

IA2 Series Motorized Instrumentation Attenuators

Description

The IA2 Series Motorized Instrumentation Attenuators are compact precision attenuator modules for incorporation into test instruments or equipment assemblies.

The IA2 Series attenuators are next-generation products. They incorporate the identical optical design and external dimensions as the JDS FIBEL IA1 Series, but without a potentiometer for attenuation element position feedback. Positioning is done by counting steps of the externally mounted stepper motor, and internal mechanical stops are supplemented by optical end-of-travel and precise zero sensors.

The stepper motor offers 200 steps per revolution with the possibility of micro-stepping for further accuracy. The IA2 Series also uses a precision linear bearing and a zero backlash lead-screw assembly to improve repeatability and accuracy. The standard wavelength range is from 1200 to 1700 nm with 60 dB attenuation.

The attenuation element used in the IA2 Series is a linear absorbing glass prism. The attenuation variation results entirely from absorption, as there are no reflections from metal coatings, scattering, or vignetting employed. Prism-based variable optical attenuators offer low polarization sensitivity, low distortion, and high linearity.

The IA2 Series attenuators are available with an analog option with high return loss and low spectral ripple for CATV AM systems. Attenuators with this option have extra-smooth wavelength response to avoid causing distortion, and they also have >60 dB return loss.

In addition, the IA2 Series attenuators are available with an optional built-in beam-blocking switch, which provides rapid attenuation change from any attenuation setting to infinite attenuation and protects devices placed at the output from harmful optical damage.



Key Features

- High precision optics
- Linear absorbing glass prism
- Low polarization dependent loss
- Stepper motor to simplify control
- Beam block option
- High return loss and low spectral ripple option

Applications

- Automated test instrumentation
- Modular equipment assemblies
- Original equipment manufacturing (OEM) applications

Specifications

Parameter		Specification
Wavelength range ¹		1200 to 1700 nm
Attenuation ¹	range ²	≥60 dB
	repeatability ³	±0.003 dB typical, ±0.02 dB maximum
	accuracy ³	±0.05 dB typical, ±0.1 dB maximum
	resolution	0.025 dB/full step nominal
Insertion loss ^{1,5,6,7}	speed ⁴	≥1.0 seconds, 0 to 60 dB
		1.4 dB typical, 2.0 dB maximum
Return loss ^{1,5}	standard	>45 dB
	analog	>60 dB
Polarization dependent loss ^{1,5}		0.04 dB typical, 0.08 dB maximum
Beam block option ¹	isolation	>100 dB
	speed	>50 ms
Maximum optical input power		200 mW
Fiber type		Corning SMF-28 9/125/900 μm
Steps per revolution ^{8,9}		200 steps/rev
Phase ^{8,9}	voltage	3.0 V DC
	current	0.35 A
	inductance	8 mH
Holding torque ^{8,9}		0.06 N.m or 0.6 kg.cm
Rotor inertia ^{8,9}		0.01 kg/cm ²
Speed ^{4,8,9}		700 rpm maximum
Dimensions (WxHxD)		55.0 x 38.2 x 111.8 mm
Weight		0.5 kg
Temperature-induced variation ¹⁰		±0.2 dB maximum
Operating temperature		-10 to 55 °C
Storage temperature		-40 to 70 °C
Humidity		95% up to 40 °C decreasing 3% per °C from 40 to 70 °C

1. Measured at room temperature with 1300 nm laser source.
2. From the beginning of the linear region to end-of-travel sensor point.
3. Referenced to absolute angular position of input shaft, at constant temperature, after at least a half hour warm-up with power to motor.
4. Highest speed attainable considering high performance driver; slower speed can be obtained depending on the driver.

5. Not including connectors, if installed.
6. At the beginning of the linear region of prism.
7. Over 1250 to 1610 nm. Insertion loss is typically highest at wavelength extremes.
8. JDS FITELE does not supply the stepper motor driver circuitry.
9. Specifications given for bipolar operation.
10. Over entire operating temperature range, relative to attenuation at 25 °C, for up to 10 dB attenuation.

Ordering Information

Indicate your application requirements by selecting one option from each configuration table. Please print the corresponding codes in the available boxes to form your part number. For more information on this or other products and their availability, please contact your local JDS FITELE sales representative or JDS FITELE directly by phone at (613)727-1303, by fax at (613)727-8284, or via e-mail at sales@jdsfitel.com.

IA27D+15 .

Sample: IA27D+15A1FA1.5

Code	Return Loss (>)
K	Low (45 dB)
A	Analog (60 dB)

Code	Beam Block
0	Without
1	With

Code	Connector Type
NC	No connector
FP	FC/HPC
FA	FC/APC
SC	SC/HPC
SU	SC/APC
SP	ST/HPC

Code	Connector Type
0.1	0.1 meters
...	...
...	...
...	...
1.5	1.5 meters (standard)
...	...
...	...
...	...
9.9	9.9 meters

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JDS FITELE Inc.
570 West Hunt Club Rd.
Nepean (Ottawa), Ontario
K2G 5W8 CANADA

Tel. (613) 727-1303
Fax. (613) 727-8284
sales@jdsfitel.com
www.jdsfitel.com

