MG40-A6-9300/10600
MG40-A8-9300/10600

AO MODULATORS/SHIFTERS

TECHNICAL DATA SHEET 2014

Product Overview

These modulators have been specially designed for far infrared range operation from 3µm to 11µm. A standard design for 10.6 µm is proposed. They can also be used as fixed frequency shifters @ 40 MHz, as well as variable frequency shifters or deflectors with a frequency range up to 40 +/- 2.5 MHz.

Features

- Large active aperture
- Linear polarisation
- High diffraction efficiency.
- 10.6 and 9.3 µm versions.

Access to your operating manual

Technical Specifications

Parameter	MG40-Ax-10600	MG40-Ax-9300
Material-Acoustic mode-Velocity	Germanium/ V= 5500 m/s	
Optical Wavelength range (AR coated)	10-11 µm	9- 9.5 µm
Optical Transmission	Nom 90%	
Input / Output Polarization	Linear //	
Active Aperture	6x10 mm² 8x10 mm²	6x10 mm² 8x10 mm²
Carrier Frequency / Frequency shift	40 MHz	
Separation Angle (0-1)	77 mrad @ 10.6µm	67.6 mrad @ 9.3 µm
Static Extinction Ratio	> 33 dB	
Rise / Fall time	120 ns / mm	
Diffraction Efficiency	≥ 80 % with TEM00 laser beam, M²≤1.1	
Analog Amplitude modulation bandwidth (-3 dB)	> 800 kHz, with 5 mm beam diameter	
Max optical power density (CW)	5 W/mm²	
Input impedance	Nom 50 Ω	
V.S.W.R.	Nom < 1.5/1	
RF Power/ Connector	Nom 50 W/ BNC	Nom 40 W/ BNC
Heat Exchange	Water Cooling (typ 250 ml/min)	
Thermal Security Sensor	Security Cut-off over high temperature	
Size / Weight	(Lxlxh) 71.5x 63.4 x 39.5 mm³ / 250 g	IN PRO 020
Operating Temperature	+10 to +40 Non condensing	
Storage Temperature	-40 to +50 Non condensing	

On request

VARIABLE FREQUENCY SHIFT ☑ 40 +/- 3 MHz **Diffraction efficiency>60%**

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Rise Time (Tr) is beam diameter (Φ) sensitive:

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

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

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

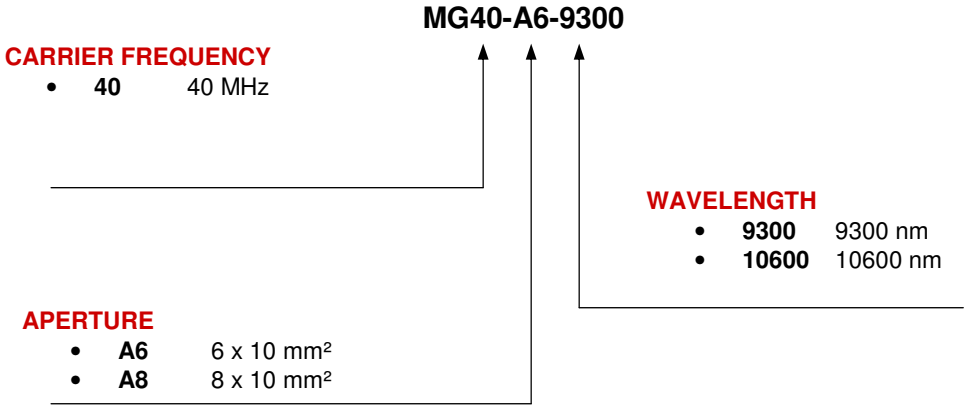
Separation angle (Δθ) is wavelength (λ) sensitive:

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

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

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

How to determine your model



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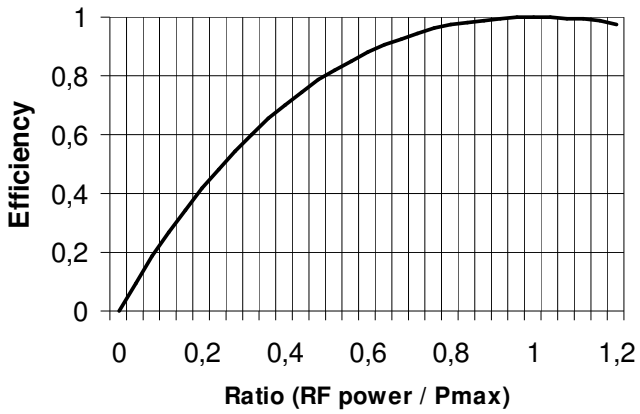
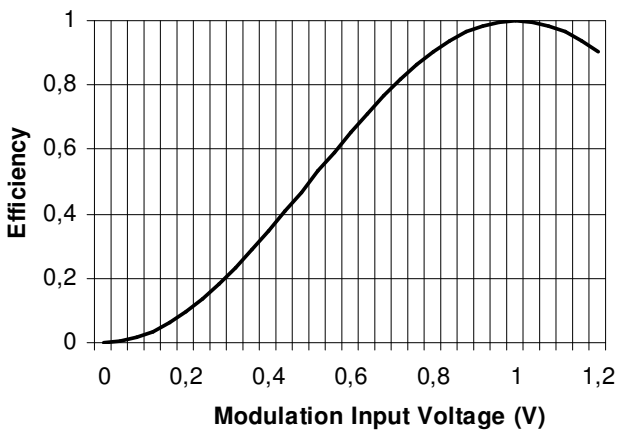
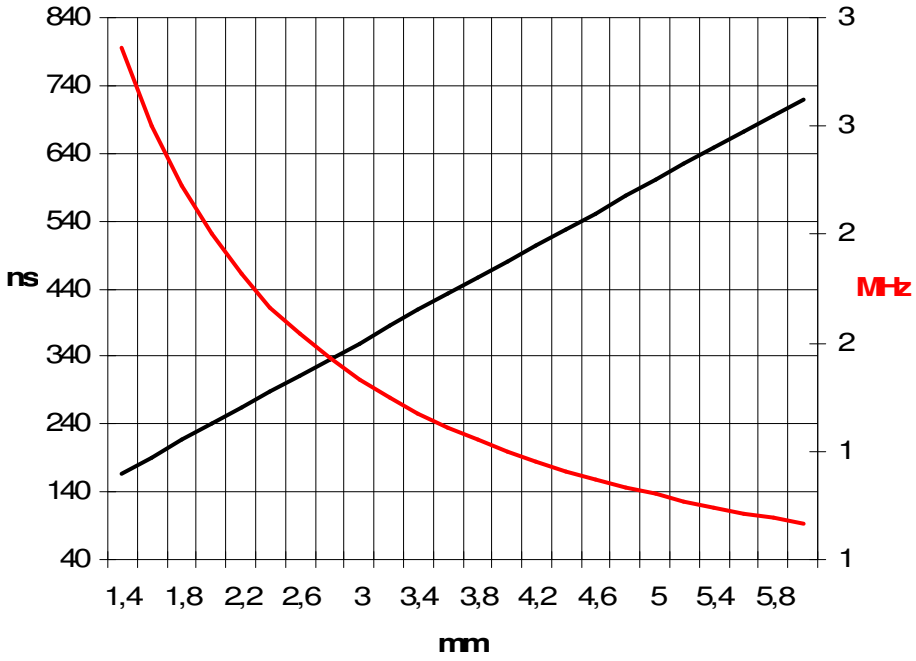
Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



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



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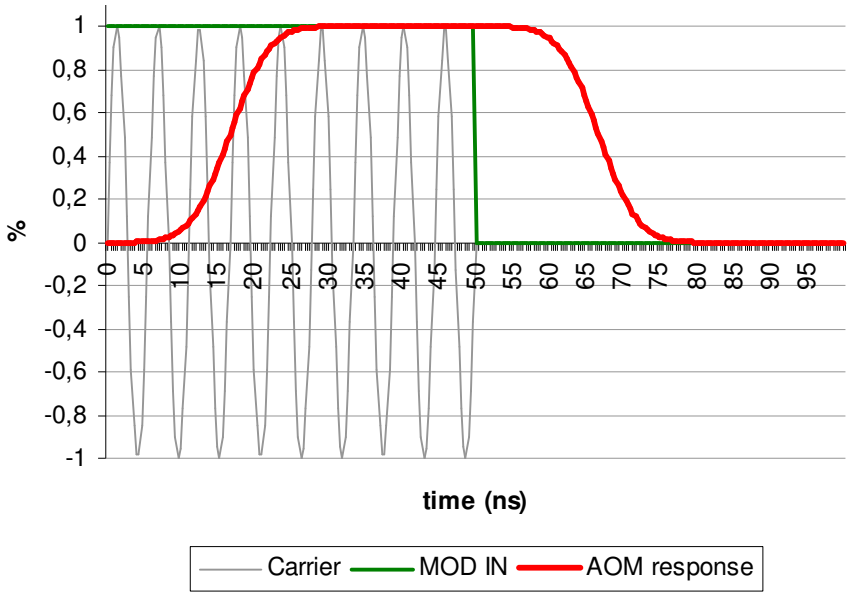
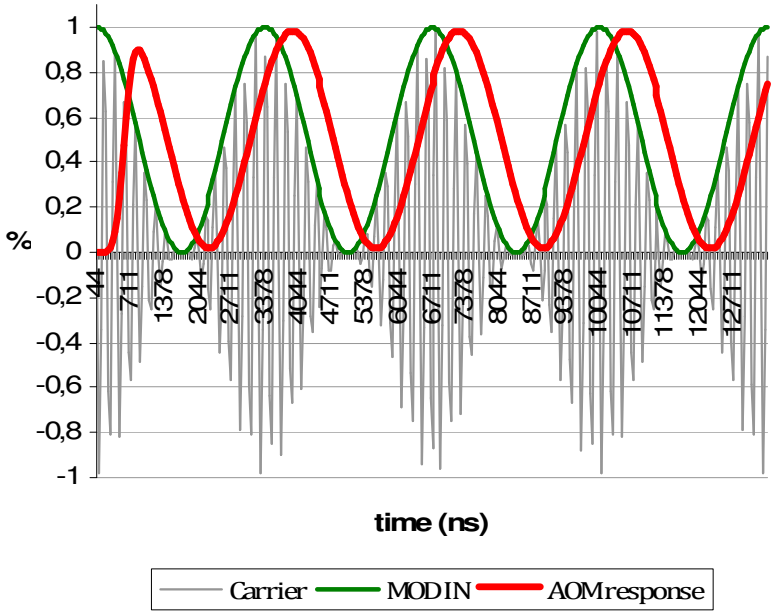
Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response
0,3 MHz with 3 mm beam dia



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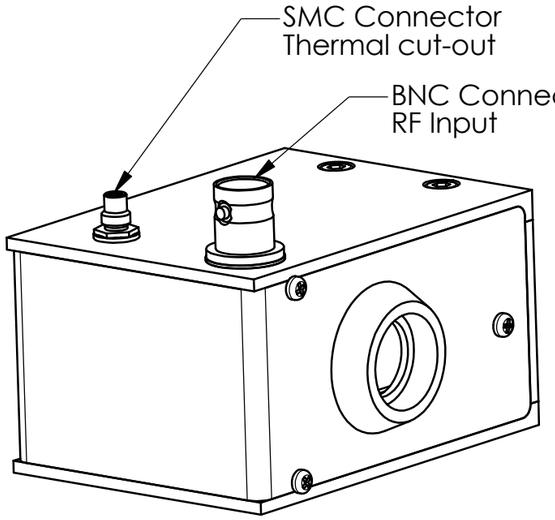

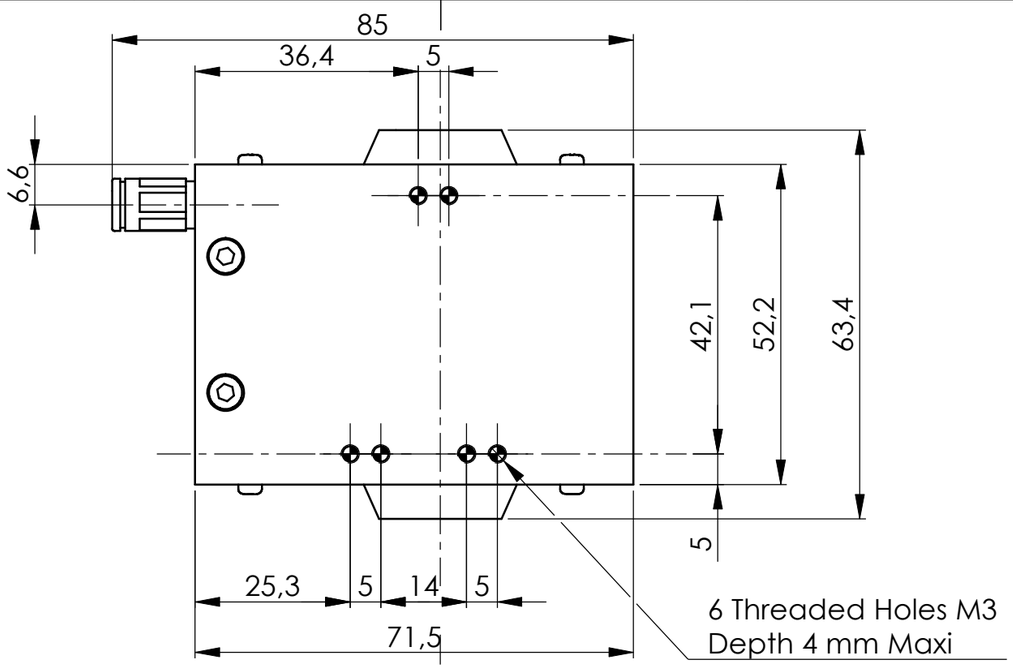

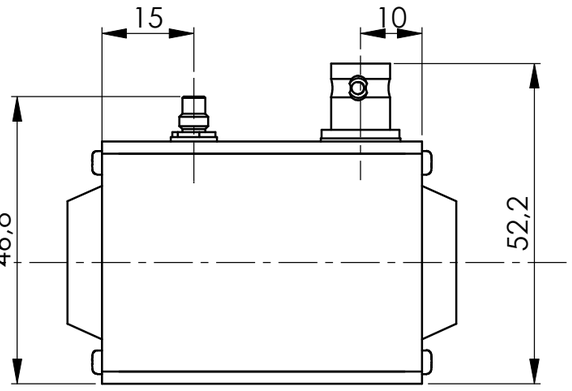

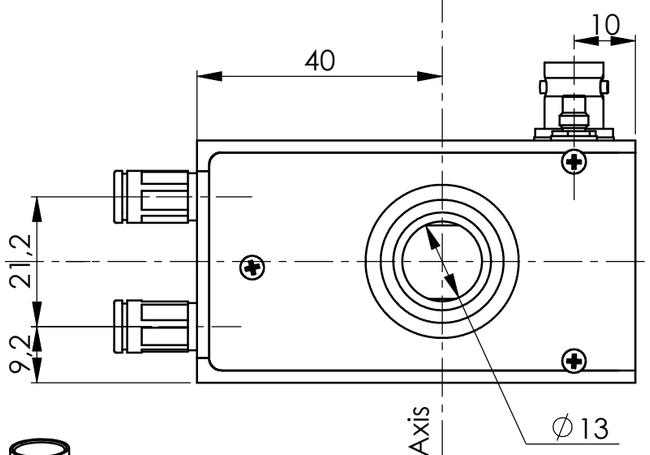

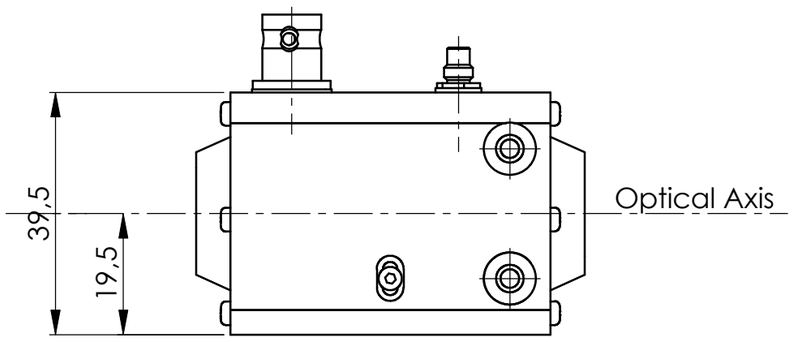

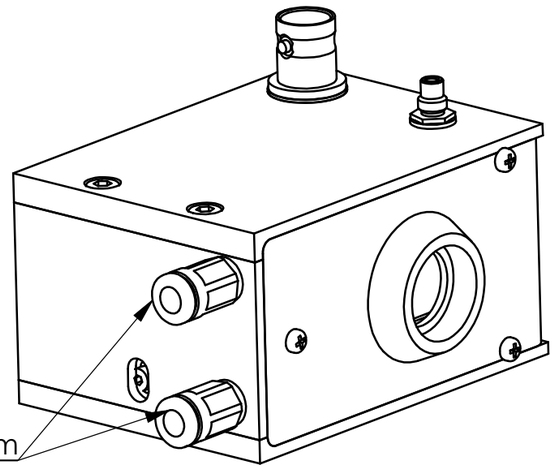

Indice Index	Date	Auteur Author	Modifications
B	25/06/07	E.D	Mise en plan + Precision de hauteur de l'axe optique
A	26/03/04	O.G.B	Plan initial / Initial Drawing

Conception Design	E.D
Vérification Checking	L.F
Tolérance Tolerance	ISO 2768mK
Echelle Scale	1:1
Format	A3

PLAN D'INTERFACE / OUTLINE DRAWING

Référence / Reference

IN-PRO-020

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