DOCUMENT NUMBER S07-051-4E

FA125 Series

LC Plug Type Fixed Attenuator

TECHNICAL SPECIFICATIONS

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FA125 Series LC PLUG TYPE FIXED ATTENUATOR
TECHNICAL SPECIFICATIONS

S07-051-0E	September	2001
S07-051-1E	July	2002
S07-051-2E	November	2005
S07-051-3E	June	2009
S07-051-4E	August	2015

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1. SCOPE

This specification is based on “LC plug and LC adaptor” equivalents which are made in accordance to the license contract with Lucent Technologies.

2. PART NUMBER

Product type	-	Attenuation value	-	Polishing type	Grade
FA125: LC type		00: 0dB 01: 1dB 02: 2dB 03: 3dB 04: 4dB 05: 5dB 06: 6dB 07: 7dB 08: 8dB 09: 9dB 10:10dB 11: 11dB 12: 12dB 13: 13dB 14: 14dB 15: 15dB 16: 16dB 17: 17dB 18: 18dB 19: 19dB 20: 20dB		HP: right-angled PC AP: Angled PC	5: Hi performance (non): standard

Example: For 3 dB attenuation HP standard,

FA125-03-HP

For 5 dB attenuation AP Hi performance,

FA125-05-AP5

For 0 dB attenuation HP standard,

FA125-00-HP

3. PATTERN

The construction and structure of the product are described in the attached drawing sheet.

4. APPEARANCE

There should be no burr, contamination or scratch which affect the product performance.

5. FEATURE

5.1 Optical characteristics

The following initial characteristics shall be confirmed.

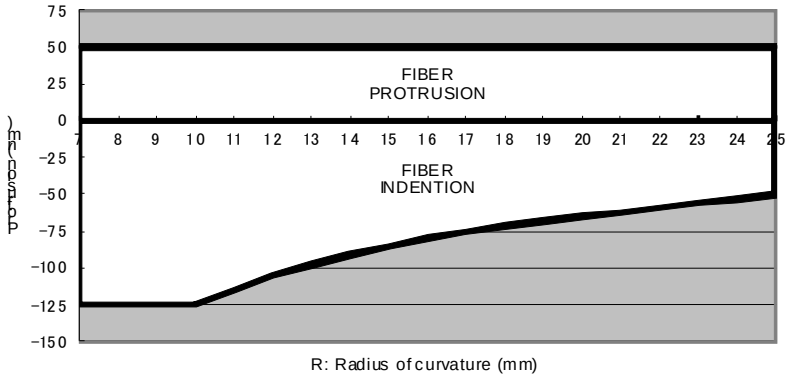
Operating wavelength		1290 ~ 1330nm and 1530 ~ 1570nm
Initial attenuation measured with 1310 +/- 10nm and 1550 +/- 10nm LD	0dB	IL≦0.5dB
	1-10dB	+/- 0.5dB (High performance) +/- 1.0dB (Standard)
	11-20dB	+/- 5% (High performance) +/- 10% (Standard)
Wavelength dependency variation of the attenuation within 1310 +/- 20nm and 1550 +/- 20nm LD	1-10dB	Initial attenuation +/- 0.5dB
	11-20dB	Initial attenuation +/- 5%
Backrefrection		>= 50dB (HP polishing) >= 60dB (AP polishing)
Polarization dependent loss		<= 0.5dB

Note: Measurement method is described in the attached sheet.

5.2 Polishing precision of the ferrule end face

Polishing precision of the ferrule end face	PC Polish	APC Polish
Radius of curvature (R)mm	7<=R<=25	5<=R<=12
Vertex offset from the center of the ferrule (E) μm	E<=50	
Protrusion of the fiber from the ferrule end face (⊿)nm	See Graph 1	⊿<=100

Graph 1: Protrusion of the fiber from the ferrule end face



* Fiber protrusion <=50 nm
* Fiber indention <=$0.02r^3$-$1.3r^2$+31r-325 nm

5.3 Mechanical Characteristics

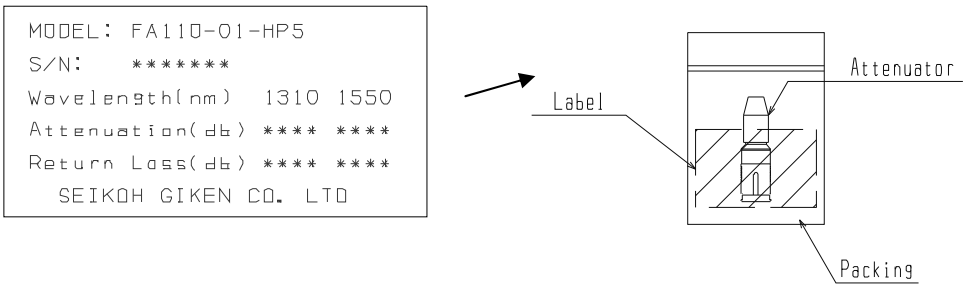
Test item	Conditions	Variation range of the attenuation		Backrefrection
		High performance	Standard	
Vibration	Frequency range: 10-55Hz Amplitude: 1.5mm 3 axis for 2 hours, 24 cycles (LC type)	+/- 0.5dB (1-10dB) +/- 5% (11-20dB)	+/- 1.0dB (1-10dB) +/- 10% (11-20dB)	>= 50dB (HP) >= 60dB (AP)
Repeatability	Times of matching: 500 times (Plug in and pull out on both ferrule side and plug side for one matching)			
Drop/free-fall	Dropping the specimen onto the steel plate from 1800 mm height for 8 times			

5.4 Environmental Characteristics

Test item	Conditions	Variation range of the attenuation		Backrefrection
		High performance	Standard	
Temperature cycle	-40 to +85 degree C, 10 cycles	+/- 0.5dB (1-10dB) +/- 5% (11-20dB)	+/- 1.0dB (1-10dB) +/- 10% (11-20dB)	>= 50dB (HP) >= 60dB (AP)
Heat resistance	+85 degree C, 240 hours			
Cold resistance	-40 degree C, 240 hours			
High humidity resistance (Constant temp.)	+40 degree C, 90 to 95%Rh, 96 hours			
Temperature/ humidity cycle	-10 to +65 degree C, 95%Rh, 10 cycles			

6. INSPECTION SHEET

Data label including Serial Number, Attenuation value and Back reflection is placed on individual package.



7. PACKAGING

The product(s) shall be packed to prevent from any damage on its appearance or performance during transportation.

8. HANDLING AND CARE

8.1 Conditions of Storage

a. Operating temperature/humidity:

-20 to +70 degree C / 30 to 80%Rh

b. Storage temperature/humidity:

-40 to +80 degree C / 30 to 90%Rh (No condensation)

8.2 Cleaning

Make sure to clean ferrule end face of the product and inside the matching adapter with alcohol and lint-free tissue before each use.

8.3 Storage

When not in use, make sure to put a protection cap on the product for storage.

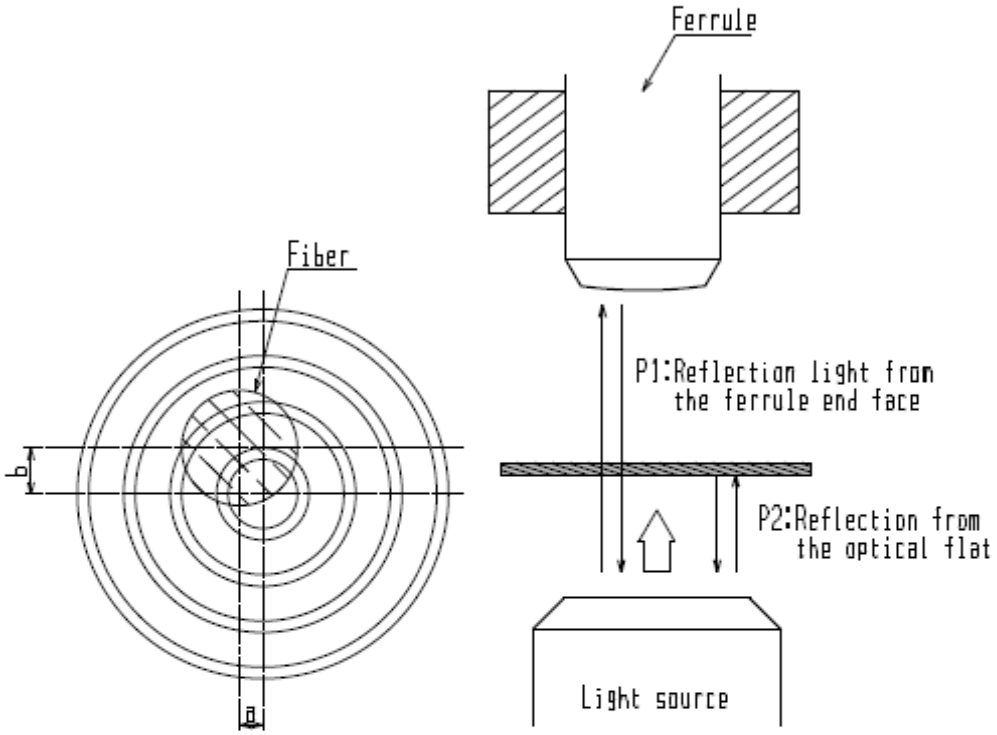
8.4 Disposal

Disposal of the product shall be carried out as industrial waste in ecologically satisfactory manner.

9. OTHERS

The product does not apply to the strategic goods, material, or service defined by Foreign Exchange and Foreign Trade Control Low.

Measurement Method for PC Polished Ferrule End Face Geometry



Description

Light, forming interference fringe : $\lambda=0.66\times10^{-3}$mm

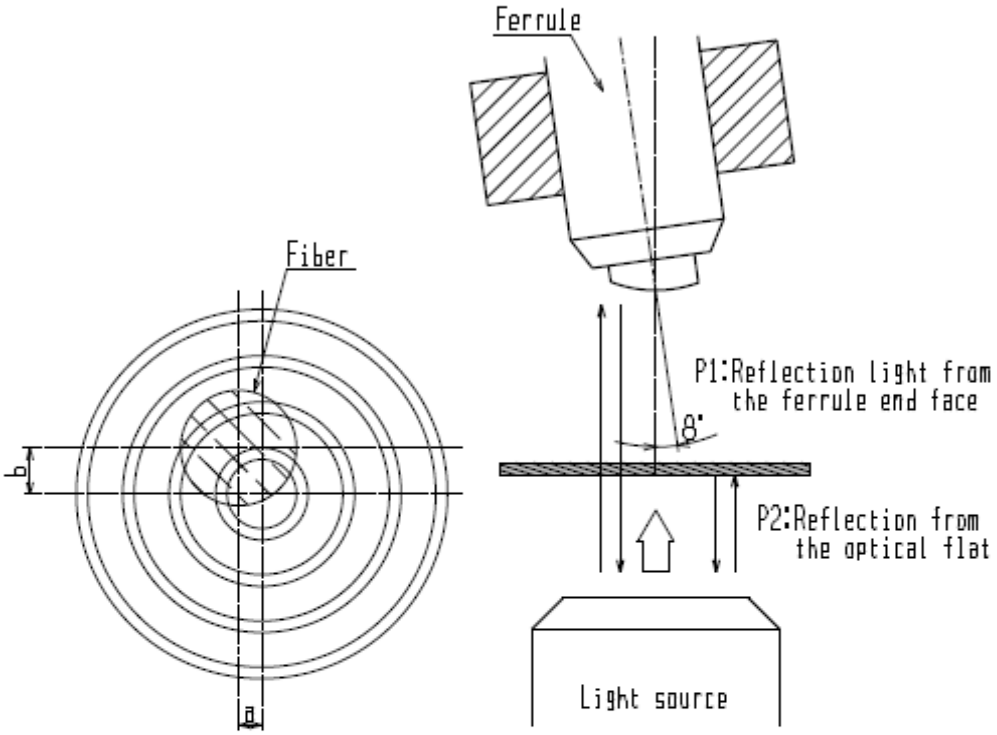
Apex offset : $e=\sqrt{a^2+b^2}$

Choose two fringes of the nth and the(m+p)th, which are formed from P_1 and P_2, and then measure the diameter of those fringes

Radius of curvature : $R=(D_{m+p}^2-D_m^2)/4p\lambda$

K01-008n

Measurement Method for APC Polished Ferrule End Face Geometry



Description

Light, forming interference fringe : $\lambda=0.66\times10^{-3}$mm

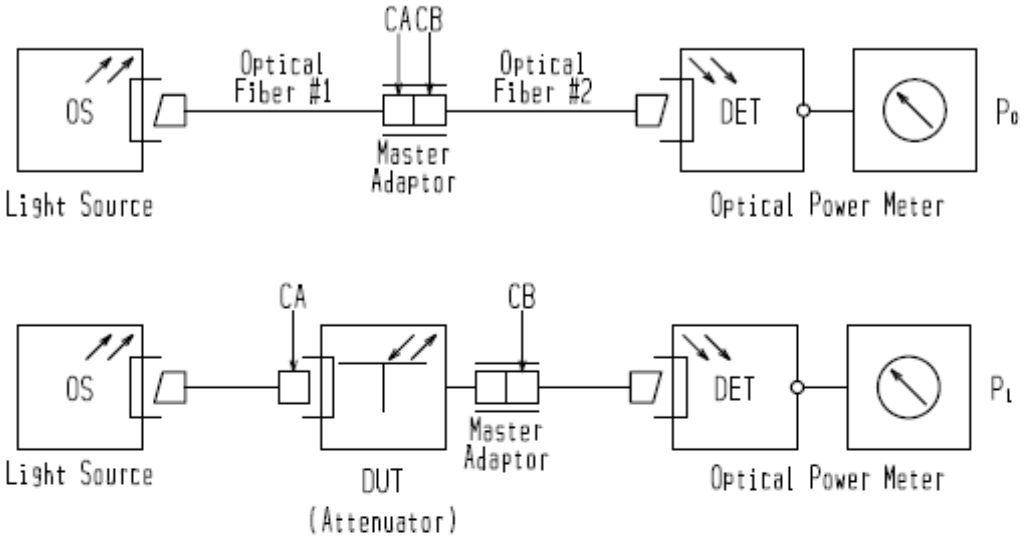
Apex offset : $e=\sqrt{a^2+b^2}$

Choose two fringes of the nth and the(m+p)th, which are formed from P_1 and P_2, and then measure the diameter of those fringes

Radius of curvature : $R=(D_{m+p}^2-D_m^2)/4p\lambda$

K01-009n

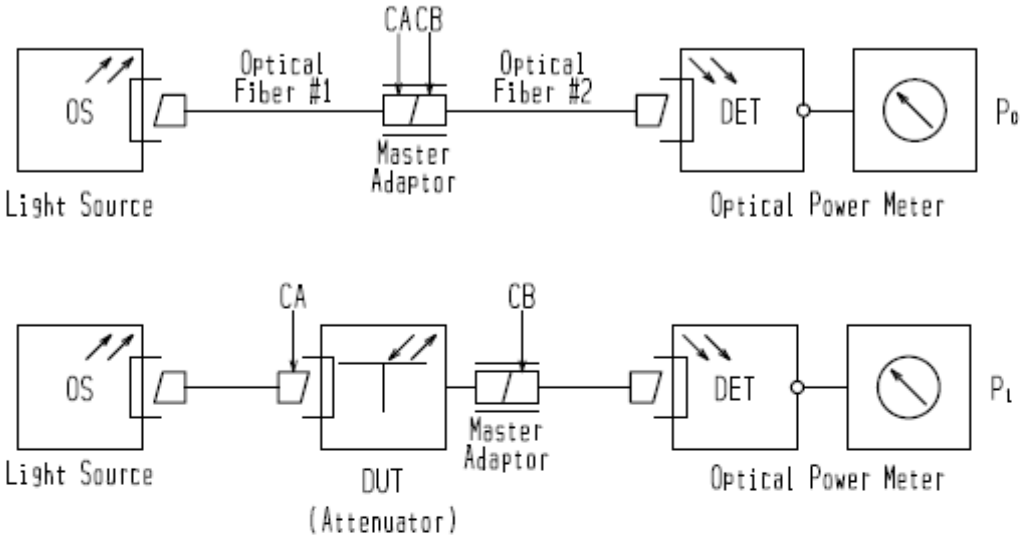
Attenuation Measurement Method - Plug Type Fixed Attenuator (PC)



DESCRIPTION
CA,CB: Master connector (satisfied the following specification)
·Fiber length : ≥2m
·Diameter of the ferrule : φ2.499±0.0005mm(FC,SC,ST), φ1.249±0.0005mm(MU,LC)
·Fiber core eccentricity : ≦0.5μm(FC,SC,MU,LC)
·Vertex offset : ≦30μm
·Radius of curvature : 10~25mm(FC,SC,ST,MU), 7~25mm(LC)
·Protrusion of the fiber from the ferrule end face : -0.05~0.05μm
·Insertion loss : ≦0.1dB
·Backreflection : ≥55dB
Attenuation = $-10\log_{10}(P_t/P_o)$

L07-007n-2

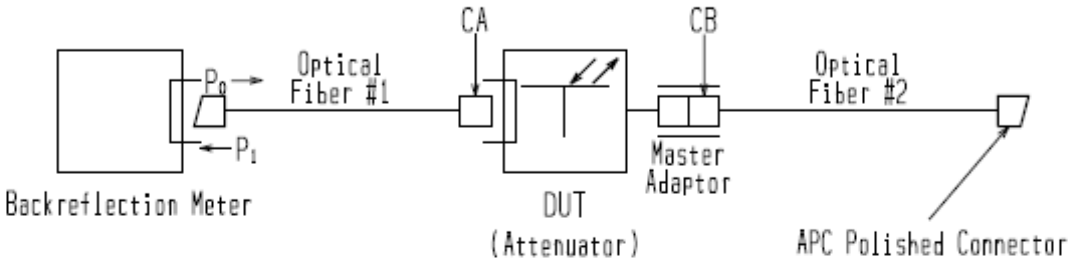
Attenuation Measurement Method - Plug Type Fixed Attenuator (APC)



DESCRIPTION
CA,CB: Master connector (satisfied the following specification)
・Fiber length : ≧2m
・Diameter of the ferrule : φ2.499±0.0005mm(FC,SC,ST),
φ1.249±0.0005mm(MU,LC)
・Fiber core eccentricity : ≦0.5μm(FC,SC,MU,LC)
(For reference only since the value is measured before APC polishing.)
・Vertex offset : ≦30μm
・Radius of curvature : 5~12mm
・Protrusion of the fiber from the ferrule end face : -0.05~0.05μm
・Insertion loss : ≦0.1dB
・Backreflection : ≧65dB
Attenuation = $-10\log_{10}(P_t/P_o)$

L07-008n-2

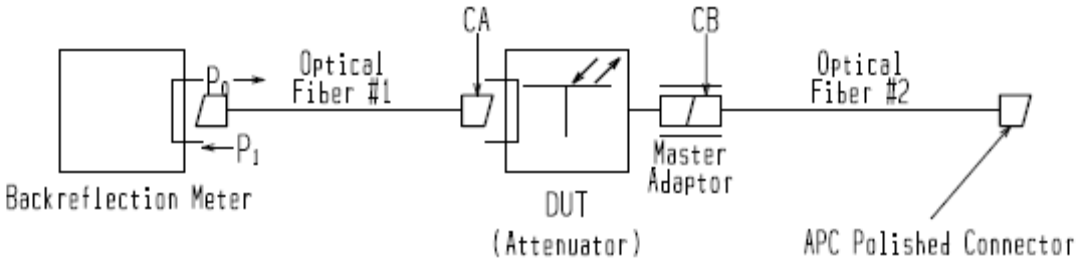
Backreflection Measurement Method - Plug Type Fixed Attenuator (PC)



DESCRIPTION
CA,CB: Master connector (satisfied the following specification)
·Fiber length : ≥2m
·Diameter of the ferrule : φ2.499±0.0005mm(FC,SC,ST),
φ1.249±0.0005mm(MU,LC)
·Fiber core eccentricity : ≦0.5μm(FC,SC,MU,LC)
·Vertex offset : ≦30μm
·Radius of curvature : 10~25mm(FC,SC,ST,MU), 7~25mm(LC)
·Protrusion of the fiber from the ferrule end face : -0.05~0.05μm
·Insertion loss : ≦0.1dB
·Backreflection : ≥55dB
Backreflection = $-10\log_{10}(P_1/P_0)$

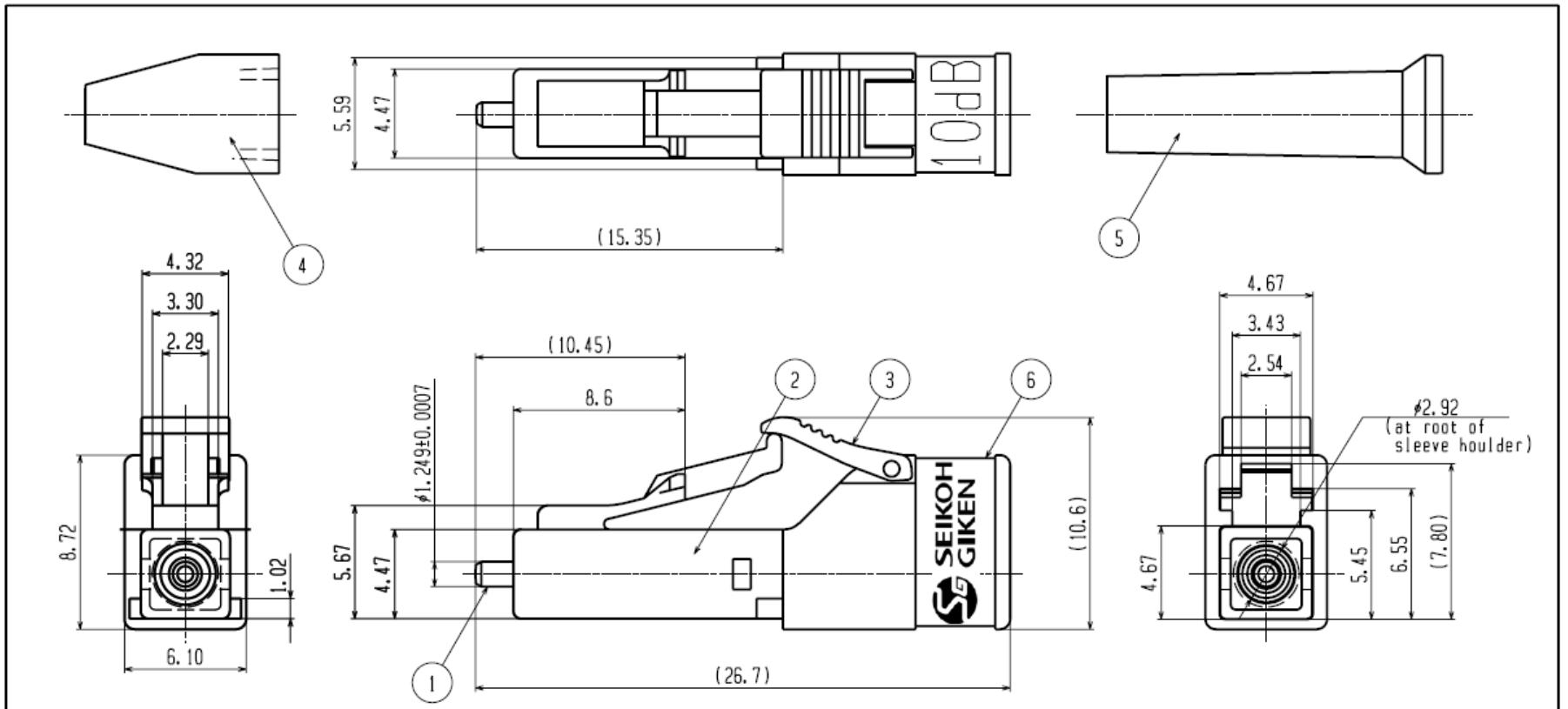
R07-007n-2

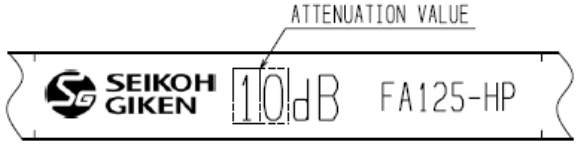
Backreflection Measurement Method - Plug Type Fixed Attenuator (APC)



DESCRIPTION
CA,CB: Master connector (satisfied the following specification)
·Fiber length : ≧2m
·Diameter of the ferrule : φ2.499±0.0005mm(FC,SC,ST),
φ1.249±0.0005mm(MU,LC)
·Fiber core eccentricity : ≦0.5μm(FC,SC,MU,LC)
(For reference only since the value is measured before APC polishing.)
·Vertex offset : ≦30μm
·Radius of curvature : 5~12mm
·Protrusion of the fiber from the ferrule end face : -0.05~0.05μm
·Insertion loss : ≦0.1dB
·Backreflection : ≧65dB
Backreflection = $-10\log_{10}(P_1/P_0)$

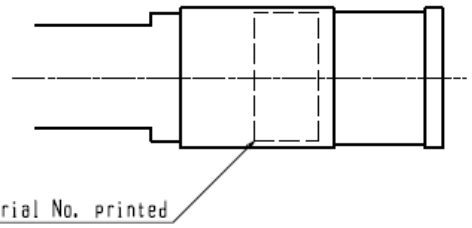
R07-008n-2





COLOR IDENTIFICATION LABEL FOR ATTENUATION LEVEL

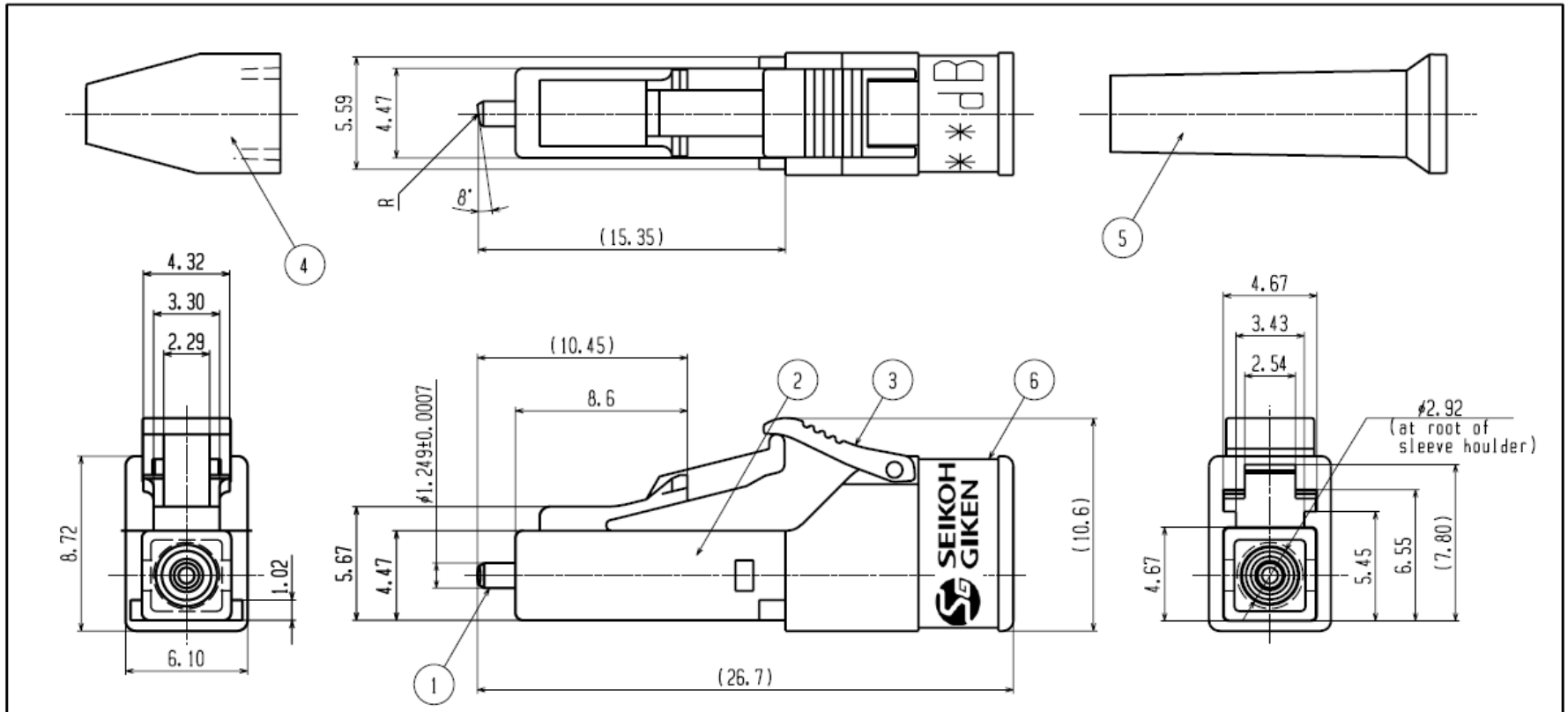
Attenuation	Back	letter
3dB	ORANGE	BLACK
5dB	YELLOW	BLACK
10dB	BLUE	WHITE
15dB	RED	WHITE
20dB	BLACK	WHITE
OTHER	MAT SILVER	BLACK



PART No	QTY	ITEM	MATERIAL / FINISH	
6	1	LABEL	ALMINUM	———
5	1	PROTECTION CAP(ADAPTOR SIDE)	PVC	WHITE
4	1	PROTECTION CAP(FERRULE SIDE)	PVC	BLUE
3	1	RELEASING LEVER	PP	BLUE
2	1	HOUSING	PEI	BLUE
1	1	FERRULE	ZIRCONIA	———

PARTS LIST

4	DRAWN	DATE	SEIKOH GIKEN	
3	CHECKED	DATE	TITLE FA125-HP PLUG ATTENUATOR	
2	APPROVED	DATE		
1	MATERIAL		UNIT:<mm>	DWG. No. S07-051-3n
DESIGN CHANGE	FINISH		SCALE: 5/1	SHEET OF 1 OF 1



ATTENUATION VALUE

SEIKOH GIKEN 10dB FA125-AP

COLOR IDENTIFICATION LABEL
FOR ATTENUATION LEVEL

Attenuation	Back	letter
3dB	ORANGE	BLACK
5dB	YELLOW	BLACK
10dB	BLUE	WHITE
15dB	RED	WHITE
20dB	BLACK	WHITE
OTHER	MAT SILVER	BLACK

Serial No. printed

PART No	QTY	ITEM	MATERIAL / FINISH	
6	1	LABEL	ALMINUM	———
5	1	PROTECTION CAP(ADAPTOR SIDE)	PVC	WHITE
4	1	PROTECTION CAP(FERRULE SIDE)	PVC	GREEN
3	1	RELEASING LEVER	PP	GREEN
2	1	HOUSING	PEI	GREEN
1	1	FERRULE	ZIRCONIA	———

PARTS LIST

④	DRAWN	DATE	SEIKOH GIKEN	
③	CHECKED	DATE	TITLE FA125-AP PLUG ATTENUATOR	
②	APPROVED	DATE		
①	MATERIAL		UNIT:<mm>	DWG. No. S07-051-3n
DESIGN CHANGE	FINISH		SCALE: 5/1	SHEET OF 1 OF 1