D&T Photonics, Inc

Arrayed Variable Optical Attenuator (VOA-10A)

OVERVIEW FOR PRODUCTS AND RELATED TECHNOLOGY

Variable optical attenuators, together with other central photonic components, such as optical splitters, multi/demultiplexers, tunable filters, and matrix switches, are key factors in creating and improving a ubiquitous society of photonic networks. Thus, this kind of popular optical networks forms a new technological field-passive optical network (PON). Silica-based planar lightwave circuits (PLCs) are promising technologies and have provided all above photonic components for practical networks because of their compactness, volume-manufacturability, high reliability, and matching compatibility with fiber-based signal lines.

A series of compact waveguide arrayed variable optical attenuators is based on own-patented device structures and technologies. The prototypes of 10-arrayed VOAs are built with the Silica-based PLC technology. Arrayed VOA stands for a popular PLC-based no-moving-part variable optical attenuators. Only a few challengers could be found in this world that can produce such a compact size and no-moving-part structure of arrayed VOAs.

The VOA-10A uses single-mode fibers with connectors and public electric connection interfaces. Each product is attached a corresponding data-table between the fiber channels and the heater connectors, so that the users can not only directly employ the product, but also develop a panel to implement a programmable control.

FEATURES

Reliable Silica-based PLC technology and advanced device structure, resulting in

1) High performance, including low insertion loss and power consumption, and compact device size;

2) Flexible applications for users because of multicasting/broadcasting of system;

3) Fast switching speed.

KEY APPLICATIONS

1) In automation production, packaging and measuring systems

Control a robot (a robot hand) to start, direction and amplitude, fiber-optic control has advantages over

the conventional electrical wire ones including system complexity and compressing production costs.

2) In mass measurements of optical instruments
Protect photo detectors, improve the measurement reliability----an arrayed VOA is connected between the end of several different signal sources and the end of the tested optical instruments/performance monitor to implement power attenuation control.

3) In medium-scale re-configurable passive optical networks (PONs) for the broad applications, including optical sensing and information processing systems, the optical cross-connect (OXC) is a commonly network architecture, the arrayed VOAs can play important role in the OXC systems.

4) Dynamically re-configurable OADM
In optical telecommunication systems, the optical ADD/DROP multiplexing (OADM) is a popular operation, while the arrayed VOAs must be deployed to balance the optical powers of signal channels in the ADD/DROP operations.

Specifications

Items		Type-I	Type-II
Wavelength		C+L	C+L
Dimensions(mm)		75x30x20	75x30x20
Dynamic range		>22 dB	>35 dB
Maximal IL		1.2 dB	1.6 dB
Maximal Switching Time		0.8 ms	0.8 ms
Electrical dissipation		0.3 W	0.6 W
Arrayed channel number		4, 8, 10, 16	4, 8, 10, 16
Polarization dependent loss (PDL):	1) @0 Att.	0.03dB	0.03dB
	2) @5dB Att.	0.05 dB	0.05 dB
	3) @10dB Att.	0.10 dB	0.10 dB
	4) @15dB Att.	0.50 dB	0.50 dB

Chip photo-picture (A 10-arrayed prototype)