

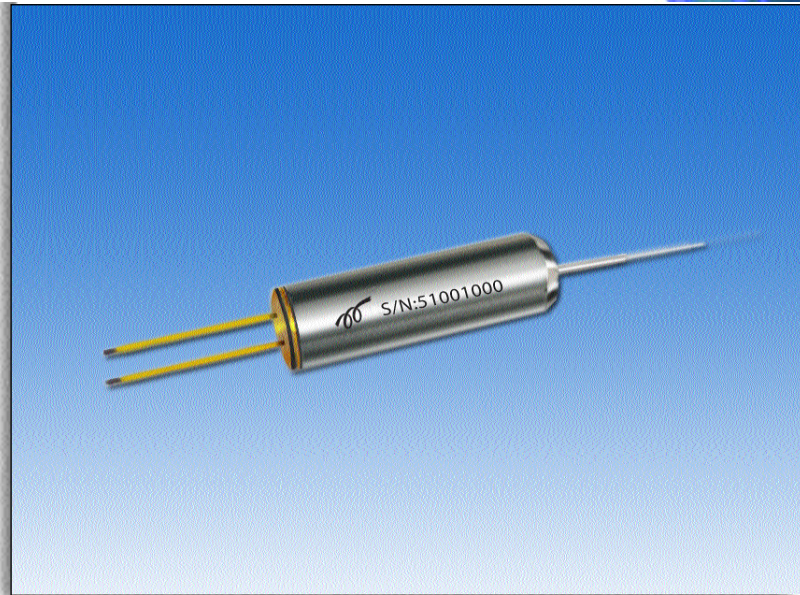
Liquid Crystal Based Wide-Band Variable Optical Attenuator

Features/Benefits

- Continuous tuning without moving parts
- Ultra wide attenuation band
- High attenuation range
- Low insertion loss
- Small footprint in coaxial package
- Slow tuning slope without backlash and hysteresis
- High precise optical power control
- Low cost

Applications

- Network optical power adjustment
- Wide band channel balancing
- EDFA gain-tilt and power balancing
- Raman amplifier
- Multi-channel OADM



Lightwaves2020's liquid crystal based variable optical attenuator (VOA) is a voltage-controlled device designed specifically for power management in optical networks. The device has a dynamic range of up to 40dB attenuation and wide operating band of wavelength from 1260nm to 1620nm.

Sealed in a compact coaxial package 7.2mm in diameter, the VOA's small footprint makes it ideal for integration onto circuit board. In addition, it offers the benefits of no moving parts, precision attenuation control without backlash, small driving voltage, low insertion loss and low cost. The VOA is driven by either a 0 ~ 40V peak to peak 10KHz square wave or by a 0 ~ 5 V DC voltage using Lightwaves2020's easy-to plug driver board.

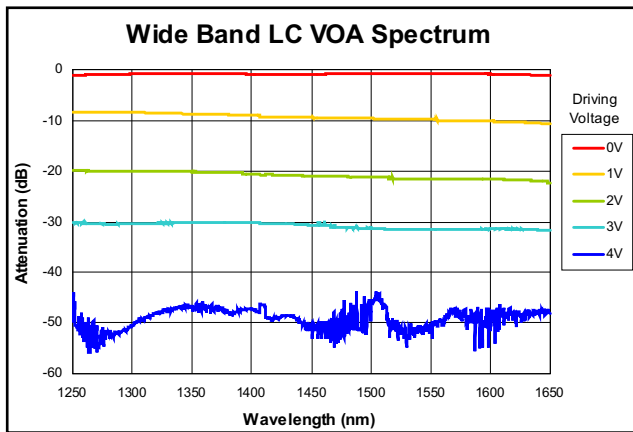
The VOA can be used for pre-emphasis of DWDM laser signals in long haul systems, power equalization in optical add/drop modules and optical cross-connects, as well as gain-tilt adjustment in EDFA. As with all Lightwaves2020's products, this wide-band VOA conforms to Telcordia requirements.

Specifications

Parameters		Unit	Normal-on		Normal-off		
			Grade P	Grade A	Grade P	Grade A	
Operating Wavelength Range	-	nm	1260nm ~ 1620nm				
Attenuation Range	Min.	dB	20, 30 or 40				
Insertion Loss	Max.	dB	1.2	1.5	1.3	1.5	
Polarization Dependent Loss	@10dB	Max.	dB	0.15	0.2	0.25	0.3
	@ 20dB	Max.	dB	0.25	0.4	0.35	0.5
Wavelength Dependent Loss	@ 10dB	Max.	dB	0.4 @ C-band or L-band			
Polarization Mode Dispersion (PMD)	Max.	ps	0.1				
Chromatic Dispersion	Max.	ps/nm	0.2				
Return Loss	Min.	dB	≥ 45				
Attenuation Resolution	Min.	dB/mV	Continuous				
Maximum Optical Power	Min.	mW	300				
Response Rising Time	Max.	ms	5				
Response Falling Time	Max.	ms	35 (-5°C ~ 23°C), 15 (23°C ~ 70°C)				
Driving Voltage (DC)	-	V	0 ~ 5				
Power Supply (DC)	-	V	+ 5				
Power Consumption	Max.	mW	200				
Operating Temperature Range	-	°C	-5 ~ 70				
Storage Temperature Range	-	°C	-40 ~ 85				
Fiber Length	-	m	1 ± 0.1				
Dimensions (with driver)	-	mm	36.3 x 12.7 x 11.5				

Note 1: Insertion loss and return loss don't include connectors.

Note 2: response time includes contributions from electrically driving circuits; measured between 10 % and 90 % of maximum attenuation.



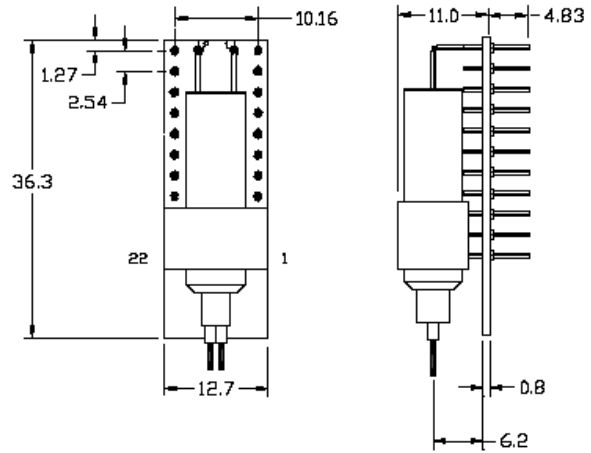
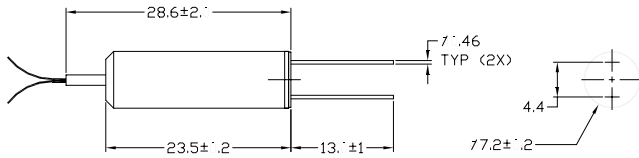
Driver Pin Assignment

Pin	Function	Pin	Function
1	NC	22	NC
2	GND	21	GND
3	NC	20	NC
4	NC	19	NC
5	NC	18	NC
6	NC	17	NC
7	Analog input (0 to 5V)	16	NC
8	GND	15	NC
9	+5V Power Supply	14	NC
10	NC	13	NC
11	VOA PIN A (for off-board connection)*	12	VOA PIN B (for off-board connection)*

* Pin 11 and 12 can be used to test VOA. Otherwise, please let these two pins open and don't connect them to the ground.

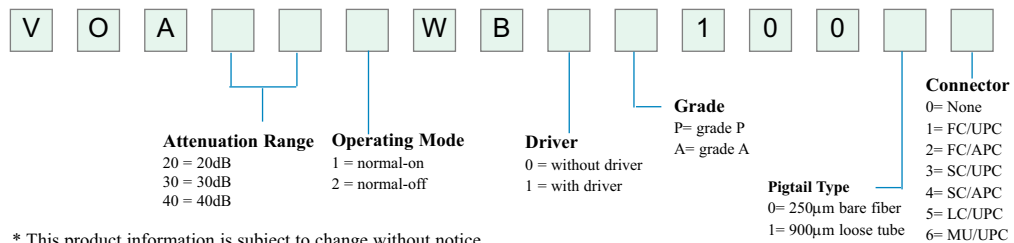
Dimensions

VOA + Driver Assembly Diagram



Unit: mm

Ordering Information



* This product information is subject to change without notice
 * Specifications for products with OSNR feature is not updated yet