

# 10-bit MEMS Photonic Time Delay with Variable Optical Attenuator

(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  $\Delta T$ . 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  $\Delta T$ ) up to the maximum value  $[T = (2^N - 1)\Delta T]$ .

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 or RS232 control interface separately.



## Performance Specifications

MEMS Series Photonic Delay Line	Min	Typical	Max	Unit
Wavelength Band	780	1550	2000	nm
Fiber Segment Number (bit #)			10	Loop
Insertion Loss <sup>[1]</sup>		1.2	2.0 <sup>[1]</sup>	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 <sup>[2]</sup>			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 <sup>[1]</sup>		44L x 15.5W x 6.5H		mm

[1]. Input to output with a single delay (1 m fiber length) loop.

[2]. The delay fiber loops (>0.5m) can be spliced in precise length control per request.

## Features

- 10-bit Resolution or more
- High Reliability
- Low Insertion Loss

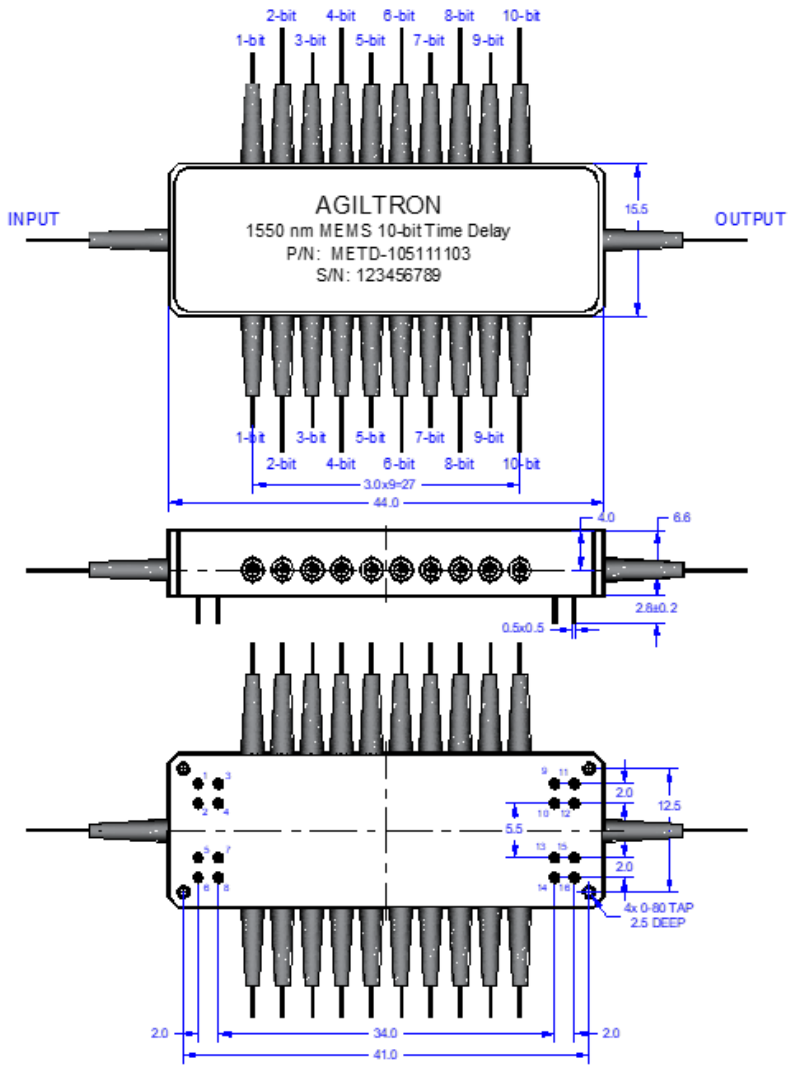
## Applications

- Phase-Array Antennas
- Instrumentation



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## Mechanical Dimensions (Unit: mm)



\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

## Electrical Driving Requirements

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

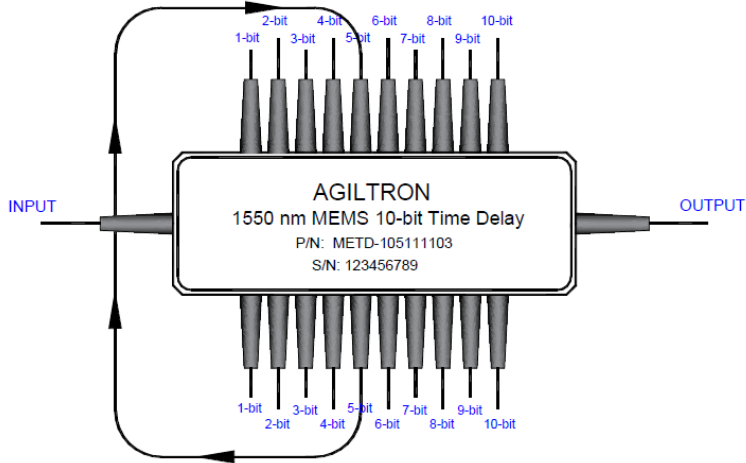
Driving Voltage	Min	Typical	Max	Unit
H	4.6	4.8	5.0	VDC
Power Consumption (For each MEMS Chip)		170		mW



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Status	Pin Number											6, 7, 8, 14, 15, 16
	1	2	3	4	5	9	10	11	12	13		
Bypass												0V
1-bit	H											
2-bit		H										
3-bit			H									
4-bit				H								
5-bit					H							
6-bit						H						
7-bit							H					
8-bit								H				
9-bit									H			
10-bit										H		

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



## Ordering Information

METD <sup>[1]</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>
	Type	Wavelength	Configuration <sup>[2]</sup>	Package	Fiber Type		Delay Range	Connector	
	4-Bit = 04 5-Bit = 05 6-Bit = 06 7-Bit = 07 8-Bit = 08 9-Bit = 09 10-Bit = 10 Special=00	1260-1620 =1 1310=3 1550=5 Special=0	TD only =1 TD & VOA =2 Special = 0	Non-Latching=2 Special =0	SMF-28 =1 PM 250 =B Special =0	Bare fiber=1 900 μm tube =3 Special =0	Custom =0	None =1 FC/PC =2 FC/APC =3 SC/PC =4 SC/APC =5 ST/PC =6 LC =7 Duplex LC=8 Special=0	

[1]. METD: MEMS Time Delay.

[2]. TD: Time Delay. VOA function may be realized in the additional PIN (not shown in driving table).

