

MT200-xx, MT250-xx, MT350-xx

AO MODULATORS/SHIFTERS

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 | | TeO ₂ [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 mm ² 0.4 x 2 mm ² (1064) 0.5 x 2 mm ² (VIS, 800) | 0.12 x 1 mm ² 0.2 x 1 mm ² 0.5 x 2 mm ² | 0.12 x 1 mm ² 0.2 x 1 mm ² |
| Carrier Frequency / Frequency shift | +/- 200 MHz | +/- 250 MHz | +/- 350 MHz |
| Separation Angle (0-1) | 38 mrad @ 800 nm | 48 mrad @ 800 nm | 66 mrad @ 800 nm |
| Static Extinction Ratio | | > 33 dB | |
| Rise / Fall time | | 160 ns / mm | |
| Diffraction Efficiency | | > 85 %, nom 90 % with TEM ₀₀ laser beam | |
| Analog Amplitude modulation bandwidth (-3 dB) | | 10 MHz, with 0.3 mm beam diameter | |
| Max optical power density (CW) | | VIS: 5 W/mm ² IR/1064: >10 W/mm ² | |
| 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

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

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

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

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

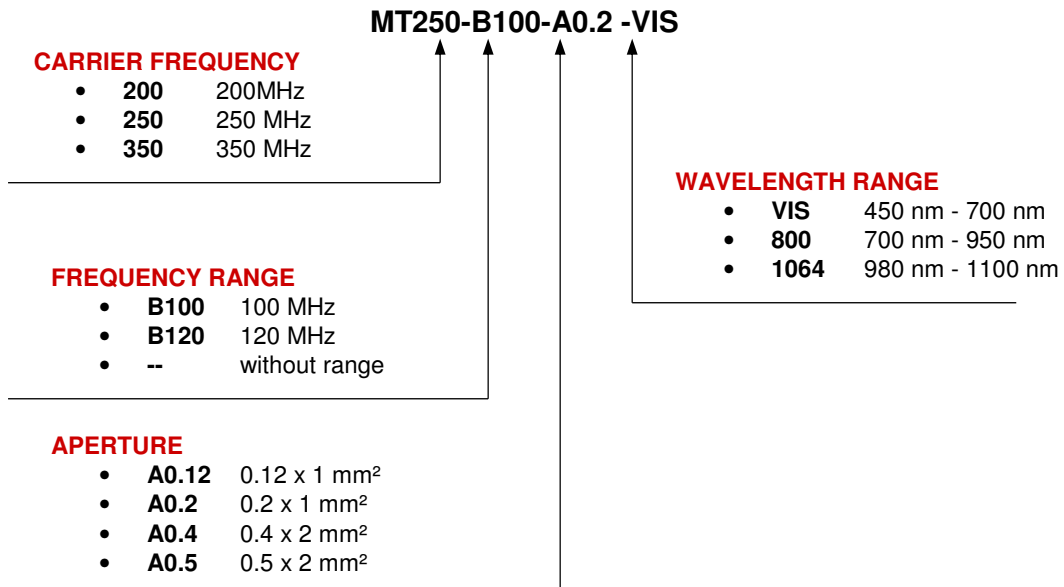
Separation angle ($\Delta\theta$) is wavelength (λ) sensitive:

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

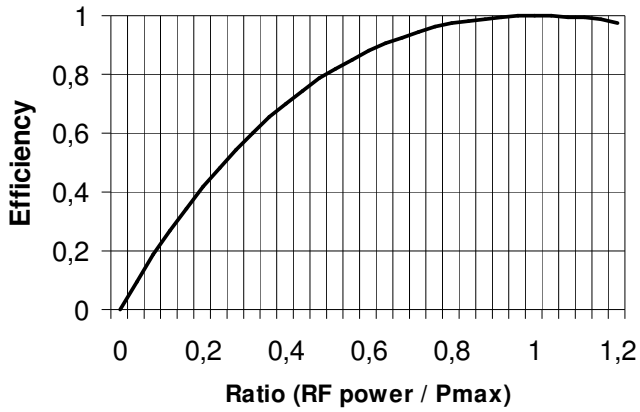
RF power (P) is wavelength (λ) sensitive:

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

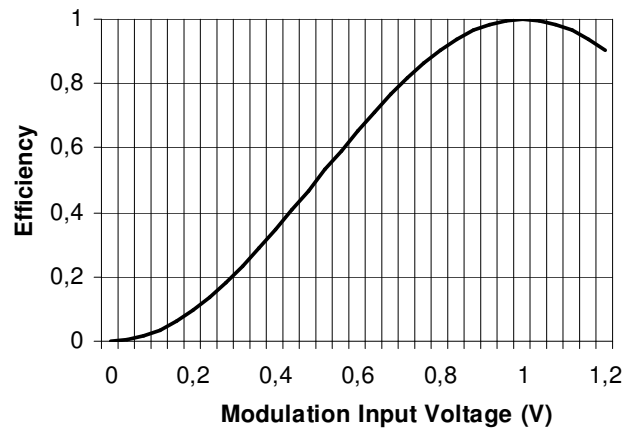
How to determine your model



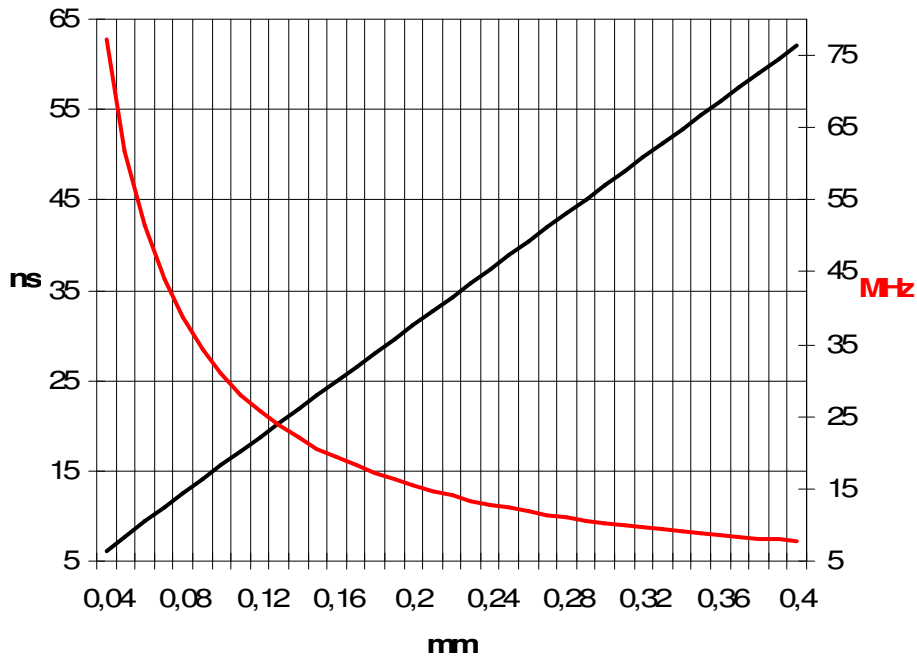
Relative Efficiency versus RF power



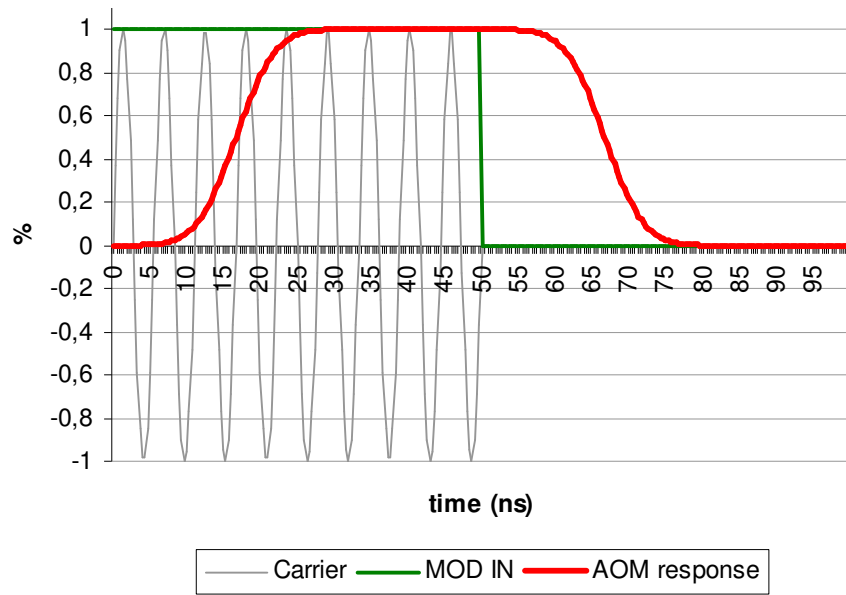
AO relative Efficiency vs driver MOD IN



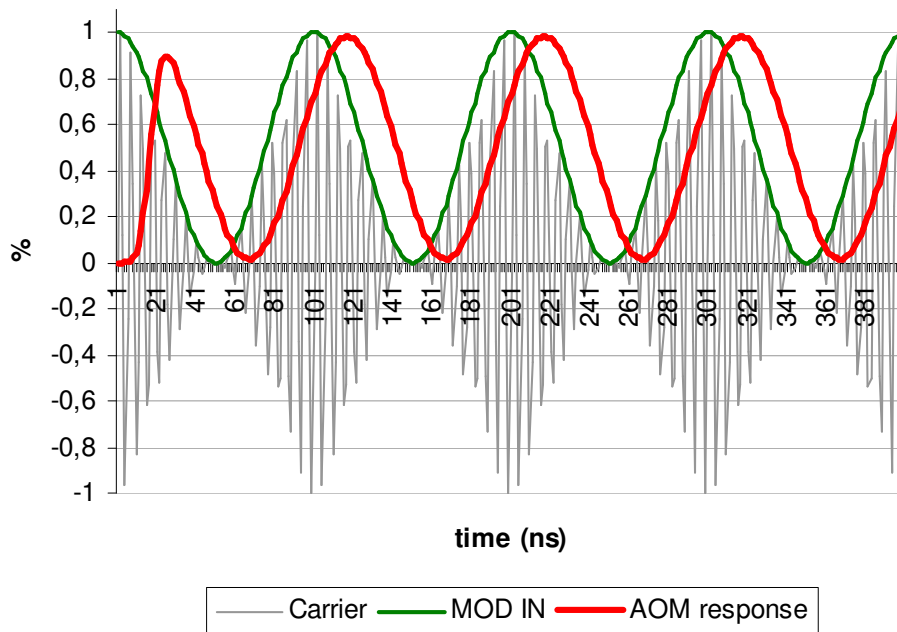
Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter

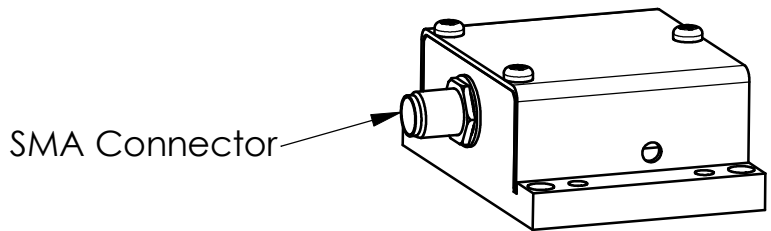
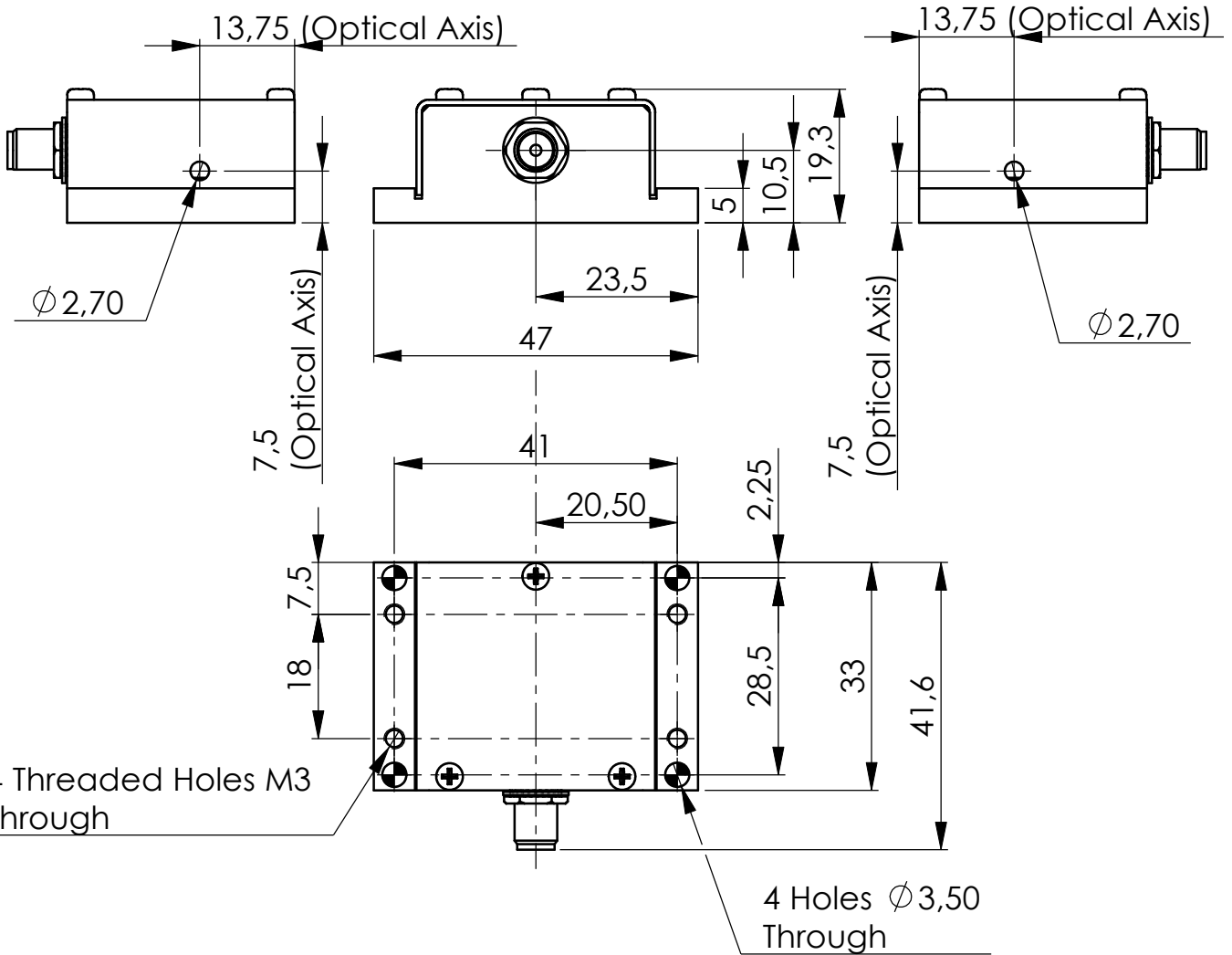


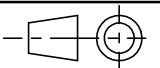
Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response (10MHz)

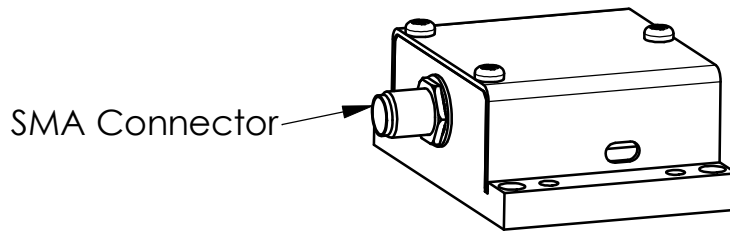
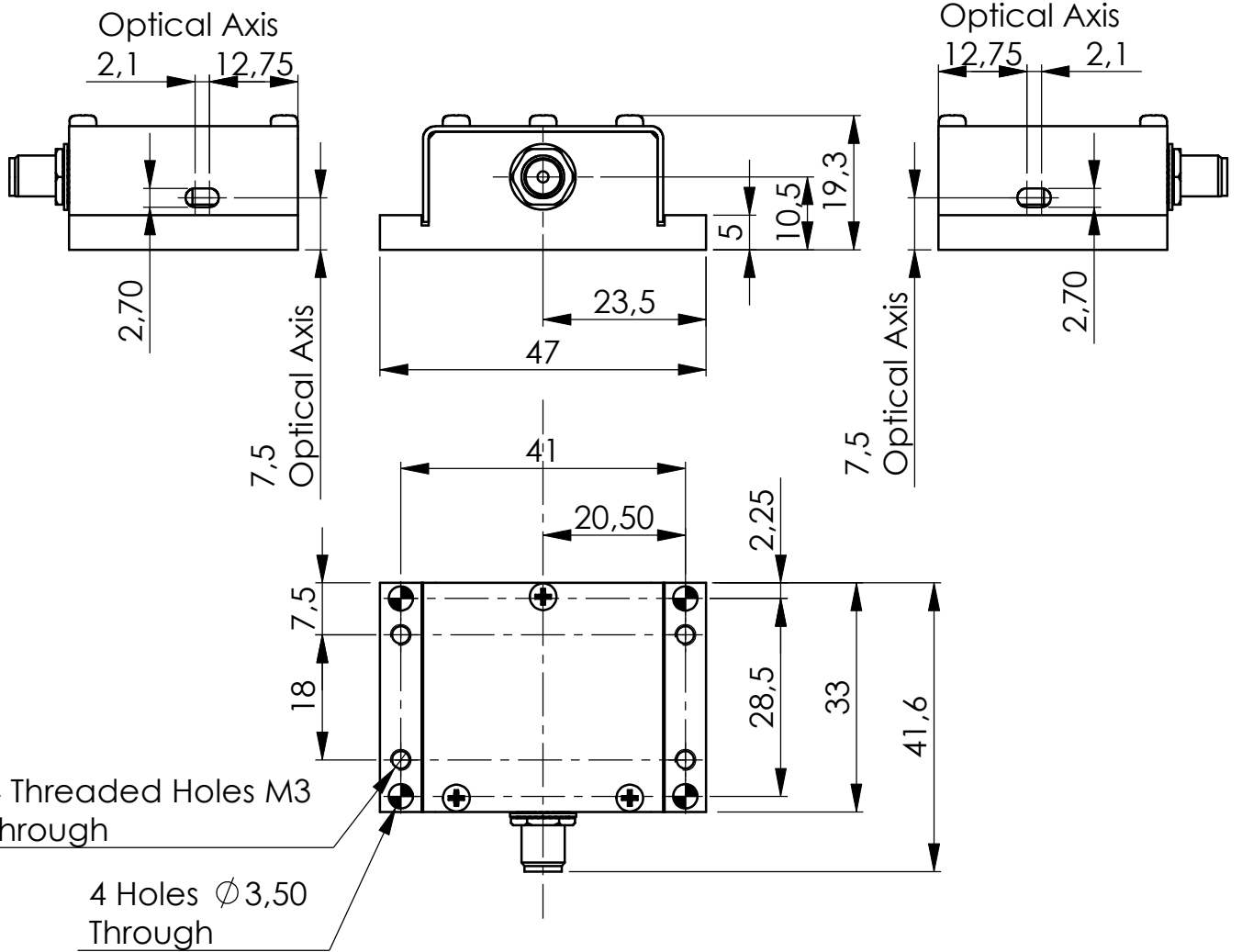




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| B | 15/12/06 | E.D | Mise en page |
| A | 25/04/02 | F.C | Plan initial / Initial Drawing |
| Index | Date | Auteur Author | Modifications |
| Conception Design | E.D | PLAN D'INTERFACE / OUTLINE DRAWING | |
| Vérification Checking | L.F | | |
| Tolérance Tolerance | ISO 2768mK | Référence / Reference IN-PRO-002 | |
| Echelle Scale | 1:1 |  Format A4 | |
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| B | 15/12/06 | E.D | Mise en page |
| A | 09/03/06 | A.A | Plan initial / Initial drawing |
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| Echelle Scale | 1:1 | IN-PRO-003 | |
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