10-bit MEMS Variable Fiber Optical Time Delay

(Protected by US Patent 10752492B2)

Product Description

The MEMS Series Photonic Time Delay digitally varies the optical delay time in fiber by selectively routing optical signal through N fiber loops whose lengths increase successively by a power 2 of the increment time delay ΔT. Since each switching element allows the signal to either pass or bypass a fiber loop, a delay T may be inserted, which can take any value (in increments of ΔT) up to the maximum value ($T = (2^{N+1}-1)\Delta T$).

This is achieved using a patent pending MEMS switching configuration and activated via an direct DC electrical control signal.

The driver is available with USB and/or RS232 control interface separately.

Features

. 7-bit Resolution or more
. High Reliability
· Compact

Applications

· Phase-Array Antennas
· Instrumentation

Performance Specifications

MEMS Series Photonic Delay Line	Min	Typical	Max	Unit
Wavelength Band	780	1550	2000	nm
Insertion Loss [1]		3	4.5	dB
Polarization Dependent Loss (SM)		0.1	0.2	dB
Polarization Extinction Ratio (PM)	18	24		dB
Cross Talk	40	50		dB
Return Loss	50	55		dB
Switching Time (fall, rise)		2	10	ms
Fiber Segment Number	4		10	
Delay Time Range [2]			10	ms
Polarization Mode Dispersion (SM)		0.1	0.2	ps
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling		300		mW
Package Dimension [1]		See drawing		

[1]. It is defined for 4-bit Time Delay with the short fiber loops. The maximum Insertion Loss is 5.6dB for 5-bit version, 6.8 dB for 6-bit, 7.8 dB for 7-bit, and 12.0 dB for 10-bit respectively.

[2]. The delay fiber loops can be spliced in precise control per customer's request.

RoHS Compliant

Revised 02/27/23

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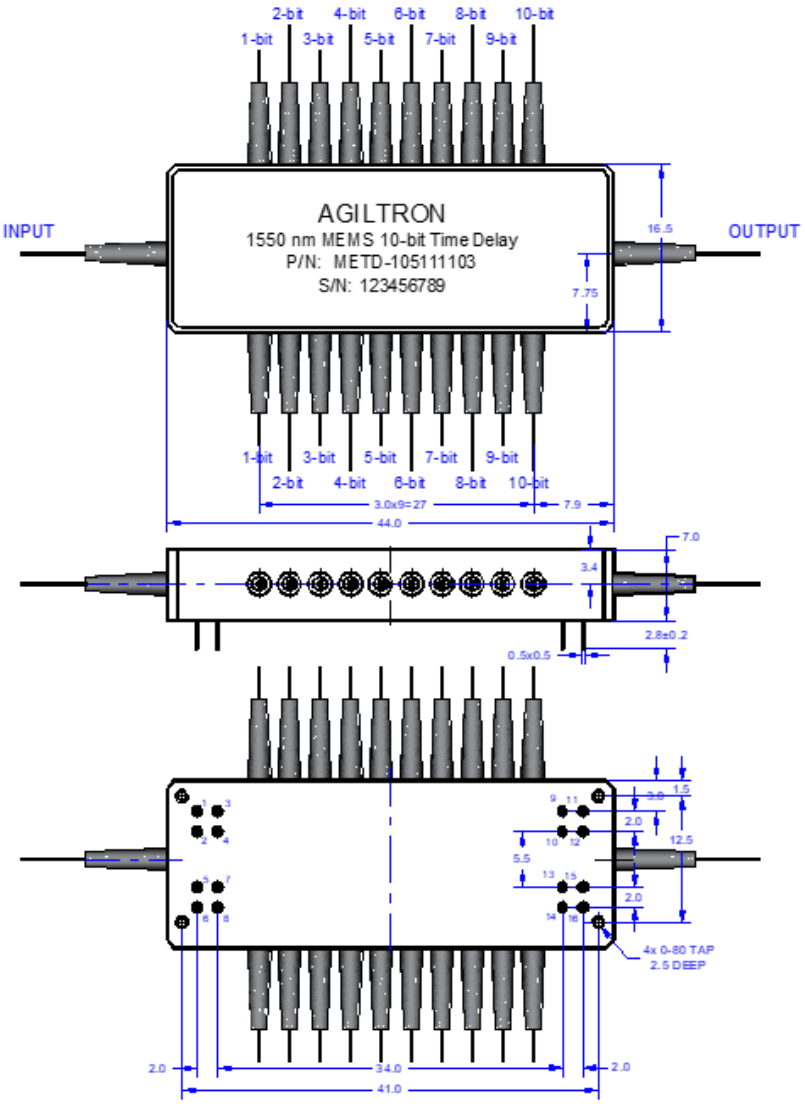
Mechanical Dimensions (Unit: mm)



Electrical Driving Requirements

The electrical driver is available with USB and/or RS232 control interfaces and Windows™ GUI. It comes with a wall-plug 5V power supply. Please contact us it.

Driving Voltage	Min	Typical	Max	Unit
H	4.0	4.2	4.5	VDC
Power Consumption (For each MEMS Chip)		170		mW

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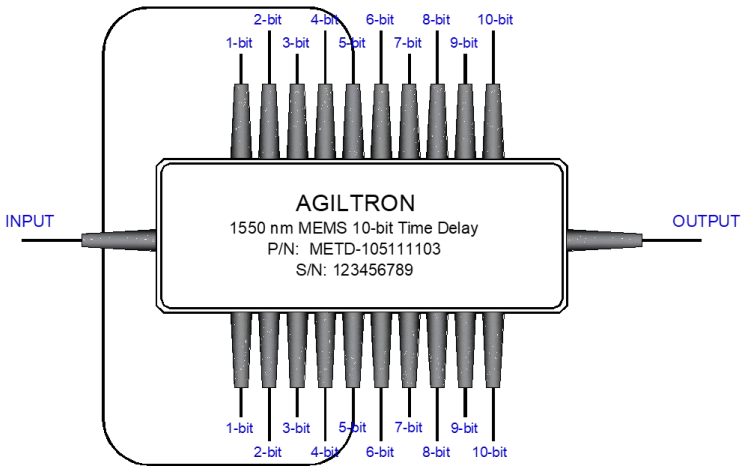
Status	Pin Number										
	1	2	3	4	5	9	10	11	12	13	6, 7, 8, 14, 15
Bypass	H	H	H	H	H	H	H	H	H	H	GND
1st bit	0	H	H	H	H	H	H	H	H	H	
2nd bit	H	0	H	H	H	H	H	H	H	H	
3rd bit	H	H	0	H	H	H	H	H	H	H	
4th bit	H	H	H	0	H	H	H	H	H	H	
5th bit	H	H	H	H	0	H	H	H	H	H	
6th bit	H	H	H	H	H	0	H	H	H	H	
7th bit	H	H	H	H	H	H	0	H	H	H	
8th bit	H	H	H	H	H	H	H	0	H	H	
9th bit	H	H	H	H	H	H	H	H	0	H	
10th bit	H	H	H	H	H	H	H	H	H	0	

Delay Path Definition: ex. 5th-bit path diagram



Ordering Information

	□□	□	□	□	□	□	0	□
Prefix	**Type**	**Wavelength**	**Configuration**	**Switch type**	**Fiber Type**	**Fiber Cover**	**Delay Range**	**Connector**
METD-	2-Bit = 02 3-Bit = 03 4-Bit = 04 5-Bit = 05 6-Bit = 06 7-Bit = 07 8-Bit = 08 9-Bit = 09 10-Bit =10 Special=0	1260~1620 =1 Special=0	Standard = 1 Inversion = 2 Special = 0	Non-latching=2 Special=0	SMF-28=1 PM 1550=B PM 1310=D PM 980=E PM 850=F Special=0	Bare fiber = 1 0.9mm tube = 3 Special = 0	Customized=0	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC=7 Special=0

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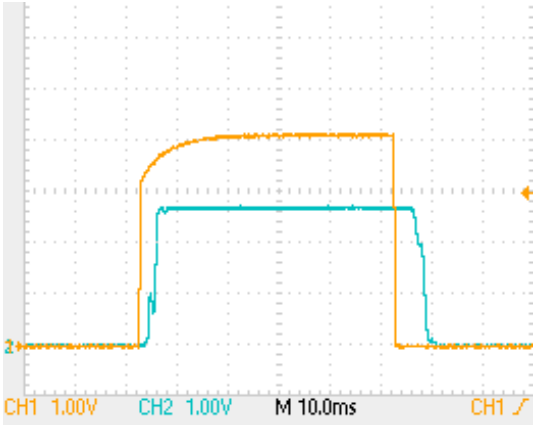
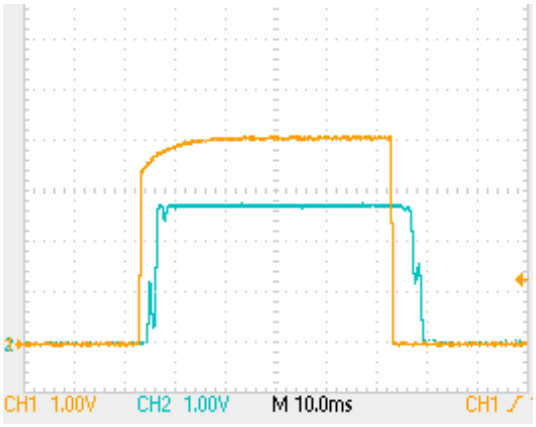
Typical Switching Rise/Fall at -40ºC and 70ºC

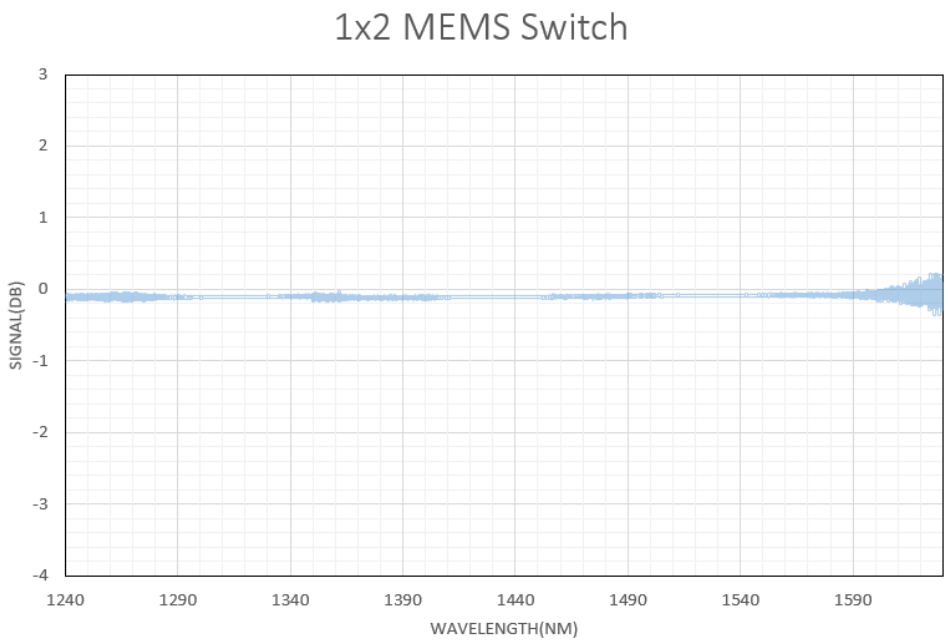


-40 ºC



+70 ºC

Typical Insertion Loss vs Wavelength (1240-1630nm)



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