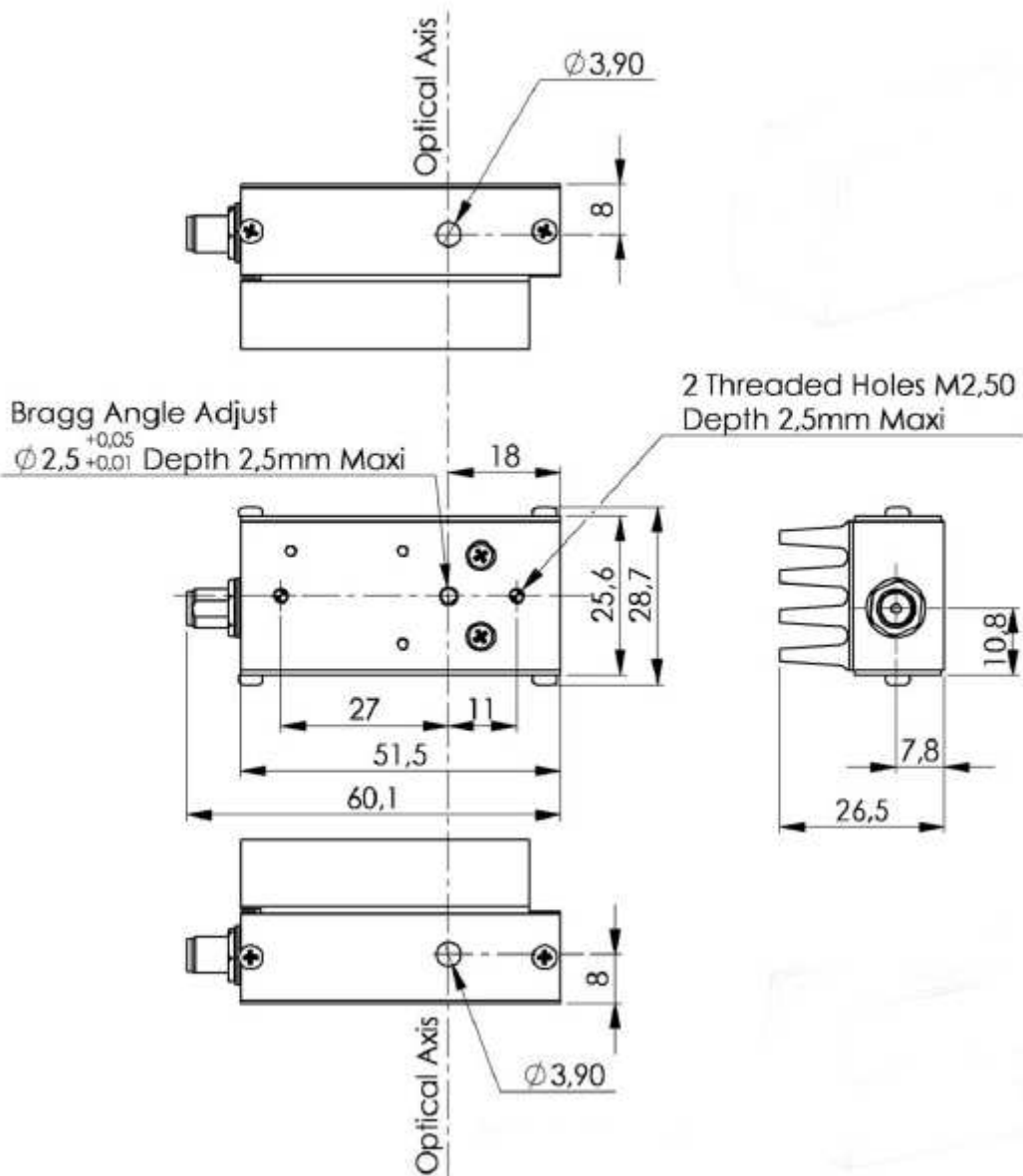
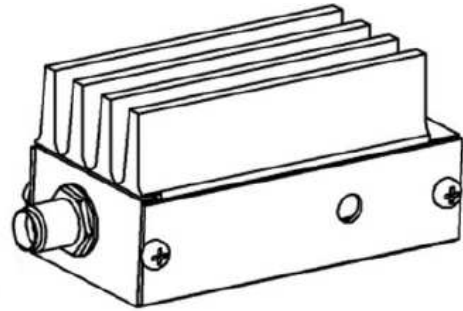


MDS1C-B6-34-85.135 (OEM version)

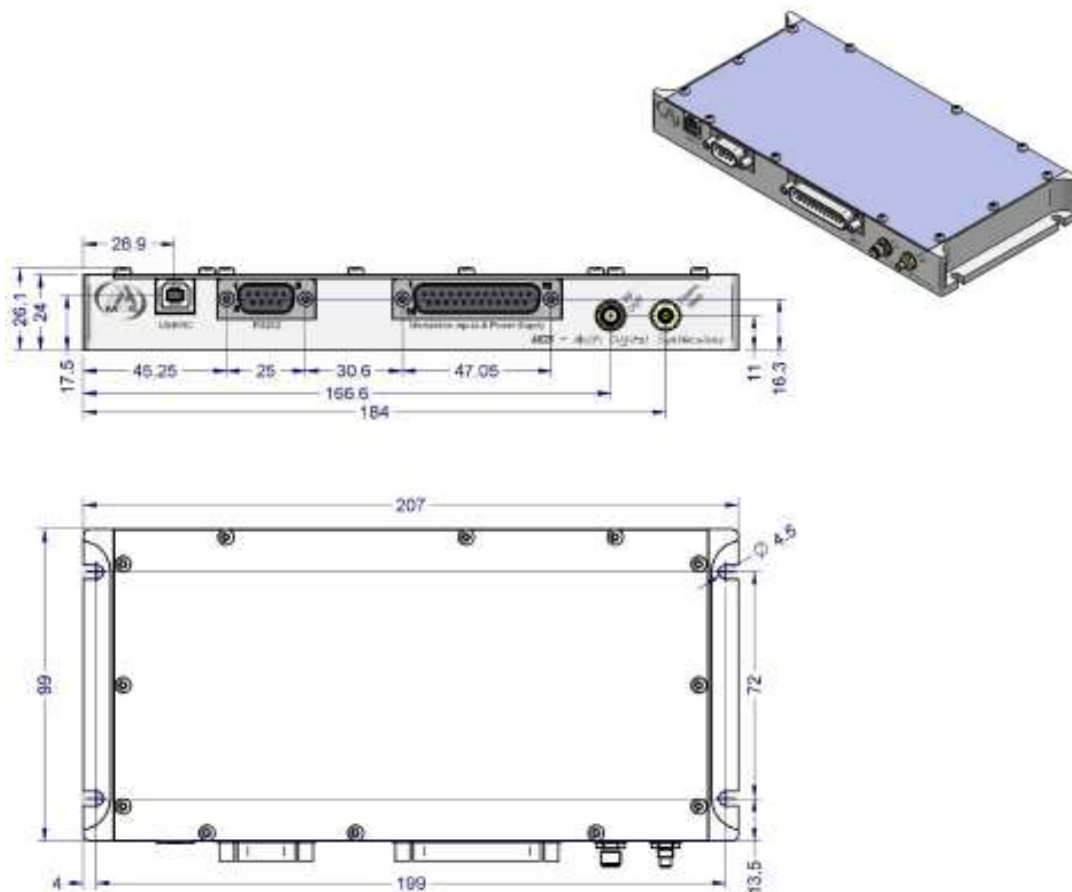
Parameter	Specifications
Number of Channels	1
Frequency Range	85 MHz to 135 MHz
Frequency Stability	+/- 2 ppm/°C
Frequency Accuracy	Nom 1 KHz
Frequency Step	Nom 1 KHz
Frequency Control	Remote Control (RC 03) + USB
Power Supply	24 VDC (<0.7 A),
Rise Time/Fall time (10-90%)	< 50 ns
Modulation Input Control /External	0-10 V or 0-5V
Modulation Input Control /Internal	Remote Control (RC 03) + USB
Extinction Ratio	Nom 70 dB
Output RF power	Max 2.5 Watts
Output Impedance	50 Ω
VSWR	< 1.5/1
Input / Output Connector	DB25/SMA
Size / Weight	207 X 99 X 26.1 mm3 / 0.6 g (OEM)
Heat Exchange	Conduction through baseplate for OEM versions
Operating Temperature	10 to 40 °C (max Tcase 55°C)
Storage Temperature	-40 to +50 Non condensing

Options / On request

CONTROL	RS 232
POWER SUPPLY	110-230 VAC (laboratory version)
HOUSING	Rack 19", 1U (laboratory version)
SOFTWARE	Free download on AA Website



OUTLINE DRAWING – MDS1C-B6-34-85.135 (OEM version)



OUTLINE DRAWING – MDS1C-D6-34-85.135 (Laboratory version)

