

# MCQ40-A2.5-L1064-Z42

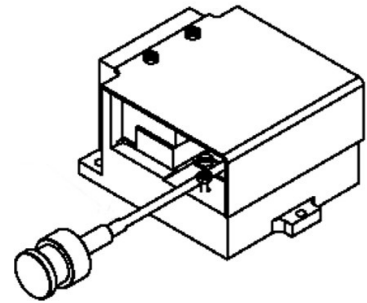
AO MODULATOR/SHIFTER



## Product Overview

These modulators are made of Quartz and due to their hard coating with low reflectivity, they have got a high damage threshold. They are designed for short cavities with an optical length of 42 mm and their fast rise time makes them a fast modulator for high power applications.

Additionally, they can be used as frequency shifter at +/- 40 MHz.



## Features

- 1.06  $\mu\text{m}$  design
- Linear polarization
- Air Cooled
- High Damage threshold

## Access to your operating manual



## Technical Specifications

Parameter	Specification
Material-Acoustic mode-Velocity	Crystal QUARTZ - 5740 m/s
Optical Wavelength range	1030-1080 nm
Transmission	>99% with hard V-coating
Input / Output Polarization	Linear perpendicular to baseplate
Active Aperture	2.5 x 2.5 mm <sup>2</sup>
Carrier Frequency / Frequency shift	+/- 40.68 MHz (other on request)
Operating mode	Bragg
Separation Angle (0-1)	7.54 mrd @ 1064 nm
Rise / Fall time	115 ns / mm
Diffraction Efficiency	>80%, Nom 85 % with TEM00 laser beam, M <sup>2</sup> ≤ 1.1
Analog Amplitude modulation bandwidth (-3 dB)	3 MHz @ 1.5 mm beam diameter
Max optical power density	> 500 MW/cm <sup>2</sup>
Input impedance	Nom 50 $\Omega$
V.S.W.R.	Nom < 1.2:1
RF Power / Connector	nom 20 W / BNC
Optical length	42 mm
Thermal security Switch	Short Circuit=Enable ; Open Circuit Disable
Heat Exchange	Conduction through baseplate
Size / Weight	(LxIxh) 52.2 x 62 x 33.8 mm <sup>3</sup> / 50 g IN PRO 259
Operating Temperature	+10 to +40 Non condensing
Storage Temperature	-40 to +50 Non condensing

## On request

Carrier frequency

Aperture

Rise Time ( $T_r$ ) is beam diameter ( $\Phi$ ) sensitive:

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

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

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

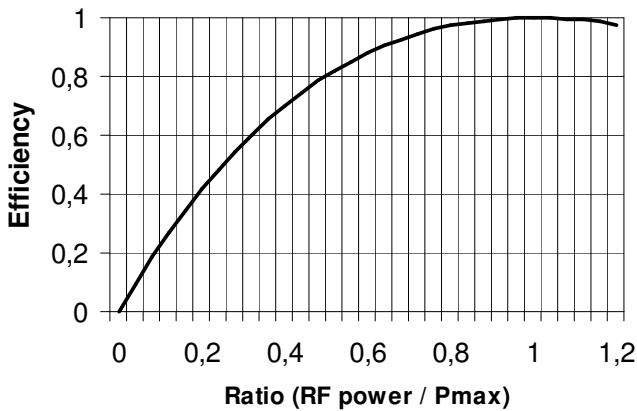
Separation angle ( $\Delta\theta$ ) is wavelength ( $\lambda$ ) sensitive:

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

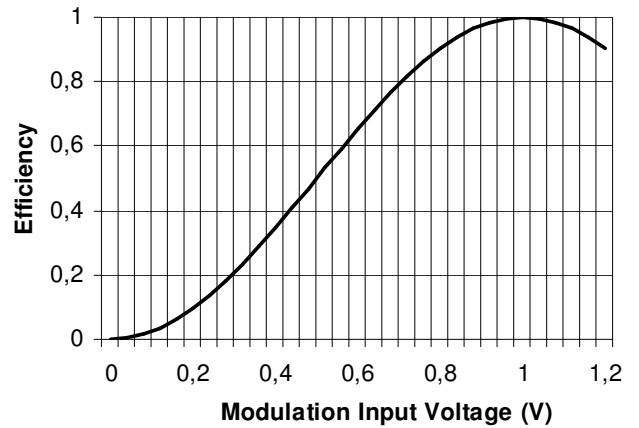
RF power ( $P$ ) is wavelength ( $\lambda$ ) sensitive:

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

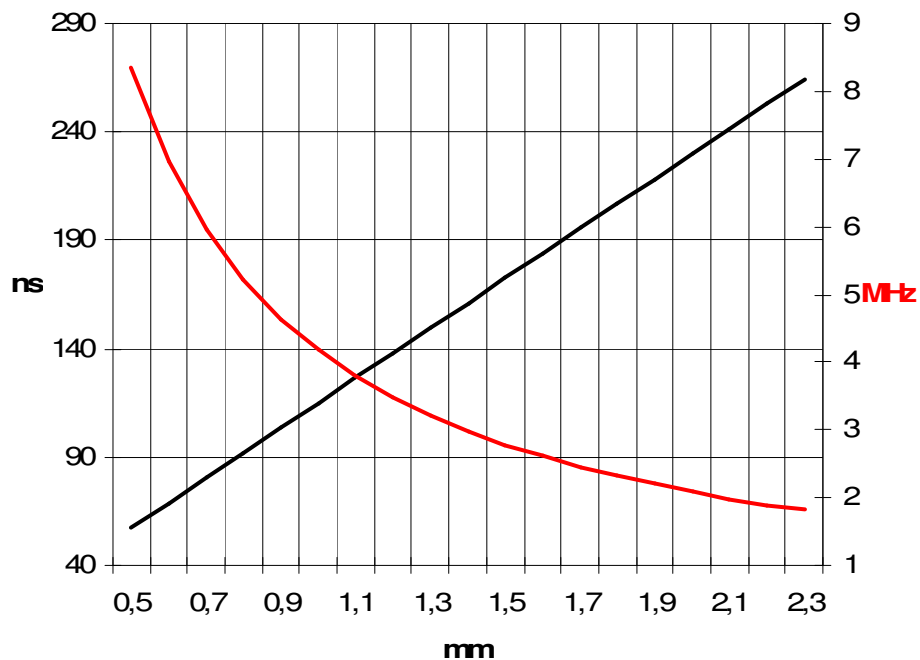
Relative Efficiency versus RF power



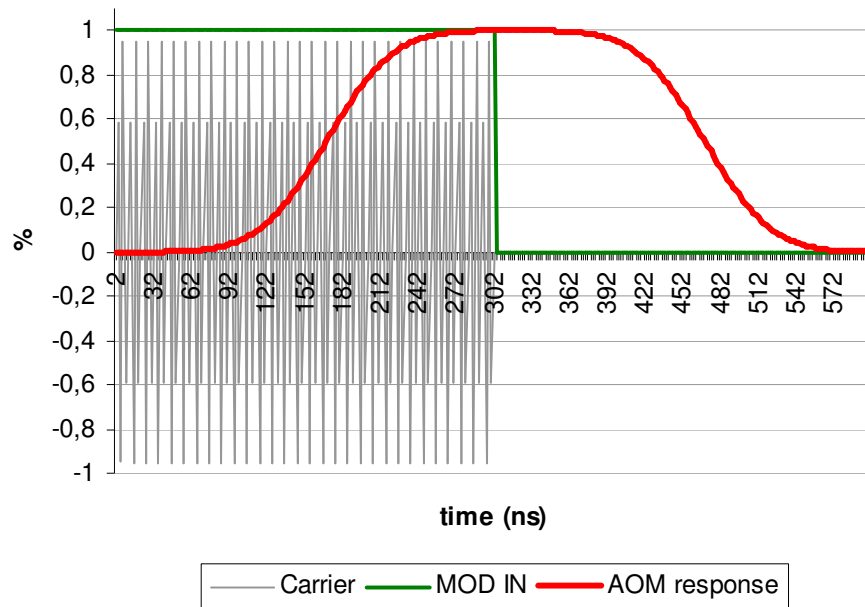
AO relative Efficiency vs driver MOD IN



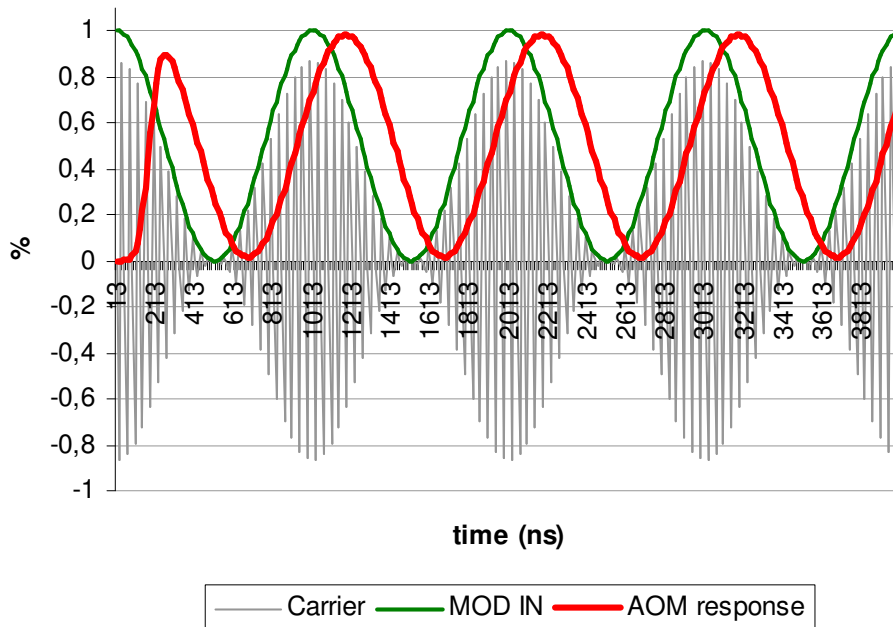
Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter

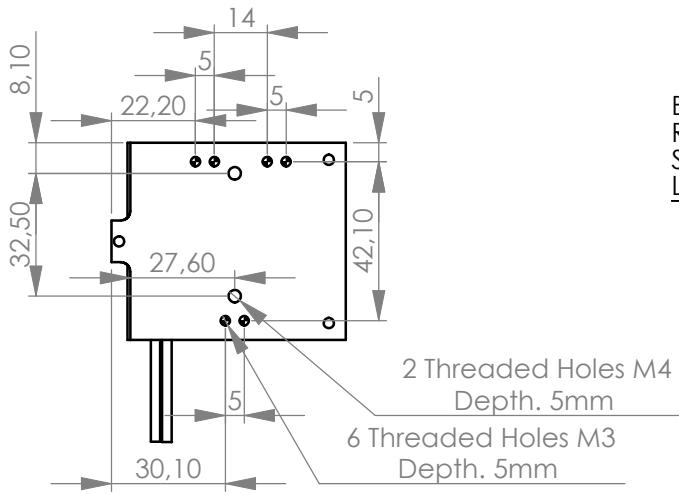


### Relative Efficiency / AOM temporal response

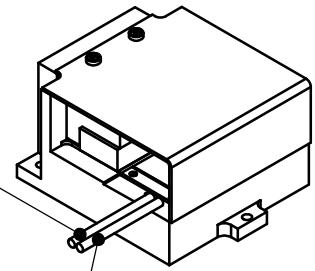


### Relative Efficiency / AOM temporal response (1MHz)

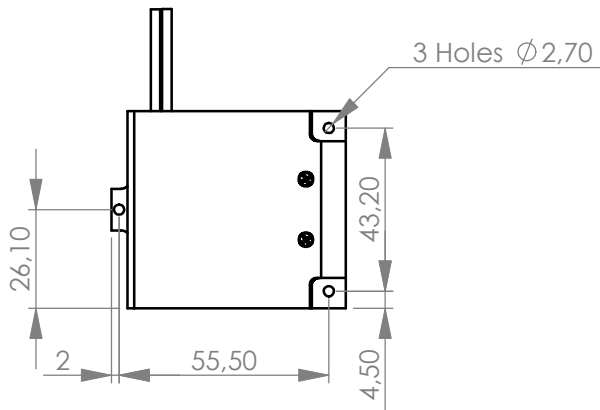
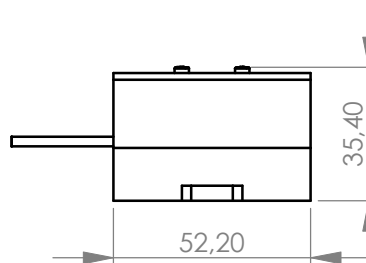
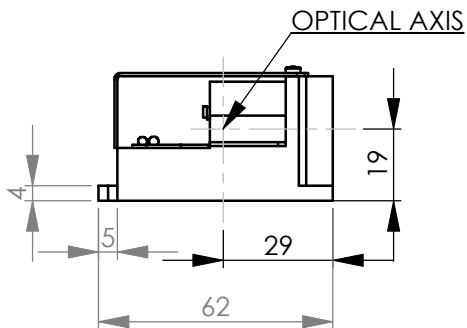



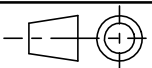


BNC Connector  
RF POWER  
Straight Plug Crimp  
Length 470mm



SMC Connector  
(with option-Th)  
SECURITY TEMPERATURE  
Straight Plug Crimp  
Length 470mm



A	20/10/09	E.V	Plan initial / Initial Drawing	
Indice Index	Date	Auteur Author	Modifications	
Conception Design	E.V	<b>PLAN D'INTERFACE / OUTLINE DRAWING</b>		 <b>OPTO-ELECTRONIC</b> <small>A.A. SA OPTO-ELECTRONIQUE DIVISION 18, rue Nicolas Appert F-91898 ORSAY tel : 08 11 09 76 76 fax : 01 76 91 50 31</small>
Vérification Checking				
Tolérance Tolerance	ISO 2768mK	Référence / Reference		
Echelle Scale	1:2	<b>IN-PRO-259</b>		
	Format A4	<small>Ce document est la propriété de A.A.SA. Il est strictement interdit de reproduire ce document ou une partie sans l'autorisation de A.A.SA. This document is the property of A.A.SA. It is strictly prohibited to reproduce this document or a part without the authorization of A.A.SA.</small>		Folio / Sheet <b>1/1</b>
				Indice / Index <b>A</b>