

# MT80-IR60-Fio-xx MT110-IR20-Fio-xx MT200-IR10-Fio-xx MT250-IR6-Fio-xx

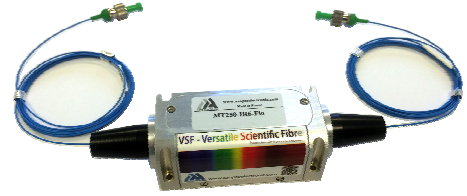
## AO FIBRE PIGTAILED MODULATORS/SHIFTERS for 980-1100 nm (1064 nm)

### Product Overview

These fibre pigtailed devices are optimized for a single wavelength within their range of operation [980-1100] and it must be specified on order.

They can operate for intensity modulation, fixed or variable frequency shifting, pulse picking or q-switching.

AA offers a complete range with different carrier frequencies (80, 110, 200, 250 MHz) and different rise/fall times (60, 20, 10, 6 ns) in order to fit most applications. Available with PM or SM fibres, low power version or high power version up to 5W depending on models.



### Features

- Polarization Maintaining or Single Mode fibre
- FC/APC
- Positive frequency shift (negative on request)
- High Extinction Ratio

Access to your operating manual



### Technical Specifications

Parameters	MT80-IR60-Fio-xx	MT110-IR20-Fio-xx	MT200-IR10-Fio-xx	MT250-IR6-Fio-xx
Material-Acoustic mode-Velocity	TeO <sub>2</sub> - [L] - 4200 m/s			
Optical Wavelength range	980 to 1100, AR coated			
IL, Insertion Losses	Nom 1.5 dB, < 2 dB	Nom 2 dB, < 3 dB	Nom 2.5 dB, < 5 dB	Nom 4 dB, < 6 dB
Input / Output Polarization	Linear (PM fibres), Random (SM fibres)			
PDL, Polarization Dependence Losses	< 0.5 dB		< 0.8dB	
Carrier frequency / Frequency shift	+80 MHz	+110 MHz	+200 MHz	+250 MHz
Static Extinction Ratio	> 45 dB, nom 50 dB	> 45 dB, nom 50 dB	> 45 dB, nom 50 dB	> 45 dB, nom 50 dB
Fibre type (SM / PM)	HI1060 or PM980			
Jacket type	HYTREL 900 µm			
Fibre connectors	FC/APC			
Pigtail length	1 meter (IN/OUT)			
Rise/Fall time	60 ns	20 ns	10 ns	6 ns
Analog modulation BW (-3dB)	8 MHz	24 MHz	48 MHz	80 MHz
Max Input laser power (CW)	0.5 W or 5 W	0.5 W or 5 W	0.5 W or 1 W	0.5 W
Input impedance	Nom 50 Ω			
V.S.W.R.	Nom < 1.2/1			
RF Power / Connector	< 2 W / SMA	< 2 W / SMA	< 2.2 W / SMA	< 2 W / SMA
Size / Weight	(LxIxh) 89 x 46.6 x 32.5 mm <sup>3</sup> / 250 g IN PRO 334			
Operating Temperature	+10 to +40°C, Non condensing			
Storage Temperature	-40 to +50°C, Non condensing			

### Options / On request

FIBER JACKET	<input checked="" type="checkbox"/> PVC 3 mm	<input checked="" type="checkbox"/> Stainless steel 3 mm
FIBER CONNECTOR	<input checked="" type="checkbox"/> Super FC/PC	<input checked="" type="checkbox"/> SMA
PIGTAIL LENGTH	<input checked="" type="checkbox"/> 2 m	<input checked="" type="checkbox"/> Other
FREQUENCY SHIFT	<input checked="" type="checkbox"/> « - » Negative shift	<input checked="" type="checkbox"/> Variable frequency shift

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

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

**Insertion Loss (IL)** is the amount of launched light lost within the Acousto-Optic Modulator (AOM). It is defined as the ratio of the input optical power over the output optical power.

The value of IL indicated in datasheet includes optical transmission through the crystal, diffraction efficiency and coupling losses. Losses at FC connectors are not included.

**Polarization dependent loss (PDL)** is when the insertion loss of a signal differs between the two different states of polarization. Polarization Dependent Loss is a measure of the peak-to-peak difference in Transmission of the AOM with respect to all possible states of polarizations.

It is defined as the ratio between the maximum and minimum transmission power with respect to all possible axes of polarization.

The PDL of the acousto-optic devices is mainly due to the polarization dependency of the diffraction efficiency.

**Amplitude modulation bandwidth (F<sub>-3dB</sub>)** is rise time (Tr) sensitive:

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

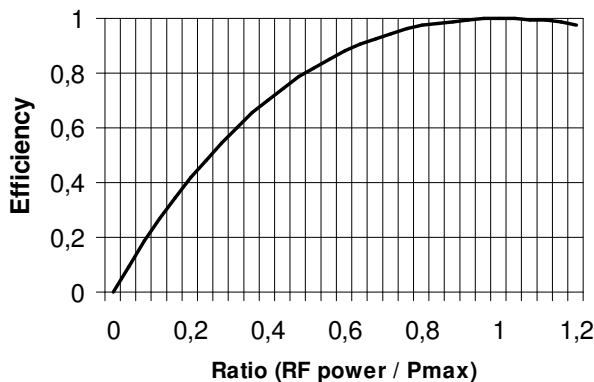
**RF power (P)** is wavelength ( $\lambda$ ) sensitive:

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

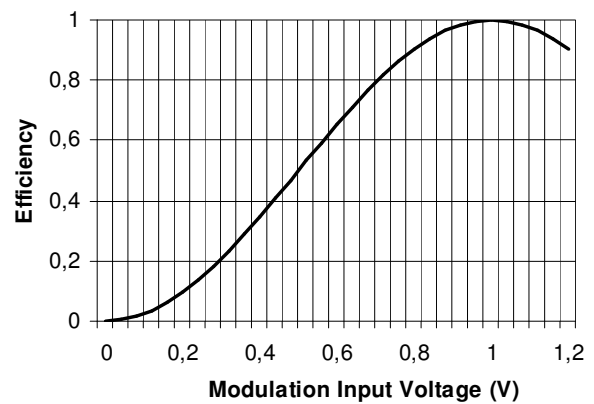
**PMD (Polarization Mode Dispersion)** is the differential arrival time of the different polarization components of an input light pulse, transmitted by the AOM. This light pulse can always be decomposed into pairs of orthogonal polarization modes. These polarization modes propagate at different speeds according to a slow and fast axis induced by the birefringence of the AOM.

**Second Order PMD:** The second order PMD describes how polarization induced delay, varies with wavelength. It provides the indication of the wavelength dependency of the PMD.

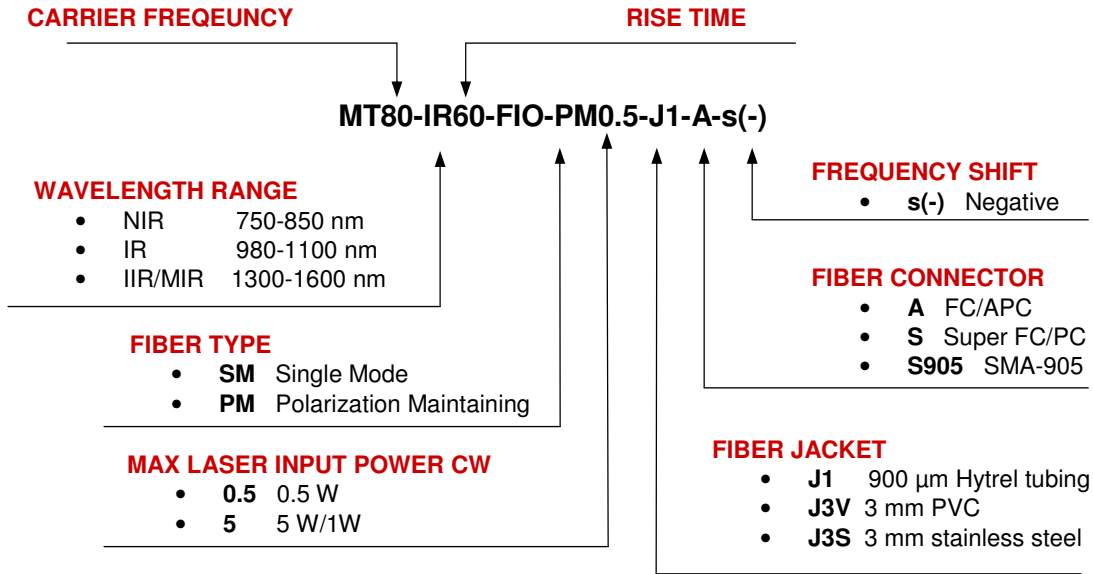
Relative Efficiency versus RF power



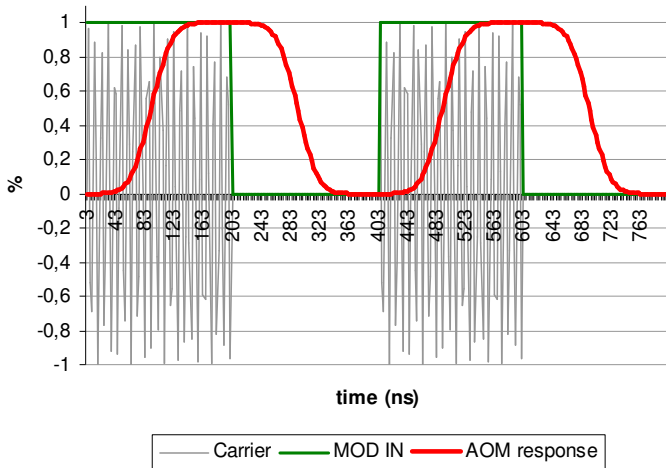
AO relative Efficiency vs driver MOD IN



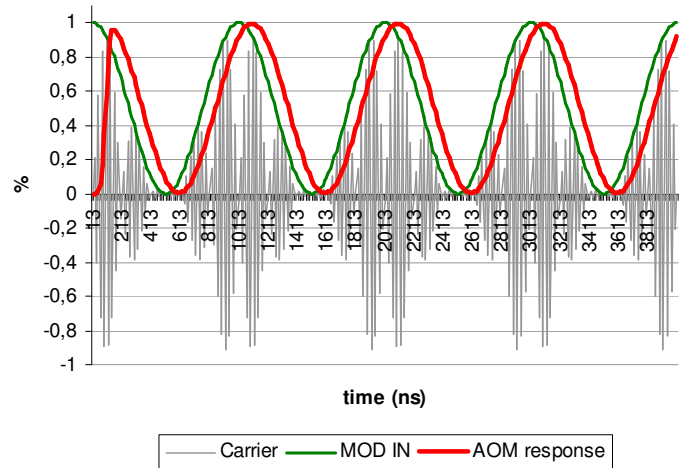
## How to determine your model

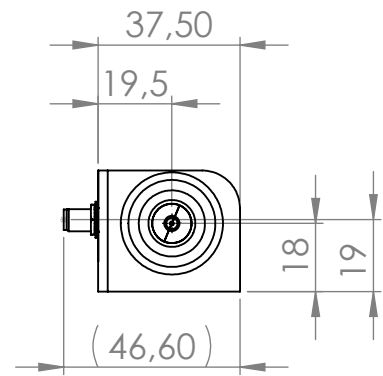
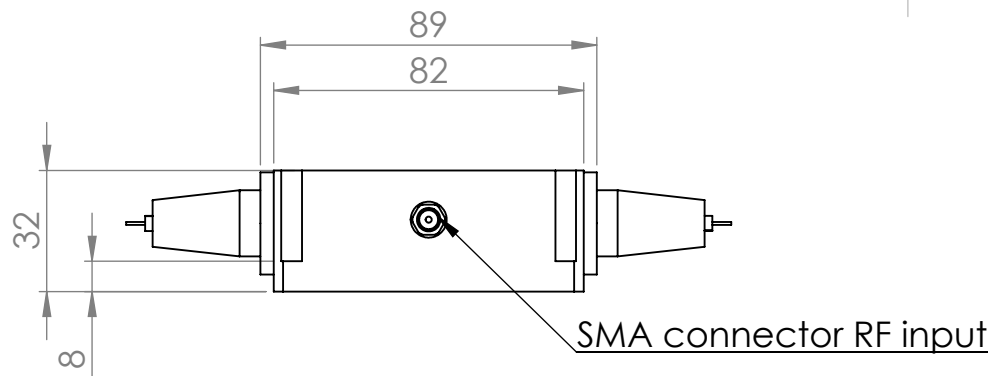


Relative Efficiency / AOM temporal response

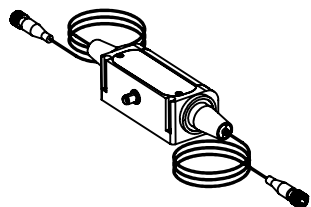
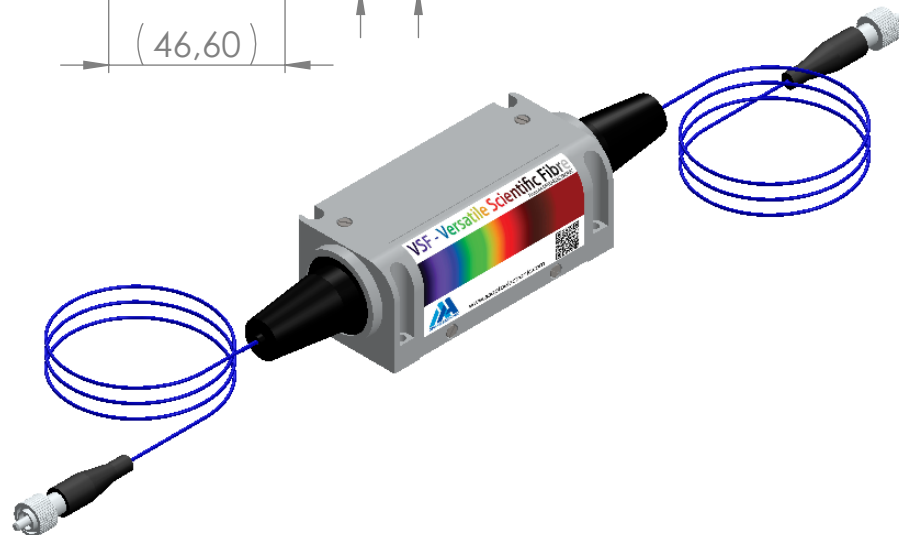
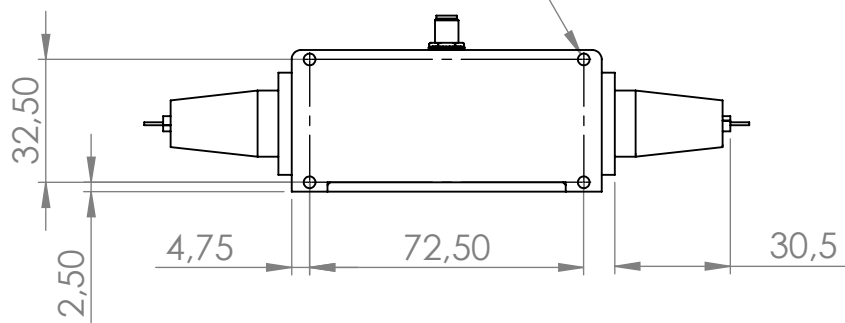


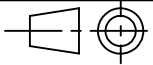

Relative Efficiency / AOM temporal response (1MHz)





4x FIXING HOLES FOR SCREWS M2.5



A	17/12/14	G.M	Plan initial / Initial plan		
Indice Index	Date	Auteur Author	Modifications		
Conception Design		GM	Désignation / Designation <b>PLAN D'INTERFACE</b>  Référence / Reference <b>IN-PRO-334</b>		
Vérification Checking		YN			
Tolérance Tolerance		ISO 2768mK			
Echelle Scale	1:2		Matière / Material	Traitement / Treatment	Finition / Finish
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