MT80-A0.4-2000

AO MODULATOR/SHIFTER

TECHNICAL DATA SHEET 2014

Product Overview

These free space modulators has been specially designed to work in the far infrared region, particularly in the wavelength range of 1950 nm to 2100 nm. Their carrier frequency of 80 MHz will enable a fix frequency shift of 80 MHz as well as a variable frequency shift of 80 +/- 15 MHz.
In addition, it can be used as intensity/ amplitude modulator with a rise time in the ns range

Features

- Small rise time
- Linear polarization
- High diffraction efficiency

Access to your operating manual

Technical Specifications

Parameter	MT80-A0.4-2000	
Material-Acoustic mode-Velocity	Te02 [L] - 4200 m/s	
Optical Wavelength range (AR coated)	1950 nm -2100 nm	
Optical Transmission	> 95 %	
Input / Output Polarization	Linear / Linear	
Active Aperture	0.4 x 2 mm²	
Carrier Frequency / Frequency shift	+/- 80 MHz	
Separation Angle (0-1)	38 mrad @ 2000 nm	
Static Extinction Ratio	> 33 dB	
Rise / Fall time	160 ns / mm	
Diffraction Efficiency	> 65% nom 70% with TEM00 laser beam, M²≤1.1	
Analog Amplitude modulation bandwidth (-3 dB)	12 MHz, with 0.3 mm beam diameter	
Input impedance	Nom 50 Ω	
Max optical power density (CW)	5 W/ mm²	
V.S.W.R.	Nom < 1.2/1	
Size / Weight	(Lxlxh) 50.9 x 22.4 x 17.3 / 50 g	IN PRO 005
RF Power / Connector	≤ 2.2/ SMA	
Operating Temperature	+10 to +40 Non condensing	
Storage Temperature	-40 to +50 Non condensing	

On request

VARIABLE FREQUENCY SHIFT	☑ 80 +/- 15 MHz	Diffraction Efficiency: >65%@ F0, >50% over range

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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

MT80-B30-A0.4-2000

CARRIER FREQUENCY
- **80** 80 MHz

FREQUENCY RANGE
- **B30** 30 MHz
- **--** without frequency range

APERTURE
- **A0.4** 0.4 x 1 mm²

WAVELENGTH RANGE
- **2000** 1950 nm - 2100 nm

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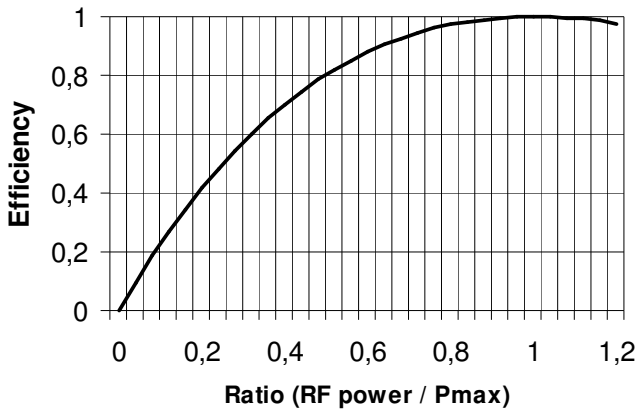
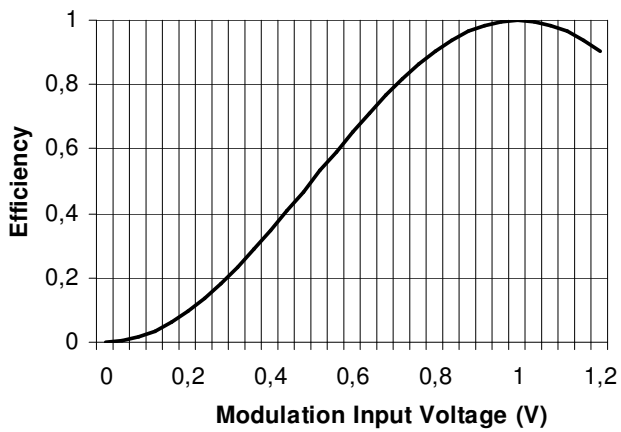
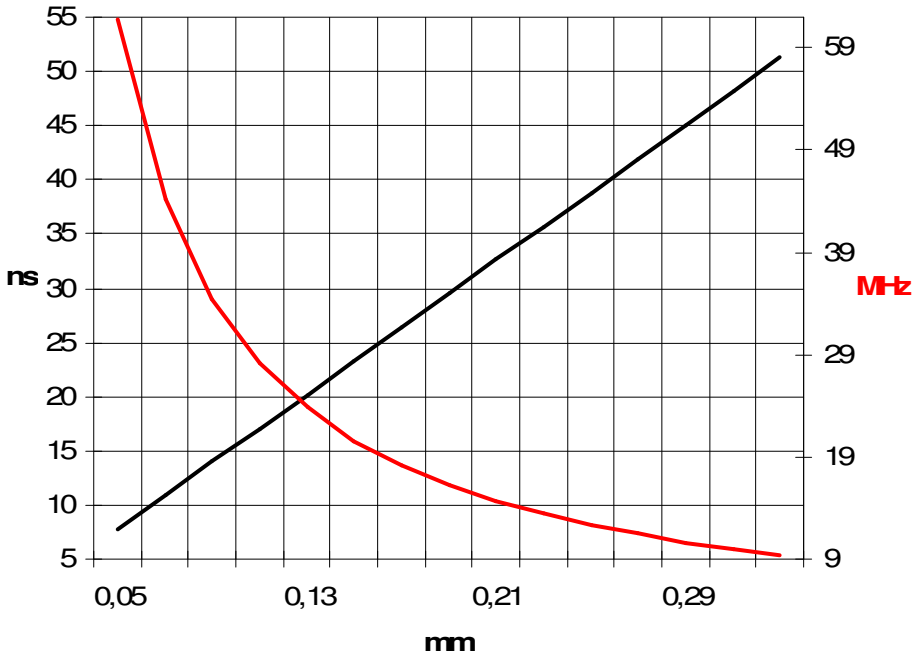
Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



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



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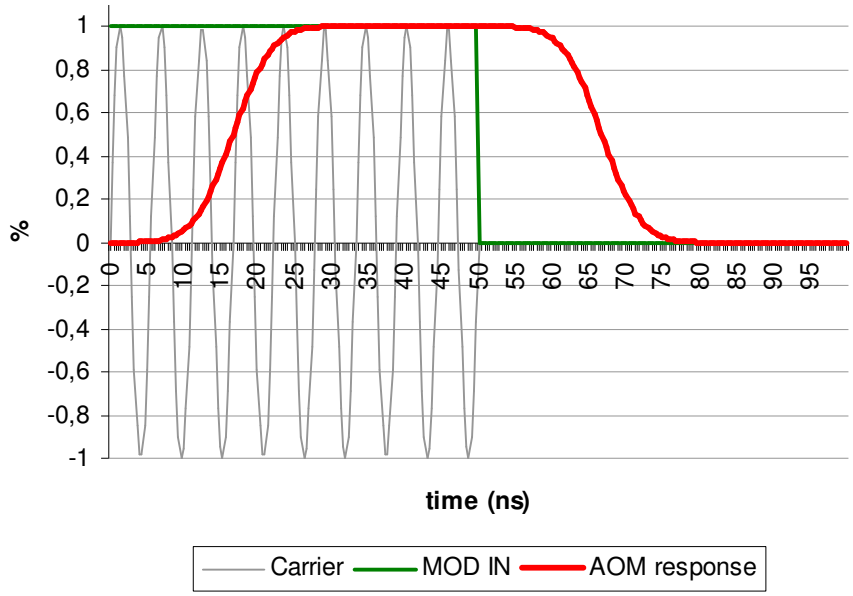
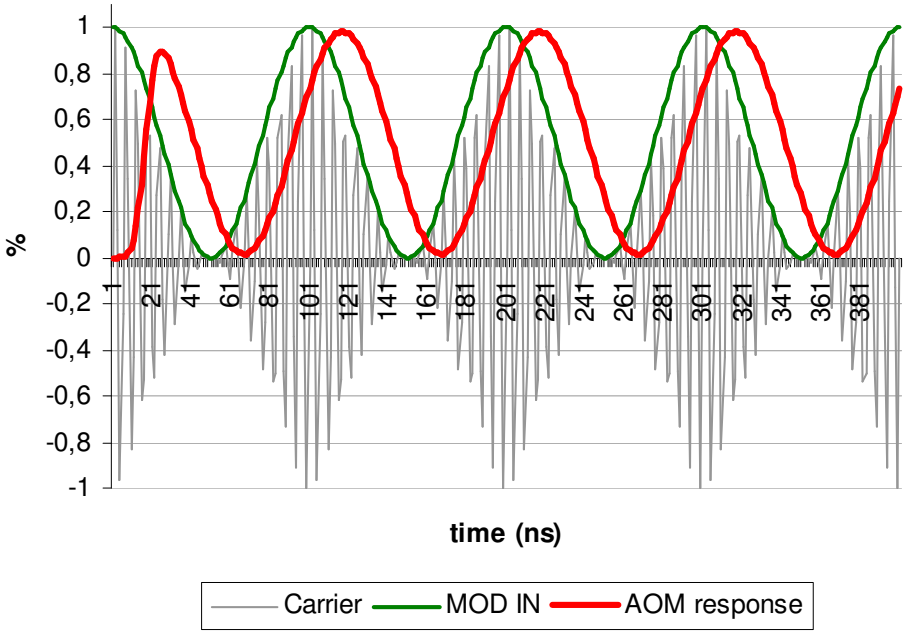
Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response (10MHz)



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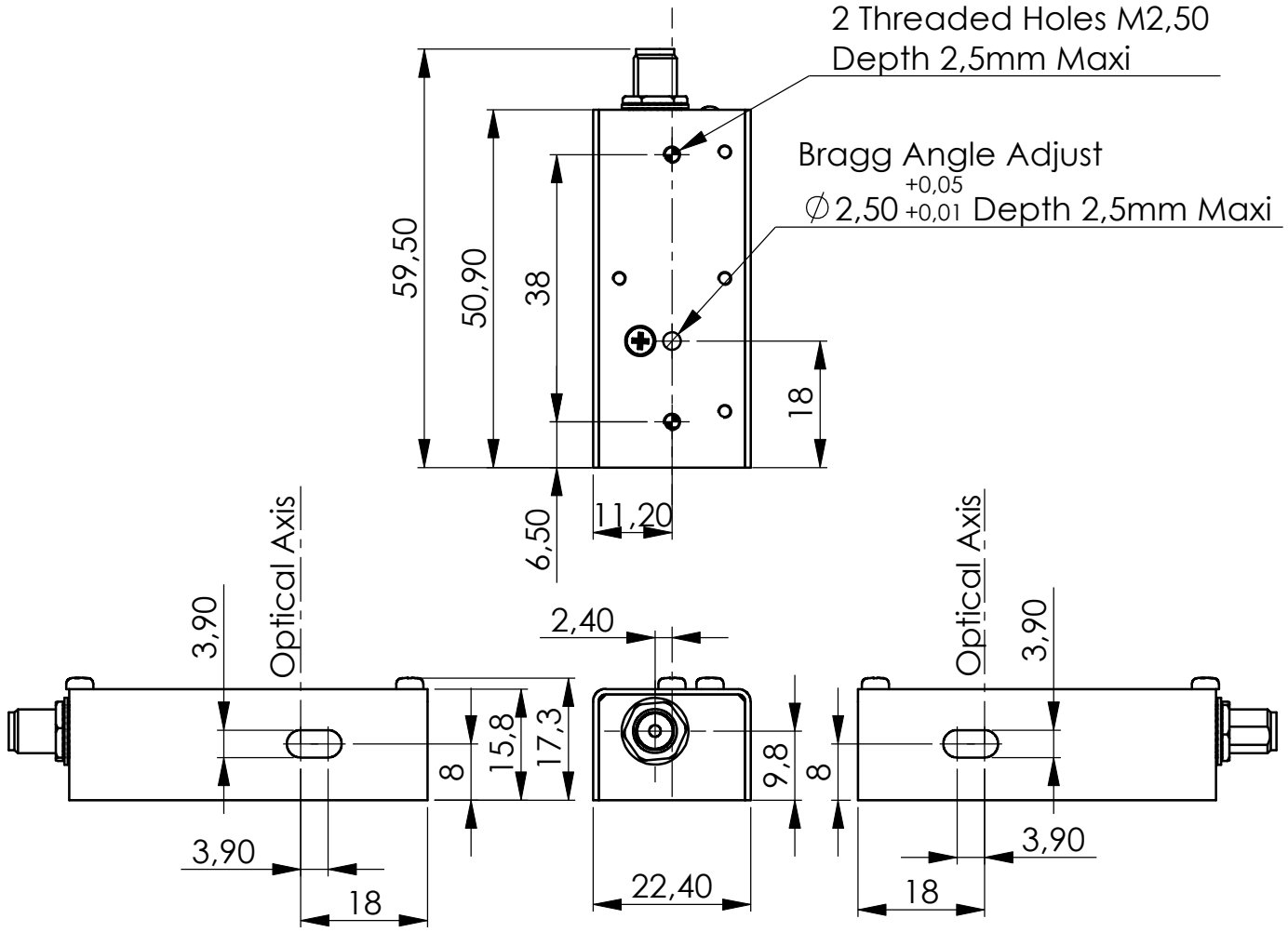

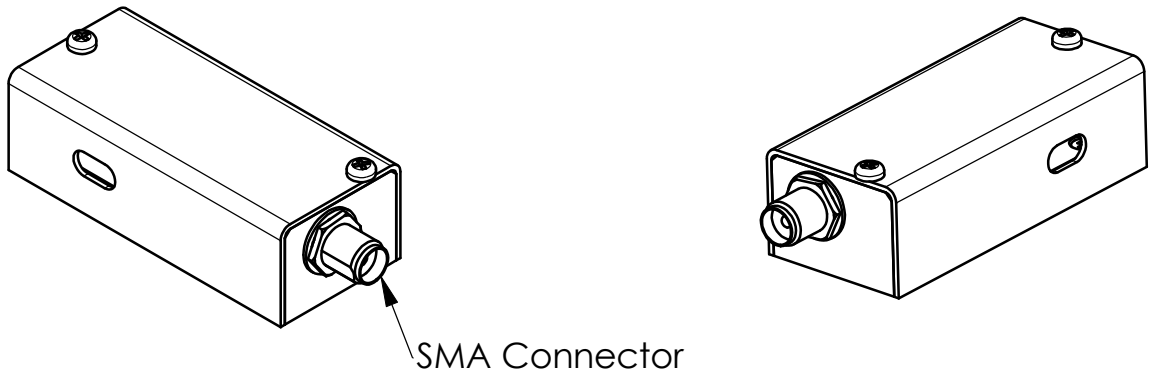

Indice Index	Date	Auteur Author	Modifications
B	18/12/06	E.D	Reprise mise en plan
A	15/10/03	F.C	Plan initial / Initial Drawing

Conception Design	E.D	PLAN D'INTERFACE / OUTLINE DRAWING	OPTO-ELECTRONIC
Vérification Checking	L.F		
Tolérance Tolerance	ISO 2768mK	Référence / Reference	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
Echelle Scale	1:1	IN-PRO-005	
Format A4			Folio / Sheet 1/1 — Indice / Index B