MT200-xx, MT250-xx, MT350-xx

AO MODULATORS/SHIFTERS

TECHNICAL DATA SHEET 2014

Product Overview

These free space modulators are proposed with different aperture sizes and at various wavelength ranges. They have been specially designed for general purpose high speed application such as intensity modulation and pulse picking.
They can also be used as fixed frequency shifters or variable frequency shifters as well as a high speed but low resolution deflector.

Features

- Fast rise time
- Linear polarization
- High diffraction efficiency

Access to your operating manual

Technical Specifications

Parameter	MT200-xx	MT250-xx	MT350-xx
Material-Acoustic mode-Velocity		Te02 [L] - 4200 m/s	
Optical Wavelength range (AR coated)	**VIS**: 450nm-700 nm **800**: 700nm-950nm **1064**: 980nm-1100nm	**VIS**: 450nm-700 nm **800**: 700nm-950nm **1064**: 980nm-1100nm	**VIS**: 450nm-700 nm **800**: 700nm-950nm
Optical Transmission		**VIS/800** > 95 % **1064**: nom 98%	
Input / Output Polarization		Linear / Linear	
Active Aperture	0.2 x 1 mm² 0.5 x 2 mm²	0.12 x 1 mm² 0.2 x 1 mm² 0.5 x 2 mm²	0.12 x 1 mm² 0.2 x 1 mm²
Carrier Frequency / Frequency shift	+/- 200 MHz	+/- 250 MHz	+/- 350 MHz
Separation Angle (0-1)	20.3 mrad @ 800 nm	27.9 mrad @ 800 nm	27.9 mrad @ 800 nm
Static Extinction Ratio		> 33 dB	
Rise / Fall time		160 ns / mm	
Diffraction Efficiency		> 85 %, nom 90 % with TEM00 laser beam	
Analog Amplitude modulation bandwidth (-3 dB)		10 MHz, with 0.3 mm beam diameter	
Max optical power density (CW)		VIS: 5 W/mm² IR/1064: >10 W/mm²	
Input impedance		Nom 50 Ω	
V.S.W.R.		Nom < 1.2/1	
RF Power / Connector		VIS: ≤ 1.3 / SMA IR/1064: ≤ 2.2 / SMA	
Size / Weight	(Lxlxh) 50.9 x 22.4 x 17.3 / 50 g		IN PRO 002, IN PRO 003
Operating Temperature		+10 to +40 Non condensing	
Storage Temperature		-40 to +50 Non condensing	

On request

VARIABLE FREQUENCY SHIFT

- ☑ 200 +/- 50 MHz
- ☑ 250 +/- 50 MHz
- ☑ 350 +/- 60 MHz

Diffraction efficiency

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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

MT250-B100-A0.2 -VIS

CARRIER FREQUENCY

- **200** 200MHz
- **250** 250 MHz
- **350** 350 MHz

FREQUENCY RANGE

- **B100** 100 MHz
- **B120** 120 MHz
- **--** without range

APERTURE

- **A0.12** 0.12 x 1 mm²
- **A0.2** 0.2 x 1 mm²
- **A0.4** 0.4 x 2 mm²
- **A0.5** 0.5 x 2 mm²

WAVELENGTH RANGE

- **VIS** 450 nm - 700 nm
- **800** 700 nm - 950 nm
- **1064** 980 nm - 1100 nm

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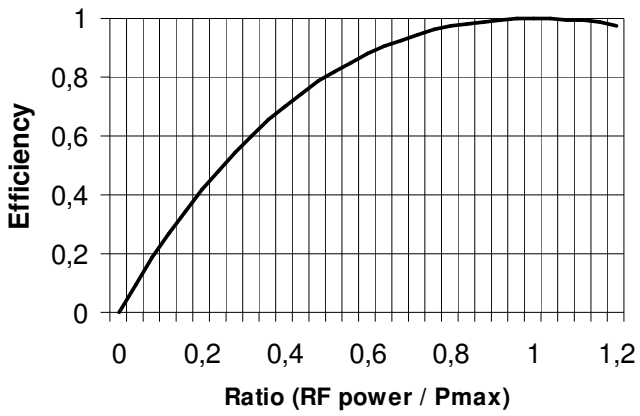
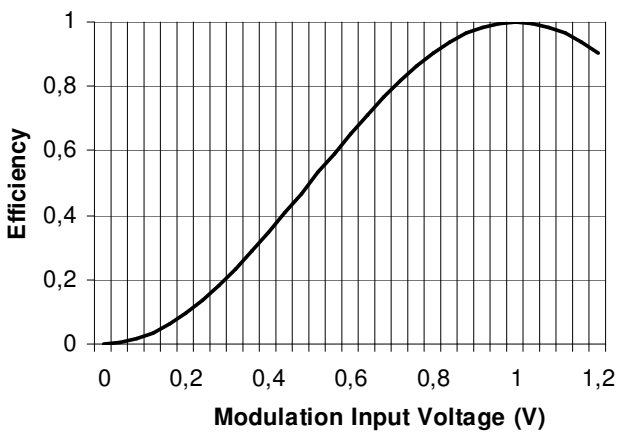
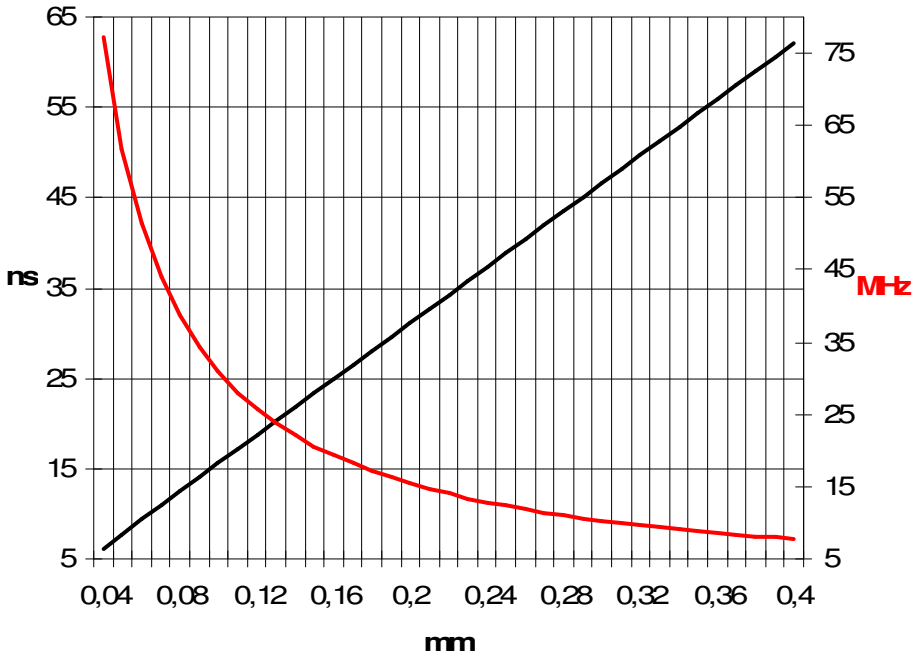
Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



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



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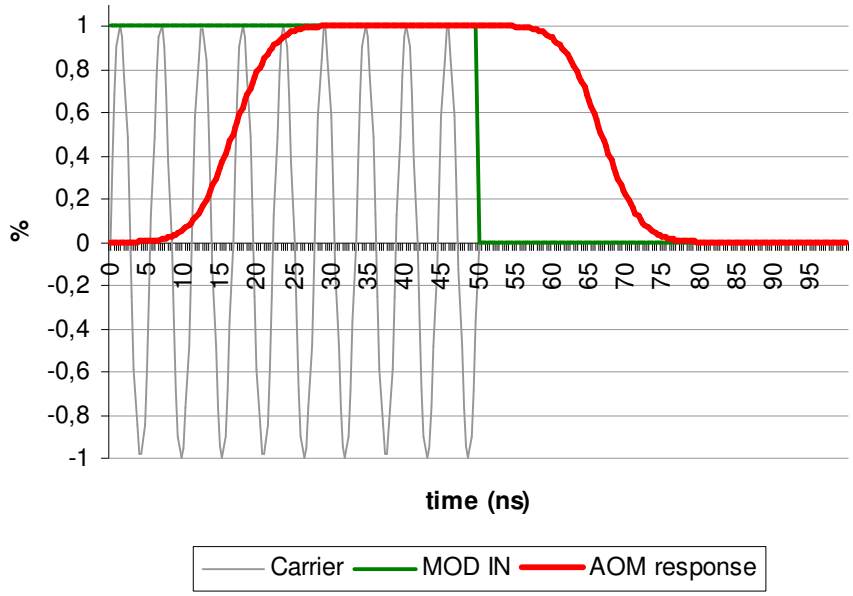
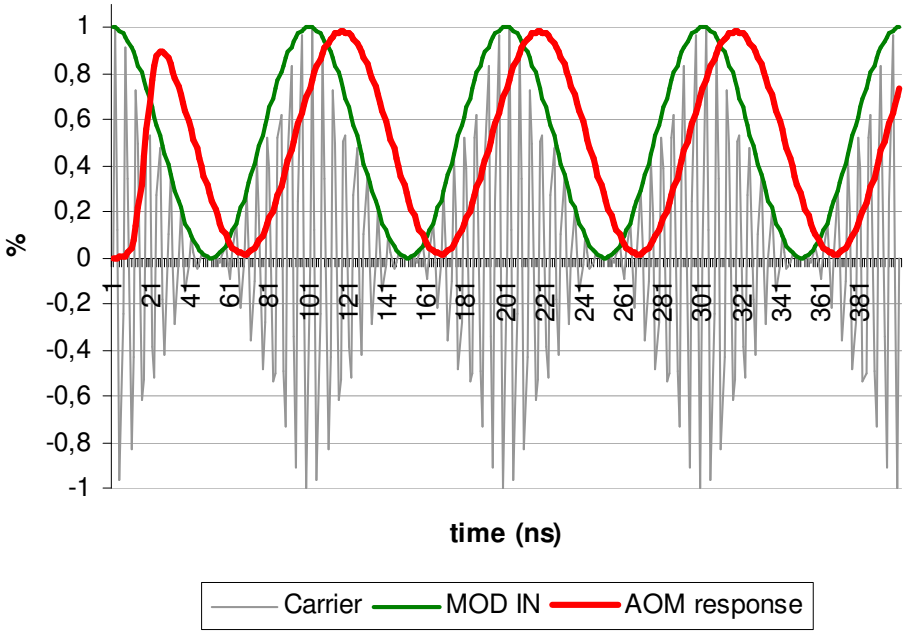
Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response (10MHz)



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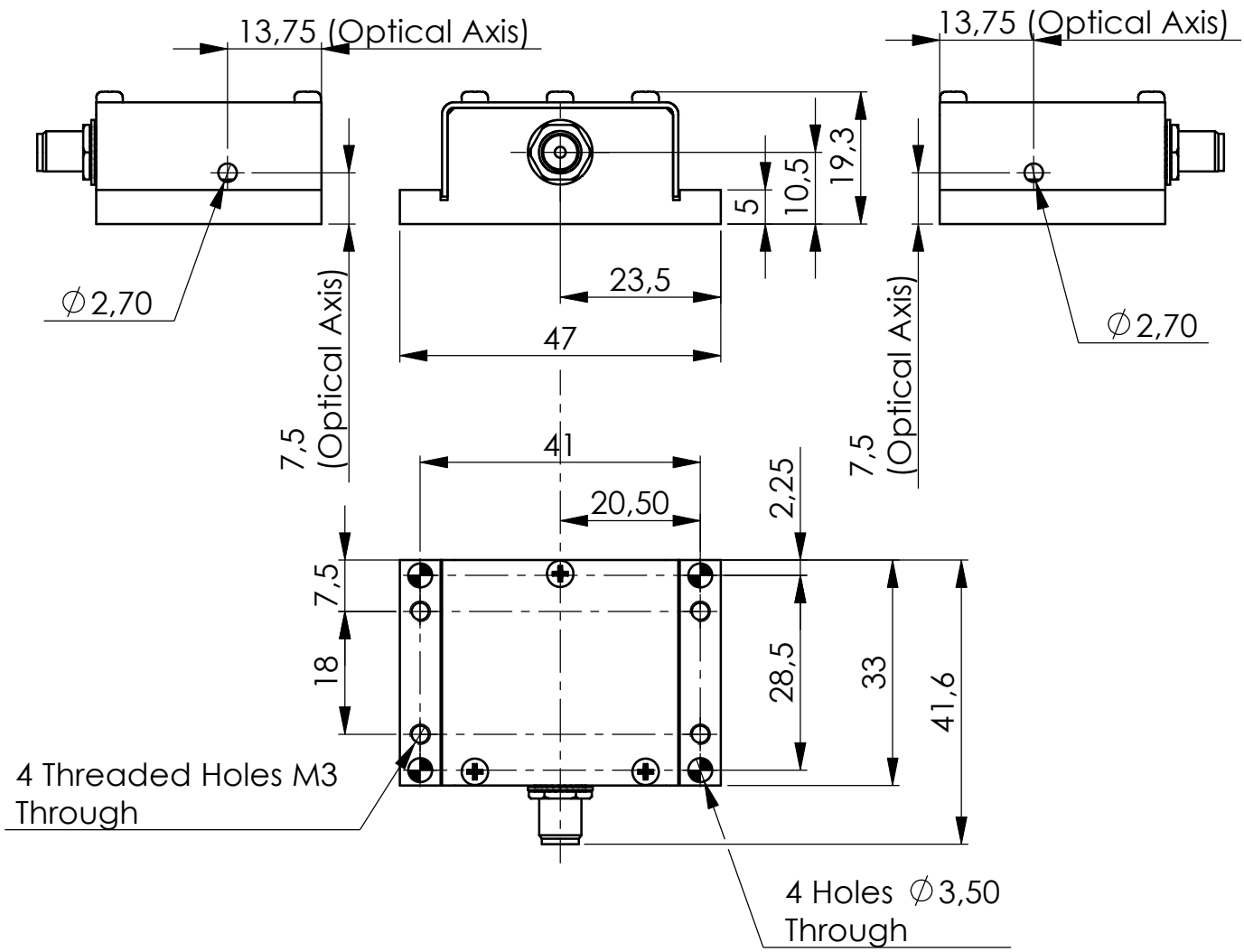

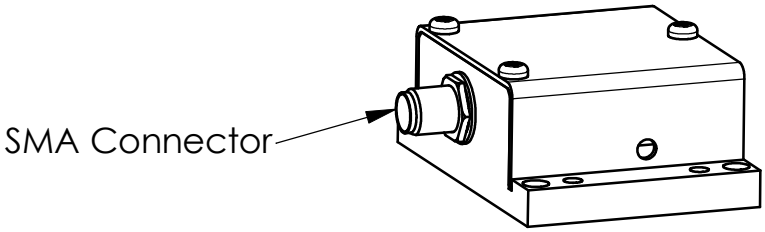

Indice Index	Date	Auteur Author	Modifications
B	15/12/06	E.D	Mise en page
A	25/04/02	F.C	Plan initial / Initial Drawing

Conception Design	E.D
Vérification Checking	L.F
Tolérance Tolerance	ISO 2768mK
Echelle Scale	1:1
Format	A4

PLAN D'INTERFACE / OUTLINE DRAWING

Référence / Reference

IN-PRO-002

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Folio / Sheet	Indice / Index
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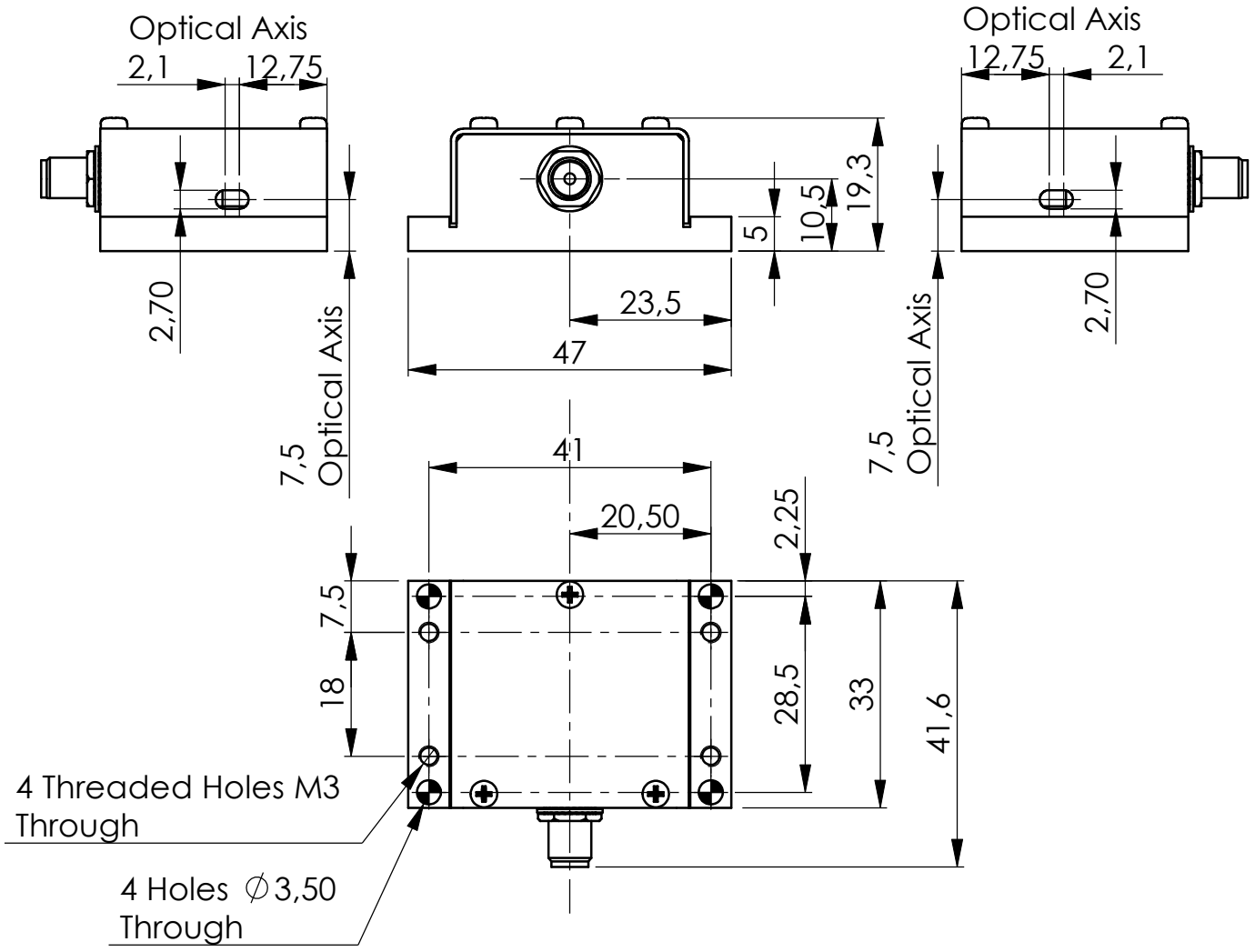

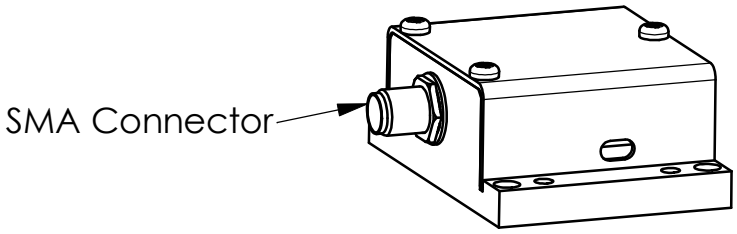

Indice Index	Date	Auteur Author	Modifications
B	15/12/06	E.D	Mise en page
A	09/03/06	A.A	Plan initial / Initial drawing

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-003	
Format A4			Folio / Sheet 1/1 — Indice / Index B