MT80-NIR60-Fio-xx
MT110-NIR20-Fio-xx
MT200-NIR10-Fio-xx
MT250-NIR6-Fio-xx

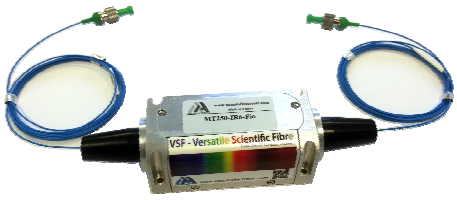
AO FIBRE PIGTAILED MODULATORS/SHIFTERS

for 780-870 nm (800 nm)

TECHNICAL DATA SHEET 2015

Product Overview

These fibre pigtailed devices are optimized for a single wavelength within their range of operation [780-870] which 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 of the applications. Available with PM or SM fibres, low power version or high power version up to 2W 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-NIR60-Fio-xx	MT110-NIR20-Fio-xx	MT200-NIR10-Fio-xx	MT250-NIR6-Fio-xx
Material-Acoustic mode-Velocity	TeO2 - [L] - 4200 m/s			
Optical Wavelength range	780 to 870, AR coated			
IL, Insertion Losses	Nom 2 dB, < 3 dB	Nom 2.5 dB, < 3.5 dB,	Nom 3 dB, < 5 dB	Nom 4 dB, <6 dB
Input / Output Polarization	Linear (PM fibres), Random (SM fibres)			
PDL, Polarization Dependence Losses	< 0.5 dB			
Carrier frequency / Frequency shift	+80 MHz	+110 MHz	+200 MHz	+250 MHz
Static Extinction Ratio	> 45 dB, nom 50 dB			
Fibre type (SM / PM)	HI780 or PM850			
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 2 W	0.5 W or 2 W	0.5 W	0.5 W
Input impedance	Nom 50 Ω			
V.S.W.R.	Nom < 1.2/1			
RF Power / Connector	< 2 W / SMA			
Size / Weight	(LxlxH) 89 x 46.6 x 32.5 mm^3 / 250 g IN PRO 334			
Operating Temperature	+10 to +40°C, Non condensing			
Storage Temperature	-40 to +50°C, Non condensing			

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Options / On request

FIBER JACKET	☑ PVC 3 mm	☑ Stainless steel 3 mm
FIBER CONNECTOR	☑ Super FC/PC	☑ SMA
PIGTAIL LENGTH	☑ 2 m	☑ Other
FREQUENCY SHIFT	☑ « - » Negative shift	☑ Variable frequency shift

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

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

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

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

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.

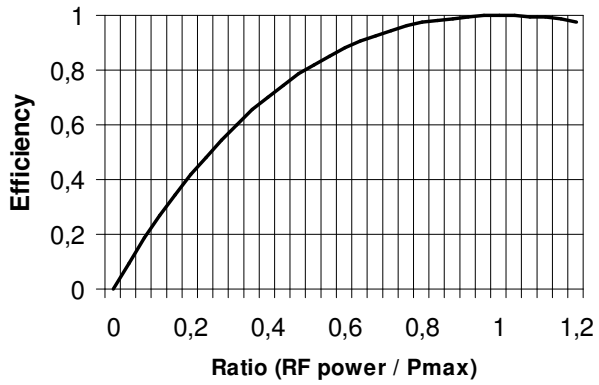
RF power (P) is wavelength (λ) sensitive:

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

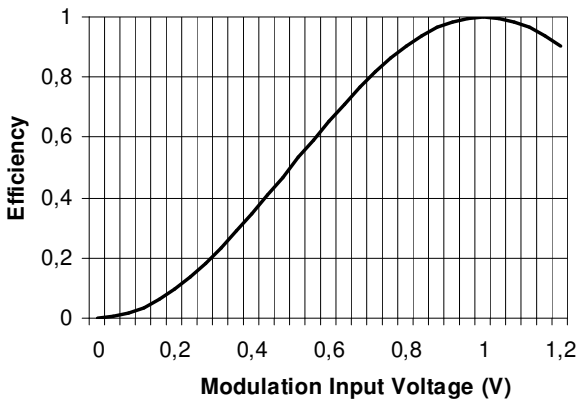
Polarization dependent loss (PDL) is when the insertion loss of a signal differs between the two different states of polarization. Polarization Dependent Loss is a measure of the peak-to-peak difference in Transmission of the AOM with respect to all possible states of polarizations.
It is defined as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

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



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How to determine your model

CARRIER FREQUENCY — **RISE TIME**

MT80-NIR60-FIO-PM0.5-J1-A-s(-)

WAVELENGTH RANGE
- NIR 780-870 nm
- IR 1000-1100 nm
- IIR/MIR 1290-1650 nm
- FIR 1850-2100 nm

FIBER TYPE
- **SM** Single Mode
- **PM** Polarization Maintaining

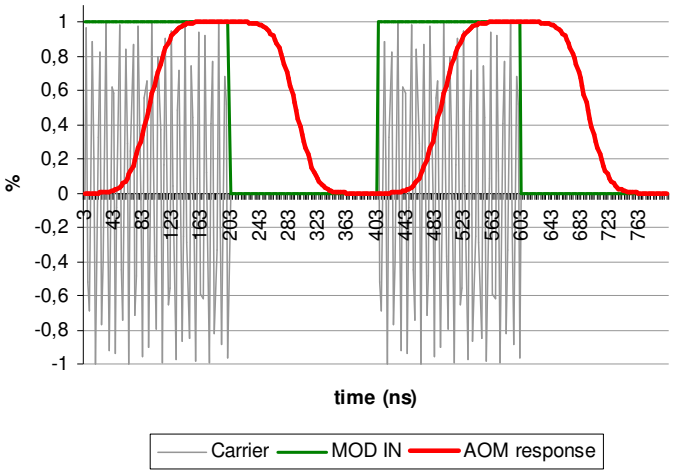
MAX LASER INPUT POWER CW
- **0.5** 0.5 W
- **5** 5 W/2W/1W

FREQUENCY SHIFT
- **s(-)** Negative

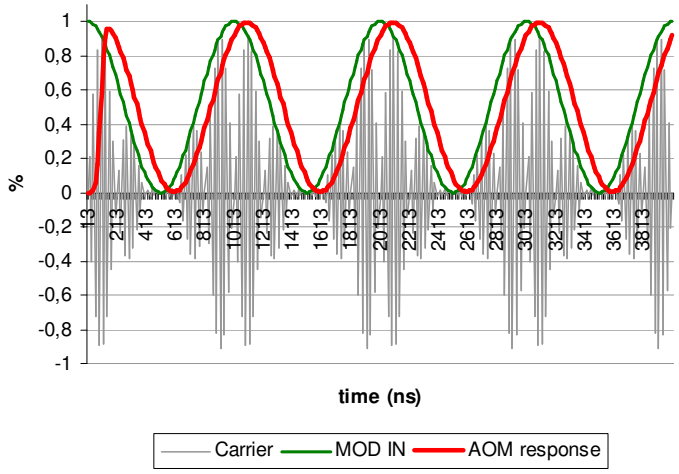
FIBER CONNECTOR
- **A** FC/APC
- **S** Super FC/PC
- **S905** SMA-905

FIBER JACKET
- **J1** 900 µm Hytrel tubing
- **J3V** 3 mm PVC
- **J3S** 3 mm stainless steel

Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response (1MHz)



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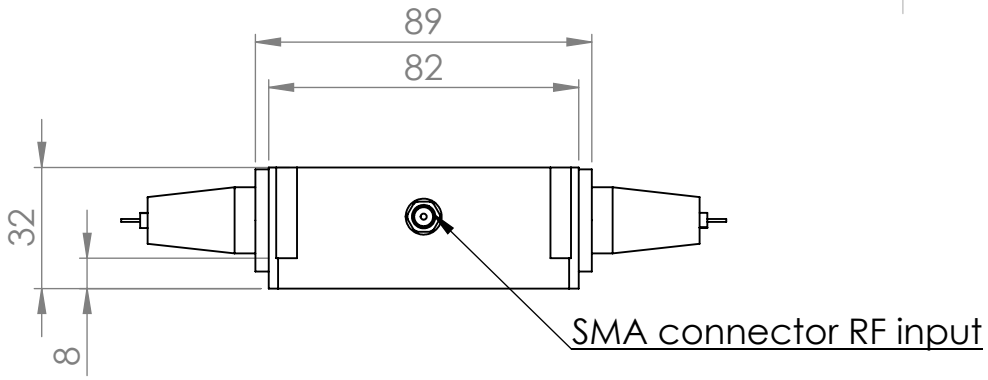

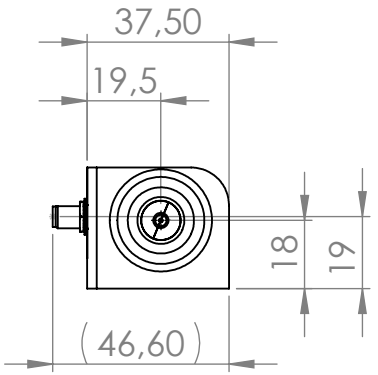

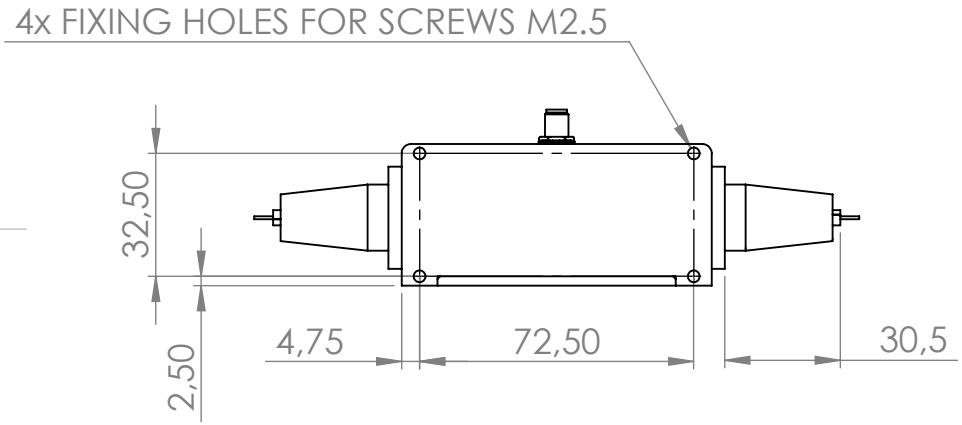

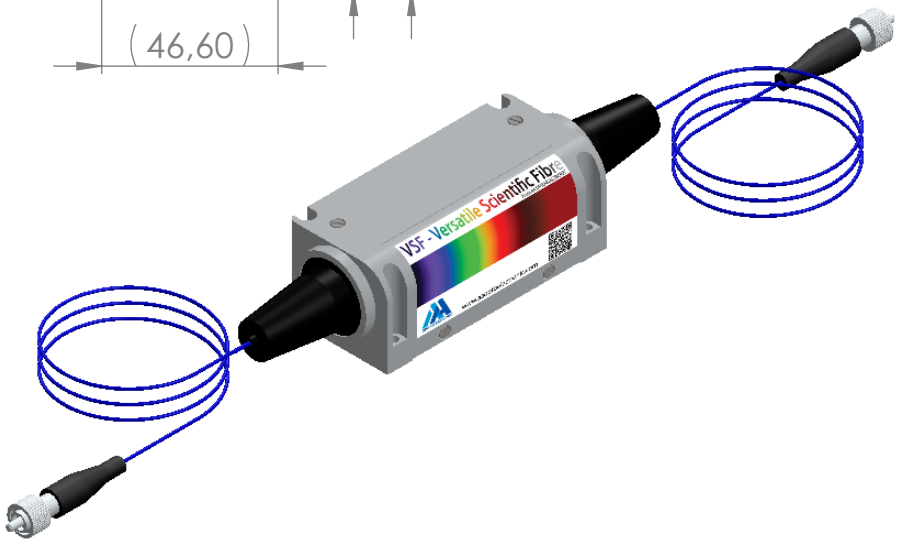

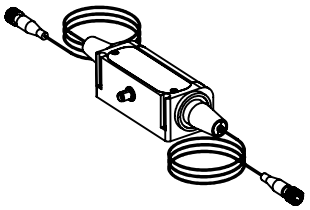

Indice Index	Date	Auteur Author	Modifications
A	17/12/14	G.M	Plan initial / Initial plan

Conception Design	GM
Vérification Checking	YN
Tolérance Tolerance	ISO 2768mK
Echelle Scale	1:2
Format	A4

Désignation / Designation

PLAN D'INTERFACE

Référence / Reference

IN-PRO-334

Matière / Material	Traitement / Treatment	Finition / Finish

OPTO-ELECTRONIC

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Folio / Sheet	Indice / Index
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