

LEAD Fiber Optics PRODUCT CATALOGUE

FIBER OPTIC ATTENUATOR Fixed plug-in type

Fixed plug in type Attenuator



Fixed plug in fiber attenuators (Fixed plug type or Male to Female Fixed fiber attenuator) use doped fiber to provide fixed level of optical attenuation. Typical attenuation values are between 3 and 20 dB. It is used in optical systems where the optical power from a source is too high for the test equipment in use. Fixed plug type fiber attenuator provides a connector plug (male) and an adapter socket (female) to connect between fiber patch cord and fiber adapter. Fixed plug type attenuator introduces an in-line fixed loss that will reduce the source power to an acceptable detection level. The attenuation level should be stable with temperature and wavelength for a stable reliable system.

Our Fixed plug type Fixed Attenuators and our Fixed In-Line Fixed Attenuators are devices that convert optical power into heat using specialty Metal Ion Doped Optical Fibers allowing the optical power to be attenuated to a desired level.

LFO provides a wide range of Fixed plug type single mode attenuator. They are used directly on the Fiber Optic Connectors and provide a fixed level of optical attenuation. Our Fixed plug type attenuator have low return loss and works at both 1310nm and 1550nm wavelength range. FC and SC fiber connector types with PC or APC polish are available, as well as ST and LC types of attenuators.

Fixed plug in type Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- **Telecommunication**
- Local area network
- CATV
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system



ITEM		Wideband Fixed Plug in type Attenuator (Doping type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm		±40)
	ITEM	H grade	A grade
Attonuation Acquiracy	1~5dB	±1.0	±1.5
Attenuation Accuracy (typical, including connector)	6~10dB	±1.5	±2.0
(typical, including connector)	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
Dool: Doffortion alD	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature		-40℃~75℃	
Storage temperature		-50℃~85℃	
Connector Type		ST,FC,FC/APC,SC,SC/APC,LC,MU	

ITEM		Dual window Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm and 1550nm	
Bandwidth, nm		±40	
	ITEM	H grade	A grade
Attonuation Acquiracy	1~5dB	±1.5	±2.0
Attenuation Accuracy (typical, including connector)	6~10dB	±2.0	±2.5
(typical, including connector)	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature		-40°C ~75°C	
Storage temperature		-50°℃~85°℃	
Connector Type		ST,FC,FC/APC,SC,SC/APC,LC,MU	

Specification <i>s</i>			
ITEM		Standard Fixed Plug in Type Attenuator (Fusing Type)	
Mode Type		Multi Mode	
Operation Wavelength, nm		850 or 1310	
Bandwidth, nm		±10	
Attenuation, dB		1~20 or otherwise specified	
Attanuation Assumes	1~5dB	±1.0	
Attenuation Accuracy	6~10dB	±1.5	
(typical, including connector)	11~20dB	±2.0	
	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature		-40℃~75℃	
Storage temperature		-50℃~85℃	
Connector Type		ST,FC,SC	

Fixed Plug in Fiber Optic Attenuator Ordering information AN-FP XX/XXConnector #1 #2 11-ST 21-FC/PC 22-FC/APC 31-SC/PC 32-SC/APC 41-LC/PC 51-MU/PC XX-Others Wavelength **Attenuation accuracy** 31-1310 nm H- High grade 55-1550 nm A- Average grade 35-1310/1550 nm $34-1310 \pm 40 \text{ nm}$ 54-1550 ± 40 nm 30-1300 nm 85-850 nm XX-Others **Attenuation value** 01- 1dB 2dB 02-03-3dB Fiber type ::: ::: 1-9/125um(Single Mode) 28-28dB 2-50/125um(Multi Mode) 29-29dB 3-62.5/125um(Multi Mode) 30dB 30-X-Others **Attenuation type** D1- Doping type

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F1- Fusing type XX-Others

LFO Fixed Plug in Fiber Optic Attenuator Series



ST Plug in type Attenuator

ST fiber optic attenuators use a 2.5mm diameter ceramic ferrule with PC end-face and a ceramic sleeve for precise alignment. It was designed to operate in the 1310 / 1550 nm windows for singlemode and 850 nm windows for multimode.



FC Plug in type Attenuator

The FC fiber optic attenuators use a 2.5mm diameter ceramic ferrule with either PC or APC end-face and a ceramic sleeve for precise alignment. It was designed to operate in the 1310 / 1550 nm windows and 850 nm windows for multimode.



SC Plug in type Attenuator

The SC fiber optic attenuators use a 2.5mm diameter ceramic ferrule with either PC or APC end-face and a ceramic sleeve for precise alignment. It was designed to operate in the 1310 / 1550 nm windows and 850 nm windows for multimode.



LC Plug in type Attenuator

The LC fiber optic attenuators use a 1.25mm diameter ceramic ferrule with either PC or APC end-face and a ceramic sleeve for precise alignment. It was designed to operate in the 1310 / 1550 nm windows and 850 nm windows for multimode.



MU Plug in type Attenuator

The MU fiber optic attenuators use a 1.25mm diameter ceramic ferrule with PC end-face and a ceramic sleeve for precise alignment. It was designed to operate in the 1310 / 1550 nm windows.

ST Fiber Optic Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- Telecommunication
- Local area network
- **CATV**
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system





ITEM		Wideband Fixed Plug in Type Attenuator (Doping type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm		±	40
	ITEM	H grade	A grade
Attenuation Assurance	1~5dB	±1.0	±1.5
Attenuation Accuracy (typical, including connector)	6~10dB	±1.5	±2.0
(typical, including connector)	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
David Dation (Communication	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature, [°] C		-40°℃ ~75°ℂ	
Storage temperature, [°] C		-50°C ~85°C	

ITEM		Dual window Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm and 1550nm	
Bandwidth, nm		±4	0
	ITEM	H grade	A grade
Attanuation Aggurage	1~5dB	±1.5	±2.0
Attenuation Accuracy (typical, including connector)	6~10dB	±2.0	±2.5
(typical, including connector)	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
	PC	≦-40	
Back Reflection, dB APC		≦-60	
Operation Temperature, ℃		-40℃~75℃	
Storage temperature,°C		-50℃~85℃	

ITEM		Standard Fixed Plug in Type Attenuator (Fusing Type)
Mode Type		Multi Mode
Operation Wavelength, nm		850 or 1310
Bandwidth, nm		±10
Attenuation, dB		1~20 or otherwise specified
	1~5dB	±1.0
Attenuation Accuracy	6~10dB	±1.5
(typical, including connector)	11~20dB	±2.0
Back Reflection, dB PC APC		≦-40
		≦-60
Operation Temperature,°C		-40°C ~75°C
Storage temperature,°C		-50°ℂ~85°ℂ

FC Fiber Optic Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- Telecommunication
- Local area network
- **CATV**
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system





ITEM		Wideband Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm			±40
	ITEM	H grade	A grade
Attanuation Acquiracy	1~5dB	±1.0	±1.5
Attenuation Accuracy (typical, including connector)	6~10dB	±1.5	±2.0
(typical, including connector)	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
Dool: Doffortion alD	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature, [°] C		-40°C ~75°C	
Storage temperature, [°] C		-50°C ~85°C	

Specifications			
ITEM		Dual window Fixed Plug in Ty	pe Attenuator (Doping Type)
Mode Type		Single Mode	
Operation Wavelength, nm		1310 nm ar	nd 1550 nm
Bandwidth, nm		±40	
	ITEM	H grade	A grade
Attonuction Acquired	1~5dB	±1.5	±2.0
Attenuation Accuracy (typical, including connector)	6~10dB	±2.0	±2.5
(typical, including connector)	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
Back Reflection, dB	PC	≦-40	
	APC	≦-60	
Operation Temperature,°C		-40°C ~75°C	

-50°C ~85°C

Specification*s*

Storage temperature, ${}^{\circ}\!\mathbb{C}$

ITEM		Standard Fixed Plug in Type Attenuator (Fusing Type)	
Mode Type		Multi Mode	
Operation Wavelength, nm		850 nm or 1310 nm	
Bandwidth, nm		±10	
Attenuation, dB		1~20 dB or otherwise specified	
Attenuation Accuracy (typical, including connector)	1~5dB	±1.0	
	6~10dB	±1.5	
	11~20dB	±2.0	
	PC	≦-40	
Back Reflection, dB APC	APC	≦-60	
Operation Temperature,°C	-	-40℃~75℃	
Storage temperature,°C		-50°℃~85°℃	

SC Fiber Optic Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- **Telecommunication**
- Local area network
- **CATV**
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system





ITEM		Wideband Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm			±40
	ITEM	H grade	A grade
Attanuation Againment	1~5dB	±1.0	±1.5
Attenuation Accuracy (typical, including connector)	6~10dB	±1.5	±2.0
(typical, including connector)	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
Dool Deflection dD	PC	≦-40	
Back Reflection, dB	APC	≦-60	
Operation Temperature, [°] C		-40°C ~75°C	
Storage temperature, [°] C		-50℃~85℃	

ITEM		Dual window Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm and 1550nm	
Bandwidth, nm		±	40
	ITEM	H grade	A grade
Attonuction Acquirect	1~5dB	±1.5	±2.0
Attenuation Accuracy (typical, including connector)	6~10dB	±2.0	±2.5
(typical, moldaling connector)	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
	PC	≦-40	
Back Reflection, dB		≦-60	
Operation Temperature,°C		-40°C ~75°C	
Storage temperature, $^{\circ}\!\mathbb{C}$		-50°℃~85°℃	

ITEM		Standard Fixed Plug in Type Attenuator (Fusing Type)
Mode Type		Multi Mode
Operation Wavelength, nm		850 or 1310
Bandwidth, nm		±10
Attenuation, dB		1~20 or otherwise specified
Attenuation Accuracy (typical, including connector)	1~5dB	±1.0
	6~10dB	±1.5
	11~20dB	±2.0
Dools Doffortion alD	PC	≦-40
Back Reflection, dB APC		≦-60
Operation Temperature,°C		-40℃~75℃
Storage temperature, [°] C		-50℃~85℃

LC Fiber Optic Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- Telecommunication
- Local area network
- **CATV**
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system





ITEM		Wideband Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm		±40	
Attenuation Accuracy (typical, including connector)	ITEM	H grade	A grade
	1~5dB	±1.0	±1.5
	6~10dB	±1.5	±2.0
	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
Back Reflection, dB	PC	≦-40	
	APC	≦-60	
Operation Temperature, ℃		-40°C ~75°C	
Storage temperature,°C		-50°℃~85°℃	

ITEM		Dual window Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm and 1550nm	
Bandwidth, nm		±40	
Attenuation Accuracy (typical, including connector)	ITEM	H grade	A grade
	1~5dB	±1.5	±2.0
	6~10dB	±2.0	±2.5
	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
Back Reflection, dB	PC	≦-40	
	APC	≦-60	
Operation Temperature, ℃		-40°℃~75°℃	
Storage temperature, [°] C		-50°℃~85°℃	
Connector Type		ST,FC,FC/APC,SC,SC/APC,LC,MU	

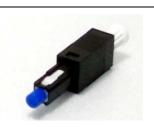
MU Fiber Optic Attenuator

Features

- Environmentally stable
- Easy installation
- Custom designed specifications
- Low return Loss
- Readily panel mountable
- Compact

Applications

- **Telecommunication**
- Local area network
- CATV
- Fiber optic sensors
- Testing instruments
- Fiber to the home
- Multi-Channel subscriber loop
- Optical transmission system





ITEM		Wideband Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm or 1550nm	
Bandwidth, nm		±40	
Attenuation Accuracy (typical, including connector)	ITEM	H grade	A grade
	1~5dB	±1.0	±1.5
	6~10dB	±1.5	±2.0
	11~15dB	±2.0	±2.5
	16~20dB	±2.0	±2.5
Back Reflection, dB	PC	≦-40	
	APC	≦-60	
Operation Temperature, [°] C		-40℃~75℃	
Storage temperature, [°] C		-50℃~85℃	

ITEM		Dual window Fixed Plug in Type Attenuator (Doping Type)	
Mode Type		Single Mode	
Operation Wavelength, nm		1310nm and 1550nm	
Bandwidth, nm		±40	
Attenuation Accuracy (typical, including connector)	ITEM	H grade	A grade
	1~5dB	±1.5	±2.0
	6~10dB	±2.0	±2.5
	11~15dB	±2.5	±3.0
	16~20dB	±3.0	±3.5
Back Reflection, dB	PC	≦-40	
	APC	≦-60	
Operation Temperature, [°] C		-40℃~75℃	
Storage temperature, [°] C		-50℃~85℃	